ENERPAC®



GB

E329e-1

INDUSTRIAL TOOLS

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ENERPAC

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Heavy Lifting Technology Page 278-309

The World Class Brand

A complete range of quality high pressure hydraulic tools, controlled force products and solutions for all industrial applications, with local availability and after sale service anywhere in the world…. this is what has made Enerpac the undisputed global market leader in high pressure hydraulics.

Across every continent, Enerpac's network of authorized distributors and service centers can reach even the most remote locations, supplying and servicing products that are designed to enhance productivity and performance, while making the workplace safer.

With over 150 sales specialists and a network of service and engineering support in 22 countries across the globe, Enerpac has become the product of choice in industries such as heavy lifting, manufacturing, construction, energy, oil & gas, shipbuilding, railroads, mining, and metals transformation.

Always at the leading edge of technology, Enerpac has continued to develop its range of time and cost-savings tools, utilizing modern engineered materials to improve productivity and minimize operator fatigue.

Enerpac's commitment to the continued development of quality high force tools ensures that the products you purchase are the best tools in the industry.
We will continue to lead the way in the development of quality high force tools for all industrial applications.



10 Reasons to Work with Enerpac

- Expert Design
- Highly Reliable
- Service Excellence
- Worldwide Experience
- Application Support
- Availability
- Quality
- Value
- Innovative Products
- Systems Solutions



Total Quality

Our products are tested to the most exacting standards. These high standards guarantee the quality, price and performance requirements of the markets we serve around the globe.

Global Network, Support and Service

Enerpac has an extensive network of authorized distributors and service centers located in more than 90 countries worldwide. You can rely on Enerpac for the products and technical support you need to get your job done, anywhere in the world.

Logistics Excellence

Enerpac's mission is to maintain service excellence in the ever-changing world of modern distribution. Providing our extensive range of products to our thousands of distributors worldwide demands a logistic expertise only a market leader can provide.





A Tradition of Innovation

Enerpac has a long history of finding new solutions to better meet the challenges of the industries we serve. We were the first to develop a composite hand pump and the first to offer a computerized lifting system.

Our latest innovations include the next generation ultra-flat, low height and high tonnage cylinders, and telescopic cylinders with highest level of durability, the XA-Series of air driven foot pumps, designed for less operator fatigue – with the unique XVARI® Technology, delivering variable oil flow and fine metering for precise control, a full range of aluminium cylinders with the strength of steel and the advantages of aluminium and the new series of E-Pulse™ Hydraulic Pumps represent the best combination of innovative features and technologies – 'Smart Controls' enable the motor to maintain constant power and provide higher flow than traditional one-half horsepower pumps, and an adjustable speed control provides extraordinary precision as needed.

We design and manufacture heavy lifting equipment. For more than 60 years, we've combined high pressure hydraulics and controls to deliver intelligent and innovative solutions that maintain the highest level of quality, reliability and safety.

ENERPAC®

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 BRD-Series).



GR2 Bearing Technology

The exclusive GR2 is a unique bearing design on RC-Series DUO general purpose cylinders which absorbs eccentric load stresses to protect your cylinder against abrasion, over-extending or plunger blow-outs and jamming or top-end mushrooming. As a result, RC-Series DUO cylinders provide long, trouble-free operation.

Improved saddle retention

Hardened plunger saddle protects plunger end during all lifting operations. Easily removable for access to plunger mounting threads.

Thread protector

Protector is easily attached and removed with oily hands or whilst wearing gloves.

Easy assembly and disassembly

External access to fasteners requires only standard shop tools for simplified maintenance.

Heavy-Duty return spring

Pre-tensioned return spring improves retraction performance, reducing retraction times.

Unique GR2 Bearing System

GR2 design surrounds seal of longer stroke models for improved life and reduced bearing loads. Bearing surface area increases side-load resistance and significantly improves cylinder life.



Coupler Protector

Coupler Dust Cap has new shape and more pliable material for easy push-on/pull-off operation. Protector is easily attached and removed with oily hands or whilst wearing gloves.

Easy assembly and disassembly

External access to fasteners requires only standard shop tools for simplified maintenance.

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] ton (kN)	Stroke Range (mm)	Cylinder Type and Functions	Series		Page
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4 - 74 (43 - 727)	17 - 600	Multi-Stage Telescopic Cylinders, Low-Height Telescopic Cylinders	RT RLT		20 ▶ 22 ▶
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10 - 520 (101 - 5108)	16 - 1219	Long Stroke Cylinders, Double-Acting	RR		38 ▶
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[1] All ton values specified in this catalog are metric ton and are for cylinder class identification only. Please refer to the kN data for calculations.

