ENERPAC

INDUSTRIAL TOOLS

Cylinders
Lifting Products
Pumps
Control Valves
System Components
Presses
Pullers
Specialty Tools
Cutters
Bolting Tools
Flange Maintenance
Heavy Lifting Technology
On-site Machining



400+ PAGES FILLED WITH OVER 2000 TOOLS

US E331

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CUSTOMER-DRIVEN INNOVATION

INDUSTRY LEADING TECHNOLOGY

CONTINUOUS IMPROVEMENT



ENDLESS INNOVATION RESULTS IN THE RIGHT TOOL

We believe it takes advanced technical expertise and ingenuity to develop the industry's most trusted solutions. Our relentless pursuit to deliver the highest standard of excellence means never compromising on quality. Yet, it all starts with a thorough understanding of our customer needs, the environments they work in and the ideas of tomorrow that help get jobs done faster, easier and safer.

SOLVING CUSTOMER PROBLEMS

One of our core values is to continually innovate and solve customer problems. That all begins with the discovery process. Through the efforts of a dedicated innovation team and several centers of excellence, new ideas are uncovered by listening to our customer's pain points and observing how they perform tasks in their own environments. These inputs lead to the forming of ideas and eventually prototypes that can be tested, refined and transformed into finished products.

FIND OUR NEWEST PRODUCTS AT...

enerpac.com/innovation

Continuous improvement means new products are introduced and made available to customers on a regular basis throughout the year. Find the newest Enerpac products at Enerpac.com/innovation.

THE RIGHT TOOL MAKES ALL THE DIFFERENCE

Backed by a global legacy of ultra-reliable quality and superior precision, Enerpac is pushing the industry forward with a wide range of advanced industrial tools and services that first and foremost ensure our customers operate safely and productively every day. It isn't about being compliant. Or "as good" as the next guy; we outpace the competition by delivering technically superior solutions that are easy to get, safe to use and built to outlast.

NEVER COMPROMISE

Enerpac combines technical excellence with proven performance – every day, every year, year after year. We believe customers shouldn't have to compromise – they can rest easy knowing that even in the most complex situations, their reputations and productivity are protected by the most trusted industrial tools available.

SAFETY AND PRODUCTIVITY

Our customers put their physical well-being and reputations on the line each day they go to work; we take the fact that they put their trust in us very seriously. Enerpac team members are obsessively committed to developing solutions that keep the world's workers safe and productive in highly demanding working conditions.

ON-DEMAND ACCESS

For us, offering the ideal customer experience means working overtime to make sure our customers can be heroes when it matters most by providing on-demand access to a vast catalog of products and services, extensive training and mobilized field teams no matter where they are in the world.

As a global market leader in high-pressure hydraulic tools, controlled force products and solutions for precision positioning of heavy loads, Enerpac products have maintained and moved some of the largest structures on earth. They are the industry standard in aerospace, infrastructure, manufacturing, mining, oil & gas, power generation and much more.

110
YEARS OF HISTORY

2000+
EMPLOYEES

100+
COUNTRIES

900+
DISTRIBUTORS

3500+
POINTS OF SALE



Enerpac hydraulic cylinders are available in hundreds of different configurations. Whatever the industrial application... lifting, pushing, pulling, bending, holding... whatever the force capacity, stroke length, or size restrictions... single- or double-acting, solid or hollow plunger, you can be sure that Enerpac has the cylinder to suit your high force application. Enerpac jacking cylinders fully comply to ASME B30.1 (except RD-Series).



With the 3rd Generation comes a trio of key features

The next evolution of the legendary Enerpac RC-Series hydraulic cylinder. The driving force of the Enerpac cylinder range, the new **RC-TRIO** is as **versatile** as ever. Featuring a new Trio Bearing System for **enhanced durability** and a hybrid spring-return system for **faster retraction** and even **greater productivity**.

NEW RC-TRIO SERIES CYLINDERS



New TRIO Bearing System

- Includes up to 4 high-performance wear bands that offer increased resistance to damage, reducing bearing load and increasing cylinder lifespan.
- Hardened composite material wear bands increase bearing surface area for greater sideload resistance - Significantly improving cylinder life.
- New high-performance Polyethylene seals last longer than ever, improving lifespan and keep you working for longer.

New TRIO Stop Ring

- Part of the Trio Bearing System, the Trio Stop Ring includes an additional wear band or high-strength bronze to absorb greater side load
- Capable of taking full cylinder extension force
- Features durable wiper to help prevent contamination from entering the cylinder during retract cycles.

New TRIO Spring System

- Hybrid pre-tensioned return springs for up to 3x faster retraction and increased productivity.
- High-strength steel wire improves spring life
- Spring retention design improves serviceability while allowing higher pre-load during assembly
- Spring is easily removed without special tools.

Durable Piston Rod

- High-strength steel plunger for improved life and sideload resistance
- Nickel-plated plunger coating improves corrosion protection
- Internal plunger threads for easy tool fixturing.

Enhanced Ergonomics

- Standard carry handles on cylinders from 33 up to 55 lbs. Sizes above include certified lifting eyes or optional handles.
- Collar threads, plunger threads and base mounting holes enable easy fixturing (on most models).

Improved Saddle Retention

- Hardened plunger saddle protects plunger end during all lifting operations
- Easily removable for access to plunger mounting threads
- Tilt and smooth saddles available as accessories (compatible with new range of CATS-Series Tilt Saddles).

Enduring Compatibility

- For full compatibility and peace of mind, the new RC-Series model numbers, external dimensions and threads remain unchanged from prior RC-Series cylinders. Ensuring compatibility with historical versions and systems.

Note: The cut-away drawing is representative of typical cylinder construction, and may not represent all cylinders in this section.



Hydraulic Cylinders and Lifting Products Section Overview

Capacity [1] (tons)	Stroke Range (inch)	Cylinder Type and Functions	Series		Page
5 - 100 5 - 25 5 - 50	1.50 - 14.25 2.00 - 6.00 0.44 - 10.13	Cylinder - Pump Sets, Single-Acting MRO - Toolbox Sets Power Box – Portable Tool Sets	SC SCTB SL, SR, SW		6 8 11
5 - 100	0.63 - 14.25	General Purpose Cylinders, Single-Acting Accessories: Saddles, Base Plates, Mounting Blocks, Clevis Eyes	RC A, CATS JBI, RE		12 16
10 - 150	1.97 - 9.84	Aluminum Cylinders, Single-Acting, Lock Nut, Hollow Plunger	RAC RACL RACH		18 20 22
20 - 150	1.97 - 9.84	Aluminum Cylinders, Double-Acting Hollow Plunger & Solid Plunger	RARH RAR		24 26
10 - 100 10 - 1000	0.24 0.26 - 0.69	Ultra-Flat Cylinders, Single-Acting, Load Return, with Stop Ring or Tilting Function	CULP CUSP		29 29
60 - 500	1.77 - 1.97	Low-Height Lock Nut Cylinders Single-Acting, Load Return	LPL		30
5 - 150	0.25 - 2.44	Low-Height Cylinders, Single-Acting or Spring-Return	RSM RCS		32
4.8 - 81.7 15.4 - 34.8	0.67 - 1.57 10.63 - 23.62	Low-Height Telescopic Cylinders Multi-Stage Telescopic Cylinders	RLT RT		34 36
2.5 - 60	5.00 - 6.00	Pull Cylinders, Single-Acting, Spring Return	BRC BRP		38
12 - 100 30 - 660	0.31 - 6.13 1.50 - 10.13	Hollow Plunger Cylinders, Single- and Double-Acting	RCH RRH		40 42
4 - 25	1.13 - 10.25	Precision Production Cylinders, Double-Acting (including Mounting Attachments)	RD		44
10 - 500	2.25 - 48.00	Long Stroke Cylinders, Double-Acting	RR		46
50 - 1000	1.97 - 11.81	High-Tonnage Cylinders, Single- and Double-Acting	HCG HCR		54 58
50 - 1000 50 - 300	1.97 - 11.81 5.91 - 11.81	High-Tonnage Lock Nut Cylinders, Single- and Double-Acting	HCL HCRL		62 66
2 - 110	2.44 - 18.11	Industrial Steel Bottle Jacks	GBJ		68
60 - 200 200	14.0 - 27.0 14. 0 - 24.5	POW'R-RISER® Mobile Lifting Jacks POW'R-LOCK™ Mobile Lift System	PR PL		70 72

[1] All ton values specified in this catalog are approximate and for cylinder class identification only. Please refer to the (maximum) value in US short tons for calculations.

SC-Series, Single-Acting, Cylinder Pump Sets

ENERPAC

▼ SCR1010H cylinder-pump set



The Quickest and Easiest Way to Start Working Right Away

Speed Chart
See the Enerpac Cylinder Speed Chart in our 'Yellow Pages' section.

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- **Optimum match of individual components**
- **All sets are ready-for-use**
- **Sets include 6 foot safety hose and gauge with gauge adaptor**
- **All pumps are two-speed.**

1 Cylinder Selection
(See Cylinder Section of this catalog for full product descriptions)

	Set Capacity tons	Cylinder Model Number	Stroke (in)	Collapsed Height (in)
RC-Trio Series, Single-Acting, General Purpose Cylinders For maximum versatility. *Page:* 6	**5**	RC55	5.00	8.50
	10	RC102	2.13	4.78
		RC106	6.13	9.75
		RC1010	10.13	13.75
	15	RC154	4.00	7.88
		RC156	6.00	10.69
	25	RC252	2.00	6.50
		RC254	4.00	8.50
		RC256	6.25	10.75
		RC2514	14.25	18.75
	50	RC506	6.25	11.13
RCS-Series, Single-Acting, Low-Height Cylinders Ideal where space is restricted. *Page:* 26	**10**	RCS101	1.50	3.47
	20	RCS201	1.75	3.88
	30	RCS302	2.44	4.63
	45	RCS502	2.38	4.81
	90	RCS1002	2.25	5.56
RCH-Series, Single-Acting, Hollow Cylinders For pushing and pulling applications. *Page:* 34	**12**	RCH121	1.63	4.75
	20	RCH202	2.00	6.31
	30	RCH302	2.50	7.03
	60	RCH603	3.00	9.75
	100	RCH1003	3.00	10.00

Single-Acting Cylinder-Pump Sets

SET SELECTION:

1. **Select the cylinder**
2. **Select the pump**
3. **Find the set model number in the gray matrix**

SELECTION EXAMPLE
Selected cylinder:
- RC106, Single-Acting cylinder with 6.13 inch stroke

Selected pump:
- P392, Lightweight hand pump

Set model number:
- SCR106H

Included:
- HC7206 hose
- GF10P gauge
- GA2 adaptor



GA45GC Gauge Adaptor Assembly

Protect yourself from system overloading by simply ordering one part number for a pre-assembled gauge, gauge adaptor and coupler.

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SC Series



Capacity:
5 - 100 tons

Stroke:
1.50 - 14.25 inches

Maximum Operating Pressure:
10,000 psi



Power Box

Tool box with hand pump, gauge adaptor assembly, hose and LW-, RC-, RCS, RSM- or WR-Series cylinder.

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2 Pump selection (See the Pump Section in this catalog for full product descriptions.)

Hand Pump P142	Hand Pump P392	Hand Pump P80	Foot Pump P392FP	XA-Series Air Pump XA11	Accessories included: Hose Model Number	Gauge Model Number	Gauge Adaptor Model No.
							
SCR55H	–	–	–	–	HC7206	GP10S	GA4
–	**SCR102H**	–	**SCR102FP**	**SCR102XA**	HC7206	GF10P	GA2
–	**SCR106H**	–	**SCR106FP**	**SCR106XA**	HC7206	GF10P	GA2
–	**SCR1010H**	–	**SCR1010FP**	**SCR1010XA**	HC7206	GF10P	GA2
–	**SCR154H**	–	**SCR154FP**	**SCR154XA**	HC7206	GP10S	GA2
–	**SCR156H**	–	**SCR156FP**	**SCR156XA**	HC7206	GP10S	GA2
–	**SCR252H**	–	**SCR252FP**	**SCR252XA**	HC7206	GF20P	GA2
–	**SCR254H**	–	**SCR254FP**	**SCR254XA**	HC7206	GF20P	GA2
–	**SCR256H**	–	–	**SCR256XA**	HC7206	GF20P	GA2
–	–	**SCR2514H**	–	**SCR2514XA** [1]	HC7206	GF20P	GA2
–	–	**SCR506H**	–	**SCR506XA** [1]	HC7206	GF50P	GA2
–	**SCL101H**	–	**SCL101FP**	**SCL101XA**	HC7206	GF10P	GA2
–	**SCL201H**	–	**SCL201FP**	**SCL201XA**	HC7206	GF230P	GA2
–	**SCL302H**	–	**SCL302FP**	**SCL302XA**	HC7206	GF230P	GA2
–	**SCL502H**	–	**SCL502FP**	**SCL502XA**	HC7206	GF510P	GA2
–	–	**SCL1002H**	–	–	HC7206	GF510P	GA2
SCH121H	–	–	–	–	HB7206	GF120P	GA4
–	**SCH202H**	–	**SCH202FP**	**SCH202XA**	HC7206	GF813P	GA3
–	**SCH302H**	–	**SCH302FP**	**SCH302XA**	HC7206	GF813P	GA3
–	–	**SCH603H**	–	**SCH603XA** [1]	HC7206	GF813P	GA3
–	–	**SCH1003H**	–	–	HC7206	GP10S	GA2

[1] With **XA12** air pump.

Flex Toolbox Set

ENERPAC

▼ **SC00HTB, Flex Toolbox Set**



SCTB-Series Toolbox Sets

Set Weight:
24 lbs

Toolbox Dimensions:
32.3 x 9.9 x 9.5 inches

FLEX TOOLBOX SET Maximum Operating Pressure: 10,000 psi	Set Model Number SC00HTB	Quantity
Lightweight Two-Speed Hand Pump	P392	1x
Gauge Adaptor Assembly with G2535L Pressure Gauge	GA45GC	1x
High-Pressure Hose 6 ft (2x CH604 Male Half Coupler)	HC7206C	1x
Hydraulic Oil 1 Quart	HF100	1x
Hard Plastic Carrying Box	–	1x

- **Option to upgrade to a complete hydraulic solution**
- **Will work effortlessly with your Enerpac tool of choice, giving you everything you need to tackle a wide range of jobs.**
- **Convenient and portable, this set comes in a durable, easy to carry box.**

Essential Parts Toolbox Set

▼ **SC00TB, Essential Parts Toolbox Set**



SCTB-Series Toolbox Sets

Set Weight:
17 lbs

Toolbox Dimensions:
32.9 x 16.1 x 5.3 inches

ESSENTIAL PARTS TOOLBOX SET Maximum Operating Pressure: 10,000 psi	Set Model Number SC00TB	Quantity
Gauge Adaptor Assembly with G2535L Pressure Gauge	GA45GC	1x
High-Pressure Hose 6 ft (3/8" NPT + CH604 Male Half Coupler)	HC7206C	2x
Female Half Coupler 3/8" NPT	CR400	3x
Male Half Coupler 3/8" NPT	CH604	3x
Metal Dust Cap	CD411	6x
Coupler Safety Bleed Tool	CT604	1x
Street Tee 3/8" NPT	BFZ16312	1x
Reducer 3/8" to 1/4" NPT	FZ1630	2x
Hexagon Nipple 3/8" NPT	FZ1617	2x
Adaptor 1/4" to 3/8" NPT	FZ1055	2x
Grooved Saddle for RC5 tons cylinders	A53G	1x
Grooved Saddle for RC10 tons cylinders	A102G	1x
Grooved Saddle for RC25 tons cylinders	A252G	1x
Corrugated Carrying Case with custom foam	–	1x

- **Convenient all-in-one component toolbox containing everything an MRO technician needs to address the most common field issues**
- **Organized in a light and easy to transport case with custom foam**
- **Helps limit any last-minute surprises that could jeopardize the success of your job.**

5T MRO Wheeled Toolbox Set

▼ **SC05HTBW, 5 tons MRO Wheeled Toolbox Set**



SCTB-Series Toolbox Sets

Set Weight:
68 lbs

Toolbox Dimensions:
31.5 x 22 x 21.75 inches

Maximum Operating Pressure:
10,000 psi

5 TONS MRO WHEELED TOOLBOX SET Maximum Operating Pressure: 10,000 psi	Set Model Number SC05HTBW *	Quantity
Steel Hand Pump, single-speed	P39	1x
Gauge Adaptor Assembly with G2535L Pressure Gauge	GA45GC	1x
High-Pressure Hose 6 ft (2x CH604 Male Half Coupler)	HC7206C	1x
Hydraulic Oil 1 Quart	HF100	1x
General Purpose Cylinder 5 tons, 1.00 inch stroke	RC51	1x
General Purpose Cylinder 5 tons, 3.00 inch stroke	RC53	1x
General Purpose Cylinder 5 tons, 5.00 inch stroke	RC55	1x
Spread Cylinder 1.0 ton, 3.70 inch spread	WR5	1x
Wheeled Aluminum Carrying Box	–	1x

- **Designed to enhance job-site performance**
- **Provides a convenient and portable solution for all your lifting and pushing requirements up to 5 tons**
- **Industrial strength container keeps tools organized and secure**
- **Sturdy wheels and handle on wheeled kits enable easy transport of toolbox over multiple surfaces.**

* Set available with aluminium box without wheels: **SC05HTB.** (29.5 x 14.6 x 13.0 inches, 49 lbs).

10T MRO Wheeled Toolbox Set

▼ **SC10HTBW, 10 tons MRO Wheeled Toolbox Set**



SCTB-Series Toolbox Sets

Set Weight:
86 lbs

Toolbox Dimensions:
31.5 x 22 x 21.75 inches

Maximum Operating Pressure:
10,000 psi

10 TONS MRO WHEELED TOOLBOX SET Maximum Operating Pressure: 10,000 psi	Set Model Number SC10HTBW *	Quantity
Lightweight Two-Speed Hand Pump	P392	1x
Gauge Adaptor Assembly with G2535L Pressure Gauge	GA45GC	1x
High-Pressure Hose 6 ft (2x CH604 Male Half Coupler)	HC7206C	1x
Hydraulic Oil 1 Quart	HF100	1x
General Purpose Cylinder 10 tons, 6.13 inch stroke	RC106	1x
Base Plate for RC10 tons cylinder	JBI10	1x
Low-Height Cylinder 10 tons, 1.50 inch stroke	RCS101	1x
Low-Height Cylinder 10 tons, 0.44 inch stroke	RSM100	1x
Hollow Plunger Cylinder 12 tons, 3.00 inch stroke	RCH123	1x
Spread Cylinder 1.0 ton, 3.70 inch spread	WR5	1x
Wheeled Aluminum Carrying Box	–	1x

- **Designed to enhance job-site performance**
- **Provides a convenient and portable solution for all your lifting, pushing or pulling requirements up to 10 tons**
- **Industrial strength container keeps tools organized and secure**
- **Complete with base plate for extra stability**
- **Sturdy wheels and handle on wheeled kits enable easy transport of toolbox over multiple surfaces.**

* Set available with aluminium box without wheels: **SC10HTB.** (29.5 x 14.6 x 13.0 inches, 71 lbs).

20T MRO Wheeled Toolbox Set

ENERPAC

▼ **SC20HTBW, 20 tons MRO Wheeled Toolbox Set**



- **Designed to enhance job-site performance**
- **Provides a convenient and portable solution for all your lifting, pushing or pulling requirements up to 20 tons**
- **Industrial strength container keeps tools organized and secure**
- **Complete with base plate for extra stability**
- **Sturdy wheels and handle on wheeled kits enable easy transport of toolbox over multiple surfaces.**

SCTB-Series Toolbox Sets

Set Weight:
121 lbs

Toolbox Dimensions:
31.5 x 22 x 21.75 inches

Maximum Operating Pressure:
10,000 psi

SCTB-Series, MRO-Toolbox Sets

Toolbox sets purpose-designed for technicians working on industrial maintenance, repair, and operations projects.

As the leader in Industrial tools, Enerpac constantly works to provide better solutions for tool users.

The new toolbox sets are the result of customer research that pinpoints areas where tool transport and storage solutions can be improved.

Each set keeps you productive by making it easy to transport, organize, and access your hydraulic tools while onsite. Included in each set are premium high-quality and reliable Enerpac tools, carefully selected to suit the needs of different projects.



MS-Series, Universal Maintenance Sets

Enerpac Maintenance sets are a complete assortment of hydraulic powered tools. Using these sets allows you to quickly configure a unique tool to meet your most difficult jobs.

Built around the Enerpac lightweight hand pump, hose and cylinder, these sets enable you to push, pull, lift, press, straighten, spread and clamp with forces up to 12.5 tons.

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20 TONS MRO WHEELED TOOLBOX SET Maximum Operating Pressure: 10,000 psi	Set Model Number SC20HTBW	Quantity
Lightweight Two-Speed Hand Pump	P392	1x
Gauge Adaptor Assembly with G2535L Pressure Gauge	GA45GC	1x
High-Pressure Hose 6 ft (2x CH604 Male Half Coupler)	HC7206C	1x
Hydraulic Oil 1 Quart	HF100	1x
General Purpose Cylinder 25 tons, 6.25 inch stroke	RC256	1x
Base Plate for RC25 tons cylinder	JBI25	1x
Low-Height Cylinder 20 tons, 1.75 inch stroke	RCS201	1x
Low-Height Cylinder 20 tons, 0.44 inch stroke	RSM200	1x
Hollow Plunger Cylinder 20 tons, 2.00 inch stroke	RCH202	1x
Spread Cylinder 1.0 ton, 3.70 inch spread	WR5	1x
Wheeled Aluminum Carrying Box	–	1x

Power Box – Portable Tool Sets

▼ SCR106TB



SCL, SCR, SLW, SRS Series



Capacity:
1 - 50 tons

Stroke:
0.44 - 10.13 inches

Maximum Operating Pressure:
10,000 psi

- **Easy to carry sturdy tool box**
- **Complete and ready-to-use hydraulic sets**
- **Includes a single-acting cylinder, P392 two-speed lightweight hand pump, GA45GC gauge adaptor assembly, 6 foot hose and couplers**
- **All components ship inside tool box as one package.**



Premium Hydraulic Oil

Use only genuine Enerpac Hydraulic Oil. The use of any other fluid will render your Enerpac warranty null and void.

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	Cylinder Model Nr.	Cylinder Stroke (in)	Cylinder Capacity (tons)	(lbs)	Power Box Model Number with HC7206C Thermo-Plastic Hose	For USA & Latin-America only: Power Box Model Number with HC9206C Rubber Hose
	**Lifting Wedge**					
	LW16	0.83	**16**	20	**SLW16PGH** [2]	–
	**Wedge Spread Cylinder**					
	WR5	3.70 [1]	**1,0**	26	**SWR5PGH**	–
	**General Purpose Cylinders**					
	RC55	5.00	**5**	26	–	**SCR55TB**
	RC102	2.13	**10**	27	**SCR102PGH**	**SCR102TB**
	RC106	6.13	**10**	32	**SCR106PGH**	**SCR106TB**
	RC1010	10.13	**10**	36	–	**SCR1010TB**
	RC154	4.00	**15**	34	**SCR154PGH**	**SCR154TB**
	RC156	6.00	**15**	37	**SCR156PGH**	–
	RC256	6.25	**25**	45	–	**SCR256TB**
	**Low-Height Cylinders**					
	RCS101	1.50	**10**	28	**SCL101PGH**	**SCL101TB**
	RCS201	1.75	**20**	33	**SCL201PGH**	**SCL201TB**
	RCS302	2.44	**30**	37	–	**SCL302TB**
	RCS502	2.38	**50**	44	–	**SCL502TB**
	**Low-Height Cylinders**					
	RSM100	0.44	**10**	25	**SRS100PGH**	**SRS100TB**
	RSM200	0.44	**20**	29	**SRS200PGH**	**SRS200TB**
	RSM300	0.50	**30**	32	**SRS300PGH**	**SRS300TB**
	RSM500	0.63	**50**	37	**SRS500PGH**	**SRS500TB**

[1] Maximum spread of WR5.
[2] With P142 two-speed lightweight hand pump.

▼ *The Hydraulic Toolbox is a versatile tool and applicable everywhere.*



▼ From left to right: **RC2510, RC53, RC1002, RC108, RC5010, RC156**



The Industry Standard General Purpose Cylinder

- **Trio Bearing system with hardened composite wear bands for optimal side load resistance**
- **Strengthened Trio Stop Ring improves durability and side load resistance**
- **Trio Hybrid pre-tensioned spring system provides faster retraction**
- **High-grade polyethylene seals for low wear and long service life**
- **Plunger wiper reduces contamination, extending cylinder life.**
- **Collar and plunger threads and base mounting holes enable easy fixturing (on most models)**
- **Standard certified lifting eyes on cylinder models above 55 lbs weight. Interchangeable with optional CHM6 carrying handle**
- **Designed for use in all positions**
- **Baked enamel finish for increased corrosion resistance**
- **Includes CR400 coupler, dust cap and collar thread protector**
- **RC-Series model numbers, external dimensions and threads remain unchanged from prior RC-Series cylinders.**



Saddles

All RC cylinders (except RC50 and RC101) have a hardened removable grooved saddle. For tilt and flat saddles, see the RC-Series accessory page. All CATS-Series Tilt Saddles use a nitrocarburization surface treatment for improved corrosion protection.

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Base Plates

To ensure the stability of cylinders for lifting applications, base plates are available for 10, 25 and 50-ton RC-cylinders.

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Specialty Attachments

For solving all kinds of application problems, specialty attachments are available for 5, 10 and 25-ton RC-cylinders.

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▼ *Foundation repair: to re-stabilize the foundation, the 308-ton silo needed to be lifted, levelled and structurally supported. 25-ton RC-Series hydraulic jacks were attached to a bracket on the top of each steel pier. Powered by a Z-Class pump, the hydraulic jacks applied 20 tons of force at each placement to lift the silo 2.0 inches.*



▼ *Synchronous lifting set-up for 200-tons cylinders. To ensure the stability of the cylinders, JBI25 base plates are installed.*



Single-Acting, General Purpose Cylinders



Optional Carrying Handle CHM6

The standard, certified lifting eyes on cylinders weighing over 55 lbs (RC5010 and heavier models) can be interchanged with optional carrying handle **CHM6**.

▼ **QUICK SELECTION CHART** For complete technical information see next page.

Cylinder Capacity tons (maximum)	Stroke (inch)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height (inch)	(lbs)
	0.63	**RC50**	0.99	0.62	1.63	2.2
	1.00	**RC51**	0.99	0.99	4.34	2.3
5	3.00	**RC53**	0.99	2.97	6.50	3.3
(4.9)	5.00	**RC55** *	0.99	4.95	8.50	4.1
	7.00	**RC57**	0.99	6.93	10.75	5.3
	9.13	**RC59**	0.99	9.04	12.75	6.1
	1.00	**RC101**	2.24	2.24	3.53	4.0
	2.13	**RC102** *	2.24	4.76	4.78	5.1
	4.13	**RC104**	2.24	9.23	6.75	7.2
10	6.13	**RC106** *	2.24	13.70	9.75	9.8
(11.2)	8.00	**RC108**	2.24	17.88	11.75	12.0
	10.13	**RC1010** *	2.24	22.64	13.75	14.0
	12.00	**RC1012**	2.24	26.82	15.75	15.0
	14.00	**RC1014**	2.24	31.29	17.75	18.0
	1.00	**RC151**	3.14	3.14	4.88	7.2
	2.00	**RC152**	3.14	6.28	5.88	9.0
	4.00	**RC154** *	3.14	12.57	7.88	11.0
15	6.00	**RC156** *	3.14	18.85	10.69	15.0
(15.7)	8.00	**RC158**	3.14	25.13	12.69	18.0
	10.00	**RC1510**	3.14	31.42	14.69	21.0
	12.00	**RC1512**	3.14	37.70	16.69	24.0
	14.00	**RC1514**	3.14	43.98	18.69	26.0
	1.00	**RC251**	5.16	5.16	5.50	13.0
	2.00	**RC252** *	5.16	10.32	6.50	14.0
	4.00	**RC254** *	5.16	20.64	8.50	18.0
25	6.25	**RC256** *	5.16	32.25	10.75	22.0
(25.8)	8.25	**RC258**	5.16	42.56	12.75	27.0
	10.25	**RC2510**	5.16	52.88	14.75	31.0
	12.25	**RC2512**	5.16	63.20	16.75	36.0
	14.25	**RC2514** *	5.16	73.52	18.75	39.0
30 (32.4)	8.25	**RC308**	6.49	53.56	15.25	40.0
	2.00	**RC502**	11.04	22.09	6.94	33.0
	4.00	**RC504**	11.04	44.18	8.94	42.0
50	6.25	**RC506** *	11.04	69.03	11.13	51.0
(55.2)	10.25	**RC5010**	11.04	113.21	15.13	70.0
	13.25	**RC5013**	11.04	146.34	18.13	83.0
75	6.13	**RC756**	15.90	97.49	11.25	65.0
(79.5)	13.13	**RC7513**	15.90	208.82	19.38	130.0
	2.00	**RC1002**	20.63	41.26	8.63	81.00
100	6.63	**RC1006**	20.63	136.77	14.06	130.0
(103.1)	10.25	**RC10010**	20.63	211.45	17.69	160.0

* Available as set, see note on this page.

RC-Trio Series



Capacity:
5 - 100 tons

Stroke:
0.63 - 14.25 inches

Maximum Operating Pressure:
10,000 psi



Think Safety

Manufacturer's rating of load and stroke are maximum safe limits. Good practice encourages using only 80% of these ratings.

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Lightweight Aluminum Cylinders

If you need a higher cylinder capacity-to-weight-ratio the **RAC-Series** are the perfect choice.

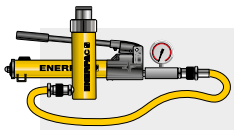
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Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. Refer to the System Components Section for a full range of gauges.

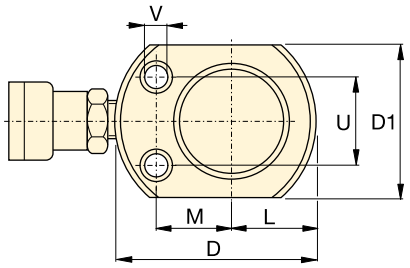
Page: 127

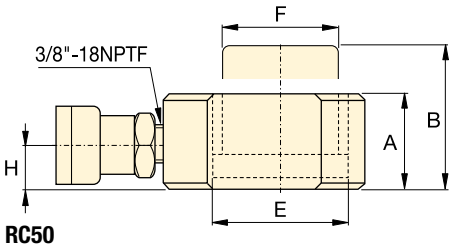


Cylinder-Pump Sets

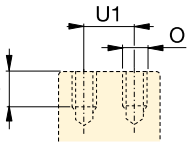
All cylinders marked with an * are available as **sets** (cylinder, gauge, couplers, hose and pump) for your ordering convenience.

Page: 6

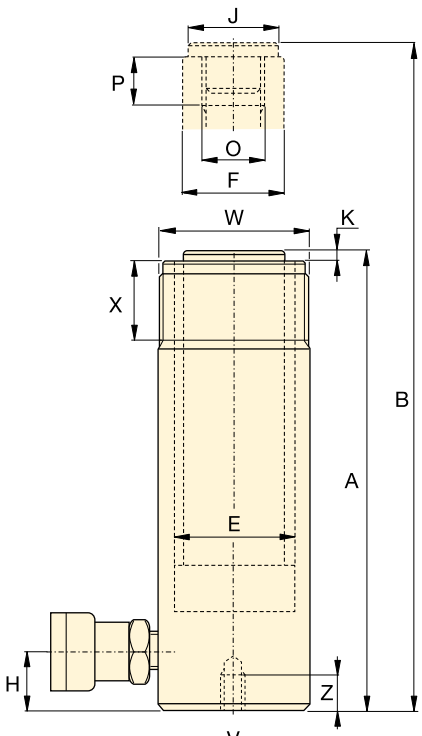




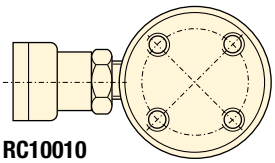
RC50



RC101 only
(U1 = 0.75 inch)



RC51 - RC5013



RC756 - RC10010

◀ For full features see previous page.

Speed Chart and Pump Selection Tool

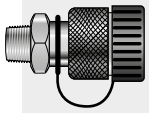
See the Enerpac Cylinder Speed Chart in our '**Yellow Pages**' to determine your approximate cylinder speed. See Pump Selection Tool on website for help to choose the most suitable pump for your application.

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Cylinder Capacity tons (maximum)	Stroke (inch)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height A (in)	Extended Height B (in)	Outside Dia. D (in)
	0.63	**RC50** [2]	0.99	0.62	1.63	2.25	2.31 [3]
	1.00	**RC51**	0.99	0.99	4.34	5.34	1.50
5	3.00	**RC53**	0.99	2.97	6.50	9.50	1.50
(4.9)	5.00	**RC55** [1]	0.99	4.95	8.50	13.50	1.50
	7.00	**RC57**	0.99	6.93	10.75	17.75	1.50
	9.13	**RC59**	0.99	9.04	12.75	21.88	1.50
	1.00	**RC101** [4]	2.24	2.24	3.53	4.53	2.25
	2.13	**RC102** [1]	2.24	4.76	4.78	6.91	2.25
	4.13	**RC104**	2.24	9.23	6.75	10.88	2.25
10	6.13	**RC106** [1]	2.24	13.70	9.75	15.88	2.25
(11.2)	8.00	**RC108**	2.24	17.88	11.75	19.75	2.25
	10.13	**RC1010** [1]	2.24	22.64	13.75	23.88	2.25
	12.00	**RC1012**	2.24	26.82	15.75	27.75	2.25
	14.00	**RC1014**	2.24	31.29	17.75	31.75	2.25
	1.00	**RC151**	3.14	3.14	4.88	5.88	2.75
	2.00	**RC152**	3.14	6.28	5.88	7.88	2.75
	4.00	**RC154** [1]	3.14	12.57	7.88	11.88	2.75
15	6.00	**RC156** [1]	3.14	18.85	10.69	16.69	2.75
(15.7)	8.00	**RC158**	3.14	25.13	12.69	20.69	2.75
	10.00	**RC1510**	3.14	31.42	14.69	24.69	2.75
	12.00	**RC1512**	3.14	37.70	16.69	28.69	2.75
	14.00	**RC1514**	3.14	43.98	18.69	32.69	2.75
	1.00	**RC251**	5.16	5.16	5.50	6.50	3.38
	2.00	**RC252** [1]	5.16	10.32	6.50	8.50	3.38
	4.00	**RC254** [1]	5.16	20.64	8.50	12.50	3.38
25	6.25	**RC256** [1]	5.16	32.25	10.75	17.00	3.38
(25.8)	8.25	**RC258**	5.16	42.56	12.75	21.00	3.38
	10.25	**RC2510**	5.16	52.88	14.75	25.00	3.38
	12.25	**RC2512**	5.16	63.20	16.75	29.00	3.38
	14.25	**RC2514** [1]	5.16	73.52	18.75	33.00	3.38
30 (32.4)	8.25	**RC308**	6.49	53.56	15.25	23.50	4.00
	2.00	**RC502**	11.04	22.09	6.94	8.94	5.00
	4.00	**RC504**	11.04	44.18	8.94	12.94	5.00
50	6.25	**RC506** [1]	11.04	69.03	11.13	17.38	5.00
(55.2)	10.25	**RC5010**	11.04	113.21	15.13	25.38	5.00
	13.25	**RC5013**	11.04	146.34	18.13	31.38	5.00
75	6.13	**RC756**	15.90	97.49	11.25	17.38	5.75
(79.5)	13.13	**RC7513**	15.90	208.82	19.38	32.51	5.75
	2.00	**RC1002**	20.63	41.26	8.63	10.63	7.00
100	6.63	**RC1006**	20.63	136.77	14.06	20.69	7.00
(103.1)	10.25	**RC10010**	20.63	211.45	17.69	27.94	7.00

[1] Available as set, see note on pages 6 - 13.
[2] RC50 cylinder has a non-removable grooved saddle and no collar thread.
[3] RC50: D1 = 1.63 inch, L = 0.81 inch, M = 1.00 inch.
[4] RC101 has plunger with two thread holes and non-removable saddle.

Single-Acting, General Purpose Cylinders



Coupler Included!

CR400 coupler included on all models. Fits all HC-Series hoses.

Capacity:
5 - 100 tons

Stroke:
0.63 - 14.25 inches

Maximum Operating Pressure:
10,000 psi

RC-Trio Series



Cylinder Bore Dia. E (in)	Plunger Dia. F (in)	Base to Adv. Port H (in)	Saddle Dia. J (in)	Saddle Protr. from Plgr. K (in)	Plunger Internal Thread O (in)	Plunger Thread Length P (in)	Base Mounting Holes: Bolt Circle U (in)	Base Mounting Holes: Thread V (in)	Base Mounting Holes: Thd. Depth Z (in)	Collar Thread W (in)	Collar Thread Length X (in)	(lbs)	Model Number
1.13	1.00	0.75	[2]	[2]	[2]	[2]	1.13	0.22	—	—	—	2.2	**RC50** [2]
1.13	1.00	0.75	1.00	0.25	3/4" - 16 UN	0.56	1.00	1/4"- 20 UNC	0.56	1 1/2" - 16 UN	1.13	2.3	**RC51**
1.13	1.00	0.75	1.00	0.25	3/4" - 16 UN	0.56	1.00	1/4"- 20 UNC	0.56	1 1/2" - 16 UN	1.13	3.3	**RC53**
1.13	1.00	0.75	1.00	0.25	3/4" - 16 UN	0.56	1.00	1/4"- 20 UNC	0.56	1 1/2" - 16 UN	1.13	4.1	**RC55** [1]
1.13	1.00	0.75	1.00	0.25	3/4" - 16 UN	0.63	1.00	1/4"- 20 UNC	0.56	1 1/2" - 16 UN	1.13	5.3	**RC57**
1.13	1.00	0.75	1.00	0.25	3/4" - 16 UN	0.63	1.00	1/4"- 20 UNC	0.56	1 1/2" - 16 UN	1.13	6.1	**RC59**
1.69	1.50	0.75	–	–	#10 - 24 UN	0.25	1.56	5/16"- 18 UNC	0.50	2 1/4" - 14 UN	1.06	4.0	**RC101** [4]
1.69	1.50	0.75	1.38	0.25	1" - 8 UN	0.75	1.56	5/16"- 18 UNC	0.50	2 1/4" - 14 UN	1.13	5.1	**RC102** [1]
1.69	1.50	0.75	1.38	0.25	1" - 8 UN	0.75	1.56	5/16"- 18 UNC	0.50	2 1/4" - 14 UN	1.06	7.2	**RC104**
1.69	1.50	0.75	1.38	0.25	1" - 8 UN	0.75	1.56	5/16"- 18 UNC	0.50	2 1/4" - 14 UN	1.13	9.8	**RC106** [1]
1.69	1.50	0.75	1.38	0.25	1" - 8 UN	0.75	1.56	5/16"- 18 UNC	0.50	2 1/4" - 14 UN	1.06	12	**RC108**
1.69	1.50	0.75	1.38	0.25	1" - 8 UN	0.75	1.56	5/16"- 18 UNC	0.50	2 1/4" - 14 UN	1.13	14	**RC1010** [1]
1.69	1.50	0.75	1.38	0.25	1" - 8 UN	0.75	1.56	5/16"- 18 UNC	0.50	2 1/4" - 14 UN	1.06	15	**RC1012**
1.69	1.50	0.75	1.38	0.25	1" - 8 UN	0.75	1.56	5/16"- 18 UNC	0.50	2 1/4" - 14 UN	1.06	18	**RC1014**
2.00	1.63	0.75	1.50	0.38	1" - 8 UN	1.00	1.88	3/8"- 16 UNC	0.50	2 3/4" - 16 UN	1.19	7.2	**RC151**
2.00	1.63	0.75	1.50	0.38	1" - 8 UN	1.00	1.88	3/8"- 16 UNC	0.50	2 3/4" - 16 UN	1.19	9	**RC152**
2.00	1.63	0.75	1.50	0.38	1" - 8 UN	1.00	1.88	3/8"- 16 UNC	0.50	2 3/4" - 16 UN	1.19	11	**RC154** [1]
2.00	1.63	1.00	1.50	0.38	1" - 8 UN	1.00	1.88	3/8"- 16 UNC	0.50	2 3/4" - 16 UN	1.19	15	**RC156** [1]
2.00	1.63	1.00	1.50	0.38	1" - 8 UN	1.00	1.88	3/8"- 16 UNC	0.50	2 3/4" - 16 UN	1.19	18	**RC158**
2.00	1.63	1.00	1.50	0.38	1" - 8 UN	1.00	1.88	3/8"- 16 UNC	0.50	2 3/4" - 16 UN	1.19	21	**RC1510**
2.00	1.63	1.00	1.50	0.38	1" - 8 UN	1.00	1.88	3/8"- 16 UNC	0.50	2 3/4" - 16 UN	1.19	24	**RC1512**
2.00	1.63	1.00	1.50	0.38	1" - 8 UN	1.00	1.88	3/8"- 16 UNC	0.50	2 3/4" - 16 UN	1.19	26	**RC1514**
2.56	2.25	1.00	2.00	0.41	1 1/2" - 16 UN	1.00	2.31	1/2"- 13 UNC	0.75	3 5/16" - 12 UN	1.94	13	**RC251**
2.56	2.25	1.00	2.00	0.41	1 1/2" - 16 UN	1.00	2.31	1/2"- 13 UNC	0.75	3 5/16" - 12 UN	1.94	14	**RC252** [1]
2.56	2.25	1.00	2.00	0.41	1 1/2" - 16 UN	1.00	2.31	1/2"- 13 UNC	0.75	3 5/16" - 12 UN	1.94	18	**RC254** [1]
2.56	2.25	1.00	2.00	0.41	1 1/2" - 16 UN	1.00	2.31	1/2"- 13 UNC	0.75	3 5/16" - 12 UN	1.94	22	**RC256** [1]
2.56	2.25	1.00	2.00	0.41	1 1/2" - 16 UN	1.00	2.31	1/2"- 13 UNC	0.75	3 5/16" - 12 UN	1.94	27	**RC258**
2.56	2.25	1.00	2.00	0.41	1 1/2" - 16 UN	1.00	2.31	1/2"- 13 UNC	0.75	3 5/16" - 12 UN	1.94	31	**RC2510**
2.56	2.25	1.00	2.00	0.41	1 1/2" - 16 UN	1.00	2.31	1/2"- 13 UNC	0.75	3 5/16" - 12 UN	1.94	36	**RC2512**
2.56	2.25	1.00	2.00	0.41	1 1/2" - 16 UN	1.00	2.31	1/2"- 13 UNC	0.75	3 5/16" - 12 UN	1.94	39	**RC2514** [1]
2.88	2.25	1.13	2.00	0.41	1 1/2" - 16 UN	1.00	2.31	1/2"- 13 UNC	0.63	3 5/16" - 12 UN	1.94	40	**RC308**
3.75	3.13	1.31	2.81	0.11	—	—	3.75	1/2"- 13 UNC	0.75	5" - 12 UN	2.19	33	**RC502**
3.75	3.13	1.31	2.81	0.11	—	—	3.75	1/2"- 13 UNC	0.75	5" - 12 UN	2.19	42	**RC504**
3.75	3.13	1.38	2.81	0.11	—	—	3.75	1/2"- 13 UNC	0.75	5" - 12 UN	2.19	51	**RC506** [1]
3.75	3.13	1.38	2.81	0.11	—	—	3.75	1/2"- 13 UNC	0.75	5" - 12 UN	2.19	70	**RC5010**
3.75	3.13	1.38	2.81	0.11	—	—	3.75	1/2"- 13 UNC	0.75	5" - 12 UN	2.19	83	**RC5013**
4.50	3.75	1.19	2.81	0.11	—	—	4.50	5/8"- 13 UNC	0.63	5 3/4" - 12 UN	1.75	65	**RC756**
4.50	3.75	1.19	2.81	0.11	—	—	4.50	5/8"- 13 UNC	0.63	5 3/4" - 12 UN	1.75	130	**RC7513**
5.13	4.13	1.63	2.81	0.11	—	—	5.50	3/4"- 10 UNC	1.00	6 7/8"- 12 UN	1.75	81	**RC1002**
5.13	4.13	1.63	2.81	0.11	—	—	5.50	3/4"- 10 UNC	1.00	6 7/8"- 12 UN	1.75	130	**RC1006**
5.13	4.13	1.63	2.81	0.11	—	—	5.50	3/4"- 10 UNC	1.00	6 7/8"- 12 UN	1.75	160	**RC10010**

Accessories for RC-Series Cylinders

ENERPAC

▼ SELECTION CHART

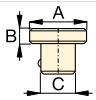
For use with Cylinder Capacity (tons)	Saddles			Base Plate	Mounting Block	Clevis Eyes	
	Flat	Grooved [1]	Tilt			Base [4]	Plunger
							
5	A53F [2]	A53G [2]	–	–	RB5 [2], AW51[2], AW53[2]	REB5 [2]	REP5 [2]
10	A12[5], A102F[3]	A102G [3]	CATS12 [3]	JBI10 [3]	RB10, AW102	REB10	REP10 [3]
15	–	A152G	CATS12	–	RB15	REB15	REP10
25	A29 [5]	A252G	CATS52	JBI25	RB25	REB25	REP25
30	A29 [5]	A252G	CATS52	–	RB25	–	REP25
50	–	–	CATS100	JBI50	–	–	–
75	–	–	CATS100	–	–	–	–
100	–	–	CATS100	–	–	–	–

[1] Standard on 5-30 tons RC-cylinders [2] Except RC50 [3] Except RC101 [4] Mounting screws are included. [5] Used with Bender Sets.

▼ DIMENSION CHARTS

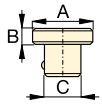
Model Number	Saddle Dimensions (in)		
	A	B	C
	Flat		
A53F	1.00	0.25	0.68
A102F	1.38	0.24	0.88
A12	2.00	1.88	1"-8 UNC
A29	2.00	1.88	1½"-16 UNC
	Grooved		
A53G	1.00	0.25	0.68
A102G	1.38	0.24	0.88
A152G	1.50	0.37	0.88
A252G	1.97	0.37	1.40

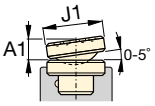
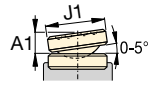
A53F, A102F



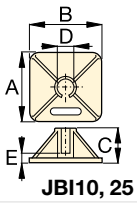
A12, A29



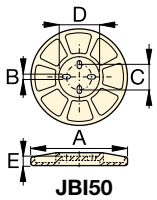


For Cylinder Capacity (tons)	Tilt Saddle Model Number	Addition to Collapsed Height A1 (in)	Saddle Diameter J1 (in)	
10	CATS12	0.55	1.38	
15	CATS12	0.43	1.38	
25	CATS52	0.59	1.97	
30	CATS52	0.59	1.97	
50	CATS100	0.59	2.80	
75	CATS100	0.59	2.80	
100	CATS100	0.59	2.80	

Model Number	Base Plate Dimensions (in)				
	A	B	C	D	E
JBI10	9.00	9.00	5.34	2.29	0.81
JBI25	11.00	11.00	5.53	3.41	1.03
JBI50	12.00	0.60	3.75	5.19	1.25

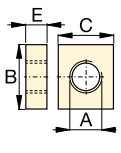


JBI10, 25

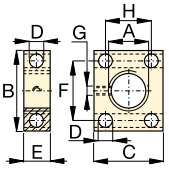


JBI50

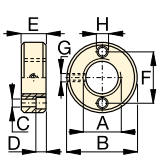
Model Number	Mounting Block Dimensions (in)							
	A	B	C	D	E	F	G	H
RB5	1½"-16UN	3.50	3.00	–	1.00	–	–	–
AW51	1½"-16UN	2.76	2.36	0.43	0.98	2.13	¼"-16 UN	1.62
AW53	1½"-16UN	2.87	0.28	0.31	0.75	2.25	¼"-20 UN	0.41
RB10	2¼"-14UN	4.50	3.50	–	1.00	–	–	–
AW102	2¼"-14UN	3.94	3.25	0.63	1.18	3.00	7/16"-20 UN	2.31
RB15	2¾"-16UN	4.00	4.50	–	1.50	–	–	–
RB25	3⅝"-12UN	5.00	6.50	–	2.00	–	–	–



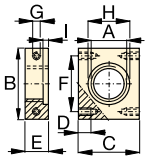
RB5, -10
RB15, -25



AW51

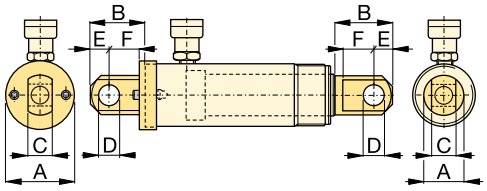


AW53



AW102 (l=1.19)

Type	Model Number	Clevis Eye Dimensions (in)						Pin-to-Pin * (in)
		A	B	C	D	E	F	
Base [4]	REB5	1.75	1.88	0.56	0.63	0.63	1.00	2.37
	REB10	2.50	2.63	1.00	0.88	1.00	1.38	3.07
	REB15	3.00	2.63	1.00	0.88	1.00	1.38	3.07
	REB25	3.75	3.13	1.50	1.25	1.25	1.63	3.45
Plunger	REP5	1.13	1.75	0.56	0.63	0.63	0.75	—
	REP10	1.69	2.43	1.00	0.88	1.00	1.13	—
	REP25	2.25	2.81	1.50	1.25	1.25	1.38	—



REB REP

[4] Mounting screws are included.

* Pin to Pin – REB and REP Clevises fitted. Add cylinder collapsed height.

The Enerpac Lightweight Aluminum Cylinders

▼ From left to right: **RAC506, RACL506, RACH1504, RAR506**



RA Series

Capacity:
10 - 150 tons

Stroke:
1.97 - 9.84 inches

Maximum Operating Pressure:
10,000 psi

- **Lightweight, easy to carry and position to allow a higher cylinder capacity-to-weight-ratio**
- **Non-corrosive by design, aluminum has always been a good material for use in many caustic environments**
- **Composite Bearings on all moving surfaces guarantee no metal-to-metal contact, to resist side loads and increase cylinder life.**



Removable Hardened Saddle, protects plunger from being damaged by abrasive surface contact.

Stop Ring on all models absorbs eccentric loading and prevents plunger over-extension.

Composite Bearing material to prevent metal to metal contact, reducing side-load issues and increasing life.

Hard-coated Plunger and Base resist wear and prevent galling.

7075-T6 Aluminum Alloy Components for maximum strength and minimum weight.

Plunger Return Spring on all single-acting models for prompt cylinder return.

Composite Bearing material to prevent metal to metal contact, reducing side load issues and increasing life.

Steel Base Plate protects cylinder base from abrasive surfaces and load-induced damage.



Think Safety

Manufacturer's rating of load and stroke are maximum safe limits.

Good practice encourages using only 80% of these ratings.

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Aluminum versus Steel

Aluminum cylinders, while offering the most lightweight solution, also have some unique limitations due to material properties. It differs from steel in that it has a lower finite fatigue life. Aluminum cylinders should NOT be used in high-cycle applications such as production.

The Enerpac line of aluminum cylinders are designed to provide 5,000 cycles at their recommended pressure. **This limit should not be exceeded.** In normal lifting and many maintenance applications, this should provide a lifetime of use.

Steel Base Plate

The steel base plate protects the cylinder from damage, it should not be removed.

The base holes in these aluminum cylinders are designed for securing the steel base plate. They will not withstand the capacity of the cylinder.

Do not use the base holes in these aluminum cylinders to attach any device to the cylinder.

▼ Shown from left to right: **RAC5010, RAC15010, RAC304, RAC208**



Lightweight for Maximum Portability



Saddles

All RAC-cylinders are equipped with bolt-on removable hardened steel saddles. For Tilt Saddles see next page.

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Lightweight Hand Pumps

The Enerpac composite lightweight hand pumps **P392** or **P802** make the optimal lightweight set.

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- **Composite bearings prevent metal-to-metal contact, increasing cylinder life and resistance to side loads of up to 10%**
- **Hard-Coat finish on all surfaces resists damage and extends cylinder life**
- **Handles included on all 30 - 150-ton models**
- **For protection against load-induced damage a saddle is standard on all models**
- **Steel base plate is standard on RAC 20-ton models and above. The steel base plate is optional only on RAC10 and 15-ton models**
- **Integral stop ring prevents plunger over-travel and is capable of withstanding the full cylinder capacity**
- **High-strength return spring for rapid cylinder retraction**
- **CR400 coupler and dust cap included on all models**
- **All cylinders meet ASME B-30.1 standard.**

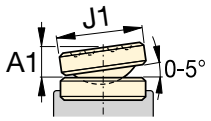
Cylinder Capacity tons (maximum)	Stroke (in)	Model Number	Cylinder Effective Area (in^2)
10 (9.9)	1.97	**RAC102**	1.95
	3.94	**RAC104**	1.95
	5.91	**RAC106**	1.95
15 (15.4)	1.97	**RAC152**	3.03
	3.94	**RAC154**	3.03
	5.91	**RAC156**	3.03
20 (24.2)	1.97	**RAC202**	4.83
	3.94	**RAC204**	4.83
	5.91	**RAC206**	4.83
	7.87	**RAC208**	4.83
	9.84	**RAC2010**	4.83
30 (34.2)	1.97	**RAC302**	6.85
	3.94	**RAC304**	6.85
	5.91	**RAC306**	6.85
	7.87	**RAC308**	6.85
	9.84	**RAC3010**	6.85
50 (54.9)	1.97	**RAC502**	10.99
	3.94	**RAC504**	10.99
	5.91	**RAC506**	10.99
	7.87	**RAC508**	10.99
	9.84	**RAC5010**	10.99
100 (110.9)	1.97	**RAC1002**	22.19
	3.94	**RAC1004**	22.19
	5.91	**RAC1006**	22.19
	7.87	**RAC1008**	22.19
	9.84	**RAC10010**	22.19
150 (175.9)	1.97	**RAC1502**	35.18
	3.94	**RAC1504**	35.18
	5.91	**RAC1506**	35.18
	7.87	**RAC1508**	35.18
	9.84	**RAC15010**	35.18



◀ *The unique Enerpac RA-Series cylinders – lightweight and made of aluminum alloy – these RAC506 cylinders are ideal for the positioning of tunnel elements under the river (High Speed Train Line, The Netherlands).*

Optional Bolt-on Tilt Saddle Dimensions (in)

For Cylinder Model / Capacity tons	Tilt Saddle * Model Number	Tilt Saddle Diameter J1	Addition to Collapsed Height A1
RAC20, 30	CATS30	2.17	0.43
RAC50	CATS50	2.80	0.55
RAC100	CATS150	3.82	0.75
RAC150	CATS200	4.96	0.71

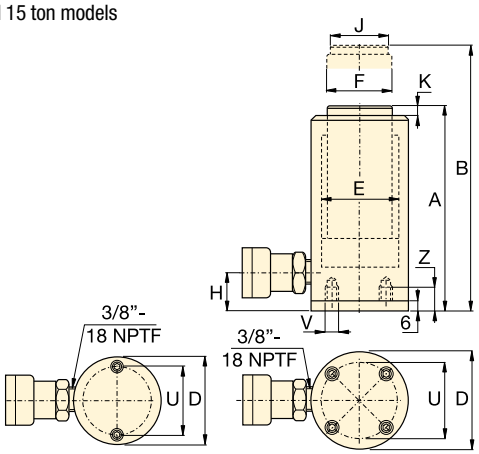


* Tilt saddles not available for 10 and 15 ton models

Optional Steel Base Plate

For Cylinder Model / Capacity tons	Base Plate [2] Model Number
RAC10	JBA10
RAC15	JBA15

[2] Base plate height of 0.25 inch included on all 20-150 tons models. Base Plate is optional on 10-15 tons cylinders.



RAC102 - RAC156 **RAC202 - RAC15010**

RAC Series



Capacity:
10 - 150 tons

Stroke:
1.97 - 9.84 inches

Maximum Operating Pressure:
10,000 psi

Steel Base Plate

The steel base plate protects the cylinder from damage, it should not be removed.

See warning on page 17.

Oil Capacity (in³)	Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	Bottom to Advance Port H (in)	Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	Bolt Circle U (in)	Thread V (mm)	Thread Depth Z (in)	(lbs)	Model Number
3.66	6.06	7.91	2.28	1.57	1.26	0.91	0.94	0.12	1.54	M6	0.47	2.7	**RAC102**
7.93	8.03	11.97	2.28	1.57	1.26	0.91	0.94	0.12	1.54	M6	0.47	3.7	**RAC104**
11.59	10.00	15.91	2.28	1.57	1.26	0.91	0.94	0.12	1.54	M6	0.47	4.4	**RAC106**
6.10	6.34	8.31	2.76	1.97	1.57	0.91	1.14	0.12	1.89	M6	0.47	4.2	**RAC152**
12.20	8.31	12.24	2.76	1.97	1.57	0.91	1.14	0.12	1.89	M6	0.47	5.3	**RAC154**
17.69	10.28	16.18	2.76	1.97	1.57	0.91	1.14	0.12	1.89	M6	0.47	6.4	**RAC156**
9.52	6.85	8.83	3.35	2.48	1.97	1.07	1.58	0.12	2.76	M6	0.47	7.9	**RAC202**
19.03	8.82	12.76	3.35	2.48	1.97	1.07	1.58	0.12	2.76	M6	0.47	9.0	**RAC204**
28.55	10.79	16.70	3.35	2.48	1.97	1.07	1.58	0.12	2.76	M6	0.47	10.1	**RAC206**
38.01	12.76	20.64	3.35	2.48	1.97	1.07	1.58	0.12	2.76	M6	0.47	11.2	**RAC208**
47.53	14.73	24.58	3.35	2.48	1.97	1.07	1.58	0.12	2.76	M6	0.47	12.3	**RAC2010**
13.49	7.13	9.10	3.94	2.95	2.36	1.31	1.58	0.12	3.15	M6	0.47	9.9	**RAC302**
26.99	9.09	13.04	3.94	2.95	2.36	1.31	1.58	0.12	3.15	M6	0.47	11.5	**RAC304**
40.48	11.06	16.98	3.94	2.95	2.36	1.31	1.58	0.12	3.15	M6	0.47	13.0	**RAC306**
53.91	13.04	20.91	3.94	2.95	2.36	1.31	1.58	0.12	3.15	M6	0.47	14.5	**RAC308**
67.40	15.01	24.85	3.94	2.95	2.36	1.31	1.58	0.12	3.15	M6	0.47	16.1	**RAC3010**
21.65	7.32	9.90	5.12	3.74	3.15	1.19	1.97	0.12	4.33	M6	0.47	18.7	**RAC502**
43.30	9.29	13.24	5.12	3.74	3.15	1.19	1.97	0.12	4.33	M6	0.47	21.6	**RAC504**
64.95	11.26	17.17	5.12	3.74	3.15	1.19	1.97	0.12	4.33	M6	0.47	24.5	**RAC506**
86.49	13.24	21.11	5.12	3.74	3.15	1.19	1.97	0.12	4.33	M6	0.47	27.3	**RAC508**
108.14	15.21	25.05	5.12	3.74	3.15	1.19	1.97	0.12	4.33	M6	0.47	30.2	**RAC5010**
43.71	8.71	10.68	7.09	5.32	4.33	1.82	3.70	0.12	5.91	M10	0.47	38.1	**RAC1002**
87.43	10.67	14.61	7.09	5.32	4.33	1.82	3.70	0.12	5.91	M10	0.47	43.2	**RAC1004**
131.14	12.64	18.55	7.09	5.32	4.33	1.82	3.70	0.12	5.91	M10	0.47	48.3	**RAC1006**
174.64	14.61	22.49	7.09	5.32	4.33	1.82	3.70	0.12	5.91	M10	0.47	53.4	**RAC1008**
218.35	16.58	26.43	7.09	5.32	4.33	1.82	3.70	0.12	5.91	M10	0.47	58.4	**RAC10010**
69.30	9.56	11.53	9.06	6.69	5.51	2.02	4.45	0.12	7.87	M10	0.47	55.8	**RAC1502**
138.61	11.53	15.47	9.06	6.69	5.51	2.02	4.45	0.12	7.87	M10	0.47	64.6	**RAC1504**
207.91	13.49	19.41	9.06	6.69	5.51	2.02	4.45	0.12	7.87	M10	0.47	73.4	**RAC1506**
276.87	15.47	23.34	9.06	6.69	5.51	2.02	4.45	0.12	7.87	M10	0.47	82.2	**RAC1508**
346.17	17.44	27.28	9.06	6.69	5.51	2.02	4.45	0.12	7.87	M10	0.47	91.1	**RAC15010**

RACL-Series, Aluminum Lock Nut Cylinders

▼ Shown from left to right: **RACL1006, RACL504, RACL5010**





Saddles

All RACL-cylinders are equipped with bolt-on removable hardened steel saddles. For Tilt Saddles see next page.

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Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

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- **Aluminum Lock Nut provides mechanical load holding for extended periods**
- **Hardened steel stop ring increasing cylinder life and resistance to side loads of up to 5%**
- **Hard-Coat finish on all surfaces resists damage and extends cylinder life**
- **Composite bearings increase cylinder life and side load resistance**
- **Handles included on all models**
- **Steel base plate and saddle for protection against load-induced damage**
- **Integral stop ring prevents plunger over-travel and is capable of withstanding the full cylinder capacity**
- **High-strength return spring for rapid cylinder retraction**
- **CR400 coupler and dust cap included on all models**
- **All cylinders meet ASME B-30.1 standards.**

Cylinder Capacity tons (maximum)	Stroke (in)	Model Number	Cylinder Effective Area (in^2)
20 (24.2)	1.97	**RACL202**	4.83
	3.94	**RACL204**	4.83
	5.91	**RACL206**	4.83
	7.87	**RACL208**	4.83
	9.84	**RACL2010**	4.83
30 (34.2)	1.97	**RACL302**	6.85
	3.94	**RACL304**	6.85
	5.91	**RACL306**	6.85
	7.87	**RACL308**	6.85
	9.84	**RACL3010**	6.85
50 (54.9)	1.97	**RACL502**	10.99
	3.94	**RACL504**	10.99
	5.91	**RACL506**	10.99
	7.87	**RACL508**	10.99
	9.84	**RACL5010**	10.99
100 (110.9)	1.97	**RACL1002**	22.19
	3.94	**RACL1004**	22.19
	5.91	**RACL1006**	22.19
	7.87	**RACL1008**	22.19
	9.84	**RACL10010**	22.19
150 (175.9)	1.97	**RACL1502**	35.18
	3.94	**RACL1504**	35.18
	5.91	**RACL1506**	35.18
	7.87	**RACL1508**	35.18
	9.84	**RACL15010**	35.18

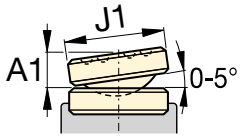


◀ *The portable lock nut cylinder RACL1506 used for extended load supports during epoxy injection for bridge reinforcement.*

Single-Acting, Spring-Return, Lock Nut Cylinders

Optional Bolt-on Tilt Saddle Dimensions (in)

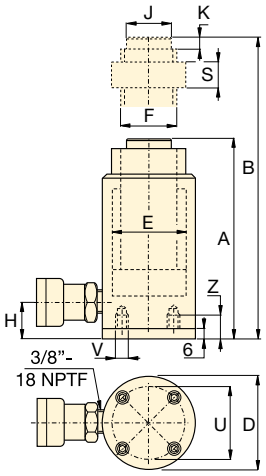
For Cylinder Model / Capacity tons	Tilt Saddle Model Number	Tilt Saddle Diameter J1	Addition to Collapsed Height A1
RACL20, 30	CATS30	2.17	0.43
RACL50	CATS50	2.80	0.55
RACL100	CATS150	3.82	0.75
RACL150	CATS200	4.96	0.71



Steel Base Plate Mounting Holes

Cylinder Model / Capacity tons	Bolt Circle U (in)	Thread V (mm)	Thread Depth [1] Z (in)
RACL20	2.76	M6	0.47
RACL30	3.15	M6	0.47
RACL50	4.33	M6	0.47
RACL100	5.91	M10	0.47
RACL150	7.87	M10	0.47

[1] Including Base Plate Height of 0.25 inch and four (4) base plate bolts M6.



RACL Series



Capacity:
20 - 150 tons

Stroke:
1.97 - 9.84 inches

Maximum Operating Pressure:
10,000 psi

Steel Base Plate

The steel base plate protects the cylinder from damage, it should not be removed.

See warning on page 17.

Oil Capacity (in³)	Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter (Threaded) F (mm)	Bottom to Advance Port H (in)	Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	Lock Nut Height S (in)	(lbs)	Model Number
9.52	8.83	10.80	3.35	2.48	Tr 55 x 4	1.07	1.58	0.12	1.97	8.8	**RACL202**
19.03	10.80	14.73	3.35	2.48	Tr 55 x 4	1.07	1.58	0.12	1.97	10.1	**RACL204**
28.55	12.76	18.67	3.35	2.48	Tr 55 x 4	1.07	1.58	0.12	1.97	11.4	**RACL206**
38.01	14.73	22.61	3.35	2.48	Tr 55 x 4	1.07	1.58	0.12	1.97	12.7	**RACL208**
47.53	16.70	26.54	3.35	2.48	Tr 55 x 4	1.07	1.58	0.12	1.97	14.1	**RACL2010**
13.49	9.10	11.07	3.94	2.95	Tr 60 x 4	1.31	1.58	0.12	1.97	11.9	**RACL302**
26.99	11.07	15.01	3.94	2.95	Tr 60 x 4	1.31	1.58	0.12	1.97	13.4	**RACL304**
40.48	13.04	18.95	3.94	2.95	Tr 60 x 4	1.31	1.58	0.12	1.97	14.9	**RACL306**
53.91	15.01	22.88	3.94	2.95	Tr 60 x 4	1.31	1.58	0.12	1.97	16.5	**RACL308**
67.40	16.98	26.82	3.94	2.95	Tr 60 x 4	1.31	1.58	0.12	1.97	18.0	**RACL3010**
21.65	9.29	11.27	5.12	3.74	Tr 80 x 4	1.19	1.97	0.12	2.95	20.5	**RACL502**
43.30	11.26	15.21	5.12	3.74	Tr 80 x 4	1.19	1.97	0.12	2.95	23.4	**RACL504**
64.95	13.23	19.14	5.12	3.74	Tr 80 x 4	1.19	1.97	0.12	2.95	27.8	**RACL506**
86.49	15.20	23.08	5.12	3.74	Tr 80 x 4	1.19	1.97	0.12	2.95	29.1	**RACL508**
108.14	17.17	27.02	5.12	3.74	Tr 80 x 4	1.19	1.97	0.12	2.95	31.9	**RACL5010**
43.71	11.65	13.63	7.09	5.32	Tr 110 x 6	1.82	3.70	0.12	2.95	48.2	**RACL1002**
87.43	13.62	17.57	7.09	5.32	Tr 110 x 6	1.82	3.70	0.12	2.95	53.3	**RACL1004**
131.14	15.59	21.50	7.09	5.32	Tr 110 x 6	1.82	3.70	0.12	2.95	58.4	**RACL1006**
174.64	17.57	25.44	7.09	5.32	Tr 110 x 6	1.82	3.70	0.12	2.95	63.4	**RACL1008**
218.35	19.54	29.38	7.09	5.32	Tr 110 x 6	1.82	3.70	0.12	2.95	68.5	**RACL10010**
69.30	12.72	14.68	9.06	6.69	Tr 140 x 6	2.02	4.45	0.12	3.15	71.0	**RACL1502**
138.61	14.69	18.62	9.06	6.69	Tr 140 x 6	2.02	4.45	0.12	3.15	79.8	**RACL1504**
207.91	16.65	22.56	9.06	6.69	Tr 140 x 6	2.02	4.45	0.12	3.15	88.6	**RACL1506**
276.87	18.62	26.49	9.06	6.69	Tr 140 x 6	2.02	4.45	0.12	3.15	97.4	**RACL1508**
346.17	20.59	30.43	9.06	6.69	Tr 140 x 6	2.02	4.45	0.12	3.15	106.3	**RACL15010**

▼ Shown from left to right: **RACH15010, RACH206, RACH306**



The Lightweight Solution for Tensioning and Testing



Saddles

All RACH-cylinders are equipped with bolt-on hollow removable saddles of hardened steel.



Lightweight Hand Pumps

The Enerpac composite lightweight hand pumps **P392** or **P802** make the optimal lightweight set.

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- **Hollow plunger design allows for both pull and push forces**
- **Composite bearings increase cylinder life and side load resistance**
- **Hard-Coat finish on all surfaces resists damage and extends cylinder life**
- **Floating center tube increases seal and product life**
- **Handles standard on all models**
- **Steel base plate and saddle for protection against load-induced damage**
- **Integral stop ring prevents plunger over-travel and is capable of withstanding the full cylinder capacity**
- **High-strength return spring for rapid cylinder retraction**
- **CR400 coupler and dust cap included on all models**
- **All cylinders meet ASME B-30.1 standards.**

Cylinder Capacity tons (maximum)	Stroke (in)	Model Number	Cylinder Effective Area (in^2)
20 (25.4)	1.97	**RACH202**	5.07
	3.94	**RACH204**	5.07
	5.91	**RACH206**	5.07
	7.87	**RACH208**	5.07
	9.84	**RACH2010**	5.07
30 (39.6)	1.97	**RACH302**	7.92
	3.94	**RACH304**	7.92
	5.91	**RACH306**	7.92
	7.87	**RACH308**	7.92
	9.84	**RACH3010**	7.92
60 (65.6)	1.97	**RACH602**	13.13
	3.94	**RACH604**	13.13
	5.91	**RACH606**	13.13
	7.87	**RACH608**	13.13
	9.84	**RACH6010**	13.13
100 (127.5)	1.97	**RACH1002**	25.51
	3.94	**RACH1004**	25.51
	5.91	**RACH1006**	25.51
	7.87	**RACH1008**	25.51
	9.84	**RACH10010**	25.51
150 (175.0)	1.97	**RACH1502**	35.00
	3.94	**RACH1504**	35.00
	5.91	**RACH1506**	35.00
	7.87	**RACH1508**	35.00
	9.84	**RACH15010**	35.00



◀ *An RACH306 powered by a P392 hand pump used to extract corroded carriage pins of refuse collection vehicles.*

Single-Acting, Spring-Return, Hollow Plunger Cylinders

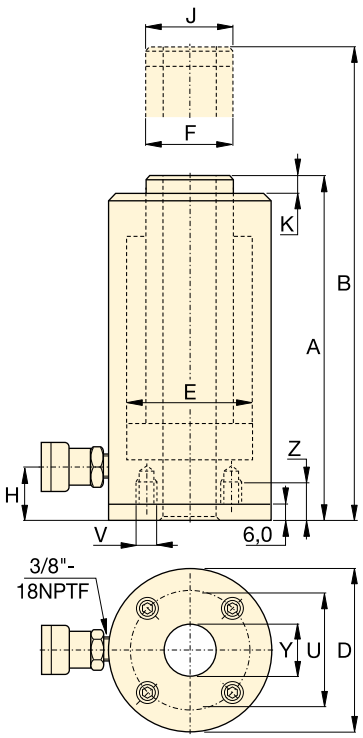
Steel Base Plate Mounting Holes

Cylinder Model / Capacity tons	Bolt Circle U (in)	Thread V (mm)	Thread Depth [1] Z (in)
RACH20	3.15	M6	0.47
RACH30	4.33	M6	0.47
RACH60	6.30	M6	0.47
RACH100	8.66	M10	0.47
RACH150	9.65	M10	0.47

[1] Including Base Plate Height of 0.25 inch and four (4) base plate bolts M6.

Steel Base Plate

The steel base plate protects the cylinder from damage, it should not be removed. See warning on page 17.



RACH Series



Capacity:
20 - 150 tons

Stroke:
1.97 - 9.84 inches

Center Hole Diameter:
1.06 - 3.11 inches

Maximum Operating Pressure:
10,000 psi

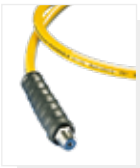
Oil Capacity (in³)	Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	Bottom to Advance Port H (in)	Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	Center Hole Diameter Y (in)	(lbs)	Model Number
9.98	7.41	9.38	3.93	2.95	2.17	1.14	2.17	0.40	1.06	11.5	**RACH202**
19.96	9.89	13.83	3.93	2.95	2.17	1.14	2.17	0.40	1.06	13.5	**RACH204**
29.94	12.41	18.32	3.93	2.95	2.17	1.14	2.17	0.40	1.06	15.6	**RACH206**
39.87	14.89	22.76	3.93	2.95	2.17	1.14	2.17	0.40	1.06	17.7	**RACH208**
49.90	17.41	27.25	3.93	2.95	2.17	1.14	2.17	0.40	1.06	19.8	**RACH2010**
15.59	8.20	10.17	5.12	3.74	2.76	1.14	2.76	0.40	1.34	17.6	**RACH302**
31.18	10.52	14.46	5.12	3.74	2.76	1.14	2.76	0.40	1.34	20.9	**RACH304**
46.77	13.12	19.02	5.12	3.74	2.76	1.14	2.76	0.40	1.34	24.6	**RACH306**
62.35	15.56	23.43	5.12	3.74	2.76	1.14	2.76	0.40	1.34	28.4	**RACH308**
77.94	18.04	27.88	5.12	3.74	2.76	1.14	2.76	0.40	1.34	31.9	**RACH3010**
25.84	9.89	11.86	7.09	5.12	3.94	2.41	3.94	0.47	2.13	35.6	**RACH602**
51.69	12.41	16.35	7.09	5.12	3.94	2.41	3.94	0.47	2.13	42.8	**RACH604**
77.53	14.97	20.87	7.09	5.12	3.94	2.41	3.94	0.47	2.13	50.3	**RACH606**
103.37	17.52	25.40	7.09	5.12	3.94	2.41	3.94	0.47	2.13	57.2	**RACH608**
129.21	20.09	29.93	7.09	5.12	3.94	2.41	3.94	0.47	2.13	65.1	**RACH6010**
50.21	10.16	12.13	9.84	7.28	5.71	2.41	5.71	0.55	3.11	74.6	**RACH1002**
100.43	12.80	16.74	9.84	7.28	5.71	2.41	5.71	0.55	3.11	87.8	**RACH1004**
150.64	15.40	21.31	9.84	7.28	5.71	2.41	5.71	0.55	3.11	101.9	**RACH1006**
200.85	18.08	25.95	9.84	7.28	5.71	2.41	5.71	0.55	3.11	115.7	**RACH1008**
251.07	20.76	30.60	9.84	7.28	5.71	2.41	5.71	0.55	3.11	129.3	**RACH10010**
66.08	11.03	13.00	10.83	8.07	5.91	2.41	5.71	0.55	3.11	107.7	**RACH1502**
132.17	14.18	18.12	10.83	8.07	5.91	2.41	5.71	0.55	3.11	122.8	**RACH1504**
206.72	16.93	22.84	10.83	8.07	5.91	2.41	5.71	0.55	3.11	138.9	**RACH1506**
275.62	19.69	27.57	10.83	8.07	5.91	2.41	5.71	0.55	3.11	154.5	**RACH1508**
344.53	22.45	32.29	10.83	8.07	5.91	2.41	5.71	0.55	3.11	170.2	**RACH15010**

▼ Shown from left to right: **RARH6010 and RARH306**



The Lightweight Solution for Double-Acting Applications

- **Lighter and shorter collapsed height than equivalent RACH models**
- **Double-acting for rapid retraction, regardless of hose lengths or system losses**
- **Built-in safety valve prevents accidental over-pressurization**
- **Hollow plunger design allows for both pull and push forces**
- **Hard coat finish on all surfaces resists damage and extends cylinder life**
- **Handles and CR400 couplers with dust caps included on all models**
- **Floating center tube increases seal life**
- **Steel base plate and saddle for protection against load-induced damage**
- **Integral stop ring prevents plunger over-travel and is capable of withstanding the full cylinder capacity**
- **All cylinders meet ASME B-30.1 standards.**



Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

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Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. Refer to the System Components section for a full range of gauges.

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4-Way Control Valve

The **P84** and **P464** hand pumps feature a manual 4-way control valve, designed for use with one double-acting or two single-acting cylinders. For system set-up information:

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Cylinder Capacity tons (maximum)	Stroke * (in)	Model Number	Maximum Cylinder Capacity @ 10,150 psi (tons)		Cylinder Effective Area (in^2)		Oil Capacity (in^3)	
			Advance	Retract	Advance	Retract	Advance	Retract
30 (40.3)	1.97	**RARH302**	40.30	21.00	7.94	4.14	15.63	8.14
	5.91	**RARH306**	40.30	21.00	7.94	4.14	46.89	24.43
	9.84	**RARH3010**	40.30	21.00	7.94	4.14	78.15	40.72
60 (66.8)	1.97	**RARH602**	66.81	29.65	13.17	5.84	25.91	11.50
	5.91	**RARH606**	66.81	29.65	13.17	5.84	77.72	34.50
	9.84	**RARH6010**	66.81	29.65	13.17	5.84	129.54	57.49
100 (112.4)	1.97	**RARH1002**	112.40	63.80	22.16	12.57	43.60	24.73
	5.91	**RARH1006**	112.40	63.80	22.16	12.57	130.79	74.19
	9.84	**RARH10010**	112.40	63.80	22.16	12.57	217.99	123.66
150 (167.2)	1.97	**RARH1502**	167.20	84.00	32.96	16.56	64.86	32.58
	5.91	**RARH1506**	167.20	84.00	32.96	16.56	194.57	97.74
	9.84	**RARH15010**	167.20	84.00	32.96	16.56	324.28	162.89

* Intermediate strokes and other tonnages available upon request.

Aluminum Double-Acting Hollow Plunger Cylinders

Steel Base Plate

The steel base plate protects the cylinder base from damage, it should not be removed. The base holes in these aluminum cylinders are designed for securing the steel base plate.

They will not withstand the capacity of the cylinder. Do not use the base holes in these aluminum cylinders to attach any device to the cylinder.

RARH Series



Capacity:
30 - 150 tons

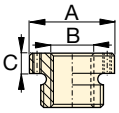
Stroke:
1.97 - 9.84 inches

Center Hole Diameter:
1.34 - 3.11 inches

Maximum Operating Pressure:
10,150 psi

Optional Threaded Hollow Saddles

Saddle Type	Cylinder Model Number	Saddle Model Number	Saddle Dimensions (in) A	B	C
Threaded Hollow	RARH302, 306, 3010	HP3015	2.49	1¼"-7 UN	0.38
	RARH602, 606, 6010	HP5016	3.61	1⅝"-5½ UN	0.50
	RARH1002, 1006, 10010	HP10016	4.96	2½"-8 UN	0.51

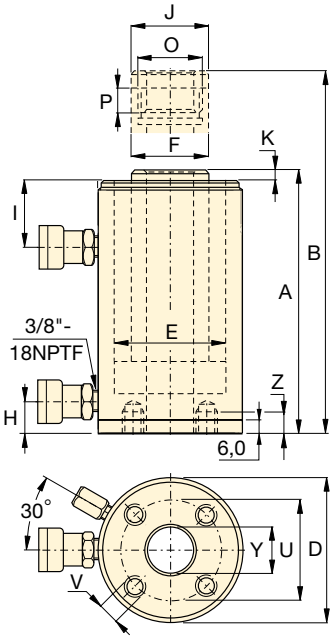


Smooth hollow saddles are standard on all RARH-models.

Steel Base Plate Mounting Holes

Cylinder Model / Capacity tons	Bolt Circle U (in)	Thread V (mm)	Thread Depth [1] Z (in)
RARH30	4.33	M6	0.47
RARH60	6.30	M6	0.47
RARH100	7.87	M10	0.47
RARH150	9.84	M10	0.47

[1] Including Base Plate Height of 0.25 inch and four (4) base plate bolts.





RACH-Series, Single-Acting, Spring Return

To be used when a single-acting pump is available and retraction time is not critical.

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Pump Selection

A double-acting cylinder must be powered by a pump with a 4-way valve.

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Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	Cyl. Base to Advance Port H (in)	Cyl. Top to Return Port I (in)	Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	Plunger Internal Thread O (in)	Plunger Thread Length P (in)	Center Hole Diameter Y (in)	(lbs)	Model Number
8.22	10.19	5.31	3.74	2.95	0.86	2.53	2.49	0.38	1 13/16"-16 UN	0.91	1.34	19.6	RARH302
12.16	18.07	5.31	3.74	2.95	0.86	2.53	2.49	0.38	1 13/16"-16 UN	0.91	1.34	26.2	RARH306
16.10	25.94	5.31	3.74	2.95	0.86	2.53	2.49	0.38	1 13/16"-16 UN	0.91	1.34	32.8	RARH3010
9.68	11.65	7.09	5.12	4.33	1.88	3.28	3.61	0.50	2¾"-16 UN	0.79	2.13	37.0	RARH602
13.62	19.52	7.09	5.12	4.33	1.88	3.28	3.61	0.50	2¾"-16 UN	0.79	2.13	48.8	RARH606
17.56	27.40	7.09	5.12	4.33	1.88	3.28	3.61	0.50	2¾"-16 UN	0.79	2.13	60.7	RARH6010
9.99	11.96	9.25	6.50	5.12	2.41	3.07	4.97	0.53	4"-16 UN	1.06	3.11	63.6	RARH1002
13.92	19.83	9.25	6.50	5.12	2.41	3.07	4.97	0.53	4"-16 UN	1.06	3.11	84.3	RARH1006
17.86	27.70	9.25	6.50	5.12	2.41	3.07	4.97	0.53	4"-16 UN	1.06	3.11	104.9	RARH10010
10.39	12.36	11.02	7.48	5.91	2.41	3.27	5.00	0.74	4¼"-12 UN	1.57	3.11	93.3	RARH1502
14.33	20.24	11.02	7.48	5.91	2.41	3.27	5.00	0.74	4¼"-12 UN	1.57	3.11	123.6	RARH1506
18.27	28.11	11.02	7.48	5.91	2.41	3.27	5.00	0.74	4¼"-12 UN	1.57	3.11	154.0	RARH15010

RAR-Series, Double-Acting Aluminum Cylinders

ENERPAC

▼ Shown from left to right: **RAR5010, RAR308, RAR204**

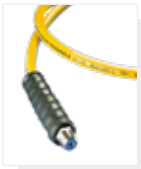




Saddles

All RAR-cylinders are equipped with bolt-on removable hardened steel saddles.
For Tilt Saddles see next page.

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Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

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- **Double-acting for rapid retraction, regardless of hose lengths or system losses**
- **Composite bearings increase cylinder life and side load resistance**
- **Hard-Coat finish on all surfaces resists damage and extends cylinder life**
- **Handle and CR400 couplers with dust caps included on all models**
- **Steel base plate and saddle for protection against load-induced damage**
- **Integral stop ring prevents plunger over-travel and is capable of withstanding the full cylinder capacity**
- **Built-in safety valve prevents accidental over-pressurization.**

▼ *An RAR506 was easy to position under a bulldozer for repair of frame member.*

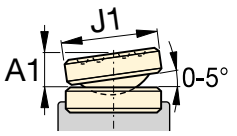


Cylinder Capacity tons	Stroke (in)	Model Number	Maximum Cylinder Capacity (tons) Push	Cylinder Effective Area (in^2) Push	Pull	Oil Capacity (in^3) Push	Pull
20	1.97	RAR202	24.2	4.83	2.88	9.52	5.67
	3.94	RAR204	24.2	4.83	2.88	19.03	11.34
	5.91	RAR206	24.2	4.83	2.88	28.55	17.02
	7.87	RAR208	24.2	4.83	2.88	38.01	22.66
	9.84	RAR2010	24.2	4.83	2.88	47.53	28.34
30	1.97	RAR302	34.2	6.85	3.80	13.49	7.49
	3.94	RAR304	34.2	6.85	3.80	26.99	14.97
	5.91	RAR306	34.2	6.85	3.80	40.48	22.46
	7.87	RAR308	34.2	6.85	3.80	53.91	29.91
	9.84	RAR3010	34.2	6.85	3.80	67.40	37.39
50	1.97	RAR502	54.9	10.99	3.54	21.65	6.97
	3.94	RAR504	54.9	10.99	3.54	43.30	13.95
	5.91	RAR506	54.9	10.99	3.54	64.95	20.92
	7.87	RAR508	54.9	10.99	3.54	86.49	27.86
	9.84	RAR5010	54.9	10.99	3.54	108.14	34.83
100	1.97	RAR1002	110.9	22.19	12.33	43.71	24.29
	3.94	RAR1004	110.9	22.19	12.33	87.43	48.58
	5.91	RAR1006	110.9	22.19	12.33	131.14	72.87
	7.87	RAR1008	110.9	22.19	12.33	174.64	97.04
	9.84	RAR10010	110.9	22.19	12.33	218.35	121.33
150	1.97	RAR1502	175.9	35.18	20.45	69.30	40.29
	3.94	RAR1504	175.9	35.18	20.45	138.61	80.57
	5.91	RAR1506	175.9	35.18	20.45	207.91	120.86
	7.87	RAR1508	175.9	35.18	20.45	276.87	160.94
	9.84	RAR15010	175.9	35.18	20.45	346.17	201.23

Double-Acting Aluminum Cylinders

Optional Bolt-on Tilt Saddle Dimensions (in)

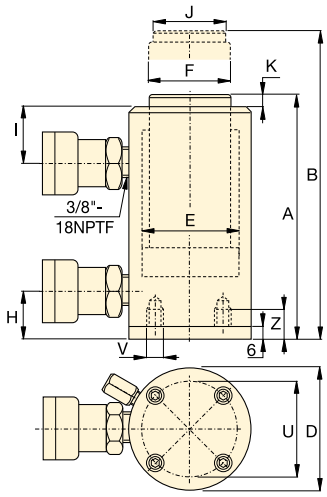
For Cylinder Model / Capacity tons	Tilt Saddle Model Number	Tilt Saddle Diameter J1	Addition to Collapsed Height A1
RAR20	CATS20	1.65	0.39
RAR30	CATS30	2.17	0.43
RAR50	CATS50	2.80	0.55
RAR100	CATS101	2.80	0.39
RAR150	CATS150	4.96	0.71



Steel Base Plate Mounting Holes

Cylinder Model / Capacity tons	Bolt Circle U (in)	Thread V (mm)	Thread Depth [1] Z (in)
RAR20	3.66	M6	0.47
RAR30	4.13	M6	0.47
RAR50	4.33	M6	0.47
RAR100	6.10	M6	0.47
RAR150	7.87	M6	0.47

[1] Including Base Plate Height of 0.25 inch and four (4) base plate bolts M6.



RAR Series



Capacity:
20 - 150 tons

Stroke:
1.97 - 9.84 inches

Maximum Operating Pressure:
10,000 psi

Steel Base Plate
The steel base plate protects the cylinder from damage, it should not be removed.
See warning on page 17.

Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	Bottom to Advance Port H (in)	Top to Retract Port I (in)	Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	(lbs)	Model Number
7.45	9.42	4.45	2.48	1.58	1.19	1.97	1.18	0.12	16.3	**RAR202**
9.42	13.35	4.45	2.48	1.58	1.19	1.97	1.18	0.12	17.6	**RAR204**
11.29	17.29	4.45	2.48	1.58	1.19	1.97	1.18	0.12	19.0	**RAR206**
13.35	21.23	4.45	2.48	1.58	1.19	1.97	1.18	0.12	20.3	**RAR208**
15.32	25.17	4.45	2.48	1.58	1.19	1.97	1.18	0.12	21.6	**RAR2010**
7.92	9.89	4.92	2.95	1.97	1.19	2.17	1.58	0.12	19.0	**RAR302**
9.89	13.83	4.92	2.95	1.97	1.19	2.17	1.58	0.12	20.9	**RAR304**
11.86	17.76	4.92	2.95	1.97	1.19	2.17	1.58	0.12	22.9	**RAR306**
13.83	21.70	4.92	2.95	1.97	1.19	2.17	1.58	0.12	24.9	**RAR308**
15.80	25.64	4.92	2.95	1.97	1.19	2.17	1.58	0.12	26.9	**RAR3010**
7.92	9.89	5.71	3.74	2.95	1.19	2.21	1.97	0.12	24.5	**RAR502**
9.89	13.83	5.71	3.74	2.95	1.19	2.21	1.97	0.12	28.0	**RAR504**
11.86	17.76	5.71	3.74	2.95	1.19	2.21	1.97	0.12	31.5	**RAR506**
13.83	21.70	5.71	3.74	2.95	1.19	2.21	1.97	0.12	35.1	**RAR508**
15.80	25.64	5.71	3.74	2.95	1.19	2.21	1.97	0.12	38.6	**RAR5010**
9.89	11.86	7.28	5.32	3.54	1.70	3.15	2.95	0.12	36.2	**RAR1002**
11.86	15.80	7.28	5.32	3.54	1.70	3.15	2.95	0.12	42.6	**RAR1004**
13.83	19.73	7.28	5.32	3.54	1.70	3.15	2.95	0.12	48.9	**RAR1006**
15.80	23.67	7.28	5.32	3.54	1.70	3.15	2.95	0.12	55.3	**RAR1008**
17.76	27.61	7.28	5.32	3.54	1.70	3.15	2.95	0.12	61.7	**RAR10010**
9.77	11.74	9.06	6.70	4.33	1.50	2.95	3.70	0.12	53.4	**RAR1502**
11.74	16.68	9.06	6.70	4.33	1.50	2.95	3.70	0.12	63.7	**RAR1504**
13.71	19.61	9.06	6.70	4.33	1.50	2.95	3.70	0.12	73.2	**RAR1506**
15.68	23.55	9.06	6.70	4.33	1.50	2.95	3.70	0.12	83.6	**RAR1508**
17.64	29.46	9.06	6.70	4.33	1.50	2.95	3.70	0.12	93.9	**RAR15010**

CULP-Series, Ultra-Flat Cylinders with Stop Ring

ENERPAC

▼ CULP50 Ultra-Flat Cylinder, with Stop Ring



CULP Series

Capacity:
10 - 100 tons

Stroke:
0.24 inch

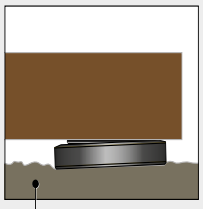
Maximum Operating Pressure:
10,150 psi

- **Up to 4% side load of maximum capacity**
- **Stop ring for maximum stroke limitation**
- **Extremely low collapsed height**
- **Nitrocarburized surface treatment for harsh conditions.**

IMPORTANT!

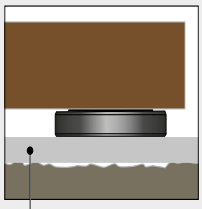
All Ultra-Flat Cylinders require a solid lifting surface for correct support. The use of these flat cylinders on surfaces such as sand, mud or dirt, may result in cylinder damage.

INCORRECT!



Rough soil

CORRECT!



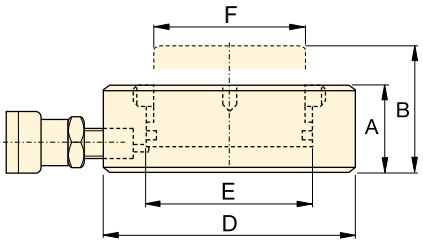
Flat lifting surface

For more safety instructions see our 'Yellow Pages'.

Page: 400

▼ *The Ultra-Flat cylinders are designed for applications where high lifting forces are required in confined spaces starting at 1.10 inch.*







Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

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Cylinder Capacity @ 10,150 psi **tons** (maximum)	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	 (lbs)
10 (10.9)	0.24	**CULP10** [1]	2.15	0.51	1.08	1.32	2.83	1.65	1.49	2.0
20 (22.2)	0.24	**CULP20** [1]	4.38	1.04	1.26	1.50	3.54	2.36	2.16	4.0
30 (34.8)	0.24	**CULP30** [1]	6.85	1.62	1.38	1.61	4.13	2.95	2.64	6.0
50 (61.8)	0.24	**CULP50** [1]	12.17	2.88	1.75	1.99	5.51	3.94	3.54	11.9
100 (121.1)	0.24	**CULP100** [2]	23.85	5.63	2.55	2.79	7.67	5.51	4.92	25.3

[1] Coupler AR630 including dust cap: use HB7206 hose including AH630 coupler to connect to your pump.
[2] Coupler CR400 including dust cap: use HC-Series hose including CH604 coupler to connect to your pump.

▼ **CUSP-Series, Ultra-Flat High-Tonnage Cylinders, integrated tilting function**



CUSP Series

Capacity:
10 - 1000 tons

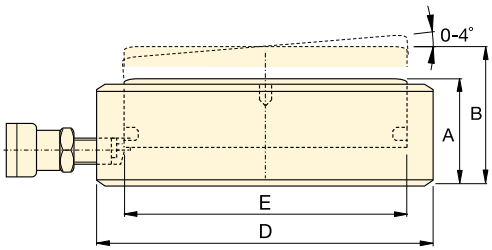
Stroke Straight / Tilted Stroke:
0.24-0.39" / 0.26-0.69"

Integrated:
Tilting Function

Maximum Operating Pressure:
10,150 psi

IMPORTANT!
CUSP-Cylinders DO NOT have a Stop Ring for stroke limitation!

- **Up to 4% side load of maximum capacity**
- **Extremely low collapsed height**
- **Integrated tilting function up to 4 degrees to evenly distribute the load**
- **Nitrocarburized surface treatment for harsh conditions**
- **"Red Line" for visual maximum stroke indication.**



IMPORTANT!
All Ultra-Flat Cylinders require a solid lifting surface for correct support. The use of these flat cylinders on surfaces such as sand, mud or dirt, may result in cylinder damage.

See instructions on page 28 or more safety instructions in our Yellow Pages.

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Cylinder Capacity @ 10,150 psi **tons** (maximum)	Tilted Stroke (in)	Straight Stroke (in)	Model Number	Tilting +/- (degree)	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height A (in)	Extended Height B (in)	Cylinder Outside Diameter D (in)	Cylinder Bore Diameter E (in)	(lbs)
10 (10.9)	0.24	0.26	**CUSP10** [1]	2	2.15	0.57	1.40	1.66	2.83	1.65	2.6
20 (22.2)	0.24	0.28	**CUSP20** [1]	2	4.39	1.21	1.59	1.87	3.54	2.36	4.2
30 (34.8)	0.24	0.29	**CUSP30** [1]	2	6.85	1.97	1.67	1.96	4.13	2.95	6.0
50 (61.8)	0.39	0.52	**CUSP50** [1]	4	12.17	6.37	2.24	2.77	5.12	3.94	12.3
75 (89.0)	0.39	0.55	**CUSP75** [1]	4	17.53	9.66	2.38	2.93	5.91	4.72	17.6
100 (121.1)	0.39	0.58	**CUSP100** [2]	4	23.85	13.81	2.50	3.08	6.69	5.51	23.8
150 (178.6)	0.39	0.56	**CUSP150** [2]	3	35.19	19.81	2.56	3.12	7.87	6.69	33.7
200 (235.0)	0.39	0.59	**CUSP200** [2]	3	46.28	27.15	2.72	3.30	9.02	7.68	47.4
250 (285.6)	0.39	0.61	**CUSP250** [2]	3	56.28	34.34	2.85	3.46	9.92	8.46	60.2
300 (355.9)	0.39	0.56	**CUSP300** [2]	2	70.12	38.93	2.85	3.41	11.10	9.45	75.8
400 (450.5)	0.39	0.57	**CUSP400** [2]	2	88.75	51.01	3.05	3.63	12.44	10.63	101.9
500 (574.8)	0.39	0.60	**CUSP500** [2]	2	113.24	67.77	3.25	3.85	14.02	12.01	138.2
600 (672.9)	0.39	0.61	**CUSP600** [2]	2	132.57	81.42	3.44	4.06	15.20	12.99	172.8
750 (846.0)	0.39	0.64	**CUSP750** [2]	2	166.66	106.95	3.68	4.32	17.01	14.57	231.9
1000 (1142.6)	0.39	0.69	**CUSP1000** [2]	2	225.09	154.20	4.06	4.74	19.76	16.93	346.1

[1] Coupler AR630 including dust cap: Use HB7206 hose including AH630 coupler to connect to your pump.
[2] Coupler CR400 including dust cap: Use HC-Series hose including CH604 coupler to connect to your pump.

▼ LPL-Series, Low-Height Lock Nut Cylinders



- **Lock nut provides mechanical load holding for a safe work environment**
- **Integrated tilt saddle allows for up to 5 degrees of misalignment**
- **Extreme low height for use in confined areas**
- **Side load resistance 5-10% of maximum capacity**
- **Overflow port as stroke limiter to prevent plunger blow-out**
- **Single-acting, gravity-return.**



Integrated Tilt Saddles

All LPL-Series cylinders include integral tilt saddles with maximum tilt angles up to 5°.

The Summit Edition

Innovation is at the heart of the new Summit Edition of cylinders, delivering the high quality construction that you expect from Enerpac. The durability ensures your job gets done safely and reliably.

- Replaceable plunger support bearing adds support for eccentric loads *
- Nitrocarburization surface treatment for improved load and wear resistance and corrosion protection
- Low-wear, high-pressure seals provide longer service life.

* Eccentric load (or "side load") is inevitable in heavy lifting. Our unique Summit Edition features provide the ultimate protection against side load. Increased bearing surface maintains stability and nitrocarburization treatment prevents scoring on the inside of the cylinder.
Side load poses a real problem.... our new cylinder features are the solution!

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▼ *Only the extreme low-height LPL-cylinder fits in this confined area to lift the construction. The lock nut provides positive and safe mechanical load holding over a long period of time.*

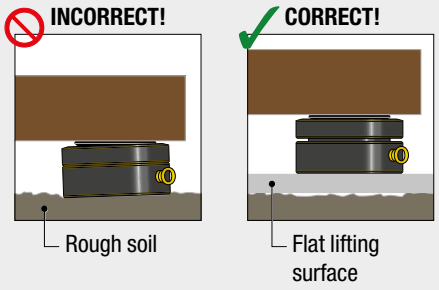


Cylinder Capacity (tons)	Stroke (in)	Model Number	Maximum Cylinder Capacity at 10,150 psi (tons)	Side-load Resistance of Maximum Capacity	Cylinder Effective Area (in^2)
60	1.97	**LPL602**	**68**	10%	13.42
100	1.97	**LPL1002**	**113**	10%	22.19
150	1.77	**LPL1602**	**179**	8%	35.18
200	1.77	**LPL2002**	**223**	8%	43.95
250	1.77	**LPL2502**	**286**	5%	56.27
400	1.77	**LPL4002**	**450**	5%	88.75
500	1.77	**LPL5002**	**575**	5%	113.25

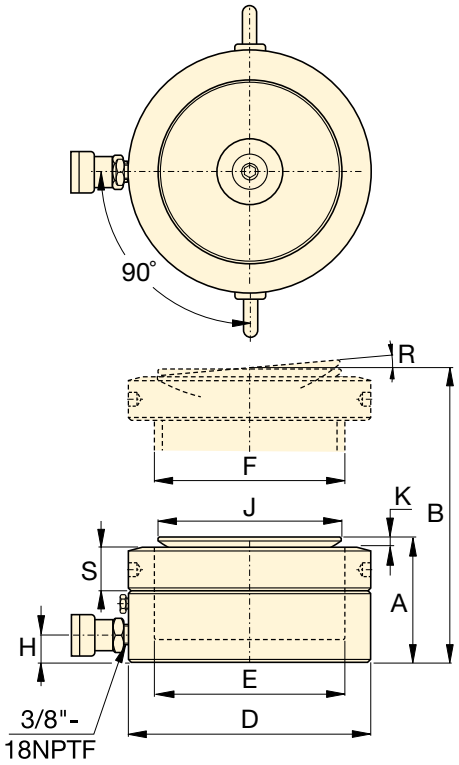
Single-Acting, Low-Height Lock Nut Cylinders

IMPORTANT!

All LPL-Series cylinders require a solid lifting surface for correct support. The use of these cylinders on surfaces such as sand, mud or dirt, may result in cylinder damage.



For more safety instructions see our 'Learning Center' on www.enerpac.com



LPL Series



Capacity:
60 - 500 tons

Stroke:
1.77 - 1.97 inches

Maximum Operating Pressure:
10,150 psi



Longer Stroke Lock Nut Cylinders

For longer stroke applications **HCL** and **HCRL-Series** lock nut cylinders are the perfect choice.

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SFP-Series, Split-Flow Pumps

SFP-Series Pumps with multiple outlets with equal oil flow. For lifting and lowering applications on multiple points these pumps are a far better alternative than using separately operated pumps.

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Synchronous Lifting Systems

EVO-Series pumps the multi-functional lifting system and multiple lift point capabilities.

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Oil Capacity (in³)	Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (mm)	Base to Advance Port H (in)	Saddle Diameter J (in)	Saddle Protrusion from Plgr. K (in)	Saddle Max. Tilt Angle R (degrees)	Lock Nut Height S (in)	(lbs)	Model Number
26.4	4.94	6.91	5.51	4.13	Tr 105 x 4	0.75	3.78	0.26	5°	1.10	33	**LPL602**
43.7	5.39	7.36	6.81	5.31	Tr 135 x 6	0.83	4.96	0.31	5°	1.22	54	**LPL1002**
62.3	5.83	7.60	8.66	6.69	Tr 170 x 6	1.06	6.30	0.35	5°	1.57	94	**LPL1602**
77.9	6.10	7.87	9.65	7.48	Tr 190 x 6	1.18	7.09	0.39	5°	1.69	121	**LPL2002**
99.7	6.24	8.01	10.83	8.46	Tr 215 x 6	1.26	7.87	0.45	5°	1.69	155	**LPL2502**
157.2	7.01	8.78	13.78	10.63	Tr 270 x 6	1.56	9.84	0.45	4°	2.17	284	**LPL4002**
200.6	7.56	9.33	15.75	12.01	Tr 305 x 6	1.91	11.42	0.39	3°	2.42	404	**LPL5002**

▼ Shown from left to right: **RSM1000, RSM300, RSM50, RCS1002, RCS302**



Maximum Power-to-Height Ratio



Saddles

All RCS-Series cylinders have plunger mounting holes for installation of tilt saddles. See table for selection and dimensional information.

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Low-Clearance Lifting

The **LW-Series Lifting Wedges** and **SOH-Series Machine Lifts** are the perfect choice for lifting the first few inches.

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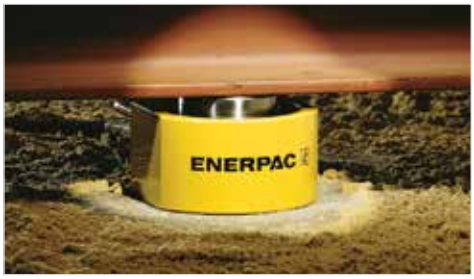
RSM-Series, Low-Height Cylinders

- **Compact, flat design for use where most other cylinders will not fit**
- **Single-acting, spring-return**
- **RSM750, 1000 and 1500 have handles for easy carrying**
- **Mounting bolt holes permit easy fixturing**
- **Baked enamel finish for increased corrosion resistance**
- **CR400 coupler and dust cap included on all models [1)]**
- **Hard chrome plated high quality steel plungers**
- **Grooved plunger ends require no saddle.**

RCS-Series, Low-Height Cylinders

- **Lightweight, low-profile design for use in confined spaces**
- **Single-acting, spring-return**
- **Baked enamel finish for increased corrosion resistance**
- **Plunger wiper reduces contamination, extending cylinder life**
- **CR400 coupler and dust cap included on all models**
- **Grooved plunger end with threaded holes for mounting tilt saddles**
- **Integral handle on RCS1002 for easy carrying**
- **Plated steel plungers.**

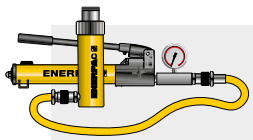
▼ *Only a couple of inches will do for an RSM-cylinder to lift a large construction.*



Cylinder Capacity tons (maximum)	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)
5 (4.9)	0.25	**RSM50** [1)]	0.99	0.25
10 (11.2)	0.44	**RSM100** *	2.24	0.98
20 (22.1)	0.44	**RSM200** *	4.43	1.94
30 (32.4)	0.50	**RSM300** *	6.49	3.25
50 (48.1)	0.63	**RSM500** *	9.62	6.01
75 (79.5)	0.63	**RSM750**	15.90	9.94
100 (98.1)	0.63	**RSM1000**	19.63	12.27
150 (153.4)	0.63	**RSM1500**	30.68	19.17
10 (11.2)	1.50	**RCS101** *	2.24	3.35
20 (22.1)	1.75	**RCS201** *	4.43	7.75
30 (32.4)	2.44	**RCS302** *	6.49	15.82
50 (48.1)	2.38	**RCS502** *	9.62	22.85
100 (98.1)	2.25	**RCS1002** *	19.63	44.18

[1)] RSM50 is fitted with an AR400 coupler.
* Available as set, see notes on next page.

Single-Acting, Low-Height Cylinders



Cylinder-Pump Sets

All cylinders marked with an * are available as **sets** (cylinder, gauge, couplers, hose and pump) for your ordering convenience.

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RSM, RCS Series



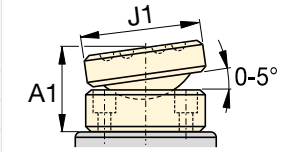
Capacity:
5 - 150 tons

Stroke:
0.25 - 2.44 inches

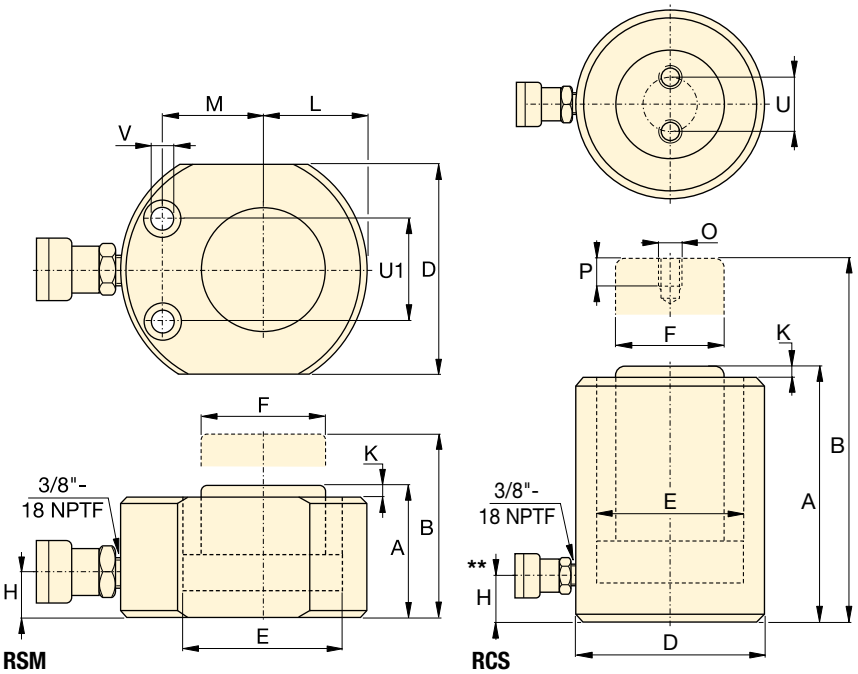
Maximum Operating Pressure:
10,000 psi

Optional Bolt On Tilt Saddle Dimensions (in)

For Cylinder Model:	Model Number	J1	A1 *
RCS101	CATS13	1.38	0.79
RCS201, 302, 502	CATS53	1.97	0.98
RCS1002	CATS103	2.80	1.38



* A1 = Addition to Collapsed Height.





Portable Hydraulic Tool Box

Tool box with hand pump, gauge adaptor assembly, hose and RSM or RCS-cylinders.

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RSM Cylinder Mounting Hole Dimensions (in)

Model Number	Bolt Circle U1	Hole Dia. V	Counter Bore Dia.	Counter Bore Depth
RSM50	1.12	0.20	0.31	0.17
RSM100	1.44	0.28	0.42	0.31
RSM200	1.94	0.40	0.59	0.39
RSM300	2.06	0.40	0.62	0.44
RSM500	2.62	0.47	0.75	0.50
RSM750	3.00	0.53	0.81	0.56
RSM1000	3.00	0.53	0.81	0.56
RSM1500	4.62	0.53	0.81	0.56

Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	Base to Advance Port H (in)	Plunger Protrusion from Base K (in)	Plunger to Base L (in)	Plunger to Mtg. Hole M (in)	Thread O (mm)	Thread Depth P (in)	Bolt Circle U (in)	(lbs)	Model Number
1.28	1.53	2.31 x 1.63	1.13	1.00	0.63	0.04	0.81	0.88	–	–	–	2.3	RSM50 [1]
1.69	2.13	3.25 x 2.19	1.69	1.50	0.75	0.04	1.09	1.34	–	–	–	3.1	RSM100 *
2.03	2.47	4.00 x 3.00	2.38	2.00	0.75	0.04	1.56	1.56	–	–	–	6.8	RSM200 *
2.31	2.81	4.63 x 3.75	2.88	2.50	0.75	0.08	1.88	1.75	–	–	–	10.0	RSM300 *
2.63	3.25	5.50 x 4.50	3.50	2.75	0.75	0.08	2.25	2.13	–	–	–	15.0	RSM500 *
3.13	3.75	6.50 x 5.50	4.50	3.25	0.75	0.08	2.75	2.63	–	–	–	25.0	RSM750
3.38	4.00	7.00 x 6.00	5.00	3.63	0.75	0.08	3.00	2.94	–	–	–	32.0	RSM1000
3.94	4.56	8.50 x 7.50	6.25	4.50	0.94	0.08	3.75	3.25	–	–	–	58.0	RSM1500
3.47	4.97	2.75	1.69	1.50	0.69	0.20	–	–	M4	0.32	1.03	6.0	RCS101 *
3.88	5.63	3.63	2.38	2.00	0.69	0.12	–	–	M5	0.32	1.57	11.0	RCS201 *
4.63	7.06	4.00	2.88	2.62	0.75	0.12	–	–	M5	0.32	1.57	15.0	RCS302 *
4.81	7.19	4.88	3.50	2.75	0.94	0.08	–	–	M5	0.32	1.57	22.0	RCS502 *
5.56	7.81	6.50	5.00	3.63	1.25	0.04	–	–	M8	0.40	2.17	46.0	RCS1002 *

** 5° angle position of coupler on RCS101, 201, 302.



For longer cylinder strokes in confined spaces

- **Single-acting, load-return**
- **Nitrocarburized surface treatment inside and out provides corrosion protection**
- **For use in confined spaces: machinery positioning, tool fastening**
- **Mounting bolt holes for easy fixing**
- **Up to 3% side load of maximum capacity**
- **Design safety factor complies with ASME B30.1 & EN1494**
- **CR400 coupler for compatibility with standard product**
- **High-Alloy steel for maximum strength.**

RLT-Series, Low-Height Telescopic Cylinders

Enerpac compact, low-height telescopic cylinders are available with two or three pistons, and can lift loads up to 1.57 inches in a single movement.

Nitrocarburization surface treatment for improved wear resistance and corrosion protection for increased safety and longer service life in harsh conditions.
The longer stroke length of telescopic cylinders will save you time and simplify projects by moving a load a greater distance and eliminating the use of temporary cribbing.

Multi-Stage Cylinders

1st Stage: maximum load capacity at lower stroke.
2nd Stage: extended stroke with lower capacity than the 1st stage.
Final Stage: maximum stroke extension with lowest capacity.



Cylinder Capacity at Maximum Stroke tons	Maximum Stroke (in)	Model Number	Collapsed Height A (in)	Extended Height B (in)	Oil Capacity (in^3)
4.8	0.67	**RLT40**	1.77	2.44	1.29
4.8	0.91	**RLT41**	2.13	3.03	3.09
12.5	0.71	**RLT110**	2.15	2.85	2.90
12.5	1.57	**RLT111**	3.50	5.08	14.71
26.1	1.06	**RLT230**	2.95	4.02	9.15
26.1	1.26	**RLT231**	3.78	5.04	18.50
34.8	1.14	**RLT311**	3.50	4.65	13.64
55.8	1.02	**RLT501**	3.78	4.80	17.29
81.7	1.02	**RLT741**	4.49	5.51	25.97

Low-Height Telescopic Cylinders, Single-Acting



Assisted-return Pumps with Venturi Valve Technology

ZU4 and ZE-Series pumps feature Venturi Valve Technology to accelerate single-acting gravity and spring-return cylinder retraction speeds. See valve type in ordering matrix and details in section Directional Control Valves. See enerpac.com for details.

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4-way Manifold assembly complete with gauges

Offering ease of portability and convenience with an ergonomic robust design, ready for use. Enerpac's CR400 female couplers on all ports allow the manifold to be quickly connected to up to 4 cylinders. Glycerine filled, 10,000 psi gauges allow operators to work safely. All protected by the robust protection frame.

Manifold Type (Used for cylinders)	Model Number
4x Single-acting	**AMGC41**
4x Double-acting	**AMGC42**

RLT Series



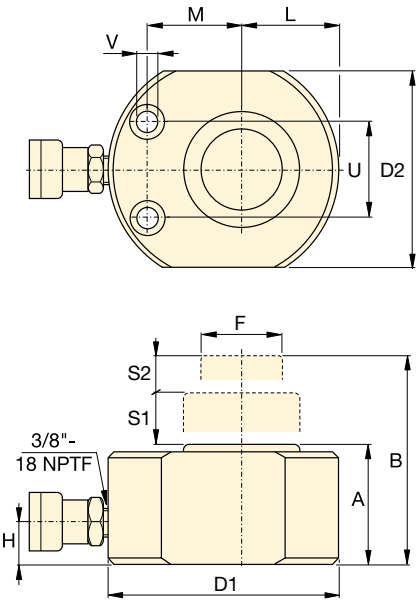
Capacity:
4.8 - 81.7 tons

Stroke:
0.67 - 1.57 inches

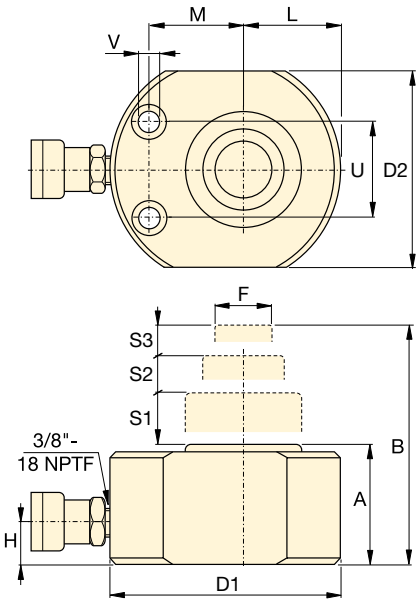
Maximum Operating Pressure:
10,150 psi

WARNING:

If several telescopic cylinders need to be controlled simultaneously Enerpac recommend the use of EVO-Series Synchronous Lifting Pumps. Enerpac advises not to use SFP-Series Split-Flow pumps to operate several telescopic cylinders at the same time due to the volume difference on the different stages.



RLT40, 110, 230, 311, 501, 741



RLT41, 111, 231

RLT-Cylinders
Mounting Hole Dimensions (in)

Model Number	Bolt Distance U	Hole Diameter V	Counter Bore Diameter	Counter Bore Depth
RLT40	1.46	0.26	0.43	0.28
RLT41	1.97	0.35	0.55	0.35
RLT110	1.97	0.35	0.55	0.35
RLT111	2.99	0.51	0.79	0.51
RLT230	2.64	0.51	0.79	0.51
RLT231	2.99	0.26	0.43	0.28
RLT311	2.99	0.51	0.79	0.51
RLT501	2.99	0.26	0.43	0.28
RLT741	4.61	0.35	0.55	0.35

1st Stage Capacity (tons)	1st Stage Stroke S1 (in)	2nd Stage Capacity (tons)	2nd Stage Stroke S2 (in)	3rd Stage Capacity (tons)	3rd Stage Stroke S3 (in)	Outside Diameter D1 x D2 (in)	Plunger Diameter F (in)	Bottom to Advance Port H (in)	Plunger to Base L (in)	Plunger to Mounting Hole M (in)	(lbs)	Model Number
12.5	0.43	**4.8**	0.24	–	–	3.27 x 2.20	0.98	0.79	1.14	1.30	4.0	**RLT40**
26.1	0.43	**12.5**	0.28	**4.8**	0.20	4.02 x 3.15	0.98	0.79	1.61	1.54	6.8	**RLT41**
26.1	0.43	**12.5**	0.28	–	–	4.02 x 3.15	1.50	0.79	1.61	1.54	6.6	**RLT110**
81.7	0.63	**34.8**	0.51	**12.5**	0.43	6.50 x 5.51	1.50	0.98	2.78	2.60	28.9	**RLT111**
55.8	0.63	**26.1**	0.43	–	–	5.51 x 4.49	2.24	0.79	2.28	2.20	16.8	**RLT230**
104.4	0.63	**55.8**	0.39	**26.1**	0.24	7.01 x 6.38	2.24	1.14	3.50	2.76	38.1	**RLT231**
81.7	0.63	**34.8**	0.51	–	–	6.50 x 5.51	2.36	0.98	2.78	2.60	28.7	**RLT311**
104.4	0.63	**55.8**	0.39	–	–	7.01 x 6.38	3.07	1.14	3.50	2.76	38.1	**RLT501**
158.2	0.63	**81.7**	0.39	–	–	8.50 x 7.72	3.74	1.38	4.25	3.07	67.0	**RLT741**

▼ RT1510, RT3323, RT2111



- **Nitrocarburized surface treatment inside and out provides corrosion protection**
- **3% side load of full capacity**
- **Double or triple wear bearings support lifting stages**
- **Tilting saddles with 5 degrees of maximum tilt standard on all models**
- **Design Safety factor complies with ASME B30.1 & EN1494**
- **Certified lifting eyes for safe handling and positioning**
- **CR400 coupler for compatibility with standard product**
- **Steel cylinder base for maximum strength.**

Moving a load a greater distance

RT-Series, Multi-Stage Cylinders

Enerpac compact, multi-stage telescopic cylinders are available with two or three pistons, and can lift loads up to 24 inches in a single movement.

Nitrocarburized surface treatment inside and out provides unparalleled sideload resistance and corrosion protection for safe use in the harshest conditions. The longer stroke length of telescopic cylinders will save you time and simplify projects by moving a load a greater distance and eliminating the use of temporary cribbing.

Multi-Stage Cylinders

1st Stage: maximum load capacity at lowest maximum stroke
2nd Stage: extended stroke but at lower maximum capacity than the 1st stage
Final Stage: maximum stroke extension but lowest maximum capacity.

WARNING: If several telescopic cylinders need to be controlled simultaneously Enerpac recommend the use of EVO or EVOP-Series Synchronous Lifting Pumps. Enerpac advise not to use SFP-Series Split-Flow pumps to operate several telescopic cylinders at a time due to the volume difference on the different stages.



Tilt Saddles

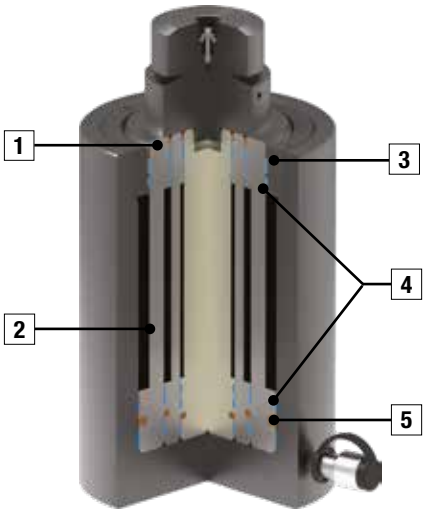
All RT-Series cylinders include integral tilt saddles with maximum tilt angles up to 5 degree.



◀ *The longer stroke length of telescopic cylinders will save you time and simplify projects by moving a load a greater distance and eliminating the use of temporary cribbing.*

Cylinder Capacity at Maximum Stroke tons	Maximum Stroke (in)	Model Number	Collapsed Height A (in)	Extended Height B (in)
15.4	10.63	**RT1510**	11.14	21.77
18.7	17.13	**RT1817**	13.58	30.71
22.2	11.81	**RT2111**	12.48	24.29
	19.69	**RT2119**	15.55	35.24
34.8	11.81	**RT3311**	13.86	25.67
	23.62	**RT3323**	18.74	42.36

Multi-Stage Telescopic Cylinders, Single-Acting, Load Return



1. **Wiper Ring** on each stage to minimize contamination.
2. **Nitrocarburized Coating** for maximum corrosion protection and surface hardness.
3. **Stop Ring** full load capable to prevent plunger overstroke.
4. **Wear Bearings**. Double or triple wear bearings for maximum sideload capability and wear resistance.
5. **Seals** for maximum compliance and high wear resistance.

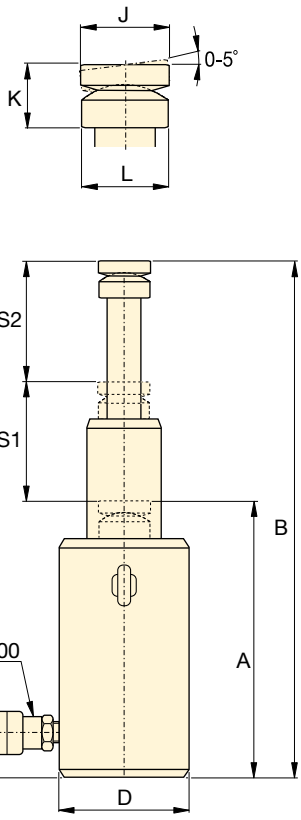
RT Series



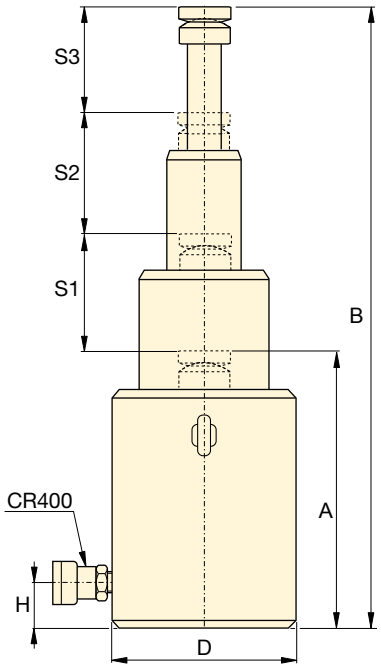
Capacity:
15.4 - 34.8 tons

Stroke:
10.63 - 23.62 inches

Maximum Operating Pressure:
10,150 psi



RT1510, 2111, 3311



RT1817, 2119, 3323



Assisted-return Pumps with Venturi Valve Technology

ZU4 and ZE-Series pumps feature Venturi Valve Technology to accelerate single-acting gravity and spring-return cylinder retraction speeds. See valve type in ordering matrix and details in section Directional Control Valves. See enerpac.com for details.

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Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

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Oil Capacity	1st Stage		2nd Stage		3rd Stage		Outside Diameter	Bottom to Advance Port	Saddle Diameter	Saddle Protrusion from Plgr.	Saddle Support Diameter		Model Number
	Capacity	Stroke S1	Capacity	Stroke S2	Capacity	Stroke S3	D	H	J	K	L		
(in^3)	tons	(in)	tons	(in)	tons	(in)	(in)	(in)	(in)	(in)	(in)	(lbs)	
57.61	**40**	5.31	**15**	5.31	**-**	-	4.33	0.79	2.36	1.93	2.36	33	**RT1510**
188.69	**104**	5.71	**45**	5.71	**18.7**	5.71	6.69	1.06	3.15	2.87	3.35	89	**RT1817**
90.74	**56**	5.91	**22**	5.91	**-**	-	4.92	0.91	2.36	2.09	2.60	48	**RT2111**
284.43	**139**	6.69	**56**	6.69	**22.2**	6.30	7.87	1.34	3.54	3.27	3.94	148	**RT2119**
143.96	**89**	5.91	**35**	5.91	**-**	-	6.30	0.98	3.15	2.60	3.50	88	**RT3311**
537.99	**223**	7.87	**89**	7.87	**34.8**	7.87	9.84	1.73	4.33	4.37	4.84	273	**RT3323**

▼ Shown from left to right: **BRC25, BRC46, BRP306, BRP606, BRP106C**



The Ultimate in Pulling Power

- **High strength alloy steel construction**
- **Hard chrome-plated plunger for long life**
- **Replaceable links on BRP-models**
- **Baked enamel finish for increased corrosion resistance**
- **CR400 coupler and dust cap included on all models**
- **Plunger wiper reduces contamination, extending cylinder life**
- **Single-acting, spring return.**



Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. Refer to the System Components Section for a full range of gauges.

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Attachments and Accessories

BRC25 and BRC46 cylinders have base, collar and plunger threads to affix a range of optional attachments and accessories, such as chains, saddles and extension tubes.

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▼ *Lifting mining conveyor belt using pull cylinders for bearing maintenance.*

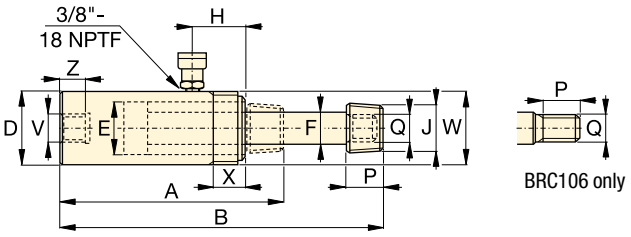


▼ *To lift a load bearing mast into place, BRP-Series cylinders were used to tension the supporting cables.*



BRC Cylinder Mounting Dimensions (in)

Model Number	Base Mounting Hole V	Collar Thread W	Collar Thread. Length X	Mounting. Thread Length Z
BRC25	¾"-14 NPT	1½"- 16 UN	0.98	0.67
BRC46	1¼"-11½ NPT	2¼"- 14 UN	1.06	0.98
BRC106	M30 x 2	M85 x 2	1.02	0.98



BRC25, 46, 106

BRC, BRP Series

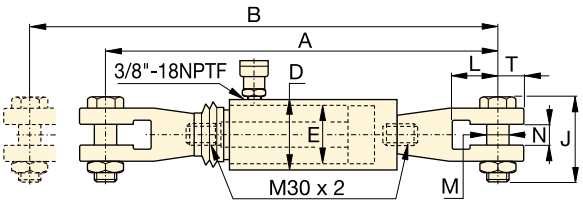


Capacity:
2.5 - 60 tons

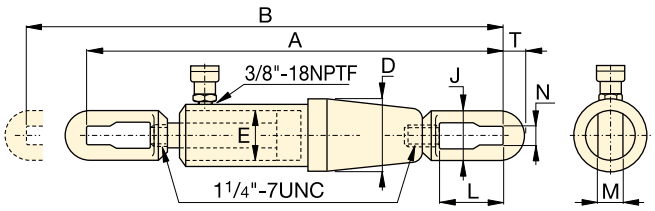
Stroke:
5.00 - 6.06 inches

Maximum Operating Pressure:
10,000 psi

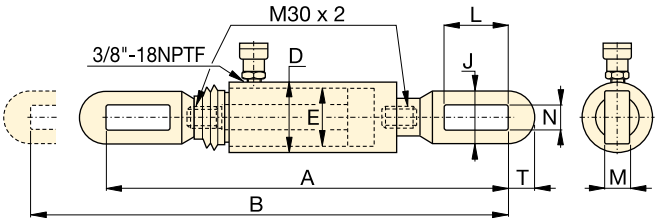
Cylinder Capacity tons (maximum)	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Coll. Height A (in)	Ext. Height B (in)	Outside Dia. D (in)	Cylinder Bore Dia. E (mm)	Plunger Dia. F (in)	Top to Inlet Port H (in)	Saddle Diameter J (NPT)	Plunger Thread Length P (in)	Plunger Outside Thread Q	(lbs)
2.5 (2.7)	5.00	**BRC25**	0.55	2.76	10.44	15.44	1.89	1.13	0.75	1.77	¾"-14	1.13	$^{11}/_{16}$"-24	4
5 (5.6)	5.50	**BRC46**	1.13	6.21	11.88	17.38	2.25	1.69	1.19	1.69	1¼"-11½	1.25	$1^{3}/_{16}$"-16	10
10 (11.6)	5.95	**BRC106**	2.32	13.80	11.38	17.33	3.35	2.13	1.25	1.57	–	1.02	M30 x 2	21



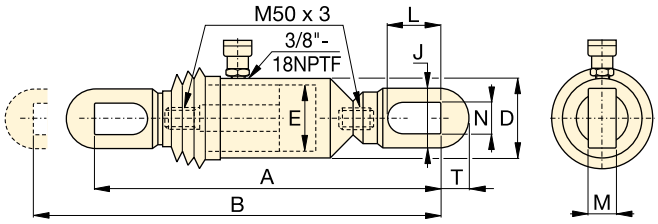
BRP106C



BRP306



BRP106L



BRP606

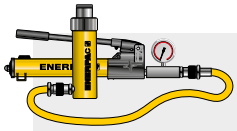
Cylinder Capacity tons (maximum)	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Coll. Height A (in)	Ext. Height B (in)	Outside Dia. D (in)	Cyl. Bore Dia. E (in)	Link Height J (in)	Link Opening L (in)	Link Thickness M (in)	Link Width N (in)	Slot to Link End T (in)	(lbs)
10 (11.6)	5.91	**BRP106C**	2.45	14.58	23.66	29.57	3.35	2.13	4.13	3.43	1.18	1.38	1.28	34
	5.91	**BRP106L**	2.45	14.58	22.56	28.46	3.35	2.13	2.52	4.69	0.87	1.19	1.26	29
30 (35.96)	6.06	**BRP306**	7.19	43.63	43.71	49.71	5.39	3.50	4.49	6.10	1.38	1.54	2.17	139
60 (55.8)	6.02	**BRP606**	11.17	67.02	28.28	34.28	5.51	4.33	5.12	5.93	1.58	1.89	2.56	129

▼ Shown from left to right: **RCH306, RCH120, RCH1003**



- **Hollow plunger design allows for both, pull and push forces**
- **Single-acting, spring-return**
- **Nickel-plated, floating center tube on models over 20 ton increases product life**
- **Baked enamel finish for increased corrosion resistance**
- **Collar threads for easy fixturing**
- **RCH120 includes AR630 coupler and has 1/4" NPTF port**
- **RCH121 and RCH1211 have FZ1630 reducer and AR630 coupler, all other models feature CR400 coupler.**

Versatility in Testing, Maintenance and Tensioning Applications



Cylinder-Pump Sets

All cylinders marked with an * are available as **sets** (cylinder, gauge, couplers, hose and pump) for your ordering convenience.

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Lightweight Aluminum Cylinders

If you need a higher cylinder capacity-to-weight-ratio the lightweight **RACH-Series** are the perfect choice.

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Saddles

Most RCH-Series cylinders are equipped with smooth saddles. See table at next page for optional threaded saddles and all dimensional information.

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▼ *Hollow plunger cylinder RCH1003 used in an application for intermediate boom suspension on a dragline.*



Cylinder Capacity tons (maximum)	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)
12 (13.8)	0.31	**RCH120**	2.76	0.86
	1.63	**RCH121 ***	2.76	4.49
	1.63	**RCH1211**	2.76	4.49
	3.00	**RCH123**	2.76	8.29
20 (23.6)	2.00	**RCH202 ***	4.72	9.46
	6.10	**RCH206**	4.72	28.67
30 (36.1)	2.50	**RCH302 ***	7.22	18.05
	6.13	**RCH306**	7.22	44.23
60 (63.6)	3.00	**RCH603 ***	12.73	38.20
	6.00	**RCH606**	12.73	76.41
100 (103.1)	3.00	**RCH1003 ***	20.63	61.88

* Available as set, see note on this page.

Single-Acting, Hollow Plunger Cylinders



Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

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RCH Series





Capacity:
12 - 100 tons

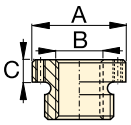
Stroke:
0.31 - 6.13 inches

Center Hole Diameter:
0.77 - 3.11 inches

Maximum Operating Pressure:
10,000 psi

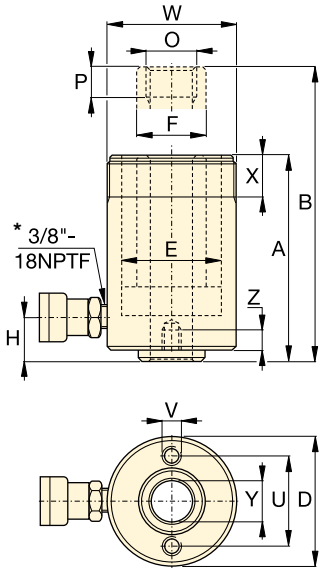
Optional Threaded Hollow Saddles

Saddle Type	Cylinder Model Number	Saddle Model Nr.	Saddle Dimensions (in) A	B	C
Threaded Hollow	RCH202, 206	HP2015	2.11	1”- 8	0.38
	RCH302, 306	HP3015	2.49	1¼"- 7	0.38
	RCH603, 606	HP5016	3.61	1⅝"- 5½	0.50
	RCH1003	HP10016	4.97	2½"- 8	0.51

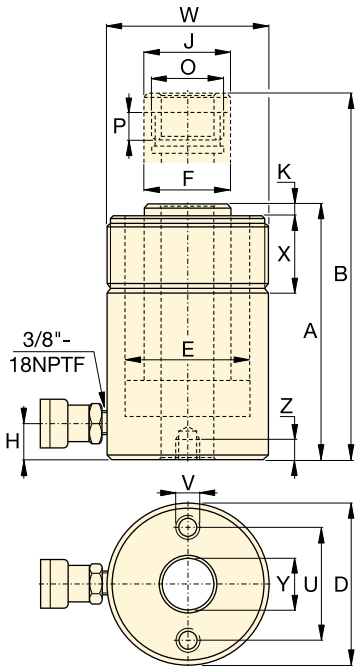


Smooth hollow saddles are standard on all RCH-models (except RCH120, RCH1211).

RCH121 and RCH1211 have a 1.88 inch dia. boss that protrudes 0.25 inch from base.



RCH120 to RCH123 models



RCH202 to RCH1003 models

* 1/4" NPTF for RCH120 only

Base Mounting Hole Dimensions (in)

Model Number	Bolt Circle U	Thread V	Thread Depth Z
RCH120	2.00	5/16"- 18 UNC	0.35
RCH121	–	–	–
RCH1211	–	–	–
RCH123	2.00	5/16"- 18 UNC	0.50
RCH202	3.25	3/8"- 16 UNC	0.37
RCH206	3.25	3/8"- 16 UNC	0.37
RCH302	3.63	3/8"- 16 UNC	0.55
RCH306	3.63	3/8"- 16 UNC	0.55
RCH603	5.13	½"- 13 UNC	0.55
RCH606	5.13	½"- 13 UNC	0.55
RCH1003	7.00	5/8"- 11 UNC	0.75

Coll. Height A (in)	Ext. Height B (in)	Outside Dia. D (in)	Cyl. Bore Dia. E (in)	Plgr. Dia. F (in)	Cyl. Base to Advance Port H (in)	Saddle Dia. J (in)	Saddle Protrusion from Plgr. K (in)	Plunger Internal Thread O (in)	Plunger Thread Length P (in)	Collar Thread W (in)	Collar Thread Length X (in)	Center Hole Dia. Y (in)	(lbs)	Model Number
2.19	2.50	2.75	2.13	1.38	0.38	–	–	¾"- 16 UN	0.63	2¾"- 16	1.19	0.77	3.2	RCH120
4.75	6.38	2.75	2.13	1.38	0.98	–	–	–	–	2¾"- 16	1.19	0.77	6.2	RCH121 *
4.75	6.38	2.75	2.13	1.38	0.98	–	–	¾"- 16 UN	0.63	2¾"- 16	1.19	0.77	6.2	RCH1211
7.25	10.25	2.75	2.13	1.38	0.98	–	–	–	–	2¾"- 16	1.19	0.77	9.8	RCH123
6.38	8.38	3.88	2.88	2.13	0.75	2.13	0.27	1 9/16"- 16 UN	0.75	3⅞"- 12	1.50	1.06	17	RCH202 *
12.05	18.11	3.88	2.88	2.13	0.75	2.13	0.27	1 9/16"- 16 UN	0.75	3⅞"- 12	1.50	1.06	31	RCH206
7.03	9.53	4.50	3.50	2.50	0.85	2.50	0.38	1 13/16"- 16 UN	0.88	4½"- 12	1.66	1.31	24	RCH302 *
13.00	19.13	4.50	3.50	2.50	1.00	2.50	0.38	1 13/16"- 16 UN	0.88	4½"- 12	1.66	1.31	48	RCH306
9.75	12.75	6.25	4.88	3.63	1.25	3.61	0.50	2¾"- 16 UN	0.75	6¼"- 12	1.91	2.12	62	RCH603 *
12.75	18.75	6.25	4.88	3.63	1.25	3.61	0.50	2¾"- 16 UN	0.75	6¼"- 12	1.91	2.12	78	RCH606
10.00	13.00	8.38	6.50	5.00	1.50	4.97	0.50	4"- 16 UN	1.00	8⅜"- 12	2.38	3.11	132	RCH1003*

▼ Shown from left to right: **RRH3010, RRH1001, RRH6010**



- **Relief valves prevent damage in case of over-pressurisation**
- **Baked enamel finish for increased corrosion resistance**
- **Collar threads enable easy fixturing. (except RRH1001, RRH1508, RRH2308, RRH4008, RRH6008)**
- **Double-acting version for fast retraction**
- **Nickel-plated, floating center tube increases product life**
- **Hollow plunger allows for both pull and push forces**
- **CR400 couplers and dust caps included on all models**
- **Plunger wiper reduces contamination, extending cylinder life.**

Versatility in Testing, Maintenance and Tensioning Applications



Lightweight Aluminum Cylinders

If you need a higher cylinder capacity-to-weight-ratio the lightweight **RARH-Series** are the perfect choice.

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Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. Refer to the System Components Section for a full range of gauges.

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Saddles

All RRH-Series cylinders are equipped with smooth saddles. See table at next page for optional threaded saddles and all dimensional information.

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▼ *Double-acting hollow plunger cylinders are applied for bridge launching systems.*

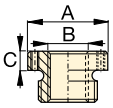


Cylinder Capacity	Stroke	Model Number	Max. Cylinder Capacity (tons)		Cylinder Effective Area (in^2)		Oil Capacity (in^3)	
tons	(in)		Advance	Retract	Advance	Retract	Advance	Retract
30	7.00	**RRH307**	36	24	7.22	4.71	50.55	32.99
	10.13	**RRH3010**	36	24	7.22	4.71	73.12	47.71
60	3.50	**RRH603**	64	42	12.73	8.37	44.57	29.21
	6.50	**RRH606**	64	42	12.73	8.37	82.77	54.24
	10.12	**RRH6010**	64	42	12.73	8.37	128.94	84.49
100	1.50	**RRH1001**	103	68	20.63	13.54	30.94	20.32
	3.00	**RRH1003**	103	68	20.63	13.54	61.88	40.64
	6.00	**RRH1006**	103	68	20.63	13.54	123.76	81.29
	10.13	**RRH10010**	103	68	20.63	13.54	208.84	137.17
150	8.00	**RRH1508**	158	80	31.62	15.91	252.97	127.23
240	7.87	**RRH2308**	243	108	47.94	21.42	377.30	168.60
450	7.87	**RRH4008**	453	188	89.39	37.15	703.50	292.49
660	7.87	**RRH6008**	667	213	131.47	42.00	1034.80	330.57

Double-Acting, Hollow Plunger Cylinders

Optional Threaded Hollow Saddles

Saddle Type	Cylinder Model Number	Saddle Model Nr.	Saddle Dimensions (in) A	B	C
Threaded Hollow	RRH307, 3010	HP3015	2.49	1¼"- 7	0.38
	RRH603, 606, 6010	HP5016	3.61	1⅝"- 5½	0.50
	RRH1001, 1003, RRH1006, 10010	HP10016	4.97	2½"- 8	0.51



Smooth hollow saddles are standard on all RRH-models.

RRH Series



Capacity:
30 - 660 tons

Stroke:
1.50 - 10.13 inches

Center Hole Diameter:
1.31 - 5.31 inches

Maximum Operating Pressure:
10,000 psi



Hoses

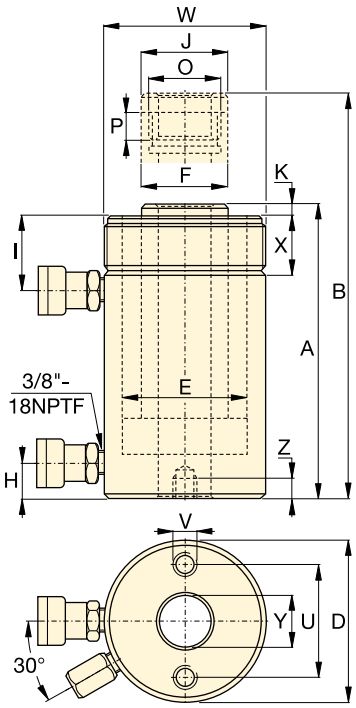
Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

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Pump Selection

A double-acting cylinder must be powered by a pump with a 4-way valve.

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Base Mounting Hole Dimensions * (in)

Model Number	Bolt Circle U	Thread * V	Thread Depth Z
RRH307	3.63	⅜" - 16 UNC	0.62
RRH3010	3.63	⅜" - 16 UNC	0.62
RRH603	5.12	½" - 13 UNC	0.55
RRH606	5.12	½" - 13 UNC	0.55
RRH6010	5.12	½" - 13 UNC	0.55
RRH1001	7.00	⅝" - 11 UNC	0.75
RRH1003	7.00	⅝" - 11 UNC	0.75
RRH1006	7.00	⅝" - 11 UNC	0.75
RRH10010	7.00	⅝" - 11 UNC	0.75
RRH1508	8.35	⅝" - 11 UNC	0.86
RRH2308	10.20	(4x) M16 x 2	0.98
RRH4008	13.33	(4x) M24 x 3	1.41
RRH6008	16.27	(4x) M24 x 3	1.41

* **Threaded base holes designed to fix the cylinder, cannot handle the full pulling capacity.**

Coll. Height A (in)	Ext. Height B (in)	Out. Dia. D (in)	Cyl. Bore Dia. E (in)	Plgr. Dia. F (in)	Cyl. Base to Adv. Port H (in)	Cyl. Top to Return Port I (in)	Saddle Dia. J (in)	Saddle Protr. fr. Plgr. K (in)	Thread O (in)	Plunger Thread Length P (in)	Collar Thread W (in)	Collar Thread Length X (in)	Center Hole Dia. Y (in)	(lbs)	Model Number
13.00	20.00	4.50	3.50	2.50	1.00	2.38	2.50	0.38	1 13/16"- 16	0.88	4½"- 12	1.66	1.31	48	RRH307
17.00	27.13	4.50	3.50	2.50	1.00	2.38	2.50	0.38	1 13/16"- 16	0.88	4½"- 12	1.66	1.31	60	RRH3010
9.75	13.25	6.25	4.88	3.63	1.25	2.63	3.61	0.50	2¾"- 16	0.75	6¼"- 12	1.91	2.13	62	RRH603
12.75	19.25	6.25	4.88	3.63	1.25	2.63	3.61	0.50	2¾"- 16	0.75	6¼"- 12	1.91	2.13	78	RRH606
17.25	27.38	6.25	4.88	3.63	1.25	2.63	3.61	0.50	2¾"- 16	0.75	6¼"- 12	1.91	2.13	101	RRH6010
6.50	8.00	8.38	6.50	5.00	1.50	1.75	4.97	0.50	4"- 16	1.00	–	–	3.13	85	RRH1001
10.00	13.00	8.38	6.50	5.00	1.50	3.38	4.97	0.50	4"- 16	1.00	8⅜"- 12	2.38	3.13	135	RRH1003
13.50	19.50	8.38	6.50	5.00	1.50	3.38	4.97	0.50	4"- 16	1.00	8⅜"- 12	2.38	3.13	175	RRH1006
18.13	28.25	8.38	6.50	5.00	1.50	3.38	4.97	0.50	4"- 16	1.00	8⅜"- 12	2.38	3.13	235	RRH10010
13.75	21.75	9.75	7.50	6.00	1.50	2.38	5.00	0.19	4¼"- 12	1.00	–	–	3.13	245	RRH1508
16.97	24.84	12.20	9,45	8.66	1.97	3.58	7.68	0.71	M150 x 2	1.97	–	–	4.13	418	RRH2308
19.13	27.01	15.75	12.01	9.84	3.15	4.37	9.65	0.71	M160 x 2	2.76	–	–	4.33	843	RRH4008
20.67	28.54	18.90	14.57	12.60	3.94	4.53	12.40	0.91	M190 x 2	3.54	–	–	5.31	1344	RRH6008

RD-Series, Precision Production Cylinders

ENERPAC

▼ Shown from left to right: **RD2510, RD96, RD256, RD41, RD166**



High-Precision and High-Cycle Performance

Speed Chart

See the Enerpac Cylinder Speed Chart in our 'Yellow Pages' to determine your approximate cylinder speed.

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- **Designed for long life, the best choice for production applications**
- **Unique mounting configurations simplify fixturing**
- **Baked enamel finish for increased corrosion resistance**
- **Double-acting operation develops force in both directions, providing maximum versatility**
- **Plunger wiper reduces contamination, extending cylinder life**
- **Metric models (BRD and BAD-Series) available on request.**

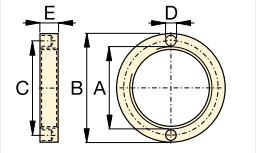
▼ *Clamping application using Enerpac RD-Series cylinders (with clevis eye attachments on both ends) for their high pressure capability and mounting flexibility.*



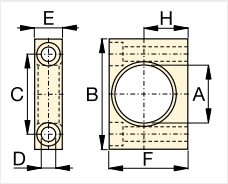
Cylinder Capacity (tons)	Stroke (in)	Model Number	Max. Cylinder Capacity (tons)		Cylinder Effective Area (in^2)		Oil Capacity (in^3)		Collap. Height A (in)	Extended Height B (in)	Body Length C (in)	Outside Dia. D (in)	Cylinder Bore Dia. E (in)	Plunger Dia. F (in)
			Advance	Retract	Advance	Retract	Advance	Retract						
4	1.13	**RD41**	4	2	0.79	0.34	0.88	0.39	7.31	8.44	6.38	2.00	1.00	0.75
	3.13	**RD43**	4	2	0.79	0.34	2.45	1.07	9.31	12.44	8.38	2.00	1.00	0.75
	6.13	**RD46**	4	2	0.79	0.34	4.81	2.10	12.31	18.44	11.38	2.00	1.00	0.75
9	1.13	**RD91**	9	5	1.77	0.98	1.99	1.10	8.75	9.88	7.80	2.50	1.50	1.00
	3.13	**RD93**	9	5	1.77	0.98	5.52	3.07	10.78	13.91	9.80	2.50	1.50	1.00
	6.13	**RD96**	9	5	1.77	0.98	10.82	6.01	13.78	19.91	12.80	2.50	1.50	1.00
	10.13	**RD910**	9	5	1.77	0.98	17.89	9.94	17.78	27.91	16.81	2.50	1.50	1.00
16	6.25	**RD166**	16	8	3.14	1.66	19.63	10.35	15.31	21.56	14.13	3.00	2.00	1.38
	10.25	**RD1610**	16	8	3.14	1.66	32.20	16.98	19.31	29.56	18.11	3.00	2.00	1.38
25	6.25	**RD256**	25	11	4.91	2.15	30.68	13.42	16.69	22.94	15.63	3.63	2.50	1.88
	10.25	**RD2510**	25	11	4.91	2.15	50.31	22.01	20.69	30.94	19.61	3.63	2.50	1.88

▼ RD CYLINDER ATTACHMENTS

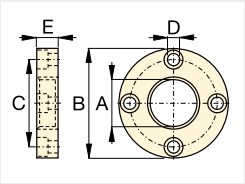




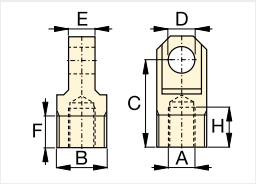
Retainer Nut
For locking foot or flange mountings. Tightens onto cylinder collar threads (Included with foot and flange mounting kits).



Foot Mounting
Mounts onto cylinder collar.



Flange Mounting
Mounts onto cylinder collar.



Clevis Eye
Threads onto plunger or into cylinder base.

Model Number	RD-Cyl. (tons)	Dimensions (in) A	B	C	D	E	F	H
Foot Mounting with Retainer Nut								
AD141	**4**	1.38	3.00	2.00	0.41	0.75	2.25	1.25
AD171	**9**	2.00	4.00	2.88	0.53	1.00	3.25	1.75
AD181	**16**	2.63	5.00	3.75	0.78	1.38	4.00	2.06
AD191	**25**	3.25	6.25	4.62	1.03	1.75	4.88	2.50
Flange Mounting with Retainer Nut								
AD142	**4**	1.38	3.88	3.09	0.41	0.75	–	–
AD172	**9**	2.00	4.75	3.88	0.41	1.00	–	–
AD182	**16**	2.63	5.63	4.56	0.53	1.38	–	–
AD192	**25**	3.25	6.50	5.34	0.66	1.75	–	–
Retainer Nut								
AD143	**4**	1⅜-12 UNF	2.25	1.81	0.25	0.38	–	–
AD173	**9**	2-12 UN	3.00	2.50	0.27	0.50	–	–
AD183	**16**	2⅝-16 UN	3.63	3.12	0.27	0.75	–	–
AD193	**25**	3¼-16 UN	4.25	3.75	0.27	1.00	–	–
Clevis Eye (See chart below for mounting dimensions L, L1 and M)								
AD150	**4**	¼-20 UNF	1⅛-20 UN	2.06	0.63	0.62	0.75	0.94
AD151	**9**	¾-16 UNF	1 1/16-18 UNEF	2.25	0.75	1.00	1.00	0.94
AD152	**16**	1⅛-12 UNF	2 3/16-16 UNS	3.06	1.00	1.25	1.00	1.19
AD153	**25**	1½-12 UNF	2¾-16 UN	3.06	1.25	1.50	1.00	1.06

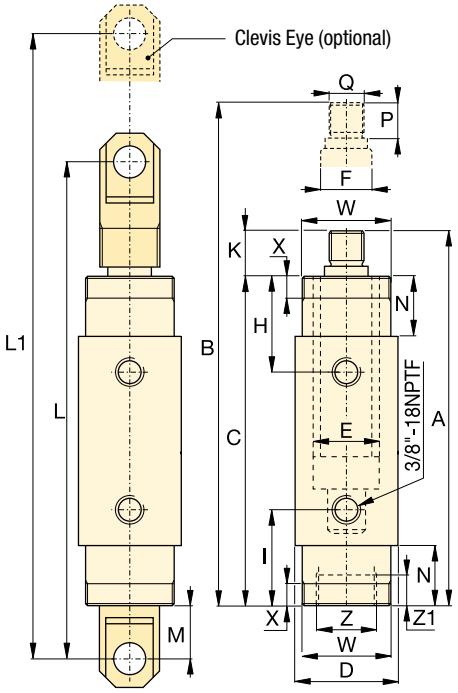
RD Series



Capacity:
4 - 25 tons

Stroke:
1.13 - 10.25 inches

Maximum Operating Pressure:
10,000 psi



Top to Retract Port H (in)	Bottom to Advance Port I (in)	Plunger Protrusion K (in)	Clevis Eye Mounting Dimensions L (in)	L1 (in)	M (in)	Neck Length N (in)	Plunger Thread Length P (in)	Plunger External Thread Q (in)	Cylinder Mounting Dimensions (in) Collar Thread W	Collar Thread Length X	Internal Base Thread Z	Int. Base Thread Length Z1	(lbs)	Model Number
1.88	1.88	0.94	10.12	11.25	1.61	1.13	0.75	½"-20	1⅜"-12	0.44	1⅛"-20	0.35	4.8	**RD41**
1.88	1.88	0.94	12.12	15.25	1.61	1.13	0.75	½"-20	1⅜"-12	0.44	1⅛"-20	0.35	6.4	**RD43**
1.88	1.88	0.94	15.12	21.25	1.61	1.13	0.75	½"-20	1⅜"-12	0.44	1⅛"-20	0.35	9.0	**RD46**
2.27	2.27	0.98	11.61	12.76	1.50	1.50	0.75	¾"-16	2"-12	0.56	1 1/16-18	0.55	9.0	**RD91**
2.27	2.27	0.98	13.66	16.79	1.50	1.50	0.75	¾"-16	2"-12	0.56	1 1/16-18	0.55	11.0	**RD93**
2.27	2.27	0.98	16.66	22.79	1.50	1.50	0.75	¾"-16	2"-12	0.56	1 1/16-18	0.55	14.0	**RD96**
2.27	2.27	0.98	20.66	30.79	1.50	1.50	0.75	¾"-16	2"-12	0.56	1 1/16-18	0.55	19.0	**RD910**
2.90	2.90	1.19	19.32	25.57	2.05	2.13	1.00	1⅛"-12	2⅝"-16	0.88	2 3/16-16	0.94	22.0	**RD166**
2.90	2.90	1.19	23.32	33.57	2.05	2.13	1.00	1⅛"-12	2⅝"-16	0.88	2 3/16-16	0.94	29.0	**RD1610**
3.50	3.50	1.06	20.86	27.11	2.09	2.75	1.00	1½"-12	3¼"-16	1.13	2¾"-16	1.02	36.0	**RD256**
3.50	3.50	1.08	24.86	35.11	2.09	2.75	1.00	1½"-12	3¼"-16	1.13	2¾"-16	1.02	46.0	**RD2510**

RR-Series, Double-Acting Cylinders

ENERPAC

▼ Shown from left to right: **RR10013, RR1502, RR20013, RR1010, RR7513**



- **Collar threads, plunger threads and base mounting holes for easy fixturing (on most models)**
- **Baked enamel finish for increased corrosion resistance**
- **Removable hardened saddles protect plunger during lifting and pressing**
- **Built-in safety valve prevents accidental over-pressurization**
- **CR400 couplers and dust caps included on all models**
- **Plunger wiper reduces contamination, extending cylinder life.**

Most Versatile Performers

Rugged enough for the toughest job site uses and precision designed for high-cycle industrial uses.



Optional Snap-in Saddles

Optional snap-in saddles for RR-Series double-acting cylinders up to 75 tons. Tilt saddles are secured to the plunger, enabling horizontal and upside-down use.

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Optimum Performance

Enerpac's range of Z-Class electric pumps, fitted with manual or solenoid operated 4-way valves, offer optimum combinations with RR-Series cylinders.

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▼ *A lateral bridge slide method was utilized to the slide the new bridge into position. Two RR-Series double-acting hydraulic cylinders with ZU4-Series electric pumps were used to push the bridge into position over PTFE sliding elements.*



▼ *RR-cylinders provide power and precision in a special hydraulic press.*



Double-Acting Long Stroke Cylinders

Pump Selection

A double-acting cylinder must be powered by a pump with a 4-way valve.

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▼ QUICK SELECTION CHART

For complete technical information see next page.

Cylinder Capacity tons (maximum)	Stroke (in)	Model Number	Cylinder Effective Area (in^2) Push	Cylinder Effective Area (in^2) Pull	Oil Capacity (in^3) Push	Oil Capacity (in^3) Pull	Collapsed Height (in)
10 (11.1)	10.00	**RR1010**	2.23	0.80	22.33	8.00	16.13
	12.00	**RR1012**	2.23	0.80	26.80	9.00	18.00
30 (33.5)	8.25	**RR308**	6.51	3.00	53.67	25.00	15.50
	14.50	**RR3014**	6.51	3.00	92.70	43.00	21.63
50 (55.3)	6.13	**RR506**	11.06	3.40	67.77	21.00	13.06
	13.13	**RR5013**	11.06	3.40	145.17	44.00	20.06
	20.13	**RR5020**	11.06	3.40	222.56	68.00	28.88
75 (79.6)	6.13	**RR756**	15.92	4.90	97.58	29.00	13.69
	13.13	**RR7513**	15.92	4.90	209.00	64.00	20.69
100 (103.2)	6.63	**RR1006**	20.65	9.60	136.93	63.00	14.06
	13.13	**RR10013**	20.65	9.60	271.17	126.00	20.63
	18.13	**RR10018**	20.65	9.60	374.44	174.00	27.06
150 (153.5)	2.25	**RR1502**	30.71	14.80	69.11	33.00	7.19
	6.13	**RR1506**	30.71	14.80	188.28	91.00	15.19
	13.13	**RR15013**	30.71	14.80	403.27	194.00	22.20
	32.13	**RR15032**	30.71	14.80	986.84	475.00	43.94
200 (221.0)	6.00	**RR2006**	44.21	22.50	265.28	135.00	16.94
	13.00	**RR20013**	44.21	22.50	574.78	293.00	23.94
	18.00	**RR20018**	44.21	22.50	795.85	396.00	30.13
	24.00	**RR20024**	44.21	22.50	1,061	528.00	36.13
	36.00	**RR20036**	44.21	22.50	1,592	792.00	48.13
	48.00	**RR20048**	44.21	22.50	2,122	1,056	60.13
300 (354.6)	6.00	**RR3006**	70.93	38.00	425.56	228.00	19.13
	12.00	**RR30012**	70.93	38.00	851.12	456.00	25.13
	18.00	**RR30018**	70.93	38.00	1,277	684.00	31.13
	24.00	**RR30024**	70.93	38.00	1,702	912.00	37.13
	36.00	**RR30036**	70.93	38.00	2,553	1,368	49.13
	48.00	**RR30048**	70.93	38.00	3,405	1,824	61.13
400 (475.4)	6.00	**RR4006**	95.09	51.00	570.51	306.00	21.19
	12.00	**RR40012**	95.09	51.00	1,141	612.00	27.19
	18.00	**RR40018**	95.09	51.00	1,712	918.00	33.19
	24.00	**RR40024**	95.09	51.00	2,282	1,224	39.19
	36.00	**RR40036**	95.09	51.00	3,423	1,836	51.19
	48.00	**RR40048**	95.09	51.00	4,564	2,448	63.19
500 (565.7)	6.00	**RR5006**	113.15	63.00	678	378.00	22.75
	12.00	**RR50012**	113.15	63.00	1,358	756.00	28.75
	18.00	**RR50018**	113.15	63.00	2,037	1,134	34.75
	24.00	**RR50024**	113.15	63.00	2,716	1,512	40.75
	36.00	**RR50036**	113.15	63.00	4,074	2,264	52.75
	48.00	**RR50048**	113.15	63.00	5,431	3,024	64.75

RR Series



Capacity:
10 - 500 tons

Stroke:
2.25 - 48.00 inches

Maximum Operating Pressure:
10,000 psi

Enerpac HCR-Series

If your application does not require high-cycle, Enerpac **HCR-Series** cylinders may be the right alternative.

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Speed Chart

See the Enerpac Cylinder Speed Chart in our 'Yellow Pages' to determine your approximate cylinder speed.

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Optional Snap-in Saddles

Optional snap-in saddles for RR-Series double-acting cylinders:

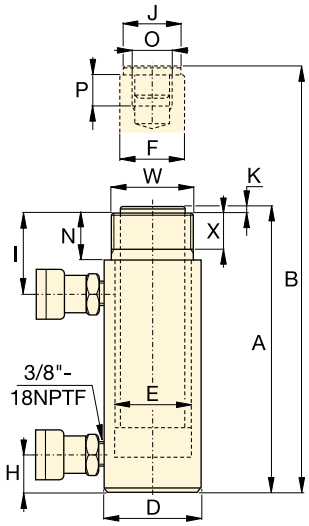
Saddle Type	Cylinder Model	Saddle Model Number
Flat	RR10	**A102F**
Tilt	RR10	**CATS12**
	RR30	**CATS52**
	RR50	**CATS100**
	RR75	**CATS100**

Standard Saddles:

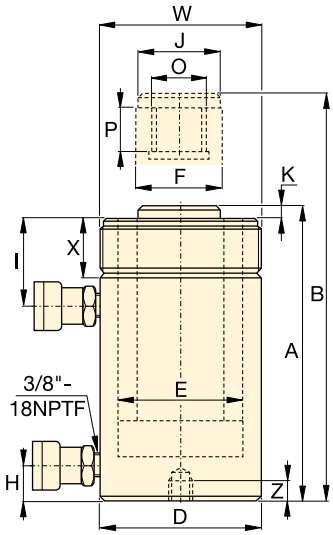
Grooved	RR10	**A102G**
	RR30	**A252G**

For additional information on saddles:

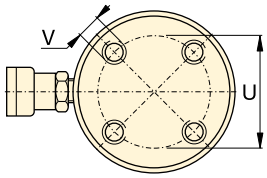
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RR1010 - RR3014

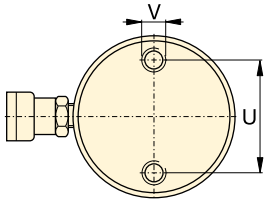


RR506 - RR50048



RR1006 - RR30048

No mounting holes on:
RR506, 5013
RR756, 7513
RR1502, 15032



RR4006 - RR50048

Base mounting hole location is for reference only, as it is affected by assembly.

Cylinder retract capacity for certain RR-Series cylinders may be less than theoretical values, as a result of reduced relief valve pressure settings:

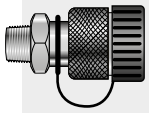
RR308/3014:	4000 psi
RR506/5013/5020:	6950 psi
RR756/7513:	7200 psi

◀ For full features see previous page.

Cylinder Capacity	Stroke	Model Number	Max. Cylinder Capacity (tons)		Cylinder Effective Area (in²)		Oil Capacity (in³)		Coll. Height	Ext. Height	Outside Dia.
			Push	Pull	Push	Pull	Push	Pull	A (in)	B (in)	D (in)
tons	(in)										
10	10.00	RR1010 *	11.1	4.0	2.23	0.80	22.33	8.00	16.13	26.13	2.88
	12.00	RR1012 *	11.1	4.0	2.23	0.80	26.80	9.00	18.00	30.00	2.88
30	8.25	RR308 *	32.5	6.0	6.51	3.00	53.67	25.00	15.50	23.75	4.00
	14.50	RR3014 *	32.5	6.0	6.51	3.00	92.70	43.00	21.63	36.13	4.00
50	6.13	RR506	55.3	11.8	11.06	3.40	67.77	21.00	13.06	19.19	5.00
	13.13	RR5013	55.3	11.8	11.06	3.40	145.17	44.00	20.06	33.19	5.00
	20.13	RR5020	55.3	11.8	11.06	3.40	222.56	68.00	28.88	49.00	5.00
75	6.13	RR756	79.6	17.6	15.92	4.90	97.58	29.00	13.69	19.81	5.75
	13.13	RR7513	79.6	17.6	15.92	4.90	209.00	64.00	20.69	33.81	5.75
100	6.63	RR1006	103.2	48.0	20.65	9.60	136.93	63.00	14.06	20.69	7.00
	13.13	RR10013	103.2	48.0	20.65	9.60	271.17	126.00	20.63	33.75	7.00
	18.13	RR10018	103.2	48.0	20.65	9.60	374.44	174.00	27.06	45.19	7.00
150	2.25	RR1502	153.5	74.0	30.71	14.80	69.11	33.00	7.19	9.44	8.00
	6.13	RR1506	153.5	74.0	30.71	14.80	188.28	91.00	15.19	21.31	8.00
	13.13	RR15013	153.5	74.0	30.71	14.80	403.27	194.00	22.20	35.31	8.00
	32.13	RR15032	153.5	74.0	30.71	14.80	986.84	475.00	43.94	76.06	8.00
200	6.00	RR2006	221.0	112.5	44.21	22.50	265.28	135.00	16.94	22.94	9.75
	13.00	RR20013	221.0	112.5	44.21	22.50	574.78	293.00	23.94	36.94	9.75
	18.00	RR20018	221.0	112.5	44.21	22.50	795.85	396.00	30.13	48.13	9.75
	24.00	RR20024	221.0	112.5	44.21	22.50	1,061	528.00	36.13	60.13	9.75
	36.00	RR20036	221.0	112.5	44.21	22.50	1,592	792.00	48.13	84.13	9.75
	48.00	RR20048	221.0	112.5	44.21	22.50	2,122	1,056	60.13	108.13	9.75
300	6.00	RR3006	354.6	190.0	70.93	38.00	425.56	228.00	19.13	25.13	12.25
	12.00	RR30012	354.6	190.0	70.93	38.00	851.12	456.00	25.13	37.13	12.25
	18.00	RR30018	354.6	190.0	70.93	38.00	1,277	684.00	31.13	49.13	12.25
	24.00	RR30024	354.6	190.0	70.93	38.00	1,702	912.00	37.13	61.13	12.25
	36.00	RR30036	354.6	190.0	70.93	38.00	2,553	1368	49.13	85.13	12.25
	48.00	RR30048	354.6	190.0	70.93	38.00	3,405	1824	61.13	109.13	12.25
400	6.00	RR4006	475.4	255.0	95.09	51.00	570.51	306.00	21.19	27.19	14.13
	12.00	RR40012	475.4	255.0	95.09	51.00	1,141	612.00	27.19	39.19	14.13
	18.00	RR40018	475.4	255.0	95.09	51.00	1,712	918.00	33.19	51.19	14.13
	24.00	RR40024	475.4	255.0	95.09	51.00	2,282	1224	39.19	63.19	14.13
	36.00	RR40036	475.4	255.0	95.09	51.00	3,423	1836	51.19	87.19	14.13
	48.00	RR40048	475.4	255.0	95.09	51.00	4,564	2448	63.19	111.19	14.13
500	6.00	RR5006	565.7	315.0	113.15	63.00	678.92	378.00	22.75	28.75	15.63
	12.00	RR50012	565.7	315.0	113.15	63.00	1,358	756.00	28.75	40.75	15.63
	18.00	RR50018	565.7	315.0	113.15	63.00	2,037	1134	34.75	52.75	15.63
	24.00	RR50024	565.7	315.0	113.15	63.00	2,716	1512	40.75	64.75	15.63
	36.00	RR50036	565.7	315.0	113.15	63.00	4,074	2268	52.75	88.75	15.63
	48.00	RR50048	565.7	315.0	113.15	63.00	5,431	3024	64.75	112.75	15.63

* N: For RR1010 and RR1012: N = 1.26 inch; for RR308 and RR3014: N = 2.20 inch.

Double-Acting Long Stroke Cylinders



Couplers Included!

CR400 couplers included on all models. Fits all HC-Series hoses.

Capacity:
10 - 500 tons

Stroke:
2.25 - 48.00 inches

Maximum Operating Pressure:
10,000 psi

RR Series



Cyl. Bore Dia. E (in)	Plgr. Dia. F (in)	Base to Adv. Port H (in)	Top to Ret. Port I (in)	Saddle Dia. J (in)	Saddle Protr. fr. Plgr. K (in)	Plunger Internal Thread O (in)	Plunger Thread Length P (in)	Base Mounting Holes			Collar Thread W (in)	Collar Thread Length X (in)	(lbs)	Model Number
								Bolt Circle U (in)	Thread V (in)	Thread Depth Z (in)				
1.69	1.38	1.44	2.25	1.38	0.24	1"- 8	1.00	–	–	–	2¼"- 14	1.06	28	**RR1010***
1.69	1.38	1.44	2.25	1.38	0.24	1"- 8	1.00	–	–	–	2¼"- 14	1.06	31	**RR1012***
2.88	2.13	1.44	3.19	2.00	0.41	1½"- 16	1.00	–	–	–	3 5/16"- 12	1.94	40	**RR308***
2.88	2.13	1.56	3.19	2.00	0.41	1½"- 16	1.00	–	–	–	3 5/16"- 12	1.94	64	**RR3014***
3.75	3.13	1.13	3.00	2.81	0.11	1"- 12	1.00	–	–	–	5"- 12	2.00	67	**RR506**
3.75	3.13	1.13	3.00	2.81	0.11	1"- 12	1.00	–	–	–	5"- 12	2.00	115	**RR5013**
3.75	3.13	2.25	3.00	2.81	0.11	1"- 12	1.00	3.00	½"- 13	–	5"- 12	2.00	150	**RR5020**
4.50	3.75	1.19	3.00	2.81	0.25	1"- 12	1.10	–	–	–	5¾"- 12	1.97	92	**RR756**
4.50	3.75	1.19	3.19	2.81	0.25	1"- 12	1.10	–	–	–	5¾"- 12	1.97	150	**RR7513**
5.13	3.75	1.50	2.81	3.00	0.13	1¾"- 12	1.38	5.50	¾"- 10	1.00	6 7/8"- 12	2.00	135	**RR1006**
5.13	3.75	1.50	2.81	3.00	0.13	1¾"- 12	1.38	5.50	¾"- 10	1.00	6 7/8"- 12	2.00	205	**RR10013**
5.13	3.75	1.63	3.63	3.00	0.13	1¾"- 12	1.38	5.50	¾"- 10	1.00	6 7/8"- 12	2.00	260	**RR10018**
6.25	4.50	0.88	2.63	3.67	0.06	–	–	–	–	–	–	–	110	**RR1502**
6.25	4.50	1.94	3.31	4.49	0.75	3 3/8"- 16	1.38	6.25	¾"- 16	1.00	8"- 12	2.36	205	**RR1506**
6.25	4.50	1.94	3.31	4.49	0.75	3 3/8"- 16	1.38	6.25	¾"- 16	1.00	8"- 12	2.36	275	**RR15013**
6.25	4.50	3.31	3.31	4.49	0.75	3 3/8"- 16	1.38	–	–	–	8"- 12	2.36	525	**RR15032**
7.50	5.25	2.25	3.81	5.25	0.88	–	–	5.00	1"- 8	1.00	–	–	325	**RR2006**
7.50	5.25	2.25	3.81	5.25	0.88	2½"- 12	2.50	5.00	1"- 8	1.00	9¾"- 12	2.13	440	**RR20013**
7.50	5.25	3.38	4.00	5.25	0.88	2½"- 12	2.50	5.00	1"- 8	1.00	9¾"- 12	2.13	450	**RR20018**
7.50	5.25	3.38	4.00	5.25	0.88	2½"- 12	2.50	5.00	1"- 8	1.00	9¾"- 12	2.13	616	**RR20024**
7.50	5.25	3.38	4.00	5.25	0.88	2½"- 12	2.50	5.00	1"- 8	1.00	9¾"- 12	2.13	845	**RR20036**
7.50	5.25	3.38	4.00	5.25	0.88	2½"- 12	2.50	5.00	1"- 8	1.00	9¾"- 12	2.13	1065	**RR20048**
9.50	6.50	3.50	4.50	6.50	1.13	2½"- 12	3.25	6.25	1¼"- 7	1.75	12¼"- 12	2.31	441	**RR3006**
9.50	6.50	3.50	4.50	6.50	1.13	2½"- 12	3.25	6.25	1¼"- 7	1.75	12¼"- 12	2.31	608	**RR30012**
9.50	6.50	3.50	4.50	6.50	1.13	2½"- 12	3.25	6.25	1¼"- 7	1.75	12¼"- 12	2.31	776	**RR30018**
9.50	6.50	3.50	4.50	6.50	1.13	2½"- 12	3.25	6.25	1¼"- 7	1.75	12¼"- 12	2.31	1034	**RR30024**
9.50	6.50	3.50	4.50	6.50	1.13	2½"- 12	3.25	6.25	1¼"- 7	1.75	12¼"- 12	2.31	1385	**RR30036**
9.50	6.50	3.50	4.50	6.50	1.13	2½"- 12	3.25	6.25	1¼"- 7	1.75	12¼"- 12	2.31	1720	**RR30048**
11.00	7.50	4.25	5.25	7.50	1.13	3"- 12	3.75	8.00	1½"- 6	2.00	14 1/8"- 8	2.56	670	**RR4006**
11.00	7.50	4.25	5.25	7.50	1.13	3"- 12	3.75	8.00	1½"- 6	2.00	14 1/8"- 8	2.56	880	**RR40012**
11.00	7.50	4.25	5.25	7.50	1.13	3"- 12	3.75	8.00	1½"- 6	2.00	14 1/8"- 8	2.56	1000	**RR40018**
11.00	7.50	4.25	5.25	7.50	1.13	3"- 12	3.75	8.00	1½"- 6	2.00	14 1/8"- 8	2.56	1317	**RR40024**
11.00	7.50	4.25	5.25	7.50	1.13	3"- 12	3.75	8.00	1½"- 6	2.00	14 1/8"- 8	2.56	1746	**RR40036**
11.00	7.50	4.25	5.25	7.50	1.13	3"- 12	3.75	8.00	1½"- 6	2.00	14 1/8"- 8	2.56	2162	**RR40048**
12.00	8.00	4.75	6.00	8.00	1.13	3¼"- 12	4.25	8.00	1¾"- 5	2.12	15 5/8"- 8	3.13	953	**RR5006**
12.00	8.00	4.75	6.00	8.00	1.13	3¼"- 12	4.25	8.00	1¾"- 5	2.12	15 5/8"- 8	3.13	1300	**RR50012**
12.00	8.00	4.75	6.00	8.00	1.13	3¼"- 12	4.25	8.00	1¾"- 5	2.12	15 5/8"- 8	3.13	1500	**RR50018**
12.00	8.00	4.75	6.00	8.00	1.13	3¼"- 12	4.25	8.00	1¾"- 5	2.12	15 5/8"- 8	3.13	1800	**RR50024**
12.00	8.00	4.75	6.00	8.00	1.13	3¼"- 12	4.25	8.00	1¾"- 5	2.12	15 5/8"- 8	3.13	2210	**RR50036**
12.00	8.00	4.75	6.00	8.00	1.13	3¼"- 12	4.25	8.00	1¾"- 5	2.12	15 5/8"- 8	3.13	2700	**RR50048**

▼ HCL1006, HCG2006, HCR506



Reaching the Summit Edition:

- **Nitrocarburized hardened surfaces offers improved protection against side load scoring and cyclic wear**
- **Weather protected, inside and out**
- **Low-friction locking rings spin easy, save time and effort [1)]**
- **State of the art bearing materials reduce wear and avoid bore damage even in high side load conditions.**

Low-wear, high-pressure seals

- **Improved seal design and material selection increases seal performance even in harsh conditions**
- **Low friction for faster retraction, longer life.**

Versatile

- **Over 220 models in 5 configurations [1)]**
- **Certified lifting eyes, base mounting holes and collar threads are included for secure handling and cylinder mounting [1)]**

[1)] See specific models technical data for more information.

Highest Level of Durability

The Summit Edition

Innovation is at the heart of the new Summit Edition cylinders, delivering the high quality construction you expect from Enerpac. The design and durability add safety and reliability to your job.

- Plunger support bearing adds support for eccentric loads [2)]
- Nitrocarburization surface treatment for improved wear resistance and corrosion protection
- Replaceable composite bearings surround the seal providing support for eccentric loads
- Low wear, high pressure seals provide longer service life.

[2)] Eccentric load (or “side load”) is inevitable in heavy lifting. Our unique Summit Edition features provide the ultimate protection against side load. Increased bearing surface maintains stability and nitrocarburization treatment prevents scoring on the inside of the cylinder.
Side load poses a real problem.... our new cylinder features are the solution!

▼ *Bridge lifting and launching system. The load is balanced on groups of lock nut cylinders. The hydraulic movements are synchronised using the Enerpac PLC-controlled synchronous lift system.*



Enerpac High-Tonnage Cylinders

High-Tonnage Cylinders
The Enerpac High-Tonnage Cylinders are particularly suitable for (multipoint) lifting applications.

HCG, HCR, HCL-Series Cylinders
- 50 - 1000 tons lifting capacity
- 1.97 - 11.81 inches lifting stroke

HCG-Series - single-acting
- gravity return
- stop ring to prevent plunger blow-out
- designed to withstand up to 10% side load of maximum capacity.

HCR-Series - double-acting
- hydraulic advance and retract for controlled movement
- designed to withstand up to 10% side load of maximum capacity.

HCL-Series - lock nut, single-acting
- gravity return
- lock nut for mechanical load holding
- overflow port to prevent plunger blow out
- designed to withstand 10% side load up to 90% of maximum stroke.

HCRL-Series - lock nut, double-acting
- hydraulic advance and retract
- designed to withstand up to 10% side load of maximum capacity
- integrated tilt saddle
- lock nut for mechanical load holding
- 50 - 300 tons lifting capacity
- 5.91 - 11.81 inches lifting stroke

LPL-Series - lock nut, low height, single-acting (see page 30)
- 60 - 500 tons lifting capacity;
- 1.77 - 1.97 inches lifting stroke
- integrated tilt saddle
- gravity return
- lock nut for mechanical load holding
- 5-10% side load of maximum capacity.

In combination with our state of the art power packs, you will have a world class hydraulic system to perform the most challenging lifting jobs in a safe and professional manner. See **page 77** for more information on our pump offering.

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HCG HCR HCL HCRL Series



Capacity:
50 - 1000 tons

Stroke:
1.97 - 11.81 inches

Maximum Operating Pressure:
10,150 psi



Assisted-Return Pumps with Venturi Valve Technology
Enerpac HCG, HCL and LPL-Series cylinders are hydraulic advance and gravity return.
ZU4 and ZE-Series pumps feature Venturi Valve Technology to accelerate single-acting gravity and spring-return cylinder retraction speeds. See valve type in ordering matrix and details in section Directional Control Valves. See enerpac.com for details.

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Split-Flow Pumps
SFP-Series pumps with multiple outlets with equal oil flow.
For lifting and lowering applications on multiple points these pumps are a far better alternative than using separately operated pumps.

Page: 342



Synchronous Lifting Systems
EVO-Series pumps the multi-functional lifting system and multiple lift point capabilities.

Page: 346

Enerpac High-Tonnage Cylinders

ENERPAC

Capacity:
50 - 300 tons

Stroke:
1.97 - 11.81 inches

Maximum Operating Pressure:
10,150 psi

HCG
HCR
HCL
HCRL
Series





QUICK SELECTION

Cylinder Capacity tons	Stroke (in)	Maximum Cylinder Capacity at 10,150 psi tons	HCG-Series Model Number Single-Acting Page: 54	HCG-Series Collapsed Height (in)	HCR-Series Model Number Double-Acting Page: 58	HCR-Series Collapsed Height (in)	HCL-Series Model Number Single-Acting With Lock Nut Page: 62	HCL-Series Collapsed Height (in)	HCRL-Series * Model Number Double-Acting With Lock Nut Page: 66	HCRL-Series * Collapsed Height (in)
50	1.97	62	HCG502	7.20	HCR502	7.20	HCL502	6.46	–	—
	3.94		HCG504	9.17	HCR504	9.17	HCL504	8.43	–	—
	5.91		HCG506	11.14	HCR506	11.14	HCL506	10.39	HCRL506	12.20
	7.87		HCG508	13.62	HCR508	13.62	HCL508	12.36	HCRL508	14.84
	9.84		HCG5010	15.59	HCR5010	15.59	HCL5010	14.33	HCRL5010	16.81
	11.81		HCG5012	17.56	HCR5012	17.56	HCL5012	16.30	HCRL5012	18.77
100	1.97	113	HCG1002	7.95	HCR1002	7.95	HCL1002	7.36	–	—
	3.94		HCG1004	9.92	HCR1004	9.92	HCL1004	9.33	–	—
	5.91		HCG1006	11.89	HCR1006	11.89	HCL1006	11.30	HCRL1006	13.62
	7.87		HCG1008	14.92	HCR1008	14.92	HCL1008	13.27	HCRL1008	16.57
	9.84		HCG10010	16.89	HCR10010	16.89	HCL10010	15.24	HCRL10010	18.54
	11.81		HCG10012	18.86	HCR10012	18.86	HCL10012	17.20	HCRL10012	20.51
150	1.97	168	HCG1502	8.66	HCR1502	8.66	HCL1502	8.23	–	—
	3.94		HCG1504	10.63	HCR1504	10.63	HCL1504	10.20	–	—
	5.91		HCG1506	12.60	HCR1506	12.60	HCL1506	12.17	HCRL1506	14.13
	7.87		HCG1508	15.63	HCR1508	15.63	HCL1508	14.13	HCRL1508	17.09
	9.84		HCG15010	17.60	HCR15010	17.60	HCL15010	16.10	HCRL15010	19.06
	11.81		HCG15012	19.57	HCR15012	19.57	HCL15012	18.07	HCRL15012	21.02
200	1.97	223	HCG2002	9.09	HCR2002	9.09	HCL2002	9.37	–	—
	3.94		HCG2004	11.06	HCR2004	11.06	HCL2004	11.34	–	—
	5.91		HCG2006	13.03	HCR2006	13.03	HCL2006	13.31	HCRL2006	15.70
	7.87		HCG2008	16.06	HCR2008	16.06	HCL2008	15.28	HCRL2008	18.46
	9.84		HCG20010	18.03	HCR20010	18.03	HCL20010	17.24	HCRL20010	20.43
	11.81		HCG20012	20.00	HCR20012	20.00	HCL20012	19.21	HCRL20012	22.40
250	1.97	286	HCG2502	9.49	HCR2502	9.49	HCL2502	9.80	–	—
	3.94		HCG2504	11.46	HCR2504	11.46	HCL2504	11.77	–	—
	5.91		HCG2506	13.43	HCR2506	13.43	HCL2506	13.74	HCRL2506	16.38
	7.87		HCG2508	16.97	HCR2508	16.97	HCL2508	15.71	HCRL2508	19.33
	9.84		HCG25010	18.94	HCR25010	18.94	HCL25010	17.68	HCRL25010	21.30
	11.81		HCG25012	20.91	HCR25012	20.91	HCL25012	19.65	HCRL25012	23.27
300	1.97	341	HCG3002	11.65	HCR3002	11.65	HCL3002	10.94	–	—
	3.94		HCG3004	13.62	HCR3004	13.62	HCL3004	12.91	–	—
	5.91		HCG3006	15.59	HCR3006	15.59	HCL3006	14.88	HCRL3006	16.57
	7.87		HCG3008	17.56	HCR3008	17.56	HCL3008	16.85	HCRL3008	19.53
	9.84		HCG30010	19.53	HCR30010	19.53	HCL30010	18.82	HCRL30010	21.50
	11.81		HCG30012	21.50	HCR30012	21.50	HCL30012	20.79	HCRL30012	23.46

* See page 66 for HCRL-cylinder maximum capacity.

Enerpac High-Tonnage Cylinders

Capacity:
400 - 1000 tons

Stroke:
1.97 - 11.81 inches

Maximum Operating Pressure:
10,150 psi

HCG
HCR
HCL
Series



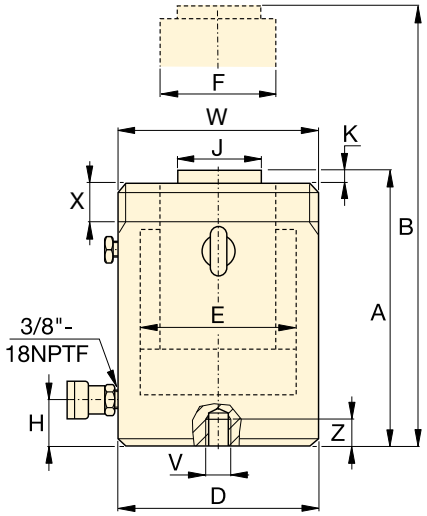


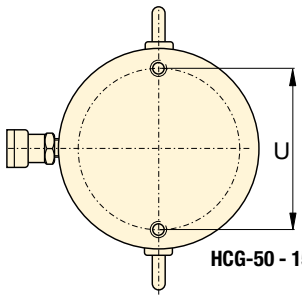




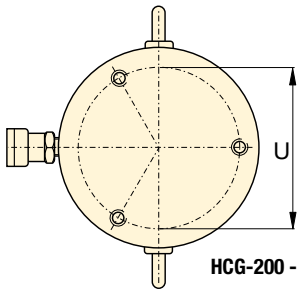
QUICK SELECTION

Cylinder Capacity	Stroke	Maximum Cylinder Capacity at 10,150 psi	HCG-Series		HCR-Series		HCL-Series	
			Model Number Single-Acting	Collapsed Height	Model Number Double-Acting	Collapsed Height	Model Number Single-Acting With Lock Nut	Collapsed Height
tons	(in)	tons	Page: 56	(in)	Page: 60	(in)	Page: 64	(in)
400	1.97	450	HCG4002	12.64	HCR4002	12.64	HCL4002	12.48
	3.94		HCG4004	14.61	HCR4004	14.61	HCL4004	14.45
	5.91		HCG4006	16.57	HCR4006	16.57	HCL4006	16.42
	7.87		HCG4008	18.54	HCR4008	18.54	HCL4008	18.39
	9.84		HCG40010	20.51	HCR40010	20.51	HCL40010	20.35
	11.81		HCG40012	22.48	HCR40012	22.48	HCL40012	22.32
500	1.97	575	HCG5002	13.54	HCR5002	13.54	HCL5002	14.06
	3.94		HCG5004	15.51	HCR5004	15.51	HCL5004	16.02
	5.91		HCG5006	17.48	HCR5006	17.48	HCL5006	17.99
	7.87		HCG5008	19.45	HCR5008	19.45	HCL5008	19.96
	9.84		HCG50010	21.42	HCR50010	21.42	HCL50010	21.93
	11.81		HCG50012	23.39	HCR50012	23.39	HCL50012	23.90
600	1.97	673	HCG6002	13.86	HCR6002	13.86	HCL6002	14.96
	3.94		HCG6004	15.83	HCR6004	15.83	HCL6004	16.93
	5.91		HCG6006	17.80	HCR6006	17.80	HCL6006	18.90
	7.87		HCG6008	19.76	HCR6008	19.76	HCL6008	20.87
	9.84		HCG60010	21.73	HCR60010	21.73	HCL60010	22.83
	11.81		HCG60012	23.70	HCR60012	23.70	HCL60012	24.80
800	1.97	916	HCG8002	15.91	HCR8002	15.91	HCL8002	16.93
	3.94		HCG8004	17.87	HCR8004	17.87	HCL8004	18.90
	5.91		HCG8006	19.84	HCR8006	19.84	HCL8006	20.87
	7.87		HCG8008	21.81	HCR8008	21.81	HCL8008	22.83
	9.84		HCG80010	23.78	HCR80010	23.78	HCL80010	24.80
	11.81		HCG80012	25.75	HCR80012	25.75	HCL80012	26.77
1000	1.97	1196	HCG10002	17.40	HCR10002	17.40	HCL10002	19.06
	3.94		HCG10004	19.37	HCR10004	19.37	HCL10004	21.02
	5.91		HCG10006	21.34	HCR10006	21.34	HCL10006	22.99
	7.87		HCG10008	23.31	HCR10008	23.31	HCL10008	24.96
	9.84		HCG100010	25.28	HCR100010	25.28	HCL100010	26.93
	11.81		HCG100012	27.24	HCR100012	27.24	HCL100012	28.90





HCG-50 - 150 tons



HCG-200 - 300 tons

HCG-Series, Single-Acting, Gravity Return Cylinders

- **Hardened surface resists side loading and cyclic wear**
- **Designed to withstand 10% side load of maximum capacity [1)]**
- **Stop ring to prevent plunger blow-out**
- **Weather protected, inside and out**
- **Upper and lower replaceable bearings enclose the cylinder plunger for support throughout the stroke**
- **Certified lifting eyes, base mounting holes and collar threads.**
- **Standard collar thread up to 250 tons models. Collar thread is optional on 300 tons models and higher.**

SELECTION CHART 50 - 300 TONS HCG-MODELS

For 400 - 1000 tons models, see pages 56-57.
For full product features see pages 50-51.

Cylinder Capacity tons	Stroke (in)	Model Number	Maximum Cylinder Capacity at 10,150 psi tons	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height A (in)
50	1.97	HCG502	62	12.17	23.96	7.20
	3.94	HCG504			47.93	9.17
	5.91	HCG506 [1)]			71.89	11.14
	7.87	HCG508			95.86	13.62
	9.84	HCG5010			119.82	15.59
	11.81	HCG5012 [1)]			143.78	17.56
100	1.97	HCG1002	113	22.19	43.67	7.95
	3.94	HCG1004			87.35	9.92
	5.91	HCG1006			131.02	11.89
	7.87	HCG1008			174.70	14.92
	9.84	HCG10010			218.37	16.89
	11.81	HCG10012			262.05	18.86
150	1.97	HCG1502	168	33.14	65.24	8.66
	3.94	HCG1504			130.48	10.63
	5.91	HCG1506			195.73	12.60
	7.87	HCG1508			260.97	15.63
	9.84	HCG15010			326.21	17.60
	11.81	HCG15012			391.45	19.57
200	1.97	HCG2002	223	43.95	86.51	9.09
	3.94	HCG2004			173.02	11.06
	5.91	HCG2006			259.53	13.03
	7.87	HCG2008			346.04	16.06
	9.84	HCG20010			432.55	18.03
	11.81	HCG20012			519.06	20.00
250	1.97	HCG2502	286	56.27	110.77	9.49
	3.94	HCG2504			221.55	11.46
	5.91	HCG2506			332.32	13.43
	7.87	HCG2508			443.09	16.97
	9.84	HCG25010			553.87	18.94
	11.81	HCG25012			664.64	20.91
300	1.97	HCG3002	341	67.23	132.34	11.65
	3.94	HCG3004			264.68	13.62
	5.91	HCG3006			397.02	15.59
	7.87	HCG3008			529.36	17.56
	9.84	HCG30010			661.71	19.53
	11.81	HCG30012			794.05	21.50

[1)] HCG506 and HCG5012: 7% side load of maximum capacity.

Collar Thread *

Model / Capacity tons	Thread Size W (mm)	Thread Length X (mm)
HCG50	M130 x 2	1.18
HCG100	M175 x 3	1.81
HCG150	M215 x 3	2.17
HCG200	M250 x 3	2.48
HCG250	M280 x 3	2.52
HCG300 *	M305 x 3	2.87

* Standard collar thread up to 250 tons models. Collar thread is optional on 300 tons models and higher. For collar thread on cylinder add suffix "**E002**"to model number. **Example: HCG3006E002** The collar thread length is designed for the full rated cylinder capacity.

Base Mounting Holes

Model / Capacity tons	Bolt Circle U (in)	Thread Size V (mm)	Minimum Thread Depth Z (in)	Number of Holes	Angle from Coupler (degrees)
HCG50	4.13	M12 x 1,75	0.87	2	90˚
HCG100	5.91	M12 x 1,75	0.87	2	90˚
HCG150	7.28	M12 x 1,75	0.87	2	90˚
HCG200	8.46	M12 x 1,75	0.87	3	60˚
HCG250	9.65	M12 x 1,75	0.87	3	60˚
HCG300	10.24	M16 x 2	0.98	3	60˚

Single-Acting, High-Tonnage Cylinders

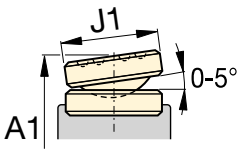
Capacity:
50 - 300 tons

Stroke:
1.97 - 11.81 inches

Maximum Operating Pressure:
10,150 psi

HCG Series

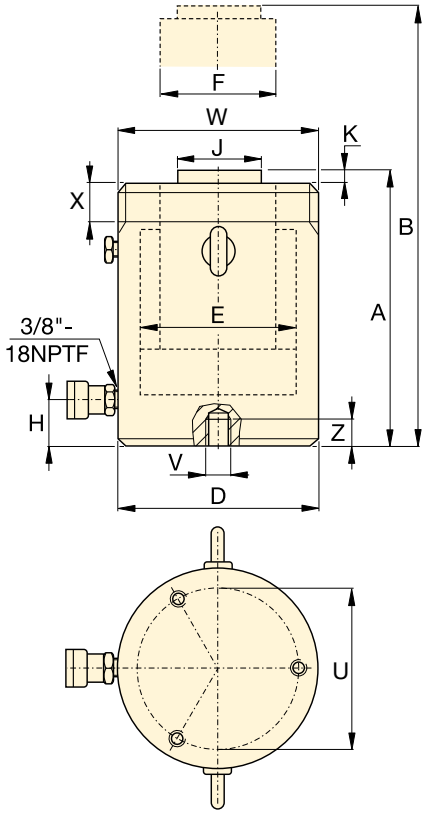




CATS-Series Tilt Saddle

Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	Base to Advance Port H (in)	Standard Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	(lbs)	Model Number	Optional Tilt Saddle		
									Saddle Diameter J1 (in)	Collapsed Height [2] A1 (in)	Saddle Model Number
9.17	5.12	3.94	2.76	1.50	1.97	0.12	37	**HCG502**	2.80	7.75	**CATS50**
13.11							45	**HCG504**		9.72	
17.05							53	**HCG506** [1]		11.69	
21.50							64	**HCG508**		14.17	
25.43							72	**HCG5010**		16.14	
29.37							80	**HCG5012** [1]		18.11	
9.92	6.89	5.31	3.74	1.50	2.95	0.12	73	**HCG1002**	2.80	8.35	**CATS101**
13.86							88	**HCG1004**		10.31	
17.80							102	**HCG1006**		12.28	
22.80							128	**HCG1008**		15.31	
26.73							142	**HCG10010**		17.28	
30.67							157	**HCG10012**		19.25	
10.63	8.46	6.50	4.72	1.61	3.70	0.12	123	**HCG1502**	3.82	9.41	**CATS150**
14.57							145	**HCG1504**		11.38	
18.50							168	**HCG1506**		13.35	
23.50							207	**HCG1508**		16.38	
27.44							230	**HCG15010**		18.35	
31.38							253	**HCG15012**		20.31	
11.06	9.84	7.48	5.51	1.85	4.45	0.12	178	**HCG2002**	4.96	9.80	**CATS200**
15.00							209	**HCG2004**		11.77	
18.94							240	**HCG2006**		13.74	
23.94							300	**HCG2008**		16.77	
27.87							331	**HCG20010**		18.74	
31.81							363	**HCG20012**		20.71	
11.46	11.02	8.46	6.69	2.09	5.51	0.16	235	**HCG2502**	6.89	11.00	**CATS300**
15.39							277	**HCG2504**		13.00	
19.33							318	**HCG2506**		14.96	
24.84							401	**HCG2508**		18.50	
28.78							442	**HCG25010**		20.47	
32.72							484	**HCG25012**		22.44	
13.62	12.01	9.25	7.87	2.28	5.51	0.16	348	**HCG3002**	6.89	13.19	**CATS300**
17.56							401	**HCG3004**		15.16	
21.50							454	**HCG3006**		17.13	
25.43							507	**HCG3008**		19.00	
29.37							560	**HCG30010**		21.00	
33.31							613	**HCG30012**		23.00	

[2] A1 = Collapsed height including CATS-Series tilt saddle.



HCG-Series, Single-Acting, Gravity Return Cylinders

- **Hardened surface resists side loading and cyclic wear**
- **Designed to withstand 10% side load of maximum capacity**
- **Stop ring to prevent plunger blow-out**
- **Weather protected, inside and out**
- **Upper and lower replaceable bearings enclose the cylinder plunger for support throughout the stroke**
- **Certified lifting eyes, base mounting holes**
- **Optional collar threads on 300 tons models and higher capacities.**

SELECTION CHART400 - 1000 TONS HCG-MODELS
For 50 - 300 tons models, see pages 54-55.
For full product features see pages 50-51.

Cylinder Capacity tons	Stroke (in)	Model Number	Maximum Cylinder Capacity at 10,150 psi tons	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height A (in)
400	1.97	HCG4002	450	88.75	174.70	12.64
	3.94	HCG4004			349.39	14.61
	5.91	HCG4006			524.09	16.57
	7.87	HCG4008			698.79	18.54
	9.84	HCG40010			873.49	20.51
	11.81	HCG40012			1,048.18	22.48
500	1.97	HCG5002	575	113.25	222.92	13.54
	3.94	HCG5004			445.85	15.51
	5.91	HCG5006			668.77	17.48
	7.87	HCG5008			891.70	19.45
	9.84	HCG50010			1,114.62	21.42
	11.81	HCG50012			1,337.55	23.39
600	1.97	HCG6002	673	132.57	260.97	13.86
	3.94	HCG6004			521.94	15.83
	5.91	HCG6006			782.90	17.80
	7.87	HCG6008			1,043.87	19.76
	9.84	HCG60010			1,304.84	21.73
	11.81	HCG60012			1,565.81	23.70
800	1.97	HCG8002	916	180.44	355.21	15.91
	3.94	HCG8004			710.41	17.87
	5.91	HCG8006			1,065.62	19.84
	7.87	HCG8008			1,420.82	21.81
	9.84	HCG80010			1,776.03	23.78
	11.81	HCG80012			2,131.24	25.75
1000	1.97	HCG10002	1196	235.68	463.94	17.40
	3.94	HCG10004			927.88	19.37
	5.91	HCG10006			1,391.83	21.34
	7.87	HCG10008			1,855.77	23.31
	9.84	HCG100010			2,319.71	25.28
	11.81	HCG100012			2,783.65	27.24

Optional Collar Thread

Model / Capacity tons	Thread Size W (mm)	Thread Length X (in)
HCG400	M350 x 3	3.27
HCG500	M400 x 4	3.54
HCG600	M430 x 4	3.94
HCG800	M505 x 5	4.80
HCG1000	M570 x 5	5.39

Collar thread is optional on 300 ton models and higher. For collar thread on cylinder add suffix "**E002**"to model number. Example: **HCG4006E002**

The collar thread length is designed for the full rated cylinder capacity.

Base Mounting Holes

Model / Capacity tons	Bolt Circle U (in)	Thread Size V (mm)	Minimum Thread Depth Z (in)	Number of Holes	Angle from Coupler (degrees)
HCG400	11.81	M16 x 2	0.98	3	60˚
HCG500	13.39	M24 x 3	1.42	3	60˚
HCG600	14.57	M24 x 3	1.42	3	60˚
HCG800	17.32	M24 x 3	1.42	3	60˚
HCG1000	19.69	M24 x 3	1.42	3	60˚

Single-Acting, High-Tonnage Cylinders



▲ *Offshore wind turbines levelling: Enerpac's synchronous lifting system was the solution for leveling support cross pieces on 80 wind turbines.*

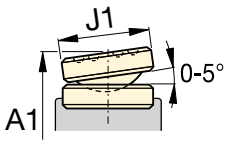
HCG Series



Capacity:
400 - 1000 tons

Stroke:
1.97 - 11.81 inches

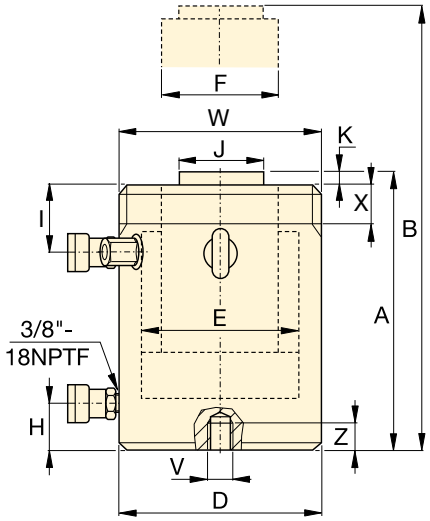
Maximum Operating Pressure:
10,150 psi

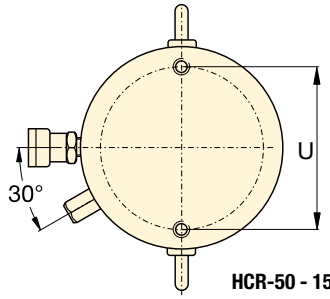


CATS-Series Tilt Saddle

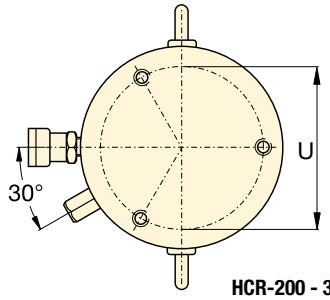
Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	Base to Advance Port H (in)	Standard Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	(lbs)	Model Number	Optional Tilt Saddle: Saddle Diameter J1 (in)	Optional Tilt Saddle: Collapsed Height * A1 (in)	Optional Tilt Saddle: Saddle Model Number
14.61	13.87	10.63	8.66	2.91	6.26	0.16	500	**HCG4002**	8.27	14.53	**CATS400**
18.54							566	**HCG4004**		16.50	
22.48							633	**HCG4006**		18.46	
26.42							699	**HCG4008**		20.43	
30.35							766	**HCG40010**		22.40	
34.29							833	**HCG40012**		24.37	
15.51	15.75	12.01	9.84	3.11	7.05	0.16	704	**HCG5002**	9.06	15.43	**CATS500**
19.45							792	**HCG5004**		17.40	
23.39							880	**HCG5006**		19.37	
27.32							968	**HCG5008**		21.34	
31.26							1,056	**HCG50010**		23.31	
35.20							1,144	**HCG50012**		25.28	
15.83	16.93	12.99	10.63	3.35	7.64	0.16	834	**HCG6002**	9.84	15.94	**CATS600**
19.76							935	**HCG6004**		17.91	
23.70							1,036	**HCG6006**		19.88	
27.64							1,137	**HCG6008**		21.85	
31.57							1,239	**HCG60010**		23.82	
35.51							1,340	**HCG60012**		25.79	
17.87	19.88	15.16	12.60	3.94	8.82	0.16	1,336	**HCG8002**	10.83	18.15	**CATS800**
21.81							1,479	**HCG8004**		20.12	
25.75							1,621	**HCG8006**		22.00	
29.69							1,763	**HCG8008**		24.00	
33.62							1,905	**HCG80010**		26.00	
37.56							2,047	**HCG80012**		28.00	
19.37	22.44	17.32	13.39	4.49	9.80	0.16	1,852	**HCG10002**	11.81	20.43	**CATS1000**
23.31							2,020	**HCG10004**		22.40	
27.24							2,188	**HCG10006**		24.37	
31.18							2,355	**HCG10008**		26.34	
35.12							2,523	**HCG100010**		28.31	
39.06							2,691	**HCG100012**		30.28	

* A1 = Collapsed height including CATS-Series tilt saddle.





HCR-50 - 150 tons



HCR-200 - 300 tons

Collar Thread *

Model / Capacity tons	Thread Size W (mm)	Thread Length X (in)
HCR50	M130 x 2	1.18
HCR100	M175 x 3	1.81
HCR150	M215 x 3	2.17
HCR200	M250 x 3	2.48
HCR250	M280 x 3	2.52
HCR300 *	M305 x 3	2.87

* Standard collar thread up to 250 tons models. Collar thread is optional on 300 tons models and higher. For collar thread on cylinder add suffix "**E002**"to model number. **Example: HCR3006E002** The collar thread length is designed for the full rated cylinder capacity.

Base Mounting Holes

Model / Capacity tons	Bolt Circle U (in)	Thread Size V (mm)	Minimum Thread Depth Z (in)	Number of Holes	Angle from Coupler (degrees)
HCR50	4.13	M12 x 1,75	0.87	2	90°
HCR100	5.91	M12 x 1,75	0.87	2	90°
HCR150	7.28	M12 x 1,75	0.87	2	90°
HCR200	8.46	M12 x 1,75	0.87	3	60°
HCR250	9.65	M12 x 1,75	0.87	3	60°
HCR300	10.24	M16 x 2	0.98	3	60°

HCR-Series, Double-Acting Cylinders

- **Fast advance and retract**
- **Designed to withstand 10% side load of maximum capacity [1)]**
- **Hardened surface resists side loading and cyclic wear**
- **Weather protected, inside and out**
- **Upper and lower replaceable bearings enclose the cylinder plunger for support throughout the stroke**
- **Certified lifting eyes, base mounting holes and collar threads**
- **Standard collar thread up to 250 tons models. Collar thread is optional on 300 tons models and higher.**

SELECTION CHART & DETAILS OF 50 - 300 TONS HCR-MODELS

For 400 - 1000 tons models, see pages 60-61.
For full product features see pages 50-51.

Cylinder Capacity tons	Stroke (in)	Model Number	Maximum Cylinder Capacity at 10,150 psi tons	Cylinder Effective Area (in²)	Oil Capacity (in³) Advance	Oil Capacity (in³) Retract	Collapsed Height A (in)
50	1.97	HCR502	62	12.17	23.96	12.22	7.20
	3.94	HCR504			47.93	24.44	9.17
	5.91	HCR506 [1)]			71.89	36.66	11.14
	7.87	HCR508			95.86	48.89	13.62
	9.84	HCR5010			119.82	61.11	15.59
	11.81	HCR5012 [1)]			143.78	73.33	17.56
100	1.97	HCR1002	113	22.19	43.67	22.05	7.95
	3.94	HCR1004			87.35	44.09	9.92
	5.91	HCR1006			131.02	66.14	11.89
	7.87	HCR1008			174.70	88.19	14.92
	9.84	HCR10010			218.37	110.23	16.89
	11.81	HCR10012			262.05	132.28	18.86
150	1.97	HCR1502	168	33.14	65.24	30.73	8.66
	3.94	HCR1504			130.48	61.47	10.63
	5.91	HCR1506			195.73	92.20	12.60
	7.87	HCR1508			260.97	122.94	15.63
	9.84	HCR15010			326.21	153.67	17.60
	11.81	HCR15012			391.45	184.40	19.57
200	1.97	HCR2002	223	43.95	86.51	39.54	9.09
	3.94	HCR2004			173.02	79.08	11.06
	5.91	HCR2006			259.53	118.62	13.03
	7.87	HCR2008			346.04	158.16	16.06
	9.84	HCR20010			432.55	197.70	18.03
	11.81	HCR20012			519.06	237.24	20.00
250	1.97	HCR2502	286	56.27	110.77	41.52	9.49
	3.94	HCR2504			221.55	83.04	11.46
	5.91	HCR2506			332.32	124.55	13.43
	7.87	HCR2508			443.09	166.07	16.97
	9.84	HCR25010			553.87	207.59	18.94
	11.81	HCR25012			664.64	249.11	20.91
300	1.97	HCR3002	341	67.23	132.34	36.49	11.65
	3.94	HCR3004			264.68	72.97	13.62
	5.91	HCR3006			397.02	109.46	15.59
	7.87	HCR3008			529.36	145.94	17.56
	9.84	HCR30010			661.71	182.43	19.53
	11.81	HCR30012			794.05	218.91	21.50

[1)] HCR506 and HCR5012: 7% side load of maximum capacity.

Double-Acting, High-Tonnage Cylinders

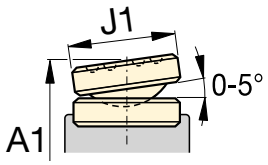
Capacity:
50 - 300 tons

Stroke:
1.97 - 11.81 inches

Maximum Operating Pressure:
10,150 psi

HCR Series

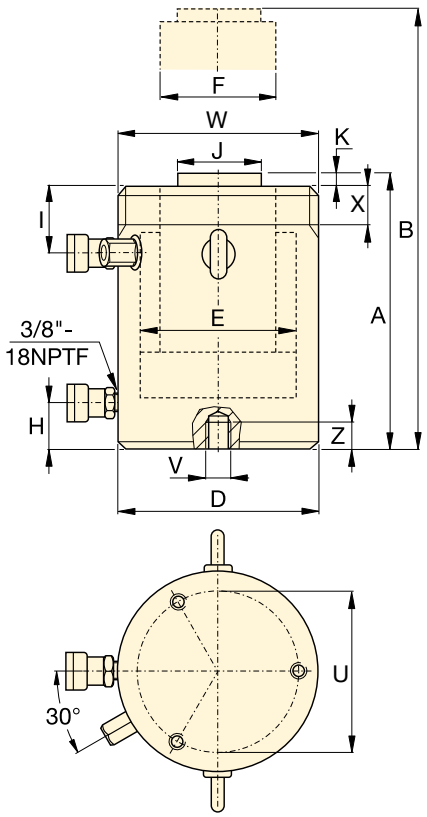




CATS-Series Tilt Saddle

Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	Base to Advance Port H (in)	Top to Retract Port I (in)	Standard Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	(lbs)	Model Number	Optional Tilt Saddle: Saddle Diameter J1 (in)	Optional Tilt Saddle: Collapsed Height [2] A1 (in)	Optional Tilt Saddle: Saddle Model Number
9.17	5.12	3.94	2.76	1.50	1.77	1.97	0.12	37	**HCR502**	2.80	7.75	**CATS50**
13.11								46	**HCR504**		9.72	
17.05								54	**HCR506** [1]		11.69	
21.50					2.17			68	**HCR508**		14.17	
25.43								76	**HCR5010**		16.14	
29.37								84	**HCR5012** [1]		18.11	
9.92	6.89	5.31	3.74	1.50	2.56	2.95	0.12	74	**HCR1002**	2.80	8.35	**CATS101**
13.86								90	**HCR1004**		10.31	
17.80								105	**HCR1006**		12.28	
22.80					3.15			131	**HCR1008**		15.31	
26.73								146	**HCR10010**		17.28	
30.67								161	**HCR10012**		19.25	
10.63	8.46	6.50	4.72	1.61	2.76	3.70	0.12	124	**HCR1502**	3.82	9.41	**CATS150**
14.57								148	**HCR1504**		11.38	
18.50								172	**HCR1506**		13.35	
23.50					3.54			209	**HCR1508**		16.38	
27.44								233	**HCR15010**		18.35	
31.38								257	**HCR15012**		20.31	
11.06	9.84	7.48	5.51	1.85	3.11	4.45	0.12	179	**HCR2002**	4.96	9.80	**CATS200**
15.00								212	**HCR2004**		11.77	
18.94								244	**HCR2006**		13.74	
23.94					3.82			306	**HCR2008**		16.77	
27.87								338	**HCR20010**		18.74	
31.81								371	**HCR20012**		20.71	
11.46	11.02	8.46	6.69	2.09	3.11	5.51	0.16	236	**HCR2502**	6.89	11.00	**CATS300**
15.39								279	**HCR2504**		13.00	
19.33								322	**HCR2506**		14.96	
24.84					4.09			407	**HCR2508**		18.50	
28.78								457	**HCR25010**		20.47	
32.72								500	**HCR25012**		22.44	
13.62	12.01	9.25	7.87	2.28	3.98	5.51	0.16	350	**HCR3002**	6.89	13.19	**CATS300**
17.56								404	**HCR3004**		15.16	
21.50								458	**HCR3006**		17.13	
25.43								512	**HCR3008**		19.00	
29.37								566	**HCR30010**		21.00	
33.31								620	**HCR30012**		23.00	

[2] A1 = Collapsed height including CATS-Series tilt saddle.



HCR-Series, Double-Acting Cylinders

- **Fast advance and retract**
- **Designed to withstand 10% side load of maximum capacity**
- **Hardened surface resists side loading and cyclic wear**
- **Weather protected, inside and out**
- **Upper and lower replaceable bearings enclose the cylinder plunger for support throughout the stroke**
- **Certified lifting eyes, base mounting holes and optional collar threads**
- **Optional collar threads on 300 tons models and higher capacities.**

SELECTION CHART & DETAILS OF 400 - 1000 TONS HCR-MODELS

For 50 - 300 tons models, see pages 58-59.
For full product features see pages 50-51.

Cylinder Capacity tons	Stroke (in)	Model Number	Maximum Cylinder Capacity at 10,150 psi tons	Cylinder Effective Area (in^2)	Oil Capacity (in^3) Advance	Oil Capacity (in^3) Retract	Collapsed Height A (in)
400	1.97	HCR4002	450	88.75	174.70	58.71	12.64
	3.94	HCR4004			349.39	117.42	14.61
	5.91	HCR4006			524.09	176.14	16.57
	7.87	HCR4008			698.79	234.85	18.54
	9.84	HCR40010			873.49	293.56	20.51
	11.81	HCR40012			1048.18	352.27	22.48
500	1.97	HCR5002	575	113.25	222.92	73.15	13.54
	3.94	HCR5004			445.85	146.30	15.51
	5.91	HCR5006			668.77	219.45	17.48
	7.87	HCR5008			891.70	292.60	19.45
	9.84	HCR50010			1114.62	365.75	21.42
	11.81	HCR50012			1337.55	438.90	23.39
600	1.97	HCR6002	673	132.57	260.97	86.27	13.86
	3.94	HCR6004			521.94	172.54	15.83
	5.91	HCR6006			782.90	258.81	17.80
	7.87	HCR6008			1043.87	345.08	19.76
	9.84	HCR60010			1304.84	431.35	21.73
	11.81	HCR60012			1565.81	517.62	23.70
800	1.97	HCR8002	916	180.44	355.21	109.81	15.91
	3.94	HCR8004			710.41	219.63	17.87
	5.91	HCR8006			1065.62	329.44	19.84
	7.87	HCR8008			1420.82	439.26	21.81
	9.84	HCR80010			1776.03	549.07	23.78
	11.81	HCR80012			2131.24	658.89	25.75
1000	1.97	HCR10002	1196	235.68	463.94	186.92	17.40
	3.94	HCR10004			927.88	373.84	19.37
	5.91	HCR10006			1391.83	560.76	21.34
	7.87	HCR10008			1855.77	747.68	23.31
	9.84	HCR100010			2319.71	934.59	25.28
	11.81	HCR100012			2783.65	1121.51	27.24

Optional Collar Thread

Model / Capacity tons	Thread Size W (mm)	Thread Length X (in)
HCR400	M350 x 3	3.27
HCR500	M400 x 4	3.54
HCR600	M430 x 4	3.94
HCR800	M505 x 5	4.80
HCR1000	M570 x 5	5.39

Collar thread is optional on 300 tons models and higher. For collar thread on cylinder add suffix "**E002**"to model number. Example: **HCR4006E002**

The collar thread length is designed for the full rated cylinder capacity.

Base Mounting Holes

Model / Capacity tons	Bolt Circle U (in)	Thread Size V (mm)	Minimum Thread Depth Z (in)	Number of Holes	Angle from Coupler (degrees)
HCR400	11.81	M16 x 2	0.98	3	60°
HCR500	13.39	M24 x 3	1.42	3	60°
HCR600	14.57	M24 x 3	1.42	3	60°
HCR800	17.32	M24 x 3	1.42	3	60°
HCR1000	19.69	M24 x 3	1.42	3	60°

Double-Acting, High-Tonnage Cylinders



▲ *The superlifting and launch of a 43,000-ton floating oil production system in Malaysia for the Gumusut-Kakap offshore field has set high benchmarks for safety through its use of sophisticated EVO-Series synchronous hydraulics to lift, balance, weigh and smoothly launch massive resource structures.*

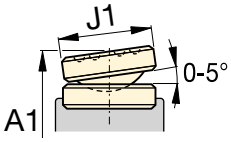
HCR Series



Capacity:
400 - 1000 tons

Stroke:
1.97 - 11.81 inches

Maximum Operating Pressure:
10,150 psi



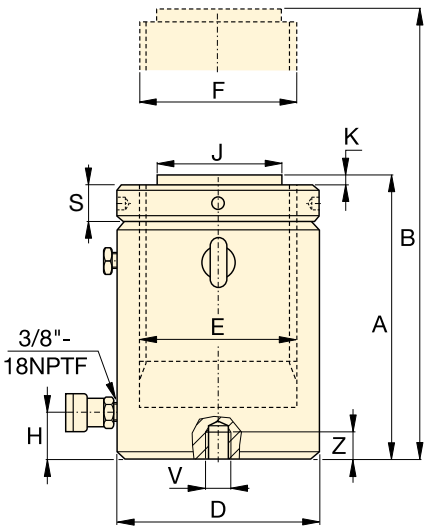
CATS-Series Tilt Saddle

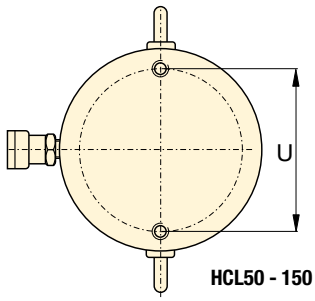
Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	Base to Advance Port H (in)	Top to Retract Port I (in)	Standard Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	(lbs)	Model Number	Optional Tilt Saddle: Saddle Diameter J1 (in)	Optional Tilt Saddle: Collapsed Height * A1 (in)	Optional Tilt Saddle: Saddle Model Number
14.61	13.78	10.63	8.66	2.91	4.37	6.26	0.16	501	**HCR4002**	8.27	14.53	**CATS400**
18.54								570	**HCR4004**		16.50	
22.48								638	**HCR4006**		18.46	
26.42								707	**HCR4008**		20.43	
30.35								775	**HCR40010**		22.40	
34.29								843	**HCR40012**		24.37	
15.51	15.75	12.01	9.84	3.11	4.76	7.05	0.16	706	**HCR5002**	9.06	15.43	**CATS500**
19.45								797	**HCR5004**		17.40	
23.39								887	**HCR5006**		19.37	
27.32								977	**HCR5008**		21.34	
31.26								1,067	**HCR50010**		23.31	
35.20								1,158	**HCR50012**		25.28	
15.83	16.93	12.99	10.63	3.35	4.76	7.64	0.16	836	**HCR6002**	9.84	15.94	**CATS600**
19.76								940	**HCR6004**		17.91	
23.70								1,044	**HCR6006**		19.88	
27.64								1,148	**HCR6008**		21.85	
31.57								1,252	**HCR60010**		23.82	
35.51								1,356	**HCR60012**		25.79	
17.87	19.88	15.16	12.60	3.94	5.63	8.82	0.16	1,340	**HCR8002**	10.83	18.15	**CATS800**
21.81								1,485	**HCR8004**		20.12	
25.75								1,631	**HCR8006**		22.00	
29.69								1,777	**HCR8008**		24.00	
33.62								1,922	**HCR80010**		26.00	
37.56								2,068	**HCR80012**		28.00	
19.37	22.44	17.32	13.39	4.49	6.02	9.80	0.16	1,858	**HCR10002**	11.81	20.43	**CATS1000**
23.31								2,031	**HCR10004**		22.40	
27.24								2,205	**HCR10006**		24.37	
31.18								2,379	**HCR10008**		26.34	
35.12								2,552	**HCR100010**		28.31	
39.06								2,726	**HCR100012**		30.28	

* A1 = Collapsed height including CATS-Series tilt saddle.

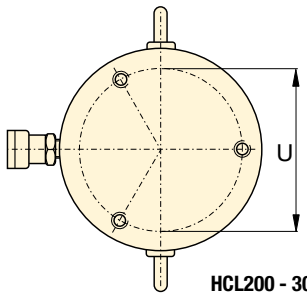
HCL-Series, High-Tonnage Lock Nut Cylinders

ENERPAC





HCL50 - 150 tons



HCL200 - 300 tons

HCL-Series, Single-Acting, Gravity Return Cylinders

- **Lock nut provides positive and safe mechanical load holding**
- **Low-friction locking rings spin easy, save time and effort**
- **Designed to withstand 10% side load up to 90% of maximum stroke**
- **Hardened surface resists side loading and cyclic wear**
- **Overflow port as stroke limiter to prevent plunger blow-out**
- **Weather protected, inside and out**
- **Replaceable bearings enclose the plunger for support throughout the stroke**
- **Certified lifting eyes and base mounting holes.**

SELECTION CHART 50 - 300 TONS HCL-MODELS

For 400 - 1000 tons models, see pages 64-65.
For full product features see pages 50-51.

Cylinder Capacity tons	Stroke (in)	Model Number	Maximum Cylinder Capacity at 10,150 psi tons	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height A (in)
50	1.97	HCL502	62	12.17	23.96	6.46
	3.94	HCL504			47.93	8.43
	5.91	HCL506			71.89	10.39
	7.87	HCL508			95.86	12.36
	9.84	HCL5010			119.82	14.33
	11.81	HCL5012			143.78	16.30
100	1.97	HCL1002	113	22.19	43.67	7.36
	3.94	HCL1004			87.35	9.33
	5.91	HCL1006			131.02	11.30
	7.87	HCL1008			174.70	13.27
	9.84	HCL10010			218.37	15.24
	11.81	HCL10012			262.05	17.20
150	1.97	HCL1502	168	33.14	65.24	8.23
	3.94	HCL1504			130.48	10.20
	5.91	HCL1506			195.73	12.17
	7.87	HCL1508			260.97	14.13
	9.84	HCL15010			326.21	16.10
	11.81	HCL15012			391.45	18.07
200	1.97	HCL2002	223	43.95	86.51	9.37
	3.94	HCL2004			173.02	11.34
	5.91	HCL2006			259.53	13.31
	7.87	HCL2008			346.04	15.28
	9.84	HCL20010			432.55	17.24
	11.81	HCL20012			519.06	19.21
250	1.97	HCL2502	286	56.27	110.77	9.80
	3.94	HCL2504			221.55	11.77
	5.91	HCL2506			332.32	13.74
	7.87	HCL2508			443.09	15.71
	9.84	HCL25010			553.87	17.68
	11.81	HCL25012			664.64	19.65
300	1.97	HCL3002	341	67.23	132.34	10.94
	3.94	HCL3004			264.68	12.91
	5.91	HCL3006			397.02	14.88
	7.87	HCL3008			529.36	16.85
	9.84	HCL30010			661.71	18.82
	11.81	HCL30012			794.05	20.79

Base Mounting Holes

Model / Capacity tons	Bolt Circle U (in)	Thread Size V (mm)	Minimum Thread Depth Z (in)	Number of Holes	Angle from Coupler (degrees)
HCL50	4.13	M8 x 1,25	0.39	2	90˚
HCL100	5.91	M12 x 1,75	0.67	2	90˚
HCL150	7.28	M12 x 1,75	0.87	2	90˚
HCL200	8.46	M12 x 1,75	0.87	3	60˚
HCL250	9.65	M12 x 1,75	0.87	3	60˚
HCL300	10.24	M16 x 2	0.98	3	60˚

Single-Acting, High-Tonnage Lock Nut Cylinders

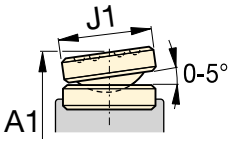
Capacity:
50 - 300 tons

Stroke:
1.97 - 11.81 inches

Maximum Operating Pressure:
10,150 psi

HCL Series

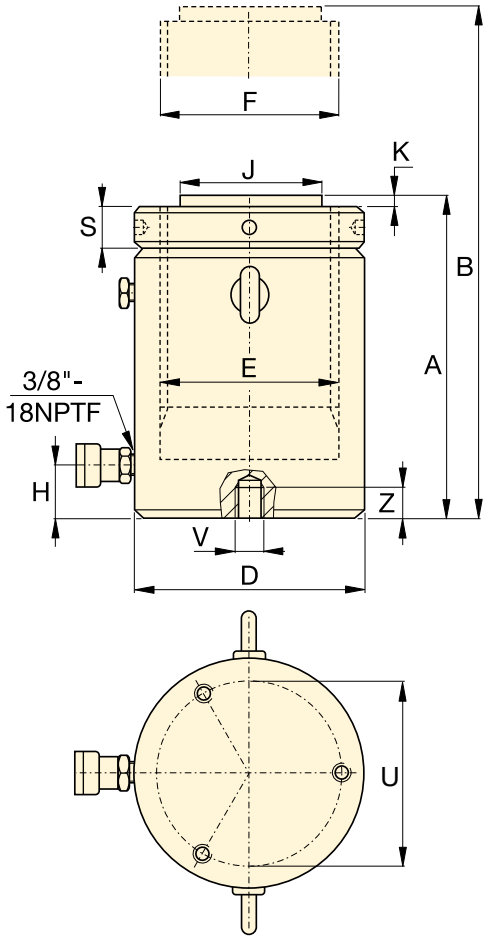




CATS-Series Tilt Saddle

Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter (threaded) F (mm)	Base to Advance Port H (in)	Standard Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	Lock Nut Height S (in)	(lbs)	Model Number	Optional Tilt Saddle		
										Saddle Diameter J1 (in)	Collapsed Height * A1 (in)	Saddle Model Number
8.43	5.12	3.94	Tr 100 x 4	0.94	2.80	0.08	0.98	37	HCL502	2.80	7.05	CATS100
12.36								48	HCL504		9.02	
16.30								60	HCL506		10.98	
20.24								71	HCL508		12.95	
24.17								83	HCL5010		14.92	
28.11								94	HCL5012		16.89	
9.33	6.89	5.31	Tr 135 x 6	1.30	2.80	0.08	1.30	77	HCL1002	2.80	7.95	CATS100
13.27								98	HCL1004		9.92	
17.20								118	HCL1006		11.89	
21.14								139	HCL1008		13.86	
25.08								160	HCL10010		15.83	
29.02								181	HCL10012		17.80	
10.20	8.46	6.50	Tr 165 x 6	1.61	5.12	0.08	1.57	130	HCL1502	4.96	8.86	CATS201
14.13								161	HCL1504		10.83	
18.07								192	HCL1506		12.80	
22.01								224	HCL1508		14.76	
25.94								255	HCL15010		16.73	
29.88								287	HCL15012		18.70	
11.34	9.84	7.48	Tr 190 x 6	1.85	5.12	0.08	1.77	188	HCL2002	4.96	10.00	CATS201
15.28								231	HCL2004		11.97	
19.21								273	HCL2006		13.94	
23.15								316	HCL2008		15.91	
27.09								358	HCL20010		17.87	
31.02								401	HCL20012		19.84	
11.77	11.02	8.46	Tr 215 x 6	2.09	5.51	0.08	2.05	262	HCL2502	6.89	11.34	CATS300
15.71								316	HCL2504		13.31	
19.65								369	HCL2506		15.28	
23.58								422	HCL2508		17.24	
27.52								476	HCL25010		19.21	
31.46								529	HCL25012		21.18	
12.91	12.01	9.25	Tr 235 x 6	2.28	5.51	0.08	2.20	348	HCL3002	6.89	12.48	CATS300
16.85								411	HCL3004		14.45	
20.79								474	HCL3006		16.42	
24.72								537	HCL3008		18.39	
28.66								601	HCL30010		20.35	
32.60								664	HCL30012		22.32	

* A1 = Collapsed height including CATS-Series tilt saddle.



HCL-Series, Single-Acting, Gravity Return Cylinders

- **Lock nut provides positive and safe mechanical load holding**
- **Low-friction locking rings spin easy, save time and effort**
- **Designed to withstand 10% side load up to 90% of maximum stroke**
- **Hardened surface resists side loading and cyclic wear**
- **Overflow port as stroke limiter to prevent plunger blow-out**
- **Weather protected, inside and out**
- **Replaceable bearings enclose the plunger for support throughout the stroke**
- **Certified lifting eyes and base mounting holes.**

SELECTION CHART 400 - 1000 TONS HCL-MODELS

For 50 - 300 tons models, see pages 62-63.
For full product features see pages 50-51.

Cylinder Capacity tons	Stroke (in)	Model Number	Maximum Cylinder Capacity at 10,150 psi tons	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height A (in)
400	1.97	HCL4002	450	88.75	174.70	12.48
	3.94	HCL4004			349.39	14.45
	5.91	HCL4006			524.09	16.42
	7.87	HCL4008			698.79	18.39
	9.84	HCL40010			873.49	20.35
	11.81	HCL40012			1,048.18	22.32
500	1.97	HCL5002	575	113.25	222.92	14.06
	3.94	HCL5004			445.85	16.02
	5.91	HCL5006			668.77	17.99
	7.87	HCL5008			891.70	19.96
	9.84	HCL50010			1,114.62	21.93
	11.81	HCL50012			1,337.55	23.90
600	1.97	HCL6002	673	132.57	260.97	14.96
	3.94	HCL6004			521.94	16.93
	5.91	HCL6006			782.90	18.90
	7.87	HCL6008			1,043.87	20.87
	9.84	HCL60010			1,304.84	22.83
	11.81	HCL60012			1,565.81	24.80
800	1.97	HCL8002	916	180.44	355.21	16.93
	3.94	HCL8004			710.41	18.90
	5.91	HCL8006			1,065.62	20.87
	7.87	HCL8008			1,420.82	22.83
	9.84	HCL80010			1,776.03	24.80
	11.81	HCL80012			2,131.24	26.77
1000	1.97	HCL10002	1196	235.68	463.94	19.06
	3.94	HCL10004			927.88	21.02
	5.91	HCL10006			1,391.83	22.99
	7.87	HCL10008			1,855.77	24.96
	9.84	HCL100010			2,319.71	26.93
	11.81	HCL100012			2,783.65	28.90

Base Mounting Holes

Model / Capacity tons	Bolt Circle U (in)	Thread Size V (mm)	Minimum Thread Depth Z (in)	Number of Holes	Angle from Coupler (degrees)
HCL400	11.81	M16 x 2	0.95	3	60°
HCL500	13.39	M24 x 3	1.42	3	60°
HCL600	14.57	M24 x 3	1.42	3	60°
HCL800	17.32	M24 x 3	1.42	3	60°
HCL1000	19.69	M24 x 3	1.42	3	60°

Single-Acting, High-Tonnage Lock Nut Cylinders



▲ *Heavy lifting and foundation leveling. The lock nut provides mechanical load holding over a long period of time.*

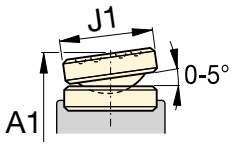
HCL Series



Capacity:
400 - 1000 tons

Stroke:
1.97 - 11.81 inches

Maximum Operating Pressure:
10,150 psi



CATS-Series Tilt Saddle

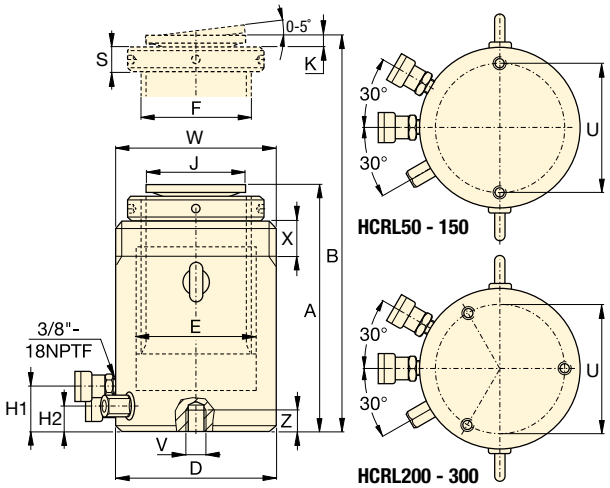
Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter (threaded) F (mm)	Base to Advance Port H (in)	Standard Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	Lock Nut Height S (in)	(lbs)	Model Number	Optional Tilt Saddle: Saddle Diameter J1 (in)	Optional Tilt Saddle: Collapsed Height * A1 (in)	Optional Tilt Saddle: Model Number
14.45	13.78	10.63	Tr 270 x 6	2.64	6.26	0.20	2.56	520	**HCL4002**	8.27	14.37	**CATS400**
18.39								603	**HCL4004**		16.34	
22.32								686	**HCL4006**		18.31	
26.26								770	**HCL4008**		20.28	
30.20								853	**HCL40010**		22.24	
34.13								936	**HCL40012**		24.21	
16.02	15.75	12.01	Tr 305 x 6	2.95	7.05	0.20	2.83	751	**HCL5002**	9.06	15.94	**CATS500**
19.96								860	**HCL5004**		17.91	
23.90								968	**HCL5006**		19.88	
27.83								1,077	**HCL5008**		21.85	
31.77								1,186	**HCL50010**		23.82	
35.71								1,294	**HCL50012**		25.79	
16.93	16.93	12.99	Tr 330 x 6	3.19	7.64	0.20	3.15	942	**HCL6002**	9.84	17.05	**CATS600**
20.87								1,067	**HCL6004**		19.02	
24.80								1,193	**HCL6006**		20.98	
28.74								1,319	**HCL6008**		22.95	
32.68								1,444	**HCL60010**		24.92	
36.61								1,570	**HCL60012**		26.89	
18.90	19.88	15.16	Tr 385 x 6	3.74	8.82	0.20	3.54	1,472	**HCL8002**	10.83	19.17	**CATS800**
22.83								1,646	**HCL8004**		21.14	
26.77								1,819	**HCL8006**		23.11	
30.71								1,992	**HCL8008**		25.08	
34.65								2,166	**HCL80010**		27.05	
38.58								2,339	**HCL80012**		29.02	
21.02	22.44	17.32	Tr 440 x 6	4.33	9.81	0.20	4.13	2,115	**HCL10002**	11.81	22.09	**CATS1000**
24.96								2,335	**HCL10004**		24.06	
28.90								2,556	**HCL10006**		26.02	
32.83								2,777	**HCL10008**		27.99	
36.77								2,998	**HCL100010**		29.96	
40.71								3,219	**HCL100012**		31.93	

* A1 = Collapsed height including CATS-Series tilt saddle.

▼ HCRL2006, HCRL506



- Hydraulically controlled fast retraction
- Lock nut provides mechanical load holding for a safe work environment
- Designed to withstand up to 10% side load of maximum capacity
- Integrated tilt saddle allows up to 5 degrees of misalignment
- Hardened surface resists side loading and cyclic wear
- Weather protected, inside and out
- Replaceable bearings enclose the plunger external and internally for support
- Certified lifting eyes, base mounting holes and collar thread as standard
- Stop ring to prevent plunger blow-out
- Low-friction lock nut, to spin easily, save time and effort.



Collar Thread

Model / Capacity tons	Thread Size W (mm)	Thread Length X (in)
HCRL50	M130 x 2	1.65
HCRL100	M185 x 2	2.24
HCRL150	M222 x 3	2.76
HCRL200	M260 x 3	3.09
HCRL250	M290 x 3	3.33
HCRL300	M315 x 3	3.68

The collar thread length is designed for the full rated cylinder capacity.

Base Mounting Holes

Model / Capacity tons	Bolt Circle U (in)	Thread Size V (mm)	Minimum Thread Depth Z (in)
HCRL50	4.13	M12 x 1,75	0.87
HCRL100	5.90	M12 x 1,75	0.87
HCRL150	7.28	M12 x 1,75	0.87
HCRL200	8.46	M12 x 1,75	0.87
HCRL250	9.65	M12 x 1,75	0.87
HCRL300	10.24	M16 x 2	0.98

SELECTION CHART 50 - 300 TONS HCRL-MODELS

For full product features see pages 50-51.

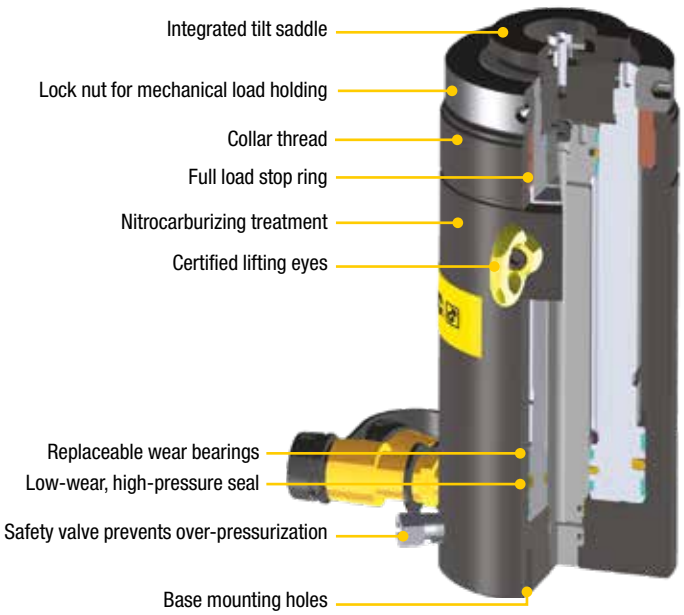
Cylinder Capacity * tons	Stroke * (in)	Model Number	Maximum Cylinder Capacity at 10,150 psi tons	Cylinder Effective Area (in^2)	Oil Capacity (in^3) Advance	Oil Capacity (in^3) Retract
50	5.91	HCRL506	54	10.60	62.55	5.24
	7.87	HCRL508			83.42	6.99
	9.84	HCRL5010			104.29	8.73
	11.81	HCRL5012			125.16	10.48
100	5.91	HCRL1006	111	21.91	129.41	14.38
	7.87	HCRL1008			172.54	19.17
	9.84	HCRL10010			215.68	23.96
	11.81	HCRL10012			258.81	28.76
150	5.91	HCRL1506	169	33.23	196.26	14.38
	7.87	HCRL1508			261.69	19.17
	9.84	HCRL15010			327.11	23.96
	11.81	HCRL15012			392.50	28.76
200	5.91	HCRL2006	225	44.31	261.62	32.35
	7.87	HCRL2008			348.87	43.14
	9.84	HCRL20010			436.06	53.92
	11.81	HCRL20012			523.31	64.70
250	5.91	HCRL2506	277	54.54	322.08	32.35
	7.87	HCRL2508			429.35	43.14
	9.84	HCRL25010			536.67	53.92
	11.81	HCRL25012			644.15	64.70
300	5.91	HCRL3006	334	65.74	388.23	32.35
	7.87	HCRL3008			517.60	43.14
	9.84	HCRL30010			647.03	53.92
	11.81	HCRL30012			776.41	64.70

* Up to 2000 tons and additional stroke lengths available on request.

Double-Acting Lock Nut Cylinders

Higher Capacities, Larger Strokes

The HCRL-Series Cylinders are available up to 2000 tons capacity and additional stroke lengths available on request.



HCRL Series



Capacity:
50 - 300 tons

Stroke:
5.91 - 11.81 inches

Maximum Operating Pressure:
10,150 psi



Synchronous Lifting Systems

EVO-Series pumps the multi-functional lifting system and multiple lift point capabilities.

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Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter (threaded) F (mm)	Base to Advance Port H1 (in)	Base to Retract Port H2 (in)	Saddle Diameter J (in)	Saddle Protrusion K (in)	Lock Nut Height S (in)	(lbs)	Model Number
12.20	18.11	5.12	3.93	Tr 90 x 4	1.61	1.04	3.02	.59	1.02	65	**HCRL506**
14.84	22.71									79	**HCRL508**
16.81	26.65									88	**HCRL5010**
18.77	30.59									98	**HCRL5012**
13.62	19.52	7.28	5.51	Tr 120 x 6	1.97	1.41	3.02	0.59	1.42	141	**HCRL1006**
16.57	14.44									170	**HCRL1008**
18.54	28.38									188	**HCRL10010**
20.51	32.32									207	**HCRL10012**
14.13	20.03	8.74	6.69	Tr 150 x 6	1.81	1.24	4.96	0.51	1.77	213	**HCRL1506**
17.09	24.96									256	**HCRL1508**
19.06	28.90									284	**HCRL15010**
21.02	32.83									312	**HCRL15012**
15.70	21.61	10.24	7.87	Tr 170 x 6	2.80	1.92	4.96	0.51	1.97	318	**HCRL2006**
18.46	26.34									370	**HCRL2008**
20.43	30.28									406	**HCRL20010**
22.40	34.21									440	**HCRL20012**
16.38	22.28	11.42	8.66	Tr 190 x 6	2.80	1.92	6.30	0.59	2.17	419	**HCRL2506**
19.33	27.20									492	**HCRL2508**
21.30	31.14									538	**HCRL25010**
23.27	35.08									584	**HCRL25012**
16.57	22.48	12.40	9.45	Tr 210 x 6	2.80	1.92	6.30	0.59	2.17	505	**HCRL3006**
19.53	27.40									592	**HCRL3008**
21.50	31.34									647	**HCRL30010**
23.46	35.28									702	**HCRL30012**

GBJ-Series, Industrial Steel Bottle Jacks

ENERPAC

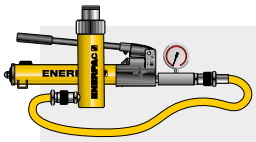
▼ Shown: **GBJ010A, GBJ030A, GBJ003A**





Screw Extension Feature

Heat treated, adjustable extension screw with cleated saddle on selected GBJ models helps adjusting and prevents slipping.



Cylinder-Pump Sets

As an alternative to bottle jacks where the operator is required to stand remote from the jacking point, see our range of cylinder-pump sets.

Page: 6



Lifting Wedge and Machine Lifts

Ideal to lift the load the first few inches. The **LW16** Lifting Wedge requires a very small access gap of only 0.39 inch.

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- **Lower handle effort reduces operator fatigue**
- **Fully serviceable**
- **High-strength beam and pump linkage for long life**
- **Pumping handle included on all models**
- **Safety relief valve to prevent overload**
- **Automatic by-pass port to prevent over-extension**
- **Wiper seal for extended life**
- **Thick base material with large area for increased strength and stability during lifting**
- **Positioning handle on 22 tons through 55 tons models.**

Jack Capacity (tons)	Stroke (in)	Model Number	Screw Extension (in)	Min. Height (in)	Max. Height (in)	Plunger diameter (in)	Saddle Diameter (in)	Bottom Dimensions W x L (in)	(lbs)
2	18.11	**GBJ002LA**	-	22.44	40.55	1.14	-	5.00 x 5.00	22.1
3	4.13	**GBJ003A**	2.56	6.61	13.31	0.94	0.93	2.95 x 4.57	8.1
5	5.91	**GBJ005A**	2.95	8.35	17.20	1.14	1.12	2.95 x 4.92	9.9
8	5.91	**GBJ008A**	2.95	8.62	17.48	1.46	1.50	3.54 x 5.67	13.6
11	5.91	**GBJ010A**	2.95	8.62	17.48	1.46	1.50	3.54 x 5.67	14.1
11	2.44	**GBJ010SA**	1.18	5.16	8.78	1.46	1.50	3.54 x 5.67	11
17	5.91	**GBJ015A**	2.95	8.98	17.83	1.75	1.77	4.41 x 6.42	19.4
22	5.91	**GBJ020A**	2.95	9.21	18.07	2.00	2.40	4.72 x 6.77	23.3
22	4.13	**GBJ020SA**	2.17	7.48	13.78	2.00	2.40	4.72 x 6.77	20.9
33	5.91	**GBJ030A**	2.95	9.53	18.39	2.27	2.72	5.67 x 7.72	34.2
55	5.51	**GBJ050A**	-	10.24	15.75	3.15	3.15	6.50 x 8.43	59.4
110	5.91	**GBJ100**	-	11.81	17.72	4.33	3.70	11.65 x 13.11	191.8

All GBJ Jacks meet or exceed: ANSI, PALD, CE.

GBJ Series



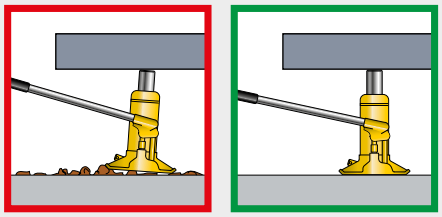
Capacity:
2 - 110 tons

Stroke:
2.44 - 18.11 inches

IMPORTANT!

Provide a level and solid support for the entire jack base area.

INCORRECT! **CORRECT!**



For more safety instructions see our 'Learning Center' on www.enerpac.com

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Wheeled Machine Skates

MLS-Series Machine Skates offer easy and stable movement across various floor types.

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Chain Roller Machine Skates

For ordinary concrete floors consider the **ER-Series** Chain Roller Machine Skates.

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▼ *GBJ100*



▼ *Enerpac heavy-duty bottle jacks make lifting loads easier.*



▼ Shown: **PRASA10027L and accessory Locking U-Rings**



Safe, Efficient, Mobile Load Lifting

Pendant cord

Standard 12 foot pendant cord for air driven units with pneumatic valves and 20 foot pendant cord for electric driven units keeps operator away from the load.



POW'R-LOCK™ – Self-Locking Mobile Lift System

A self-locking jack that performs automatic locking during lifting, lowering and holding.

See the Enerpac **PL-Series.**

Page: **72**

- **60, 100, 150 and 200-tons capacities with pneumatic or electric pumps for the toughest jobs**
- **4 inches ground clearance for transport over rail and rough terrain**
- **Double-acting cylinder**
- **Three position handle provides easy tilt back and transport**
- **Complies with ASME/ANSI B30:1 2015 and CE specifications**
- **Easy to change external filter minimizes down time**
- **Rugged, fully enclosed 24 inches wide frame with no exposed fittings or hoses**
- **SUP-R-STACK™ Extension System allows lifting at all heights without blocking.**



◀ *Enerpac POW'R-RISER® used in mining operations to lift heavy equipment.*

Capacity	Stroke	Model Number with Electric Pump	
tons	(in)	(115V - 1 ph - 50-60Hz)	(lbs)
60	14	**PREMB06014L**	419
	27	**PREMB06027L**	640
100	16	**PREMB10016L**	510
	27	**PREMB10027L**	640
	16	-	-
	27	-	-
150	15.5	-	-
	26.5	-	-
	15.5	**PREMB15016L**	570
	26.5	**PREMB15027L**	708
200	15.3	-	-
	24.3	-	-

PR-Series not available in Canada. Contact Enerpac.



SUP-R-STACK™ Extensions

Increase useful height from 5 to 18 inches.

Model No.	Size (in)	Model No.	Size (in)
PRE5	5	PRE11	11
PRE7	7	PRE14	14
PRE9	9	PRE18	18
PRES6024	Extension set includes **PRE5, PRE7, PRE11** and **PRE18**.		



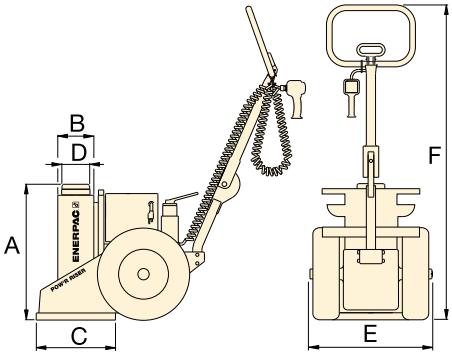
Spacers

Fine tune your extension stack height.

Model No.	Size (in)	Model No.	Size (in)
PRS1	1	PRS3	3
PRS2	2	–	–
PRS4	Set includes (2x) **PRS1,** (1x) **PRS2** and (1x) **PRS3**.		

Cap.	Swivel Load Saddle	Locking U-Rings					Set Model Number	Locking U-Ring Sets Include:			
		1 inch	3 inches	4¼ inches	5½ inches	10 inches		Quantity & model numbers			
tons								2x	1x	2x	1x
60	PRTS60	PRU11	PRU13	PRU14	–	PRU110	[1] PRUS126	PRU11	PRU13	PRU14	–
							[2] PRUS137	PRU11	PRU13	PRU14	PRU110
100	PRTS60	PRU11	PRU13	PRU14	–	PRU110	[1] PRUS126	PRU11	PRU13	PRU14	–
							[2] PRUS137	PRU11	PRU13	PRU14	PRU110
150	PRTS150	PRU151	PRU153	–	PRU155	PRU1510	[3] PRUS1526	PRU151	PRU153	PRU155	–
							[2] PRUS1537	PRU151	PRU1510	PRU155	–
200	PRTS200	PRU201	PRU203	–	PRU205	PRU2010	[3] PRUS2026	PRU201	PRU203	PRU205	–
							[2] PRUS2037	PRU201	PRU2010	PRU205	–

[1] For 14 and 16 inches stroke models
[2] For 27 inches stroke models
[3] For 15.5 inches stroke models.



Model Number with Air Pump	(lbs)	Dimensions (in) A	B	C	D	E	F	Max. Stack Height [1] (in)	Valve Type
PRAMA06014L	419	24	7.0	14	4	24	56	32 [2]	Manual
PRAMA06027L	640	37	7.0	14	4	24	56	11	
PRAMA10016L	510	26	7.0	18	4	24	56	21 [3]	
PRAMA10027L	600	37	7.0	18	4	24	56	11	
PRASA10016L	510	26	7.0	18	4	24	56	21 [3]	Pneumatic
PRASA10027L	600	37	7.0	18	4	24	56	11	
PRASA15016L	570	26	8.0	18	5	24	56	21 [3]	
PRASA15027L	708	37	8.0	18	5	24	56	11	
-	-	26	8.0	18	5	24	56	21 [3]	Manual
-	-	37	8.0	18	5	24	56	11	
PRASA20016L	640	26	9.5	20	6	24	56	21 [3]	Pneumatic
PRASA20027L	825	37	9.5	20	6	24	56	11	

[1] Maximum Additional Stack Height Using Optional Extension
[2] Based on one 18" and one 11" Extension and one 3" Spacer.
[3] Based on one 18" Extension and one 3" Spacer.

PR Series



Rated Lifting Capacity:
60 - 200 tons

Stroke:
14 - 27 inches

Maximum Operating Pressure:
6,000 psi



Optional Locking U-Rings

For safe mechanical cribbing of a lifted load, accessory Locking U-Rings can be placed around an extended piston and come in four lengths for each POW'R-RISER® capacity, and are available individually or in sets. Locking U-Rings are accommodated by storage racks integral to the POW'R-RISER®.

WARNING!

Extensions: Any two extensions may be stacked for loads up to 60 tons. For loads over 60 tons or strokes over 14 inches only one extension and one spacer can be used.

Spacers:
Never exceed 3 inches in total spacer height.

For power source, the following characters should be inserted in the 5th space of the model number.

Ordering Example:
PREMI06014L is a 14" stroke, 60 ton model, with a manual valve and a 208-240 VAC, 1-ph electric motor.

A	Air Pump, 50 scfm, 80 psi
B	115 VAC, 1ph., 50-60 Hz, 20 A
E	208-240 VAC, 1-ph., 50-60 Hz, Euro Plug, 10 A
I	208-240 VAC, 1-ph., 50-60 Hz, USA Plug, 10 A
G	[1] 208-240 VAC, 3-ph., 50-60 Hz
W	[1] 380-415 VAC, 3-ph., 50-60 Hz
J	[1] 440-480 VAC, 3-ph., 50-60 Hz
R	[1] 575 VAC, 3-ph., 50-60 Hz.

[1] Not available for 60 tons capacity.

▼ Shown: **PL20025-ASA** and **PL20014-ASA**



Efficient Lifting with Continuous Automatic Load Locking

- **Provides continuous locking protection during lift, lower and hold functions**
- **Patent-pending control technology synchronizes cylinder and lock nut for smooth and efficient lifting and lowering**
- **Unique double-acting cylinder offers a low collapsed height to accomodate more lifting applications**
- **Simple 2-button pendant allows operation of raise and lower functions from up to 20 feet away**
- **All load-bearing cylinder components have a nitrocarburized treatment to improve wear characteristics and resist corrosion**
- **Ergonomic handle has six positions for comfortable handling and folds when not in use**
- **Meets ANSI/ASME B30.1-2015, AS/NZS-2538, AS/NZS-2693 certification criteria.**

POW'R-LOCK™ Self-Locking Lift System

Only the POW'R-LOCK™ Lift System provides continuous positive locking of the load through all stages of lifting and lowering. No operator intervention is required to activate or de-activate the automatic locking system.

Two different stroke lengths are available. Both models are powered by an external compressed air system (user-supplied).

A convenient two-button pendant controls operation of the Lift System's air motor and directional control valve.



Tilt Load Cap

All POW'R-LOCK™ Lift System models feature a Tilt Load Cap to reduce side-loading.

Safety First

When lifting large, heavy vehicles certain precautions must be followed. Follow your published safety directions for lifting and cribbing your loads.
The POW'R-LOCK™ Lift System provides load/lock protection, but you must follow the safety directions for load cribbing operations.

Enerpac declares that this product has been tested and conforms to applicable standards and is approved to carry the CE mark.
An EU Declaration of Conformity is enclosed separately.

CE

▼ *The PL-Series POW'R-LOCK™ Portable Lift System.*



Accessories

Flat Load Cap – Non-tilt load cap has lower profile for tight lifting spaces.

Extensions – Stackable, with large alloy steel locating studs to resist effects of side-loading.

Spacers – Minimize gap between load cap and lifting point to maximize hydraulic stroke of the jack.

Extension Base Adapter – Extension Base Adapter design eliminates risk of improper stacking when using more than one extension.

PL Series

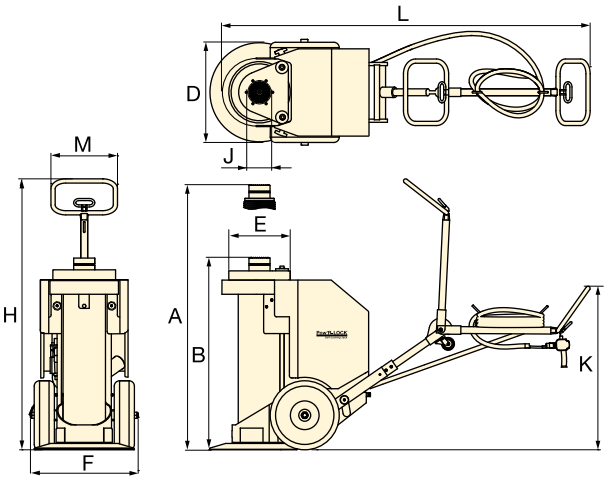


Rated Lifting Capacity:
200 tons

Stroke:
14 or 24.5 inches

Maximum Operating Pressure:
10,000 psi

	Model Number	Description	Height (in)	PL20014-ASA	PL20025-ASA
	**PLC1**	Flat Load Cap	1.3	x	x
	**PLS1**	Spacer	1.0	x	x
	PLS2	Spacer	2.0	x	x
	PLE5	Extension	5.0	x	x
	PLE7	Extension	7.0	x	x
	**PLE9**	Extension	9.0	x	x
	PLE11	Extension	11.0	x	–
	PLE14	Extension	14.0	x	–
	**PLB12**	Extension Base Adapter	12.0	x	–



WARNING!

PLE11 and **PLE14** Extensions and **PLB12** Extension Base Adapter are to be used with the "short" model **PL20014-ASA** only.
Use of these extensions on the "tall" model **PL20025-ASA** will result in an excessive maximum lifting height. Load could become unstable and drop, resulting in possible personal injury and/or property damage.

Model Number	Maximum Additional Stack Height * (in)
PLS20014-ASA	28.0
PLS20025-ASA	9.0

* Using optional PLB and PLE-Series extensions and PLS-Series spacers. Load cap height is NOT included in the stack height.



PR-Series, POW'R-RISER® Mobile Lifting Jack

When automatic load-locking is not required, the POW'R-RISER® jack provides a mobile lifting solution.

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Capacity	Stroke	Model Nr. with Air Pump	Cylinder Lifting Speed [1] (in/min)		Recommended Air Supply [2]		
tons	(in)		Load	No Load	(CFM)	(psi)	(lbs)
200	14.0	**PL20014-ASA**	2.0	2.4	130 - 150	55 - 100	1105
	24.5	**PL20025-ASA**	2.0	2.4	130 - 150	55 - 100	1320

Model Number	Dimensions (in)									
	A [3]	B [3]	D	E	F	H	J	K	L	M
PL20014-ASA	48.0	34.0	23.6	14.5	25.4	64.0	5.0	38.6	89.9	15.7
PL20025-ASA	70.0	45.5	23.6	14.5	25.4	64.0	5.0	38.6	89.9	15.7

[1] Depending on available airflow, regulator setting, pump speed and load weight.

[2] Minimum dynamic air pressure of 55-60 psi, 90-100 psi required to achieve 200 tons capacity.

[3] Height of items A and B is with swivel load cap installed. Subtract 2 inches if flat load cap is used.

There's no substitute for experience in customizing hydraulic cylinders and Enerpac meets the needs of the most demanding applications.

Cylinders are the primary workhorse in hydraulic systems required to push or pull. Although Enerpac offers a wide variety of cylinders to fit many application requirements, there are many applications that require customization.

These may include special corrosion protection, ability to handle extreme side loads, or having special mounting needs.



◀ *Large capacity, double-acting lock nut cylinders with an external lock ring used for bridge work.*



◀ *Double-acting cylinders with pilot-operated check valves and rod eyes on both ends for lifting and positioning applications.*



◀ *Custom private-label cylinders for OEM applications.*

Overview Custom Cylinders



▲ *Custom 500 tons double-acting cylinders with 6 foot stroke for lifting electric rope shovels.*

CUSTOMIZABLE FEATURES:

- Stroke
- Capacity
- Paint
- Pressure Rating
- Fitting
- Special Attachments
- Seals
- Imbedded Sensors
- Collapsed Height
- Rod Modifications
- Special Mounting
- Corrosion Resistance



Custom Hydraulic Pumps

Enerpac offers a wide variety of hydraulic pumps for all your custom needs. Still, many applications require a customized pump to operate the system.

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Overview Enerpac Heavy Lifting Capabilities



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SFP-SERIES, SPLIT-FLOW PUMPS
The split-flow pump is an economical solution for multi-point controlled lifting applications. Split-Flow pumps distribute an equal amount of hydraulic oil to a maximum of 8 outlets.



346

EVO-SERIES, SYNCHRONOUS LIFTING SYSTEMS
EVO-pumps: modular, multi-functional system to control 4, 8 or 12 lifting points. Network capability to link up to 48 lifting points with 4 EVO-units. **EVOP-Series:** (Pump-per-Point) synchronous lift system provides industry leading speed and accuracy for lifting operations.



350

SCJ-SERIES, SELF-LOCKING CUBE JACKS
Compact incremental lifting system with automated mechanical locking. Safe, more efficient alternative to the jack-and-pack method with wooden cribbing. Cube Jack utilizes base lifting frames and self-aligning, lightweight steel cribbing blocks.



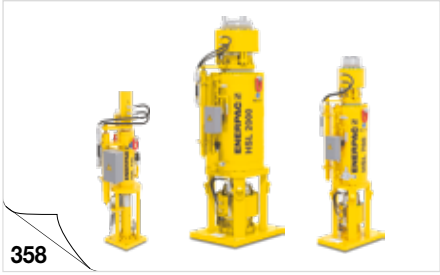
354

BLS-SERIES, CLIMBING JACKS
Double-acting stage lift cylinders with solid plunger design allows for a load to be lifted many times the stroke of the cylinder. The solution for incremental lifting.



356

JS-SERIES, JACK-UP SYSTEMS
The jack-up system is a custom developed multi-point incremental lifting system – synchronously lift and mechanically hold. A typical system setup includes four jack up units positioned under each corner of a load.



358

HSL-SERIES, STRAND JACKS
Compact high capacity system for controlled lifting and lowering. Strand jack systems that provide fully controlled precise lifting.



360

SHC, SHP-SERIES, SYNCHOIST LOAD POSITIONING
Enerpac SynchHoist is a unique crane product for below-the-hook positioning of heavy loads that require precision placement. The SyncHoist system may reduce the number of cranes needed and reduce the costs of multiple picks.



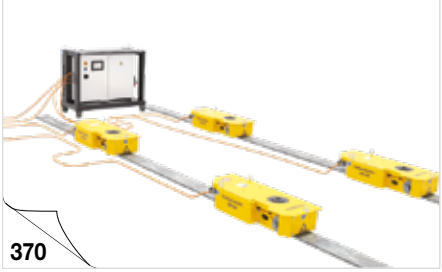
362

ML, SL, SBL-SERIES, HYDRAULIC GANTRIES
Telescopic hydraulic gantries are heavy lifting systems that offer control and stability, even in confined spaces. Wireless control system is included and offer superior safety and control for your most demanding lifting and rigging operations.



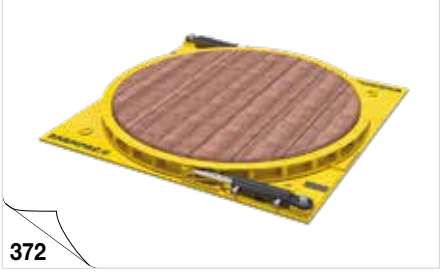
366

LH-SERIES, SKIDDING SYSTEMS
A system comprised of a series of skid-shoes powered by hydraulic push-pull cylinders, traveling over a pre-constructed track. LH-Series includes low-height skid beams that can fit in tight spaces while still offering high capacity.



370

ETR-SERIES, ELECTRIC TROLLEY SYSTEMS
Safe & synchronized travel. The ETR-System is comprised of electrically-driven trolleys which can carry heavy loads along a fixed track system. The entire system is controlled by a hand held wireless control system.



372

ETT-SERIES, HYDRAULIC TURNTABLES
Safe and controlled rotation. The ETT-Series is your solution for rotating heavy loads during, before or after a lifting and skidding operation.



186

EMLS, EMV-SERIES, BATTERY-POWERED MACHINE SKATES
Heavy-duty machine moving system for clean and even surfaces. Safely position loads of up to 55 tons with a single remote operator.

Enerpac hydraulic pumps are available in over 1000 different configurations. Whatever your high-pressure pump needs are... speed, control, intermittent or heavy duty cycle or pumps for multiple lift point capabilities and synchronous lifting systems, you will find an Enerpac pump suited to the application.

Featuring Hand, Battery, Electric, Air and Gasoline powered models, with multiple reservoir and valve configurations, Enerpac offers the most comprehensive pump line available.



Pump Selection

For help in selecting the correct pump for your application, please view our **'Yellow Pages'**. If you require further assistance, contact the Enerpac office located near you.

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Torque Pumps

System matched cordless, air and electric pumps provide control to operate Enerpac Torque Wrenches.

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Pumps for Multiple Lift Point Capabilities

The **SFP-Series Split-Flow Pumps** are an economical solution for multi-point controlled lifting and lowering applications and a far better alternative than using separately operated pumps.

Pumps for Synchronous Lifting Systems

The multi-functional **EVO-Series** lifting system to control 4, 8, 12 up to 48 lifting points.

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Pumps and Directional Valves Section Overview

Power Source	Pump Types	Maximum Reservoir Capacity	Max. Flow at Rated Pressure (in^3/min)	Maximum Power Consumption (hp)	Series		Page
Manual	**Lightweight Hand Pumps** Exclusively from Enerpac	155 in^3	0.15 (in^3/stroke)	–	P		78 ▶
	ULTIMA Steel Hand Pumps	453 in^3	0.29 (in^3/stroke)	–	P		80 ▶
	Low-Pressure Hand Pumps	200 in^3	0.58 (in^3/stroke)	–	P		82 ▶
	Multifluid Hand Pumps Pumping Fluids up to 14,500 psi	–	1.28 (cm^3/stroke)	–	MP		84 ▶
	Foot Pump For Hands Free Operation	38 in^3	0.15 (cm^3/stroke)	–	P		85 ▶
	Ultra-High Pressure Hand Pumps Pressure up to 40,000 psi	60 in^3	0.15 (cm^3/stroke)	–	P, 11		86 ▶
Battery	**Battery Powered Hydraulic Pumps**	73 in^3	12	0.94	SC		88 ▶
	Portable Cordless Zero Emission Pumps	256 in^3	20	0.94	XC2		90 ▶
	Battery Powered Hydraulic Pumps Cordless, Zero Emission Pumps	1.75 gal.	32	1.36	ZC3		92 ▶
Electric	**Economy Pump Series** Compact and Portable	1.0 gal.	20	0.50	PU		94 ▶
	Z-Class Pumps, ZE2-Series Durable, reliable, easy to use	1.8 gal.	20	0.75	ZE2		96 ▶
	Z-Class Pumps Portable Hydraulic Power	10.3 gal.	60	1.7	ZU4		100 ▶
	Z-Class Pumps Powerful and Heavy-Duty	10.3 gal.	200	7.5	ZE		106 ▶
	8000-Series Pumps The Maximum Flow Pumps	25 gal.	462	12.5	PEM PER		112 ▶
Air	**Air Hydraulic Pumps**	80 in^3	8	9.0 scfm	PA		114 ▶
	Single and Twin-Air Motor	2.0 gal.	9	18.0 scfm	PAM		115 ▶
	Turbo II Air Hydraulic Pumps Compact Air Over Hydraulic	305 in^3	10	12.0 scfm	PA		116 ▶
	Air Hydraulic Foot Pumps For Productivity and Ergonomics	122 in^3	15	35.0 scfm	XA		118 ▶
	Z-Class Air Hydraulic Pumps Modular Air Pumps	10.3 gal.	80	100 (scfm)	ZA		120 ▶
Gasoline	**Z-Class Gasoline Hydraulic Pumps** Gas Powered High Flow Pumps	10.3 gal.	200	13.2	ZG		122 ▶
	8000-Series Gasoline Hydraulic Pumps For the largest jobs	25 gal.	346	18.0	EGM		124 ▶
Directional Control Valves Manual and Solenoid Valves, pump and remote mounted					VM, VE VC		127 ▶

▼ Shown from top to bottom: **P802, P842, P202, P142**



- **Lightweight and compact design**
- **Durable glass-filled nylon reservoir and nylon encapsulated aluminum pump base for maximum corrosion resistance**
- **Two-speed operation reduces handle strokes by as much as 78% over single-speed pumps**
- **Lower handle effort to minimize operator fatigue**
- **Integral 4-way valve on P842 for operation of double-acting cylinders**
- **Handle lock and lightweight construction for easy carrying**
- **Large oil capacities to power a wide range of cylinders or tools**
- **Non-conductive fiberglass handle for improved operator safety**
- **Internal pressure relief valve for overload protection.**

Exclusively from Enerpac

Cylinder Matching Chart

For help in selecting the correct hand pump for your application, please refer to the Cylinder Matching Chart located in the 'Yellow Pages'.

Page: **402**

Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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Tank Kits:

When a return-to-tank port is required, the Tank Kits provide a $^{7}/_{16}$"-20 UN port at the rear of the reservoir.

PC20	Fits P141, P142
PC25	Fits P202, P391, P392



Premium Hydraulic Oil

Use only genuine Enerpac Hydraulic Oil. The use of any other fluid will render your Enerpac warranty null and void.

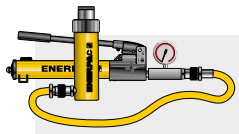
Page: **140**

▼ *Cylinder-pump set SCR254H used to support the construction while monitoring pressure and load with the gauge.*



Pump Type	Usable Oil Capacity (in^3)	Model Number	Pressure Rating [2] (psi) 1st stage	Pressure Rating [2] (psi) 2nd stage	Oil Displacement per Stroke (in^3) 1st stage	Oil Displacement per Stroke (in^3) 2nd stage	Max. Handle Effort (lbs)
Single-Speed	20	**P141**	-	10,000	-	0.055	72
	55	**P391**	-	10,000	-	0.151	85
Two-Speed	20	**P142** [1]	200	10,000	0.221	0.055	78
	55	**P202**	200	10,000	0.221	0.055	63
	55	**P392** [1]	200	10,000	0.687	0.151	93
	155	**P802**	400	10,000	2.40	0.151	95
	155	**P842** [3]	400	10,000	2.40	0.151	95

[1] Available as set, see note on next page. P392 also available in Power Box Set (page 11).
[2] Contact Enerpac for applications where operating pressure is less than 10% of pressure rating.
[3] P842 for use with double-acting cylinders



Pump-Cylinder Sets

All pumps marked with an * are available as **sets** (pump, cylinder, gauge, couplers and hose) for your ordering convenience.

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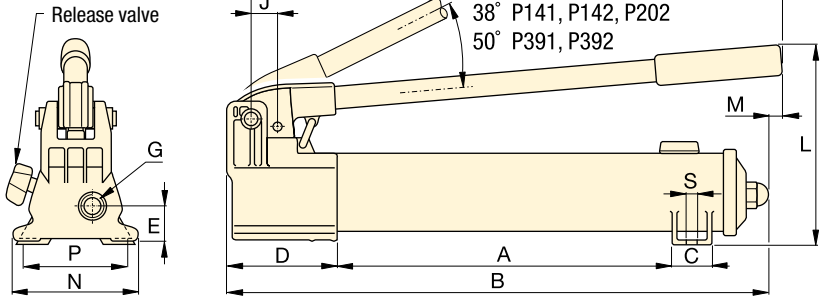
P Series



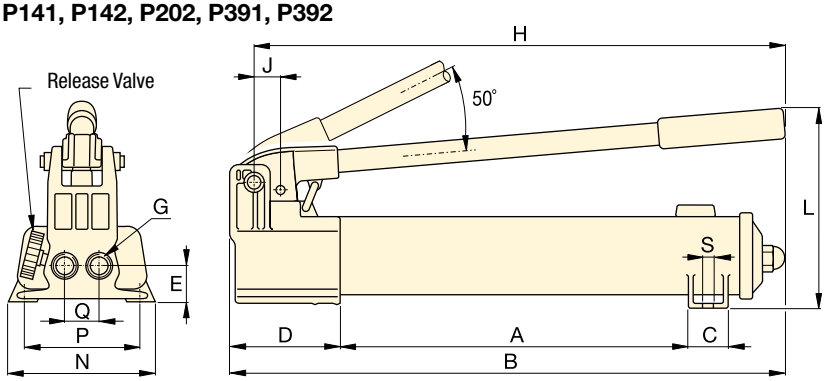
Reservoir Capacity:
20 - 155 in³

Flow at Rated Pressure:
0.055 - 0.15 in³/stroke

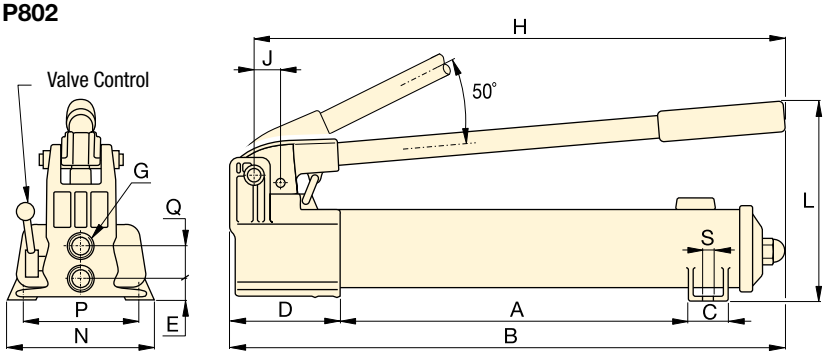
Operating Pressure:
10,000 psi



P141, P142, P202, P391, P392



P802



P842



Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

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GA45GC Gauge Adaptor

Protect yourself from system overloading by simply ordering one part number for a pre-assembled gauge, adaptor block and coupler.

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Foot Pump P392FP

For handsfree operation the lightweight and robust **P392FP** Foot Pump is the perfect choice.

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Piston Stroke	Dimensions (in)															Model Number
(in)	A	B	C	D	E	G	H	J	L	M	N	P	Q	S	(lbs)	
0.50	7.31	13.25	1.13	3.37	1.13	¼"-18 NPTF	12.56	0.75	5.63	–	3.75	3.25	–	0.28	4.5	**P141**
1.00	13.56	21.00	1.44	3.93	1.31	⅜"-18 NPTF	20.56	1.19	7.00	0.63	4.75	–	–	–	9.0	**P391**
0.50	7.31	13.25	1.13	3.37	1.13	¼"-18 NPTF	12.56	0.75	5.63	–	3.75	3.25	–	0.28	5.3	**P142** [1]
0.50	13.56	20.06	1.44	3.37	1.13	¼"-18 NPTF	15.75	0.75	5.69	0.63	3.75	–	–	–	7.5	**P202**
1.00	13.56	21.00	1.44	3.93	1.31	⅜"-18 NPTF	20.56	1.19	7.00	0.63	–	–	–	–	9.0	**P392** [1]
1.00	13.30	21.75	1.78	5.25	1.39	⅜"-18 NPTF	20.75	2.19	9.00	–	7.12	6.02	1.40	0.41	18.0	**P802**
1.00	13.30	21.75	1.78	5.25	0.81	⅜"-18 NPTF	20.75	2.19	9.00	–	7.12	6.02	1.44	0.41	22.0	**P842** [3]

▼ Shown from left to right: **P77, P80, P84, P801, P39**



The Solution for Tough Jobs

- **Reduced handle effort and ergonomic grip for less operator fatigue**
- **Two-speed operation for fast and easy operation (except P39)**
- **Vent free reservoir eliminates spills**
- **Quick grip handle allows for easy transport**
- **Integral reservoir over-pressurization protection**
- **All steel construction, chrome plated plunger and wiper system for durable, long lasting performance**
- **4-way valving on P84 and P464 for operation of double-acting cylinders.**

Two-Speed Pumps

Recommended for applications where cylinder plunger must advance rapidly to load contact, and applications where greater oil capacities are required, such as multiple cylinder hook-ups.



Foot Pump Conversion Kits

Convert your P39, P77, P80 or P801 to foot power with the **PC11** Kit. Includes instructions for easy conversion.



GA45GC Gauge Adaptor

Protect yourself from system overloading by simply ordering one part number for a pre-assembled gauge, adaptor block and coupler.

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4-Way Control Valve

P84 and **P464** feature a manual 4-way control valve, designed for use with one double-acting or two single-acting cylinders. For system set-up information:

Page: 404

▼ *In the absence of a power supply, the P80 Hand Pump offers a powerful solution. Alternatively, a battery-powered cordless pump can be used.*



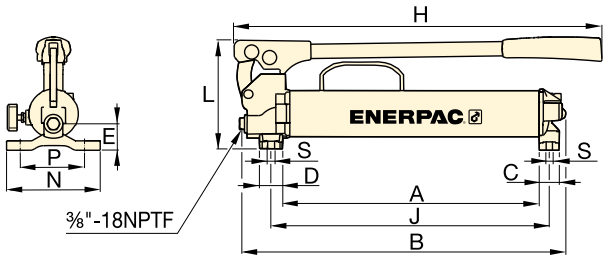
Pump Type	Usable Oil Capacity (in³)	Model Number	Pressure Rating [2] (psi) 1st stage	Pressure Rating [2] (psi) 2nd stage	Oil Displacement per Stroke (in³) 1st stage	Oil Displacement per Stroke (in³) 2nd stage	Max. Handle Effort (lbs)
Single	41	P39	-	10,000	-	0.15	85
Two-Speed	41	P77	500	10,000	1.00	0.15	88
	134	P80 [1]	500	10,000	1.00	0.15	77
	250	P801	500	10,000	1.00	0.15	77
	134	P84 [3]	500	10,000	1.00	0.15	77
	453	P462	200	10,000	7.69	0.29	110
	453	P464 [3]	200	10,000	7.69	0.29	110

[1] Available as a set, see note on next page.
[2] Contact Enerpac for applications where operating pressure is less than 10% of pressure rating.
[3] P84 and P464 are for use with double-acting cylinders.

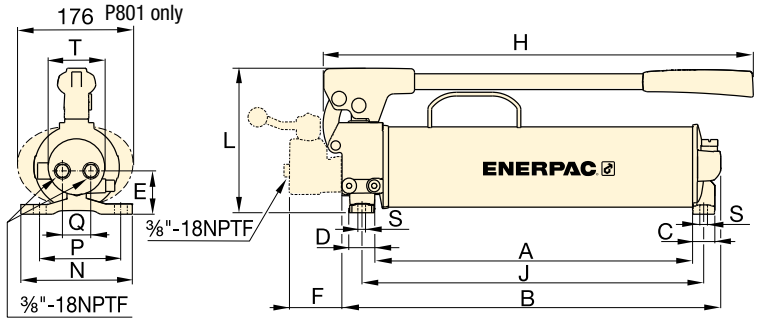
Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the '**Yellow Pages**'.

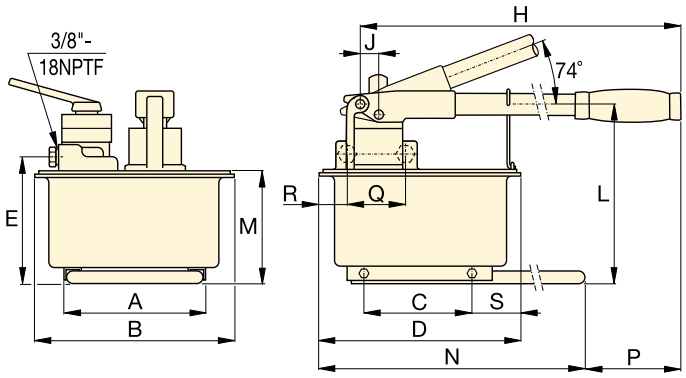
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P39, P77



P80, P801, P84



P462, P464

P Series



Reservoir Capacity:
41- 453 in³

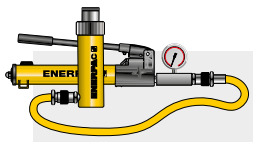
Flow at Rated Pressure:
0.15 - 0.29 in³/stroke

Maximum Operating Pressure:
10,000 psi



Extra Capacity Hand Pumps

P462 and **P464** feature extra large reservoirs and high first-stage flow rate. These pumps are ideally suited for powering high-capacity cylinders.



Pump-Cylinder Sets

The **P80** is also available as **complete set** (pump, cylinder, gauge, couplers and hose) for your ordering convenience.

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Cylinder Matching Chart

For help in selecting the correct hand pump for your application, please refer to the Cylinder Matching Chart located in the 'Yellow Pages'.

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Piston Stroke	Dimensions (in)																	Model Number
(in)	A	B	C	D	E	F	H	J	L	M	N	P	Q	R	S	T	(lbs)	
1.00	15.09	18.91	1.18	1.38	1.48	–	21.63	16.37	6.39	–	5.51	4.37	–	–	0.33	–	13.6	**P39**
1.00	15.39	19.19	1.18	1.38	1.86	–	21.63	16.67	6.39	–	5.51	4.37	–	–	0.33	–	15.6	**P77**
1.00	16.83	20.12	1.18	1.38	2.17	–	23.50	18.11	7.65	–	5.91	4.76	1.65	–	0.33	2.93	23.6	**P80** [1]
1.00	16.83	20.12	1.18	1.38	2.17	–	23.50	18.11	7.65	–	5.91	4.76	1.65	–	0.33	2.93	31.0	**P801**
1.00	16.83	20.06	1.18	1.38	2.30	2.77	22.78	18.11	7.65	–	5.91	4.76	1.50	–	0.33	2.93	26.0	**P84** [3]
1.50	8.25	12.13	6.42	12.63	7.68	–	26.44	.98	10.63	6.89	25.6	3.63	–	–	3.13	–	61.0	**P462**
1.50	8.35	12.13	6.42	12.63	7.68	–	26.44	.98	10.63	6.89	25.6	3.63	3.50	2.68	3.13	–	61.0	**P464** [3]

▼ Shown from left to right: **P25, P51, P18**



When Less Than 10,000 psi is All You Need

- **P25 and P50 pump oil in both forward and reverse handle movement improving overall efficiency, ideal when mounting space is restricted**
- **External load-release valve**
- **Internal pressure-relief valve for overload protection**
- **For use with single-acting cylinders and tools**
- **P18 vertical operation requires pump head facing down**
- **P25 and P50 vertical operation requires pump vent side facing down**
- **P51 for horizontal operation only.**



GA45GC Gauge Adaptor

Protect yourself from system overloading by simply ordering one part number for a pre-assembled gauge, adaptor block and coupler.

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Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

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Premium Hydraulic Oil

Use only genuine Enerpac Hydraulic Oil. The use of any other fluid will render your Enerpac warranty null and void.

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▼ *P18 hand pump used for locking the rotating table for marble polishing.*



Pump Type	Usable Oil Capacity (in^3)	Model Number *	Pressure Rating (psi)	Oil Displacement per Stroke (in^3)	Max. Handle Effort (lbs)
Single-Speed	18	**P18**	2,850	0.16	34
	200	**P25**	2,500	0.58	60
	200	**P50**	5,000	0.29	60
	50	**P51**	3,000	0.25	61

* For use with single-acting cylinders and tools.

P Series



Reservoir Capacity:
18 - 200 in³

Flow at Rated Pressure:
0.16 - 0.58 in³/stroke

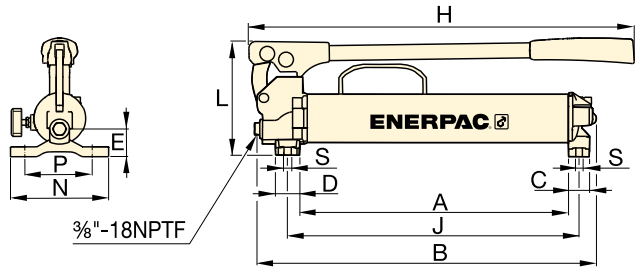
Maximum Operating Pressure:
2,500 - 5,000 psi



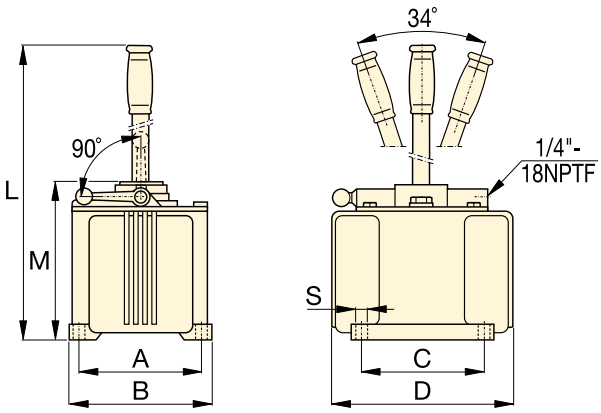
MP-Series Multifluid Hand Pumps

Corrosion resistant hand pumps for low pressure filling and high pressure testing applications, suitable for a wide range of fluids.

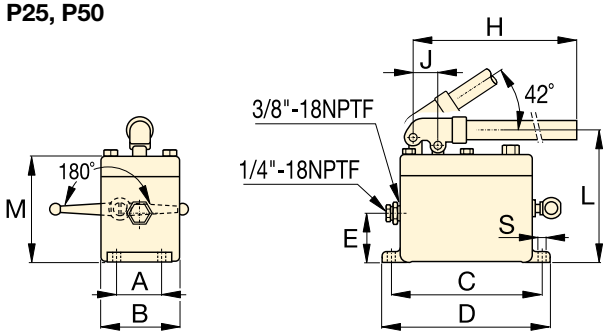
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P18



P25, P50



P51

▼ *P51 hand pumps used with RC-Series cylinders to keep wooden layers under pressure during lamination of plates.*



Piston Stroke	Dimensions (in)													Model Number *
(in)	A	B	C	D	E	H	J	L	M	N	P	S	(lbs)	
1.00	8.70	12.44	1.18	1.38	1.48	15.17	9.98	6.39	–	5.51	4.37	0.33	11	**P18**
1.50	6.00	6.82	6.00	9.43	–	–	–	26.94	7.88	–	–	0.40	36	**P25**
1.50	6.00	6.82	6.00	9.43	–	–	–	26.94	7.88	–	–	0.40	37	**P50**
1.00	2.06	3.63	7.12	7.88	2.25	24.00	1.16	6.31	5.06	–	–	0.34	12	**P51**

▼ MP110



MP
Series

Flow at Rated Pressure:
0.12 - 1.28 in³/stroke

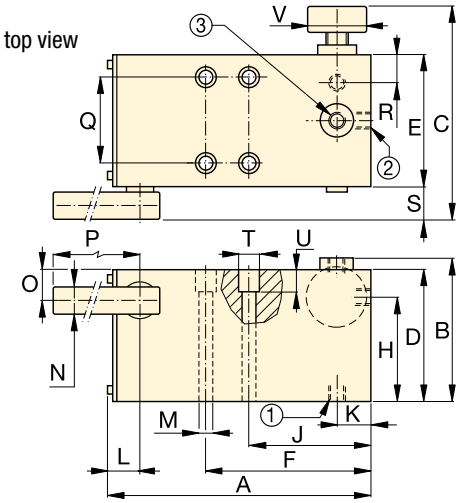
Maximum Operating Pressure:
1,500 - 14,500 psi



Optional Reservoir Kit

The two-gallon reservoir kit includes tank with skid frame, top plate with reservoir seal, suction pipe and mounting bolts. For use with mineral oil applications only. Useable oil capacity is 1.5 gallon. Order model number: **MP10T**

- **Superior corrosion resistance**
- **Standard Nitrile seals – can be used for a wide range of fluids such as demineralised water, oil/water emulsions, waterglycols, mineral oils**
- **Two-speed pumps up to 14,500 psi pressure**
- **Buna Nitrile seals can be exchanged with optional EPDM seal for use with Skydrol or brake fluids**
- **Impregnated aluminum anodized pump housing with stainless steel internal pumping components**
- **Externally adjustable pressure relief valve**
- **1/4" NPTF gauge port**
- **For use with single-acting cylinders and tools.**

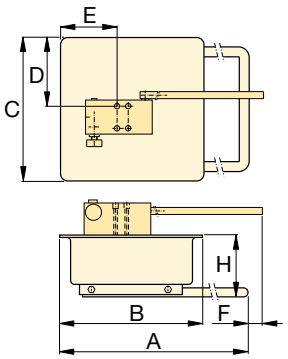


MP110, 350, 700, 1000

① Suction / Tank return port 3/8"-18 NPTF
② Pressure port 3/8"-18 NPTF
③ Gauge port 1/4"-18 NPTF

Pump Type	Usable Oil Capacity * (in³)	Model Number **	Pressure Rating (psi) 1st stage	Pressure Rating (psi) 2nd stage	Oil Displacement per Stroke (in³) 1st stage	Oil Displacement per Stroke (in³) 2nd stage	Max. Handle Effort (lbs)	Piston Stroke (in)	(lbs)
Two Speed	*	MP110	500	1500	3.2	1.28	99	1.04	14.5
	*	MP350	500	5000	3.2	0.43	99	1.04	14.5
	*	MP700	500	10,000	3.2	0.18	99	1.04	14.5
	*	MP1000	500	14,500	3.2	0.12	99	1.04	14.5

* MP-Pump includes 0.060 inch thick gasket for reservoir mounting. MP-Series pumps requires the use of an external reservoir.
** MP-Series pumps are for use with single-acting cylinders and tools.



MP10T

	Dimensions (in) A	B	C	D	E	F	H	J	K	L	M	N	O	P	Q	R	S	T	U	V
MP	7.48	4.65	6.85	3.74	3.74	4.69	2.72	3.31	.79	1.10	.37	ø 1.00	.90	26.60	2.80	.79	1.18	.59	.59	ø 1.97
MP10T	25.6	12.6	12.13	4.57	7.09	11.1	6.89	–	–	–	–	–	–	–	–	–	–	–	–	–

Lightweight Hydraulic Foot Pump

▼ P392FP



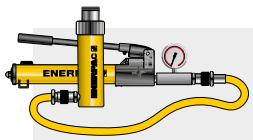
P Series



Reservoir Capacity:
38 in^3

Flow at Rated Pressure:
0.151 in^3/stroke

Maximum Operating Pressure:
10,000 psi



Pump-Cylinder Sets

The **P392FP** is available as **set** (pump, cylinder, gauge, couplers and hose) for your ordering convenience.

Page: 6

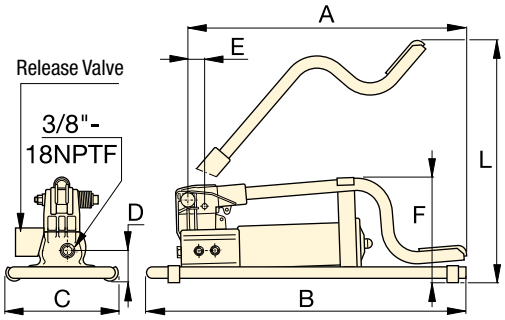


Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

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- **Robust, durable and compact**
  - **Steel frame for maximum stability**
  - **Steel pumping handle**
  - **Aluminum reservoir**
- **Foot pedal lock and lightweight construction for easy carrying**
- **Two-speed operation reduces foot pedal strokes**
- **Large foot-pad release valve for controlling load descent**
- **Internal pressure relief valve for overload protection.**



▼ *P392FP offers the advantage of hands-free operation to handle and control the tool or cylinder.*



Usable Oil Capacity (in^3)	Model Number	Pressure Rating (psi) 1st stage	Pressure Rating (psi) 2nd stage	Oil Displacement per Stroke (in^3) 1st stage	Oil Displacement per Stroke (in^3) 2nd stage	Max. Handle Effort (lbs)	Piston Stroke (in)	(lbs)	Dimensions (in) A	B	C	D	E	F	L
30	**P392FP ***	200	10,000	0.687	0.151	125	1.00	16	20	24.1	7.8	2.3	1.2	8.1	18.4

* Available as set, see note on this page.

▼ Shown from left to right: **11-100, P2282**



Ultra-High Pressure up to 40,000 psi

- **Two-speed operation on the P2282 allows for faster fill operation, reducing cycle times for many testing applications**
- **303 Stainless steel construction on the 11-100 and 11-400 models enable use with many different fluids, such as distilled water, diesters, silicones, soluble oils and petroleum**
- **Large release knob for improved control of pressure release**
- **Outlet ports are ¾"-16 UNF cone for 40,000 psi rating**
- **Ultra-high pressure fittings feature all stainless steel construction except adaptor 41-366 which features nickel plated carbon steel construction.**



2-Way Shut-Off Valve Model Number 72-750

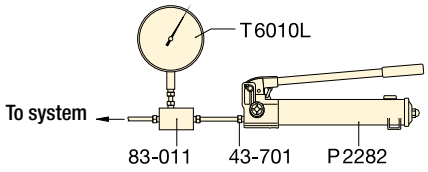
For 40,000 psi applications requiring a shut-off valve or gauge snubber. Made of 318 Stainless Steel and utilizing .38 inch cone fittings, it is the perfect selection for use with your ultra-high pressure hand pump.



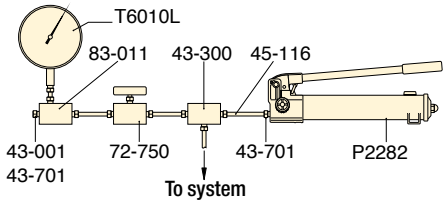
Test System Gauges

Ideal for monitoring pressure in your hydraulic circuit. Test System Gauges, such as the **T6010L**, are available with cone threads or NPTF threads and a variety of pressure ranges.

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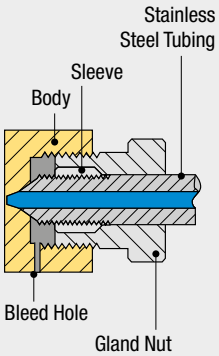
▲ *Typical Test System*



▲ *Test System with Gauge and Snubber*

Cone Seal

Stainless Steel High Pressure fittings seal on a 'cone' surface and do not require pipe sealer. The Gland Nut holds the sleeve and tubing tight against the cone surface to provide a 40,000 psi seal.



Pump Type	Usable Oil Capacity (in³)	Model Number	Pressure Rating * (psi) 1st stage	Pressure Rating * (psi) 2nd stage	Oil Displacement per Stroke (in³) 1st stage	Oil Displacement per Stroke (in³) 2nd stage	Max. Handle Effort (lbs)
Two-Speed	60	**P2282**	200	**40,000**	0.99	0.037	106
Single-Speed	45	**11-100**	-	**10,000**	-	0.152	120
	45	**11-400**	-	**40,000**	-	0.038	120

* Contact Enerpac for applications where operating pressure is less than 10% of operating pressure.

▼ Optional Ultra-High Pressure Fittings and Tubings

Description		Connection	Model No.
		40,000 psi	
Gland Nut Plug		.38" cone	**43-001**
Elbow		.38" cone	**43-200**
Tee		.38" cone	**43-300**
Gauge Tee		.38" cone side/ .25" cone gauge port	**43-301**
Gauge Adaptor		.38" cone side/ .25" cone gauge port	**83-011**
Coupling		.38" cone	**43-400**
Cross		.38" cone	**43-600**
Gland Nut with Sleeve		.38" cone	**43-701**
Gauge Connector		.25" cone	**43-704**
Tubing		4 inch tube, O.D. .38" * 8 inch tube, O.D. .38" * 12 inch tube, O.D. .38" *	**45-116** **45-126** **45-136**
WARNING: Maximum working pressure: 10,000 psi only			
Adaptor		.38" F cone to ¼" M NPTF .38" F cone to ⅜" M NPTF	**41-146** **41-166**
Adaptor		.38" F cone to ¼" F NPTF .38" F cone to ⅜" F NPTF	**41-246** **41-266**
Adaptor		.38" M cone to ⅜" F NPTF	**41-366**

Note: .25" cone fittings use 9⁄16"-18 threads, ⅜" cone fittings use ¾"-16 threads.
* Actual tubing lengths are 0.75 inch less than nominal size shown. These dimensions make distance between centers of valves and fittings multiples of 4 inches spaces.

P, 11 Series



Reservoir Capacity:
45 - 60 in³

Flow at Rated Pressure:
0.037 - 0.152 in³/stroke

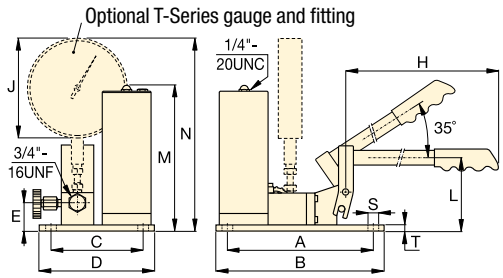
Maximum Operating Pressure:
10,000 - 40,000 psi

Ultra-High Pressure pumps DO NOT have an internal safety pressure relief valve.

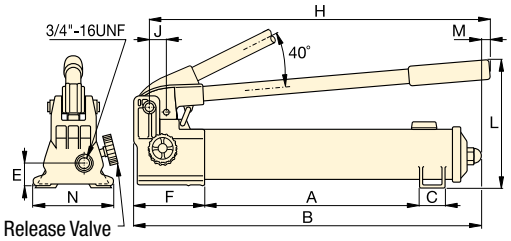
Stainless Steel Construction

Ultra-High Pressure Fittings feature all stainless steel construction except adaptor **41-366**, which features nickel plated carbon steel construction.

11-100
11-400



P2282



Piston Stroke	Dimensions (in)														Model Number
(in)	A	B	C	D	E	F	H	J	L	M	N	S	T	(lbs)	
1.00	13.56	22.00	1.40	–	1.24	5.25	20.75	1.16	9.00	0.28	4.74	–	–	14	**P2282**
0.78	9.45	10.50	5.98	7.00	1.77	–	25.00	6.41	4.50	9.33	12.38	0.31	0.37	22	**11-100**
0.78	9.45	10.50	5.98	7.00	1.77	–	25.00	6.41	4.50	9.33	12.38	0.31	0.37	22	**11-400**

▼ **SC1201MB**



Works with ENERPAC CONNECT

Compact, lightweight with exceptional speed, battery runtime and precision control

- **Cordless convenience eliminates extension cords, noise and emission producing generators**
- **High-performance brushless motor provides high-flow rate for increased productivity and twice the life of brushed motors**
- **Compact, lightweight design for access and use in tight workspaces**
- **Ideal for lifting, alignment and other applications requiring high-precision in advance and retract**
- **Oil capacity for a wide range of cylinders and tools**
- **Bladder reservoir reduces contamination and allows pump use in any position**
- **Includes shoulder strap SSTRP55, attaches to integrated steel rings for enhanced portability**
- **Compatible with the Enerpac Connect App, which gives access to the latest tool & job information.**

▼ *Thumbwheel speed control enables high-precision of cylinder or tool advance during operation.*



▼ *Release valve enables controlled cylinder or tool retraction.*





Pendant Controls

Heavy-duty pendants operate any Enerpac SC-Series pump. Easy to connect or disconnect when not required, the pendants feature large buttons, an over molded grip, lanyard loop and hanger magnet. Multiple seals within the pendant provide IP64 environmental protection. The SC-pump does not come with a pendant. The pendant must be ordered as an accessory.

Description	Model No.
Pendant, 10 ft cord	**CC131**
Pendant, 20 ft m cord	**CC132**
Extension Cord, 10 ft	**CC010**



54 Volt Lithium-Ion Battery

The 4 Ah **EBH544K** battery with high-capacity cells provides extended runtime for higher cycle and larger tool and cylinder applications.



54 Volt Fast Battery Charger

The fast charger minimizes downtime with a 1½ hour charge cycle. Charger provides charge status, over-temperature and damaged battery indication.

54 Volt Fast Charger	Model No.
115 Volt North America	**EC1F541B**
230 Volt Europe	**EC1F542E**
230 Volt Australia	**EC1F542A**

SC-Series Cordless Pump

The SC-Series pump features a compact, lightweight design for access and use in tight workspaces.
The high-performance brushless motor provides excellent speed to complete applications quickly and efficiently.

When precision control of tool or cylinder advance is required, the thumbwheel speed control can be adjusted during operation for fine incremental movement.

High-precision retraction is possible as well with the convenient release valve.

The pump utilizes the Enerpac 54 Volt, 4 Ah battery providing substantial runtime for high-cycle, high-pressure applications.

The SC-Series pump extends cordless convenience further in the field or facility.

Tool / Cylinder	Application	Per Charge
NC5060 Nut Splitter	2.0 inch, A194 Grade 2H Heavy Hex Nut	57x
SP35 Punch	13⁄16 inch hole, 1⁄4 inch mild steel	317x
RCS302 Cylinder	22 tons, 1.50 inch extension	43x

SC Series



Reservoir Capacity:
73 in³

Flow at Rated Pressure:
12 in³/min

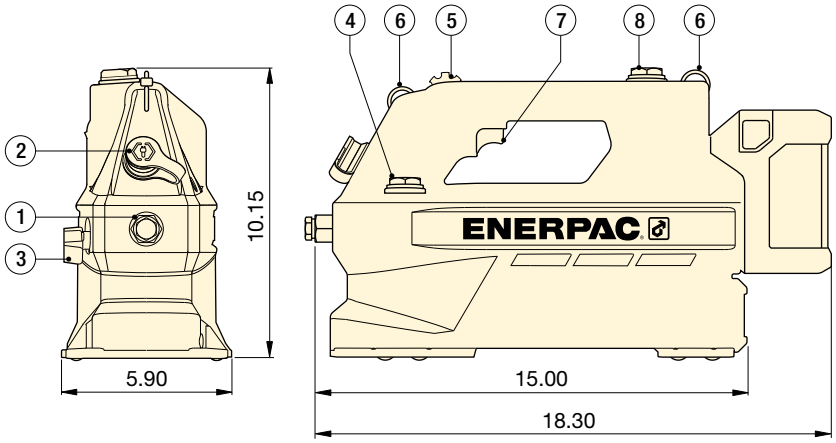
Motor & Battery Size:
0.94 hp, 54 V / 4 Ah

Maximum Operating Pressure:
10,000 psi

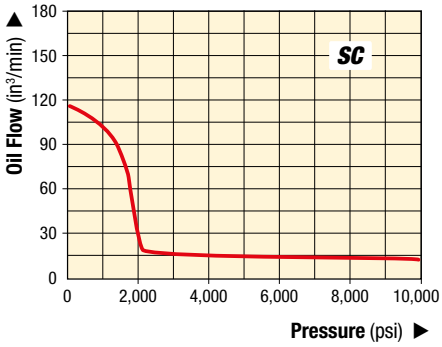
Works with ENERPAC CONNECT

Use the Enerpac Connect Mobile App for the latest essential tool information.
Scanning the QR code on the pump gives instant access to product specifications, manuals, videos, job specific usage data, and wireless firmware updates.

① Outlet advance port 3/8"-18 NPTF
② Pendant connection port
③ Manual release valve
④ User adjustable relief valve access
⑤ Thumbwheel adjustable speed control
⑥ Shoulder strap connection points
⑦ Trigger
⑧ Oil fill



OIL FLOW vs. PRESSURE



▼ SELECTION CHART

Pump Type (Use with cylinder/tool)	Useable Oil Capacity (in³)	Model Number *	Output Flow Rate (in³/min) No Load	Output Flow Rate (in³/min) 10,000 psi	Valve Function	Batteries in kit	Charger in kit Plug set type	1) (lbs)
Single-Acting	61	SC1201M	115	12	Manual 3-way, 2-pos.	–	–	20.2
	61	SC1201MB *				2x 4 Ah	115 V North America	20.2
	61	SC1201ME *				2x 4 Ah	230 V Europe	20.2
	61	SC1201MA *				2x 4 Ah	230 V Australia	20.2

* The sets **SC1201MBS**, **SC1201MES** and **SC1201MAS** include: SC-Pump, 1x Battery, Charger and Shoulder Strap.
1) Weight includes pump with oil and battery. Battery weight 3.5 lbs.

▼ From left to right: **XC2402MB, XC2302SB**



Works with ENERPAC CONNECT

- **Cordless convenience eliminates extension cords, noise and emission producing generators**
- **High-Performance brushless motor drives high-flow rates for increased productivity and provides twice the life of brushed motors**
- **Bladder reservoir reduces contamination and allows pump use in any position**
- **Pump models with 1 gallon oil capacity enable use with larger and multiple cylinders**
- **Includes shoulder strap SSTRP55, attaches to integrated steel rings for enhanced portability**
- **Compatible with the Enerpac Connect App, which gives access to the latest tool & job information**
- **Torque pump models available, see Bolting Tools section.**

▼ *Variable Speed Trigger: Featured on manual valve models. Enables greater precision of tool or cylinder travel.*



The Next Generation of Cordless Performance and Efficiency

Works with ENERPAC CONNECT

Use the Enerpac Connect Mobile App for the latest essential tool information.
Scanning the QR code on the pump gives instant access to product specifications, manuals, videos, job specific usage data, and wireless firmware updates.



Pendant Controls

Heavy-duty pendants operate any Enerpac XC2-Series pump. Easy to connect or disconnect when not required, the pendants feature large buttons, an over molded grip, lanyard loop and hanger magnet. Multiple seals within the pendant provide IP64 environmental protection.

Description	Model No.
Pendant, 10 ft cord	**CC131**
Pendant, 20 ft cord	**CC132**
Extension Cord, 10 ft	**CC010**



54 Volt Lithium-Ion Battery

The 4 Ah **EBH544K** battery with high-capacity cells provides extended runtime for higher cycle and larger tool and cylinder applications.



One gallon reservoir

Pump models with one gallon oil capacity enable use with larger and multiple cylinders.

1 gallon XC2 pump can be used with:
One **RC10010** 100 tons cylinder
Two **RC756** 75 tons cylinders
Three **RC506** 50 tons cylinders
Four **RC504** 50 tons cylinders



54 Volt Fast Battery Charger

The fast charger minimizes downtime with a 1½ hour charge cycle. Charger provides charge status, over-temperature and damaged battery indication.

54 Volt Fast Charger	Model No.
115 Volt North America	**EC1F541B**
230 Volt Europe	**EC1F542E**
230 Volt Australia	**EC1F542A**

XC2-Series Cordless Pumps

The XC2-Series pumps take speed, battery run time and oil capacity to new levels greatly expanding the usage opportunities. Capable of larger tool and cylinder applications, cordless convenience can be extended further in the field or facility.

Manual valve models feature a variable speed trigger for greater control of tool or cylinder advance and the Enerpac 54 Volt battery system enables significant work completion on a single battery charge.

The high-performance brushless motor provides the speed of a ½ hp electric pump enabling corded productivity with cordless convenience.

Tool / Cylinder	Application	Per Charge
NC5060 Nut Splitter	2.0 inch, A194 Grade 2H Heavy Hex Nut	57x
SP35 Punch	13⁄16 inch hole, ¼ inch mild steel	317x
RCS302 Cylinder	22 tons, 1½ inch extension	43x
RAR506 Cylinder	40 tons, 3.0 inch extension	10½x
RAR1006 Cylinder	80 tons, 3.0 inch extension	4½x

XC2 Series



Reservoir Capacity:
134 - 256 in³

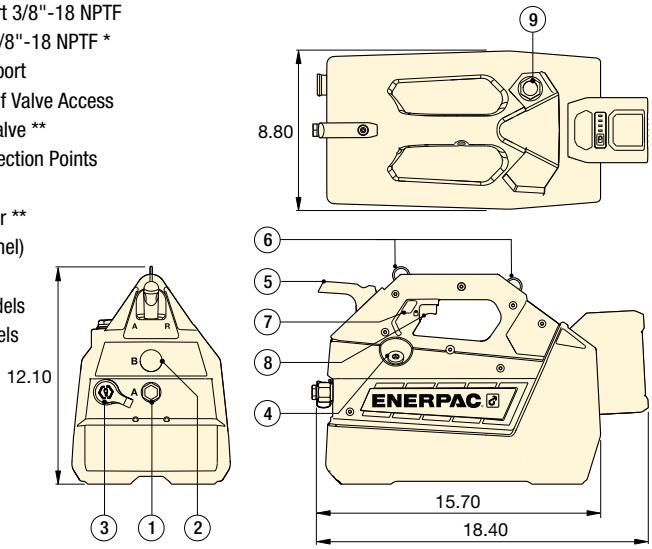
Flow at Rated Pressure:
20 in³/min

Motor & Battery Size:
0.94 hp, 54 V / 4 Ah

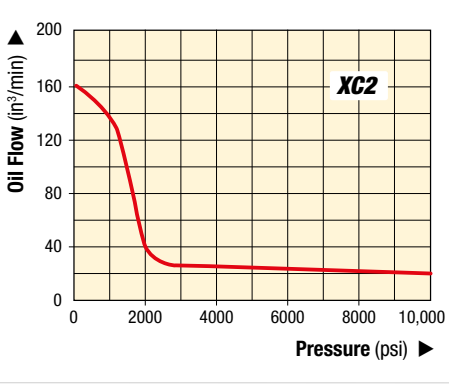
Maximum Operating Pressure:
10,000 psi

① Outlet "Advance" Port 3/8"-18 NPTF
② Inlet "Retract" Port 3/8"-18 NPTF *
③ Pendant connection port
④ User Adjustable Relief Valve Access
⑤ Directional Control Valve **
⑥ Shoulder Strap Connection Points
⑦ Trigger Lock **
⑧ Variable speed trigger **
⑨ Oil Fill (must use funnel)

* On Double-Acting models
** On Manual Valve models



OIL FLOW vs. PRESSURE



▼ SELECTION CHART

Pump Type (Used with cylinder)	Useable Oil Capacity (in³)	Model Number [1]	Output Flow Rate (in³/min) No Load	Output Flow Rate (in³/min) 10,000 psi	Valve Function	Pendant in kit	Batteries in kit	Charger in kit	Weight [2] (lbs)
Single-Acting	122	XC2202M	160	20	Manual 3-way, 2-position	–	–	–	26.3
	241	XC2204M				–	–	–	29.8
	122	XC2202MB				–	2x 4 Ah	115 V	26.3
	241	XC2204MB				–	2x 4 Ah	115 V	29.8
Single-Acting	122	XC2302S	160	20	Solenoid 3-way, 2-position	CC131	–		28.3
	241	XC2304S				CC131	–		31.8
	122	XC2302SB				CC131	2x 4 Ah	115 V	28.3
	241	XC2304SB				CC131	2x 4 Ah	115 V	31.8
Double-Acting	122	XC2402M	160	20	Manual 4-way, 3-position	–	–	–	28.3
	241	XC2404M				–	–	–	31.8
	122	XC2402MB				–	2x 4 Ah	115 V	28.3
	241	XC2404MB				–	2x 4 Ah	115 V	31.8

[1] Pumps available with 230 V North European plugset charger. Substitute "**B**" suffix with "**E**" in model number. Example: **XC2204ME**.
Pumps available with 230 V Australian plugset charger. Substitute "**B**" suffix with "**A**" in model number. Example: **XC2304SA**.

[2] Weight includes pump with oil and battery. Battery weight 3.5 lbs.

▼ ZC3308JB



Tough.
Dependable.
Innovative.
Z CLASS

High-Performance Battery Power

Productivity, Performance, Safety

- High-flow cordless solution saves users time and money by eliminating the need for using a generator and extension cords
- Brushless 1.36 hp motor and 3 stage pump maximizes pump and tool productivity while minimizing heat buildup and downtime
- The Lithium-Ion battery provides superior run time, even under extreme job site conditions
- Convenient 10 ft. pendant cord for hassle-free operation
- Reduced noise level 80 dBA max.
- Zero emission hydraulic power pack.



Charger *	
ZC115VC	120 V - 60 Hz
ZC230VC	230 V - 50 Hz
Battery **	
ZC82V4NA	82 V, 4 Ah
ZC82V4EUAU	82 V, 4 Ah

* 1-hour quick charger
** NA is North America and EUAU is European and Australia.



Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. Refer to the System Components Section for a full range of gauges.

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Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

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◀ *Special Enerpac ZC3-Series Cordless Hydraulic Pump used for rail stressing applications (page 194).*

ZC-Series, Cordless Pumps

The Enerpac ZC-Series pump combines the performance of an electric pump with the convenience and portability of a battery pump. This quiet, cordless solution is ideal for applications where emission and noise are a concern, or when electricity or air is not readily available.

The Lithium-Ion battery provides impressive run times

Power for the pump is supplied by a rechargeable 82 V Lithium-ion battery.

The Lithium-ion battery is capable of providing impressive run times, even under extreme job site conditions.

- 50 times lifting with RC1006 cylinder (100 tons, 6.13 inches stroke)
- 90 times lifting with RC504 cylinder (50 tons, 4.0 inches stroke).

Valve Options

- 4-way/3-position manual control valve used with double-acting cylinders
- 3-way/3-position manual control valve used with single-acting cylinders
- 4-way/3-postion manual control valve with locking and power seat functions used in post tensioning concrete applications.

Applications

- High-flow cordless solution for industrial applications
- Foundation repair
- Rail industry
- Post-tensioning concrete.

ZC Series

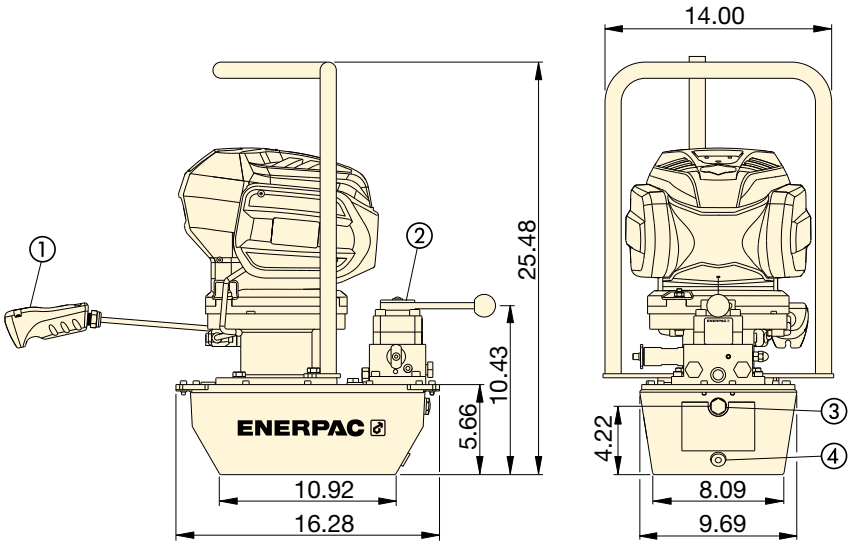


Reservoir Capacity:
1.75 gallons

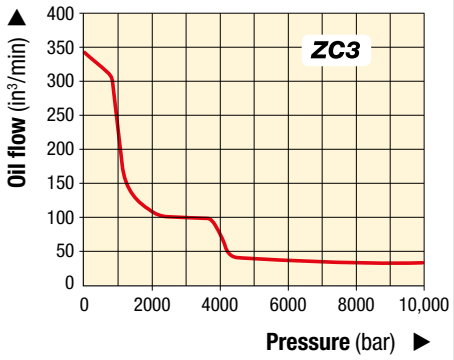
Flow at Rated Pressure:
32 in³/min

Motor & Battery Size:
1.36 hp, 82 V / 4 Ah

Maximum Operating Pressure:
10,000 psi



OIL FLOW VERSUS PRESSURE



① Motor On/Off Remote Pendant
② VM43-LPS Valve Shown
③ Sight Glass
④ Oil Drain ½" NPTF

Used for Cylinder or Tools	Useable Oil Capacity (gal)	Manual Valve Model Number	Valve Function	Model Number *	Output Flow Rate (in³/min) @ no load	@ 4000 psi	@ 10,000 psi	Battery Charger Voltage V - Hz	** (lbs)
Single-Acting	1.75	VM33	Advance/Neutral/Retract	**ZC3308JB**	310	80	32	115 - 60	65.5
				ZC3308JE				230 - 50	
Double-Acting	1.75	VM43	Advance/Neutral/Retract	**ZC3408JB**	310	80	32	115 - 60	65.5
				ZC3408JE				230 - 50	
Power Seater Post-Tensioning Tools	1.75	VM43LPS	Advance/Hold/Retract	**ZC3908JB**	310	80	32	115 - 60	73.4
				ZC3908JE				230 - 50	

* All models meet CE safety requirements and all TÜV requirements. Pump includes one charger and battery.
** Weight including oil and battery. Battery weight = 5.7 lbs.

▼ **PUJ1200B**



Heavy on Performance, Light on Weight

- **Lightweight and compact design: 24 to 36 lbs**
- **Large easy-carry handle for maximum portability**
- **Two-speed operation reduces cycle times for improved productivity**
- **115 VAC 50/60-cycle universal motor will operate under poor voltage supply**
- **24 VAC remote motor control, 10 ft. length for operator safety**
- **Starts under full load**
- **High-strength molded shroud, with integral handle, protects motor from contamination and damage**
- **Designed for intermittent duty cycle.**



Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. For use with the Economy pump the **G2535L** gauge and **GA3** gauge adaptor are suggested.

For a full range of gauges, please refer to the System Components section.

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Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

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Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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▼ *An Economy Pump PUJ1200B is used with a low-height cylinder RCS302 to reposition a Scissor lift to simplify maintenance.*



Pump Type (Used with cylinder)	Usable Oil Capacity (gal)	Model Number *	Pressure Rating (psi) 1st stage	Pressure Rating (psi) 2nd stage
Single-Acting	0.5	**PUD1100B**	200	10,000
	1.0	**PUD1101B**	200	10,000
	0.5	**PUJ1200B**	200	10,000
	1.0	**PUJ1201B**	200	10,000
	0.5	**PUD1300B**	200	10,000
	1.0	**PUD1301B**	200	10,000
Double-Acting	0.5	**PUJ1400B**	200	10,000
	1.0	**PUJ1401B**	200	10,000

* For 230 Volt applications replace '**B**' suffix with '**E**'.
CE conformity marking only applies to pumps with an "E" suffix (230 V).

Economy Electric Pumps

About the Economy Pump

The Economy pump is best suited to power small to medium size cylinders or hydraulic tools. Its lightweight and compact design make it ideal for applications which require easy transport of the pump. The universal motor works well on long extension cords or generator-driven electrical power supplies.

For further application assistance refer to the 'Yellow Pages'.

PUD1100-Series

- Provides advance-retract of single-acting cylinders
- Ideal for punching applications
- For applications not requiring load holding
- 10 ft. cord with pendant controls motor and valve operation.

PUD1300-Series

- Provides advance-hold-retract of single-acting cylinders
- Ideal for applications requiring load-holding
- For applications requiring solenoid valve operations
- 10 ft. cord with pendant controls motor and valve operation.

PUJ-Series

- Manual valves provide advance-hold-retract tool operation
- Available with 3- and 4-way valves for single or double-acting cylinders
- 10 ft. cord with pendant controls the motor operation.

CE conformity marking only applies to pumps with an "E" suffix (230 V).

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PU Series

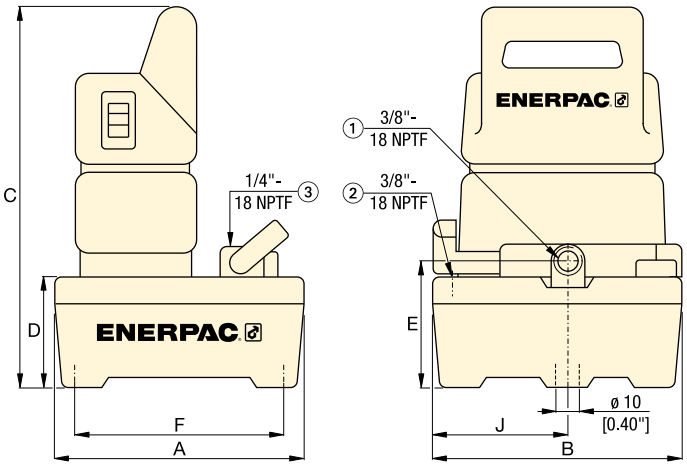


Reservoir Capacity:
0.5 - 1.0 gallon

Flow at Rated Pressure:
20 in³/min

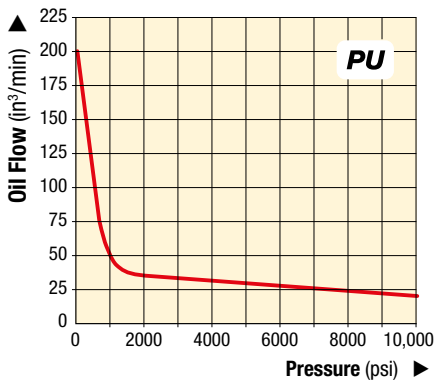
Motor Size:
0.50 hp

Maximum Operating Pressure:
10,000 psi



① Oil Outlet Port
② Tank Port
③ Gauge Port (PUJ1200 and PUJ1201 models only)

OIL FLOW VERSUS PRESSURE



Output Flow Rate (in³/min) 1st stage	Output Flow Rate (in³/min) 2nd stage	Valve Type	Valve Function	Current Draw (Amps)	Motor Voltage (VAC)	Sound Level (dBA)	Dimensions (in) A	B	C	D	E	F	J	Weight (lbs)	Model Number *
200	20	Dump **	Advance/Retract	9.5	115	85	9.62	9.62	14.25	4.00	4.72	8.00	5.25	26	**PUD1100B**
200	20			9.5	115	85	14.50	12.18	14.72	4.15	5.12	12.74	5.62	35	**PUD1101B**
200	20	3/2 manual	Advance/ Hold/Retract	9.5	115	85	9.62	9.62	14.25	4.00	4.72	8.00	5.25	26	**PUJ1200B**
200	20			9.5	115	85	14.50	12.18	14.72	4.15	5.12	12.74	5.62	35	**PUJ1201B**
200	20	3/2 solenoid	Dump & Hold	9.5	115	85	9.62	9.62	14.25	4.00	4.72	8.00	5.25	24	**PUD1300B**
200	20			9.5	115	85	14.50	12.18	14.72	4.15	5.12	12.74	5.62	31	**PUD1301B**
200	20	4/3 manual	Advance/ Hold/Retract	9.5	115	85	9.62	9.62	14.25	4.00	4.72	8.00	5.25	29	**PUJ1400B**
200	20			9.5	115	85	14.50	12.18	14.72	4.15	5.12	12.74	5.62	36	**PUJ1401B**

** Electric dump valve for auto-retract of cylinders.

▼ ZE2208MB, ZE2-Series, Electric Pump



Durable, reliable, easy to use

- 0.75 hp induction motor for long life and quiet operation
- 71 to 79 dBA across the pressure range
- 1.8 gallons, steel reservoir offers capacity and cool operation for wide range of applications
- IP54 protection
- Heavy-duty bearings extend pump life by reducing heat, improving lubrication and reducing wear
- Replaceable piston check valves increase service life of major pump components
- VE32D solenoid dump valve model available
- Pendant and manual control options for ease of use.



Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. Refer to the System Components Section for a full range of gauges.

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Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

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Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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ZE2-Series, Electric Pumps

The ZE2-Series is part of the proven Enerpac ZE-Series and utilizes many of the same design elements as the larger pumps in the family.

The 0.75 hp induction motor enables productive flow rates, long cycle life and quiet operation. Combined with the efficient, robust and easy to service pumping element the ZE2 is ideal for manufacturing and shop environments.

Multiple valve and control options provide the flexibility to match the pump to a wide range of pressing, punching and other operations.

Compare the ZE2 to the other pumps in the ZE-Series and determine the best pump for the application.

ZE2 Series

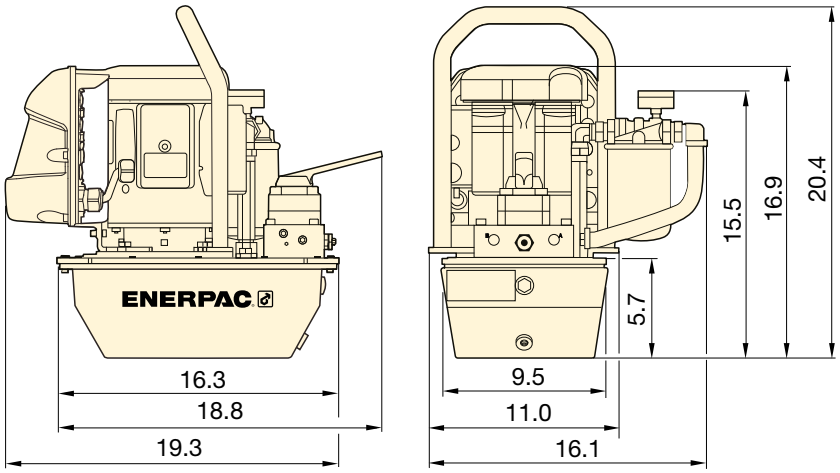


Reservoir Capacity:
1.8 gallons

Flow at Rated Pressure:
20 in³/min

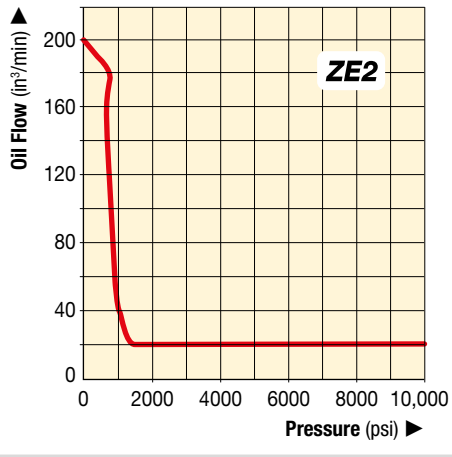
Motor Size:
0.75 hp

Maximum Operating Pressure:
10,000 psi



ZE2 with Optional Return Line Filter

OIL FLOW vs. PRESSURE



Used with Cylinder *	Valve Hold Function	Useable Oil Capacity (gal)	Model Number [1] Two-Stage Pump	Oil Flow Rate at 50 Hz (in³/min) 100 psi	Oil Flow Rate at 50 Hz (in³/min) 10,000 psi	Valve Type	Valve Operation	Motor Voltage (VAC)	Motor Size (hp)	Sound Level (dBA)	(lbs)
S/A	–	1.8	**ZE2108DB (E, I)**	200	20	VE32D	Solenoid with Pendant	115	.75	79	93
S/A	–	1.8	**ZE2208MB (E, I)** [2]	200	20	VM32	Manual without Pendant	115	.75	79	83
S/A	•	1.8	**ZE2308MB (E, I)** [2]	200	20	VM33	Manual without Pendant	115	.75	79	84
D/A	•	1.8	**ZE2408MB (E, I)** [2]	200	20	VM43	Manual without Pendant	115	.75	79	84
S/A	–	1.8	**ZE2208PB (E, I)**	200	20	VM32	Manual with Pendant	115	.75	79	91
S/A	•	1.8	**ZE2308PB (E, I)**	200	20	VM33	Manual with Pendant	115	.75	79	92
D/A	•	1.8	**ZE2408PB (E, I)**	200	20	VM43	Manual with Pendant	115	.75	79	92
S/A	•	1.8	**ZE2308EB (E, I)**	200	20	VE33	Solenoid with Pendant	115	.75	79	108
D/A	•	1.8	**ZE2408EB (E, I)**	200	20	VE43	Solenoid with Pendant	115	.75	79	108

* S/A = Single-Acting, D/A = Double-Acting.

[1] "**B**" suffix model numbers shown are 115 VAC, 1-phase, 50/60 Hz, CE compliant.
"**I**" indicates pump is available in 208-240V, 1-phase, 50/60 Hz with NEMA 6/15 plug, CE compliant.
"**E**" indicates pump is available in 208-240V, 1-phase, 50/60 Hz with European plug, CE compliant.

[1] All models can be ordered with the following Factory Installed Accessories/Options:
F = with Return Line Filter, **G** = with 0-15,000 psi gauge (ø 2.5 inches), **S** = Single-stage pump unit.

[2] Models can be ordered with Pressure Switch (**P**).

Introducing the Z-Class power pumps from Enerpac – pumps that run cooler, use less electricity and are easy to service.

Enerpac has used the latest metallurgical, bearing and seal technologies to produce a pump whose features and benefits far surpass the electric pumps that are available today. By reducing the number of moving parts, improving flow dynamics and decreasing friction, Z-Class pumps will stay on the job longer, require less energy to operate and when needed, have lower service costs.



Z-Class power pumps from Enerpac – simply the best pump you will ever use.



Tough
Dependable
Innovative
Z CLASS

Z-Class Pumping Element – The Heart of Your Hydraulic System

Highly efficient design provides increased flow rates, reduced heat generation and a decrease in power consumption. This means improved tool speed and increased service life – which results in higher productivity and lower operating costs.

Heavy-duty bearings extend pump life by reducing friction, reducing surface-loading and lowering bearing stresses.

Pump cavity oil bath extends pump life by reducing heat, improving lubrication and reducing wear.

Self-priming, high-flow 1st stage pump increases pump performance by super-charging the 2nd stage piston pump – improving oil flow in both hot and cold weather operation.

Balanced rotating components reduce vibration creating a smoother running pump – reducing wear, friction and sound levels.

Replaceable piston check-valves increase service life of major pump components.

Ergonomic pendant features sealed switches and operates at 24 V for improved operator safety.

Z-Class factory options & accessories
Extensive list of accessories including heat exchanger, roll cage, skid bar, pressure transducer, return line filter and level and temperature switches, allow complete pump control over a wide range of industrial applications.

Z-Class power pumps for your application
Available in one flow range for universal motor and eight flow ranges for induction motor. Choose from single or two-stage models to provide the optimum cylinder and tool performance for almost any industrial application.

Back-lit LCD on select Z-Class pumps

- pump usage information, hour and cycle counts
- low-voltage warning and recording
- offers self-test and diagnostic capabilities
- information displayed in 6 languages
- pressure read-out (when used with the optional pressure transducer)
- adjustable trigger pressure setting (when used with the optional pressure transducer).



Back-lit LCD available on ZU4 and ZE-Series Electric Pumps. ▶

Oil Flow Rate at 10,000 psi (in³/min)	Z-Class Pump Series *	Electric Motor Power (hp)	Air Motor-Consumption (scfm)	Gasoline Engine Power (hp)	Page:
20	ZE2	0.75	–	–	96
32	ZC3	1.36	–	–	92
40	ZE3	1.0	–	–	106
60	ZE4(T)	1.5	–	–	106, 282
60	ZU4(T)	1.7	–	–	100, 278
80	ZA4(T)	–	100	–	120, 286
100	ZG5	–	–	5.5	122
120	ZE5(T)	3.0	–	–	106, 282
200	ZE6	7.5	–	–	106
200	ZG6	–	–	13.2	122

* ZC3 battery powered cordless pumps.
ZA4T, ZU4T, ZE4T and ZE5T-Series are Torque Pumps.

ZU4-Series Pump Applications

- **Mobile**: when frequent pump transport is required and/or on remote locations
- **Universal motor**: 1-phase, runs well under poor voltage supply, using generator power supply or using long extension cord
- **Duty-cycle**: for intermittent applications
- **Cylinders and tools**: for medium to large size single and double-acting applications and high-speed
- **Pump speed**: two-stage pump unit.

ZE-Series Pump Applications

- **Stationary**: when pump remains in one location
- **Induction motor**: 1 and 3-phase for high cycle usage
- **Duty-cycle**: for heavy-duty, extended cycle application
- **Cylinders and tools**: for medium to large size single and double-acting applications and high-speed
- **Pump speed**: single or two-stage pump unit.

ZU4-Series, Portable Electric Pumps

ENERPAC

▼ ZU4308MB (Classic), ZU4420SBH (Pro)



- **High-efficiency two-speed pump design – higher oil flow and by-pass pressure**
- **Powerful 1.70 hp universal electric motor provides high power-to-weight ratio and excellent low-voltage operating characteristics**
- **High-strength, moulded composite shroud protects motor and electronics, while providing an ergonomic, non-conductive handle for easy transport**
- **Low-voltage pendant provides additional safety for the operator (remote control units).**

Pro-Series models only

- **Back-lit LCD readout provides pressure display and a number of diagnostics and readout capabilities never offered on a portable pump before:**
  - **pump usage information, hour and cycle counts**
  - **self-test, diagnostic and read-out capabilities**
  - **pressure readout and auto-mode pressure settings.**

Z-Class – A Pump For Every Application

Patented Z-Class pump technology provides high by-pass pressures for increased productivity – important in applications using long hose runs and high pressure-drop circuits, like heavy lifting or certain double-acting tools.

Enerpac ZU4-Series Pumps are built to power small to large-sized cylinders or hydraulic tools, or wherever high-speed, intermittent duty, remote hydraulic power is needed.

Classic Electric Pumps

- The Classic has traditional electro-mechanical components (transformers, relays and switches) in place of solid-state electronics.
- The Classic delivers durable, safe and efficient hydraulic power for demanding markets like construction, post-tensioning and foundation repair.

Standard Electric Pumps

- For applications that do not require digital display features of the Premium Pump. Available in all manual or jog versions.

Pro Electric Pumps

- Digital (LCD) display features a built-in hour meter and shows self-diagnostic, cycle-count and low-voltage warning information.
- Pressure can also be displayed when the pump is equipped with an optional pressure transducer.



◀ *Designed to be tough, the ZU4-Series with steel reservoirs will take the abuse of today's construction sites.*

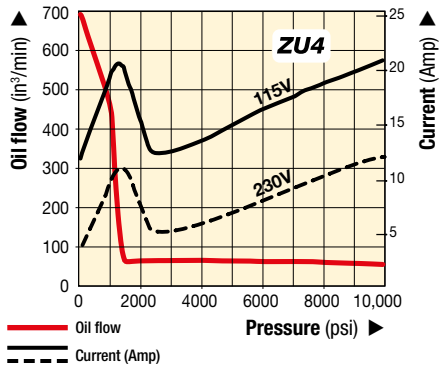
Assisted Return Pumps with Venturi Valve Technology

ZU4 and ZE-Series pumps feature Venturi Valve Technology to accelerate single-acting gravity and spring-return cylinder retraction speeds.
See valve type in ordering matrix and details in section Directional Control Valves.

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ZU4-Series, Specifications and Dimensions

OIL FLOW VERSUS PRESSURE



ZU4-SERIES PERFORMANCE CHART

Motor Size	Output Flow Rate at 60 Hz (in³/min)				Motor Electrical Specifications	Sound Level	Relief Valve Adjustment Range
(hp)	100 psi	700 psi	5,000 psi	10,000 psi	(Volts-Ph-Hz)	(dBA)	(psi)
1.70	700	535	76	60	115-1-50/60 230-1-50/60	85-90	2000 - 10,000

ZU4 Series

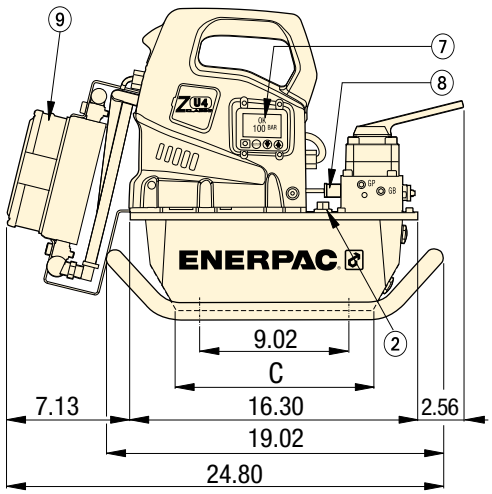


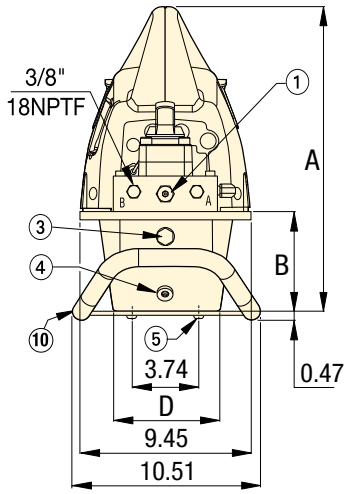
Reservoir Capacity:
1.2 - 10.3 gallons

Flow at Rated Pressure:
60 in³/min

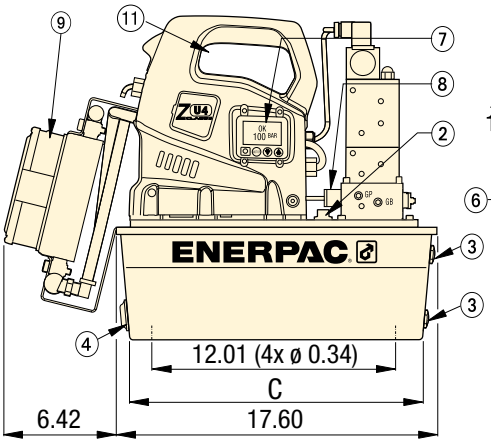
Motor Size:
1.70 hp

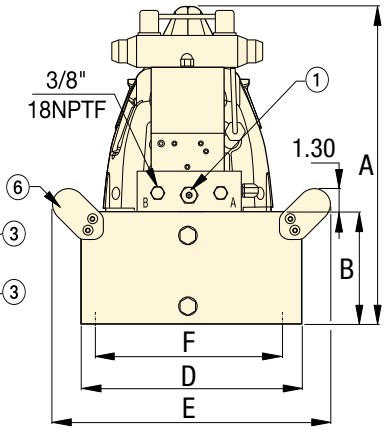
Maximum Operating Pressure:
10,000 psi





ZU4-Series with 1.2 and 1.8 gallons reservoirs





ZU4-Series with 5.2 and 10.3 gallons reservoirs
(left view shown without side handle)

⅜"-18 NPTF Advance and Retract Ports

① User adjustable relief valve
② Oil fill port SAE #10 ⅞"-14 UNF-2B
③ Oil level sight gauge
④ Oil drain ½" NPTF
⑤ M8, 0.25 inch (6 mm) deep
⑥ Handles on all 5.2 and 10.3 gallons reservoirs.

Options

⑦ Back-lit LCD Electric
⑧ Pressure transducer
⑨ Heat Exchanger
⑩ Skid Bar. Fits 1.2 and 1.8 gallons reservoirs
⑪ Handle guard installed on all 5.2 and 10.3 gallons reservoirs
⑫ Reservoir handles (not shown) included on all 5.2 and 10.3 gallons reservoirs

Reservoir Capacity	Pump Dimensions (in)					
(gal)	A	B	C	D	E	F
1.2	16.7	5.6	11.0	6.0	–	–
1.8	16.7	5.6	11.0	8.1	–	–
5.2	18.3	7.1	16.5	16.6	19.7	15.6
10.3	21.7	10.6	15.7	19.9	22.7	18.9

▼ STEP 1: Select a pump from the Pump Ordering Matrix

The functionality of the pump can be determined by the model number. Utilize the guide below to select the best pump for the application from the pump ordering matrix.

Z	U	4	4	08	J	B	-	H	R
1 Product Type	2 Motor Type	3 Flow Group	4 Valve Type	5 Reservoir Capacity	6 Valve Operation	7 Voltage		8 Factory Installed Accessories	

1 Product Type

Z = Pump Series

2 Motor Type

U = Universal electric motor

3 Flow Group

4 = 60 in³/min @ 10,000 psi

4 Valve Type

1 = Dump (**VE32D**)
2 = 3 way/2 position manual or electric (**VM32** or **VE32**)
3 = 3 way/3 position manual or electric (**VM33** or **VE33**)
4 = 4 way/3 position manual or electric (**VM43** or **VE43**)
6 = 3 way/3 position locking manual with pilot operated check valve (**VM33L**)
7 = 3 way/2 position manual (**VM22**)
8 = 4 way/3 position locking manual with pilot operated check valve (**VM43L**)
9 = 4 way/3 position manual w/power seating (**VM43LPS**)
10 = 3 way/3 position manual Venturi valve (**VM33VAC**)
11 = 3 way/3 position electric Venturi valve (**VE33VAC**)

5 Reservoir Capacity

04 = 1.2 gallons
08 = 1.8 gallons
20 = 5.2 gallons (includes side handles)
40 = 10.3 gallons (includes side handles)

6 Valve Operation

D = Dump solenoid valve with pendant and LCD Electric
J = Jog manual valve with pendant (without LCD)
L = Manual valve with LCD Electric (without pendant)
M = Manual valve (without pendant and LCD)
P = Manual valve with pendant (without LCD)
S = Solenoid valve with pendant and LCD Electric

7 Voltage

B = 115V, 1 ph, 50/60Hz
E = 208-240V, 1 ph, 50/60 Hz (with European plug and CE EMC compliant)
I = 208-240V, 1 ph, 50/60 Hz (with NEMA 6-15 plug)

▼ STEP 2: Factory Installed Accessories

Select factory installed accessories and add to the pump model number after the hyphen. The example above shows that a **Heat Exchanger (H)** and **Roll Cage (R)** have been added to the pump.

8 Factory installed accessories include the following:

F = Return Line Filter
G = Pressure Gauge [1)]
H = Heat Exchanger
K = Skid Bar
L = Level/Temperature Switch [2)]
N = Lifting Eyes (no reservoir handles)
R = Roll Cage
T = Pressure Transducer
U = Foot Switch

[1) + 2):] See the notes about Pressure Gauge and Level/Temperature Switch in right column.

Two-Speed Pumps

Recommended for applications where cylinder plunger must advance rapidly to load contact, and applications where greater oil capacities are required, such as multiple cylinder hook-ups.

Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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Assisted Return Pumps with Venturi Valve Technology

ZU4 and ZE-Series pumps feature Venturi Valve Technology to accelerate single-acting gravity and spring-return cylinder retraction speeds. See valve type in ordering matrix and details in section Directional Control Valves.

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Spring Centered Valve Kits

VM and VC-Series manual 3-position valves can be easily converted into spring centered valves. With these retrofit kits the handle will automatically move into the neutral valve position when released.

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Pressure Gauge, Level/Temperature Switch

[1)] Pressure Gauge (**G**) not available on pump models with pressure transducer (**T**). The pressure transducer provides digital pressure read-out on LCD-display.

[2)] Level/Temperature Switch (**L**) requires electric package. Not available on reservoirs 04 and 08.

ZU4-Series, Pump Ordering Matrix

ZU4-Series



Reservoir Capacity:
1.2 - 10.3 gallons

Flow at Rated Pressure:
60 in^3/min

Motor Size:
1.70 hp

Maximum Operating Pressure:
10,000 psi

▼ ZU-PRO SERIES PUMP MODELS WITH SOLENOID VALVE, PENDANT AND LCD ELECTRIC

	S/A or D/A [1]	Hold	Valve Type [2]	Reservoir Capacity (gal)	(lbs)	Model Number 115 VAC, 1 phase, 50 / 60 Hz [3]
With Dump Valve • Ideal for punching, crimping and cutting • For use when load-holding is not required.	S/A		VE32D	1.2	63	**ZU4104DB (I, E)**
	S/A		VE32D	1.8	69	**ZU4108DB (I, E)**
	S/A		VE32D	5.2	112	**ZU4120DB (I, E)**
	–		–	–	–	**–**
	–		–	–	–	**–**
With Solenoid Valves • Ideal for lifting applications and where remote control is required • Motor runs continuously on pumps with VE33 and VE43 valves. • With VE32 valve, motor only runs during the advance function, while holding and retracting, the motor is off • Venturi Valve technology (VE33VAC) for faster retract of single-acting cylinders.	S/A	●	VE32	1.2	63	**ZU4204SB (I, E)**
	S/A	●	VE32	1.8	69	**ZU4208SB (I, E)**
	S/A	●	VE32	5.2	112	**ZU4220SB (I, E)**
	S/A	●	VE33	1.8	81	**ZU4308SB (I, E)**
	S/A	●	VE33	5.2	124	**ZU4320SB (I, E)**
	S/A	●	VE33	10.3	174	**ZU4340SB (I, E)**
	S/A	●	VE33VAC	1.8	74	**ZU41108SB (E)**
	S/A	●	VE33VAC	5.2	117	**ZU41120SB (E)**
	S/A	●	VE33VAC	10.3	168	**ZU41140SB (E)**
	D/A	●	VE43	1.8	81	**ZU4408SB (I, E)**
	D/A	●	VE43	5.2	124	**ZU4420SB (I, E)**
	D/A	●	VE43	10.3	174	**ZU4440SB (I, E)**

▼ ZU-SERIES PUMP MODELS WITH MANUAL VALVES

	S/A or D/A [1]	Hold	Valve Type [2]	Reservoir Capacity (gal)	(lbs) [5]	Model Number 115 VAC, 1 phase, 50 / 60 Hz [3]		
						Manual Only	Standard Electric with Pendant	Classic Electric with Pendant [4]
With Manual Valves • Ideal choice for most applications • Manual valve control, for single-acting or double-acting applications • Motor control on shroud • Venturi Valve technology (VM33VAC) for faster retract of single-acting cylinders • Pendant models ideal for light production and lifting applications • Locking valves provide hydraulic locking of cylinder until valve is shifted into retract position.	S/A		VM22	1.2	59	**ZU4704MB (I, E)**	**–**	**ZU4704PB (I, E)**
	S/A		VM22	1.8	65	**ZU4708MB (I, E)**	**–**	**ZU4708PB (I, E)**
	S/A		VM22	5.2	108	**ZU4720MB (I, E)**	**–**	**ZU4720PB (I, E)**
	S/A		VM32	1.2	55	**ZU4204MB (I, E)**	**ZU4204JB (I, E)**	**–**
	S/A		VM32	1.8	61	**ZU4208MB (I, E)**	**ZU4208JB (I, E)**	**–**
	S/A		VM32	5.2	104	**ZU4220MB (I, E)**	**ZU4220JB (I, E)**	**–**
	S/A		VM32	10.3	155	**ZU4240MB (I, E)**	**ZU4240JB (I, E)**	**–**
	S/A	●	VM33	1.2	56	**ZU4304MB (I, E)**	**–**	**–**
	S/A	●	VM33	1.8	62	**ZU4308MB (I, E)**	**ZU4308JB (I, E)**	**ZU4308PB (E)**
	S/A	●	VM33	5.2	106	**ZU4320MB (I, E)**	**ZU4320JB (I, E)**	**ZU4320PB (E)**
	S/A	●	VM33	10.3	156	**ZU4340MB (I, E)**	**ZU4340JB (I, E)**	**ZU4340PB (E)**
	S/A	●	VM33VAC	1.8	63	**ZU41008MB (E)**	**ZU41008JB (E)**	**–**
	S/A	●	VM33VAC	5.2	106	**ZU41020MB (E)**	**ZU41020JB (E)**	**–**
	S/A	●	VM33L	1.8	66	**ZU4608MB (E)**	**ZU4608JB, (E)**	**–**
	S/A	●	VM33L	5.2	109	**ZU4620MB (E)**	**ZU4620JB, (E)**	**–**
	D/A	●	VM43	1.8	63	**ZU4408MB (I, E)**	**ZU4408JB (I, E)**	**ZU4408PB (E)**
	D/A	●	VM43	5.2	106	**ZU4420MB (I, E)**	**ZU4420JB (I, E)**	**ZU4420PB (E)**
	D/A	●	VM43	10.3	156	**ZU4440MB (I, E)**	**ZU4440JB (I, E)**	**ZU4440PB (E)**
	D/A	●	VM43L	1.8	67	**ZU4808MB (E)**	**ZU4808JB (E)**	**–**
	D/A	●	VM43L	5.2	110	**ZU4820MB (E)**	**ZU4820JB (E)**	**–**

[1] S/A or D/A = For use with Single-Acting or Double-Acting cylinders and tools. [2] Additional details can be found in the Directional Control Valve section
[3] "**E**" indicates pump is available in 208-240V, 1-phase, 50/60 Hz. Model number order example: **ZU4208ME**.
"**I**" indicates pump is available in 208-240V, 1-phase, 50/60 Hz with NEMA 6-15 plug. Model number order example: **ZU4208MI**.
[4] Classic Electric Pump has traditional electro-mechanical components (transformers, relays, switches) in place of solid-state electronics.
[5] Weights given for pump with manual valve. For Standard Electric with pendant add 1.0 lbs and Classic Electric with pendant add 3.0 lbs.
NOTE: Valve operation "**L**" available on pumps with manual valve. Substitute "**M**" for "**L**" valve operation. Example: **ZU4608LB**.