▼ From left to right: **RC-506, RC-50, RC-2510, RC-154, RC-10010, RC-55, RC-1010**



The Industry Standard General Purpose Cylinder

- **Unique GR2 Bearing Design, reduces wear, extending life**
- **Collar threads, plunger threads and base mounting holes enable easy fixturing (on most models)**
- **Designed for use in all positions**
- **High strength alloy steel for durability**
- **Redesigned cylinder thread protector for ease of use**
- **Heavy-duty, pretensioned spring improves retraction speed**
- **Baked enamel finish for increased corrosion resistance**
- **CR-400 coupler and dust cap included on all models**
- **Plunger wiper reduces contamination, extending cylinder life.**



Saddles

All RC cylinders (except RC-50 and RC-101) are equipped with hardened removable grooved saddles. 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 ton of force at each placement to lift the silo 5,1 cm.*



▼ *Synchronous lifting set-up for 200 ton petrochemical process module using twelve RC-2510 cylinders. To ensure the stability of the cylinders JBI-25 base plates are installed.*





GR2 Bearing Technology

The exclusive GR2 is a unique bearing design on RC-Series DUO cylinders which absorbs eccentric load stresses to protect your cylinder against abrasion, over-extending or plunger blow-outs and jamming or top-end mushrooming. As a result, RC-Series DUO cylinders provide long, trouble-free operation.

RC Series



Capacity:
5 - 95 ton

Stroke:
16 - 362 mm

Maximum Operating Pressure:
700 bar

▼ QUICK SELECTION CHART

For complete technical information see next page.

Cylinder Capacity ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm^2)	Oil Capacity (cm^3)	Collapsed Height (mm)	(kg)
5 (45)	16	**RC-50**	6,5	10	41	1,0
	25	**RC-51**	6,5	16	110	1,0
	79	**RC-53**	6,5	50	165	1,5
	127	**RC-55** *	6,5	83	215	1,9
	177	**RC-57**	6,5	115	273	2,4
	232	**RC-59**	6,5	151	323	2,8
10 (101)	26	**RC-101**	14,5	38	89	1,8
	54	**RC-102** *	14,5	78	121	2,3
	105	**RC-104**	14,5	152	171	3,3
	156	**RC-106** *	14,5	226	247	4,4
	203	**RC-108**	14,5	294	298	5,4
	257	**RC-1010** *	14,5	373	349	6,4
	304	**RC-1012**	14,5	441	400	6,8
	356	**RC-1014**	14,5	516	450	8,2
15 (142)	25	**RC-151**	20,3	51	124	3,3
	51	**RC-152**	20,3	104	149	4,1
	101	**RC-154** *	20,3	205	200	5,0
	152	**RC-156** *	20,3	308	271	6,8
	203	**RC-158**	20,3	411	322	8,2
	254	**RC-1510**	20,3	516	373	9,5
	305	**RC-1512**	20,3	619	423	10,9
	356	**RC-1514**	20,3	723	474	11,8
25 (232)	26	**RC-251**	33,2	86	139	5,9
	50	**RC-252** *	33,2	166	165	6,4
	102	**RC-254** *	33,2	339	215	8,2
	158	**RC-256** *	33,2	525	273	10,0
	210	**RC-258**	33,2	697	323	12,2
	261	**RC-2510**	33,2	867	374	14,1
	311	**RC-2512**	33,2	1033	425	16,3
	362	**RC-2514** *	33,2	1202	476	17,7
30 (295)	209	**RC-308**	42,1	880	387	18,1
50 (498)	51	**RC-502**	71,2	362	176	15,0
	101	**RC-504**	71,2	719	227	19,1
	159	**RC-506** *	71,2	1131	282	23,1
	337	**RC-5013**	71,2	2399	460	37,6
75 (718)	156	**RC-756**	102,6	1601	285	29,5
	333	**RC-7513**	102,6	3417	492	59,0
95 (933)	168	**RC-1006**	133,3	2239	357	59,0
	260	**RC-10010**	133,3	3466	449	72,6

* Available as set, see note on this page.



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 Aluminium Cylinders

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

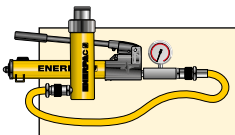
Page: 13



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.

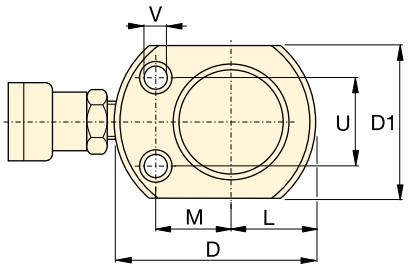
Page: 127

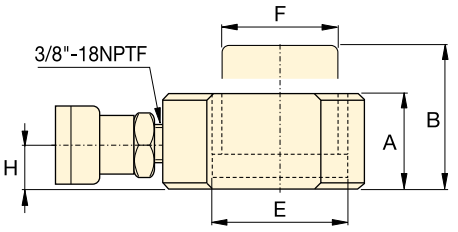


Cylinder-Pump Sets

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

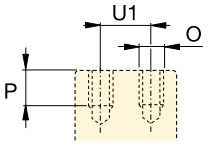
Page: 60

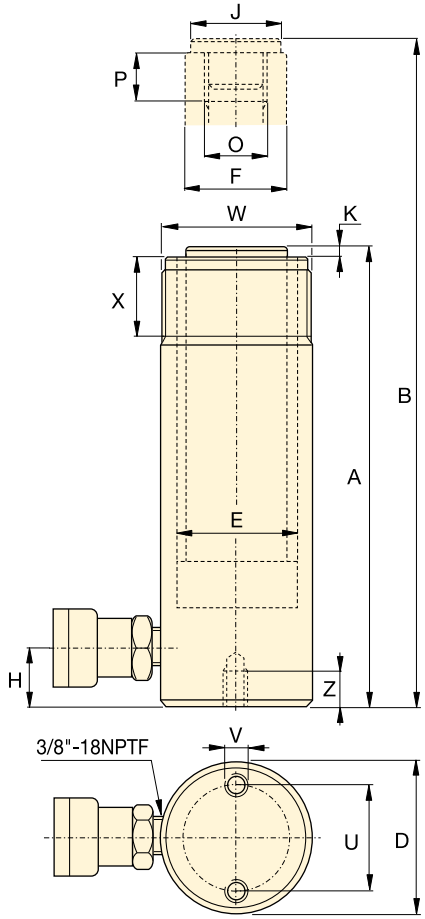




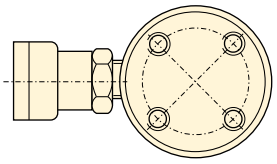
RC-50

RC-101 only
(U1 = 19 mm)





RC-51 - RC-5013



RC-1006, RC-10010

Speed Chart

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

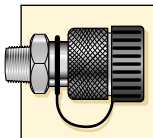
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◀ For full features see previous page.

Cylinder Capacity ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm^2)	Oil Capacity (cm^3)	Collapsed Height A (mm)	Extended Height B (mm)	Outside Dia. D (mm)
5 (45)	16	**RC-50** [2]	6,5	10	41	57	58 [3]
	25	**RC-51**	6,5	16	110	135	38
	79	**RC-53**	6,5	50	165	244	38
	127	**RC-55** [1]	6,5	83	215	342	38
	177	**RC-57**	6,5	115	273	450	38
	232	**RC-59**	6,5	151	323	555	38
10 (101)	26	**RC-101** [4]	14,5	38	89	115	57
	54	**RC-102** [1]	14,5	78	121	175	57
	105	**RC-104**	14,5	152	171	276	57
	156	**RC-106** [1]	14,5	226	247	403	57
	203	**RC-108**	14,5	294	298	501	57
	257	**RC-1010** [1]	14,5	373	349	606	57
	304	**RC-1012**	14,5	441	400	704	57
	356	**RC-1014**	14,5	516	450	806	57
15 (142)	25	**RC-151**	20,3	51	124	149	69
	51	**RC-152**	20,3	104	149	200	69
	101	**RC-154** [1]	20,3	205	200	301	69
	152	**RC-156** [1]	20,3	308	271	423	69
	203	**RC-158**	20,3	411	322	525	69
	254	**RC-1510**	20,3	516	373	627	69
	305	**RC-1512**	20,3	619	423	728	69
	356	**RC-1514**	20,3	723	474	830	69
25 (232)	26	**RC-251**	33,2	86	139	165	85
	50	**RC-252** [1]	33,2	166	165	215	85
	102	**RC-254** [1]	33,2	339	215	317	85
	158	**RC-256** [1]	33,2	525	273	431	85
	210	**RC-258**	33,2	697	323	533	85
	261	**RC-2510**	33,2	867	374	635	85
	311	**RC-2512**	33,2	1033	425	736	85
	362	**RC-2514** [1]	33,2	1202	476	838	85
30 (295)	209	**RC-308**	42,1	880	387	596	101
50 (498)	51	**RC-502**	71,2	362	176	227	127
	101	**RC-504**	71,2	719	227	328	127
	159	**RC-506** [1]	71,2	1131	282	441	127
	337	**RC-5013**	71,2	2399	460	797	127
75 (718)	156	**RC-756**	102,6	1601	285	441	146
	333	**RC-7513**	102,6	3417	492	825	146
95 (933)	168	**RC-1006**	133,3	2239	357	525	177
	260	**RC-10010**	133,3	3466	449	709	177