Roll Cage (R)

- **Protects and stabilizes the pump.**

Popular Pump Models (115 VAC, 1 phase) with Factory Installed Roll Cage	
ZU4108DB-R (I, E)	ZU4308MB-R (I, E)
ZU4208JB-R (I, E)	ZU4320M-BR (I, E)
ZU4220JB-R (I, E)	ZU4408M-BR (I, E)
ZU4208SB-R (I, E)	ZU4420M-BR (I, E)
ZU4308JB-R (I, E)	ZU4408JB-R (I, E)
ZU4320JB-R (I, E)	ZU4420JB-R (I, E)
ZU4308SB-R (I, E)	ZU4408SB-R (I, E)
ZU4320SB-R (I, E)	ZU4420SB-R (I, E)

Accessory Kit Model No.	Fits on Reservoir
	
ZRC-04	1.2 and 1.8 gallons [1]
ZRC-04H	1.2 and 1.8 gallons [2]
ZRB-20	5.2 gallons
ZRB-40	10.3 gallons

[1] Without heat exchanger
[2] With heat exchanger



Foot Switch (U)

- **10 foot cord, hands-free control.**

Popular Pump Models (115 VAC, 1 phase) with Factory Installed Foot Switch
ZU4108DB-U (I, E)
ZU4208SB-U (I, E)
ZU4220SB-U (I, E)
ZU4320SB-U (I, E)
ZU4408SB-U (I, E)
ZU4420SB-U (I, E)

Accessory Kit Model No	Can be used on ZU4-Pumps with solenoid dump and 3-position valves, LCD electric
	
ZCF-2	Solenoid VE-Series valves



Heat Exchanger (H)

- **Removes heat from by-pass oil**
- **Increases oil life, reduces wear on hydraulic components.**

Popular Pump Models with Factory Installed Heat Exchanger
ZU4108DB-H (I, E)
ZU4208SB-H (I, E)
ZU4308SB-H (I, E)
ZU4408SB-H (I, E)
ZU4420SB-H (I, E)

Accessory Kit Model No.	Can be used on
	
ZHE-U115	115 V pumps
ZHE-U230	230 V pumps



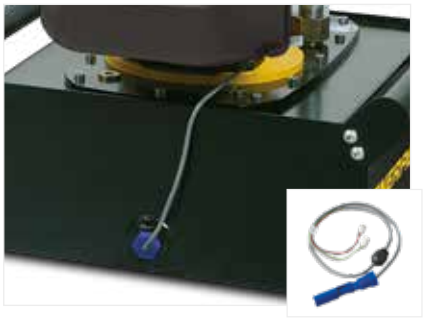
Pressure Transducer (T)

- **More durable than analog gauges**
- **Displays psi, bar or MPa**
- **Motor shut-off or shift to neutral at set pressure.**

Popular Pump Models (115 VAC, 1 phase) with Factory Installed Pressure Transducer, Requires LCD Electric Pump
ZU4108DB-T (I, E)
ZU4208SB-T (I, E)
ZU4308SB-T (I, E)
ZU4408SB-T (I, E)
ZU4420SB-T (I, E)

Accessory Kit Model No.	Adjustable Pressure Range (psi)	Switch-Point Repeat-ability (%)	Dead-band (psi)
			
ZPT-U4	1015-10,000	± 0,5	50

Note: The pressure transducer provides digital pressure read-out on LCD-display.



Level/Temperature Switch (L) [1]

- **Shuts off pump when high operating temperature or low oil is reached**
- **Plugs directly into pump electrical enclosure**
- **Easy installation to pump reservoir**
- **Requires LCD electric.**

Accessory Kit Model Number	Operating Temperature (°F)	Maximum Pressure (psi)	(lbs)
ZLS-U4	40 - 230	150	0.2

[1] Level/Temperature switch (L) not available on 1.2 or 1.8 gallon reservoir.



Return Line Filter (F)

- **25 micron filter removes contaminants from return oil flow**
- **Internal by-pass valve prevents damage if filter is dirty**
- **With maintenance indicator**
- **Replaceable filter element PF25.**

Accessory Kit Model Number	Max. Pressure (psi)	Max. Oil Flow (GPM)	By-Pass Setting (psi)
ZPF	200	12.0	25



Skidbar (K)

- **Provides easy two-hand lift**
- **Provides greater pump stability on soft or uneven surfaces**
- **Cannot be used in combination with roll cage.**

Accessory Kit Model Number	Fits on Reservoir	(lbs)
SBZ-4	1.2 and 1.8 gallons [2]	2,2
SBZ-4L	1.2 and 1.8 gallons [3]	3,2

[2] Without heat exchanger
[3] With heat exchanger



Pressure Gauge (G)

- **Minimize risk of overloading to ensure long life of equipment**
- **ø 2.5 inch face diameter, glycerine-filled**
- **Dual scale in bar and psi.**

Accessory Kit Model Number	Description
G2536L	0 - 15,000 psi, 0 - 1000 bar

Note: Pressure Gauge not available on pump models with pressure transducer. The pressure transducer provides digital pressure read-out on LCD-display.

ZU4 Series



Reservoir Capacity:
1.2 - 10.3 gallons

Flow at Rated Pressure:
60 in³/min

Motor Size:
1.70 hp

Maximum Operating Pressure:
10,000 psi

Heat Exchanger

Stabilizes oil temperature at a maximum of 130 °F at 70 °F ambient temperature.

Do not exceed maximum oil flow and pressure ratings. Heat exchanger is not suitable for water-glycol or water based fluids.

Thermal Transfer * (Btu/h)	Maximum Pressure (psi)	Maximum Oil Flow (GPM)	Voltage (VDC)
900	300	7.0	12

* At 0.5 gal/min at 70 °F ambient temperature.



Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

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▼ Shown from left to right: **ZE3304MB-K, ZE4110DB-FHR**



ZE Series

Reservoir Capacity:
1.2 - 10.3 gallons

Flow at Rated Pressure:
40 - 200 in³/min

Motor Size:
1.0 - 7.5 hp

Maximum Operating Pressure:
10,000 psi

Z Tough Dependable Innovative CLASS

- **High-efficiency pump design – higher oil flow and by-pass pressure**
- **High-strength, molded electrical box protects electronics, power supplies and LCD readout and stands up to harsh industrial environments**
- **IP54 protection and isolation class**
- **Back-lit LCD provides self test, diagnostic and read-out capabilities never before offered on an industrial pump (included on pump with electric valves, optional on other models)**
- **Totally enclosed, fan-cooled industrial electric motors for extended life**
- **User adjustable relief valve built-in on manual and solenoid valves. Oil ports on valves are 3/8" NPTF**
- **Steel fan guard on all electric motors**
- **Full sight oil level glass on 2.6, 5.2 and 10.3 gallons reservoirs, oil level indicators on 1.2 and 1.8 gallons reservoirs.**
- **40 micron filter breather with splash guard**
- **Durable steel reservoirs.**

Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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Locking Valves

For applications requiring positive load holding, VM-Series valves (except VM32) are available with a pilot operated check valve **VM33L** and **VM43L**. This provides hydraulic locking of the load until the valve is shifted into the retract position.



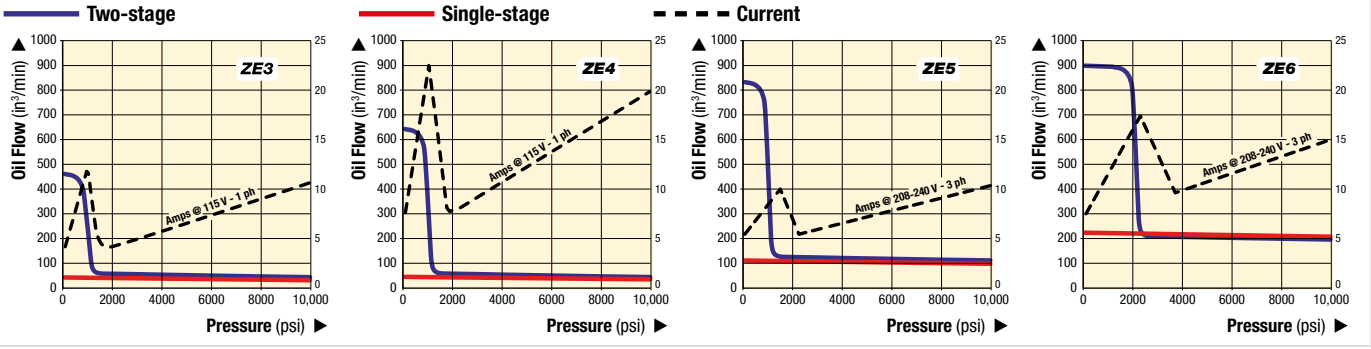
Assisted Return Pumps with Venturi Valve Technology

ZU4 and ZE-Series pumps feature Venturi Valve Technology to accelerate single-acting gravity and spring-return cylinder retraction speeds. See valve type in ordering matrix and details in section Directional Control Valves.

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◀ *Rail wheel pulling using RACH-aluminum cylinder powered by ZE-Series pump.*



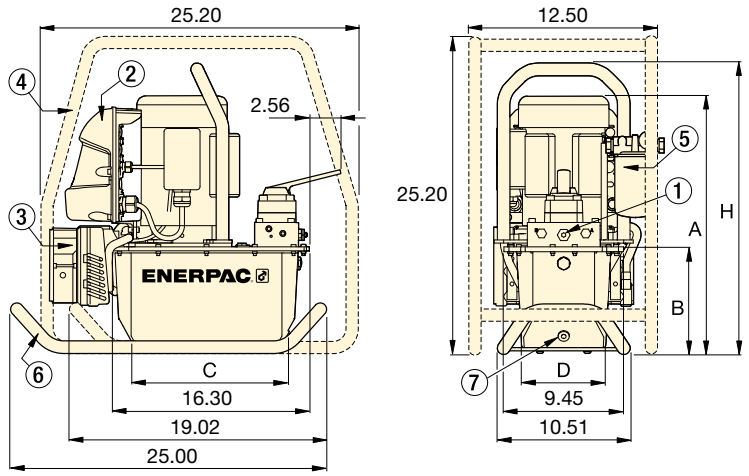
▼ **ZE-SERIES PERFORMANCE CHART**

Pump Series	Output Flow Rate at 60 Hz * (in³/min) low pressure at 100 psi	low pressure at 700 psi	high pressure at 5,000 psi	high pressure **at 10,000 psi**	Pump Unit	Available Reservoir Sizes (gal)	Motor Size (hp **)	Relief Valve Adjustment Range (psi)	Sound Level (dBA)
ZE3	43	43	42	**40**	Single-stage	1.2, 1.8, 2.6, 5.2, 10.3	1.0	1000-10,000	75
	450	385	42	**40**	Two-stage				
ZE4	64	64	62	**60**	Single-stage	1.2, 1.8, 2.6, 5.2, 10.3	1.5	1000-10,000	75
	650	600	62	**60**	Two-stage				
ZE5	128	126	123	**120**	Single-stage	2.6, 5.2, 10.3	3.0	1000-10,000	75
	850	825	123	**120**	Two-stage				
ZE6	220	215	210	**200**	Single-stage	2.6, 5.2, 10.3	7.5	1000-10,000	80
	900	890	210	**200**	Two-stage				

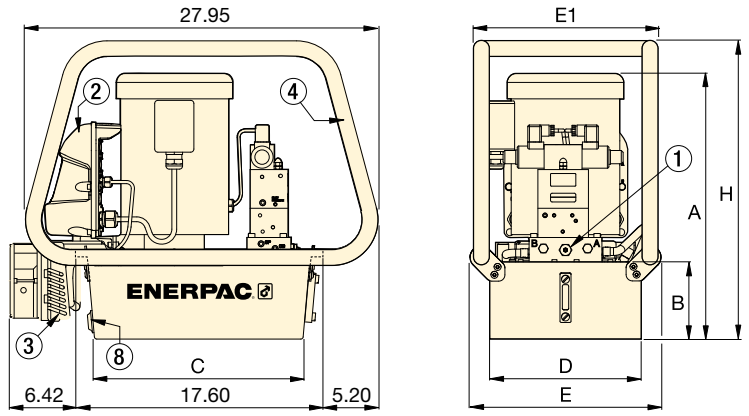
* Oil flow will be approximately 5/6 of these values at 50 Hz. ** at 1750 RPM and 3450 RPM for 7.5 hp.

Single or Two-Stage

Choose single-stage pumps for applications that require constant flow regardless of pressure such as testing or clamping.
Two-stage pumps have an increased output flow at low pressure to allow fast movement towards the load, for reduced cycle times and increased productivity.



ZE-Series Pumps with 1.2 - 1.8 gallons reservoir



ZE-Series Pumps with 2.6, 5.2 and 10.3 gallons reservoir

① User adjustable relief valve on all manual and solenoid valves. ⅜" NPTF on A and B ports; ¼" NPTF on auxiliary ports.
② Electric Box
③ Heat Exchanger
④ Roll Cage
⑤ Return Line Filter
⑥ Skid Bar
⑦ Magnetic Oil Drain
⑧ Oil Drain / Oil Level & Temperature Switch

Reservoir Size (gal)	ZE-Series Pump Dimensions (in) A	B	C	D	E	E1	H
1.2	18.0	5.6	11.0	6.0	–	–	20.2
1.8	18.0	5.6	11.0	8.1	–	–	20.2
2.6	21.0	6.2	16.5	12.0	15.1	14.6	23.6
5.2	22.0	7.1	16.5	16.6	19.7	19.2	24.6
10.3	25.5	10.6	15.7	19.9	22.7	22.5	28.1

▼ STEP 1: Select a pump from the Pump Ordering Matrix

The functionality of the pump can be determined by the model number. Utilize the guide below to select the best pump for the application from the pump ordering matrix.

Z	E	4	4	20	M	B	-	F	H
1 Product Type	2 Motor Type	3 Flow Group	4 Valve Type	5 Reservoir Capacity	6 Valve Operation	7 Voltage		8 Factory Installed Accessories	

1 Product Type

Z = Pump Class

2 Prime Mover

E = Induction electric motor

3 Flow Group

3 = 40 in³/min @ 10,000 psi
4 = 60 in³/min @ 10,000 psi
5 [1] = 120 in³/min @ 10,000 psi
6 [1] = 200 in³/min @ 10,000 psi

4 Valve Type

0 = No valve, with cover plate
1 = 3/2 Dump valve **VE32D**
2 = 3/2 manual **VM32**
3 = 3/3 manual **VM33** or electric **VE33**
4 = 4/3 manual **VM43** or electric **VE43**
6 = 3/3 manual locking valve **VM33L** with pilot operated check
8 = 4/3 manual locking valve **VM43L** with pilot operated check
10 [6] = 3 way/3 position manual **Venturi** valve **VM33VAC**
11 [6] = 3 way/3 position electric **Venturi** valve **VE33VAC**

5 Reservoir Capacity

04 = 1.2 gal (not available on ZE5, ZE6)
08 = 1.8 gal (not available on ZE5, ZE6)
10 = 2.6 gallons
20 = 5.2 gallons
40 = 10.3 gallons

6 Valve Operation

D = Dump solenoid valve with pendant and LCD
L = Manual valve with LCD Electric (without pendant)
M = Manual valve, without pendant or LCD
N = No valve, no electric box
S = Solenoid valve, with pendant and LCD

7 Motor Voltage

Single phase motor (not on ZE5, ZE6)
B [1] = 115V, 1 ph, 50-60 Hz
E = 208-240V, 1 ph, 50-60 Hz with European SCHUKO Plug
I = 208-240V, 1 ph, 50-60 Hz with USA Nema 6-15 plug

Three phase motor [3]
G = 208-240V, 3 ph, 50-60 Hz
J = 460-480V, 3 ph, 50-60 Hz
W = 380-415V, 3 ph, 50-60 Hz

▼ STEP 2: Factory Installed Accessories

Select factory installed accessories and add to the pump model number after the hyphen. The example above shows that a **Return Line Filter (F)** and **Heat Exchanger (H)** have been added to the pump.

8 Factory installed accessories include the following:

F = Return Line Filter
G = Pressure Gauge [4]
H = Heat exchanger [2]
K = Skid Bar
L = Level/Temperature switch [2]
N = Lifting Eyes (no reservoir handles) [7]
P = Pressure Switch [2]
R = Roll Cage
S = Single-stage pump unit [5]
T = Pressure transducer [2] [4]
U = Foot switch [2]

1) 115-volt pumps are supplied with 15-Amp plug for intermittent use. 20-Amp circuit recommended for frequent full pressure use.
2) These accessories (H, L, P and T) require LCD electrical package. Level/Temperature switch (L) not available on 1.2 or 1.8 gallons reservoir. Pressure switch option (P) only available on manual valves without locking valve. The LCD electrical package can accept either a pressure switch or pressure transducer, but not both.
3) Pump with 3-phase motors without Electric Box shipped without cord, motor starter or overload protection.
4) Pressure gauge (G) not available on pump models with pressure transducer. Pressure transducer provides digital pressure readout on LCD display.
5) Not available on pumps with Venturi Valve Type 10 or 11.
6) Not available on ZE3-Series pumps.
7) Lifting eyes (N) not available on reservoir capacities 04 or 08.

▼ ZE-SERIES PUMP MODELS

No Valve, with coverplate, no electric box

Manual Valve without Electric Box or LCD
- Ideal choice for most applications
- Manual valve control, for both single-acting or double-acting applications
- Venturi Valve Technology (VM33VAC) for faster retract of single-acting cylinders
- Manual motor control
- On/off switch on 1-phase electric motor.

Solenoid Dump Valve, Electric Box and LCD
- Ideal for punching, crimping and cutting
- For use when load holding is not required
- Push-button control pendant with 10 ft. cord controls the valve and motor.

Solenoid 3-position Valve with Electric Box
- Ideal for production and lifting applications
- All valves are 3-position for Advance-Hold-Retract
- Venturi Valve Technology (VE33VAC) for faster retract of single-acting cylinders
- Push-button control pendant with 10 ft. cord controls the valve and motor.

ZE-Series, Pump Ordering Matrix

S/A or D/A [1]	Hold 	Valve Type [2]	Reservoir Capacity (gal)	ZE3-Series (1.0 hp) Output Flow Rate at 10,000 psi: 40 in³/min Model Number [3] B = 115 V, 1 ph	(lbs)	ZE4-Series (1.5 hp) Output Flow Rate at 10,000 psi: 60 in³/min Model Number [3] B = 115 V, 1 ph	(lbs)	ZE5-Series (3.0 hp) Output Flow Rate at 10,000 psi: 120 in³/min Model Number [3] W = 400 V, 3 ph	(lbs)	ZE6-Series (7.5 hp) Output Flow Rate at 10,000 psi: 200 in³/min Model Number [3] W = 400 V, 3 ph	(lbs)
–	–	–	1.8	ZE3008NB (I, E, W, J, G)	99	ZE4008NB (I, E, W, J, G)	95	–	–	–	–
–	–	–	2.6	ZE3010NB (I, E, W, J, G)	99	ZE4010NB (I, E, W, J, G)	108	ZE5010NW (J, G)	119	ZE6010NW (J, G)	158
–	–	–	5.2	ZE3020NB (I, E, W, J, G)	126	ZE4020NB (I, E, W, J, G)	135	ZE5020NW (J, G)	146	ZE6020NW (J, G)	185
–	–	–	10.3	ZE3040NB (I, E, W, J, G)	177	ZE4040NB (I, E, W, J, G)	186	ZE5040NW (J, G)	197	ZE6040NW (J, G)	236
S/A	–	VM22	5.2	–	–	ZE4720MB (E, W)	143	–	–	–	–
S/A	–	VM32	1.2	ZE3204MB (E)	85	–	–	–	–	–	–
S/A	–	VM32	1.8	ZE3208MB (I, E, W, J, G)	91	ZE4208MB (I, E, W, J, G)	100	–	–	–	–
S/A	–	VM32	2.6	ZE3210MB (I, E, W, J, G)	104	ZE4210MB (I, E, W, J, G)	113	ZE5210MW (J, G)	124	ZE6210MW (J, G)	163
S/A	–	VM32	5.2	ZE3220MB (I, E, W, J, G)	131	ZE4220MB (I, E, W, J, G)	140	ZE5220MW (J, G)	151	ZE6220MW (J, G)	190
S/A	●	VM33	1.2	ZE3304MB (E)	86	–	–	–	–	–	–
S/A	●	VM33	1.8	ZE3308MB (I, E, W, J, G)	92	ZE4308MB (I, E, W, J, G)	101	–	–	–	–
S/A	●	VM33	2.6	ZE3310MB (I, E, W, J, G)	105	ZE4310MB (I, E, W, J, G)	114	ZE5310MW (J, G)	125	ZE6310MW (J, G)	164
S/A	●	VM33	5.2	ZE3320MB (I, E, W, J, G)	132	ZE4320MB (I, E, W, J, G)	141	ZE5320MW (J, G)	152	ZE6320MW (J, G)	191
S/A	●	VM33	10.3	ZE3340MB (I, E, W, J, G)	183	ZE4340MB (I, E, W, J, G)	192	ZE5340MW (J, G)	203	ZE6340MW (J, G)	242
S/A	●	VM33VAC	1.8	–	–	ZE41008MB (I, E, W, J, G)	101	–	–	–	–
S/A	●	VM33VAC	5.2	–	–	ZE41020MB (I, E, W, J, G)	141	ZE51020MW (J, G)	153	ZE61020MW (J, G)	192
S/A	●	VM33VAC	10.3	–	–	–	–	ZE51040MW (J, G)	203	ZE61040MW (J, G)	242
S/A	●	VM33L	1.8	ZE3608MB (I, E, W, J, G)	92	–	–	–	–	–	–
S/A	●	VM33L	5.2	ZE3620MB (I, E, W, J, G)	136	ZE4620MB (I, E, W, J, G)	145	–	–	–	–
S/A	●	VM33L	10.3	ZE3640MB (I, E, W, J, G)	187	ZE4640MB (I, E, W, J, G)	196	–	–	–	–
D/A	●	VM43	1.2	ZE3404MB (E)	86	–	–	–	–	–	–
D/A	●	VM43	1.8	ZE3408MB (I, E, W, J, G)	92	ZE4408MB (I, E, W, J, G)	101	–	–	–	–
D/A	●	VM43	2.6	ZE3410MB (I, E, W, J, G)	106	ZE4410MB (I, E, W, J, G)	114	ZE5410MW (J, G)	125	ZE6410MW (J, G)	164
D/A	●	VM43	5.2	ZE3420MB (I, E, W, J, G)	132	ZE4420MB (I, E, W, J, G)	141	ZE5420MW (J, G)	152	ZE6420MW (J, G)	191
D/A	●	VM43	10.3	ZE3440MB (I, E, W, J, G)	183	ZE4440MB (I, E, W, J, G)	192	ZE5440MW (J, G)	203	ZE6440MW (J, G)	242
D/A	●	VM43L	1.8	ZE3808MB (I, E, W, J, G)	96	–	–	–	–	–	–
D/A	●	VM43L	5.2	ZE3820MB (I, E, W, J, G)	136	ZE4820MB (I, E, W, J, G)	145	ZE5820MW (J, G)	156	ZE6820MW (J, G)	195
D/A	●	VM43L	10.3	ZE3840MB (I, E, W, J, G)	187	ZE4840MB (I, E, W, J, G)	196	ZE5840MW (J, G)	207	ZE6840MW (J, G)	246
S/A	–	VE32D	1.2	ZE3104DB (I, E, W, J, G)	94	–	–	–	–	–	–
S/A	–	VE32D	1.8	ZE3108DB (I, E, W, J, G)	100	ZE4108DB (I, E, W, J, G)	109	–	–	–	–
S/A	–	VE32D	2.6	ZE3110DB (I, E, W, J, G)	114	ZE4110DB (I, E, W, J, G)	122	ZE5110DW (J, G)	136	ZE6110DW (J, G)	175
S/A	–	VE32D	5.2	ZE3120DB (I, E, W, J, G)	140	ZE4120DB (I, E, W, J, G)	149	ZE5120DW (J, G)	163	ZE6120DW (J, G)	202
S/A	–	VE32D	10.3	–	–	ZE4140DB (I, E, W, J, G)	199	ZE5140DW (J, G)	213	ZE6140DW (J, G)	252
S/A	●	VE33	1.2	ZE3304SB (I, E, W, J, G)	106	–	–	–	–	–	–
S/A	●	VE33	1.8	ZE3308SB (I, E, W, J, G)	112	ZE4308SB (I, E, W, J, G)	121	–	–	–	–
S/A	●	VE33	2.6	ZE3310SB (I, E, W, J, G)	125	ZE4310SB (I, E, W, J, G)	134	ZE5310SW (J, G)	148	ZE6310SW (J, G)	186
S/A	●	VE33	5.2	ZE3320SB (I, E, W, J, G)	152	ZE4320SB (I, E, W, J, G)	161	ZE5320SW (J, G)	174	ZE6320SW (J, G)	213
S/A	●	VE33	10.3	ZE3340SB (I, E, W, J, G)	203	ZE4340SB (I, E, W, J, G)	212	ZE5340SW (J, G)	225	ZE6340SW (J, G)	264
S/A	●	VE33VAC	1.8	–	–	ZE41108SB (I, E, W, J, G)	115	–	–	–	–
S/A	●	VE33VAC	5.2	–	–	ZE41120SB (I, E, W, J, G)	155	ZE51120SW (J, G)	168	ZE61120SW (J, G)	207
S/A	●	VE33VAC	10.3	–	–	–	–	ZE51140SW (J, G)	219	ZE61140SW (J, G)	258
D/A	●	VE43	1.2	ZE3404SB (I, E, W, J, G)	106	–	–	–	–	–	–
D/A	●	VE43	1.8	ZE3408SB (I, E, W, J, G)	112	ZE4408SB (I, E, W, J, G)	121	–	–	–	–
D/A	●	VE43	2.6	ZE3410SB (I, E, W, J, G)	125	ZE4410SB (I, E, W, J, G)	134	ZE5410SW (J, G)	148	ZE6410SW (J, G)	186
D/A	●	VE43	5.2	ZE3420SB (I, E, W, J, G)	152	ZE4420SB (I, E, W, J, G)	161	ZE5420SW (J, G)	174	ZE6420SW (J, G)	213
D/A	●	VE43	10.3	ZE3440SB (I, E, W, J, G)	203	ZE4440SB (I, E, W, J, G)	212	ZE5440SW (J, G)	225	ZE6440SW (J, G)	264

[1] S/A or D/A = For use with Single-Acting or Double-Acting cylinders and tools. [2] Additional details can be found in the Directional Control Valve section.

[3] "**B**" suffix model numbers shown are 115 VAC, 1-phase, 50/60 Hz. "**W**" suffix model numbers shown are 400 VAC, 3-phase, 50/60 Hz. Other voltages available as shown.
Replace "**B**" voltage suffix with selected voltage character. Model number order example: **ZE4108DE** is 230 VAC, 1 phase, 50/60 Hz. See Ordering Guide page 108 for voltage descriptions.

NOTE: Voltage options **K** (440 VAC, 3-phase, 50/60 Hz) and **R** (575 VAC, 3-phase, 60 Hz) are available on select models. Contact your local representative for availability.

NOTE: Valve operation "**L**" available on pumps with manual valve. Substitute "**M**" for "**L**" valve operation. Example: **ZE3608LB**.



Electric Box [1]

- **Back-lit LCD**
- **Pump usage information, hour and cycle counts**
- **Low-voltage warning and recording**
- **Self-test and diagnostic capabilities**
- **Pressure read-out [2]**
- **Auto-mode pressure setting [2]**
- **Information can be displayed in six languages [3]**

[1] Included on pumps with solenoid valves.
[2] When used with optional pressure transducer.
[3] English, French, German, Italian, Spanish and Portuguese.



Level & Temperature Switch (L) [4]

- **Shuts down pump before oil level reaches an unsafe level, avoiding damage due to cavitation**
- **Shuts down pump when unsafe oil temperature is reached**
- **Ideal if pump is used in remote area without visual access to oil level.**

[4] 24 V, requires Electric Box. Available for 2.6; 5.2 and 10.3 gallons reservoirs.

Accessory Kit Model Number	Fixed Temperature Signal (°F)	Operating Temperature (°F)	Max. Pressure (psi)
ZLS-U4	75	40 - 230	150



Return Line Filter (F)

- **25 micron nominal filter removes contaminants from return oil flow before allowing it back into tank**
- **Internal by-pass valve prevents damage if filter is dirty**
- **With maintenance indicator**
- **Replaceable filter element PF25.**

Accessory Kit Model Number	Maximum Pressure (psi)	Maximum Oil Flow (GPM)	By-pass Setting (psi)
ZPF	200	12.0	25



Roll Cage (R)

- **For easy portability and hoisting**
- **Protects pump and electric box**
- **Available for all reservoir sizes.**

Accessory Kit Number	Fits on reservoir size:	(lbs)
ZRC-04	1.2 and 1.8 gallons [5]	12.1
ZRC-04H	1.2 and 1.8 gallons [6]	14.3
ZRB-10	2.6 gallons	13.2
ZRB-20	5.2 gallons	13.2
ZRB-40	10.3 gallons	13.2

[5] For pump without heat exchanger
[6] For pump with heat exchanger.



Skid Bar (K)

- **Provides easy two-hand lift**
- **Provides greater pump stability on soft or uneven surfaces.**

Accessory Kit Number	Fits on reservoir size:	(lbs)
SBZ-4	1.2 and 1.8 gallons [5]	4.9
SBZ-4L	1.2 and 1.8 gallons [6]	5.5

[5] For pump without heat exchanger
[6] For pump with heat exchanger.



Foot Switch (U) [7]

- **Hands-free remote control on solenoid dump and 3-position valves**
- **With 10 ft. cord.**

[7] 15 V, requires Electric Box.

Accessory Kit Number	Can be used on ZE-Series pumps with
ZCF-2	Solenoid VE-Series valves



Pressure Transducer (T) [1]

- **Displays pressure on LCD in bar, MPa or psi**
- **More accurate than analog gauge**
- **Calibration can be fine-tuned for certification**
- **Easy-viewing variable rate display**
- **"Set pressure" feature turns off motor at user defined pressure.**

[1] 24 V, requires Electric Box.



Pressure Switch (P) [2]

- **Controls pump, monitors system**
- **Adjustable pressure 500-10,000 psi**
- **Includes glycerine-filled 15,000 psi pressure gauge G2536L**
- **Accuracy ± 1,5% of full scale.**

[2] 24 V, requires Electric Box. Not available in combination with pressure transducer. Not available on LCD-electronics.

ZE Series



Reservoir Capacity:
1.2 - 10.3 gallons

Flow at Rated Pressure:
40 - 200 in³/min

Motor Size:
1.0 - 7.5 hp

Maximum Operating Pressure:
10,000 psi

Accessory Kit Model Number	Adjustable Pressure Range (psi)	Switch-point repeat-ability	Dead-band (psi)
ZPT-U4	1015 - 10,000	± 0,5%	50

Accessory Kit Model Number	Switch-point repeat-ability	Deadband (psi)	Oil Ports (NPTF)
ZPS-E3	± 2%	115 - 550	3/8"

ZPT-U4 Pressure Transducer

More durable against mechanical and hydraulic shock than analog gauges.

- Digital pressure read-out provides accuracy of 0,5% of full scale.
- Easy-viewing variable rate display automatically varies increments between 45, 200, 510 and 2100 psi as rate of pressure change increases.
- "Set pressure" feature turns off motor at user defined pressure (or shifts valve to neutral on VE33 and VE43 valves).



Heat Exchanger (H) [3]

- **Removes heat from by-pass oil to provide cooler operation**
- **Stabilizes oil viscosity, increasing oil life and reduces wear of pump and other hydraulic components.**

[3] 24 VDC, requires electric box.



Pressure Gauge (G)

- **Minimize risk of overloading to ensure long life of equipment**
- **ø 2.15 inch face diameter, glycerine-filled**
- **Dual scale in bar and psi.**

Note: Pressure Gauge not available on pump models with pressure transducer. The pressure transducer provides digital pressure read-out on LCD-display.

ZHE-Series Heat Exchangers

Heat exchanger stabilizes oil temperature at 130 °F at 70 °F ambient temperature. Thermal transfer at 5 GPM and 70 °F ambient temperature: 900 Btu/hour [950 kJ].

Do not exceed max. oil flow of 7.0 GPM and max. pressure of 300 psi. Not suitable for water-glycol or high-water based fluids.

Accessory Kit Number	Fits on reservoir size:	(lbs)
ZHE-E04	1.2 and 1.8 gallons	9.0
ZHE-E10	2.6; 5.2 and 10.3 gallons	9.0

Accessory Kit Model Number	Description
G2536L	0 - 15,000 psi, 0 - 1000 bar

▼ **PEM8418**



The Largest Pump for the Largest Jobs

- **Panel-mounted pressure gauge and adjustable relief valve for system pressure control**
- **Two-speed pump design, with high by-pass pressure, for rapid cylinder advance**
- **Dual-voltage motor (230/460 VAC, 3-phase, 60 Hz)**
- **Full length reservoir sight tube with integral thermometer for ease in monitoring oil level and temperature**
- **Low-voltage controls to protect the pump operator.**



Locking Valves

Pumps with VM4 manual valves are available with VM4L manual valves for positive load holding. Add suffix "**L**" to pump model number.

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FS34 Foot Control Switch

This 3-position switch allows hands-free control of the solenoid valve on the pump. Operates 24V and 115V valves that use the square electrical connector.



Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

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Premium Hydraulic Oil

Use only genuine Enerpac Hydraulic Oil. The use of any other fluid will render your Enerpac warranty null and void.

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◀ *With similar specifications, a gasoline-powered EGM8000-Series is shown here performing a synchronized lift.*

About the 8000-Series

The 8000-Series is the largest pump in the Enerpac line and the best choice to power most large size cylinders, multiple cylinder circuits, and applications where the need for high-speed requires high-flow rates.

The 8000-Series, with its large reservoir capacity, is best suited for large jobs and may be the only solution because of the required oil capacity.

For further application assistance see our “Yellow Pages”, or consult your local Enerpac office.

PEM, PER Series

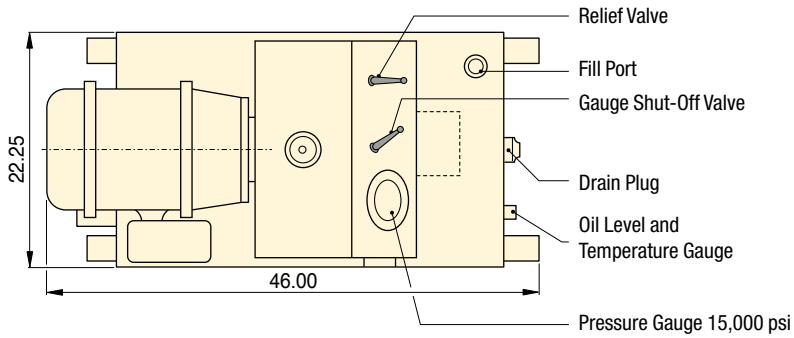


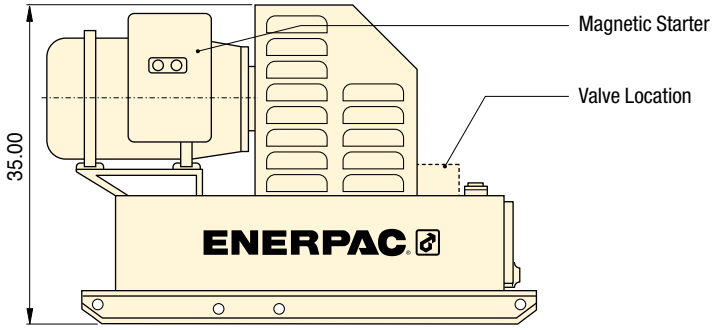
Reservoir Capacity:
25 gallons

Flow at Rated Pressure:
2.0 gal/min

Motor Size:
12.5 hp

Maximum Operating Pressure:
10,000 psi



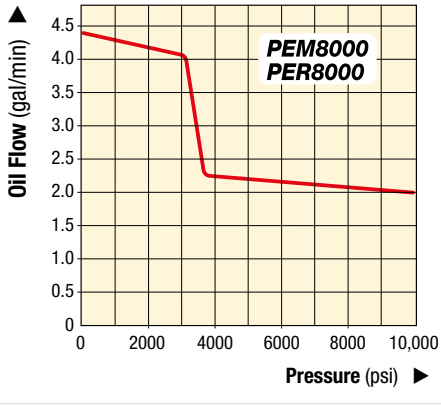


Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the ‘Yellow Pages’.

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OIL FLOW VERSUS PRESSURE



Used with Cylinder	Useable Oil Capacity (gal)	Model Number	Pressure Rating (psi) 1st stage	Pressure Rating (psi) 2nd stage	Output Flow Rate (gal/min) 1st stage	Output Flow Rate (gal/min) 2nd stage	Valve Type	Valve Function	Current Draw (Amps)	Motor Voltage * (VAC)	Sound Level (dBA)	(lbs)
Single-Acting	18	PEM8218	3,700	10,000	4.4	2.0	Manual (VM2)	3-way, 2-pos.	33.0	230	78 - 84	720
	18	PEM8218C	3,700	10,000	4.4	2.0			16.5	460	78 - 84	720
Double-Acting	18	PEM8418	3,700	10,000	4.4	2.0	Manual (VM4)	4-way, 3-pos.	33.0	230	78 - 84	720
	18	PEM8418C	3,700	10,000	4.4	2.0			16.5	460	78 - 84	720
	18	PER8418	3,700	10,000	4.4	2.0	Solenoid (VE43)	4-way, 3-pos.	33.0	230	78 - 84	765
	18	PER8418C	3,700	10,000	4.4	2.0			16.5	460	78 - 84	765

* Consult Enerpac for availability of other voltages.

PA-Series, Air Hydraulic Foot Pumps

ENERPAC

▼ **PA1150, PA133**



PA Series

Reservoir Capacity:
36 - 80 in³

Flow at Rated Pressure:
8 in³/min

Air Consumption:
9.0 scfm

Maximum Operating Pressure:
10,000 psi



Reservoir Conversion Kit

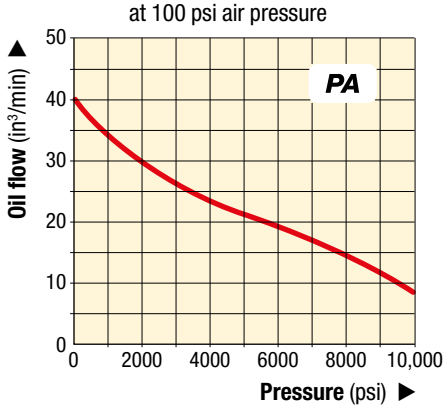
Double the reservoir capacity of your existing **PA133** with this easy to install conversion kit.

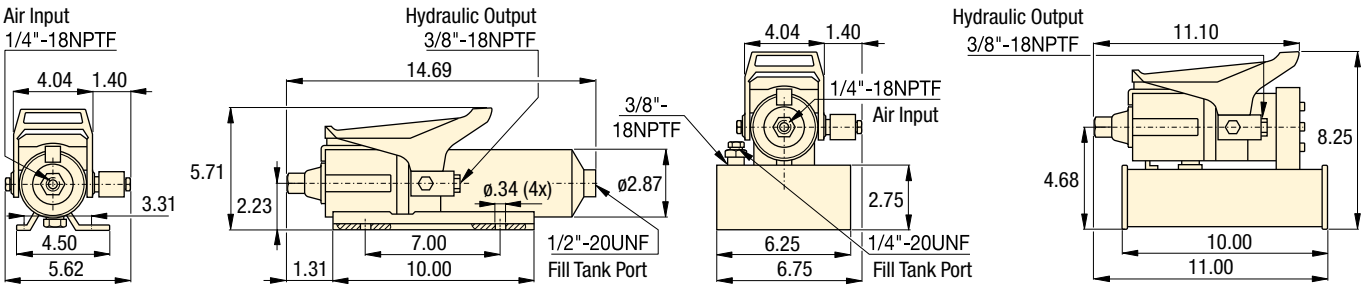
Model Number	PC66

- **Rugged construction – built for long life and easy service**
- **Swivel coupling simplifies hydraulic connection and pump operation**
- **3-position treadle provides cylinder advance, hold or retract operation**
- **Operates in all positions for increased versatility in use and mounting (except PA1150)**
- **Base mounting slots provided on PA133.**

OIL FLOW VERSUS PRESSURE

at 100 psi air pressure





PA133 **PA1150**

Used with Cylinder	Usable Oil Capacity (in³)	Model Number	Pressure Rating (psi)	Output Flow Rate (in³/min) No load	Output Flow Rate (in³/min) Load	Valve Function	Air Pressure Range * (psi)	Air Consumption (scfm)	Sound Level (dBA)	(lbs)
Single-Acting	36	**PA133**	10,000	40	8	Advance / Hold / Retract	60 - 120	9.0	85	12
	80	**PA1150**	10,000	49	8	Advance / Hold / Retract	60 - 120	9.0	85	18

* Recommended Regulator-Filter-Lubricator: **RFL102**.

▼ **PAM1041**



PAM Series

Reservoir Capacity:
1.0 - 2.0 gallons

Flow at Rated Pressure:
9 in³/min

Air Consumption:
18 scfm

Maximum Operating Pressure:
10,000 psi

- **Twin air motor configuration delivers high-flow performance in first stage, up to 200 psi, for rapid cylinder advance**
- **1 and 2 gallons reservoirs for use with a wide range of cylinders**
- **Integral shroud protects air motors and provides easy portability.**



Locking Valves

Pumps with 4/3 manual valves are available as manual locking valves **VM4L** instead. Add suffix "**L**" to pump model number.
Example: **PAM1042L**.

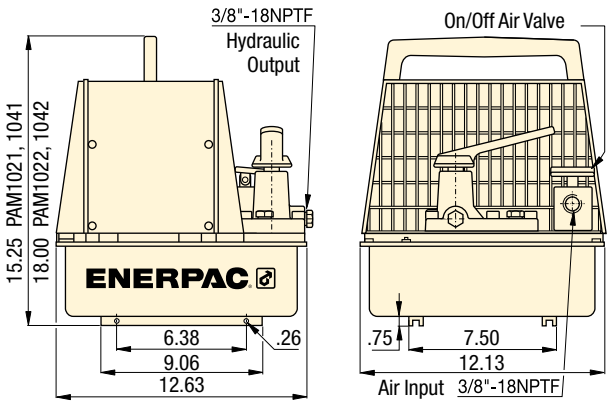
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Remote Air Valve

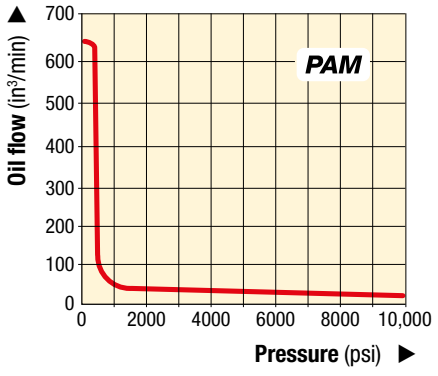
For remote operation of PAM-Series air pumps. Permits either hand or foot operation.

Model Number	VA2



OIL FLOW VERSUS PRESSURE

at 100 psi air pressure



Used with Cylinder	Usable Oil Capacity (gal)	Model Number with Shroud	Pressure Rating (psi)	Output Flow Rate (in³/min) 1st stage	Output Flow Rate (in³/min) 2nd stage	Valve Function	Valve Type	Valve Model Number	Air Pressure Range * (psi)	Air Consumption (scfm)	Sound Level (dBA)	(lbs)
Single-Acting	0.7	**PAM1021**	10,000	650	9	Advance/Hold/Retract	3/2	VM2	60 - 120	18	87	50
	2.0	**PAM1022**	10,000	650	9	Advance/Hold/Retract	3/2	VM2	60 - 120	18	87	60
Double-Acting	0.7	**PAM1041**	10,000	650	9	Advance/Hold/Retract	4/3	VM4	60 - 120	18	87	50
	2.0	**PAM1042**	10,000	650	9	Advance/Hold/Retract	4/3	VM4	60 - 120	18	87	60

* Recommended Regulator-Filter-Lubricator: **RFL102**.

▼ Shown from top to bottom: **PAMG1402N, PARG1102N, PATG1102N, PATG1105N**



Compact Air Over Hydraulic

- **High-efficiency cast aluminum air motor for increased life and reduced air consumption**
- **Fully serviceable air motor assembly**
- **Reinforced heavy-duty reservoir for applications in tough environments**
- **Air-saver piston with rugged one-piece design reduces air consumption and operating costs**
- **Return-to-tank port for use in remote valve applications**
- **Quiet – only 76 dBA with low air consumption of 12 scfm**
- **Operating air pressure: 40-125 psi, enables pump to start at extremely low pressure**
- **Internal pressure-relief valve provides overload protection**
- **Mounting Bracket Kit (MTB1) available to mount pumps to horizontal or vertical surfaces.**



Regulator-Filter-Lubricator

Recommended for use with all Turbo air pumps. Provides clean, lubricated air and allows for air pressure adjustment. Steel bowl guards are standard.

Model Number	RFL102



Large Reservoir Models

The Turbo II Air Pump is also available with an enlarged reservoir: **PATG1105N, PAMG1405N** and **PARG1105N.**



High-Pressure Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

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▼ *Easily operated by hand or by foot.*





Used with Cylinder	Usable Oil Capacity (in³)	Model Number
Single-Acting	127	PATG1102N
	230	PATG1105N
Single-Acting	127	PARG1102N
	230	PARG1105N
Double-Acting	127	PAMG1402N
	230	PAMG1405N

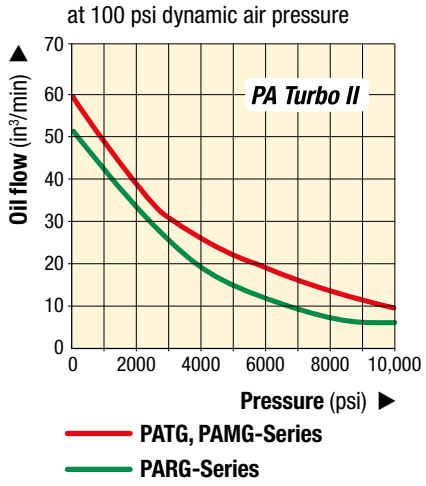
PA-Series, Turbo II Air Hydraulic Pumps

PATG-models use a foot or hand operated treadle to control air and valve functions.

PAMG-models use a treadle with a locking feature to control air, and a 4-way manual valve to control hydraulics.

PARG-models use a 15 feet air pendant for remote control.

OIL FLOW VERSUS PRESSURE



PATG PAMG PARG Series



Reservoir Capacity:
105 - 305 in³

Flow at Rated Pressure:
5 - 10 in³/min

Air Consumption:
8 - 12 scfm

Maximum Operating Pressure:
10,000 psi

Maximum Pressure (psi)	Output Flow Rate (in³/min) No Load	Load	Pump Series	Valve Function	Air Pressure Range (psi)	Air Consumption at 75 psi air pressure (scfm)	Sound Level (dBA)
10,000	60	10	**PATG**	A / H / R *	40 - 115	12	76
10,000	48-51 [1]	5-6 [1]	**PARG**	A / H / R *	40 - 115	8	76
10,000	60	10	**PAMG**	A / H / R *	40 - 115	12	76

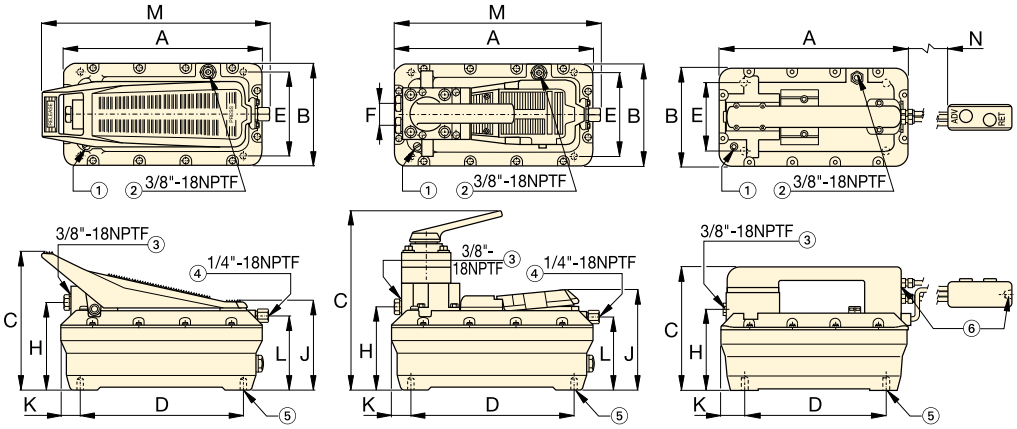
* Valve function: Advance / Hold / Retract.

[1] PARG: air supply connected at pendant 48 and 5 in³/min.
PARG: air supply connected at pump shown on flow curve 51 and 6 in³/min.

Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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PATG1102N
PATG1105N

PAMG1402N
PAMG1505N

PARG1102N
PARG1105N

① Filtered 'Permanent' Tank Vent
② Return-to-Tank/Auxiliary Vent/ Fill Tank Port
③ Hydraulic Output
④ Swivel Air Input with Filter
⑤ 4 Mounting Holes for #10 thread forming screw. Max. depth into reservoir = 0.75 inch
⑥ Air Input with Filter on PARG models ¼"-18 NPTF

Valve Operation	Turbo II Dimensions (in) A	B	C	D	E	F	H	J	K	L	M	N	(lbs)	Model Number
Treadle 3/3	12.33	6.49	8.29	9.04	4.00	–	5.15	5.75	1.65	4.43	13.62	–	18	**PATG1102N**
	15.60	7.92	8.22	9.04	4.00	–	5.08	5.75	3.28	4.41	17.20	–	22	**PATG1105N**
Air Pendant 3/3	12.33	6.49	7.88	9.04	4.00	–	5.15	–	1.65	4.43	–	177	22	**PARG1102N**
	15.60	7.92	7.88	9.04	4.00	–	5.08	–	3.28	4.41	–	177	26	**PARG1105N**
Manual 4/3	12.33	6.49	10.50	9.04	4.00	1.42	5.23	6.00	1.65	4.43	12.60	–	24	**PAMG1402N**
	15.60	7.92	10.50	9.04	4.00	1.42	5.19	6.00	3.28	4.41	15.94	–	28	**PAMG1405N**

▼ XA11G

Ex II 2 GD ck T4



Productivity & Ergonomics

- **Ergonomic design for less operator fatigue**
- **Variable oil flow & fine metering for precise control**
- **Higher oil flow for increased productivity**
- **Closed hydraulic system prevents contamination and allows pump usage in any position**
- **Pedal lock function for retract position**
- **External adjustable pressure setting valve**
- **Ground screw for improved ATEX explosion safety.**

▼ *Easy operated by foot. No need to fully lift up foot – rest bodyweight on heel, resulting in a handsfree and stabile working position.*





Optional Pressure Gauge

Integrated gauge with calibrated scale reading in psi, bar, and MPa for actual pressure reading.



4/3 Control Valve

For powering double-acting hydraulic cylinders and tools.



1/2 Gallon Reservoir

Double oil capacity for powering larger hydraulic cylinders and tools.



"Joy-stick" Lever Kit

Customer installed set of handles for manual operation of both pedals.

Model Number [1]	XLK1



Swivel Connector

Customer installed swivel connector for optimal orientation of the hydraulic hose.
See page 141 for details.

Model Number [1]	XSC1

[1] Accessories must be ordered separately.

Air Driven Hydraulic Foot Pumps



Production Application

XA11 pump is used with a 13-ton hollow cylinder to compress and position diesel engine valve springs.

The operator benefits from the fine metering capacities of this pump to apply the mandatory precise stroke and force.

XA Series



Reservoir Capacity:
61 - 122 in³

Flow at Rated Pressure:
15 in³/min

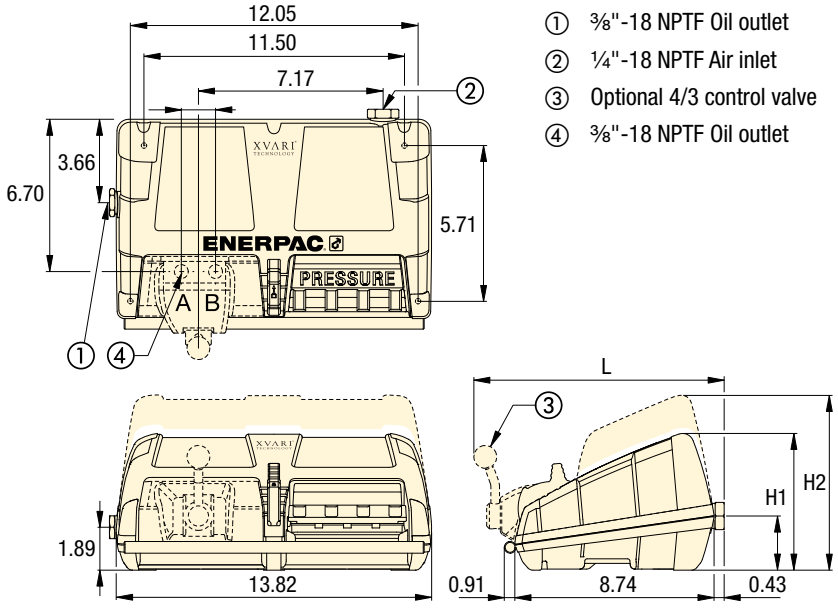
Air Consumption:
10 - 35 scfm

Maximum Operating Pressure:
10,000 psi

▼ XA-SERIES PERFORMANCE CHART

Maximum Pressure (psi)	Output Flow Rate (in³/min) No Load	Output Flow Rate (in³/min) Load	Pump Series	Valve Function	Dynamic Air Pressure (psi)
10,000	120	15	**XA1**	Advance / Hold / Retract	30 - 125

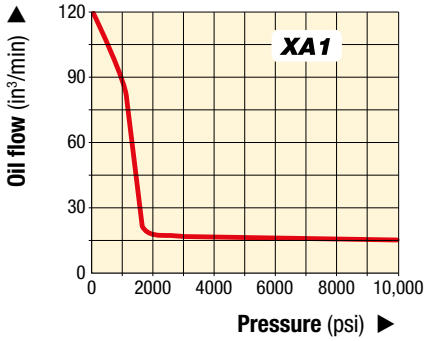
Sound Level: 88 dBA.



① ⅜"-18 NPTF Oil outlet
② ¼"-18 NPTF Air inlet
③ Optional 4/3 control valve
④ ⅜"-18 NPTF Oil outlet

OIL FLOW VERSUS PRESSURE

at 100 psi dynamic air pressure





Regulator-Filter-Lubricator

Recommended for use with all XA-Series Air pumps.
Provides clean, lubricated air and allows for air pressure adjustment.

Model Number	RFL102

▼ SELECTION CHART

For use with cylinder or tool	Useable Oil Capacity (in³)	Model Number [1]	Pressure Gauge	3-way, 3-position Valve	4-way, 3-position Valve	Dimensions (inch) H1	H2	L	(lbs)
Single-acting	61	**XA11** [2]	–	•	–	5.98	–	–	19.0
	122	**XA12** [2]	–	•	–	–	6.69	–	22.4
Single-acting	61	**XA11G**	•	•	–	5.98	–	–	19.4
	122	**XA12G**	•	•	–	–	6.69	–	22.9
Double-acting	61	**XA11V**	–	–	•	5.98	–	10.98	22.3
	122	**XA12V**	–	–	•	–	6.69	10.98	25.7
Double-acting	61	**XA11VG**	•	–	•	5.98	–	10.98	22.7
	122	**XA12VG**	•	–	•	–	6.69	10.98	26.2

[1] High-Flow coupler CR400 and accessories must be ordered separately. [2] Available as cylinder-pump set, see page 6.

▼ ZA4208MX, ZA4420MX

Ex II 2 GD ck T4
DEKRA 0602

Z Tough Dependable Innovative CLASS



- **ATEX 95 certified for use in potentially explosive atmospheres**
- **Features Z-Class high-efficiency pump design, higher oil flow and by-pass pressure**
- **Two-speed operation reduces cycle time for improved productivity**
- **User adjustable relief valve built-in on manual valves. Oil ports on valves are 3/8" NPTF**
- **Optional heat exchanger warms exhaust air to prevent freezing and cools the oil**
- **Full sight oil level glass on 2.6, 5.2 and 10.3 gallons reservoirs, oil level indicators on 1.2 and 1.8 gallons reservoirs.**

ATEX 95 Certified

The Enerpac ZA4-series air pumps are tested and certified according to the **Equipment Directive 94 / 9 / EC "ATEX Directive"** for equipment and protective systems intended for use in potentially explosive atmospheres.

Ex II 2 GD ck T4
DEKRA 0602

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Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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High-Pressure Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

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Used with Cylinder	Reservoir Size (gal)	Manual Valve [1] Model Number	Valve Function	Model Number	Output Flow Rate [2] (in³/min) 100 psi	700 psi	5,000 psi	**10,000 psi**	Relief Valve Adjustment Range (psi)	Maximum Air Consumption [3] (scfm)
–	1.2	–	–	**ZA4004NX**	850	675	110	**80**	–	100
Single-acting	1.2	VM32	Advance / Retract	**ZA4204MX**	850	675	110	**80**	1000 - 10,000	100
	1.8	VM33	Advance / Hold / Retract	**ZA4308MX**	850	675	110	**80**	1000 - 10,000	100
	2.6	VM33L	Advance / Hold /Retract	**ZA4610MX**	850	675	110	**80**	1000 - 10,000	100
Double-acting	1.2	VM43	Advance / Hold /Retract	**ZA4404MX**	850	675	110	**80**	1000 - 10,000	100
	1.8	VM43	Advance / Hold /Retract	**ZA4408MX**	850	675	110	**80**	1000 - 10,000	100
	2.6	VM43L	Advance / Hold /Retract	**ZA4810MX**	850	675	110	**80**	1000 - 10,000	100
	5.2	VM43	Advance / Hold /Retract	**ZA4420MX**	850	675	110	**80**	1000 - 10,000	100
	10.3	VM43	Advance / Hold /Retract	**ZA4440MX**	850	675	110	**80**	1000 - 10,000	100

[1] See pages 128-129 for hydraulic symbols of these valves.
[2] Actual oil flow will vary with air supply.
[3] Dynamic air pressure range: 60 - 100 psi, air consumption 20 - 100 scfm.

▼ **This is how a ZA4-Series pump model number is built up:**

Z	A	4	2	08	M	X	-	F	H	R	
1 Product Type	2 Motor Type	3 Flow Group	4 Valve Type	5 Reservoir Size	6 Valve Operation	7 Motor Voltage		8 Options			

1 Product Type
- **Z** = Pump Class

2 Prime Mover
- **A** = Air motor

3 Flow Group
- **4** = 80 in³/min @ 10,000 psi

4 Valve Type
- **0** = No valve, with cover plate
- **2** = 3/2 manual valve **VM32**
- **3** = 3/3 manual valve **VM33**
- **4** = 4/3 manual valve **VM43**
- **6** = 3/3 manual locking valve **VM33L** with pilot operated check
- **7** = 3/2 manual valve **VM22**
- **8** = 4/3 manual locking valve **VM43L** with pilot operated check.

5 Reservoir Size
- **04** = 1.2 gallons
- **08** = 1.8 gallons
- **10** = 2.6 gallons
- **20** = 5.2 gallons
- **40** = 10.3 gallons

6 Valve Operation
- **M** = Manual valve
- **N** = No valve

7 Motor Voltage
- X = Not applicable

8 Options
- **F** = Return Line Filter
- **G** = 15,000 psi gauge
- **H** = Heat exchanger (on 1.2 and 1.8 gallons reservoir only)
- **K** = Skid Bar (on 1.2 and 1.8 gallons reservoir only)
- **N** = No reservoir handles (includes lifting eyes on 2.6, 5.2 and 10.3 gallon)
- **R** = Roll Cage

Ordering Example
Model Number: **ZA4208MX-FHK**
ZA4208MX-FHK is an air operated pump with a 3-way, 2-position manual valve, 1.8 gallons reservoir, filter, heat exchanger and skid bar.

ZA4 Series



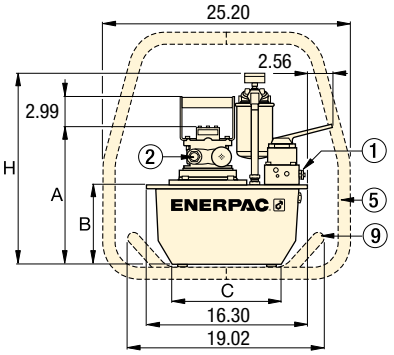
Reservoir Capacity:
1.2 - 10.3 gallons

Flow at Rated Pressure:
80 in³/min

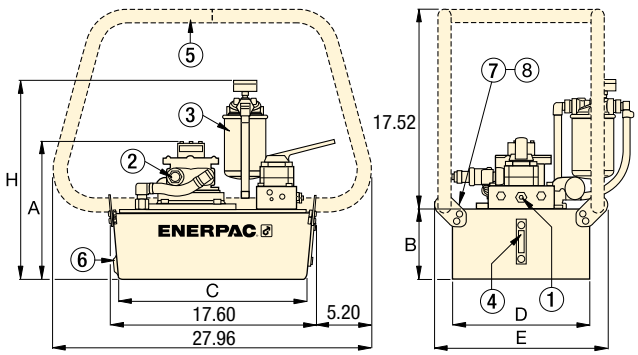
Air Consumption:
20 - 100 scfm

Maximum Operating Pressure:
10,000 psi

① User adjustable relief valve on all manual valves. ⅜" NPTF on A and B ports; ¼" NPTF on auxiliary ports.
② Air inlet ½" NPTF
③ Return Line Filter (optional)
④ Oil Sight Gauge
⑤ Roll Cage (optional)
⑥ Oil Drain
⑦ Lifting eyes (optional)
⑧ Handles
⑨ Skid Bar (Model Number SBZ4) (optional)



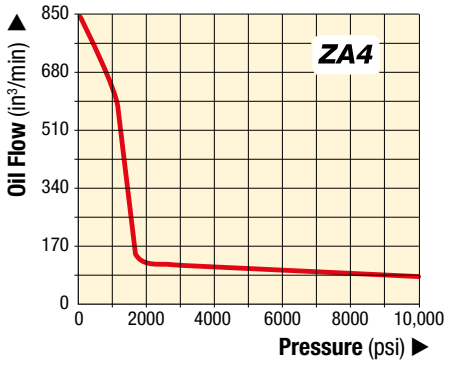
ZA4-Series Pumps with 1.2 - 1.8 gallons reservoir



ZA4-Series Pumps with 2.6, 5.2 and 10.3 gallons reservoir

Sound Level (dBA)	Motor Size (hp)	Dimensions (in) A	B	C	D	E	H	Weight (lbs)	Model Number
80 - 95	4.0	11.6	5.6	11.0	6.0	–	16.9	60	**ZA4004NX**
80 - 95	4.0	11.6	5.6	11.0	6.0	–	16.9	66	**ZA4204MX**
80 - 95	4.0	14.0	8.0	11.0	8.1	–	19.3	75	**ZA4308MX**
80 - 95	4.0	13.0	7.1	16.3	16.6	19.7	18.4	112	**ZA4610MX**
80 - 95	4.0	11.6	5.6	11.0	6.0	–	16.9	69	**ZA4404MX**
80 - 95	4.0	14.0	8.0	11.0	8.1	–	19.3	77	**ZA4408MX**
80 - 95	4.0	12.0	6.1	16.5	12.0	15.1	17.4	88	**ZA4810MX**
80 - 95	4.0	13.0	7.1	16.3	16.6	19.7	18.4	115	**ZA4420MX**
80 - 95	4.0	16.5	10.6	15.7	19.9	23.0	21.9	165	**ZA4440MX**

OIL FLOW VERSUS PRESSURE
at 100 psi air and 70 scfm air consumption



▼ ZG6440MX-BFCH, ZG5420MX-R



Z Tough, Dependable, Innovative CLASS

- Features Z-Class high-efficiency pump design, higher oil flow and by-pass pressure
- Two-speed operation reduces cycle time for improved productivity
- User adjustable relief valve built-in on manual valves. Oil ports on valves are 3/8" NPTF
- Available in two 4-cycle engine sizes: 5.5 hp Honda® and 13.2 hp Briggs & Stratton®
- Full sight oil level glass on all reservoirs allow quick and easy oil level monitoring.

ZG6-Series

- Easy serviceable 13.2 hp, 4-cycle gasoline engine with electric start, pressurized oil and 12 Volt, 16 Amp charge output for accessories
- Dual forced air heat exchanger stabilizes hydraulic oil temperature
- Sturdy wheeled cart with collapsible handles.



GA45GC Gauge Adaptor Assembly

Protect yourself from system overloading by simply ordering one part number for a pre-assembled gauge, adaptor block and coupler.

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User Adjustable Relief Valve

All VM-Series directional valves have a user adjustable relief valve to allow the operator to easily set the optimum working pressure.

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Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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▼ SELECTION CHART

Used with Cylinder	Reservoir Size (gal)	Manual Valve [1] Model Number	Valve Function	Model Number with Roll Cage	Output Flow Rate (in³/min) 100 psi	700 psi	5,000 psi	10,000 psi	4-Cycle Engine Type and Size
Single-Acting	2.6	VM33	Advance / Hold / Retract	**ZG5310MX-R**	700	650	110	**100**	Honda® 5.5 hp
	5.2	VM33	Advance / Hold / Retract	**ZG5320MX-R**	700	650	110	**100**	
Double-Acting	2.6	VM43	Advance / Hold / Retract	**ZG5410MX-R**	700	650	110	**100**	
	5.2	VM43	Advance / Hold / Retract	**ZG5420MX-R**	700	650	110	**100**	
Double-Acting	10.3	VM43	Advance / Hold / Retract	**ZG6440MX-BCFH**	897	885	226	**200**	Briggs & Stratton® 13.2 hp
	–	–	–	**–**	–	–	–	**–**	

[1] See pages 128-129 for hydraulic symbols of these valves.

ZG-Series, Gasoline Pump Performance

Elevation can affect the performance of any gasoline engine. ZG-Series pumps are designed to develop rated performance at elevations up to 4920 ft. For applications above this elevation, please consult your Enerpac office.

Optional: Diesel Engine

ZG-Series pumps can also be equipped with a Diesel Engine. Contact Enerpac for details.

ZG Series

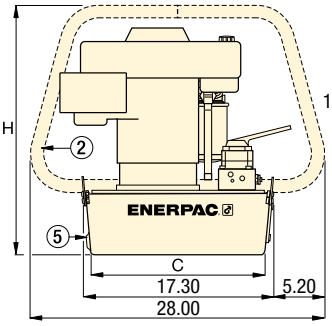


Reservoir Capacity:
2.6 - 5.2 - 10.3 gallons

Flow at Rated Pressure:
100 - 200 in^3/min

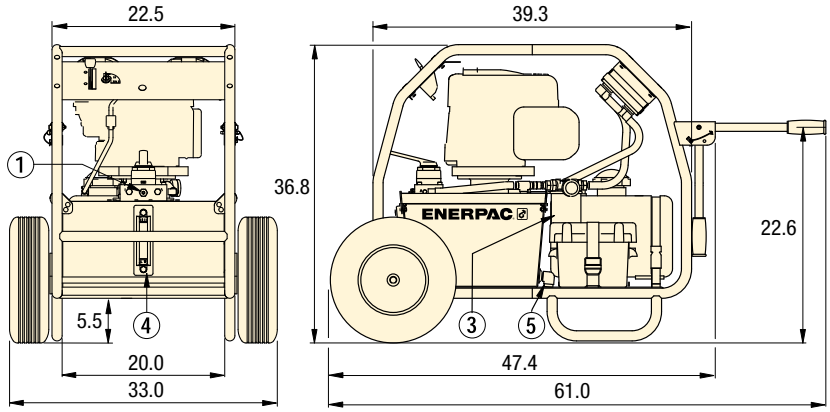
Engine Size:
5.5 - 13.2 hp

Maximum Operating Pressure:
10,000 psi



① User adjustable relief valve on all manual valves. ⅜" NPTF on A and B ports; ¼" NPTF on auxiliary ports.
② Roll Bar
③ Return Line Filter
④ Oil Level Gauge
⑤ Oil Drain

ZG5-Series



ZG6-Series

Relief Valve Adjustment Range (psi)	Sound Level (dBA)	Dimensions (in) B	C	D	E	H	(lbs)	Model Number with Roll Cage
1000 - 10,000	88 - 93	6.1	16.5	12.0	15.1	23.6	114	ZG5310MX-R
		7.1	16.3	16.6	19.7	24.6	141	ZG5320MX-R
		6.1	16.5	12.0	15.1	23.6	114	ZG5410MX-R
		7.1	16.3	16.6	19.7	24.6	141	ZG5420MX-R
1000 - 10,000	88 - 93	–	–	–	–	–	335	ZG6440MX-BCFH
		–	–	–	–	–	–	–



High-Pressure Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

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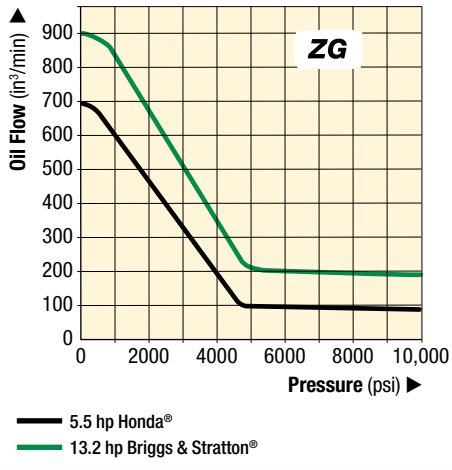


Premium Hydraulic Oil

Use only genuine Enerpac Hydraulic Oil. The use of any other fluid will render your Enerpac warranty null and void.

Page: 140

OIL FLOW VERSUS PRESSURE



▼ EGM8418



For the Largest Jobs

- **Industrial grade 18 hp twin-cylinder motor**
- **Panel mounted pressure gauge and adjustable relief valve for system pressure control**
- **Two-speed pump design with high by-pass pressure for rapid cylinder advance**
- **Built-in oil temperature and oil level gauge**
- **External adjustable relief valve (1200 - 10,000 psi) allows control of operating pressure without opening the pump**
- **Integral priming circuit guarantees quick starts after transport.**



◀ *Gasoline-powered EGM8000-Series pump is shown here performing a synchronized lift.*



Locking Valves

Pumps with VM4 manual valves are available with VM4L manual valves for positive load holding. Add suffix "**L**" to pump model number.

Page: **128**



High-Pressure Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

Page: **136**



Premium Hydraulic Oil

Use only genuine Enerpac Hydraulic Oil. The use of any other fluid will render your Enerpac warranty null and void.

Page: **140**

EGM Series

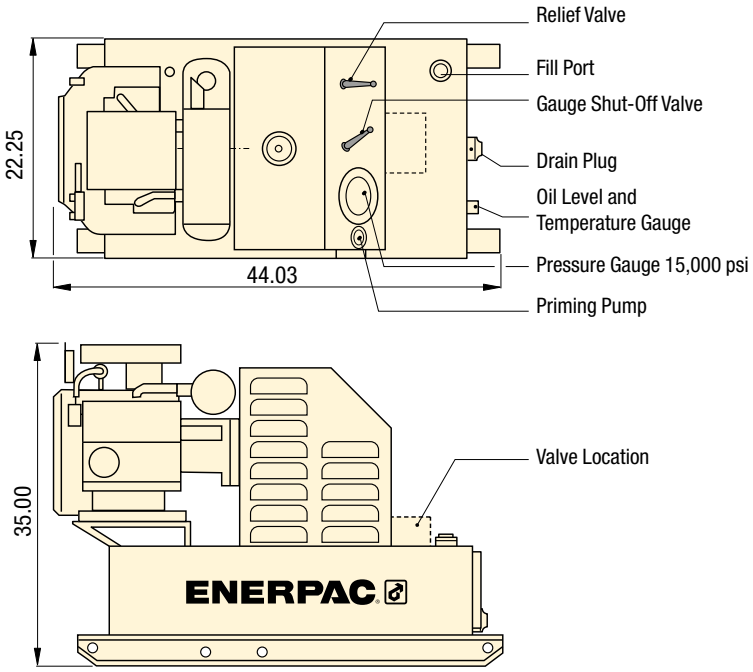


Reservoir Capacity:
25 gallons

Flow at Rated Pressure:
1.5 gal/min

Motor Size:
18 hp

Maximum Operating Pressure:
10,000 psi

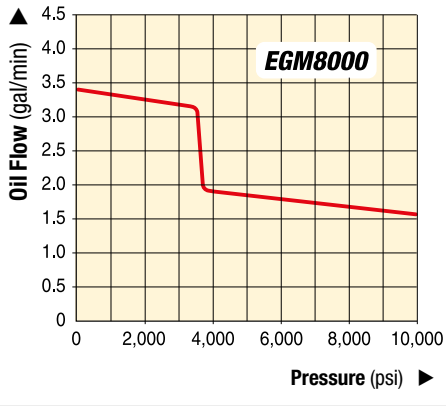


Speed Chart

To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.

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OIL FLOW VERSUS PRESSURE



Used with Cylinder	Useable Oil Capacity (gal)	Model Number	Pressure Rating (psi) 1st stage	Pressure Rating (psi) 2nd stage	Output Flow Rate (gal/min) 1st stage	Output Flow Rate (gal/min) 2nd stage	Manual Valve Type	Valve Function	Sound Level (dBA)	(lbs)
Single-Acting	18	**EGM8218**	3,700	10,000	3.4	1.5	3-way, 2-pos.	Adv./Retr.	94	890
Double-Acting	18	**EGM8418**	3,700	10,000	3.4	1.5	4-way, 3-pos.	Adv./Hold/Retr.	94	890

Custom Hydraulic Pumps

Enerpac offers a wide variety of hydraulic pumps for all your custom needs. Still, many applications require a customized pump to operate the system.

Hydraulic pumps are at the heart of any hydraulic system. Different systems require different flow, pressure and control.

Enerpac offers a wide variety of hydraulic pumps from small hand-operated pumps to large gasoline-powered pumps.

Still, many applications require a customized pump to operate the system. These may include larger reservoir capacity, custom valve configurations or added electrical controls. Enerpac also specializes in power units and controls used for synchronous lifting/lowering of multiple jacking points.



▲ *Private-label hand or foot pumps with fire-resistant oil and special exterior paint.*



▲ *Private labeled electric torque wrench pumps for OEMs.*



▲ *XC-Series Cordless Pump with custom black shroud for private-label OEM customer to be used with a variety of hand held hydraulic tools.*



▲ *Custom pumps with control packages.*



▲ *Electric pump with large cooler and controls for high-temperature applications.*



▲ *Pumps with custom valve manifolds and circuits.*

Overview Custom Pumps



▲ *Custom hydraulic pumps for a bridge deck launching system.*

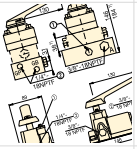
Customizable Features:

- Reservoir and Frame
- Valve Configurations
- Controls
- Oil
- Seals
- Pressure and Flow
- Coolers and Heaters
- Paint
- Motor Type
- Human Machine Interface (HMI)

Enerpac hydraulic valves are available in a wide variety of models and configurations.

Whatever your requirements… directional control, flow control, or pressure control… you can be sure that Enerpac has the correct valve to match your application exactly.

Designed and manufactured for safe operation up to 10,000 psi, the range of Enerpac valves allows for direct pump mounting, remote mounting, manual or solenoid actuation, and in-line installation, giving you flexible solutions to control your hydraulic system.

Valve Type	Series		Page
Pump Mounted Manual and Solenoid Directional Control Valves	VM VE		128 ▶
Remote Mounted Manual Directional Control Valves	VC		130 ▶
Valve Dimensions	VM VE VC		131 ▶
Solenoid Operated Modular Directional Control Valves	VE		132 ▶



Pressure & Flow Control Valves

For more hydraulic system control with pressure relief valves, shut-off valves, check valves and sequence valves see our “System Components”.

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Valving Help

See Basic System Set-Up and Valve Information in our ‘Yellow Pages’.

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Pump Mounted Directional Control Valves

ENERPAC

▼ Shown from left to right: **VM32, VE33, VM33, VM43L, VE43**



- **Advance/Retract and Advance/Hold/Retract operation of single- and double-acting cylinders and tools**
- **Manual or solenoid operation**
- **Pump mounting will retrofit on most Enerpac pumps**
- **Available "locking" option on VM-Series valves for load-holding applications**
- **Standard "locking" feature on VE-Series 3-position valves**
- **User adjustable relief valve allows the operator to easily set the working pressure.**

Venturi Valve Technology

- **For fast return of single-acting gravity and spring return cylinders**
- **Available as manual or solenoid valve on ZU4- and ZE-Series electric pumps**
- **Retrofit Venturi valve kits for field installation on existing ZU4- and ZE-Series electric pumps.**

Adjustable Relief Valve

All valves feature several gauge ports for "system", A port and B port pressure monitoring. User adjustable relief valves are included on all models to allow the operator to easily set the optimum working pressure for each application.

VM33 and VE43 valves include "System Check" feature, for more precise pressure holding and improved system control.

The VM33 has improved porting which provides faster cylinder retraction while motor is running.

Locking Valves

For applications that require positive load holding, VM-Series valves (except VM22 and VM32) are available with a pilot-operated check valve. This option provides hydraulic locking of the load until the valve is shifted into the retract position.

Reliable Control of Single and Double-Acting Cylinders and Tools

Valve Operation	Used with Cylinder	Valve Type
Manual	Single-acting	3-Way, 2-Position
Manual	Single-acting	3-Way, 2-Position
Manual	Single-acting	3-Way, 3-Position, Tandem Center
Manual	Single-acting	3-Way, 3-Position, Tandem Center, Venturi Return Assist
Manual	Double-acting	4-Way, 3-Position, Tandem Center
Manual	Single-acting	3-Way, 3-Position, Tandem Center, Locking
Manual	Double-acting	4-Way, 3-Position, Tandem Center, Locking
Solenoid 24 VDC	Single-acting	3-Way, 2-Position
Solenoid 24 VDC	Single-acting	3-Way, 2-Position, Dump
Solenoid 24 VDC	Single-acting	3-Way, 3-Position, Tandem Center Venturi Return Assist
Solenoid 24 VDC	Single-acting	3-Way, 3-Position, Tandem Center
115 VAC		
Solenoid 24 VDC	Double-acting	4-Way, 3-Position, Tandem Center
115 VAC		

For remote valve information, see page 130.
See page 131 for valve dimensions.

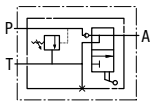
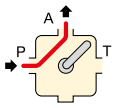
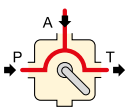
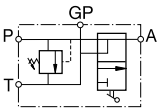
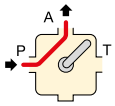
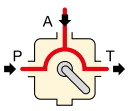
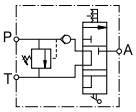
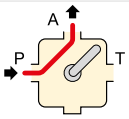
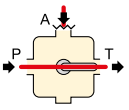
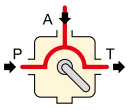
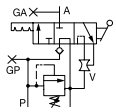
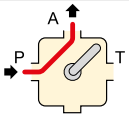
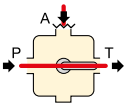
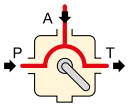
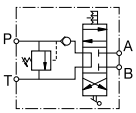
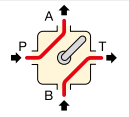
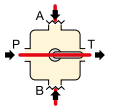
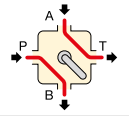
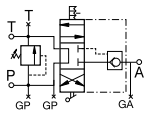
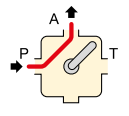
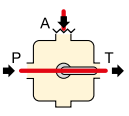
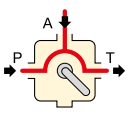
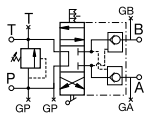
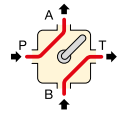
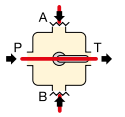
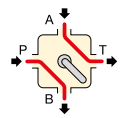
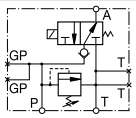
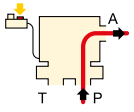
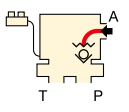
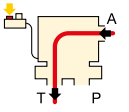
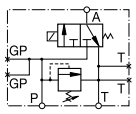
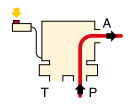
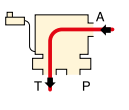
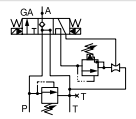
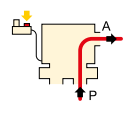
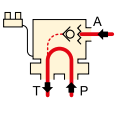
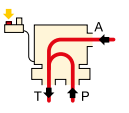
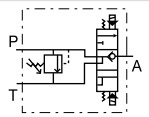
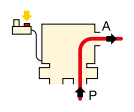
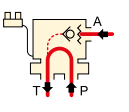
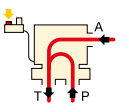
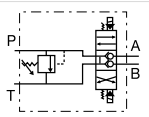
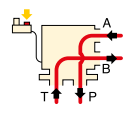
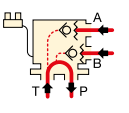
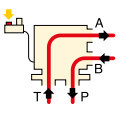
Pump Mounted Directional Control Valves

VM, VE- Series



Maximum Flow Capacity:
4.5 gal/min

Maximum Operating Pressure:
10,000 psi

Model Number	Hydraulic Symbol	Schematic Flowpath			
		Advance	Neutral	Retract	(lbs)
VM22					5.6
VM32					5.6
VM33					6.7
VM33VAC					7.5
VM43					6.8
VM33L					10.7
VM43L					10.8
VE32 *					8.7
VE32D *					8.7
VE33VAC*					22.0
VE33 *					20.3
VE33-115*					
VE43 *					20.3
VE43-115*					

* When ordering Enerpac VE-Series solenoid valves, the pendant must be ordered separately for Z-Class Pumps.



Assisted Return Pumps with Venturi Valve Technology

ZU4 and ZE-Series pumps feature Venturi Valve Technology to accelerate single-acting gravity and spring-return cylinder retraction speeds.

See valve type in ZU4 and ZE-pump ordering matrix on pages 102 and 108.

Venturi Valve Retrofit Kits

For field installation on existing ZU4, ZE and ZA-Series pumps, Retrofit Kits are available for manual and solenoid operated valves.

For valve model	For valve operation	Retrofit Kit Model Nr.
VM33, VM33L	Manual	**VM33RVK**
VE33	Solenoid	**VUV5**



Spring Centered Valve Kits

VM and VC-Series manual 3-position valves can be easily converted into spring centered valves. With these retrofit kits the handle will automatically move into the neutral valve position when released.

For valve model	Model Number
VM33, VM43	**VMC3343K**
VM33L, VM43L	**VMC3343KL**
VC3, VC15, VC4, VC20	**VMC34K**
VC3L, VC15L, VC4L, VC20L	**VMC34KL**

▼ Shown from left to right: **VC20, VC4L**



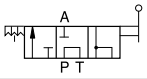
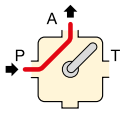
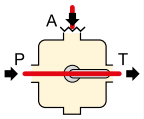
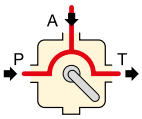
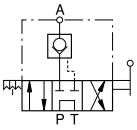
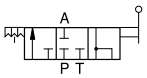
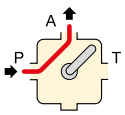
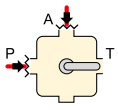
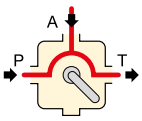
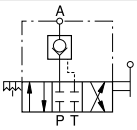
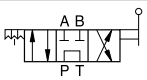
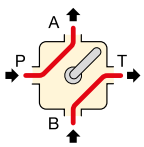
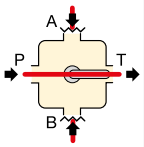
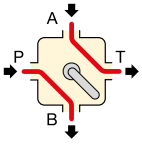
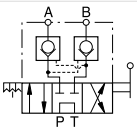
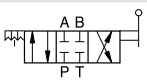
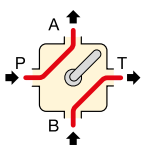
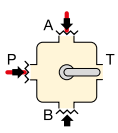
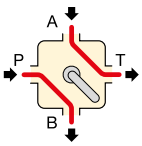
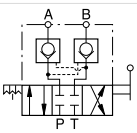
Remote Control of Single and Double-Acting Cylinders and Tools



Locking Valves

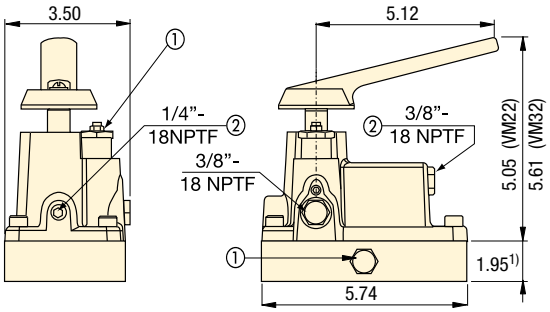
For applications that require positive load holding, VC-Series valves are available with a pilot-operated check valve. This option provides hydraulic locking of the load until the valve is shifted into the retract position.

- **Advance/Hold/Retract operation for use with single-acting or double-acting cylinders and tools**
- **Return line kit included with remote valves.**

Valve Operation	Used with Cylinder	Valve Type	Model Number	Hydraulic Symbol	Schematic Flowpath			(lbs)
					Advance	Hold	Retract	
Manual	Single-Acting	3-Way, 3-Position, Tandem Center	**VC3**					6.4
Manual	Single-Acting	3-Way, 3-Position, Tandem Center, Locking	**VC3L**					10.3
Manual	Single-Acting	3-Way, 3-Position, Closed Center	**VC15**					6.4
Manual	Single-Acting	3-Way, 3-Position, Closed Center, Locking	**VC15L**					10.3
Manual	Double-Acting	4-Way, 3-Position, Tandem Center	**VC4**					6.4
Manual	Double-Acting	4-Way, 3-Position, Tandem Center, Locking	**VC4L**					10.3
Manual	Double-Acting	4-Way, 3-Position, Closed Center	**VC20**					6.4
Manual	Double-Acting	4-Way, 3-Position, Closed Center, Locking	**VC20L**					10.3

Directional Control Valves Dimensions

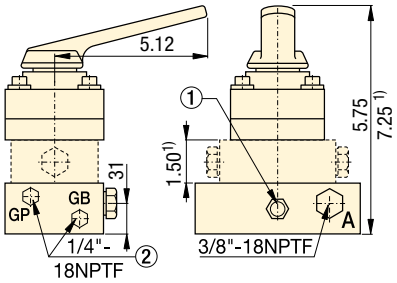
Pump Mounted Directional Control Valves



① User Adjustable Relief Valve
② Auxiliary Port

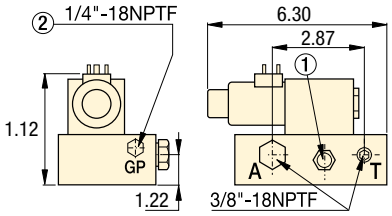
VM22, VM32

[1] VM22 only

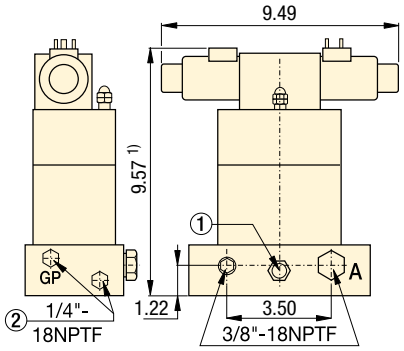


VM33, VM33L, VM33VAC, VM43, VM43L

[1] VM33VAC, VM33L and VM43L only.

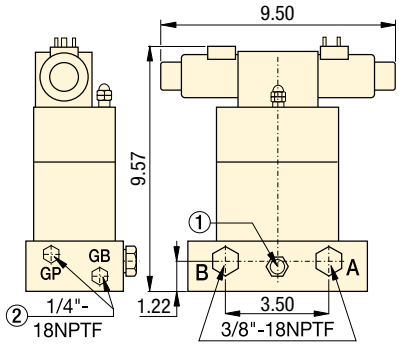


VE32, VE32D



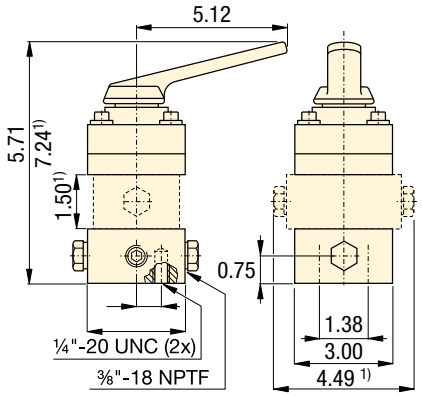
VE33, VE33VAC

[1] VE33VAC is 1.50 inch higher: 11.07 inch



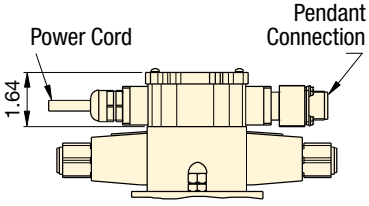
VE43

Remote Manual Directional Control Valves



VC3, VC3L, VC15, VC15L
VC4, VC4L, VC20, VC20L

[1] VC3L, VC15L, VC4L and VC20L only.



VE33-115
VE43-115

VM, VE, VC- Series



Maximum Flow Capacity:
4.5 gal/min

Maximum Operating Pressure:
10,000 psi



Spring Centered Valve Kits

VM and VC-Series manual 3-position valves can be easily converted into spring centered valves. With these retrofit kits the handle will automatically move into the neutral valve position when released.

For valve models	Model Number
VM33, VM43	**VMC3343K**
VM33L, VM43L	**VMC3343KL**
VC3, VC15, VC4, VC20	**VMC34K**
VC3L, VC15L, VC4L, VC20L	**VMC34KL**



Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. Refer to the System Components Section for a full range of gauges.

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Fittings

For additional fittings see the fitting page of the System Components section in this catalogue.

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Valving Help

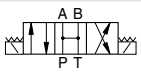
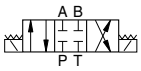
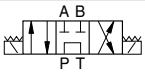
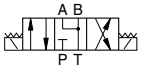
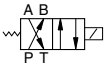
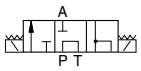
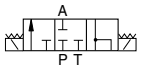
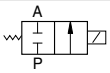
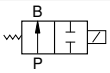
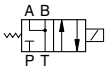
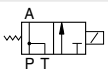
See Basic System Set-Up and Valve Information in our 'Yellow Pages'.

Page: 418

▼ Shown top to bottom: **VEC11600D, VEK11000B, VEC11000B**



- **Ideal for independent control of multiple cylinders or functions**
- **Relief valve and pilot-operated check accessory valves are stackable between manifold and valve body**
- **Remote and pump mounting.**

Valve Flow Path	Used with Cylinder	Valve Code	Hydraulic Symbol
4-Way, 3-Position (4/3) Open Center	Double-acting	**A**	
4-Way, 3-Position (4/3) Closed Center	Double-acting	**B**	
4-Way, 3-Position (4/3) Tandem Center	Double-acting	**C**	
4-Way, 3-Position (4/3) Float Center	Double-acting	**D**	
4-Way, 2-Position (4/2) Crossover Offset	Double-acting	**E**	
3-Way, 3-Position (3/3) Tandem Center	Single-acting	**F**	
3-Way, 3-Position (3/3) Closed Center	Single-acting	**G**	
2-Way, 2-Position (2/2) Normally Closed	System Un-loading	**H ***	
2-Way, 2-Position (2/2) Normally Open	System Un-loading	**K ***	
4-Way, 2-Position (4/2) Float Offset	Double-acting	**M**	
3-Way, 2-Position (3/2) Normally Open	Single-acting	**P**	

* Requires use of tank port for dump or unloading.

Unmatched Combinations and Possibilities



3-Way Check Valve

Use a **VS51** 3-way pilot operated check valve assembly to convert your 3-way modular valve into a load-holding valve.



4-Way Check Valve

Use a **VS61** 4-way pilot operated check valve assembly to convert your 4-way modular valve into a load-holding valve.



System Pressure Control

To add system pressure control to your modular valve, order **VS11** Relief Valve assembly.



Bolt Kits for Accessory Valves Without Manifold

Order Bolt Kit **BK2** when adding one of the accessory valves. Order Bolt Kit **BK3** when adding any combination of two accessory valves.

How to order one of the 1300 possible model numbers?

With over 1300 possible model numbers, Enerpac has the perfect valve for you.

Use the “chart” to build your own valve for the specific application you require. This is the complete guide to all the Modular valves that are available.

VE-Series, Solenoid Operated Modular Valves

CUSTOM BUILD YOUR MODULAR VALVES

▼ **This is how a Modular Valve Model Number is built up:**

VE	A	1	5	600	D
1 Solenoid Operated Valve	2 Valve Flow Path & Code	3 Flow Capacity	4 Operating Voltage	5 Accessory Valves	6 Manifold

1 Product Type

VE = Solenoid Operated Valve

2 Valve Flow Path & Code

A = 4/3 Open Center
B = 4/3 Closed Center
C = 4/3 Tandem Center
D = 4/3 Float Center
E = 4/2 Crossover Offset
F = 3/3 Tandem Center
G = 3/3 Closed Center
H = 2/2 Normally Closed
K = 2/2 Normally Open
M = 4/2 Float Offset
P = 3/2 Normally Open

3 Flow Capacity

1 = 4.0 gal/min

4 Voltage

1 = 24 VDC
2 = 220-240 V, 1 ph, 50 Hz
5 = 115 V, 1 ph, 60 Hz

5 Accessory Valves

000 = No accessory valves
100 = Relief Valve only
150 = Relief Valve and 3-way pilot operated check valve
Only for VEF / VEG
160 = Relief Valve and 4-way pilot operated check valve
Only for VEA / VEB / VEC / VED
500 = 3-way pilot operated check valve
Only for VEF / VEG
600 = 4-way pilot operated check valve
Only for VEA / VEB / VEC / VED

6 Manifold

A = No manifold *
B = Remote Mounted
D = Pump Mounted **
* Must order Bolt Kit separately.
** Only for valve code: **VEA / VEC / VEF**

Example: VEA15600-D
VEA15600-D is a Modular Valve with a 4-way, 3-position open center flowpath, 115 VAC, and an integral pilot-operated check valve, for mounting on an Enerpac pump.

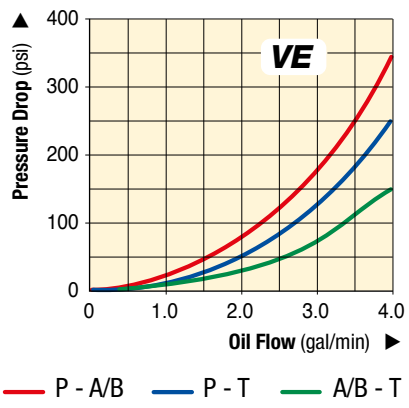
VE Series

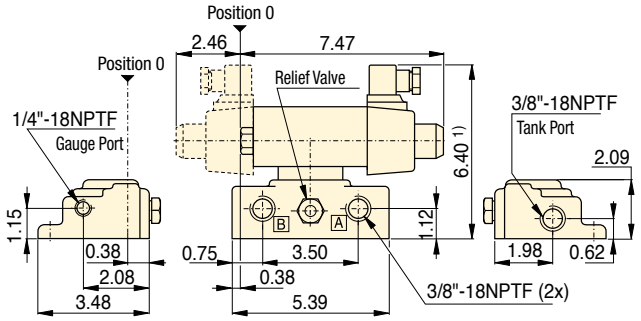


Maximum Flow Capacity:
4.0 gal/min

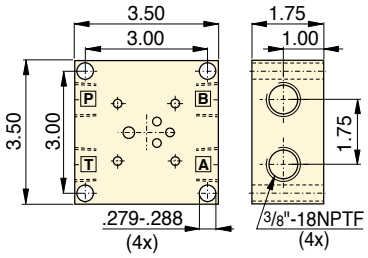
Maximum Operating Pressure:
10,000 psi

PRESSURE DROP VERSUS OIL FLOW





Modular Valve Pump Mounted 1) add 1.85 inch for each Accessory Valve



Modular Valve Remote Mounted Manifold

Maximum Operating Pressure (psi)	Amperage Draw			Seal Material	Electric Connection Plug
	24 VDC	115 VAC, 60 Hz	230 VAC, 50 Hz		
0 - 10,000	N/A Inrush	3.6 Amp Inrush	1.8 Amp Inrush	Buna-N, Polyurethane	DIN 43650
	2.5 Amps Holding	1.0 Amp Holding	0.5 Amp Holding		

Enerpac System Components:

All the additional elements you need to complete your high-pressure hydraulic system and get started.

Engineered to work with your Enerpac cylinders, pumps and tools, all Enerpac components are designed to the most exacting standards.

With this complete line of hydraulic hoses, couplers, fittings, manifolds, oil and gauges, Enerpac has the accessories to complement your system and ensure the efficient operation, long life and safety of your hydraulic equipment.

Yellow Pages

For sample system set-ups and how to correctly specify your system components, please view the Enerpac "Yellow Pages" section in this catalogue.

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Maintain System Integrity

Use Enerpac System Components, designed to interface with Enerpac cylinders, pumps and tools to ensure your system operates at peak performance.



Use only genuine Enerpac Hydraulic Oil

The use of any other fluid will render your Enerpac warranty null and void.

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System Components & Control Valves Overview

Component Type	Series		Page
High-Pressure Hydraulic Hoses	H700 H900		136 ▶
Couplers	A, C, F, T		138 ▶
Hydraulic Oil	HF LX		140 ▶
Manifolds	A		140 ▶
Control Manifolds	AM		140 ▶
Fittings	BFZ, FZ XSC		141 ▶
Split-Flow Manifolds	SFM		142 ▶
Force Gauges Pressure Gauges	GF GP		144 ▶
Pressure Gauges, glycerine-filled Pressure Gauges, dry	G H		146 ▶
Test System Gauges	T		148 ▶
Digital Hydraulic Pressure Gauge	DGR		149 ▶
Gauge Adaptor Assembly	GA45		150 ▶
4-Way Manifold Assembly with Gauges	AMGC		150 ▶
Gauge Adaptors Swivel Adaptor, Needle Valves	GA NV, V		151 ▶
Pressure and Flow Control Valves	V		152 ▶

▼ Shown from top to bottom: **HC7206, HC7210, HC9206**



Safety and Quality

To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

WARNING !

- **Do not exceed 10,000 psi maximum pressure.**
- **Do not handle hoses which are under pressure.**

More safety instructions in our 'Yellow pages'.

Page: 400

- **Vinyl strain relief guard on both ends of hose to improve life and durability on all models**
- **Maximum working pressure of 10,000 psi.**

Thermo-Plastic Safety Hoses (H700-Series)

- **For demanding applications, featuring a 4:1 safety factor**
- **Outside jacket is polyurethane, to provide maximum abrasion resistance**
- **Exhibits low volumetric expansion under pressure to enhance overall system efficiency.**

Heavy-Duty Rubber Hoses (H900-Series)

- **The most complete offering: 35 models up to 50 feet in length**
- **Rubber coated with two layers of steel wire braids**
- **Designed to comply with Material Handling Institute IJ100 hose specification**
- **Flexible, with little "memory", is the best choice for long hose runs.**

▼ *To prevent back pressure and to increase cylinder retraction speed, when using long hoses with single-acting cylinders, the Enerpac HC7300-Series of hoses with increased internal diameter is the best choice.*



▼ **Hose End Couplings**

¼" NPTF	
⅜" NPTF	
A604	
A630	
AH604	
AH630	
C604	
CH604	

Hose Oil Capacity

When using greater hose lengths, it is sometimes necessary to fill the pump reservoir after filling the hoses.

To determine the hose oil capacity, use the following:

For 0.25" internal diameter hoses:
Capacity (in^3) = .59 x Length (ft)

For 0.38" internal diameter hoses:
Capacity (in^3) = 1.36 x Length (ft)

H700 H900 Series



Internal Diameter:
0.25 - 0.38 inch

Length:
2 - 50 feet

Maximum Operating Pressure:
10,000 psi

Internal Diameter	Hose End Assemblies and Couplers *		Hose Length	For USA & Latin-America only: 700-Series Model Number Thermo-Plastic Hoses		For USA & Latin-America only: 900-Series Model Number Heavy-Duty Rubber Hoses	
(in)	End one	End two	(ft)		(lbs)		(lbs)
0.25	¼" NPTF	¼" NPTF	6	–		H9206Q	2.6
		⅜" NPTF	6	–		H9206S	2.6
		A630	6	HB7206QB	2.4	HB9206QB	3.1
		AH630	6	–		HB9206Q	2.9
		CH604	6	HC7206Q	2.3	HC9206Q	3.0
	⅜" NPTF	⅜" NPTF	2	H7202	1.2	H9202	1.6
			3	H7203	1.5	H9203	1.9
			6	H7206	2.0	H9206	2.6
			10	H7210	3.0	H9210	3.9
			20	H7220	6.2	H9220	8.0
			30	H7230	10.0	H9230	13.0
			50	H7250	15.4	H9250	22.0
		A604	–	–	–	–	–
			6	HA7206B	2.5	HA9206B	3.2
			10	–	–	HA9210B	4.5
		AH604	–	–	–	–	–
			3	–	–	HA9203	2.1
			6	HA7206	2.2	HA9206	2.9
			10	HA7210	3.2	HA9210	4.2
		AH630	6	HB7206	2.2	HB9206	2.9
		C604	3	HC7203B	2.2	HC9203B	2.9
			6	HC7206B	2.8	HC9206B	3.7
			10	HC7210B	3.9	HC9210B	5.0
		CH604	3	HC7203	1.7	HC9203	2.2
			6	HC7206	2.3	HC9206	3.0
			10	HC7210	3.3	HC9210	4.3
			20	HC7220	6.4	HC9220	8.3
	CH604	CH604	6	HC7206C	2.4	HC9206C	3.1
			20	HC7220C	6.6	HC9220C	9.7
			50	HC7250C	15.4	HC9250C	20.0
0.38	⅜" NPTF	⅜" NPTF	6	H7306	3.5	H9306	4.6
			10	H7310	10	H9310	7.0
			20	H7320	5.4	H9320	13.0
			30	H7330	10.0	H9330	21.0
			50	H7350	16.2	H9350	4.9
		CH604	6	HC7306	3.4	HC9306	7.3
			10	HC7310	5.6	HC9310	–
			20	HC7320	11.2	–	

* For technical information on couplers see next page.



GA45GC Gauge Adaptor

Protect yourself from system overloading by simply ordering one part number for a pre-assembled gauge, adaptor block and coupler.

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Torque Wrench Hoses

Use Enerpac twin safety hoses with double-acting wrenches to ensure the integrity of your hydraulic system.

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Fittings

For additional fittings see the fitting page of the System Components section.

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Premium Hydraulic Oil

Use only genuine Enerpac Hydraulic Oil. The use of any other fluid will render your Enerpac warranty null and void.

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▼ Shown: **FH604, FR400, AR630, C604, AH604, AR400**



Quick Connection of Hydraulic Lines

Thread sealer

To seal NPTF-threads use one of the new anaerobic thread sealers or Teflon paste. When using Teflon Tape, apply the tape one thread from the end of a fitting to prevent it from winding up in the hydraulic system.

WARNING!

Couplers should be pressurized only when completely connected and should not be coupled or uncoupled when pressurized.

More safety instructions in our 'Yellow Pages'.

Page: 400

F-Series, Flush-faced couplers

Flush-faced couplers provide reduced pressure drop versus other types and are preferred in dirty, grimy construction and mining environments due to easy clean, non-dirt trapping faces.

3/8" High-Flow Couplers

- Standard equipment on most Enerpac cylinders
- Recommended for use on all Enerpac pumps and cylinders where space and porting permits
- Includes "2-in-1" dust cap for use on male and female couplers.

3/8" High-Pressure 'Flush-face' Couplers

- Featuring "Push-to-connect" operation, to guarantee good connection every time
- Flush-face, zero-leak operation for minimal spillage and reduced pressure drop
- HTMA * recognized for safety and performance
- Will not interchange with low-pressure couplers.

3/8" Regular Spee-D-Couplers®

- For medium duty applications with hand pumps
- Includes female aluminum dust cap.

1/4" Regular Couplers

- For use with small cylinders and hand pumps
- Includes female aluminum dust cap.

1/4" Spin-on Torque Wrench Couplers

- For use with 10,000 psi S, W, RSL, DSX and HMT-Series torque wrenches, THQ-Series hoses and 10,000 psi torque pumps.

* Hydraulic Tool Manufacturers Association.

▼ *With the use of Enerpac high-flow couplers, hoses are easily installed for multiple hydraulic line connections in this 34 points PLC-controlled lifting system.*





CT604 Safety Tool

Use the Enerpac CT604 to relieve hydraulic back pressure by safely bleeding the hydraulic coupler.

Minimize injuries from projectile parts and under-skin hydraulic fluid injections by eliminating unsafe coupler bleeding practices. The CT604 is Enerpac-engineering safe for use at 10,000 psi.

NOTE: For use on CR400 and CH604 10,000 psi High-Flow Couplers only.

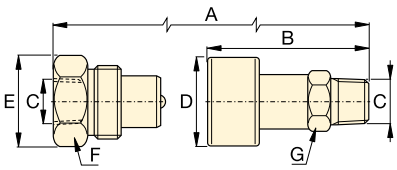
A, C, F, T Series



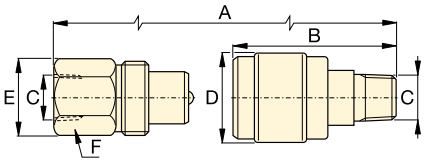
Maximum Flow Capacity:
462 - 2500 in³/min

Thread:
¼" - ⅜" NPTF

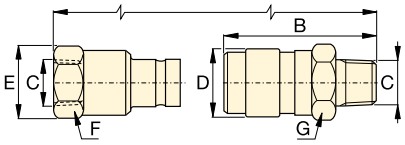
Maximum Operating Pressure:
10,000 psi



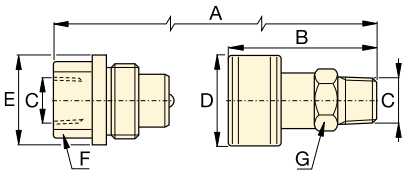
C604



A604
A630



F604



T630



Metal Dust Caps

Steel dust caps are available for the C604-Series couplers.
Order model number:
CD411M for female half
CD415M for male half

Maximum Flow Capacity (in³/min)	Coupler Type	Model Numbers			Dimensions (in)							Dust Cap(s) Model No.
		Complete Coupler Set	Female Half Coupler	Male Half Coupler	A *	B	C	D	E	F	G	
2100	10,000 psi High-Flow Coupler 	C604	CR400	CH604	3.26	2.87	⅜" NPTF	1.38	1.38	1.25	1.00	(2x) CD411
2500	10,000 psi Flush-Face Coupler 	F604	FR400	FH604	4.36	2.85	⅜" NPTF	1.23	1.23	1.06	1.12	–
462	10,000 psi Regular Spee-D-Coupler© 	A604	AR400	AH604	3.09	2.53	⅜" NPTF	1.12	0.94	0.94	0.73	Z410 female only
462	10,000 psi Regular Coupler 	A630	AR630	AH630	2.61	1.72	¼" NPTF	0.87	0.81	0.75	0.57	Z640 female only
695	10,000 psi Spin-on Coupler 	T630	TR630	TH630	2.87	2.36	¼" NPTF	1.14	1.14	0.74	0.82	–

* Value A is total length when male and female half are connected.

▼ HF100, LX101, HF95Y

The Genuine Range



HF-Series, Hydraulic Oil
- Maximum pump volumetric efficiency
- Maximum internal heat transfer
- Prevents pump cavitation
- Additives prevent rust, oxidation and sludge
- High viscosity index
- Maximum lubricity protection film.

LX-Series, Hand Pump Oil
- Specially formulated for hand pumps
- Anti-sludge, anti-rust additives
- Reduced handle effort over HF oil
- Good low-temperature performance
- Not for use in power pumps.

Use only genuine Enerpac Hydraulic Oil. The use of any other fluid will render your Enerpac warranty null and void.

Hydraulic Oil

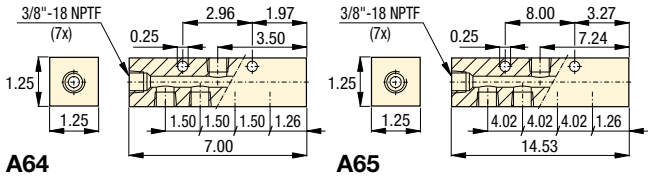
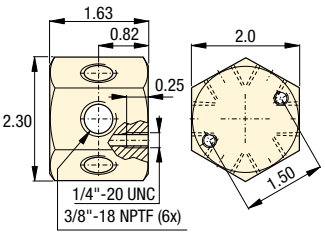
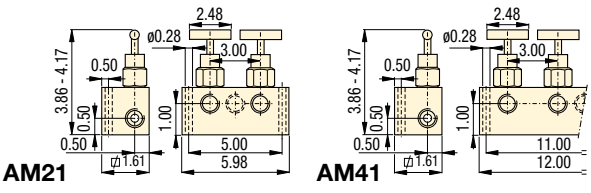
Contents	Model Number Europe	Model Number Australia & NZ
1 litre	HF95X	–
5 litres	HF95Y	HF105L
20 litres	HF95T	HF102L
205 litres	–	HF104L

Contents	Model Number Americas	Model Number Americas
1 Quart	HF100	–
1 Gallon	HF101	LX101
5 Gallons	HF102	–
55 Gallons	HF104	–

▼ OIL SPECIFICATION CHART

Oil Type	HF	LX
Viscocity Index	95 min	100 min
Viscocity (cSt @ 104 ˚F)	32	15
API Gravity ASTM D1298	31-33	34
Density (cSt @ 59 ˚F)	875	845
Flash point	400 ˚F	374 ˚F
Pour point	-90 ˚F	-111 ˚F
Colour	Blue	Yellow
Working Temperature Range	32-140 ˚F	32-140 ˚F
Ideal working temperature	104 ˚F	104 ˚F

10,000 psi Manifolds

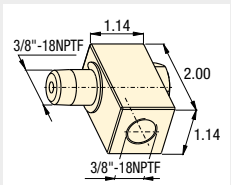
		Model Number	Dimensions (in)
7-port Manifold, short		A64	
7-port Manifold, long allows direct mounting of control valves to the manifold.		A65	
6-port Manifold, hexagon Plugs furnished for all ports ⅜"-18 NPTF.		A66	
Control Manifolds * For control of two or four single-acting cylinders simultaneously. **AM21** with 5 ports ⅜" NPTF. **AM41** with 7 ports ⅜" NPTF.		AM21 AM41	

* See page 150 for AMGC-Series 4-way manifold assembly complete with gauges.



3/8" Swivel Connector

360 degree swivel coupler for optimal orientation of the hydraulic connection on cylinders, pumps and hoses.
Order Model Number **XSC1**



A, AM
BFZ
FZ
HF
Series



Fittings, max. 10,000 psi

Model Number	Dimensions (in) A	B	C	D	
Street Elbow					
From: ⅜"-NPTF Male To: ⅜"-NPTF Female	**FZ1616**	0.94	1.30	⅜"-18 NPTF	⅜"-18 NPTF
Reducing Connector					
From: ⅜"-NPTF Female To: ¼"-NPTF Female	**FZ1615**	1.13	1.00	⅜"-18 NPTF	¼"-18 NPTF
From: ½"-NPTF Female To: ⅜"-NPTF Female	**FZ1625**	1.38	1.25	½"-14 NPTF	⅜"-18 NPTF
Hexagon Nipple					
From: To:					
¼"-NPTF ¼"-NPTF	**FZ1608**	1.50	0.63	¼"-18 NPTF	¼"-18 NPTF
⅜"-NPTF ⅜"-NPTF	**FZ1619**	2.00	0.75	⅜"-18 NPTF	⅜"-18 NPTF
⅜"-NPTF ⅜"-NPTF	**FZ1617**	1.47	0.75	⅜"-18 NPTF	⅜"-18 NPTF
Coupling					
From: To:					
⅜"-NPTF ⅜"-NPTF	**FZ1614**	1.14	1.00	⅜"-18 NPTF	⅜"-18 NPTF
¼"-NPTF ¼"-NPTF	**FZ1605**	1.14	0.75	¼"-18 NPTF	¼"-18 NPTF
Cross					
From: ⅜"-NPTF Female To: ⅜"-NPTF Female	**FZ1613**	1.77	1.00	⅜"-18 NPTF	–
Tee					
From: To:					
⅜"-NPTF ⅜"-NPTF	**FZ1612**	1.77	1.00	⅜"-18 NPTF	–
¼"-NPTF ¼"-NPTF	**FZ1637**	1.77	0.94	¼"-18 NPTF	–
Street Tee					
From: ⅜"-NPTF Female To: ⅜"-NPTF Male	**BFZ16312**	2.20	1.02	⅜"-18 NPTF	⅜"-18 NPTF
Elbow					
From: To:					
⅜"-NPTF ⅜"-NPTF	**FZ1610**	1.38	0.88	⅜"-18 NPTF	–
¼"-NPTF ¼"-NPTF	**FZ1638**	1.41	0.94	¼"-18 NPTF	–
Reducer					
From: To:					
⅜"-NPTF ¼"-NPTF	**FZ1630**	0.75	0.75	¼"-18 NPTF	⅜"-18 NPTF
¼"-NPTF ½"-NPTF	**BFZ1630**	1.10	0.86	¼"-18 NPTF	½"-14 NPTF
⅜"-NPTF G¼"	**BFZ16301**	0.75	0.75	G¼"	⅜"-18 NPTF
Adaptor					
From: To:					
G¼" ¼"-NPTF	**BFZ16411**	1.37	0.75	¼"-18 NPTF	G¼"
G¼" ⅛"-NPTF	**BFZ16421**	1.22	0.75	⅛"-27 NPTF	G¼"
G⅜" ¼"-NPTF	**BFZ16323**	1.69	0.94	¼"-18 NPTF	G⅜"
G⅜" ⅜"-NPTF	**BFZ16324**	1.69	0.94	⅜"-18 NPTF	G⅜"
Adaptor					
From: To:					
¼"-NPTF ⅜"-NPTF	**FZ1055**	1.75	0.94	¼"-18 NPTF	⅜"-18 NPTF
¼"-NPTF ⅛"-NPTF	**FZ1642**	1.18	0.75	⅛"-27 NPTF	¼"-18 NPTF
½"-NPTF ⅜"-NPTF	**FZ1634**	1.75	1.13	⅜"-18 NPTF	½"-18 NPTF
Swivel Fitting					
From: ⅜"-NPTF Male To: ⅜"-NPSM Female	**FZ1660**	1.59	0.88	⅜"-18 NPTF	⅜"-18 NPSM

▼ Shown from left to right: **SFM41, SFM42 Split-Flow Manifolds**



Improved safety on basic simultaneous lifting applications

- **Split-Flow Manifolds improve safety, precision and control in lifting and lowering operations**
- **Pressure gauge, flow control valve in each outlet port; CR400 couplers installed in each inlet and outlet port**
- **Regulates both advance and retract speeds: lifting and lowering**
- **1 inlet, 4 outlets. Maximum of 4 cylinders per manifold: SFM41 for single-acting cylinders, SFM42 for double-acting cylinders**
- **Minimum pump oil flow: 85 in³/min to deliver 9.1-15 in³/min per cylinder**
- **Maximum difference among outlets: 10% of the stroke (in 6 inch)**
- **More cylinders can be controlled simultaneously by connecting several SFM-models parallel.**



Pressure Gauges G2535L

Glycerine-filled pressure gauges are installed in each outlet pressure line to monitor the pressure of each cylinder.



Optimum Performance

Minimum pump oil flow must be 85 in³/min to deliver 9.1-15 in³/min per cylinder. Enerpac recommends to use Z-Class electric or gasoline pumps from the ZE5 and ZG-Series.



SFP-Series, Split-Flow Pumps

When a higher accuracy is required across cylinder strokes in a multi-point lifting or lowering application Enerpac recommends to use the SFP-Series Split-Flow Pumps.

Contact Enerpac!

Contact the Enerpac office nearest to you for advice and technical assistance in the layout of your ideal Lifting System or visit us at: www.enerpac.com. Or ask Enerpac for assistance: **enerpac.com/contact-us**



◀ *To repair the foundation, silos needed to be lifted, leveled and structurally supported. Powered by a ZE5-Series electric pump the split-flow manifold used to operate multiple hydraulic cylinders.*

Split-Flow Manifolds

The SFM-Series offer an economical solution for basic multi-point simultaneous lifting applications and enables a single operator to control a maximum of 4 lifting points from one manifold.

The Split-Flow Manifolds are equipped with pressure compensated flow control valves, to preset and limit advance and retract speed of each cylinder, allowing to move up to 4 cylinders simultaneously.

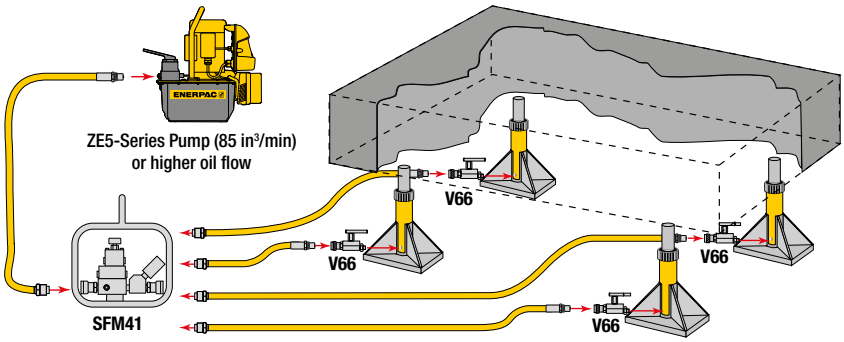
The SFM-Series provide more lifting and lowering control compared to AM-Series Control Manifolds. See flow control valve adjustments table below.

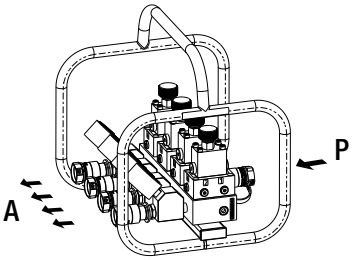
Minimum pump oil flow must be 85 in^3/min (ZE5-Series pumps) to deliver 9.1 - 15 in^3/min per cylinder. Several SFM-models can be connected parallel to the same pump to allow simultaneous operation of 8, 12 or 16 cylinders.

Higher flow pumps are required to achieve faster advance speeds. A 20% higher oil flow must be considered for a proper speed compensation.
Example : when using 4 cylinders: if oil flow of 28 in^3/min is required per cylinder, the pump oil flow must be:
4 x 28 = 112 + 20% = 134 in^3/min.

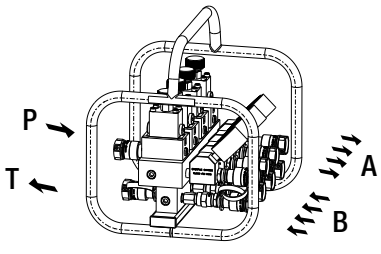
The maximum stroke deviation between the cylinders can reach up to 10% (in 6 inch stroke) depending on the cylinder pressure. Oil flow adjustment is also possible during cylinder operation by fine tuning using the flow control valves.

All cylinders connected to the SFM-manifold must have the same capacity (effective area). Both advance and retract speed are limited by the same valves. Use hoses of the same lengths to improve the accuracy of the hydraulic system. Improved precision when difference of pressures among the cylinders is within 2900 psi.





SFM41



SFM42

▼ SPLIT-FLOW MANIFOLDS

For use with cylinders	Model Number	Minimum oil flow to each cylinder (in^3/min)	Female couplers included	Dimensions L x W x H (in)	(lbs)
4x single-acting	**SFM41**	9.1	CR400	14.6 x 13.2 x 14.8	53
4x double-acting	**SFM42**	9.1	CR400	14.6 x 13.2 x 14.8	66

SFM Series



Inlet Connection:
1x power pump

Outlet Connections:
Max. 4 cylinders

Minimum Pump Flow Required:
85 in^3/min

Maximum Operating Pressure:
10,000 psi



Load Holding

Use **V66 check valves** for load holding applications with single-acting cylinders.

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High-Pressure Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses. Enerpac recommends to use hoses of the same lengths between the SFM and cylinders to improve system accuracy.



Flow Control Valves

The Split-Flow Manifold has pressure compensated flow control valves installed in each outlet line. The oil flow from the SFM-Manifold to each cylinder can be adjusted by turning the knob on the valve.

Flow Control Valve Adjustments

Number of Knob Turns	Oil Flow (in^3/min)	Number of Knob Turns	Oil Flow (in^3/min)
½	9.1	3	115.9
1	27.4	3½	219.6
1½	45.8	4	341.6
2	54.9	4½	506.3
2½	79.3	Open	628.3

▼ Shown from left to right: **GF230P, GF835P, GP10S**



- **GF-Series gauges: calibrated with dual scale reading for pressure (psi) and force (tons, lbs)**
- **GF-Series gauges: all pressure sensing parts are sealed and dampened by glycerine for long life**
- **GP-Series gauges: calibrated with dual scale reading for pressure in bar and psi**
- **Excellent readability: gauge face dimensions 4 inches**
- **Fast, easy installation**
- **Stainless steel gauge cases for corrosion resistance.**

▼ *A GP10S gauge is used on this press to check the hydraulic pressure required to bend flat steel bar.*



Visual Reference for System Pressure and Force



Auto-Damper Valve V10

For automatic control of gauge fluctuations, the V10 Auto-Damper Valve controls the movement of the gauge needle by restricting oil flow in and out of the gauge. No adjustments needed.

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Snubber Valve V91

Infinitely adjustable for metering oil out of a gauge. The V91 Snubber Valve is also suitable as a shut-off valve to protect the gauge during high-cycle applications.

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	Used With
	All cylinders
	All cylinders
	All 5-tons RC, RSM cylinders
	All 10-tons RC, RCS, RSM cylinders
	All 25-tons RC cylinders
	All 50-tons RC, RR cylinders
	12-tons RCH-Series
	RCH, RRH20, 30 and 60-tons
	RCS201, 302
	RCS502, 1002
	25, 30, 50-tons RC, RCS, RSM, RR
	75 and 100-tons RC, RR cylinders
	150 and 200-tons RR cylinders
	10-tons presses
	25-tons presses
	50-tons presses
	100-tons presses
	150-200 tons presses



Maximum Indicator Pointer

Indicator retains peak reading of pressure or force generated by the system.

Can easily be installed on GP and H-Series gauges. Order model number: **H4000G**.

Pressure Gauges

To measure the input pressure into cylinders or high pressure systems. Also for all testing applications.

Load Gauges

To measure external load supported by a cylinder or jack. For pressing parts together under pre-determined loads, weighing, testing, etc.

Force Gauges

To measure external load supported by a cylinder or jack in tons. For pressing parts together under pre-determined loads, weighing, testing, etc.

GP-Series are dry gauges.
GF-Series are glycerine-filled gauges.

GF, GP- Series

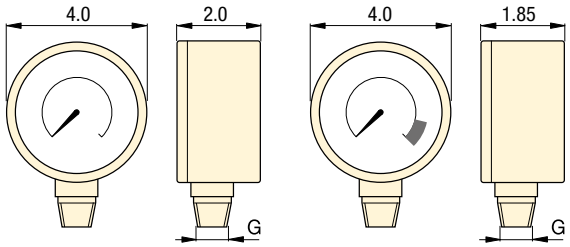


Pressure Range:
0 - 15,000 psi

Force Range:
0 - 200 tons

Gauge Face Diameter:
4 inches

Accuracy, % of full scale:
± 1%



GP-Series **GF-Series**

Gauge Type and Calibration					Units per Division	Model Number *	Thread G	Gauge Adaptor		
								 151		
								Required		
psi	bar	psi	lbs	tons				GA1	GA2	GA3
0 - 10,000	0 - 700	–	–	–	100 psi, 10 bar	**GP10S**	½" NPTF	●	●	
0 - 15,000	0 - 1000	–	–	–	200 psi, 10 bar	**GP15S**	½" NPTF	●	●	
–	–	0 - 10,000	0 - 10,000	0 - 5	100 psi, 100 lbs, 0.1 tons	**GF5P**	½" NPTF	●	●	
–	–	0 - 10,000	0 - 22,200	0 - 11	100 psi, 200 lbs, 0.2 tons	**GF10P**	½" NPTF	●	●	
–	–	0 - 10,000	0 - 51,500	0 - 25.5	100 psi, 500 lbs, 0.5 tons	**GF20P**	½" NPTF	●	●	
–	–	0 - 10,000	0 - 110,000	0 - 55	100 psi, 1000 lbs, 1 tons	**GF50P**	½" NPTF	●	●	
–	–	0 - 10,000	0 - 27,000	0 - 13.5	100 psi, 200 lbs, 0.25 tons	**GF120P**	½" NPTF	●	●	
–	–	0 - 10,000	–	0 - 23.5/36/65	100 psi, 0.5/0.5/1 tons	**GF230P**	½" NPTF	●	●	
–	–	0 - 10,000	–	0 - 22/32	100 psi, 0.5/0.5 tons	**GF510P**	½" NPTF	●	●	
–	–	0 - 10,000	–	0 - 50/100	100 psi, 1/1 tons	**GF813P**	¼" NPTF			●
–	–	0 - 10,000	–	0 - 25.5/32.5/55	100 psi, 0.5/0.5/0.5 tons	**GF835P**	¼" NPTF			●
–	–	0 - 10,000	–	0 - 79/103	100 psi, 1/1 tons	**GF871P**	¼" NPTF			●
–	–	0 - 10,000	–	0 - 150/200	100 psi, 5/5 tons	**GF200P**	¼" NPTF			●
–	–	0 - 10,000	0 - 22,200	0 - 11	100 psi, 200 lbs, 0.2 tons	**GF10P**	½" NPTF	●	●	
–	–	0 - 10,000	0 - 51,500	0 - 25.5	100 psi, 500 lbs, 0.5 tons	**GF20P**	½" NPTF	●	●	
–	–	0 - 10,000	0 - 11,000	0 - 55	100 psi, 1000 lbs, 1 tons	**GF50P**	½" NPTF	●	●	
–	–	0 - 10,000	–	0 - 79/103	100 psi, 1/1 tons	**GF871P**	¼" NPTF			●
–	–	0 - 10,000	–	0 - 150/200	100 psi, 5/5 tons	**GF200P**	¼" NPTF			●

* GF-Series Force Gauges with metric scale reading (bar, kN) are available by changing the suffix 'P' into 'B'.

▼ Shown from left to right: **G4089L, G2535L, G4040L**



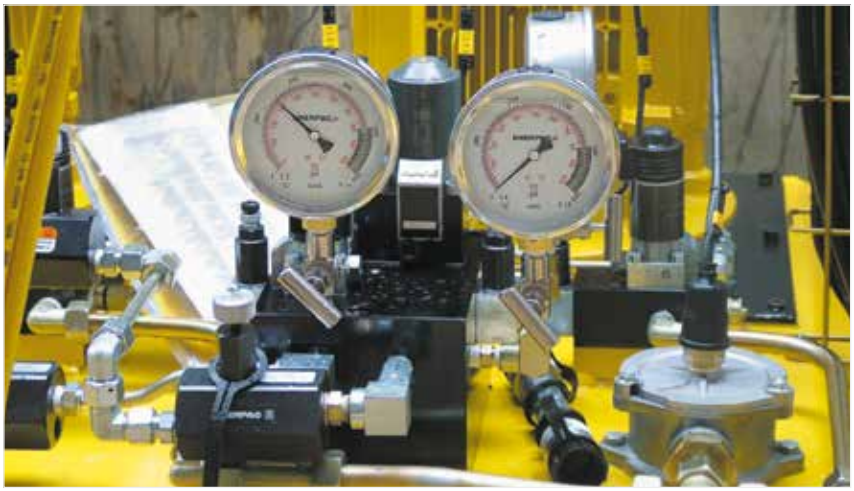
Visual Reference of System Pressure

Glycerine-Filled (G-Series)

- **Dual scale reading calibrated in psi and bar**
- **All pressure sensing parts sealed and dampened by glycerine for long life**
- **Includes safety blow-out disk and pressure equalizing membrane**
- **Gauge snubbers or needle valves recommended for high-cycle applications.**

High-Cycle Dry Gauges (H-Series)

- **Dual scale reading calibrated in psi and bar**
- **Ideal for use in many applications, specifically for high-cycle and harsh environments**
- **Gauge snubbers or needle valves recommended to shut-off gauge when not in use.**



◀ *When lifting or pressing, always use a gauge. A gauge is your 'window' to the system. It lets you see what's going on.*



Gauge Adaptor Assembly

45˚ Angled gauge adaptor **GA45GC** for easier gauge reading.

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Gauge Adaptor

For easy gauge installation into almost any system, Enerpac offers a complete line of gauge adaptors.

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Snubber Valve V91

Infinitely adjustable for metering oil out of a gauge. The V91 Snubber Valve is also suitable as a shut-off valve to protect the gauge during high cycle applications.

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Hydraulic Pressure Gauges

CAUTION! When lifting or pressing, always use a gauge

Do not override factory setting of relief valves. Always use a gauge to check system pressure. A gauge is your 'window' to the system. It lets you see what's going on. See our Safety Instructions.

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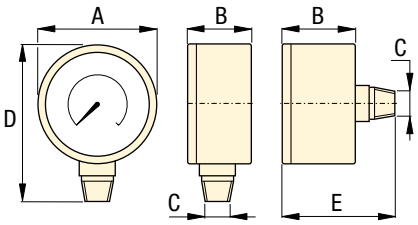
G H Series



Pressure Range:
0 - 15,000 psi

Face Diameter:
2.5 - 4.0 inches

Accuracy, % of full scale:
± 1.0 - 1.5%



Size	Connection	Dimensions (in)				
(in)		A	B	C	D	E
2.5	Lower Mount	2.50	1.46	¼" NPTF	3.31	–
2.7	Center Rear	2.72	1.26	¼" NPTF	–	2.15
4.0	Lower Mount	4.00	1.15	¼" NPTF	4.80	–
4.0	Lower Mount	4.00	1.93	½" NPTF	5.38	–

Note: dimensions for reference only.



Maximum Indicator Pointer

Indicator retains peak reading of pressure or force generated by the system.

Can easily be installed on GP and H-Series ø 4 inch gauges. Order model number: **H4000G**.

▼ SELECTION CHART

Gauge Series	Pressure Range		Model Number				Major Graduation		Minor Graduation		Major Graduation		Minor Graduation	
			ø 2.5" ¼" NPTF Lower Mount	ø 2.5" ¼" NPTF Center Rear	ø 4.0" ¼" NPTF Lower Mount	ø 4.0" ½" NPTF Lower Mount	psi				bar			
	psi	bar	Accuracy: ± 1.5 %		Accuracy: ± 1.0 %		ø 2.5"	ø 4.0"	ø 2.5"	ø 4.0"	ø 2.5"	ø 4.0"	ø 2.5"	ø 4.0"
G-Series	0-100	0-7	**G2509L**	–	–	–	10	–	2	–	1	–	0.01	–
	0-160	0-11	**G2510L**	–	–	–	10	–	2	–	1	–	0.02	–
	0-200	0-14	**G2511L**	–	–	–	50	–	5	–	1	–	0.02	–
	0-300	0-20	**G2512L**	–	–	–	50	–	5	–	5	–	0.50	–
	0-600	0-40	**G2513L**	–	–	–	100	–	10	–	10	–	1	–
	0-1,000	0-70	**G2514L**	**G2531R**	–	–	100	–	20	–	10	–	1	–
	0-2,000	0-140	**G2515L**	–	–	–	500	–	50	–	10	–	2	–
	0-3,000	0-200	**G2516L**	–	–	–	500	–	50	–	50	–	5	–
	0-6,000	0-400	**G2517L**	**G2534R**	–	–	1000	–	100	–	100	–	10	–
	0-10,000	0-700	**G2535L**	**G2537R**	**G4088L**	**G4039L**	2000	1000	200	100	100	100	10	10
	0-15,000	0-1000	**G2536L**	**G2538R**	**G4089L**	**G4040L**	3000	3000	200	200	100	100	20	20
H-Series	0-10,000	0-700	–	–	**H4049L**	**H4071L**	–	1000	–	100	–	100	–	10

▼ T6003L



T Series

Pressure Range:
0 - 50,000 psi

Face Diameter:
6.4 - 7.7 inches

Accuracy, % of full scale:
± 0.5 - 1.5%

- **Dual scale reading calibrated in psi and bar**
- **All gauges have spring-loaded backs with rubber blow-out plugs to protect case assembly in case of over-pressurization**
- **Integral maximum indicator pointer standard included**
- **40,000 and 50,000 psi (2800 and 3500 bar) models include flange mounting**
- **½" NPTF versions are made of high-strength alloy steel**
- **0.25" cone models are made of 316 stainless steel, with 403 stainless steel on 40,000 and 50,000 psi models.**



Cone Mount Gauge Adaptor

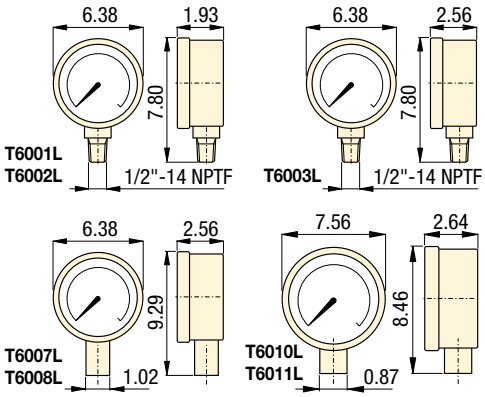
Contains fittings to connect ¼" cone fitting gauge to ⅜" cone system. Kit includes **43-301** tee, **43-704** gauge adaptor and **45-116** tubing. Order Model Number: **83-011**.

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Cone Mount Gauge Connector

For connecting gauges with 0.25" cone fitting directly to model number **11-100** or **11-400** pump (page 86). May be used with other 0.25" cone systems
Order Model Number: **43-704**



▼ *An Enerpac P2282 hand pump equipped with a T6011L test system gauge is used for proof pressure testing of hydraulic valves.*



Pressure Range (psi)	Pressure Range (bar)	Model Number Alloy Steel ½" NPTF	Model Number Stainless Steel 0,25" cone	Number Intervals (psi)	Gradu-ation Inter-vals (psi)	Number Intervals (bar)	Gradu-ation Inter-vals (bar)
0-1000	0-70 [1]	**T6001L**	–	100	10	10	1
0-5000	0-350 [1]	**T6002L**	–	500	50	50	5
0-10.000	0-700 [1]	**T6003L**	**T6007L**	1000	100	100	10
0-20.000	0-1400 [1]	–	**T6008L**	1000	100	200	20
0-40.000	0-2800 [2]	–	**T6010L**	5000	200	500	20
0-50.000	0-3500 [2]	–	**T6011L**	5000	200	500	50

[1] Accuracy ± 0.5%
[2] Accuracy ± 1.5%

Digital Hydraulic Pressure Gauge

▼ DGR2



DGR Series

Pressure Range:
0 - 20,000 psi

Voltage:
3 Volt (battery)

Accuracy, % of full scale:
± 0.25%

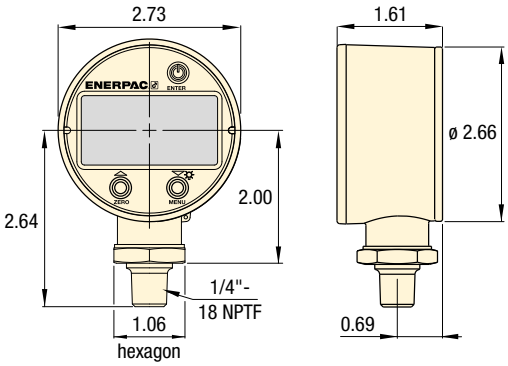
- **Rated for system pressure up to 20,000 psi**
- **Displays in psi, bar, MPa and kg/cm²**
- **Zero reset - ensures that gauge reads actual pressure**
- **IP65 protection, UL listed, CE and RoHS compliant**
- **Batteries included, condition indicator on read-out**
- **Shut-off selectable – menu driven**
- **Back-lit readout allows easy reading in less than ideal lighting**
- **Protective cover included.**



Gauge Adaptor GA3

For easy gauge installation into almost any system, Enerpac offers a complete line of gauge adaptors. Maximum operating pressure 10,000 psi.

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High-Pressure Rating (psi)		High-Pressure Rating (bar)		Model Number	High-Pressure Rating (MPa)		High-Pressure Rating (kg/cm²)	
Range	Resolution	Range	Resolution		Range	Resolution	Range	Resolution
0-20,000	1	0-1380	0.1	**DGR2**	0-140	0.01	0-1400	0.1

Weight: 0.51 lbs.

▼ *Greater accuracy and easier to read: enhance your ability to monitor and control hydraulic system pressure up to 20,000 psi.*



Gauge Adaptor Assembly, 4-way Manifolds

ENERPAC

▼ Shown: **GA45GC, AMGC42 (front and backside)**



GA45GC, AMGC Series

Connection 1:
3/8" NPTF male

Connection 2:
CR400 coupler

Maximum Operating Pressure:
10,000 psi



4-Way Manifold assembly complete with gauges

Offering ease of portability and convenience with an ergonomic robust design, ready for use.



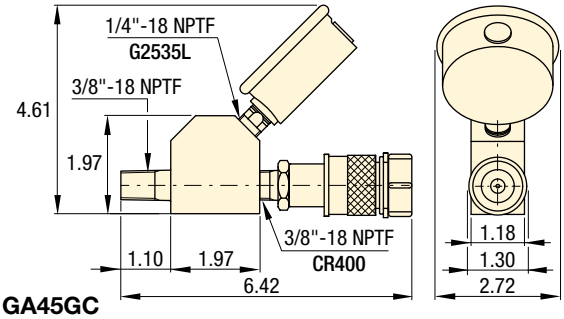
▲ *The Gauge Adaptor Assembly is the window to your system; allows easy reading of the pressure for safe operation.*

GA45GC, Gauge Adaptor Assembly

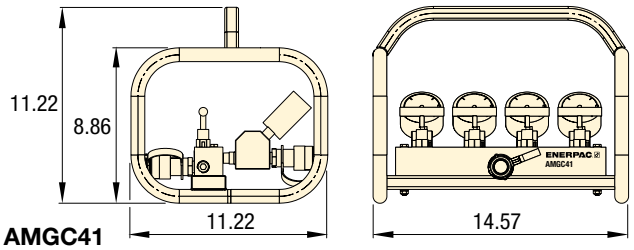
- **45° angled gauge improves reading**
- **Slim design**
- **Easy to fit in a broad range of systems**
- **Maximize controlled load movement**
- **Glycerine-dampened gauge with dual scale**
- **Enerpac High-Flow female coupler CR400.**

AMGC-Series, 4-Way Manifolds

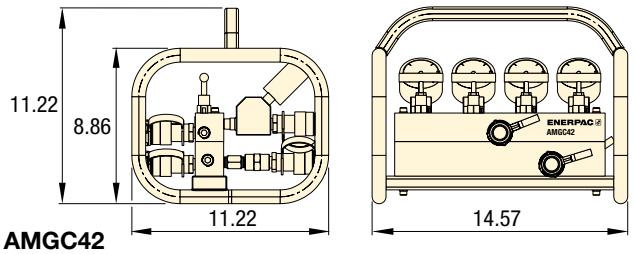
- **Four glycerine-dampened 10,000 psi gauges improve safety**
- **All protected by the robust protection frame**
- **Enerpac's CR400 female couplers on all ports allow the manifold to be quickly connected to up to 4 cylinders.**



GA45GC



AMGC41



AMGC42

Model Number	Gauge Port * (1/4" NPTF)	Male End	Female End (3/8" NPTF)	(lbs)
GA45GC	G2535L	⅜"-18 NPTF	CR400	7.0

* Gauge Range: 0 - 10,000 psi, 0-700 bar.

Model Number	Manifold Type * (cylinders used)	Advance		Retract		Gauge **	(lbs)
		Inlet	Outlet	Inlet	Outlet		
AMGC41	4x S/A	1	4	–	–	4x G2535L	23.8
AMGC42	4x D/A	1	4	4	4	4x G2535L	38.4

* S/A: single-acting; D/A: double-acting.
** Gauge Range: 0 - 10,000 psi, 0-700 bar.

▼ Shown from left to right: **GA3, V91, GA1, GA2, GA4, NV251, GA918**



GA, NV, V Series

Maximum Operating Pressure:
10,000 psi

▼ *A gauge is easily installed into your hydraulic system using a gauge adaptor.*

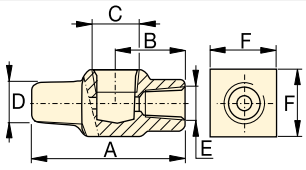




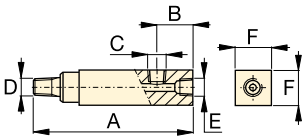
Gauge Adaptors (GA-Series)

- For easy mounting of a pressure gauge onto your system
- Male end screws into pump or cylinder port, female end accepts hose or coupler, 3rd port is for gauge connection
- GA918 provides for swivel connection
- Simplifies gauge installation and reading.

Model Number	Gauge Port	Male End	Female End	Dimensions (in)					
	(NPTF)	(NPTF)	(NPTF)	A	B	C	D	E	F
GA1	½"	⅜"	⅜"	2.81	1.24	½" NPTF	⅜" NPTF	⅜" NPTF	1.25
GA2	½"	⅜"		6.10	1.38	½" NPTF	⅜" NPTF	⅜" NPTF	1.25
GA3	¼"	⅜"		5.25	1.38	¼" NPTF	⅜" NPTF	⅜" NPTF	1.25
GA4	½"	¼"		4.38	1.38	½" NPTF	¼" NPTF	⅜" NPTF	1.25



GA1



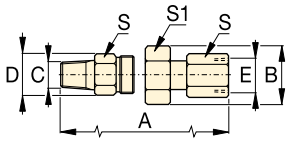
GA2, GA3, GA4



Swivel Adaptor (GA918)

- Simplifies gauge installation and reading.

Model Number	Dimensions (in)						
	A	B	C	D	E	S	S1
GA918	4.62	1.72	½" NPTF	1.30	½" NPTF	1.13	1.50



GA918



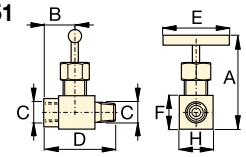


Needle Valves (V- and NV-Series)

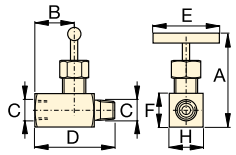
- Both NV251 and V91 provide positive shut-off
- 316 stainless steel stem, 24 threads/in (NV251).

Model Number	Orifice (in)	Thread Size	Dimensions (in)						
			A	B	C	D	E	F	H
NV251	0.17	¼" NPTF	2.24	1.14	¼" NPTF	2.24	1.81	0.75	0.75
V91	0.19	½" NPTF	3.50	1.26	½" NPTF	2.52	1.26	1.46	1.46

NV251



V91



▼ From left to right: **V152, V66, V82, V161, V42, V17**



Your Hydraulic Control Solution

Valve Applications

To see these valves used in typical hydraulic circuits, please see our 'Yellow Pages'.

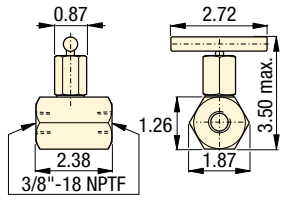
Page: 404

▼ *The V152 pressure relief valve limits the pressure or force developed in the hydraulic system.*

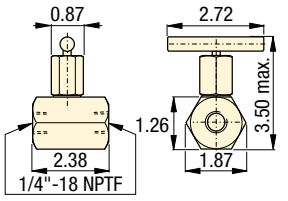


- **All valves are rated for 10,000 psi maximum operating pressure**
- **All valves feature NPTF-porting to insure against leakage at rated pressure**
- **All valves are painted, coated, or plated for corrosion resistance**
- **Viton® seals (in V66NV and V152NV) for high-temperature applications, nickel-plated for maximum corrosion resistance.**

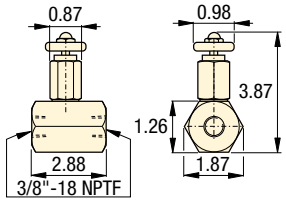
Valve dimensions in inches



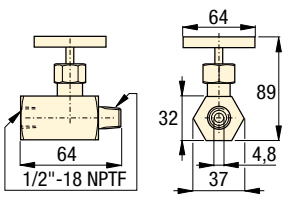
V82



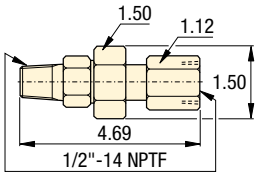
V182



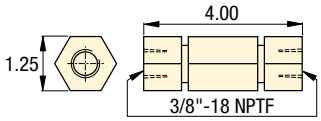
V8F



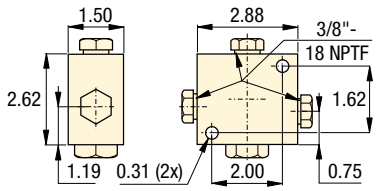
V91



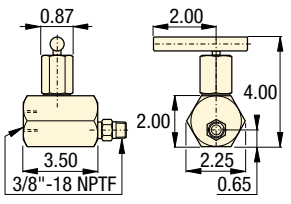
V10



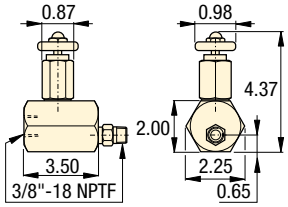
V17



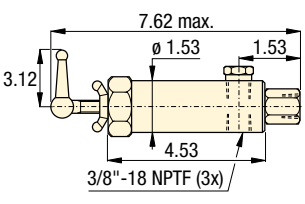
V42



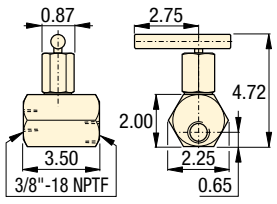
V66, V66NV



V66F



V152, V152NV



V161

Pressure and Flow Control Valves



Control Manifolds

For two or four port manifolds with integral flow control valves, see the manifold page of the System Components section.

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Fittings

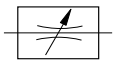
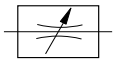
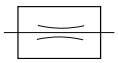
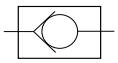
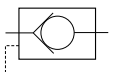
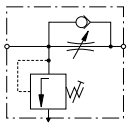
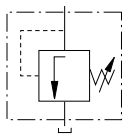
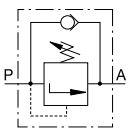
For additional fittings see the fitting page of the System Components section in this catalogue.

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V Series



Maximum Operating Pressure:
10,000 psi

Valve Type and Model Number		Description		Hydraulic Symbol
Needle Valve **V82** **V182** **V8F**		**V82**: To control cylinder speed. Can also be used as shut-off valve for temporary load holding. ⅜" NPTF ports, nickel-plated. **V182**: Same as V82, but with ¼" NPTF female ports, nickle plated.	Also suitable for gauge snubbing (also V82). **V8F**: Like V82, but with very fine metering for precise flow control 9.7 - 896 in^3/min at 4,000 psi. **Not recommended as shut-off valve.**	
Snubber Valve **V91**		**V91**: Infinitely adjustable for metering oil out of a gauge to prevent snapping of gauge pointer when load or pressure is suddenly released.	Also suitable as shut-off valve to protect the gauge during high-cycling applications. ½" NPTF male and female threads for use with GA1, GA2 or GA4 gauge adaptors.	
Auto Damper® Valve **V10**		**V10**: To be used when gauge pressure must be monitored during high-cycle applications. Creates a flow resistance when load is released suddenly.	No adjustments are necessary. ½" NPTF male and female threads for use with GA1, GA2 or GA4 gauge adaptors.	
Check Valve **V17**		**V17**: Ruggedly built to resist shock and operate with low pressure drop. Closes smoothly without pounding. ⅜" NPTF female port.		
Pilot Operated Check Valve **V42**		**V42**: Can be mounted at the cylinder to hold the load in case of system pressure loss. Normally used with double-acting cylinders where pilot port receives pressure from a Tee-fitting in the cylinder retract line.	⅜" NPTF female ports. Pilot pressure ratio 14% (6,5:1).	
Manually Operated Check Valve **V66, V66NV** **V66F**		**V66, V66NV**: For load holding applications with single and double-acting cylinders. Valves allow oil to flow back to tank when cylinder retracts.	**V66NV** with Viton seals, nickel-plated. **V66F:** Similar to V66, but with very fine metering capability for precise flow control. V66F is not designed for load holding.	
Pressure Relief Valve **V152** **V152NV**		**V152**: Limits pressure developed by the pump in hydraulic circuit, thus limiting the force imposed on other components. Valve opens whenever preset pressure is reached.	To increase pressure setting, turn handle clockwise. Includes: • 3 feet return line hose kit, • ± 3% repeatability, • 800 - 10,000 psi adjustment range.	
Sequence Valve **V161**		**V161**: To control oil flow to a secondary circuit. Flow is blocked until system pressure rises to the V161 setting. When this pressure level is reached, the V161 opens to allow flow to the secondary circuit.	A pressure differential is always maintained between the primary and secondary circuit. **Minimum operating pressure: 2,000 psi**.	

Enerpac Hydraulic Presses

Enerpac Hydraulic Presses are available in a variety of capacities and sizes. The press frames are designed for maximum strength and durability. Strong frames and powerful high-pressure hydraulics will provide years of dependable service in many applications.

Enerpac Presses are available in H-Frame, Workshop, Roll-Frame, Arbor, C-Clamp and Bench models.

Available in capacities from 10 to 200 tons, each Enerpac press consists of three basic high quality components: press frame, power source and hydraulic cylinder.

Capacity (tons)	Press type and functions	
10 - 200	H-Frame Presses	
10	Bench Presses	
25 - 200	Workshop Presses	
50 - 200	Roll-Frame Presses	
5 - 20	C-Clamp Presses	
10 - 30	Arbor Presses	
2000 - 200,000 lbs	Tension Meters and Load Cells	



With decades of experience and in-house capabilities look to Enerpac to help find solutions to your customization needs.

Next to our large range of standard workshop presses, Enerpac offers the possibility of customization. Because many customers have specific requirements, we offer turn-key project management, including design, engineering and manufacturing. As the market leader, we listen to our customers and with our world wide experience we offer the best solutions, especially when safety is not negotiable. Whether a longer stroke, wider frame or complete new design is required, our custom product group has many years of experience in multiple industries to deliver a solution that meets or exceeds expectations.

CUSTOMIZABLE FEATURES:

- Capacity
- Cylinder Stroke
- Pump Type
- Controls
- Guarding
- Daylight Dimensions

CONFIGURATIONS:

- Vertical and horizontal press
- Cylinders mounted in upper and lower bolsters
- Height built to customer specifications
- Daylight (vertical and horizontal) built to customer specifications



◀ ***Fully Automated PLC-Controlled 1800-ton, High-Accuracy Press.*** *The pressing and heating cycle, during the production of magnetic acceleration coils, required high force and high- accuracy to ensure absolute quality.*



◀ ***600-ton High-Accuracy Collar Press.*** *For the production of accelerator coils, sheet metal needs to be formed into a specific shape and size.*



◀ ***50-ton Workshop Press for maintenance jobs.***



GET THE LATEST VERSION OF THE COMPLETE PRESSES BROCHURE TODAY!

SCAN HERE

Enerpac offers a complete line of pullers with the widest range of sizes, capacities and styles. Whether your application requires mechanical, hydraulic or the patented Lock-Grip system, Enerpac can satisfy your requirements.

Made of high-strength steel alloys, you can depend on Enerpac pullers to provide years of trouble-free operation, even in the harshest environments.



Hydraulic Pullers

These hydraulic pullers eliminate time-consuming and unsafe hammering, heating or prying. Damage to parts is minimized through the use of controlled hydraulic power.



Lock-Grip Pullers

The puller's self-centering closing system allows all jaws to move simultaneously, making it easy for a single operator to mount the puller and to perform the application.

CAUTION!

Not all puller components and configurations are rated at the set capacity. Please contact Enerpac for details.

IMPORTANT!

Always wear Safety Goggles and Gloves while using pullers.



Puller Section Overview

When selecting a puller it is important to consider 3 basic specifications:

1. The Capacity:

is the amount of force the puller is capable of producing.

Typically, the capacity required for a job can be determined by using the shaft diameter of the part being pulled.

For manual pullers, the center bolt diameter of the puller should be at least half the diameter of the shaft being pulled from.

For hydraulic pullers, the capacity in tons should be 7 to 10 times the shaft diameter. Use the following chart:

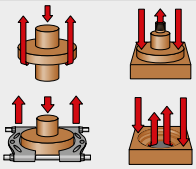
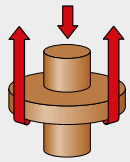
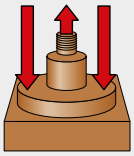
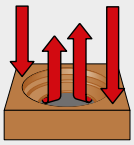
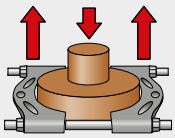
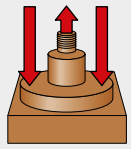
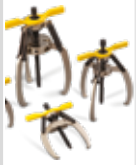
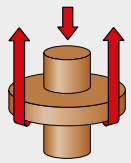
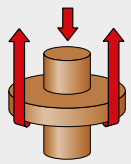
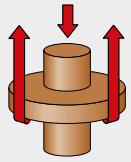
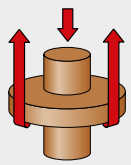
Shaft Diameter	Puller Capacity
0 - 1 inch	14 tons
1 - 2 inches	24 tons
2 - 3.5 inches	36 tons
3.5 - 5.5 inches	50 tons

2. The Reach:

is the distance between the bottom of the base and the jaw flats. The puller's reach must equal or exceed the same distance of the part being pulled.

3. The Spread:

is the distance between the jaws. The puller's spread needs to be greater than the width of the part being pulled.

Puller Function	Capacity (tons)	Puller Type	Series		Page
	14-50	**Master Puller Sets** Max. Reach: 27.56 inches Spread Range: 43.30 inches	BHP		158 ▶
	14-50	**Grip Puller Sets** Max. Reach: 27.56 inches Spread Range: 43.30 inches	BHP		159 ▶
	7-24	**Cross Bearing Puller Sets** Max. Reach: 34.00 inches Spread Range: 22.83 inches	BHP		160 ▶
	7-25	**Bearing Cup Pullers** Max. Reach: 5.91 inches Spread Range: 9.45 inches	BHP		161 ▶
	7-25	**Bearing Separators** Max. Spread: 9.84 inches Max. Width: 10.24 inches	BHP		161 ▶
	3-40	**Mechanical Lock-Grip Pullers** Max. Reach: 4.02 - 13.19 in. Spread Range: 5.20 - 25.00 in.	LGM		162 ▶
	10-64	**Hydraulic Lock-Grip Pullers** Max. Reach: 8.46 - 16.06 in. Spread Range: 11.81 - 25.98 in.	LGH		164 ▶
	100	**100 t Hydraulic Lock-Grip Pullers** Max. Reach: 48 in. Max. Spread: 28.74 - 78.15 in.	LGH		168 ▶
	40-66	**Hydraulic Pin Pullers** Max. Pin Length: 3.97 - 11.92 in. Cylinder Stroke: 3.94 in.	PPH		170 ▶
	–	**Internal Mechanical Puller** Max. Reach: 1.77 - 3.11 in. Spread Range: 0.98 - 3.94 in.	IPM		172 ▶

▼ Shown: **Master Puller Set BHP5751G**



Multi Purpose Puller Set

WARNING

Do not exceed 50% of the rated puller capacity when using two jaw configurations, a double crosshead (2 grip arms) or when using puller legs in combination with bearing puller attachments.

- **Supplied with a full hydraulic set including pump, hose, cylinder, gauge, gauge adaptor and wooden case**
- **High-quality, forged steel components provide superior reliability and service**
- **Sets include speed crank and adjusting screw for fast contact to work before hydraulics are applied**
- **All Master Puller Sets include a Grip Puller, a Cross Bearing Puller, a Bearing Cup Puller and a Bearing Separator, which can be ordered separately, see items nr. 10, 20 , 30 and 40.**

▼ *Maintenance engineers throughout the industry greatly appreciate the Enerpac Master Puller sets.*



▼ **SELECTION CHART**

	Master Puller Set Capacity *	14 tons	24 tons	36 tons	50 tons **	*Page:*
	Model Number ▶	**BHP1752** [1]	**BHP2751G**	**BHP3751G**	**BHP5751G**	
	Included Hydraulics **Set Weight ▶**	82 lbs	198 lbs	380 lbs	657 lbs	
	• Hand Pump	P142	P392	P392	P80	**78-81** ▶
	• Cylinder	RWH121900	RCH202	RCH302	RCH603	**40** ▶
	• Saddle	–	HP2015	HP3015	HP5016	**41** ▶
	• Hose	HC7206C	HC7206C	HC7206C	HC7206C	**136** ▶
	• Gauge + Adaptor	GA45GC	GA45GC	GA45GC	GA45GC	**150** ▶
	Included Pullers					
10	Grip Puller	BHP1762	BHP252	BHP352	BHP552	**159** ▶
20	Cross Bearing Puller	BHP1772	BHP262	BHP362	BHP562	**160** ▶
30	Bearing Cup Puller	BHP180	BHP280	BHP380	BHP580	**161** ▶
40	Bearing Separator	BHP181	BHP282	BHP382	BHP582	**161** ▶
	• Case	CM6	CW350	CW350	CW750	

* See warning on this page.

** Puller capacity at 7,850 psi; maximum cylinder capacity at 10,000 psi is 60 tons.

[1] Includes Adaptor FZ1055.

▼ Shown: **Grip Puller Set BHP351G**



BHP Series



Capacity:
14, 24, 36 and 50 tons

Reach:
9.92 - 27.56 inches

Spread:
9.84 - 43.30 inches

Maximum Operating Pressure:
10,000 psi

- **Precise hydraulic control allows fast, efficient and safe pulling**
- **High-quality, forged steel components provide superior reliability and service**
- **Available with and without full hydraulic set.**

Ordering Example

Model Number BHP251G:

includes Grip Puller BHP252 and a full hydraulic set. (Hand pump, cylinder, saddle, hose, gauge and gauge adaptor).

Model Number BHP252:

includes Grip Puller mechanical parts **only**, for use with your existing hydraulics.

▼ **SELECTION CHART**

Grip Puller Set Capacity **		**14 tons**	**24 tons**	**36 tons**	**50 tons *****
	Model Number ▶	**BHP152** [1)]	**BHP251G**	**BHP351G**	**BHP551G**
Included Hydraulics	**Set Weight ▶**	48 lbs	123 lbs	200 lbs	353 lbs
• Hand Pump		P142	P392	P392	P80
• Cylinder		RWH121900	RCH202	RCH302	RCH603
• Saddle		–	HP2015	HP3015	HP5016
• Hose		HC7206C	HC7206C	HC7206C	HC7206C
• Gauge + Adaptor		GA45GC	GA45GC	GA45GC	GA45GC
10 Grip Puller	**Model Number ▶**	**BHP1762 ***	**BHP252 ***	**BHP352 ***	**BHP552 ***
Maximum Spread (inches)	2-jaw	9.84	15.75	23.38	35.43
	3-jaw	9.84	19.68	31.50	43.30
Maximum Reach (inches)	2-jaw	9.92	11.81	15.25	27.56
	3-jaw	9.92	11.81	15.25	27.56
Jaw (inches)	Thickness	0.59	0.79	0.98	1.18
	Width	0.94	1.10	1.50	1.57
Adjusting Screw (inches)	Thread	¾" - 16 UNF	1" - 8 UNC	1¼" - 7 UNC	1⅝" - 5.5 UNS
	Length	15.75	26.38	31.16	38.39
• Case		CW166	CW166	CW350	CW750

[1)] Includes Adaptor FZ1055.
* Grip Puller order number without hydraulics.
** See warning on page 158.
*** Puller capacity at 7,850 psi; maximum cylinder capacity at 10,000 psi is 60 tons.

BHP-Series, Cross Bearing Puller Sets

ENERPAC

▼ Shown: **Cross Bearing Puller Set BHP361G**



BHP Series

Capacity:
7, 12, 18 and 25 tons

Reach:
14.06 - 34.00 inches

Spread:
10.24 - 22.83 inches

Maximum Operating Pressure:
5,000 psi

CAUTION! Not all puller components and configurations are rated at the set capacity. Please contact Enerpac for details.

- **Precise hydraulic control allows fast, efficient and safe pulling**
- **High-quality, forged steel components provide superior reliability and service**
- **The Cross-Bearing Puller without hydraulics, Bearing Cup Puller and Bearing Puller may be ordered separately. See items 20, 30 and 40.**

Cross Bearing Puller Sets

 Hand Pump	 **XA11G** Air-Hydraulic Foot Pump	 **PUD1300B** Electric Pump
BHP162	**BHP162A**	**BHP162EB ***
BHP261G	**BHP261GA**	**BHP261GEB ***
BHP361G	**BHP361GA**	**BHP361GEB ***
BHP561G	**BHP561GA**	**BHP561GEB ***

* **B** = 115 V pump. For 230 V change "**B**" suffix into "**E**".

▼ **SELECTION CHART**

			7 tons	12 tons	18 tons	25 tons
		Model Number ▶	**BHP162** [1]	**BHP261G**	**BHP361G**	**BHP561G**
Included Hydraulics		**Set Weight ▶**	57 lbs	137 lbs	267 lbs	408 lbs
• Hand Pump			P142	P392	P392	P80
• Cylinder			RWH121900	RCH202	RCH302	RCH603
• Saddle			–	HP2015	HP3015	HP5016
• Hose			HC7206C	HC7206C	HC7206C	HC7206C
• Gauge + Adaptor			GA45GC	GA45GC	GA45GC	GA45GC
20 Cross Bearing Puller [2]		**Model Number ▶**	**BHP1772**	**BHP262**	**BHP362**	**BHP562**
Spread (inches)		Maximum	10.24	13.58	17.32	22.83
		Minimum	4.53	5.51	7.09	8.66
Reach (inches)		Maximum	14.06	22.44	27.95	34.00
Adjusting Screw (inches)		Diameter	¾"- 16 UNF	1"- 8 UNC	1¼"- 7 UNC	1⅝"- 5.5 UNS
		Length	15.75	26.38	31.10	38.39
Leg (inches)		Length	4.17	4.53	8.07	23.98
		Length	14.06	9.45	18.11	34.02
		Length	–	16.54	27.95	–
		Length	–	22.44	–	–
Upper Leg Ends (inches)		Thread	¾"- 16 UNF	¾"- 16 UNF	1"-14 UNS	1¼"- 12 UNF
Lower Leg Ends (inches)		Thread	⅝"- 18 UNF	⅝"- 18 UNF	1"-14 UNS	1¼"- 12 UNF
30 Bearing Cup Puller [2]		**Model Number ▶**	**BHP180**	**BHP280**	**BHP380**	**BHP580**
40 Bearing Separator [2]		**Model Number ▶**	**BHP181**	**BHP282**	**BHP382**	**BHP582**
• Wooden Case			CW66	CW166	CW550	CW750

[1] Includes Adaptor FZ1055.
[2] Can be ordered separately without hydraulic components, see next page.

Bearing Cup Pullers and Bearing Separators

▼ Shown: **BHP380**



Bearing Cup Puller

- **Made of high-strength steel alloy**
- **Easily adapted to Cross Bearing Pullers for fast and efficient removal of the most difficult parts**
- **Adjustable to fit a variety of bearings and seals.**

BHP Series



Capacity:
7, 12, 18 and 25 tons

Maximum Reach:
4.53 - 5.91 inches

Spread Range:
5.71 - 9.84 inches

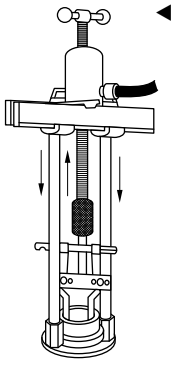
Maximum Operating Pressure:
5,000 psi

▼ SELECTION CHART

	Capacity *		7 tons	12 tons	18 tons	25 tons
30	**Bearing Cup Puller**					
	Model Number ▶		**BHP180**	**BHP280**	**BHP380**	**BHP580**
	Spread (inches)	Max.	5.71	6.30	9.45	9.45
		Min.	1.57	1.26	2.36	2.36
	Reach (inches)	Max.	4.53	5.51	5.91	5.91
	Center Screw	Thread	¾"- 16 UNF	1"- 8 UNC	1¼"- 7 UNC	1⅝"- 5.5 UNS

* Puller capacity, not attachment capacity. See warning on this page.

WARNING
Do not exceed 50% of the rated puller capacity when using a double crosshead (2 grip arms) or when using puller legs in combination with bearing puller attachments.



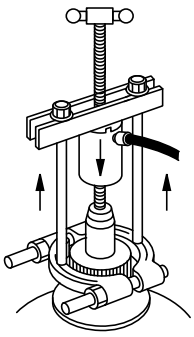
◀ *Bearing Cup Puller shown with Crosshead Puller Attachment.*

▼ Shown: **BHP382**



Bearing Separator

- **Made of high-strength steel alloy**
- **Wedge-shaped edges allow removal of the most hard-to-grip components**
- **Easily adapted to Cross Bearing Pullers for fast and efficient removal of the most difficult parts.**



Bearing Separator shown with Crosshead Puller Attachment. ▶

▼ SELECTION CHART

	Capacity *		7 tons	12 tons	18 tons	25 tons
40	**Bearing Puller**					
	Model Number ▶		**BHP181**	**BHP282**	**BHP382**	**BHP582**
	Spread (inches)	Max.	4.33	5.28	9.84	9.84
		Min.	0.39	0.47	0.67	0.67
	Width (inches)		4.33	6.10	10.24	10.24
	Thread		⅝"-18 UNF	¾"- 18 UNF	1"- 14 UNS	1¼"-12 UNF

* Bearing Separator rated at 50% of puller capacity. See warning on this page.



Bearing Separator

Bearing Separator has wedge shaped edges for placing puller behind hard to reach bearings, gears, etc., where clearance prevents direct application of grip puller arms.

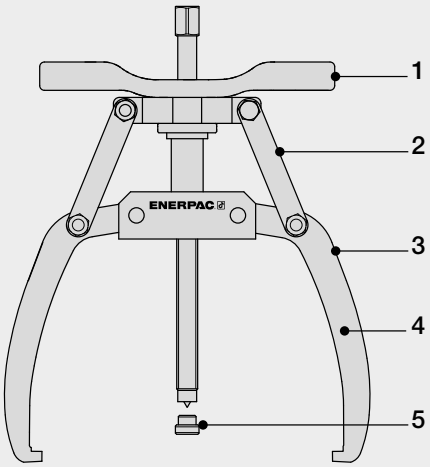
The Bearing Separator can be used with the Cross Bearing Puller or the Grip Puller.

▼ 2 and 3-Jaw Mechanical Lock-Grip Pullers



The simple, safe and cost-effective way to remove shaft-mounted parts

- **Quickly and easily mount on a wide range of applications**
- **Lock-on jaws offer a secure grip for safe and easy operation**
- **Synchronous jaw movement enables entire pulling job to be performed by a single operator**
- **Available in 2 and 3-jaw configurations.**



1. Convenient adjustment handle simplifies positioning of jaws on application and increases speed of operation.
2. Locking mechanism helps prevent puller jaws from slipping off application during pulling process.
3. Greater spreading width on top portion of jaws enables use on thicker objects.
4. Synchronous jaw movement increases ease of use, allowing one operator to mount the tool and perform the pulling application.
5. Point protector helps prevent damage to spindle when pulling against a flat surface.

▼ *Lock-Grip Pullers – the simple, safe and cost-effective way to remove shaft-mounted parts.*



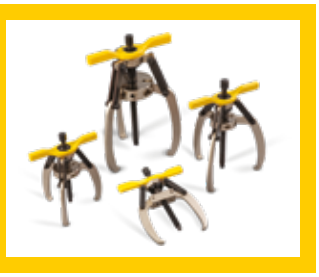
LGM-Series, Lock-Grip Pullers

LGM-Series pullers are an ideal solution for pulling small to medium-size wheels, sprockets, bearings and other similar shaft-mounted parts.

The puller's self-centering closing system allows all jaws to move simultaneously, making it easy for a single operator to mount the puller and to perform the application.

Turning the puller handle locks the jaws onto the application, allowing the desired object to be pulled free when the spindle is turned.

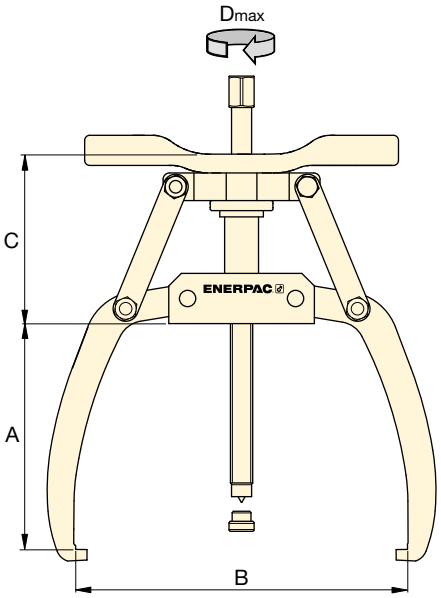
LGM Series



Puller Capacity:
3 - 40 tons

Maximum Reach:
4.02 - 13.19 inches

Maximum Spread:
5.20 - 25.00 inches



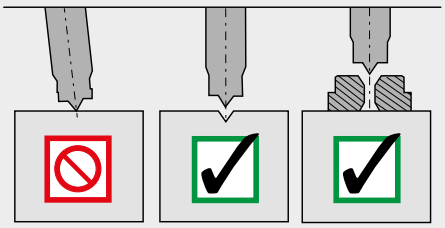
IMPORTANT!