[1] Available as set, see note on page 7.
[2] RC-50 cylinder has a non removable grooved saddle and no collar thread.
[3] RC-50: D1 = 41 mm, L = 20 mm, M = 25 mm.
[4] RC-101 has plunger thread and non-removable saddle.

Single-Acting, General Purpose Cylinders



Couplers Included!
CR-400 couplers included on all models. Fits all HC-Series hoses.

Capacity:
5 - 95 ton

Stroke:
16 - 362 mm

Maximum Operating Pressure:
700 bar

RC Series



	Cylinder Bore Dia. E (mm)	Plunger Dia. F (mm)	Base to Adv. Port H (mm)	Saddle Dia. J (mm)	Saddle Protr. from Plgr. K (mm)	Plunger Internal Thread O	Plunger Thread Length P (mm)	Base Mounting Holes			Collar Thread W	Collar Thread Length X (mm)	(kg)	Model Number
								Bolt Circle U (mm)	Thread V	Thd. Depth Z (mm)				
	28,7	25,4	19	[2]	[2]	[2]	[2]	28	5,6 mm	—	—	—	1,0	**RC-50** [2]
	28,7	25,4	19	25	6	3/4" - 16 UN	14	25	1/4"- 20 UN	14	1 1/2" - 16 UN	28	1,0	**RC-51**
	28,7	25,4	19	25	6	3/4" - 16 UN	14	25	1/4"- 20 UN	14	1 1/2" - 16 UN	28	1,5	**RC-53**
	28,7	25,4	19	25	6	3/4" - 16 UN	14	25	1/4"- 20 UN	14	1 1/2" - 16 UN	28	1,9	**RC-55** [1]
	28,7	25,4	19	25	6	3/4" - 16 UN	16	25	1/4"- 20 UN	14	1 1/2" - 16 UN	28	2,4	**RC-57**
	28,7	25,4	19	25	6	3/4" - 16 UN	16	25	1/4"- 20 UN	14	1 1/2" - 16 UN	28	2,8	**RC-59**
	42,9	38,1	19	–	–	#10 - 24 UN	6	39	5/16"- 18 UN	12	2 1/4" - 14 UN	26	1,8	**RC-101** [4]
	42,9	38,1	19	35	6	1" - 8 UN	19	39	5/16"- 18 UN	12	2 1/4" - 14 UN	26	2,3	**RC-102** [1]
	42,9	38,1	19	35	6	1" - 8 UN	19	39	5/16"- 18 UN	12	2 1/4" - 14 UN	26	3,3	**RC-104**
	42,9	38,1	19	35	6	1" - 8 UN	19	39	5/16"- 18 UN	12	2 1/4" - 14 UN	26	4,4	**RC-106** [1]
	42,9	38,1	19	35	6	1" - 8 UN	19	39	5/16"- 18 UN	12	2 1/4" - 14 UN	26	5,4	**RC-108**
	42,9	38,1	19	35	6	1" - 8 UN	19	39	5/16"- 18 UN	12	2 1/4" - 14 UN	26	6,4	**RC-1010** [1]
	42,9	38,1	19	35	6	1" - 8 UN	19	39	5/16"- 18 UN	12	2 1/4" - 14 UN	26	6,8	**RC-1012**
	42,9	38,1	19	35	6	1" - 8 UN	19	39	5/16"- 18 UN	12	2 1/4" - 14 UN	26	8,2	**RC-1014**
	50,8	41,4	19	38	9	1" - 8 UN	25	48	3/8"- 16 UN	12	2 3/4" - 16 UN	30	3,3	**RC-151**
	50,8	41,4	19	38	9	1" - 8 UN	22	48	3/8"- 16 UN	12	2 3/4" - 16 UN	30	4,1	**RC-152**