Always wear safety goggles and gloves while using pullers.

Point Protector

LGM-Series Pullers MUST be used with a point protector if the shaft end does not contain a drilled center hole.

One point protector is included with every puller.



▼ SELECTION CHART

Mechanical Puller Model Number	Dimensions (in) Maximum Reach A	Minimum Spread Diameter B	Maximum Spread Diameter B	C	Number of Jaws	Puller Capacity US tons	Maximum Torque D max (Ft.lbs)	(lbs)	Replacement Point Protector Part Number
LGM203	4.02	1.10	5.20	2.36	2	**3**	30	3.74	
LGM305	4.02	1.10	5.20	2.36	3	**5**	50	4.62	**SGM0404**
LGM204	5.59	1.18	7.32	3.54	2	**4**	50	5.50	
LGM306	5.59	1.18	7.32	3.54	3	**6**	74	6.82	
LGM207	6.97	1.38	10.24	5.28	2	**7**	87	10.78	
LGM308	6.97	1.38	10.24	5.28	3	**8**	99	15.18	**SGM0704**
LGM211	8.46	3.31	11.81	4.96	2	**11**	150	14.74	
LGM318	8.46	4.33	15.35	5.51	3	**18**	245	21.56	
LGM324	10.43	4.33	18.11	5.51	3	**24**	327	30.64	**LGH14K6**
LGM340	13.19	3.94	25.00	7.68	3	**40**	735	79.37	**LGH24K6**

▼ 2 and 3-Jaw Hydraulic Lock-Grip Pullers

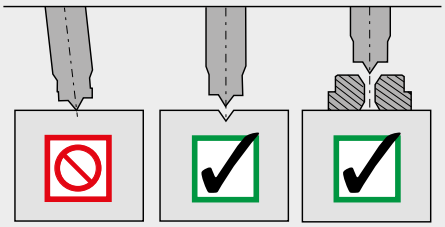


The simple, safe and cost-effective way to remove shaft-mounted parts

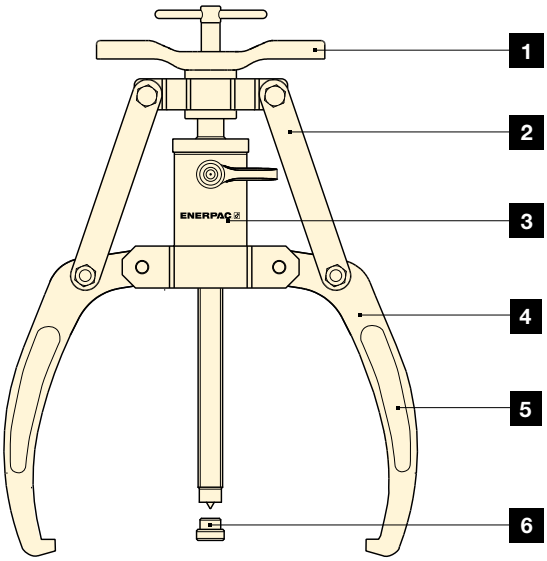
Point Protector

LGH-Series Pullers MUST be used with a point protector if the shaft end does not contain a drilled center hole.

One point protector is included with every puller.



- **Quickly and easily mount on a wide range of applications**
- **Hydraulically applied pulling force increases pulling capacity, reducing operator fatigue**
- **Lock-on jaws offer a secure grip for safe and easy operation**
- **Synchronous jaw movement enables entire pulling job to be performed by a single operator**
- **Available in 2 and 3-jaw configurations with or without a detachable hollow cylinder.**



1. Convenient adjustment handle simplifies positioning of jaws on application and increases speed of operation.
2. Locking mechanism helps prevent jaws from slipping off application during pulling process.
3. Detachable hollow cylinder offers increased pulling capacity compared to mechanical alternatives.
4. Greater spreading width on jaws enables use on thicker objects.
5. Synchronous jaw movement increases ease of use, allowing one operator to mount the tool and perform the pulling application.
6. Point protector helps prevent damage to spindle when pulling against a flat surface.

Hydraulic Lock-Grip Pullers

LGH-Series, Lock-Grip Pullers

LGH-Series pullers provide the same safety and ease of use as their mechanical counterparts, with the pulling force applied by a standard 10,150 psi hydraulic cylinder.

LGH-Series pullers can apply up to 64 tons of force and are perfect for removing larger shaft-mounted objects up to 26 inches in diameter.

Turning the puller handle locks the jaws onto the application, allowing the desired object to be pulled free when the spindle is turned.

LGH Series

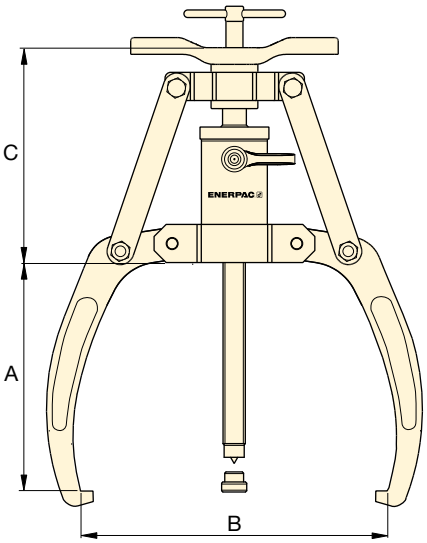


Puller Capacity:
10 - 64 tons

Maximum Reach:
8.46 - 16.06 inches

Maximum Spread:
11.81 - 25.98 inches

Maximum Operating Pressure:
10,150 psi



IMPORTANT!

Always wear safety goggles and gloves while using pullers.

Hydraulic Pullers

LGH-Series Hydraulic Pullers include puller and hydraulic cylinder.

Hydraulic Puller Sets

LGHS-Series Hydraulic Pullers Sets include hydraulic puller, pump, gauge and HC7206C hydraulic hose.
Choose pump options below.

▼ SELECTION CHART

Hydraulic Puller Model Nr [1]	Dimensions (in) Max. Reach A	Minimum Spread Diameter B	Maximum Spread Diameter B	C	Number of Jaws	Puller Capacity US tons	(lbs)	Replacement Point Protector Part Number	Hydraulic Puller Sets Model Number: Hand Pump P392 Gauge Ass'y GA45GC	Air Pump XA11G Integrated Gauge	Electric Pump PUD1300B * Gauge G2535L
LGH210	8.46	3.31	11.81	7.56	2	**10**	23	**SGM0704**	–	–	–
LGH310	8.46	3.31	11.81	7.56	3	**10**	28	**SGM0704**	**LGHS310H**	**LGHS310A**	**LGHS310EB ***
LGH214	10.24	4.92	14.96	7.32	2	**14**	31	**LGH14K6**	–	–	–
LGH314	10.24	4.92	14.96	7.32	3	**14**	40	**LGH14K6**	**LGHS314H**	**LGHS314A**	**LGHS314EB ***
LGH224	13.23	6.50	18.90	12.80	2	**24**	82	**LGH24K6**	–	–	–
LGH324	13.23	6.50	18.90	12.80	3	**24**	104	**LGH24K6**	**LGHS324H**	**LGHS324A**	**LGHS324EB ***
LGH253	16.06	9.06	25.98	18.62	2	**53**	244	**LGH253K6**	–	–	–
LGH364	16.06	9.06	25.98	18.62	3	**64**	307	**LGH253K6**	**LGHS364H**	**LGHS364A**	**LGHS364EB ***

[1] Hydraulic puller models include cylinder. To receive puller without cylinder add "NC" after LGH (Example: **LGHNC210**).

* **B** for 115V applications. For 230V applications change last suffix from B into **E**. Example **LGHS314EE**.

Hydraulic Lock-Grip Master Puller Sets

ENERPAC

Master Puller Sets include a hydraulic puller, cylinder, a pump with hose and gauge for standard pulling applications, as well as a selection of accessories designed for work environments where clearance prevents a direct application of the puller jaws.



Lock-Grip Pullers:
All sets come with a hydraulic LGH-Series Puller. Both two jaw and three jaw versions are available.



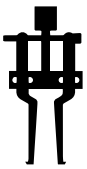
Detachable Hollow Cylinder:
Provided with all hydraulic pullers as well as the Cross Bearing Puller.



Pump with Hose and Gauge:
Hydraulic Puller Sets and Master Puller Sets are supplied with a hose, gauge, and your choice of a hand, air or electric pump.



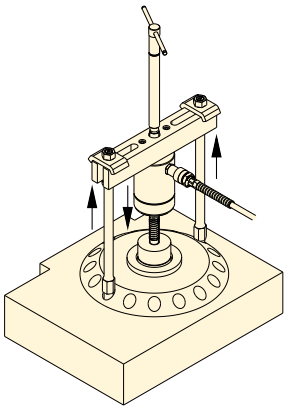
Cross Puller:
Hydraulically powered via a detachable hydraulic cylinder and pump. The Cross Puller can be used individually as a 'push' puller, or in conjunction with the Bearing Separator or Bearing Cup Puller.



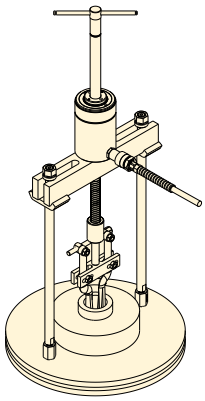
Bearing-Cup Puller:
Specifically designed to pull cup style bearings and other applications requiring an internal style puller.



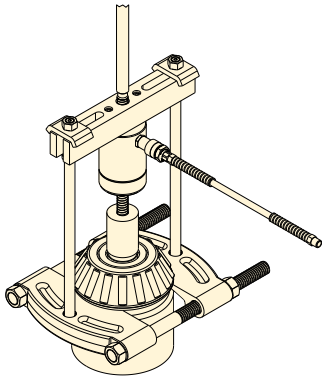
Bearing Separator (used with Cross Bearing Puller):
Features narrow edges, which enable puller to be placed behind hard to reach bearings, gears, etc., where limited clearance prevents the direct application of puller arms.



▲ *Cross Bearing puller on application*



▲ *Cross Bearing Puller with Bearing Cup Puller on application*



▲ *Cross Bearing Puller with Bearing Separator on application*

▼ DIMENSIONAL INFORMATION

Model Number	Cross Bearing Puller (in)			
	A	B min.	Thread Size C	(lbs) *
BHP112	11.02	4.53	⅝"-18 UNF	4.40
BHP172	11.02	4.53	⅝"-18 UNF	4.62
BHP272	14.57	5.51	⅝"-18 UNF	5.28
BHP672	24.21	8.66	1¼"-12 UNF	14.08

Model Number	Bearing Separator (in)				
	A	B min.	B max.	Thread Size C	(lbs)
BHP181	4.33	0.39	4.33	⅝"-18 UNF	6.16
BHP282	6.14	0.47	5.28	⅝"-18 UNF	12.54
BHP292	7.17	0.51	8.27	⅝"-18 UNF	27.5
BHP682	11.81	0.79	11.81	1¼"-12 UNF	95.7

Model Number	Bearing Cup Puller (in)				
	A	B	C min.	C max.	(lbs)
BHP180	5.31	9.29	1.57	5.71	4.4
BHP190	6.46	10.43	1.57	5.71	4.62
BHP280	6.46	10.43	1.57	5.71	5.28
BHP580	5.91	12.20	2.36	9.45	14.08

* With slotted crosshead, cylinder and spindle.

Hydraulic Lock-Grip Master Puller Sets

▼ LGHMS Master Puller Set with Hand Pump Option



LGHMS Series

Puller Capacity:
10 - 64 tons

Maximum Reach:
8.46 - 16.06 inches

Maximum Spread:
11.81 - 25.98 inches

Maximum Operating Pressure:
10,150 psi

- **All LGHMS-Series Master Puller Sets include an LGH-Series Hydraulic Puller with 3 jaws, a Cross Puller, a Bearing Separator, a Bearing Cup Puller, a detachable Hollow Cylinder, a hose, a gauge and a pump**
- **Set options include hand, air or electric pump for an optimal solution to every application.**

Puller Dimensions

See dimensional information for LGH-pullers on page 165.
For dimensions of BHP-puller attachments, see page 166.

LGH-Series, Hydraulic Pullers

Hydraulic Pullers include puller and hydraulic cylinder.

LGHMS-Series, Hydraulic Master Puller Sets

Hydraulic Master Pullers Sets include LGH-hydraulic puller, pump, gauge and HC7206C hydraulic hose.
Choose pump options below.

WARNING!

Enerpac hydraulic pullers can be operated up to 10,150 psi. When using accessories, hydraulic pressure MUST BE LIMITED to maximum capacities below.

▼ SELECTION CHART

Hydraulic Puller Capacity	Hydraulic Master Puller Sets Model Numbers			Master Puller Sets include following components					
					Hydraulic 3-Jaws Puller	Maximum Capacity Accessories	Cross Puller Model Nr.	Bearing Separator Model Nr.	Bearing Cup Puller Model Nr.
US tons	Hand Pump P392 Gauge Ass'y GA45GC	Air Pump XA11G Integrated Gauge	Electric Pump PUD1300B* Gauge G2535L	Hydraulic Hose Model Nr.		US tons			
10	LGHMS310H	LGHMS310A	LGHMS310EB*	HC7206C	LGH310	7	BHP112	BHP181	BHP180
14	LGHMS314H	LGHMS314A	LGHMS314EB*	HC7206C	LGH314	7	BHP172	BHP282	BHP190
24	LGHMS324H	LGHMS324A	LGHMS324EB*	HC7206C	LGH324	12	BHP272	BHP292	BHP280
64	LGHMS364H	LGHMS364A	LGHMS364EB*	HC7206C	LGH364	25	BHP672	BHP682	BHP580

* **B** = for 115V applications. For 230V applications change last suffix from B into **E**. Example: **LGHMS310EE**.

LGH-Series, 100 tons Hydraulic Lock-Grip Puller

ENERPAC

▼ LGH3100B



The safe and productive way to remove large, shaft mounted components without damage

- Synchronous grip jaw movement for easy alignment of the three jaws while setting it on the workpiece to be removed
- Lock-on jaws offer a secure grip
- Hydraulically applied pulling force increases pulling capacity, improves control of pulling process while reducing operator fatigue
- No need to cut, heat or torch components for removal, resulting in safer work-environment and preventing damage to equipment
- Ergonomic rolling cart with large industrial castor wheels
- Smooth action scissor lift: hydraulically actuated lift cylinder on cart extends puller from center height between 27.5 - 66.1 inches
- Mounted on a stable cart/trolley with a wide base. Includes pockets to provide the option of using a forklift
- Includes ZE3-Series electric two-stage pump with remote pendant for fingertip control of the removal process.



Pushing Adaptors

The LGH3100 Lock-Grip Puller includes 2 pushing adaptors.

Length (in)	Diameter (in)	Model Number
9.84	3.54	LGH100K6
17.72	3.54	LGH100K7



Built-in Gauge

The LGH3100 Lock-Grip Puller's control panel includes a pressure gauge as standard equipment



◀ *LGH3100 used to remove rail wheel from axle.*

100 tons Hydraulic Lock-Grip Puller

LGH3100, 100 tons Lock-Grip Puller

The LGH3100 is an ideal solution for pulling medium to large size wheels, sprockets, bearings and other similar shaft-mounted parts.

The puller's self-centering closing "Lock-Grip" system allows all jaws to move simultaneously, making it easy for the operator to mount the puller and to perform the application.

LGH3100 is a 3 jaw design which can be converted into a 2 jaw puller for use when clearance is limited.
NOTE: the 2 jaw configuration has a capacity of 70 tons.

IMPORTANT!

Always wear safety goggles and gloves while using pullers.

LGH Series

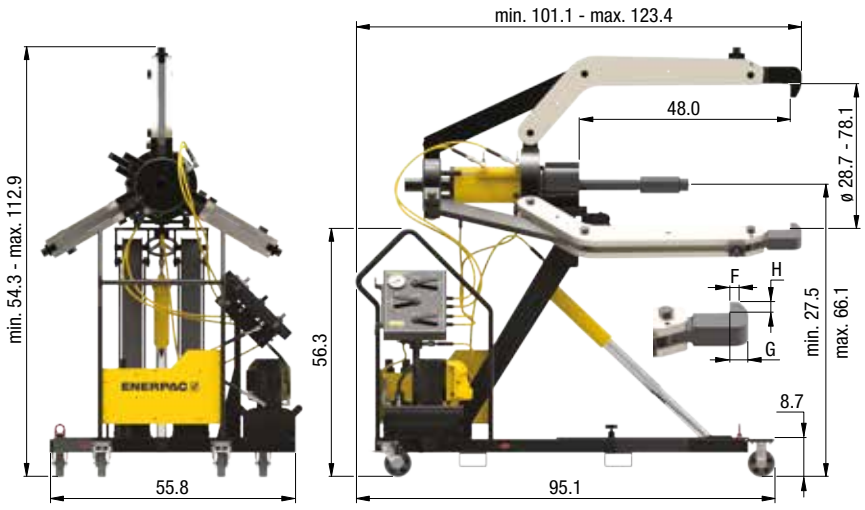


Capacity:
100 tons

Maximum Reach:
48 inches

Spread Range:
28.7 - 78.1 inches

Maximum Operating Pressure:
10,000 psi



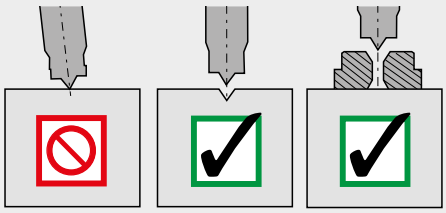


Point Protectors

The pushing cylinder rod needs to use a point protector. If the shaft end does have a drilled center hole use the point protector with the tip **LGH100K4**.
If the shaft end does not have a drilled center hole use the flat point protector **LGH100K5**.

One of these two protectors has to be used on the cylinder push rod.

Model No.	Description
LGH100K4	Point Protector Kit
LGH100K5	Point Protector Flat Kit



Number of Jaws *	Maximum Reach (in)	Spread Range (in)	Capacity (tons)	Model Number	Electric Pump (V - ph - Hz)	Cylinder Stroke (in)	Jaw Width F (in)	Tip Clearance G (in)	Tip Depth H (in)	(lbs)
3	48	28.74 - 78.15	100	**LGH3100E**	230 - 1 - 50	10.12	1.20	2.68	3.07	2998
3	48	28.74 - 78.15	100	**LGH3100B**	115 - 1 - 60	10.12	1.20	2.68	3.07	2998

* Can be converted into a 2 jaw puller for use when clearance is limited. The 2 jaw configuration has a capacity of 70 tons.

▼ PPH40 shown in front and backside



The Revolutionary Hydraulic Pin Removal Kit

Hydraulic Pin Pullers

Enerpac PPH-Series Hydraulic Pin Pulling Kits set a new standard for efficient pin removal during the maintenance of heavy machinery, mining & construction equipment.

The tool incorporates innovative features to make your pin pulling operations faster, safer, and easier to carry out.

Each kit includes an aluminum hydraulic cylinder with an ergonomic grip handle, Locking Column Sections (3x), and a 'Quick Nut' (1x) that makes long and damaged threaded rods * easier to manipulate.

The included lifting eye and shackle attach to multiple lift points to assist with handling such as when the unit is to be used at greater heights.

* Threaded rods not included.

Experience the Future of Pin Removal — Faster, Safer, Simpler

Discover how the PPH-Series can streamline your pin maintenance operations today.

Accelerated Pin Removal for Heavy Machinery & Construction Equipment

- Sets a new standard for efficient pin removal, thanks to innovative features engineered to make pin pulling operations faster, safer, and easier to carry out.

Locked-In Safety and Efficiency

- Ingenious patent-pending design features locking column sections (collars), providing the crucial flexibility to tailor the setup effectively for every task.
- Unique geometry and locking pins make first time alignment and assembly a breeze.
- Spring-loaded locking pins maintain the integrity of the kit and prevent the collars from dangerously dropping.

Secure Handling and Ergonomic Construction

- The innovative Enerpac Quick Nut with effortless one-handed operation excels where regular nuts fail, by significantly reducing run down time and rapidly bypassing damaged threads.
- Lifting eye & shackle and a series of mounting holes enable flexible hoisting and rigging setups.
- Carry case enables comfortable transportation and efficient tool deployment. Ergonomic handle on the cylinder provides better grip and maneuverability.

Surpasses Conventional and DIY Solutions

- Leave behind the cumbersome and risky pin removal methods of the past.
- Innovative design elements outpace both makeshift solutions and existing market offerings. Our tool offers a multitude of advantages in the field.





◀ *Excavator maintenance using the PPH40 powered by a SC-Series Cordless Pump.*

▼ **SPECIFICATIONS & SELECTION**

Pull Capacity (tons)	Model Number Hydraulic Pin Puller Kit	Single-Acting Cylinder Stroke (in)	Oil Capacity (in^3)	(lbs)
40	**PPH40**	3.94	31.18	22.1
66	**PPH66**	3.94	51.68	48.9



Quick Nuts

The PPH-Kit also has a quick nut to make pulling larger pins easier and damaged threads easier to manipulate.

Standard included with PPH-Series

Each PPH-Kit includes one Quick Nut:
PPH40: 1¼" - 12 UNF (**PPH40Q125U12**)
PPH66: 1½" - 12 UNF (**PPH66Q150U12**).
Other sizes to be purchased separately.

Used with	Internal Thread	Quick Nut Model Number	Outside Diameter (in)	Height (in)	(lbs)
PPH40	1" - 14 UNS	**PPH40Q100U14**	3.50	1.66	2.5
	1¼" - 12 UNF	**PPH40Q125U12** *	3.50	1.66	2.5
	M30 x 3,5	**PPH40QM30X35**	3.50	1.66	2.5
PPH66	1½" - 12 UNF	**PPH66Q150U12** *	4.33	2.01	5.1
	1¼" - 12 UNF	**PPH66Q125U12**	4.33	2.01	5.1
	M36 x 4,0	**PPH66QM36X40**	4.33	2.01	5.1
	M48 x 5,0	**PPH66QM48X50**	4.33	2.01	5.1

* Quick Nut size standard included with PPH-Series.

PPH Series



Pull Capacity:
40 - 66 tons

Cylinder Stroke:
3.94 inches

Maximum Pin Length To Be Pulled:
3.97 - 11.92 inches

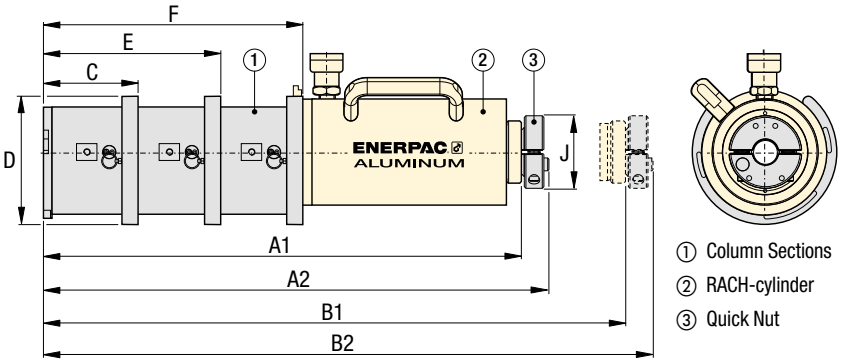
Maximum Operating Pressure:
10,000 psi



Hydraulic Pumps

Visit Enerpac.com for pumps, hoses and gauges. The following pump series are recommended with PPH-Series.

Pin Puller	Cordless Pumps		Air Pumps	Electric Pumps	
PPH40	SC	XC2	PATG	ZU4	ZE2
PPH66	–	XC2	PATG	ZU4	ZE2



① Column Sections
② RACH-cylinder
③ Quick Nut



Stackable Column Sections

Each PPH-Kit includes three Column Sections (locking sleeves). Multiple Column Sections can be stacked together depending on the length of the joint pin.
Up to five (maximum) Column Sections can be locked together. Additional Column Sections can be ordered separately.

Used with	Description	Model Number
PPH40	40 Tons Column Section	**PPH40C**
PPH66	66 Tons Column Section	**PPH66C**

▼ DIMENSIONS

Pull Capacity (tons)	Model Number	Dimensions (in)								
		Collapsed Height		Extended Height						
		A1	A2	B1	B2	C	D	E	F	J
40	**PPH40**	22.91	24.21	26.89	28.15	4.48	7.00	8.46	12.44	3.50
66	**PPH66**	24.80	26.42	28.74	30.35	4.48	9.50	8.46	12.44	4.33

Column Section Dimensions *					Maximum Pin Length that can be pulled *			Overall Length of Kit with Column Sections and Quick Nut **				Model Number
Outside Diameter (in)	Internal Diameter (in)	Side Opening (in)	Height (in)	(lbs)	1x Section (in)	2x Sections (in)	3x Sections (in)	1x Section (in)	2x Sections (in)	3x Sections (in)	Kit *** (lbs)	
7.00	5.00	3.94	4.48	8.3	3.97	7.94	11.92	16.26	20.27	24.21	49.5	**PPH40**
9.50	7.00	5.91	4.48	16.9	3.97	7.94	11.92	18.46	22.44	26.42	104.7	**PPH66**

* Maximum of 5 sections can be used with the 40 tons kit and the 66 tons kit.
** Length will increase by 3.97 inches for each additional column section added.
*** Weight with 3 column sections, cylinder and quick nut, weight will increase by the weight of the column section for each additional section added.

▼ IPM3 Internal Mechanical Puller



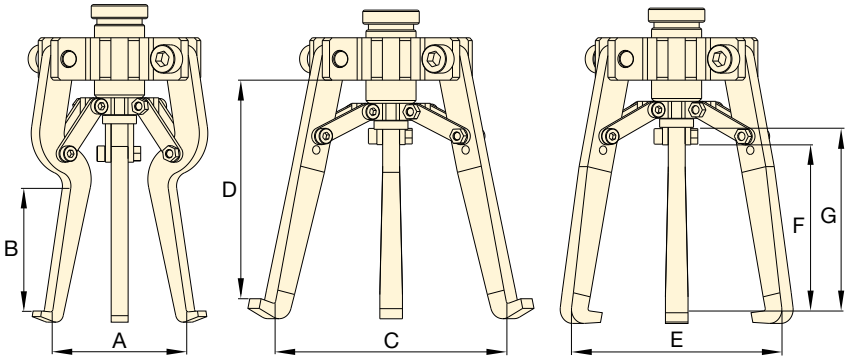
IPM Series

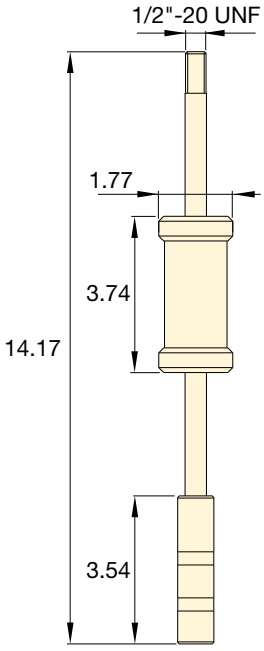
Maximum Reach:
1.77 - 3.11 inches

Spread Range:
0.98 - 3.94 inches

IMPORTANT!
Always wear Safety Goggles and Gloves while using pullers.

- **Remove bearings or other shaft-mounted parts where no spindle support is available**
- **Slide hammer allows for application of safe, high-impact force**
- **Jaw design provides secure grip**
- **Includes two sets of jaws for internal and external pulling applications.**





Slide Hammer Dimensions (inch)

▼ DIMENSIONAL DATA

Model Number	Internal Jaw Dimensions (in)			Standard Jaw Dimensions (in)							
				Internal Configuration			External Configuration				
	Minimum Spread Diameter	Maximum Spread Diameter	Maximum Reach	Minimum Spread Diameter	Maximum Spread Diameter	Maximum Reach	Minimum Spread Diameter	Maximum Spread Diameter	Maximum Reach		
	A	A	B	C	C	D	E	E	F	G	(lbs)
IPM3	0.98	2.36	1.77	2.36	3.94	3.11	0.59	2.95	2.16	7.75	4.60

Enerpac Specialty Tools Section Overview

Enerpac offers an extensive range of dedicated tools for a variety of specific and flexible applications.

Whatever your requirement… cutting, punching, spreading or bending… you can be sure that Enerpac has the correct tool to do your job safely and efficiently.

Featuring maintenance sets, machine lifts and machine skates, as well as hole punches, pipe benders, rail stressor and cable cutters, Enerpac has the tools to ensure that even your most demanding applications can be undertaken with the highest degree of safety and accuracy.



Capacity (tons)	Tool type and functions	Series		Page
2.5 - 12.5	Maintenance Sets	MS		174 ▶
35 - 50	Punches Punch-Pump Sets	SP, MSP, STP		178 ▶ 180 ▶
16	Lifting Wedges	LW		182 ▶
8.5 - 20	Hydraulic Machine Lifts	SOH		183 ▶
3.3 - 35.2	Wheeled Machine Skates	MLS		184 ▶
11 - 33 - 55	Battery-Powered Machine Skates	EMLS, EMV		186 ▶
1 - 80	Heavy-Duty Load Skates	ER, ES, ELP		188 ▶
0.67 - 16 ft³	Industrial Storage Cases	CM		190 ▶
0.75 - 1.0	Hydraulic Wedgie Spread Cylinders	A, WR		191 ▶
Nominal Pipe Bore ½ - 4 inches	Pipe Bender Sets	STB		192 ▶
70	Hydraulic Rail Stressor	RP70		194 ▶
4 x 62	Hydraulic Track Lift System	TL		196 ▶
120	Hydraulic Rail Puller	RP120		198 ▶

▼ Shown: **MS210**



The Universal Hydraulic Tool Box

- **All sets include Enerpac pump, hose, cylinder and gauge**
- **Lock-on or threaded connectors**
- **Complete maintenance set for almost every maintenance application.**

Maintenance Sets

Enerpac Maintenance sets are a complete assortment of hydraulic powered tools. Using these sets allows you to quickly configure a unique tool to meet your most difficult jobs.

Built around the Enerpac lightweight hand pump, hose and cylinder, these sets enable you to push, pull, lift, press, straighten, spread and clamp with forces up to 12.5 tons.



More Information

For detailed information on all included attachments, see the next pages.

Page: 176



◀ *Clamping a workpiece is just one of the many applications for the Enerpac maintenance sets.*



MRO Wheeled Toolbox Sets

Designed to enhance job-site performance. Provides a convenient and portable solution for all your lifting, pushing or pulling requirements up to 5 - 20 tons.

Page: 9

▼ QUICK SELECTION CHART

Capacity using attachments* (tons)	Set Model Number						Number of Attachment Components	(lbs)
2.5	**MS24**	P142	HC7206	RC55	GP10S	GA4	33	59
2.5	**MSFP5**	P142	HC7206	RC55	GP10S	GA4	24	44
5.0	**MSFP10**	P392	HC7206	RC106	G2535L	GA3	23	105
5.0	**MS210**	P392	HC7206	RC106	GP10S	GA2	35	140
12.5	**MS220**	P392	HC7206	RC256	GP10S	GA2	13	210
5.0 - 12.5	**MS21020**	P392	HC7206	RC102, 106, 256	GP10S	GA2	53	350

* If no attachments are being used, capacity is double these values. Maximum operating pressure is then 10,000 psi.

Universal Maintenance Sets

CAUTION!
When cylinders are used with maintenance set attachments or components, the maximum system pressure must be limited to half the rated pressure (5,000 psi).

WARNING!
Only use attachments provided with set. Non-Enerpac attachments and longer extension tubes will reduce column strength, potentially creating unsafe conditions.

MS Series



Capacity (using attachments):
2.5 - 12.5 tons

Maximum Operating Pressure:
5,000 psi

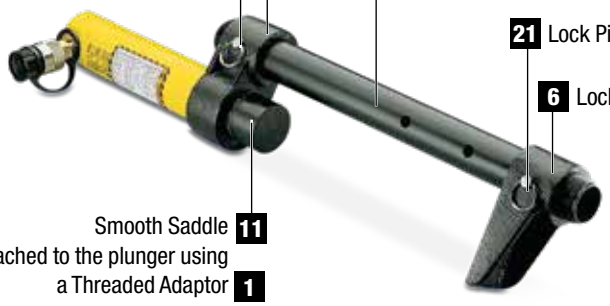
▼ **APPLICATION EXAMPLES**



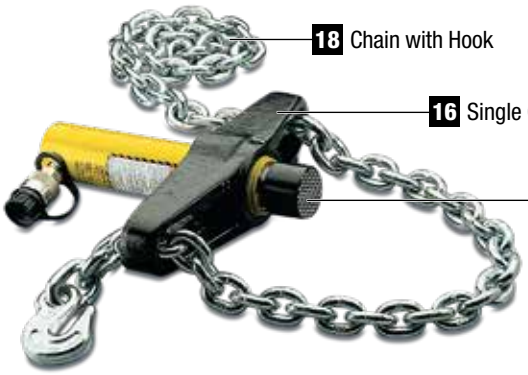
15 Rubber Flex Head
27 5 inch Extension Tube
19 Pipe Coupling
1 Threaded adaptor
2 Base Attachment
4 Flat Base, attached to the Base Attachment using a Threaded Connector 5



5 inch Extension Tube 27
22 Lock-on Connector
27 10 inch Extension Tube
21 Lock Pins



Lock Pin 21
8 Collar Clamp Head
27 18 inch Extension Tube
21 Lock Pin
6 Lock-on Clamp Toe
Smooth Saddle 11 attached to the plunger using a Threaded Adaptor 1



18 Chain with Hook
16 Single Chain Plate
10 Serrated Saddle, attached to the Plunger using a Threaded Adaptor 1



3 Collar Toe
1 Threaded adaptor
4 Flat Base



Double Chain Plate 17 attached to the plunger using a Threaded Adaptor 1
17 Double Chain Plate, attached to the Base Attachment 2 using a Threaded Adaptor 5
18 Chain with Hook

MS-Series, Maintenance Sets

ENERPAC

CAUTION! When cylinders are used with maintenance set attachments or components, the maximum system pressure must be limited to half the rated pressure (5,000 psi).

Note: All dimensions in inches.

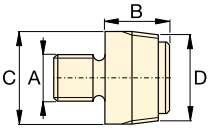
Set Model Number	MS24	MSFP5	MSFP10	MS210	MS220	MS21020
Base, Collar and Plunger Attachments	2.5 tons	2.5 tons	5.0 tons	5.0 tons	12.5 tons	5.0 - 12.5 tons
Cylinder Model(s)	RC55	RC55	RC106	RC106	RC256	RC102, 106, 256
1	A23	A23	A13	A13	A28	A13, A28
2	A25	A25	A21	A21	A27	A21, A27
3	A1034	A1034	A20	A20	A595	A20, A595
4	MZ4010	MZ4010	A14	A14	A243	A14, A243
5	A545	A545	A10	A10	–	A10 (2x)
6	–	–	–	A8	–	A8
7	A530	A530	A6	A6	–	A6
8	MZ4011	–	–	A192	–	A192
9	–	–	–	A305	–	A305
10	A531	A531	A18	A18	–	A18
11	–	–	–	A185	–	A185
12	A532	A532	A15	A15	–	A15
13	–	–	–	–	A607	A607
14	A629	A629	A129	A129	–	A129
15	A539	A539	A128	A128	–	A128
Chains and Attachments for Pulling Applications	2.5 tons	2.5 tons	5.0 tons	5.0 tons	12.5 tons	5.0 - 12.5 tons
16	A558	–	–	A132	A238	A132, A238
17	–	–	–	A5 (2x)	–	A5 (2x)
18	A557 (2x)	–	–	A141 (2x)	A218 (2x)	A141 (2x)
						A18 (2x)
Extension Tubes, Connectors and Adaptors	2.5 tons	2.5 tons	5.0 tons	5.0 tons	12.5 tons	5.0 - 12.5 tons
19	A544	–	–	A19 (2x)	A242 (2x)	A19 (2x)
						A242 (2x)
20	WR5	WR5	WR5	A92	–	A92
21	MZ4013 (4x)	MZ4013 (4x)	A16 (4x)	A16 (4x)	–	A16 (4x)
22	MZ4007 (3x)	MZ4007 (3x)	MZ1050 (3x)	MZ1050 (2x)	–	MZ1050 (3x)
23	MZ4008 (2x)	–	–	MZ1051	–	MZ1051 (2x)
24	MZ4009	MZ4009	MZ1052	MZ1052	–	MZ1052
25	–	–	–	A285	–	A285
26	A650	–	–	–	–	–
27 Length (inch) 3"	MZ4002	MZ4002	–	–	–	–
5"	MZ4003	MZ4003	MZ1002	MZ1002	–	MZ1002
10"	MZ4004	MZ4004	MZ1003	MZ1003	A239	MZ1003
10"	–	–	–	–	–	A239
18"	MZ4005 (2x)	MZ4005	MZ1004	MZ1004	A240	MZ1004 (2x)
18"	–	–	–	–	–	A240
23"	MZ4006	MZ4006	–	–	–	–
30"	–	–	MZ1005	MZ1005	A241	MZ1005 (2x)
30"	–	–	–	–	–	A241
28 Storage Case	CM6	CM6	CW166	CW166	CW166	CW750
Set Weight (lbs)	59	44	105	140	210	350



Base, Collar and Plunger Attachments

1 Threaded Adaptor

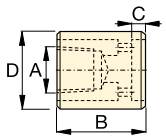




tons	Model No.	A	B	C	D
2.5	A23	¾"- 16 UN	1.13	1.05	¾"- 14 NPT
5.0	A13	1"- 8 UN	1.25	2.19	1¼"- 11½ NPT
12.5	A28	1½"- 16 UN	1.87	2.75	2"- 11½ NPT

2 Base Attachment

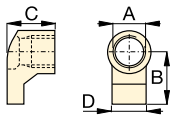




tons	Model No.	A	B	C	D
2.5	A25	¾"- 14 NPT	2.00	0.50	1.75
5.0	A21	1¼"- 11½ NPT	2.25	0.50	2.56
12.5	A27	2"- 11½ NPT	2.50	0.50	3.88

3 Collar Toe

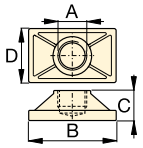




tons	Model No.	A	B	C	D
2.5	A1034	1½"- 16 UN	2.13	1.97	1.25
5.0	A20	2¼"- 14 UN	3.16	2.25	2.25
12.5	A595	3 5/16"- 12 UN	4.06	2.03	3.18

4 Flat Base



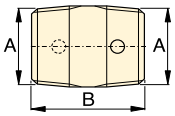


tons	Model No.	A	B	C	D
2.5	MZ4010	¾"- 14 NPT	4.50	1.25	2.50
5.0	A14	1¼"- 11½ NPT	6.50	1.38	3.50
12.5	A243 *	2"- 11½ NPT	6.50	2.31	6.50

* A243 is a round base model.

5 Threaded Connector

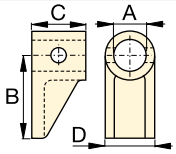




tons	Model No.	A	B
2.5	A545	¾"- 14 NPT	1.38
5.0	A10	1¼"- 11½ NPT	1.63

6 Lock-on Clamp Toe

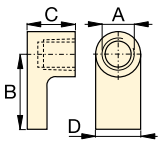




tons	Model No.	A	B	C	D
5.0	A8	1.69	4.13	2.00	2.25

7 Threaded Plunger Toe

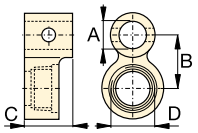




tons	Model No.	A	B	C	D
2.5	A530	¾"- 14 NPT	2.25	1.00	1.33
5.0	A6	1¼"- 11½ NPT	3.12	1.25	2.25

8 Collar Clamp Head

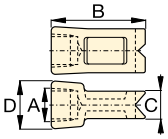




tons	Model No.	A	B	C	D
2.5	MZ4011	¾"-14 NPT	1.95	3.00	1½"-16 UN
5.0	A192	42	2.50	2.00	2¼"-14 UN

9 Spreader Toe

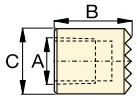




tons	Model No.	A	B	C	D
5.0	A305	1¼"-11½ NPT	4.50	1.00	2.00

10 Serrated Saddle

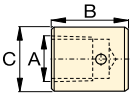




tons	Model No.	A	B	C
2.5	A531	¾"- 14 NPT	1.25	1.09
5.0	A18	1¼"- 11½ NPT	1.50	2.00

11 Smooth Saddle

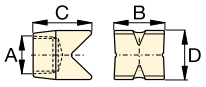




tons	Model No.	A	B	C
5.0	A185	1¼"- 11½ NPT	1.50	2.00

12 90° V-Base

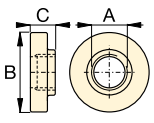




tons	Model No.	A	B	C	D
2.5	A532	¾"- 14 NPT	1.50	1.88	1.00
5.0	A15	1¼"- 11½ NPT	2.13	2.25	2.13

13 Plunger Base

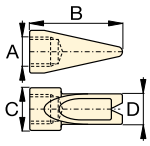




tons	Model No.	A	B	C
12.5	A607	2"-11½ NPT	6.56	1.53

14 Wedge Head

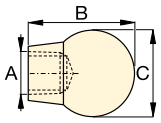




tons	Model No.	A	B	C	D
2.5	A629	¾"- 14 NPT	2.75	1.31	1.13
5.0	A129	1¼"- 11½ NPT	4.00	2.00	1.75

15 Rubber Flex Head



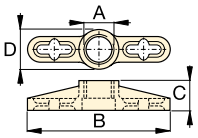


tons	Model No.	A	B	C
2.5	A539	¾"- 14 NPT	1.75	2.75
5.0	A128	1¼"-11½ NPT	3.40	3.40

Chains and Attachments for Pulling

16 Single Chain Plate

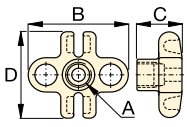




tons	Model No.	A	B	C	D
2.5	A558	1½"- 16 UN	7.75	1.56	1.75
5.0	A132	2¼"- 14 UN	12.12	2.50	3.12
12.5	A238	3⁵⁄₁₆"- 12 UN	17.75	4.03	4.93

17 Double Chain Plate





tons	Model No.	A	B	C	D
5.0	A5	1¼"-11½ NPT	6.18	2.00	4.96

18 Chain with Hook

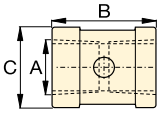


tons	Model No.	Chain Length
2.5	A557	5 feet
5.0	A141	6 feet
12.5	A218	8 feet

Tubes, Connectors and Adaptors

19 Pipe Coupling

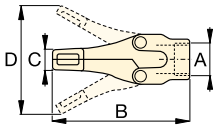




tons	Model No.	A	B	C
2.5	A544	¾"- 14 NPT	1.69	1.31
5.0	A19	1¼"- 11½ NPT	1.94	2.15
12.5	A242	2"-11½ NPT	3.50	3.25

20 Spreader

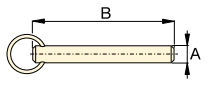




tons	Model No.	A	B	C	D
1.0	WR5	—	8.78	0.50	3.70
1.0	A92	2¼"-14 UN	9.63	1.38	6.25

21 Lock Pin

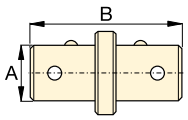




tons	Model No.	A	B
2.5	MZ4013	0.25	2.38
5.0	A16	0.44	3.25

22 Lock-on Connector

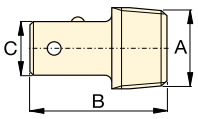




tons	Model No.	A	B
2.5	MZ4007	0.75	3.12
5.0	MZ1050	1.31	5.00

23 Male Lock-on Adaptor

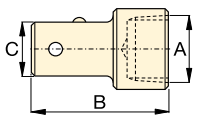




tons	Model No.	A	B	C
2.5	MZ4008	¾"- 14 NPT	2.38	0.75
5.0	MZ1051	1¼"-11½ NPT	3.56	1.31

24 Female Lock-on Adaptor

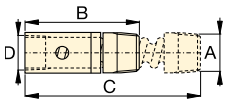




tons	Model No.	A	B	C
2.5	MZ4009	¾"- 14 NPT	2.56	0.75
5.0	MZ1052	1¼"-11½ NPT	3.81	1.31

25 Adjustable Extension

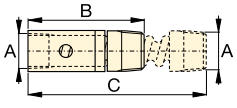




tons	Model No.	A	B	C	D
5.0	A285	1¼"-11½ NPT	13.20	17.37	1.30

26 Slip-on Extension





tons	Model No.	A	B	C
2.5	A650	¾"- 14 NPT	7.88	14.37

▼ Shown: **SP35S**



- **1/2 inch thick capacity through mild steel**
- **Round, oblong and square punches and dies are available to solve your punching applications**
- **Long life Enerpac single-acting, spring-return design**
- **Durable case keeps tools and dies together and provides for easy carrying and storage**
- **CR400 coupler included.**

▼ *SP-Series, Lightweight Hydraulic Punch – Much Faster than Drilling.*



Much Faster than Drilling



Tool Kit SPK10

Included with all 35-ton punches, this tool kit is used to remove and install the punch into the head. Can be ordered as a replacement under model number **SPK10**.



Ordering Information

The 35-ton hydraulic Punch may be ordered by itself or as a set, including a pump.
A punch or die may also be ordered separately or as a matched set. Please refer to the Quick Selection Chart information on top of the next page.

▼ STANDARD PUNCHES AND DIES SELECTION CHART

Hole Shape	Imperial [1] (inch)		Metric [1] (mm)	
	Hole Size	Bolt Size	Hole Size	Bolt Size
●	0.31	1/4	7,9	–
●	0.38	5/16	9,5	M8
●	0.44	3/8	11,1	M10
●	0.53	7/16	13,5	M12
●	0.56	1/2	14,3	–
●	0.69	5/8	17,5	M16
●	0.78	–	19,8	M18
●	0.81	3/4	20,6	–
■	0.31	1/4	7,9	–
■	0.38	5/16	9,5	M8
■	0.44	3/8	11,1	M10
■	0.50	7/16	12,7	M12
▬	.31 x .75	1/4	7,9 x 19	–
▬	.38 x .75	5/16	9,5 x 19	M8
▬	.44 x .75	3/8	11,1 x 19	M10
▬	.50 x .75	7/16	12,7 x 19	M12

[1] Material thickness should not exceed hole diameter.

Single-Acting, Spring Return Hydraulic Punch

▼ QUICK SELECTION CHART

Included						Model Number	
*	Punch & Die Set	Pump	Hose	Gauge	Gauge Adaptor		(lbs)
SP35	Standard**	P392	HC7206	GP10S	GA2	**STP35H**	55
SP35	Standard**	PATG1102N	HC7206	GP10S	GA2	**STP35A**	63
SP35	–	–	–	–	–	**SP35**	35
SP35	Standard**	–	–	–	–	**SP35S**	40
SP35	Standard**	PUD1100B [1]	HC7206	–	–	**SP35SP**	70
SP35	Metric***	–	–	–	–	**MSP351**	40
SP35	Metric***	PUD1100B [1]	HC7206	–	–	**MSP351PE**	70

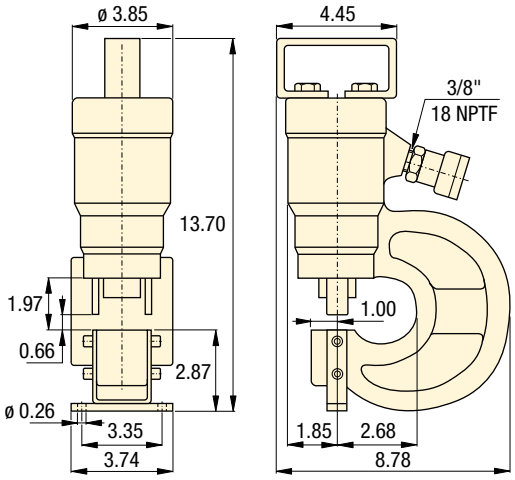
* Punch oil capacity: 4.58 in³

[1] PUD1100B = 115 V

Includes the following punch and die sets:

** SPD438, SPD688, SPD563 and SPD813

*** SPD375, SPD531, SPD438 and SPD688



Model Number Standard Punch & Die Set	Maximum allowable material thickness to be punched (inch) Material thickness should not exceed hole diameter										
	1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)
SPD313	0.31	0.31	0.25	0.25	0.25	0.25	0.13	0.19	0.25	0.25	0.25
SPD375	0.38	0.38	0.31	0.31	0.31	0.31	0.19	0.25	0.31	0.31	0.31
SPD438	0.44	0.44	0.38	0.38	0.38	0.31	0.19	0.31	0.31	0.31	0.31
SPD531	0.50	0.50	0.44	0.44	0.44	0.38	0.25	0.31	0.38	0.38	0.38
SPD563	0.50	0.50	0.50	0.44	0.50	0.44	0.25	0.38	0.44	0.44	0.44
SPD688	0.50	0.50	0.50	0.44	0.50	0.40	0.25	0.31	0.40	0.40	0.40
SPD781	0.50	0.50	0.50	0.44	0.50	0.38	0.25	0.31	0.38	0.39	0.38
SPD813	0.50	0.50	0.50	0.44	0.50	0.31	0.19	0.31	0.31	0.31	0.31
SPD458	0.31	0.31	0.25	0.25	0.25	0.25	0.13	0.19	0.25	0.25	0.25
SPD549	0.38	0.38	0.31	0.31	0.31	0.31	0.19	0.25	0.31	0.31	0.31
SPD639	0.44	0.44	0.38	0.38	0.38	0.31	0.19	0.31	0.31	0.31	0.31
SPD728	0.50	0.50	0.44	0.44	0.44	0.38	0.25	0.31	0.38	0.38	0.34
SPD106	0.31	0.31	0.25	0.25	0.25	0.25	0.13	0.19	0.25	0.25	0.25
SPD125	0.38	0.38	0.31	0.31	0.31	0.31	0.19	0.25	0.31	0.31	0.31
SPD188	0.44	0.44	0.38	0.38	0.38	0.31	0.19	0.31	0.31	0.31	0.31
SPD250	0.50	0.50	0.44	0.44	0.44	0.38	0.25	0.31	0.38	0.38	0.38

MSP, SP, STP Series



Capacity:
35 tons

Hole Sizes:
0.31 - 0.81 inch

Maximum Operating Pressure:
10,000 psi

CAUTION!

The chart below is for reference only! Maximum allowable material thickness to be punched varies with set wear.

CAUTION!

Material thickness should not exceed hole diameter.

Steel Qualities (see table):

1) Mild A-7
2) Boiler Plate
3) Structural A-36
4) Struct Corten (ASTM A242)
5) Cold Rolled C-1018
6) Hot Rolled C-1050
7) Hot Rolled C-1095
8) Hot Rolled C-1095 Annealed
9) Stainless Annealed
10) Stainless 304 Hot Rolled
11) Stainless 316 Cold Rolled

▼ *The hydraulic punch cuts the time spent forming holes.*



SP-Series, 50 Tons Hydraulic Punch

▼ Shown: **SP50100**



Cuts the Time Spent Forming Holes

- **Available as a complete set including electric pump and hoses**
- **Double-acting cylinder design for fast cycle times**
- **Punch and die changeover tools included**
- **Lifting bracket included**
- **Adjustable power stripper prevents movement of the metal during stripping**
- **CR400 female couplers included.**



Depth Stop

For simplified repetitive punching applications an adjustable Depth Stop is available.Order model number: **SP110**.



Foot Mounting Kit

A foot mounting kit for easy mounting of the 50-ton punch to workbench or fixture is available. Order model number: **SP120**.



Ordering Information

The 50-ton Hydraulic Punch may be ordered by itself or as a set with an electric pump. A punch and die may be ordered as a matched set. Please refer to the selection chart information.



◀ *Save time using the 50-ton Enerpac Punch.*

▼ *Shown below is the 50-ton punch with SP120 and SP110 assembled.*



50 Tons Double-Acting Hydraulic Punch

▼ QUICK SELECTION CHART PUNCH SETS

Included				Set Model Number	(lbs)
Model Number Punch *	Punch & Die Sets	Electric Pump (115 V - 1 ph)	Hydraulic Hose (2x)		
SP50	All **	–	–	**SP50100**	255
SP50	All **	ZE4410SBN	HC7206	**SP5000**	384

* Punch Oil Capacity:
Advance: 17 in^3
Retract: 14 in^3
** All standard sets from chart below.

SP
Series



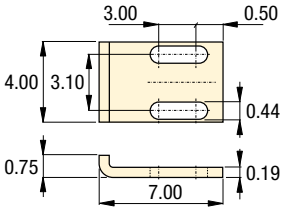
Capacity:
50 tons

Hole Sizes:
0.53 - 1.03 inches

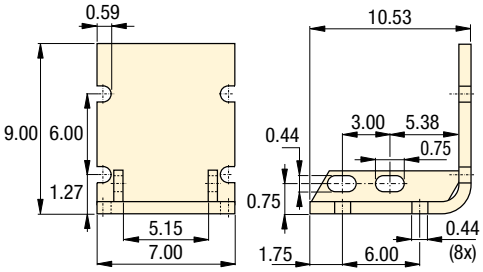
Maximum Operating Pressure:
10,000 psi

CAUTION!
Material thickness should not exceed hole diameter.

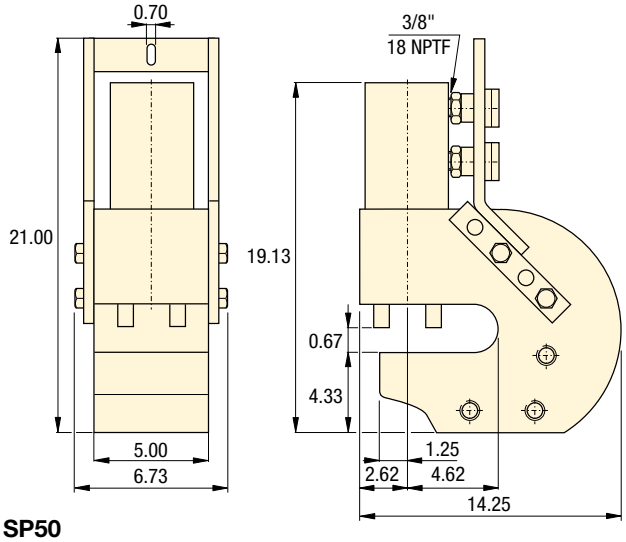
CAUTION!
Chart below is for reference only! Maximum allowable material thickness to be punched varies with set wear.



SP110



SP120



SP50

Steel Qualities (see table below):

1) Mild A-7
2) Boiler Plate
3) Structural A-36
4) Struct Corten (ASTM A242)
5) Cold Rolled C-1018
6) Hot Rolled C-1050
7) Hot Rolled C-1095
8) Hot Rolled C-1095 Annealed
9) Stainless Annealed
10) Stainless 304 Hot Rolled
11) Stainless 316 Cold Rolled

▼ STANDARD PUNCH AND DIE SELECTION CHART

Hole Shape	Hole Size (in)	Bolt Size (in)	Model Numbers Standard Punch and Die Set	Maximum Allowable Material Thickness To Be Punched (inch)										
				1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)
●	0.53	½	**SP150**	0.53	0.53	0.53	0.53	0.53	0.49	0.32	0.40	0.49	0.49	0.49
●	0.66	⅝	**SP170**	0.56	0.56	0.56	0.50	0.56	0.51	0.32	0.40	0.51	0.51	0.51
●	0.78	¾	**SP190**	0.56	0.56	0.56	0.50	0.56	0.49	0.32	0.40	0.49	0.50	0.49
●	0.91	⅞	**SP121**	0.56	0.56	0.56	0.50	0.56	0.35	0.22	0.35	0.35	0.35	0.35
●	1.03	1	**SP123**	0.56	0.56	0.56	0.44	0.56	0.31	0.19	0.31	0.31	0.31	0.31

LW-Series, Hydraulic Vertical Lifting Wedges

ENERPAC

▼ Shown: **LWC16, LW16 with SB2 and optional LWB1**



LW Series

Maximum Lifting Force:
16 tons

Minimum Clearance:
0.39 inches

Maximum Lift Height *:
2.02 - 2.72 inches

Maximum Operating Pressure:
10,000 psi

* Using Stepped Block LWB1

- **Integrated hand pump offers greater maneuverability (LWC16 only)**
- **Minimized access gap for greater accessibility on applications with limited insertion space**
- **Secure, stable lifting and lowering motion with no slippage**
- **Single-acting, spring-return cylinder allows for automatic, mechanical retraction**
- **Includes safety block SB2**
- **LW16 can be used in multiple set-up.**



Power Box

Tool box with hand pump, gauge adaptor assembly, hose and LW16.

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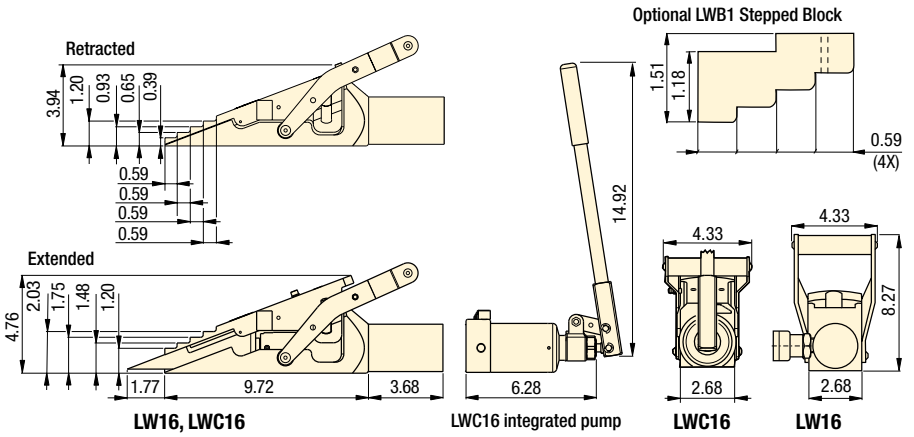


Control Manifolds

Control Manifold to control two or four LW16 lifting wedges simultaneously.

AM21 with 3 ports 3/8" NPTF
AM41 with 5 ports 3/8" NPTF.

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▼ *For lifting heavy equipment with minimum floor clearance the LW16 is the ideal tool.*



Max. Lifting Force (tons)	Model Number	Minimum Clearance Gap (in)	Max. Lift per Stage (in)	Max. Lifting Height (in)	Max. Lifting Height using Stepped Block LWB1 (in)	Oil Capacity (in^3)	Pump Power Source	(lbs)
16	LW16 [1]	0.39	0.83	2.02	2.72	4.75	External	15.4
	LWC16 [2]					–	Integrated	22.0

[1] Includes SB2.
[2] Includes SB2, LWB1, and carrying case.

▼ SOH10-6



SOH Series

Lifting Capacity:
8.5 - 20 tons

Stroke:
5.39 - 6.18 inches

Toe Clearance:
0.79 - 1.18 inches

Maximum Operating Pressure:
10,000 psi



RSM-Series, Low-Height Cylinders

Low-height, single-acting, spring-return cylinders are ideal for space restricted applications.

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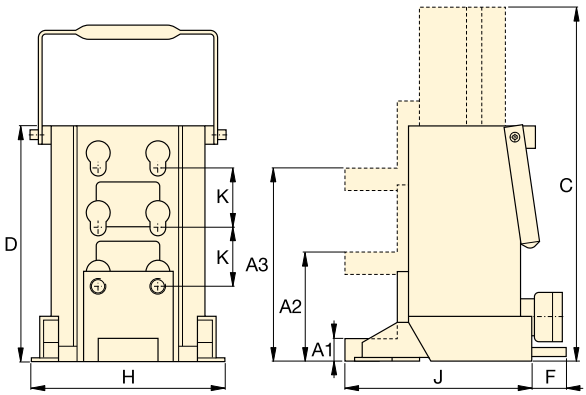


Load Skates

In combination with the Enerpac Machine Lifts we recommend Load Skates for moving heavy loads.

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- **For lifting heavy equipment with minimum available access**
- **Remote hydraulic pump enhances safety**
- **Low-height lifting toe**
- **Precision guided to reduce friction and isolate cylinder from side loads**
- **Two extendable support feet provide extra stability**
- **Includes RC-Trio Series cylinder with CR400 coupler.**



▼ *Limited access under this machine makes the Enerpac hydraulic machine lift the perfect solution.*



Capacity	Toe Clearance (in)			Stroke	Model Number	Oil Capacity	Dimensions (in)						
(tons)	Minimum A1	Central A2	Maximum A3	(in)		(in^3)	Total Ext. Height C	Total Body Height D	F	H	J	K	(lbs)
8.5	0.79	3.74	6.69	5.39	**SOH10-6**	13.7	17.00	11.61	–	7.48	8.46	2.95	59.2
20	1.18	4.33	7.48	6.18	**SOH23-6**	32.0	18.58	12.40	2.56	10.24	9.84	3.15	99.2

▼ MLS-Series, Wheeled Machine Skates



DESIGNED FOR INDUSTRIAL MACHINE MOVERS AND MILLWRIGHTS

- **Durable polyurethane or optional nylon wheels provide excellent stability while preventing damage to finished floors**
- **Rugged, reliable bearings and wheels deliver low rolling resistance**
- **Low-height, requires minimal lifting to accommodate moves**
- **MLSF steerable skates improve maneuverability with turntables that can easily rotate under the load, ideal for general applications**
- **For ultimate versatility, MLSR rotational skates provide 360 degrees of directional movement, ideal for confined space applications**
- **Models pre-assembled with nylon wheels are available upon request**
- **Configure MLSR sets with a handle and connecting bar to meet your application requirements.**



Connecting Bars

Connecting bars come standard with MLSD-models. Different lengths of connecting bars are available to connect MLSR-models together.



Handles

MLSF-models come standard with size-specific handles. Optional manual or pulling eye handles are available for MLSR-models.



Optional Turntable Assembly

Available for MLSR-Rotational Skates. The turntable provides an additional 1.45 inch of height.

Model Number	Type	Compatible with
MLSRTT	Swivel Top	MLSR3, MLSR7, MLSR9



Nylon Wheel Kits

Nylon wheel kits are available for better wear resistance or if increased capacity is required.

Nylon Wheel Kit	Part Number	Compatible Skates	No. of Wheel Kits per Skate
ø 3.35 inch x 3.43 inch width. Includes 4 wheels	**MLSWNY85874**	MLSF3, MLSD3	1
		MLSF7, MLSD7	2
		MLSF10, MLSD10	3
		MLSF13, MLSD13	4
ø 5.51 inch x 3.35 inch width. Includes 4 wheels	**MLSWNY140854**	MLSF17, MLSD17	2
		MLSF27, MLSD27	3
		MLSF35, MLSD35	4



An Enerpac MLS-Series machine skate set combined with a low-height hydraulic cylinder provides the ideal package for heavy machinery moves. ▶

Wheeled Machine Skates

Selecting the Right Skate Set

MLS-Series Machine Skates offer easy and stable movement across various floor types.

MLSS-sets (consisting of MLSF and MLSD-skates) are a great option for most maneuvers, especially when confined space is not a concern.

MLSR-rotational skates have the highest level of maneuverability for easy moves in tight spaces and around corners.

Combining MLSR-models with connecting bars and handles provides a versatile set to cover more applications.

For ordinary concrete floors consider the ER-Series Chain Roller Machine Skates.

EMLS, EMV-Series, Battery-Powered Machine Skates

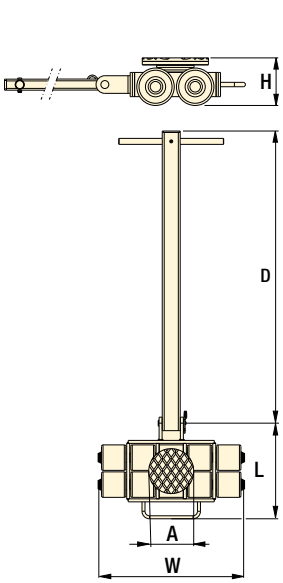
Remote-controlled, heavy-duty machine moving system up to 55 tons for clean and even surfaces, see pages 186-187.

MLS Series

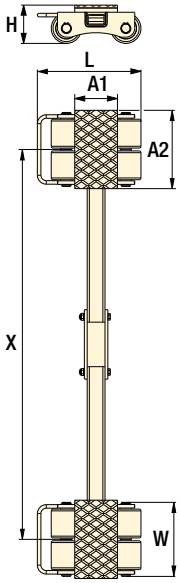


Capacity (Individual Skates):
3.3 - 35.2 tons

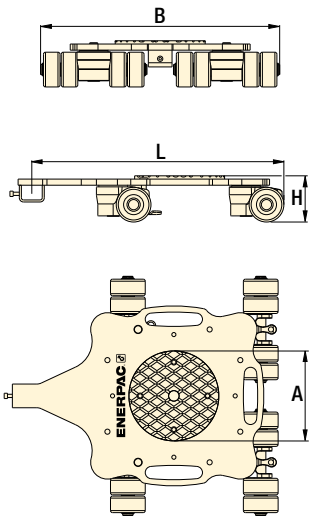
Height:
4.3 - 7.0 inches



MLSF-Steerable Skates



MLSD-Dual Skates



MLSR-Rotational Skates



Lifting Wedges & Machine Lifts

To place Machine Skates, the load must first be lifted. This can be done using the LW-Series Enerpac Lifting Wedge or SOH-Series Machine Lifts.

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ER-Series, Chain Roller Skates

Enerpac has an alternative offering of steel chain roller style machine skates for moving loads up to 80 tons.

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▼ SELECTION CHART

Capacity (tons)	Model Number	No. of Wheels/ Diameter		Dimensions (inch)									Handle Type	
			ø inch	A	A1	A2	B	D	H	L	W	X		(lbs)
3.3	**MLSF3**	4	3.35	5.8	–	–	–	39.0	4.3	9.3	10.4	–	Manual	30.8
6.6	**MLSF7**	8	3.35	5.8	–	–	–	39.0	4.3	13.2	18.8	–	Manual	57.3
9.9	**MLSF10**	12	3.35	6.6	–	–	–	45.6	4.3	20.6	30.4	–	Towable	125.6
13.2	**MLSF13**	16	3.35	6.6	–	–	–	45.6	4.3	20.7	38.3	–	Towable	149.9
17.6	**MLSF17**	8	5.51	8.6	–	–	–	63.8	7.0	22.1	28.2	–	Towable	291.0
26.4	**MLSF27**	12	5.51	8.6	–	–	–	63.8	7.0	22.1	36.3	–	Towable	348.3
35.2	**MLSF35**	16	5.51	9.7	–	–	–	63.8	7.0	22.1	45.0	–	Towable	432.1
3.3	**MLSD3**	4	3.35	–	5.9	2.9	–	–	4.3	9.7	4.7	4.7 - 39.3	–	30.9
6.6	**MLSD7**	8	3.35	–	4.7	8.7	–	–	4.3	11.5	8.7	16.5 - 43.3	–	63.9
9.9	**MLSD10**	12	3.35	–	6.7	7.1	–	–	4.3	11.6	11.6	18.1 - 45.0	–	79.4
13.2	**MLSD13**	16	3.35	–	7.9	8.7	–	–	4.3	11.5	15.0	22.0 - 43.1	–	99.2
17.6	**MLSD17**	8	5.51	–	12.5	7.5	–	–	7.0	17.9	8.5	8.7 - 76.4	–	202.8
26.4	**MLSD27**	12	5.51	–	12.5	11.2	–	–	7.0	17.9	12.3	12.6 - 76.4	–	262.3
35.2	**MLSD35**	16	5.51	–	12.5	15.0	–	–	7.0	17.9	16.1	16.5 - 65.4	–	335.1
3.3	**MLSR3**	8	3.35	6.7	–	–	18.4	–	4.3	23.1	–	–	–	77.0
6.6	**MLSR7**	16	3.35	8.6	–	–	23.0	–	4.3	25.6	–	–	–	94.6
8.8	**MLSR9**	20	3.35	8.6	–	–	30.9	–	4.3	32.6	–	–	–	129.8

▼ MLSR ACCESSORIES

Description	Model Number	Type	Length (ft)	Compatible with
Handles	**MLSHRT**	Manual	3.2	MLSR3 MLSR7 MLSR9
	MLSHRR	Towable	3.8	
Connecting Bars	**MLSCR6**	Rigid	6.5	
	MLSCR8	Rigid	8.0	
	MLSCRH8	Handle Joint	8.0	

▼ AVAILABLE SETS

Set Model Number	Set Model Numbers Include:	Set Capacity * (tons)
MLSS7	1x MLSF3 + 1x MLSD3	6.6
MLSS13	1x MLSF7 + 1x MLSD7	13.2
MLSS20	1x MLSF10 + 1x MLSD10	19.8
MLSS27	1x MLSF13 + 1x MLSD13	26.4
MLSS35	1x MLSF17 + 1x MLSD17	35.3
MLSS53	1x MLSF27 + 1x MLSD27	52.9
MLSS70	1x MLSF35 + 1x MLSD35	70.6

* Set capacity assumed to be equally distributed across skates. Ensure each individual skate capacity is not exceeded.

▼ EMLSF25, Battery-Powered Machine Skate



DESIGNED FOR INDUSTRIAL MACHINE MOVERS & MILLWRIGHTS

- **Position loads of up to 55 tons with this self-propelled solution designed specifically for machine movers**
- **Single user operation allows you to quickly recoup your initial investment, tackling more projects with fewer resources**
- **Manoeuvre around tight corners, obstacles and even an incline of up to 1,5% with the agile dual drive motors and 360-degree tilt swivel saddle**
- **Runs for 3 hours on a single charge, giving you the potential to move loads over 3940 ft without ever switching out the 24V battery**
- **Up to 4 x faster than manual methods, travelling at up to 26 feet per minute fully loaded**
- **Remote control keeps your operator safe by eliminating the need to manually push or pull**
- **Responsive controls allow precise speed adjustment allowing you to adapt to changing conditions**
- **Consistent and repeatable performance allow you to reliably estimate project costs ahead of time.**

▼ *EMLSF25*





Spare Wireless Remote Control

Protect yourself against downtime in the event of loss or damage.
Model No.: **EMVPC**
To charge spare batteries outside the main unit, you must use **EMV24VPCXCC** charging cable, sold separately.

Spare Batteries for EMLSF-Series

Machine Skate	Spare Battery Model No.	Capacity (A/hr)	Optimal Run Time (hr)
11 tons	**EMV24V60**	60	3 - 4
33 tons	**EMV24V100**	100	3 - 4
55 tons	**EMV24V100**	100	2,5 - 3,5



Transport Storage Case

Save time mobilizing and storing with this durable steel case. Holds any Battery-Powered Machine Skate set and its remote control.

Model Number	Dimensions (inch) L	W	H	(lbs)
EMVTC1 *	43.3	49.0	17.9	359
EMVTC2 **	44.4	63.9	17.9	455

* EMVTC1 for 11 and 33 tons models;
** EMVTC2 for 55 tons models.



External Charger EMV24VPC

Be prepared for jobs of longer duration with an external charger and extra battery.
Charge time 3 – 4 hours.
Spare battery model numbers shown below, left.

Model Number (115-230 VAC)	Dimensions (inch) L	W	H	(lbs)
EMV24VPC	9.8	5.4	6.3	7.9



Back-Up Power Supply

For bigger or complex jobs that may take more time than normal battery life can provide, consider a Back-Up Power Supply. Provides continuous operation for one battery-powered machine skate.

Model Number (460 VAC)	Dimensions (inch) L	W	H	(lbs)
EMV24VPSJ	22.0	19.5	7.8	54

Battery-Powered Machine Skates

Battery-powered, remote-controlled, heavy-duty machine moving system for clean and even surfaces. Joint transitions not exceeding 3/16 inch difference in height or 1/2 inch in width, maximum 1,5% grade.

All movements are proportional and precisely controlled via two joysticks on the wireless remote control.

Equipped with cut and abrasion-resistant polyurethane traction wheels and high-quality nylon load wheels.

In combination with a properly rated dual follower skate or skate set, (the load capacity of the undercarriage must correspond to the towing capacity of the drive unit) with the same installation height it forms a safe overall system with 3 load points.

Safety: Wireless remote control operation keeps operator at safe distance.

Steering: Dual motors and simple controls make tight spaces easier to navigate.

Transport Speed: Up to 26.2 ft/min improves productivity so saves money compared to manual methods.

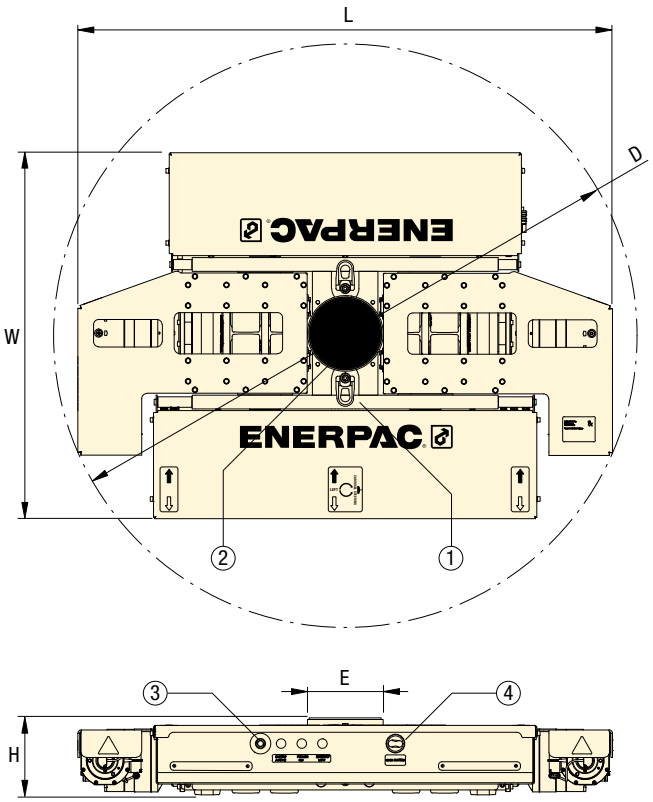
EMLS, EMV Series

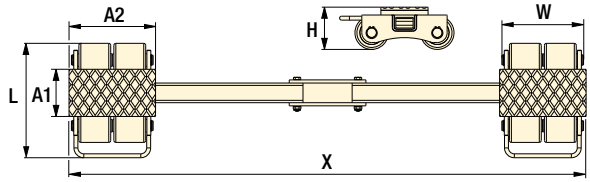


Capacity (Set with Dual Follower Skate):
11 - 33 - 55 tons

Transport Speed (loaded):
26 ft/min

Power Source:
24 Volt Battery





EMLSD-Series, Dual Follower Skate

Model Number Dual Follower Skate	Dimensions (inch)					
	A1	A2	Height H	Length L	W	X
EMLSD8NY	7.9	8.7	5.5	11.5	8.7	25.2-51.8
EMLSD22NY	12.5	7.4	7.1	17.9	8.5	16.1-84.9
EMLSD33NY	12.5	11.2	8.7	17.9	11.2	23.8-88.7

Model Number Battery-Powered Machine Skate	Dimensions (inch)					
	Length L	Width W	Height H	Turning Circle D	Load Area ø E	(lbs)
EMLSF5	38.0	37.4	5.5	47.6	5.9	684
EMLSF15	44.8	40.9	7.1	56.9	5.9	794
EMLSF25	61.0	41.7	8.7	66.5	5.9	1235

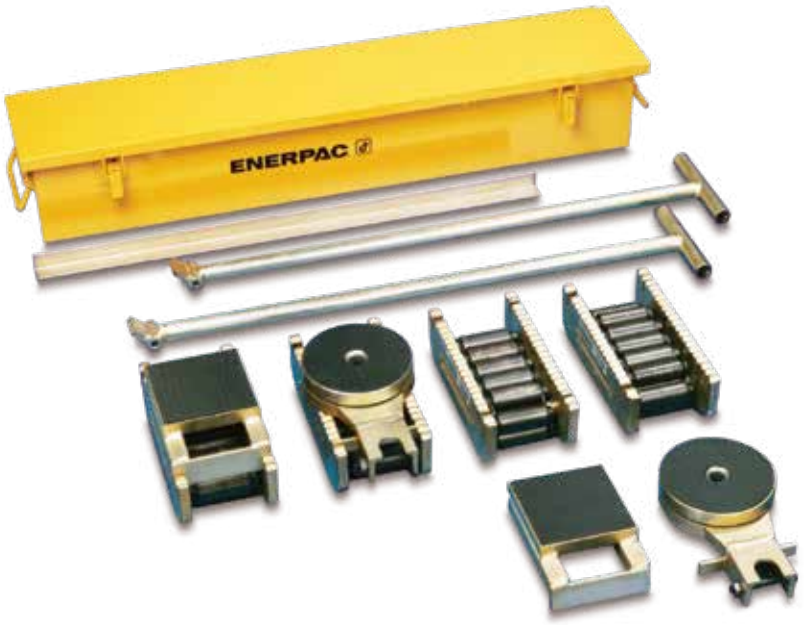
EMLSF-Series

① Lifting Lugs
② Load Area
③ Emergency Stop
④ Main Switch 24 VDC

Supported Load Capacity tons			Model Number Machine Skate Set	Set Contents		Lifting Stroke at max. 2900 psi	Set
Set [1]	Powered Machine Skate	Dual Follower Skate		Battery-Powered Machine Skate	Dual Follower Skate	(inch)	(lbs)
11	**5.5**	**8.8**	**EMV10S**	EMLSF5	EMLSD8NY	–	750
33	**16.5**	**22**	**EMV30S**	EMLSF15	EMLSD22NY	–	979
55	**27.5**	**33**	**EMV50S**	EMLSF25	EMLSD33NY	2.75	1484

[1] Note that set capacity is based on total moving capacity of the battery-powered machine skate. Load distribution on each component of the set should not exceed each component's load capacity rating.

▼ Shown: **Set ERS20**



Move Heavy Loads Easily and Safely

- **Rugged and sturdy construction for long life**
- **Low-profile construction for increased stability**
- **Low rolling-resistance allows for easy transportation**
- **Attachable load leveling plates and swivel turntables for turning corners.**

Sets (see table) include all components necessary to handle a variety of applications.

Two **ELB1** link-up bars, two **ERH1** handles (34.4 inches long) and one **EMB1** metal box are included.

Optional long handle **ERH2** (46.4 inches) available for 60 and 80 tons only.



Lifting Wedges and Machine Lifts

To place the Load Skates, the load must first be lifted. This can be done easily and safely using the Enerpac Lifting Wedge or Machine Lifts.

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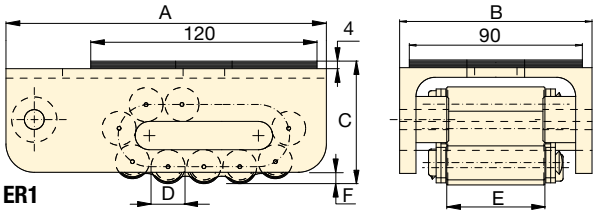
▼ *Heavy transport using Load Skates. The machine is first lifted, using the SOH-Series Enerpac Machine Lifts.*



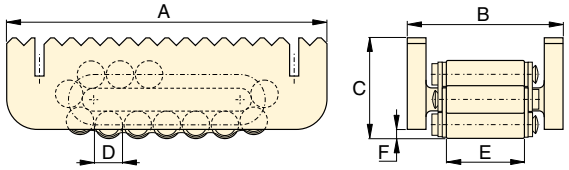
▼ *Chemical tank transportation: For the first few inches the load was lifted with an RCS-Series low-height cylinder and then moved on to load skates for transportation.*



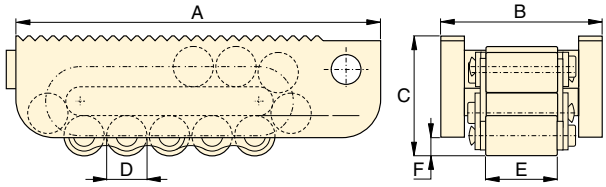
Heavy Duty Caterroller™ Load Skates



ER1



ER10, ER15, ER30

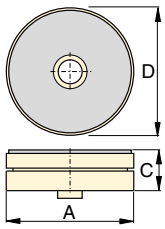


ER60, ER80

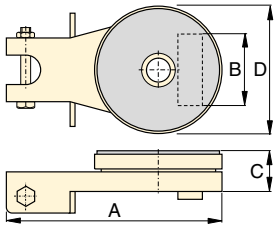
EL, ER, ES Series



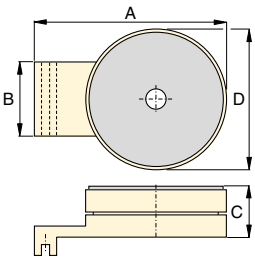
Maximum Carrying Capacity:
80 tons



ES1, Turntable Swivel



ES10, ES15, ES30 Turntable Swivel

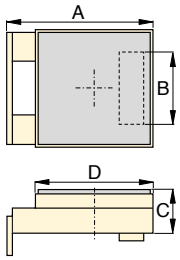


ES60, ES80 , Turntable Swivel

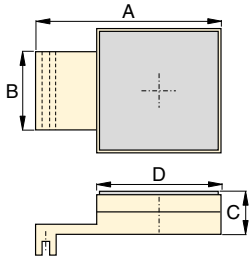
Load Skates may be ordered separately or as a matched set.

Set Capacity * (tons)	Set Model Number	Load Skates (4x)	Turntable Swivels (2x)	Leveling Plates (2x)	Weight including handles and metal box (lbs)
20	ERS20	ER10	ES10	ELP10	110
30	ERS30	ER15	ES15	ELP15	123
60	ERS60	ER30	ES30	ELP30	167

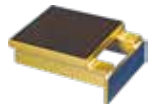
* Sets are designed to enable two skates to take full load for extra safety on uneven floor surfaces.



ELP10, ELP15, ELP30 Leveling Plate



ELP60, ELP80 Leveling Plate

	Capacity (tons)	Model Number	Dimensions (in) A	B	C	D	E	F	Contact Rolls per Skate	Rollers per Skate	(lbs)
Load Skates	1	ER1	6.69	3.94	2.56	0.71	2.00	0.24	4	11	8.4
 ER1 ER10	10	ER10	8.27	3.94	2.63	0.71	2.00	0.24	5	15	11.5
	15	ER15	8.69	4.45	2.95	0.94	2.38	0.39	4	13	16.0
	30	ER30	10.63	5.13	3.63	1.18	2.69	0.39	4	13	28.6
	60	ER60	15.00	6.63	4.94	1.65	3.00	0.63	4	13	70.4
	80	ER80	20.88	7.19	5.75	1.97	3.38	0.75	6	17	134.2
Turntable Swivel	1	ES1	8.15	–	1.02	3.54	–	–	–	–	2.4
 ES1 ES10	10	ES10	8.66	2.87	1.65	5.12	–	–	–	–	8.1
	15	ES15	8.66	3.39	1.65	5.12	–	–	–	–	8.1
	30	ES30	9.84	3.78	1.89	5.91	–	–	–	–	11.7
	60	ES60	10.83	4.49	2.40	7.48	–	–	–	–	30.1
	80	ES80	14.17	5.04	2.40	8.66	–	–	–	–	41.6
Leveling Plate	10	ELP10	5.87	2.87	1.65	4.72	–	–	–	–	8.1
	15	ELP15	5.87	3.39	1.65	4.72	–	–	–	–	8.1
	30	ELP30	7.01	3.78	1.89	5.12	–	–	–	–	11.6
	60	ELP60	10.63	4.49	2.40	7.09	–	–	–	–	30.4
	80	ELP80	13.78	5.04	2.40	7.87	–	–	–	–	41.4

▼ CM16



CM Series

Case Size:
0.67 - 16 ft³

Protect your Equipment

- **Protect your equipment from dust, water, grease and dirt**
- **Reduce losses on the jobsite, maintenance area or shop**
- **Durable steel, painted with corrosion-resistant primer and finished in durable enamel**
- **Heavy-duty hinges and lifting handles**
- **Lockable.**

Maintenance Sets

Enerpac Maintenance sets are a complete assortment of hydraulic powered tools.

Using these sets allows you to quickly configure a unique tool to meet your most difficult jobs.

Built around the Enerpac lightweight hand pump, hose and cylinder, these sets enable you to push, pull, lift, press, straighten, spread and clamp with forces up to 12.5 tons.

Page: 174



SCTB-Series, MRO-Toolbox Sets

Toolbox sets purpose-designed for technicians working on industrial maintenance, repair, and operations projects.

Page: 8

▼ *When not storing the lifting system, this heavy-duty storage case doubles as a work station.*



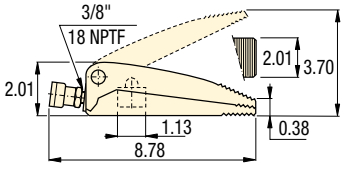
Case Size (ft³)	Model Number	Inside Dimensions L x W x H (in)	Thickness (in)	(lbs)
0.67	**CM6**	23.5 x 7.0 x 8.0	0.035	15.4
1.13	**CM1**	24.5 x 11.1 x 6.5	0.035	17.6
4.50	**CM4**	30.6 x 17.9 x 13.9	0.059	35.3
7.50	**CM7**	47.6 x 15.2 x 18.0	0.074	125.7
16.00	**CM16**	47.9 x 23.9 x 21.9	0.059	121.3

Hydraulic Wedgie and Spread Cylinders

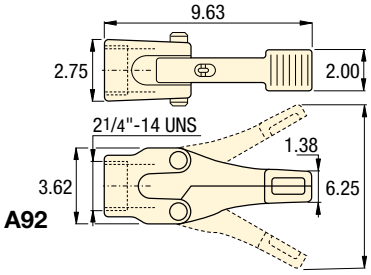
▼ Shown clockwise from top: **WR15, WR5, A92**



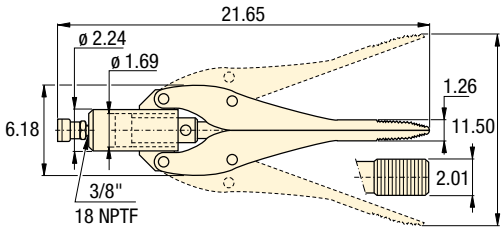
- **WR5: For use in very confined work areas**
- **WR15: For long stroke spreading applications**
- **Single-acting, spring-return**
- **A92: Spreader attachment; threads on 10-ton RC-Trio Series cylinders * (except RC101).**



WR5



A92



WR15

Cylinder Capacity (tons)	Tip Clearance (in)	Model Number	Maximum Spread (in)	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	(lbs)
1.0	0.50	**WR5**	3.70	1.00	0.61	5.0
0.75	1.26	**WR15**	11.50	2.25	3.91	25.0
1.0	1.38	**A92 ***	6.25	–	–	8.0

* Maximum system pressure must be limited to half the rated pressure (5,000 psi).

A WR Series



Capacity:
0.75 - 1.0 tons

Tip Clearance:
0.50 - 1.38 inches

Maximum Spread:
3.70 - 11.50 inches

Maximum Operating Pressure:
10,000 psi



RC-Trio Series Cylinders

10-ton RC-Trio Series cylinders (except RC101) fit into **A92** Spreader Attachment.

Page: 12



Portable Toolbox

Tool box with **P392** hand pump, gauge adaptor assembly, hose and **WR5**.

Page: 11



Best Match Hand Pump

To power your WR5 and WR15 the **P392** hand pump is an ideal choice. Use Enerpac H700-Series hoses (page 136) for hydraulic connection.

Page: 78

▼ *A WR5 wedgie cylinder is used to loosen a bridge bearing.*



▼ Shown: **STB101H**



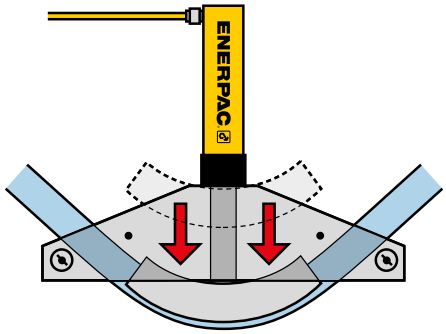
Quick, Safe and Wrinkle-free Bending

'One Shot' and 'Sweep'

One shot shoes give up to a 90° bend without resetting.

Sweep shoes are used where increasing radii are required for multiple parallel pipe installations.

- **Makes smooth, wrinkle-free bends**
- **Sets include genuine Enerpac cylinder, hose, air, electric or hand pump**
- **Sets are also available without hydraulics**
- **Bending shoes and frame are lightweight, heat-treated aluminium**
- **All sets include sturdy steel storage case**
- **All sets include BZ12091 angle indicator for accurate bending**
- **BZ12377 Shoe Lock Pin included in every set**
- **Eject-O-Matic™ benders (STB202 models) have double-acting cylinder to eject pipe from the bending shoe.**



▲ *Typical one shot bending operation.*

▼ **SELECTION CHART**

Pipe Range Nominal Size (inch)		Bender Set Model Number	Hand Pump *	Air Pump *	Electric Pump * (115 V)		Cylinder *	Hose *	Saddle *	Steel Case *	
One Shot	Sweep										(lbs)
½ - 2	–	**STB101X**	–	–	–	–	–		A12	CM4	88
		STB101N	–	–	–	–	RC1010	HC7206	A12	CM4	105
		STB101H	P392	–	–	–	RC1010	HC7206	A12	CM4	114
		STB101A	–	PATG1102N	–	–	RC1010	HC7206	A12	CM4	119
		STB101B	–	–	PUJ1200B [2]	–	RC1010	HC7206	A12	CM4	127
1 - 2	2½ - 4	**STB221X**	–	–	–	–	–		A29	CM7	229
		STB221N	–	–	–	–	RC2510	HC7206	A29	CM7	263
		STB221H	P80	–	–	–	RC2510	HC7206	A29	CM7	286
1¼ - 4	–	**STB202X** [1]	–	–	–	–	–		A29	CM7	316
		STB202N [1]	–	–	–	–	RR3014	HC7206 (2x)	A29	CM7	383
		STB202B [1]	–	–	–	ZU4408SB [2]	RR3014	HC7206 (2x)	A29	CM7	467

* See corresponding sections in this catalog for more detailed specifications.

[1] Eject-O-Matic™

[2] For 230 volt applications replace the last digit of Set Model Number from 'B' to 'E'. Example: **STB202E**.

Nominal Pipe Size (inch)	Wall Thick-ness (inch)	Sche-dule Pipe *	Pipe Bend Inside Radius (inch)	STB101 ø ½ - 2" One Shot	STB221 ø 1 - 2" One Shot ø 2¼ - 4" Sweep	STB202 ø 1¼ - 4" One Shot	One Shot Bending Shoe Model Number	Sweep Bending Shoe Model Number
½	0.109	40	2⅞	Yes	–	–	BZ12011	–
	0.147	80		Yes	–	–		
	0.187	160		WS *	–	–		
	0.294	DEH		WS *	–	–		
¾	0.113	40	4	Yes	–	–	BZ12021	–
	0.154	80		Yes	–	–		
	0.218	160		WS *	–	–		
	0.308	DEH		WS *	–	–		
1	0.133	40	5⅛	Yes	Yes	–	BZ12031	–
	0.179	80		Yes	Yes	–		
	0.250	160		WS *	WS *	–		
	0.358	DEH		–	WS *	–		
1¼	0.140	40	6⅞16	Yes	Yes	Yes	BZ12041	–
	0.191	80		Yes	Yes	Yes		
	0.250	160		WS *	WS *	Yes		
	0.342	DEH		–	WS *	WS *		
1½	0.145	40	7⅝16	Yes	Yes	Yes	BZ12051	–
	0.200	80		Yes	Yes	Yes		
	0.281	160		WS *	WS *	Yes		
	0.400	DEH		–	WS *	WS *		
2	0.154	40	8⅝16	–	Yes	Yes	BZ12061	–
	0.218	80		–	Yes	Yes		
	0.343	160		–	WS *	Yes		
2½	0.203	40	9½	–	Yes	Yes	BZ12341	BZ12382
	0.276	80		–	WS *	Yes		
	0.375	160		–	WS *	Yes		
3	0.216	40	11¼	–	Yes	Yes	BZ12351	BZ12383
	0.300	80		–	WS *	Yes		
3½	0.226	40	15½	–	Yes	Yes	BZ12391	BZ12384
	0.318	80		–	WS *	Yes		
4	0.237	40	17¾	–	Yes	Yes	BZ12392	BZ12385
	0.337	80		–	–	Yes		

STB Series



Nominal Pipe Size:
ø ½ - 4 inches

Maximum Bending:
90°

Maximum Operating Pressure:
10,000 psi

*** Schedule Pipe**

All bender sets are designed to bend mild steel pipe. For other material please consult Enerpac.

40 = Standard;
80 = Extra Heavy;
160 = Double Extra Heavy;
DEH = Double Extra Heavy (slightly thicker than 160);
WS = Can be bent using wider spacing for swivel shoes.

Frame Assembly	Pivot Pins (2x)	Pivot Shoes (2x)	Bending Shoes included (Shoes with [3] are Sweep, all other shoes are One Shot)								Bender Set Model Number
BZ12371	BZ12375	BZ12071	BZ12011	BZ12021	BZ12031	BZ12041	BZ12051	BZ12061	–	–	STB101X STB101N STB101H STB101A STB101E
BZ12372	BZ12376	BZ13401	BZ12031	BZ12041	BZ12051	BZ12061	BZ12382[3]	BZ12383[3]	BZ12384[3]	BZ12385[3]	STB221X STB221N STB221H
BZ12374	BZ12376	BZ13401		BZ12041	BZ12051	BZ12061	BZ12341	BZ12351	BZ12391	BZ12392	STB202X[1] STB202N[1] STB202E[1]

▼ RP70A, Hydraulic Rail Stressor



Lightweight & Modular Rail Stressing System

Hydraulic Rail Stressor

- Modular 70-ton stressor and holds the rail in neutral length during the welding process
- Easy to assemble in less than 2 minutes
- Certified lifting eyes mounted directly on the clamps for easy and safe lifting
- Designed with new aluminum lightweight cylinders including protection sleeves over the rods to extend durability.

ZC3-Series, Battery-Powered Stressing Pumps *(see page 195)*

- Zero emission hydraulic power pack
- Advanced brushless motor and Lithium-ion battery
- Steel manual operating valve with pressure hold function
- Safety key to safely leave the pump unattended during breaks
- Pressure release valve V182 included.

RP70A Rail Stressor

The Enerpac RP70A is a lightweight rail stressing kit for railway maintenance crews who assemble and install the rail puller directly on site.

The durable, easy-to-assemble components, stored and protected in a specially designed steel cage during transport, are up to 3 times lighter than similar tools.

The less physically demanding Enerpac RP70A is compatible with the cordless Enerpac ZC3-Series pump for a complete clean energy solution.

Certificate of Acceptance PA05-06958

Both RP70A Hydraulic Rail Stressor and ZC3 Stressing Pump are certified by Network Rail.



Durability

Double-acting aluminum cylinders are enclosed within steel sleeves protecting the cylinder rods from damage, particularly weld splatter and extends the life of the unit.



◀ *Complete system with RP70A Hydraulic Rail Stressor and ZC3 cordless stressing pump.*

Hydraulic Rail Stressor & Cordless Powerpack

RP70A Rail Stressor

The RP70A Hydraulic Rail Stressor is used to pull together heavy railroad tracks for stressing and thermite welding.

In the rail industry ergonomic managers specify that tools over 64 lbs should be modular and be able to be manually assembled/transported on site.

The RP70A can be used with the battery-powered pump. The stressor is interchangeable with other type of powerpacks.

The RP70A adjusts the gap between rail ends for rail stressing, rail welding, repairing rail failures and servicing insulators.

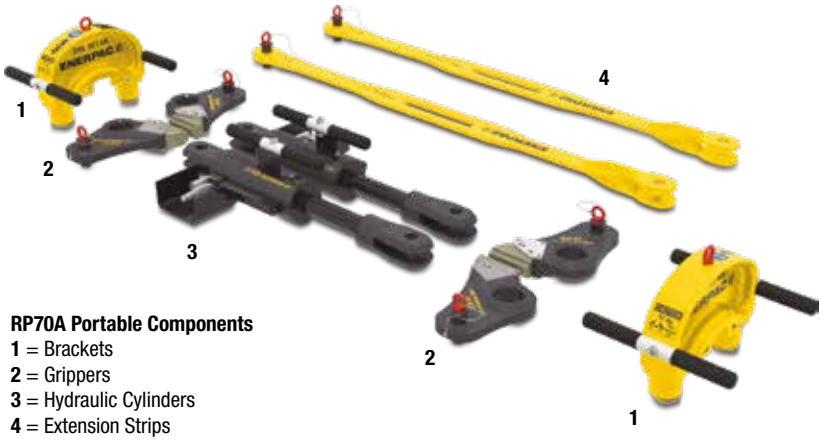
RP Series



Rated Pulling/Pushing Capacity:
70 / 45 tons

Stroke:
8.07 inches

Maximum Operating Pressure:
8,400 psi



RP70A Portable Components
1 = Brackets
2 = Grippers
3 = Hydraulic Cylinders
4 = Extension Strips



Hydraulic Hoses

Use Enerpac model number **H9210-RS** 10 feet hydraulic hoses to ensure the integrity of your Rail Stressor system.

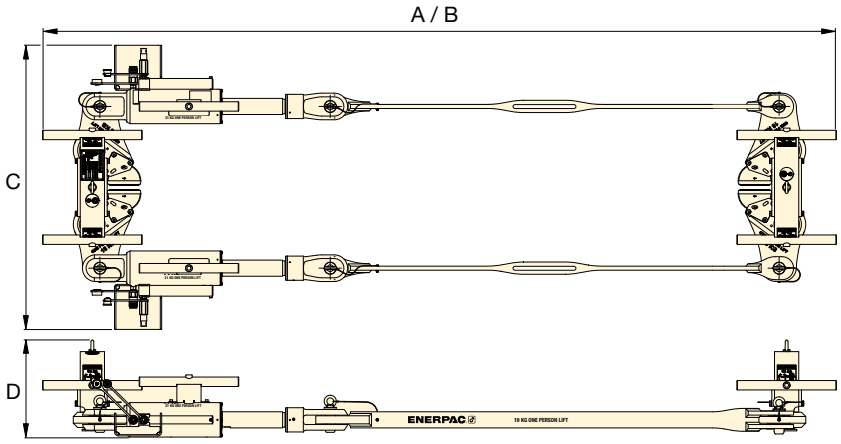


◀ *Modular 70-ton stressor and holds the rail in neutral length during the welding process.*



Battery-Powered Stressing Pumps

- **Cordless, zero emission pump**
- **82 V, 4 Ah Lithium-ion battery**
- **Roll cage and pressure gauge**
- **3-stage: 31.7 in³/min at 8,400 psi**
- **1.0 gallon useable oil capacity**
- **Pump weight 77 lbs (excluding battery)**
- **Reduced Noise Level 80 dBA max**
- **Advanced brushless 1.36 hp motor.**

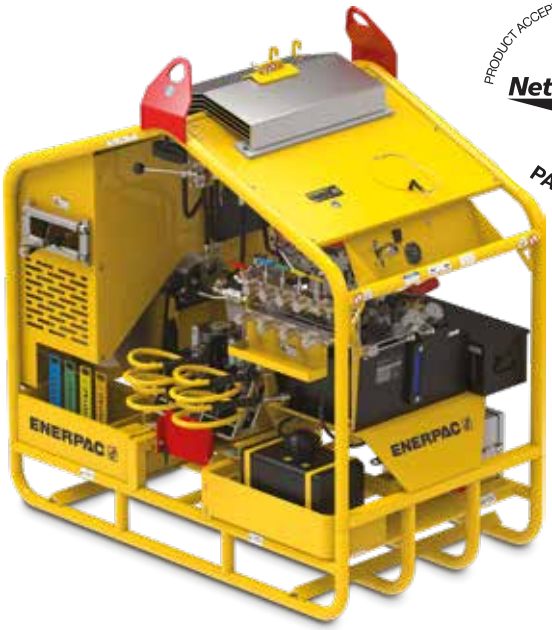


Capacity (tons)		Stroke	Model Number	Dimensions (in)				
Pull	Push	(in)		A	B	C	D	(lbs)
70	45	8.07	RP70A	116.1	124.2	41.6	14.2	452

A = Closed length. B = Extended length

Model Number	Battery Charger (Volt)	Maximum Pressure (psi)
ZC3404JE-RS	230	8,400
ZC3404JB-RS	115	8,400

▼ TL248, Hydraulic Track Lift System



Revolutionizes complex track lifts

- **Groundbreaking system transforms lifts of turnouts, diamond crossings, switches, retarders, and bridge ends.**
- **Features elements engineered to ramp up productivity, precision, and safety.**

Cuts time, shortens curfews, lowers costs

- **Multi-point lifting system dramatically compresses project times using less labor and shorter dig-out times than traditional methods.**
- **Rail industry feedback indicates you can expect a return on your investment after just 10 - 20 lifts.**

Powerful hydraulic technology delivers precision control

- **Unique system lifts, holds, and lowers loads up to 248 tons with supreme precision and control.**
- **Includes four framed cylinders with load distribution shoes and integrated handle working to 1/8 inch accuracy.**

Accessible and easy to transport – goes where cranes cannot

- **Lifts tracks from below, preventing crane truck and side boom problems.**
- **The complete unit fits easily into the bed of a pickup truck and lifts securely using dual fork pockets or lift hooks.**

Intuitive operator controls – highly visible and safe

- **Master multiple lift points like a pro from a central point using color-coded valves matched to hydraulic lines.**
- **Redundant systems including manual needle valves and pilot operated check valves help ensure safe operation and prevent cylinder drift.**
- **Self-powered system with electric start engine and pull start backup.**
- **Work safely with maximum visibility in low lighting, thanks to the integral LED lighting and the safety yellow paint finish.**

RAISING TRACKS. LIFTING PRODUCTIVITY.

Applications

Use the Enerpac TL248 to raise diamond crossings, switches, retarders, turnouts and bridge ends. This unique track lift system allows work to be completed more efficiently and with greater precision than traditional methods - even in limited access areas.

Additional Safety Features

TL248 includes also:

- Reservoir protection plate to prevent damage or leakage caused by forklifts
- Integrated hand pump as back-up
- Crank for emergency operation of hose reel if hydraulics fail.

▼ *Well suited for environments with limited work space or overhead clearance restrictions, the TL248 eliminates crane truck and side boom crane problems.*



▼ *The TL248 Track Lift System includes four cylinders with load distribution shoes and integrated handle, each rated for 62 tons, offering a total lifting capacity of 248 tons.*



Hydraulic Track Lift System

Hydraulic Track Lift System

The TL248 is a portable and self-powered compact system designed for easy transport to remote locations.

This innovative and hydraulic lifting device is specifically engineered to raise track from below, allowing work to be completed more efficiently and with greater precision and safety than traditional methods.

When the track is placed back down on the ballast, the TL248 System allows production crews or maintenance-of-way (MoW) equipment such as tamping machines to traverse the rail – ultimately resulting in shorter curfews and time and money saved.

The system was developed in conjunction with the continuous feedback from a Class I railroad, meeting Class I specs for operations, safety, and support materials.

TL Series



Cylinder Capacity:
4 x 62 tons

Cylinder Stroke:
5.91 inches

Reservoir Oil Capacity:
10.3 gallons

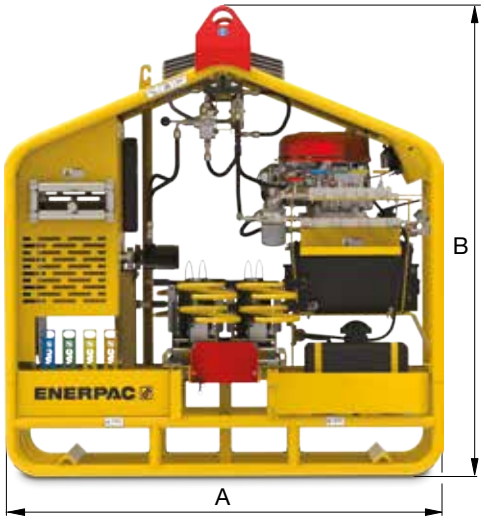
Gasoline Engine Size:
10.5 hp

Maximum Operating Pressure:
10,000 psi



H700-Series Hydraulic Hoses Included

The TL248 includes 9 hydraulic hoses of 50 feet length.





▼ *The TL248 Track Lift System includes four Ballast Shields to protect the lifting cylinders.*





▼ DIMENSIONS

Model Number	Dimensions (in)			Weight
	A	B	C	(lbs)
TL248	63.4	68.1	37.6	1660

▼ PUMP SPECIFICATIONS

Briggs & Stratton Gasoline Motor Size (hp)	Useable Oil Capacity (gal)	Maximum Hydraulic Pressure (psi)	Output Flow Rate (in^3/min)	Useable Gasoline Capacity (gal)
10.5	10.3	10,000	200	5.0

▼ CYLINDERS & HOUSING SPECIFICATIONS

Cylinder Capacity at max. 10,000 psi (tons)	Cylinder Stroke (in)	Cylinder Collapsed Height (in)	Cylinder Extended Height (in)	Housing Length (in)	Housing Width (in)
62	5.91	12.28	18.19	14.53	7.75

RP120BP, Hydraulic Rail Puller

ENERPAC

▼ RP120BP, Hydraulic Rail Puller



RP Series

Rated Pulling Capacity:
120 tons

Stroke:
6.50 inches

Maximum Operating Pressure:
2,000 psi

Hydraulic Power Source

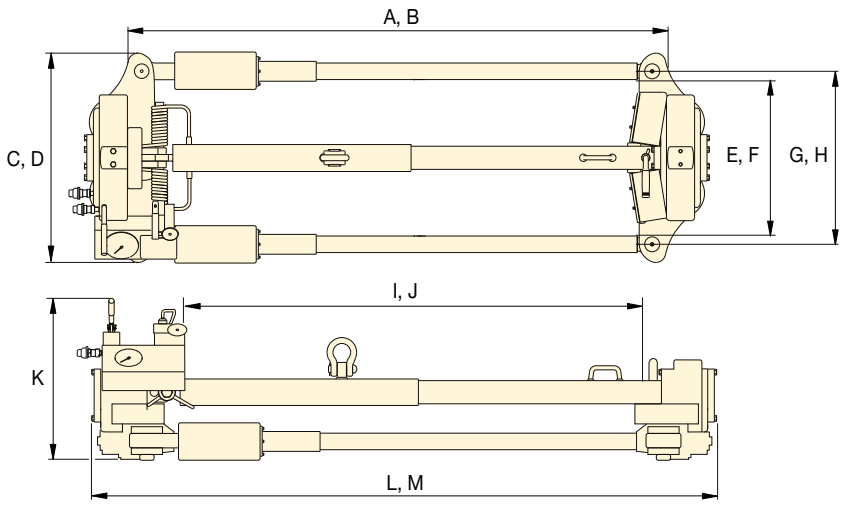
Unit runs off a HPU with pressure of 2,000 psi and a flow of 5 GPM minimum.

- **Versatile design allows for quick and easy setup for stressing rail**
- **Compact, alloy steel design requires no disassembly for transport or storage**
- **Swing Arm clamps the bracket and eliminates the need for separate jaws and wedges**
- **Center beam swings up and out of the way**
- **Operator controls are positioned safely away from work area.**



Rail Puller Brake Kit 18904

Minimizes movement of the rail puller in the event of shock load due to rail failure.
Optional accessory for the RP120BP (a partial Kit is shown).



A = Open
B = Clamped
C = Closed
D = Open
E = Clamped
F = Open
G = Clamped
H = Open
I = Clamped maximum
J = Clamped minimum
K = Height
L = Clamp maximum
M = Open minimum

Capacity (tons)	Stroke (in)	Model Number	Dimensions (in)													Weight (lbs)
			A	B	C	D	E	F	G	H	I	J	K	L	M	
120	6.50	**RP120BP**	74.5	83.5	33.0	35.0	24.0	26.0	26.5	28.5	71.0	64.6	23.0	98.0	89.0	1160

REVOLUTIONARY RAIL MAINTENANCE



PRODUCT ACCEPTANCE CERTIFICATE NUMBER
NetworkRail
PA05/06958

HYDRAULIC RAIL STRESSING KIT

PRECISION AND ACCURACY REDEFINED

Discover the new standard in railway maintenance with the RP70A Hydraulic Rail Stressor. Its innovative modular design ensures **rapid assembly and deployment**, enabling your crew to be operational in minutes. Engineered with high-strength steel and aluminum, the RP70A is **up to three times lighter than competing tools**, allowing for easy transport and handling by one or two persons.



Optional ZC3-Series Cordless Pump (sold separately)



ULTRA-RELIABLE & PRECISE TOOLS FOR THE RAIL INDUSTRY

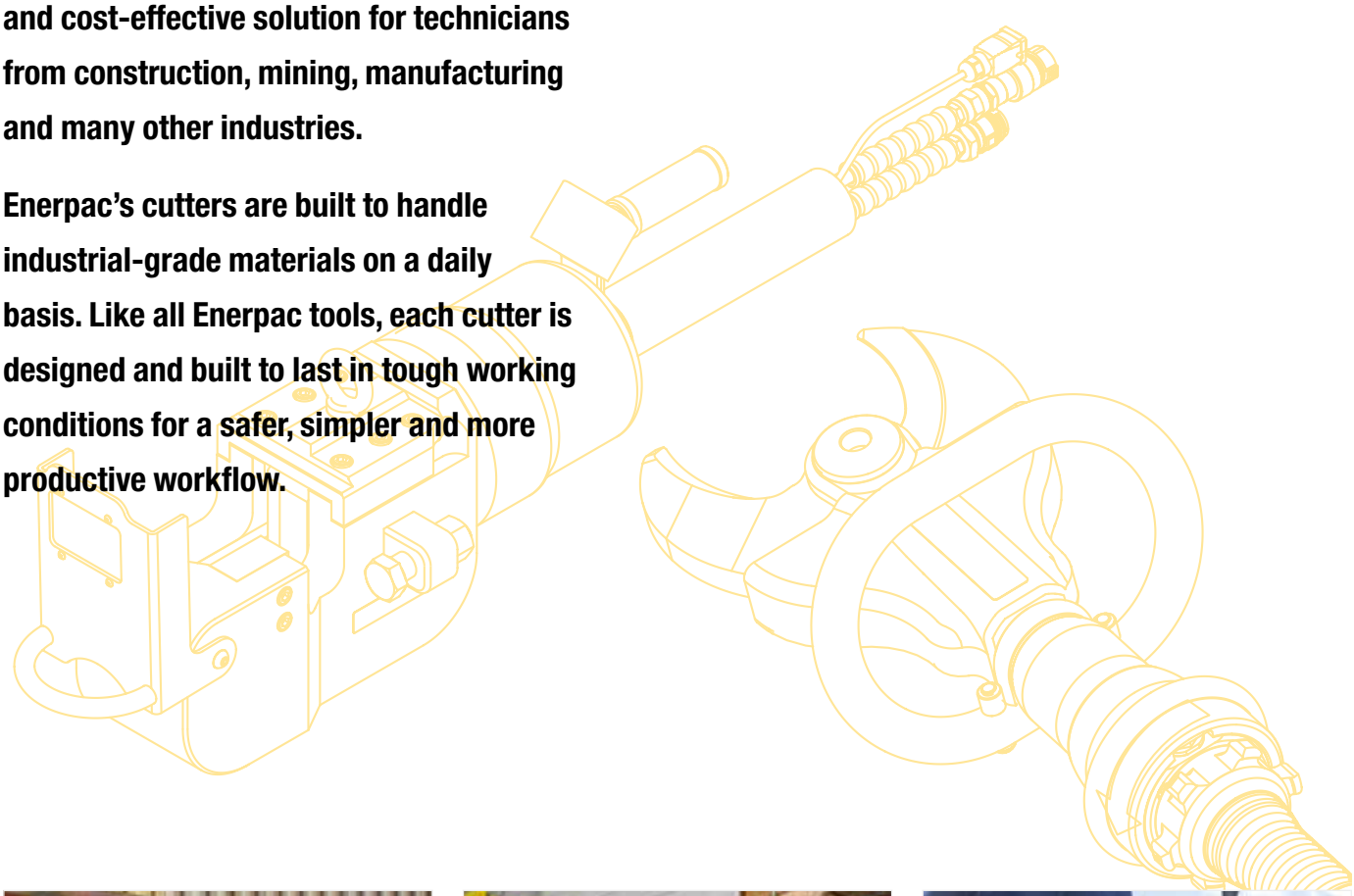
World-Class Cutters



When you need to make cuts through heavy-duty bar, chain, cable and similar materials, look no further than Enerpac's broad range of cutters.

An extensive line-up of hydraulic, electric and manual cutters provides a quick, safe and cost-effective solution for technicians from construction, mining, manufacturing and many other industries.

Enerpac's cutters are built to handle industrial-grade materials on a daily basis. Like all Enerpac tools, each cutter is designed and built to last in tough working conditions for a safer, simpler and more productive workflow.









Overview Enerpac Cutters

Cutter Type		Maximum Tool Capacity *	Series		Power Source	Page
Bar Cutters		**2.04 inches** (max. material cutting diameter)	**EBH EBE EBC**		Hydraulic, Electric & Cordless	**202** ▶
Decommissioning Cutters		**6.69 inches** (max. blade aperture)	**EDCH**		Hydraulic	**206** ▶
Flat Bar Cutters		**2.75 x 0.59 inches** (max. material cutting Height x Width)	**EFBE**		Electric	**207** ▶
Chain Cutters		**1.25 inches** (max. link cutting diameter)	**ECCE**		Electric	**208** ▶
Wire Rope and Cable Cutters		**7.09 inches** (max. material cutting diameter)	**EWCH EWCE**		Hydraulic & Electric	**210** ▶
Cutter / Spreader Combination Tools		**11.81 inches** (max. blade aperture)	**ECSE**		Electric	**213** ▶
Hydraulic Cutterheads		**4.00 inches** (max. material cutting diameter)	**WHC WHR STC**		Hydraulic	**214** ▶
Self-Contained Hydraulic Cutters		**3.38 inches** (max. material cutting diameter)	**WMC**		Manual	**215** ▶
ZE-Series Pumps and Accessories		**1.5 - 7.5 hp**	**EBH EWCH**		Electric	**216** ▶
ZC, ZE-Series Pumps and Accessories		**1.4 - 1.5 - 7.5 hp**	**EBH EDCH EWCH**		Cordless & Electric	**217** ▶

* Actual cutting capacities may vary depending on material being cut.

▼ Shown from left to right: **EBC20B, EBH30 and EBE22B**



Your Fast, Safe and Simple Solution for Cutting Metal Bar

Internal Mechanics

EBH-Series: Cylinder is driven by an external Enerpac pump.

EBC and EBE-Series: Cylinder is driven by a radial pump powered by an electric motor.

Typical Bar Cutting Applications

- Commercial and residential construction
- Concrete and masonry
- Metal fabrication
- Industrial manufacturing

Productivity

- **A broad range of hydraulic and electric tools quickly and easily cut through heavy-duty bar**
- **Highly durable, long-lasting blades outlast angle grinder or saw blades.**

Safety

- **Controlled cutting process enhances user safety compared with use of cut-off blades**
- **Minimal spark risk compared to torching, grinding and sawing methods**
- **Cutters produce minimal vibration, helping prevent HAVS (Hand Arm Vibration Syndrome).**

▼ *Enerpac's bar cutters are built to handle tough cutting applications.*





EBH-Series, Hydraulic Bar Cutters

EBH-Series Hydraulic Bar Cutters

EBH-Series Hydraulic Bar Cutters are driven by a specialized external hydraulic pump for optimal power and a higher duty cycle compared with other cutter types.

These cutters are ideal for use in production or manufacturing facilities with demanding, high-volume cutting applications.

EBH Series



Maximum Material Hardness:
HRc 43

Maximum Material Diameter:
1.18 - 1.38 - 2.04 inches

Maximum Operating Pressure:
10,000 psi

① Highly durable blades maintain effectiveness throughout rigorous use.

② Safety guard helps protect hands from injury.

③ Heavy-duty cutting head provides a longer operational life.

④ Lifting handle enables easier positioning and transport.

⑤ Double-acting cylinder with advance and retract buttons improves control and reduces jamming

⑥ External hydraulic pump helps keep the tool cool, improving operational time (pump and hose sold separately).





Electric Pumps and Accessories

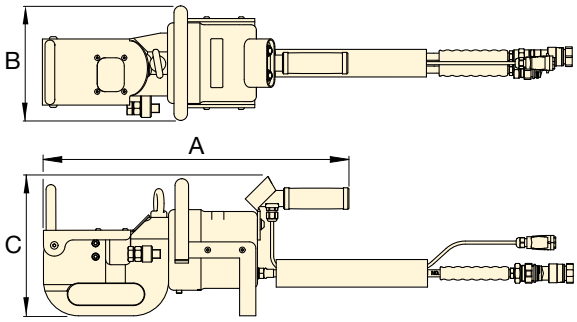
The EBH-Series Hydraulic Cutters are designed to work with specialized ZE4 and ZE6-Series pumps. Pump models vary by voltage type.
Pump and hoses are sold separately. Both are required for the system to function.

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Optional Gauge Kit GKHC

Optional gauge and accessories can be used to monitor pressure in the hydraulic system. Enerpac recommends **GKHC Gauge Kit** for use with Enerpac hydraulic cutters.



Drawings are for guidance purposes only, exact tool configurations vary by model.

Maximum Material Diameter * (in)	Model Number	Maximum Material Tensile Strength * (psi)	Maximum Material Hardness * (HRc)	Maximum Cutting Force (tons)	Maximum Hydraulic Operating Pressure (psi)	Dimensions (in) A	B	C	(lbs)	Replacement Blade Kit Model Number
1.18	**EBH30**	87,000	43	50	10,000	18.9	7.2	8.7	46	**EBH3001K**
1.38	**EBH35**	89,900	43	68	10,000	22.3	8.4	10.2	106	**EBH3501K**
2.04	**EBH52**	72,500	43	121	10,000	30.1	10.4	12.2	299	**EBH5201K**

* Maximum material properties indicated refer to the material to be cut.

EBE-Series, Electric Bar Cutters

The versatile EBE-Series Electric Bar Cutters quickly cut through heavy duty bar up to 1.02 inch in diameter without the need for an external hydraulic pump.

Their compact size and low weight enable them to be easily transported and used wherever an external power source is available.

EBE Series



Maximum Material Hardness:
HRc 43

Maximum Material Diameter:
0.87 - 1.02 inches

Voltage *:
120 and 230 Volt

* ETL certification applies to 120 Volt tools only.

① Highly durable blades maintain effectiveness throughout rigorous use.

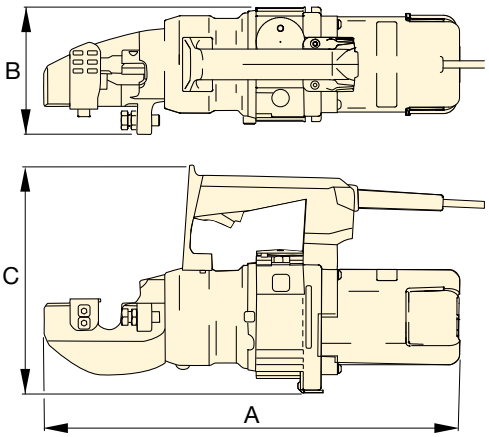
② Safety guard helps protect hands from injury.

③ Heavy-duty cutting head provides a longer operational life.

④ Lifting handle enables easy positioning and transport.

⑤ Piston-release mechanism allows blade to be reset, reducing jamming and providing a controlled cutting process.





Voltage: (Model Number ending with suffix)

B = 120V, 60 Hz (with American-style NEMA 1-15 plug)

E = 230V, 50 Hz (with European-style SCHUKO plug)

Maximum Material Diameter [1]	Power Specifications				Model Number	Maximum Material Tensile Strength [1]	Maximum Material Hardness [1]	Maximum Cutting Force	Dimensions (in)			Cord Length		Replacement Blade Kit Model Number
(in)	Volt	Hz	Amp	kW		(psi)	(HRc)	(tons)	A	B	C	(ft)	(lbs)	
0.87	120	60	11	1.3	**EBE22B**	94,275	43	25.1	18.1	5.5	9.8	6	29	**EBE2201K**
0.87	230	50	6.8	1.4	**EBE22E**	94,275	43	25.1	18.1	5.5	9.8	10	29	**EBE2201K**
1.02	120	60	11	1.3	**EBE26B**	94,275	43	37.0	18.4	5.5	10.2	6	35	**EBE2601K**
1.02	230	50	6.8	1.4	**EBE26E**	94,275	43	37.0	18.4	5.5	10.2	10	35	**EBE2601K**

[1] Maximum material properties indicated refer to the material to be cut.

EBC-Series, Cordless Bar Cutters

Cordless Bar Cutters

The highly portable EBC-Series Cordless Bar Cutters quickly and easily slice through up to number 6 rebar, or similar metal bar up to 0.79 inch in diameter.

A powerful 18V Lithium-ion battery provides mobility and long lasting performance, making these tools the perfect go-to solution for the jobsite, including remote locations, or anywhere an external power source is not available.

EBC Series



Maximum Material Hardness:
HRc 43

Maximum Material Diameter:
0.79 inches

Battery:
12 and 18 Volt

* ETL certification applies to 120 Volt tools only.

① Highly durable blades maintain effectiveness throughout rigorous use.

② Safety guard helps protect hands from injury.

③ Highly durable cutting head can be rotated 360 degrees to aid in the positioning of the blades on the application.

④ Lifting handle enables easy positioning and transport.

⑤ Piston-release mechanism allows blade to be reset, providing a controlled cutting process and reducing jamming.

⑥ Powerful 18V battery provides high performance and complete mobility.



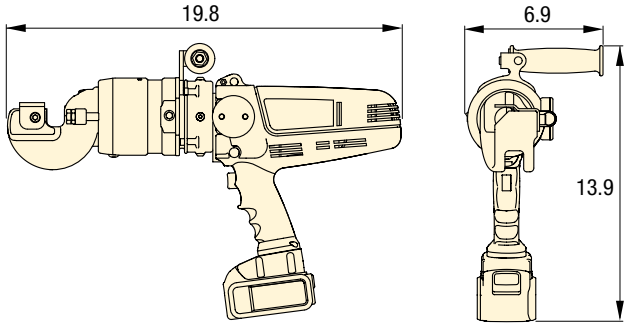
Batteries and Chargers

EBC-Series Cutters come standard with two DeWALT® 18V-5Ah Lithium-ion batteries and one DeWALT® 12V or 18V charger. Additional batteries and chargers are sold separately.

EBC-Series Cutters work with DeWALT® 18V XR batteries. DeWALT® is a registered trademark of DeWALT Industrial Tool Co., which has not manufactured, licensed, approved, or endorsed this cutter product.

For Cutter Model Number	DeWALT® Lithium-ion Battery	Li-ion Battery Charger 12V and 18V
EBC20B	B205	BC1220B
EBC20E	B185	BC1220E

Dimensions shown in inches.



Voltage: (Model Number ending with suffix)

B = 120V, 60 Hz (with American-style NEMA 1-15 plug)

E = 230V, 50 Hz (with European-style SCHUKO plug)

Maximum Material Diameter [1] (in)	Power Specifications: Battery Input Voltage (V)	Amp	kW	Model Number [2]	Maximum Material Tensile Strength [1] (psi)	Maximum Material Hardness [1] (HRc)	Maximum Cutting Force (tons)	(without battery) (lbs)	Replacement Blade Kit Model Number
0.79	18 - 20	46	0,83	**EBC20B**	94,275	43	21.2	19.2	**EBC2001K**
0.79	18 - 20	46	0,83	**EBC20E**	94,275	43	21.2	19.2	**EBC2001K**

[1] Maximum material properties indicated refer to the material to be cut.

[2] To order an EBC-Series Cutter without batteries or a charger, remove the "B" or "E" from the Model Number, e.g. "EBC20".

▼ EDCH130, Decommissioning Cutter



EDCH Series

Maximum Material Hardness:
HRc 41

Maximum Blade Aperture:
5.12 - 5.70 - 6.69 inches

Maximum Operating Pressure:
10,000 psi



Electric Pumps and Accessories

The EDCH-Series Hydraulic Cutters are designed to work with specialized ZC3, ZE4 and ZE6-Series electric pumps. Pump models vary by voltage type. Pump and hose are all sold separately, and all are required for the system to function.

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*** IMPORTANT**

Do not use to cut wire rope. Use instead the EWCH-Series wire and rope cutter.

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Optional Gauge Kit GKHC

Optional gauge and accessories can be used to monitor pressure in the hydraulic system. Enerpac recommends **GKHC Gauge Kit** for use with Enerpac hydraulic cutters.

Productivity

- **Powerful jaws and an exceptionally large blade aperture enable use on a large variety of applications including metal tubes, communication cables, profiles and similar materials ***
- **Multiple pump options provide power, speed and mobility for all your applications.**

Safety

- **Minimal spark risk compared with torching, grinding and sawing methods**
- **Cutters produce minimal vibration, helping prevent HAVS (Hand Arm Vibration Syndrome).**

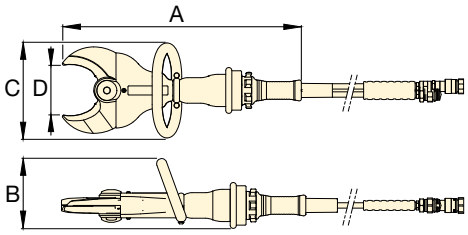


① Durable blades maintain efficiency throughout rigorous use

② Double-acting cylinder improves control and reduces jamming

③ Control knob immediately stops the tool when released, improving operator safety

④ External hydraulic pump helps keep tool cooler and working longer (pump an hose sold separately).



Maximum Blade Aperture * (in)	Model Number	Maximum Material Tensile Strength * (psi)	Maximum Material Hardness * (HRc)	Maximum Operating Pressure (psi)	Dimensions (in) A	B	C	D	(lbs)	Replacement Blade Kit Model Number
5.12	**EDCH130**	94,275	41	10,000	23.2	6.7	9.2	5.1	25.4	**EDCH13001K**
5.70	**EDCH145**	94,275	41	10,000	27.0	8.1	9.7	5.7	37.3	**EDCH14501K**
6.69	**EDCH170**	94,275	41	10,000	28.9	6.8	9.8	6.7	53.4	**EDCH17001K**

* Maximum material properties indicated refer to the material to be cut.
Do not use to cut wire rope. Use instead the EWCH-Series wire and rope cutter.

Electric Flat Bar Cutters

EFBE-Series Electric Flat Bar Cutters

EFBE-Series Electric Flat Bar Cutters enhance workplace safety by replacing unsafe cutting methods with a precise, controlled cutting solution. Unlike standard bar cutters, the deep cutting head design accommodates metal bar up to 70 mm (2¾ inch) high and over 15 mm (0.59 inch) thick.

A piston release mechanism allows the blade to be stopped and reset at any time, providing the operator with a high degree of cutting precision and control. EFBE-Series Cutters are perfect for use in industrial manufacturing facilities as well as steel and metal fabrication shops.

EFBE Series



Maximum Material Hardness:
HRc 33

Maximum Material Height x Width:
1.96 x 0.67 / 2.75 x 0.59 inch

Voltage *:
120 and 230 Volt

* ETL certification applies to 120 Volt tools only.

① Highly durable blades cut through flat bar, maintaining effectiveness throughout rigorous use.

② Heavy-duty cutting head provides a longer operational life.

③ Robust handle enables easy positioning and transport.

④ Piston-release mechanism allows blade to be retracted, providing a controlled cutting process and reducing jamming.

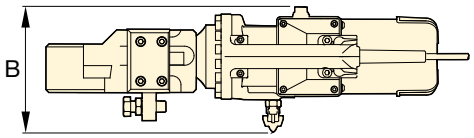


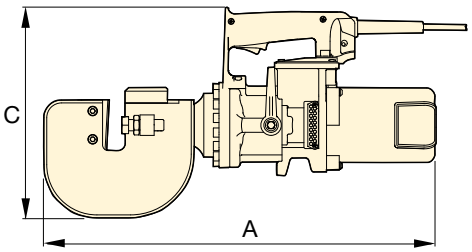


Replacement Blade Kits

To order replacement parts use one of the model numbers shown below.

For Cutter Model Number	Blade Kit Model Number
EFBE5017B	EFBE501701K
EFBE5017E	
EFBE7015B	EFBE701501K
EFBE7015E	





Voltage: (Model Number ending with suffix)

B = 120V, 60 Hz (with American-style NEMA 1-15 plug)

E = 230V, 50 Hz (with European-style SCHUKO plug)

Maximum Material Dimensions [1] (in)		Power Specifications				Model Number	Maximum Material Tensile Strength [1] (psi)	Maximum Material Hardness [1] (HRc)	Maximum Cutting Force (tons)	Dimensions (in)			Cord Length (ft)	(lbs)
Height	Width	Volt	Hz	Amp	kW					A	B	C		
1.96	0.67	120	60	11.0	1.3	**EFBE5017B**	65,267	33	29.8	19.0	6.9	10.7	6	46
1.96	0.67	230	50	6.8	1.4	**EFBE5017E**	65,267	33	29.8	19.0	6.9	10.7	10	46
2.75	0.59	120	60	11.0	1.3	**EFBE7015B**	65,267	33	29.8	21.9	6.9	11.7	6	66
2.75	0.59	230	50	6.8	1.4	**EFBE7015E**	65,267	33	29.8	21.9	6.9	11.7	10	66

[1] Maximum material properties indicated refer to the material to be cut.

▼ ECCE32B Electric Chain Cutter



Your Simple Solution for Cutting High-Strength Industrial Chain

Internal Mechanics

ECCE-Series: Cylinder is driven by a radial pump powered by an electric motor.

Typical Chain Cutting Applications

- Chain manufacturing
- Mining
- Rigging / material handling for transport
- Oil and gas
- Marine

Productivity

- **Quickly cut through heavy-duty chain links with minimal effort**
- **Highly durable blades outlast angle grinder or saw blades.**

Safety

- **Controlled cutting process behind a protective shield enhances safety**
- **Precisely cut only selected link, helping prevent damage to adjacent links and weakening of chain**
- **Minimal spark risk compared to torching, grinding and sawing methods**
- **Cutters produce minimal vibration, helping prevent HAVS (Hand Arm Vibration Syndrome).**



◀ *Cut through chain links with ease using Enerpac's chain cutters.*

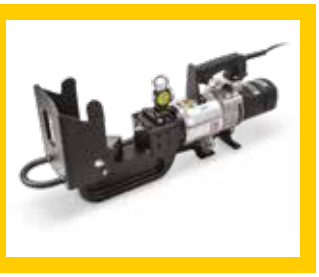
ECCE-Series, Electric Chain Cutters

ECCE-Series Electric Chain Cutters

ECCE-Series Electric Chain Cutters are ideal for applications where safety is paramount. Unlike other cutting methods, Enerpac's chain cutters precisely cut selected chain links behind an enclosed, transparent safety guard.

This not only protects the operator's hands, it also helps prevent damage to adjacent links, which often results from using alternative cutting methods like torches or cut-off tools.

ECCE Series



Maximum Material Hardness:
HRc 46

Maximum Material Diameter:
1.00 - 1.25 inches

Maximum Grade of Chain:
100

Voltage *:
120 and 230 V

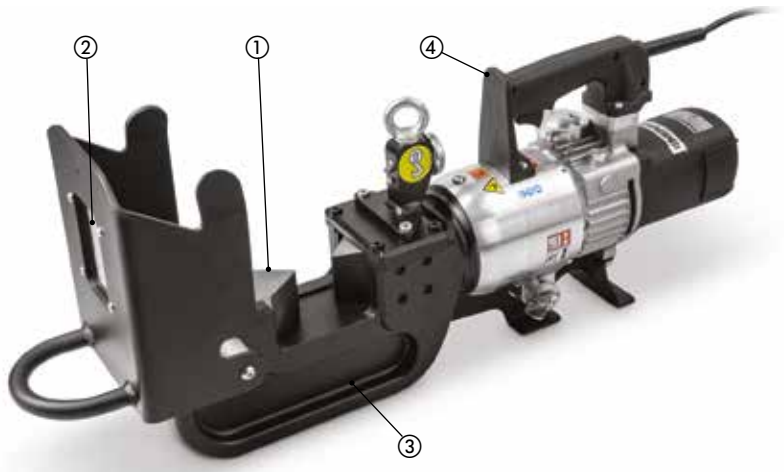
* ETL certification applies to 120 Volt tools only.

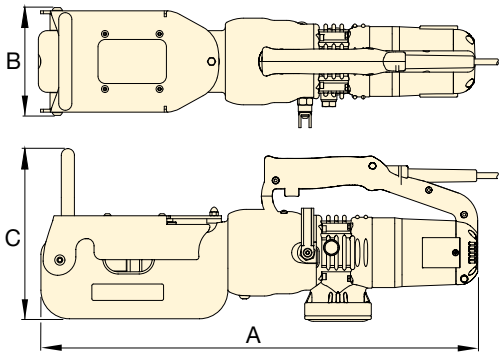
① Highly durable blades maintain effectiveness throughout rigorous use.

② Transparent safety guard protects hands and allows continuous monitoring for better management of cutting process.

③ Heavy-duty cutting head provides a longer operational life.

④ Lifting handle and eyebolt enable easy positioning and transport.





Voltage: (Model Number ending with suffix)

B = 120V, 60 Hz (with American-style NEMA 1-15 plug)

E = 230V, 50 Hz (with European-style SCHUKO plug)

Grade [1] and Maximum Material Diameter [2] (in)			Power Specifications				Model Number	Maximum Material Hardness [1]	Maximum Cutting Force	Dimensions (in)			Cord Length		Replacement Blade Kit Model Number
Grade 70	Grade 80	Grade 100	Volt	Hz	Amp	kW		(HRc)	(tons)	A	B	C	(ft)	(lbs)	
1.00	1.00	0.50	120	60	10.0	1.2	**ECCE26B**	46	35.1	23.6	6.0	9.3	6	55	**ECCE2601K**
1.00	1.00	0.50	230	50	5.3	1.1	**ECCE26E**	46	35.1	23.6	6.0	9.3	10	55	**ECCE2601K**
1.25	1.00	0.75	120	60	11.0	1.3	**ECCE32B**	46	52.9	27.5	7.5	12.6	6	106	**ECCE3201K**
1.25	1.00	0.75	230	50	6.8	1.4	**ECCE32E**	46	52.9	27.5	7.5	12.6	10	106	**ECCE3201K**

[1] Cutting larger chains or those of a grade higher than those recommended will result in increased wear, and may damage the tool.

[2] All links over 1/2" (12,7 mm) must be cut in two passes, with each pass cutting one side of the link.

▼ Shown from left to right: **EWCH90 and EWCE55B**



The Quick and Clean Way to Cut Cable and Wire Rope

Internal Mechanics

EWCH-Series: Cylinder is driven by an external Enerpac hydraulic pump.

EWCE-Series: Cylinder is driven by a radial pump powered by an electric motor.

Typical Wire and Cable Cutting Applications

- Telecommunications
- Electrical installation and maintenance
- Power generation and transmission
- Shipbuilding

Productivity

- **A broad range of hydraulic and electric tools quickly and easily cut through cable and wire rope.**

Safety

- **Controlled cutting process enhances operator safety**
- **Minimal spark risk compared with torching, grinding and sawing methods**
- **Cutters produce minimal vibration, helping prevent HAVS (Hand Arm Vibration Syndrome).**

▼ *Guillotine-style blades make quick work of electrical cables and rope.*



EWCH-Series, Hydraulic Wire and Cable Cutters

EWCH-Series Hydraulic Wire and Cable Cutters

EWCH-Series Hydraulic Wire and Cable Cutters are ideal for use in production facilities where demanding, high volume cutting applications are often encountered.

Each tool is driven by a specialized external hydraulic pump, which provides greater cutting force and allows for higher duty cycles compared with other cutter types.

EWCH Series

CE



Maximum Material Hardness:
HRc 43

Maximum Material Diameter:
3.54 - 5.51 - 7.09 inches

Maximum Operating Pressure:
10,000 psi

① Guillotine-style blades maintain effectiveness throughout rigorous use.

② Cutting head can be opened and closed to help position material to be cut.

③ Eyebolt facilitates easy lifting.

④ Double-acting cylinder with advance and retract buttons improves control and reduces jamming.

⑤ External hydraulic pump helps keep tool cooler and working longer (pump and hose are sold separately).





Electric Pumps and Accessories

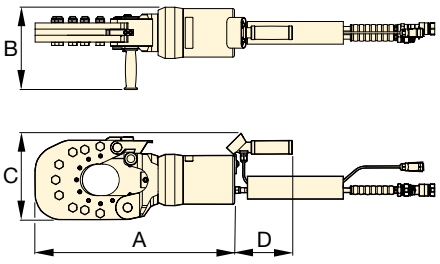
The EWCH-Series Hydraulic Cutters are designed to work with specialized ZE6-Series electric pumps. Pump models vary by voltage type. Pump and hoses are sold separately. Both are required for the system to function.

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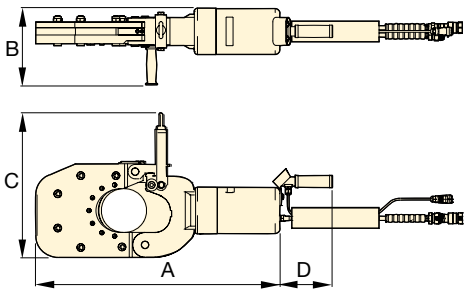


Optional Gauge Kit GKHC

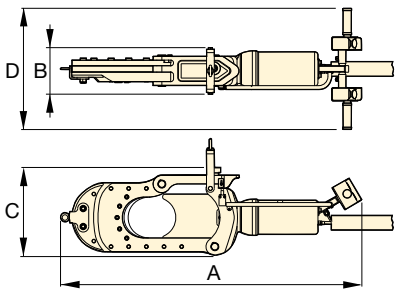
Optional gauge and accessories can be used to monitor pressure in the hydraulic system. Enerpac recommends **GKHC Gauge Kit** for use with Enerpac hydraulic cutters.



EWCH90



EWCH140



EWCH180

Maximum Material Diameter * (in)	Model Number	Maximum Material Tensile Strength * (psi)	Maximum Material Hardness * (HRc)	Maximum Cutting Force (tons)	Maximum Hydraulic Operating Pressure (psi)	Dimensions (in) A	B	C	D	(lbs)	Replacement Blade Kit Model Number
3.54	**EWCH90**	94,275	43	61.8	10,000	22.9	11.1	9.9	6.7	119	**EWCH9001K**
5.51	**EWCH140**	94,275	43	61.8	10,000	30.8	9.7	12.2	6.7	198	**EWCH14001K**
7.09	**EWCH180**	94,275	43	89.0	10,000	53.7	8.3	15.8	21.7	330	**EWCH18001K**

* Maximum material properties indicated refer to the material to be cut.

EWCE-Series, Electric Wire and Cable Cutters

ENERPAC

EWCE-Series Electric Wire and Cable Cutters

EWCE-Series Electric Wire and Cable Cutters combine the efficiency and safety of their hydraulic counterparts with the greater portability of electric tools.

Their lighter weight allows for easier carrying and positioning. Available in 120V and 230V versions.

EWCE Series



Maximum Material Hardness:
HRc 48

Maximum Material Diameter:
1.65 - 2.17 inches

Voltage *:
120 and 230 V

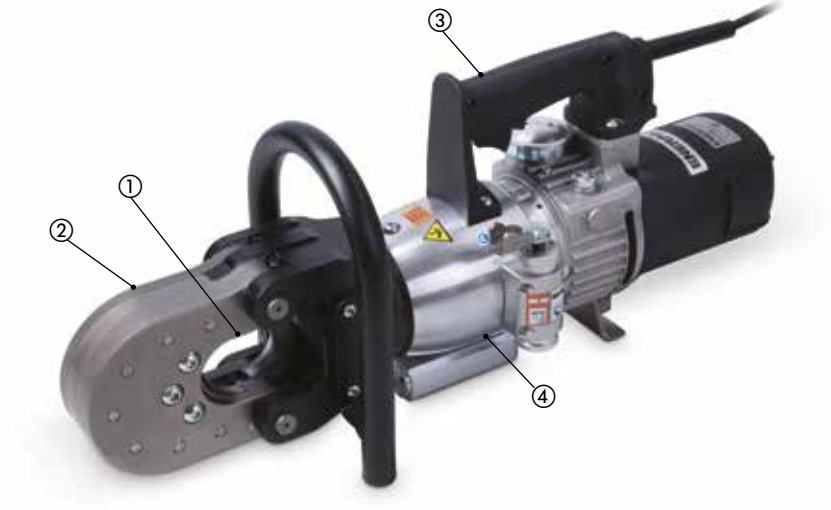
* ETL certification applies to 120 Volt tools only.

① Durable, guillotine-style style blades maintain effectiveness throughout rigorous use.

② Cutting head opens wide for easy positioning of wire or cable.

③ Robust handles enable easy positioning and transport.

④ Double-acting cylinder with directional control improves handling and reduces jamming.



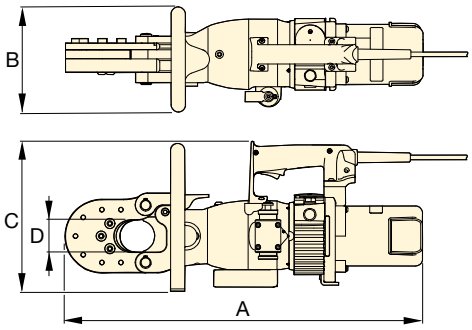


◀ *Cut through wire rope and cables with ease.*

Voltage: (Model Number ending with suffix)

B = 120V, 60 Hz (with American-style NEMA 1-15 plug)

E = 230V, 50 Hz (with European-style SCHUKO plug)



Maximum Material Diameter * (in)		Power Specifications				Model Number	Maximum Material Hardness *	Maximum Cutting Force	Dimensions (in)				Cord Length		Replacement Blade Kit Model Number
Electric Cable	Wire Rope	Volt	Hz	Amp	kW		(HRc)	(tons)	A	B	C	D	(ft)	(lbs)	
2.17	1.65	120	60	11.0	1.3	**EWCE55B**	48	38.2	24.7	7.2	10.4	2.2	6	55	**EWCE5501K**
2.17	1.65	230	50	6.8	1.4	**EWCE55E**	48	38.2	24.7	7.2	10.4	2.2	10	55	**EWCE5501K**

* Maximum material properties indicated refer to the material to be cut.

ECS-Series, Cutter / Spreader Combination Tools

▼ ECSE300B



ECSE Series

Maximum Material Hardness:
HRc 41

Maximum Blade Aperture:
11.81 inches

Voltage *:
120 and 230 V

* ETL certification applies to 120 Volt tools only.

Internal Mechanics

ECSE-Series: Cylinder is driven by a radial pump powered by an electric motor.

Typical Chain Cutting Applications

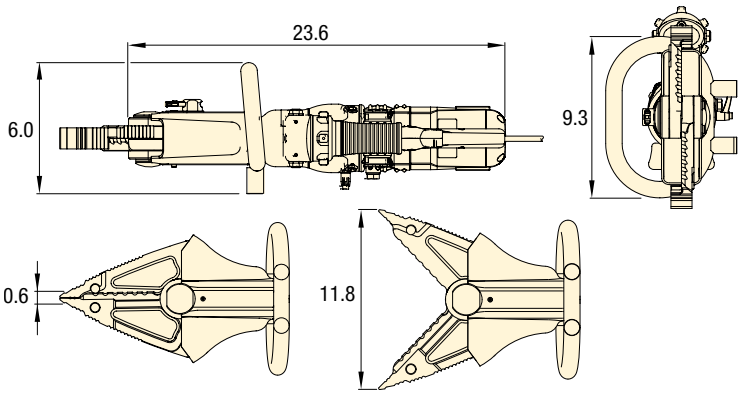
- Industrial manufacturing
- Recycling
- Demolition

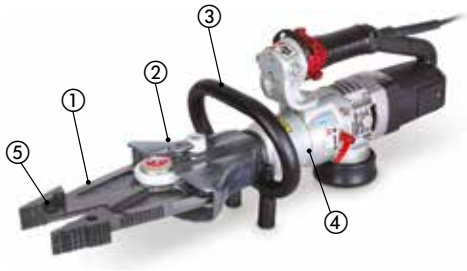
Productivity

- **Blades easily cut through metal profiles, pipes, rods and other obstructions**
- **Wedges on tips of blades provide powerful spreading force.**

Safety

- **Controlled cutting process creates minimal spark risk compared with torching, grinding and sawing methods.**





① Highly durable blades grip and cut through metal obstructions with ease

② Cutting head can be rotated 180 degrees in each direction for easier access to the application

③ Robust handle enables easy positioning and transport

④ Double-acting cylinder improves control and reduces jamming

⑤ Wedges provide powerful spreading force

Voltage: (Model Number ending with suffix)
B = 120V, 60 Hz (with American-style NEMA 1-15 plug)
E = 230V, 50 Hz (with European-style SCHUKO plug)

Maximum Blade Aperture (in)	Power Specifications Volt	Hz	Amp	kW	Model Number	Maximum Material Tensile Strength [1] (psi)	Maximum Material Hardness [1] (HRc)	Maximum Spreading Force [2] (tons)	Cord Length (ft)	(lbs)	Replacement Jaws Kit Model Number
11.81	120	60	10.0	1.2	**ECSE300B**	94,275	41	5.17	6	33	**ECSE30001K**
11.81	230	50	5.3	1.1	**ECSE300E**	94,275	41	5.17	10	33	**ECSE30001K**

[1] Maximum material properties indicated refer to the material to be cut.
[2] 0.98 inches from jaw tips with jaws closed.

▼ Shown from left to right: **WHC4000, WHC750**

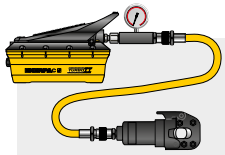


WHC, WHR, STC Series

Capacity:
3 - 20 tons

Cutting Capacity:
ø 0.50 - 4.0 inches

Maximum Operating Pressure:
10,000 psi



Tool-Pump Sets

Cutterheads marked with an * are available as **sets** (pump, tool, gauge, couplers and hose) for your ordering convenience.

Cutterhead Model No.	Pump Model No.	Set Model Number No.*
WHC750	P392	**STC750H**
WHC750	P392FP	**STC750FP**
WHC750	PATG1102N	**STC750A**
WHC1250	P392	**STC1250H**
WHC1250	P392FP	**STC1250FP**
WHC1250	PATG1102N	**STC1250A**

* **H** = Hand Pump, **FP** = Foot Pump, **A** = Air Pump

- **Single-acting, spring-return on all models, except WHR1250**
- **Guillotine action for smooth cutting operation**
- **Lifting handles on larger models for easy transport**
- **Carrying bag included for easy carrying and tool protection**
- **Ideal for use with most Enerpac pumps featuring 3-way valve or dump valve and 10,000 psi pressure rating (except WHR1250, which requires 4-way valve)**
- **CR400 coupler and dust cap included on all models.**



Steel rope is easily cut with the smooth guillotine action of an Enerpac cutterhead. ▶

▼ **Selection Chart**
Maximum Cutting Capacities (ø in inches)

Cutter Head Operation	Capacity (tons)	Model Number	Oil Capacity (in^3)	Length (in)	Steel Wire Rope, Hemp-core or IWRC 6x7 6x12 6x19	Round Bar: Copper Wire or Bar	Round Bar: Alumi-num Wire or Bar	Round Bar: Soft Steel Bolts	Round Bar: Rein-forcing Bar	Wire Strand: Bare Copper Wire Strands	Wire Strand: Bare Alumi-num Wire Strands 6x7	Wire Strand: ACSR	Wire Strand: Guy Steel Wire Strands 1x7 1x19	Cable: Tele-phone Cable CPP	Cable: Under-ground Cable (Power)	Weight (lbs)	Replace-ment Blades
Single-Acting	**4**	**WHC750***	1.2	5.0	0.63	0.75	0.75	0.56	0.50**	0.75	0.75	0.75	0.63	☆	☆	7	**WCB750**
	20	**WHC1250***	8.2	11.0	1.25	1.25	1.25	1.25	1.00	1.25	1.25	1.25	0.88	☆	☆	25	**WCB1250**
	13	**WHC2000**	7.3	15.0	1.00	1.25	1.25	0.88	☆	2.00	2.00	2.00	0.75	☆	☆	23	**WCB2000**
	3	**WHC3380**	4.0	19.0	☆	☆	☆	☆	☆	3.00	3.00	☆	☆	3.38	3.38	20	**WCB3380**
	8	**WHC4000**	8.4	24.0	☆	☆	☆	☆	☆	3.50	3.50	☆	☆	4.00	4.00	32	**WCB4000**
Dbl.-Act.	**20**	**WHR1250**	7.5	16.5	1.25	1.25	1.25	1.25	1.00	1.25	1.25	1.25	0.88	☆	☆	26	**WCB1250**

* Available in sets.
** Low Alloy.
☆ Will not cut designated material.

WMC-Series, Self-Contained Hydraulic Cutters

▼ Shown from left to right: **WMC2200, WMC750**



WMC Series



Capacity:
3 - 20 tons

Cutting Capacity:
ø 0.38 - 3.38 inches



Replacement Blades

60-62 HRc hardened replacement blades.

For Cutter Model Number	Order Blades Model Number
WMC580	**WCB750**
WMC750	**WCB750**
WMC1000	**WCB1000**
WMC1250	**WCB1250**
WMC2200	**WCB2200**
WMC3380	**WCB3380**

- **Rotating heads for operator convenience**
- **Guillotine action for smooth cutting operation**
- **Carrying bag included for easy carrying and tool protection**
- **Velcro straps to secure handles on larger models for easy carry**
- **Spring-return for easy operation**
- **Lightweight self-contained tool, can be used anywhere.**

CAUTION !:

A "☆" in the charts on these pages means that this hydraulic cutter is not designed to cut this size or type of material. Any attempt to do so may result in personal injury and damage to the unit and will void the warranty.

▼ **Selection Chart**
Maximum Cutting Capacities (ø in inches)

Capacity (tons)	Model Number	Length (in)	Steel Wire Rope, Hempcore or IWRC 6x7 6x12 6x19	Round Bar				Wire Strand					Cable		Weight (lbs)
				Copper Wire or Bar	Aluminum Wire or Bar	Soft Steel Bolts	Reinforcing Bar	Bare Copper Wire Strands	Bare Aluminum Wire Strands 6x7	ACSR Wire Strands	Guy Steel Wire Strands 1x7	Guy Steel Wire Strands 1x19	Telephone Cable CPP	Underground Cable (Power)	
4	**WMC580**	15.00	0.63	0.63	0.63	0.63	0.38	0.63	0.63	0.63	0.56	0.56	☆	☆	8
4	**WMC750**	15.00	0.75	0.75	0.75	0.69	0.50**	0.75	0.75	0.75	0.56	0.56	☆	☆	8
20	**WMC1000 ***	26.75	☆	0.75	0.75	0.75	0.75	☆	☆	☆	☆	☆	☆	☆	25
20	**WMC1250**	26.75	1.25	1.25	1.25	1.25	0.88	1.25	1.25	1.25	0.88	0.88	☆	☆	23
13	**WMC2200**	24.75	1.00	1.25	1.25	0.88	☆	2.00	2.00	2.00	0.75	0.75	☆	☆	24
3	**WMC3380**	26.00	☆	☆	☆	☆	☆	3.00	3.00	☆	☆	☆	3.38	3.38	22

* Cuts 0.50 inch alloy chain grade 70 (type G7 transport or tie-down) or grade 80 (for overhead lifting applications).
** Low Alloy.
☆ Will not cut designated material.

Pumps & Accessories for EBH & EWCH-Cutters

EBH-Series Bar Cutters and EWCH-Series Wire and Cable Cutters are powered by an external pump with an electric valve.

A twin hydraulic hose and electric cable connect the tools to the pump, allowing the user to operate them directly from a control panel located on the cutters.

ZE Series



Reservoir Capacity:
1.2- 2.6 gallons

Motor Size:
1.5 - 7.5 hp

Maximum Operating Pressure:
10,000 psi



ZE4-Series Pumps

Specialized **ZE4-Series** pumps provide a balance of speed and versatility, and are available in 115 and 230 volts. Recommended for use with **EBH30** and **EBH35** cutters when portability, or the convenience of using standard voltage is required.



ZE6-Series Pumps

Specialized **ZE6-Series** 3-phase pumps offer a high-flow rate that provides fast performance for demanding applications. Recommended for **EBH52** and all **EWCH** cutting applications where speed is critical, or where higher flow rates are required by the application.



Optional Gauge Kit GKHC

Optional gauge and accessories can be used to monitor pressure in the hydraulic system. Enerpac recommends **GKHC Gauge Kit** for use with Enerpac hydraulic cutters.



Hoses

EBH- and EWCH-Series Cutters require a twin hose with an electric cable. The hose comes equipped with the appropriate couplers. Required hoses sold separately.

Description	Model Number
20 feet long, twin hose with couplers, sheath & electric cable	**CH720EC**

Pump Voltage 1-phase: (Model Number ending with suffix)
B = 120V, 60 Hz (with American-style NEMA 5-15 plug)
E = 230V, 50 Hz (with European-style SCHUKO plug)
I = 230V, 50 Hz (with NEMA 6-15 plug)

Pump Series	Pump Model Number *	Motor Electrical Specifications (Volt - Phase, 50-60 Hz)	Motor Size (hp)	Reservoir Capacity (gal)	Dimensions (in) Height	Length	Width	(lbs)	Required Twin Hose Model Number (Sold separately)	Compatible Cutter Model Number (Sold separately)
ZE4	**ZE4404XB**	115 V - 1 ph	1.5	1.2	20.2	20.5	11.0	100	**CH720EC**	**EBH30 EBH35**
	ZE4404XE	208-240 V - 1 ph								
	ZE4404XI	208-240 V - 1 ph								
ZE6 [1)]	**ZE6410XG-S**	208-240 V - 3 ph	7.5	2.6	15.1	22.0	15.1	170	**CH720EC**	**All EBH and EWCH-Series Cutters**
	ZE6410XJ-S	460-480 V - 3 ph								
	ZE6410XK-S	440 V - 3 ph								
	ZE6410XW-S	380-415V - 3 ph								

* Indicated pumps come equipped with appropriate configurations to work with indicated cutters.
[1)] ZE6 pumps are available with roll cages. To add a roll cage, add an "R" prior to the "S" in the model number: example **ZE6410XG-RS**.

Pumps & Accessories for EDCH-Cutters

Pumps & Accessories for EDCH-Cutters

The EDCH-Decommissioning Cutters are designed to work in a wide variety of environments, from factories to demolition projects.

Enerpac offers multiple pump options to provide power, speed and mobility for all your applications.

ZC, ZE Series



Reservoir Capacity:
1.2 - 2.6 gallons

Motor Size:
1.4 - 1.5 - 7.5 hp

Maximum Operating Pressure:
10,000 psi



ZC3-Series Cordless Pumps

Specialized **ZC3-Series** Cordless Pumps offer the portability of a cordless tool without the added weight of an integrated motor, combining freedom of movement with ease of use. Recommended for use with the **EDCH130** cutter.



ZE4-Series Pumps

Specialized **ZE4-Series** Pumps provide a balance of speed and versatility. Recommended for use with all **EDCH** cutters when the convenience of using standard voltage is required.



ZE6-Series Pumps

Specialized **ZE6-Series** pumps offer a high-flow rate that provides fast performance. Recommended for use with all **EDCH** cutters when 3-phase power is available, and speed is critical.



Optional Gauge Kit GKHC

Optional gauge and accessories can be used to monitor pressure in the hydraulic system. Enerpac recommends **GKHC Gauge Kit** for use with Enerpac hydraulic cutters.



Twin Hose

EDCH-Series Cutters require a twin hose for operation. The hose comes equipped with the appropriate couplers. Required hoses sold separately.

Description	Model Number
20 feet long, twin hose with couplers	**CH720MC**

Pump Voltage 1-phase: (Model Number ending with suffix)
B = 120V, 60 Hz (with American-style NEMA 5-15 plug);
E = 230V, 50 Hz (with European-style SCHUKO plug); **I** = 230V, 50 Hz (with NEMA 6-15 plug)

Pump Series	Pump Model Number *	Motor Electrical Specifications (Volt - Phase, Hz)	Motor Size (hp)	Reservoir Capacity (gal)	Dimensions (in) Height	Length	Width	(lbs)	Required Twin Hose Model Number (Sold separately)	Compatible Cutter Model Number (Sold separately)
ZC3	**ZC3204XB**	**Cordless** (115 V Charger 60 Hz)	1.4	1.2	25.7	18.6	14.3	60	**CH720MC**	**EDCH130**
	ZC3204XE	**Cordless** (230 V Charger 50 Hz)								
ZE4	**ZE4204XB**	115 V - 1 ph, 50-60 Hz	1.5	1.2	20.2	20.5	11.0	100	**CH720MC**	**EDCH130 EDCH145 EDCH170**
	ZE4204XE	208-240 V - 1 ph, 50-60 Hz								
	ZE4204XI	208-240 V - 1 ph, 50-60 Hz								
ZE6 [1)]	**ZE6210XG-S**	208-240 V - 3 ph	7.5	2.6	15.1	22.0	15.1	170	**CH720MC**	**EDCH130 EDCH145 EDCH170**
	ZE6210XJ-S	460-480 V - 3 ph								
	ZE6210XK-S	440 V - 3 ph								
	ZE6210XW-S	380-415V - 3 ph								

* Indicated pumps come equipped with appropriate configurations to work with indicated cutters.
[1)] ZE6 pumps are available with roll cages. To add a roll cage, add an "R" prior to the "S" in the model number: example **ZE6410XG-RS**.

Enerpac's Bolting Solutions cater to the complete bolting workflow, ensuring joint integrity in a variety of applications throughout the industry:

Joint Assembly

From simple pipe alignment to complex joint positioning of large structural assemblies, our comprehensive line of joint assembly products range from hydraulic and mechanical alignment tools to synchronized PLC-controlled multi-point positioning systems.

Controlled Tightening – Torque & Tensioning

Enerpac offers a variety of controlled tightening options to best meet the requirements of your application. From mechanical torque multipliers to hydraulic, pneumatic and battery-powered square drive wrenches and from low-profile torque wrenches to interconnectable bolt tensioning tools; we offer the products you need for accurate and simultaneous tightening of multiple bolts.

Joint Separation

Enerpac also provides hydraulic nut splitters and a variety of mechanical and hydraulic spreading tools for joint separation during inspection, maintenance and decommissioning operations.

High-quality bolting solutions from the brand you can trust.
See how Enerpac can make your bolting workflow more accurate, safer and efficient.

Bolting Integrity Software

Enerpac Bolting Integrity Software Solutions play a key role in implementing and managing an Integrity Program for bolted connections.

The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application Data Sheet and Joint Completion Report. Custom Joint information can also be entered.

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Torque Tightening & Tensioning

See our 'Yellow Pages' for information on torque tightening. See our Bolting Safety Instructions on enerpac.com.

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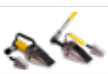
Flange Maintenance Tools

The range of patented flange spreading tools have been developed to aid and simplify the maintenance of flange joints.

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Bolting Tools & Pumps Section Overview

	Capacity	Tool type and functions	Series		Page
Controlled Tightening and Loosening – Torque & Tensioning	1440 - 26,150 Ft.lbs	**Square Drive Hydraulic Torque Wrenches** Rigid steel design & maximum versatility	S		220 ▶
	5.9 - 21.9 inches 1500 - 8,000 Ft.lbs	**Reaction Arm Kits for S and RSL-Series Wrenches** Significantly improves worker safety	ERAK		224 ▶
	¾ - 6⅛ inches 19 - 155 mm	**Heavy-Duty Impact Sockets**	BSH		226 ▶
	1 1/16 - 4 15/16 inches 27 - 120 mm	**Back-Up Spanners for Torque Wrenches**	BUS		227 ▶
	2040 - 35,000 Ft.lbs	**Hexagon Hydraulic Torque Wrenches, low-profile** **Ultra-Slim Stepped Width Cassettes**	W W-SL		228 ▶ 236 ▶
	1408 - 28,002 Ft.lbs	**Hexagon and Square Drive Torque Wrenches** One drive, two tools	RSL, RLP RSQ		240 ▶ 250 ▶
	1411 - 24,057 Ft.lbs	**Square Drive Aluminum Torque Wrenches** Setting Industry-First Safety Standards	DSX		252 ▶
	1541 - 13,489 Ft.lbs	**Modular Torque Wrenches,** **Drive Units, Hexagon & Square Drive Cassettes**	HMT, HLP		256 ▶
	750 - 8,000 Ft.lbs	**Manual Torque Multipliers**	E		260 ▶
	500 - 6,000 Ft.lbs 750 - 8,000 Ft.lbs	**Battery Torque Wrenches** **Pneumatic Torque Wrenches**	BTW PTW		262 ▶ 266 ▶
	2140 - 16,100 Ft.lbs	**Safe T™ Torque Checker** Accurate mobile torque system safety testing	STTC		270 ▶
	148 - 7,375 Ft.lbs	**Mobile Calibration System** For continuous rotation tools and hydraulic wrenches	MCS		272 ▶
	Flow: 20 in³/min Power: 0.94 hp	**Battery-Powered Torque Pumps** Cordless Hydraulic Power	XC2		274 ▶
	Flow: 30 in³/min Power: 1.0 hp	**Electric Torque Pumps** Lightweight	TQ		276 ▶
	Flow: 60 in³/min Power: 1.7 hp	**Portable Electric Torque Pumps** Z-Class innovation	ZU4T		278 ▶
	Flow: 60 - 120 in³/min Power: 1.5 - 3.0 hp	**Electric Torque Pumps** Z-Class innovation	ZE4T ZE5T		282 ▶
	Flow: 25 in³/min Air: 65 scfm	**Air Hydraulic Torque Pump** Lightweight and Compact	LAT		284 ▶
	Flow: 60 in³/min Air: 20 - 100 scfm	**Air Driven Torque Pumps** Z-Class innovation	ZA4T		286 ▶
	15.1 - 522.7 tons 25.2 - 444.9 tons	**HydraMax® Topside Bolt Tensioners** **Topside Bolt Tensioners**	HM GT		292 ▶ 296 ▶
	17.8 - 260.9 tons	**Aquajack® Subsea Bolt Tensioners**	EAJ		298 ▶
	22.9 - 333.6 tons 42.1 - 307.5 tons	**Power Generation Bolt Tensioners** **Foundation Bolt Tensioners**	PGT FTR, FTE		300 ▶ 302 ▶
	Flow: 0.037 in³/stroke 3.3 - 98.4 feet	**High-Pressure Hand Pump, max. 21,750 psi** **Hoses, Hose Reels and Couplers, max. 21,750 psi**	HPT HT, B		306 ▶ 307 ▶
	Flow: 20 in³/min Flow: 4.0 in³/min	**Electric Tensioning Pumps** **Ultra-High Pressure Air Pump**	ZUTP ATP		308 ▶ 309 ▶
Joint Assembly and Separation	1 - 10 tons	**Flange Alignment Tools**	FA		312 ▶
	8 - 14 tons	**Step-type Industrial Spreaders**	FSC, FSH FSM		314 ▶
	Hexagon: 1/2 - 5 3/8" Bolt range: 5/16 - 3 1/2"	**Hydraulic Nut Splitters**	NC NSC, NSH		316 ▶ 318 ▶
	ø 1 - 12 inch flanges	**QuickFace – Mechanical Pipe Flange Face Tool**	FF		322 ▶

▼ Shown: **S3000PX**



Safety and Performance

- **Compact, high-strength uni-body construction provides a small operating radius without sacrificing endurance**
- **35° rotation angle and rapid return stroke for fast operation**
- **Tough manifold design with added safety feature for enhanced operator safety.**

Simplicity

- **360° click-on reaction arm with quick release lever provides easier handling, even with gloves on**
- **Includes robust handle or lifting eye which mounts on both sides of tool for extra maneuverability**
- **Push button square drive release for quickly reversing the square drive for tightening or loosening.**

Versatility

- **With enhanced tilt and swivel TSP300 manifold for horizontal and vertical maneuverability, with greater durability [1)]**

Accuracy

- **Constant torque output provides accuracy of ±3% across full stroke**
- **Optional Angle-of-Turn Indicator provides measurement of rotation.**

ATEX declared

- **All S-Series X-Edition tools are CE - ATEX declared and are shipped complete with a calibration certificate.**

[1)] TSP300 is designed for X-Edition tools only, and is not compatible with previous edition tools. For replacement components for existing tools, refer to repair sheet on www.enerpac.com

Setting New Standards in Safety, Simplicity and Performance



Two Handle Styles

Robust angled positioning handle comes standard with every S-Series (X-Edition) tool. Straight positioning handles are available as accessories.

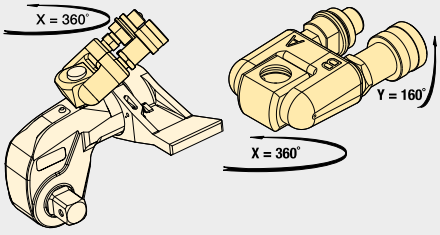
Compatible S-Series (X-Edition) wrenches	Model No. Angled positioning handles (standard)	Model No. Straight positioning handles (optional)
S1500PX, S3000PX	**SWH6A**	**SWH6S**
S6000PX, S11000PX	**SWH10A**	**SWH10S**
S25000PX	**SWH10EA [2)]**	

[2)] SWH10EA is an lifting eye.



TSP300 Tilt & Swivel Manifold

Standard included on S-PX models: the TSP300 tilt and swivel manifold with robust interlocking design provides 360° X-axis rotation and 160° Y-axis rotation.





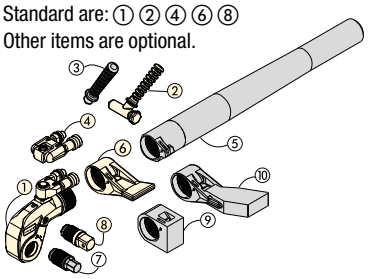
ERAK-Series, Reaction Arm Kits

Provides reaction point options for S1500PX, S3000PX and S6000PX square drive torque wrenches. Significantly improves worker safety by providing a safety tested and full torque rated reaction arm, and increases tool fit.

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X-Edition, Square Drive Hydraulic Torque Wrenches

Standard are: ① ② ④ ⑥ ⑧
Other items are optional.



① Drive Unit
② Angled Positioning Handle
③ Straight Positioning Handle
④ TSP300 Pro-Series Tilt & Swivel
⑤ Reaction Tube Extension
⑥ Standard Reaction Arm
⑦ Allen®-Key Drive
⑧ Square Drive
⑨ Short Reaction Arm
⑩ Extended Reaction Arm



Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.

S Series X-Edition



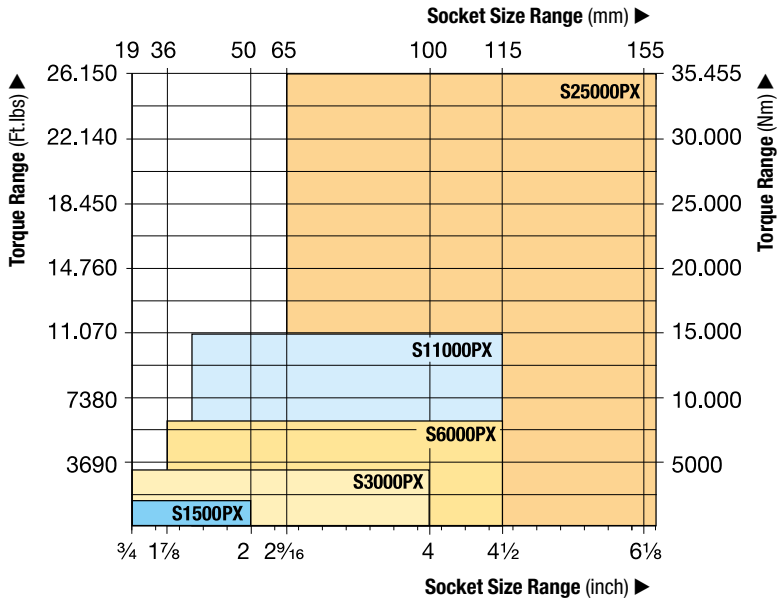
Nominal Torque Output:
26,150 Ft.lbs

Square Drive Range:
¾ - 2½ inches

Nose Radius:
0.98 - 2.52 inches

Maximum Operating Pressure:
10,000 psi

TORQUE WRENCH SELECTION (based on socket size range)





Back-Up Spanners

Hands free tool to be used to stop the back nut from turning during make up or break out.

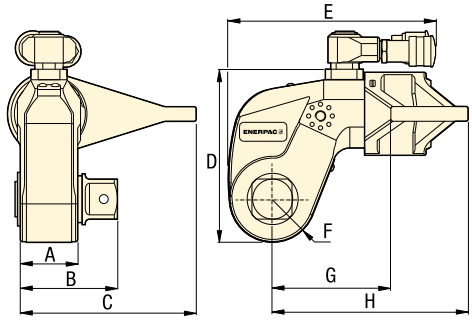
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Use only Heavy-Duty Impact Sockets

For power driven torqueing equipment, according to ISO2725 and ISO1174; DIN 3129 and DIN 3121 or ASME-B107.2/1995.

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Nominal Torque at 10,000 psi (690 bar)		Minimum Torque at 1000 psi (69 bar)		Square Drive Size (inch)	Square Drive Model Nr. (included with wrench)	Angle-of-Turn Model Nr. (optional)	Torque Wrench Model Number *	Dimensions (in)								
(Ft.lbs)	(Nm)	(Ft.lbs)	(Nm)					A	B	C	D	E	F	G	H	(lbs)
1440	1952	144	195	¾	SD15-012	AOT15	**S1500PX**	1.54	2.56	4.25	3.82	5.35	0.98	2.76	5.08	7.0
3225	4373	323	438	1	SD30-100	AOT30	**S3000PX**	1.89	3.15	5.31	5.04	6.81	1.30	3.54	6.34	12.3
6150	8338	615	834	1½	SD60-108	AOT60	**S6000PX**	2.17	3.62	6.65	6.18	7.56	1.57	4.33	7.40	20.2
11,175	15.151	1118	1516	1½	SD110-108	AOT110	**S11000PX**	2.83	4.49	7.76	7.48	8.98	1.95	5.24	9.02	34.7
26,150	35.455	2615	3545	2½	SD250-208	AOT250	**S25000PX**	3.50	5.63	9.69	9.61	11.30	2.52	7.17	11.61	70.8

* To order a S-Series (X-Edition) torque wrench fitted without a TSP300 tilt and swivel manifold, remove the "P" prior to the "X" in the tool model number, example: **S1500X**.

SDA-Series, Allen-Key® Drives

ENERPAC

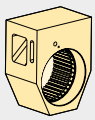
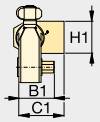
Maximum Torque at 10,000 psi:
26,150 Ft.lbs

Hexagon Size Allen Drive:
½ - 2¼ inches

Hexagon Size Allen Drive:
14 - 85 mm

For S Series



Torque Wrench	Optional Allen® Drives, Imperial				Optional Allen® Drives, Metric				Short Reaction Arm for Allen Drives		
											
Model Number	**Hexagon Size** [1] (inch)	**Maximum Torque** (Ft.lbs)	**Model Number**	**Dim.** B1 (in)	**Hexagon Size** [1] (mm)	**Maximum Torque** (Ft.lbs)	**Model Number**	**Dim.** B1 (in)	**Model Number**	**Dimensions** (in) C1	H1
S1500PX (1440 Ft.lbs)	½	355	**SDA15008**	2.60	**14**	475	**SDA1514**	2.60	**SRA15X**	2.66	2.56
	⅝	690	**SDA15010**	2.64	**17**	850	**SDA1517**	2.68			
	¾	1195	**SDA15012**	2.80	**19**	1185	**SDA1519**	2.76			
	⅞	1400	**SDA15014**	2.91	**22**	1400	**SDA1522**	2.87			
	1	1400	**SDA15100**	3.03	**24**	1400	**SDA1524**	2.91			
S3000PX (3225 Ft.lbs)	⅝	690	**SDA30010**	3.03	**17**	850	**SDA3017**	3.03	**SRA30X**	3.15	2.91
	¾	1195	**SDA30012**	3.15	**19**	1185	**SDA3019**	3.11			
	⅞	1895	**SDA30014**	3.27	**22**	1835	**SDA3022**	3.23			
	1	2825	**SDA30100**	3.39	**24**	2385	**SDA3024**	3.31			
	1⅛	3200	**SDA30102**	3.46	**27**	3200	**SDA3027**	3.35			
	1¼	3200	**SDA30104**	3.50	**30**	3200	**SDA3030**	3.43			
	–	–	–	–	**32**	3200	**SDA3032**	3.46			
S6000PX (6150 Ft.lbs)	⅝	690	**SDA60010**	3.35	**17**	850	**SDA6017**	3.39	**SRA60X**	3.60	3.50
	¾	1195	**SDA60012**	3.50	**19**	1185	**SDA6019**	3.46			
	⅞	1895	**SDA60014**	3.62	**22**	1835	**SDA6022**	3.58			
	1	2825	**SDA60100**	3.74	**24**	2385	**SDA6024**	3.66			
	1⅛	4025	**SDA60102**	3.82	**27**	3395	**SDA6027**	3.70			
	1¼	5520	**SDA60104**	3.86	**30**	4655	**SDA6030**	3.78			
	–	–	–	–	**32**	5650	**SDA6032**	3.82			
S11000PX (11,175 Ft.lbs)	**1¼**	5520	**SDA110104**	4.53	**30**	4655	**SDA11030**	4.41	**SRA110X**	5.02	4.17
	1⅜	7345	**SDA110106**	4.61	**32**	5650	**SDA11032**	4.49			
	1½	9535	**SDA110108**	4.65	**36**	8040	**SDA11036**	4.61			
	1⅝	11,000	**SDA110110**	4.80	**41**	11,000	**SDA11041**	4.76			
	1¾	11,000	**SDA110112**	4.92	**46**	11,000	**SDA11046**	5.00			
S25000PX (26,150 Ft.lbs)	**1½**	9535	**SDA250108**	5.55	**36**	8040	**SDA25036**	5.51	**SRA250X**	6.24	5.31
	1⅝	12,120	**SDA250110**	5.71	**41**	11,880	**SDA25041**	5.67			
	1¾	15,135	**SDA250112**	5.83	**46**	16,775	**SDA25046**	5.83			
	1⅞	18,620	**SDA250114**	5.87	**50**	21,545	**SDA25050**	5.94			
	2	22,595	**SDA250200**	5.94	**55**	26,150	**SDA25055**	6.06			
	2¼	26,150	**SDA250204**	6.06	**60**	26,150	**SDA25060**	6.22			
	–	–	–	–	**65**	26,150	**SDA25065**	6.34			
	–	–	–	–	**70**	26,150	**SDA25070**	6.46			
	–	–	–	–	**75**	26,150	**SDA25075**	6.61			
	–	–	–	–	**85**	26,150	**SDA25085**	6.89			

[1] See page 411 for table of hexagon sizes of bolts, nuts and related thread diameters.

Accessories for S-Series, X-Edition Wrenches

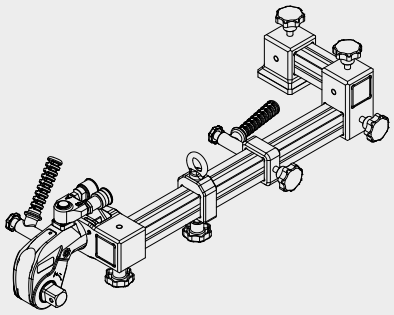


ERAK-Series,
Reaction Arm Kits

Provides reaction point options for S1500PX, S3000PX and S6000PX.

Significantly improves worker safety by providing a safety tested and full torque rated reaction arm, and increases tool fit.

- Replaces multiple custom reaction arms
- Eliminates the need for Extended Reaction Arm (SRS-X) and Reaction Tubes (RTE-X).

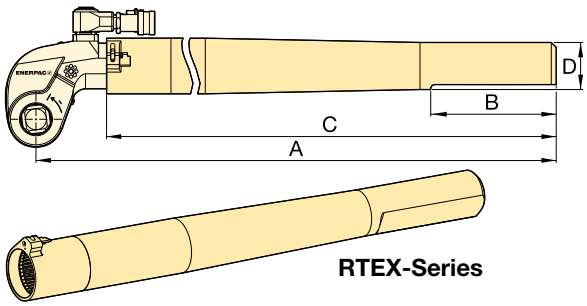


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RTEX SRSX Series



RTEX-Series, Reaction Tube Extensions

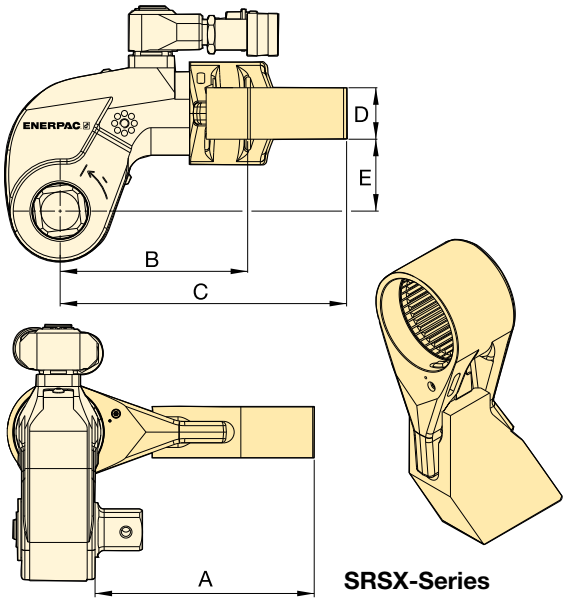


- **Full torque rated**
- **Increases tool fit in restricted access areas**

For Torque Wrench Model Number	Model Number	Dimensions (in)				(lbs) *
		A	B	C	D	
S1500PX	RTE15X	27.80	5.98	25.04	2.28	10.1
S3000PX	RTE30X	28.86	5.98	25.47	2.24	12.1
S6000PX	RTE60X	29.41	5.98	25.94	2.56	17.0
S11000PX	RTE110X	30.28	5.98	26.57	2.99	24.7
S25000PX	RTE250X	32.01	5.98	26.97	3.94	38.1

* Weights indicated are for the accessories only and do not include the wrench.

SRSX-Series, Extended Reaction Arms



- **Lightweight interchangeable design**

For Wrench Model No.	Max. Torque (Ft.lbs)	Model Number	Dimensions (in)					(lbs) *
			A	B	C	D	E	
S1500PX	1328	SRS151X	3.70	3.39	5.00	0.94	1.34	1.8
	1210	SRS152X	4.69	3.82	5.43	0.94	1.34	2.2
	1131	SRS153X	5.71	4.29	5.83	0.94	1.34	2.6
S3000PX	2890	SRS301X	4.37	4.17	6.61	1.34	1.89	3.5
	2739	SRS302X	5.39	4.61	7.17	1.34	1.89	4.4
	2638	SRS303X	6.38	5.20	7.80	1.34	1.89	5.5
S6000PX	5784	SRS601X	5.43	5.04	7.56	1.54	2.44	5.1
	5501	SRS602X	6.42	5.67	8.15	1.54	2.44	6.0
	5295	SRS603X	7.44	6.26	8.74	1.54	2.44	7.5
S11000PX	10,812	SRS1101X	5.87	6.18	9.13	1.81	2.99	9.7
	10,300	SRS1102X	6.89	6.77	9.72	1.81	2.99	11.2
	9883	SRS1103X	7.87	7.36	10.28	1.81	2.99	12.8
S25000PX	24,751	SRS2501X	7.20	8.23	11.61	1.97	3.94	16.8
	23,652	SRS2502X	8.19	8.74	12.20	1.97	3.94	18.5
	22,694	SRS2503X	9.17	9.29	12.83	1.97	3.94	22.0

* Weights indicated are for the accessories only and do not include the wrench.

▼ Typical Reaction Arm Kit assembly with optional wrench adaptor assembly

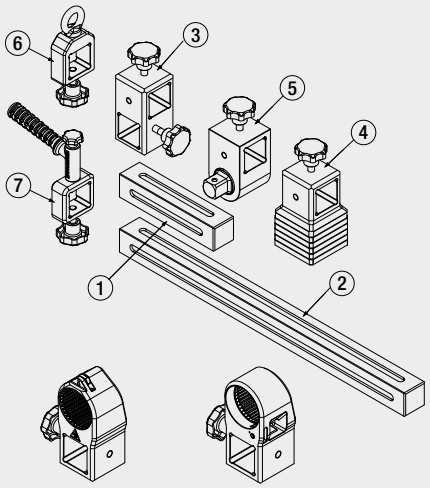


- **Provides reaction point options for most common Enerpac S and RSL (RSQ)-Series Square Drive torque wrenches.**
- **Significantly improves worker safety by providing a safety tested and full torque rated reaction arm, and increases tool fit**
- **Can be configured in unique standard setups which are suitable to repetitive work**
- **Can be used with hexagon Allen-Key® drives on the torque wrench**
- **Replaces multiple custom reaction arms**
- **Eliminates the need for Extended Reaction Arm and Reaction Tubes.**

ERAK - Reaction Arm Kits

Complete Kit Includes the following components:

① Short Beam – 7.9 inches (200 mm)
② Long Beam – 17.7 inches (450 mm)
③ Beam Connector Assembly, 90°
④ Reaction Foot Assembly
⑤ Square Drive Adaptor Assembly
⑥ Lifting Point Assembly
⑦ Positioning Handle Assembly



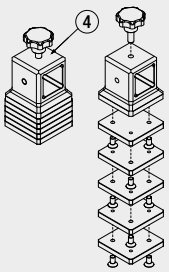
TWRAKRSL * Wrench Adaptor Assembly for RSL-Series

TWRAKS * Wrench Adaptor Assembly for S-Series

* The Wrench Adaptors must be ordered separately.

▼ *To overcome the absence of an adjacent bolt as the proper reaction point, the ERAK3000 Reaction Arm was the ideal solution during maintenance using the S3000X on a Caterpillar bulldozer, eliminating the need for a custom reaction arm.*



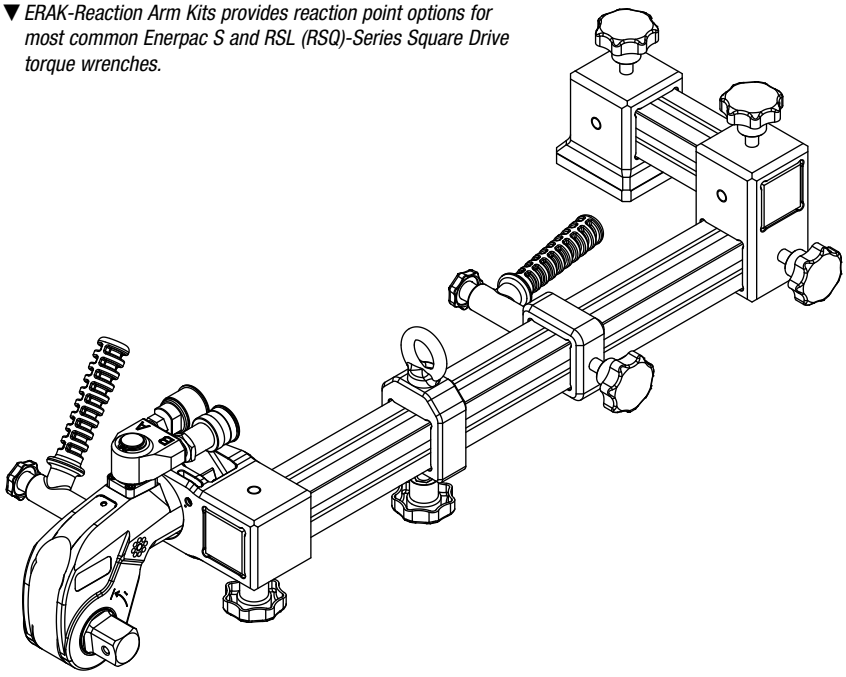


Reaction Foot Assembly

The reaction foot can be used on its own, or with any number of the 5 spacer plates included.
Spacer plates should be added as and when required by the application.

Reaction Arm Kits for S and RSL-Series Wrenches

▼ *ERAK-Reaction Arm Kits provides reaction point options for most common Enerpac S and RSL (RSQ)-Series Square Drive torque wrenches.*



ERAK Series



Min. - Max. Length:
5.9 - 21.9 inches

Full Torque Rated:
1500 - 8,000 Ft.lbs

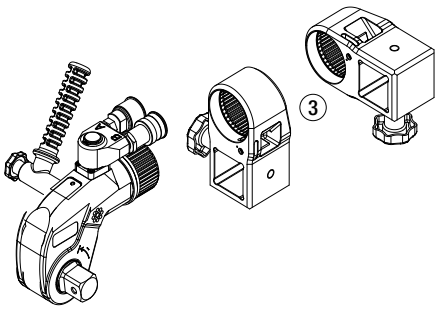
Full Torque Rated:
2034 - 10,847 Nm

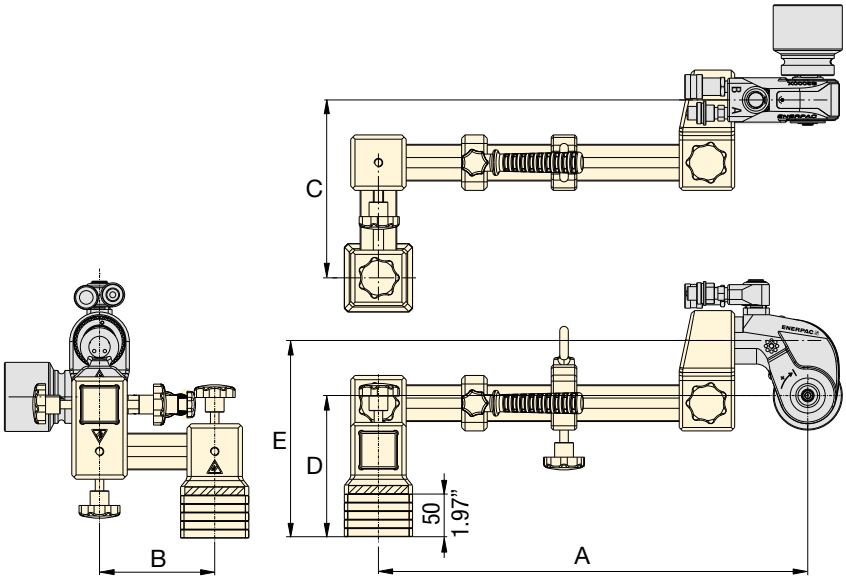


Back-Up Spanners
Hands free tool to be used to stop the back nut from turning during make up or break out.

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▼ *The ERAK-Adaptor can be rotated incrementally through 360 degrees and can maintain stability against a reaction point up to full torque.*





▼ **SELECTION CHART REACTION ARM KITS & OPTIONAL WRENCH ADAPTOR ASSEMBLY**

Use With Torque Wrench Model No.	Model Number Reaction Arm Kit	Model Number Wrench Adaptor Assembly *	Torque Wrench Output		Maximum ERAK Working Torque		Dimensions (inch)					
			(Ft.lbs)	(Nm)	(Ft.lbs)	(Nm)	A min. - max.	B	C	D	E	(lbs)
S1500PX	ERAK1500	TWRAKS15	1440	1952	1500	2034	5.9 - 19.5	5.8	8.5	4.6	6.5	24.2
RSL1500		TWRAKRSL2-1500	1408	1909	1500	2034	7.3 - 20.9	5.8	8.5	4.5	6.5	24.2
S3000PX	ERAK3000	TWRAKS3	3225	4373	3,500	4745	7.2 - 19.8	5.3	8.2	4.4	6.9	37.6
RSL3000		TWRAKRSL4-3000	3080	4176	3,500	4745	8.7 - 21.3	5.3	8.2	4.6	6.9	37.6
S6000PX	ERAK8000	TWRAKS6	6150	8338	8,000	10,847	10.6 - 21.7	4.6	7.8	6.1	9.3	79.6
RSL5000		TWRAKRSL6-5000	5303	7190	8,000	10,847	8.4 - 19.5	4.6	7.8	6.5	9.3	79.6
RSL8000		TWRAKRSL8-8000	7862	10,659	8,000	10,847	10.7 - 21.9	4.6	7.8	6.5	9.3	79.6

* The Wrench Adaptors must be ordered separately.

- Heavy-duty impact sockets
- Supplied with “Pin and O-Ring”

BSH Series



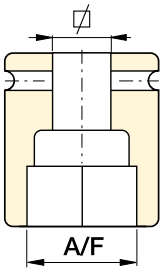
Hexagon Sizes (A/F):
¾ - 6⅛" | 19 - 155 mm



Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.

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Hexagon Bolt and Nut Sizes

See the table of hexagon sizes of bolts, nuts and related thread diameters.

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METRIC SOCKETS

¾" Square Drive		1" Square Drive		1½" Square Drive		2½" Square Drive	
A/F (mm)	Model Number	A/F (mm)	Model Number	A/F (mm)	Model Number	A/F (mm)	Model Number
19	BSH7519	19	BSH1019	36	BSH1536	65	BSH2565
24	BSH7524	24	BSH1024	41	BSH15163	70	BSH2570
27	BSH7527	27	BSH1027	46	BSH1546	75	BSH2575
30	BSH7530	30	BSH1030	50	BSH1550	80	BSH2580
32	BSH7532	32	BSH1032	55	BSH1555	85	BSH2585
36	BSH7536	36	BSH1036	60	BSH1560	90	BSH2590
41	BSH75163	41	BSH10163	65	BSH1565	95	BSH2595
46	BSH7546	46	BSH1046	70	BSH1570	100	BSH25100
50	BSH7550	50	BSH1050	75	BSH1575	105	BSH25105
–	–	55	BSH1055	80	BSH1580	110	BSH25110
–	–	60	BSH1060	85	BSH1585	115	BSH25115
–	–	65	BSH1065	90	BSH1590	120	BSH25120
–	–	70	BSH1070	95	BSH1595	125	BSH25125
–	–	75	BSH1075	100	BSH15100	135	BSH25135
–	–	80	BSH1080	105	BSH15105	140	BSH25140
–	–	85	BSH1085	110	BSH15110	145	BSH25145
–	–	90	BSH1090	115	BSH15115	150	BSH25150
–	–	95	BSH1095	–	–	155	BSH25155
–	–	100	BSH10100	–	–	–	–

IMPERIAL SOCKETS

¾" Square Drive		1" Square Drive				1½" Square Drive				2½" Square Drive			
A/F (inch)	Model Number	A/F (inch)	Model Number	A/F (inch)	Model Number	A/F (inch)	Model Number	A/F (inch)	Model Number	A/F (inch)	Model Number	A/F (inch)	Model Number
¾"	BSH7519	¾"	BSH1019	2 5/16"	BSH10231	1 7/16"	BSH15144	2 13/16"	BSH15281	2 7/16"	BSH25244	4 3/16"	BSH25419
⅞"	BSH75088	⅞"	BSH10088	2 3/8"	BSH10238	1½"	BSH1538	2 7/8"	BSH15288	2½"	BSH25250	4¼"	BSH25425
15/16"	BSH75094	15/16"	BSH10094	2 7/16"	BSH10244	1 9/16"	BSH15156	2 15/16"	BSH1575	2 13/16"	BSH2565	4 5/16"	BSH25110
1 1/16"	BSH7527	1 1/16"	BSH1027	2½"	BSH10250	1 5/8"	BSH15163	3"	BSH15300	2 5/8"	BSH25263	4 3/8"	BSH25438
1 3/16"	BSH7530	1 3/16"	BSH1030	2 9/16"	BSH1065	1 11/16"	BSH1543	3 1/16"	BSH15306	2 11/16"	BSH25269	4½"	BSH25450
1¼"	BSH75125	1¼"	BSH10125	2 5/8"	BSH10263	1¾"	BSH15175	3 1/8"	BSH15313	2¾"	BSH2570	4 5/8"	BSH25463
1 5/16"	BSH75131	1 5/16"	BSH10131	2 11/16"	BSH10269	1 13/16"	BSH1546	3 3/16"	BSH15319	2 11/16"	BSH25281	4¾"	BSH25475
1⅜"	BSH7535	1⅜"	BSH1035	2¾"	BSH1070	1⅞"	BSH15188	3¼"	BSH15325	2⅞"	BSH25288	4⅞"	BSH25488
1 7/16"	BSH75144	1 7/16"	BSH10144	2 13/16"	BSH10281	1 15/16"	BSH15194	3⅜"	BSH15338	2 15/16"	BSH2575	5"	BSH25500
1½"	BSH7538	1½"	BSH1038	2⅞"	BSH10288	2"	BSH15200	3½"	BSH15350	3"	BSH25300	5⅛"	BSH25513
1 9/16"	BSH75156	1 9/16"	BSH10156	2 15/16"	BSH1075	2 1/16"	BSH15206	3⅝"	BSH15363	3 1/16"	BSH25306	5 3/16"	BSH25519
1⅝"	BSH75163	1⅝"	BSH10163	3"	BSH10300	2⅛"	BSH15213	3¾"	BSH1595	3⅛"	BSH25313	5¼"	BSH25525
1 11/16"	BSH7543	1 11/16"	BSH1043	3 1/16"	BSH10306	2 3/16"	BSH15219	3⅞"	BSH15388	3 3/16"	BSH25319	5⅜"	BSH25538
1¾"	BSH75175	1¾"	BSH10175	3⅛"	BSH10313	2¼"	BSH15225	3 15/16"	BSH15100	3¼"	BSH25325	5½"	BSH25140
1 13/16"	BSH7546	1 13/16"	BSH1046	3 3/16"	BSH10319	2 5/16"	BSH15231	4"	BSH15400	3⅜"	BSH25338	5¾"	BSH25575
1⅞"	BSH75188	1⅞"	BSH10188	3¼"	BSH10325	2⅜"	BSH15238	4⅛"	BSH15105	3½"	BSH25350	5⅞"	BSH25150
1 15/16"	BSH75194	1 15/16"	BSH10194	3⅜"	BSH10338	2 7/16"	BSH15244	4 3/16"	BSH15419	3⅝"	BSH25363	6"	BSH25600
2"	BSH75200	2"	BSH10200	3½"	BSH10350	2½"	BSH15250	4¼"	BSH15425	3¾"	BSH2595	6⅛"	BSH25613
–	–	2 1/16"	BSH10206	3⅝"	BSH10363	2 9/16"	BSH1565	4 5/16"	BSH15110	3⅞"	BSH25388	–	–
–	–	2⅛"	BSH10213	3¾"	BSH1095	2⅝"	BSH15263	4⅜"	BSH15438	3 15/16"	BSH25100	–	–
–	–	2 3/16"	BSH10219	3⅞"	BSH10388	2 11/16"	BSH15269	4½"	BSH15450	4"	BSH25400	–	–
–	–	2¼"	BSH10225	–	–	2¾"	BSH1570	4⅝"	BSH15463	4⅛"	BSH25105	–	–

▼ **BUS03 Back-Up Spanner** (safety cable not shown)



BUS
Series

Hexagon Sizes (A/F):
1 1/16 - 4 15/16 inches

Hexagon Sizes (A/F):
27 - 120 mm

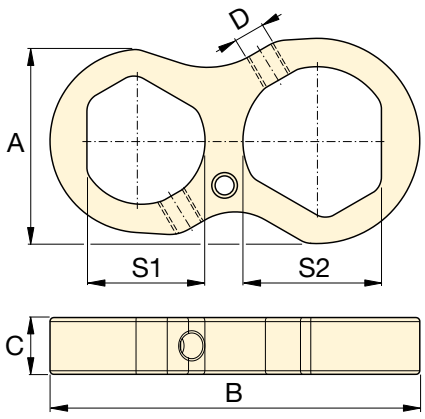
Back-Up Spanners

Hands free operation of a hydraulic torque wrench improves the safety of the operator significantly.

Enerpac Back-Up Spanners are a hands free tool that eliminates the need to use a flogging spanner as a backing tool.

The Back-Up Spanners have been specifically designed to prevent them from locking onto the nut during bolt torqueing operations. They fit easily onto the back nut and prevent it from turning during make up or break out of bolted joints.

- **Hands free solution – improves operator safety**
- **Eliminates the need for flogging spanners**
- **Speeds up the bolting process**
- **Includes safety cable with quick-connect carabiner's, stainless steel tethers and secure Allen-key fixings**
- **Won't lock on during operations**
- **Lightweight, spark-free and non-impact for improved safety and ease of use.**
- **Two hexagon sizes in one tool, so fewer tools to carry.**



▼ **SELECTION CHART BACK-UP SPANNERS**

Hexagon Sizes (A/F)		Model Number	Dimensions (in)				
S1 to S2 (inch)	S1 to S2 (mm)		A	B	C	D	(lbs)
1 1/16 - 1 1/4"	27 - 32	**BUS01**	2.0	3.9	0.6	M8	0.7
1 7/16 - 1 5/8"	36 - 41	**BUS02**	2.4	4.7	0.6	M8	0.9
1 13/16 - 2"	46 - 50	**BUS03**	3.0	5.6	0.8	M8	1.3
2 3/16 - 2 3/8"	55 - 60	**BUS04**	3.5	6.5	0.8	M12	1.8
2 9/16 - 2 3/4"	65 - 70	**BUS05**	3.9	7.5	1.0	M16	2.2
2 15/16 - 3 1/8"	75 - 80	**BUS06**	4.4	8.4	1.0	M16	2.9
3 1/2 - 3 7/8"	–	**BUS07**	5.3	10.1	1.2	M20	4.9
4 1/4 - 4 5/8"	–	**BUS08**	6.4	12.2	1.2	M20	7.3
-	85 - 90	**BUS09**	5.0	9.5	1.0	M16	3.7
3 3/4 - 3 15/16"	95 - 100	**BUS10**	5.4	10.5	1.2	M20	5.1
4 1/8 - 4 15/16"	105 - 110	**BUS11**	6.0	11.7	1.2	M20	6.8
-	115 - 120	**BUS12**	6.5	12.6	1.2	M20	7.7

▼ *Enerpac Back-Up Spanners to be used to stop back nut from turning during make up or break out.*



▼ Shown: **W4206X hexagon cassette with W4000PX drive unit**



Safety and Performance

- **Superior strength to size ratio provides easy access to difficult to reach applications without sacrificing endurance**
- **30° rotation angle and rapid return stroke provide fast operation**
- **Tough manifold design with added safety feature for enhanced operator safety.**

Simplicity

- **Fast release drive unit enables rapid exchange of cassettes, no tools required**
- **Quick and easy disassembly for maintenance without special tools**
- **Drive units include robust handle which mounts on both sides of cassettes to allow for extra maneuverability.**

Versatility

- **Standard with enhanced tilt and swivel TSP300 manifold for horizontal and vertical maneuverability, with greater durability [1)]**
- **X-Edition drive units, cassettes and most accessories are compatible with standard edition tools [1)]**
- **Drive unit compatible with UltraSlim W-SL cassettes.**

Accuracy

- **Constant torque output provides accuracy of ±3% across full stroke.**

[1)] TSP300 is designed for X-Edition tools only, and is not compatible with previous edition tools. For replacement components for existing tools, refer to repair sheet on www.enerpac.com



Two Handle Styles

Robust angled positioning handle comes standard with every W-Series (X-Edition) drive unit.

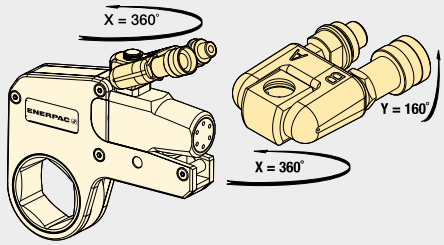
Compatible with W-Series (X-Edition) Cassettes	Model No. Angled positioning handles (standard)	Model No. Straight positioning handles (optional)
W2000PX, W4000PX	**SWH6A**	**SWH6S**
W8000PX, W15000PX	**SWH10A**	**SWH10S**
W22000PX, W35000PX	**SWH10EA [2)]**	

[2)] SWH10EA is an eyebolt handle.



TSP300 Tilt & Swivel Manifold

Standard included on W-PX models: the TSP300 tilt and swivel manifold with robust interlocking design provides 360° X-axis rotation and 160° Y-axis rotation.





CE - ATEX declared

All W-Series X-edition drive units are CE - ATEX declared. All W-Series X-edition hexagon cassettes are CE - ATEX declared and are shipped complete with a calibration certificate.

CE Ex II 2 GD T4

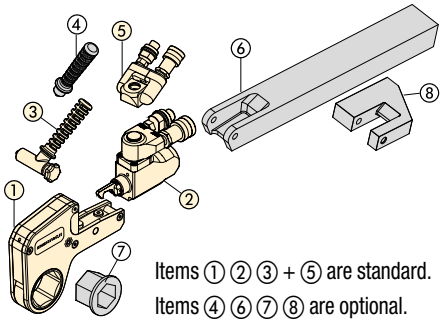


Back-Up Spanners, BUS-Series

To be used to stop the back nut from turning during make up or break out. Two hexagon sizes in one tool.

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Double-Acting Hydraulic Hexagon Torque Wrenches, X-Edition



Items ① ② ③ + ⑤ are standard.
Items ④ ⑥ ⑦ ⑧ are optional.

① Hexagon Cassette (pages 230-237)
② Drive Unit (page 229)
③ Angled Positioning Handle (page 228)
④ Straight Positioning Handle (page 228)
⑤ Pro-Series Swivel TSP300 (page 228)
⑥ Extended Reaction Arm (page 238)
⑦ Reducer Insert (pages 230-237)
⑧ Reaction Paddle (page 238)

W Series X-Edition



Nominal Torque at 10,000 psi:
35,000 Ft.lbs

Hexagon Range:
1 1/16 - 6 1/8 " | 30 - 155 mm

Nose Radius:
1.22 - 4.52 inches

Maximum Operating Pressure:
10,000 psi

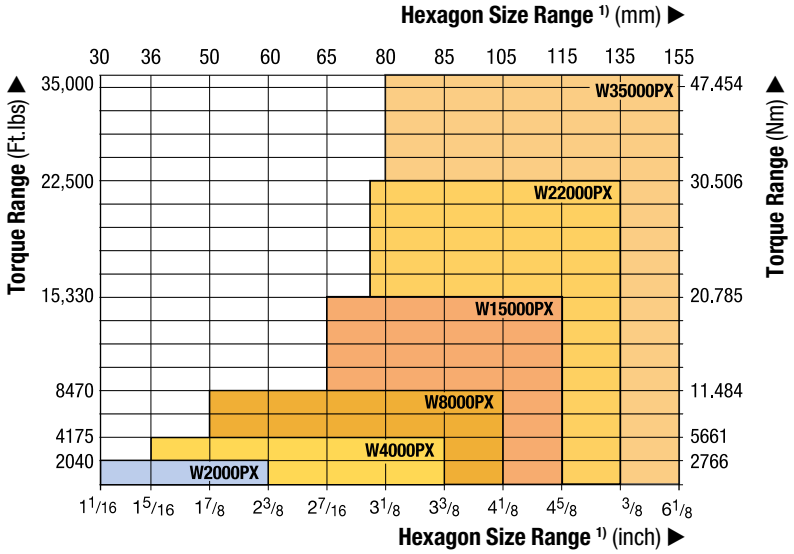


Torque Wrench Pump Selection Matrix

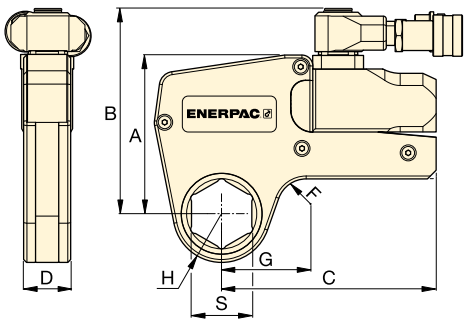
For optimum speed and performance see the torque wrench and pump matrix.

Page: 273

DRIVE UNIT AND INTERCHANGEABLE CASSETTE SELECTION



1) See page 411 for table of hexagon sizes of bolts, nuts and related thread diameters.



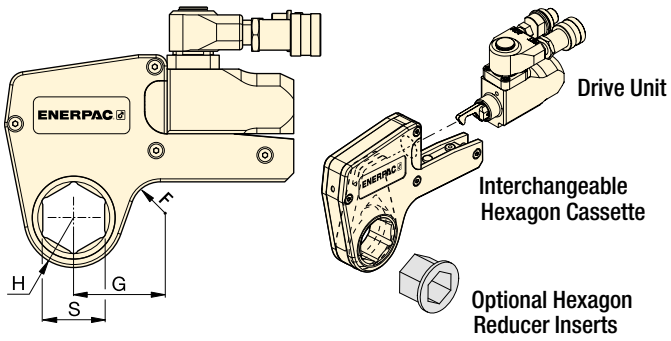


These rigid steel wrenches with low-profile interchangeable hexagon cassettes guarantee durability and maximum versatility in bolting applications. ▶

▼ SELECTION CHART HYDRAULIC DRIVE UNIT

Hexagon Range *  230-237		Nominal Torque at 10,000 psi (690 bar)		Drive Unit Model Number ** 	Minimum Torque at 1000 psi (69 bar)		Dimensions (inch) (see pages 230-237 for dimensions G, H and S)					 ***	Dimensions (mm) (see pages 230-237 for dimensions G, H and S)					 ***
(inch)	(mm)	(Ft.lbs)	(Nm)		(Ft.lbs)	(Nm)	A	B	C	D	F	(lbs)	A	B	C	D	F	(kg)
1 1/16 - 2 3/8	30 - 60	2040	2766	**W2000PX**	204	276	4.29	5.55	5.83	1.26	0.79	3.1	109	141	148	32	20	1,4
1 5/16 - 3 3/8	36 - 85	4175	5661	**W4000PX**	417	566	5.35	6.57	7.01	1.61	0.79	4.5	136	167	178	41	20	2,0
1 7/8 - 4 1/8	50 - 105	8470	11,484	**W8000PX**	847	1148	6.77	8.07	8.19	2.07	0.98	6.6	172	205	208	53	25	3,0
2 7/16 - 4 5/8	65 - 115	15,330	20,785	**W15000PX**	1533	2078	8.15	9.45	9.96	2.48	0.79	10.7	207	240	253	63	20	5,0
2 15/16 - 5 3/8	75 - 135	22,500	30,506	**W22000PX**	2250	3050	8.94	10.46	11.68	3.03	1.38	17.0	227	266	297	77	35	7,7
3 1/8 - 6 1/8	80 - 155	35,000	47,454	**W35000PX**	3500	4745	10.54	11.94	13.60	3.57	1.98	26.4	268	301	345	91	50	11,4

* With in-line reaction foot.
** To order a W-series wrench without the TSP300 swivel, remove suffix "**P**" from the model number. Example: **W2000X**
*** Weight of drive unit without hexagon cassette.



W
Series
X-Edition



Hexagon Cassette Range:
1 1/16 - 2 3/8 inches

Hexagon Cassette Range:
30 - 60 mm

Maximum Operating Pressure:
10,000 psi / 690 bar



Optional Hexagon Reducers Inserts
Available upon request and made to order.

Example: Model No. **W2206R114**
HEX REDUCER 2 3/8" (60MM) x 1 1/4" (32MM) A/F

Hexagon Bolt and Nut Sizes
See the table for hexagon sizes of bolts, nuts and related thread diameters.

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▼ SELECTION CHART HEXAGON CASSETTES

Drive Unit Model Number	Hexagon Size [1] S (inch)	Hexagon Size [1] S (mm)	Model Number Cassette	Maximum Torque at 10,000 psi (690 bar) (Ft.lbs)	Maximum Torque at 10,000 psi (690 bar) (Nm)	Dim. G (inch)	Nose Radius H (inch)	(lbs)	Dim. G (mm)	Nose Radius H (mm)	(kg)
W2000PX	1 1/16	–	W2101X	2040	2766	2.11	1.22	4.19	53,7	31,0	2,1
	1 1/8	–	W2102X	2040	2766	2.11	1.22	4.19	53,7	31,0	2,1
	1 3/16	30	W2103X	2040	2766	2.11	1.22	4.19	53,7	31,0	2,1
	1 1/4	32	W2104X	2040	2766	2.11	1.22	4.19	53,7	31,0	2,1
	1 5/16	–	W2105X	2040	2766	2.11	1.22	4.48	53,7	31,0	2,1
	1 3/8	–	W2106X	2040	2766	2.11	1.22	4.43	53,7	31,0	2,1
	1 7/16	36	W2107X	2040	2766	2.11	1.22	4.37	53,7	31,0	2,1
	1½	38	W2108X	2040	2766	2.29	1.32	4.51	58,2	33,5	2,2
	1 9/16	–	W2109X	2040	2766	2.29	1.32	4.44	58,2	33,5	2,2
	1 5/8	41	W2110X	2040	2766	2.29	1.32	4.38	58,2	33,5	2,2
	1 11/16	–	W2111X	2040	2766	2.38	1.44	4.63	60,5	36,5	2,2
	1 3/4	–	W2112X	2040	2766	2.38	1.44	4.57	60,5	36,5	2,2
	1 13/16	46	W2113X	2040	2766	2.38	1.44	4.46	60,5	36,5	2,2
	1 7/8	–	W2114X	2040	2766	2.48	1.54	4.69	63,1	39,0	2,2
	1 15/16	–	W2115X	2040	2766	2.48	1.54	4.64	63,1	39,0	2,2
	2	50	W2200X	2040	2766	2.48	1.54	4.54	63,1	39,0	2,2
	2 1/16	–	W2201X	2040	2766	2.70	1.65	4.83	68,6	41,8	2,3
	2 1/8	–	W2202X	2040	2766	2.70	1.65	4.74	68,6	41,8	2,3
	2 3/16	55	W2203X	2040	2766	2.70	1.65	4.64	68,6	41,8	2,3
	2 1/4	–	W2204X	2040	2766	2.55	1.75	4.94	64,8	44,5	2,2
	2 5/16	–	W2205X	2040	2766	2.55	1.75	4.84	64,8	44,5	2,2
	2 3/8	60	W2206X	2040	2766	2.55	1.75	4.72	64,8	44,5	2,2

[1] See page 411 for table of hexagon sizes of bolts, nuts and related thread diameters.

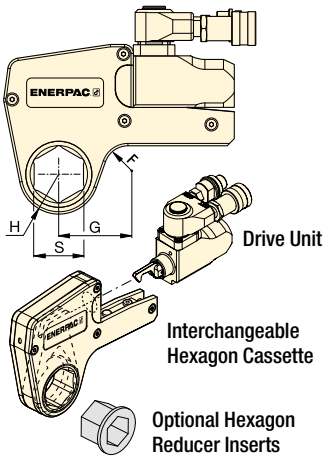
W4000-Series, Hexagon Cassettes



Optional Hexagon Reducers Inserts

Available upon request and made to order. Example: Model No. **W4209R200**

HEX REDUCER 2 9/16" (65MM) x 2" (50MM) A/F



W Series X-Edition



Hexagon Cassette Range:
1 5/16 - 3 3/8 inches

Hexagon Cassette Range:
36 - 85 mm

▼ **SELECTION CHART HEXAGON CASSETTES**

Drive Unit Model Number	Hexagon Size [1] S (inch)	Hexagon Size [1] S (mm)	Model Number Cassette	Maximum Torque at 10,000 psi (690 bar) (Ft.lbs)	Maximum Torque at 10,000 psi (690 bar) (Nm)	Dim. G (inch)	Nose Radius H (inch)	(lbs)	Dim. G (mm)	Nose Radius H (mm)	(kg)
	1 5/16	–	W4105X	4175	5661	2.40	1.46	8.15	61,0	37,0	3,7
	1 3/8	–	W4106X	4175	5661	2.40	1.46	8.15	61,0	37,0	3,7
	1 7/16	36	W4107X	4175	5661	2.40	1.46	8.15	61,0	37,0	3,7
	1 1/2	–	W4108X	4175	5661	2.40	1.46	8.31	61,0	37,0	3,7
	1 9/16	–	W4109X	4175	5661	2.40	1.46	8.22	61,0	37,0	3,7
	1 5/8	41	W4110X	4175	5661	2.40	1.46	8.15	61,0	37,0	3,7
	1 11/16	–	W4111X	4175	5661	2.52	1.56	8.43	64,0	39,5	3,8
	1 3/4	–	W4112X	4175	5661	2.52	1.56	8.35	64,0	39,5	3,8
	1 13/16	46	W4113X	4175	5661	2.52	1.56	8.25	64,0	39,5	3,8
	1 7/8	–	W4114X	4175	5661	2.63	1.63	8.45	66,7	41,5	3,9
	1 15/16	–	W4115X	4175	5661	2.63	1.63	8.39	66,7	41,5	3,9
	2	50	W4200X	4175	5661	2.63	1.63	8.28	66,7	41,5	3,9
	2 1/16	–	W4201X	4175	5661	2.89	1.73	8.65	73,4	44,0	4,0
	2 1/8	–	W4202X	4175	5661	2.89	1.73	8.53	73,4	44,0	4,0
	2 3/16	55	W4203X	4175	5661	2.89	1.73	8.42	73,4	44,0	4,0
	2 1/4	–	W4204X	4175	5661	2.78	1.83	8.73	70,6	46,5	4,1
	2 5/16	–	W4205X	4175	5661	2.78	1.83	8.61	70,6	46,5	4,1
W4000PX	2 3/8	60	W4206X	4175	5661	2.78	1.83	8.47	70,6	46,5	4,1
	2 7/16	–	W4207X	4175	5661	3.00	1.95	8.96	76,2	49,5	4,1
	2 1/2	–	W4208X	4175	5661	3.00	1.95	8.86	76,2	49,5	4,1
	2 9/16	65	W4209X	4175	5661	3.00	1.95	8.67	76,2	49,5	4,1
	2 5/8	–	W4210X	4175	5661	3.08	2.07	9.14	78,3	52,5	4,2
	2 11/16	–	W4211X	4175	5661	3.08	2.07	9.03	78,3	52,5	4,2
	2 3/4	70	W4212X	4175	5661	3.08	2.07	8.84	78,3	52,5	4,2
	2 13/16	–	W4213X	4175	5661	3.21	2.18	9.32	81,6	55,3	4,3
	2 7/8	–	W4214X	4175	5661	3.21	2.18	9.17	81,6	55,3	4,3
	2 15/16	75	W4215X	4175	5661	3.21	2.18	8.96	81,6	55,3	4,3
	3	–	W4300X	4175	5661	3.29	2.30	9.51	83,5	58,5	4,4
	3 1/16	–	W4301X	4175	5661	3.29	2.30	9.42	83,5	58,5	4,4
	3 1/8	80	W4302X	4175	5661	3.29	2.30	9.16	83,5	58,5	4,4
	3 3/16	–	W4303X	4175	5661	3.37	2.44	9.92	85,5	62,0	4,5
	3 1/4	–	W4304X	4175	5661	3.37	2.44	9.92	85,5	62,0	4,5
	3 5/16	–	W4305X	4175	5661	3.37	2.44	9.92	85,5	62,0	4,5
	–	85	W4085MX	4175	5661	3.37	2.44	9.92	85,5	62,0	4,5
	3 3/8	–	W4306X	4175	5661	3.37	2.44	9.92	85,5	62,0	4,5

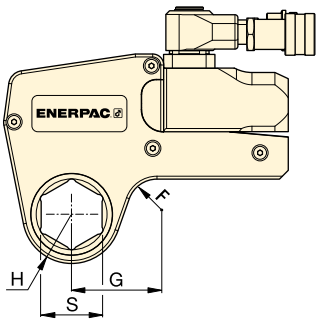
[1] See page 411 for table of hexagon sizes of bolts, nuts and related thread diameters.



Optional Hexagon Reducers Inserts

Available upon request and made to order. Example: Model No. **W8302R209**

HEX REDUCER 3 1/8"(80MM) x 2 9/16"(65MM) A/F



W Series X-Edition



Hexagon Cassette Range:

1⅞ - 4⅛" / 50 - 105 mm

▼ SELECTION CHART HEXAGON CASSETTES

Drive Unit Model Number	Hexagon Size [1] S (inch)	Hexagon Size [1] S (mm)	Model Number Cassette	Maximum Torque at 10,000 psi (690 bar) (Ft.lbs)	Maximum Torque at 10,000 psi (690 bar) (Nm)	Dim. G (inch)	Nose Radius H (inch)	(lbs)	Dim. G (mm)	Nose Radius H (mm)	(kg)
	1⅞	–	W8114X	8470	11,484	3.08	1.77	17.97	78,2	45,0	8,1
	1 15/16	–	W8115X	8470	11,484	3.08	1.77	17.89	78,2	45,0	8,1
	2	50	W8200X	8470	11,484	3.08	1.77	17.75	78,2	45,0	8,1
	2 1/16	–	W8201X	8470	11,484	3.15	1.89	17.52	80,0	48,0	8,1
	2⅛	–	W8202X	8470	11,484	3.15	1.89	17.36	80,0	48,0	8,1
	2 3/16	55	W8203X	8470	11,484	3.15	1.89	17.22	80,0	48,0	8,1
	2¼	–	W8204X	8470	11,484	3.25	2.01	17.92	82,5	51,0	8,1
	2 5/16	–	W8205X	8470	11,484	3.25	2.01	17.76	82,5	51,0	8,1
	2⅜	60	W8206X	8470	11,484	3.25	2.01	17.59	82,5	51,0	8,1
	2 7/16	–	W8207X	8470	11,484	3.38	2.07	17.65	85,9	52,5	8,1
	2½	–	W8208X	8470	11,484	3.38	2.07	17.52	85,9	52,5	8,1
	2 9/16	65	W8209X	8470	11,484	3.38	2.07	17.29	85,9	52,5	8,1
	2⅝	–	W8210X	8470	11,484	3.34	2.20	17.50	84,8	56,0	8,1
	2 11/16	–	W8211X	8470	11,484	3.34	2.20	17.36	84,8	56,0	7,9
	2¾	70	W8212X	8470	11,484	3.34	2.20	17.12	84,8	56,0	7,9
	2 13/16	–	W8213X	8470	11,484	3.35	2.28	17.57	85,0	58,0	7,9
	2⅞	–	W8214X	8470	11,484	3.35	2.28	17.38	85,0	58,0	7,9
	2 15/16	75	W8215X	8470	11,484	3.35	2.28	17.11	85,0	58,0	7,9
	3	–	W8300X	8470	11,484	3.52	2.38	17.77	89,5	60,5	8,0
W8000PX	3 1/16	–	W8301X	8470	11,484	3.52	2.38	17.65	89,5	60,5	8,0
	3⅛	80	W8302X	8470	11,484	3.52	2.38	17.33	89,5	60,5	8,0
	3 3/16	–	W8303X	8470	11,484	3.63	2.60	18.99	92,2	66,0	8,2
	3¼	–	W8304X	8470	11,484	3.63	2.60	18.72	92,2	66,0	8,2
	3 5/16	–	W8305X	8470	11,484	3.63	2.60	18.54	92,2	66,0	8,2
	–	85	W8085MX	8470	11,484	3.63	2.60	18.36	92,2	66,0	8,2
	3⅜	–	W8306X	8470	11,484	3.63	2.60	18.36	92,2	66,0	8,2
	3 7/16	–	W8307IX	8470	11,484	3.63	2.60	18.11	92,2	66,0	8,2
	3½	–	W8308X	8470	11,484	3.63	2.60	17.81	92,2	66,0	8,2
	–	90	W8090MX	8470	11,484	4.05	2.91	20.36	102,9	74,0	8.8
	3 9/16	–	W8309X	8470	11,484	4.05	2.91	20.36	102,9	74,0	8,8
	3⅝	–	W8310X	8470	11,484	4.05	2.91	20.18	102,9	74,0	8,8
	3 11/16	–	W8311X	8470	11,484	4.05	2.91	19.93	102,9	74,0	8,8
	3¾	95	W8312X	8470	11,484	4.05	2.91	19.71	102,9	74,0	8,8
	3 13/16	–	W8313X	8470	11,484	4.05	2.91	19.46	102,9	74,0	8,8
	3⅞	–	W8314X	8470	11,484	4.05	2.91	19.10	102,9	74,0	8,8
	3 15/16	100	W8315X	8470	11,484	4.33	3.13	20.31	110,0	79,5	9,3
	4	–	W8400X	8470	11,484	4.33	3.13	20.04	110,0	79,5	9,3
	4 1/16	–	W8401IX	8470	11,484	4.33	3.13	19.80	110,0	79,5	9,3
	4⅛	105	W8402X	8470	11,484	4.33	3.13	19.39	110,0	79,5	9,3

[1] See page 411 for table of hexagon sizes of bolts, nuts and related thread diameters.

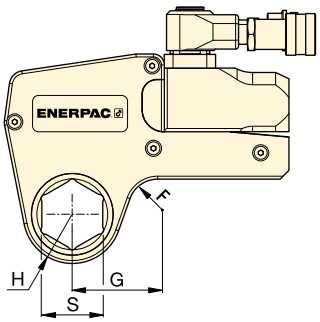
W15000-Series, Hexagon Cassettes



Optional Hexagon Reducers Inserts

Available upon request and made to order. Example: Model No. **W15312R302**

HEX REDUCER 3 3/4" (95MM) x 3 1/8" (80MM) A/F



W Series X-Edition



Hexagon Cassette Range:

2⅞ - 4⅝" / 65 - 115 mm

▼ **SELECTION CHART HEXAGON CASSETTES**

Drive Unit Model Number	Hexagon Size [1] S (inch)	Hexagon Size [1] S (mm)	Model Number Cassette	Maximum Torque at 10,000 psi (690 bar) (Ft.lbs)	Maximum Torque at 10,000 psi (690 bar) (Nm)	Dim. G (inch)	Nose Radius H (inch)	(lbs)	Dim. G (mm)	Nose Radius H (mm)	(kg)
	2 7/16	–	W15207X	15,330	20,785	3.49	2.32	30.72	88,6	59,0	13,6
	2½	–	W15208X	15,330	20,785	3.49	2.32	30.72	88,6	59,0	13,6
	2 9/16	65	W15209X	15,330	20,785	3.49	2.32	30.72	88,6	59,0	13,6
	2⅝	–	W15210X	15,330	20,785	3.49	2.32	30.72	88,6	59,0	13,6
	2 11/16	–	W15211X	15,330	20,785	3.49	2.32	30.72	88,6	59,0	13,6
	2¾	70	W15212X	15,330	20,785	3.49	2.32	30.72	88,6	59,0	13,6
	2 13/16	–	W15213X	15,330	20,785	3.56	2.44	30.62	90,5	62,0	13,7
	2⅞	–	W15214X	15,330	20,785	3.56	2.44	30.39	90,5	62,0	13,7
	2 15/16	75	W15215X	15,330	20,785	3.56	2.44	30.08	90,5	62,0	13,7
	3	–	W15300X	15,330	20,785	3.66	2.54	30.86	92,9	64,5	13,8
	3 1/16	–	W15301X	15,330	20,785	3.66	2.54	30.71	92,9	64,5	13,8
	3⅛	80	W15302X	15,330	20,785	3.66	2.54	30.34	92,9	64,5	13,8
	3 3/16	–	W15303X	15,330	20,785	3.80	2.74	32.38	96,6	69,5	14,1
	3¼	–	W15304X	15,330	20,785	3.80	2.74	32.07	96,6	69,5	14,1
	3 5/16	–	W15305X	15,330	20,785	3.80	2.74	31.85	96,6	69,5	14,1
	–	85	W15085MX	15,330	20,785	3.80	2.74	31.85	96,6	69,5	14,1
	3⅜	–	W15306X	15,330	20,785	3.80	2.74	31.63	96,6	69,5	14,1
	3 7/16	–	W15307IX	15,330	20,785	3.80	2.74	31.32	96,6	69,5	14,1
	3½	–	W15308X	15,330	20,785	3.80	2.74	30.98	96,6	69,5	14,1
W15000PX	–	90	W15090MX	15,330	20,785	4.01	2.95	31.70	101,8	75,0	14,5
	3 9/16	–	W15309X	15,330	20,785	4.01	2.95	31.70	101,8	75,0	14,6
	3⅝	–	W15310X	15,330	20,785	4.01	2.95	31.70	101,8	75,0	14,6
	3 11/16	–	W15311X	15,330	20,785	4.01	2.95	31.70	101,8	75,0	14,6
	3¾	95	W15312X	15,330	20,785	4.01	2.95	31.70	101,8	75,0	14,6
	3 13/16	–	W15313X	15,330	20,785	4.01	2.95	31.70	101,8	75,0	14,5
	3⅞	–	W15314X	15,330	20,785	4.01	2.95	31.70	101,8	75,0	14,5
	3 15/16	100	W15315X	15,330	20,785	4.06	3.17	34.02	103,1	80,5	14,8
	4	–	W15400X	15,330	20,785	4.06	3.17	33.70	103,1	80,5	14,8
	4 1/16	–	W15401IX	15,330	20,785	4.06	3.17	33.41	103,1	80,5	14,8
	4⅛	105	W15402X	15,330	20,785	4.06	3.17	33.09	103,1	80,5	14,8
	4 3/16	–	W15403IX	15,330	20,785	4.06	3.17	32.81	103,1	80,5	14,8
	4¼	–	W15404X	15,330	20,785	4.06	3.17	32.29	103,1	80,5	14,8
	4 5/16	110	W15405X	15,330	20,785	4.52	3.44	35.61	114,8	87,5	15,1
	4⅜	–	W15406X	15,330	20,785	4.52	3.44	35.32	114,8	87,5	15,1
	4 7/16	–	W15407X	15,330	20,785	4.52	3.44	34.99	114,8	87,5	15,1
	4½	–	W15408IX	15,330	20,785	4.52	3.44	34.63	114,8	87,5	15,1
	–	115	W15115MX	15,330	20,785	4.52	3.44	34.63	114,8	87,5	15,1
	4 9/16	–	W15409IX	15,330	20,785	4.52	3.44	34.28	114,8	87,5	15,1
	4⅝	–	W15410IX	15,330	20,785	4.52	3.44	33.72	114,8	87,5	15,1

[1] See page 411 for table of hexagon sizes of bolts, nuts and related thread diameters.

W22000-Series, Hexagon Cassettes

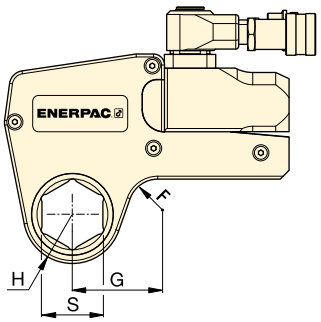
ENERPAC



Optional Hexagon Reducers Inserts

Available upon request and made to order. Example: Model No. **W22312R215**

HEX REDUCER 3 3/4" (95MM) x 2 15/16" (75MM) A/F



W Series X-Edition



Hexagon Cassette Range:

2 15/16 - 5 3/8" / 75 - 135 mm

▼ **SELECTION CHART HEXAGON CASSETTES**

Drive Unit Model Number	Hexagon Size [1] S (inch)	Hexagon Size [1] S (mm)	Model Number Cassette	Maximum Torque at 10,000 psi (690 bar) (Ft.lbs)	Maximum Torque at 10,000 psi (690 bar) (Nm)	Dim. G (inch)	Nose Radius H (inch)	(lbs)	Dim. G (mm)	Nose Radius H (mm)	(kg)
	2 15/16	75	W22215X	22,500	30,506	4.02	2.64	48.72	102,1	67,0	22,1
	3	–	W22300X	22,500	30,506	4.02	2.64	48.40	102,1	67,0	22,0
	3 1/16	–	W22301X	22,500	30,506	4.02	2.64	48.22	102,1	67,0	21,9
	3 1/8	80	W22302X	22,500	30,506	4.02	2.64	47.78	102,1	67,0	21,6
	3 3/16	–	W22303X	22,500	30,506	4.23	2.85	50.58	107,4	72,4	22,9
	3 1/4	–	W22304X	22,500	30,506	4.23	2.85	50.19	107,4	72,4	22,8
	3 5/16	–	W22305X	22,500	30,506	4.23	2.85	49.92	107,4	72,4	22,6
	–	85	W22085MX	22,500	30,506	4.23	2.85	49.66	107,4	72.4	22,5
	3 3/8	–	W22306X	22,500	30,506	4.23	2.85	49.66	107,4	72,4	22,5
	3 7/16	–	W22307IX	22,500	30,506	4.23	2.85	50.29	107,4	72,4	22.8
	3 1/2	–	W22308X	22,500	30,506	4.23	2.85	48.87	107,4	72,4	22,2
	–	90	W22090MX	22,500	30,506	4.45	3.07	51.58	113,0	77,9	23,4
	3 9/16	–	W22309X	22,500	30,506	4.45	3.07	51.58	113,0	77,9	23,4
	3 5/8	–	W22310X	22,500	30,506	4.45	3.07	51.30	113,0	77,9	23,3
	3 11/16	–	W22311X	22,500	30,506	4.45	3.07	50.93	113,0	77,9	23,1
	3 3/4	95	W22312X	22,500	30,506	4.45	3.07	50.62	113,0	77,9	22,9
	3 13/16	–	W22313X	22,500	30,506	4.45	3.07	50.24	113,0	77,9	22,8
	3 7/8	–	W22314X	22,500	30,506	4.45	3.07	49.77	113,0	77,9	22,6
	3 15/16	100	W22315X	22,500	30,506	4.72	3.35	53.57	119,9	85,1	24,3
W22000PX	4	–	W22400X	22,500	30,506	4.72	3.35	53.19	119,9	85,1	24,1
	4 1/16	–	W22401IX	22,500	30,506	4.72	3.35	52.82	119,9	85,1	24,0
	4 1/8	105	W22402X	22,500	30,506	4.72	3.35	52.43	119,9	85,1	23,6
	4 3/16	–	W22403IX	22,500	30,506	4.72	3.35	52.09	119,9	85,1	23,6
	4 1/4	–	W22404X	22,500	30,506	4.72	3.35	51.48	119,9	85,1	24,6
	4 5/16	110	W22405X	22,500	30,506	4.92	3.54	54.26	125,0	89,9	24,6
	4 3/8	–	W22406X	22,500	30,506	4.92	3.54	53.91	125,0	89,9	24,5
	4 7/16	–	W22407X	22,500	30,506	4.92	3.54	53.50	125,0	89,9	24,3
	4 1/2	–	W22408IX	22,500	30,506	4.92	3.54	53.06	125,0	89,9	24,1
	–	115	W22115MX	22,500	30,506	4.92	3.54	53.06	125,0	89,9	24,1
	4 9/16	–	W22409IX	22,500	30,506	4.92	3.54	52.64	125,0	89,9	23,9
	4 5/8	–	W22410IX	22,500	30,506	4.92	3.54	51.99	125,0	89,9	23,6
	4 3/4	120	W22412X	22,500	30,506	5.12	3.74	54.54	130,0	95,0	24,7
	–	123	W22123MX	22,500	30,506	5.12	3.74	53.80	130,0	95,0	24,4
	4 7/8	–	W22414X	22,500	30,506	5.12	3.74	53.60	130,0	95,0	24,3
	5	–	W22500X	22,500	30,506	5.12	3.74	52.37	130,0	95,0	23,8
	5 1/8	130	W22502X	22,500	30,506	5.31	3.94	55.10	134,8	100,0	25,0
	5 3/16	–	W22503IX	22,500	30,506	5.31	3.94	54.71	134,8	100,0	24,8
	5 1/4	–	W22504IX	22,500	30,506	5.31	3.94	54.05	134,8	100,0	24,5
	5 3/8	135	W22506X	22,500	30,506	5.31	3.94	52.77	134,8	100,0	23,9

[1] See page 411 for table of hexagon sizes of bolts, nuts and related thread diameters.

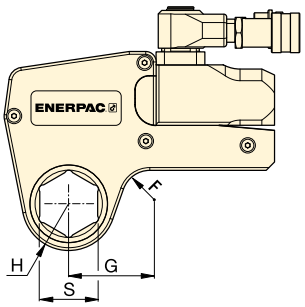
W35000-Series, Hexagon Cassettes



Optional Hexagon Reducers Inserts

Available upon request and made to order.
Example: Model No. **W35502R402**

HEX REDUCER 5-1/8" (130MM) x 4-1/8" (105MM) A/F



W
Series
X-Edition



Hexagon Cassette Range:
3⅛ - 6⅛" / 80 - 155 mm

▼ **SELECTION CHART HEXAGON CASSETTES**

Drive Unit Model Number	Hexagon Size [1] S (inch)	Hexagon Size [1] S (mm)	Model Number Cassette	Maximum Torque at 10,000 psi (690 bar) (Ft.lbs)	Maximum Torque at 10,000 psi (690 bar) (Nm)	Dim. G (inch)	Nose Radius H (inch)	(lbs)	Dim. G (mm)	Nose Radius H (mm)	(kg)
W35000PX	3⅛	80	W35302X	35,000	47,454	4.99	3.02	72.30	126,8	76,0	32,8
	3⁳⁄₁₆	–	W35303X	35,000	47,454	4.99	3.02	72.10	126,8	76,0	32,7
	3¼	–	W35304X	35,000	47,454	4.99	3.02	71.70	126,8	76,0	32,5
	3⁵⁄₁₆	–	W35305X	35,000	47,454	4.99	3.02	71.40	126,8	76,0	32,4
	–	85	W35085MX	35,000	47,454	5.08	3.02	71.22	129,0	76,0	32,3
	3⅜	–	W35306X	35,000	47,454	4.99	3.02	71.00	126,8	76,0	32,2
	3⁷⁄₁₆	–	W35307IX	35,000	47,454	4.99	3.02	70.50	126,8	76,0	32,0
	3½	–	W35308X	35,000	47,454	4.99	3.02	70.10	126,8	76,0	31,8
	–	90	W35090MX	35,000	47,454	5.31	3.23	73.87	135,0	81,5	33,5
	3⁹⁄₁₆	–	W35309X	35,000	47,454	5.22	3.23	71.40	132,5	81,5	32,4
	3⅝	–	W35310X	35,000	47,454	5.22	3.23	73.40	132,5	81,5	33,3
	3¹¹⁄₁₆	–	W35311X	35,000	47,454	5.22	3.23	73.00	132,5	81,5	33,1
	3¾	95	W35312X	35,000	47,454	5.22	3.23	72.50	132,5	81,5	32,9
	3¹³⁄₁₆	–	W35313X	35,000	47,454	5.22	3.23	72.10	132,5	81,5	32,7
	3⅞	–	W35314X	35,000	47,454	5.22	3.23	71.40	132,5	81,5	32,4
	3¹⁵⁄₁₆	100	W35315X	35,000	47,454	5.39	3.45	70.80	137,0	87,0	34,1
	4	–	W35400X	35,000	47,454	5.39	3.45	74.70	137,0	87,0	33,9
	4⁁₁₆	–	W35401IX	35,000	47,454	5.39	3.45	74.30	137,0	87,0	33,7
	4⅛	105	W35402X	35,000	47,454	5.39	3.45	73.90	137,0	87,0	33,5
	4⁳⁄₁₆	–	W35403IX	35,000	47,454	5.39	3.45	73.40	137,0	87,0	33,3
	4¼	–	W35404X	35,000	47,454	5.39	3.45	72.80	137,0	87,0	33,0
	4⁵⁄₁₆	110	W35405X	35,000	47,454	5.63	3.69	76.90	143,0	93,0	34,9
	4⅜	–	W35406X	35,000	47,454	5.63	3.69	76.50	143,0	93,0	34,7
	4⁷⁄₁₆	–	W35407X	35,000	47,454	5.63	3.69	76.10	143,0	93,0	34,5
	4½	–	W35408IX	35,000	47,454	5.63	3.69	75.60	143,0	93,0	34,3
	–	115	W35115MX	35,000	47,454	5.75	3.69	75.41	146,0	93,0	34,2
	4⁹⁄₁₆	–	W35409IX	35,000	47,454	5.63	3.69	75.20	143,0	93,0	34,1
	4⅝	–	W35410IX	35,000	47,454	5.63	3.69	74.50	143,0	93,0	33,7
	4¾	120	W35412X	35,000	47,454	5.85	3.91	78.50	148,5	98,5	35,6
	–	123	W35123MX	35,000	47,454	6.02	3.94	77.18	153,0	100,0	35,0
	4⅞	–	W35414X	35,000	47,454	5.85	3.91	76.90	148,5	98,5	34,9
	5	–	W35500X	35,000	47,454	5.85	3.91	75.60	148,5	98,5	34,3
	5⅛	130	W35502X	35,000	47,454	6.02	4.09	78.90	153,0	103,0	35,8
	5⁳⁄₁₆	–	W35503IX	35,000	47,454	6.02	4.09	78.50	153,0	103,0	35,6
	5¼	–	W35504IX	35,000	47,454	6.02	4.09	77.60	153,0	103,0	35,2
	5⅜	135	W35506X	35,000	47,454	6.02	4.09	76.30	153,0	103,0	34,6
	5½	140	W35508X	35,000	47,454	6.24	4.31	79.80	158,5	108,5	36,2
	5⁹⁄₁₆	–	W35509X	35,000	47,454	6.24	4.31	79.40	158,5	108,5	36,0
	5⅝	–	W35510X	35,000	47,454	6.24	4.31	78.50	158,5	108,5	35,6
	5¾	145	W35512X	35,000	47,454	6.24	4.31	76.90	164,0	108,5	34,9
	5⅞	150	W35514X	35,000	47,454	6.46	4.52	80.90	164,0	114,0	36,7
	–	151	W35151MX	35,000	47,454	6.46	4.52	80.48	164,0	114,0	36,5
	6	–	W35600X	35,000	47,454	6.46	4.52	79.60	164,0	114,0	36,1
	6⅛	155	W35602X	35,000	47,454	6.46	4.52	77.80	164,0	114,0	35,3

[1] See page 411 for table of hexagon sizes of bolts, nuts and related thread diameters.

▼ W4206SL UltraSlim bi-hexagonal stepped width cassette with W4000X drive unit



Ex II 2 GD T4

Your easy and long lasting solution to difficult access bolting applications



UltraSlim: Designed for Tight Spots

Stepped width design provides easy access in confined areas. UltraSlim cassettes fit where standard solutions won't.



Built to Outperform

High endurance components keep working when others fail.



Top Mounted Straight Handle

The top mounted straight handle is standard and provides safe and easy positioning and access to hard to reach fasteners.

Straight handle (standard)	**SWH6S**
Angled handle (optional)	**SWH6A**



Torque Pump Selection Matrix

System matched battery-powered cordless, electric and air-driven torque pumps that are ideal for use with hydraulic wrenches.

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Versatility

- **Lean, stepped width design allows tool to be mounted over bolts where other tools won't fit**
- **Bi-Hexagonal cassette allows twice as many positioning points on nut or bolt**
- **Robust top mounted handle stays out of the way, providing safe fastening in hard to reach areas**
- **Uses same drive unit as standard W-series hexagon cassettes.**

Performance

- **Premium components provide best-in-class endurance compared to other limited access tools.**

Ease of Use

- **Few moving parts are easily accessible for quick field maintenance**
- **Fast release drive unit enables rapid exchange of cassettes, no tools required**
- **Top mounted straight handle for improved tool handling and safety.**

Accuracy

- **Constant torque output provides accuracy of ± 3% across the full stroke**

CE - ATEX declared

- **All W-Series X-edition drive units are CE - ATEX declared.**
- **All UltraSlim Series cassettes are CE - ATEX declared and are shipped complete with a calibration certificate.**



Slim enough to fit and tough enough to last. This UltraSlim wrench is the perfect controlled bolting solution for this oil and gas flange. ▶

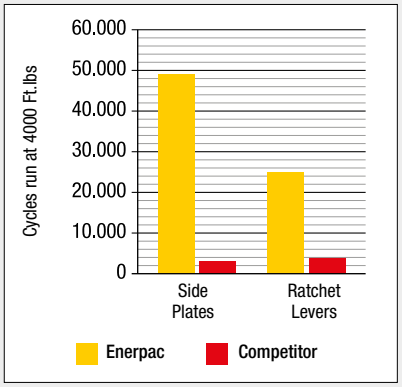
UltraSlim Bi-Hexagonal Cassettes

UltraSlim Cassettes

Accessing narrow spaces normally requires significantly reducing the width of the torque wrench. For the tool operator, this has always meant vastly reduced tool durability, and/or reduced torque output.

By using the highest grade materials, perfecting the geometry, and placing the positioning handle on top of the tool for safe fastening, Enerpac UltraSlim cassettes are able to provide greater torque, get into tighter spaces, and vastly outperform the competition in product durability *.

Durability of Key Components *



* Average test results, whereby three Enerpac 1 13/16 inch UltraSlim cassettes and three competitor 1 13/16 inch cassettes were tested at 4,000 Ft.lbs for 50,000 cycles. The Enerpac side plates never broke for the full duration of the test.

W-SL Series UltraSlim



Nominal Torque Output at 10,000 psi:
4360 Ft.lbs / 5911 Nm

Bi-Hexagonal Range:
1 13/16 - 2 15/16" / 46 - 75 mm

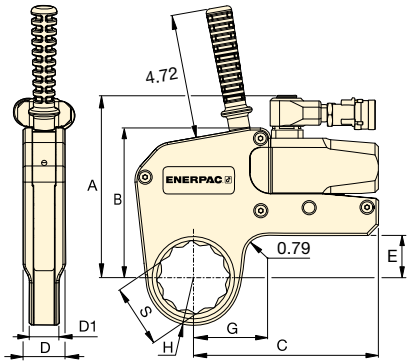
Maximum Operating Pressure:
10,000 psi / 690 bar



Torque Wrench Hoses

Use Enerpac THQ700-Series hoses with W-Series torque wrenches to ensure the integrity of your hydraulic system.

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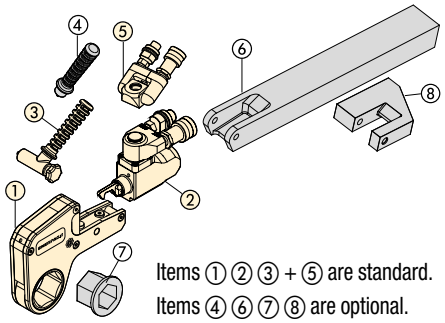


	Dimensions (inch)						Dimensions (mm)					
	A	B	C	D	D1	E	A	B	C	D	D1	E
W2...-SL	5.54	4.30	5.81	1.28	1.00	0.94	140,7	109,3	147,7	32,4	25,4	24,0
W4...-SL	6.91	5.69	7.03	1.59	1.13	1.61	175,6	144,5	178,5	40,5	28,6	40,8

▼ SELECTION CHART

Hexagonal Size (A/F) S		Nominal Torque @ 10,000 psi (690 bar)		UltraSlim Cassette * Model Nr.	Minimum Torque @ 1000 psi (69 bar)		Dimensions (inch)			Dimensions (mm)			Drive Unit Model Nr. ** (sold separately)
													
(inch)	(mm)	(Ft.lbs)	(Nm)		(Ft.lbs)	(Nm)	G	H	(lbs)	G	H	(kg)	
1 13/16	46	1980	2685	W2113SL	200	269	2.35	1.44	4.87	59,6	36,5	2,2	
2	50	1980	2685	W2200SL	200	269	2.40	1.52	4.87	61,1	38,8	2,2	W2000PX
2 3/16	55	1980	2685	W2203SL	200	269	2.49	1.63	4.87	63,2	41,5	2,2	
2 3/8	60	1980	2685	W2206SL	200	269	2.56	1.75	4.88	65,1	44,5	2,2	
1 13/16	46	4360	5911	W4113SL	430	591	2.65	1.56	10.15	67,2	39,5	4,6	
2 3/16	55	4360	5911	W4203SL	430	591	2.70	1.73	10.15	68,7	44,0	4,6	
2 3/8	60	4360	5911	W4206SL	430	591	2.82	1.89	10.36	71,6	48,0	4,7	
2 9/16	65	4360	5911	W4209SL	430	591	2.92	1.99	10.37	74,1	50,5	4,7	W4000PX
2 3/4	70	4360	5911	W4212SL	430	591	2.98	2.11	10.42	75,6	53,5	4,7	
2 15/16	75	4360	5911	W4215SL	430	591	2.99	2.20	10.37	76,0	56,0	4,7	

* Bi-Hexagonal Cassette includes top mounted straight handle.
** Cassette may also be used with W2000X or W4000X drive units.
Weight of drive units: W2000PX = 3.1 lbs (1,4 kg); W4000PX = 4.4 lbs (2,0 kg).



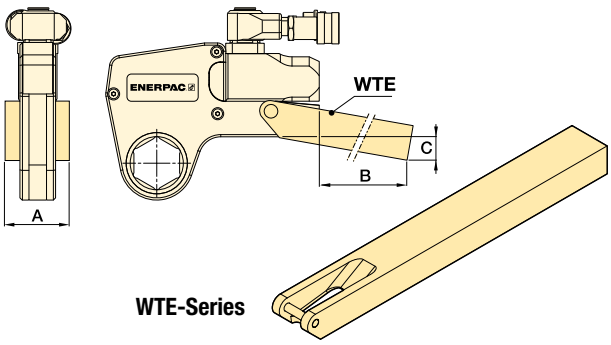
Items ① ② ③ + ⑤ are standard.
Items ④ ⑥ ⑦ ⑧ are optional.

① Hexagon Cassette (pages 230-237)
② Drive Unit (page 229)
③ Angled Positioning Handle (page 228)
④ Straight Positioning Handle (page 228)
⑤ TSP300 Tilt & Swivel (page 228)
⑥ Extended Reaction Arm (page 238)
⑦ Reducer Insert (pages 230-237)
⑧ Reaction Paddle (page 238)

WTE WRP Series



WTE-Series, Extended Reaction Arm

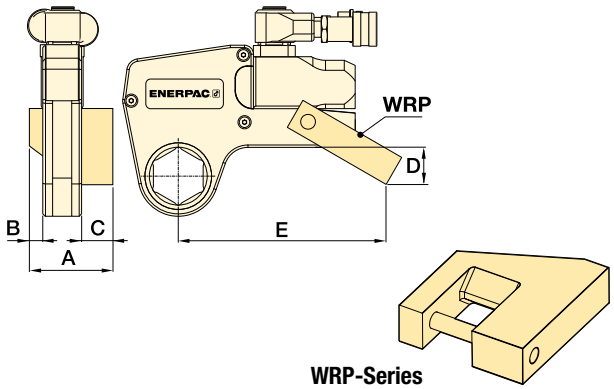


- **Full torque rated**
- **Increases tool fit in restricted access areas.**

For Torque Wrench Model Number	Model Number	Dimensions (in)			
		A	B	C	(lbs) *
W2000PX	WTE20	2.20	15.67	2.66	5.73
W4000PX	WTE40	2.60	17.17	2.91	10.14
W8000PX	WTE80	3.35	17.68	2.15	16.76
W15000PX	WTE150	4.02	19.61	2.83	26.46
W22000PX	WTE220	4.49	20.51	3.03	38.14
W35000PX	WTE350	5.00	16.48	5.23	39.24

* Weights indicated are for the accessories only and do not include the wrench.

WRP-Series, Low-Profile Reaction Paddles



- **Lightweight interchangeable design**
- **Allows for offset reaction when in-line reaction is not available.**

For Torque Wrench Model No.	Model Number	Dimensions (in)					
		A	B	C	D	E	(lbs) *
W2000PX	WRP20	3.31	0.63	1.40	1.77	5.83	0.88
W4000PX	WRP40	4.29	0.83	1.87	2.32	7.48	1.76
W8000PX	WRP80	5.37	1.02	2.25	2.72	8.78	4.41
W15000PX	WRP150	6.50	1.26	2.74	3.43	10.12	8.60
W22000PX	WRP220	8.15	1.52	3.58	5.28	12.48	15.87
W35000PX	WRP350	9.22	1.79	3.58	7.17	13.98	23.37

* Weights indicated are for the accessories only and do not include the wrench.

Looking for customized components to help solve your torquing problems? Enerpac has the experience and capabilities to help find solutions to your problems.

Enerpac hydraulic torque wrenches are designed to accommodate most bolting applications. However, due to space constraints, location of reaction points or need for special sockets and adapters, there is often a need for customized components.



◀ *Custom S6000X hydraulic torque wrench fitted with a custom reaction arm/socket.*



◀ *Enerpac Multi Stud Tensioning (MST) system capable of tensioning every single stud in a joint simultaneously.*



◀ *Custom hydraulic tensioners to suit 5 inch studs load output 472 US-ton.*

Overview Custom Torque Wrenches and Bolt Tensioners



▲ *Custom S11000X torque wrench with a custom torque link and reaction roller.*

Customizable features on torque wrenches:

- Reaction Arms
- Torque Links (split or layered for extremely space restricted applications)
- Reaction Roller Assemblies
- Sockets (direct drive, castellated, peg-drive, stacked)
- Drives (direct Allen®, spline, square drive size)
- Hexagon Reducing and Square Drive Inserts.

Customizable features on bolt tensioners:

- Adaptor kits with puller sleeves to suit different thread and/or pitch sizes
- Nut rotating sockets to accommodate different nut A/F (across flats) sizes
- Bridges to suit round or non-standard nuts or clear obstructions
- Sockets (direct drive, castellated, peg-drive, stacked)
- Load cells with various capacities
- Screw-on tensioners to overcome space restrictions.

▼ RSL-Drive Units with interchangeable RLP-Hexagon Cassette and RSQ-Square Drive Cassette



Setting New Standards in Safety, Simplicity and Performance

Safety and Performance

- **Innovative design that completely encloses all moving parts and minimizes pinch points**
- **30-35° rotation angle provides added productivity while avoiding "tool lock on" which is common with some torque wrench designs.**

Simplicity

- **Simple robust alloy steel design with just three moving parts for reduced maintenance**
- **Robust handles are available for both sides and the tops of cassettes to allow for extra maneuverability**
- **Designed to give optimum strength to weight and torque to weight ratios**
- **Minimum nose radius for trouble-free tool fit.**

Versatility

- **Interchangeable cassette design**
- **Wide range of hexagon sizes available for all applications**
- **Reaction arm has a simple dial lock for rapid change**
- **For use in multiple industrial, energy, and oil and gas applications.**

Accuracy

- **Constant torque output provides accuracy of ± 3% across the full stroke.**



RLP-Series Low-Profile Hexagon Cassettes

For the metric and imperial sizes of hexagon cassettes see **pages 242 - 251**.



RSQ-Square Drive Cassettes

RSQ-Square Drive Cassettes are interchangeable with the RLP-Hexagon Cassettes. They all use the same RSL-drive unit.

Page: **250**



Back-Up Spanners, BUS-Series

To be used to stop the back nut from turning during make up or break out. Two hexagon sizes in one tool.

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Torque Pumps

Visit enerpac.com for system matched battery-powered, electric and air-driven torque pumps that are ideal for use with hydraulic torque wrenches.

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Torque Wrench Hoses

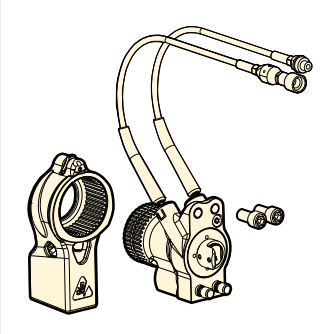
Use Enerpac THQ700-Series torque wrench hoses with RSL-Series torque wrenches to ensure the integrity of your hydraulic system.

6 feet long, 2 hoses	**THQ702T**
19.5 feet long, 2 hoses	**THQ706T**
39 feet long, 2 hoses	**THQ712T**

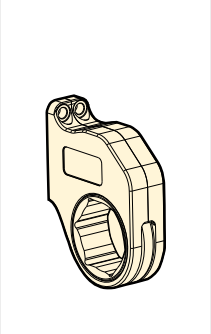
Drive Units for Hexagon & Square Drive Cassettes

One Drive, Two Tools

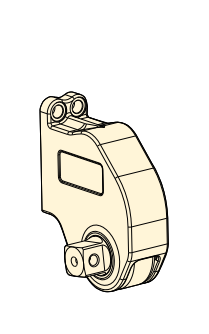
One RSL-Hydraulic Drive Unit fits RLP-Hexagon Cassette or RSQ-Square Drive Cassette.



RSL



RLP... / RLP...SL



RSQ

RSL Series



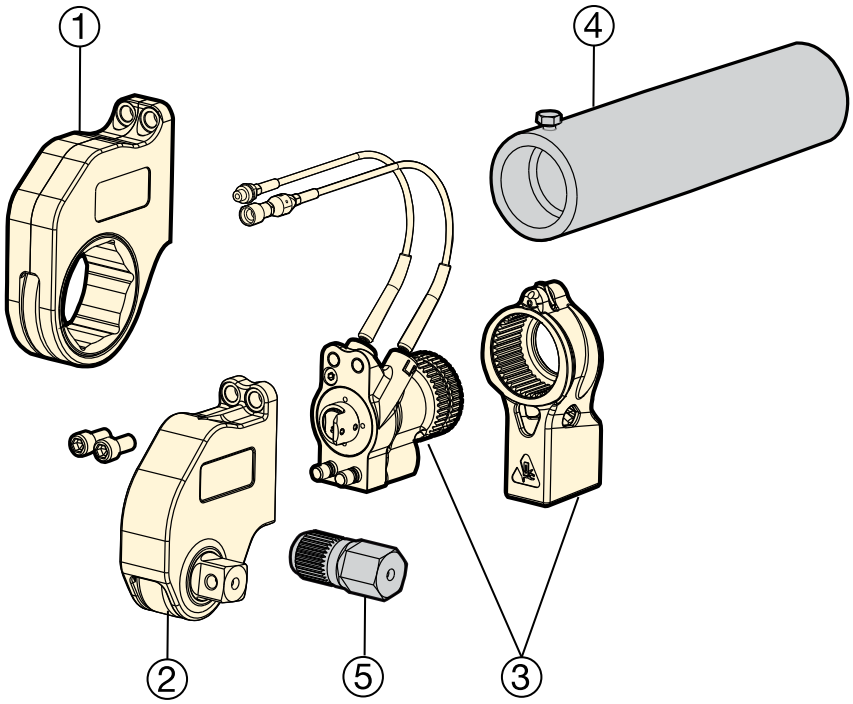
Maximum Torque at 10,000 psi:
1408 - 28,002 Ft.lbs

Hexagon Range:
⅞ - 6⅛ inches

Hexagon Range:
27 - 155 mm

Maximum Operating Pressure:
10,000 psi / 690 bar

▼ TORQUE WRENCH OPTIONS AND ACCESSORIES



① **RLP**-Hexagon Cassette (pages 242-246)
RLP-SL-Slimline Hexagon Cassette (pages 248-249)

② **RSQ**-Square Drive Cassette (pages 250-251)

③ **RSL**-Drive Unit and Reaction Arm (page 241)

Optional Parts (page 247)

④ **ERT**-Extended Reaction Tube, for RLP only

Optional Parts (only available per request)

⑤ Hexagon Bit



ERAK-Series, Reaction Arm Kits

Provides reaction point options for RSQ1500, RSQ3000, RSQ5000 and RSQ8000 square drive torque wrenches. Significantly improves worker safety by providing a safety tested and full torque rated reaction arm, and increases tool fit.

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▼ SELECTION CHART

Hexagon Cassette Range (A/F) (see pages 242 - 251 for sizes and model numbers)		Max. Torque Output at 10,000 psi (690 bar)		Drive Unit Model Number	Minimum Torque Output at 1000 psi (69 bar)		
(inch)	(mm)	(Ft.lbs)	(Nm)		(Ft.lbs)	(Nm)	(lbs)
⅞ - 2⅜	27 - 60	1408	1909	**RSL1500**	141	191	3.4
1⁵⁄₁₆ - 2¹⁵⁄₁₆	33 - 75	3080	4176	**RSL3000**	308	417	5.6
1¹¹⁄₁₆ - 3⅛	46 - 80	5303	7190	**RSL5000**	530	719	8.9
2⅜ - 3⅛	60 - 80	7862	10,659	**RSL8000**	786	1066	10.6
2⁷⁄₁₆ - 4⅝	62 - 110	11,154	15,123	**RSL11000**	1115	1512	11.6
2¹⁵⁄₁₆ - 4⅝	75 - 115	18,843	25,547	**RSL19000**	1884	2554	20.0
3⅛ - 6⅛	80 - 155	28,002	37,965	**RSL28000**	2800	3796	22.0

Select the Right Torque: Use Enerpac Bolting Integrity Software Solutions

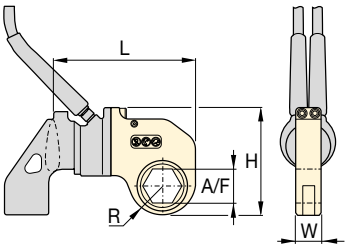
Comprehensive on-line software solutions for Bolted Joint Integrity.

The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application Data Sheet and Joint Completion Report. Custom Joint information can also be entered.

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Hexagon Cassettes for RSL-Series

ENERPAC



Hexagon Range:
⅞ - 6⅛ inches

Hexagon Range:
27 - 155 mm

Maximum Operating Pressure:
10,000 psi / 690 bar

RSL Series



▼ **SELECTION CHART**

Drive Unit Model Number	Hexagon Size A/F		Hexagon Cassette Model Number	Maximum Torque		Dimensions (inch)					Dimensions (mm)				
	(inch)	(mm)		(Ft.lbs)	(Nm)	R	L	W	H	(lbs)	R	L	W	H	(kg)
RSL1500	⅞	–	RLP1014	320	434	0.79	6.00	1.25	4.33	2.2	20,1	152,4	31,8	110,0	1,0
	1 1/16	27	RLP1101	640	868	0.95	6.05	1.25	4.50	2.2	24,1	153,7	31,8	114,3	1,0
	1⅛	–	RLP1102	640	868	1.03	6.12	1.25	4.57	2.3	26,2	155,4	31,8	116,1	1,0
	1 3/16	30	RLP1103	640	868	1.03	6.12	1.25	4.57	2.3	26,2	155,4	31,8	116,1	1,0
	1¼	32	RLP1104	640	868	1.03	6.12	1.25	4.57	2.3	26,2	155,4	31,8	116,1	1,0
	1 5/16	33	RLP1105	900	1220	1.15	6.24	1.25	4.69	2.4	29,2	158,5	31,8	119,1	1,1
	1⅜	35	RLP1106	900	1220	1.15	6.24	1.25	4.69	2.4	29,2	158,5	31,8	119,1	1,1
	1 7/16	36	RLP1107	900	1220	1.15	6.24	1.25	4.69	2.4	29,2	158,5	31,8	119,1	1,1
	1½	38	RLP1108	1408	1909	1.31	6.41	1.25	4.86	2.7	33,3	162,8	31,8	123,4	1,2
	1 9/16	–	RLP1109	1408	1909	1.31	6.41	1.25	4.86	2.7	33,3	162,8	31,8	123,4	1,2
	1⅝	41	RLP1110	1408	1909	1.31	6.41	1.25	4.86	2.7	33,3	162,8	31,8	123,4	1,2
	1 11/16	–	RLP1111	1408	1909	1.40	6.49	1.25	4.94	2.7	35,6	164,8	31,8	125,5	1,2
	1¾	–	RLP1112	1408	1909	1.40	6.49	1.25	4.94	2.7	35,6	164,8	31,8	125,5	1,2
	1 13/16	46	RLP1113	1408	1909	1.40	6.49	1.25	4.94	2.7	35,6	164,8	31,8	125,5	1,2
	1⅞	–	RLP1114	1408	1909	1.48	6.58	1.25	5.03	2.7	37,6	167,1	31,8	127,8	1,2
	1 15/16	–	RLP1115	1408	1909	1.48	6.58	1.25	5.03	2.7	37,6	167,1	31,8	127,8	1,2
	2	50	RLP1200	1408	1909	1.48	6.58	1.25	5.03	2.7	37,6	167,1	31,8	127,8	1,2
	2 1/16	–	RLP1201	1408	1909	1.58	6.68	1.25	5.13	2.7	40,1	169,7	31,8	130,3	1,2
	2⅛		RLP1202	1408	1909	1.58	6.68	1.25	5.13	2.7	40,1	169,7	31,8	130,3	1,2
	2 3/16	55	RLP1203	1408	1909	1.58	6.68	1.25	5.13	2.7	40,1	169,7	31,8	130,3	1,2
	2¼	–	RLP1204	1408	1909	1.70	6.79	1.25	5.24	2.8	43,2	172,5	31,8	133,1	1,3
	2 5/16	–	RLP1205	1408	1909	1.70	6.79	1.25	5.24	2.8	43,2	172,5	31,8	133,1	1,3
	2⅜	60	RLP1206	1408	1909	1.70	6.79	1.25	5.24	2.8	43,2	172,5	31,8	133,1	1,3
RSL3000	1 5/16	33	RLP3105	900	1220	1.18	7.62	1.38	5.49	3.5	30,0	193,5	35,1	139,4	1,6
	1⅜	35	RLP3106	900	1220	1.18	7.62	1.38	5.49	3.5	30,0	193,5	35,1	139,4	1,6
	1 7/16	36	RLP3107	900	1220	1.18	7.62	1.38	5.49	3.5	30,0	193,5	35,1	139,4	1,6
	1½	38	RLP3108	1200	1627	1.32	7.77	1.38	5.63	3.9	33,5	197,4	35,1	143,0	1,8
	1 9/16	–	RLP3109	1200	1627	1.32	7.77	1.38	5.63	3.9	33,5	197,4	35,1	143,0	1,8
	1⅝	41	RLP3110	1200	1627	1.32	7.77	1.38	5.63	3.9	33,5	197,4	35,1	143,0	1,8
	1 11/16	–	RLP3111	1900	2576	1.47	7.87	1.38	5.78	4.0	37,3	199,9	35,1	146,8	1,8
	1¾	–	RLP3112	1900	2576	1.47	7.87	1.38	5.78	4.0	37,3	199,9	35,1	146,8	1,8
	1 13/16	46	RLP3113	1900	2576	1.47	7.87	1.38	5.78	4.0	37,3	199,9	35,1	146,8	1,8
	1⅞	–	RLP3114	2600	3526	1.60	8.04	1.38	5.92	4.5	40,6	204,2	35,1	150,4	2,0
	1 15/16	–	RLP3115	2600	3526	1.60	8.04	1.38	5.92	4.5	40,6	204,2	35,1	150,4	2,0
	2	50	RLP3200	2600	3526	1.60	8.04	1.38	5.92	4.5	40,6	204,2	35,1	150,4	2,0
	2 1/16	–	RLP3201	3080	4176	1.76	8.16	1.38	6.08	4.7	44,7	207,3	35,1	154,4	2,1
	2⅛	–	RLP3202	3080	4176	1.76	8.16	1.38	6.08	4.7	44,7	207,3	35,1	154,4	2,1
	2 3/16	55	RLP3203	3080	4176	1.76	8.16	1.38	6.08	4.7	44,7	207,3	35,1	154,4	2,1
	2¼	–	RLP3204	3080	4176	1.84	8.25	1.38	6.15	4.8	46,7	209,6	35,1	156,2	2,2
	2 5/16	–	RLP3205	3080	4176	1.84	8.25	1.38	6.15	4.8	46,7	209,6	35,1	156,2	2,2
	2⅜	60	RLP3206	3080	4176	1.84	8.25	1.38	6.15	4.8	46,7	209,6	35,1	156,2	2,2
	2 7/16	62	RLP3207	3080	4176	1.95	8.14	1.38	6.26	4.6	49,5	206,8	35,1	159,0	2,1
	2½	63	RLP3208	3080	4176	1.95	8.14	1.38	6.26	4.6	49,5	206,8	35,1	159,0	2,1
	2 9/16	65	RLP3209	3080	4176	1.95	8.14	1.38	6.26	4.6	49,5	206,8	35,1	159,0	2,1
	2⅝	–	RLP3210	3080	4176	2.04	8.23	1.38	6.36	4.4	51,8	209,0	35,1	161,5	2,0
	2 11/16	–	RLP3211	3080	4176	2.04	8.23	1.38	6.36	4.4	51,8	209,0	35,1	161,5	2,0
	2¾	70	RLP3212	3080	4176	2.04	8.23	1.38	6.36	4.4	51,8	209,0	35,1	161,5	2,0
	2 13/16	–	RLP3213	3080	4176	2.16	8.34	1.38	6.54	4.7	54,9	211,8	35,1	166,1	2,1
	2⅞	–	RLP3214	3080	4176	2.16	8.34	1.38	6.54	4.7	54,9	211,8	35,1	166,1	2,1
	2 15/16	75	RLP3215	3080	4176	2.16	8.34	1.38	6.54	4.7	54,9	211,8	35,1	166,1	2,1

IMPORTANT: RSL-drive units must be ordered separately to operate the RLP-Hexagon Cassettes.

Hexagon Cassettes for RSL-Series

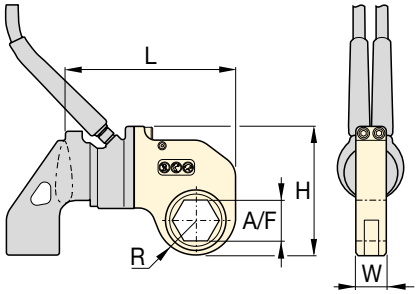
Hexagon Range:
7/8 - 6 1/8 inches

Hexagon Range:
27 - 155 mm

Maximum Operating Pressure:
10,000 psi / 690 bar

RSL Series







Slimline Stepped-Width Hexagon Cassettes

For accessing narrow spaces **RLP...SL** Stepped-Width Hexagon Cassettes are available. Slimline cassettes use same drive unit as standard RLP-cassettes.

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▼ SELECTION CHART

Drive Unit Model Number	Hexagon Size A/F		Hexagon Cassette Model Number	Maximum Torque		Dimensions (inch)					Dimensions (mm)				
	(inch)	(mm)		(Ft.lbs)	(Nm)	R	L	W	H	(lbs)	R	L	W	H	(kg)
RSL5000	1 11/16	–	RLP5111	2600	3526	1.61	9.08	1.75	6.52	6.6	40,9	230,6	44,5	165,6	3,0
	1 3/4	–	RLP5112	2600	3526	1.61	9.08	1.75	6.52	6.6	40,9	230,6	44,5	165,6	3,0
	1 13/16	46	RLP5113	2600	3526	1.61	9.08	1.75	6.52	6.6	40,9	230,6	44,5	165,6	3,0
	1 7/8	–	RLP5114	2600	3526	1.61	9.08	1.75	6.52	6.6	40,9	230,6	44,5	165,6	3,0
	1 15/16	–	RLP5115	2600	3526	1.61	9.08	1.75	6.52	6.6	40,9	230,6	44,5	165,6	3,0
	2	50	RLP5200	2600	3526	1.61	9.08	1.75	6.52	6.6	40,9	230,6	44,5	165,6	3,0
	2 1/16	–	RLP5201	3500	4746	1.71	9.18	1.75	6.62	6.5	43,4	233,2	44,5	168,1	2,9
	2 1/8	–	RLP5202	3500	4746	1.71	9.18	1.75	6.62	6.5	43,4	233,2	44,5	168,1	2,9
	2 3/16	55	RLP5203	3500	4746	1.71	9.18	1.75	6.62	6.5	43,4	233,2	44,5	168,1	2,9
	2 1/4	–	RLP5204	4500	6102	1.87	9.34	1.75	6.78	7.0	47,5	237,2	44,5	172,2	3,2
	2 5/16	–	RLP5205	4500	6102	1.87	9.34	1.75	6.78	7.0	47,5	237,2	44,5	172,2	3,2
	2 3/8	60	RLP5206	4500	6102	1.87	9.34	1.75	6.78	7.0	47,5	237,2	44,5	172,2	3,2
	2 7/16	62	RLP5207	5303	7191	2.01	9.48	1.75	6.92	7.0	51,1	240,8	44,5	175,8	3,2
	2 1/2	63	RLP5208	5303	7191	2.01	9.48	1.75	6.92	7.0	51,1	240,8	44,5	175,8	3,2
	2 9/16	65	RLP5209	5303	7191	2.01	9.48	1.75	6.92	7.0	51,1	240,8	44,5	175,8	3,2
	2 5/8	–	RLP5210	5303	7191	2.16	9.63	1.75	7.07	7.5	54,9	244,6	44,5	179,6	3,4
	2 11/16	–	RLP5211	5303	7191	2.16	9.63	1.75	7.07	7.5	54,9	244,6	44,5	179,6	3,4
	2 3/4	70	RLP5212	5303	7191	2.16	9.63	1.75	7.07	7.5	54,9	244,6	44,5	179,6	3,4
	2 13/16	–	RLP5213	5303	7191	2.24	9.71	1.75	7.15	7.5	56,9	246,6	44,5	181,6	3,4
	2 7/8	–	RLP5214	5303	7191	2.24	9.71	1.75	7.15	7.5	56,9	246,6	44,5	181,6	3,4
	2 15/16	75	RLP5215	5303	7191	2.24	9.71	1.75	7.15	7.5	56,9	246,6	44,5	181,6	3,4
	3	–	RLP5300	5303	7191	2.26	9.73	1.75	7.17	7.2	57,4	247,1	44,5	182,1	3,3
	3 1/16	–	RLP5301	5303	7191	2.26	9.73	1.75	7.17	7.2	57,4	247,1	44,5	182,1	3,3
	3 1/8	80	RLP5302	5303	7191	2.26	9.73	1.75	7.17	7.2	57,4	247,1	44,5	182,1	3,3
RSL8000	2 3/8	60	RLP8206	4500	6102	1.87	9.53	2.25	7.00	8.9	47,5	242,1	57,2	177,8	4,0
	2 7/16	62	RLP8207	5800	7865	2.01	9.67	2.25	7.13	9.0	51,1	245,6	57,2	181,1	4,1
	2 1/2	63	RLP8208	5800	7865	2.01	9.67	2.25	7.13	9.0	51,1	245,6	57,2	181,1	4,1
	2 9/16	65	RLP8209	5800	7865	2.01	9.67	2.25	7.13	9.0	51,1	245,6	57,2	181,1	4,1
	2 5/8	–	RLP8210	7862	10,661	2.16	9.82	2.25	7.28	9.6	54,9	249,4	57,2	184,9	4,4
	2 11/16	–	RLP8211	7862	10,661	2.16	9.82	2.25	7.28	9.6	54,9	249,4	57,2	184,9	4,4
	2 3/4	70	RLP8212	7862	10,661	2.16	9.82	2.25	7.28	9.6	54,9	249,4	57,2	184,9	4,4
	2 13/16	–	RLP8213	7862	10,661	2.24	9.90	2.25	7.38	9.6	56,9	251,5	57,2	187,5	4,4
	2 7/8	–	RLP8214	7862	10,661	2.24	9.90	2.25	7.38	9.6	56,9	251,5	57,2	187,5	4,4
	2 15/16	75	RLP8215	7862	10,661	2.24	9.90	2.25	7.38	9.6	56,9	251,5	57,2	187,5	4,4
	3	–	RLP8300	7862	10,661	2.26	9.92	2.25	7.39	9.3	57,4	252,0	57,2	187,7	4,2
	3 1/16	–	RLP8301	7862	10,661	2.26	9.92	2.25	7.39	9.3	57,4	252,0	57,2	187,7	4,2
	3 1/8	80	RLP8302	7862	10,661	2.26	9.92	2.25	7.39	9.3	57,4	252,0	57,2	187,7	4,2

IMPORTANT: RSL-drive units must be ordered separately to operate the RLP-Hexagon Cassettes.

Hexagon Cassettes for RSL-Series

ENERPAC

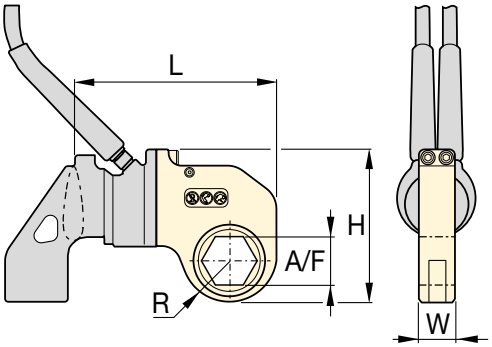
Hexagon Range:
⅞ - 6⅛ inches

Hexagon Range:
27 - 155 mm

Maximum Operating Pressure:
10,000 psi / 690 bar

RSL Series





▼ **SELECTION CHART**

Drive Unit Model Number	Hexagon Size A/F		Hexagon Cassette Model Number	Maximum Torque		Dimensions (inch)					Dimensions (mm)				
	(inch)	(mm)		(Ft.lbs)	(Nm)	R	L	W	H	(lbs)	R	L	W	H	(kg)
RSL11000	2 7/16	62	RLP11207	5800	7865	1.98	10.00	2.50	8.03	14.2	50,3	254,0	63,5	204,0	6,4
	2 1/2	–	RLP11208	5800	7865	1.98	10.00	2.50	8.03	14.2	50,3	254,0	63,5	204,0	6,4
	2 9/16	65	RLP11209	5800	7865	1.98	10.00	2.50	8.03	14.2	50,3	254,0	63,5	204,0	6,4
	2 5/8	–	RLP11210	7300	9899	2.19	11.20	2.50	8.23	14.8	55,6	284,5	63,5	209,0	6,7
	2 11/16	–	RLP11211	7300	9899	2.19	11.20	2.50	8.23	14.8	55,6	284,5	63,5	209,0	6,7
	2 3/4	70	RLP11212	7300	9899	2.19	11.20	2.50	8.23	14.8	55,6	284,5	63,5	209,0	6,7
	2 13/16		RLP11213	9000	12,204	2.29	11.31	2.50	8.34	14.8	58,2	287,3	63,5	211,8	6,7
	2 7/8	–	RLP11214	9000	12,204	2.29	11.31	2.50	8.34	14.8	58,2	287,3	63,5	211,8	6,7
	2 15/16	75	RLP11215	9000	12,204	2.29	11.31	2.50	8.34	14.8	58,2	287,3	63,5	211,8	6,7
	3	–	RLP11300	11,154	15,125	2.43	11.44	2.50	8.47	15.2	61,7	290,6	63,5	215,1	6,9
	3 1/16	–	RLP11301	11,154	15,125	2.43	11.44	2.50	8.47	15.2	61,7	290,6	63,5	215,1	6,9
	3 1/8	80	RLP11302	11,154	15,125	2.43	11.44	2.50	8.47	15.2	61,7	290,6	63,5	215,1	6,9
	3 3/16	–	RLP11303	11,154	15,125	2.60	11.71	2.50	8.64	16.6	66,0	297,4	63,5	219,5	7,5
	–	85	RLP11085M	11,154	15,125	2.60	11.71	2.50	8.64	16.6	66,0	297,4	63,5	219,5	7,5
	3 1/4	–	RLP11304	11,154	15,125	2.60	11.71	2.50	8.64	16.6	66,0	297,4	63,5	219,5	7,5
	3 5/16	–	RLP11305	11,154	15,125	2.60	11.71	2.50	8.64	16.6	66,0	297,4	63,5	219,5	7,5
	3 3/8	–	RLP11306	11,154	15,125	2.60	11.71	2.50	8.64	16.6	66,0	297,4	63,5	219,5	7,5
	3 7/16	–	RLP11307	11,154	15,125	2.60	11.71	2.50	8.64	16.6	66,0	297,4	63,5	219,5	7,5
	3 1/2	–	RLP11308	11,154	15,125	2.60	11.71	2.50	8.64	16.6	66,0	297,4	63,5	219,5	7,5
	–	90	RLP11090M	11,154	15,125	2.88	11.89	2.50	8.92	17.2	73,2	302,0	63,5	226,6	7,8
	3 9/16	–	RLP11309	11,154	15,125	2.88	11.89	2.50	8.92	17.2	73,2	302,0	63,5	226,6	7,8
	3 5/8	–	RLP11310	11,154	15,125	2.88	11.89	2.50	8.92	17.2	73,2	302,0	63,5	226,6	7,8
	3 11/16	–	RLP11311	11,154	15,125	2.88	11.89	2.50	8.92	17.2	73,2	302,0	63,5	226,6	7,8
	3 3/4	95	RLP11312	11,154	15,125	2.88	11.89	2.50	8.92	17.2	73,2	302,0	63,5	226,6	7,8
	3 13/16	–	RLP11313	11,154	15,125	2.88	11.89	2.50	8.92	17.2	73,2	302,0	63,5	226,6	7,8
	3 7/8	–	RLP11314	11,154	15,125	2.88	11.89	2.50	8.92	17.2	73,2	302,0	63,5	226,6	7,8
	3 15/16	100	RLP11315	11,154	15,125	2.98	12.00	2.50	9.03	16.4	75,7	304,8	63,5	229,4	7,4
	4	–	RLP11400	11,154	15,125	2.98	12.00	2.50	9.03	16.4	75,7	304,8	63,5	229,4	7,4
	4 1/16	–	RLP11401	11,154	15,125	2.98	12.00	2.50	9.03	16.4	75,7	304,8	63,5	229,4	7,4
	4 1/8	105	RLP11402	11,154	15,125	2.98	12.00	2.50	9.03	16.4	75,7	304,8	63,5	229,4	7,4
	4 1/4	–	RLP11404	11,154	15,125	2.98	12.00	2.50	9.03	16.4	75,7	304,8	63,5	229,4	7,4
	4 5/16	110	RLP11405	11,154	15,125	3.25	12.27	2.50	9.30	17.6	82,6	311,7	63,5	236,2	8,0
	4 1/2	–	RLP11408	11,154	15,125	3.25	12.27	2.50	9.30	17.6	82,6	311,7	63,5	236,2	8,0
	–	115	RLP11115M	11,154	15,125	3.25	12.27	2.50	9.30	17.6	82,6	311,7	63,5	236,2	8,0
	4 5/8	–	RLP11410	11,154	15,125	3.25	12.27	2.50	9.30	17.6	82,6	311,7	63,5	236,2	8,0

IMPORTANT: RSL-drive units must be ordered separately to operate the RLP-Hexagon Cassettes.

Hexagon Cassettes for RSL-Series

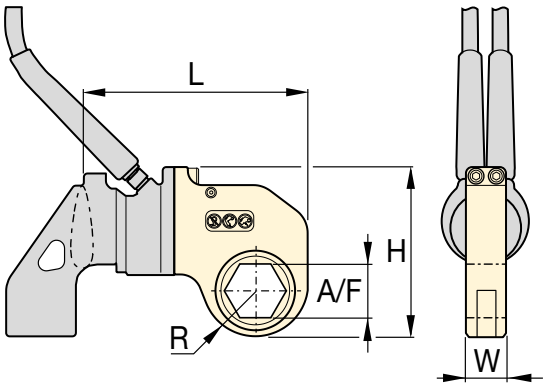
Hexagon Range:
⅞ - 6⅛ inches

Hexagon Range:
27 - 155 mm

Maximum Operating Pressure:
10,000 psi / 690 bar

RSL
Series





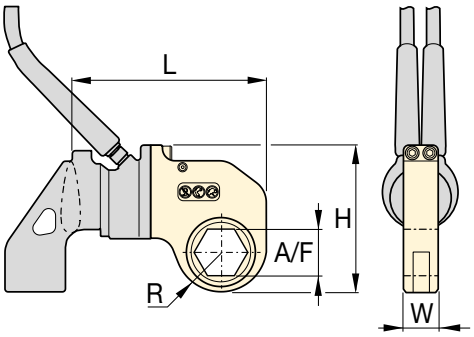
▼ **SELECTION CHART**

Drive Unit Model Number	Hexagon Size A/F		Hexagon Cassette Model Number	Maximum Torque		Dimensions (inch)					Dimensions (mm)				
	(inch)	(mm)		(Ft.lbs)	(Nm)	R	L	W	H	(lbs)	R	L	W	H	(kg)
	2 15/16	75	RLP19215	11,000	14,916	2.45	12.72	2.75	9.44	21.5	62,2	323,1	69,9	239,8	9,8
	3	–	RLP19300	11,000	14,916	2.45	12.72	2.75	9.44	21.5	62,2	323,1	69,9	239,8	9,8
	3 1/16	–	RLP19301	11,000	14,916	2.45	12.72	2.75	9.44	21.5	62,2	323,1	69,9	239,8	9,8
	3 1/8	80	RLP19302	11,000	14,916	2.45	12.72	2.75	9.44	21.5	62,2	323,1	69,9	239,8	9,8
	3 3/16	–	RLP19303	16,000	21,696	2.77	13.04	2.75	9.76	22.6	70,4	331,2	69,9	247,9	10,3
	–	85	RLP19085M	16,000	21,696	2.77	13.04	2.75	9.76	22.6	70,4	331,2	69,9	247,9	10,3
	3 1/4	–	RLP19304	16,000	21,696	2.77	13.04	2.75	9.76	22.6	70,4	331,2	69,9	247,9	10,3
	3 5/16	–	RLP19305	16,000	21,696	2.77	13.04	2.75	9.76	22.6	70,4	331,2	69,9	247,9	10,3
	3 3/8	–	RLP19306	16,000	21,696	2.77	13.04	2.75	9.76	22.6	70,4	331,2	69,9	247,9	10,3
	3 7/16	–	RLP19307	16,000	21,696	2.77	13.04	2.75	9.76	22.6	70,4	331,2	69,9	247,9	10,3
	3 1/2	–	RLP19308	16,000	21,696	2.77	13.04	2.75	9.76	22.6	70,4	331,2	69,9	247,9	10,3
	–	90	RLP19090M	18,843	25,551	2.95	13.22	2.75	9.94	23.8	74,9	335,8	69,9	252,5	10,8
	3 9/16	–	RLP19309	18,843	25,551	2.95	13.22	2.75	9.94	23.8	74,9	335,8	69,9	252,5	10,8
	3 5/8	–	RLP19310	18,843	25,551	2.95	13.22	2.75	9.94	23.8	74,9	335,8	69,9	252,5	10,8
	3 11/16	–	RLP19311	18,843	25,551	2.95	13.22	2.75	9.94	23.8	74,9	335,8	69,9	252,5	10,8
RSL19000	3 3/4	95	RLP19312	18,843	25,551	2.95	13.22	2.75	9.94	23.8	74,9	335,8	69,9	252,5	10,8
	3 13/16	–	RLP19313	18,843	25,551	2.95	13.22	2.75	9.94	23.8	74,9	335,8	69,9	252,5	10,8
	3 7/8	–	RLP19314	18,843	25,551	2.95	13.22	2.75	9.94	23.8	74,9	335,8	69,9	252,5	10,8
	3 15/16	100	RLP19315	18,843	25,551	3.30	13.57	2.75	10.28	25.3	83,8	344,7	69,9	261,1	11,5
	4	–	RLP19400	18,843	25,551	3.30	13.57	2.75	10.28	25.3	83,8	344,7	69,9	261,1	11,5
	4 1/16	–	RLP19401	18,843	25,551	3.30	13.57	2.75	10.28	25.3	83,8	344,7	69,9	261,1	11,5
	4 1/8	105	RLP19402	18,843	25,551	3.30	13.57	2.75	10.28	25.3	83,8	344,7	69,9	261,1	11,5
	4 3/16	–	RLP19403	18,843	25,551	3.30	13.57	2.75	10.28	25.3	83,8	344,7	69,9	261,1	11,5
	4 1/4	–	RLP19404	18,843	25,551	3.30	13.57	2.75	10.28	25.3	83,8	344,7	69,9	261,1	11,5
	4 5/16	110	RLP19405	18,843	25,551	3.44	13.71	2.75	10.43	25.6	87,4	348,2	69,9	264,9	11,6
	4 3/8	–	RLP19406	18,843	25,551	3.44	13.71	2.75	10.43	25.6	87,4	348,2	69,9	264,9	11,6
	4 7/16	–	RLP19407	18,843	25,551	3.44	13.71	2.75	10.43	25.6	87,4	348,2	69,9	264,9	11,6
	4 1/2	–	RLP19408	18,843	25,551	3.44	13.71	2.75	10.43	25.6	87,4	348,2	69,9	264,9	11,6
	–	115	RLP19115M	18,843	25,551	3.44	13.71	2.75	10.43	25.6	87,4	348,2	69,9	264,9	11,6
	4 9/16	–	RLP19409	18,843	25,551	3.44	13.71	2.75	10.43	25.6	87,4	348,2	69,9	264,9	11,6
	4 5/8	–	RLP19410	18,843	25,551	3.44	13.71	2.75	10.43	25.6	87,4	348,2	69,9	264,9	11,6

IMPORTANT: RSL-drive units must be ordered separately to operate the RLP-Hexagon Cassettes.

Hexagon Cassettes for RSL-Series

ENERPAC



Hexagon Range:
⅞ - 6⅛ inches

Hexagon Range:
27 - 155 mm

Maximum Operating Pressure:
10,000 psi / 690 bar

RSL Series



▼ **SELECTION CHART**

Drive Unit Model Number	Hexagon Size A/F		Hexagon Cassette Model Number	Maximum Torque		Dimensions (inch)					Dimensions (mm)				
	(inch)	(mm)		(Ft.lbs)	(Nm)	R	L	W	H	(lbs)	R	L	W	H	(kg)
RSL28000	3⅛	80	RLP28302	16,000	21,696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	3³⁄₁₆	–	RLP28303	16,000	21,696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	–	85	RLP28085M	16,000	21,696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	3¼	–	RLP28304	16,000	21,696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	3⁵⁄₁₆	–	RLP28305	16,000	21,696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	3⅜	–	RLP28306	16,000	21,696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	3⁷⁄₁₆	–	RLP28307	16,000	21,696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	3½	–	RLP28308	16,000	21,696	2.56	14.36	3.00	10.54	27.6	65,0	364,7	76,2	267,7	12,5
	–	90	RLP28090M	22,000	29,832	2.92	14.36	3.00	10.77	28.8	74,2	364,7	76,2	273,6	13,1
	3⁹⁄₁₆	–	RLP28309	22,000	29,832	2.92	14.36	3.00	10.77	28.8	74,2	364,7	76,2	273,6	13,1
	3⅝	–	RLP28310	22,000	29,832	2.92	14.36	3.00	10.77	28.8	74,2	364,7	76,2	273,6	13,1
	3¹¹⁄₁₆	–	RLP28311	22,000	29,832	2.92	14.36	3.00	10.77	28.8	74,2	364,7	76,2	273,6	13,1
	3¾	95	RLP28312	22,000	29,832	2.92	14.36	3.00	10.77	28.8	74,2	364,7	76,2	273,6	13,1
	3¹³⁄₁₆	–	RLP28313	22,000	29,832	2.92	14.36	3.00	10.77	28.8	74,2	364,7	76,2	273,6	13,1
	3⅞	–	RLP28314	22,000	29,832	2.92	14.36	3.00	10.77	28.8	74,2	364,7	76,2	273,6	13,1
	3¹⁵⁄₁₆	100	RLP28315	28,002	37,971	3.29	14.47	3.00	11.14	31.7	83,6	367,5	76,2	283,0	14,4
	4	–	RLP28400	28,002	37,971	3.29	14.47	3.00	11.14	31.7	83,6	367,5	76,2	283,0	14,4
	4¹⁄₁₆	–	RLP28401	28,002	37,971	3.29	14.47	3.00	11.14	31.7	83,6	367,5	76,2	283,0	14,4
	4⅛	105	RLP28402	28,002	37,971	3.29	14.47	3.00	11.14	31.7	83,6	367,5	76,2	283,0	14,4
	4³⁄₁₆	–	RLP28403	28,002	37,971	3.29	14.47	3.00	11.14	31.7	83,6	367,5	76,2	283,0	14,4
	4¼	–	RLP28404	28,002	37,971	3.29	14.47	3.00	11.14	31.7	83,6	367,5	76,2	283,0	14,4
	4⁵⁄₁₆	110	RLP28405	28,002	37,971	3.43	14.61	3.00	11.28	31.5	87,1	371,1	76,2	286,5	14,3
	4⅜	–	RLP28406	28,002	37,971	3.43	14.61	3.00	11.28	31.5	87,1	371,1	76,2	286,5	14,3
	4⁷⁄₁₆	–	RLP28407	28,002	37,971	3.43	14.61	3.00	11.28	31.5	87,1	371,1	76,2	286,5	14,3
	4½	–	RLP28408	28,002	37,971	3.43	14.61	3.00	11.28	31.5	87,1	371,1	76,2	286,5	14,3
	–	115	RLP28115M	28,002	37,971	3.43	14.61	3.00	11.28	31.5	87,1	371,1	76,2	286,5	14,3
	4⁹⁄₁₆	–	RLP28409	28,002	37,971	3.43	14.61	3.00	11.28	31.5	87,1	371,1	76,2	286,5	14,3
	4⅝	–	RLP28410	28,002	37,971	3.43	14.61	3.00	11.28	31.5	87,1	371,1	76,2	286,5	14,3
	4¾	120	RLP28412	28,002	37,971	3.65	14.83	3.00	11.50	33.5	92,7	376,7	76,2	292,1	15,2
	–	123	RLP28123M	28,002	37,971	3.65	14.83	3.00	11.50	33.5	92,7	376,7	76,2	292,1	15,2
	4⅞	–	RLP28414	28,002	37,971	3.65	14.83	3.00	11.50	33.5	92,7	376,7	76,2	292,1	15,2
	5	–	RLP28500	28,002	37,971	3.65	14.83	3.00	11.50	33.5	92,7	376,7	76,2	292,1	15,2
	5⅛	130	RLP28502	28,002	37,971	3.79	14.97	3.00	11.64	33.2	96,3	380,2	76,2	295,7	15,1
	5³⁄₁₆	–	RLP28503	28,002	37,971	3.79	14.97	3.00	11.64	33.2	96,3	380,2	76,2	295,7	15,1
	5¼	–	RLP28504	28,002	37,971	3.79	14.97	3.00	11.64	33.2	96,3	380,2	76,2	295,7	15,1
	5⅜	135	RLP28506	28,002	37,971	3.79	14.97	3.00	11.64	33.2	96,3	380,2	76,2	295,7	15,1
	5½	140	RLP28508	28,002	37,971	4.05	15.23	3.00	11.90	33.5	102,9	386,8	76,2	302,3	15,2
	5⁹⁄₁₆	–	RLP28509	28,002	37,971	4.05	15.23	3.00	11.90	33.5	102,9	386,8	76,2	302,3	15,2
	5⅝	–	RLP28510	28,002	37,971	4.05	15.23	3.00	11.90	33.5	102,9	386,8	76,2	302,3	15,2
	5¾	145	RLP28512	28,002	37,971	4.05	15.23	3.00	11.90	33.5	102,9	386,8	76,2	302,3	15,2
	5⅞	150	RLP28514	28,002	37,971	4.22	15.48	3.00	12.15	34.5	107,2	393,2	76,2	308,6	15,6
	–	151	RLP28151M	28,002	37,971	4.22	15.48	3.00	12.15	34.5	107,2	393,2	76,2	308,6	15,6
	6	–	RLP28600	28,002	37,971	4.22	15.48	3.00	12.15	34.5	107,2	393,2	76,2	308,6	15,6
	6⅛	155	RLP28602	28,002	37,971	4.22	15.48	3.00	12.15	34.5	107,2	393,2	76,2	308,6	15,6

IMPORTANT: RSL-drive units must be ordered separately to operate the RLP-Hexagon Cassettes.

TWMPS503, Torque Wrench Moly Paste

- Enerpac 503 Moly Paste reduces friction on threaded fasteners – bolts, nuts and studs
- The low and uniform friction coefficient of 0.06 (torque coefficient, K, of 0.10) creates reliable assembly conditions
- This lubricant stays in place through heat, load and vibration to insure trouble-free disassembly from -20 ˚F to 750 ˚F (-29 ˚C to 400 ˚C)
- 4 lbs (1.8 kg) can.

▼ TWMPS503



for **RSL Series**





ERAK-Series, Reaction Arm Kits

Provides reaction point options for RSQ1500, RSQ3000, RSQ5000 and RSQ8000 square drive torque wrenches. Significantly improves worker safety by providing a safety tested and full torque rated reaction arm, and increases tool fit.

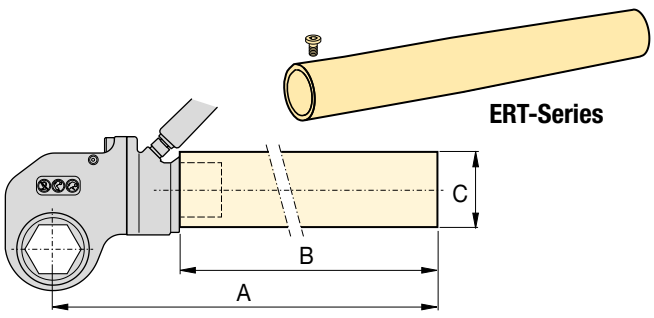
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ERT-Series, Extended Reaction Tubes

For Torque Wrench Model No.	Model Number	Dimensions (in) A	B	Ø C	(lbs)
RSL1500 + RLP	ERT152	6.18	2.01	2.24	1.98
	ERT156	10.20	5.98	2.24	3.53
	ERT159	13.19	9.02	2.24	5.51
	ERT1512	16.18	12.01	2.24	7.50
	ERT1524	28.19	24.02	2.24	14.78
RSL3000 + RLP	ERT3012	16.89	12.01	2.76	6.61
	ERT3024	28.90	24.02	2.76	13.01
RSL5000 + RLP	ERT5012	17.76	12.01	3.50	12.35
	ERT5024	29.76	24.02	3.50	24.91
RSL11000 + RLP	ERT1106	12.99	5.98	3.74	4.63
	ERT11012	19.02	12.01	3.74	9.04
	ERT11018	25.00	17.99	3.74	13.45
	ERT11024	30.98	24.02	3.74	18.52
RSL19000 + RLP	ERT19024	31.50	24.02	5.00	36.82
RSL28000 + RLP	ERT2806	13.82	5.98	5.00	7.94
	ERT28012	19.80	12.01	5.00	16.09
	ERT28018	25.79	17.99	5.00	24.03
	ERT28024	31.81	24.02	5.00	36.60

NOTE: Extended Reaction Tubes for RSL8000 are available on request.

- Only to be used on RSL-drive units with RLP-hexagon cassettes
- Used in place of standard reaction arm
- One-piece steel design, durable and simple
- Increases tool fit in restricted access areas
- Full torque rated.



▼ RSL-Drive Unit with interchangeable RLP...SL Slimline Hexagon Cassette



Setting New Standards in Safety, Simplicity and Performance

Simplicity

- Minimum nose radius for trouble-free tool fit which makes it uniquely equipped to access tight spaces
- Simple robust alloy steel design with three moving parts for reduced maintenance
- Robust handles are available for both sides and the tops of cassettes to allow for extra maneuverability
- Proven to perform even in the harshest environments
- Reaction arm has a simple dial lock for rapid change
- Designed to give optimum strength to weight and torque to weight ratios.

Versatility

- Interchangeable cassette design
- Drive unit / hexagon cassette combination for limited height in line solutions
- Wide range of hexagon sizes available for all applications.

Accuracy

- Constant torque output provides accuracy of ± 3% across the full stroke.

Ease of Use

- Few moving parts are easily accessible for quick field maintenance
- Innovative design that completely encloses all moving parts and minimizes pinch points.



Torque Pumps

Visit enerpac.com for system matched air and electric torque pumps that are ideal for use with hydraulic torque wrenches.

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Torque Wrench Options and Accessories

Optional accessories are available for maximum versatility. Please contact your Enerpac representative to help you select the optimum solution for your application.

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Back-Up Spanners

To be used to stop the back nut from turning during make up or break out. Two hexagon sizes in one tool.

Hexagon Sizes (A/F) (inch)	Hexagon Sizes (A/F) (mm)	Back-Up Spanner Model Number
1 1/16 - 1 1/4"	27 - 32	BUS01
1 7/16 - 1 5/8"	36 - 41	BUS02
1 13/16 - 2"	46 - 50	BUS03
2 3/16 - 2 3/8"	55 - 60	BUS04
2 9/16 - 2 3/4"	65 - 70	BUS05
2 15/16 - 3 1/8"	75 - 80	BUS06
3 1/2 - 3 7/8"	–	BUS07
4 1/4 - 4 5/8"	–	BUS08
–	85 - 90	BUS09
3 3/4 - 3 15/16"	95 - 100	BUS10
4 1/8 - 4 15/16"	105 - 110	BUS11
–	115 - 120	BUS12

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Slimline Stepped-Width Hexagon Cassettes for RSL-Series

Slimline Stepped-Width Hexagon Cassettes

Accessing narrow spaces normally requires significantly reducing the width of the torque wrench. For the tool operator, this has always meant vastly reduced tool durability, and/or reduced torque output.

By using the highest-grade materials and perfecting the geometry, the RSL-Slimline cassettes are able to provide greater torque, get into tighter spaces, and vastly outperform the competition in product durability.

RSL Series



Hexagon Range:
1¼ - 3³⁄₁₆ inches

Hexagon Range:
32 - 80 mm

Maximum Operating Pressure:
10,000 psi / 690 bar



Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.

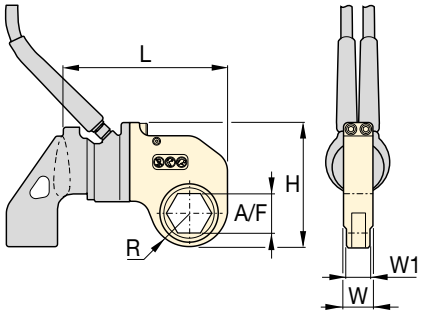
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Torque Wrench Hoses

Use Enerpac THQ700-Series torque wrench hoses with RSL-Series torque wrenches to ensure the integrity of your hydraulic system.

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▼ SELECTION CHART

Drive Unit Model Number	Hexagon Size A/F		Slimline Hexagon Cassette Model Number	Maximum Torque *		Dimensions (inch)						Dimensions (mm)					
	(inch)	(mm)		(Ft.lbs)	(Nm)	R	L	W	W1	H	(lbs)	R	L	W	W1	H	(kg)
RSL1500	1¼	32	RLP1104SL	375	509	1.03	6.12	1.25	1.00	4.57	2.2	26,2	155,4	31,8	25,4	116,1	1,0
	1⁷⁄₁₆	36	RLP1107SL	658	892	1.15	6.24	1.25	1.00	4.69	2.3	29,2	158,5	31,8	25,4	119,1	1,0
	1⅝	41	RLP1110SL	831	1127	1.31	6.41	1.25	1.00	4.86	2.7	33,3	162,8	31,8	25,4	123,4	1,2
	1¹³⁄₁₆	46	RLP1113SL	831	1127	1.40	6.49	1.25	1.00	4.94	2.7	35,6	164,8	31,8	25,4	125,5	1,2
	2	50	RLP1200SL	831	1127	1.48	6.58	1.25	1.00	5.03	2.7	37,6	167,1	31,8	25,4	127,8	1,2
RSL3000	2	50	RLP3200SL	1354	1836	1.60	8.04	1.38	1.13	5.92	4.5	40,6	204,2	35,1	28,7	150,4	2,0
	2³⁄₁₆	55	RLP3203SL	1604	2175	1.76	8.16	1.38	1.13	6.08	4.7	44,7	207,3	35,1	28,7	154,4	2,1
	2⅜	60	RLP3206SL	1604	2175	1.84	8.25	1.38	1.13	6.15	4.8	46,7	209,6	35,1	28,7	156,2	2,2
	2⁹⁄₁₆	65	RLP3209SL	1604	2175	1.95	8.14	1.38	1.13	6.26	4.6	49,5	206,8	35,1	28,7	159,0	2,1
	2¾	70	RLP3212SL	1604	2175	2.04	8.23	1.38	1.13	6.36	4.4	51,8	209,0	35,1	28,7	161,5	2,0
	2¹⁵⁄₁₆	75	RLP3215SL	1604	2175	2.16	8.34	1.38	1.13	6.54	4.7	54,9	211,8	35,1	28,7	166,1	2,1
RSL5000	2¾	70	RLP5212SL	4173	5658	2.16	9.63	1.75	1.62	7.07	7.5	54,9	244,6	44,5	41,1	179,6	3,4
	3⅛	80	RLP5302SL	4173	5658	2.26	9.73	1.75	1.62	7.17	7.2	57,4	247,1	44,5	41,1	182,1	3,3
RSL8000	2³⁄₁₆	55	RLP8203SL	2487	3372	1.71	9.53	2.25	2.00	6.84	8.5	43,4	242,1	57,2	50,8	173,7	3,9
	2⅜	60	RLP8206SL	3198	4336	1.87	9.67	2.25	2.00	7.00	8.9	47,5	245,6	57,2	50,8	177,8	4,0
	2⁹⁄₁₆	65	RLP8209SL	4122	5589	2.01	9.67	2.25	2.00	7.13	9.0	51,1	245,6	57,2	50,8	181,1	4,1
	2¾	70	RLP8212SL	5587	7575	2.16	9.82	2.25	2.00	7.28	9.6	54,9	249,4	57,2	50,8	184,9	4,4
	2¹⁵⁄₁₆	75	RLP8215SL	5587	7575	2.24	9.90	2.25	2.00	7.36	9.6	56,9	251,5	57,2	50,8	186,9	4,4
	3⅛	80	RLP8302SL	5587	7575	2.26	9.92	2.25	2.00	7.39	9.3	57,4	252,0	57,2	50,8	187,7	4,2
	3³⁄₁₆	–	RLP8303SL	4740	6427	2.26	9.92	2.25	2.00	7.39	9.3	57,4	252,0	57,2	50,8	187,7	4,2

IMPORTANT: RSL-drive units must be ordered separately to operate the RLP-SL-Hexagon Cassettes.

* Minimum Torque Output at 69 bar: 10%

▼ RSL-drive unit with interchangeable RSQ-square drive cassette



Safety and Performance

- Innovative design that completely encloses all moving parts and minimizes pinch points
- 30-35° rotation angle provides added productivity while avoiding "tool lock on" which is common with some torque wrench designs.

Simplicity

- Simple robust design with just three moving parts for reduced maintenance
- Robust handles are available for both sides and the tops of cassettes to allow for extra maneuverability
- Pull-type square drive release for quickly reversing the square drive for tightening or loosening.

Versatility

- Square Drive Sets available with Interchangeable Hexagon Cassettes
- Power head / square drive combination for flexible use with standard impact quality sockets
- Reaction arm has a simple dial lock for rapid change.

Accuracy

- Constant torque output provides accuracy of ± 3% across the full stroke.

Torque Wrench Options and Accessories

Optional accessories are available for maximum versatility. Please contact your Enerpac representative to help you select the optimum solution for your application.

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BSH-Series Sockets

Heavy-Duty Impact Sockets for power driven torqueing equipment.

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Back-Up Spanners, BUS-Series

To be used to stop the back nut from turning during make up or break out. Two hexagon sizes in one tool.

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ERAK-Series, Reaction Arm Kits

Provides reaction point options for RSQ1500, RSQ3000, RSQ5000 and RSQ8000 square drive torque wrenches. Significantly improves worker safety by providing a safety tested and full torque rated reaction arm, and increases tool fit.

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Square Drive Hydraulic Torque Wrenches

Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.

RSL Series



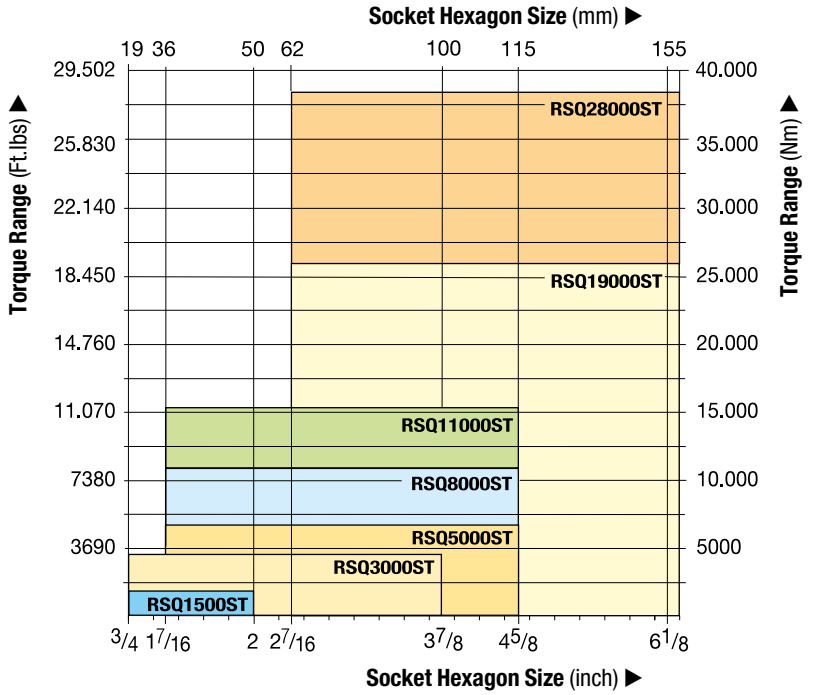
Maximum Torque Output:
1408 - 28,002 Ft.lbs

Maximum Torque Output:
1909 - 37,965 Nm

Square Drive Range:
¾ - 2½ inches

Maximum Operating Pressure:
10,000 psi / 690 bar

TORQUE WRENCH SELECTION (based on socket size range)



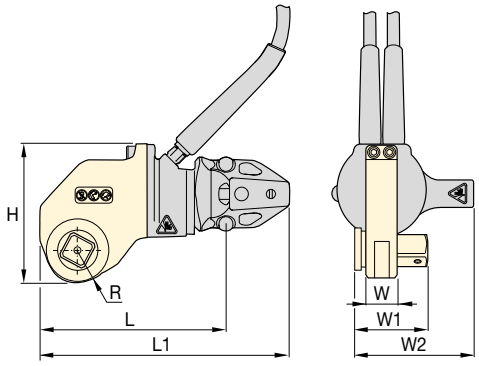


Torque Wrench Hoses

Use Enerpac THQ700-Series torque wrench hoses with RSL-Series torque wrenches to ensure the integrity of your hydraulic system.

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	Dimensions (in)							Dimensions (mm)						
RSQ/RSQ-ST	W	W1	W2	H	L	L1	R	W	W1	W2	H	L	L1	R
RSQ1500	1.25	2.30	3.98	4.48	6.29	7.45	0.94	32	58	101	114	160	189	24
RSQ3000	1.50	2.88	4.89	5.57	7.67	10.30	1.25	38	73	124	141	195	262	32
RSQ5000	1.75	3.71	6.31	6.42	9.27	11.67	1.52	45	94	160	163	235	296	39
RSQ8000	2.40	4.14	6.30	6.65	9.47	11.78	1.52	61	105	160	169	241	300	39
RSQ11000	2.50	4.63	6.70	7.93	11.20	12.40	1.88	64	118	170	201	284	315	48
RSQ19000	3.25	6.38	10.42	9.48	13.46	18.97	2.50	83	162	265	241	342	482	64
RSQ28000	3.50	6.54	8.93	10.35	14.09	21.07	2.50	89	166	227	263	358	536	64



▼ SELECTION CHART

Maximum Torque Output at 10,000 psi (690 bar)		Square Drive Size	Square Drive Cassette Model Number [1]	Square Drive Torque Wrench Set Model Number [2]	Weight (lbs)			Weight (kg)		
(Ft.lbs)	(Nm)	(inch)			Drive Unit (without reaction arm)	Reaction Arm	Square Drive Cassette	Drive Unit (without reaction arm)	Reaction Arm	Square Drive Cassette
1408	1909	¾	**RSQ1500**	**RSQ1500ST**	3.4	1.0	2.8	1,6	0,5	1,3
3080	4176	1	**RSQ3000**	**RSQ3000ST**	5.6	2.2	5.2	2,6	1,0	2,4
5303	7190	1½	**RSQ5000**	**RSQ5000ST**	8.9	4.0	9.1	4,1	1,8	4,1
7862	10,659	1½	**RSQ8000**	**RSQ8000ST**	10.6	4.3	11.6	4,8	2,0	5,3
11,154	15,123	1½	**RSQ11000**	**RSQ11000ST**	11.6	6.6	18.4	5,3	3,0	8,4
18,843	25,547	2½	**RSQ19000**	**RSQ19000ST**	20.0	15.7	28.9	9,1	7,1	13,1
28,002	37,965	2½	**RSQ28000**	**RSQ28000ST**	22.0	11.1	39.3	10,0	5,0	17,9

[1] When ordering an RSQ-Square Drive Cassette, the RSL-Drive Unit must be ordered separately.
[2] An RSQ....ST Torque Wrench Set includes RSQ-Square Drive Cassette, RSL-Drive Unit with Hoses and Reaction Arm.

▼ Shown: **DSX11000**



Safety and Performance

- High-strength, lightweight aluminum, slimline design suited for complete operator safety
- Fully enclosed drive for maximum safety
- Built-in, work-at-height safety tether connection
- Retained quick release push-button
- Patented, easy-to-use, quick release, retained reaction arm
- Fine tooth ratchet prevents the tool 'locking on'
- High-cycle design with fewer moving parts making it a more efficient tool to operate, maintain or repair
- 35° rotation angle and rapid return stroke for fast operation.

Simplicity

- Includes a robust handle or handle with lifting eye bolt which mounts on either side of the tool for extra maneuverability and safer operation
- Push-button square drive and reaction arm for fast changes and adjustments
- Easily accessible work-at-height connection point.

Accuracy

- Constant torque output provides accuracy of ± 3% across the full stroke.

ATEX declared

- All DSX-tools are CE - ATEX declared and are shipped complete with a calibration certificate.

Setting Industry-First Safety Standards



Work-at-Height Connection

Built-in, work-at-height safety tether connection.



Fully Retained Reaction Arm

Patented, fully retained reaction arm with easy-to-use quick release, helps prevent injuries when working-at-height.



Secured Square Drive

Retained quick release push-button.



Ergonomic Tool Handle

Robust ergonomic positioning handle comes supplied as standard with every DSX-tool. The SWH10EA is a handle with lifting eye for the DSX25000.

Compatible DSX-Series wrenches	Ergonomic Handle (Standard)
DSX1500, 3000, 5000	**SWH6A**
DSX11000	**SWH10A**
DSX25000	**SWH10EA**

Bolting Integrity Software

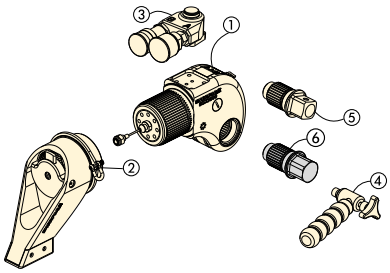
Enerpac Bolting Integrity Software Solutions play a key role in implementing and managing an Integrity Program for bolted connections.

The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as a combined Application Data Sheet and Joint Completion Report.

Custom Joint information can also be entered.

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Square Drive Hydraulic Torque Wrenches



Standard are: ① ② ③ ④ ⑤
Item ⑥ is optional.

① Drive Unit
② Reaction Arm
③ Hose Swivel
④ Ergonomic Tool Handle
⑤ Square Drive
⑥ Allen® Key-Drive (option, page 254)

DSX Series



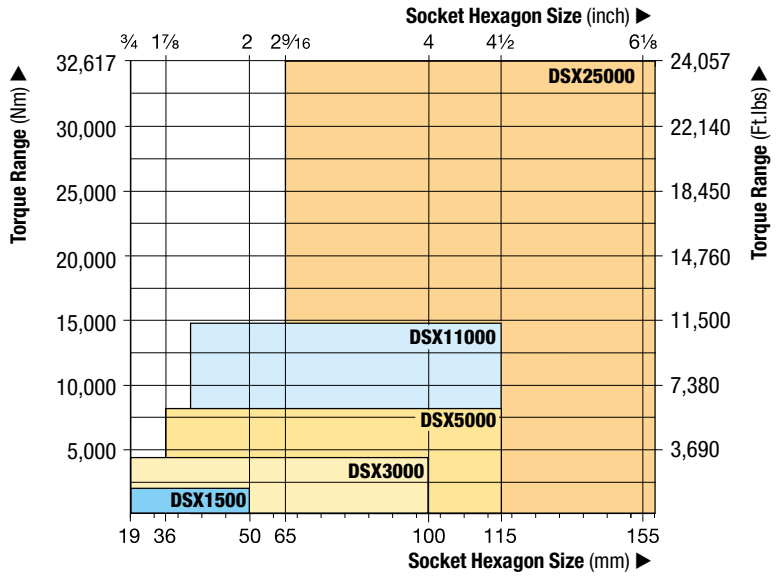
Nominal Torque Output:
24,057 Ft.lbs / 32,617 Nm

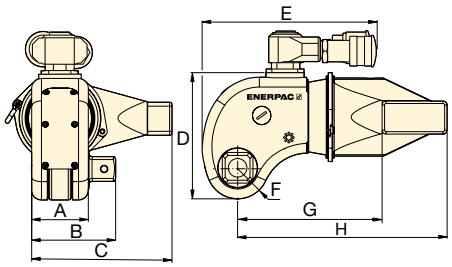
Square Drive Range:
¾ - 2½ inches

Nose Radius:
0.94 - 2.50 inches

Maximum Operating Pressure:
10,000 psi / 690 bar

TORQUE WRENCH SELECTION (based on socket size range)





Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.

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BUS-Series, Back-Up Spanners

Hands-free tool to be used to stop the back nut from turning during make up or break out.

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	Dimensions (in)								Dimensions (mm)							
	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H
DSX1500	1.7	2.6	4.2	3.7	5.7	0.94	4.4	6.4	44	67	107	96	145	24	114	163
DSX3000	2.3	3.4	5.7	5.1	6.7	1.25	5.8	8.5	58	86	144	129	171	32	148	215
DSX5000	2.7	4.4	6.8	5.8	7.6	1.50	7.1	10.2	69	112	173	148	192	38	180	260
DSX11000	3.4	5.1	8.5	7.2	8.7	1.88	8.9	12.8	87	129	215	181	222	48	227	325
DSX25000	4.6	6.9	11.8	9.6	10.5	2.50	11.1	18.2	117	176	288	244	266	64	281	426

Nominal Torque at 10,000 psi (690 bar)		Minimum Torque at 1000 psi (69 bar)		Square Drive Size (inch)	Square Drive Model Nr. (included with wrench)	Torque Wrench Model Number		
(Ft.lbs)	(Nm)	(Ft.lbs)	(Nm)				(lbs)	(kg)
1411	1913	141	191	¾	DSX1500-08	**DSX1500**	4.8	2.2
3233	4383	323	438	1	DSX3000-08	**DSX3000**	10.6	4.8
5635	7640	563	764	1½	DSX5000-08	**DSX5000**	17.9	8.1
11,000	14,914	1100	1491	1½	DSX11000-08	**DSX11000**	31.7	14.4
24,057	32,617	2406	3262	2½	DSX25000-08	**DSX25000**	71.7	32.5

▼ *The rigid design of the DSX-Series torque wrenches provides durability, reliability and safety.*



DSX-Series, Allen® Key Drives

ENERPAC

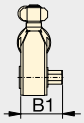
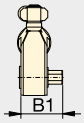
Maximum Torque Output:
24,057 Ft.lbs / 32,617 Nm

Hexagon Size Allen Drive:
½ - 2¼ inches

Hexagon Size Allen Drive:
14 - 85 mm

For DSX Series



Torque Wrench	Optional Allen® Key Drives, Imperial				Optional Allen® Key Drives, Metric			
								
Model Number (max. torque)	**Hexagon Size** (inch)	**Maximum Torque** (Ft.Lbs)	**Model Number**	**Dim. B1** (inch)	**Hexagon Size** (mm)	**Maximum Torque** (Nm)	**Model Number**	**Dim. B1** (mm)
DSX1500 (1411 Ft.lbs) (1913 Nm)	½	350	**DDA15008**	2.64	**14**	644	**DDA1514**	67
	⅝	690	**DDA15010**	2.64	**17**	1152	**DDA1517**	67
	¾	1200	**DDA15012**	2.64	**19**	1627	**DDA1519**	67
	⅞	1411	**DDA15014**	2.64	**22**	1913	**DDA1522**	67
	1	1411	**DDA15100**	2.64	**24**	1913	**DDA1524**	67
DSX3000 (3233 Ft.lbs) (4383 Nm)	⅝	690	**DDA30010**	3.39	**17**	1152	**DDA3017**	86
	¾	1200	**DDA30012**	3.39	**19**	1627	**DDA3019**	86
	⅞	1900	**DDA30014**	3.39	**22**	2495	**DDA3022**	86
	1	2830	**DDA30100**	3.39	**24**	3376	**DDA3024**	86
	1⅛	3233	**DDA30102**	3.39	**27**	4383	**DDA3027**	86
	1¼	3233	**DDA30104**	3.39	**30**	4383	**DDA3030**	86
	–	–	**-**	–	**32**	4383	**DDA3032**	86
DSX5000 (5635 Ft.lbs) (7640 Nm)	⅝	690	**DDA50010**	4.41	**17**	1152	**DDA5017**	112
	¾	1200	**DDA50012**	4.41	**19**	1627	**DDA5019**	112
	⅞	1900	**DDA50014**	4.41	**22**	2495	**DDA5022**	112
	1	2830	**DDA50100**	4.41	**24**	3376	**DDA5024**	112
	1⅛	5325	**DDA50102**	4.41	**27**	4610	**DDA5027**	112
	1¼	5635	**DDA50104**	4.41	**30**	7640	**DDA5030**	112
	–	–	**–**	-	**32**	7640	**DDA5032**	112
DSX11000 (11,000 Ft.lbs) (14,914 Nm)	**1¼**	5635	**DDA110104**	5.08	**30**	7640	**DDA11030**	129
	1⅜	9958	**DDA110106**	5.08	**32**	7640	**DDA11032**	129
	1½	9958	**DDA110108**	5.08	**36**	10,846	**DDA11036**	129
	1⅝	11,000	**DDA110110**	5.08	**41**	14,914	**DDA11041**	129
	1¾	11,000	**DDA110112**	5.08	**46**	14,914	**DDA11046**	129
DSX25000 (24,057 Ft.lbs) (32,617 Nm)	**1½**	9958	**DDA250104**	176	**36**	10,846	**DDA25036**	176
	1⅝	16,433	**DDA250106**	176	**41**	16,107	**DDA25041**	176
	1¾	15,200	**DDA250112**	176	**46**	22,777	**DDA25046**	176
	1⅞	22,777	**DDA250114**	176	**50**	29,211	**DDA25050**	176
	2	24,057	**DDA250200**	176	**55**	32,617	**DDA25055**	176
	2¼	24,057	**DDA250204**	176	**60**	32,617	**DDA25060**	176
	–	–	**–**	-	**65**	32,617	**DDA25065**	176
	–	–	**–**	-	**70**	32,617	**DDA25070**	176
	–	–	**–**	-	**75**	32,617	**DDA25075**	176
	–	–	**–**	-	**85**	32,617	**DDA25085**	176

▼ THQ706T



THQ Series

Hose Lengths:
6 - 19.5 - 39 feet

Maximum Operating Pressure:
10,000 psi / 700 bar



HT, B-Series, Hoses and Fittings for Tensioning 21,750 psi

Bolt tensioning equipment require different hoses, couplers and fittings than torque wrenches and pumps.

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Premium Hydraulic Oil

Use only genuine Enerpac Hydraulic Oil. The use of any other fluid will render your Enerpac warranty null and void.

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Twin Torque Wrench Hose

- Thermo-plastic safety dual hoses
- For use S, W, RSL, DSX and HMT-Series torque wrenches and 10,000 psi torque pumps
- With 1/4" Spin-on Torque Wrench Couplers
- For demanding applications, featuring a 4:1 safety factor
- Maximum working pressure of 10,000 psi
- Outside jacket is polyurethane, to provide maximum abrasion resistance
- Low volumetric expansion under pressure to enhance overall system efficiency
- Crimped-on vinyl strain relief for improved life and durability on all models.



Use the THQ-Series hoses with Enerpac torque wrenches and pumps to ensure the integrity of your hydraulic system. ▶

Internal Diameter (inch)	Hose Length (ft)	Model Number	Maximum Operating Pressure (psi)	Hose Ends 1/4" Spin-on Torque Wrench Couplers		Weight (lbs)
				Hose end one	Hose end two	
0.25	6.0	**THQ702T**	10,000	female half **TR630** + male half **TH630**	male half **TH630** + female half **TR630**	4.9
	19.5	**THQ706T**	10,000	female half **TR630** + male half **TH630**	male half **TH630** + female half **TR630**	9.9
	39.0	**THQ712T**	10,000	female half **TR630** + male half **TH630**	male half **TH630** + female half **TR630**	16.8

▼ HMT-Drive Units with interchangeable HLP-Low Profile Cassette and HSQ-Square Drive Cassette

Ex II 2G c T6



Modular, Durable, Fast and Efficient Torque for Low-Profile Applications

The HMT-Series is a range of fast, durable and efficient modular hydraulic torque wrenches, enabling you to tackle almost any bolting application. Interchange cassettes with ease, switching the HLP low profile hexagon cassette with the HSQ square drive whenever your application demands.

The tool itself has been carefully designed and manufactured, utilizing superior alloys and surface treatments to make it lightweight, up to 25% faster and more than twice as durable as other tools in the same class.

Safety and Performance

- **Supplied with an ergonomic tool safety handle as standard**
- **The HMT Modular Torque/Tool is also supplied with a link pin retainer as standard.**

Versatility

- **Interchangeable with other manufacturers**
- **HMT is able to solve all of your bolting challenges quickly and safely, with one or more attachment options, making it suitable for any application.**

Simplicity

- **The HMT is part of a modular system which is made up of a single power head and one attachment; the HMT-Drive Unit and HLP-Hexagon Cassette**

Accuracy

- **Constant torque output provides accuracy of +/-5% across the full stroke when used with compatible Enerpac-branded cassettes.**

ATEX declared

- **All HLP-Cassettes and HSQ-Square Drive Cassetts are CE - ATEX declared and are shipped complete with a calibration certificate.**



Ergonomic Tool Handle

Robust ergonomic positioning handle comes standard with every HMT-Drive Unit.

Compatible HMT-Series drive units	Ergonomic Handle (Standard)
HMT1500, 3500, 7500	**SWH6A**
HMT13000	**SWH10A**



HLP Low-Profile Cassettes

For the metric and imperial low-profile hexagon cassettes see:

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Torque Pumps

Visit enerpac.com for system matched air and electric torque pumps that are ideal for use with hydraulic torque wrenches.

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Torque Wrench Hoses

Use Enerpac THQ-Series hoses with HMT-Series torque wrenches to ensure the integrity of your hydraulic system. See page 255.

6 feet long, 2 hoses	**THQ702T**
19.5 feet long, 2 hoses	**THQ706T**
39 feet long, 2 hoses	**THQ712T**



BUS-Series, Back-Up Spanners

To be used to stop the back nut from turning during make up or break out. Two hexagon sizes in one tool.

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Drive Units for Hexagon & Square Drive Cassettes

Bolting Integrity Software

Visit enerpac.com to access our free on-line bolting software application. A comprehensive free online software solution for Bolted Joint Integrity.

Integral databases hold data for:

- BS1560, MSS SP44, API 6A and 17D flanged joints
- Common gasket materials and configurations
- Comprehensive range of bolt materials
- Comprehensive range of lubricants
- Enerpac's Controlled Bolting Equipment including: Torque Multipliers, Hydraulic Wrenches and Bolt Tensioning tools.

Custom Joint information can also be entered

The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as a combined Application data sheet and Joint completion report.

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HMT Series



Maximum Torque at 10,000 psi:
1541 - 13,489 Ft.lbs

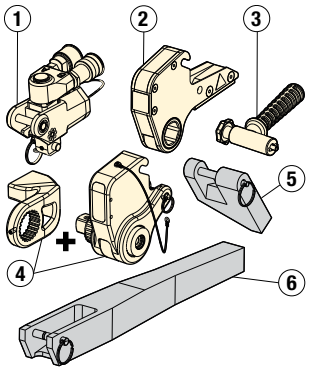
Maximum Torque at 690 bar:
2089 - 18,289 Nm

Hexagon Range:
1 1/16 - 4 5/8" / 27 - 115 mm

Square Drive Range:
¾ - 1 - 1½ inches

Maximum Operating Pressure:
10,000 psi / 690 bar

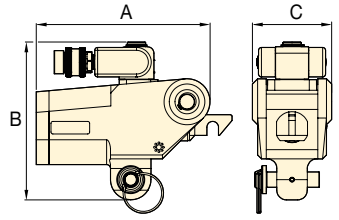
HMT-Series, Torque Wrench Options and Accessories



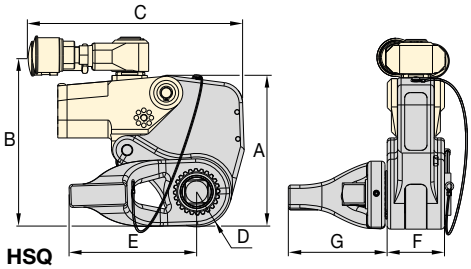
① **HMT**: Drive Unit (page 257)
② **HLP**: Hexagon Cassette (page 258-259)
③ **SWH**: Ergonomic Tool Handle (page 256)
④ **HSQ**: Square Drive Cassette + Reaction Arm for HSQ (page 257)

Optional Parts

⑤ **HRP**: Reaction Paddle (page 258)
⑥ **HTE**: Extended Reaction Arm (page 258)



HMT



HSQ

Select the Right Torque

250%

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.

▼ SELECTION CHART

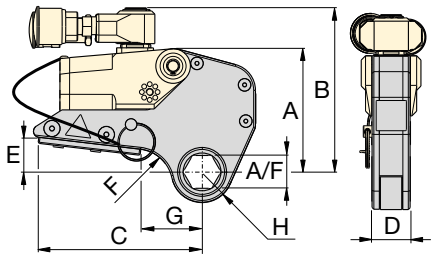
Hexagon Cassette Range (A/F) (see pages 258 - 259 for sizes and model numbers)		Maximum Torque Output at 10,000 psi (690 bar)		Drive Unit Model Number	Minimum Torque Output at 1000 psi (69 bar)		Dimensions (inch)				Dimensions (mm)			
(inch)	(mm)	(Ft.lbs)	(Nm)		(Ft.lbs)	(Nm)	A	B	C	(lbs)	A	B	C	(kg)
1 1/16 - 2 7/16	26 - 62	1541	2089	**HMT1500**	154	209	4.30	4.10	2.0	2.20	108	104	49	1,0
1 3/8 - 3 1/8	35 - 780	3750	4804	**HMT3500**	375	508	5.70	5.20	2.60	3.97	146	132	66	1,8
2 3/16 - 3 15/16	55 - 100	7562	10,252	**HMT7500**	756	1025	7.10	6.40	3.30	7.05	180	163	82	3,2
2 7/16 - 4 5/8	62 - 115	13,489	18,289	**HMT13000**	1349	1828	8.50	7.40	3.90	4.40	216	187	98	9,7

Maximum Torque Output at 690 bar (10.000 psi)		Square Drive Size	Square Drive Cassette * Model Number	Dimensions (inch)								Dimensions (mm)							
(Ft.lbs)	(Nm)	(inch)		A	B	C	D	E	F	G	(lbs)	A	B	C	D	E	F	G	(kg)
1541	2089	¾	**HSQ1500**	5.71	6.61	6.85	1.19	2.36	1.95	3.29	8.16	145	168	174	30	60	50	84	3,7
3750	4804	1	**HSQ3500**	7.54	8.23	7.95	1.52	3.07	2.58	4.35	13.01	192	209	202	39	78	66	111	5,9
7562	10,252	1½	**HSQ7500**	9.60	10.08	9.25	1.99	4.33	3.23	6.32	25.13	244	256	235	51	110	82	161	11,4

* **IMPORTANT**: HMT-drive units must be ordered separately to operate the HSQ-Square Drive Cassettes.

Hexagon Cassettes for HMT-Drive Units

ENERPAC



Hexagon Range:
1 1/16 - 4 5/8 inches

Hexagon Range:
27 - 115 mm

Maximum Operating Pressure:
10,000 psi / 690 bar

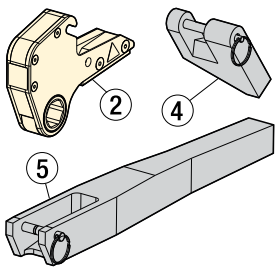
HLP Series



▼ SELECTION CHART

IMPORTANT: HMT-drive units must be ordered separately to operate the HLP-Hexagon Cassettes.

Drive Unit Model Number	Hexagon Size A/F		Hexagon Cassette Model Number	Maximum Torque		Dimensions (inch)									Dimensions (mm)								
	(inch)	(mm)		(Ft.lbs)	(Nm)	A	B	C	D	E	F	G	H	(lbs)	A	B	C	D	E	F	G	H	(kg)
HMT1500	1 1/16	27	HLP1101	1541	2089	4.48	5.32	5.35	1.2	1.13	1.18	2.01	1.00	3.53	114	135	136	31,5	29	30	51	25	1,6
	1 1/8	-	HLP1102	1541	2089	4.48	5.32	5.35	1.2	1.13	1.18	2.01	1.00	3.53	114	135	136	31,5	29	30	51	25	1,6
	1 3/16	30	HLP1103	1541	2089	4.48	5.32	5.35	1.2	1.13	1.18	2.01	1.00	3.53	114	135	136	31,5	29	30	51	25	1,6
	1 1/4	32	HLP1104	1541	2089	4.48	5.32	5.35	1.2	1.13	0.95	2.01	1.08	3.53	114	135	136	31,5	29	24	51	27	1,6
	1 5/16	33	HLP1105	1541	2089	4.48	5.32	5.35	1.2	1.13	0.95	2.01	1.08	3.53	114	135	136	31,5	29	24	51	27	1,6
	1 3/8	35	HLP1106	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	1.89	1.19	3.53	114	135	136	31,5	29	14	48	30	1,6
	1 7/16	36	HLP1107	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	1.89	1.19	3.53	114	135	136	31,5	29	14	48	30	1,6
	1 1/2	38	HLP1108	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.01	1.30	3.53	114	135	136	31,5	29	14	51	33	1,6
	1 9/16	-	HLP1109	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.01	1.30	3.53	114	135	136	31,5	29	14	51	33	1,6
	1 5/8	41	HLP1110	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.01	1.30	3.53	114	135	136	31,5	29	14	51	33	1,6
	1 11/16	-	HLP1111	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.01	1.30	3.53	114	135	136	31,5	29	14	51	33	1,6
	1 3/4	-	HLP1112	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.01	1.38	3.53	114	135	136	31,5	29	14	51	35	1,6
	1 13/16	46	HLP1113	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.01	1.38	3.53	114	135	136	31,5	29	14	51	35	1,6
	1 7/8	-	HLP1114	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.36	1.52	3.53	114	135	136	31,5	29	14	60	39	1,6
	1 15/16	-	HLP1115	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.36	1.52	3.53	114	135	136	31,5	29	14	60	39	1,6
	2	50	HLP1200	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.36	1.52	3.75	114	135	136	31,5	29	14	60	39	1,7
	2 1/16	-	HLP1201	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.36	1.52	3.75	114	135	136	31,5	29	14	60	39	1,7
	2 1/8	-	HLP1202	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.36	1.65	3.75	114	135	136	31,5	29	14	60	42	1,7
	2 3/16	55	HLP1203	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.36	1.65	3.75	114	135	136	31,5	29	14	60	42	1,7
	2 1/4	-	HLP1204	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.36	1.65	3.75	114	135	136	31,5	29	14	60	42	1,7
	2 5/16	-	HLP1205	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.36	1.65	3.75	114	135	136	31,5	29	14	60	42	1,7
	2 3/8	60	HLP1206	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.36	1.71	3.75	114	135	136	31,5	29	14	60	44	1,7
	2 7/16	62	HLP1207	1541	2089	4.48	5.32	5.35	1.2	1.13	0.55	2.36	1.71	3.75	114	135	136	31,5	29	14	60	44	1,7
HMT3500	1 3/8	35	HLP3106	3750	5084	6.02	6.57	7.24	1.7	1.59	1.89	3.09	1.30	8.60	153	167	184	42,0	41	48	79	33	3,9
	1 7/16	36	HLP3107	3750	5084	6.02	6.57	7.24	1.7	1.59	1.89	3.09	1.30	8.60	153	167	184	42,0	41	48	79	33	3,9
	1 1/2	38	HLP3108	3750	5084	6.02	6.57	7.24	1.7	1.59	1.81	3.16	1.42	8.60	153	167	184	42,0	41	46	80	36	3,9
	1 9/16	-	HLP3109	3750	5084	6.02	6.57	7.24	1.7	1.59	1.81	3.16	1.42	8.60	153	167	184	42,0	41	46	80	36	3,9
	1 5/8	41	HLP3110	3750	5084	6.02	6.57	7.24	1.7	1.59	1.81	3.16	1.42	8.60	153	167	184	42,0	41	46	80	36	3,9
	1 11/16	-	HLP3111	3750	5084	6.02	6.57	7.24	1.7	1.59	1.81	3.16	1.42	8.60	153	167	184	42,0	41	46	80	36	3,9
	1 3/4	-	HLP3112	3750	5084	6.02	6.57	7.24	1.7	1.59	1.58	3.08	1.52	8.60	153	167	184	42,0	41	40	78	39	3,9
	1 13/16	46	HLP3113	3750	5084	6.02	6.57	7.24	1.7	1.59	1.58	3.08	1.52	8.60	153	167	184	42,0	41	40	78	39	3,9
	1 7/8	-	HLP3114	3750	5084	6.02	6.57	7.24	1.7	1.59	1.42	3.05	1.63	8.60	153	167	184	42,0	41	36	77	41	3,9
	1 15/16	-	HLP3115	3750	5084	6.02	6.57	7.24	1.7	1.59	1.42	3.05	1.63	8.60	153	167	184	42,0	41	36	77	41	3,9
	2	50	HLP3200	3750	5084	6.02	6.57	7.24	1.7	1.59	1.42	3.05	1.63	8.60	153	167	184	42,0	41	36	77	41	3,9
	2 1/16	-	HLP3201	3750	5084	6.02	6.57	7.24	1.7	1.59	1.42	3.05	1.63	8.82	153	167	184	42,0	41	36	77	41	4,0
	2 1/8	-	HLP3202	3750	5084	6.02	6.57	7.24	1.7	1.59	1.18	2.97	1.74	8.82	153	167	184	42,0	41	30	75	44	4,0
	2 3/16	55	HLP3203	3750	5084	6.02	6.57	7.24	1.7	1.59	1.18	2.97	1.74	8.82	153	167	184	42,0	41	30	75	44	4,0
	2 1/4	-	HLP3204	3750	5084	6.02	6.57	7.24	1.7	1.59	1.18	2.97	1.74	8.82	153	167	184	42,0	41	30	75	44	4,0
	2 5/16	-	HLP3205	3750	5084	6.02	6.57	7.24	1.7	1.59	0.63	2.68	1.85	9.04	153	167	184	42,0	41	16	68	47	4,1
	2 3/8	60	HLP3206	3750	5084	6.02	6.57	7.24	1.7	1.59	0.63	2.68	1.85	9.04	153	167	184	42,0	41	16	68	47	4,1
	2 7/16	62	HLP3207	3750	5084	6.02	6.57	7.24	1.7	1.59	0.63	2.80	1.85	9.04	153	167	184	42,0	41	16	71	47	4,1
	2 1/2	63	HLP3208	3750	5084	6.02	6.57	7.24	1.7	1.59	0.63	2.80	1.96	9.04	153	167	184	42,0	41	16	71	50	4,1
	2 9/16	65	HLP3209	3750	5084	6.02	6.57	7.24	1.7	1.59	0.63	2.80	1.96	9.04	153	167	184	42,0	41	16	71	50	4,1
	2 5/8	-	HLP3210	3750	5084	6.02	6.57	7.24	1.7	1.59	0.63	2.80	2.07	9.04	153	167	184	42,0	41	16	71	53	4,1
	2 11/16	-	HLP3211	3750	5084	6.02	6.57	7.24	1.7	1.59	0.63	2.80	2.07	9.04	153	167	184	42,0	41	16	71	53	4,1
	2 3/4	70	HLP3212	3750	5084	6.02	6.57	7.24	1.7	1.59	0.63	2.80	2.07	9.04	153	167	184	42,0	41	16	71	53	4,1
	2 13/16	-	HLP3213	3750	5084	6.02	6.57	7.24	1.7	1.59	0.63	2.80	2.07	9.04	153	167	184	42,0	41	16	71	53	4,1
	2 7/8	-	HLP3214	3750	5084	6.02	6.57	7.24	1.7	1.59	0.63	2.80	2.07	9.04	153	167	184	42,0	41	16	71	53	4,1
	2 15/16	75	HLP3215	3750	5084	6.02	6.57	7.24	1.7	1.59	0.63	2.99	2.19	9.04	153	167	184	42,0	41	16	76	56	4,1
	3	-	HLP3300	3750	5084	6.02	6.57	7.24	1.7	1.59	0.63	2.99	2.19	9.04	153	167	184	42,0	41	16	76	56	4,1
	3 1/16	-	HLP3301	3750	5084	6.02	6.57	7.24	1.7	1.59	0.63	2.99	2.19	9.04	153	167	184	42,0	41	16	76	56	4,1
	3 1/8	80	HLP3302	3750	5084	6.02	6.57	7.24	1.7	1.59	0.63	2.99	2.19	9.04	153	167	184	42,0	41	16	76	56	4,1

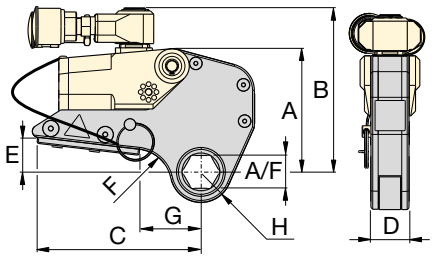


Optional Parts for HLP-Hexagon Cassettes

- Full torque rated
- Includes pin to secure onto HLP-cassette
- ④ HRP: allows offset reaction when in-line reaction point is not available
- ⑤ HTE: Increases tool fit in restricted areas.

For HMT with HLP-Series Hexagon Cassettes	Reaction Paddle Model No. ④	Extended Reaction Arm Model No. ⑤
HMT1500 + HLP1	**HRP15**	**HTE15**
HMT3500 + HLP3	**HRP35**	**HTE35**
HMT7500 + HLP7	**HRP75**	**HTE75**
HMT13000 + HLP13	**HRP130**	**HTE130**

Hexagon Cassettes for HMT-Drive Units



Hexagon Range:
1 1/16 - 4 5/8 inches

Hexagon Range:
27 - 115 mm

Maximum Operating Pressure:
10,000 psi / 690 bar

HLP Series



▼ SELECTION CHART

IMPORTANT: HMT-drive units must be ordered separately to operate the HLP-Hexagon Cassettes.

Drive Unit Model Number	Hexagon Size A/F		Hexagon Cassette Model Number	Maximum Torque		Dimensions (inch)									Dimensions (mm)								
	(inch)	(mm)		(Ft.lbs)	(Nm)	A	B	C	D	E	F	G	H	(lbs)	A	B	C	D	E	F	G	H	(kg)
HMT7500	2 3/16	55	HLP7203	7562	10,252	7.60	8.01	8.94	2.1	1.81	1.65	3.39	1.91	15.65	193	203	227	52,6	46	42	86	49	7,1
	2 1/4	-	HLP7204	7562	10,252	7.60	8.01	8.94	2.1	1.81	1.65	3.39	1.91	15.65	193	203	227	52,6	46	42	86	49	7,1
	2 5/16	-	HLP7205	7562	10,252	7.60	8.01	8.94	2.1	1.81	1.65	3.39	1.91	15.65	193	203	227	52,6	46	42	86	49	7,1
	2 3/8	60	HLP7206	7562	10,252	7.60	8.01	8.94	2.1	1.81	1.18	3.15	1.99	15.65	193	203	227	52,6	46	30	80	51	7,1
	2 7/16	62	HLP7207	7562	10,252	7.60	8.01	8.94	2.1	1.81	1.18	3.15	1.99	15.65	193	203	227	52,6	46	30	80	51	7,1
	2 1/2	63	HLP7208	7562	10,252	7.60	8.01	8.94	2.1	1.81	1.18	3.15	1.99	15.65	193	203	227	52,6	46	30	80	51	7,1
	2 9/16	65	HLP7209	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.87	3.15	2.07	15.65	193	203	227	52,6	46	22	80	53	7,1
	2 5/8	-	HLP7210	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.79	3.15	2.19	15.65	193	203	227	52,6	46	20	80	56	7,1
	2 11/16	-	HLP7211	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.79	3.15	2.19	15.65	193	203	227	52,6	46	20	80	56	7,1
	2 3/4	70	HLP7212	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.79	3.15	2.19	17.42	193	203	227	52,6	46	20	80	56	7,9
	2 13/16	-	HLP7213	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.79	3.15	2.19	17.42	193	203	227	52,6	46	20	80	56	7,9
	2 7/8	-	HLP7214	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.79	3.15	2.19	17.42	193	203	227	52,6	46	20	80	56	7,9
	2 15/16	75	HLP7215	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.67	3.15	2.26	17.42	193	203	227	52,6	46	17	80	58	7,9
	3	-	HLP7300	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.67	3.39	2.38	17.42	193	203	227	52,6	46	17	86	61	7,9
	3 1/16	-	HLP7301	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.67	3.39	2.38	17.42	193	203	227	52,6	46	17	86	61	7,9
	3 1/8	80	HLP7302	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.67	3.39	2.38	17.42	193	203	227	52,6	46	17	86	61	7,9
	3 1/4	-	HLP7304	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.67	3.39	2.52	17.42	193	203	227	52,6	46	17	86	64	7,9
	-	85	HLP7085M	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.67	3.39	2.52	17.42	193	203	227	52,6	46	17	86	64	7,9
	3 3/8	-	HLP7306	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.67	3.39	2.52	17.42	193	203	227	52,6	46	17	86	64	7,9
	3 7/16	-	HLP7307	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.67	3.50	2.52	17.64	193	203	227	52,6	46	17	89	64	8,0
	3 1/2	-	HLP7308	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.67	3.50	2.64	17.64	193	203	227	52,6	46	17	89	67	8,0
	-	90	HLP7090M	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.67	3.74	2.64	17.64	193	203	227	52,6	46	17	95	67	8,0
	3 9/16	-	HLP7309	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.67	3.74	2.78	17.64	193	203	227	52,6	46	17	95	71	8,0
	3 3/4	95	HLP7312	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.67	3.74	2.89	18.08	193	203	227	52,6	46	17	95	71	8.2
	3 7/8	-	HLP7314	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.67	3.74	2.89	18.08	193	203	227	52,6	46	17	95	74	8.2
	3 15/16	100	HLP7315	7562	10,252	7.60	8.01	8.94	2.1	1.81	0.67	3.74	2.89	18.08	193	203	227	52,6	46	17	95	74	8,2
HMT13000	2 7/16	62	HLP13207	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.95	4.69	2.28	24.3	204	242	276	63,4	57	75	119	58,0	11,0
	2 1/2	63	HLP13208	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.95	4.69	2.28	24.3	204	242	276	63,4	57	75	119	58,0	11,0
	2 9/16	65	HLP13209	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.95	4.69	2.28	24.3	204	242	276	63,4	57	75	119	58,0	11,0
	2 5/8	67	HLP13210	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.95	4.69	2.28	24.3	204	242	276	63,4	57	75	119	58,0	11,0
	2 11/16	68	HLP13211	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.95	4.69	2.28	24.3	204	242	276	63,4	57	75	119	58,0	11,0
	2 3/4	70	HLP13212	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.95	4.69	2.28	24.3	204	242	276	63,4	57	75	119	58,0	11,0
	2 13/16	71	HLP13213	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.95	4.69	2.28	24.3	204	242	276	63,4	57	75	119	58,0	11,0
	2 7/8	73	HLP13214	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.95	4.69	2.28	24.3	204	242	276	63,4	57	75	119	58,0	11,0
	2 15/16	75	HLP13215	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.76	4.69	2.40	24.3	204	242	276	63,4	57	70	119	61,0	11,0
	3	77	HLP13300	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.76	4.88	2.56	24.3	204	242	276	63,4	57	70	124	65,0	11,0
	3 1/16	78	HLP13301	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.76	4.88	2.56	24.3	204	242	276	63,4	57	70	124	65,0	11,0
	3 1/8	80	HLP13302	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.76	4.88	2.56	24.3	204	242	276	63,4	57	70	124	65,0	11,0
	3 3/16	81	HLP13303	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.76	4.88	2.58	24.3	204	242	276	63,4	57	70	124	65,5	11,0
	3 1/4	83	HLP13304	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.76	4.88	2.58	24.3	204	242	276	63,4	57	70	124	65,5	11,0
	3 5/16	84	HLP13305	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.76	4.88	2.58	24.3	204	242	276	63,4	57	70	124	65,5	11,0
	–	85	HLP13085M	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.76	4.88	2.58	24.3	204	242	276	63,4	57	70	124	65,5	11,0
	3 3/8	86	HLP13306	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.76	4.88	2.58	24.3	204	242	276	63,4	57	70	124	65,5	11,0
	3 7/16	–	HLP13307	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.36	4.88	2.76	24.3	204	242	276	63,4	57	60	124	70,0	11,0
	3 1/2	89	HLP13308	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.36	4.88	2.76	24.3	204	242	276	63,4	57	60	124	70,0	11,0
	–	90	HLP13090M	13,489	18,289	8.03	9.53	10.87	2.50	2.25	2.36	4.88	2.76	26.5	204	242	276	63,4	57	60	124	70,0	12,0
	3 9/16	91	HLP13309	13,489	18,289	8.03	9.53	10.87	2.50	2.25	1.34	4.33	2.91	26.5	204	242	276	63,4	57	34	110	74,0	12,0
	3 5/8	92	HLP13310	13,489	18,289	8.03	9.53	10.87	2.50	2.25	1.34	4.33	2.91	26.5	204	242	276	63,4	57	34	110	74,0	12,0
	3 11/16	94	HLP13311	13,489	18,289	8.03	9.53	10.87	2.50	2.25	1.34	4.33	2.91	26.5	204	242	276	63,4	57	34	110	74,0	12,0
	3 3/4	95	HLP13312	13,489	18,289	8.03	9.53	10.87	2.50	2.25	1.34	4.33	2.91	26.5	204	242	276	63,4	57	34	110	74,0	12,0
	3 13/16	97	HLP13313	13,489	18,289	8.03	9.53	10.87	2.50	2.25	1.73	4.69	2.95	26.5	204	242	276	63,4	57	44	119	75,0	12,0
	3 7/8	99	HLP13314	13,489	18,289	8.03	9.53	10.87	2.50	2.25	1.73	4.69	2.95	26.5	204	242	276	63,4	57	44	119	75,0	12,0
	3 15/16	100	HLP13315	13,489	18,289	8.03	9.53	10.87	2.50	2.25	1.73	4.69	2.95	26.5	204	242	276	63,4	57	44	119	75,0	12,0
	4	102	HLP13400	13,489	18,289	8.03	9.53	10.87	2.50	2.25	1.73	4.88	3.11	26.5	204	242	276	63,4	57	44	124	79,0	12,0
	4 1/16	–	HLP13401	13,489	18,289	8.03	9.53	10.87	2.50	2.25	1.73	4.88	3.11	26.5	204	242	276	63,4	57	44	124	79,0	12,0
	4 1/8	105	HLP13402	13,489	18,289	8.03	9.53	10.87	2.50	2.25	1.73	4.88	3.11	26.5	204	242	276	63,4	57	44	124	79,0	12,0
	4 3/16	–	HLP13403	13,489	18,289	8.03	9.53	10.87	2.50	2.25	0.95	4.33	3.21	28.7	204	242	276	63,4	57	24	110	81,5	13,0
	4 1/4	108	HLP13404	13,489	18,289	8.03	9.53	10.87	2.50	2.25	0.95	4.33	3.21	28.7	204	242	276	63,4	57	24	110	81,5	13,0
	4 5/16	110	HLP13405	13,489	18,289	8.03	9.53	10.87	2.50	2.25	0.95	4.33	3.21	28.7	204	242	276	63,4	57	24	110	81,5	13,0
	4 3/8	111	HLP13406	13,489	18,289	8.03	9.53	10.87	2.50	2.25	0.95	4.69	3.45	28.7	204	242	276	63,4	57	24	119	87,5	13,0
	4 7/16	113	HLP13407	13,489	18,289	8.03	9.53	10.87	2.50	2.25	0.95	4.69	3.45	28.7	204	242	276	63,4	57	24	119	87,5	13,0
	4 1/2	–	HLP13408	13,489	18,289	8.03	9.53	10.87	2.50	2.25	0.95	4.69	3.45	28.7	204	242	276	63,4	57	24	119	87,5	13,0
	4 9/16	–	HLP13409	13,489	18,289	8.03	9.53	10.87	2.50	2.25	0.95	4.69	3.45	28.7	204	242	276	63,4	57	24	119	87,5	13,0
	–	115	HLP13115M	13,489	18,289	8.03	9.53	10.87	2.50	2.25	0.95	4.69	3.45	28.7	204	242	276	63,4	57	24	119	87,5	13,0
	4 5/8	–	HLP13410	13,489	18,289	8.03	9.53	10.87	2.50	2.25	0.95	4.69	3.45	28.7	204	242	276	63,4	57	24	119	87,5	13,0

▼ Shown from left to right: **E291, E393, E494**



Accurate, Efficient Torque Multiplication

When accurate make-up or break-out of stubborn fasteners requires high torque

- **High-efficiency planetary gear sets achieve high output torque from low input torque**
- **Operator protected by anti-backlash device**
- **Reversible, tighten or loosen bolts**
- **Reaction bar or reaction plate style**
- **Angle-of-turn protractor standard on E300-Series models**
- **Reaction plate models offer increased versatility with reaction point locations**
- **E300 and E400-Series have replaceable shear drives, providing overload protection of internal power train**
- **One replacement shear drive is included with each E300 and E400-Series models.**

Typical Torque Multiplier Applications

- Locomotives
- Power plants
- Pulp and paper mills
- Refineries
- Chemical plants
- Mining and construction
- Off-road equipment
- Shipyards
- Cranes.



BUS-Series, Back-Up Spanners

To be used to stop the back nut from turning during make up or break out. Two hexagon sizes in one tool.

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▼ **SELECTION CHART**

Torque Multiplier Type	Nominal Torque Output (Ft.lbs)	Nominal Torque Output (Nm)	Model Number
Reaction Bar Multiplier	750	1020	**E290PLUS**
	1000	1358	**E291**
	1200	1627	**E391**
	2,200	2983	**E392**
	3,200	4340	**E393**
Reaction Plate Multiplier	2,200	2983	**E492**
	3,200	4339	**E493**
	5,000	6779	**E494**
	8,000	10,846	**E495**



◀ *Enerpac Reaction Bar Torque Multiplier E393 used to manually torque bolts up to 3170 Ft.lbs*

Manual Torque Multipliers

Enerpac manual torque multipliers provide efficient torque multiplication in wide clearance applications and when external power sources are not available.

Manual torque multipliers are used in most industrial, construction, and equipment maintenance applications. Hydraulic torque wrenches are better suited for tight tolerance, flange and repetitious bolting applications.

Use Reaction Bar Models:

- Where space is limited,
- Where multiple reaction points are available,
- when portability is desirable.

Use Reaction Plate Models:

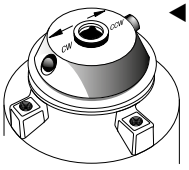
- Above 3170 Ft.lbs output torque,
- On flanges and applications where neighbouring bolt or nut is available to react against
- When extreme reaction forces are generated.

E Series



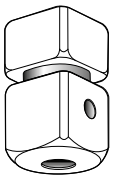
Nominal Torque Output:
750 - 8,000 Ft.lbs

Torque Ratio:
3:1 - 52:1



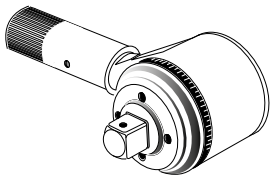
◀ **Selector Pawl**

Models with anti-backlash protection have directional selector pawls. Set the pawl for clockwise or counter-clockwise rotation.



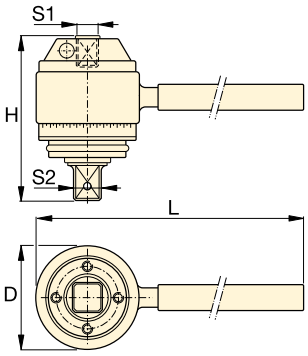
◀ **Shearable Square Drive**

Provides overload protection on E300- and E400-Series multiplier's power train by shearing when the rated capacity of the tool is exceeded. Internal shear pin prevents tool from falling off bolt.

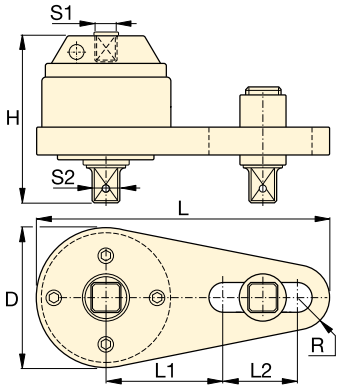


▲ **Angle-of-Turn Protractor**

E391, E392 and E393 models include an angle-of-turn protractor (scale) to tighten fasteners using a "torque turn" method. Allows accurate measuring a specific number of degrees of rotation.



Reaction Bar Type [1]



Reaction Plate Type [1]

CAUTION!

Never use impact air tools for power driving torque multipliers. Torque multiplier drive train damage will occur.



Battery-powered, hydraulic and pneumatic Torque Wrenches

Enerpac offers a complete range of square drive and hexagon cassette torque wrenches.

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BSH-Series, Sockets

Heavy-Duty Impact Sockets for power driven torqueing equipment.

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Input Torque [2] (Ft.lbs)	Input Torque [2] (Nm)	Torque Ratio (estimate)	Input Female Square Drive S1 (in)	Output Male Square Drive S2 (in)	Output Male Square Drive Replaceable Shear Drive Model Nr.	Over-load protection	Anti-Backlash	Dimensions (in) D	H	L	L1	L2	R	(lbs)	Model Number
250	339	3 : 1	½	¾	–	No	No	2.8	3.3	8.5	–	–	–	4.0	**E290PLUS**
333	452	3 : 1	½	¾	–	No	No	2.8	3.3	17.4	–	–	–	5.5	**E291**
200	271	6 : 1	½	¾	E391SDK	Yes	No	3.9	4.0	19.6	–	–	–	9.0	**E391**
162	220	13,6 : 1	½	1	E392SDK	Yes	Yes	4.1	5.7	19.6	–	–	–	15.2	**E392**
173	235	18,5 : 1	½	1	E393SDK	Yes	Yes	4.1	6.5	19.6	–	–	–	18.3	**E393**
162	219	13,6 : 1	½	1	E392SDK	Yes	Yes	4.9	5.5	14.0	5.5	4.9	1.3	17.2	**E492**
173	234	18,5 : 1	½	1	E393SDK	Yes	Yes	4.9	6.4	14.0	5.5	4.9	1.3	19.6	**E493**
189	256	26,5 : 1	½	1½	E494SDK	Yes	Yes	5.6	8.7	14.9	7.0	3.5	1.7	34.0	**E494**
154	209	52 : 1	½	1½	E495SDK	Yes	Yes	5.8	10.7	15.2	7.0	3.5	1.9	50.3	**E495**

[1] E200 and E400-series do not have an Angle-of-Turn Protractor (scale).
[2] User must verify manual torque wrench accuracy prior to use to ensure accurate final output torque.

▼ BTW1000B, Battery Torque Wrench



Ready, Set, Torque!



Ordering Convenience

Choose a complete set with a wrench, two batteries, and a battery quick charger, or opt for the wrench only.

All items are housed in a sturdy storage case. Additional Quick Chargers and spare batteries can be ordered separately.



Quick Charger & Batteries

The batteries are fully charged in 40 - 60 minutes.

Quick Charger	Model No.
115 Volt North America	EC181BQC
230 Volt Europe	EC182EQC
230 Volt Australia	EC182AUSQC

Lithium-Ion Batteries	Model No.
18 Volt, 5.5 Ah (standard)	EB18V5
18 Volt, 8 Ah	EB18V8

Pinpoint Precision, Time After Time

- Integrated digital motor vectoring system delivers accurate and repeatable torque up to 6,000 Ft.lbs (8,130 Nm).
- The most comprehensive pre-programing and calibration process of any battery torque wrench in the world.
- Delivering +/- 5% accuracy throughout the complete usable range of the tool.

The Solo Torque Expert

- Go wherever the job takes you with the handheld, battery-powered design.
- Single-operator usage for unparalleled productivity without cords or hoses.

Set in Seconds

- Set your torque target swiftly and torque with ease, thanks to the intuitive LED display.

Power that Lasts Throughout Your Workday

- Supplied as standard with two Enerpac 18 V 5.5 Ah Lithium-ion batteries and a 60-minute fast-charger. 8 Ah battery option available separately.
- Highly efficient and low maintenance brushless motor runs cooler and maximizes your productivity, even in remote or hard-to-reach areas.
- Effortlessly switch between any compatible Cordless Alliance System (CAS) battery for unmatched versatility and savings.

Torque With Confidence

- Ergonomic glass-filled Nylon handle with a durable slip-resistant grip.
- Convenient start trigger operation.
- Compatible with standard impact quality sockets.
- Planetary gear design provides smooth and consistent torque.
- Hardened steel alloy square drive withstands high levels of torque and resists wear and tear.
- Robust cast reaction arm provides a safe and strong reaction point.

Calibration Certificate

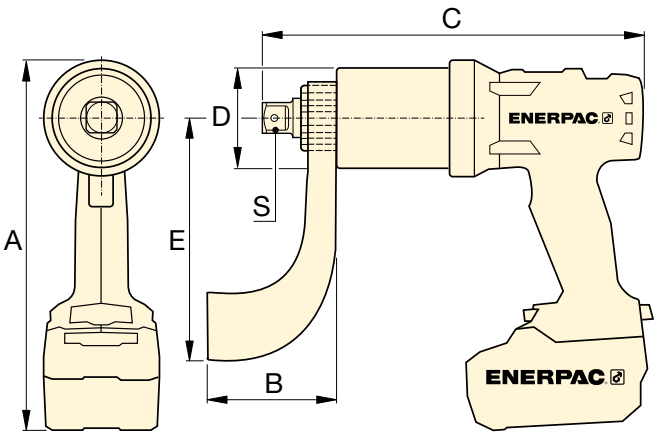
- All BTW-torque wrenches are supplied with a calibration certificate.

▼ *BTW-Series: Handheld, battery-powered design and single-operator usage provides unparalleled portability. No cords, no hoses, no worries.*





Battery Torque Wrench, Square Drive



BTW Series



Maximum Torque Output:
500 - 6,000 Ft.lbs

Maximum Torque Output:
670 - 8,130 Nm

Square Drive Range:
¾ - 1 - 1½ inches

▼ SELECTION CHART

Maximum Torque Output		Square Drive S	Model Number [1] Complete Battery Torque Wrench	Minimum Torque Output		Speed (min. - max.)	Dimensions (inch)					[2]	Dimensions (mm)					[2]
(Ft.lbs)	(Nm)	(inch)		(Ft.lbs)	(Nm)	(RPM)	A	B	C	D	E	(lbs)	A	B	C	D	E	(kg)
500	670	¾	**BTW500B**	120	160	12 - 20	10.54	3.63	8.86	2.56	4.29	10.4	267,7	93	225,0	65,0	109	4,7
1,000	1,350	1	**BTW1000B**	240	330	2 - 8	10.54	3.63	10.63	2.85	4.29	14.5	267,7	92	270,0	72,4	109	6,6
2,000	2,710	1	**BTW2000B**	500	680	1 - 5	10.54	4.00	11.47	3.09	5.25	15.9	267,7	101	291,3	78,5	133	7,2
3,000	4,030	1	**BTW3000B**	750	1,020	0,5 - 2	10.76	4.00	13.72	3.75	5.25	22.5	273,3	101	348,5	95,3	133	10,2
6,000	8,130	1½	**BTW6000B**	1,200	1,630	0,9 - 1,2	11.39	5.75	14.73	5.00	8.00	43.3	289,0	146	374,0	127,0	203	19,6

[1] Complete set include Wrench, Reaction Arm, Quick Charger and 18V 5.5 Ah Batteries, all in a sturdy case.
For wrench only remove "**B**". Example: **BTW1000**.
For 230 V with European plug change "**B**" into "**E**". Example **BTW1000E**.
For 230 V with Australian plug change "**B**" into "**AUS**". Example **BTW1000AUS**.

[2] Weight including Reaction Arm and Battery.

▼ *Go wherever the job takes you with the handheld, battery-powered design.*





Optional Handle Assemblies

* The D-Handle of the BTW3000 model requires installation at an Authorized Service Center.

Model Number D-Handle Assembly	Fits Wrench Models
BTW500DH	BTW500
BTW1000-3000DH *	BTW1000, BTW3000 *
BTW2000DH	BTW2000
BTW6000DH	BTW6000



Optional Hangers

* The Hanger Plate of the BTW3000 model requires installation at an Authorized Service Center.

Model Number Hanger Plate	Fits Wrench Models
BTW500HP	BTW500
BTW1000-3000HP *	BTW1000, BTW3000 *
BTW2000HP	BTW2000
BTW6000HP	BTW6000

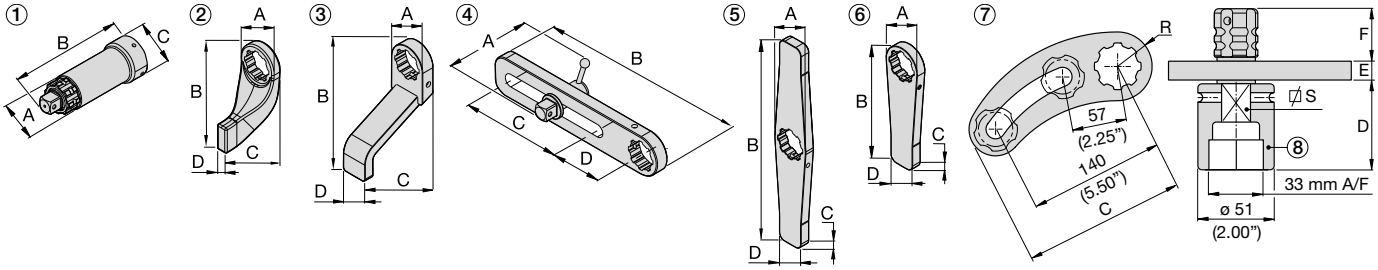
Accessories for BTW-Series Torque Wrenches

▼ Accessories for BTW-Series Battery Torque Wrenches





BTW-Series accessories for further extending the application range. ▶



Optional Accessories for use with BTW500				Dimensions (inch)				Dimensions (mm)			
Nr.	Description	Model No.	Application	A	B	C	D	A	B	C	D
1	Extended Drive, 6 inches (152 mm)	ED6TW	Nose extension, for truck wheel bolts	1.97	6.81	2.24	–	50	173	57	–
1	Extended Drive, 12 inches (305 mm)	ED12TW	Nose extension, for truck wheel bolts	1.97	12.80	2.24	–	50	325	57	–
1	Extended Drive, 18 inches (457 mm)	ED18TW	Nose extension, for truck wheel bolts	1.97	18.82	2.24	–	50	478	57	–
2	Standard Reaction Arm	RATW	Standard arm included with BTW	2.52	4.29	3.63	0.63	64	109	92	16
3	Extended Reaction Arm	ERATW	Long plate, use with deep well sockets	2.52	6.77	5.63	1.54	64	172	143	39
4	Sliding Reaction Arm	SLRATW	For widely spaced and uneven bolt centers	4.17	14.25	7.99	4.02	106	362	203	102
5	Double Straight Reaction Arm	DSATW	Reduces time to reposition arm *	2.52	12.01	0.63	1.26	64	305	16	32
6	Straight Reaction Arm	SRATW	Long plate for wide spaced reaction points	2.52	7.24	0.63	1.26	64	184	16	32

Optional Accessories for use with BTW1000, 2000, 3000				Dimensions (inch)				Dimensions (mm)			
Nr.	Description	Model No.	Application	A	B	C	D	A	B	C	D
1	Extended Drive, 6 inches (152 mm)	ED6TWS	Nose extension, for truck wheel bolts	2.44	8.11	2.87	–	62	206	73	–
1	Extended Drive, 12 inches (305 mm)	ED12TWS	Nose extension, for truck wheel bolts	2.44	15.12	2.87	–	62	384	73	–
1	Extended Drive, 18 inches (457 mm)	ED18TWS	Nose extension, for truck wheel bolts	2.44	20.12	2.87	–	62	511	73	–
2	Standard Reaction Arm	RATWS	Standard arm included with BTW	2.99	6.77	4.00	0.83	76	172	101	21
3	Extended Reaction Arm	ERATWS	Long plate, use with deep well sockets	2.87	7.91	5.88	2.01	73	201	149	51
4	Sliding Reaction Arm	SLRATWS	For widely spaced and uneven bolt centers	4.41	15.00	7.99	4.02	112	381	203	102
5	Double Straight Reaction Arm	DSATWS	Reduces time to reposition arm *	2.87	15.98	0.75	4.02	73	406	19	102
6	Straight Reaction Arm	SRATWS	Long plate for wide spaced reaction points	2.87	9.45	0.75	2.01	73	240	19	51

Optional Accessories for use with BTW6000				Dimensions (inch)				Dimensions (mm)			
Nr.	Description	Model No.	Application	A	B	C	D	A	B	C	D
1	Extended Drive 6 inches (152 mm)	ED6TWL	Nose extension, primarily for truck wheel bolts	3.31	9.13	4.02	–	84	232	102	–
1	Extended Drive 12 inches (305 mm)	ED12TWL	Nose extension, primarily for truck wheel bolts	3.31	15.12	4.02	–	84	384	102	–
2	Standard Reaction Arm	RATWL	Standard arm included with BTW model	4.02	9.02	5.75	1.26	102	229	146	32
3	Extended Reaction Arm	ERATWL	Long plate for use with deep well sockets	4.02	10.00	7.24	2.52	102	254	184	64
4	Sliding Reaction Arm	SLRATWL	For widely spaced and uneven bolt centers	5.98	16.50	7.48	4.49	152	419	190	114
5	Double Straight Reaction Arm	DSATWL	Reduces time to reposition arm *	4.02	20.00	1.26	2.24	102	508	32	57
6	Straight Reaction Arm	SRATWL	Long plate for wide spaced reaction points	4.02	12.01	1.26	2.24	102	305	32	57

* Time to reposition arm when repeatedly moving from tightening to loosening.

Optional Curved Reaction Arms and Sockets for Wheel Bolting				Dimensions (inch)						Dimensions (mm)					
Nr.	Description	Model Number	Application	C	D	E	F	R	S	C	D	E	F	R	S
7	Curved Reaction Arm, 3/4" Square Drive	RAWB50075SQD	BTW500	6.56	–	.75	2.13	1.38	¾"	167	–	19	54	35	¾"
7	Curved Reaction Arm, 3/4" Sq. Dr. 33 mm cup	RAWB5007533CUP	BTW500	6.56	3.15	.75	2.13	1.38	¾"	167	80	19	54	35	¾"
7	Curved Reaction Arm, 1" Square Drive	RAWB100SQD	BTW1000, 2000, 3000	6.75	–	1.00	1.88	1.50	1"	171	–	25	48	38	1"
7	Curved Reaction Arm, 1" Sq. Dr. 33 mm cup	RAWB10033CUP	BTW1000, 2000, 3000	6.75	3.31	1.00	1.88	1.50	1"	171	84	25	48	38	1"
8	Socket 3/4" Square Drive, 33 mm hexagon	BSH75WB33	BTW500	–	3.15	–	–	–	¾"	–	80	–	–	–	¾"
8	Socket 1" Square Drive, 33 mm hexagon	BSH100WB33	BTW1000, 2000, 3000	–	3.31	–	–	–	1"	–	84	–	–	–	1"

ACHIEVE MORE.
REACH FURTHER.

BTW-Series Accessories



SPARE RECHARGEABLE BATTERY

High-capacity battery cells provide extended runtime for higher cycle and larger tool applications.



QUICK CHARGER

Charges each Lithium-Ion battery in 60 minutes.



BSH-SERIES SOCKETS

Heavy-Duty Impact Sockets for power driven torquing equipment.



EXTENDED REACTION ARMS

Choose from a selection of extended reaction arms to access tight or difficult areas where standard reaction arms don't fit.



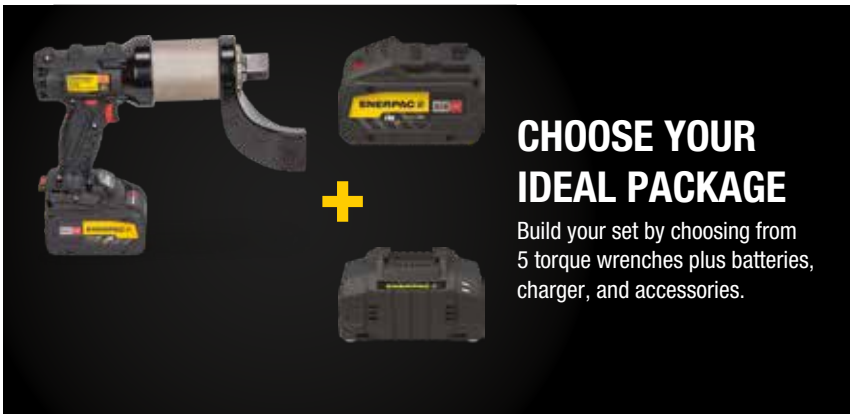
CURVED REACTION ARMS

Allows operator to react against adjacent nut using a cup to protect it. Allows socket to socket between 4-6" (101-152 mm) away from square drive of the tool.



BACK-UP SPANNERS

Stops the back nut from turning during make up or break out. Two hexagon sizes in one tool.



CHOOSE YOUR IDEAL PACKAGE

Build your set by choosing from 5 torque wrenches plus batteries, charger, and accessories.







▼ PTW1000



Continuous Rotation Controlled Torque

Calibration Certificate

All PTW-Series tools are CE declared and are shipped complete with a calibration certificate.

CE



FRL120C, Filter-Regulator-Lubricator with air hose

All PTW-Series tools are shipped complete with standard reaction arm, and Filter-Regulator-Lubricator (FRL120C).



MCS-Series, Mobile Calibration System

To check torque accuracy, run calibration tests and create calibration certificates prior to the use of continuous rotation torque tools in various applications while on a job site.

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Productivity

- **High-speed continuous rotation for constant torque output**
- **Low-friction planetary gearbox design minimizes wear and extends uptime.**

Safety

- **Ergonomic, low vibration design reduces fatigue and the risk of vibration related injuries for the operator**
- **Low noise air motor provides quiet, consistent performance for indoor and outdoor applications.**

Convenience

- **Provided with standard reaction arm; wide assortment of custom arms and accessories are available**
- **Available with or without Filter-Regulator-Lubricator (FRL)**
- **Unique calibration certificate provided with each tool.**



◀ *The PTW1000 makes quick work of this flange maintenance job.*

▼ *PTW-Series Pneumatic Torque Wrenches are ideal for applications where speed and precision are critical, such as track maintenance.*



PTW-Series, Pneumatic Torque Wrenches

Enerpac PTW-Series Pneumatic Torque Wrenches are designed for applications that require speed and control.

The standard package includes a Torque Wrench with a calibration certificate, an FRL (Filter/Regulator/Lubricator), and a 10 feet long, ½ inch diameter air hose, which connects the FRL to the wrench.

Once the air hoses are connected, the operator simply adjusts the air pressure on the FRL to achieve the desired torque using the calibration certificate. After this, the tool is ready to go to work! *

The air source used with the PTW system must be regulated and/or limited to 120 psi, and must be capable of providing a volume of at least 50 CFM at 100 psi. A separate ½ inch hose (not included) must be used to connect the FRL to the air supply.

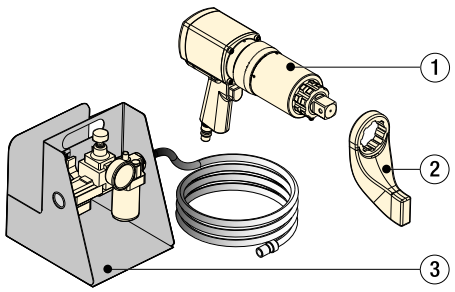
* See instruction manual for comprehensive instructions.

PTW Series

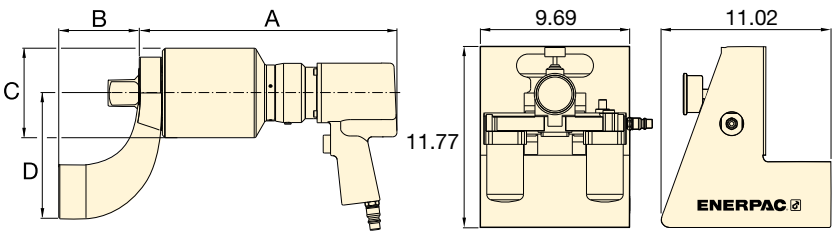


Nominal Torque Output:
1000 - 6,000 Ft.lbs

Square Drive Range:
¾ - 1 - 1½ inches



① PTW Torque Wrench
② Standard Reaction Arm
③ FRL120C Filter-Regulator-Lubricator with 10 feet (3 meters) air hose





Accessories for PTW-Series

Enerpac offers a full line of accessories including a range of reaction arms and drives.

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BSH-Series, Sockets

Heavy-Duty Impact Sockets for power driven torquing equipment.

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BUS-Series, Back-Up Spanners

Hands-free tool to be used to stop back nut from turning during make up or break out.

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▼ SELECTION CHART

All tools are shipped complete with standard reaction arm and FRL120C.

Minimum Torque (Ft.lbs)	Minimum Torque (Nm)	Nominal Torque (Ft.lbs)	Nominal Torque (Nm)	Square Drive (in)	Model Number [1] (FRL120C included)	Speed (RPM)	Dimensions (in) A	B	C	D	(lbs) [2]
300	407	1,000	1,356	¾	**PTW1000-75C**	12.6	10.70	3.27	2.83	5.12	17.4
300	407	1,000	1,356	1	**PTW1000C**	12.6	10.70	3.27	2.83	5.12	18.0
500	678	2,000	2,712	1	**PTW2000C**	8.0	11.26	3.27	3.11	5.24	19.5
900	1,220	3,000	4,067	1	**PTW3000C**	3.1	13.50	3.27	3.74	5.24	23.0
1,300	1,763	6,000	8,135	1½	**PTW6000C**	2.5	14.40	4.49	5.00	7.00	39.0

[1] To order without FRL120C, remove "C" suffix from model number (example: **PTW3000**).
[2] Weight does not include reaction arm.
Reaction arm weight for PTW1000, PTW2000, PTW3000 is 2.9 lbs and for PTW6000 is 7.8 lbs.

Accessories for PTW-Series Torque Wrenches

▼ Shown: **Accessories for PTW-Series Torque Wrenches**



- **Accessories for further extending the application range of pneumatic torque wrenches**
- **Extended drives increases tool fit in restricted access areas.**

Accessories for PTW-Series

Enerpac offers the following accessories to support a wide variety of applications in industries such as mining, power generation and oil & gas.
For additional custom accessories not pictured here, please contact Enerpac.

Applications

PTW-Series Pneumatic Wrenches are designed for applications that require speed and control.

Mining
- Track maintenance
- Undercarriage maintenance
- Wheel maintenance
- Shovel maintenance

Power Generation
- Turbine bolts
- Tower segments
- Turbine casings

Oil & Gas
- Pipe flanges
- Valves
- Manway covers
- Pressure vessels

▼ *PTW-Wrenches are ideal for applications where speed and precision are critical, such as track or wheel maintenance.*





▼ PTW1000



Continuous Rotation Controlled Torque

Calibration Certificate

All PTW-Series tools are CE declared and are shipped complete with a calibration certificate.

CE



FRL120C, Filter-Regulator-Lubricator with air hose

All PTW-Series tools are shipped complete with standard reaction arm, and Filter-Regulator-Lubricator (FRL120C).



MCS-Series, Mobile Calibration System

To check torque accuracy, run calibration tests and create calibration certificates prior to the use of continuous rotation torque tools in various applications while on a job site.

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Productivity

- **High-speed continuous rotation for constant torque output**
- **Low-friction planetary gearbox design minimizes wear and extends uptime.**

Safety

- **Ergonomic, low vibration design reduces fatigue and the risk of vibration related injuries for the operator**
- **Low noise air motor provides quiet, consistent performance for indoor and outdoor applications.**

Convenience

- **Provided with standard reaction arm; wide assortment of custom arms and accessories are available**
- **Available with or without Filter-Regulator-Lubricator (FRL)**
- **Unique calibration certificate provided with each tool.**



◀ *The PTW1000 makes quick work of this flange maintenance job.*

▼ *PTW-Series Pneumatic Torque Wrenches are ideal for applications where speed and precision are critical, such as track maintenance.*



▼ STTC2000 Safe T™ Torque Checker



Quick, simple and accurate mobile torque system safety testing device

Applications

All bolted joints from 144 Ft.lbs up to 16,100 Ft.lbs (195 - 21,800 Nm).

- All Enerpac torque wrenches up to the maximum capacity of the Torque Checker. Also for other brands that fit the envelope of the Torque Checker.
- Oil & Gas flanges,
- Tower Crane installation,
- Bigger machine installation/assembly,
- Wind Tower installation etc.

Industries:

- Oil & Gas, Petrochemical,
- Wind Power Generation,
- Marine,
- Manufacturing,
- Mining, Rail and more.

Safety & Accuracy

- **Durable mobile testing device for Enerpac hydraulic torque wrench systems**
- **Delivering ultimate on site accuracy, testing the entire wrench, pump and hose system to be used on the job**
- **Consistent and repeatable ±1% accurate range.**

Durability

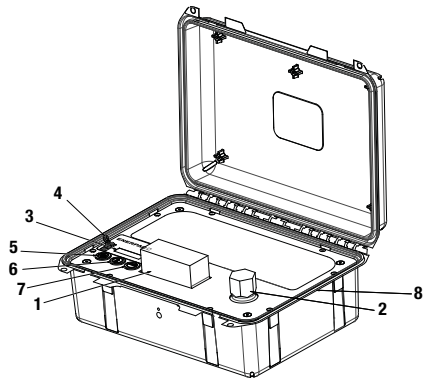
- **Durable splash-proof keypad and display for those harsh working environments**
- **Impact-resistant composite carry case.**

Simplicity

- **Allows the user to validate & test the exact system (torque wrench, pump, hose, etc.) to give a digital read out in Ft.lbs or Nm**
- **Easy to operate: power up and start testing**
- **Transportable: all in one compact carry case, ideal for use on the road with its durable internal 3.6 V-2.2 Ah Lithium-ion battery.**

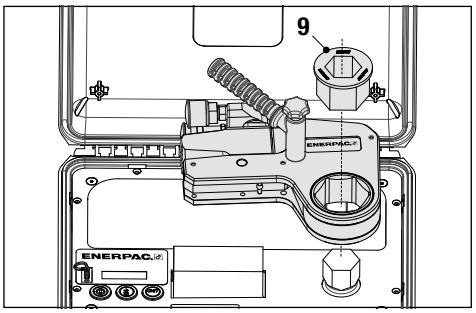
Versatility

- **Can test all Enerpac S, W, RSL, HMT and DSX-Series wrenches of both square drive and hexagon cassettes up to 16,100 Ft.lbs (21,800 Nm)**
- **Hexagon Reducers or Square Drive Sockets to be bought separately.**



1	Reaction Block	**5**	Power Switch
2	Hexagon Adaptor	**6**	Bluetooth Switch
3	Display	**7**	Units Switch
4	USB-connector	**8**	Case





Hexagon Reducer (nr. 9) must be bought separately: see selection tables on next page. ▶

Safe T™ Torque Checker

Safe T™ Torque Checker

Mobile, compact safety device allows the end user to instantly validate the performance of the entire system to be used - not just the wrench only. Allows the user to test the system on-site and in situ.
The user can validate and test the exact torque system (wrench, pump, hose, etc) to give an accurate digital read out.

Safety

The user can verify if the torque system is safe to operate, functioning correctly and within the desired safety parameters.

Unique from Enerpac

No need to wait for annual calibration tests to be confident in the performance and safety of your equipment. The Safe T™ Torque Checker can validate equipment in seconds, saving time and money.

Hexagon Reducers

The W-Series Hexagon Reducers from the tables below, can be used with all W, RLP and HLP-Series hexagon cassettes.

STTC Series



Max. Testing Output:
16,100 Ft.lbs (21,800 Nm)

Accuracy:
± 1%

Battery:
3.6 V 2.2 Ah Lithium-ion

For use with STTC2000

Hexagon Size (inch)	Hexagon Size (mm)	Cassette Model Number	Hexagon Reducer to 1 3/16" (30 mm) Model No.
1 1/16	–	W2101X	-
1 1/8	–	W2102X	-
1 3/16	**30**	**W2103X**	*
1 1/4	32	W2104X	**
1 5/16	–	W2105X	**
1 3/8	–	W2106X	**W2106R103D**
1 7/16	36	W2107X	**W2107R103D**
1 1/2	38	W2108X	**W2108R103**
1 9/16	–	W2109X	**W2109R103**
1 5/8	41	W2110X	**W2110R103**
1 11/16	–	W2111X	**W2111R103**
1 3/4	–	W2112X	**W2112R103**
1 13/16	46	W2113X	**W2113R103**
1 7/8	–	W2114X	**W2114R103**
1 15/16	–	W2115X	**W2115R103**
2	50	W2200X	**W2200R103**
2 1/16	–	W2201X	**W2201R103**
2 1/8	–	W2202X	**W2202R103**
2 3/16	55	W2203X	**W2203R103**
2 1/4	–	W2204X	**W2204R103**
2 5/16	–	W2205X	**W2205R103**
2 3/8	60	W2206X	**W2206R103**



Hexagon Reducers:

Must be bought separately. Can be used with all W, RLP and HLP-Series hexagon cassettes.

* Standard hexagon size of adaptor included with STTC-model

** Requires special reaction block.

For use with STTC4000

Hexagon Size (inch)	Hexagon Size (mm)	Cassette Model Number	Hexagon Reducer to 1 7/16" (36 mm) Model No.
1 5/16	–	W4105X	-
1 3/8	–	W4106X	-
1 7/16	**36**	**W4107X**	*
1 1/2	–	W4108X	**
1 9/16	–	W4109X	**
1 5/8	41	W4110X	**W4110R107**
1 11/16	–	W4111X	**W4111R107**
1 3/4	–	W4112X	**W4112R107**
1 13/16	46	W4113X	**W4113R107**
1 7/8	–	W4114X	**W4114R107**
1 15/16	–	W4115X	**W4115R107**
2	50	W4200X	**W4200R107**
2 1/16	–	W4201X	**W4201R107**
2 1/8	–	W4202X	**W4202R107**
2 3/16	55	W4203X	**W4203R107**
2 1/4	–	W4204X	**W4204R107**
2 5/16	–	W4205X	**W4205R107**
2 3/8	60	W4206X	**W4206R107**
2 7/16	–	W4207X	**W4207R107**
2 1/2	–	W4208X	**W4208R107**
2 9/16	65	W4209X	**W4209R107**
2 5/8	–	W4210X	**W4210R107**
2 11/16	–	W4211X	**W4211R107**
2 3/4	70	W4212X	**W4212R107**
2 13/16	–	W4213X	**W4213R107**
2 7/8	–	W4214X	**W4214R107**
2 15/16	75	W4215X	**W4215R107**
3	–	W4300X	**W4300R107**
3 1/16	–	W4301X	**W4301R107**
3 1/8	80	W4302X	**W4302R107**
3 3/16	–	W4303X	**W4303R107**
3 1/4	–	W4304X	**W4304R107**
3 5/16	–	W4305X	**W4305R107**
3 3/8	–	W4306X	**W4306R107**
–	85	W4085MX	**W4085MR107**

For use with STTC8000

Hexagon Size (inch)	Hexagon Size (mm)	Cassette Model Number	Hexagon Reducer to 2 inch (50 mm) Model No.
1 7/8	–	W8114X	-
1 15/16	–	W8115X	-
2	**50**	**W8200X**	*
2 1/16	–	W8201X	**
2 1/8	–	W8202X	**
2 3/16	55	W8203X	**W8203R200**
2 1/4	–	W8204X	**W8204R200**
2 5/16	–	W8205X	**W8205R200**
2 3/8	60	W8206X	**W8206R200D**
2 7/16	–	W8207X	**W8207R200**
2 1/2	–	W8208X	**W8208R200**
2 9/16	65	W8209X	**W8209R200**
2 5/8	–	W8210X	**W8210R200**
2 11/16	–	W8211X	**W8211R200**
2 3/4	70	W8212X	**W8212R200**
2 13/16	–	W8213X	**W8213R200**
2 7/8	–	W8214X	**W8214R200**
2 15/16	75	W8215X	**W8215R200**
3	–	W8300X	**W8300R200**
3 1/16	–	W8301X	**W8301R200**
3 1/8	80	W8302X	**W8302R200**
3 3/16	–	W8303X	**W8303R200**
3 1/4	–	W8304X	**W8304R200**
3 5/16	–	W8305X	**W8305R200**
–	85	W8085MX	**W8085MR200**
3 3/8	–	W8306X	**W8306R200**
3 7/16	–	W8307IX	**W8307R200**
3 1/2	–	W8308X	**W8308R200**
–	90	W8090MX	**W8090MR200**
3 9/16	–	W8309X	**W8309R200**
3 5/8	–	W8310X	**W8310R200**
3 11/16	–	W8311X	**W8311R200**
3 3/4	95	W8312X	**W8312R200**
3 13/16	–	W8313X	**W8313R200**
3 7/8	–	W8314X	**W8314R200**
3 15/16	100	W8315X	**W8315R200**
4	–	W8400X	**W8400R200**
4 1/16	–	W8401IX	**W8401R200**
4 1/8	105	W8402X	**W8402R200**

For use with STTC15000

Hexagon Size (inch)	Hexagon Size (mm)	Cassette Model Number	Hexagon Reducer to 2 5/8 inch Model No.
2 7/16	–	W15207X	-
2 1/2	–	W15208X	-
2 9/16	65	W15209X	-
2 5/8	**–**	**W15210X**	*
2 11/16	–	W15211X	**
2 3/4	70	W15212X	**
2 13/16	–	W15213X	**
2 7/8	–	W15214X	**W15214R210**
2 15/16	75	W15215X	**W15215R210**
3	–	W15300X	**W15300R210**
3 1/16	–	W15301X	**W15301R210**
3 1/8	80	W15302X	**W15302R210**
3 3/16	–	W15303X	**W15303R210**
3 1/4	–	W15304X	**W15304R210**
3 5/16	–	W15305X	**W15305R210**
–	85	W15085MX	**W15085MR210**
3 3/8	–	W15306X	**W15306R210**
3 7/16	–	W15307IX	**W15307R210**
3 1/2	–	W15308X	**W15308R210**
–	90	W15090MX	**W15090MR210**
3 9/16	–	W15309X	**W15309R210**
3 5/8	–	W15310X	**W15310R210**
3 11/16	–	W15311X	**W15311R210**
3 3/4	95	W15312X	**W15312R210**
3 13/16	–	W15313X	**W15313R210**
3 7/8	–	W15314X	**W15314R210**
3 15/16	100	W15315X	**W15315R210**
4	–	W15400X	**W15400R210**
4 1/16	–	W15401IX	**W15401R210**
4 1/8	105	W15402X	**W15402R210**
4 3/16	–	W15403IX	**W15403R210**
4 1/4	–	W15404X	**W15404R210**
4 5/16	110	W15405X	**W15405R210**
4 3/8	–	W15406X	**W15406R210**
4 7/16	–	W15407X	**W15407R210**
4 1/2	–	W15408IX	**W15408R210**
–	115	W15115MX	**W15115MR210**
4 9/16	–	W15409IX	**W15409R210**
4 5/8	–	W15410IX	**W15410R210**

Nominal Measurable Torque Output (Ft.lbs)	Nominal Measurable Torque Output (Nm)	Model Number [1]	Hexagon Adaptor included (inch)	Hexagon Adaptor included (mm)	Carry Case Size L x B x H (in)	(lbs)	Sockets to be used with Square Drive Wrenches [2]	Hexagon Cassette fits Adaptor. For other hexagon sizes, see table above with Hexagon Reducers sizes [2] W-Series	RSL-Series	HMT-Series
2140	2900	**STTC2000**	1 3/16	30	16 x 13 x 13	13	BSH7530	W2103X	RLP1103	HLP1103
4383	5950	**STTC4000**	1 7/16	36	16 x 13 x 13	18	BSH1036	W4107X	RLP3107	HLP3107
8893	12,000	**STTC8000**	2	50	24.5 x 19.6 x 6.6	42	BSH1550	W8200X	RLP5200	HLP3200
16,100	21,800	**STTC15000**	2 5/8	–	24.5 x 19.6 x 6.6	57	BSH15263	W15210X	RLP8210	HLP7210

1) With 3.6 V-2.2 Ah Lithium-ion battery.

2) Square drive sockets, hexagon cassettes and hexagon reducers must be bought separately.

MCS-Series, Mobile Calibration System

ENERPAC

▼ MCS7500C, Mobile Calibration System



MCS Series

Measurable Output Torque Range:
148 - 7,375 Ft.lbs

Measurable Output Torque Range:
200 - 10,000 Nm

Female Square Drive:
1½ inches

Accuracy

The calibration system is a calibrated instrument qualified in a UKAS certified laboratory. The accuracy of the MCS7500C is calibrated to meet or exceed: 1% of Full Scale Deflection (FSD) from 2% to 8% of torque range and 1% of reading from 8% to 100% of torque range.

Versatility

- **Accurately measures torque output for pneumatic and electric continuous rotation tools and square drive hydraulic (*) torque wrenches from 148 - 7,375 Ft.lbs (200 - 10,000 Nm)**
- **Adaptable design enables use with a large variety of Enerpac and competitive wrenches**
- **Internal Li-ion battery pack, external power via 5 VDC USB power supply.**

Performance

- **Certificate Manager feature enables quick and easy creation of calibration certificates**
- **Tool database feature allows specific wrench data and calibration results to be recorded and saved for future use**
- **Each MCS comes with a standard ISO17025 calibration certificate.**

Ease of Use

- **Compact design in carrying facilitates easy transport, allowing calibration to be carried out in the shop, on jobsites, or even in a vehicle**
- **Integrated digital interface enables torque values to be displayed, saved, printed or transferred to a computer.**

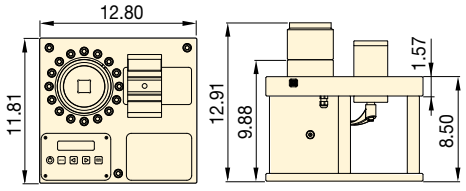


Female Reducer Set

The Female Reducer Set consists of two reducers: 1½ x 1 inch and 1½ x 3/4 inch. To be ordered separately as **MCS7500RS**.

Additional Reaction Block and Adaptor

A heavy-duty adjustable reaction block in combination with one of the three adaptors is required to facilitate the use with S, RSQ and DSX-Series Square Drive Wrenches as well as most competitive hydraulic wrenches to maximum 7,375 Ft.lbs (10,000 Nm). Drawings of additional reaction block and adaptor are available upon request.



Minimum Measurable Torque Output		Nominal Measurable Torque Output		Female Square Drive	Model Number **	Description	
(Ft.lbs)	(Nm)	(Ft.lbs)	(Nm)	(in)			(lbs)
148	200	7,375	10,000	1½	**MCS7500C**	MCS with carrying case	87

* Additional Reaction Block and appropriate Adaptor is required with the use of S, RSQ and DSX-Series square drive hydraulic wrenches.

** Not suitable for use with battery tools, impact tools or low-profile torque wrenches.

Optimum Wrench-Torque Pump Combinations

For optimum speed and performance Enerpac recommends the following system set-up with wrench-pump-hose combinations. For other combinations, consult your Enerpac bolting expert or your authorized Enerpac distributor.

	ELECTRIC TORQUE PUMPS				AIR DRIVEN TORQUE PUMPS	
	Cordless XC2-Series	**TQ-Series**	**ZU4T-Series**	**ZE4T-Series ZE5T-Series**	**LAT-Series**	**ZA4T-Series**
						
	274	276	278	282	284	286
Speed:						
Oil Flow @ 10,000 psi (in³/min):	20	30	60	60 - 120	25	60
Reservoir Capacity (gal):	0.5 - 1.0	1.0	1.2 - 1.8	1.2 - 5.2	0.8	1.2 - 1.8
Duty Cycle:	Intermittent	Standard	Heavy-Duty	Heavy-Duty	Standard	Heavy-Duty
Weight:						
Work:	Field/Factory	Field/Factory	Field	Factory	Field	Field
 220 **S1500PX S3000PX S6000PX S11000PX S25000PX**	**Optimal** / Acceptable	**Optimal** / Acceptable	**Optimal**	**Optimal**	**Optimal** / Acceptable	**Optimal**
 228 **W2000PX W4000PX W8000PX W15000PX W22000PX W35000PX**	**Optimal** / Acceptable	**Optimal** / Acceptable			**Optimal** / Acceptable	
 240 **RSL1500 RSL3000 RSL5000 RSL8000 RSL11000 RSL19000 RSL28000**	**Optimal** / Acceptable	**Optimal** / Acceptable	**Optimal**	**Optimal**	**Optimal** / Acceptable	**Optimal**
 252 **DSX1500 DSX3000 DSX5000 DSX11000 DSX25000**	**Optimal** / Acceptable	**Optimal** / Acceptable	**Optimal**	**Optimal**	**Optimal** / Acceptable	**Optimal**
 256 **HMT1500 HMT3500 HMT7500 HMT13000**	**Optimal** / Acceptable	**Optimal** / Acceptable	**Optimal**	**Optimal**	**Optimal** / Acceptable	**Optimal**

XC2-Series, Portable Cordless Pumps
Ideal for maintenance bolting applications at sites that do not have access to power or where having extension cords or air hoses could cause trip hazards.

TQ700-Series, Electric Torque Pumps
Designed for both portability and production, to deliver superior bolting speed.

ZU4T-Series, Electric Torque Pumps
Works well with long extension cords or generator driven electrical power supplies. Available in **Pro** and **Classic** formats.

ZU4T-Series Pro Pumps have an LCD feature to display torque or pressure, selectable torque wrench, and self-diagnostics.

ZU4T-Series Classic Pumps feature an analogue gauge and a basic electrical package to deliver durable, safe and efficient hydraulic power.

ZE-T Series, Electric Torque Pumps
Features LCD to display torque or pressure values, and self-diagnostics. With induction motor, making the ZE-Series the coolest and quietest pumps in their class.

LAT-Series, Lightweight Torque Air Pumps
Combines compact design and high productivity for bolting applications in areas hard to access with larger air powered pumps.

ZA4T-Series, Air Driven Torque Pumps
This air driven pump is best suited to power medium to large size torque wrenches.

THQ-Series, Torque Wrench Hoses
Use Enerpac THQ-Series twin hoses with all torque wrenches to ensure the integrity of your hydraulic system (see page 255).

▼ XC2502BB



Works with ENERPAC CONNECT

- **Cordless convenience eliminates extension cords, noise and emission producing generators**
- **Ideal for bolting applications requiring portability and convenience**
- **20 ft detachable pendant control**
- **4 inch glycerine-filled gauge for easy viewing**
- **Adjustable pressure relief valve can be locked when desired pressure is set**
- **High-performance brushless motor drives flow rate comparable to ½ hp electric pumps for increased productivity and provides twice the life of brushed motors**
- **Bladder reservoir reduces contamination and allows pump use in any position**
- **Includes shoulder strap SSTRP55, attaches to integrated steel rings for enhanced portability**
- **Compatible with the Enerpac Connect App, which gives access to the latest tool & job information.**



Torque Wrenches

The following torque wrenches are ideal for use with the XC2-Series Cordless Torque Pumps:

S	W	RSL	DSX	HMT
S1500PX	W2000PX	RSL1500	DSX1500	HMT1500
S3000PX	W4000PX	RSL3000	DSX3000	HMT3500
		RSL5000		HMT7500

Larger torque wrenches may be used with the pump.

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The Next Generation of Cordless Performance and Efficiency

Works with ENERPAC CONNECT

Use the Enerpac Connect Mobile App for the latest essential tool information.
Scanning the QR code on the pump gives instant access to product specifications, manuals, videos, job specific usage data, and wireless firmware updates.



Pendant Controls

The heavy-duty pendants operate any XC2-Series pumps. Easy to connect or disconnect when not required, the pendants feature large buttons, an over-molded grip, lanyard loop and hanger magnet. Multiple seals within pendant provide IP64 environmental protection.

Description	Model No.
Pendant, 10 ft cord	**CC131**
Pendant, 20 ft cord	**CC132**
Extension Cord, 10 ft	**CC010**



54 Volt Lithium-Ion Battery

The 4 Ah **EBH544** battery with high-capacity cells provides extended runtime for higher cycle and larger tool and cylinder applications.



54 Volt Fast Battery Charger

The fast charger minimizes downtime with a 1½ hour charge cycle. Charger provides charge status, over-temperature and damaged battery indication.

54 Volt Fast Charger	Model No.
115 Volt North America	**EC1F541B**
230 Volt Europe	**EC1F542E**
230 Volt Australia	**EC1F542A**

XC2-Series Torque Pumps

The XC2-Series Cordless Torque Pump is ideal for applications where a power supply is not available or extension cords present safety or mobility issues.

Whether in the field or facility, the XC2 combination of portability, productive fastening speed and battery run time will increase the efficiency of any job.

If working in confined spaces where any cord is a challenge, the pendant control is easily detached and the pump can be operated by the trigger.

Torque Wrench Model No.	Application	Nut A/F (in)	Stud (in)	Torque (Ft.lbs)	Passes	Fasteners Torqued [2]
W2000PX	Hard Joint	2⅜	1 1/2	1000	Single	84
W2000PX	Flange 1500# [1]	2	1¼	974	3 + Ringer	32 [3]

[1] Flange 1500#, 4 inch, 8 x 1¼ inch
[2] Actual number of fasteners per charge will vary depending on condition of tools and materials.
[3] 32 = 1 flange.

XC2 Series



Reservoir Capacity:
134 - 256 in³

Flow at Rated Pressure:
20 in³/min

Motor & Battery Size:
.94 hp, 54 V / 4 Ah

Maximum Operating Pressure:
10,000 psi



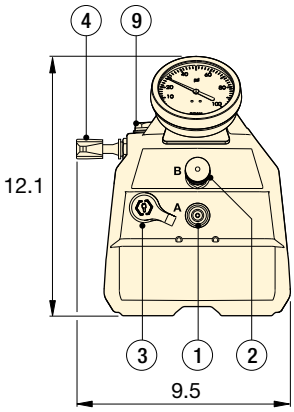
Torque Wrench Hoses

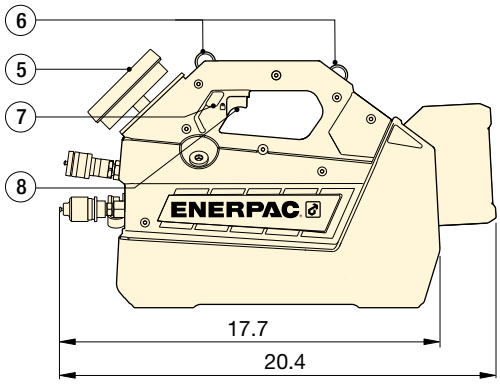
Use Enerpac THQ-Series torque wrench hoses with torque wrenches and torque pumps.

6.5 ft long, 2 hoses	**THQ702T**
19.5 ft long, 2 hoses	**THQ706T**
39 ft long, 2 hoses	**THQ712T**

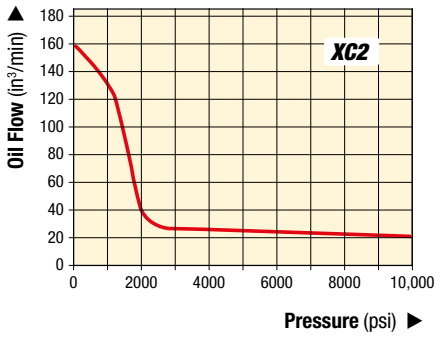
① Outlet "Advance" Port 1/4"-18 NPTF
② Inlet "Retract" Port 1/4"-18 NPTF
③ Pendant connection port
④ User Adjustable Relief Valve
⑤ Pressure Gauge (bar, psi, MPa)
⑥ Shoulder Strap Connection Points
⑦ Trigger Lock
⑧ Trigger
⑨ Oil Fill (must use funnel)







OIL FLOW vs. PRESSURE



▼ SELECTION CHART

Torque Pump for use with	Useable Oil Capacity (in³)	Model Number	Output Flow Rate (in³/min) No Load	Output Flow Rate (in³/min) 10,000 psi	Valve Function	Pendant in kit	Batteries in kit	Charger in kit	Weight [5] (lbs)
All Series torque wrenches	122	**XC2502B**	160	20	Solenoid 4-way, 2-pos.	CC132	–	–	33.6
	241	**XC2504B**				CC132	–	–	37.1
	122	**XC2502BB** [4]				CC132	2x 4 Ah	115 V	33.6
	241	**XC2504BB** [4]				CC132	2x 4 Ah	115 V	37.1

[4] Pumps available with 230 V European plug set charger. Substitute "**B**" suffix with "**E**" in model number. Example: **XC2504BE**.
Pumps available with 230 V Australian plug set charger. Substitute "**B**" suffix with "**A**" in model number. Example: **XC2504BA**.
[5] Weight includes pump with oil and battery. Weight 3.5 lbs per battery.

▼ TQ700B



Lightweight Torque Wrench Pumps

- **Optimized flow technology – three stage pump maximizes productivity of the pump and tool while minimizing heat build-up and down time**
- **Heat exchanger is standard included**
- **A quiet (<85 dBA), lightweight pump with a compact footprint – easy to move around and through the work site**
- **Durable roll cage with an ergonomically sized handle and shielded gauge – a pump that is easy to put into position and safe from on site operational hazards**
- **Maintenance made simple with a brushless motor designed for continuous usage**
- **Straightforward operation with a simple pressure set and convenient to use 20 foot pendant control – immediate productivity for crews operating the pump**
- **IP55 Rating for Superior Dust and Water Protection**
- **Transparent gauge overlays in Ft.lbs and Nm for all Enerpac torque wrenches provide a quick torque reference.**



Four Port Manifold

The TQ700 offers an optional four wrench manifold as an accessory factory installed. Add suffix “M” at the end of the model number.
For example: **TQ700BM**.



Torque Wrench Hoses

Use Enerpac THQ-Series torque wrench hoses with 10,000 psi torque wrenches and pumps.

6.5 feet long, 2 hoses	**THQ702T**
19.5 feet long, 2 hoses	**THQ706T**
39 feet long, 2 hoses	**THQ712T**



Hydraulic Torque Wrenches

Enerpac offers a complete range of square drive and hexagon cassette torque wrenches.

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Overlay Kit with Gauge

Available separately for use with TQ-Series: **GT4015Q** includes gauge and torque overlays for all Enerpac torque wrenches.



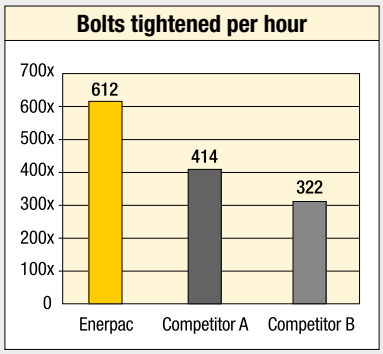
The TQ700B and the W-Series wrenches are a productive combination in wind applications. ◀

TQ700 Applications

The TQ700 Series pump is ideal for powering hydraulic wrenches for the Power Generation and Wind Markets.

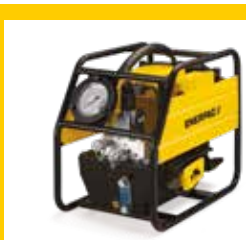
Bolting speed is more complex than how much flow per minute the pump produces. The key is optimising the flow rate across the entire bolting cycle. With more oil flowing at the right time and at the right volume, you achieve the optimized flow for a hydraulic bolting system.

The result of this optimized flow is more bolts tightened faster and a more productive work team.



Internal laboratory testing based on standard torqueing procedure on a pipe flange with 14, 1⅞" bolts.

TQ Series



Reservoir Capacity:
1.0 gallons

Flow at Rated Pressure:
30 in³/min

Motor Size:
1.0 hp

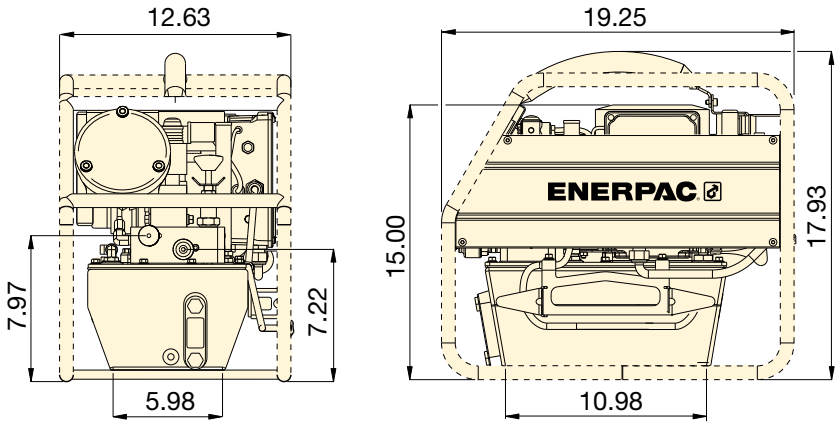
Maximum Operating Pressure:
10,000 psi



Torque Pump Selection Matrix

For optimum speed and performance see the torque pump and hose selection matrix.

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For Use with Torque Wrenches	Pressure Rating (psi)	Model Number [1]	Useable Oil Capacity (gal)	Motor Size (hp)	Motor Electrical Specifications (Volt - Ph - Hz)	Sound Level (dBA)	(lbs)
All Series	10,000	**TQ700B**	1.0	1.0	115 - 1 - 50/60	82 - 85	68
	10,000	**TQ700E** [2]	1.0	1.0	230 - 1 - 50	82 - 85	66
	10,000	**TQ700I** [3]	1.0	1.0	230 - 1 - 60	82 - 85	66

[1] All models meet CE safety requirements and all TÜV requirements.
[2] TQ700E with European plug and CE EMC directive compliant.
[3] TQ700I with NEMA 6-15 plug.

▼ *The TQ700B and the W-Series wrenches are a productive combination.*



▼ ZU4204TE-Q (Pro), ZU4204BE-Q (Classic)



Z Tough, Dependable Innovative CLASS



Classic Electrical

Basic electrical package includes mechanical contactor, ON/OFF toggle switch, pendant with electro-mechanical push buttons, 24V transformer timer and operator accessible circuit breaker.

- **Features Z-Class high-efficiency pump design; higher oil flow and bypass pressure, cooler running and requires 18% less current draw than comparable pumps**
- **Powerful 1.70 hp universal electric motor provides high power-to-weight ratio and excellent low-voltage operating characteristics**
- **High-strength, molded composite shroud protects motor and electrical components, while providing an ergonomic, non-conductive handle for easy transport**
- **Low-voltage pendant provides additional safety for the operator.**

Pro-Series pump only

- **LCD readout provides pressure display and a number of diagnostic and readout capabilities never before offered on a portable electric pump**
- **Autocycle feature provides continuous cycle operation of the torque wrench as long as the advance button is pressed (pump can be used with or without autocycle feature).**



Pro-Series

Back-lit LCD and Pressure Transducer featuring Autocycle Technology.

- Torque wrench model is selectable
- “Autocycle” setting easily programmable.
- Digital read-out and “Autocycle” setting
- Pump usage information, hour and cycle counts
- Low-voltage warning and recording
- Self-test and diagnostic capabilities
- Information can be displayed in English, French, German, Italian, Spanish and Portuguese
- Pressure transducer is more accurate and durable than analog gauges
- Easy-viewing variable rate display
- Display pressure in bar, MPa or psi.



◀ *Crane maintenance and assembly with S1500X wrench powered by ZU4T-Series torque pump.*



Any brand of hydraulic torque wrench can be powered by the portable ZU4T-Series torque pump. ▶

Z-Class – A Pump For Every Application

Patented Z-Class pump technology provides high by-pass pressures for increased productivity – important in applications using long hose runs and high pressure-drop circuits, like heavy lifting or certain double-acting tools.

Enerpac ZU4T-Series pumps are built to power small to large torque wrenches. Choosing the right ZU4T-Series torque wrench pump for your application is easy.

Classic Electric Torque Pumps

- The Classic has traditional electro-mechanical components (transformers, relays and switches) in place of solid-state electronics.
  The Classic delivers durable, safe and efficient hydraulic power.

Pro-Series Electric Torque Pumps

- Digital (LCD) display features a built-in hour meter, pressure display and shows self-diagnostic, cycle-count and low-voltage warning information.
  These premium features are not available on any other pump – anywhere!
- Autocycle feature provides continuous cycle operation of the torque wrench as long as the advance button is pressed (pump can be used with or without Autocycle feature).

ZU4T-Series, Torque Pump Ordering Guide *Page:* 281

ZU4T Series



Reservoir Capacity:
1.2 - 1.8 gallons

Flow at Rated Pressure:
60 in^3/min

Motor Size:
1.70 hp

Maximum Operating Pressure:
10,000 psi

Bolting Integrity Software

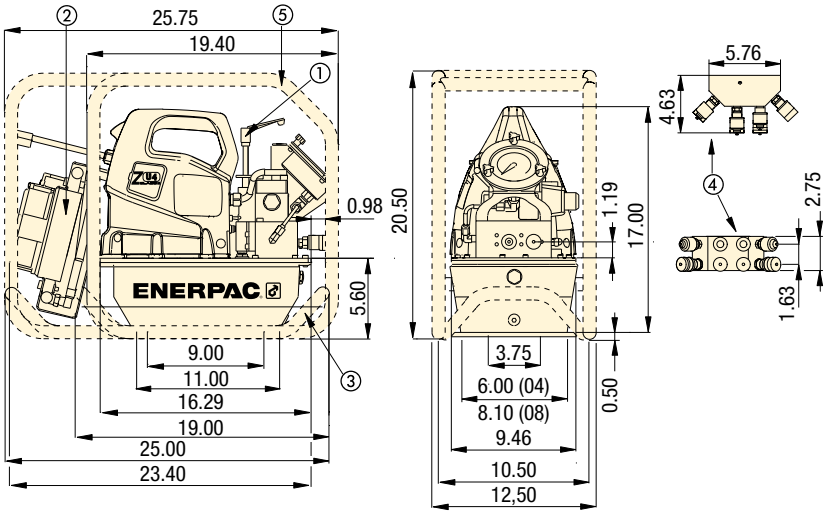
Enerpac Bolting Integrity Software Solutions play a key role in implementing and managing an Integrity Program for bolted connections.
The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application Data Sheet and Joint Completion Report. Custom Joint information can also be entered.

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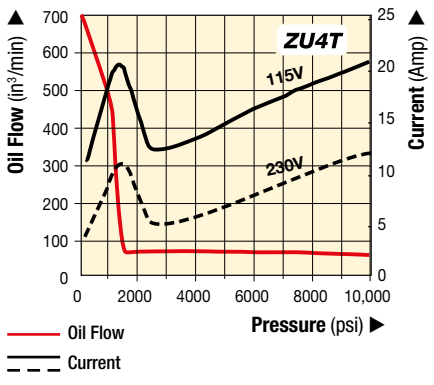
Overlay Kit with Gauge

Available separately for use with **ZU4T-Series Classic** Pumps: **GT4015Q** includes gauge and torque overlays for all Enerpac torque wrenches.



① User adjustable relief valve
② Heat Exchanger (optional)
③ Skid Bar (optional)
④ 4-wrench manifold (optional)
⑤ Roll Cage (optional)

OIL FLOW VERSUS PRESSURE



ZU4T-Series Torque Pumps

ZU4T-Series Performance Chart

Motor Size	Output Flow Rate (in^3/min)				Motor Electrical Specification	Sound Level	Relief Valve Adjustment Range
(hp)	100 psi	725 psi	5,000 psi	10,000 psi	(Volt - Phase - Hz)	(dBA)	(psi)
1.70	700	535	70	60	115 - 1 - 50/60 208-240 - 1 - 50/60	85 - 90	1800 -10,000



4-Wrench Manifold

- **For simultaneous operation of multiple torque wrenches.**

Accessory Kit * Model No.	Can be used on ZU4T-Series torque pumps
ZTM-Q *	for 10,000 psi torque wrenches

* 4-Wrench Manifold adds 6 lbs to pump weight.



Skid Bar

- **Provides greater pump stability on soft or uneven surfaces**
- **Provides easy two-handed lift.**

Accessory Kit Model No.	Can be used on ZU4T-Series torque pumps
SBZ-4	1.2 and 1.8 gallon reservoir [1]
SBZ-4L	1.2 and 1.8 gallon reservoir [2]

[1] Without heat exchanger 5.0 lbs.
[2] With heat exchanger 5.5 lbs.



Heat Exchanger

- **Removes heat from the bypass oil to provide cooler operation**
- **Stabilizes oil viscosity, increasing oil life and reduces wear of pump and other hydraulic components.**

Accessory Kit * Model NO.	Can be used on ZU4T-Series torque pumps
ZHE-U115	115 V pumps
ZHE-U230	230 V pumps

* Heat Exchanger adds 9.0 lbs to pump weight.

Thermal Transfer * (Btu/h)	Max. Pressure (psi)	Max. Oil Flow (gal/min)	Voltage (VDC)
900	300	7.0	12

* At 116 in³/min at 70˚F ambient temperature. Do not exceed maximum oil flow and pressure ratings. Heat exchanger is not suitable for water-glycol or high water-based fluids.



Roll Cage

- **Protects pump**
- **Provides greater pump stability.**

Accessory Kit Model No.	Can be used on ZU4T-Series torque pumps
ZRC-04	1.2 and 1.8 gallon reservoir [1]
ZRC-04H	1.2 and 1.8 gallon reservoir [2]

[1] For pump without heat exchanger 9.0 lbs
[2] For pump with heat exchanger 9.5 lbs.

▼ *These rigid steel wrenches with low-profile interchangeable hexagon cassettes guarantee durability and maximum versatility in bolting applications.*





Torque Wrench Hoses

Use Enerpac twin safety hoses to connect your torque wrench to the pump.

For 10,000 psi	Model No.
6.5 feet, 2 hoses	THQ702T
19.5 feet, 2 hoses	THQ706T
39 feet, 2 hoses	THQ712T

ZU4T-Series, Torque Pump Ordering Guide

▼ Select a pump from the model matrix at the bottom of the page.

The functionality of the pump can be determined by the model number. Utilize the guide below to select the best pump for the application.

Z	U	4	2	08	T	B	-	Q	H	M
1 Product Type	2 Motor Type	3 Flow Group	4 Valve Type	5 Reservoir Size	6 Valve Operation	7 Voltage		8 Must be Q	8 Factory Installed Accessories	

1 Product Type
- **Z** = Pump series

2 Motor Type
- **U** = Universal electric motor

3 Flow Group
- **4** = 60 in³/min @ 10,000 psi

4 Valve Type
- **2** = Torque wrench valve

5 Reservoir Size
- **04** = 1.2 gallons
- **08** = 1.8 gallons

6 Valve Operation
- **T** = **Pro Series pump** with solenoid valve and pendant, LCD Electric and pressure transducer
- **B** = **Classic Electric pump** with solenoid valve and pendant.

7 Voltage
- **B** = 115V, 1 ph, 50/60 Hz
- **E** = 208-240V, 1 ph, 50/60 Hz (with European plug CE RF compliant)
- **I** = 208-240V, 1 ph, 50/60 Hz (with NEMA 6-15 plug)

8 Factory installed accessories
- **H** = Heat Exchanger
- **K** = Skid Bar
- **M** = 4-wrench manifold
- **R** = Roll Cage

ZU4T Series



Reservoir Capacity:
1.2 - 1.8 gallons

Flow at Rated Pressure:
60 in³/min

Motor Size:
1.70 hp

Maximum Operating Pressure:
10,000 psi



Torque Pump Selection Matrix

For optimum speed and performance see the torque pump and hose selection matrix.

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▼ ZU4T-SERIES CLASSIC TORQUE PUMP MODELS

ZU4T Classic [1] Model Numbers 115 VAC, 1 ph [2]	Reservoir Capacity (gal)	Factory Installed Accessories: Heat Exchanger	Roll Cage	Skid Bar	4-Wrench Manifold	(lbs)
ZU4204BB-Q (E, I)	1.2					72
ZU4208BB-Q (E, I)	1.8					78
ZU4204BB-QH (E, I)	1.2	●				88
ZU4208BB-QH (E, I)	1.8	●				87
ZU4204BB-QR (E)	1.2		●			81
ZU4208BB-QR (E)	1.8		●			87
ZU4204BB-QHR (E)	1.2	●	●			90
ZU4208BB-QHR (E, I)	1.8	●	●			96
ZU4208BB-QHK (E, I)	1.8	●		●		92
ZU4208BB-QHM (E, I)	1.8	●			●	92
ZU4208BB-QMR (E)	1.8		●		●	93
ZU4208BB-QHMR (E, I)	1.8	●	●		●	102

▼ ZU4T-SERIES PRO TORQUE PUMP MODELS

ZU4T Pro Model Numbers 115 VAC, 1 ph [3]	Reservoir Capacity (gal)	Factory Installed Accessories: Heat Exchanger	Roll Cage	Skid Bar	4-Wrench Manifold	(lbs)
ZU4204TB-Q (E, I)	1.2					69
ZU4208TB-Q (E, I)	1.8					75
ZU4204TB-QH (E, I)	1.2	●				78
ZU4208TB-QH (E, I)	1.8	●				84
ZU4204TB-QR (E)	1.2		●			78
ZU4208TB-QR (E)	1.8		●			84
ZU4204TB-QHR (E)	1.2	●	●			87
ZU4208TB-QHR (E, I)	1.8	●	●			93
ZU4208TB-QHK (E, I)	1.8	●		●		90
ZU4208TB-QHM (E, I)	1.8	●			●	89
ZU4208TB-QMR (E)	1.8		●		●	90
ZU4208TB-QHMR (E, I)	1.8	●	●		●	99

[1] Classic Electric Pump has traditional electro-mechanical components (transformers, relays, switches) in place of solid-state electronics.

[2] "**E**" indicates pump is 230, 1-phase, 50/60 Hz. Model number example: **ZU4204BE-QHR**.
"**I**" indicates pump is 208-240V, 1-phase, 50/60 Hz with NEMA 6-15 plug. Model number example: **ZU4208BI-QHR**.

[3] "**E**" indicates pump is 230V, 1-phase, 50/60 Hz. Model number example: **ZU4204TE-QHR**.
"**I**" indicates pump is 208-240V, 1-phase, 50/60 Hz with NEMA 6-15 plug. Model number example: **ZU4204TI-QHR**.

▼ ZE4204TB-QHR



Tough, Dependable Innovative CLASS

- **Autocycle feature provides continuous cycle operation of the torque wrench as long as the advance button is pressed (pump can be used with or without autocycle feature)**
- **LCD readout provides pressure and torque display and a number of diagnostic and readout capabilities never before offered on a portable electric pump**
- **Totally enclosed, fan-cooled industrial electric motors supply extended life and stand up to harsh industrial environments**
- **High-strength, molded electrical enclosure protects electronics, power supplies and LCD readout from harsh environments.**



Pro-Series

Back-lit LCD and Pressure Transducer featuring Autocycle Technology.

- Torque wrench model is selectable
- "Autocycle" setting easily programmable.
- Digital read-out and "Autocycle" setting
- Pump usage information, hour and cycle counts
- Low-voltage warning and recording
- Self-test and diagnostic capabilities
- Information can be displayed in English, French, German, Italian, Spanish and Portuguese
- Pressure transducer is more accurate and durable than analog gauges
- Easy-viewing variable rate display
- Display pressure in bar, MPa or psi.

Bolting Integrity Software

Enerpac Bolting Integrity Software Solutions play a key role in implementing and managing an Integrity Program for bolted connections.

The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application Data Sheet and Joint Completion Report.

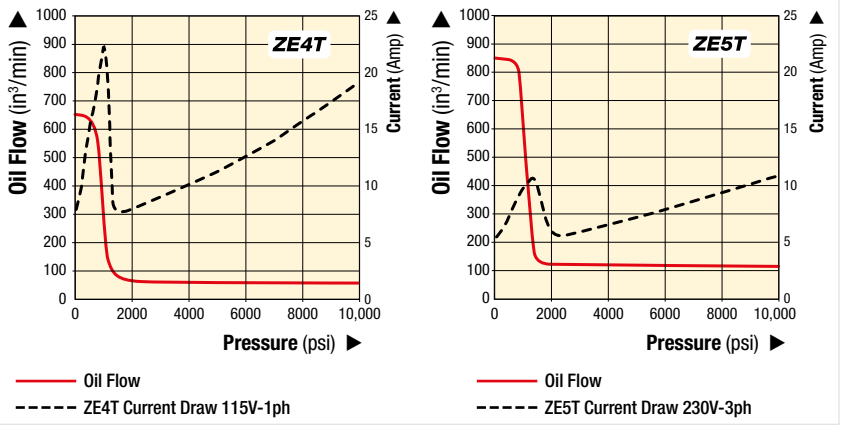
Custom Joint information can also be entered.

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◀ *The ZE4T-Series torque wrench pumps are perfectly matched for this W2000X wrench.*

ZE4T AND ZE5T-SERIES OIL FLOW VERSUS PRESSURE



ZE4T ZE5T Series

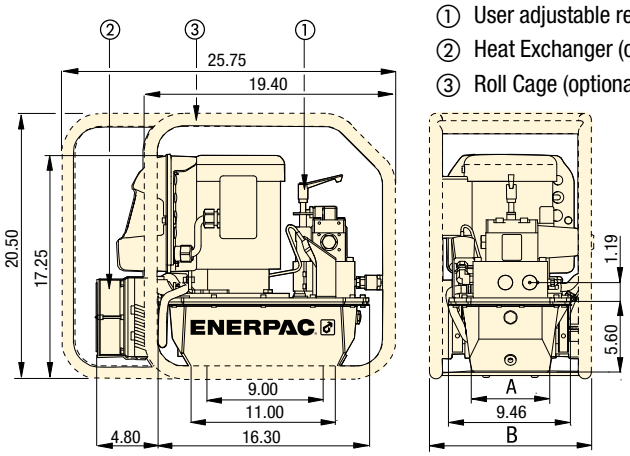


Reservoir Capacity:
1.2 - 5.2 gallons

Flow at Rated Pressure:
60 - 120 in³/min

Motor Size:
1.5 - 3.0 hp

Maximum Operating Pressure:
10,000 psi



① User adjustable relief valve
② Heat Exchanger (optional)
③ Roll Cage (optional)

Reservoir Capacity (gal)	A (in)	B (in)
1.2	6.0	13.0
1.8	8.1	13.0
5.2	16.6	19.2

ZE4T and ZE5T-Series

▼ PERFORMANCE CHART

Pump Series	Output Flow Rate at 60 Hz (in³/min) 100 psi	700 psi	5,000 psi	10,000 psi	Motor Size (hp)	Relief Valve Adjustment Range (psi)	Sound Level (dBA)
ZE4T	650	600	62	60	1.5	1000 - 10,000	75
ZE5T	850	825	123	120	3.0	1000 - 10,000	75

For Use With Wrenches	Model Number [1]	Reservoir Capacity (gal)	Factory Installed Accessories: Heat Exchanger	Roll Cage	4-Wrench Manifold	(lbs)
All Series	**ZE4204TB-QR (E)**	1.2		●		120
	ZE4204TB-QHR (E)	1.2	●	●		129
	ZE4208TB-QHR (E)	1.8	●	●		135
	ZE4208TB-QHMR (E)	1.8	●	●	●	141
All Series	**ZE5204TJ-QHR (G, W)**	1.2	●	●		142
	ZE5208TJ-QHR (G, W)	1.8	●	●		148
	ZE5208TJ-QHMR (G, W)	1.8	●	●	●	154
	ZE5220TJ-QHR (G, W)	5.2	●	●		194

[1] "**B**" suffix model numbers shown are 115 VAC, 1-phase, 50/60 Hz.
"**E**" indicates pump available in 208-240 VAC, 1 phase, 50/60 Hz with European plug and CE EMC compliant. Model number order example: **ZE4204TE-QR**.
"**J**" indicates pump available in 460-480 VAC, 3-phase, 50/60 Hz. Model number order example: **ZE5208TJ-QHR**.
"**G**" indicates pump available in 208-240 VAC, 3-phase, 50/60 Hz. Model number order example: **ZE5208TG-QHR**.
"**W**" indicates pump available in 380-415 VAC, 3-phase, 50/60 Hz. Model number order example: **ZE5208TW-QHR**.



Torque Wrench Pump Selection Matrix

For optimum speed and performance see the torque wrench pump and hose selection matrix.

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Accessories

Descriptions can be found in the ZU4T-Series pump section.

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Torque Wrench Hoses

Use Enerpac THQ-Series torque wrench hoses with torque wrenches and pumps.

6.5 feet long, 2 hoses	**THQ702T**
19.5 feet, 2 hoses	**THQ706T**
39 feet, 2 hoses	**THQ712T**

▼ LA2504TX-QR, Air-Driven Hydraulic Torque Pump

IIC T4 Gc
IIIC T135°C Dc



Lightweight and Compact

Improved Operator Efficiency and Ergonomics

- Easy to lift, transport and maneuver
- Hand carry where no crane, hoist or elevator is available
- One person transport up ladders and stairs
- Ideal for use on narrow or constrained scaffolding, catwalks, pipe racks and lifts.

High Productivity

- Proven 3 piston design provides leading fastening and breakout speed to stay on time and under budget
- ATEX certified to meet worksite compliance requirements.

Reduce Equipment Downtime

- Roll cage with reinforcement to support and protect FRL
- Rugged 1/2" NPTF air supply connection with integrated roll cage support
- Key components are easy to access and service.

Standard Features

- 15 feet pendant cord for mobility around work site
- ø 4 inches calibrated gauge with certificate, scale in bar and psi
- Roll cage and Filter-Regulator-Lubricator (FRL).



Torque Pump Selection Matrix

For optimum speed and performance see the torque wrench and pump matrix.

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Torque Wrench Hoses

Use Enerpac THQ-Series hoses with torque pumps to ensure the integrity of your hydraulic system.

For 10,000 psi	Model No.
6.5 feet long, 2 hoses	THQ702T
19.5 feet long, 2 hoses	THQ706T
39 feet long, 2 hoses	THQ712T

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ATEX Certified

The LAT-Series air-driven pumps are tested and certified according to the ATEX Directive 2014/34/EU.

The explosion protection is for Equipment Group II, Equipment Category 2 (Hazardous Area Zone 1), in Gas and/or Dust atmospheres.

Each LAT-Series air-driven pump contains the following markings:
Ex IIC T4 Gc and **Ex IIIC T135°C Dc**

IIC T4 Gc
IIIC T135°C Dc

Air-Driven Hydraulic Torque Pump

LAT-Series
Air-Driven Torque Pump

The Enerpac LAT Air-Driven Torque Pump combines compact design and high productivity for bolting applications in areas hard to access with larger air powered pumps.

Whether on an offshore platform, refinery or mine anywhere in the world, the pump is built for the toughest worksite environments.

Featuring a proven Enerpac piston design, reinforced FRL support and air supply connection, the LAT-pump will provide years of reliable service with fastening and breakout speeds to keep you on schedule and under budget.

LAT Series



Reservoir Capacity:
0.8 gallon

Flow at Rated Pressure:
25 in³/min

Maximum Operating Pressure:
10,000 psi

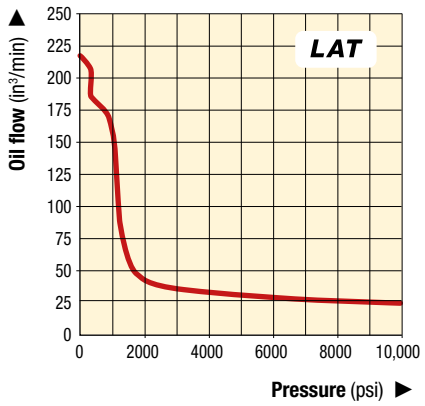
▼ Rugged 1/2" NPTF air supply connection with integrated roll cage support.



▼ Roll cage design supports and protects Filter-Regulator-Lubricator (FRL).



OIL FLOW vs. PRESSURE



▼ Proven 3 piston design provides leading speed.



▼ Skid Rail accessory **DD8365920K** bolts to bottom of reservoir to prevent wear from rough surfaces.



▼ *LAT-Series, the portable and compact torque pump.*



Usable Oil Capacity (gal)	Model Number *	Output Flow Rate (in³/min) No Load	5,000 psi	10,000 psi	Valve Type	Air Pressure Range (psi)	Air Consumption (scfm)	Sound Level (dBA)	Dimensions (in) Length	Width	Height	(lbs)
0.5	**LA2504TX-QR**	214	34	25	4-way, 2-pos.	65 - 100	65	87 - 90	17.1	9.8	14.8	39.6

* Enerpac Spin-On couplers are included. Pump hydraulic port thread size is 1/4"-18 NPTF.

▼ ZA4204TX-QR



Ex II 2 GD ck T4
DEKRA 0602

Z Tough, Dependable, Innovative CLASS

ZA4208TX-QRU105 Complete Set with Pump, Hose THQ706T and Roll Cage:

- Fine air pressure adjustment for very accurate torque control
- High by-pass pressure (2600 psi) for faster torque cycles
- Improved wrench performance at low pressure.

Standard ZA4T-pump models:

- Two-speed operation and 1400 psi by-pass pressure reduces cycle time for improved productivity
- Glycerine-filled pressure gauge with transparent overlays in Ft.lbs and Nm for Enerpac torque wrenches provide a quick torque reference
- Standard Regulator-Filter-Lubricator with removable bowls and auto drain
- Heat exchanger warms exhaust air to prevent freezing and cools the oil
- Ergonomic pendant allows remote operation up to 20 feet.



Gauge with Overlay Kit

Gauge Overlay Kits are available separately for use with ZA4T-Series pumps:

GT4015Q includes gauge and overlays for all Enerpac torque wrenches.



Torque Pump Selection Matrix

For optimum speed and performance see the torque pump selection matrix.

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Torque Wrench Hoses

Use Enerpac THQ-Series hoses with torque pumps to ensure the integrity of your hydraulic system.

For 10,000 psi	Model No.
6.5 feet long, 2 hoses	THQ702T
19.5 feet long, 2 hoses	THQ706T
39 feet long, 2 hoses	THQ712T

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◀ *Most hydraulic torque wrenches can be powered by the Enerpac ZA4T-Series torque pumps.*

ZA4T-Pump Applications

The ZA4T-Series pump is best suited to power medium to large size torque wrenches.

Patent-pending Z-Class technology provides high by-pass pressures for increased productivity.

Its high power to weight ratio and compact design make it ideal for applications which require easy transport of the pump.

All ZA4T-Series pump models meet CE, CSA and TÜV safety requirements. For further application assistance contact your local Enerpac office.

ATEX 95 Certified

The ZA4T-Series pumps are tested and certified according to the Equipment Directive 94 / 9 / EC “ATEX Directive”.

The explosion protection is for Equipment Group II, Equipment Category 2 (Hazardous Area Zone 1), in Gas and/or Dust atmospheres. The ZA4T-Series pumps are marked with: **Ex II 2 GD ck T4**.

Ex II 2 GD ck T4
DEKRA 0602

ZA4T Series



Reservoir Capacity:
1.2 - 1.8 gallons

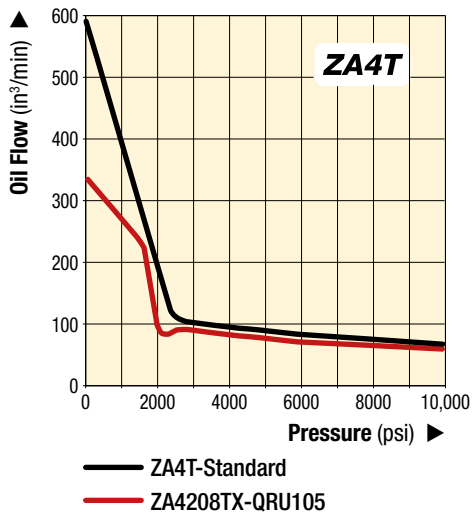
Flow at Rated Pressure:
60 in³/min

Air Consumption:
20 - 100 scfm

Maximum Operating Pressure:
10,000 psi

OIL FLOW VERSUS PRESSURE

100 dynamic air pressure at 70 scfm



Accessory Options

Available by placing the following additional suffix at the end of the model number:

K = Skid Bar
M = 4-wrench manifold (ZA4T-standard only)
R = Roll Cage

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▼ *ZA4208TX-QRU105 for improved wrench performance and torque control at low pressure.*



▼ **COMMON PUMP MODELS**

For Use With Torque Wrenches	Maximum Operating Pressure (psi)	Model Number	Reservoir Capacity (gal)	(lbs)
all S, W, RSL, DSX and HMT-Series	10,000	**ZA4208TX-QRU105 ***	1.8	99
	10,000	**ZA4204TX-Q**	1.2	94
	10,000	**ZA4208TX-Q**	1.8	100
	10,000	**ZA4204TX-QR ****	1.2	101
	10,000	**ZA4208TX-QR ****	1.8	112

* Standard with roll cage, with THQ706T hose and fine air pressure adjustment for very accurate torque control. Pump weight 99 lbs, complete set including hose weight 128 lbs.

** With Roll Cage.



Skid Bar

- **Provides greater pump stability on soft or uneven surfaces**
- **Provides easy two-handed lift.**

Accessory Kit * Model No.	Can be used on ZA4T-Series torque pumps
SBZ-4	Reservoir 04 and 08

* Add suffix **K** for factory installation.
Weight skid bar 4.9 lbs.
Ordering Example: ZA4208TX-QK



4-Wrench Manifold

- **For simultaneous operation of multiple torque wrenches**
- **Can be factory installed or ordered separately.**

Accessory Kit * Model No.	Can be used on ZA4T-Series torque pumps
ZTM-Q	for 10,000 psi torque wrenches

* Add suffix **M** for factory installation. This option cannot be installed onto the ZA4208TX-QRU105 pump, as the valve manifold is different.
Weight manifold 7.9 lbs.
Ordering Example: ZA4208TX-QM



Roll Cage

- **Protects pump**
- **Provides greater pump stability.**

Accessory Kit * Model No.	Can be used on ZA4T-Series torque pumps
ZRC-04	Reservoir 04 and 08

* Add suffix **R** for factory installation.
Roll cage weight 7.5 lbs.
Ordering Example: ZA4208TX-QR



Torque Wrench Couplers

For Enerpac torque wrench couplers see our "System Components" section in this catalog.

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Premium Hydraulic Oil

Use only genuine Enerpac Hydraulic Oil. The use of any other fluid will render your Enerpac warranty null and void.

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PowaPak™ Air Torque Pump

ZA4208TX-QR0P Pump with Stainless Steel Roll Cage and Certified Lifting Eye.

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Torque Wrench Hoses

Use Enerpac twin safety hoses to connect your torque wrench to the pump.

For 10,000 psi	Model No.
6.5 feet long, 2 hoses	**THQ702T**
19.5 feet long, 2 hoses	**THQ706T**
39 feet long, 2 hoses	**THQ712T**

▼ **This is how a ZA4T-Series torque pump model number is built up:**

Z	A	4	2	08	T	X	-	Q	M	R
1 Product Type	2 Motor Type	3 Flow Group	4 Valve Type	5 Reservoir Size	6 Valve Operation	7 Voltage		8 Must be Q	8 Options	

1 Product Type
Z = Pump series

2 Motor Type
A = Air motor

3 Flow Group
4 = 60 in³/min @ 10,000 psi

4 Valve Type
2 = Torque Wrench Valve

5 Reservoir Size
04 = 1.2 gallons
08 = 1.8 gallons

6 Valve Operation
T = Air operated valve with pendant

7 Voltage
X = Not applicable

8 Options
Q = 10,000 psi couplers for use with Enerpac or other torque wrenches
K = Skid Bar
M = 4-wrench manifold
R = Roll Cage

ZA4T Series



Reservoir Capacity:
1.2 - 1.8 gallons

Flow at Rated Pressure:
60 in³/min

Air Consumption:
20 - 100 scfm

Maximum Operating Pressure:
10,000 psi

How to order your ZA4T-Series torque pump

Model No. ZA4208TX-QMR

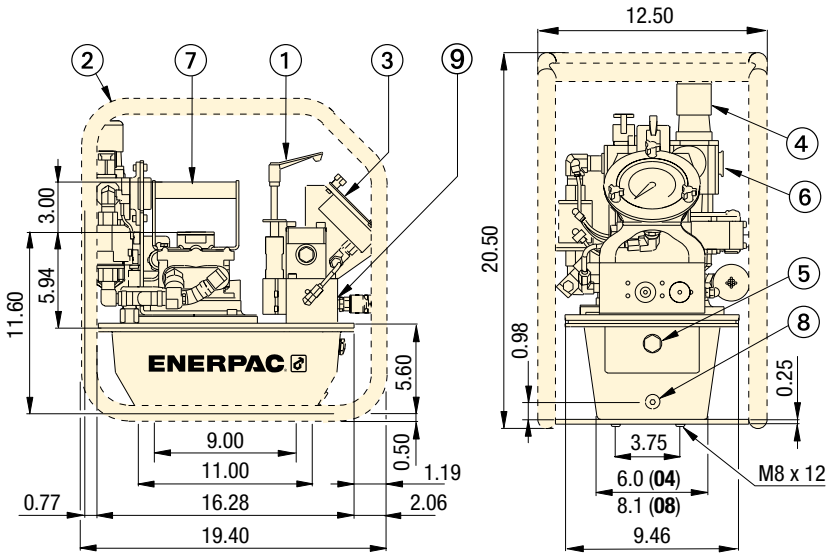
Torque pump for use with Enerpac S-, W-, RSL, DSX and HMT-Series and other 10,000 psi torque wrenches, 1.8 gallons reservoir, 4-wrench manifold and roll cage.



Torque Pump Selection Matrix

For optimum speed and performance see the torque wrench and pump matrix.

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① User adjustable relief valve
② Roll Cage (optional)
③ Gauge with overlays
④ Filter/lubricator/regulator
⑤ Oil level sight gauge
⑥ Air input 1/2" NPTF
⑦ Standard handle
⑧ Oil drain
⑨ 1/4"-18 NPTF Oil outlet

ZA4T-Series Performance

Pump Model	Output Flow Rate (in³/min)				By-pass pressure	Dynamic Air Pressure Range	Air Consumption	Sound Level	Relief Valve Adjustment Range
	100 psi	700 psi	5,000 psi	10,000 psi	(psi)	(psi)	(scfm)	(dBA)	(psi)
ZA4208TX-QRU105	350	275	80	60	2600	100	20 - 100	85 - 90	2600 - 10,000
ZA4T Standard	600	500	80	60	1400	60 - 100	20 - 100	85 - 90	1400 - 10,000

▼ ZA4208TX-QR0P



IIC T4 Gc
IIIC T135°C Dc

New ZA4T with Stainless Steel Roll Cage and Certified Lifting Eye

- Stainless-Steel Roll Cage resists corrosion
- Certified Lifting Eye for transporting pump between levels
- Two-speed operation and high by-pass pressure reduces cycle time for improved productivity
- Integrated heat exchanger warms exhaust air to prevent freezing and cools the oil
- Fine hydraulic pressure adjustment for accurate torque control
- Improved wrench speed at low hydraulic pressure due to the expanded 1st stage by-pass setting
- Pendant allows operation up to 20 feet
- Filter-Regulator-Lubricator with removable bowls and auto drain is standard
- Calibrated, glycerine-filled gauge with display in psi and bar
- ATEX-tested and certified.



Torque Pump Selection Matrix

For optimum speed and performance see the torque wrench pump selection matrix.

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Torque Wrench Hoses

Use Enerpac THQ700-Series hoses with torque wrenches to ensure the integrity of your hydraulic system.

For 10,000 psi	Model No.
6.5 feet long, 2 hoses	THQ702T
19.5 feet long, 2 hoses	THQ706T
39 feet long, 2 hoses	THQ712T

▼ *Certified lifting eye.*



PowaPak™ Air Torque Pump

PowaPak™ Air Torque Pump

The ZA4208TX-QR0P was developed for the high demands of the oil and gas, chemical processing, rental and other industrial markets.
The stainless-steel roll cage resists corrosion and surface damage reducing the maintenance required to prepare the pump for the next job.
The certified lifting eye enables the pump to be transported between levels with a lifting hook avoiding time consuming strapping.

ATEX-Certified

The ZA4T air-driven torque pump is tested and certified according to the ATEX Directive 2014/34/EU.
The explosion protection is for Equipment Group II, Equipment Category 2 (Hazardous Area Zone 1), in Gas and /or Dust atmospheres.
Each pump contains the following markings:
Ex IIC T4 Gc
Ex IIIC T135°C Dc

CE

ZA4T Series



Reservoir Capacity:
1.8 gallons

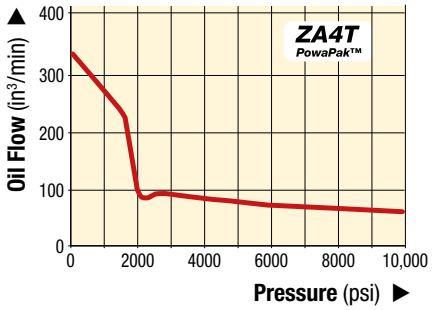
Flow at Rated Pressure:
60 in³/min

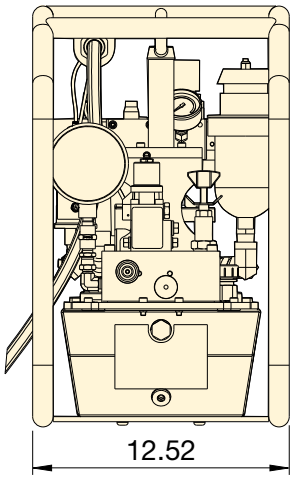
Air Consumption:
20 - 100 scfm

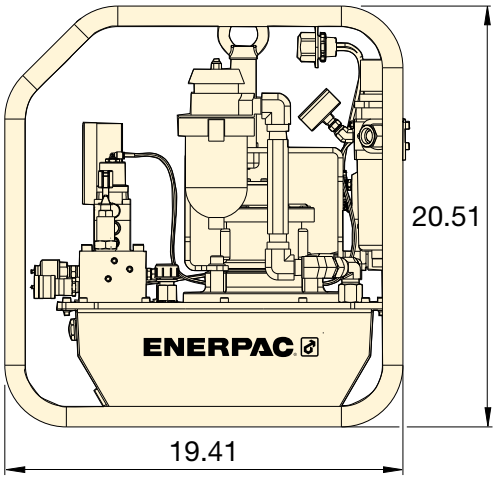
Maximum Operating Pressure:
10,000 psi

OIL FLOW VERSUS PRESSURE

100 psi dynamic air pressure at 70 scfm







Bolting Integrity Software

Enerpac Bolting Integrity Software Solutions play a key role in implementing and managing an Integrity Program for bolted connections.

The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application Data Sheet and Joint Completion Report.

Custom Joint information can also be entered.

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Maximum Operating Pressure (psi)	Model Number	Reservoir Capacity (gal)	Output Flow Rate (in³/min) 100 psi	5,000 psi	10,000 psi	By-pass Pressure (psi)	Dynamic Air Pressure Range (psi)	Air Consumption (scfm)	(lbs)
10,000	**ZA4208TX-QR0P**	1.8	350	80	60	2300	60 - 100	20 - 100	114

▼ HM10 Hydramax® Topside Tensioner



High Bolt Load Capacities, Superior Performance

- **Fifteen load cells from ¾" to 4 inches and M20 to M100**
- **Twin ports for quick connection of multiple tools**
- **High bolt load capacity at max. 21,750 psi (1500 bar)**
- **Long stroke capability of 9/16 inch (15 mm) with over-stroke elimination**
- **HM01 to HM05: mechanical over-stroke prevention, no spring assist; HM06 to HM15: relief valve for over-stroke prevention, spring assist**
- **Quick release bridge**
- **Stroke indicator**
- **Captive socket – eliminates falling object risk**
- **Interchangeable adapter kits available**
- **Anti-slip grip for more secure handling**
- **HM-Series HydraMax® Tensioners comply to following: Machine Directive 2006/42/EC, ASME B30.1, EN-ISO 4413:2010 and EN-ISO 12100:2010.**

HydraMax® Topside Tensioners

The HM-Series tensioners have been designed to fit all standard flanges, including ANSI, API and Compact flanges based on Norsok L005 and generates 30% more load capacity than traditional tensioners.



Tensioning Pumps, Hoses and Couplers

High pressure pumps, hoses and fittings matched for use with the Enerpac Bolt Tensioners.

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Ultra-high Pressure

This tool operates at ultra-high pressure, use only the specified fittings and hoses designed for these pressures.

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How to Order HydraMax® Tensioners

To provide maximum flexibility Load Cells are ordered separately from Adaptor and Bridge Kits.

Example, to order a complete tensioner for a M24 x 3 threaded bolt order:
1 x Load Cell with tommy bar: **HM03-LC**
1 x Adaptor and Bridge Kit: **HM03BPM-NRS02430**

Bolting Integrity Software

The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application data sheet and Joint completion report. Custom Joint information can also be entered.

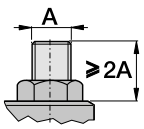
Page: 416



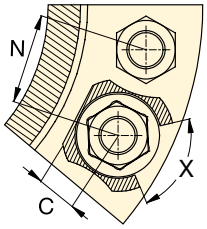
◀ *Enerpac HM-Series HydraMax® tensioners have been designed to generate high bolt loads associated with compact flanges, while providing versatility for maximum bolt coverage,*

Thread and Pitch Sizes

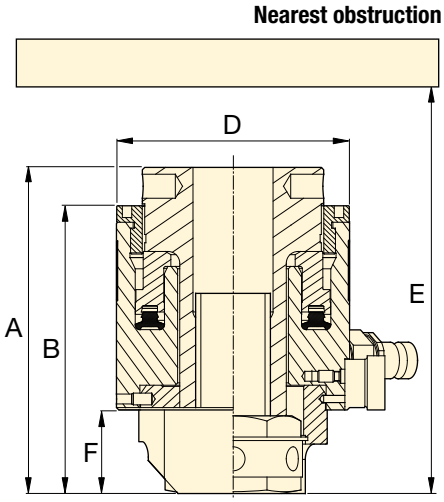
Contact Enerpac for different thread or pitch sizes. Alternative size adaptor kits can be supplied upon request.



Minimum Stud Protrusion



X = Minimum socket rotation 60°



HM Series



Bolt Range:
¾ - 1½" | M20 - M39

Maximum Load Capacity:
15.1 - 70.2 tons

Stroke:
0.39 - 0.59 inch *

Maximum Operating Pressure:
21,750 psi

* Stroke HM01 models 0.39 inch
Strokes all other HM-models 0.59 inch

Load Cell Model Number *	Thread Size	Adaptor and Bridge Kit Model Number	Cylinder Effective Area	Maximum Load Capacity	Dimensions (in)							Load Cell Weight	Adaptor and Bridge Kit Weight
					A	B	C	D	E min.	F	N min.		
			(in^2)	(tons)								(lbs)	(lbs)
HM01-LC	M20 x 2,5	HM01BPM-NRS02025	1.39	15.1	4.4	3.8	0.6	2.7	7.8	1.1	2.0	3.5	1.3
	¾"- 10UN	HM01BP-NRS0750U10	1.39	15.1	4.4	3.8	0.6	2.7	7.8	1.1	2.0	3.5	1.3
HM02-LC	M20 x 2,5	HM02BPM-NRS02025	1.92	20.9	4.7	4.1	0.6	2.9	8.2	1.1	2.1	4.0	2.0
	M22 x 2,5	HM02BPM-NRS02225	1.92	20.9	4.7	4.1	0.6	2.9	8.2	1.1	2.1	4.0	2.0
	¾"- 10UN	HM02BP-NRS0750U10	1.92	20.9	4.7	4.1	0.6	2.9	8.2	1.1	2.0	4.0	2.0
	⅞"-9UN	HM02BP-NRS0875U09	1.92	20.9	4.7	4.1	0.7	2.9	8.2	1.1	2.2	4.0	1.8
HM03-LC	M20 x 2,5	HM03BPM-NRS02025	2.52	27.4	4.7	4.1	0.6	3.2	8.3	1.1	2.2	4.9	2.4
	M22 x 2,5	HM03BPM-NRS02225	2.52	27.4	4.7	4.1	0.6	3.2	8.3	1.1	2.3	4.9	2.4
	M24 x 3	HM03BPM-NRS02430	2.52	27.4	4.7	4.1	0.8	3.2	8.3	1.1	2.3	4.9	2.4
	¾"- 10UN	HM03BP-NRS0750U10	2.52	27.4	4.7	4.1	0.6	3.2	8.3	1.1	2.2	4.9	2.4
	⅞"- 9UN	HM03BP-NRS0875U09	2.52	27.4	4.7	4.1	0.7	3.2	8.3	1.1	2.3	4.9	2.4
	1"- 8UN	HM03BP-NRS1000U08	2.52	27.4	4.9	4.3	0.8	3.2	8.5	1.3	2.4	4.9	2.4
HM04-LC	M22 x 2,5	HM04BPM-NRS02225	3.35	36.4	5.0	4.4	0.7	3.5	9.1	1.1	2.4	6.0	3.5
	M24 x 3	HM04BPM-NRS02430	3.35	36.4	5.1	4.4	0.8	3.5	9.1	1.1	2.5	6.0	3.5
	M27 x 3	HM04BPM-NRS02730	3.35	36.4	5.3	4.6	0.8	3.5	9.3	1.3	2.5	6.0	3.7
	M30 x 3,5	HM04BPM-NRS03035	3.35	36.4	5.4	4.7	0.9	3.5	9.4	1.4	2.6	6.0	3.7
	⅞"- 9UN	HM04BP-NRS0875U09	3.35	36.4	5.1	4.4	0.7	3.5	9.1	1.1	2.4	6.0	3.5
	1"- 8UN	HM04BP-NRS1000U08	3.35	36.4	5.3	4.6	0.8	3.5	9.3	1.3	2.5	6.0	3.7
	1⅛"- 8UN	HM04BP-NRS1125U08	3.35	36.4	5.4	4.7	0.9	3.5	9.4	1.4	2.6	6.0	3.7
HM05-LC	M24 x 3	HM05BPM-NRS02430	4.27	46.4	5.1	4.5	0.7	3.9	9.2	1.1	2.7	7.3	4.2
	M27 x 3	HM05BPM-NRS02730	4.27	46.4	5.3	4.7	0.8	3.9	9.4	1.3	2.7	7.3	4.4
	M30 x 3,5	HM05BPM-NRS03035	4.27	46.4	5.5	4.8	0.9	3.9	9.5	1.4	2.8	7.3	4.4
	M33 x 3,5	HM05BPM-NRS03335	4.27	46.4	5.6	4.9	1.1	3.9	9.6	1.5	2.8	7.3	4.6
	1"-8UN	HM05BP-NRS1000U08	4.27	46.4	5.3	4.7	0.8	3.9	9.4	1.3	2.7	7.3	4.6
	1⅛"-8UN	HM05BP-NRS1125U08	4.27	46.4	5.5	4.8	0.9	3.9	9.5	1.4	2.7	7.3	4.6
	1¼"-8UN	HM05BP-NRS1250U08	4.27	46.4	5.6	4.9	1.1	3.9	9.6	1.5	2.8	7.3	4.6
HM06-LC	M30 x 3,5	HM06BPM-NRS03035	6.45	70.2	5.6	5.0	0.9	4.6	9.7	1.4	3.1	9.9	6.2
	M33 x 3,5	HM06BPM-NRS03335	6.45	70.2	5.7	5.1	1.1	4.6	9.8	1.5	3.2	9.9	6.4
	M36 x 4	HM06BPM-NRS03640	6.45	70.2	5.9	5.2	1.3	4.6	9.9	1.6	3.3	9.9	6.6
	M39 x 4	HM06BPM-NRS03940	6.45	70.2	6.0	5.3	1.3	4.6	10.0	1.8	3.3	9.9	6.8
	1⅛"- 8UN	HM06BP-NRS1125U08	6.45	70.2	5.6	5.0	0.9	4.6	9.7	1.4	3.1	9.9	6.2
	1¼"- 8UN	HM06BP-NRS1250U08	6.45	70.2	5.7	5.1	1.1	4.6	9.8	1.5	3.2	9.9	6.4
	1⅜"- 8UN	HM06BP-NRS1375U08	6.45	70.2	5.9	5.2	1.3	4.6	9.9	1.6	3.2	9.9	6.6
	1½"- 8UN	HM06BP-NRS1500U08	6.45	70.2	6.0	5.3	1.3	4.6	10.0	1.8	3.3	9.9	6.8

* Tommy Bar is included with Load Cell.

Thread and Pitch Sizes

Contact Enerpac for different thread or pitch sizes. Alternative size adaptor kits can be supplied upon request.

HM Series

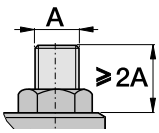


Bolt Range:
1¼ - 2" | M33 - M52

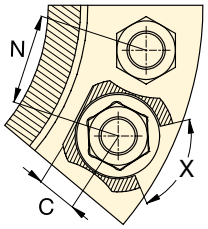
Maximum Load Capacity:
83.9 - 131.9 tons

Stroke:
0.59 inch

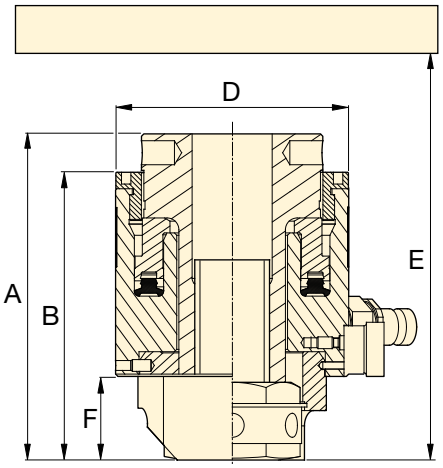
Maximum Operating Pressure:
21,750 psi



Minimum Stud Protrusion

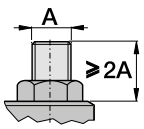


X = Minimum socket rotation 60°

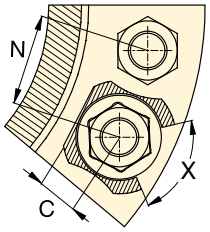


Load Cell Model Number *	Thread Size	Adaptor and Bridge Kit Model Number	Cylinder Effective Area (in²)	Maximum Load Capacity (tons)	Dimensions (in) A	B	C	D	E min.	F	N min.	Load Cell Weight (lbs)	Adaptor and Bridge Kit Weight (lbs)
HM07-LC	M33 x 3,5	HM07BPM-NRS03335	7.72	83.9	5.7	5.0	1.1	5.0	9.7	1.5	3.4	11.5	7.5
	M36 x 4	HM07BPM-NRS03640	7.72	83.9	5.8	5.2	1.3	5.0	9.8	1.6	3.4	11.5	7.7
	M39 x 4	HM07BPM-NRS03940	7.72	83.9	5.9	5.3	1.3	5.0	9.9	1.8	3.5	11.5	7.9
	M42 x 4,5	HM07BPM-NRS04245	7.72	83.9	6.1	5.4	1.3	5.0	10.0	1.9	3.6	11.5	8.2
	1¼"- 8UN	HM07BP-NRS1250U08	7.72	83.9	5.7	5.0	1.1	5.0	9.7	1.5	3.4	11.5	7.5
	1⅜"- 8UN	HM07BP-NRS1375U08	7.72	83.9	5.8	5.2	1.3	5.0	9.8	1.6	3.4	11.5	7.7
	1½"- 8UN	HM07BP-NRS1500U08	7.72	83.9	5.9	5.3	1.3	5.0	9.9	1.8	3.5	11.5	7.9
	1⅝"- 8UN	HM07BP-NRS1625U08	7.72	83.9	6.1	5.4	1.3	5.0	10.0	1.9	3.5	11.5	8.2
HM08-LC	M36 x 4	HM08BPM-NRS03640	9.10	98.9	5.9	5.2	1.3	5.4	9.9	1.6	3.6	13.9	8.6
	M39 x 4	HM08BPM-NRS03940	9.10	98.9	6.0	5.3	1.3	5.4	10.0	1.8	3.7	13.9	8.8
	M42 x 4,5	HM08BPM-NRS04245	9.10	98.9	6.1	5.5	1.3	5.4	10.1	1.9	3.8	13.9	9.0
	M45 x 4,5	HM08BPM-NRS04545	9.10	98.9	6.2	5.6	1.5	5.4	10.3	2.0	3.8	13.9	9.7
	1⅜"- 8UN	HM08BP-NRS1375U08	9.10	98.9	5.9	5.2	1.3	5.4	9.9	1.6	3.6	13.9	8.6
	1½"- 8UN	HM08BP-NRS1500U08	9.10	98.9	6.0	5.3	1.3	5.4	10.0	1.8	3.7	13.9	8.8
	1⅝"- 8UN	HM08BP-NRS1625U08	9.10	98.9	6.1	5.5	1.3	5.4	10.1	1.9	3.7	13.9	9.0
	1¾"- 8UN	HM08BP-NRS1750U08	9.10	98.9	6.2	5.6	1.5	5.4	10.3	2.0	3.8	13.9	9.7
HM09-LC	M39 x 4	HM09BPM-NRS03940	10.59	115.2	6.0	5.4	1.3	5.7	10.0	1.8	3.9	14.3	11.0
	M42 x 4,5	HM09BPM-NRS04245	10.59	115.2	6.1	5.5	1.3	5.7	10.1	1.9	3.9	14.3	13.4
	M45 x 4,5	HM09BPM-NRS04545	10.59	115.2	6.2	5.6	1.5	5.7	10.3	2.0	4.0	14.3	11.2
	M48 x 5	HM09BPM-NRS04850	10.59	115.2	6.4	5.7	1.6	5.7	10.4	2.1	4.0	14.3	12.1
	1½"- 8UN	HM09BP-NRS1500U08	10.59	115.2	6.0	5.4	1.3	5.7	10.0	1.8	3.8	14.3	11.2
	1⅝"- 8UN	HM09BP-NRS1625U08	10.59	115.2	6.1	5.5	1.3	5.7	10.2	1.9	3.9	14.3	11.2
	1¾"- 8UN	HM09BP-NRS1750U08	10.59	115.2	6.2	5.5	1.5	5.7	10.1	2.0	4.0	14.3	13.2
	1⅞"- 8UN	HM09BP-NRS1875U08	10.59	115.2	6.4	5.7	1.6	5.7	10.4	2.1	4.0	14.3	11.9
HM10-LC	M42 x 4,5	HM10BPM-NRS04245	12.20	132.6	6.3	5.6	1.3	6.1	10.5	1.9	4.1	18.3	12.6
	M45 x 4,5	HM10BPM-NRS04545	12.20	131.9	6.4	5.7	1.5	6.1	10.6	2.0	4.2	18.3	12.6
	M48 x 5	HM10BPM-NRS04850	12.20	131.9	6.5	5.8	1.6	6.1	10.7	2.1	4.3	18.3	13.4
	M52 x 5	HM10BPM-NRS05250	12.20	131.9	6.7	6.0	1.7	6.1	10.8	2.3	4.3	18.3	13.9
	1⅝"- 8UN	HM10BP-NRS1625U08	12.20	131.9	6.3	5.6	1.3	6.1	10.5	1.9	4.1	18.3	12.6
	1¾"- 8UN	HM10BP-NRS1750U08	12.20	131.9	6.4	5.7	1.5	6.1	10.6	2.0	4.2	18.3	12.3
	1⅞"- 8UN	HM10BP-NRS1875U08	12.20	131.9	6.5	5.9	1.6	6.1	10.7	2.1	4.2	18.3	13.2
	2"- 8UN	HM10BP-NRS2000U08	12.20	131.9	6.7	6.0	1.7	6.1	10.8	2.3	4.3	18.3	13.9

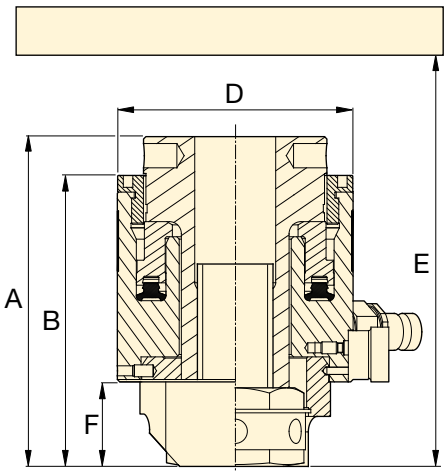
* Load Cell with Tommy Bar.



Minimum Stud Protrusion



X = Minimum socket rotation 60°



HM Series



Bolt Range:
1¾ - 4" | M45 - M100

Maximum Load Capacity at max. 21,750 psi:
171.1 - 522.7 tons

Stroke:
0.59 inch

Load Cell Model Number *	Thread Size **	Adaptor and Bridge Kit Model Number	Cylinder Effective Area	Maximum Load Capacity	Dimensions (in)							Load Cell Weight	Adaptor and Bridge Kit Weight
			(in²)	(tons)	A	B	C	D	E min.	F	N min.	(lbs)	(lbs)
HM11-LC	M45 x 4,5	HM11BPM-NRS04545	15.74	171.1	6.6	5.7	1.5	6.9	10.8	2.0	4.6	23.1	16.3
	M48 x 5	HM11BPM-NRS04850	15.74	171.1	6.7	5.8	1.6	6.9	10.9	2.1	4.6	23.1	17.4
	M52 x 5	HM11BPM-NRS05250	15.74	171.1	6.8	6.0	1.7	6.9	11.0	2.3	4.7	23.1	17.9
	M56 x 5,5	HM11BPM-NRS05655	15.74	171.1	7.2	6.3	2.0	6.9	11.4	2.6	4.8	23.1	20.1
	M60 x 5,5	HM11BPM-NRS06055	15.74	171.1	7.2	6.3	2.0	6.9	11.4	2.6	4.9	23.1	19.2
	1¾"- 8UN	HM11BP-NRS1750U08	15.74	171.1	6.6	5.7	1.5	6.9	10.8	2.0	4.6	23.1	16.5
	1⅞"- 8UN	HM11BP-NRS1875U08	15.74	171.1	6.7	5.8	1.6	6.9	10.9	2.1	4.6	23.1	17.4
	2"- 8UN	HM11BP-NRS2000U08	15.74	171.1	6.8	6.0	1.7	6.9	11.0	2.3	4.7	23.1	17.9
	2¼"- 8UN	HM11BP-NRS2250U08	15.74	171.1	7.2	6.3	2.0	6.9	11.4	2.6	4.8	23.1	19.4
HM12-LC	M48 x 5	HM12BPM-NRS04850	19.72	214.4	6.7	5.8	1.6	7.6	11.0	2.1	5.0	29.3	21.4
	M52 x 5	HM12BPM-NRS05250	19.72	214.4	6.8	6.0	1.7	7.6	11.2	2.3	5.1	29.3	21.6
	M56 x 5,5	HM12BPM-NRS05655	19.72	214.4	7.2	6.3	2.0	7.6	11.5	2.6	5.2	29.3	23.6
	M60 x 5,5	HM12BPM-NRS06055	19.72	214.4	7.2	6.3	2.0	7.6	11.5	2.7	5.2	29.3	22.9
	M64 x 6	HM12BPM-NRS06460	19.72	214.4	7.3	6.5	2.2	7.6	11.7	2.7	5.3	29.3	24.5
	1⅞"- 8UN	HM12BP-NRS1875U08	19.72	214.4	6.7	5.8	1.6	7.6	11.0	2.1	5.0	29.3	21.2
	2"- 8UN	HM12BP-NRS2000U08	19.72	214.4	6.8	6.0	1.7	7.6	11.2	2.3	5.1	29.3	21.6
	2¼"- 8UN	HM12BP-NRS2250U08	19.72	214.4	7.2	6.3	2.0	7.6	11.5	2.6	5.2	29.3	22.9
	2½"- 8UN	HM12BP-NRS2500U08	19.72	214.4	7.3	6.5	2.2	7.6	11.7	2.7	5.3	29.3	23.8
HM13-LC	M64 x 6	HM13BPM-NRS06460	26.29	285.9	7.7	6.8	2.2	8.6	12.2	2.7	5.8	38.8	32.0
	M68 x 6	HM13BPM-NRS06860	26.29	285.9	7.7	6.8	2.2	8.6	12.2	2.7	5.9	38.8	36.4
	M72 x 6	HM13BPM-NRS07260	26.29	285.9	8.0	7.1	2.5	8.6	12.5	3.1	6.0	38.8	35.3
	M76 x 6	HM13BPM-NRS07660	26.29	285.9	8.1	7.3	2.7	8.6	12.7	3.2	6.0	38.8	35.9
	2½"- 8UN	HM13BP-NRS2500U08	26.29	285.9	7.7	6.8	2.2	8.6	12.2	2.7	5.8	38.8	31.3
	2¾"- 8UN	HM13BP-NRS2750U08	26.29	285.9	8.0	7.1	2.5	8.6	12.5	3.1	5.9	38.8	34.8
	3"- 8UN	HM13BP-NRS3000U08	26.29	285.9	8.1	7.3	2.7	8.6	12.7	3.2	6.3	38.8	34.8
HM14-LC	M72 x 6	HM14BPM-NRS07260	36.35	395.3	8.0	7.1	2.5	10.2	12.6	3.1	6.8	56.9	45.9
	M76 x 6	HM14BPM-NRS07660	36.35	395.3	8.1	7.3	2.7	10.2	12.7	3.2	6.8	56.9	47.0
	M80 x 6	HM14BPM-NRS08060	36.35	395.3	8.1	7.3	2.7	10.2	12.7	3.2	6.9	56.9	46.7
	M85 x 6	HM14BPM-NRS08560	36.35	395.3	8.5	6.5	2.7	10.2	11.9	3.6	7.0	56.9	50.5
	M90 x 6	HM14BPM-NRS09060	36.35	395.3	8.7	7.8	3.1	10.2	13.3	3.8	7.1	56.9	51.4
	3"- 8UN	HM14BP-NRS3000U08	36.35	395.3	8.1	7.3	2.7	10.2	12.7	3.2	6.8	56.9	45.0
	3¼"- 8UN	HM14BP-NRS3250U08	36.35	395.3	8.5	6.5	2.7	10.2	11.9	3.6	7.0	56.9	50.0
	3½"- 8UN	HM14BP-NRS3500U08	36.35	395.3	8.7	7.8	3.1	10.2	13.3	3.8	7.2	56.9	52.7
HM15-LC	M90 x 6	HM15BPM-NRS09060	48.06	522.7	8.7	7.8	3.1	11.7	13.3	3.8	7.8	71.6	66.1
	M95 x 6	HM15BPM-NRS09560	48.06	522.7	8.9	8.1	3.2	11.7	13.5	4.0	7.9	71.6	74.3
	M100 x 6	HM15BPM-NRS10060	48.06	522.7	9.1	8.3	3.5	11.7	13.7	4.2	8.0	71.6	77.4
	3½"- 8UN	HM15BP-NRS3500U08	48.06	522.7	8.7	7.8	3.1	11.7	13.3	3.8	7.8	71.6	65.0
	3¾"- 8UN	HM15BP-NRS3750U08	48.06	522.7	8.9	8.1	3.2	11.7	13.5	4.0	7.9	71.6	72.3
	4"- 8UN	HM15BP-NRS4000U08	48.06	522.7	9.1	8.3	3.5	11.7	13.7	4.2	8.3	71.6	75.0

* Load Cell with Tommy Bar.
** Contact Enerpac for different thread or pitch sizes. Alternative size adaptor kits can be supplied upon request.

▼ Shown: **GT-Series Topside Bolt Tensioners**



Accurate & Reliable Extreme Performance Bolt Tensioners

- **Seven load cells from ⅝" to 4 inches and M16 to M105**
- **Twin ports for quick connection of multiple tools**
- **Only one size of bridge per size of load cell**
- **Detachable and rotational bridge simplifies tool positioning**
- **Full bridge window – increased access to socket**
- **Captive socket – eliminates falling object risk**
- **Piston stroke indicator**
- **Black surface treatment protects against corrosion**
- **Anti-slip grip for more secure handling**
- **Universal and multi-use tool**
- **GT-Series Tensioners comply to Machine Directive 2006/42/CE, ASME B30.1, EN-ISO 4413:2010 and EN-ISO 12100:2010.**



Tensioning Pumps, Hoses and Couplers

High-pressure pumps, hoses and fittings matched for use with the Enerpac Bolt Tensioners.

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Bolting Integrity Software

The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application data sheet and Joint completion report. Custom Joint information can also be entered.

Page: 416

How to Order

To provide maximum flexibility Load Cell and Bridges are ordered separately from Adaptor Kits.

Example, to order a complete tensioner for a M36 x 4 threaded bolt order:

1 x Load Cell and Bridge: **GT2-LCB**

1 x Adaptor Kit: **GT2PM-NRS03640**

Load Cell * and Bridge Model Number	Thread Size	Adaptor Kit Model Number	Cylinder Effective Area	Maximum Load Capacity	Dimensions (in)							Load Cell and Bridge Weight	Adaptor Kit Weight
			(in^2)	(tons)	A	B	C	D	E min.	F	N min.	(lbs)	(lbs)
GT1-LCB	M16 x 2	GT1PM-NRS01620	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.2	6.6	3.5
	M18 x 2,5	GT1PM-NRS01825	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.3	6.6	3.3
	M20 x 2,5	GT1PM-NRS02025	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.3	6.6	3.1
	M24 x 3	GT1PM-NRS02430	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.4	6.6	2.9
	M27 x 3	GT1PM-NRS02730	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.5	6.6	2.6
	M30 x 3,5	GT1PM-NRS03035	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.6	6.6	2.2
	⅝"- 11UN	GT1P-NRS0625U11	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.2	6.6	3.5
	¾"- 10UN	GT1P-NRS0750U10	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.3	6.6	3.1
	⅞"- 9UN	GT1P-NRS0875U09	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.4	6.6	2.9
	1"- 8UN	GT1P-NRS1000U08	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.5	6.6	2.6
	1⅛"- 8UN	GT1P-NRS1125U08	2.32	25.2	5.3	4.4	1.1	3.4	9.6	1.7	2.6	6.6	2.2
GT2-LCB	M30 x 3,5	GT2PM-NRS03035	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	2.9	9.0	5.7
	M33 x 3,5	GT2PM-NRS03335	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	3.0	9.0	5.3
	M36 x 4	GT2PM-NRS03640	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	3.1	9.0	4.9
	M39 x 4	GT2PM-NRS03940	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	3.2	9.0	4.2
	1⅛"- 8UN	GT2P-NRS1125U08	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	2.9	9.0	5.7
	1¼"- 8UN	GT2P-NRS1250U08	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	3.0	9.0	5.3
	1⅜"- 8UN	GT2P-NRS1375U08	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	3.1	9.0	4.9
	1½"- 8UN	GT2P-NRS1500U08	4.15	45.1	5.4	4.4	1.4	4.2	8.9	1.6	3.2	9.0	4.4

* Load Cell with tommy bar.

Thread and Pitch Sizes

Contact Enerpac for different thread or pitch sizes. Alternative size adaptor kits can be supplied upon request.

GT Series

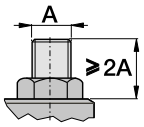


Bolt Range:
⅝" - 4" | M16 - M105

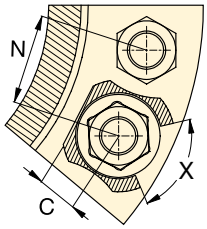
Maximum Load Capacity at 21,750 psi:
25.2 - 444.9 tons

Stroke:
0.39 inch

Maximum Operating Pressure:
21,750 psi

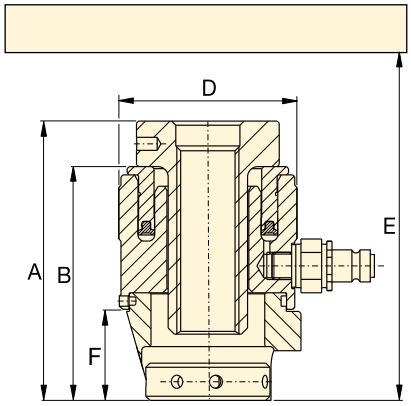


Minimum Stud Protrusion



X = Minimum socket rotation 60°

Nearest obstruction



Load Cell * and Bridge Model Number	Thread Size	Adaptor Kit Model Number	Cylinder Effective Area	Maximum Load Capacity	Dimensions (in)							Load Cell and Bridge Weight	Adaptor Kit Weight
					A	B	C	D	E min.	F	N min.		
			(in^2)	(tons)								(lbs)	(lbs)
GT3-LCB	M39 x 4	GT3PM-NRS03940	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	3.8	15.4	12.6
	M42 x 4,5	GT3PM-NRS04245	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	3.9	15.4	11.9
	M45 x 4,5	GT3PM-NRS04545	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	4.0	15.4	11.0
	M48 x 5	GT3PM-NRS04850	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	4.1	15.4	10.4
	M52 x 5	GT3PM-NRS05250	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	4.2	15.4	9.3
	1½"- 8UN	GT3P-NRS1500U08	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	3.7	15.4	12.6
	1⅝"- 8UN	GT3P-NRS1625U08	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	3.9	15.4	11.7
	1¾"- 8UN	GT3P-NRS1750U08	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	4.0	15.4	11.0
	1⅞"- 8UN	GT3P-NRS1875U08	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	4.1	15.4	10.1
	2"- 8UN	GT3P-NRS2000U08	7.95	86.4	6.3	5.0	1.8	5.4	10.1	2.2	4.2	15.4	9.3
GT4-LCB	M52 x 5	GT4PM-NRS05250	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	4.8	26.9	23.6
	M56 x 5,5	GT4PM-NRS05655	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	4.9	26.9	22.3
	M60 x 5,5	GT4PM-NRS06055	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	5.0	26.9	20.7
	M64 x 6	GT4PM-NRS06460	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	5.1	26.9	19.4
	M68 x 6	GT4PM-NRS06860	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	5.2	26.9	17.9
	2"- 8UN	GT4P-NRS2000U08	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	4.7	26.9	23.6
	2¼"- 8UN	GT4P-NRS2250U08	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	5.0	26.9	21.4
	2½"- 8UN	GT4P-NRS2500U08	15.17	164.9	7.1	5.6	2.4	6.9	11.1	2.8	5.2	26.9	18.7
GT5-LCB	M68 x 6	GT5PM-NRS06860	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	5.8	38.3	38.1
	M72 x 6	GT5PM-NRS07260	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	5.9	38.3	36.2
	M76 x 6	GT5PM-NRS07660	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	6.0	38.3	34.2
	M80 x 6	GT5PM-NRS08060	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	6.1	38.3	32.2
	2½"- 8UN	GT5P-NRS2500U08	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	5.8	38.3	39.2
	2¾"- 8UN	GT5P-NRS2750U08	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	6.0	38.3	35.9
	3"- 8UN	GT5P-NRS3000U08	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	6.2	38.3	32.6
	3¼"- 8UN	GT5P-NRS3250U08	23.37	254.2	8.0	6.2	3.1	8.3	11.9	3.4	6.3	38.3	28.9
GT6-LCB	M80 x 6	GT6PM-NRS08060	29.41	319.8	8.6	6.8	3.2	9.4	12.7	3.7	6.6	61.3	49.2
	M85 x 6	GT6PM-NRS08560	29.41	319.8	8.6	6.8	3.2	9.4	12.7	3.7	6.7	61.3	46.3
	M90 x 6	GT6PM-NRS09060	29.41	319.8	8.6	6.8	3.2	9.4	12.7	3.7	6.9	61.3	42.8
	M95 x 6	GT6PM-NRS09560	29.41	319.8	8.6	6.8	3.2	9.4	12.7	3.7	7.0	61.3	39.7
	3¼"- 8UN	GT6P-NRS3250U08	29.41	319.8	8.6	6.8	3.2	9.4	12.7	3.7	6.8	61.3	45.6
	3½"- 8UN	GT6P-NRS3500U08	29.41	319.8	8.6	6.8	3.2	9.4	12.7	3.7	7.1	61.3	41.4
	3¾"- 8UN	GT6P-NRS3750U08	29.41	319.8	8.6	6.8	3.2	9.4	12.7	3.7	7.4	61.3	37.0
GT7-LCB	M100 x 6	GT7PM-NRS10060	40.90	444.9	9.6	7.2	3.5	10.9	13.1	4.3	7.7	84.2	62.8
	M105 x 6	GT7PM-NRS10560	40.90	444.9	9.6	7.2	3.5	10.9	13.1	4.3	7.8	84.2	60.2
	4"- 8UN	GT7P-NRS4000U08	40.90	444.9	9.6	7.2	3.5	10.9	13.1	4.3	8.0	84.2	60.2

* Load Cell with tommy bar.

▼ **Aquajack® Tensioner EAJ2LC with Quick Fastening Nut**



The most cost-effective solution to subsea bolt or stud tightening

- **Compact design**
- **Long piston stroke**
- **Misalignment compensation**
- **Quick, simple hose connection**
- **Visible piston stroke indication**
- **'No spill' over-stroke elimination**
- **Quick fastening or solid reaction nut.**

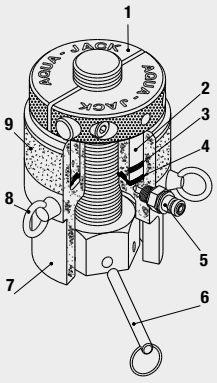


Quick Fastening Nut Design

Easily positioned in poor visibility conditions, Aquajack® subsea tensioners feature a compact design and long piston stroke. The unique Split Nut® design of these tools allows rapid application to long bolts and damaged threads, and rapid tool removal.

No Oil Spillage or Over-Stroking

Innovative tool design ensures maximum tool strokes can be used without over-stroking the piston or oil spillage. Guaranteed to save time and increase efficiency, Aquajack® subsea tensioners improve diver safety, productivity and reduce diver fatigue.



1. Quick Fastening Reaction Nut
2. Long Piston Stroke
3. Maximum Stroke Indicator Band
4. Self-Energising Seals
5. Hose Connections (2x)
6. Tommy Bar
7. Compact Body Design
8. Lifting Eyes
9. Anti-Slip Tool Surface

▼ *Guaranteed to save time and increase efficiency, Aquajack® tensioners improve diver safety, productivity and reduce diver fatigue.*

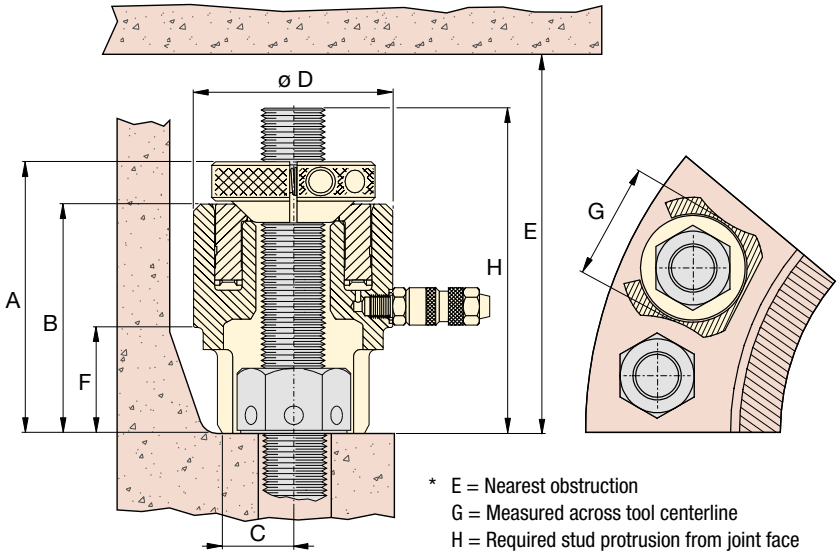




Hose Reels and Stand

Stainless steel hose stand with 21,750 psi hoses from 98 up to 885 feet lengths.
All hose reels are built up with multiple 98 feet length hoses.

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* E = Nearest obstruction
G = Measured across tool centerline
H = Required stud protrusion from joint face

EAJ Series



Bolt Range:
¾ - 3½" | M20 - M90

Maximum Load Capacity:
17.0 - 260.9 tons

Maximum Operating Pressure:
21,750 psi

Load Cell Model Number **	Thread Size	Quick Fastening Nut Model Number	Cylinder Effective Area	Maximum Load Capacity	Stroke	Dimensions (in)								Tool Weight
			(in^2)	(tons)	(in)	A	B	C	D	E *	F	G *	H *	(lbs)
EAJ1LC	¾" - 10 UN	EAJ1QFN0750U10	1.56	17.0	0.79	4.49	3.58	0.75	2.60	8.54	1.38	2.09	4.69	3.3
	7/8" - 9 UN	EAJ1QFN0875U09												
	M20 x 2,5	EAJ1QFNM02025												
	M22 x 2,5	EAJ1QFNM02225												
EAJ2LC	1" - 8 UN	EAJ2QFN1000U08	2.57	28.0	1.18	5.79	4.72	0.98	3.23	11.38	1.97	2.44	5.98	6.6
	M24 x 3,0	EAJ2QFNM02430												
	M27 x 3,0	EAJ2QFNM02730												
	1⅛" - 8 UN	EAJ2QFN1125U08												
	M30 x 3,5	EAJ2QFNM03035												
EAJ3LC	1¼" 8 UN	EAJ3QFN1250U08	3.91	42.6	1.18	6.20	5.16	1.10	3.86	12.09	2.28	3.07	6.42	9.9
	M33 x 3,5	EAJ3QFNM03335												
	1⅜" - 8 UN	EAJ3QFN1375U08												
	M36 x 4,0	EAJ3QFNM03640												
EAJ4LC	1½" - 8 UN	EAJ4QFN1500U08	5.71	62.2	1.18	6.73	5.35	1.30	4.49	12.56	2.48	3.58	6.93	13.2
	M39 x 4,0	EAJ4QFNM03940												
	1⅝" - 8 UN	EAJ4QFN1625U08												
	M42 x 4,5	EAJ4QFNM04245												
EAJ5LC	1¾" - 8 UN	EAJ5QFN1750U08	9.16	99.6	1.18	7.24	5.75	1.57	5.47	13.46	2.76	4.49	7.44	19.8
	M45 x 4,5	EAJ5QFNM04545												
	1⅞" - 8 UN	EAJ5QFN1875U08												
	M48 x 5,0	EAJ5QFNM04850												
	2" - 8 UN	EAJ5QFN2000U08												
	M52 x 5,0	EAJ5QFNM05250												
EAJ6LC	M56 x 5,5	EAJ6QFNM05655	12.88	140.2	1.18	7.91	6.34	1.93	6.46	14.45	3.23	5.43	8.11	28.7
	2¼" - 8 UN	EAJ6QFN2250U08												
	M60 x 5,5	EAJ6QFNM06055												
	2½" - 8 UN	EAJ6QFN2500U08												
	M64 x 6,0	EAJ6QFNM06460												
EAJ7LC	M68 x 6,0	EAJ7QFNM06860	19.17	208.6	1.18	9.06	7.01	2.95	7.56	15.75	3.74	6.06	9.25	41.9
	2¾" - 8 UN	EAJ7QFN2750U08												
	M72 x 6,0	EAJ7QFNM07260												
	M76 x 6,0	EAJ7QFNM07660												
	3" - 8 UN	EAJ7QFN3000U08												
EAJ8LC	M80 x 6,0	EAJ8QFNM08060	23.98	260.9	1.18	9.72	7.60	2.68	8.39	16.22	4.29	7.17	9.92	54.0
	3¼" - 8 UN	EAJ8QFN3250U08												
	M85 x 6,0	EAJ8QFNM08560												
	3½" - 8 UN	EAJ8QFN3500U08												
	M90 x 6,0	EAJ8QFNM09060												

** Tommy Bar included with Load Cell.

▼ PGT-Series Single Stage and Double Deck Tensioners



High-Precision, Low Maintenance



Tensioning Pumps

Electric, pneumatic and manual high-pressure tensioning pumps are available for use with Enerpac hydraulic tensioners.



Hoses and Fittings

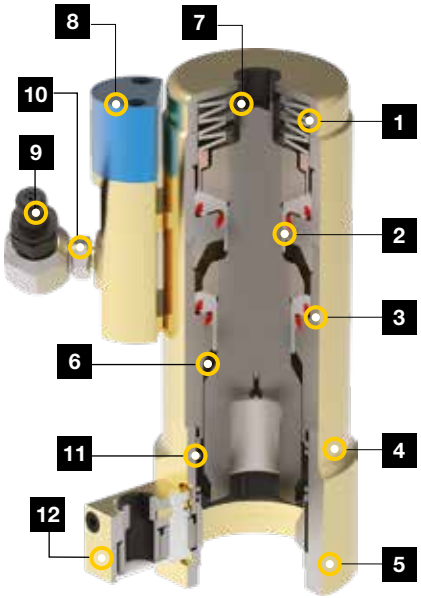
High-pressure hoses and fittings for use with Enerpac tensioning systems are available.

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- **PGT-Series Bolt Tensioners are designed for critical fastening applications in wind, steam and gas turbines**
- **A broad range of single stage and double deck tensioners provide high-performance in tight spaces associated with Power Generation applications**
- **PGT-Series Bolt Tensioners are loaded with performance enhancing features such as Auto-Retract Pistons, Cycle Counters and a premium coating to offer the ultimate in efficiency, durability and ease of use.**

Description	PGTS Single Stage	PGTD Double Deck
Auto-Retract Piston	✔	✔
Zinc Coating	✔	✔
Geared Nut-Rundown	✔	✔
Over-stroke Indicator	✔	✔
Over-stroke Preventer	✔	✔
Single Male Fitting	✔	✔
Swivel Manifold	✚	✚
Cycle Counter	–	✚

✔ = **Standard on tensioner**
✚ = **Possible option**
– = **Option not available**



▲ *The model above illustrates a typical tool configuration. Actual model configurations vary.*

1. **Auto-retract piston:** Simplifies use and improves speed of operation.
2. **Long-life puller:** For maximum durability.
3. **Long-life seals:** For maximum durability and extended service life intervals.
4. **Corrosion protection:** Zinc coating provides best-in-class corrosion resistance.
5. **Interchangeable bridge:** For optimal application fit.
6. **Over-stroke preventer:** Mechanically prevents over-stroke, extending cylinder life.
7. **Over-stroke indicator:** Extends cylinder life by helping to prevent over-stroking of cylinder.
8. **Optional counter:** Helps indicate when maintenance is due to maximize uptime.
9. **Quick-disconnect coupler:** For safe, simple hydraulic connection.
10. **Optional 360° swivel:** Available for additional hose positioning flexibility.
11. **Spring-loaded nut engagement:** Keeps socket positioned on nut for faster and easier seating process.
12. **Gearbox:** For nut run down. Easy and quick nut run down back to the flange.

Options

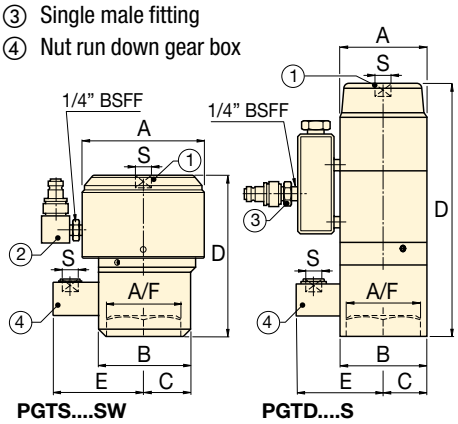
Fitting Type

SW = Swivel manifold with single male fitting
Example: **PGTS2436SW**

Cycle-Counter

C = Cycle Counter (not available on PGTS-models)
Example: **PGTD3655SWC**

① Puller bar square drive
② Swivel manifold with single male fitting
③ Single male fitting
④ Nut run down gear box



PGT Series



Bolt Range:
M20 - M72

Maximum Load Capacity:
22.9 - 333.6 tons

Maximum Operating Pressure [1]:
19,575 - 21,750 psi

[1] Max. pressure varies, see specifications table for details.

Tensioner Type	Thread Diameter (mm)	Model Number with single male fitting	Nut Size A/F (in)	Maximum Pressure (psi)	Hydraulic Pressure Area (in²)	Maximum Load Capacity (tons)	Stroke (in)	Dimensions (in) A	B	C	D	E	S * (inch)	Weight (lbs)	Bolt Protrusion (in) min.	max.
Single Stage	M20 x 2,5	PGTS2030S	1.18	21,750	2.10	22.9	0.28	2.52	2.52	1.26	3.19	3.07	⅜	4.4	1.73	2.17
	M24 x 3,0	PGTS2436S	1.42	21,750	3.02	32.8	0.28	3.03	3.03	1.22	3.86	3.20	⅜	6.4	1.93	2.44
	M27 x 3,0	PGTS2742S	1.65	21,750	4.10	44.6	0.31	3.62	2.95	1.34	5.08	3.27	⅜	10.6	2.36	2.76
	M30 x 3,5	PGTS3046S	1.81	21,750	4.97	54.0	0.31	3.90	3.35	1.50	5.28	3.46	⅜	12.8	2.68	2.87
	M33 x 3,5	PGTS3350S	1.97	21,750	6.14	66.8	0.31	4.17	3.54	1.57	5.59	3.54	⅜	14.9	2.95	3.94
	M36 x 4,0	PGTS3655S	2.17	21,750	6.92	75.3	0.35	4.37	3.54	2.19	5.04	3.75	½	14.1	2.90	3.74
	M39 x 4,0	PGTS3960S	2.36	21,750	8.62	93.8	0.39	4.86	4.09	1.81	6.30	3.78	⅜	21.5	3.50	4.53
	M42 x 4,5	PGTS4265S	2.56	21,750	9.70	105.6	0.39	5.28	4.53	2.65	6.97	3.90	½	20.9	3.11	4.53
	M45 x 4,5	PGTS4570S	2.76	21,750	11.63	126.6	0.39	5.63	4.69	2.07	6.61	4.02	⅜	29.1	3.86	4.57
	M48 x 5,0	PGTS4875S	2.95	21,750	13.00	141.5	0.39	5.98	4.92	2.20	6.22	4.17	⅜	29.3	4.06	4.69
	M52 x 5,0	PGTS5280S	3.15	21,750	15.65	170.2	0.39	6.50	5.28	2.30	6.73	4.25	⅜	39.5	4.17	4.65
	M56 x 5,5	PGTS5685S	3.35	21,750	18.08	196.7	0.39	6.97	5.59	2.44	6.69	4.41	⅜	45.0	4.57	5.04
	M60 x 5,5	PGTS6090S	3.54	21,750	20.89	227.3	0.39	7.48	5.98	2.60	7.32	4.53	⅜	54.6	4.86	5.39
	M64 x 6,0	PGTS6495S	3.74	21,750	23.74	258.3	0.39	7.87	6.26	2.70	8.15	4.65	½	67.7	5.39	5.91
	M68 x 6,0	PGTS68100S	3.94	21,750	27.11	295.0	0.39	8.41	6.65	2.85	8.11	4.84	½	75.6	5.35	5.83
	M72 x 6,0	PGTS72105S	4.13	21,750	30.69	333.9	0.39	8.86	7.01	2.99	8.78	4.96	½	88.9	5.94	6.57
Double Deck	M24 x 3,0	PGTD2436S	1.42	19,575	3.55	34.8	0.24	4.69	3.03	1.22	7.28	3.19	⅜	10.1	2.09	2.34
	M27 x 3,0	PGTD2742S	1.65	19,575	4.56	44.6	0.24	4.92	2.95	1.34	7.72	3.28	⅜	11.6	2.36	2.68
	M30 x 3,5	PGTD3046S	1.81	19,575	5.31	52.0	0.28	5.28	3.35	1.46	7.68	3.46	⅜	12.7	2.36	2.76
	M33 x 3,5	PGTD3350S	1.97	19,575	6.62	64.8	0.28	5.59	3.03	1.52	8.19	3.54	⅜	14.7	2.56	3.03
	M36 x 4,0	PGTD3655S	2.17	19,575	7.74	75.8	0.31	5.98	3.27	1.61	8.58	3.66	½	17.1	2.76	3.43
	M39 x 4,0	PGTD3960S	2.36	19,575	9.70	95.0	0.39	6.26	4.09	1.89	10.47	3.78	⅜	27.6	3.31	3.66
	M42 x 4,5	PGTD4265S	2.56	19,575	10.64	104.2	0.39	6.69	4.09	2.05	9.78	3.90	½	25.0	3.23	3.58
	M45 x 4,5	PGTD4570S	2.76	19,575	12.93	126.6	0.39	6.97	4.69	2.09	11.57	4.09	⅜	38.9	3.82	4.21
	M48 x 5,0	PGTD4875S	2.95	19,575	14.62	143.1	0.39	4.53	4.92	2.26	11.97	4.17	⅜	44.3	4.06	4.45
	M52 x 5,0	PGTD5280S	3.15	19,575	17.50	171.3	0.39	4.88	5.28	2.40	12.91	4.25	⅜	57.5	4.33	4.94
	M56 x 5,5	PGTD5685S	3.35	19,575	20.06	196.4	0.39	5.20	5.59	2.56	13.62	4.41	⅜	66.1	4.61	5.22
	M60 x 5,5	PGTD6090S	3.54	19,575	23.30	228.2	0.39	5.55	5.98	2.78	14.65	4.53	⅜	81.9	4.92	5.63
	M64 x 6,0	PGTD6495S	3.74	19,575	26.54	259.9	0.39	5.94	6.26	2.99	15.20	4.69	½	94.8	5.24	6.00
	M68 x 6,0	PGTD68100S	3.94	19,575	30.25	296.2	0.39	6.30	6.69	3.15	15.67	4.84	½	109.1	5.43	6.30
	M72 x 6,0	PGTD72105S	4.13	19,575	34.06	333.6	0.39	6.73	6.97	3.48	16.89	4.96	½	132.5	5.75	6.73

* Dimension S = Square Drive of Puller Bar and Gear Box.

▼ FTR-Series, Foundation Bolt Tensioners Round



High-Precision, Low Maintenance

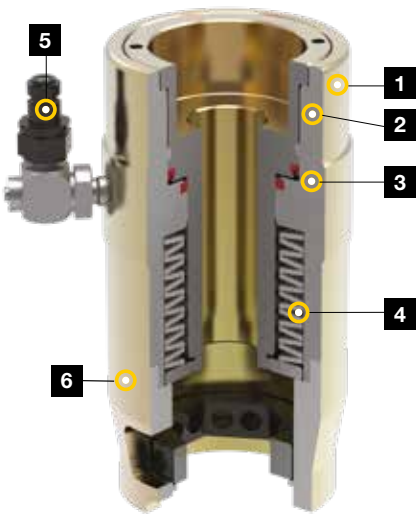
- **FTR-Series Foundation Bolt Tensioners provide fast, accurate and easy tightening of external or internal-ring wind tower foundations**
- **Standard models are available for 75, 150 ksi and metric style Williams®, Dyson® and Macalloy® bar types**
- **Long-stroke options accelerate process with single-pull tensioning.**

FTR-Series Foundation Bolt Tensioners

FTR-Series Foundation Bolt Tensioners are designed specifically for tensioning wind tower foundation bolts. These tensioners provide the speed and precision required by this critical application.

Potential thread fit problems are eliminated through the use of existing rebar hex nuts as a reaction point.

The FTR-Series includes long-stroke models, which provide greater speed and ease of use by enabling applications to be completed in a single pull.



1. **Corrosion protection:** Zinc coating provides best-in-class corrosion resistance.
2. **Over-stroke indicator:** Extends life by helping to prevent over-stroking of cylinder.
3. **Long-life seals:** For maximum durability and extended service life intervals.
4. **Auto-retract piston:** Simplifies use and improves speed of operation.
5. **Quick-disconnect coupler:** For safe, simple hydraulic connection. Optional 360° swivel available for additional hose positioning flexibility.
6. **Interchangeable bridge:** For optimal application fit.

▼ *FTR-Series Foundation Bolt Tensioner. Manual wrench (not included) required to apply up to 22 Ft.lbs of torque during installation of models that feature run down gears.*



▼ **This is how a FTR-Series Foundation Bolt Tensioner model number is built up:**

FTR	75	14	20	SW	G
1 Product Type	2 Bar Grade	3 Bar Size Designation	4 Stroke	5 Fitting Type	6 Run Down Gear *

1 Product Type
FTR = Foundation Tensioner, Round

2 Bar Grade
75 = 75 ksi
150 = 150 ksi
(or metric designation)

3 Bar Size Designation
Example
14 = No. 14 bar size

4 Maximum Stroke
Example:
20 = 20 mm (0.79 inch) max. stroke

5 Fitting Type
SW = Includes swivel manifold with single male fitting

6 Run Down Gear
G = Includes Nut Run Down Gear
* available in select models

FTR Series



Maximum Load Capacity:
42.1 - 307.5 tons

Maximum Operating Pressure [1]:
16,965 - 21,750 psi

[1] Max. pressure varies, see specifications table for details.



Tensioning Pumps
Electric, pneumatic and manual high-pressure tensioning pumps are available for use with Enerpac hydraulic tensioners.

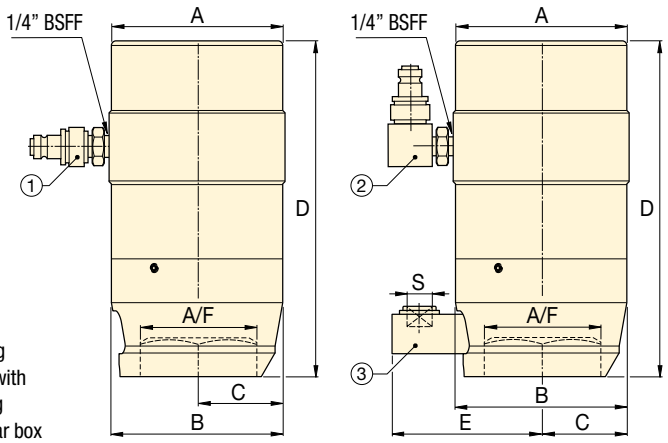


Hoses and Fittings
High-pressure hoses and fittings for use with Enerpac tensioning systems are available.

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Bolting Integrity Software
The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application data sheet and Joint completion report. Custom Joint information can also be entered.

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① Single male fitting
② Swivel manifold with single male fitting
③ Nut run down gear box

FTR....S **FTR.....SWG**

▼ **SPECIFICATION TABLE**

Bar Grade	Bolt Diameter (inch)	Bolt Diameter (mm)	Bar Size Designation	Model Number with single male fitting	Nut Size A/F (in)	Max. Pressure (psi)	Hydraulic Pressure Area (in²)	Max. Load Capacity (tons)	Stroke (in)	Dimensions (in) A	B	C	D	E	Weight (lbs)	Minimum Bolt Protrusion (in)
	1.38	35	#10	**FTR751010S**	2.00	17,400	4.86	42.3	0.39	3.90	3.48	1.74	6.42	–	12.9	7.87
	1.38	35	#10	**FTR751025S**	2.00	17,400	4.84	42.1	0.98	4.53	4.02	1.65	8.64	–	24.1	9.84
75 ksi	1.50	38	#11	**FTR751110S**	2.25	21,750	4.86	52.8	0.39	3.90	3.86	1.50	7.01	–	12.1	8.66
	1.50	38	#11	**FTR751125SG**	2.25	21,750	4.84	52.7	0.98	4.53	4.02	2.01	8.92	3.78	25.3	10.24
	1.88	48	#14	**FTR751420S**	2.75	16,965	9.44	80.1	0.79	5.20	5.20	2.60	10.55	–	40.2	12.40
	1.44	37	1.25	**FTR15012510S**	2.25	16,965	8.34	90.8	0.39	4.37	4.33	1.57	7.01	–	18.2	8.66
150 ksi	1.56	40	1.37	**FTR15013810S**	2.50	21,750	8.34	90.8	0.39	4.37	4.33	1.50	7.01	–	17.8	8.86
	2.75	70	2.50	**FTR15025025S**	4.25	21,750	28.27	307.5	1.00	8.44	8.35	3.39	13.68	–	127.8	17.72
10.9	1.42	36	36	**FTR1093610SG**	2.36	21,750	5.92	64.4	0.39	4.02	3.90	1.57	6.93	3.74	19.0	7.68

Gear box square drive dimension S = ½ inch.

▼ FTE-Series, Foundation Bolt Tensioner Elliptical



High-Precision, Low Maintenance

- **FTE-Series Foundation Bolt Tensioners provide fast and accurate performance in difficult, narrow access foundation tensioning applications**
- **Standard models are available for 75, 150 ksi and metric style Williams®, Dyson® and Macalloy® bar types**
- **Ideal universal solution that fits both standard and narrow access applications.**

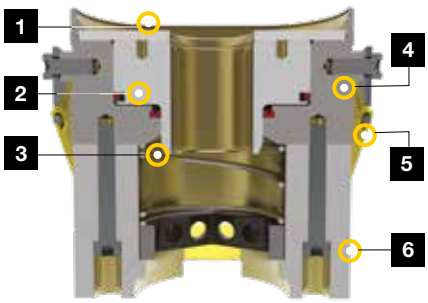
FTE-Series, Foundation Bolt Tensioners

Similar to Standard Foundation Tensioners, Elliptical tensioners were designed specifically for foundation fastening applications on wind towers, and utilize the existing hex nut as a reaction point in order to eliminate thread fit misalignment.

Unlike standard FTR-Series Tensioners, the FTE-Series Tensioners feature an elliptical geometry, which enables fit in narrow access foundation applications, without reducing load capabilities.

Operators may access the nut with a Tommy Bar rather then employing the use of an offset rundown gear.

Elliptical tensioners are ideal for close clearance applications, or as a universal tool that will work in nearly any foundation application, whether standard or narrow access.



1. **Maximum stroke Indicator:** Extends life by helping to prevent over-stroking of cylinder.
2. **Long-life seals:** For maximum durability and extended service life intervals.
3. **Auto-retract piston:** Simplifies use and improves speed of operation.
4. **Elliptical form:** Provides access to close clearance applications.
5. **Corrosion protection:** Zinc coating provides best-in-class corrosion resistance.
6. **Quick-disconnect coupler:** *(not shown)* For safe, simple hydraulic connection. Optional 360° swivel available for additional hose positioning flexibility.

▼ *FTE-Series, Foundation Bolt Tensioner, designed to fit both standard and narrow access foundation applications.*



Foundation Bolt Tensioners, Elliptical

▼ **This is how a FTE-Series Foundation Bolt Tensioner model number is built up:**

FTE	75	10	SW
1 Product Type	2 Bar Grade	3 Bar Size Designation	4 Fitting Type

1 Product Type

FTE = Foundation Tensioner, Elliptical

2 Bar Grade

75 = 75 ksi
150 = 150 ksi
(or metric designation)

3 Bar Size Designation

Example
10 = No. 10 bar size

4 Fitting Type

SW = Includes swivel manifold with single male fitting

FTE Series



Maximum Load Capacity:
41.9 - 85.6 tons

Maximum Operating Pressure [1]:
17,400 - 21,750 psi

[1] Max. pressure varies, see specifications table for details.



Tensioning Pumps

Electric, pneumatic and manual high-pressure tensioning pumps are available for use with Enerpac hydraulic tensioners.



Hoses and Fittings

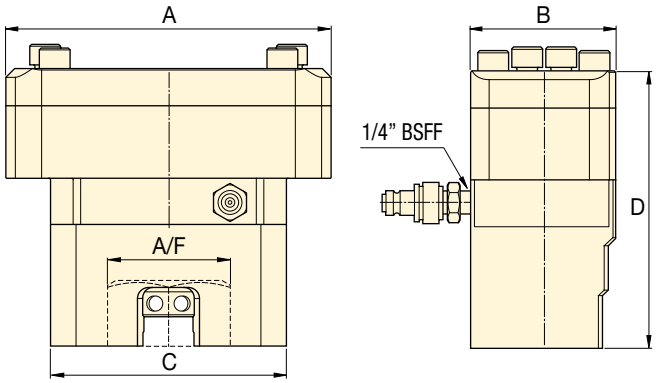
High-pressure hoses and fittings for use with Enerpac tensioning systems are available.

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Bolting Integrity Software

The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application data sheet and Joint completion report. Custom Joint information can also be entered.

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▼ **SPECIFICATION TABLE**

Bar Grade	Bolt Diameter (inch)	Bolt Diameter (mm)	Bar Size Designation	Model Number with single male fitting	Nut Size A/F (in)	Max. Pressure (psi)	Hydraulic Pressure Area (in^2)	Max. Load Capacity (tons)	Stroke (in)	Dimensions (in) A	B	C	D	Weight (lbs)	Minimum Bolt Protrusion (in)
75 ksi	1.38	35	#10	**FTE7510S**	2.00	17,400	4.82	41.9	0.39	6.69	3.23	5.59	5.81	18.2	7.87
	1.50	38	#11	**FTE7511S**	2.25	21,750	4.82	52.4	0.39	6.69	3.23	5.59	5.81	18.2	8.66
150 ksi	1.56	40	1.375	**FTE150138S**	2.25	17,400	7.86	68.4	0.39	8.74	3.90	6.34	8.01	41.7	9.45
	1.44	37	1.250	**FTE150125S**	2.50	21,750	7.86	85.6	0.39	8.74	3.90	6.34	8.01	40.8	9.06
8.8	1.42	36	36	**FTE8836S**	2.36	21,750	4.82	52.4	0.39	5.59	3.23	5.59	5.81	21.3	7.09

▼ HPT1500



HPT Series

Reservoir Capacity:
155 in³

Flow at Rated Pressure:
0.037 in³/stroke

Maximum Operating Pressure:
21,750 psi

- **Lightweight and portable high-pressure hand pump**
- **Two-speed operation displaces a larger volume of oil per stroke, reducing cycle times for many testing applications**
- **Includes a pressure gauge and coupler for direct connection to Enerpac Bolt Tensioners**
- **Integrated relief valve set at 21,750 psi.**



Applications
The hand pump is ideally suited for use with hydraulic bolt tensioning tools and hydraulic nuts.

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Ultra-high pressure
This pump operates at ultra-high pressure, use only the specified fittings and hoses designed for these pressures.

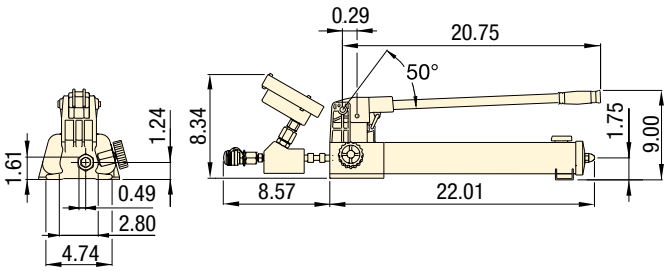
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Bolt Tensioning Theory
See more on tensioning operation and procedures in our “Yellow Pages”.

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Bolting Integrity Software
The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application data sheet and Joint completion report. Custom Joint information can also be entered.

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21,750 PSI ULTRA-HIGH PRESSURE PUMP

Pump Type	Useable Oil Capacity (in³)	Model Number	Pressure Rating (psi)		Oil Displacement per Stroke (in³)		High-Pressure Oil Port with female coupler	(lbs)
			1st stage	2nd stage	1st stage	2nd stage		
Two-Speed	155	**HPT1500**	200	21,750	0.99	0.037	1/4" BSPP + BR150	19.0

Ultra-High Pressure Hoses & Couplers

- **Hose Reel and Stand: Stainless steel stand with 21,750 psi hoses from 100 up to 900 feet lengths**
- **All hose reels are built up with multiple 98 feet length hoses**
- **Wide offering of hoses and system components to complete your tensioning system**
- **Can be used for subsea fastening systems**
- **Hoses can be inter-connected in multi-tool set-ups using nipples, couplers, T-pieces and Y-Pipe assemblies.**

HT, B Series



Hose Lengths:
3.3 - 98.4 feet

Hose Reel & Stand:
100 - 900 feet

Maximum Operating Pressure:
21,750 psi

21,750 PSI HOSE REEL & STANDS

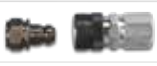
Model Number		Stainless Steel Hose Reels with Stand (Hose with Female Half BR150 and Male Half BH150 couplers)
HT15000RS		Reel & Stand Assembly, No Fitting
HT15000HRS		Hose Reel & Stand, No Hose
HT15100HRS		Hose Reel & Stand, with 100 ft. hose
HT15200HRS		Hose Reel & Stand, with 200 ft. hose
HT15300HRS		Hose Reel & Stand, with 300 ft. hose
HT15400HRS		Hose Reel & Stand, with 400 ft. hose
HT15500HRS		Hose Reel & Stand, with 500 ft. hose
HT15600HRS		Hose Reel & Stand, with 600 ft. hose
HT15700HRS		Hose Reel & Stand, with 700 ft. hose
HT15900HRS		Hose Reel & Stand, with 900 ft. hose

21,750 PSI HOSES

Model Number		Hose End 1	Hose End 2	Length (ft)
HT1503		1/4" BSPM 120° Cone	1/4" BSPM 120° Cone	3.3
HT1510		1/4" BSPM 120° Cone	1/4" BSPM 120° Cone	9.8
HT15100		1/4" BSPM 120° Cone	1/4" BSPM 120° Cone	98.4
HT1503HR *		BH150	BR150	3.3
HT1506HR *		BH150	BR150	5.9
HT1510HR *		BH150	BR150	9.8
HT1520HR *		BH150	BR150	20.0
HT15100HR *		BH150	BR150	98.4
HT1503RR *		BR150	BR150	3.3
HT1506RR *		BR150	BR150	5.9
HT1510RR *		BR150	BR150	9.8
HT1520RR *		BR150	BR150	20.0

* Includes dust caps.
H = Male Nipple (BH150); R = Female Coupling (BR150)

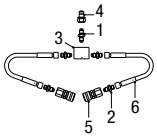
21,750 PSI COUPLERS

Description (includes dust caps)		Complete Set	Female Half	Male Half
Quick Disconnect Coupler		B150	BR150	BH150
Quick Disconnect Coupler & Adaptor Kit		BW150AW	–	–
Quick Disconnect Blanking Coupler Set		B150B	BR150B	BH150B

21,750 PSI T-PIECES

Model Number	shown HT15TPMMF	End 1	End 2	End 3
HT15TPMMF		1x BH150	1x BH150	1x BR150
HT15TPMMM		1x BH150	1x BH150	1x BH150

21,750 PSI Y-PIPE ASSEMBLIES

Model Number	shown HT1506YPFMF	End 1 Hose	End 2 Hose	End 3 T-Piece
HT1506YPMMF		HT1506HR	HT1506HR	HT15TPMMF
HT1510YPMMF		HT1510HR	HT1510HR	HT15TPMMF
HT1506YPFMF		HT1506RR	HT1506RR	HT15TPMMM
HT1510YPFMF		HT1510RR	HT1510RR	HT15TPMMM

Y-Pipe Assembly: 1+2 = adaptor; 3 = stainless steel T with 1/4" BSPM
4 = Male Nipple (BH150); 5 = Female Coupling (BR150); 6 = Hose

▼ ZUTP1500SB-H



- **Solenoid-operated valve with 20 feet pendant for remote control of valve and one-man operation**
- **Easily accessible manual override valve to release pressure if power is lost**
- **Safety relief valve limits output pressure**
- **Two-stage pump design provides high flow at low pressure for fast system fills and controlled flow at high pressure for accurate operation**
- **1.7 hp heavy-duty universal motor provides the best performance-to-weight ratio**
- **Replaceable 10 micron in-line high-pressure filter helps maintain oil cleanliness for optimum performance**
- **Panel-mounted 6 inch pressure gauge, with polycarbonate cover, is set into the protective metal shroud for improved visibility.**

ZUTP Series

Reservoir Capacity:
1.0 gallon

Flow at Rated Pressure:
20 in³/min

Motor Size:
1.7 hp

Maximum Operating Pressure:
21,750 psi

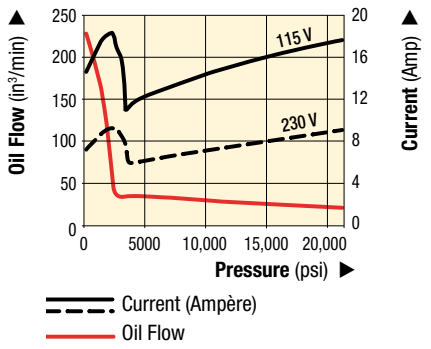
ZUTP-Tensioning Pumps

ZUTP-pumps achieve high-pressure without the need for an intensifier. This allows for low maintenance, resulting in less cost for the end-user.

ZUTP-S with Solenoid Valve

The **ZUTP1500S** with pendant-operated solenoid valve is ideal for multiple bolt tensioning applications as it allows for single-person operation. The operator can pressurize and depressurize the tensioner directly from the pendant.

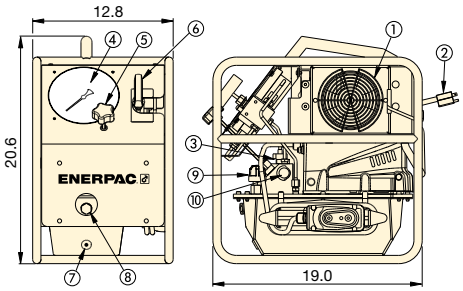
OIL FLOW VERSUS PRESSURE



21,750 PSI HIGH-PRESSURE PUMP

Useable Oil Capacity (gal)	Valve Type	Model Number [1]	Pressure Rating (psi)	Output Flow Rate (in³/min) 0 bar	Output Flow Rate (in³/min) 21,750 psi	1.7 hp Motor [5] (VAC, 1-ph, 60 Hz)	(lbs)
1.0	Solenoid	ZUTP1500SB	21,750	230	20	115	65
		ZUTP1500SE [2]				230 [2]	
		ZUTP1500SI [3]				230 [3]	
1.0	Solenoid	ZUTP1500SB-H [4]	21,750	230	20	115	75
		ZUTP1500SE-H [2] [4]				230 [2]	
		ZUTP1500SI-H [3] [4]				230 [3]	
1.0	Jog	ZUTP1500B	21,750	230	20	115	65
		ZUTP1500E [2]				230 [2]	
		ZUTP1500I [3]				230 [3]	

[1] All models meet CE safety requirements and all TÜV requirements.
[2] European plug and CE EMC directive compliant.
[3] With NEMA 6-15 plug. [4] H = with heat exchanger. [5] Sound level 89 dBA.



① Heat Exchanger (optional)
② Power Cord
③ Solenoid Dump Valve
④ Pressure Gauge
⑤ User Adjustable Relief Valve
⑥ Manual Release Valve
⑦ Oil Drain
⑧ Oil Level Sight Glass
⑨ Breather
⑩ Outlet Port with CEJN Coupler (116 Series)

▼ ATP1500

Ex II 2 GD ck T4



- **General purpose, high-pressure air driven two-speed pump unit for products requiring up to 21,750 psi hydraulic pressure**
- **Compact, lightweight, rugged steel frame for protection and easy handling**
- **Prelubricated pump element, does not require an airline lubricator**
- **Easily adjustable output pressure control**
- **Integrated and protected easy-to-read glycerine-filled gauge**
- **Safety relief valve limits output pressure.**

ATP Series

Reservoir Capacity:
1.0 gallon

Flow at Rated Pressure:
4 in³/min

Maximum Operating Pressure:
21,750 psi

Ultra-high-pressure

This pump operates at ultra-high pressure, use only the specified fittings and hoses designed for these pressures.

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Applications

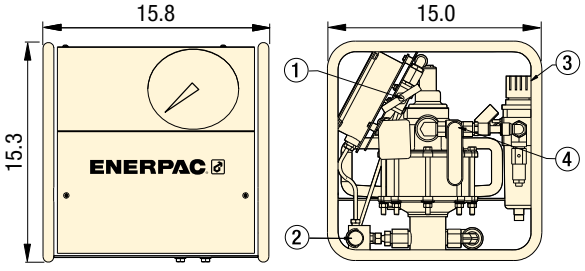
The ATP-pump is ideally suited for use with hydraulic bolt tensioning tools and hydraulic nuts.

ATEX Certified

The ATP-Pump is tested and certified according ATEX.

Ex II 2 GD ck T4

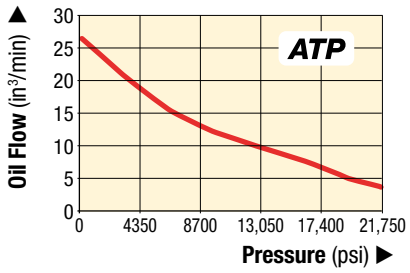
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① Shut-off Valve
② Out Port 1/4" BSPM with BR150 coupler
③ Filter/Regulator
④ Air On/Off Valve
Air Inlet 1/2" NPTF

OIL FLOW VERSUS PRESSURE

Flow (in³/min) at 90 psi air input



21,750 PSI HIGH-PRESSURE AIR PUMP

Pump Type	Useable Oil Capacity (gal)	Pressure Rating (psi)	Model Number	Output Flow Rate at 0 psi (in³/min)	Output Flow Rate at 21,750 psi (in³/min)	Air Pressure Range (psi)	Air Consumption (scfm)	Sound Level (dBA)	(lbs)
Two-speed	1.0	21,750	**ATP1500**	26	4	80 - 90	70	70	65

Tensioning every single stud in a joint simultaneously



▲ *Multi Stud Tensioning Set-Up.*

MULTI STUD TENSIONERS

Enerpac Multi Stud Tensioning (MST) systems are capable of tensioning every single stud in a joint simultaneously. By applying a predictable and accurate pre-load to all studs, problems associated with conventional bolt tightening techniques are avoided.
Typical Enerpac Multi Stud Tensioning applications include:

Manway, Hand-Hole & Inspection Covers

MST systems are the fastest and most accurate means of loosening and tightening studs on Primary & Secondary Manway Covers, Hand-Hole and Inspection Ports in nuclear facilities. Using special ram areas and strong lightweight materials, the MST's reduce bolting time by as much as 75%.

Coolant Pump

A custom slimline tensioning system for a Nuclear Reactor Coolant Pump, using six equally spaced tensioners and tightening studs in four passes, has reduced bolting times by 25% and significantly increased tensioning accuracy.

Wind Turbine Blade Assembly

Using an Enerpac MST has allowed wind turbine blade assembly times to be reduced by approx. 65% while bolt load accuracy and consistency have improved, resulting in better joint life and reduced maintenance requirements. The MST, comprising four tool segments, is capable of simultaneously tensioning up to 88 bolts connecting a 125 ft long blade to a bearing slew ring.

MST - Multi Stud Tensioners

This tool can be custom-designed, and built, for virtually any nuclear facility. We specialise in addressing difficult projects that demand accurate loads within tight space envelopes, while also seeking ease of operation and performance.

- Designed in segments enabling the operator to easily and quickly connect each segment to the joint and link together to provide simultaneous loading.
- Very accurate and fast closure system for large tensioning applications on pumps, valves, and steam-generators, for example.
- For ease of handling on-site, Enerpac MST systems can be supplied with an integral lifting frame and trolley.



▲ *Multi Stud Tensioner.*



▲ *Multi Stud Tensioning application.*

A simple and effective method of tensioning large bolts in difficult to access areas



▲ *Tensioning with hydraulic nuts.*

HYDRAULIC NUTS

Enerpac hydraulic nuts are used in many process-critical bolting applications where the ease of installation and manpower time savings are substantial and on-going. Moreover, they eliminate many of the uncertainties of torque arising from friction, point loading and load scatter.

Enerpac Hydraulic Nuts are a simple and effective method of tensioning large bolts in difficult to access areas with insufficient space for standard tensioners. Typically used when installing and maintaining bolting systems, hydraulic nuts can replace both conventional hexagon nuts and standard round nuts providing a high and predictable degree of tensioning accuracy.

Threaded directly onto the stud, Enerpac hydraulic nuts apply a direct axial elongation by means of hydraulic force generated via the nut's integral hydraulic cylinder. The nut is held in place either by means of a top or bottom load retaining collar externally located on the nut or by the insertion of mechanical shims. Enerpac hydraulic nuts can be retrofitted to existing plant providing an accurate solution to mechanical jointing problems.

Benefits of Enerpac Hydraulic Nuts

- Highly Accurate & Repeatable Bolt Loads
- Ideal where space limitations prevent use of standard detachable tensioners
- Direct Axial Loading - No nut rotation required
- Multiple Nuts can be connected and tightened / loosened simultaneously
- Eliminates issues with friction
- Substantial time savings due to the quick set-up and hydraulic nuts remaining in-situ
- No stud or flange damage (Galling, Seizure)
- No need to change joint hardware – system works with existing studs
- Ideal when the tension in bolts needs to be checked regularly such as vibration loosening.

Enerpac hydraulic nut applications have included:

The Hydraulic Nut is a permanent fixture, replacing the conventional nut and retaining the high bolt load and extension in small space envelopes where there may not be sufficient space to use tensioners.

- Flange Clamps: Pipeline, Structural
- Turbines: Gas, Wind, Steam
- Pressure & Reactor Vessels
- Diesel Engines
- Nuclear Applications: Steam Generators
- Hydraulic and Mechanical Presses
- Heat Exchangers
- Pipeline Flanges, Valves and Control Systems
- Valves & Pumps
- Cranes – Slew Ring Bolts, Tower Cranes
- Shaft Couplings
- Mining: Grinders, Cutters, Earth Moving Equipment.



▲ *Hydraulic nuts on a diesel engine.*

▼ From left to right: **FA4TM, FA9TE, FA1TM** (FA9TE shown without pump and hose)



The faster, simpler and safer way to align flanges

- **Enerpac FA-Series tools rectify twist and rotational misalignment quickly, safely and without the need for an external power source**
- **Appropriate for use on most ANSI, API, BS and DIN flanges**
- **Reduces set-up time: no need for chains, pulleys or rigs**
- **Safety strap helps provide secure operation**
- **Can be installed and used in any position**
- **Stays stable in position under full load**
- **Portable, lightweight design enables easy transport and use, even in remote locations**
- **The FA9TESTD comes with a HP350S hand pump, hose and a pressure gauge as standard**
- **Each FA-model contains a tool and kit box.**



Adjustable Reach

The highly adjustable reach of the wing and drop leg on FA4TM and FA9TE allow precise alignment.



TFA-Series Wind Turbine Tower Flange Alignment Tools

The TFA Wind Turbine Tower Flange Alignment Tools have been developed to aid the alignment of large flanges on the inside of wind turbine towers during their assembly or installation.

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▼ *The compact FA1TM is actuated by simply hand turning the crank.*



▼ *FA9TESTD*



Applications

Enerpac FA-Series Tools help correct flange misalignment, and allow bolts to be placed into joints. This alignment takes place during pipework construction, or maintenance.

These tools provide pipe installers and maintenance personnel with some of the simplest, safest and most productive solutions available for flange alignment in the market today.

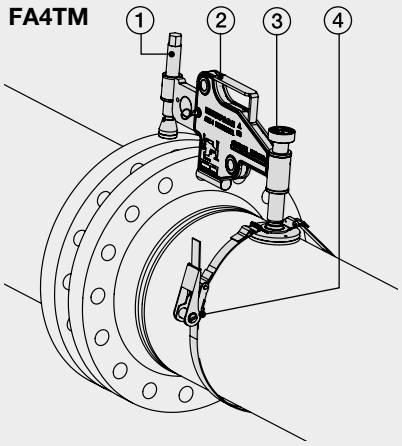
① Extendable wing provides usage on wide variety of flanges.

② Portable, lightweight design enables easy transport and use.

③ Hand-adjustable base for easy positioning by a single operator.

④ Safety strap helps provide secure operation from a horizontal or vertical position.

FA4TM



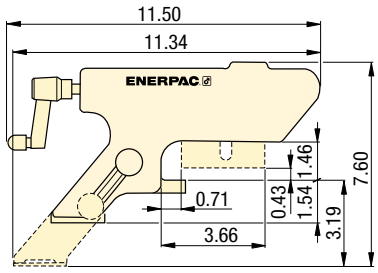
FA Series



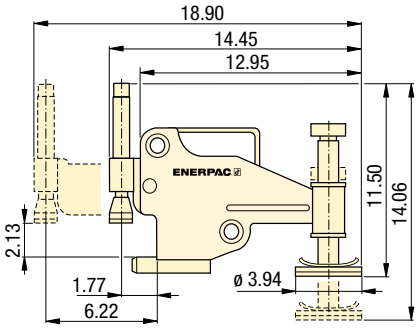
Minimum Bolt Size:
0.63 - 1.40 inches

Flange Wall Thickness:
0.55 - 9.00 inches

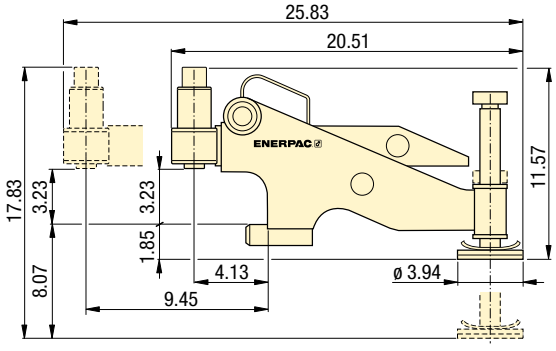
Maximum Lifting Force:
1 - 10 tons



FA1TM



FA4TM



FA9TE

Maximum Lifting Force		Model Number	Minimum Bolt Size		Flange Wall Thickness		
(tons)	(kN)		(inch)	(mm)	(inch)	(mm)	(lbs)
1	10	**FA1TMSTD**	.63	16	.55 - 3.29	14 - 82	3.5
4	40	**FA4TMSTD**	.95	24	1.18 - 5.23	30 - 133	19.0
10	90	**FA9TESTD**	1.40	35,5	3.66 - 9.00	93 - 228	32.0



Cylinder-Pump Sets

Hydraulic cylinders, jacks and lifting wedges can also be used to assist in pipeline positioning and aligning.

Page: **6**



Pipe Flange Face Tool

The portable, hand powered tool **FF120** makes even the hardest to reach pipe flanges resurfaceable in a safe and convenient way.

Page: **322**

▼ *The FA-Series – the faster, simpler and safer way to align flanges.*



▼ FSC14, FSM8 and FSH14 with safety blocks SB1



Practical, portable and lightweight

- **Unique interlocking wedge design no first step bending and risk of slipping out of joint**
- **Requires very small access gap of only 0.24 inch**
- **Few moving parts mean durability and low maintenance**
- **Safety block SB1 included with FSC14, FSH14 and FSM8**
- **Ratchet spanner SW22 included with FSM8 mechanical spreader**
- **Single-acting cylinder included with FSH14 hydraulic spreader.**



FSC14 with integrated hand pump

Powered by a built-in hydraulic hand pump, the FSC14 is a ready-to-use tool – no making or breaking hydraulic connections. This compact tool delivers 14 US tons of force and requires a clearance gap as small as 0.24 inch.



Stepped Blocks FSB1

Use stepped blocks to increase wedge opening up to 3.16 inch. Fits both FSC, FSH and FSM-models.



AM-Series Control Manifolds

For simultaneously and even spreading of flange joints, 180° apart with FSH14.

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Flange Maintenance Tools

Secure-Grip and Zero-Gap flange speading tools for application on flanges with a zero or small gap.

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▼ *Two FSH14 spreaders used simultaneously with Enerpac handpump, hoses and AM21 control manifold.*



Flange Spreading Wedges

The flange spreading tools have been developed to aid and simplify the maintenance of flange joints. No longer will those tasked with separating flanges have to rely on using ropes and pulleys, podgers, tirfors, come-alongs or hammers – there is a safe, quick and effective alternative, the Enerpac range of spreaders.

These spreaders use mechanical and hydraulic principles for separating flanges and can spread small, medium or large flange joints. Tool selection is made on the basis of the access gap between the flange faces, the flange size and the required scope of work.

FSC, FSH, FSM Series



Tip Clearance / Maximum Spread [1]:
0.24 / 3.16 inches

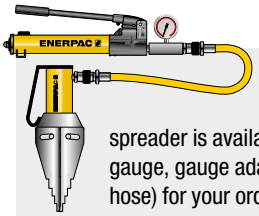
Maximum Spread Force:
8 - 14 tons

Maximum Operating Pressure:
10,000 psi (FSH14)



Safety Lanyard FSC1

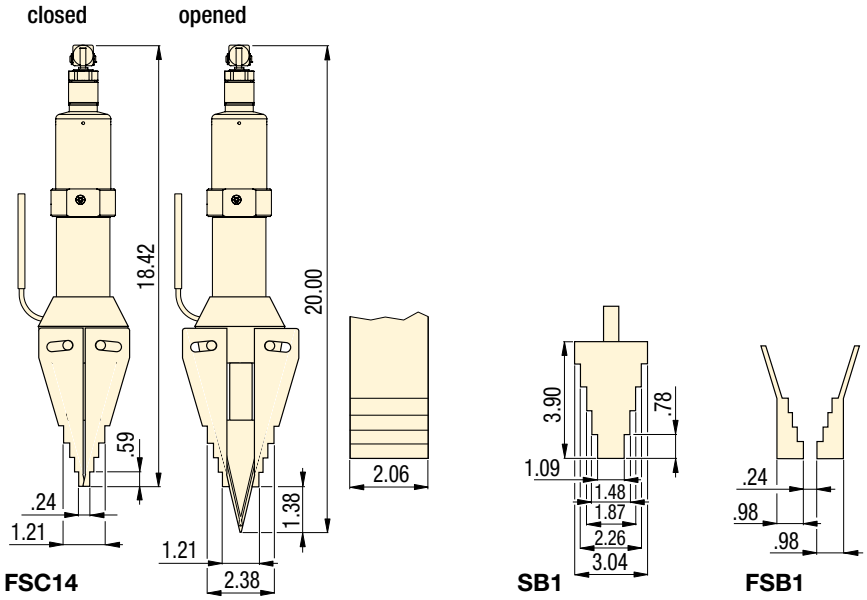
Recommended safety accessory to compliment bolting apllications. Includes steel cable with carabiners.



Tool-Pump Sets

The hydraulic flange spreader is available as **set** (pump, tool, gauge, gauge adaptor, couplers and hose) for your ordering convenience.

Spreader Model No.	Handpump Model No.	Set Model Number
FSH14	P392	**STF14H**



Maximum Spreading Force (tons)	Model Number	Tip Clearance (in)	Maximum Spread [1] (in)	Spreader Type	Oil Capacity (in³)	(lbs)
14	**FSC14**	0.24	3.16	Integral hydraulics	–	19.8
14	**FSH14 ***	0.24	3.16	External hydraulics	4.76	15.7
8	**FSM8**	0.24	3.16	Mechanical	–	14.3

[1] Using stepped blocks FSB1.
* Available as pump-tool set, see note on this page.

▼ *Flange maintenance and joint separation with FSH14 Hydraulic Wedge Spreader.*



▼ Shown from left to right: **NC3241, NC1019, NC1924**

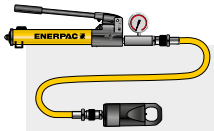


The safest and easiest way to remove corroded and frozen nuts

- **Compact and ergonomic design, easy to use**
- **Unique angled head design**
- **Two-blades design (NC-D models) for time saving operation – nuts are split from two sides in one action**
- **Single-acting, spring-return cylinder**
- **Heavy-duty chisels can be reground**
- **Nut splitters include spare chisel, spare set screw and wrench used to secure the chisel.**
- **CR400 female half coupler is standard.**

▼ *Enerpac hydraulic nut splitters – the safest and easiest way to remove corroded and frozen nuts.*





Tool-Pump Sets

Hydraulic Nut Splitters are available as sets (pump, tool, gauge, gauge adaptor, couplers and hose) for your ordering convenience.

Nut Splitter Model No.	Hand Pump Model No.	Nut Splitter Set Model Number
NC1924	P392	**STN1924H**
NC2432	P392	**STN2432H**
NC3241	P392	**STN3241H**



High-Pressure Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

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GA45GC Gauge Adaptor Assembly

Protect yourself from system overloading by simply ordering one part number for a pre-assembled gauge, adaptor block and coupler.

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Single-Acting Hydraulic Nut Splitters

Frozen or Corroded Nuts

Often nuts are difficult to remove, while loosening using tightening tools is possible, it generally requires larger equipment and is time consuming.
The use of cutting torches or hammers and chisels can cause damage to the joint components, requires significantly longer setup and operational time, and can present a potential safety risk.

Hydraulic Nut Splitters

Nut splitting with the Enerpac Hydraulic Nut Splitters is the safest method. It takes less time and avoids costly damage to joint components. The head design fitted with heavy-duty chisels permits the splitting of nuts on a wide variety of applications. With the two blades models nuts are split from two side in one action.

NC, STN Series



Bolt Range:
5/16 - 1 7/8 inches

Hexagon Nut Range:
0.50 - 2.88 inches

Capacity:
5 - 90 tons

Maximum Operating Pressure:
10,000 psi

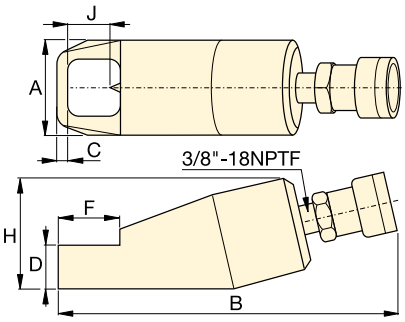
IMPORTANT!

These nut splitters are only designed for **grade 8 metal nuts** which match sizes shown in the specifications chart. These are not suited for square, star, round or stainless steel nuts. Maximum allowable hardness of nuts to be split is HRc-44.

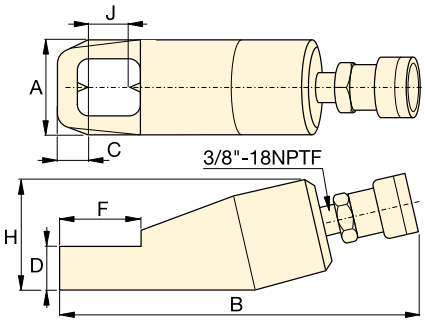
For materials and sizes not specified, contact Enerpac Technical Services.

For Nut Splitter Model No.	Replacement Chisel Model Numbers	
	Moving	Static
NC1019	**NCB1019**	–
NC1924	**NCB1924**	–
NC2432	**NCB2432**	–
NC3241	**NCB3241**	–
NC4150	**NCB4150**	–
NC5060	**NCB5060**	–
NC6075	**NCB6075**	–

For Nut Splitter Model No.	Replacement Chisel Model Numbers	
	Moving	Static
NC1019	**NCB1019**	–
NC1924	**NCB1924**	**NCB1924D**
NC2432	**NCB2432**	**NCB2432D**
NC3241	**NCB3241**	**NCB3241D**
NC4150	**NCB4150**	**NCB4150D**
NC5060	**NCB5060**	**NCB5060D**
NC6075	**NCB6075**	**NCB6075D**



Single Blade Models (NC)



Double Blade Models (NC-D)

	Bolt Range (in)	Hexagon Nut Range (in)	Maximum Cutting Force (tons)	Oil Capacity (in^3)	Model Number	Dimensions (in) A	B	C	D	F	H	J	Weight (lbs)
	5/16 - 1/2	0.50 - 0.75	5	0.92	**NC1019**	1.57	6.69	0.27	0.75	1.10	1.89	0.83	1.8
	1/2 - 5/8	0.75 - 0.94	10	1.22	**NC1924** *	2.13	7.52	0.32	1.02	1.57	2.44	0.98	4.4
	5/8 - 7/8	0.94 - 1.13	15	3.66	**NC2432** *	2.52	8.74	0.39	1.22	2.01	2.83	1.30	6.6
	7/8 - 1 1/8	1.13 - 1.56	20	4.88	**NC3241** *	2.95	9.61	0.67	1.42	2.60	3.46	1.69	9.7
	1 1/8 - 1 3/8	1.56 - 2.00	35	9.46	**NC4150**	3.70	11.34	0.83	1.77	2.91	4.13	2.13	18.0
	1 3/8 - 1 1/2	2.00 - 2.25	50	14.64	**NC5060**	4.17	12.52	0.91	2.13	3.54	5.04	2.36	26.0
	1 1/2 - 1 7/8	2.38 - 2.88	90	30.00	**NC6075**	6.14	15.47	1.02	2.83	4.33	7.13	3.15	75.1
	1/2 - 5/8	0.75 - 0.94	10	1.22	**NC1924D**	2.13	6.61	0.87	0.89	1.97	2.60	1.02	8.4
	5/8 - 7/8	0.94 - 1.13	15	3.66	**NC2432D**	2.52	10.83	0.89	1.22	2.56	3.07	1.30	11.9
	7/8 - 1 1/8	1.13 - 1.56	20	4.88	**NC3241D**	3.03	12.00	1.22	1.46	3.15	3.54	1.69	15.9
	1 1/8 - 1 3/8	1.56 - 2.00	35	9.46	**NC4150D**	3.70	13.54	1.54	1.77	3.66	4.37	2.05	30.4
	1 3/8 - 1 1/2	2.00 - 2.25	50	14.64	**NC5060D**	4.17	15.20	1.69	2.13	4.21	5.16	2.44	41.0
	1 1/2 - 1 7/8	2.38 - 2.88	90	30.00	**NC6075D**	6.14	18.74	2.13	2.95	5.24	7.32	3.03	94.6

* Available as Tool-Pump Set, see note on page 316.

▼ Shown from left to right: **NSH1927, NSC1927**



Designed to meet the challenges of bolted pipeline flange joints

- **NSC-Series with built-in small hand pump – useful for subsea applications and working at heights**
- **Quick and easy cutting tip replacement**
- **Drop-tested revolving anchor point and safety lanyard**
- **Revolving composite handle for vibration and shock isolation**
- **Nut Splitters include set of hexagon keys and following spare parts:**
  – cutting tip,
  – tip retention screw,
  – spare alignment screw
- **CR400 female half coupler with dust cap is standard (NSH).**



NSC-Series Nut Splitters with integral hand pump

Powered by a built-in hydraulic hand pump, the NSC-Series are a ready-to-use tool – no need for hose, separate hand pump or couplings.



Carry Case

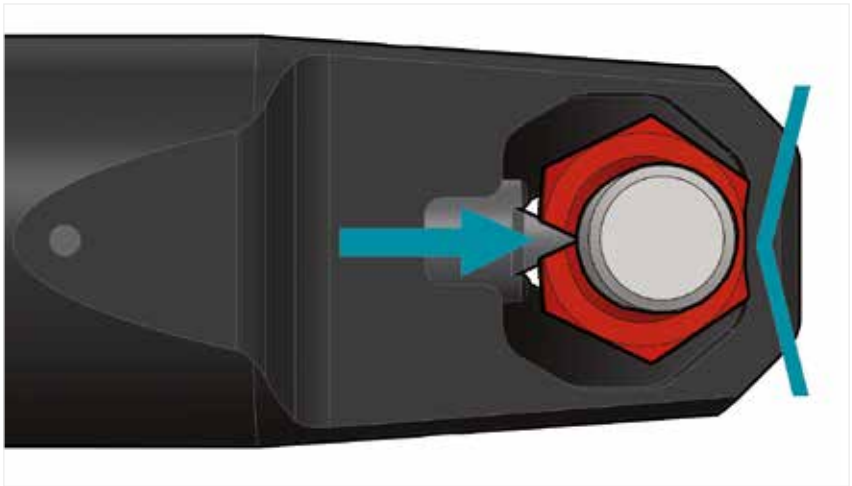
Nut splitters (up to NSH6575) come in a carry case for portability and easy storage.



Safety Lanyard FSC1

Standard Safety Lanyard with each nut splitter. Includes steel cable with carabiners.

▼ *The sharp cutting tip and opposing convex reaction point encourages more efficient splitting by spreading the nut open rather than squashing the nut onto the stud. This makes it easier to rotate the nut for the second cut.*





Single-Acting Integral & Hydraulic Nut Splitters

Frozen or Corroded Nuts

Often nuts are difficult to remove, while loosening using tightening tools is possible, it generally requires larger equipment and is time consuming.

The use of cutting torches or hammers and chisels can cause damage to the joint components, requires significantly longer setup and operational time, and can present a potential safety risk.

Hydraulic Nut Splitters

Nut splitting with the Enerpac Hydraulic Nut Splitters is the safest method. It takes less time and avoids costly damage to joint components. The head design fitted with heavy-duty chisels permits the splitting of nuts on a wide variety of applications.

NSC, NSH Series

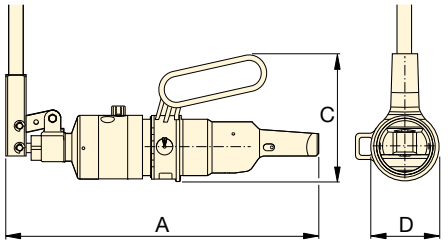


Bolt Range:
½ - 1⅞ inches

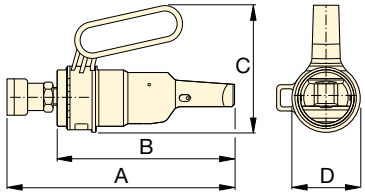
Hexagon Nut Range:
0.75 - 2.95 inches

Capacity:
12 - 50 tons

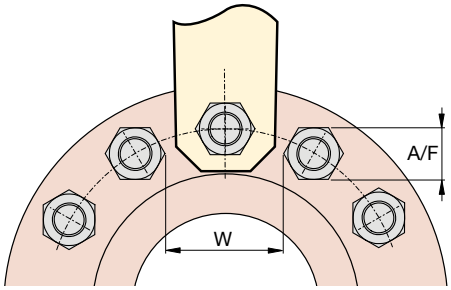
Maximum Operating Pressure:
10,000 psi (NSH-Series)

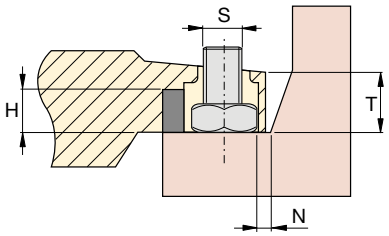


NSC



NSH







High-Pressure Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

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Joint Separation Tools

Flange Spreading Wedges (FSC, FSH, FSM-Series) provide quick and easy joint separation using hydraulic or mechanical force.

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▼ NUT SPLITTER SPECIFICATIONS

Bolt Range (in)	Hexagon Nut Range A/F (in)	Maximum Cutting Force (tons)	Oil Capacity (in^3)	Model Number	Nut Splitter Type	Dimensions (in) A	B	C	D	H max.	N min.	S max.	T	W min.	Weight (lbs)	Cutting Tip Service Kit Model No.
½ - ⅝	0.75 - 1.06	12	–	**NSC1927**	Integral pump	13.9	–	6.0	3.2	0.71	0.45	0.96	1.04	2.11	12.8	**NSH1927CTK**
¾ - ⅞	0.94 - 1.26	15	–	**NSC2432**	Integral pump	14.6	–	6.0	3.2	0.98	0.35	1.04	1.26	2.26	13.9	**NSH2432CTK**
½ - ⅝	0.75 - 1.06	12	2.8	**NSH1927**	Hydraulic	10.1	8.4	6.0	3.2	0.71	0.45	0.96	1.04	2.11	7.7	**NSH1927CTK**
¾ - ⅞	0.94 - 1.26	15	2.8	**NSH2432**	Hydraulic	10.4	8.7	6.0	3.2	0.98	0.35	1.04	1.26	2.26	8.8	**NSH2432CTK**
⅞ - 1⅛	1.42 - 1.81	20	4.9	**NSH3646**	Hydraulic	11.4	9.4	6.7	3.7	1.34	0.63	1.53	1.73	3.20	15.2	**NSH3646CTK**
1¼ - 1⅝	2.00 - 2.56	36	14.0	**NSH5065**	Hydraulic	14.8	12.7	8.3	7.3	1.77	0.90	1.93	2.05	4.25	24.0	**NSH5065CTK**
1⅝ - 1⅞	2.56 - 2.95	50	20.0	**NSH6575**	Hydraulic	15.6	13.6	8.7	7.9	2.15	1.06	2.40	2.56	5.31	54.0	**NSH6575CTK**

Ordering Notes: Maximum allowable hardness to split is ASTM A194 Gr 2H. Not to be used on square nuts or stainless steel.

▼ Shown: **NSH31 with NSPH3, NSH41 with NSPH4**



Versatile, reliable and trouble-free operation

- **Designed to fit standard BS/ANSI flanges**
- **Blade positioning scale to eliminate bolt damage**
- **Adjustable cutting depth**
- **Ergonomically designed and positioned handle**
- **Interchangeable power heads with cutting blade**
- **Single-acting, spring-return power head (NSPH)**
- **Double-acting power head (NSPH-D) for subsea operation**
- **Nut splitters include spare chisel, spare set screw and wrench used to secure the chisel**
- **CR400 female half coupler standard on single-acting NSPH**
- **CR400 + CH604 couplers standard on double-acting NSPH-D.**

ATEX certified

- **All NSH cutting head and NSPH power head combinations are CE - ATEX certified.**



Blade Positioning Scale

The pwer head can be adjusted to preset the blade cutting distance in order to prevent damage to the bolt thread as the nut is cut.

The blade positioning scale can be used with the following bolt and nut forms:

- Unified bolt threads (UN) with heavy series hexagon nuts;
- Metric bolt threads (M) with standard series hexagon nuts.



Steel Hand Pumps

The **P80** and **P84** two-speed hand pumps are ideal to operate nut splitters. The P84 can be used to power the double-acting tools.

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High-Pressure Hoses

Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

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Single- and Double-Acting Hydraulic Nut Splitters

Hydraulic Nut Splitters

These Hydraulic Nut Splitters are the ideal tools for removing seized and corroded nuts, eradicating the need for unsafe grinding or flame cutting.

They are designed with a single-acting, spring-return cylinder and boast a 360 degree rotation, lockable handle improving operator safety.

The heavy-duty blades can also be easily removed to enable replacement blades to be fitted.

Operator Safety

To improve operator safety an ergonomic, adjustable handle is available which can be easily fitted to the Nut Splitter.
This lightweight, durable accessory can prevent injuries such as trapped fingers by eliminating the need to hold the tool itself.

ATEX Certified: Ex II 2 G c T6

These Nut Splitters are tested and certified to conform to the 94/9/EC "ATEX Directive".
The explosion protection is for Equipment Group II, Equipment Category 2 (Hazardous Zone Area 1) in Gas and/or Dust atmospheres.

NSH Series

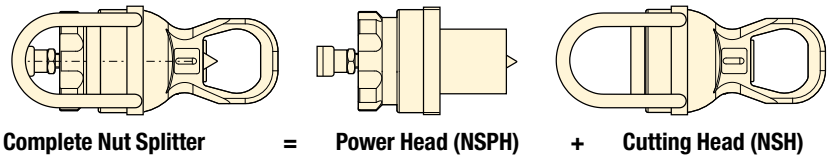


Bolt Range:
1¾ - 3½ inches

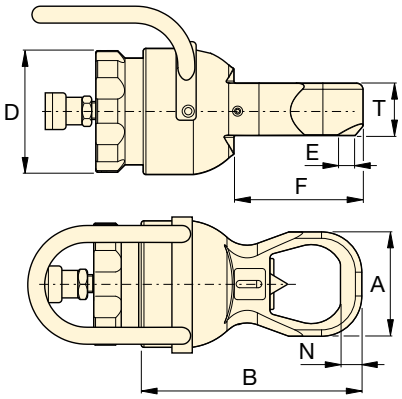
Hexagon Nut Range:
2¾ - 5⅜ inches

Maximum Cutting Force:
115 - 195 tons

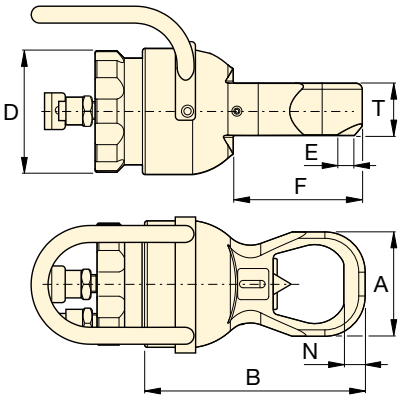
Maximum Operating Pressure:
10,000 psi



Complete Nut Splitter = **Power Head (NSPH)** + **Cutting Head (NSH)**



NSPH + NSH



NSPH-D + NSH



Joint Separation Tools

Flange Spreading Wedges (FSC, FSH and FSM-Series) provide quick and easy joint separation using hydraulic or mechanical force.

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For Power Head Model Number		Cutting Tip Service Kit Model Number
NSPH3	NSPH3D	NSPH3CTK
NSPH4	NSPH4D	NSPH4CTK

▼ NUT SPLITTER SPECIFICATIONS

Bolt Range	Hexagon Nut Range	Maximum Cutting Force	Oil Capacity	Model Numbers Nut Splitter Components					Dimensions (in)							Cutting + Power Head (lbs)
				Cutting Head		Power Heads										
						Single-acting	Double-acting									
(in)	(in)	(tons)	(in^3)		(lbs)			(lbs)	A	B	D	E	F	N	T	
1¾ - 2	2¾ - 3⅛	115	33.5	**NSH31**	44.1	**NSPH3**	**NSPH3D**	48.5	5.2	12.1	7.5	0.3	7.4	1.1	3.2	92.6
1¾ - 2¼	2¾ - 3½	115	33.5	**NSH32**	46.3	**NSPH3**	**NSPH3D**	48.5	5.9	12.7	7.5	0.6	7.9	1.2	3.2	94.8
1¾ - 2½	2¾ - 3⅞	115	33.5	**NSH33**	48.5	**NSPH3**	**NSPH3D**	48.5	6.3	13.0	7.5	0.4	7.9	1.3	3.2	97.0
1¾ - 2¾	2¾ - 4¼	115	33.5	**NSH34**	48.5	**NSPH3**	**NSPH3D**	48.5	6.8	13.5	7.5	0.4	8.0	1.4	3.2	97.0
2¾ - 3	4¼ - 4⅝	195	67.0	**NSH41**	69.9	**NSPH4**	**NSPH4D**	83.8	7.4	14.5	9.3	0.2	9.1	1.4	4.4	153.7
2¾ - 3½	4¼ - 5⅜	195	67.0	**NSH42**	95.9	**NSPH4**	**NSPH4D**	83.8	8.6	15.5	9.3	0.1	9.7	1.4	4.4	179.7

Ordering Notes: Maximum allowable hardness to split is ASTM A194 Gr 2H. Not to be used on square nuts or stainless steel.

▼ FF120



Safe, efficient and accurate refacing of flat pipe flange surfaces

- **Makes refacing easy – hand-operated machine tool can be set up anywhere without the need for air, electric or hydraulic power**
- **Lightweight and portable (33 lbs in storage box)**
- **Adjustable cutting head for reface of flat flange surfaces of pipes with flange outside diameter facing range 1 - 12 inches (25,4 - 304,8 mm)**
- **Interchangeable collets for ID mounting range 1-6 inches (25,4 - 152,4 mm) allow the user to work on many different flanges with minimal time between set-ups**
- **Interchangeable lead screws suitable for refacing damaged raised-face (RF) or flat-face (FF) joint flanges**
- **Tool body with expanding collets centers itself providing real concentric operation.**

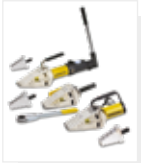
▼ *The Enerpac FF120 used to face a pipe flange.*





Complete in Wheeled Carrying Case

The **FF120** comes as portable set (33 lbs). Can be transported, easy set-up and operated by a single technician. Set includes:
FFL-kit with locators, O-Rings and extensions;
FSS-kit with feed screw and nut ½"-20 UN for surface roughness Ra 64 - 96 µin.
FSF-kit with feed screw and nut ½"-11 UNF for surface roughness Ra 125 - 250 µin..



Joint Separation Tools

FSC, FSH and FSM-Series parallel wedge spreaders provide quick and easy joint separation using hydraulic or mechanical force.

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Flange Alignment Tools

The FA-Series provide safe and high-precision flange alignment tools that fit most commonly used ANSI, API, BS and DIN flanges.

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Controlled Tightening and Loosening

Use Enerpac Bolting Tools to seal the joint to the precise torque or tension required: torque multipliers, torque wrenches and hydraulic bolt tensioners.

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QuickFace – Mechanical Pipe Flange Face Tool

Mechanical Flange Face Tool

Portable, hand-operated tool makes even the hardest to reach pipe flanges resurfaceable in a safe and convenient way.

Makes refacing easy

A simple and cost-effective solution – the FF120 turns a two man operation with heavy equipment, compressors and portable generators into a one man job.

The FF120 has interchangeable lead screws that make it suitable for resurfacing damaged flat-faced or raised-face joint flanges to the high safety standards required.

FF120 is not suitable for lens-ring joint flanges or ring type joint (RTJ) flanges.

After selecting the correct lead screw for the operation, the tool body is inserted in the pipe end and centres itself with adjustable locators to provide real concentric operation.

The tool arm is then rotated by hand using a worm-gear mechanism to provide a perfect spiral "gramophone" finish.
The tool can be adjusted with a calibrated slide to define cut depth and the correct finish.

Surface finish & accuracy

A serrated finish with 30-55 grooves per inch and a resultant roughness of between Ra 125-500 micro inches (3,2-12,5 µm). The FF120 has same precision and quality of finish as a lathe.

Cost-effective solution

Small and portable enough to be a permanent addition to your equipment range, Enerpac's FF120 is the perfect solution to all of your small diameter facing problems.

For more Flange Facing Machines, see page 381.

FF Series



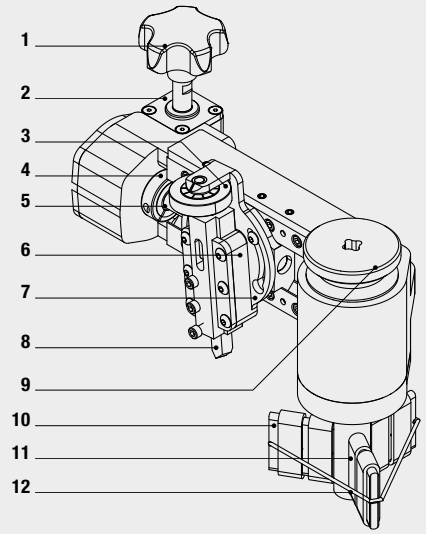
Pipe Flange Cutting Diameter Range:
ø 1 - 12" / 25 - 305 mm

Internal Pipe Mounting Range:
ø 1 - 6" / 25 - 152 mm

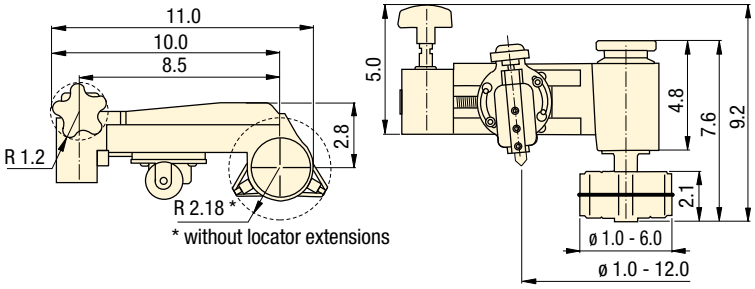
Cutting Resultant Roughness:
Ra 125-500 µin (3,2-12,5 µm)



1. Hand-operated cold work tool – no need for external power and hot work permits.
2. Calibrated cross slide for accurate cutting control.
3. Adjustable cutting head for reface of flat flange surfaces of pipes with flange OD facing range ø 1-12 inches (25,4-304,8 mm).
4. Interchangeable lead screws enable selection of surface finish between Ra 125-500 µin (3,2-12,5 µm).
5. Utilizes standard 3/8 inch or 10 mm tool steel.
6. Range of interchangeable collets allow the tool to accommodate ø 1 - 6 inches (25,4 - 152,4 mm) pipe internal diameter.
7. Tool body with expanding collets centers in the bore ensuring concentric and accurate set-up.



1. Feed Knob
2. Gear Box
3. Cutting Depth Adjustment with indicator: .005 inch (0,127 mm) per mark
4. Locking Collar
5. Lead/Feed Screw
6. Tool Block
7. Swivel Slide
8. HSS 3/8" Tool Bits
9. Mandrel Locking Knob
10. Locator Extensions
11. Adjustable Locators
12. O-Ring



▼ *The Enerpac FF120 QuickFace has same precision and quality of finish as a lathe.*



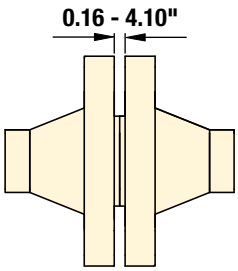
▼ SELECTION CHART

Pipe Flange Cutting Diameter Range		Internal Pipe Mounting Diameter Range		Cutting Resultant Roughness	Model Number	
(inch)	(mm)	(inch)	(mm)	(Ra µin)		(lbs)
1.0 - 12.0	25,4 - 304,8	1.0 - 6.0	25,4 - 152,4	125 - 500	**FF120**	15

The Equalizer™ range of patented flange spreading tools have been developed to aid and simplify the maintenance of flange joints. No longer will those tasked with separating flanges have to rely on using ropes and pulleys, podgers, tirfors, come-alongs or hammers – there is a safe, quick and effective alternative, the Equalizer™ range of spreaders.

These spreaders use mechanical and hydraulic principles for separating flanges and can spread small, medium or large flange joints. Tool selection is made on the basis of the access gap between the flange faces, the flange size and the required scope of work.

SWi-Series Flange Spreading Wedges:

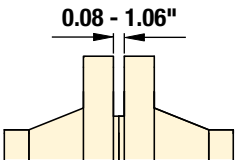


An innovative flange spreading wedge for use on small, medium or large flange joints with a minimum access gap of 0.16 inch. The SWi range includes ATEX approved options.

The SWi range has set the new standard for spreading flange joints powerfully, efficiently, effectively and safely. The tools offer the following features and benefits:

- Wider spreading - using the Standard Stepped Block accessories means the SWi range offers up to 30% more flange spreading distance than a traditional SW tool.
- Unrivalled power - the tools now offer up to 27 tons of spreading force when used in pairs, which provides additional confidence when spreading.
- Narrower jaws - the SWi5T tools are only 1.97 inches wide to help them fit more easily between flange bolts.
- Fully rotational handle – the handle swivels 360-degrees around the wedge head, so that the SWi tools can be used comfortably in all orientations.
- Easier maintenance – end-users will appreciate the ease with which the tools can be maintained. The supplied hex-key and a two step-process is all that's required to disassemble and reassemble the tools.
- No pinch points – the SWi range of tools has been engineered to overcome finger pinch-points.

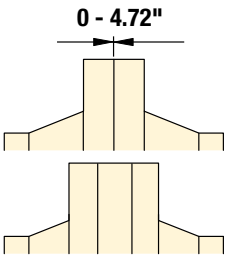
MG-Series Flange Spreading Tool:



A mechanical tool for small diameter, low pressure flanges with a minimum access gap of 0.08 inch.

For use on smaller, lower pressure flange joints, this portable and flexible tool can be assembled in two alternative configurations that gives it twice the application range from one tool. The tool is locked onto the flange joint by the spreading bar preventing the risk of it falling from the flange joint.

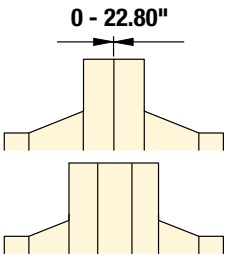
SG-Series Flange Spreading Tools:



A unique flange spreader, ideal for situations where there is no access gap, or where there is a spacer, a wafer or butterfly valve positioned between the flanges.

Equalizer's unique Secure-Grip tools spread by locking into the flange bolt holes and pulling the mating flanges away from each other, the Secure Grip flange spreaders are locked on to the flanges when under load making them arguably the world's safest flange spreading tools.

VC-Series Valve Change-Out Tools:



Using the same technology as the SG flange spreaders the VC range has been developed for valve removal applications.

The Equalizer™ VC Range of Valve Change-Out tools has been developed to assist in the removal of valves, spades/spacers or gaskets from large flange joints. The span of the tool is longer than a standard Secure-Grip Flange Spreader and is adjustable to enable the tool to operate in a range of applications.

Flange Maintenance Tools – Overview

Capacity (US tons)	Spreading Distance (inches)	Tool Type and Function	Series		Page
8.7 - 27.0	0.16 - 4.10	**Flange Spreading Tools and Kits** Flange Spreading Wedges	SWi		326 ▶
15.7 - 27.0	0.24 - 4.10	**Flange Spreading Tools and Kits** Flange Spreading Wedges, ATEX-Certified	SWi		328 ▶
4.2 - 16.9	0 - 4.53	**Flange Spreading Tools and Kits** Hydraulic and Mechanical	SG		330 ▶
20.2 - 28.1	0 - 4.72	**Flange Spreading Tools and Kits** Hydraulic	SG		332 ▶
11.2	0 - 22.80	**Flange Spreading Tools and Kits** Secure-Grip Valve Change-Out Tools, Hydraulic	VC		334 ▶
7.6	0.08 - 1.06	**Flange Spreading Tool and Kit** Mechanical	MG		336 ▶
11.2	22.40 - 0	**Flange Pulling Tool** Hydraulic	FC		337 ▶
4.5 - 30.3	1.70 - 2.60	**Flange Alignment Tools and Kits** Wind Turbine Tower Flange Alignment Tools Hydraulic and Mechanical	TFA		338 ▶
.08 - .26 gal. 2-Speed	–	**Hydraulic Sealed Hand Pumps** Standard and ATEX-Certified	HP		339 ▶
6.5 - 19.6 ft	–	**Hydraulic Hoses** Standard and ATEX-Certified	144 302		339 ▶



Flange Alignment Tools

The FA-Series provide safe and high-precision flange alignment tools that fit most commonly used ANSI, API, BS and DIN flanges.

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The Flange Tool Guru

Visit **www.enerpac.com** for the online software to help select the most applicable tool based on the your flange.

▼ SWi5TI-S



SWi Series

FLANGE SPREADING WEDGES

Spreading Force:
8.7 - 27 tons

Spreading Distance:
0.16 - 4.10 inches

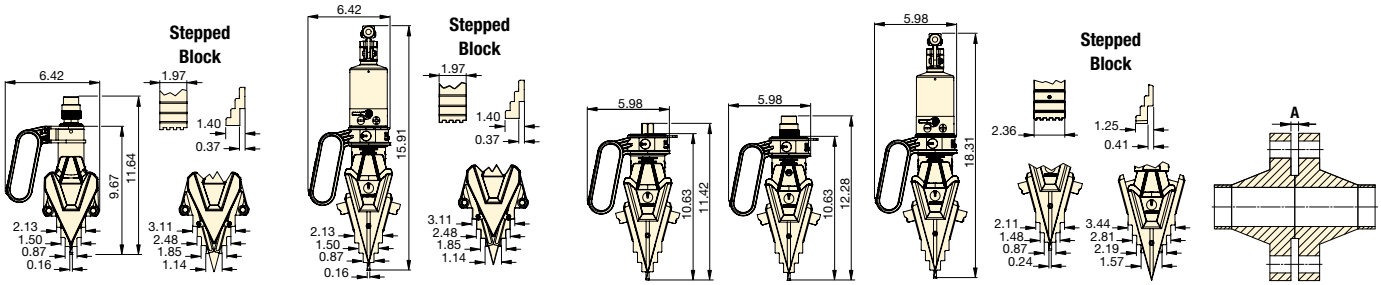
Maximum Operating Pressure:
10,000 psi *

* Only relevant for hydraulic tools.

- **Practical, portable and lightweight**
- **Revolving handle to aid horizontal or vertical spreading**
- **Removable handle for improved access**
- **No finger pinch-point**
- **Increased step-depth on upper steps**
- **Safety lanyard – 39 inches length**
- **Forged key components for strength and reliability**
- **Rapid disassembly and assembly**
- **Narrow jaw teeth – improved tool wear.**

Caution

A minimum of two Flange Spreading Tools must be used when opening flange joints. This will enable the operator to maintain an equal spreading distance across the flange faces.



Model Number Tool Kit	Type	Maximum Spreading Force Per Tool (tons)	Maximum Spreading Distance * (in)	Flange Dimensions Minimum Access Gap A (in)	Jaw Width (in)	Tool Weight (lbs)	Kit Weight (lbs)	Case Dimensions (in)	Tool Number
SWi5TE-S	External Hydraulic	8.7	4.0	0.16	1.97	11.4	19.1	22.8 x 13.4 x 7.1	SWi5TE
SWi5TE-T	External Hydraulic	8.7	4.0	0.16	1.97	11.4	31.7	22.8 x 13.4 x 7.1	SWi5TE
SWi5TI-S	Integral Hydraulic	8.7	4.0	0.16	1.97	15.4	23.1	22.8 x 13.4 x 7.1	SWi5TI
SWi1214TMSTDSPB	Mechanical	15.7	4.1	0.24	2.40	13.7	28.7	22.8 x 13.0 x 6.5	SWi12/14TM
SWi2025TEMINSPB	External Hydraulic	27.0	4.1	0.24	2.40	14.1	25.6	22.8 x 13.0 x 6.5	SWi20/25TE
SWi2025TESTDSPB	External Hydraulic	27.0	4.1	0.24	2.40	14.1	45.6	36.2 x 19.7 x 8.1	SWi20/25TE
SWi2025TEMAXSPB	External Hydraulic	27.0	4.1	0.24	2.40	14.1	72.8	36.2 x 19.7 x 8.1	SWi20/25TE
SWi2025TISTDSPB	Integral Hydraulic	27.0	4.1	0.24	2.40	18.7	20.4	22.8 x 13.0 x 6.5	SWi20/25TI

* Using stepped blocks.

SWi5TE - Hydraulic Flange Spreading Wedge

SWi5TE-S - SWi5TE S Kit



1 x SWi5TE Flange Spreading Tool
1 x Standard Safety Block
1 x Lanyard
1 x Moulded Plastic Carry Case with Protective Foam Inserts

SWi5TE-T - SWi5TE T Kit



2 x SWi5TE Flange Spreading Tools
2 x Standard Safety Blocks
2 x Lanyards
1 x Moulded Plastic Carry Case with Protective Foam Inserts

1640016-01 - SWi5TE Stepped Block Kit



1 x Pair of SWi5TE Stepped Blocks
2 x M6 CSK Hex Screw
2 x Retaining Washer
1 x SWi5TE Large Safety Block
2 x Hex Key

SWi12/14TM - Mechanical Flange Spreading Wedge

SWi1214TMSTDSPB - SWi12/14TM STD Kit



1 x SWi12/14TM Flange Spreading Tool
1 x Torque Wrench with 22 mm Socket
1 x Set of Safety Blocks
1 x Pair of Stepped Blocks
1 x Lanyard
1 x Hex Key
1 x Moulded Plastic Carry Case

SWi20/25TE - Hydraulic Flange Spreading Wedge

SWi2025TEMINSPB - SWi20/25TE MIN Kit



1 x SWi20/25TE Flange Spreading Tool
1 x Set Safety Blocks
1 x Pair of Stepped Blocks
1 x Lanyard
1 x Hex Key
1 x Moulded Plastic Carry Case

SWi2025TESTDSPB - SWi20/25TE STD Kit



1 x SWi20/25TE Flange Spreading Tool
1 x 10,000 psi Hydraulic Hose, 6.5 ft with 90° Elbow
1 x 10,000 psi HP350S Single-Port Sealed Hand Pump with Gauge
1 x Set Safety Blocks
1 x Pair of Stepped Blocks
1 x Lanyard
1 x Hex Key
1 x Moulded Plastic Carry Case

SWi2025TEMAXSPB - SWi20/25TE MAX Kit



2 x SWi20/25TE Flange Spreading Tools
2 x 10,000 psi Hydraulic Hoses, 6.5 ft with 90° Elbow
1 x 10,000 psi HP550D Twin-Port Sealed Hand Pump with Gauge
2 x Set Safety Blocks
2 x Pair of Stepped Blocks
2 x Lanyards
2 x Hex Keys
1 x Moulded Plastic Carry Case

SWi5TI - Integral Hydraulic Flange Spreading Wedge

SWi5TI-S - SWi5TI-S Kit



1 x SWi5TI Flange Spreading Tool
1 x Standard Safety Block
1 x Lanyard
1 x Moulded Plastic Carry Case with Protective Foam Inserts

1640016-01 - SWi5TE Stepped Block Kit



1 x Pair of SWi5TE Stepped Blocks
2 x M6 CSK Hex Screw
2 x Retaining Washer
1 x SWi5TE Large Safety Block
2 x Hex Key

SWi20/25TI - Integral Hydraulic Flange Spreading Wedge

SWi2025TISTDSPB - SWi20/25TI STD Kit



1 x SWi20/25TI Flange Spreading Tool
1 x Set of Safety Blocks
1 x Pair of Stepped Blocks
1 x Lanyard
1 x Hex Key
1 x Carry-Strap
1 x Moulded Plastic Carry Case

▼ SWi20/25TEEX

ATEX CERTIFIED



SWi Series

ATEX CERTIFIED FLANGE SPREADING WEDGES

Spreading Force:
15.7 - 27.0 tons

Spreading Distance:
0.24 - 4.10 inches

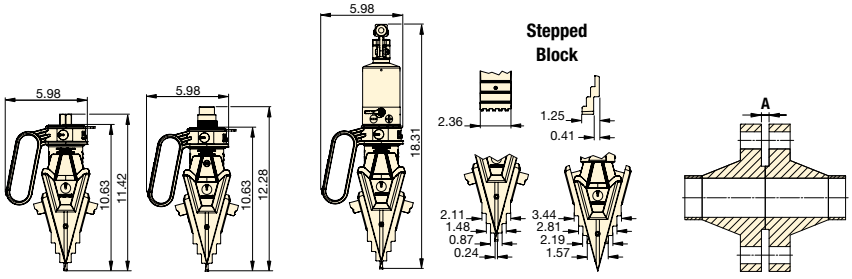
Maximum Operating Pressure:
10,000 psi *

* Only relevant for hydraulic tools.

- **ATEX certified**
- **Practical, portable and lightweight**
- **Revolving handle to aid horizontal or vertical spreading**
- **Removable handle for improved access**
- **No finger pinch-point**
- **Increased step-depth on upper steps**
- **Safety lanyard – 39 inches length**
- **Forged key components for strength and reliability**
- **Rapid disassembly and assembly**
- **Narrow jaw teeth – improved tool wear.**

Caution

A minimum of two Flange Spreading Tools must be used when opening flange joints. This will enable the operator to maintain an equal spreading distance across the flange faces.



SWi12/14TMEX closed | SWi20/25TEEX closed | SWi20/25TIEX closed | Tool closed | Tool open | Flange Dimensions

Model Number Tool Kit	Type	Maximum Spreading Force Per Tool (tons)	Spreading Distance Maximum * (in)	Flange Dimensions Minimum Access Gap A (in)	Jaw Width (in)	Tool Weight (lbs)	Kit Weight (lbs)	Case Dimensions (in)	Tool Number
SWi1214TMSTDEX	Mechanical	15.7	4.10	0.24	2.40	13.7	37.5	22.8 x 15.7 x 7.1	SWi12/14TMEX
SWi2025TEMINEX	External Hydraulic	27.0	4.10	0.24	2.40	14.1	33.1	22.8 x 15.7 x 7.1	SWi20/25TEEX
SWi2025TESTDEX	External Hydraulic	27.0	4.10	0.24	2.40	14.1	60.6	26.8 x 22.0 x 7.1	SWi20/25TEEX
SWi2025TEMAXEX	External Hydraulic	27.0	4.10	0.24	2.40	14.1	85.5	36.6 x 23.6 x 7.1	SWi20/25TEEX
SWi2025TISTDEX	Integral Hydraulic	27.0	4.10	0.24	2.40	18.7	38.6	22.8 x 15.7 x 7.1	SWi20/25TIEX

* Using stepped blocks.

SWi12/14TMEX -
ATEX Certified Mechanical Flange Spreading Wedge

II 2G Ex h IIB T5 Gb
II 2D Ex h IIIC T185°F Db

SWi1214TMSTDEX - SWi12/14TMEX STD Kit



1 x SWi12/14TMEX Flange Spreading Tool
1 x ATEX Torque Wrench with 22 mm Socket
1 x Set of Safety Blocks
1 x Pair of Stepped Blocks
1 x Lanyard
1 x Hex Key
1 x Aluminum Carry Case with Protective Foam Inserts

SWi20/25TIEX -
ATEX Certified Integral Hydraulic Flange Spreading Wedge

II 2G Ex h IIB T5 Gb
II 2D Ex h IIIC T212°F Db

SWi2025TISTDEX - SWi20/25TIEX STD Kit



1 x SWi20/25TIEX Flange Spreading Tool
1 x Set of Safety Blocks
1 x Pair of Stepped Blocks
1 x Lanyard
1 x Hex Key
1 x Carry-Strap
1 x Aluminum Carry Case with Protective Foam Inserts

SWi20/25TEEX -
ATEX Certified Hydraulic Flange Spreading Wedge

II 2G Ex h IIB T5 Gb
II 2D Ex h IIIC T212°F Db

SWi2025TEMINEX - SWi20/25TEEX MIN Kit



1 x SWi20/25TEEX Flange Spreading Tool
1 x Set Safety Blocks
1 x Pair of Stepped Blocks
1 x Lanyard
1 x Hex Key
1 x Aluminum Carry Case with Protective Foam Inserts

SWi2025TESTDEX - SWi20/25TEEX STD Kit



1 x SWi20/25TEEX Flange Spreading Tool
1 x 10,000 psi ATEX Hydraulic Hose, 6.5 ft with 90° Elbow
1 x 10,000 psi HP350S ATEX Single-Port Sealed Hand Pump with Gauge
1 x Set Safety Blocks
1 x Pair of Stepped Blocks
1 x Lanyard
1 x Hex Key
1 x Aluminum Carry Case with Protective Foam Inserts

SWi2025TEMAXEX - SWi20/25TEEX MAX Kit



2 x SWi20/25TEEX Flange Spreading Tools
2 x 10,000 psi ATEX Hydraulic Hose, 6.5 ft with 90° Elbow
1 x 10,000 psi HP550D ATEX Twin-Port Sealed Hand Pump with Gauge
2 x Set Safety Blocks
2 x Pair of Stepped Blocks
2 x Lanyards
2 x Hex Keys
1 x Aluminum Carry Case with Protective Foam Inserts

These tools have been designed for use in potentially explosive atmospheres which is:

- Group II (Non-mining equipment)
- Equipment **category 2** where explosive atmosphere is likely to occur in normal operation
- Can be applied in **zones 1 and 2** of gaseous explosive atmospheres and in **zones 21 and 22** of dust explosive atmosphere
- **Gas G** or **Dust D** with type of protection **Ex h** for non-electrical equipment
- Suitable for use with **Group IIB** of a gases and vapors (Ethylene group) and **Group IIIC** of dust (conductive dust)
- For hydraulic tools **T5** means that minimum ignition temperature of gas or vapor > **212°F** (> **100°C**); **T212°F** (**T100°C**) means that minimum ignition temperature of a dust cloud ≥ **302°F** (≥ **150°C**) and minimum ignition temperature of a 0.20 inch (5 mm) dust layer ≥ **347°F** (≥ **175°C**).
- For mechanical tools **T6** means that minimum ignition temperature of gas or vapor > **185°F** (> **85°C**); **185°F** (**T85°C**) means that minimum ignition temperature of a dust cloud ≥**261.5°F** (≥**127,5°C**) and minimum ignition temperature of a 0.20 inch (5 mm) dust layer ≥ **320°F** (≥ **160°C**).

These tools have been designed and manufactured in accordance with the following transposed harmonized European standards:

- **EN ISO 80079-36:2016** Explosive atmospheres - Part 36: Non-electrical equipment for explosive atmospheres - Basic method and requirements;
- **EN ISO 80079-37:2016** Explosive atmospheres - Part 37: Non-electrical equipment for explosive atmospheres - Non-electrical type of protection constructional safety "c", control of ignition sources "b", liquid immersion "k":

▼ SG11TM



- **For use on all flange types with bolt-hole sizes ranging from 0.69 to 2.44 inches**
- **Unique expanding collet technology**
- **Little or no access gap required**
- **Secure bolt-hole locking mechanism.**

Range of Application

For a detailed range of application please request the Secure-Grip Mechanical or Hydraulic Operator Instruction Sheet.

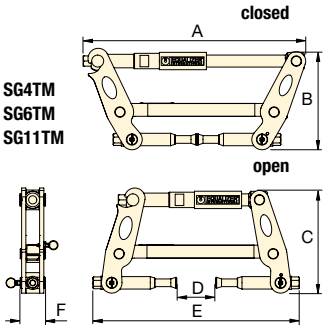
Caution

A minimum of two Flange Spreading Tools must be used when opening flange joints. This will enable the operator to maintain an equal spreading distance across the flange faces.

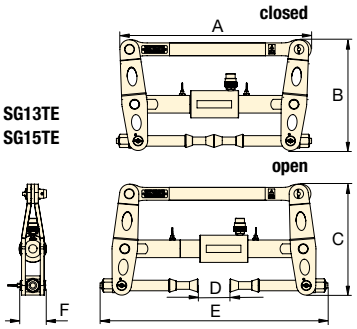
OPERATING BENEFITS

- **Time-saving, simple operation**
- **Measurable, controlled flange spreading force**
- **Virtually universal, the Secure-Grip Flange Spreader range covers ANSI, DIN, SPO, ASME, API and BS flanges.**

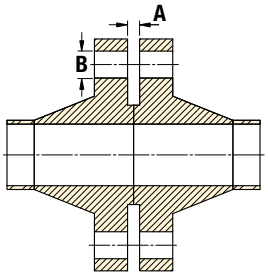
SG4TM
SG6TM
SG11TM



SG13TE
SG15TE



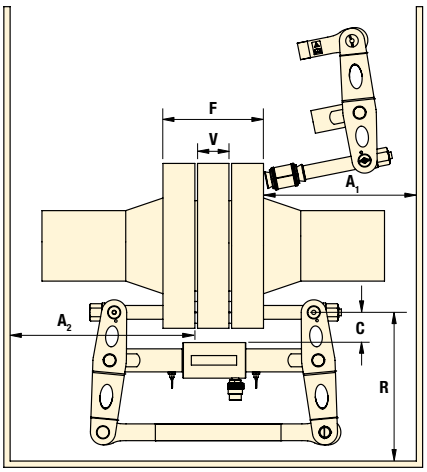
Flange Dimensions



Model Number Tool Kit	Type*	Maximum Spreading Force Per Tool (tons)	Spreading Distance Maximum (in)	Flange Dimensions (in)		Tool Dimensions (in)						Tool Weight (lbs)	Kit Weight (lbs)	Case Dimensions (lbs)	Tool Number
				Minimum Access Gap A	Bolt-hole Diameter B	A	B	C	D	E	F				
SG4TMSTD	M	4.2	2.95	0	0.69 - 0.91	15.7	7.5	7.2	3.0	15.2	1.9	9.9	28.2	20.5x14.8x6.5	SG4TM
SG6TMSTD	M	6.7	3.15	0	0.94 - 1.18	18.4	9.6	9.9	3.1	17.5	2.0	16.5	35.3	25.2x21.3x6.5	SG6TM
SG11TMSTD	M	12.4	3.54	0	1.18 - 1.54	20.3	9.8	10.4	3.5	18.2	2.4	23.1	44.1	25.2x21.3x6.5	SG11TM
SG13TESTD	H	14.6	4.53	0	1.50 - 1.93	20.3	11.9	12.4	4.5	24.8	2.8	47.4	89.3	35.0x22.4x6.5	SG13TE
SG15TESTD	H	16.9	3.94	0	1.87 - 2.44	23.6	13.6	15.0	3.9	28.3	3.1	57.3	99.2	35.0x22.4x6.5	SG15TE

* M = Mechanical
H = Hydraulic

Flange Spreading Tools



Spreading Force:
4.2 - 16.9 tons

Spreading Distance:
0 - 4.53 inches

Maximum Operating Pressure:
10,000 psi *

* Only relevant for hydraulic tools.

SG Series



Model Number	Flange Joint Thickness F			Valve / Spacer Thickness V			Flange Clearance C		Radial Space R		Axial Space (for installation) A_1		Axial Space (installed) A_2		Tool Number
	Min. (in)	Max. (in)	Measured: From / To	Min. (in)	Max. (in)	Measured: From / To	Max. (in)	Measured: From / To	Min. (in)	Measured: From / To	Min. (in)	Measured: From / To	Min. (in)	Measured: From / To	
SG4TMSTD	2.4	7.3	Outside face of flange / Outside face of flange	0*	1.8*	Inside face of flange / Inside face of flange	2.0	Bolt-hole circle / Largest OD of valve/spacer	6.7	Bolt-hole circle / Closest obstruction	6.7	Outside face of flange / Closest obstruction	7.9	Inner face of flange / Closest obstruction	SG4TM
SG6TMSTD	2.4	8.3		0*	2.0*		2.2		9.1		7.9		9.2		SG6TM
SG11TMSTD	3.8	9.4		0*	2.4*		2.4		9.4		8.8		10.2		SG11TM
SG13TESTD	4.7	12.2		0*	3.7*		2.8		11.0		12.2		10.2		SG13TE
SG15TESTD	5.5	15.7		0*	3.1*		3.1		14.6		15.0		12.4		SG15TE

* Short Collet Holder Kits (SCH) are available which can offer improved range of application.

SG4TM MECHANICAL TOOL KIT



1 x SG4TM Tool
1 x 6 inch Vernier Calliper
1 x 3/8" Drive Torque Wrench and 16 mm Socket
1 x Safety Block
2 x M16 (5/8") Collets
2 X M20 (3/4") Collets
1 x Aluminum Carry Case with Protective Foam Inserts

SG6TM MECHANICAL TOOL KIT



1 x SG6TM Tool
1 x 6 inch Vernier Calliper
1 x 3/8" Drive Torque Wrench and 21 mm Socket
1 x Safety Block
2 x M24 (7/8") Collets
2 x M27 (1") Collets
1 x Aluminum Carry Case with Protective Foam Inserts

SG11TM MECHANICAL TOOL KIT



1 x SG11TM Tool
1 x 6 inch Vernier calliper
1 x 1/2" Drive torque wrench and 24 mm socket
1 x Safety block
2 x M30 (1-1/8") Collets
2 x M33 (1-1/4") Collets
2 x M36 (1-3/8") Collets
1 x Aluminum Carry Case with Protective Foam Inserts

SG13TE HYDRAULIC TOOL KIT



1 x SG13TE Tool
1 x 10,000 psi HP550S Single Port Sealed Hand Pump with Gauge
1 x 10,000 psi Hydraulic Hose, 6.5 ft
1 x 6 inch Vernier Calliper
1 x 1/2" Square Drive Flexible Handle
1 x 30 mm Socket
1 x Safety Block
2 x M39 (1-1/2") Collets
2 x M42 (1-5/8") Collets
2 x M45 (1-3/4") Collets
1 x Aluminum Carry Case with Protective Foam Inserts

SG15TE HYDRAULIC TOOL KIT



1 x SG15TE Tool
1 x 10,000 psi HP550S Single Port Sealed Hand Pump with Gauge
1 x 10,000 psi Hydraulic Hose, 6.5 ft
1 x 12 inch Vernier Calliper
1 x 1/2" Square Drive Flexible Handle
1 x 36 mm Socket
1 x Safety Block
2 x M48 (1-7/8") Collets
2 x M52 (2") Collets
2 x M56 (2-1/4") Collets
1 x Aluminum Carry Case with Protective Foam Inserts

▼ SG18TE & SG25TE



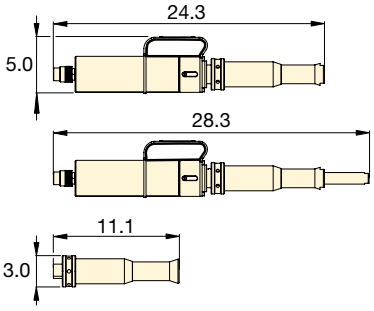
- **Applicable for larger-sized flanges**
- **Actuated by an external hand pump**
- **Suitable for bolt holes from 2.34 to 4.25 inches.**

Range of Application

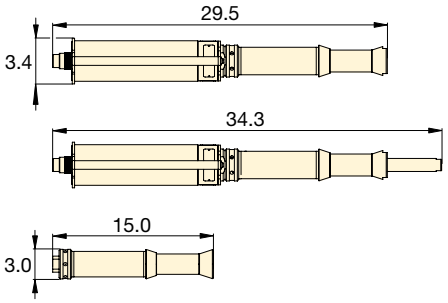
For a detailed range of application please request the Secure-Grip In-Line Hydraulic Operator Instruction Sheet.

Caution

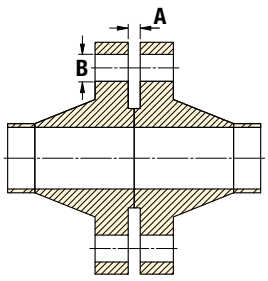
A minimum of two Flange Spreading Tools must be used when opening flange joints. This will enable the operator to maintain an equal spreading distance across the flange faces.



SG18TE

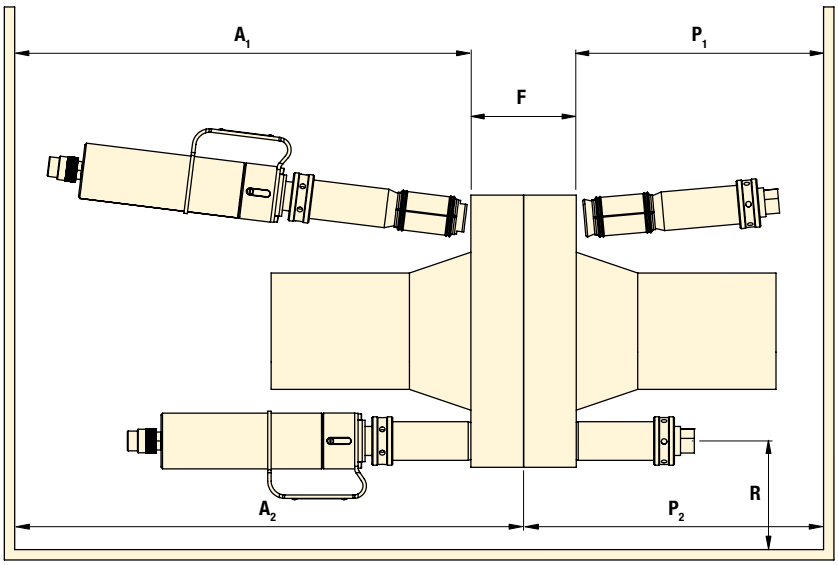


SG25TE



Flange Dimensions

Model Number Tool Kit	Type	Maximum Spreading Force Per Tool (tons)	Spreading Distance Maximum (in)	Flange Dimensions (in)		Tool Weight (lbs)	Kit Weight (lbs)	Case Dimensions (in)	Tool Number
				Minimum Access Gap A	Bolt-hole Diameter B				
SG18TESTD	Hydraulic	20.2	3.93	0	2.34 - 2.95	31	99	35 x 22.4 x 6.5	SG18TE
SG25TESTD	Hydraulic	28.1	4.72	0	2.95 - 4.25	53	110	35 x 22.4 x 6.5	SG25TE



SG Series



Spreading Force:
20.2 - 28.1 tons

Spreading Distance:
0 - 4.72 inches

Maximum Operating Pressure:
10,000 psi

Model Number Tool Kit	Flange Joint Thickness F			Radial Space R		Axial Space (for installation) A1		Axial Space (installed) A2		Axial Plug Space (for installation) P1		Axial Plug Space (installed) P2		Tool Number
	Min. (in)	Max. (in)	Measured: From / To	Min. (in)	Measured: From / To	Min. (in)	Measured: From / To	Min. (in)	Measured: From / To	Min. (in)	Measured: From / To	Min. (in)	Measured: From / To	
SG18TESTD	7.5	17.7	Outside face of flange / Outside face of flange	2.2	Bolt-hole circle / Closest obstruction	24.4	Outside face of flange / Closest obstruction	35.4	Inner face of flange / Closest obstruction	11.1	Outside face of flange / Closest obstruction	11.1	Inner face of flange / Closest obstruction	SG18TE
SG25TESTD	8.3	22.4		2.2		29.5		43.3		15.0		15.0		SG25TE

SG18TE HYDRAULIC TOOL KIT



1x SG18TE Tool
1x Spreading Plug
1x 10,000 psi HP550S Single Port Sealed Hand Pump with Gauge
1x 10,000 psi Hydraulic Hose, 6.5 ft
1x 12 inch Vernier Calliper
1x 1/2 inch Spacer Plate
1x 5 mm Allen Key
1x 2 inch Spacer
1x Safety Block
2x M60 (2-3/8") Collets
2x M64 (2-1/2") Collets
2x M70 (2-3/4") Collets
1x Aluminum Carry Case with Protective Foam Inserts

SG25TE HYDRAULIC TOOL KIT



1x SG25TE Tool
1x Spreading Plug
1x 10,000 psi HP550S Single Port Sealed Hand Pump with Gauge
1x 10,000 psi Hydraulic Hose, 6.5 ft
1x 12 inch Vernier Calliper
1x 1/2 inch Spacer Plate
1x Safety Block
1x Aluminum Carry Case with Protective Foam Inserts

SG25TE COLLETS (AVAILABLE SEPARATELY)

Model Number	Description
673601-01	2x M76 (3") Collets
674801-01	2x M90 (3-1/2") Collets
673901-01	2x M80 (3-1/4") Collets
675101-01	2x M95 (3-3/4") Collets
674501-01	2x M84 (3-3/8") Collets
675601-01	2x M100 (4") Collets

▼ VC10TE



Secure-Grip Valve Change-Out Tools

Caution

A minimum of two Flange Spreading Tools must be used when opening flange joints. This will enable the operator to maintain an equal spreading distance across the flange faces.

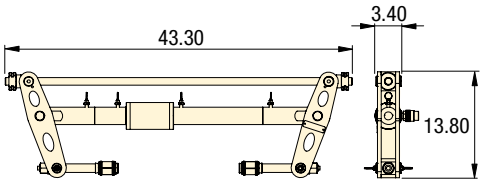
The Actuator and Extension

Subassembly can be assembled into 4 different configurations to suit a variety of applications. For a detailed range of application please request the VC10 Operator Instruction Sheet.

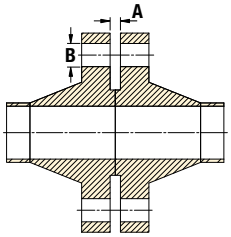
- **Assists in the removal of wafer/butterfly valves, spades/spacers or gaskets from large flange joints**
- **Tool span is longer than a standard Secure-Grip Flange Spreader**
- **Adjustable to enable the tool to operate in a range of situations.**

PATENTED SECURE-GRIP SYSTEM:

- **Unique expanding collet technology**
- **Secure bolt-hole locking mechanism**
- **Unique technology makes the Secure-Grip arguably the safest flange spreader available in the world today**
- **Virtually universal, the Secure-Grip Flange Spreader range will cover ANSI, DIN, Norsok L005, ASME, API and BS Flanges**
- **Time-saving, simple operation.**

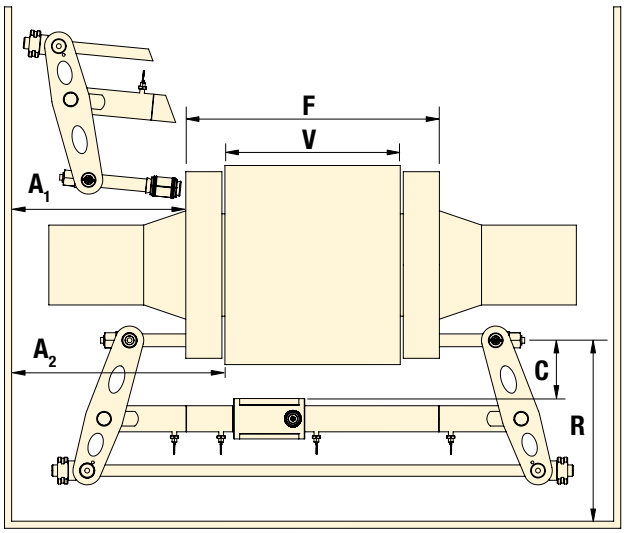


Flange Dimensions



Model Number Tool Kit	Type*	Maximum Spreading Force Per Tool (tons)	Spreading Distance Maximum (in)	Flange Dimensions (in)		Tool Kit Weight (2 per Maxi Kit) (lbs)	Pump Kit Weight (lbs)	Gross Kit Weight (lbs)	Tool Case Dimensions (in)	Pump Case Dimensions (in)	Tool Number
				Minimum Access Gap A	Bolt-hole Diameter B						
VC10/13TESTD	H	11.2	22.8	0	1.50 - 1.93	110	60	170	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/13TE
VC10/13TEMAX	H	11.2	22.8	0	1.50 - 1.93	110	66	287	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/13TE
VC10/15TESTD	H	11.2	22.0	0	1.87 - 2.44	117	60	176	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/15TE
VC10/15TEMAX	H	11.2	22.0	0	1.87 - 2.44	117	66	300	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/15TE
VC10/18TESTD	H	11.2	20.2	0	2.34 - 2.95	128	60	187	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/18TE
VC10/18TEMAX	H	11.2	20.2	0	2.34 - 2.95	128	66	322	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/18TE
VC10/25TESTD	H	11.2	19.3	0	2.95 - 4.25	128	60	187	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/25TE
VC10/25TEMAX	H	11.2	19.3	0	2.95 - 4.25	128	66	322	21.7 x 47.2 x 6.7	21.7 x 47.2 x 6.7	VC10/25TE

* H = Hydraulic



VC Series



Spreading Force:
11.2 tons

Spreading Distance:
0 - 22.8 inches

Maximum Operating Pressure:
10,000 psi

Model Number Tool Kit	Flange Joint Thickness F			Valve / Spacer Thickness V			Flange Clearance C	Radial Space R	Axial Space (for installation) A_1	Axial Space (installed) A_2	Tool Number
	Min. (in)	Max. (in)	Measured: From / To	Min. (in)	Max. (in)	Measured: From / To	Measured: From / To	Measured: From / To	Measured: From / To	Measured: From / To	
VC10/13TESTD	4.3	27.2	Outside face of flange / Outside face of flange	0*	22.8*	Inside face of flange / Inside face of flange	Bolt-hole circle / Largest OD of valve/spacer - max. 5.1 inches	Bolt-hole circle / Closest obstruction - min. 14.2 inches	Outside face of flange /Closest obstruction - min. 11.8 inches	Inner face of flange / Closest obstruction - min. 14.6 inches	VC10/13TE
VC10/13TEMAX	4.3	27.2		0*	22.8*						VC10/13TE
VC10/15TESTD	5.1	27.2		0*	22.0*						VC10/15TE
VC10/15TEMAX	5.1	27.2		0*	22.0*						VC10/15TE
VC10/18TESTD	6.9	27.2		0*	20.2*						VC10/18TE
VC10/18TEMAX	6.9	27.2		0*	20.2*						VC10/18TE
VC10/25TESTD	7.9	27.2		0*	19.3*						VC10/25TE
VC10/25TEMAX	7.9	27.2		0*	19.3*						VC10/25TE

* Short Collet Holder Kits (SCH) are available which can offer improved range of application.

TOOL KITS
(1 PER STD KIT, 2 PER MAX KIT)



VC10/13TE
1 x VC10/13TE Tool
2 x M39 (1-1/2") Collets
2 x M42 (1-5/8") Collets
2 x M45 (1-3/4") Collets
1 x Aluminum Carry Case with Protective Foam Inserts

VC10/18TE
1 x VC10/18TE Tool
2 x M60 (2-3/8") Collets
2 x M64 (2-1/2") Collets
2 x M70 (2-3/4") Collets
1 x Aluminum Carry Case with Protective Foam Inserts

VC10/15TE
1 x VC10/15TE Tool
2 x M48 (1-7/8") Collets
2 x M52 (2") Collets
2 x M56 (2-1/4") Collets
1 x Aluminum Carry Case with Protective Foam Inserts

VC10/25TE
1 x VC10/25TE Tool
1 x Aluminum Carry Case with Protective Foam Inserts

PUMP KITS



For STD Tool Kits
1 x 10,000 psi HP550S Single Port Hydraulic Hand Pump
1 x Hydraulic Gauge with Manifold
1 x 10,000 psi Hydraulic Hose, 6.5 ft
1 x Secure Grip Safety Block
1 x Square Drive Flexible Handle
1 x Vernier Calliper
1 x Aluminum Carry Case with Protective Foam Inserts

For MAX Tool Kits
1 x 10,000 psi HP1000D Twin Port Hydraulic Hand Pump
2 x Hydraulic Gauges with Manifolds
2 x 10,000 psi Hydraulic Hoses, 6.5 ft
2 x Secure Grip Safety Blocks
1 x Square Drive Flexible Handle
1 x Vernier Calliper
1 x Aluminum Carry Case with Protective Foam Inserts

Collet Sizing

It is important that the correct size of collet is used. An undersized collet could allow the collet holder to pull through its bore. An oversized collet has the potential to become jammed in the bolt-hole.

Range of Application

For a detailed range of application please request the Hydraulic Secure-Grip Valve Change-Out Tool Operator Instruction Sheet.

VC10/25TE COLLETS (Available Separately)

Model Number	Description
673601-01	2 x M76 (3") Collets
673901-01	2 x M80 (3-1/4") Collets
674501-01	2 x M84 (3-3/8") Collets
674801-01	2 x M90 (3-1/2") Collets
675101-01	2 x M95 (3-3/4") Collets
675601-01	2 x M100 (4") Collets

▼ MG7TM



MG Series

FLANGE SPREADING TOOL

Spreading Force:
7.6 tons

Spreading Distance:
0.08 - 1.06 inches

Range of Application

For a detailed range of application please request the MG7TM Operator Instruction Sheet.

- **Reversible leg design giving greater range of applications**
- **Unique double-angled wedge produces a greater spreading force without reducing spreading distance**
- **Robust, lightweight tool**
- **Spreading force of 7.6 tons.**

OPERATING BENEFITS

- **Locks on to flange joint**
- **Safe, quick and easy operation**
- **Saves time and cost.**

Caution

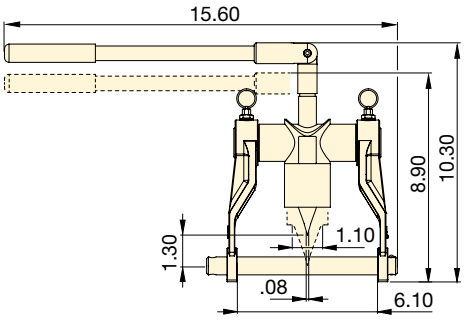
A minimum of two Flange Spreading Tools must be used when opening flange joints. This will enable the operator to maintain an equal spreading distance across the flange faces.

MG7TMSTD Standard Kit

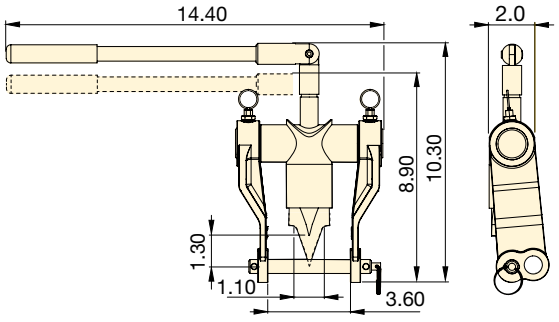


1 x MG7TM Tool
2 x Spreading Bar
1 x Moulded Plastic Carry Case

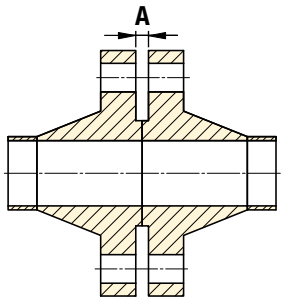
Tool retracted and advanced using large (ø 0.80 inch) spreading bar



Tool retracted and advanced using small (ø 0.60 inch) spreading bar



Flange Dimensions



Model Number Tool Kit	Type	Maximum Spreading Force Per Tool (tons)	Spreading Distance Maximum (in)	Flange Dimensions Minimum Access Gap A (in)	Wedge Width (in)	Tool Weight (lbs)	Kit Weight (lbs)	Case Dimensions (in)	Tool Number
MG7TMSTD	Mechanical	7.6	1.06	0.08	1.80	11.0	12.1	14.2 x 11.8 x 3.5	MG7TM

▼ FC10TE



FC Series

FLANGE CLOSING TOOLS

Closing Force:
11.2 tons

Closing Distance:
22.4 - 0 inches

Maximum Operating Pressure:
10,000 psi

Caution

A minimum of two flange closing tools must be used when flange pulling. This will enable the operator to maintain an even gap between flange faces and prevent flange / gasket damage.

- **Applicable to all flanges with a bolt-hole diameter of 1 inch or greater, including ANSI, DIN, Norsok L005, ASME and BS flanges**
- **Slide and lock collet system**
- **Low-profile tool**
- **Can be used on all vertical and horizontal flanges including ANSI, API, BS, DIN & Norsok L005**
- **Robust yet lightweight**
- **Subsea compatible**
- **Reciprocating hydraulic action.**

OPERATING BENEFITS

- **Reducing operator fatigue**
- **Reducing pinch point**
- **Quick and easy to use.**

FC10TESTD STD Kit



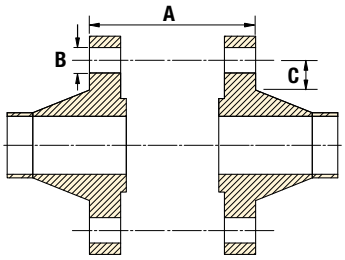
1 x FC10TE Tool
1 x 10,000 psi Hydraulic Hose, 6.5 ft long
1 x 10,000 psi HP550S Single Port Sealed Hand Pump with Gauge
1 x Aluminum Carry Case with Protective Foam Inserts

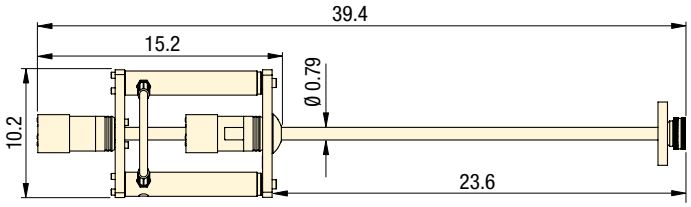
FC10TEMAX MAX Kit



2 x FC10TE Tool
2 x 10,000 psi Hydraulic Hoses, 6.5 ft long
1 x 10,000 psi HP550D Twin Port Sealed Hand Pump with Gauge
1 x Aluminum Carry Case with Protective Foam Inserts

Flange Dimensions





Model Number Tool Kit	Type	Maximum Closing Force Per Tool (tons)	Closing Distance (in)	Flange Dimensions (in) A	B min	C min	Tool Weight (lbs)	Kit Weight (lbs)	Box/Case Dimensions (in)	Tool Number
FC10TESTD	Hydraulic	11.2	22.4	0.63 - 22.4	1.0	1.30	24.3	51.8	35.0 x 22.4 x 6.5	FC10TE
FC10TEMAX	Hydraulic	11.2	22.4	0.63 - 22.4	1.0	1.30	24.3	80.5	35.0 x 22.4 x 6.5	FC10TE

▼ TFA15TI



TFA Series

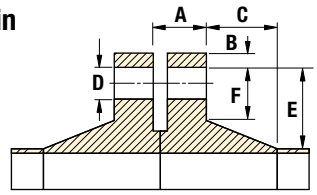
WIND TURBINE TOWER FLANGE ALIGNMENT TOOLS

Hook Force:
4.5 - 30.3 tons

Aligning Distance:
1.7 - 2.6 inches

The TFA Wind Turbine Tower Flange Alignment Tools have been developed to aid the alignment of large flanges on the inside of wind turbine towers during their assembly or installation.

- **Assists in aligning / de-ovalizing large internal pipe flanges**
- **Helps resolve bolt-hole misalignment within tower sections of wind turbine towers**
- **Can be used both on and offshore.**



Flange Dimensions

TFA4TM Mechanical Tool Kit



1 x TFA4TM Tool
1 x Torque Wrench
1 x Moulded Plastic Carry Case

TFA12TE / TFA15TE External Hydraulic Tool Kit [1)]



1 x TFA12TE or TFA15TE Tool
1 x Safety Lanyard
1 x Aluminum Carry Case with Protective Foam Inserts

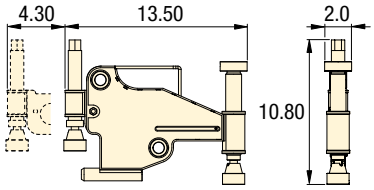
TFA12TI / TFA15TI Integral Hydraulic Tool Kit



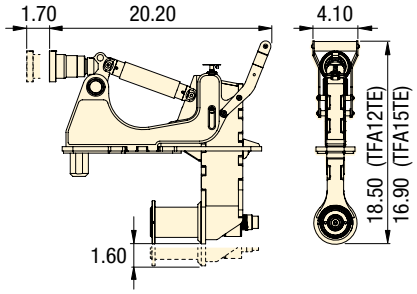
1 x TFA12TI or TFA15TI Tool
1 x Aluminum Carry Case with Protective Foam Inserts

[1)] External Hand Pump not included. To be ordered separately, see page 339.

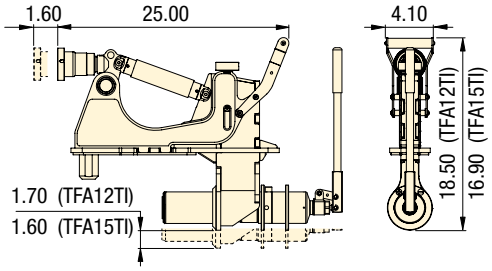
TFA4TM



TFA12TE
TFA15TE



TFA12TI
TFA15TI



Model Number Tool Kit	Type *	Maximum Hook Force Per Tool (tons)	Maximum Aligning Distance (in)	Maximum Operating Pressure (psi)	Flange Dimensions (in) A	B	C	D min	E	F min	Tool Weight (lbs)	Kit Weight (lbs)	Box/Case Dimensions (in)	Tool Number
TFA4TMSTD	M	4.5	1.7	-	1.4-5.3	0-2.2	0-9.1	0.98	0-4.1	0.94	17.9	39.7	23.6 x 14.6 x 7.9	TFA4TM
TFA12TEMIN	H [1)]	27.0	2.6	7,400	5.1-7.0	4.3-9.5	0-16.6	1.80	3.4-4.9	2.40	42.5	62.6	25.2 x 21.3 x 6.5	TFA12TE
TFA15TEMIN	H [1)]	30.3	2.6	10,000	3.5-5.4	4.3-9.5	0-16.6	1.80	3.4-4.9	2.40	41.7	61.7	25.2 x 21.3 x 6.5	TFA15TE
TFA12TISTD	H	27.0	2.6	**	5.1-7.0	4.4-9.5	0-16.6	1.80	3.4-4.9	2.40	48.3	68.3	23.0 x 35.4 x 6.3	TFA12TI
TFA15TISTD	H	30.3	2.6	**	3.5-5.4	4.4-9.5	0-16.6	1.80	3.4-4.9	2.40	47.4	67.5	23.0 x 35.4 x 6.3	TFA15TI

* M = Mechanical; H = Hydraulic. ** Integral Hydraulic.
[1)] External Hand Pump not included. To be ordered separately, see page 339.

▼ HP350DMIN



HP Series

HYDRAULIC SEALED HAND PUMPS

Maximum Pressure Rating:
1st Stage: 200 psi
2nd Stage: 10,000 psi

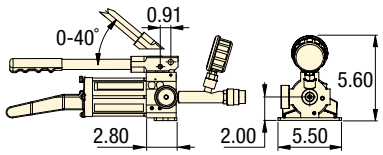
Pump Type:
2-Speed

- **HP-S , HP-D and HP-SD pump ranges are operable at all angles and are highly resistant to accidental spillage of hydraulic fluid (certified)**
- **The Single-Port and Twin-Port Hand Pumps are also available with ATEX rating, which are certified for use in hazardous areas II 2G Ex h IIB T5 Gb, II 2D Ex h IIIC T212°F Db.**

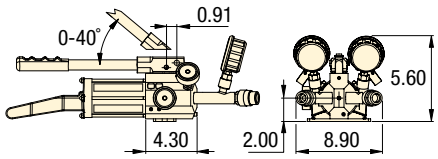
Pump Ratings

The Hydraulic Single Port, Twin Port and Double-Acting Hand-Pump (and hoses) are tailored for use with hydraulic equipment. Each pump's output is regulated to 10,000 psi and is delivered from threaded 3/8" NPT output ports.
The pumps and hoses can be used with any 10,000 psi rated hydraulic equipment within their oil capacity specification. The HP range of hydraulic hand pumps have been designed with a seal oil reservoir, which allows the pumps to be used in any orientation without the risk of oil spills or air contamination.

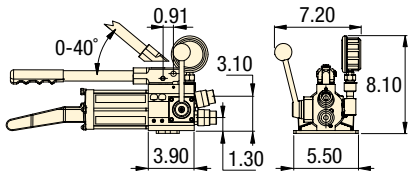
HP350/550/1000S



HP350/550/1000D



HP350/550/1000SD





10,000 PSI HOSES
Available to purchase separately

Model Number	Description
302701-01	Hydraulic Hose 6.5 feet
302702-01	Hydraulic Hose 13 feet
302705-01	Hydraulic Hose 10 feet
302706-01	Hydraulic Hose 16.4 feet
302707-01	Hydraulic Hose 19.6 feet
1440008-01	ATEX Hydraulic Hose 6.5 feet
1440013-01	ATEX Hydraulic Hose 13 feet
1440014-01	ATEX Hydraulic Hose 19.6 feet

Model Number Hand Pump Kit		Type *	Nominal Oil Capacity (in^3)	Useable Oil Capacity (in^3)	Oil Volume per Stroke (in^3)		Max. Handle Effort (ft.lb)	Piston Stroke (in)	Overall Length (in)	Box Dimensions (in)	Pump Weight (lbs)	Kit Weight (lbs)	Tool Number
Standard	ATEX				1st Stage	2nd Stage							
HP350SMIN	HP350SMINEX	SA, SP	21.4	18.3	0.221	0.047	73	0.71	21.8	9.8 x 7.1 x 23.6	9.7	10.8	HP350S
HP550SMIN	HP550SMINEX	SA, SP	35.4	33.6	0.221	0.047	55	0.71	25.3	9.8 x 7.1 x 27.6	11.2	13.0	HP550S
HP1000SMIN	HP1000SMINEX	SA, SP	67.7	61.0	0.221	0.047	46	0.71	34.1	9.8 x 7.1 x 35.4	13.4	15.7	HP1000S
HP350DMIN	HP350DMINEX	SA, TP	21.4	18.3	0.221	0.047	73	0.71	22.8	9.8 x 7.1 x 23.6	14.3	15.9	HP350D
HP550DMIN	HP550DMINEX	SA, TP	35.4	33.6	0.221	0.047	55	0.71	26.3	9.8 x 7.1 x 27.6	15.9	17.9	HP550D
HP1000DMIN	HP1000DMINEX	SA, TP	67.7	61.0	0.221	0.047	46	0.71	35.2	9.8 x 7.1 x 35.4	15.7	20.5	HP1000D
HP350SDMIN	–	DA	21.4	18.3	0.221	0.047	73	0.71	18.0	9.8 x 7.1 x 23.6	11.7	12.5	HP350SD
HP550SDMIN	–	DA	35.4	33.6	0.221	0.047	55	0.71	22.8	9.8 x 7.1 x 27.6	12.6	13.2	HP550SD
HP1000SDMIN	–	DA	67.7	61.0	0.221	0.047	46	0.71	30.3	9.8 x 7.1 x 35.4	13.0	13.9	HP1000SD

* SA = Single-Acting DA = Double-Acting
SP = Single Port TP = Twin Port

Enerpac Heavy Lifting Technology

ENERPAC

Enerpac Heavy Lifting Technology provides customers with tailored solutions, combining hydraulics, steel fabrication and electronic control technology. Global Leader providing best in class solutions for safe and precise positioning of heavy loads.

With more than 50 years supporting industrial markets, Enerpac has gained the unique and in-depth expertise that is respected by industrial professionals around the world. Across every continent, Enerpac's network of application engineers, authorized distributors and technical service centers can reach any location, and deliver innovative solutions, technical assistance and quality products.

Enerpac's complete line of standard and customized products and a unique systems approach offers the benefits of safety and efficiency to applications where high forces are required.

Whether constructing a signature bridge across a deep valley, lifting a national landmark for seismic retrofit or simultaneously testing hundreds of foundation pilings to support a new building, Enerpac will supply the hydraulic solutions to get the job done safely and efficiently.



Precision lift and position of heavy loads



Synchronous superlift and launch



Bridge lifting and launching



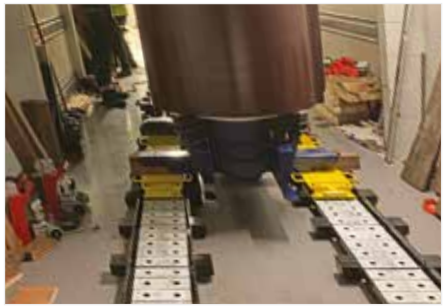
Jacking with high capacity precision control



Synchronous hoisting and load positioning



Incremental bridge lifting

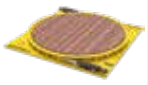


Transportation



Machine moving

Heavy Lifting Technology - Section Overview

Capacity tons	Type and Capabilities	Series		Page
Flow: 20 - 153 in³/min **Power: 1 - 20 hp**	**Split-Flow Hydraulic Pumps** Multiple outlets with equal flow for lifting and lowering	**SFP**		**342** ▶
Flow: 46 - 292 in³/min **Power: 4 - 10 hp**	**Synchronous Lifting Systems, standard pump models** The multi-functional synchronous lifting system	**EVO**		**346** ▶
Flow: 128 - 488 in³/min **Power: 4 - 20 hp**	**Synchronous Lifting Systems, Pump-per-Point** Provides industry leading speed and accuracy	**EVOP**		**348** ▶
56 - 110	**Self-Locking Cube Jacks** Incremental lifting, automated mechanical locking	**SCJ**		**350** ▶
55 - 220	**Climbing Jacks** A simple solution to incremental lifting	**BLS**		**354** ▶
275 - 550	**Jack-Up Systems** Synchronically lift, mechanically hold, incremental lifting	**JS**		**356** ▶
17 - 935	**Heavy Lifting Strand Jacks** High capacity precision control	**HSL**		**358** ▶
60 - 120	**Synchronous Hoisting Systems - SyncHoist** Precision positioning jacks	**SHC,** **SHP**		**360** ▶
45 - 1178	**Telescopic Hydraulic Gantries** Precision lift and position of heavy loads	**ML,** **SL, SBL**		**362** ▶ **364** ▶
400	**Low-Height Skidding System** The ideal jack and slide solution	**LH**		**366** ▶
50 - 100 **Speed: 82 - 164 ft/hr**	**Electric Trolley Systems** Synchronized travel	**ETR**		**370** ▶
225 - 450	**Hydraulic Turntables** Controlled rotation of heavy loads	**ETT**		**372** ▶
–	**Custom Heavy Lifting Solutions** **Solution Consultations, On-Demand Support**	**–**		**373** ▶

▼ **SFP414SJ and SFP403SJ** (Gauges and retract valves not shown)





Multiple Outlets with Equal Flow for Lifting and Lowering

- **2, 4, 6 or 8 split-flow outlets**
- **Individual or simultaneously operation of valves, with advance/hold/retract function**
- **Joystick (manual) controlled or pendant (solenoid) controlled valves**
- **Flow per outlet ranging from 20 to 153 in^3/min at 10,000 psi**
- **For double- and single-acting cylinders**
- **Adjustable pressure relief valve per circuit**
- **Reservoir sizes: 2.5, 10 or 40 gallons**
- **All models include pressure gauges.**

Typical Split-Flow Pump Applications

For lifting and lowering applications on multiple points, Split-Flow Pumps are a far better alternative than using independently operated pumps. Where synchronization of maximum 4% is acceptable, Split-Flow Pumps are a safe and economical solution.

The SFP-Series pumps feature both single and synchronized multiple outlet control either through joystick or pendant operation.

Application examples:

- Bridge deck lifting for bearing maintenance
- Stage lifting in construction and shipbuilding
- Skidding to move structures and buildings
- Levelling of constructions such as wind turbines.

▼ *Step-by-step stage lifting an old windmill using double-acting RR506 cylinders powered by a split-flow pump.*





Remote Control Pendant

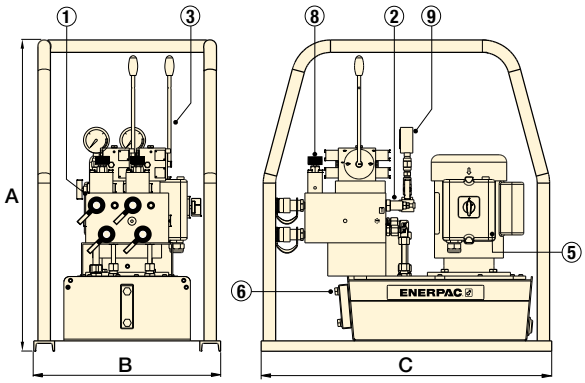
Split-Flow pumps with solenoid valves include a remote pendant with selector switches for each individual outlet, allowing single or multiple cylinder operation.



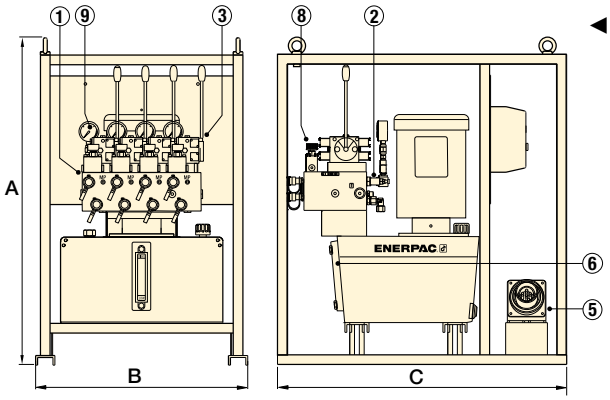
Split-Flow Pump Synchro Kits

Split-Flow Pump Synchro Kits connect and electronically synchronize each lift point of a single Split-Flow Pump or multiple Split-Flow Pumps under one control system.

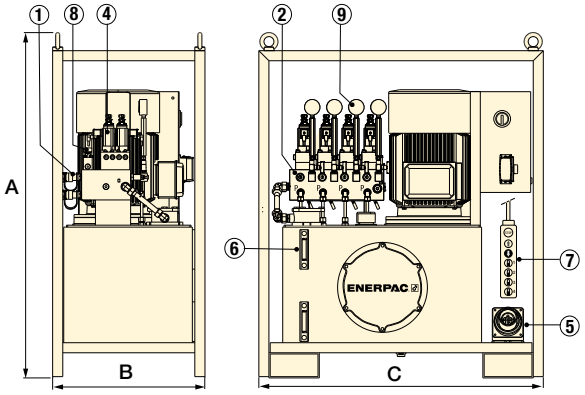
Page: 344



◀ **SFP-Series with 2.5 gallons reservoir (shown with 2 split-flow outlets)**



◀ **SFP-Series with 10 gallons reservoir (shown with 4 split-flow outlets)**



◀ **SFP-Series with 40 gallons reservoir (shown with 4 split-flow outlets)**

SFP Series



Reservoir Capacity:
2.5, 10 or 40 gallons

Split-Flow Outlets:
2, 4, 6 and 8 outlets

Flow at Rated Pressure:
20 - 153 in³/min

Motor Size:
1 - 20 hp

Maximum Operating Pressure:
10,000 psi



Lifting Cylinders

For a complete line of Enerpac cylinders, see the Cylinder and Lifting Products in our catalogue.

Page: 5

① Manifold with split-flow outlets and CR400 couplers
② Adjustable pressure relief valve per circuit
③ Manual 4/3 control valves with joysticks
④ Solenoid 4/3 control valves (24 VDC)
⑤ Power socket
⑥ Oil sight gauge(s)
⑦ Remote control pendant with 16 feet cord
⑧ Return flow control valve in each circuit
⑨ Hydraulic pressure gauge in each circuit

Number of Split-Flow Outlets	Usable Oil Capacity (gal)	Oil Flow per Outlet at 10,000 psi (in³/min)	Pump Model Number 4/3 Valve Operation Advance/Hold/Retract Manual (Joystick)	24 V Solenoid (Pendant)	Motor Size 460 V, 3ph 60 Hz (hp)	Dimensions (in) A	B	C	(lbs)
2	2.5	20	**SFP202MB**	**–**	1.0 *	29.4	17.7	27.6	253
4	10	22	**SFP403MJ**	**SFP403SJ**	3.0	40.0	25.2	38.2	565
	40	65	**–**	**SFP409SJ**	7.5	53.4	23.8	45.7	1045
	40	101	**–**	**SFP414SJ**	10	53.4	23.8	45.7	1078
	40	153	**–**	**SFP421SJ**	15	53.4	23.8	45.7	1311
6	40	94	**–**	**SFP613SJ**	15	53.4	31.7	47.2	1236
8	10	22	**–**	**SFP803SJ**	5.4	45.8	32.7	43.8	990
	40	94	**–**	**SFP813SJ**	20	53.4	31.7	47.2	1364

* SFP202MB with 115 V, 1 phase, 60 Hz motor.

Motor Voltage

Motor voltage is specified by the last letter in the model number.

Other motor voltages are available from Enerpac. Change "**J**" in the model as follows for other options:
G = 208-240V, 3 ph, 50-60 Hz
W = 380-415V, 3 ph, 50 Hz

▼ **SFP-Series Split-Flow Pump Kit Components**



Connecting Split-Flow Pumps for more lift points and greater accuracy

- **Control multiple Split-Flow Pumps with one control unit**
- **Pumps can be closer to the lifting points, requiring shorter hoses and increasing accuracy**
- **Synchronize all lift points to within 0.04 inch (1,0 mm)**
- **Network control boxes expand the number of lifting points by combining up to four split-flow pumps together, simplifying lifting operations by using a single operator station**
- **Plug and play synchronous lift upgrade kits limit initial investment and provide everyday flexibility to tailor the controls to the applications needs.**

Split-Flow Pumps Kits

SFP-Series kits are customized from standard components to meet the needs of your unique applications. On the next page is the guide to help you choose the right components to upgrade or expand your equipment based on your application needs.

Contact your regional Enerpac representative / territory manager for support with your specific project.

Split-Flow Pump Network Kits

Split-Flow Pump Network Kits connect multiple Split-Flow Pumps under one control system.

Split-Flow Pump Synchro Kits

Split-Flow Pump Synchro Kits connect and electronically synchronize each lift point of a single Split-Flow Pump or multiple Split-Flow Pumps under one control system.



Junction Box

SFPKSS4 and **SFPKSS8** junction boxes consolidate the signals from pressure and stroke sensors, allowing the master control box to synchronize the lifting operation.



SFPKMN, Master Control Box

All SFP-Series Synchro Kits include a master control box to allow the operator to easily monitor and control a multi-point synchronized lift and adjust individual lift points as needed.
All master control boxes feature an industrial grade touch screen and a user-friendly interface.



EVO-SC, Stroke Sensor Cables

Can be connected together for additional length. Ordered separately, requires one for each stroke sensor.

Model Number	Length (ft)	Model Number	Length (ft)
EVO-SC-6	19.7	EVO-SC-25	82



EVO-WSS, Wire Stroke Sensors

Provides stroke feedback to controls. Includes magnets for mounting. Ordered separately, requires one sensor for each lifting point. Available in measuring range from 14.8 to 39.4 inches.

Model Number	Range (in)	Model Number	Range (in)
EVO-WSS-375	14.8	EVO-WSS-1000	39.4
EVO-WSS-500	19.7	–	–



Communication Cables

EVO-COMM-Series communication cables transfer information about the synchronized lift operation from the master control panel to each of the connected split-flow pumps.

Model Number	Length (ft)	Model Number	Length (ft)
EVO-COMM-25	82	EVO-COMM-75	246
EVO-COMM-50	164	EVO-COMM-100	328

Split-Flow Pump Network Kits

Upgrading Split-Flow Pumps

To network multiple SFP-pumps together with standard function see drawing and table ①.

To upgrade a single SFP-pump to synchronous lift capability, see drawing and table ②.

To upgrade and network multiple SFP-pumps together with synchronous lift capabilities, see drawing and table ③.

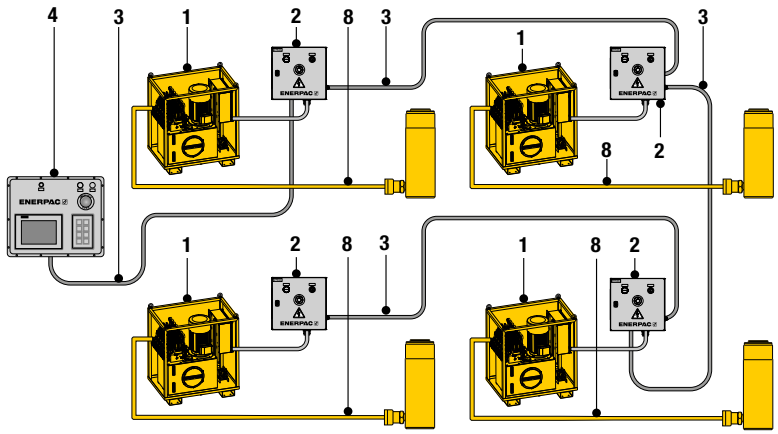
SFP Series



Multiple Pumps in Network System:
1 - 4 pumps

Maximum Lifting Points:
32x cylinders

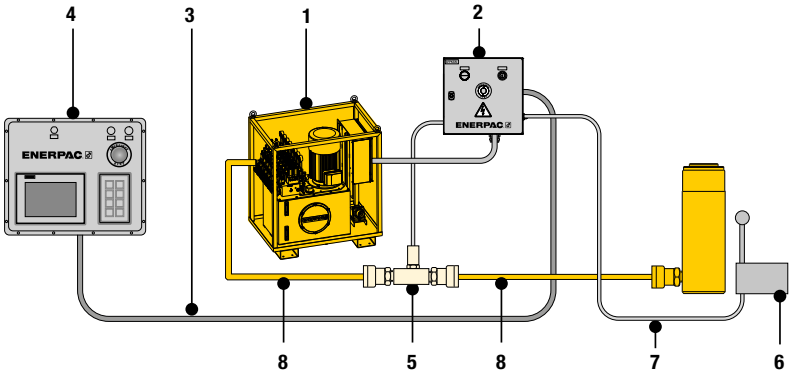
① Networked SFP-Pumps in Standard Operation



① Networked SFP-Pumps in Standard Operation

Nr.	Qty	Model No. & Description
1	4x	**SFP...SJ** Pumps with solenoid valves
2	4x	**SFPKSN** Junction Box, 1x per pump
3	4x	**SFPCOMM-25** Communication Cable, 1x per pump
4	1x	**SFPKMN** Master Control Box
8		**HC700-Series**, Hydraulic Hoses

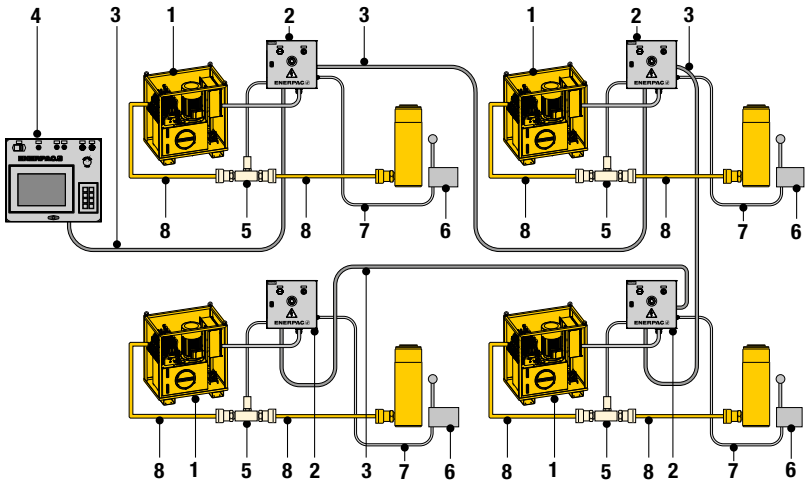
② Single SFP-Pump in Multiple-Point Synchronous Lifting Operation



② Single SFP-Pump in Multiple-Point Synchronous Lifting Operation

Nr.	Qty	Model No. & Description
1	1x	**SFP...SJ** Pump with solenoid valves
2	1x	**SFPKSS4** Junction Box for 2-4 lifting points or **SFPKSS8** for 6-8 lifting points
3	1x	**SFPCOMM-25** Communication Cables
4	1x	**SFPSSC** Single Slave Control Box
5		**SFPKPT** Pressure Transducer Kit (1x per cylinder A-port)
6		**EVO-WSS-XXX** Stroke Sensor, 1x per cylinder
7		**EVO-SC-25** Stroke Sensor Cable, 1x per cylinder
8		**HC700-Series**, Hydraulic Hoses

③ Networked SFP-Pumps in Multiple-Point Synchronous Lifting Operation



③ Networked SFP-Pumps in Multiple-Point Synchronous Lifting Operation

Nr.	Qty	Model No. & Description
1	4x	**SFP...SJ** Pump with solenoid valves
2	4x	**SFPKSS4** Junction Box, 1x per pump, for 2-4 lifting points or **SFPKSS8** Junction Box for 6-8 lifting points)
3	4x	**EVO-COMM-XXX** Communication Cable, 1x per pump
4	1x	**EVOMASTER** Master Control Box
5		**SFPKPT** Pressure Transducer Kit, 1x per cylinder A-port)
6		**EVO-WSS-XXX** Stroke Sensor, 1x per cylinder
7		**EVO-SC-25** Stroke Sensor Cable, 1x per cylinder
8		**HC700-Series**, Hydraulic Hoses

▼ EVO840460



- **Modular lifting pumps to control 4, 8 or 12 lifting points**
- **Can be connected to single- or double-acting cylinders with the same or different lifting capacities**
- **PLC-controlled system with integrated 10,000 psi hydraulic power unit and 66 gallons reservoir**
- **Network capability to link up to 4 EVO-units (HPUs) to a separate network controller**
- **Intuitive user interface providing easy set up, control and navigation**
- **Data storage and recording capabilities**
- **Variable frequency drive motor (VFDM) and PLC for precise synchronization and oil flow control.**

▼ *The superlifting and launch of a 43,000-ton floating oil production system in Malaysia for the Gumusut-Kakap offshore field has set high benchmarks for safety through its use of sophisticated EVO-Series synchronous hydraulics to lift, balance, weigh and smoothly launch massive resource structures.*



The multi-functional synchronous lifting systems



CLNC12 Network Controller

Easily monitor and control a multipoint synchronized lift. All network control boxes feature an industrial grade touch screen and a user-friendly interface.
Same controller can be used to operate either SFP-Series Split-Flow Pumps or multifunctional EVO-Series lifting systems.



EVO-SC, Stroke Sensor Cables

Can be connected together for additional length. Ordered separately, requires one for each stroke sensor.

Model Number	Length (ft)	Model Number	Length (ft)
EVO-SC-6	19.7	EVO-SC-25	82



EVO-WSS, Wire Stroke Sensors

Provides stroke feedback to controls. Includes magnets for mounting. Ordered separately, requires one sensor for each lifting point. Available in measuring range of 19.7 and 39.4 inches. Other lengths available on request.

Model Number	Range (in)	Model Number	Range (in)
EVO-WSS-500	19.7	EVO-WSS-1000	39.4



Communication Cables

EVO-COMM-Series communication cables transfer information about the synchronized lift operation from the network control panel to each of the connected hydraulic pumps.

Model Number	Length (ft)	Model Number	Length (ft)
EVO-COMM-25	82	EVO-COMM-75	246
EVO-COMM-50	164	EVO-COMM-100	328

Benefits of the EVO-Series System

Precise control of multiple lift points
- Comprehensive understanding and management of a lifting operation from a central control system improves safety and operational productivity.
- Programmable synchronized lifting.
- Automatic stop at pre-set cylinder stroke or load limit.

Safe and efficient movement of loads
- System secured with warning and stop features to realize optimal safety.

High accuracy
- Variable frequency drive (VDFM) and PLC for precise synchronization and control of oil flow, stroke and speed.
- Depending the cylinder capacities used, an accuracy of 0.040 inch (1,0 mm) between lifting points is achieved.

Ease of operation
- User friendly interface: visual screens, icons, symbols and color coding.
- A single operator controls the entire operation.

Monitoring and Data Recording
- Displays data of the operation.
- Data recording at user-defined intervals.
- Data storage and read-out for reporting.

Network capability
- Ethernet IP protocol for communication between hydraulic power units, allow easy “plug and play”.

EVOLCK-12 Load Cell Connection Kit
- Install electronic load cells when applications require high accuracy of load measurement
- Kit allows connection of up to 12 electronic load cells
- Plug and play connection to standard EVO lifting system
- Weighing accuracy as good as 1% of total load.

Global standardized system
- Enerpac global coverage ensures local support.

EVO Series



Number of Lifting Points:
4 - 8 -12 (up to 48)

Reservoir Capacity:
66 gallons

Flow at Rated Pressure:
46 - 292 in³/min

Motor Size:
4 - 10 hp

Maximum Operating Pressure:
10,000 psi



EVOLCK-12, Load Cell Connection Kit

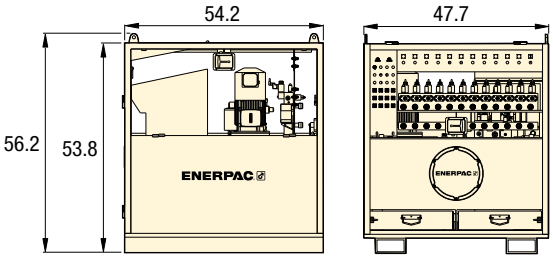
Allows connection up to 12 electronic load cells to standard EVO-system.



High-Tonnage Cylinders

The Enerpac High-Tonnage Cylinders are particularly suitable for (multipoint) lifting applications. Options include single or double-acting with and without mechanical lock nuts for load holding.

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▼ *Precision levelling caisson pier box: 3 EVO-Systems connected with 32 hydraulic jacks lowered the 1100-ton bascule pier box.*



EVO-Series (Standard)

Lifting Points	Variable Oil Flow at 60 Hz (in³/min) (< 1800 psi)	Variable Oil Flow at 60 Hz (in³/min) (> 1800 psi)	Model Number [1] 460-480 V, 3 ph, 50-60 Hz	Usable Oil Capacity (gal)	Motor Size (hp)	Motor Speed [2]	(lbs)
4	243 - 812	46 - 153	**EVO421460**	66	4	VFDM	2000
4	285 - 951	88 - 292	**EVO440460**	66	10	VFDM	2210
8	243 - 812	46 - 153	**EVO821460**	66	4	VFDM	2000
8	285 - 951	88 - 292	**EVO840460**	66	10	VFDM	2000
12	243 - 812	46 - 153	**EVO1221460**	66	4	VFDM	2025
12	285 - 951	88 - 292	**EVO1240460**	66	10	VFDM	2250

[1] For 380-415 VAC, 3 phase, 50-60 Hz change 460 in model number into 380. Example **EV0421380.**
[2] VFDM = Variable Frequency Drive 15-60 Hz.

▼ EVOP140150J Hydraulic Power Unit



Raising the speed limit on synchronized lifting operations

- **Lifting system controls multiple lifting points**
- **Each EVOP-Series pump (Pump-per-Point) controls only one lifting point, providing the best combination of high flow rate and exceptional accuracy**
  - **Ideal for high-tonnage cylinders, 300 to 1000-ton capacities**
  - **Increased lifting speeds for long stroke cylinders and repetitive operations such as with climbing jacks**
  - **Up to 8x lifting speed compared to similar methods**
- **Synchronization controlled via a variable frequency drive (VFD) on the motor, enables smoother operation and tight accuracy at high lifting speeds**
- **Standard control interface provides easy set-up and operation/selection of multiple lifting options**
- **Accuracy of up to 0.040 inch (1,0 mm) between leading and lagging cylinders**
- **Built-in warning and stop alarms for optimal safety.**



◀ *A 1200-ton electric mining shovel being separated using custom 500-ton RR-Series cylinders and a pump per point synchronous lift system.*



CLNC12 Network Controller

Easily monitor and control a multipoint synchronized lift. All network control boxes feature an industrial grade touch screen and a user-friendly interface.
Same controller can be used to operate either SFP-Series Split-Flow Pumps or multifunctional EVO-Series lifting systems.



EVO-SC, Stroke Sensor Cables

Can be connected together for additional length. Ordered separately, requires one for each stroke sensor.

Model Number	Length (ft)	Model Number	Length (ft)
EVO-SC-6	19.7	EVO-SC-25	82



EVO-WSS, Wire Stroke Sensors

Provides stroke feedback to controls. Includes magnets for mounting. Ordered separately, requires one sensor for each lifting point. Available in measuring range of 19.7 and 39.4 inches. Other lengths available on request.

Model Number	Range (in)	Model Number	Range (in)
EVO-WSS-500	19.7	EVO-WSS-1000	39.4



Communication Cables

EVO-COMM-Series communication cables transfer information about the synchronized lift operation from the network control panel to each of the connected hydraulic pumps.

Model Number	Length (ft)	Model Number	Length (ft)
EVO-COMM-25	82	EVO-COMM-75	246
EVO-COMM-50	164	EVO-COMM-100	328

Synchronous Lift System, Pump-per-Point

EVOP-Series Pumps

The Enerpac EVOP-Series (Pump-per-Point) synchronous lift system provides industry leading speed and accuracy for 10,000 psi lifting operations.

Safety: Stroke synchronization ensures level lift regardless of load distribution.

Lifting Speed: Improve lifting speed up to 8 times over traditional multi-point lifting systems. Save time on long stroke lifts and repetitive operations

Accuracy: Variable speed motor control allows accuracy down to 0.040 inch (1,0 mm) between cylinders and smooth operation without the start and stop associated with opening and closing hydraulic valves.

EVOP Series



Lifting Points per Pump:
1x cylinder/pump

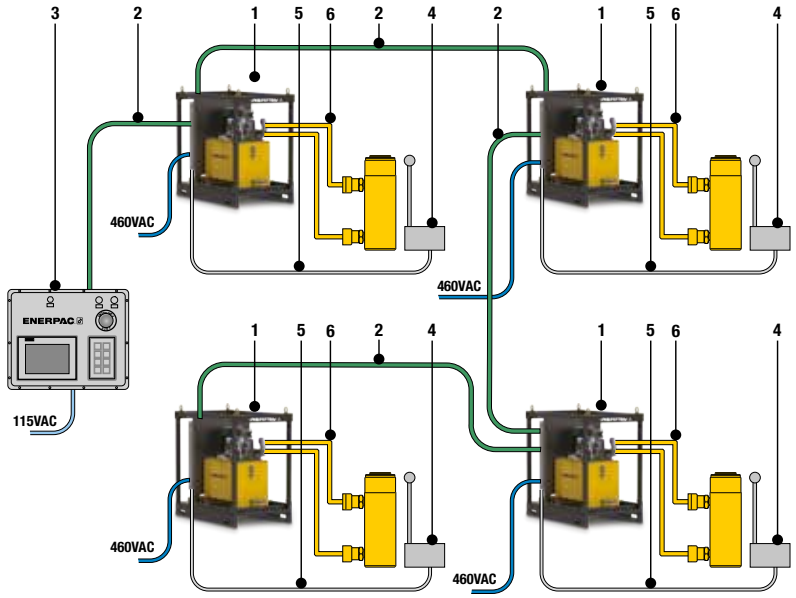
Reservoir Capacity:
10 - 40 gallons

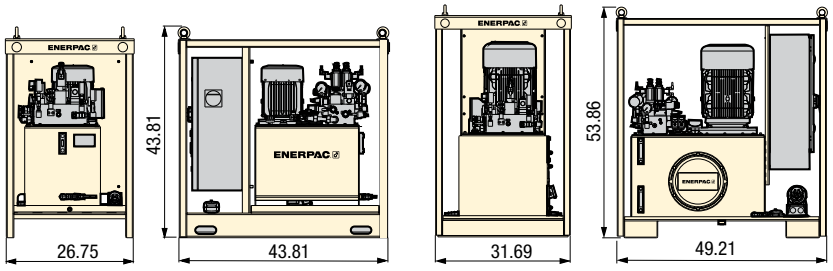
Flow at Rated Pressure:
128 - 488 in³/min

Motor Size:
4 - 10 - 20 hp

Maximum Operating Pressure:
10,000 psi

Networked EVOP-Pumps in Multipoint Synchronous Lifting Set-Up





5 hp — 10 - 20 hp

Networked EVOP-Pumps in Multipoint Synchronous Lifting Set-Up (with double-acting cylinders)

Nr.	Model No. & Description	Quantity
1	**EVOP-Series** Pump with Solenoid Valves	1x/cylinder
2	**EVO-COMM-XXX** Communication Cable	1x/pump
3	**CLNC12** Network Control Box	1x/system
4	**EVO-WSS-XXX** Stroke Sensor	1x/cylinder
5	**EVO-SC-25** Stroke Sensor Cable	1x/cylinder
6	**HC700-Series** Hydraulic Hoses	2x/cylinder



High-Tonnage Cylinders

The Enerpac High-Tonnage Cylinders are particularly suitable for (multipoint) lifting applications. Double-acting cylinders are recommended to take advantage of speed and time saving with EVOP-Series pumps.

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BLS-Series Climbing Jacks

Climbing Jacks overcome the usual limitation of lift height imposed by the jack's plunger stroke length. Large objects, such as oil tanks, can be lifted, held and lowered for maintenance without sending for a crane.

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EVOP-Series (Pump-per-Point)

Lifting Points per Pump	Reservoir Capacity	Oil Flow [1] (in³/min)		Model Number [2] 440 - 480 V, 3 phase, 60 Hz	Motor Size	
(cylinder)	(gal)	< 1800 psi	> 1800 psi		(hp)	(lbs)
1x	10	677	128	**EVOP12140J**	4	685
1x	40	793	244	**EVOP140150J**	10	1080
1x	40	1037	488	**EVOP180150J**	20	1115

[1] First stage high oil flow only available in manual control mode.
[2] For 380-415 Volt - 3ph - 50-60 Hz change suffix "**J**" into "**W**". Example: **EVOP140150W**.

▼ SCJ50, Enerpac Self-Locking Cube Jack



Incremental lifting system with automated mechanical locking

- **System is automatically mechanically locked after the lifting or lowering stroke**
- **Self-aligning steel cribbing blocks save time, improve side load, and eliminate the need for wooden cribbing materials**
- **Jobs are completed more efficiently due to simplified operation sequence with 50% fewer cycles than climbing jacks**
- **End block with adjustable swivel saddle allows fine adjustment during set-up: 1.97 inches screw extension**
- **Can be operated with Enerpac's 10,000 psi hydraulic power units**
- **Lloyds witness tested to 125% of maximum working load.**

Why use Self-Locking Cube Jacks?

The Self-Locking Cube Jack is a safer, more efficient alternative to the jack-and-pack method with wooden cribbing. The Self-Locking Cube Jack is derived from the proven Enerpac Jack-up System.

The Cube Jack has a small footprint and is useable in confined spaces, providing heavy lift contractors with a stable lift up to 118.3 inches. The cribbing blocks are lightweight and can be handled manualy.

Markets & Applications

Applications with a minimum starting height of 19 or 22 inch and requirement to lift up to 81 or 118 inch.

- Power Generation - transformer jacking
- Mining - equipment maintenance
- Heavy Transport - vehicle unloading
- Oil & Gas - module jacking
- Construction - bridge jacking
- Industrial Movers - lifting, lowering and levelling of heavy equipment.



◀ *Completed in just over one hour, the 160-ton 164 x 23 feet steel racking system was lifted synchronously to a height of 7.2 feet using 16 Enerpac SCJ50 Cube Jacks powered by a single SFP-Series Split-Flow Pump. Lifting large racking systems can be hazardous, complex and difficult involving forklift trucks and chain blocks. Photo by courtesy of PHL Hydraulics Ireland Ltd.*

▼ *Forklift tabs on Cube Jacks for easy transportation and positioning with a pallet truck. See dimensions D and I to select the right pallet truck size.*



Self-Locking Cube Jacks

Easy-to-use, compact and portable jacking system that utilizes base lifting frames and self-aligning, lightweight steel cribbing blocks, instead of wooden cribbing materials.

Operation is simple:

1. Connect the Cube Jacks to the Enerpac Split-Flow Pump and select lifting mode on each base lifting frame.
2. Insert a cribbing block and actuate the Cube Jack until the cribbing block engages the lock mechanism.
3. Retract the jack and repeat the process until the desired lifting height is reached. For the lowering operation select lowering mode on each base lifting frame and reverse the process.

The Cube Jack End Block is equipped with an adjustable saddle for initial alignment with the load.

All controls except for the main directional valve, which is on the hydraulic power unit, are included on the Cube Jack.

Manual cribbing block insertion

Cribbing blocks are easily managed by hand and the Cube Jack includes integrated fork pockets and lifting rings for effortless positioning.

Synchronous Lifting & Lowering

Enerpac recommends using the SFP-Series Split-Flow Pumps with multiple outlets with equal oil flow. For lifting and lowering applications on multiple points, Split-Flow Pumps are a far better alternative than using separately operated pumps.

If synchronous lifting & lowering is required, the SFP-Series Pumps can be configured to accommodate stroke sensors and provide accurate computer controlled lifting function.

SCJ Series



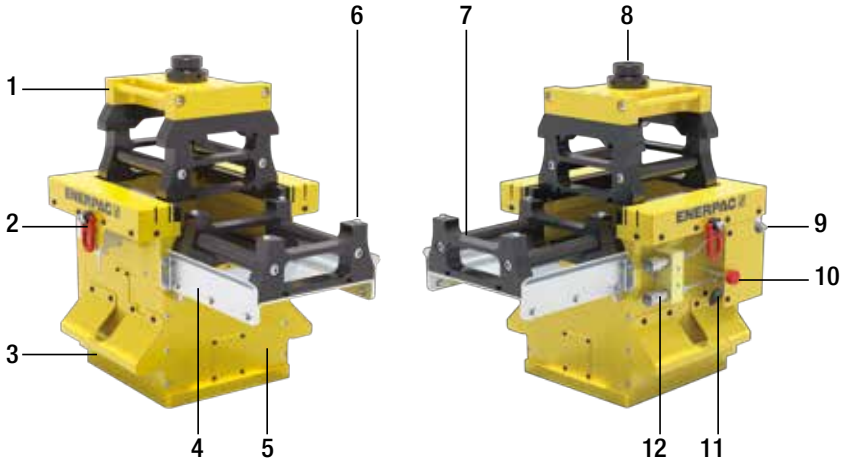
Capacity Per Cube Jack:
56 - 110 tons

Maximum Lifting Height:
81.4 - 118.3 inches

Maximum Operating Pressure:
10,000 psi

▼ *Cube Jack close-up of lifting and lowering valving mode and lock handle.*





Self-Locking Cube Jack

1 End block with tilting saddle
2 Eye-bolts for hoisting
3 Forklift tabs
4 Removable insert table
5 Cube Jack base frame
6 Locating pins
7 Steel cribbing blocks
8 Adjustable tilting saddle
9 Flow control
10 Mode locking pin
11 Mode selector lever
12 Hydraulic connections (Advance / Retract)

▼ SCJ100, Enerpac Self-Locking Cube Jack



Incremental lifting system with automated mechanical locking

- **Included with the Cube Jack are:**
  - **– Cube Jack Basic Unit**
  - **– End Block with adjustable swivel saddle**
  - **– Multiple cribbing blocks: 11x on SCJ50**
    18x on SCJ100
  - **– Transportation Frame**
- **Cribbing blocks can be manually inserted into the Cube Jack by one person.**



Transport Frame

Provided with purchase of each Cube Jack. Provides storage and transport for base unit, end block, and all included cribbing blocks.



Lightweight Cribbing Blocks

Provided with purchase of each Cube Jack. Cribbing blocks can be manually inserted into the Cube Jack by one person. Spare cribbing blocks can be ordered separately.

Description	Model No.
1x Cribbing Block, for 56 tons	**SCJ5B**
1x Cribbing Block, for 110 tons	**SCJ10B**



Split-Flow Pumps

Enerpac recommend to use the **SFP-Series Pumps** with multiple outlets with equal oil flow.
For lifting and lowering applications on multiple points, Split-Flow Pumps are a far better alternative than using separately operated pumps.

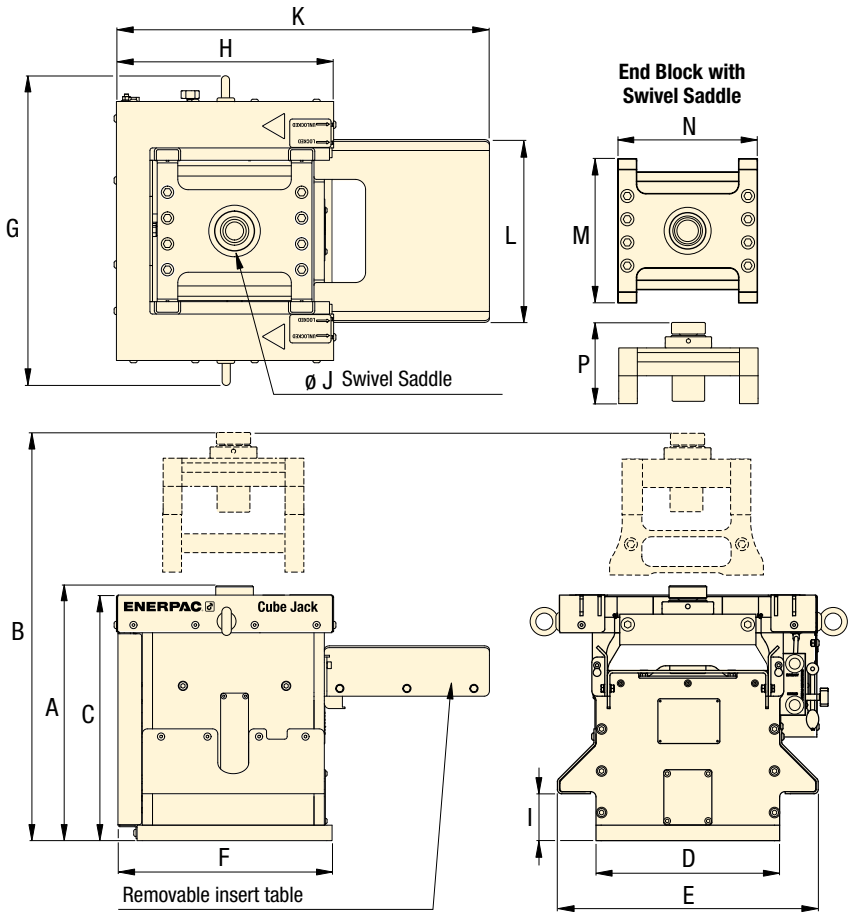
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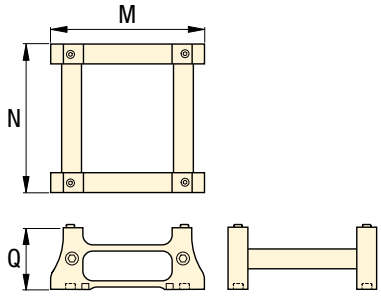
◀ *Heat exchanger maintenance job on the piping and condensers at a refinery using a combination of Enerpac Heavy Lifting Technology: SCJ-Series Cube Jacks, the ETT-Series Hydraulic Turntable and LH-Series Low-Height Skidding Systems.*

Self-Locking Cube Jacks

Lifting Capacity per Base Unit (tons)	Lifting Stroke (in)	Model Number	Maximum Sideload at full extension	Maximum Pump Oil Flow Rate (in³/min)	Oil Capacity per Base Unit (in³) Advance	Oil Capacity per Base Unit (in³) Retract
56	6.14	**SCJ50**	1.5%	65	75	38
110	6.14	**SCJ100**	1.5%	128	152	85



Basic Unit



Cribbing Block

SCJ Series



Capacity Per Cube Jack:
56 - 110 tons

Maximum Lifting Height:
81.4 - 118.3 inches

Maximum Operating Pressure:
10,000 psi

▼ *Typical set-up with 4 Self-Locking Cube Jacks and cribbing blocks in a Factory Acceptance Test (FAT). Enerpac recommends to power the Cube Jack using SFP-Series Split-Flow Pump.*



Base Unit		End Block		Cribbing Block		Transport Frame *	
Model Number	(lbs)	Model Number	(lbs)	Model Number	(lbs)	Model Number	(lbs)
SCJ50	794	**SCJ5EB**	88	**SCJ5B**	35	**SCJ5F**	243
SCJ100	1804	**SCJ10EB**	220	**SCJ10B**	52	**SCJ10F**	550

Dimensions (in)																Model Number
A	B	C	D	E	F	G	H	I	J	K	L	M	N	P Min.	P Max.	Q	
19.4	81.4	18.7	14.0	19.9	17.4	21.9	16.9	3.6	4.92	28.6	13.8	11.8	12.2	6.9	8.9	4.9	**SCJ50**
22.0	118.3	20.7	19.9	25.8	25.0	30.4	23.5	4.0	6.69	41.2	19.8	17.7	18.1	7.4	9.4	4.9	**SCJ100**

* Dimensions Transport Frame L x W x H: **SCF5F**: 36.25 x 33.5 x 34 inches.
SCF10F: 63 x 47.25 x 59 inches.

▼ BLS1006



A Simple Solution to Incremental Lifting

- **Climbing jacks include integral tilt saddles with maximum tilt angles up to 5 degrees**
- **Large base plate with anti-rotation rod for stability and safety**
- **Built-in safety valve prevents accidental over-pressurization**
- **Ideal in combination with the stage lift work mode of the EVO-Series synchronous lifting system**
- **Baked enamel finish for increased corrosion resistance**
- **CR400 couplers and dust caps included on all models.**

Lifting Height

Climbing Jacks overcome the usual limitation of lifting height imposed by the cylinder's plunger stroke length. Large objects, such as oil tanks, can be lifted, held and lowered for maintenance without sending for a crane.



Split-Flow Pumps

SFP-Series Pumps with multiple outlets with equal oil flow. For lifting and lowering applications on multiple points Split-Flow Pumps are a far better alternative than using separately operated pumps.

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Synchronous Lifting System

The standard EVO-Series System is ideal for stage lifting, powering interlinked hydraulic cylinders. The EVO-system has 9 work modes including the stage lift work mode.

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Jack-Up Systems

For incremental lifting with higher lifting capacities and up to 49.2 feet lifting height, see our JS-Series Jack-Up Systems.

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▼ *Synchronous Stage Lifting: 48 double-acting jacks (25 and 50-ton) are networked into a 16 point synchronous system to lift this 164 feet, 1100-ton building up to a height of 8 feet to construct a new floor level.*



Cylinder Capacity (tons)	Stroke (in)	Model Number	Max. Cylinder Capacity (tons) Push	Pull
55	5.91	**BLS506**	55	12
105	6.34	**BLS1006**	105	48
154	5.94	**BLS1506**	154	74
220	5.94	**BLS2006**	220	113

Double-Acting Climbing Jacks





◀ *Typical stage-lift application using a custom built Enerpac system to lift the 360-ton Akkerwinde wooden bridge in the Netherlands.*

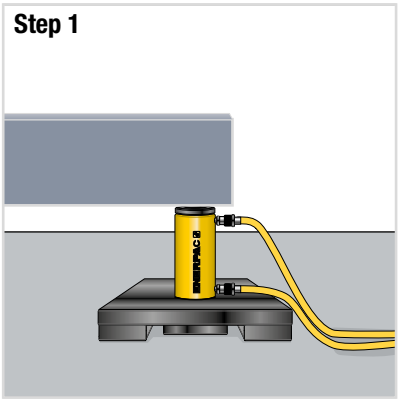
BLS Series

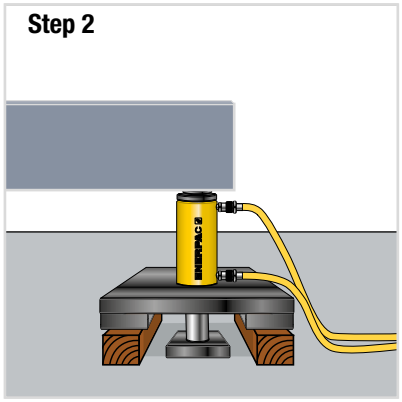


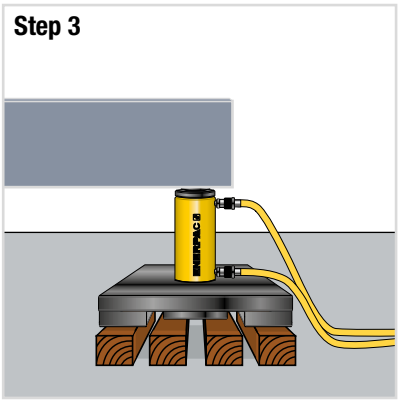
Capacity per Lifting Point:
55 - 220 tons

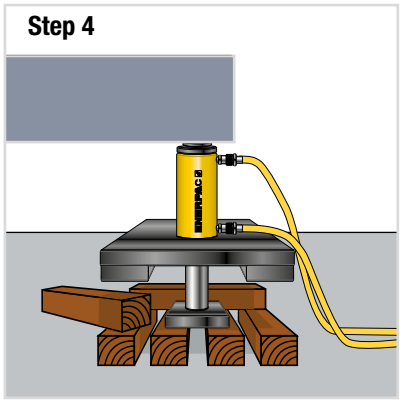
Stroke per Stage:
5.91 - 6.34 inches

Maximum Operating Pressure:
10,000 psi









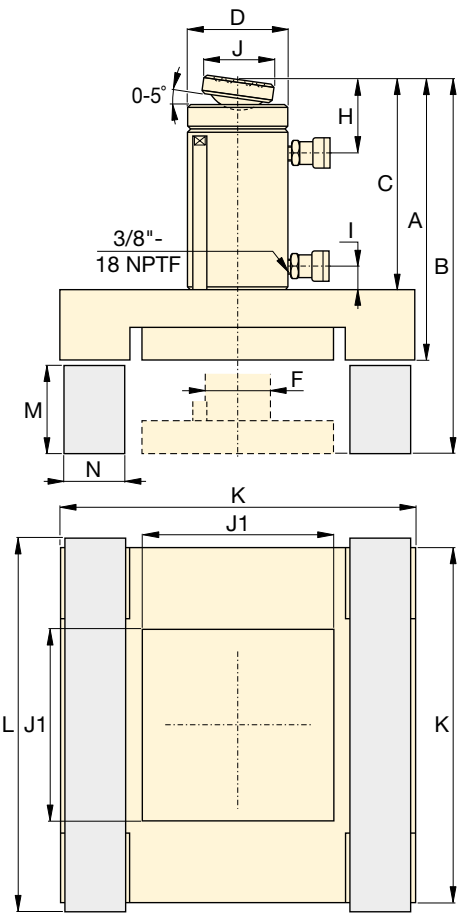
▲ Stage Lifting Sequence

Step 1: The climbing jack is placed on a solid support under the load (retracted plunger).

Step 2: Plunger extends, lifting the load and giving clearance to insert two outer blocks under the spreading plate.

Step 3: Plunger retracts, giving clearance to position the central blocks which will support the plunger plate for the next extension.

Step 4: Plunger extends, lifting the load, giving clearance to insert two new blocks, placed crosswise under the spreading plate.



Cylinder Effective Area (in²)		Oil Capacity (in³)		Dimensions (in)										Cribbing Blocks * and Dimensions (in)					Model Number
Push	Pull	Push	Pull	A	B	C	D	F	H	I	J	J1	K	Material	L	M	N	(lbs)	
11.04	3.33	67.8	20.5	15.98	21.89	12.52	5.00	3.11	2.24	1.42	1.97	9.45	20.28	Azobe Wood	22.24	5.51	4.72	375	**BLS506**
20.66	9.64	136.6	63.8	17.52	23.86	13.50	6.97	3.74	2.99	0.94	2.80	12.99	26.38		28.35	5.91	6.30	695	**BLS1006**
30.71	14.79	188.6	90.8	18.58	24.57	14.57	8.00	4.49	3.70	1.54	5.12	9.06	18.70	Solid Aluminum or Steel	19.69	5.51	4.53	710	**BLS1506**
44.21	22.50	264.4	134.8	20.08	26.02	15.24	9.76	5.24	4.02	1.46	5.12	10.63	21.65		22.64	5.51	5.31	825	**BLS2006**

* Cribbing blocks are not supplied by Enerpac.

▼ **JS250 and JS500 Enerpac Jack-Up System** (one lifting tower shown)



Incremental Lifting System – Synchronously Lift and Mechanically Hold

- **Self-contained hydraulics in each jack-up unit for uncluttered work area**
- **Synchronously lift loads with multiple jack-up units. The most common system set-up includes 4 jack-up units**
- **Adjustable top barrel is standard on all models**
- **Lifting barrels are stacked together to mechanically hold the load**
- **Up to 4% side load capacity depending on lifting height**
- **Computer controls for operating the jack-up system with automatic and manual lifting settings.**

Typical Applications

- Bridge maintenance
- Lifting and lowering of heavy equipment
- Lifting, lowering and leveling of heavy structures and buildings
- De-propping/load transfer from temporary steel work.

Computer Controls

Enerpac Jack-up Systems provide precision control suitable for many demanding lifting/lowering applications. The comprehensive self-contained design features simple to use software.

- Automatic synchronization of multiple networked lift points.
- Overload and stroke alarms
- Emergency stop switch at jack-up units and controls.

▼ *Enerpac has been awarded a contract by Burkhalter to extend the height of Enerpac's 2200-ton (550-ton per tower) jack-up system from 66 to 118 feet for future projects.*



▼ *Enerpac Jack-Up System lifts 1500-ton span on Fore River Bridge.*



▼ *Undecking an 1500-ton Electric Rope Shovel in a Copper Mine with a JS500 Jack-Up System for bearing inspection and maintenance.*



Enerpac Jack-Up Systems

The jack-up system is a custom developed multi-point lifting system. A typical system setup includes four jack-up units positioned under each corner of a load.

Example: A four unit setup with JS250 has a lifting capacity of 1100 ton (275 ton per unit). The lifting frame of a jack-up unit contains four hydraulic lifting cylinders, one in each corner, which lift the load using the stacked steel barrels.

A load is lifted in increments as barrels are slid into the system, lifted, and stacked; forming 'lifting towers'. A jack-up system is operated and controlled by a computer control unit.

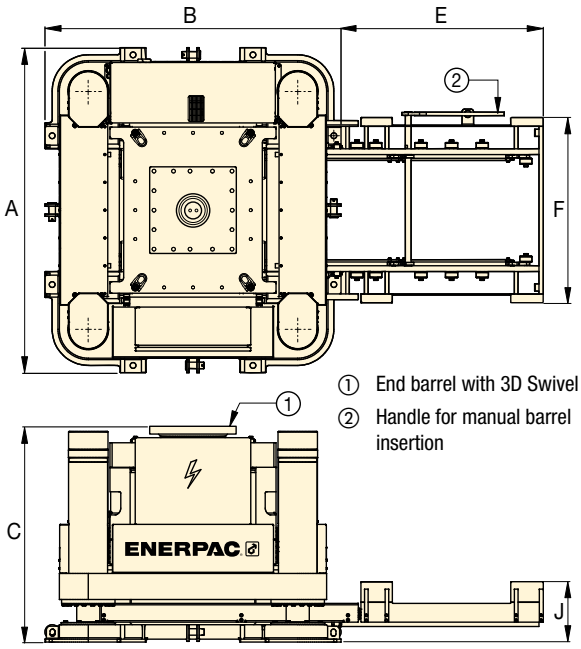
Each unit's lifting and lowering operations occur simultaneously; the computer control unit's synchronous technology maintains the balance of the load.

JS Series

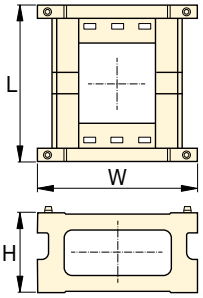


Capacity Per Lifting Tower:
275 - 550 tons

Lifting Height:
Up to 32.9 - 49.2 feet



Jack-Up System (JS)



Steel Barrel (BLJS)

Jack-up System Smart Box

The **Smart Box SBSJ-SCCV4** is Enerpac's proprietary control platform. It allows an operator to control up to 8 jack-up towers simultaneously with one **SBLT1** standard laptop.

- Single operator control from a central location provides safe and reliable operation
- Synchronous lift /lower and load control between the lifting positions
- Automatic lifting and lowering cycles
- Displays individual and accumulative stroke/load
- Simple graphical user interface.



Adjustable Top Barrel

Adjustable top barrel is standard on all models.
Includes double-acting lock nut cylinder with swivel saddle. Cylinder can be extended to contact the load. Provides ability to adjust starting height of each leg, ensuring safe and stable lifting. Must be operated with separate 10,000 psi pump with 4/3 directional valve.

Steel Barrels

For use with Jack-Up System	Barrel Set Model Number	Number of Barrels per Set	Barrel Dimensions (in)			Weight per Barrel
			L	W	H	(lbs)
JS250	**BLJS250**	4	45.28	45.28	19.69	792
JS500	**BLJS500**	4	66.93	66.93	27.56	2090

Jack-Up Systems

Capacity per Tower	Model Number	Maximum Side load and Max. Height	Maximum Lifting Speed	Base Frame Dimensions (in)			Barrel Loading System (in)			Electric Power Pack	Weight per Jack-Up Unit *	Weight Adjustable Top Barrel (3D Swivel)
(tons)			(ft/hr)	A	B	C	E	F	J	(hp)	(lbs)	(lbs)
275	**JS250**	3% @ 32.8 ft	13	88.58	80.71	58.07	52.81	52.81	16.46	20	16,500	6,450
550	**JS500**	4% @ 49.2 ft	13	110.25	90.55	66.93	69.75	69.75	18.03	40	30,250	8,470

* Weight per jack-up tower, excluding adjustable top barrel.

▼ HSL150, HSL2000, HSL700 Heavy Lifting Strand Jacks



High Capacity Precision Control

- **Precision control of synchronous lifting and lowering**
- **Can be controlled by a single operator from a central location for increased safety**
- **Automated locking - unlocking operation**
- **Two strand sizes: 0.62 inch (15,7 mm) and 0.71 inch (18 mm)**
- **Telescopic strand guide pipes prevent bird caging**
- **Internal components are coated with Lunac, an anti-corrosion coating, making it suitable for marine environments**
- **Lifting anchor included with all strand jacks**
- **Lloyd's witness tested to 125% of maximum working load.**

Heavy Lifting Strand Jacks

Enerpac strand jacks are the strand jacks of choice for customers seeking precise synchronous control with heavy-lifting capacity in an economical, compact, and reliable foot print.

Enerpac strand jacks are powered by electrical or diesel driven hydraulic power packs and controlled by Enerpac's proprietary SCC-Smart Cylinder Control System to ensure full control of lifting and lowering operations.

Enerpac continually improves reliability, durability, and safety of their strand jacks, making them an industry standard for heavy lifting.

▼ *HSL85007 Strand Jack System used on Enerpac custom Self-Erecting Tower.*



▼ *Enerpac's SCC-Smart Cylinder Control System simplifies synchronous operation with intuitive controls and a user-friendly graphical interface.*



Heavy Lifting Strand Jacks

Strand Jacks

A strand jack can be considered a linear winch. In a strand jack, a bundle of steel strands are guided through a main “lifting” jack.

Above and below the cylinder are anchor systems with wedges that grip the strand bundle simultaneously. Lifting and lowering a load is achieved by hydraulically controlling the main jack and both mini jacks alternately.

In the case of system pressure loss, the wedges are mechanically closed automatically, holding the suspended load in place.

Today, strand jacks are widely recognized as the most sophisticated heavy lifting solution. They are used all over the world to erect bridges, load out offshore structures, and lift/lower heavy loads where the use of conventional cranes is neither economical nor practical.

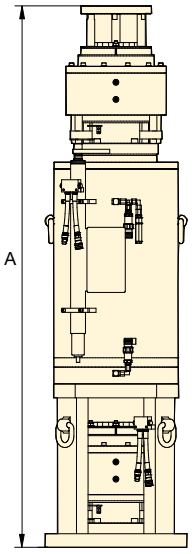
HSL Series

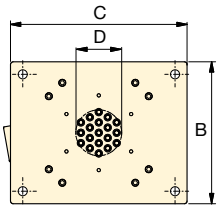


Capacity:
17 - 935 tons

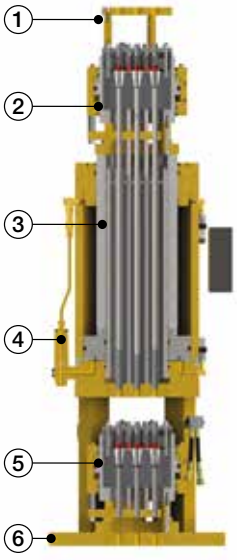
Stroke:
10 - 18 inches

Maximum Operating Pressure:
2,000 - 5,000 psi





① Strand Guide
② Top Mini Jack
③ Main Lifting Jack
④ Counter Balance Valve
⑤ Bottom Mini Jack
⑥ Chair



Strand Diameter inch (mm)	Capacity * (tons)	Model Number	Number of Strands	Stroke (in)	Working Pressure (psi)	Dimensions (in) A	B	C	D	(lbs)
0.62 (15,7)	**77**	**HSL7006**	7	18	3,000	75.4	14.2	22.6	3.7	1523
	220	**HSL20006**	19	18	3,400	78.4	20.6	25.6	6.7	3203
	550	**HSL50006**	48	18	5,000	87.3	28.9	28.9	11.1	7694
0.71 (18)	**17**	**HSL1507**	1	10	3,200	48.9	8.7	8.7	0.8	224
	50	**HSL4507**	3	18	2,000	75.4	14.2	22.6	3.7	1523
	110	**HSL10007**	7	18	3,000	75.8	16.1	24.6	4.5	2128
	935	**HSL85007**	55	18	5,000	94.6	35.4	35.4	14.3	11.648

* Capacity is based on 2.5 minimum safety factor over strand breaking load.

▼ Strand Jack Accessories

Contact Enerpac for assistance at **enerpac.com/contact-us**



SLPP-Series Hydraulic Power Packs

Enerpac offers a comprehensive range of hydraulic power packs that are optimized for use with their industry leading heavy lifting strand jacks.



SG-Series Strand Guides

Provides a guide for the strand as a strand jack lifts the load.



SR-Series Strand Recoilers

Passively pays in or pays out strands while jacking and lowering.



SD1 Strand Dispenser

Essential to safely unbundle a new strand coil.



Lifting Anchor

Each Strand Jack includes a lifting anchor for attaching strand to the load.

▼ SyncHoist System with SHC5540S Cylinders and SHP-Series Pump



Accurate Hoisting and Load Positioning Enhancing a Crane's Capability

- **High-precision load maneuvering, vertically and horizontally – using one crane**
- **Reduces the risk of damage from oscillations of wire rope due to crane jogging and sudden starts/stops**
- **Vastly improving worker safety, operating speed and control**
- **Weather conditions play less critical role**
- **PLC-controlled hydraulics turn lifting into high-accuracy hoisting and load positioning system**
- **Double-acting push/pull cylinders with load holding valves for added safety in case of hose rupture or coupler damage**
- **Cost reduction compared to conventional load positioning methods.**

Options for system management & control:

- **Manual control with load and position monitoring for up to four cylinders as standard**
- **Automatic control available with addition of SFPSSC control panel provides automatic movements as well as stroke and load warning functions.**

Synchronous Hoisting

Enerpac SyncHoist is a unique crane product for below-the-hook positioning of heavy loads that require precision placement. The SyncHoist system may reduce the number of cranes needed and reduce the costs of multiple picks.

Functions

- High precision horizontal and vertical load positioning
- Load and position monitoring standard on all units to ensure safe and accurate operation.

Applications

- Positioning of rotor, stator and propeller blades of wind turbines
- Positioning of roof sections, concrete elements, steel structures
- Positioning of turbines, transformers, fuel rods
- Precise machinery loading, mill rod changes, bearing changes
- Precise positioning of pipe lines, blow out valves
- Positioning and aligning of ship segments prior to assembly.

▼ *Bridge segments are hoisted from the ground, being positioned with a 4-point SyncHoist system with fully monitored cylinders.*



▼ *Rigging engineers used the SyncHoist system to precisely monitor and adjust each lifting point independently, or together in a synchronized manner to position the 1140-ton nuclear plant module.*



▼ *Enerpac SyncHoist system in use during roof truss picks: precise lift and positioning of stadium retractable roof trusses. 33 trusses weighing between 450 - 750 tons.*



SyncHoist - High-Precision Load Positioning

What is SyncHoist?

Enerpac SyncHoist is a hydraulically operated auxiliary attachment for high-precision load positioning for cranes.

The automatic version with PLC-controlled hydraulic pump monitors and guides the powerful double-acting push-pull cylinders integrated into the lifting points above the load. The SyncHoist system can be used for positioning, tilting and aligning of loads.

- Patented system
- European lifting directive and safety requirements as well as ASME BTH-1 standard for below the hook lifting devices.

SyncHoist improves safety, operating speed and control of load movement

Geometric positioning of heavy loads in a horizontal and vertical plane are frequently done using more than one crane.

Synchronising movements between cranes are difficult and risky. The lifting inaccuracy can result in damage to the load and support structures and puts workers at risks. The SyncHoist system can be used for controlled hydraulic horizontal and vertical material handling.

SHC-Series Cylinders

Standard stroke lengths and capacities shown serve most common applications. Contact Enerpac for custom stroke lengths and additional capacities to suit your specific application.

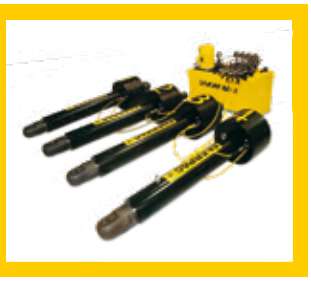
SHP-Series Manual Control

- Push button pendant control of up to four cylinders
- Load and position readout from sensors on SHC-series cylinders
- Visual check oil level, filter indicator.

Automatic Control Available

- Connect control panel **SFPSSC** to SHP-Series pumps to enable automatic control
- PLC-control and touch screen
- Pre-programmable motions and data recording
- System warnings for:
  – maximum cylinder load control setting
  – stroke and position control
  – thermal motor protection.

SHC, SHP Series

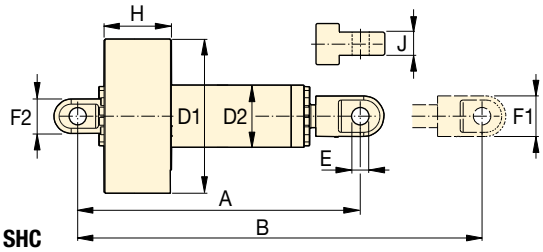


Capacity Per Lifting Point:
60 - 94 - 120 tons

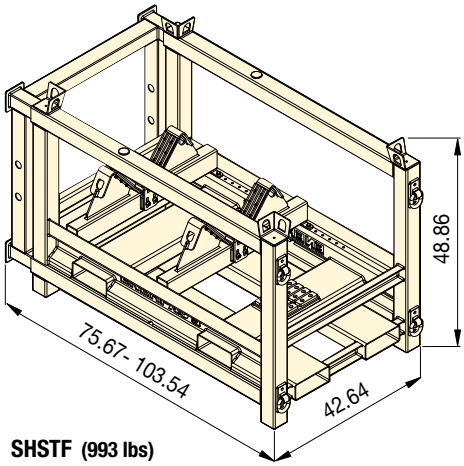
Maximum Stroke:
39.37 - 59.06 inches

Accuracy Over Full Stroke:
± 0.040 inch

Maximum Operating Pressure:
10,000 psi



SHC

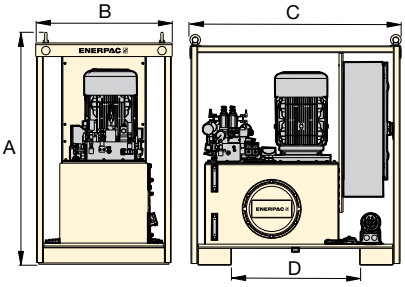


SHSTF (993 lbs)

Cylinder Capacity	Cylinder Stroke	Cylinder Model Number *	Dimensions (in)									
tons	(in)		A	B	D1	D2	E	F1	F2	H	J	(lbs)
60	39.37	**SHC5540S**	70.87	110.24	27.17	9.65	2.32	6.30	6.30	15.55	3.15	1398
94	39.37	**SHC8540S**	72.05	111.42	26.77	10.43	2.83	6.46	6.46	15.16	3.94	1568
120	59.06	**SHC11060S**	92.72	151.77	30.71	12.40	3.35	8.07	6.85	15.94	4.88	2766

* Each cylinder requires separate purchase of (1) **EVO-SC-25** sensor cable (82 ft length) and (2) **SHH25** hydraulic hoses (82 ft length) for connection to SHP-Series pumps.
All SHC-cylinders supplied with adjustable steel transport frame (model nr. **SHSTF**) to protect your investment.

Maximum Lifting Points	Reservoir Size (gal)	Pump Model Number	Oil Flow per Outlet (in^3/min)	Motor Size 460V, 3 ph, 60 Hz (hp)	Dimensions (in) A	B	C	D	(lbs)
4	66	**SHP414SJ**	101	10	53.86	31.69	49.21	29.92	1750
4	66	**SHP421SJ**	153	15	53.86	31.69	49.21	29.92	1750



▼ One leg of ML40 Mini-Lift Hydraulic Gantry; shown with Wireless Pendant



Lift Heavy Machinery Safely

Portable design with precision control

- Compact design for use in areas with limited space
- Self-contained hydraulics with synchronized lifting for enhanced safety
- Powered travel, under load, standard on all models for ultimate utilization
- Three-stage, double-acting cylinder provides extended lifting capacity
- Easy-to-use handheld pendant control can operate four legs simultaneously
- Compatible with standard Enerpac gantry accessories
- Operates on 115 or 230 VAC 1-phase or 380-415 VAC 3-phase power (1 circuit per leg)
- ASME B30.1 compliant and load tested under witness of Lloyd's Register.



Load Beams

Sold in pairs and includes lifting points and fork pockets for easy positioning on gantry towers.

Description	Model Number
19.7 ft length	HBH6
26.2 ft length	HBH8



Skid Tracks

Skid tracks used for leveling and load distribution to reduce ground bearing pressure. Available in two standard lengths.

Description	Model Number
9.8 ft length	GST100-3
19.4 ft length	GST100-6



Lifting Anchors

Designed to transfer the load to the top of the load beam. Can accommodate a 250-ton shackle or attach directly to the lifted load.

▼ *Moving and positioning a 25-ton boiler using the ML40 Mini-Lift Gantry.*



▼ *SL400 gantry used to offload and install new forming press.*





Higher Capacities SL and SBL-Series Hydraulic Gantries

When the ML-Series Mini Gantry isn't quite enough capacity or height for your application, Enerpac offers a full range of safe-to-operate full featured telescopic hydraulic gantries, up to 1178-ton capacity and lifting heights up to 39 feet. Contact Enerpac for more details.

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Mini-Lift Hydraulic Gantry

ML-Series, Mini-Lift Gantry

The cost-effective, compact ML40 Mini-Lift Hydraulic Gantry System, with wireless controls offers several key features:

Safety:
Stroke synchronization ensures a level lift regardless of load distribution.
PLC-controlled lifting using feedback from a stroke encoder maintains even height on all legs and will stop the lift if necessary to prevent issues.

Capacity with 4 legs:

ML40B (115 VAC) capacity is 50 tons at stages 1 and 2, and 45 tons at stage 3. **ML40E / W** capacity 50 tons at each stage.

Even with its compact size, the ML40 can lift full capacity to full height of 18 feet, making it the most versatile portable gantry in the market.

Compact:
Fits through standard doorway and is easily moved and set up. The ML40 gantry can be moved through the tightest spaces imaginable in all industrial settings.
Easy to push, pull and maneuver, the ML40 can get into spaces that no other gantry can.

ML Series



Capacity (with 4 legs):
45 - 50 tons *

Maximum Lifting Height:
18 feet



Wireless Pendant

- Stroke measurement and closed loop synchronization ensure level lifting and lowering.
- Integrated 1.8 inch color display provides load and stroke information for all four lift points.



Mini-Lift Gantry Transport Frame

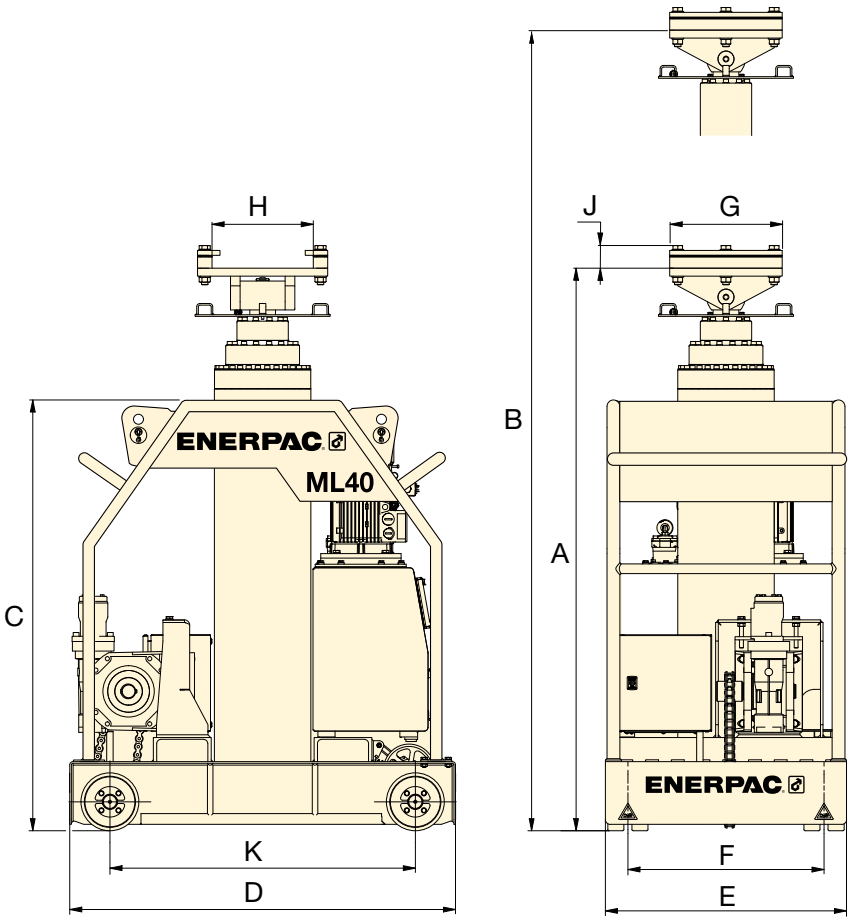
Galvanized steel transport frames to allow shipment of mini gantry legs via standard truck lines.
Two legs mount on each frame which includes storage for controls and accessories.

Description	Model Number
Set of two frames	**ML40TF**

Operating Voltages

ML40 is available in three voltages.
1 circuit per leg.

Voltage (VAC), 50-60 Hz	Model Number
110-120 VAC, 1 phase, 20 A	**ML40B**
208-240 VAC, 1 phase, 10 A	**ML40E**
380-415 VAC, 3 phase, 4 A	**ML40W**



Max. Capacity * (tons)	Model Number (4 legs)	Retracted Height A (ft)	Stage 1 Max. Height B (ft)	Stage 1 Max. Capacity * (tons)	Stage 2 Max. Height B (ft)	Stage 2 Max. Capacity * (tons)	Stage 3 Max. Height B (ft)	Stage 3 Max. Capacity * (tons)	Base Height C (in)	Base Length D (in)	Base Width E (in)	Track Gauge F (in)	Beam Plate Length G (in)	Beam Plate Width H (in)	Beam Plate Height J (in)	Wheel Base K (in)	** (lbs)
45	**ML40**	6.23	9.84	50	13.78	50	18.09	45	54.75	47.25	29.50	24.00	13.78	12.40	2.80	37.40	2756

* Capacity with 4 legs. **ML40B** (115 VAC) capacity 45 tons at stage 3. **ML40E, ML40W** capacity 50 tons at stage 3.

** Weight per leg including oil.

▼ SBL1100 with optional skid tracks, load beams, powered side shifts and lifting anchors



- **Self-contained hydraulics and electronics**
- **Intelli-Lift wireless control system**
- **Self-propelled wheels or tank rollers**
- **Foldable boom on SBL600, SBL900 and SBL1100 to enable easy transport and set-up**
- **Full range of supplementary equipment: load beams, lifting anchors, side shifts and skid tracks**
- **All gantries comply to ASME B30.1, CE, UKCA and other safety standards**
- **Lloyds witness tested to 125% of maximum working load.**

Precision Lift and Position of Heavy Loads

The Ultimate in Safety and Control



Intelli-Lift Wireless Control

The Intelli-Lift wireless control system is included with all Enerpac SL- and SBL-Series hydraulic gantries.

The Intelli-Lift controller offers superior safety and control and includes the following features:

- Encrypted bi-directional communication that eliminates interference from other devices
- Remote operation using multi-channel wireless (2.4 GHz) or wired (RS-485) control
- High and low speed settings
- Automatic synchronization of lifting with an accuracy of 0.95 inch
- Automatic synchronization of travelling with an accuracy of 0.60 inch
- Overload and stroke alarms
- Remote side shift control
- Emergency stop switch.



ML40, Mini-Lift Hydraulic Gantry

45-ton lifting capacity at full extended lift height. Even with its compact size, the ML40 can lift 45 tons to 18 feet, making it the most versatile portable gantry in the market.

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▼ *Enerpac SBL-Series hydraulic gantries are used in a variety of applications to install turbines, transformers and other power generation equipment all over the world.*





Maximum Capacity (with 4 towers) (tons)	Model Number (4 towers)	Retracted Height A (ft)
220	SL200J	8.96
450	SL400NJ	8.94
450	SL400J	10.39
674	SBL600J	14.11
1009	SBL900J	16.42
1178	SBL1100J	14.34

* **J** = 460 - 480 V, 3 ph, 50-60 Hz.
W = 380 - 415 V, 3 ph, 50 Hz

Hydraulic Gantries

Telescopic Hydraulic Gantries are a safe, efficient way to lift and position heavy loads in applications where traditional cranes will not fit and permanent overhead structures for job cranes are not an option.

Hydraulic Gantries are placed on skid tracks to provide a means for moving and placing heavy loads, many times with only one pick.

Enerpac Hydraulic Gantry Systems:

- **ML-Serie Mini-Lift**
  Fits through standard doorway and is easily moved and set up.
  The ML40 gantry can be moved through the tightest spaces imaginable in all industrial settings.
- **SL-Series Super Lift**
  The cost-effective SL-Series Super Lift offer control and stability for everyday lifting applications below 450-ton up to 30 feet.
- **SBL-Series Super Boom Lift**
  The heavy-duty SBL-Series Super Boom Lift boom style gantries offer increased lifting capacity of over 450-ton to heights of 39 feet.

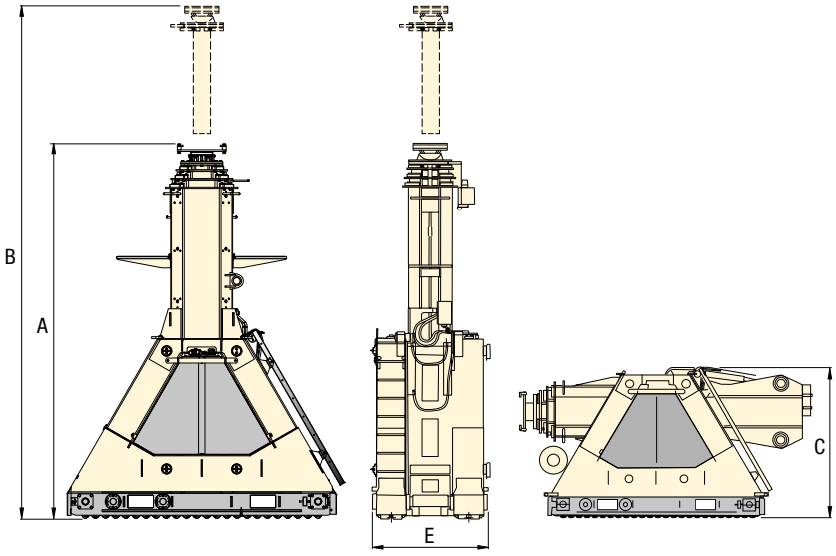
All Enerpac gantries are delivered with specific properties and control systems to ensure optimum stability and safety.

SL, SBL Series



Capacity with 4 towers:
220 - 1178 tons

Lift Height:
14.31 - 39.38 feet



Stage 1		Stage 2		Stage 3		Transport Height	Skid Track Width		Model Number (4 towers)
Max. Height B (ft)	Max. Capacity * (tons)	Max. Height B (ft)	Max. Capacity * (tons)	Max. Height B (ft)	Max. Capacity * (tons)	C (in)	E (in)	(lbs) [1]	
15.47	220	21.98	150	–	–	102.8	31.97	4850	**SL200J**
14.31	450	19.76	337	25.26	220	107.3	31.97	7937	**SL400NJ**
17.14	450	23.73	450	29.99	208	124.8	47.95	10,141	**SL400J**
21.33	674	28.22	562	34.78	416	88.6	47.95	19,842	**SBL600J**
27.24	1009	37.09	664	–	–	88.3	47.95	29,432	**SBL900J**
22.98	1178	31.72	760	39.38	424	88.4	47.95	26,345	**SBL1100J**

* Maximum capacity with 4 towers.

[1] Weight per tower

▼ Optional Gantry Accessories

Contact Enerpac for assistance by email at **enerpac.com/contact-us**



Skid Tracks

Allows for easy leveling of the gantry tower and reduce ground bearing pressure, available in two standard lengths, 10 and 20 ft.



Load Beams

Sold in pairs and includes lifting points and fork pockets for easy positioning on gantry towers. Available in standard lengths of 26.2, 32.8 and 39.3 ft.



Powered Side Shift

Electric propulsion controlled by standard gantry controls. Each set consists of 4 units.



Lifting Anchors

Designed to transfer the load to the top of the load beam. Can accommodate a 250-ton shackle or attach directly to the lifted load.

▼ LH-Series, Low-Height Skidding System



Low-Height Skidding System for Heavy Loads

The Ideal Low-Height Jack & Slide Solution

- **Low starting height saves time and increases versatility**
- **Portable design allows for easy transport and quick setup**
- **System can push or pull load without relocating skidding cylinder**
- **Skid track sections can be connected with fast-coupling system to allow each setup to be customized as needed**
- **Backwards compatible: new LHS4-2 system can be connected with previous LH400 system using the Conversion Kit LHCK**
- **Improved handling, transportation and storage with integrated lifting points, starter kit, skid track kits and stackable frames**
- **Replaceable PTFE skid pads lower the total cost of ownership**
- **High capacity skidding in a portable design**
- **Intuitive pump controls (SFP-Series Split-Flow Pump)**
- **Easily reversible to change skidding direction.**

Skidding Systems

The Skidding System is comprised of a series of skid beams moved by hydraulic push-pull cylinders, traveling over a pre-constructed skid track.

A series of special PTFE-coated Teflon® pads are mounted on the skid tracks to reduce friction. The push-pull cylinders are then connected by hydraulic hoses to a Split-Flow Pump.

Skid Track Fast-Coupling System

Enerpac's LHS4-2 skid track fast-coupling system reduces assembly time for greater productivity.





▼ *Low-Height Skidding System provides the ability to maneuver and transport large, heavy objects like this press frame.*



▼ *The Enerpac Low-Height Skidding System allows the maintenance team to transport transformers with access limitations.*



Starter Kit LHS4ST-2

A complete starter kit is available to fit the needs of many jack and slide applications.

Starter kit has 23,5 feet (2 lines) sliding length. The Skid Track Kit is max. 32,8 feet (2 lines) length.

This system comes with two skidding units that will support up to 400 tons in total. Total skidding capacity is only achieved when the friction is less than 5%.

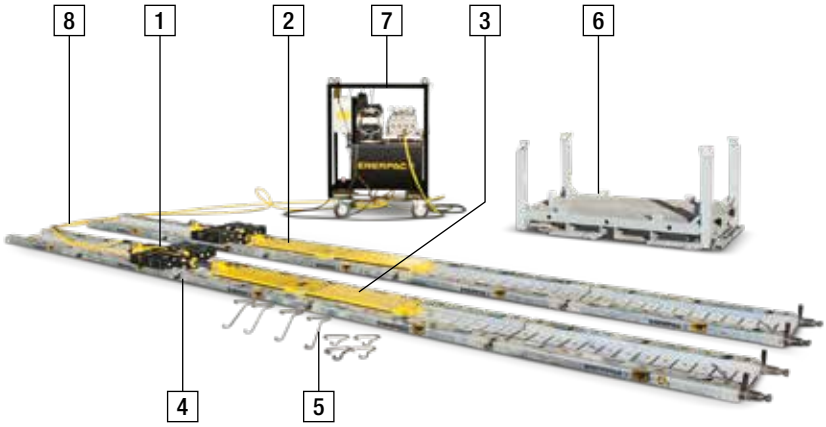
This kit will get the job done. Optional accessories available (see page 368-369).

Easy to handle, stackable transport frame. To operate the system an SFP-Series Split-Flow Pump and hydraulic hoses are required and must be ordered separately.

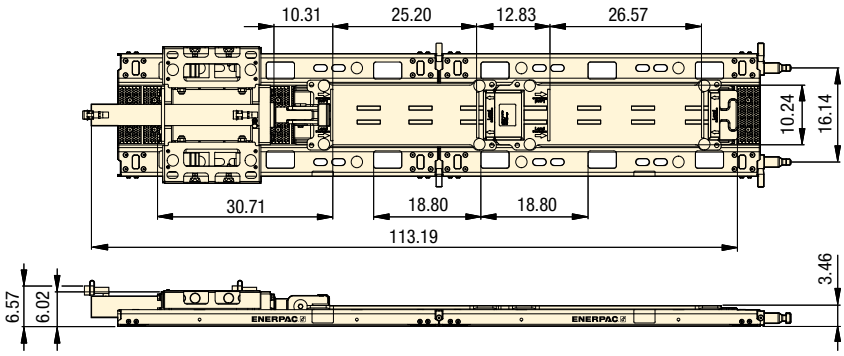


Starter Kit LHS4ST-2 includes nrs 1-6:		Model Numbers	Qty
1.	Push-Pull Units (200 tons)	LHPP25-2	2x
2.	Skid Beams A (3.3 feet)	LHSB1A-2	2x
3.	Skid Beams B (3.3 feet)	LHSB1B-2	2x
4.	Skid Tracks (4.7 feet)	LHS4TK10-2	10x
5.	Handle Hooks	–	8x
6.	Transport Frame	LHS4TF-2	1x
7.	Split-Flow Pump *	SFP....	1x
8.	Hydraulic Hoses *	HC....	4x

* Pump and Hoses must be ordered separately.



LH-Series, Low-Height Skidding System
(dimensions in inches)



▼ Low-Height Skidding System

Capacity * Skidding System (2 units) (tons)	Model Number	Capacity Skidding Unit (1x) (tons)	Maximum Cylinder Advance Force (tons)	Maximum Cylinder Retract Force (tons)	Maximum Operating Pressure (psi)
400	**LHS4-2**	200	25	11	10,000

* Total skidding capacity is only achieved when the friction is less than 5%.

LH Series



Skidding Capacity with two push-pull units:
400 tons

Push-Pull Stroke:
23.62 inches

Maximum Operating Pressure:
10,000 psi



SFP-Series, Split-Flow Pumps

Split-Flow pumps distribute an equal amount of hydraulic fluid to a maximum of 6 outlets. Smart valve technology allows controlled lifting and lowering of heavy loads.

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Conversion Kit LHCK

Backwards compatible: the new LHS4-2 skidding system can easily be connected with the previous LH400 low-height skidding system using the **LHCK** Conversion Kit.

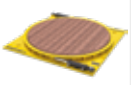
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Skidding Components

To extend the length of your skidding system additional Skid Beams, Skid Tracks and PTFE-coated Teflon® Pads are available.

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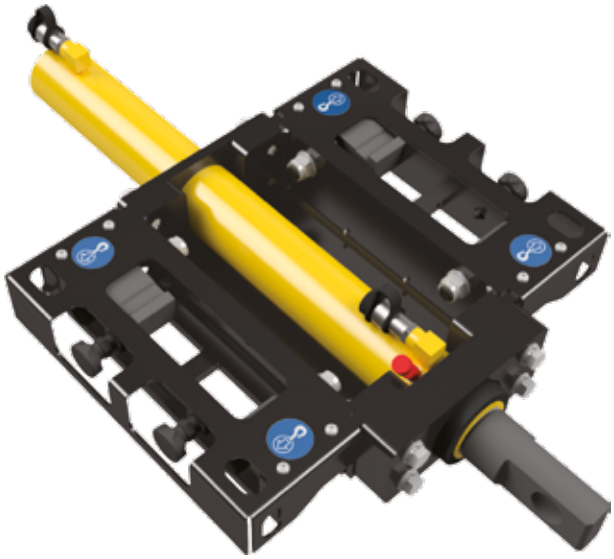


Hydraulic Turntables

ETT-Series hydraulic turntables, in combination with our low-height skidding system, makes load handling in the most demanding situations easy.

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▼ LHPP25-2 Low-Height Push-Pull Unit



Push-Pull Unit

- Connects to first skid beam to push or pull load along skid track
- Cover to protect index plunger
- Integrated lifting points for improved handling
- Easily reverse direction by switching reaction tabs
- Complies to ASME B30.1 and other safety standards.

▼ Low-Height Push-Pull Unit

Maximum Capacity (tons)		Model Number	Stroke	
Push	Pull		(in)	(lbs)
25	11	**LHPP25-2**	23.62	224

▼ LHSB1A-2 and LHSB1B-2 Skid Beams



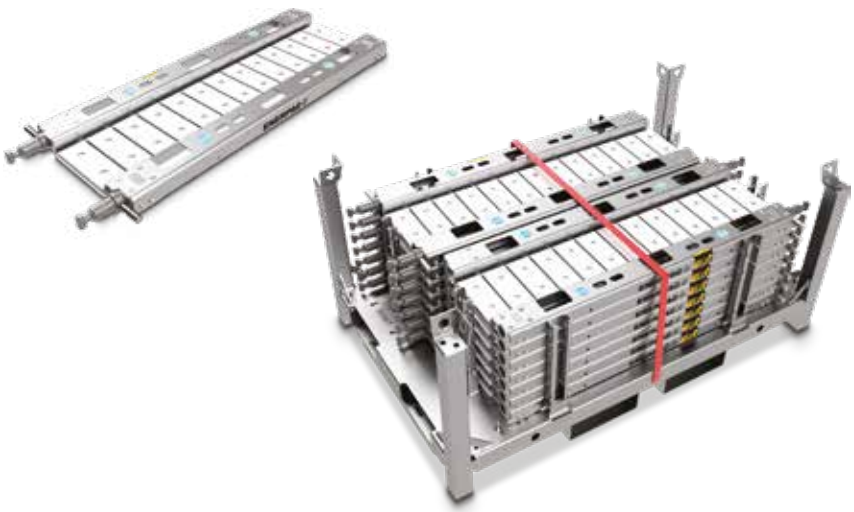
Skid Beams

- Interlocks without any fasteners to slide load over skid track;
  skid beam A (LHSB1A-2) attaches to the push-pull unit
  skid beam B (LHSB1B-2) attaches to skid beam A
- Polished stainless steel skid surface
- Lifting points & holes.

▼ Skid Beams

Capacity (tons)	Model Number	Length (in)	(lbs)
100	**LHSB1A-2**	38.4	148
100	**LHSB1B-2**	42.5	154

▼ LHS4-2 Skid Track and LHS4TK14-2 Skid Track Kit



Skid Tracks

- Support the load for skidding operations
- Skid track can be connected with Fast-Coupling System
- Includes 13 pieces easily replaceable PTFE skid pads.

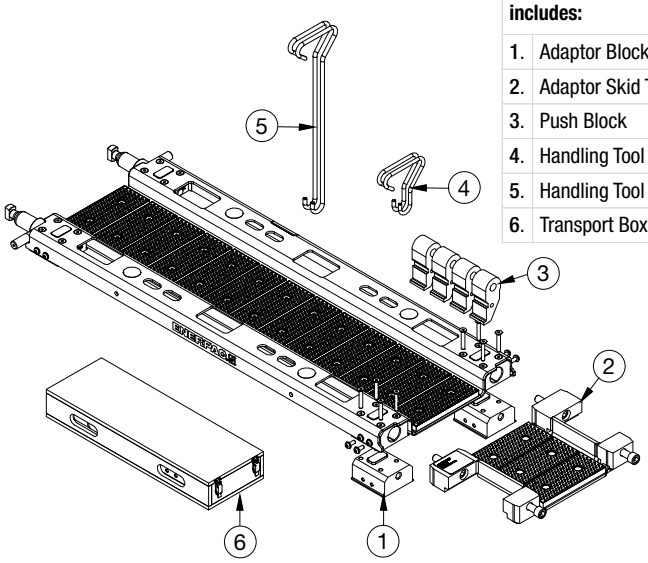
▼ Skid Track Kits

Model Number Skid Track Kit	Quantity Skid Tracks *	Transport Frame **	(lbs)
LHS4TK4-2	4x LHS4-2	1x	1576
LHS4TK8-2	8x LHS4-2	1x	2381
LHS4TK10-2	10x LHS4-2	1x	2778
LHS4TK14-2	14x LHS4-2	1x	3583

* Skid Track Capacity 73 tons, Length 4.7 feet, 419 lbs.
** Frame L x W x H: 76 x 48 x 35 inches, 717 lbs.

Low-Height Skidding Components & Split-Flow Pumps

▼ **Conversion Kit LHCK**



Conversion Kit LHCK includes:		Qty
1.	Adaptor Block	4x
2.	Adaptor Skid Track	2x
3.	Push Block	8x
4.	Handling Tool Short	4x
5.	Handling Tool Long	4x
6.	Transport Box	2x

LH Series



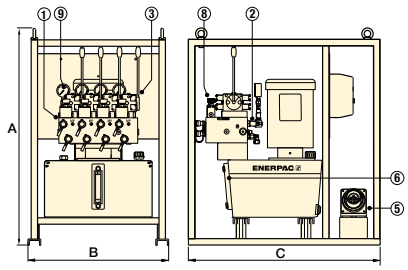
Skidding Capacity with two push-pull units:
400 tons

Push-Pull Stroke:
23.62 inches

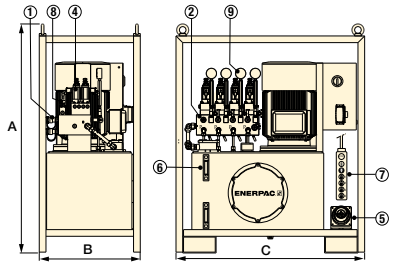
Maximum Operating Pressure:
10,000 psi

Conversion Kit LHCK

- **Provides compatibility between old and new skidding system**
- **Pushing and pulling possible with this transition.**



SFP-Series with 10 gallons reservoir
(shown with 4 split-flow outlets)



SFP-Series with 40 gallons reservoir
(shown with 4 split-flow outlets)

① Manifold with split-flow outlets and CR400 couplers
② Adjustable pressure relief valve per circuit
③ Manual 4/3 control valves with joysticks
④ Solenoid 4/3 control valves (24 VDC)
⑤ Power socket
⑥ Oil sight gauge(s)
⑦ Remote control pendant with 16 feet cord
⑧ Return flow control valve in each circuit
⑨ Hydraulic pressure gauge in each circuit



SFP-Series, Split-Flow Pumps
For full details and options of these pumps, see
Page: 342



Teflon® Skid Pads
A series of special PTFE coated Teflon® skid pads are placed on the skid tracks. The PTFE surface is matched with the skid beam and designed to achive minimum friction coefficients.
Replacement Teflon® Skid Pads come in packs of 12 pieces. Order model number **HSKSPS1**.



▲ *Low-Height Skidding System Skidding used to remove an old press to make room for new equipment.*

▼ **Recommended Split-Flow Pumps**

Number of Split-Flow Outlets	Usable Oil Capacity (gal)	Oil Flow per Outlet at 10,000 psi (in³/min)	Pump Model Number * 4/3 Valve Operation Advance/Hold/Retract Manual (Joystick)	24 V Solenoid (Pendant)	Motor Size 460 V, 3 ph 60 Hz (hp)	Dimensions (in) A	B	C	(lbs)	System Skidding Speed (ft/hr)
4	10	22	**SFP403MJ**	**SFP403SJ**	3.0	40.0	25.2	38.2	565	15
6	40	65	–	**SFP409SJ**	7.5	53.4	23.8	45.7	1045	40
	40	101	–	**SFP414SJ**	10.0	53.4	23.8	45.7	1078	65
	40	94	–	**SFP613SJ**	15.0	53.4	31.7	47.2	1236	65

* **J** = 460-480 V, 3 ph, 50-60 Hz, Change "**J**" in the model as follows for other options:
G = 208-240 V, 3 ph, 50-60 Hz, **W** = 380-415 V, 3 ph, 50 Hz.

▼ **ETR50H, Enerpac Trolley System** (shown with Trolley Track Plates)



Safe & Synchronized Travel

- **High transport speed: 82 - 164 ft/hour loaded, 328 ft/hour unloaded**
- **Suited for repetitive movements**
- **Runs on simple flat steel plate**
- **Ease of maintenance: – long maintenance intervals – no consumables**
- **Clean usage – electric driven**
- **Built-in synchronization – no need for forced external mechanical connection to synchronize movements**
- **Easy transport - compact design**
- **Hydraulic lifting cylinder option available**
- **Kits to accommodate other lifting options also available.**

Product Overview

The ETR-Series Trolley System is comprised of electrically-driven trolleys which can carry heavy loads along a fixed track system.

The entire system is controlled by a hand held wireless control system.

A typical system is comprised of 4 Trolleys, 2 Tracks and one Controller. Trolley Tracks and Wireless Control must be ordered separately.



Control Panel and Cables

Operate up to 8 trolleys (same capacity each) using control panel with included wireless controller:

- Automatic synchronization of traveling with an accuracy of 0.39 inch
- Dual-band radio with automatic frequency search
- Wireless remote operation
- High and low speed settings
- Emergency stop switch
- Control cables operate trolley and provide feedback to controller.

Control Panel

Model Number 460-480 VAC, 32A	Dimensions (in)			Weight (lbs)
	L	W	H	
ETR-CPJ8	50.81	23.62	43.25	551

Control Cables

Model Number	Description
ETR-CBL-15	50 feet control cable
ETR-CBL-25	82 feet control cable

▼ *The trolley system speeds up offshore wind transition piece load out: the transition pieces are positioned in the clamping frames and moved along the track.*



▼ *ETR-Series electric trolley undergoing factory acceptance testing prior to shipment.*



Enerpac Electric Trolley Systems

ETR-Trolley System

The Enerpac Trolley System provides an alternative method with increased benefits over traditional skidding methods.

Load movements are more stable due to the continuous movement and ability to precisely control travel speed including acceleration and deceleration.

Key features:

Low speed (loaded):	82 ft/hr
High speed (loaded):	164 ft/hr
Travel speed unloaded:	328 ft/hr
Accuracy:	0.39 inch
Sideload:	1,5% rated load
Sound Level:	< 80 dBA

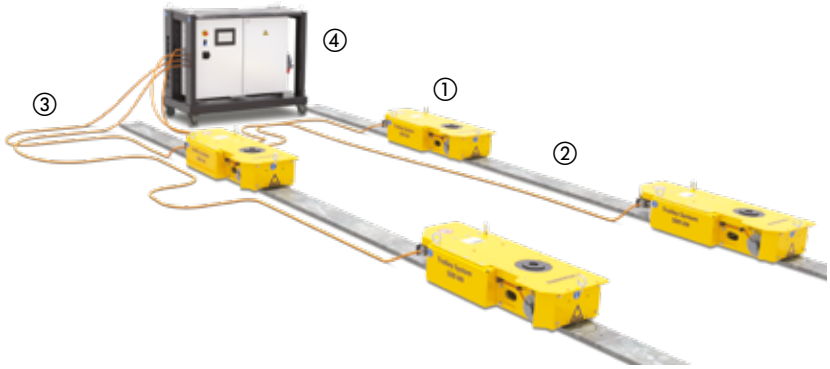
ETR Series



Capacity Per Trolley:
50 - 100 tons

Travel Speed (loaded):
82 - 164 ft/hr

Motor Power:
0.5 - 1.0 hp



① Electric Trolley **ETR-Series**
② Track Plate **ETR-TP-015** or **ETR-TP-030**
③ Control Cable **ETR-CBL-15** or **ETR-CBL-25**
④ Control Panel **ETR-CPJ8** (including wireless remote)
⑤ Split-Flow Electric Pump - **SFP-Series** Not shown. Optional for units with hydraulic cylinders



Trolley Track Plates

Track plates provide level guidance and support for the trolley. Two plates placed side-by-side are used for operation of ETR100-Series Trolleys. Maximum inclination of tracks is 0.2 degree.

Model Number	Description
ETR-TP-015	59 inch Trolley track plate
ETR-TP-030	118 inch Trolley track plate

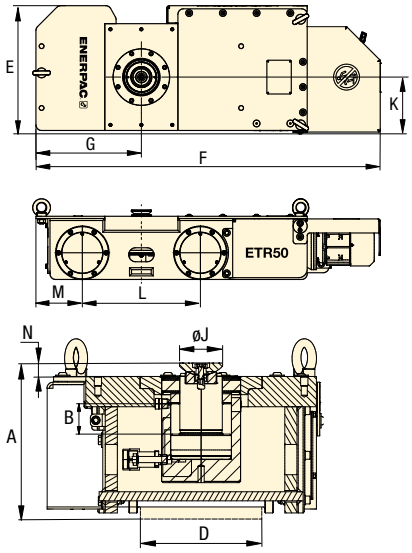


Additional Mounting Options

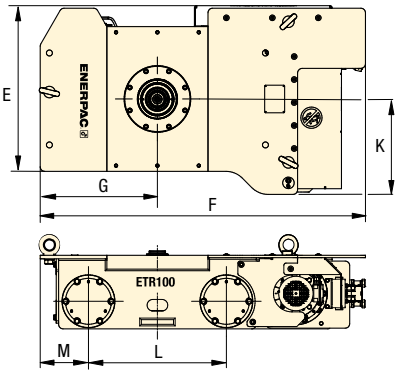
Mounting kits are available to accommodate other lifting and rigging solutions.

Model Number	Description
ETR50-SMK	Enerpac SCJ50 on ETR50
ETR100-SMK	Enerpac SCJ100 on ETR100
ETR50-BMK	Swivel beam mount on ETR50
ETR100-BMK	Swivel beam mount on ETR100

ETR50



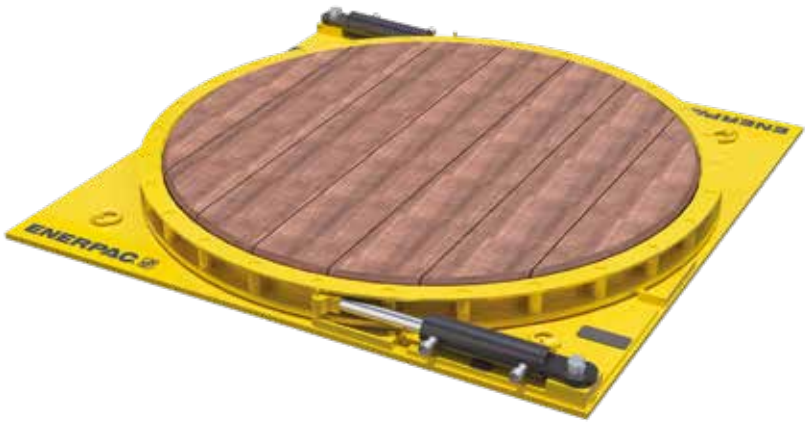
ETR100



Capacity per Trolley Unit (tons)	Model Number (one unit)	Motor Power (hp)	Dimensions (in) A	Hydraulic Stroke [1]	Track Width [2]	E	F	G	J	K	L	M	N	(lbs)
50	**ETR50**	0.5	9.65	–	7.87	17.95	48.23	14.76	4.92	7.95	16.54	6.50	0.39	684
	ETR50H		10.12	1.97					2.80				0.87	705
100	**ETR100**	1.0	13.62	–	15.75	32.32	55.71	20.08	6.69	16.34	23.62	8.27	0.59	1874
	ETR100H		13.74	3.94					2.80				0.75	1896

[1] ETR50H includes HCG502 Cylinder with CATS50 Swivel Saddle. ETR100H includes HCG1004 Cylinder with CATS101 Swivel Saddle.
[2] ETR100-Series uses two track plates side-by-side.

▼ ETT400 Turntable



ETT Series

Maximum Capacity:
225 - 450 tons

Cylinder Capacity:
25 tons

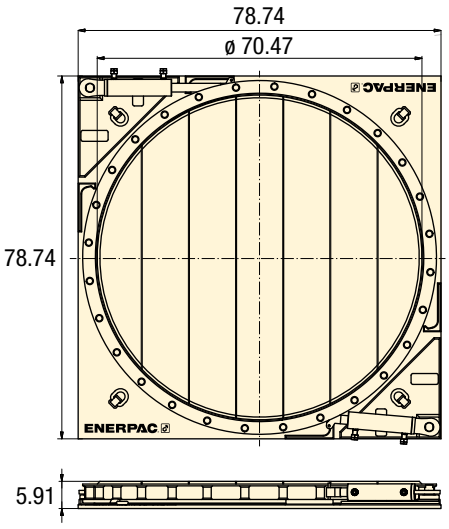
Maximum Operating Pressure:
10,000 psi

Safe and controlled rotation

The ETT-Series is your solution for rotating heavy loads during, before or after a lifting and skidding operation.

- **Safe and controlled rotation of heavy loads**
- **Easily change rotation direction**
- **Dual capacity: 225 tons with one cylinder, 450 tons with two cylinders**
- **Compact size for use in applications with limited space**
- **Compatible with standard Enerpac pumps**
- **Hardwood surface.**







SFP-Series, Split-Flow Pumps

Split-Flow pumps distribute an equal amount of hydraulic oil to a maximum of 8 outlets. Smart valve technology allows both controlled lifting and lowering of heavy loads.

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LH-Series, Low-Height Skidding

The ETT-Series are ideal in combination with our skidding systems, particular the LH-Series. Skidding and rotating in confined spaces is simplified.

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Telescopic Hydraulic Gantries

The ETT-Series in combination with our hydraulic gantry SL-Series makes load handling in the most demanding situations easy.

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▼ SELECTION CHART

Maximum Load Capacity (tons)	Model Number	Cylinder Capacity * (tons)	Cylinder Oil Capacity * (in^3) advance	retract	No. of Cylinders *	Rotation per Stroke (degrees)	Platform Diameter (in)	(lbs)
225	**ETT200**	25	48.3	21.0	1	12.5	70.47	3748
450	**ETT400**	25	48.3	21.0	2	12.5	70.47	3803

* Per cylinder. Cylinder model number: **BRD259-ETT**

FROM SIMPLE TO COMPLEX – LIFTING SOLUTIONS FOR YOUR APPLICATION

For those who do the heavy lifting today, the stakes are high and the challenges complex. We know our customers put their reputations and physical well-being on the line to get the job done right. We take that very seriously.

Backed by a global legacy of ultra-reliable quality and superior precision, Enerpac Heavy Lifting Technology is pushing the industry forward with a wide range of advanced solutions that first and foremost ensure our customers operate safely and productively every day. It isn't about being compliant, or "as good" as the next guy; we outpace the competition by delivering technically superior solutions that are easy to design, safe to use and built to outlast.

CONSULTATIVE APPROACH TO HEAVY LIFTING

From the very first discussion to gain an understanding of your application to solution design, training and ongoing field support of your operators, you will find a structured process and a team of application experts who will advise you towards a successful solution.



SOLUTION CONSULTATION

- Requirements Specifications
- Selecting the Right Solution for Your Application

DESIGN & MANUFACTURING

- Design & Engineering
- Manufacturing Excellence

TESTING & TRAINING

- Quality Assurance
- Operation & Safety Training

ON-DEMAND SUPPORT

- On-the-job Application Engineer Support
- Routine Maintenance & Repair Services

SOLUTION CONSULTATION

- Requirements Specifications
- Selecting the Right Solution for Your Application

Since the late 1950's, Enerpac has been steadfast in their commitment to work closely with customers to understand their lift needs and work-site environment. Not all lifts are the same. There are several factors that must be taken into consideration before recommending the best solution.

APPLICATION CONSIDERATIONS

LOAD CAPACITY
How much weight needs to be lifted, moved and/or positioned?

LIFT HEIGHT
How high does the load need to be lifted? Are there restrictions above or below the load?

TYPE OF LIFT
Will you lift from above or below?

SPACE
How much space is available to complete the task?

TIME
How the job needs to be completed within a set timeframe due to operational or environmental factors.

TRANSPORTATION
Does the load need to be transported as well as being lifted? How far and how often?

TOTAL COST OF OWNERSHIP
What productivity, labor or training costs need to be factored into the solution to make it the best long-term investment.

Because Enerpac engineers have designed solutions for a variety of applications over the years, they are well-equipped to minimize risks and to recommend a simpler solution that others may overlook. Built on a world-class reputation for developing products that meet the most common lifting applications, once your specifications are in the hands of the Enerpac experts, you are sure to receive a comprehensive recommendation that will save time and money while ensuring safety above all else.



Enerpac has the most complete offering of standard heavy lifting and positioning tools in the market. These products are designed to highest standards of performance and offer great flexibility to meet the demands of even the most challenging applications. Our manufacturing facility adheres to world-class production planning and inventory management to ensure your product arrives at your facility on time as specified.

DESIGN & MANUFACTURING

- Design & Engineering
- Manufacturing Excellence



Design & Engineering

Enerpac engineers are experienced in the latest software, rapid prototyping, failure analysis methods and engineering standards. This allows us to continuously improve and expand our product offering to meet ever changing needs of the market.

- CE, Machinery Directive 2006/42/E
- ASME: B30.1



Assembly & Quality Assurance

- All Enerpac products are assembled by highly trained individuals, working safely and efficiently from start to finish.
- The Hengelo, NL facility that manufactures the Enerpac heavy-lifting equipment holds several quality certifications.
- ISO 9001: 2015
- ISO 3834-2: 2005
- ISO 14001: 2015
- ISO 45001: 2018



Fabrication & Machining

- A dedicated steel fabrication and certified welding facility manufactures product components and support structures for the most demanding heavy-lifting applications.
- Complete in-house production is delivered using the latest CNC and conventional turning machines plus a full range of milling and boring equipment.



TESTING & TRAINING

- Quality Assurance
- Operation & Safety Training

The Enerpac facility, that makes and builds your heavy-lifting equipment, holds several quality system certifications giving you extra confidence in the safety and reliability of your heavy lifting equipment. Whether your first lift or move is scheduled upon taking delivery of your new equipment or months later, you will have access to the dedicated Heavy-Lifting team to support your training or troubleshooting needs.



Factory Acceptance Testing (FAT)

Customers are invited to witness FAT, often combined with operator training. Under witness of Lloyd's Register, all equipment is functionally tested to maximum capacity, and in many cases up to 125% of rated load. Additional testing to meet standards compliance, government regulations or specific customer requirements are performed and documented at the same time.



Documentation

Upon delivery of your new heavy-lifting equipment, an operator's manual outlines the configuration of your system, detailed operating instructions with safety guidelines, and maintenance recommendations.



Training

Customers who attend factory acceptance training at Enerpac's facility can also receive a day of training on their heavy lifting equipment. Additional training or on-site custom training can also be arranged.



On-Demand Support

Once you take possession of your new heavy-lifting equipment, you have on-demand access to our field support team. And support continues with ongoing maintenance or system upgrades throughout the life of your assets.

ON-DEMAND SUPPORT

- **On-the-job Application Engineer Support**
- **Routine Maintenance & Repair Services**



On-the-Job Field Support

Should you ever require extra support while using your Enerpac Heavy-Lifting system on the job, our dedicated application engineers will work closely to guide your operators on appropriate use of our equipment. And to ensure job safety, they will travel to your job site as needed to ensure your project is completed timely and without incident.



Product Warranty

All Enerpac Heavy-Lifting equipment is built to stringent specifications and built to last. Should you ever encounter a defect in materials or workmanship under normal use, it will be remedied through our standard one-year warranty program.



Maintenance & Repair

Downtime is minimized with fast delivery of repair parts and consumables stocked at several locations worldwide. For those that want the added confidence of specialized technicians, the Enerpac Maintenance & Repair team are ready to perform your maintenance or repair services for you.



A SAFE AND EFFICIENT METHOD FOR MACHINE MAINTENANCE

The Enerpac Cube Jacks are easy to position resulting in a short set up time.



Two Cube Jacks are fitted with a custom designed V-shaped saddle to securely support the pin during lifting and lowering.



Two Cube Jacks at the rear are positioned under the lifting beam, which is raised as more cribbing blocks are inserted.

Cube Jacks used to split the upper body from the undercarriage; a safer, more efficient alternative to the jack-and-pack methods that are currently used.



SCJ-SERIES
SELF-LOCKING CUBE JACKS

INCREMENTAL LIFTING SYSTEM WITH AUTOMATED MECHANICAL LOCKING



THE RIGHT TOOL MAKES ALL THE DIFFERENCE

Since joining the Enerpac portfolio, the design innovation of Mirage machines has continued to deliver new products that help get the job done faster, safer, and smarter. Explore the full Mirage product line from flange facing machines, milling machines, hot tapping and drilling machines, line stop actuators to clamshell pipe cutters, decommissioning saws and hydraulic power packs. All backed by Enerpac training, application support and service.

Design & Innovation

On-site Machine Tools are the result of over 25 years of expertise and innovation. The pioneering spirit continues under Enerpac ownership through our commitment to new product development. Watch out for more new tools being launched in the near future!

Continuous Improvement

Our specialist manufacturing operation is ISO9001 certified. This means we drive a culture of continuous improvement. Our team members are encouraged to find ways to improve today, tomorrow, and long into the future.

Specialist Support, Experience & Expertise

Each machining project presents difficult and unique challenges. Making the right choice for your next and any future projects can be complex. That is why our team is eager to support you through every step on your journey. Whether it is choosing the right specification, commissioning your machine, or maintenance - we're with you all the way.



Specialist Support, Experience & Expertise



Utilities



Nuclear



Oil & Gas



Petrochemicals



Power Generation



Ship Building, Maintenance and Repair



Wind Power



Construction and Mining

On-site Machining Tools – Overview

Machining Capacities	On-site Machining Tools	Series		Page
ø 1 - 161 inches **ø 25,4 - 4100 mm**	**Internal Mount Flange Facing Machines** Create the right flange sealing surface	**FF, MM-I**		**382** ▶
ø 0 - 80 inches **ø 0 -2032 mm**	**External Mount Flange Facing Machines** Create the right flange sealing surface	**MM-E**		**383** ▶
ø 2 - 86 inches **ø 51 - 2184 mm**	**DL RICCI Clamshell Pipe Cutting and Beveling Machines** Narrow Body, Mid-Size and Heavy-Duty	**DLR**		**384** ▶
ø 98 - 315 inches **ø 2500 - 8000 mm**	**General Orbital Milling Machines** Machine large flanges accurately and efficiently	**OM**		**386** ▶
ø 70 - 181 inches **ø 1800 - 4600 mm**	**Wind Power Orbital Milling Machines** Machine large flanges accurately and efficiently	**WP**		**387** ▶
40 - 80 inches **1000 - 2000 mm**	**Linear Milling Machines** On-site milling with workshop precision	**LMR**		**388** ▶
ø 2 - 12 inches **ø 51 - 305 mm**	**Casing Pin Drilling Machines** Make light work of the toughest applications	**DDU**		**388** ▶
ø 6 - 60 inches **ø 152 - 1524 mm**	**Decommissioning Diamond Wire Saws** Cutting the toughest materials	**MWDS**		**389** ▶
ø 1/2 - 60 inches **ø 12,7 - 1524 mm**	**Hot Tapping Machines** Built to deliver power where it matters most	**HTM, LPH, MHT**		**390** ▶
ø 4 - 48 inches **ø 102 - 1219 mm**	**Hydraulic Line Stop Actuators** Safe, Simple and Reliable Pipeline Isolation	**LSA**		**391** ▶
Oil Flow: **5.3 - 52.8 gal/min** **Power: 15 - 60 hp**	**Hydraulic Power Packs** Electric and Diesel Units, engineered for the On-site Machining Portfolio	**PP**		**392** ▶
ø ⅞ - 11 inches **ø 22 - 279 mm**	**GeniSYS™ IV 3-axis CNC Mill** Removal of cracked or broken studs and refurbishment of damaged threads	**GeniSYS™**		**394** ▶
ø ¾ - 40 inches **ø 19 - 1016 mm**	**Inline Isolation & Test Tools** Piping Isolation and Pressure Testing	**MITT**		**396** ▶

Internal Mount Flange Facing Machines



FF120
- Mechanical tool manually operated
- Simple to operate
- Lightweight - only 15 lbs (6,8 kg)
- Multiple leadscrew options allow for manually driven continuous fixed feeds for ASME standard surface finishes
- Calibrated slide to define cut depth and correct finish.



MM305I and MM610I
- Swivel toolpost for groove details, reduces the need for separate accessories
- Supplied with a range of 2 quick set base sizes for improved onto site operation
- Collet base allows for efficient machine mounting and centering.



MM860I and MM1000I
- 360 swivel toolpost for groove details, reduces the need for separate accessories (power feed on MM1000I)
- Supplied with a range of 3 quick set base sizes for improved onto site operation
- Adjustable height clamping jaws for efficient machine setting.



MM1500I
- Power feed 360 swivel toolpost for groove details, reduces the need for separate accessories
- Supplied with a range of 3 quick set base sizes for improved onto site operation
- Adjustable height clamping jaws for efficient machine setting.



MM2000I
- Power feed 360 swivel toolpost for groove details, reduces the need for separate accessories
- Supplied with a range of 2 quick set base sizes for improved onto site operation
- Adjustable height clamping jaws for efficient machine setting.



MM3000I and MM4500I
- Power feed 360 swivel toolpost for groove details, reduces the need for separate accessories
- Supplied with a range of 3 quick set base sizes for improved onto site operation
- Adjustable height clamping jaws for efficient machine setting
- Milling accessories available with the hydraulic drive version.

Flange Facing Machines

Flange Facers are known for precision construction, the results they deliver, and how easy they are to set-up on-site. These high-performing machines produce continuous groove facing feeds to ASME standards for the oil & gas, power generation and petrochemical industries.

MM-I Series feature
- Hardened slideways for long term accuracy
- High torque low noise drive
- Heat exchanger machining accessories available on most models.

Applications
- Heat exchanger flanges
- Hub profiles
- Lens-ring joints & Raised face flanges
- Recessed gaskets and spigots
- Ring type joint grooves (RTJ)
- SPO compact flanges
- Swivel ring & TECHLOK flanges
- Welding preparations.

▼ *MM860I machine to ensure flange joint integrity.*



Internal Mount Flange Facing Machines

Flange Facing Diameter Range		Machine Model Number	Drive Power Options	
(inch)	(mm)		Pneum.	Hydr.
1 – 12	25 – 305	**FF120 ***		
2 – 12	51 – 305	**MM305I**	●	
2 – 24	51 – 610	**MM610I**	●	
6 – 34	152 – 864	**MM860I**	●	
6 – 40	152 – 1016	**MM1000I**	●	●
12 – 60	305 – 1524	**MM1500I**	●	●
24 – 80	610 – 2032	**MM2000I**	●	●
5 – 120	127 - 3048	**MM3000I**	●	●
83 – 161	2100 – 4100	**MM4500I**		●

* FF120 is not suitable for lens-ring joint flanges or ring type joint (RTJ) flanges.

External Mount Flange Facing Machines



MM200E
- Preloaded cross roller bearing drive, ensuring robust, accurate, repeatable machining
- Hardened slideways for long term accuracy
- Swivel toolpost for groove details, reduces the need for separate accessories
- Continuous fixed feed for ASME standard surface finish
- Quick set integrated clamping jaws.



MM300E
- Preloaded cross roller bearing drive, ensuring robust, accurate, repeatable machining
- Hardened slideways for long term accuracy
- Swivel toolpost for groove details, reduces the need for separate accessories
- Multiple continuous fixed feeds for ASME standard surface finishes
- Quick set integrated clamping jaws.



MM600E
- Preloaded cross roller bearing drive, ensuring robust, accurate, repeatable machining
- Hardened slideways for long term accuracy
- Power feed 360 swivel toolpost for groove details, reduces the need for separate accessories
- Multiple continuous fixed feeds for ASME standard surface finishes
- Quick set integrated clamping jaws.



MM760E, MM1000E, MM1250E, MM1500E, MM1775E, MM2000E
- Continuous variable auto-feed for ASME standard finishes
- Choice of pneumatic and hydraulic drive motors
- Quick-set radial clamping adjustment
- Quick-set axial adjustment jaws
- Heavy duty bearing construction for high metal removal rates and accuracy
- Heat exchanger kits for back facing and slot machining in one operation.

External Mount Flange Facing Machines

Flange Facing Diameter Range		Machine Model Number	Drive Power Options	
(inch)	(mm)		Pneum.	Hydr.
0 – 8	0 – 203	**MM200E**	●	
0 – 12	0 – 305	**MM300E**	●	
0 – 24	0 – 610	**MM600E**	●	
0 – 30	0 – 762	**MM760E**	●	●
0 – 40	0 – 1016	**MM1000E**	●	●
0 – 50	0 – 1270	**MM1250E**	●	●
0 – 60	0 – 1524	**MM1500E**	●	●
0 – 70	0 – 1778	**MM1775E**	●	●
0 – 80	0 – 2032	**MM2000E**	●	●

FF MM Series



Internal Mount Facing Diameter:
1 - 161"/ 25,4 - 4100 mm

External Mount Facing Diameter:
0 - 80"/ 0 - 2032 mm

Cutting Resultant Roughness:
Ra 125-492 µin / 3,2-12,5 µ

Surface finish & accuracy

All flange facing machines provide a serrated finish with 30-55 grooves per inch and a resultant roughness of between Ra 3,2-12,5µ (125-492 micro-inches). Geared multiple continuous groove facing feeds for a gramophone finish (ASME Standard).

▼ *MM600E external mount flange facing machine to ensure flange joint integrity.*



Narrow Body & Mid-Size Clamshell Cutters





DLR-NB12, NARROW BODY CLAMSHELL CUTTER

- NB or "Narrow Body" portable clamshells are ideal when space is at a premium
- Standard NB-Series cover a range from 2 to 36" outside diameter (51 to 914 mm)
- Narrow body design: ideal when space is at a premium or obstructions present
- Pneumatic, hydraulic, and electric drive options
- Several different drive options are available to best position the motor for a specific machining application
- Accepts a wide range of accessories to increase performance and expand capabilities
- Full range of bevel and sever tools available.

DLR-MS30, MID-SIZE CLAMSHELL CUTTER

- Mid-size machines weigh less than the HD heavy-duty series, but provide greater rigidity than the NB-narrow body series
- Standard MS-Series cover a range from 4⅛ to 48¼" outside diameter (105 to 1226 mm)
- Increased maneuverability and greater clearance than the HD-Series
- Several different drive options are available to best position the motor for a specific machining application
- Accepts a wide range of accessories to increase performance and expand capabilities
- Full range of bevel and sever tools available.



◀ *NB-model narrow body Clamshell Cutter.*

DL Ricci Clamshell Cutters

Clamshell cutters in the Enerpac range remain true to the pioneering designs that made DL Ricci the 'go-to' brand for machinists worldwide. Outstanding performance and a comprehensive choice has seen them used widely for applications in new construction, decommissioning, component replacement, fabrication, and maintenance.

Robust and efficient pipe cutting and bevelling

Designed for any industry that needs pipe or tube cutting, or any pipe end preparation weld repair. This may be in oil and gas sector, power generation, ship building/dock yards, or processing plants during maintenance and shut downs.

Applications

- Pipe cutting
- Weld preparation
- Cutting materials, including super duplex, carbon steel, stainless steel, hastelloy and incolloy
- For pipe diameters up to 86 inches (2184 mm)
- Ideal for projects beyond the usual clamshell configuration – using a wide range of purpose designed accessories.

Included as Standard with Each Machine

- Clamshell body
- Locators & extensions covering the full range
- Slides
- Motor & Mounting
- Air Caddy
- Tool Kit
- Manual
- Shipping crate.

NB Narrow Body Series Clamshell Cutters

Mounting Outside Diameter (min. - max.)		Machine Model Number	Drive Power Options		
(inch)	(mm)		Pneumatic	Hydraulic	Electric
2 – 4½	51 – 114	**DLR-NB4**	•	•	
2⅜ – 6⅝	60 – 168	**DLR-NB6**	•	•	
3½ – 8⅝	89 – 219	**DLR-NB8**	•	•	•
4½ – 10¾	114 – 273	**DLR-NB10**	•	•	•
6⅝ – 12¾	168 – 324	**DLR-NB12**	•	•	•
8⅝ –14	219 – 356	**DLR-NB14**	•	•	•
10⅝ – 16	219 – 406	**DLR-NB16**	•	•	•
12¾ – 18	324 – 457	**DLR-NB18**	•	•	•
14 – 20	356 – 508	**DLR-NB20**	•	•	•
18 – 24	457 – 609	**DLR-NB24**	•	•	•
20 – 26	508 – 660	**DLR-NB26**	•	•	•
22 – 28	559 – 711	**DLR-NB28**	•	•	•
24 – 30	610 – 762	**DLR-NB30**	•	•	•
26 – 32	661 – 813	**DLR-NB32**	•	•	•
30 – 36	762 – 914	**DLR-NB36**	•	•	•

MS Mid-Size Series Clamshell Cutters

Mounting Outside Diameter (min. - max.)		Machine Model Number	Drive Power Options	
(inch)	(mm)		Pneumatic	Hydraulic
4⅛ – 13	105 – 330	**DLR-MS12**	•	•
7⅜ – 16¼	187 – 413	**DLR-MS16**	•	•
9⅜ – 18¼	238 – 464	**DLR-MS18**	•	•
11⅜ – 20¼	289 – 514	**DLR-MS20**	•	•
15⅜ – 24¼	391 – 616	**DLR-MS24**	•	•
19⅜ – 28¼	492 – 718	**DLR-MS28**	•	•
21⅜ – 30¼	543 – 769	**DLR-MS30**	•	•
23⅜ – 32¼	594 – 819	**DLR-MS32**	•	•
27⅜ – 36¼	695 – 921	**DLR-MS36**	•	•
27⅞ – 36¾	708 – 934	**DLR-MS365**	•	•
33⅜ – 42¼	848 – 1073	**DLR-MS42**	•	•
39⅜ – 48¼	1000 – 1226	**DLR-MS48**	•	•

HD Heavy-Duty Clamshell Cutters



DLR Series



Outside Mounting Diameter Range:
2 - 86 inches

Outside Mounting Diameter Range:
51 - 2184 mm

DLR-HD54, HEAVY-DUTY CLAMSHELL CUTTER

- **Robust body design - ideal for large diameter heavy wall pipe applications**
- **16 HD-models cover a range of 20 - 86 inches outside diameter (508 - 2184 mm)**
- **Pneumatic and hydraulic drive options**
- **Fully adjustable heavy-duty bearing design provides greater serviceability**
- **Stepped and keyed gear clamps equipped with a through bolt provide a positive fit at each assembly joint**
- **Accepts a wide range of accessories to increase performance and expand capabilities**
- **Full range of bevel and sever tools available.**

HD Heavy-Duty Series Clamshell Cutters

Mounting Outside Diameter (min. - max.)		Machine Model Number	Drive Power Options	
(inch)	(mm)		Pneumatic	Hydraulic
20 – 32	508 – 813	**DLR-HD32**	•	•
24 – 36	610 – 914	**DLR-HD36**	•	•
27 – 39	686 – 990	**DLR-HD39**	•	•
31 – 43	787 – 1092	**DLR-HD43**	•	•
33 – 45	838 – 1143	**DLR-HD45**	•	•
36 – 48	915 – 1219	**DLR-HD49**	•	•
38 – 50	966 – 1270	**DLR-HD50**	•	•
41 – 53	1042 – 1346	**DLR-HD53**	•	•
42 – 54	1067 – 1360	**DLR-HD54**	•	•
43 – 55	1092 – 1397	**DLR-HD55**	•	•
45 – 57	1143 – 1448	**DLR-HD57**	•	•
48 – 60	1220 – 1524	**DLR-HD60**	•	•
54 – 66	1372 – 1676	**DLR-HD66**	•	•
60 – 72	1524 – 1828	**DLR-HD72**	•	•
68 – 80	1728 – 2032	**DLR-HD80**	•	•
74 – 86	1880 – 2184	**DLR-HD86**	•	•

Recommended Accessories for Clamshell Cutters

Other clamshell accessories available. Details available on request.

Counter-bore Swivel Head Modules

- 10 inches size available
- Match boring applications
- Up to 60 degrees adjustability in the head
- Internal diameter beveling.

Description	Part Number
2 inch travel	**F0108A1224AA-SK**
6 inch travel	**F0108A1224AB-SK**

Low-Profile Tool Slide

- Brings cut line closer to the back of machine
- Allows cutting & beveling on short pipe sections
- Use for facing, RTJ-grooves and compound angle weld preparations.

Description	Part Number
Low-profile slide	**F0130A0016XX**

Out-of-round Tool Block Slide

- Dual compensating Spring Assembly
- Rides on OD of pipe and tracks the contour
- For up to 1 inch out-of-round.

Description	Part Number
Out of round slide	**F0130A0022XX**
Tripper for NB models	**F0145A0019XX**
Tripper for MS models	**F0145A0020XX**
Tripper for HD models	**F0145A0028XX**

▼ OM6000 Orbital Milling Machine



OM Series

Cutting Diameter Range:
98 - 315 inches

Cutting Diameter Range:
2500 - 8000 mm

General Orbital Milling Machines

Orbital milling machines are designed to deliver fast material removal and achieve high accuracy across large flange diameters.

Applications

- Machining crane bearing faces
- Repairing drag lines
- Machining large flanges
- Machining ship thruster flanges.

Machine large flanges accurately and efficiently

- **Precision flatness tolerances across large diameters**
- **Hydraulic high-torque anti-backlash drive**
- **Precision preloaded linear rotary drive**
- **Adjustable fast-set hydraulic chuck**
- **Rigid and adjustable mounting base.**

▼ *Machining crane bearing face.*



▼ *Milling a ship thruster flange.*

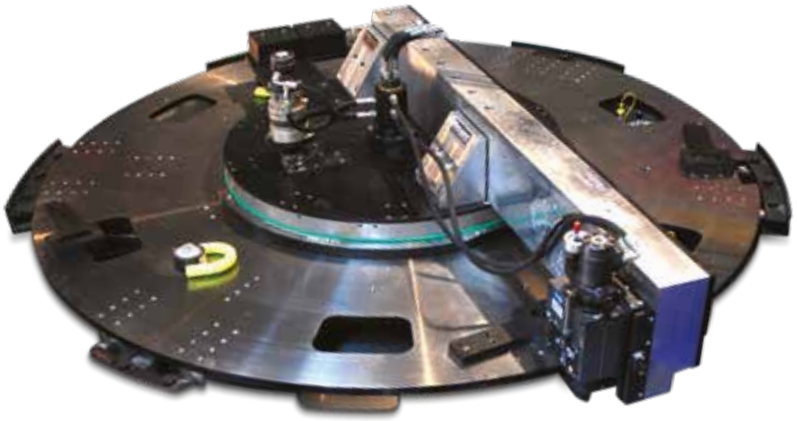


General Orbital Milling Machines

Cutting Diameter Range (min. - max.) (inch)	Cutting Diameter Range (min. - max.) (mm)	Machine Model Number	Hydraulic Power Drive
98 – 178	2500 - 4500	**OM4500**	•
98 – 237	2500 – 6000	**OM6000**	•
138 – 315	3500 – 8000	**OM8000**	•

Wind Power Orbital Milling Machines

▼ WP3500 Wind Power Orbital Milling Machine



WP
Series

Cutting Diameter Range:
70 - 181 inches

Cutting Diameter Range:
1800 - 4600 mm

Wind Power Orbital Milling Machines

The wind power orbital milling range is designed especially for companies manufacturing wind turbine rotor blades and towers.

Applications

- Wind turbine blade root end milling
- Wind tower flange machining.

Machine large flanges accurately and efficiently

- **Fully packaged system; includes trolley, power unit and base**
- **Accurate and repeatable process time**
- **Minimum distortion fast mount hydraulic base**
- **Adjustable arm for different diameters**
- **Patented hydraulic mounting system for blade and tower production**
- **Direct drive spindle**
- **High torque anti-backlash drive.**

▼ *Wind tower machining with WP4600.*



▼ *WP3500 milling turbine blade end.*



Wind Power Orbital Milling Machines

Cutting Diameter Range (min. - max.)		Machine Model Number	Hydraulic Power Drive
(inch)	(mm)		
70 – 96	1800 - 2450	**WP2500**	•
90 – 137	2300 – 3500	**WP3500**	•
110 – 181	2800 – 4600	**WP4600**	•

2-Axis Milling Machines



LMR, DDU Series

X-Axis Maximum Stroke (LMR):
40 - 80" / 1,0 - 2,0 m

Case Pin Drilling Diameter (DDU):
Up to 12" / 305 mm

Maximum Stroke (DDU):
16" / 406 mm

LMR1000, 2-AXIS MILLING MACHINE

- **Ideal for lightweight applications**
- **Hand feed to main axis; auto feed optional**
- **Features ER40 Collet with ISO30 spindle option**
- **Choice of pneumatic and hydraulic drive.**

2-Axis Linear Milling Machines

X-Axis Maximum Stroke		Machine Model Number	Drive Power Options	
(inch)	(mm)		Pneumatic	Hydraulic
40	1000	**LMR1000**	•	•
60	1500	**LMR1500**	•	•
80	2000	**LMR2000**	•	•

Casing Pin Drilling Machines



Included as Standard with Each Machine

- Toolkit
- All required mounting legs and connections
- Storage/shipping box
- CE certificate
- Operator's Manual.
- Packing list.

DDU1636

- **Efficient pin drilling cold cut method**
- **Horse-shoe mount options**
- **Helical drive spindle**
- **4 inches (102 mm) cutter assembly supplied as standard**
- **Alternative cutter kits available up to 12 inches (305 mm).**

Casing Pin Drilling Machines

Maximum Diameter with Standard Drills		Maximum Standard Stroke		Casing Pin Drill Clamping Diameter		Machine Model Number	Drive Power Options
(inch)	(mm)	(inch)	(mm)	(inch)	(mm)		Hydraulic
12	305	16	406	9 – 24	228 – 609	**DDU924**	•
12	305	16	406	16 – 36	406 – 914	**DDU1636**	•

▼ *DDU1636 casing pin drilling.*



Decommissioning Diamond Wire Saws

▼ MDWS1638-H



MDWS Series

Cutting Diameters:
6 - 60" / 152 - 1524 mm

Decommissioning Saws

A range of portable saws for a diverse range of tubular severance projects. Diamond wire saws are ideal for cutting through dissimilar materials and quickly deliver a cost-effective solution to cold cutting requirements in either surface or subsea situations.

Applications

- Offshore platform decommissioning
- Conductors, caissons, piles
- Multiple grouted strings
- Subsea ROV-applications
- Subsea structures
- Pipes, casings and risers.

Items included with each machine;

- Diamond wire rope
- Toolkit
- Storage / shipping crate
- CE Certificate
- Packing list and manual.

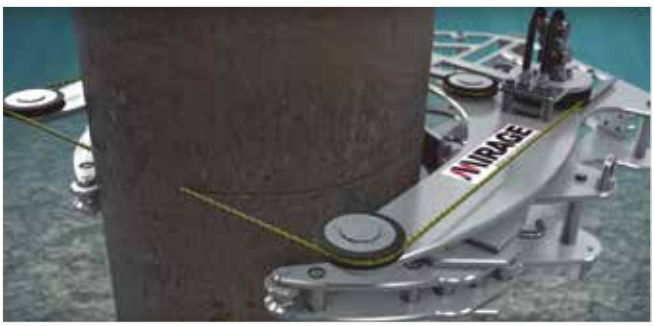
Cutting the toughest materials in the most challenging environments

- **Strong aluminum frame**
- **Overload clutch for bow damage prevention**
- **Hydraulic Auto Clamp and auto-feed**
- **Diver and ROV compatible**
- **Available with optional flotation modules for deep water use**
- **User replaceable clamp contact pads, wheels, and wheel liners**
- **Crimped or continuous loop wires available.**



▲ *MDWS Diamond Wire Saw lowered into sea.*

▼ *Subsea pile cutting.*



Decommissioning Diamond Wire Saws

Cutting Diameters (Min. - Max.) (inch)	Cutting Diameters (Min. - Max.) (mm)	Machine Model Number	Main Application	Hydraulic Drive Power
6 – 20	152 – 508	**MDWS620-H**	Subsea	•
16 – 38	406 – 965	**MDWS1638-H**	Subsea	•
36 – 60	914 – 1524	**MDWS3660-H**	Subsea	•

▼ **HTM100**



HTM, MANUAL HOT TAPPING

- Operates to 1480 psi (102 bar)
- Versatile hot taps, by-pass lines and completion plugs
- Manual rotation & feed
- Optional pneumatic feed
- 2" NPT connection
- Lightweight construction.

HTM, LPHT, MHT Series



Tapping Diameters:
½ - 60" / 12,7 - 1524 mm

Maximum Stroke:
18 - 150" / 457 - 3810 mm

Maximum Operating Pressure:
285-1480 psi / 20-102 bar

▼ **LPHT312**



▼ **MHT312**



LPHT312, LOW PRESSURE HOT TAPPING

- Operates up to 285 psi (20 bar)
- Pneumatic or hydraulic drive
- Depth stop to ensure correct hot tap distance.

MHT, HOT TAPPING MACHINES

- Pressure rating up to 1480 psi (102 bar)
- Helical geared drive situated close to the cutter
- Hydraulic and pneumatic drive options
- Industry standard connection flanges
- Compatible with industry standard tooling
- Fast traverse feed motors available
- Cutter holders included
- Interchangeable seal cartridge.

Hot Tapping – Built to deliver power where it matters most

Hot tapping is a high-pressure intervention and our range of hot tapping machines can help towards a safe and effective solution. Industry-leading innovations used include a helical gear drive located as close to the cutting head as possible for maximum efficiency, rotary pressure seals, and four fixed feeds.

Applications

- Construction tie-ins
- Gas distribution
- Petrochemical pipelines
- Subsea pipelines
- Temporary installation
- Transmission pipelines
- Valve installation and repair
- Water mains pipelines
- Wellhead maintenance.

▼ *On-site hot tapping with MHT312.*



Hot Tapping Machines

Tapping Diameters (Min. - Max.)		Maximum Stroke		Max. Operating Pressure		Machine Model Number	Drive Power Options	
(inch)	(mm)	(inch)	(mm)	(psi)	(bar)		Pneumatic	Hydraulic
½ – 4	12,7 – 102	18	457	1480	102	**HTM100**	*	*
½ – 6	12,7 – 152	32	813	1480	102	**HTM150XL**	*	*
3 – 12	76,2 – 305	30	762	285	20	**LPHT312**	•	•
3 – 12	76,2 – 305	42	1067	1480	102	**MHT312**	•	
4 – 20	102 – 508	72	1829	1480	102	**MHT420**		•
8 – 24	203 – 609	80	2032	1480	102	**MHT824**		•
12 – 36	76,2 – 914	110	2794	1480	102	**MHT1236**		•
12 – 42	76,2 – 1066	132	3353	1480	102	**MHT1242**		•
24 – 60	203 – 1524	150	3810	1480	102	**MHT2460**		•

* HTM has manual rotation & feed.

Hydraulic Line Stop Actuators

▼ LSA1420-H



LSA Series



Plugging Head Range:
4 - 48" / 102 - 1219 mm

Stroke:
72 - 140"/ 1829 - 3556 mm

Maximum Operating Temperature:
181 ˚F / 83 ˚C

Maximum Operating Pressure:
1480 psi / 102 bar

LSA, LINE STOP ACTUATORS

- **Series of four hydraulic line stop actuators covering a plugging head size range of 4 to 48 inches (102 - 1219 mm)**
- **Maximum working pressure of 1480 psi (102 bar) at 181 ˚F (83 ˚C)**
- **Failsafe mechanical lock prevents control rod movement**
- **Anti-rotation feature to ensure aligned plugging head deployment**
- **Hydraulic control situated at the working end of the cylinder for ease of use**
- **Visible control bar depth control.**

LSA-Series Line Stop Actuators

Line Stop Actuators (LSA) are used in conjunction with the required line stop head and housings to carry out line stops in surface or subsea environments.
The range is designed for easy use on pipelines in various materials and differing wall thickness. Their use provides temporary pipeline isolation, temporary or permanent by-pass and no costly interruption of service.

▼ SELECTION & SPECIFICATIONS (METRIC)

Plugging Head Size (min. - max.) (mm)	Capacity at 70 bar * (kN) Extend	Retract	Hydraulic Line Stop Actuator Model Number	Stroke (mm)	Standard Certified Pressure (bar)	Maximum Operating Temperature (continuous) (˚C)
102 - 305	55	38	**LSA412-H**	1829	102	83
356 - 508	220	175	**LSA1420-H**	2591	102	83
559 - 914	344	277	**LSA2236-H**	3556	102	83
965 - 1219	495	387	**LSA3848-H**	3556	102	83

* Hydraulic oil flow required at 70 bar: variable flow.

Accessory Compatibility

LSA-Series users can be reassured the product will interface with market standard items, such as plugging heads and housings.

▼ SELECTION & SPECIFICATIONS (IMPERIAL)

Plugging Head Size (min. - max.) (inch)	Capacity at 1015 psi * (US tons) Extend	Retract	Hydraulic Line Stop Actuator Model Number	Stroke (inch)	Standard Certified Pressure (psi)	Maximum Operating Temperature (continuous) (˚F)
4 - 12	6.1	4.3	**LSA412-H**	72	1480	181
14 - 20	24.7	19.7	**LSA1420-H**	102	1480	181
22 - 36	38.7	31.2	**LSA2236-H**	140	1480	181
38 - 48	55.7	43.5	**LSA3848-H**	140	1480	181

* Hydraulic oil flow required at 1015 psi: variable flow.



PP-Series, Hydraulic Power Pack

Recommended hydraulic pump: Enerpac 60 hp diesel hydraulic power pack.

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▼ PP11 and PP15 Electric Hydraulic Power Packs



PP Series

Reservoir Capacity:
66 gallons

Flow at Rated Pressure:
5.3 - 13.2 - 15.8 gal/min

Motor Size:
15 - 20 hp

Maximum Operating Pressure:
1015 - 1305 psi

Electric Hydraulic Power Packs

- **Two variable pumps with 15 hp or 20 hp electric motor**
- **Voltage options 380-415 V, 3 ph, 50-60 Hz and 440-480 V, 3 ph, 60 Hz**
- **Series of application specific Pendant Controls can be selected**
- **Standard supplied with 33 ft pendant control**
- **33 ft hydraulic hose kit supplied as standard.**

PP-Series, Electric Power Packs

These power packs will service all hydraulic machines within the Enerpac on-site machining portfolio.

Key Benefits

- Voltage options allow for global supply
- Series of application specific Pendant Controls can be selected
- Safety: Emergency stop buttons are provided on the power pack and the control pendant.
- Power Packs enclosed within a protective frame
- Forklift truck and vertical lift points
- Removable castor trolley available as an accessory.

Pendant Control Specifications (standard supplied with Electric Power Packs)

Pendant Model Number	For Pump Series	For Machining Tools Type	Pendant Control Specifications Fwd/Off/Rev = Forward / Off / Reverse
SM	PP11	Single Motor	Emergency Stop, Feed: Fwd/Off/Rev, Potentiometer
TM	PP15	Twin Motor	Emergency Stop, Spindle FWD/Off/Rev, Spindle Potentiometer, Feed: Fwd/Rev/Off, Feed Potentiometer
WP	PP15	Wind Power	Emergency Stop, Spindle: On/Off, Feed: Fwd/Off/Rev, Feed Potentiometer
GM	PP15	3-Axis Gantry Milling	Emergency Stop, Spindle: Fwd/Off/Rev, Spindle Potentiometer, Feed: Fwd/Off/Rev, Feed: Potentiometer, X/Y-Axis

Selection Chart, Electric Hydraulic Power Packs

Electric Motor Power (hp)	Oil Flow [1] at Maximum Pressure (gal/min) 1015 psi	1160 psi	1305 psi	Reservoir Capacity [2] (gal)	Model Number with 33 ft Pendant Control	Motor Voltage 3 Phase (Volt)
15	–	–	15.8	66	**PP11EAW-SM**	380-415 V, 50-60 Hz
15	–	–	15.8	66	**PP11EAJ-SM**	440-480 V, 60 Hz
20	15.2	13.2	–	66	**PP15EBW-TM**	380-415 V, 50-60 Hz
20	15.2	13.2	–	66	**PP15EBJ-TM**	440-480 V, 60 Hz
20	15.2	13.2	–	66	**PP15EBW-WP**	380-415 V, 50-60 Hz
20	15.2	13.2	–	66	**PP15EBJ-WP**	440-480 V, 60 Hz
20	15.2	13.2	–	66	**PP15EBW-GM**	380-415 V, 50-60 Hz
20	15.2	13.2	–	66	**PP15EBJ-GM**	440-480 V, 60 Hz

[1] Oil flow fully variable up to specified values
[2] Power packs are supplied as standard with ISO VG 46 Hydraulic Oil.

Accessories and Kits

Maintenance Kit: consumables and wear parts for regular maintenance.
Service Kit: most essential spare parts to minimize the risk of down-time, to keep in stock for inspection and/or servicing.
Capital Kit: to shorten downtime to a minimum.

Description	Model No. for PP11	Model No. for PP15
Removable Castor Trolley	**PP11-CT**	**PP15-CT**
Protective Storage Cover	**PP11-T**	**PP15-T**
Maintenance Kit, Spares A	**PP11SK-A**	**PP15SK-A**
Service Kit, Spares B	**PP11SK-B**	**PP15SK-B**
Capital Kit, Spares C	**PP11SK-C**	**PP15SK-C**

Dimensions

Series	Length (inch)	Width (inch)	Height (inch)	Weight (lbs)
PP11	59.57	39.76	48.80	2200
PP15	59.57	39.76	48.80	2200

▼ PP19DC and PP44DD Diesel Hydraulic Power Packs



PP Series

Reservoir Capacity:
92.4 gallons

Flow at Rated Pressure:
15.8 - 52.8 gal/min

Motor Size:
26 - 60 hp

Maximum Operating Pressure:
1450 - 2900 psi

Diesel Hydraulic Power Packs

- **Two variable pumps with 26 hp or 60 hp diesel engine**
- **Complies with EU Stage V – EPA Tier 4 final regulations**
- **Engine with 13.2 gallons diesel tank**
  26 hp ± 12 hours running time at max torque
  60 hp ± 6 hours running time at max torque
- **Pressure & Flow can be set by adjustment screws**
- **Case Drain Return option**
- **Safety: Emergency stop buttons are provided on the power pack.**

PP-Series, Diesel Power Packs

These power packs will service all hydraulic machines within the Enerpac on-site machining portfolio.

Key Benefits

- Emission levels allow for global supply
- Spark Arrestor
- Series of optional application specific hydraulic controls
- Series of optional application specific Hose Kits
- Power Packs enclosed within a protective frame
- Forklift truck and vertical lift points
- Pressureless Switch to remove pressure and flow.



◀ *Enerpac MHT2460-H hot tapping machine powered by a PP44-Series Power Pack.*

Accessories and Kits

Maintenance Kit: consumables and wear parts for regular maintenance.
Service Kit: most essential spare parts to minimize the risk of down-time, to keep in stock for inspection and/or servicing.
Capital Kit: to shorten downtime to a minimum.

Description	Model No. for PP19	Model No. for PP44
Maintenance Kit, Spares A	PP19SK-A	PP44SK-A
Service Kit, Spares B	PP19SK-B	PP44SK-B
Capital Kit, Spares C	PP19SK-C	PP44SK-C

Selection Chart, Diesel Hydraulic Power Packs

Diesel Engine Power (hp)	Oil Flow at Maximum Pressure (gal/min) 1450 psi	2320 psi	2900 psi	Reservoir Capacity * (gal)	Model Number	Diesel Engine Type
26	26.4	15.8	–	92.4	**PP19DC**	EU Stage V EPA Tier 4
60	52.8	33.0	26.4	92.4	**PP44DD**	

* Power packs are supplied as standard with ISO VG 46 Hydraulic Oil.

Dimensions

Series	Length (inch)	Width (inch)	Height (inch)	Weight ** (lbs)
PP19	86.61	38.58	59.06	3329
PP44	86.61	38.58	59.06	3505

** Pump weight does not include fuel.

GeniSYS™ IV On-site CNC Mill

▼ GeniSYS™ IV CNC Mill



Removal of cracked or broken studs, refurbishment of damaged threads

- **CNC software allows the GeniSYS to be programmed to perform multiple tasks within its working envelope**
- **Can create bore and thread hole diameters ranging from 0.875 – 11 inches (22,2 – 279,4 mm)**
- **Hole depths up to 15.12 inches (384 mm)**
- **High-tolerance profile rails produce consistent results**
- **All three axes utilize precision ground ball screws, providing precise movement of the milling head**
- **Accurate and repeatable machining**
- **A cold cutting operation**
- **Ejects chips during operation**
- **Single machine capable of drilling, threading and general milling applications.**

GeniSYS IV On-site CNC Mill

The GeniSYS™ IV is a highly portable 3-axis CNC milling machine.
The motion control command center provides the ultimate in performance monitoring and technician safety.

Designed for the accurate removal of cracked or broken studs up to 11 inches diameter and the precise refurbishment of damaged threads. This is achieved without the need for manually controlled drilling or metal disintegration techniques.

Can be used for automated general profile milling applications.

Typical examples

- Manway covers
- Reactor studs
- Bolt extraction and threading applications
- Recirculation pumps
- Turbine cases
- Heat exchangers
- Motor bases and many more high impact assets.

▼ *Thread cutting*



▼ *GeniSYS IV CNC Milling Machine.*



GeniSYS™ IV On-site 3-axis CNC Milling Machine

GeniSYS



Hole Diameter:
⅞ - 11" / 22 - 279 mm

Hole Depths:
Up to 15.12" / 384 mm



▲ *A typical thread before refurbishment.*



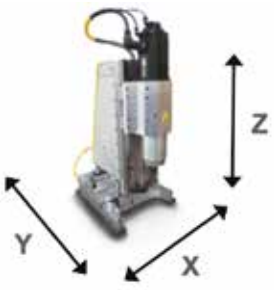
▲ *New machined thread.*



▲ *Enlarging a hole.*



▲ *Coring out the centre of a bolt (minor diameter).*



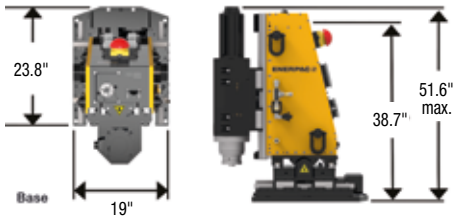
Included as Standard

The machine is supplied complete with the following items:

- GeniSYS IV milling machine
- Control System
- Laptop
- Motor and Cables
- Storage / Shipping Boxes
- Operator's Manual.

Tooling

Standard tooling packages available to support general milling and thread milling applications.



Dimensions GeniSYS IV

Base Length		Base Width		Total Height		Weight	
(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(lbs)	(kg)
23.8	605	19	483	51.6	1311	1100	499

Specifications GeniSYS IV 3-axis CNC Milling Machine

Hole Diameters (Min. - Max.)		Machine Model Number	Maximum Hole Depth		Milling Head Maximum Travel X-axis		Y-axis		Z-axis		Spindle Speed	Spindle Motor		Motor Voltage
(inch)	(mm)		(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(RPM)	(hp)	(kW)	(Volt, 3 phase)
⅞ – 11	22,2 – 279,4	**GeniSYS IV**	15.12	384	8	203,2	8	203,2	17	431,8	3000	6.7	5,0	380 - 440

▼ Shown: **MITT6A, MITT16A, MITT2A, MITT1A Isolation & Test Tools**



Ultimate Versatility in Piping Isolation and Pressure Testing

- **Combination Isolation and Test Tool assures vapor-free isolation for hot work and high-pressure capability between seals for testing welds with one tool**
- **Multi-schedule capability – up to 6 schedules covered per tool, 40 tools cover 154 pipe diameter / schedule combinations**
- **Lightweight, slim and versatile design – no crane required, able to mount in elbows and tees, able to test mismatched schedules**
- **High-pressure capability – test welds with relative ease up to 4,500 psi**
- **Self-centering tools are user-friendly and require minimal training**
- **Hydrodynamic capability for heat treating.**

Inline Isolation & Test Tools

MITT series tools obsolete traditional pipe cleaning and hydrotesting methods used for maintenance and construction operations.

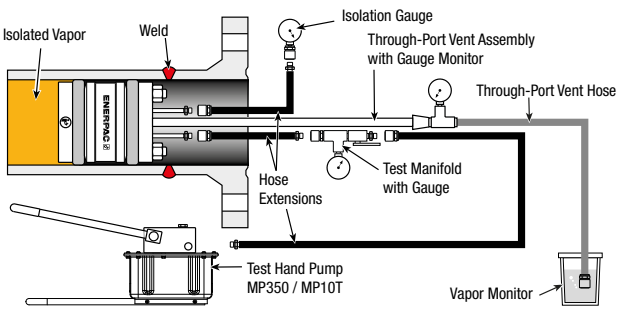
Improve operator safety and reduce system downtime by eliminating cleaning requirements and limiting test pressure volume.

The MITT series tools improve safety by limiting the test pressure volume and reduce downtime by eliminating cleaning requirements.

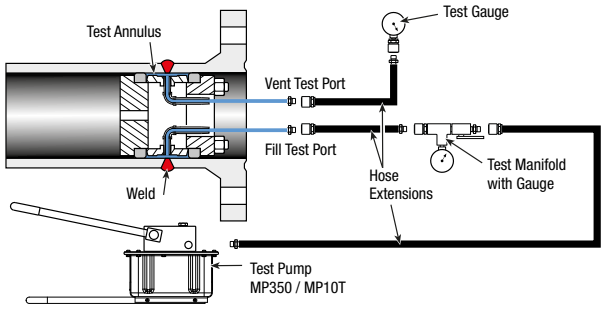
Key benefits of the tools include:

- Significantly reduce maintenance project timelines
- Safely perform welding on hydrocarbon lines with the peace of mind of a positive pressurized hydrostatic isolation
- Achieve significant reduction in wastewater (< 1/4 gallon (1,0 litre) of water required for a 24 inch test)
- Patent Pending.

MITT Isolation / Vapor Barrier Arrangement



MITT Isolation Pressure Test Arrangement



Nominal Pipe Diameter (inch)	Model Number	Pipe Schedules Covered	Max. Tool Pressure Rating (psi)	Tool Body Diameter (inch)	Overall Length (inch)	Stud, Nut, Washer Size (inch)	Pressure Port Size (ASME NPT)	(lbs)
¾	MITT075A	5, 10, STD/40	4500	0.7	14	1/8"	Female 1/8"	1.7
	MITT075B	XS/80, 160	4500	0.6	14	1/8"	Female 1/8"	1.5
1	MITT1A	5, 10, STD/40	4500	0.9	14	1/8"	Female 1/8"	1.9
	MITT1B	XS/80, 160	4500	0.7	14	1/8"	Female 1/8"	1.6
1¼	MITT125A	5, 10, STD/40 XS/80	4500	1.1	14	¼"	Female 1/4"	2.9
1½	MITT150A	5,10, XS/80	4500	1.4	14	¼"	Female 1/4"	4.1
	MITT150B	160	4500	1.1	14	¼"	Female 1/4"	3.4
2	MITT2A	5,10, STD/40, XS/80	4500	1.8	14	¼"	Female 1/4"	5.4
	MITT2B	160, XXS	4500	1.4	14	¼"	Female 1/4"	4.3
3	MITT3A	5,10, STD/40, XS/80	4500	2.8	7	3/8"	Male 1/8"	5
	MITT3B	160, XXS	4500	2.3	7	3/8"	Male 1/8"	4.5
4	MITT4A	5,10, STD/40, 60, XS/80	4500	3.7	7	5/16"	Male 1/8"	5.6
	MITT4B	120, 160	4500	3.2	7	5/16"	Male 1/8"	4.8
	MITT4C	XXS	4500	3.0	7	5/16"	Male 1/8"	4.3
6	MITT6A	10 , STD/40, 60	4500	5.7	7	5/8"	Male 1/4"	13
	MITT6B	XS / 80, 120	4500	5.4	7	5/8"	Male 1/4"	12
	MITT6C	160, XXS	4500	4.8	7	5/8"	Male 1/4"	10
8	MITT8A	10, 20, 30, STD/40, XS/80	4500	7.4	7	5/8"	Male 1/4"	19
	MITT8B	100, 120, 140, XXS, 160	4500	6.6	7	5/8"	Male 1/4"	16
10	MITT10A	20, 30, STD/40, XS/60, 80	4500	9.4	7	5/8"	Male 1/4"	29
	MITT10B	100, 120, XXS/140, 160	4500	8.4	7	5/8"	Male 1/4"	25
12	MITT12A	10, 20, 30, STD, 40, XS	4500	11.6	7	5/8"	Male 1/4"	43
	MITT12B	60, 80, 100, XXS/120	4500	10.7	7	5/8"	Male 1/4"	41
	MITT12C	140, 160	4500	9.8	7	5/8"	Male 1/4"	32
14	MITT14A	10, 20, STD/30, 40	4500	12.8	7	5/8"	Male 1/4"	45
	MITT14B	XS, 60, 80	4500	12.8	7	5/8"	Male 1/4"	42
	MITT14C	100, 120, 140, 160	4500	11.1	7	5/8"	Male 1/4"	38
16	MITT16A	10, 20, STD/30, XS/40, 60	4500	14.6	7	5/8"	Male 1/4"	54
	MITT16B	80, 100	4500	13.6	7	5/8"	Male 1/4"	48
	MITT16C	120, 140, 160	4500	12.8	7	5/8"	Male 1/4"	45
18	MITT18A	10, 20, STD, 30, XS, 40	4500	16.5	7	5/8"	Male 1/4"	64
	MITT18B	60, 80	4500	15.8	7	5/8"	Male 1/4"	60
	MITT18C	100, 120	4500	14.9	7	5/8"	Male 1/4"	55
	MITT18D	140, 160	4500	14.1	7	5/8"	Male 1/4"	52
20	MITT20A	10, STD/20, XS / 30	4500	18.9	7	5/8"	Male 1/4"	80
	MITT20B	40, 60	4500	18.0	7	5/8"	Male 1/4"	73
	MITT20C	80, 100	4500	17.1	7	5/8"	Male 1/4"	67
	MITT20D	120, 140	4500	16.1	7	5/8"	Male 1/4"	61
	MITT20E	160	4500	15.7	7	5/8"	Male 1/4"	60
22	MITT22A	STD, XS	4500	20.6	7	5/8"	Male 1/4"	89
	MITT22B	60, 80	4500	19.4	7	5/8"	Male 1/4"	81
	MITT22C	100, 120	4500	18.4	7	5/8"	Male 1/4"	75
	MITT22D	140, 160	4500	17.4	7	5/8"	Male 1/4"	69
24	MITT24A	10, STD/20, XS, 30	1150	22.6	7	5/8"	Male 1/4"	99
	MITT24B	40, 60	2250	21.7	7	5/8"	Male 1/4"	94
	MITT24C	80, 100	3375	20.6	7	5/8"	Male 1/4"	88
	MITT24D	120, 140	4500	19.5	7	5/8"	Male 1/4"	82
	MITT24E	160	4500	18.9	7	5/8"	Male 1/4"	80
26	MITT26A	10, STD, XS	1150	24.6	7	5/8"	Male 1/4"	115
30	MITT30A	10, STD, XS/20, 30	1150	28.6	7	5/8"	Male 1/4"	147
	MITT30B	40	1150	28.1	7	5/8"	Male 1/4"	140
32	MITT32A	10, STD, XS/20, 30	1150	30.6	7	5/8"	Male 1/4"	158
	MITT32B	40	1150	30.3	7	5/8"	Male 1/4"	155
34	MITT34A	10, STD, XS/20, 30	425	32.6	7	5/8"	Male 1/4"	168
	MITT34B	40	425	32.2	7	5/8"	Male 1/4"	165
36	MITT36A	10, STD, XS	425	34.6	7	5/8"	Male 1/4"	187
38	MITT38A	STD, XS	425	36.6	7	5/8"	Male 1/4"	208
40	MITT40A	STD, XS	425	38.6	7	5/8"	Male 1/4"	230

MITT Series



Pipe Diameters:
¾ - 40 inches

Water Capacity per Test:
0.10 - 0.75 gallon

Maximum Test Pressure:
4,500 psi



Cost-Effective Spares

Buna 90 shore hardness seals and stainless steel seal backing rings provide additional pressure capacity for a low cost.



Ancillary Kit – MITTAK

All ancillary components required to safely isolate piping and test new welds (includes manual valves, gauge set, hoses, hand tools, fittings).



Pump and Reservoir

To match the full capability of the tools, the **MP350** hand pump and **MP10T** reservoir are recommended.

Page: 84

▼ *MITT2A tool being torqued in a test stand for high pressure testing.*



Enerpac 'Yellow Pages' stand for Hydraulic Information!

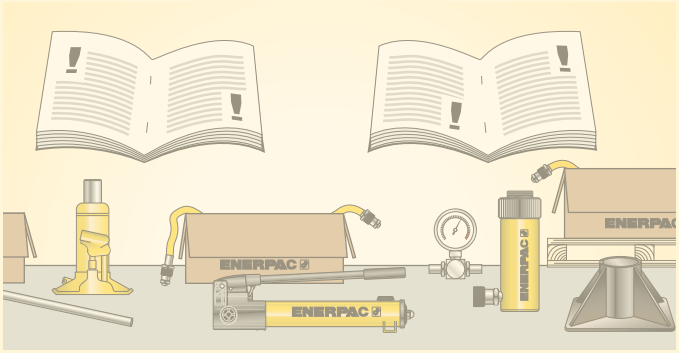
If selecting hydraulic equipment is not your daily routine, then you will appreciate these pages. The 'Yellow Pages' are designed to help you work with hydraulics. They will help you to better understand the basics of hydraulics, of system set-ups and of the most commonly used hydraulic techniques. The better your choice of equipment, the better you will appreciate hydraulics. Take the time to go through these 'Yellow Pages' and you will benefit even more from Enerpac High-Pressure Hydraulics.

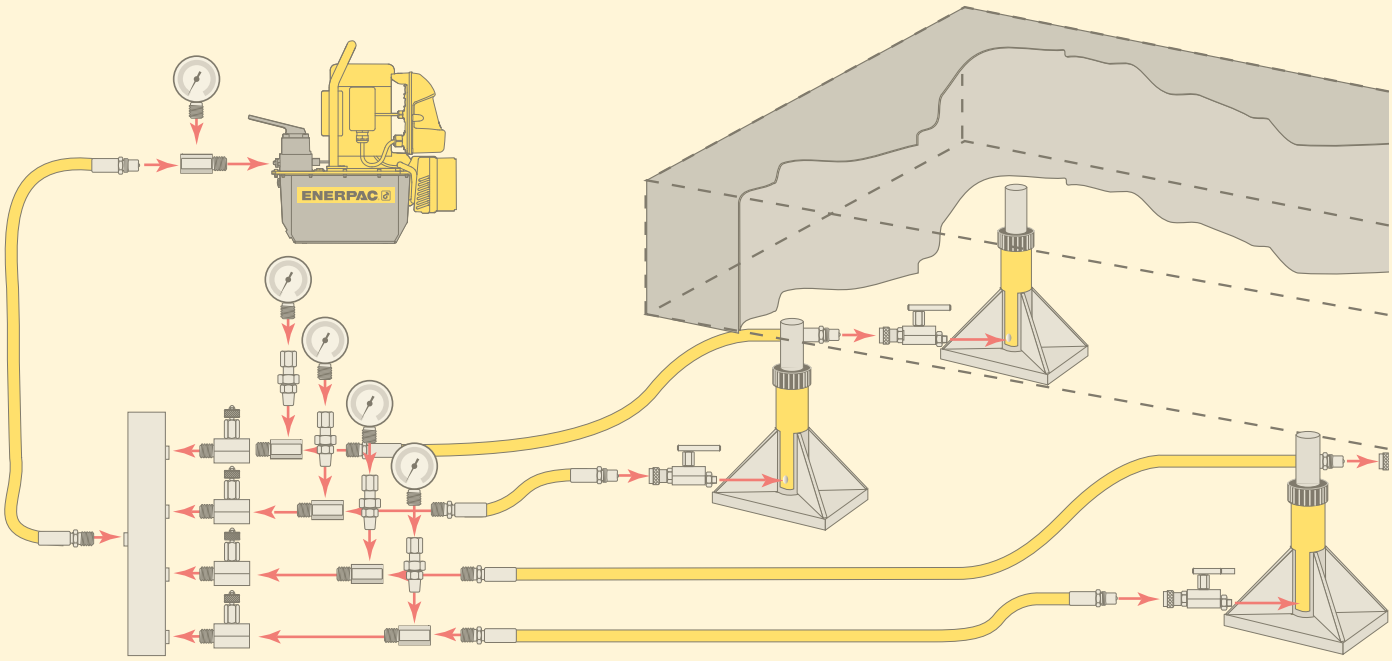
ENERPAC WARRANTY STATEMENT

Visit our website for the complete Global Lifetime Warranty or call your Authorized Service Center.

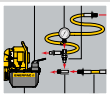
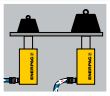
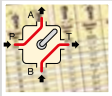
Learn more about hydraulics

Visit **www.enerpac.com** to learn more about hydraulics and system set-ups.





Yellow Pages Section Overview

Section		Page
Safety Instructions		**400** ▶
Pump Selection		**402** ▶
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Basic System Set-ups		**404** ▶
Basic Hydraulics		**406** ▶
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ISO 9001 REGISTERED
ENERPAC, 720 W. James St., Columbus, WI 53925 USA

Enerpac is certified for several quality standards. These standards require compliance with standards for management, administration, product development and manufacturing. Enerpac worked hard to earn the quality rating ISO 9001, in its ongoing pursuit of excellence.

DIN-ISO 1402
Enerpac Thermoplastic and Rubber Hoses have been tested and confirm to this Standard.

ASME B30.1-2015
Our cylinders fully comply with the criteria set forth by the American National Standards Institute (except RD, BRD, HCL, LPL, CUSP and JHA-Series).

Product Design Criteria
All hydraulic components are designed and tested to be safe for use at max. 10,000 psi (700 bar) pressure unless otherwise specifically noted.

Where specified, Enerpac electric power units meet the design, assembly and test requirements of the Standards Council of Canada (CAN C22.2 No. 68-92), and UL73 for the United States. Units were tested and certified for both USA and Canada by TÜV and by CSA, USA-OSHA-NRTLs., (Nationally Recognized Testing Laboratories).

EMC Directive
Where specified, Enerpac electric power pumps meet the requirements for Electromagnetic Compatibility per EMC Directive 2014/30/EU.

CE Marking & Conformity
Enerpac provides Declarations of Conformity or Incorporation, as applicable, and CE Marks for products according to the EU Directives.

ATEX 95 Certified
The S, W, DSX and HMT-Series torque wrenches, ZA, XA, LAT and ATP-Series air driven pumps, SWi-Ex-flange spreaders, HP-Ex hand pumps and the 144-type hoses are tested and certified to conform to the Directive 2014/34/EU "ATEX Directive".
The explosion protection is for Equipment Group II, Equipment Category 2 (Hazardous Zone Area 1) in Gas and/or Dust atmospheres.

S, W-wrenches:	**Ex II 2 GD T4**
DSX, HMT-wrenches:	**Ex II 2 G c T6**
NSH-Nut Splitters:	**Ex II 2 G c T6**
ZA4, ZA4T-Air Pumps:	**Ex II 2 GD ck T4**
ZA4TX-QR0P-Pump:	**Ex IIC T4 Gc** **Ex IIIC T135°C Dc**
ATP, XA-Air Pumps:	**Ex II 2 GD ck T4**
LAT-Air Pumps:	**Ex IIC T4 Gc** and **Ex IIIC T135°C Dc**
SWi-Ex Spreaders:	**II 2G Ex h IIB T5 Gb** and **II 2D Ex h IIIC T85°C Db**
HP-Ex Hand Pumps:	**II 2G Ex h IIB T5 Gb** and **II 2D Ex h IIIC T100°C Db**
144-Hoses:	**II 2G Ex h IIB T5 Gb** and **II 2D Ex h IIIC T100°C Db**

Safety Instructions

ENERPAC

THINK SAFETY

When used correctly, hydraulic power is one of the safest methods of applying force to your work. And to that end we offer some DO's and DON'Ts, simple common-sense points which apply to practically all Enerpac hydraulic products.

- **Lift slowly and check the load often**
- **Avoid standing in the line of force**
- **Anticipate possible problems and take steps to avoid them.**

The line drawings and application photos of Enerpac products throughout this catalog are used to portray how some of our customers have used hydraulics in industry.

In designing similar systems, care must be taken to select the proper components that provide safe operation and fit your needs.

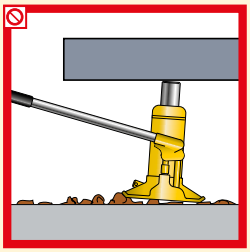
Check to see if all safety measures have been taken to avoid the risk of injury and property damage from your application or system.

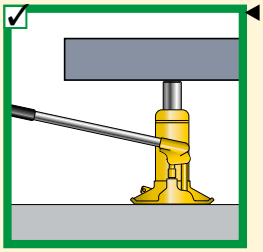
Enerpac cannot be held responsible for damage or injury, caused by unsafe use, maintenance or application of its products.

Please contact the Enerpac office or a representative for guidance when you are in doubt as to the proper safety precautions to be taken in designing and setting up your particular system.

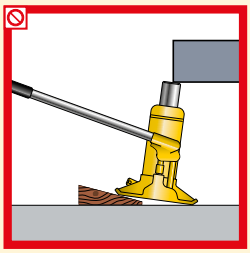
In addition to these tips, every Enerpac product comes with instructions spelling out specific safety information. Please read them carefully.

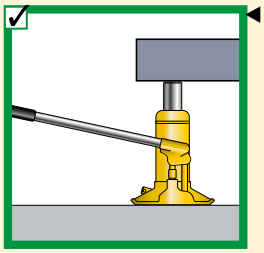
Jacks





Provide a level and solid support for the entire jack base area.



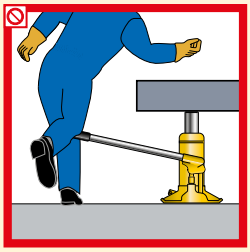


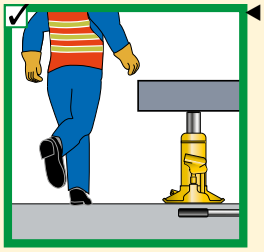
The entire jack saddle must be in contact with the load. Movement of the load to be in the same direction as jack plunger.





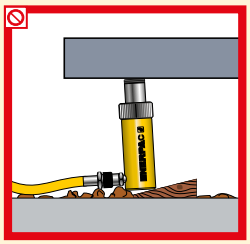
Never place any part of your body under the load. Ensure the load is on a solid support before venturing under.

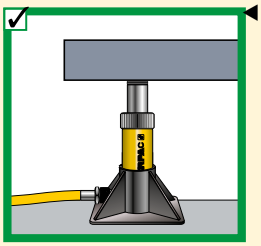




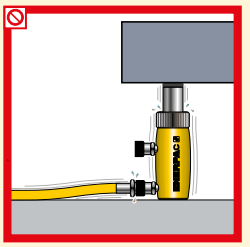
Remove the jack handle when it is not being used.

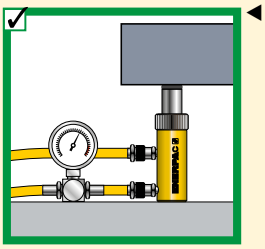
Cylinders



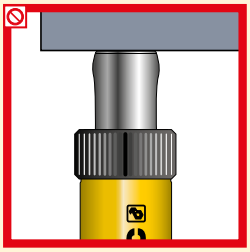


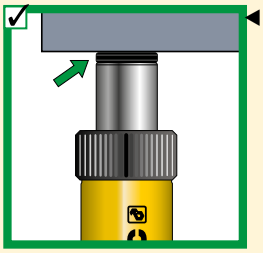
Provide a solid support for the entire cylinder base area. Use cylinder base attachment for more stability.





Both couplers must be connected when using double-acting cylinders. Ensure return hose is fitted.





Do not use cylinder without saddle. This will cause plunger to "mushroom". Saddles distribute load evenly on the plunger.





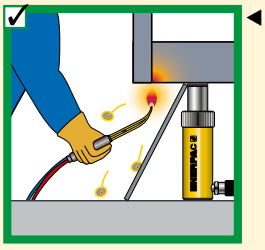
As with jacks, never place any part of your body under the load. Load must be on cribbing before venturing under.





Always protect cylinder threads for use with attachments.

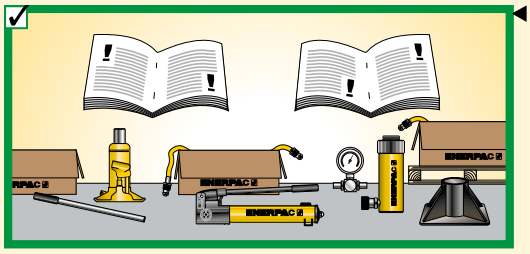




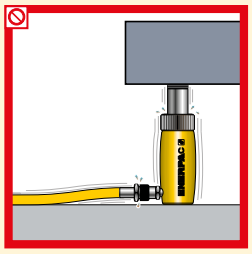
Keep hydraulic equipment away from open fire and temperatures above 150 °F (65 °C).

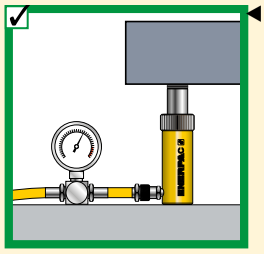
General

80% Manufacturer's rating of load and stroke are maximum safe limits. Good practice encourages using only 80% of these ratings! 80%



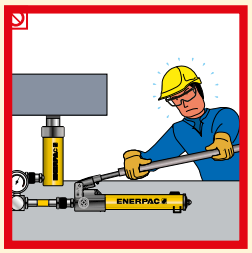
Always read instructions and safety warnings that come with your Enerpac hydraulic equipment.

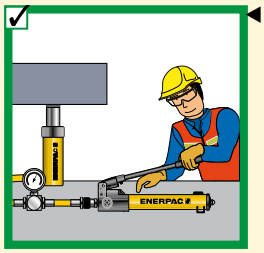




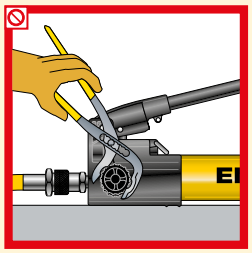
Don't override the factory setting of relief valves. Always use a gauge to check system pressure.

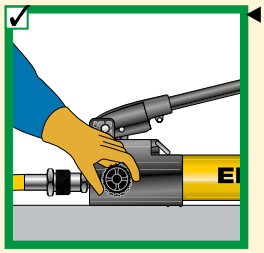
Pumps



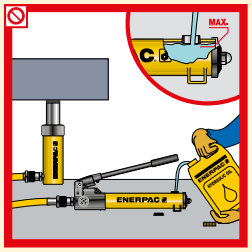


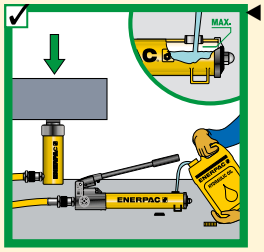
Don't use handle extenders. Hand pumps should be easy to operate when used correctly.



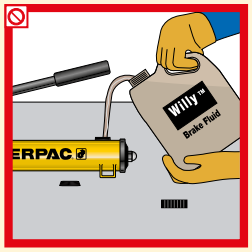


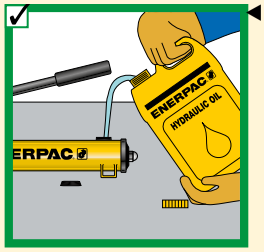
Close release valve finger tight. Using force will ruin the valve.





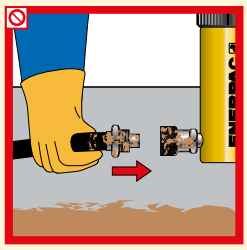
Fill pump only to recommended level. Fill only when connected cylinder is fully retracted.

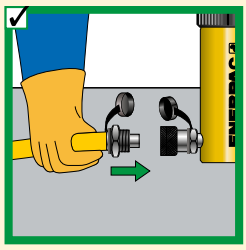




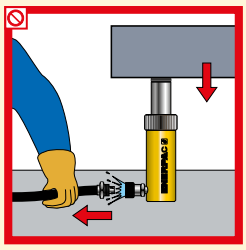
Use only genuine Enerpac hydraulic oil. Wrong fluid can destroy seals and pump and will render your warranty null and void your guarantee.

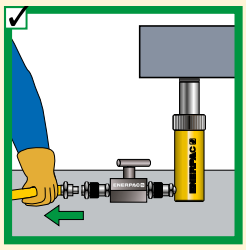
Hoses and couplers



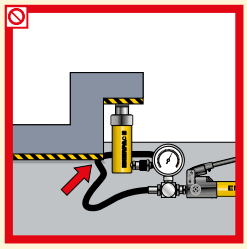


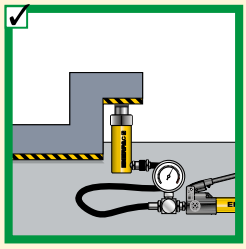
Clean both coupler parts before connecting. Use dust caps when coupler parts are not connected.



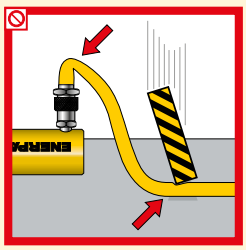


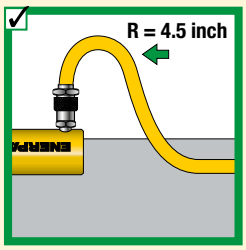
Detach cylinder only when fully retracted or use shut-off valves or safety valves to lock-in cylinder pressure.





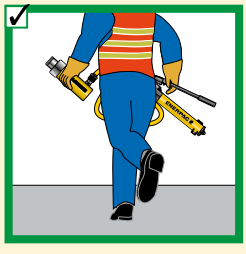
Keep hoses away from the area beneath loads.



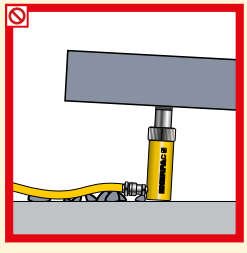


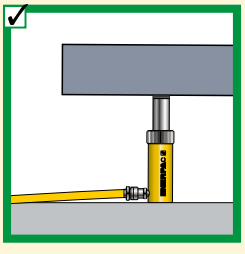
Don't kink hoses. Bending radius should be at least 4½ inch (115 mm). Don't drive over or drop heavy objects on hoses.





Don't lift hydraulic equipment by the hoses.





Never allow the cylinder to be lifted off of the ground through the couplers.

▼ HAND PUMP AND SINGLE-ACTING CYLINDER MATCHING CHART

Capacity (tons) ▶ / ▼ Stroke (inches)	5 t	10 t	15 t	25 t	30 t	50 t	60 t	75 t	100 t	150 t
<1.00										
1.00										
2.00										
3.00										
4.00										
5.00										
6.00										
7.00										
8.00										
9.00										
10.00										
12.00										
13.00										
14.00										





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Note: Selection based on oil capacity requirements of cylinders.

▼ POWER PUMP SELECTION CHART

Oil Flow *	Low Oil Flow (6 - 20 in³/min)		Medium Oil Flow (30 -120 in³/min)		High Oil Flow (120 - 250 in³/min)	
Oil Capacity	0.5 - 1.0 gallon	0.5 - 1.0 gallon	1.5 - 10 gallons	1.5 - 10 gallons	2.0 - 10 gallons	2.5, 10, 40 gallons
Duty Cycle **	Intermittent	Intermittent	Intermittent	Extended	Extended	Extended
Portability ***	Portable	Portable	Portable	Stationary	Stationary	Stationary
Recommended Series	**XC2-Series Cordless**	**PU-Series Economy**	**ZU4-Series**	**ZE3-, ZE4- and ZE5-Series**	**ZE6-Series**	**SFP-Series Split-Flow**
						
	Page: 90	Page: 94	Page: 100	Page: 106	Page: 106	Page: 342

*** Oil Flow**

- Determined by motor size
- Directly affects electrical power requirements
- Determines cylinder or tool speed

**** Duty Cycle**

- Extended applications require more than one hour of uninterrupted pump use
- Intermittent would be used less than one hour, depending on reservoir capacity.

***** Portability**

Portable
- Ergonomic handles
- Flexible power requirements

Stationary
- Mounting options
- Normally requires stable power

Selection Worksheet

▼ **Complete the following information to select the right products:**

Cylinder Selection

Question:	*Tips/help*	*Data*	*Model Number*
Total force required (ton):	Total load		
Number of cylinders required:	Number of lifting points		
Force per cylinder (ton):	Should be 80% of total cylinder capacity		
Stroke required:	Plunger travel		
Single or double-acting (D/A):	D/A used when pull force is required, or retract speed is critical		
Type of plunger required:	Hollow or solid		
Collapsed height required:			
Optional saddle required:	Tilt, Grooved, Flat		
Cylinder base:	Improves stability		
Cylinder attachments: (RC-Series)	Expanded functions		
Selected cylinder model:		▶	
Including coupler model:			

Pump Selection

The three most commonly selected pumps are hand pumps, electric pumps and air-driven pumps. Gas powered pumps, however can be selected in the same way.

Available power source: ☐ **Manual** ☐ **Battery** ☐ **Electric** ☐ **Compressed Air** ☐ **Petrol**

Hand Pump	Not for high cycle applications		
Single- or double-acting operation	Use 4-way valve for D/A applications		
	Check speed chart on page 409 for number of strokes per inch		
Selected Hand Pump:		▶	
Electric or Compressed Air Pump			
Need for portability:			
Duty cycle:	Intermittent or extended		
Required useable oil capacity:	Intermittent = 1.2 x cylinder oil capacity		
	high cycle = 2 x cylinder oil capacity		
Available Voltage:			
Lifting speed (Important/not important):	Use speed chart on page 409		
Type of control:	Manual / remote pendant		
Type of actuation/function:	Advance / Hold / Retract		
Accessories:	Filter Kit, Level Switch, Roll Bar ...		
Selected Pump:		▶	
Including Coupler:	Oil connection		

System Components

Number of hoses and length required:			
Selected Hoses:		▶	
Manifold or Tee-fitting:		▶	
Extra hose per manifold (2):		▶	
Gauge (psi, lbs or tons scale):	GF-Series glycerine-filled for high cycle	▶	
Gauge Adapter:		▶	
Fittings:		▶	
Pressure Relief Safety Valve:		▶	
Load-holding Valve(s):		▶	
Hydraulic Oil:		▶	

1 Cylinder
Applies hydraulic force.
Page 5

2 Cylinder Base Plate
For applications like lifting where additional cylinder stability is required.
Page 16

3 Pump
Provides hydraulic flow.
Page 77

4 Hose
Transports hydraulic fluid.
Page 136-137

5 Male Coupler
For quick connection of the hose to system components.
Page 138-139

6 Female Coupler
For quick connection of the hose end to the system components.
Page 138-139

7 Gauge
To monitor pressure of the hydraulic circuit.
Page 144-149

8 Gauge Adaptor
For quick and easy gauge installation.
Page 150-151

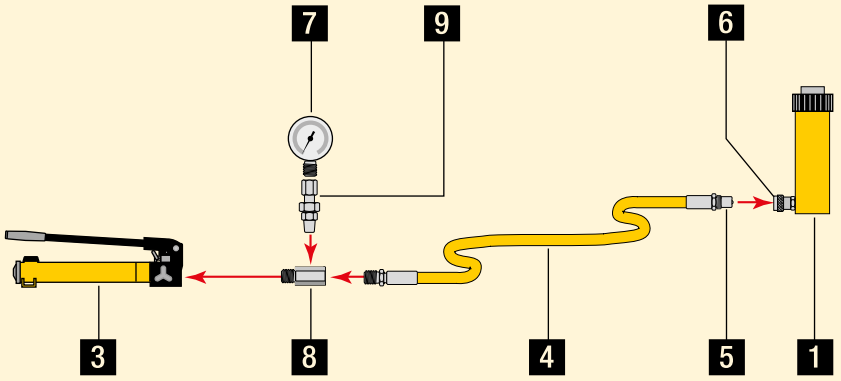
9 Swivel Connector
Allows proper alignment of valves and/or gauges. Used when units being connected cannot be rotated.
Page 151

10 Auto-Damper Valve V10
Used to protect gauge from damage due to sudden pressure pulses in the system. Needs no adjustment and allows correct positioning of gauge, prior to tightening.
Page 152-153

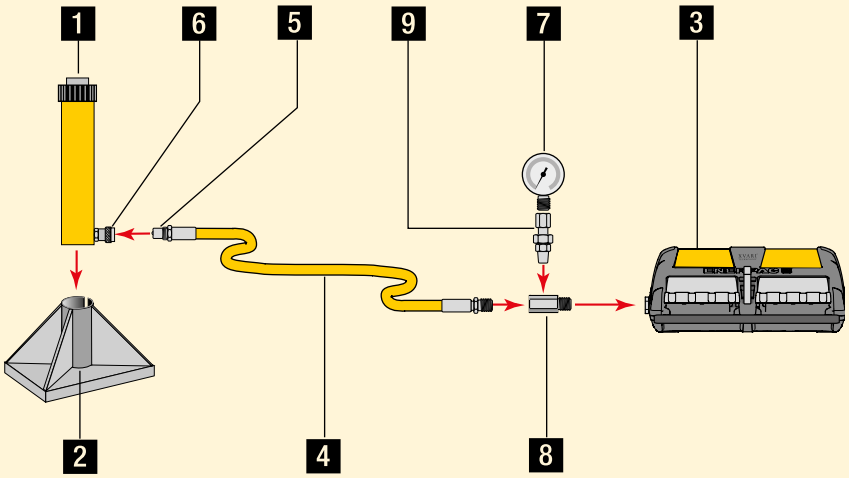
11 4-Way Directional Control Valve
Controls the direction of hydraulic fluid in a double-acting system.
Page 128-129

Single-acting push application, such as in a press.
The hand pump offers controlled cylinder advance, but may require many hand pump strokes in longer stroke applications when the cylinder capacity is 25 ton or above.

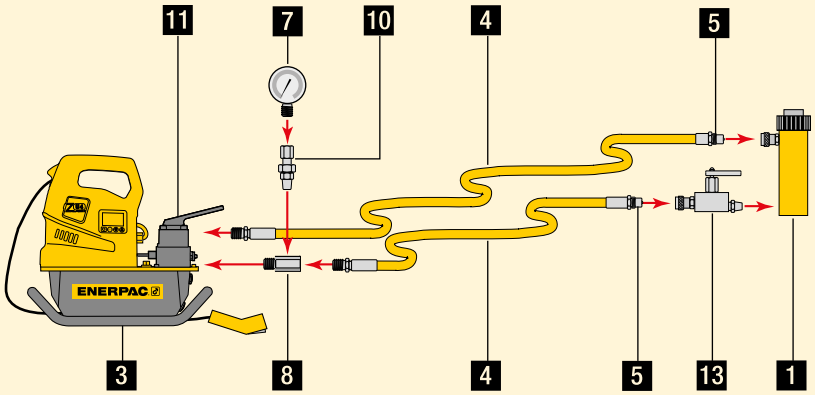
Examples of pump, hose and cylinder sets can be found on **pages 6-11**.



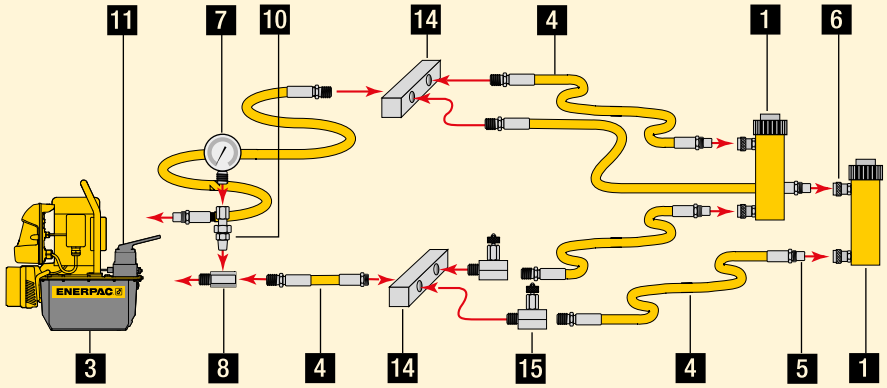
Single-acting cylinder with longer stroke used for lifting applications.



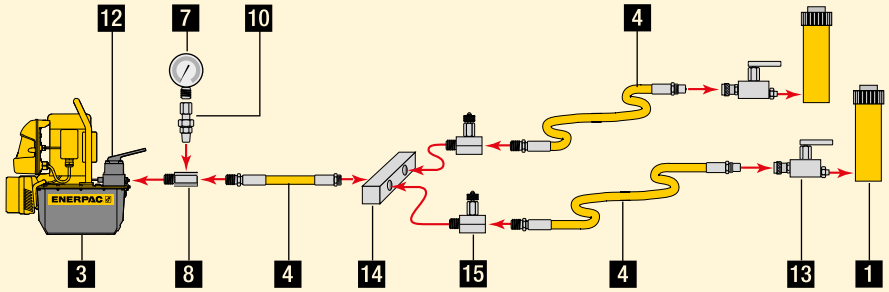
Double-acting cylinder set-up used for lifting applications where a slow controlled descent of the load must be maintained.



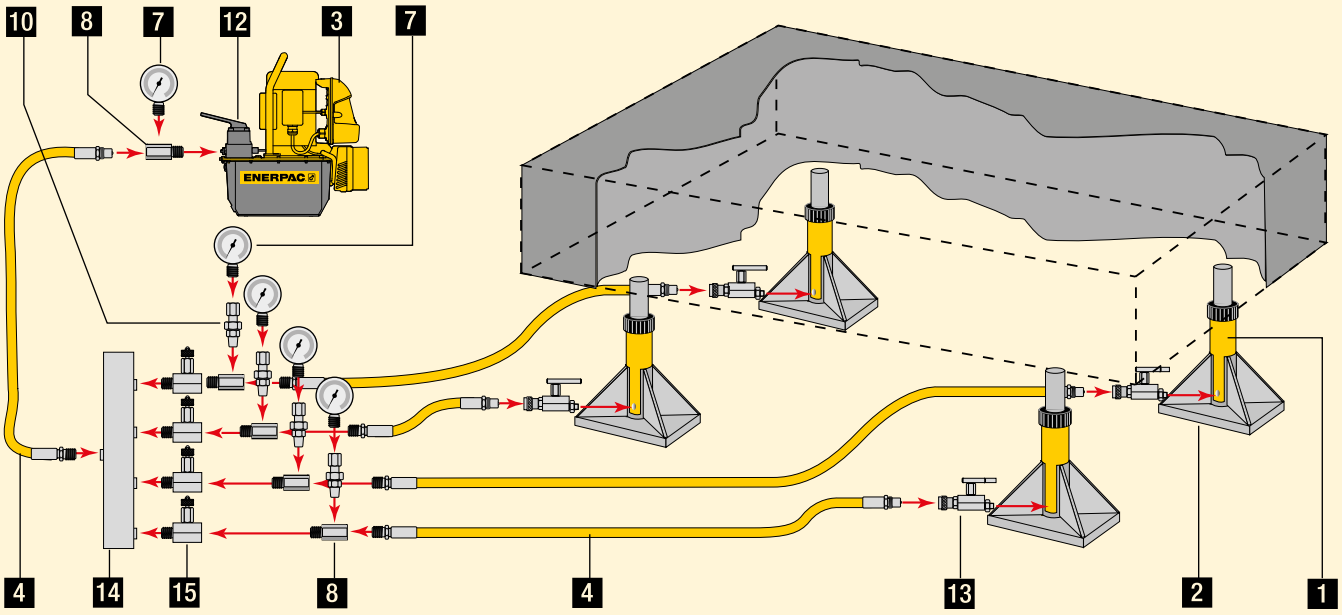
Double-acting cylinder set-up used in a push/pull application.



Two point lifting set-up using single-acting cylinders.



Four point lifting set-up, using single-acting cylinders and directional control valves.



12 3-Way Directional Control Valve
Controls the direction of hydraulic fluid in a single-acting system.
Page 128-129

13 Safety Holding Valve V66
Controls load descent in lifting applications.
Page 152-153

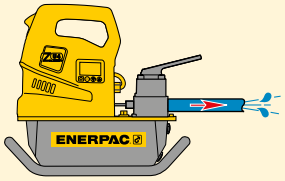
14 Manifold
Allows distribution of hydraulic fluid from one power source to several cylinders.
Page 140-143

15 Needle valves V82 and V182
Regulates the flow of hydraulic fluid to or from the cylinders.
Page 152-153

www.enerpac.com
Visit our web site to learn more about hydraulics and system set-ups.

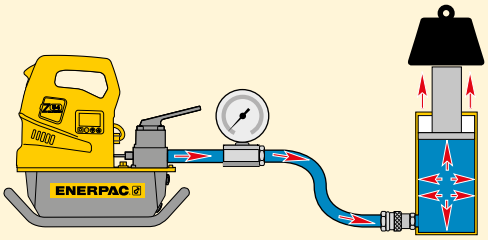
Flow

A hydraulic pump produces flow.



Pressure

Pressure occurs when there is resistance to flow.



Pascal's Law

Pressure applied at any point upon a confined liquid is transmitted undiminished in all directions (Fig.1). This means that when more than one hydraulic cylinder is being used, each cylinder will lift at its own rate, depending on the force required to move the load at that point (Fig. 2).

Cylinders with the lightest load will move first, and cylinders with the heaviest load will move last (Load A), as long as the cylinders have the same capacity.

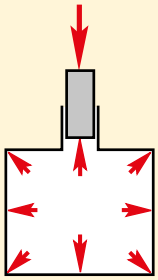


Figure 1

To have all cylinders operate uniformly so that the load is being lifted at the same rate at each point, either control valves (see Valve section) or Synchronous Lift System components (see section Heavy Lifting Technology) must be added to the system (Load B).

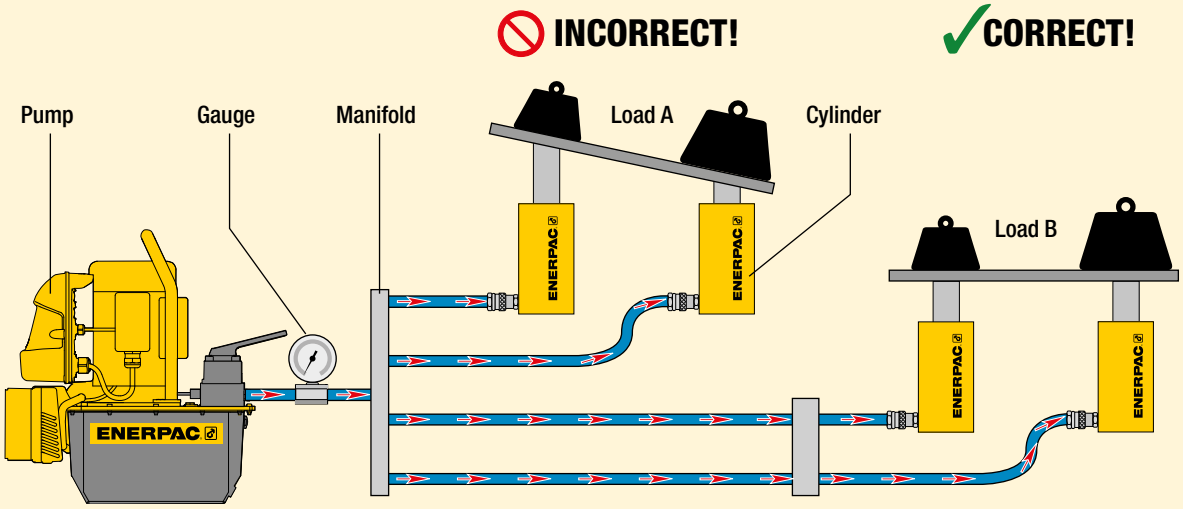


Figure 2

Synchronous Lift or Control Valves to provide uniform lifting of load.

CAUTION!
When lifting or pressing, always use a gauge.

A gauge is your 'window' to the system. It lets you see what's going on.

You will find the gauges in the System Components section.

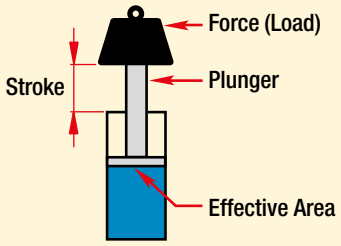
Page: 135

Learn more about hydraulics

Visit **www.enerpac.com** to learn more about hydraulics and system set-ups.

Force

The amount of force a hydraulic cylinder can generate is equal to the hydraulic pressure times the "effective area" of the cylinder (see cylinder selection charts).



Force	=	Hydraulic Working Pressure	x	Cylinder Effective Area
F	=	P	x	A

Use this formula to determine either force, pressure or effective area if two of the variables are known.

Example 1
An RC106 cylinder with 2.24 in^2 effective area operating at 8,000 psi will generate what force?
Force = 8,000 psi x 2.24 in^2 = 17,920 lbs.

Example 2
An RC106 cylinder lifting 14,000 lbs will require what pressure?
Pressure = 14,000 lbs ÷ 2.24 in^2 = 6,250 psi

Example 3
An RC256 cylinder with 5.15 in^2 effective area is required to produce a force of 41,000 lbs. What pressure is required?
Pressure = 41,000 lbs. ÷ 5.15 in^2 = 7,961 psi.

Example 4
Four RC308 cylinders each with 6.49 in^2 effective area are required to produce a force of 180,000 lbs. What pressure is required?
Pressure = 180,000 lbs ÷ (4 x 6.49 in^2) = 6,933 psi.
Remember, since four cylinders are used together, the area for one cylinder must be multiplied by the number of cylinders used.

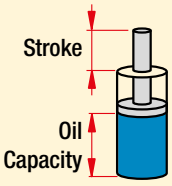
Example 5
A HCL2506 cylinder with 56.27 in^2 effective area is going to be used with a power source that is capable of 7,500 psi. What is the theoretical force available from that cylinder?
Force = 7,500 psi x 56.27 in^2 = 422,025 lbs.

Cylinder Oil Capacity

The volume of oil required for a cylinder (cylinder oil capacity) is equal to the effective area of the cylinder times the stroke.

Cylinder Oil Capacity	=	Cylinder Effective Area	x	Cylinder Stroke

* Note: these are theoretical examples and do not take into account the compressibility of oil under high pressure.



Example 1:
An RC158 cylinder with 3.14 in^2 effective area and an 8 inches stroke will require what volume of oil?
Oil Capacity = 3.14 in^2 x 8 in = 25.12 in^3

Example 2:
An RC5013 cylinder has an effective area of 11.05 in^2 and a stroke of 13.25 in. How much oil will be required?
Oil Capacity = 11.05 in^2 x 13.25 in = 146.41 in^3

Example 3:
An RC10010 cylinder has an effective area of 20.63 in^2 and a stroke of 10.25 in. How much oil will it require?
Oil Capacity = 20.63 in^2 x 10.25 in = 211.46 in^3

Example 4:
Four RC308 cylinders are being used, each with an effective area of 6.49 in^2 and stroke of 8.25 in. How much oil will be required?
Oil Capacity = 6.49 in^2 x 8.25 in = 53.54 in^3 for one cylinder
Multiply by four to obtain the required capacity: 214.17 in^3

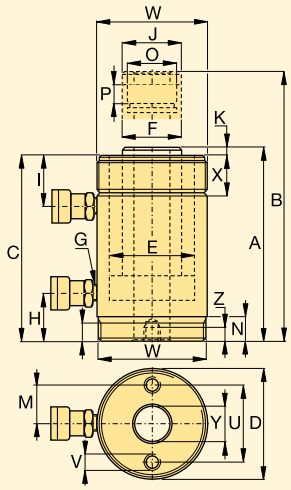
CAUTION!
Enerpac oil will compress 2.28% at 5,000 psi and 4.1% at 10,000 psi.

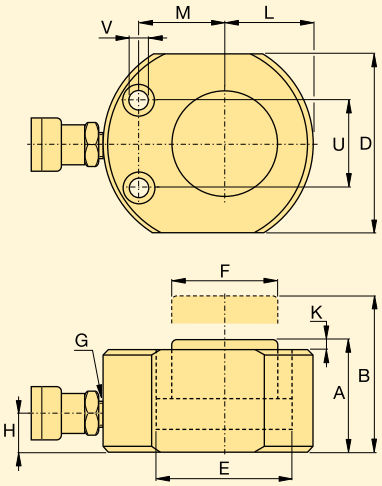
Page: 140

Key to cylinder dimensions

Dimensions shown in the Selection Charts of the cylinder section are identified on the relevant drawings by the capital letter references listed here: A for collapsed height through Z for depth of internal base thread.

A = Collapsed height
B = Extended height
C = Cylinder body length
D = Cylinder outside diameter
D1 = Cylinder width
E = Cylinder inside diameter (bore)
F = Plunger rod diameter
G = Oil inlet thread
H = Cylinder bottom to advance port
I = Cylinder top to retract port
J = Saddle outside diameter
K = Cylinder rod protrusion at collapsed height
L = Plunger centre to side of base
M = Mounting holes to plunger center
N = Length of smaller cylinder part
O = Plunger hole or thread of saddle
P = Plunger thread length
Q = Plunger outside thread
U = Pitch (BC bolt circle) of mounting holes
V = Thread of cylinder mounting holes
W = Collar thread
X = Collar thread length
Y = Center hole diameter
Z = Depth of internal base thread





Key to measurements

All capacities and measurements in the catalogue are expressed in uniform values.

The conversion chart provides helpful information for their translation into equivalent systems.

All ton values specified in this catalogue are tons (US ton) and are for cylinder class identification only.

Free Conversion Calculator

Visit enerpac.com and download the free conversion calculator.

Pressure:

1 psi	= 0.069 bar
1 bar	= 14.50 psi
	= 9.8 N/cm^2
	= 100,000 Pa
1 kPa	= 0.145 psi
1 MPa	= 145 psi

Volume:

1 in^3	= 16.387 cm^3
1 cm^3	= 0.061 in^3
1 litre	= 61.02 in^3
	= 0.264 gal
1 USgal	= 3785 cm^3
	= 3.785 l
	= 231 in^3

Weight:

1 pound (lb)	= 0.4536 kg
1 kg	= 2205 lbs
	= 9.806 N
1 metric ton	= 2205 lbs
	= 1000 kg
1 ton (short)	= 2000 lbs
1 US ton	= 2000 lbs
	= 907.18 kg

Torque:

1 Nm	= 0.738 Ft.lbs
	= 0.102 kgf.m
1 Ft.lbs	= 1356 Nm
	= 0.138 kgf.m

Temperature:

To Convert °F to °C:

$T\ ^{\circ}C = (T_{\circ F} - 32) \div 1.8$

To Convert °C to °F:

$T\ ^{\circ F} = (T_{\circ C} \times 1.8) + 32$

Other measurements:

1 in	= 25.4 mm
1 mm	= 0.039 in
1 in^2	= 6.452 cm^2
1 cm^2	= 0.155 in^2
1 ft	= 0.3048 m
1 m	= 3.28 ft
1 hp	= 0.746 kW
1 kW	= 1.359 hp
1 kN	= 225 lbs

Imperial to metric

Inches	Decimal	mm
1/16	.06	1.59
1/8	.13	3.18
3/16	.19	4.76
1/4	.25	6.35
5/16	.31	7.94
3/8	.38	9.53
7/16	.44	11.11
1/2	.50	12.70
9/16	.56	14.29
5/8	.63	15.88
11/16	.69	17.46
3/4	.75	19.05
13/16	.81	20.64
7/8	.88	22.23
15/16	.94	23.81
1	1.00	25.40

Cylinder Speed Charts

Cylinder Speed

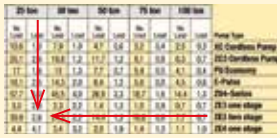
This chart will help you calculate the time required for an Enerpac cylinder to lift a load when powered by a 10,000 psi Enerpac hydraulic pump.

The Cylinder Speed Chart can also be used to determine the pump type and model best suited for an application when you know the plunger speed required.

To determine: Cylinder plunger speed

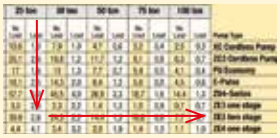
An RC256 cylinder (25 tons) is powered by a ZE3 two stage pump. While lifting the load, the cylinder plunger will require 9.23 seconds to travel 1 inch.

While extending towards the load, the cylinder plunger travels at 0.83 sec/in.



To determine: Best matching pump

Your 25 tons cylinder needs to move a load at a speed of 5,2 sec/in. Simply go down from the top of the chart, to the value of 5.2 sec/in. Then follow the chart to the right to find that the ZE4 pump or ZU4 is most suitable for your application.



Number of Pump Handle Strokes per Inch of Cylinder Plunger Travel

Cyl. Capacity ▶	5 tons		10 tons		15 tons		25 tons		30 tons		50 tons		75 tons		100 tons			
▼ Power Source	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	Pump Type	Page:
Manual	18.0	18.0	40.7	40.7	57.1	57.1	93.8	93.8	118.0	118.0	200.7	200.7	289.1	289.1	375.1	375.1	**P141**	**78**
	6.6	6.6	14.8	14.8	20.8	20.8	34.2	34.2	43.0	43.0	73.1	73.1	105.3	105.3	136.6	136.6	**P391**	**78**
	1.4	6.6	3.3	14.8	4.6	20.8	7.5	34.2	9.4	43.0	16.1	73.1	23.1	105.3	30.0	136.6	**P392**	**78**
	1.0	6.6	2.2	14.9	3.1	20.9	5.2	34.4	6.5	43.3	11.0	73.6	15.9	106.0	20.6	137.5	**P77/80/801/84**	**80**
	0.4	6.6	0.9	14.8	1.3	20.8	2.2	34.2	2.7	43.0	4.6	73.1	6.6	105.3	8.6	136.6	**P802/842**	**80**
	0.1	3.4	0.3	7.7	0.4	10.8	0.7	17.8	0.8	22.4	1.4	38.1	2.1	54.8	2.7	71.1	**P462/464**	**80**

Seconds per Inch of Cylinder Plunger Travel

Cyl. Capacity ▶	5 tons		10 tons		15 tons		25 tons		30 tons		50 tons		75 tons		100 tons			
▼ Power Source	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	Pump Type	Page:
Electric Pumps (speed based on 60 Hz)	0.51	4.88	1.16	10.97	1.63	15.47	2.67	25.37	3.44	32.69	5.72	54.33	8.23	78.18	10.68	101.42	**SC Cordless Pump**	**88**
	0.38	2.96	0.84	6.65	1.19	9.37	1.19	15.38	2.51	19.51	4.18	32.93	6.01	47.38	7.81	61.56	**XC2 Cordless Pump**	**90**
	0.20	1.88	0.44	4.22	0.62	5.95	1.01	9.76	1.31	12.57	2.90	20.87	3.13	30.07	4.06	39.01	**ZC3 Cordless Pump**	**92**
	0.29	3.05	0.66	6.86	0.93	9.67	1.53	15.86	1.98	20.43	3.28	33.96	4.72	48.86	6.13	63.39	**PU Economy**	**94**
	0.08	0.98	0.19	2.19	0.27	3.09	0.44	5.07	0.57	6.54	0.94	10.87	1.36	15.64	1.76	20.28	**ZU4-Series**	**99, 103**
	1.65	1.77	3.72	3.99	5.24	5.62	8.60	9.23	11.08	11.89	18.42	19.76	26.50	28.43	34.38	36.88	**ZE3 one stage**	**99, 109**
	0.16	1.77	0.36	3.99	0.50	5.62	0.83	9.23	1.06	11.89	1.77	19.76	2.54	28.43	3.30	36.88	**ZE3 two stage**	**99, 109**
	1.12	1.19	2.52	2.68	3.56	3.77	5.83	6.19	7.51	7.97	12.49	13.25	17.97	19.07	23.32	24.74	**ZE4 one stage**	**99, 109**
	0.11	1.19	0.25	2.68	0.35	3.77	0.57	6.19	0.74	7.97	1.22	13.25	1.76	19.07	2.28	24.74	**ZE4 two stage**	**99, 109**
	0.56	0.59	1.25	1.34	1.77	1.89	2.90	3.09	3.74	3.99	6.21	6.63	8.93	9.53	11.59	12.37	**ZE5 one stage**	**99, 109**
	0.08	0.59	0.19	1.34	0.27	1.89	0.44	3.09	0.56	3.99	0.94	6.63	1.35	9.53	1.75	12.37	**ZE5 two stage**	**99, 109**
	0.33	0.36	0.73	0.80	1.03	1.13	1.69	1.86	2.18	2.39	3.62	3.98	5.21	5.73	6.76	7.43	**ZE6 one stage**	**99, 109**
	0.08	0.36	0.18	0.80	0.25	1.13	0.41	1.86	0.53	2.39	0.88	3.98	1.27	5.73	1.65	7.43	**ZE6 two stage**	**99, 109**
	0.06	0.13	0.13	0.29	0.19	0.41	0.30	0.67	0.39	0.86	0.65	1.44	0.94	2.07	1.22	2.68	**SFP421 (15 hp)**	**342**
Air Driven Pumps (at 100 psi air pressure)	0.49	3.90	1.10	8.78	1.55	12.37	2.54	20.30	3.27	26.15	5.43	43.46	7.82	62.54	10.14	81.14	**XA-Series**	**118**
	0.98	6.10	2.19	13.72	3.09	19.34	5.07	31.72	6.54	40.86	10.85	67.82	15.64	97.73	20.28	126.78	**PATG-Serie Turbo II Air**	**116**
	1.50	7.50	3.38	16.88	4.76	23.80	7.81	39.04	10.06	50.29	16.72	83.59	24.06	120,28	31.21	156.03	**PA-Series**	**114**
	0.09	6.50	0.21	14.63	0.29	20.62	0.48	33.83	0.61	43.59	1.02	72.44	1.47	104.24	1.90	135.23	**PAM-Series**	**115**
	0.07	0.75	0.16	1.69	0.22	2.38	0.36	3.90	0.47	5.03	0.78	8.36	1.12	12.03	1.45	15.60	**ZA4-Series**	**99, 120**
Gasoline Engine	0.08	0.61	0.19	1.37	0.27	1.93	0.44	3.17	0.57	4.09	0.94	6.79	1.36	9.77	1.76	12.68	**ZG5-Series (5.5 hp)**	**99, 122**
	0.07	0.30	0.15	0.67	0.21	0.94	0.35	1.54	0.44	1.98	0.74	3.29	1.06	4.74	1.38	6.15	**ZG6-Series (13.2 hp)**	**99, 122**

No Load indicates the plunger speed as the plunger extends towards the load (1st stage).

Load indicates the plunger speed as the load is lifted at a system pressure of 10,000 psi (2nd stage).

Example: At what speed (V) will the RC256 (25 tons) cylinder move when powered by a ZE3-Series two-stage pump?
Formula: **V** (sec/in) = **A** (in^2) ÷ **Q** (in^3/min)
RC256 Cylinder Effective Area = 5.16 in^2
ZE3-Series pump Oil Flow (no load) = 450 in^3/min

$$\text{Cylinder Plunger Speed (sec/in)} = \frac{\text{Cylinder Effective Area (in}^2\text{)}}{\text{Pump Flow Rate (in}^3\text{/min)}} \times \frac{60}{1}$$

$$\text{Speed V} = \frac{5.16\ in^2}{450\ in^3/min} \times 60\ sec = \mathbf{0.68\ sec/in}$$

Ways

The (oil) ports on a valve.
A 3-way valve has 3 ports: pressure (**P**), tank (**T**), and cylinder (**A**).
A 4-way valve has 4 ports: pressure (**P**), tank (**T**), advance (**A**) and retract (**B**).

Single-Acting cylinders require at least a 3-way valve, and can, under certain instances, be operated with a 4-way valve.

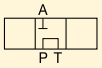
Double-Acting cylinders require a 4-way valve, providing control of the flow to each cylinder port.

Positions

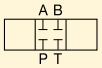
The number of control points a valve can provide. A 2-position valve has the ability to control only the advance or retraction of the cylinder. To be able to control the cylinder with a hold position, the valve requires a 3rd position.

Center Configuration

The center position of a valve is the position at which there is no movement required of the hydraulic component, whether a tool or cylinder.

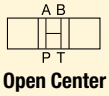


The most common is the **Tandem Center**. This configuration provides for little to no movement of the cylinder and the unloading of the pump. This provides for minimum heat build-up.

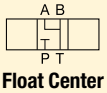


The next most common is the **Closed Center** configuration, which is used mostly for independent control of multi-cylinder applications. This configuration again provides for little to no movement of the cylinder, but also dead-heads the pump, isolating it from the circuit.
Use of this type of valve may require some means of unloading the pump to prevent heat build-up.

There are many more type of valves, such as **Open Center** and **Float Center**. These valves are used mostly in complex hydraulic circuits and require other special considerations.



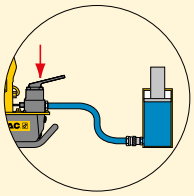
Open Center



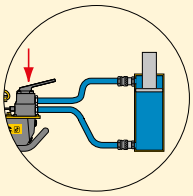
Float Center

Directional Control Valves

3-Way Valves
are used with single-acting cylinders.

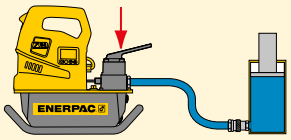


4-Way Valves
are used with double-acting cylinders.

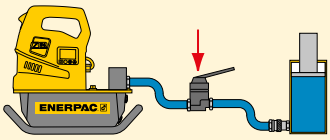


Valves may be either pump mounted or remote mounted.

Pump Mounted

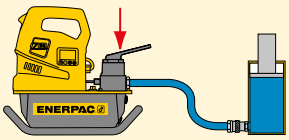


Remote Mounted

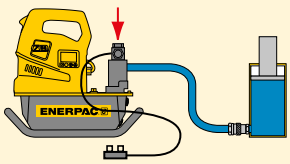


Valves may be either manually or solenoid operated.

Manually Operated

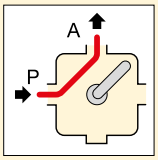


Solenoid Operated

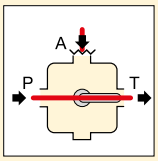


Advance Hold Retract

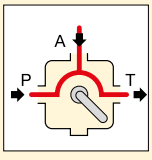
Single-acting cylinder
Controlled by a 3-way, 3-position valve.



Advance
The oil flows from the pump pressure port P to the cylinder port A: the cylinder plunger will extend.

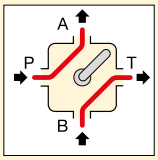


Hold
The oil flows from the pump pressure port P to the tank T. The cylinder port A is closed: the cylinder plunger will maintain its position.

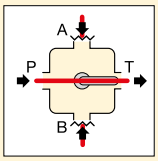


Retract
The oil flows from the pump and cylinder port A to the tank T: the cylinder plunger will retract.

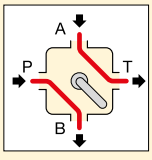
Double-acting cylinder
Controlled by a 4-way, 3-position valve.



Advance
The oil flows from the pump pressure port P to the cylinder port A and from cylinder port B to tank T.



Hold
The oil flows from the pump pressure port P to the tank T. The cylinder ports A and B are closed: the cylinder plunger will maintain position.

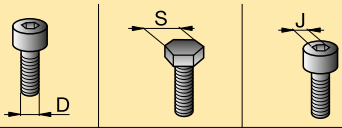


Retract
The oil flows from the pump pressure port P to cylinder port B and from cylinder port A to tank T: the cylinder plunger will retract.

© Enerpac

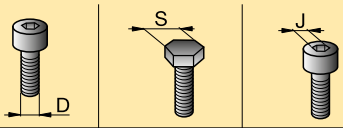
Hexagon Nut and Bolt Sizes

METRIC SIZES



Thread Size D (mm)	Hexagon Size S (mm)	Hexagon Size J (mm)
M10	17	8
M12	19	10
M14	22	12
M16	24	14
M18	27	14
M20	30	17
M22	32	17
M24	36	19
M27	41	19
M30	46	22
M33	50	24
M36	55	27
M39	60	27 (30)
M42	65	32
M45	70	-
M48	75	36
M52	80	36
M56	85	41
M60	90	46
M64	95	46
M68	100	50
M72	105	55
M76	110	60
M80	115	65
M85	120	70
M90	130	70 (75)
M95	135	-
M100	145	85
M105	150	-
M110	155	-
M115	165	-
M120	170	-
M125	180	-
M130	185	-
M140	200	-
M150	210	-

IMPERIAL SIZES



Thread Size D (inch)	Hexagon Size * S (inch)	Hexagon Size J (inch)
5/8"	1 1/16"	1/2"
3/4"	1 1/4"	5/8"
7/8"	1 7/16"	3/4"
1"	1 5/8"	3/4"
1 1/8"	1 13/16"	7/8"
1 1/4"	2"	7/8"
1 3/8"	2 3/16"	1"
1 1/2"	2 3/8"	1"
1 5/8"	2 9/16"	-
1 3/4"	2 3/4"	1 1/4"
1 7/8"	2 15/16"	1 3/8"
2"	3 1/8"	1 5/8"
2 1/4"	3 1/2"	1 3/4"
2 1/2"	3 7/8"	1 7/8"
2 3/4"	4 1/4"	2"
3"	4 5/8"	2 1/4"
3 1/4"	5"	2 1/4"

* Heavy hexagon nuts.

Determine the maximum torque according to the bolt (nut) size and grade. Always consult the manufacturer's instructions or engineering recommendations when making bolted connections.

IMPORTANT

The hexagon sizes shown in the tables should be used as a guide only. Individual sizes should be checked before specifying any equipment.



BSH-Series, Heavy-Duty Sockets

Use only Heavy-Duty Impact Sockets for power driven torquing equipment, according to ISO2725 and ISO1174; DIN3129 and DIN3121 or ASME-B107.2/1995.

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Tightening Methods

Principally there are two modes of tightening: "Uncontrolled" and "Controlled".

Uncontrolled tightening

Uses equipment and/or procedures that cannot be measured. Preload is applied to a bolt and nut assembly using a hammer and spanner or other types of impact tools.

Controlled tightening

Employs calibrated and measurable equipment, follows prescribed procedures and is carried out by trained personnel.

Advantages of Controlled Tightening

Known, controllable and accurate bolt loads

Employs tooling with controllable outputs and adopts calculation to determine the required tool settings.

Uniformity of bolt loading

Especially important on gasketed joints as an even and consistent compression is required for the gasket to be effective.

Safe operation following prescribed procedures

Eliminates the dangerous activities of manual uncontrolled tightening and requires that the operators be skilled and follow procedures.

Reduces operational time resulting in increased productivity

Reduces tightening time and operator fatigue by replacing manual effort with the use of controlled tooling.

Reliable and repeatable results

Using calibrated, tested equipment, following procedures and employing skilled operators achieves known results consistently.

The right results first time

Many of the uncertainties surrounding in-service joint failures are removed by ensuring the correct assembly and tightening of the joint the first time.

Bolting Tools

For further information on Torque Tightening or other controlled tightening methods, please visit our website or ask for our **Bolting Tools Catalog**.

Bolting Integrity Software

A comprehensive free on-line software solution for Bolted Joint Integrity.

Integral databases hold data for:

- ASME B16.5, ASME B16.47, API 6A and API 17D flanged joints
- Common gasket materials and configurations
- Comprehensive range of bolt materials
- Comprehensive range of lubricants
- Enerpac's Controlled Bolting Equipment including: Torque Multipliers, Hydraulic Wrenches and Bolt Tensioning tools.

Custom Joint information can also be entered.

The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as a combined Application data sheet and Joint completion report.

Page: **416**

What is Torque?

It is a measure of how much force acting on an object causes that object to rotate.

What is Torque Tightening?

The application of preload to a fastener by the turning of the fastener's nut.

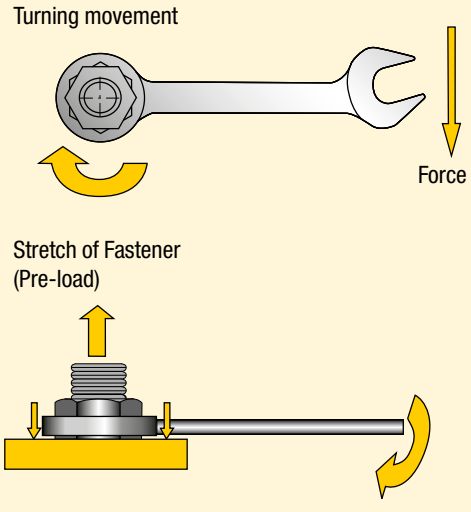
Torque Tightening and Preload

The amount of preload created when torquing is largely dependent on the effects of friction.

Principally there are three different "torque components":

- torque to stretch the bolt
- torque to overcome the friction in bolt and nut threads
- torque to overcome friction at the nut spot face (bearing contact surface).

Torque Tightening



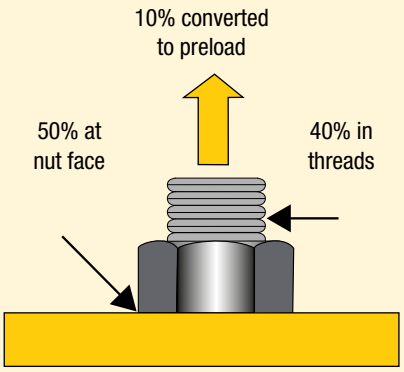
Preload (residual load) =
Applied Torque *minus* Frictional Losses

Lubrication Reduces Friction

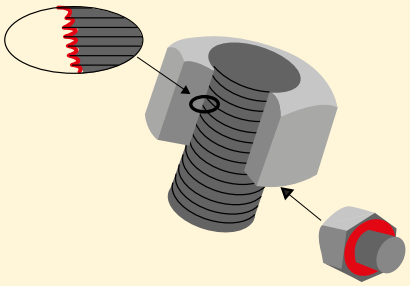
Lubrication reduces the friction during tightening, decreases bolt failure during installation and increases bolt service life. Variation in friction coefficients affect the amount of preload achieved at a specified torque. Higher friction results in less conversion of torque to preload. The value for the friction coefficient provided by the lubricant manufacturer must be known to accurately establish the required torque value.

Lubricant or anti-seizure compounds should be applied to both, the nut bearing surface and the male threads.

Frictional Losses



Frictional Losses (dry steel bolt)



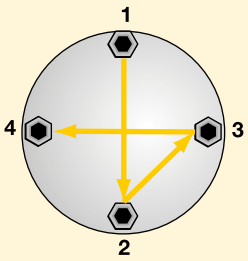
Friction points should always be lubricated when using the torque tightening method.

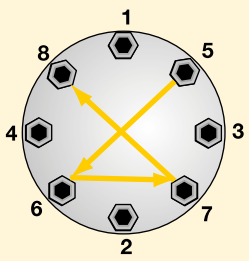
Torque Procedure

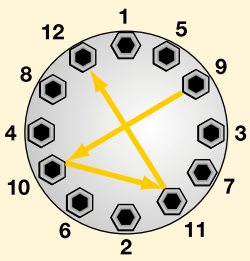
When torquing it is common to tighten only one bolt at a time, which can result in Point Loading and Load Scatter.

To avoid this, torque is applied in stages following a prescribed pattern:

Torque Sequence







Step 1 Spanner tight ensuring that 2 - 3 threads extend above nut.

Step 2 Tighten each bolt to one-third of the final required torque following the pattern as shown above.

Step 3 Increase the torque to two-thirds following the pattern shown above.

Step 4 Increase the torque to full torque following the pattern shown above.

Step 5 Perform one final pass on each bolt working clockwise from bolt 1, at the full final torque.

Select the Right Torque Wrench

Choose your Enerpac torque wrench using the untightening rule of thumb:

- When loosening a nut or bolt, more torque is usually required than when tightening.
- For general conditions it can take up to **2½ times** the input torque to breakout.
- Do not apply more than 75% of the maximum torque output of the tool when loosening nuts or bolts.

Conditions of bolted joints

- Humidity corrosion (rust) requires up to **twice** the torque required for tightening.
- Sea water and chemical corrosion requires up to **2½ times** the torque required for tightening.
- Heat corrosion requires up to **3 times** the torque required for tightening.

Breakout Torque

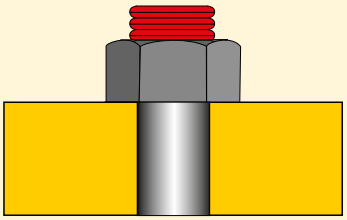
When loosening bolts a torque value higher than the tightening torque is normally required. This is mainly due to corrosion and deformations in the bolt and nut threads.

Breakout torque cannot be accurately calculated, however, depending on conditions it can take up to **2½ times** the input torque to breakout.

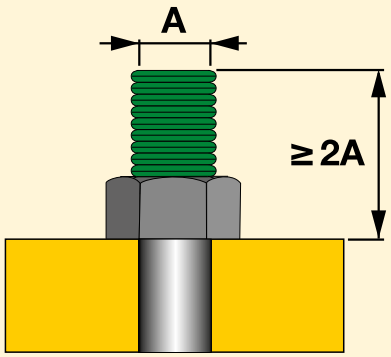
The use of penetrating oils or anti-seize products is always recommended when performing breakout operations.

Tensioning requires longer bolts

INCORRECT



CORRECT



What is Bolt Tensioning?

Tensioning is the direct axial stretching of the bolt to achieve **preload**. Inaccuracies created through friction are eliminated. Massive mechanical effort to create torque is replaced with simple hydraulic pressure. A uniform load can be applied by tensioning multiple studs simultaneously.

Tensioning requires longer bolts, and a seating area on the assembly around the nut. Tensioning can be done using detachable Bolt Tensioners or Hydraulic Nuts.

Preload (residual load) = Applied Load *minus* Load Losses

What is Load Loss?

Load loss is a loss of bolt elongation depending on factors such as thread deflections, radial expansion of the nut, and embedding of the nut into the contact area of the joint. Load loss is accounted for in calculation and is added to the preload value to determine the initial **Applied Load**.

The preload depends on Applied Load and Load Loss (load loss factor).

GLOSSARY OF TERMS

Applied Load:
The load applied to a bolt during tensioning which includes an allowance for Load Loss.

Bolt Tensioning:
A method of controlled tightening which applies preload to a bolt by stretching it axially.

Breakout Torque:
The amount of torque required to loosen a tightened bolt. (Usually more torque is required to loosen a bolt than was used to tighten it.)

Elastic Range:
The range on a bolt's stress / strain curve where stress is directionally proportional to strain.

Plastic Range:
The range on a stress / strain curve where the tensile load applied to a bolt results in permanent deformation.

Load Loss:
The losses in a bolt which occur on transfer of load from a tensioning device to the bolt assembly (these may arise from phenomena such as thread deflection and embedding of the nut to the contact area of the joint, and is calculated as a factor of the length to diameter ratio of the bolt).

Load Scatter:
The spread of differing loads in a sequence of bolts after they have been loaded. It is mostly due to the elastic interaction of the bolts and the joint member; as subsequently tightened bolts further compress the joint, previously tightened bolts are subject to some relaxation.

Preload:
The load in a bolt immediately after it has been tightened.

Proof Load:
Proof load is often used interchangeably with Yield Strength but is usually measured at 0.2% plastic strain.

Tensile Point:
The point at which the tensile loading on a bolt causes the bolt to rupture.

Torque Tightening:
The application of Preload to a bolt by turning of the bolt's nut.

Ultimate Strength:
The maximum tension which can be created by tensile load on a bolt.

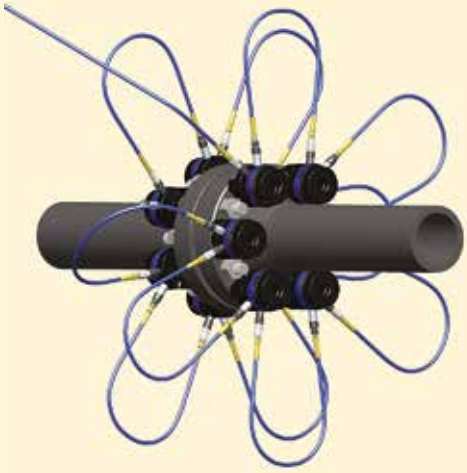
Yield Strength:
The point at which a bolt begins to plastically deform under tensile loading.

NOTE: Bolt is used as a generic term for a threaded fastener.

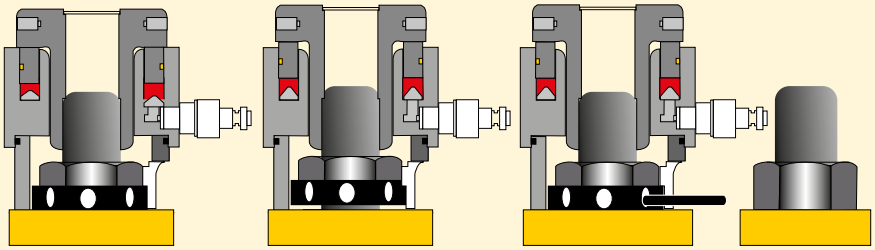
80% **Manufacturer's rating of pressure and load are maximum safe limits. Good practice encourages using only 80% of these ratings!** **80%**

Tensioning Operation

Tensioning permits the simultaneous tightening of multiple bolts; the tools are connected in sequence via a high-pressure hose assembly to a single pump unit. This ensures each tool develops the exact same load and provides a uniform clamping force across the joint. This is especially important for pressure containing vessels requiring even gasket compression to affect a seal.



General Procedure



Step 1 Step 2 Step 3 Step 4

Step 1: The bolt tensioner is fitted over the stud.

Step 2: Hydraulic pressure is applied to the tensioner which then stretches the stud (bolt).

Step 3: The stud's nut is wound down against the joint face

Step 4: Hydraulic pressure is released and the tensioner removed.

The bolt behaves like a spring, when the hydraulic pressure is released, the bolt is under tension and attempts to contract, creating the required clamping force across the joint.

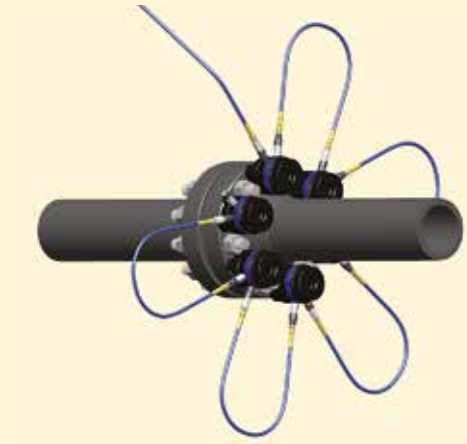
Less than 100% Tensioning

Not all applications allow for the simultaneous fit of a tensioning device on each bolt, in these cases at least two tensioning pressures are applied. This is to account for a load loss in those bolts already tensioned as the next sets are tightened.

The load losses are accounted for in calculation and a higher load is applied to allow the first sets to relax back to the target preload.

Set-up using a 100% tensioning procedure

All bolts are tensioned simultaneously.



Set-up using a 50% tensioning procedure

Half the bolts are tensioned simultaneously, the tools are relocated on the remaining bolts and they are subsequently tensioned.

Read Instruction Manuals

Please refer to the product Instruction Sheets for safe use guidelines and detail on the correct set up and operation of the equipment.

Bolting Integrity Software

Enerpac Bolting Integrity Software Solutions play a key role in implementing and managing an Integrity Program for bolted connections. The software is used extensively within Enerpac and increasingly by a wide range of clients worldwide often interfacing with maintenance, construction and commissioning management systems.

- First developed over 25 years ago, we have continued to update and enhance the software based on user feedback, technology advances and our roles on Industry standard committees, to produce the most comprehensive suite of joint integrity software available.
- Recommended bolt loads for standard joints are derived from independently verified calculation methods and traceable back to standards.

Integral databases hold data for:

- ASME B16.5, ASME B16.47, API 6A and API 17D flanged joints
- Common gasket materials and configurations
- Comprehensive flange and bolt materials
- Comprehensive range of lubricants
- Enerpac controlled bolting equipment includes torque, multipliers, hydraulic wrenches and bolt tensioners.
- Custom joint information can also be entered.



▲ Standard flange calculation menu (INFORMATE®)

The Enerpac Bolting Software Suite includes:

- **Bolt-Up** - Online bolt load calculator. Free access and use on www.enerpac.com.
- **INFORMATE®** - Advanced calculation and procedure software. Contact Enerpac for user licenses and dedicated support.
- **IDMS Integrity Data Management System** - A complete Integrity Assurance project management package for managing bolted joints from cradle to grave. Contact Enerpac for user licenses and dedicated support.

Bolt-Up

Bolt-Up is a simple to use online calculator, built upon the Informate calculation engine, providing reliable, repeatable bolt loads for:

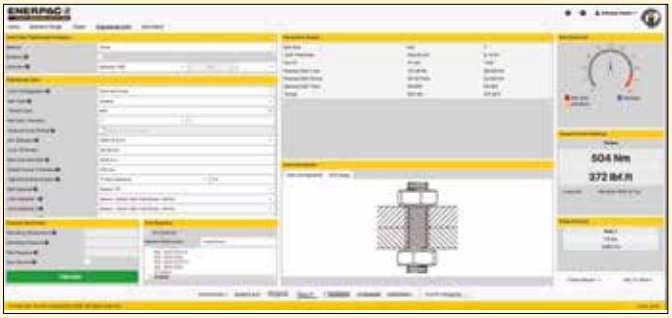
- Carbon steel weldneck ANSI 16.5 standard flanges, using a limited range of bolt materials; selected gasket options and a fixed lubrication value.
- Inputting basic joint configuration information allows Bolt-Up to determine: bolt load; bolt stress and the required torque. These outputs are displayed alongside basic flange and bolt information e.g. joint thickness and bolt size/ quantity.

Bolting Integrity Software

The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application data sheet and Joint completion report.
This software includes following hydraulic tools selections:

- S, W, RSL, DSX and HMT-Series Torque Wrenches,
- HM-Series HydraMax®, GT-Series Bolt Tensioners and EAJ-Series AquaJack® Subsea Tensioners.

Software	INFORMATE® Subscriptions
Model No.	Contact Enerpac for details
BSO1PP	Bolting Software 1 person purchase
BSO1PAS	Bolting Software 1 person annual support
BSO5PP	Bolting Software 5 person purchase
BSO5PAS	Bolting Software 5 person annual support



▲ Engineered Joint menu (INFORMATE®)



▲ Clamp menu (INFORMATE®)

INFORMATE® Bolt Load Calculation Software

INFORMATE® can be used on a huge range of flanged joints and clamped connections in virtually any situation from process piping to custom-designed flange connections.

- Calculate bolt loads and stresses, determine tooling pressures for Enerpac torque and tensioning equipment; analyze existing connections and test custom designed connections.
- Extensive material database covering all common standards:
  - Common and industry specific lubricants
  - 200+ bolting materials
  - 500+ flange materials
  - 60+ gasket materials
- Engineered Joint Calculation Features - allows for different types of bolted application for non-circular or structural applications.
- Installed direct to the desktop or accessed via the internet, INFORMATE® is available in a single version that is configurable to client requirements and includes multiple international standards and the latest and forthcoming regulatory data, when taken with a maintenance package.

Integrity Data Management System (iDMS)

iDMS is a flexible data management and activity planning system specifically for use on assets featuring bolted connections.

Designed to store the entire lifecycle data relating to every critical bolted joint on an installation, it aids planning, ensures joint integrity, as well as reducing construction and maintenance schedules and costs.

- Provides managers and technicians with essential information about joint components used in assembly, in addition it specifies the tools and the torque or tension values to deliver a leak-free joint.
- Allows planner and maintenance engineers to rapidly build packages of work complete with all documentation and then track them to completion
- Whenever a joint is worked on, all of the previous history and experience of that joint is available, allowing any particular requirements of the joint to be taken into account proactively prior to joint assembly and tightening.

iDMS Custom Tailored Solutions available to meet client needs, for example:

- Embedded INFORMATE® bolted joint calculator
- Export and import of data to asset management systems
- Exporting data to populate customer documentation
- Color coding of the joint provides an instant review of the status.

Contact Enerpac for User License

The Enerpac Academy is our in-house training program, offering Enerpac product operators and maintenance staff the opportunity to be trained in the safe use and maintenance of high-pressure hydraulic tools.

Operating these tools requires sound knowledge of how they work and how they should be maintained. Correct use of these tools increases safety and reduces risk – both for the operator and the environment in which the tools are used. Having the right training enables the operator to use the tools safely and properly.

- Safety focus for operators, tools and environment
- Dedicated in-house Enerpac training centers
- Both standard training courses and specialized training services
- Highly experienced training staff
- Develops alternative training options such as:
  - eLearning modules
  - vLearning sessions
  - Instructional videos

In-house Training Centers



Do you work with high-pressure hydraulic tools on a regular basis or even every day? The training courses are designed to be highly interactive with a strong hands-on element. Each training course is led by a qualified trainer, an Enerpac specialist capable of providing high-quality training. A written or practical exam is part of certain training courses.

Training Center Locations



Enerpac Academy offers a meticulously compiled training program covering tool knowledge, repairs and maintenance, and safe operation of Enerpac hydraulic tools. If you would like to schedule a training course, please contact Enerpac for a training calendar, application form, and brochure at www.enerpac.com.

- Ede (The Netherlands)
- Bangalore (India)
- Columbus, Wisconsin (USA)
- Perth (Australia)
- Singapore

In-Person Training



- Highly experienced training staff
- Class sizes range from 8 to 20, depending on class and location
- Commercial Sales, Service and Repair Class capabilities
- Most classes consist of theoretical and hands-on training.

The Power of Knowledge & Enerpac Maintenance Program

eLearning Modules



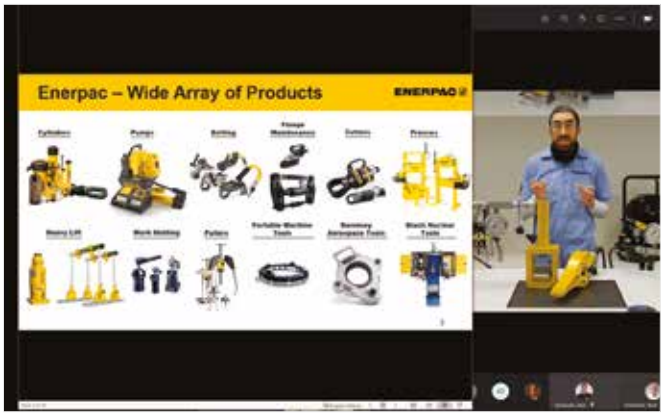
- Enerpac Training available on “your” schedule
- Courses available to support New Product Launches, Product Awareness Training and Enerpac Academy Courses
- Available to external viewers through Enerpac’s “LDMS” system.

EMP – Enerpac Maintenance Program

EMP is a preventive maintenance program. Your Enerpac Authorized Service Center will check the tools on essential points: leaking, oil level and quality, maximum pressure setting, and damage. EMP reduces operational risks, increases safety and minimizes extremely expensive delays in your operations. You will be advised about regular maintenance of the Enerpac tools.

- Work more safely
- Minimise operational risk
- Ensure tools are always available and in tip-top shape
- As good as new after repair
- Prevent downtime
- Advice on safe and effective use
- Maintenance when tools are not used.

vLearning Sessions



- Interactive training available on-line
- Sessions contain Technical Presentations, Hands-on product demos and end with a Q&A session
- Classes cover many topics, such as Product Operational information and Service & Repair Training
- Look for scheduling and registration details on www.enerpac.com

Instructional Videos



- Informational videos created with Enerpac Academy Training processes in-mind
- Topics range from product “how-to” videos to application and operational videos
- Videos are available on the Enerpac “You-Tube” channel and other venues, where appropriate.

Enerpac Worldwide Locations

ENERPAC

www.enerpac.com/en-gb/contact/e/locations

Australia and New Zealand
Actuant Australia Pty Ltd.
3 Orion Rd, Jandakot, WA 6164, Australia
Tel: +61 287 177 200
Fax: +61 297 438 648
Australia Toll Free: +1800 225 084
New Zealand Toll Free: +0800 363 772

Brazil
Power Packer do Brasil Ltda.
Rua Luiz Lawrie Reid, 548
09930-760 - Diadema (SP)-Brasil
Tel: +55 11 5687 2211
Toll Free: 0800 891 5770

China (Taicang)
Actuant (China) Industries Co.Ltd.
No. 6 Nanjing East Road,
Taicang Economic Dep Zone, Jiangsu, China
T +86 0512 5328 7500
F +86 0512 5335 9690
Toll Free:
T +86 400 885 0369

Enerpac Heavy Lifting Technology B.V.
Zuidelijke Havenweg 3, 7554 RR Hengelo
P.O. Box 421, 7550 AK Hengelo, The Netherlands
T +31 74 242 20 45
F +31 74 243 03 38

France and French-speaking Switzerland
ENERPAC France S.A.S
Parc ICADE Immeuble Panama
45 Rue de Villeneuve
94150 Rungis, France
T: +33 (0)160 136 868

Germany, Austria and German-speaking Switzerland
Actuant GmbH
Boelckestrasse 21-23
D-50171 Kerpen, Germany
T +49 (0)2237 92301-0
F +49 (0)2237 92301-180

Central and Eastern Europe, Russia, Baltic States and CIS countries
Enerpac Eastern Europe Sp. z o.o.
Krakowska Street 280,
building: Eximius Park 1000, floor 0,
32-080 Zabierzów, Poland

India
Enerpac India Private Limited
No. 10, Bellary Road, Sadashivanagar,
Bangalore, Karnataka - 560 080 India
T +91 80 3928 9000

Italy, Greece and Turkey
ENERPAC S.p.A.
Via Leonardo da Vinci, 97
20090 Trezzano sul Naviglio (Milano)
T +39 02 4861 111
F +39 02 4860 1288

Japan
Enerpac Co., Ltd.
Besshocho 85-7
Kita-ku, Saitama-shi 331-0821, Japan
T +81 48 662 4911
F +81 48 662 4955

Middle East, North Africa and Caspian Sea Countries
ENERPAC Middle East FZE
Swiss Tower, Office 902, Cluster Y,
Jumeirah Lake Towers,
Dubai-United Arab Emirates
Tel: +971 4 527 0700

Norway
ENERPAC AS
Kirkegata 3, NO-2000, Lillestrom
P.O. Box 3051, NO-2028, Lillestrom, Norway
Tel: +47 91 578 300

Southeast Asia, Hong Kong and Taiwan
Actuant Asia Pte Ltd.
25 Pandan Crescent,
#05-11/12/13 Tic Tech Centre
Singapore 128477
T +65 68 63 0611
F +65 64 84 5669
Toll Free:
T +1800 363 7722

South Korea
Actuant Korea Ltd.
48, Mayu-ro, 20-beon-gil, Shiheung-si
Gyeonggdi-do, 15116 South Korea
T +82 31 434 4506
M +82 (0)10 7134 4508

Spain and Portugal
ENERPAC SPAIN, S.L.
Avenida Valdelaparra N° 27 3ª - L8
28108 Alcobendas (Madrid), Spain
T +34 91 884 86 06
F +34 91 884 86 11

South Africa and other English-speaking African countries
ENERPAC AFRICA (PTY) Ltd.
Cambridge Office Park, Block E
5 Bauhinia Avenue
Highveld Techno Park, Centurion 0157
Republic of South-Africa
T 0027 (0) 12 940 0656

Sweden, Denmark, Finland and Iceland
Enerpac Scandinavia AB
c/o Ekonomi Klarapapper AB
P.O. Box 1062, SE 10139 Stockholm, Sweden
Tel: +46 (0) 415 000

The Netherlands, Belgium, Luxembourg
ENERPAC B.V.
Galvanistraat 115, 6716 AE Ede
P.O. Box 8097, 6710 AB Ede, The Netherlands
T +31 318 535 911
F +31 318 535 848

United Kingdom and Ireland
ENERPAC UK LTD
Unit 45, Colbourne Avenue Nelson Industrial Estate
Cramlington NE23 1WD, England
T +44 800 1380500

USA, Latin America and Caribbean
ENERPAC World Headquarters
P.O. Box 3241
Milwaukee, WI 53201-3241 USA
648 N. Plankinton Avenue, 4th floor
Milwaukee, WI 53203 USA
T +1 262 293 1600
F +1 262 293 7036
User inquiries:
+1 800 433 2766
Distributor inquiries/orders:
+1 800 558 0530
+1 800 628 0490

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