	50,8	41,4	19	38	9	1" - 8 UN	22	48	3/8"- 16 UN	12	2 3/4" - 16 UN	30	5,0	**RC-154** [1]
	50,8	41,4	25	38	9	1" - 8 UN	25	48	3/8"- 16 UN	12	2 3/4" - 16 UN	30	6,8	**RC-156** [1]
	50,8	41,4	25	38	9	1" - 8 UN	25	48	3/8"- 16 UN	12	2 3/4" - 16 UN	30	8,2	**RC-158**
	50,8	41,4	25	38	9	1" - 8 UN	25	48	3/8"- 16 UN	12	2 3/4" - 16 UN	30	9,5	**RC-1510**
	50,8	41,4	25	38	9	1" - 8 UN	25	48	3/8"- 16 UN	12	2 3/4" - 16 UN	30	10,9	**RC-1512**
	50,8	41,4	25	38	9	1" - 8 UN	25	48	3/8"- 16 UN	12	2 3/4" - 16 UN	30	11,8	**RC-1514**
	65,0	57,2	25	50	10	1 1/2" - 16 UN	25	58	1/2"- 13 UN	19	3 5/16" - 12 UN	49	5,9	**RC-251**
	65,0	57,2	25	50	10	1 1/2" - 16 UN	25	58	1/2"- 13 UN	19	3 5/16" - 12 UN	49	6,4	**RC-252** [1]
	65,0	57,2	25	50	10	1 1/2" - 16 UN	25	58	1/2"- 13 UN	19	3 5/16" - 12 UN	49	8,2	**RC-254** [1]
	65,0	57,2	25	50	10	1 1/2" - 16 UN	25	58	1/2"- 13 UN	19	3 5/16" - 12 UN	49	10,0	**RC-256** [1]
	65,0	57,2	25	50	10	1 1/2" - 16 UN	25	58	1/2"- 13 UN	19	3 5/16" - 12 UN	49	12,2	**RC-258**
	65,0	57,2	25	50	10	1 1/2" - 16 UN	25	58	1/2"- 13 UN	19	3 5/16" - 12 UN	49	14,1	**RC-2510**
	65,0	57,2	25	50	10	1 1/2" - 16 UN	25	58	1/2"- 13 UN	19	3 5/16" - 12 UN	49	16,3	**RC-2512**
	65,0	57,2	25	50	10	1 1/2" - 16 UN	25	58	1/2"- 13 UN	19	3 5/16" - 12 UN	49	17,7	**RC-2514** [1]
	73,2	57,2	57	50	10	1 1/2" - 16 UN	25	—	—	—	3 5/16" - 12 UN	49	18,1	**RC-308**
	95,2	79,5	33	71	2	—	—	95	1/2"- 13 UN	19	5" - 12 UN	55	15,0	**RC-502**
	95,2	79,5	33	71	2	—	—	95	1/2"- 13 UN	19	5" - 12 UN	55	19,1	**RC-504**
	95,2	79,5	35	71	2	—	—	95	1/2"- 13 UN	19	5" - 12 UN	55	23,1	**RC-506** [1]
	95,2	79,5	35	71	2	—	—	95	1/2"- 13 UN	19	5" - 12 UN	55	37,6	**RC-5013**
	114,3	95,2	30	71	2	—	—	—	—	—	5 3/4" - 12 UN	44	29,5	**RC-756**
	114,3	95,2	30	71	2	—	—	—	—	—	5 3/4" - 12 UN	44	59,0	**RC-7513**
	130,3	104,9	41	71	2	—	—	140	3/4"- 10 UN	25	6 7/8"- 12 UN	44	59,0	**RC-1006**
	130,3	104,9	41	71	2	—	—	140	3/4"- 10 UN	25	6 7/8"- 12 UN	44	72,6	**RC-10010**

Accessories for RC-Series Cylinders

ENERPAC

▼ SELECTION CHART

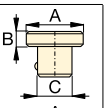
For use with Cylinder Capacity ton (kN)	Saddles			Base Plate	Mounting Block	Clevis Eyes	
	Flat	Grooved [1]	Tilt			Base [4]	Plunger
							
5 (45)	**A-53F** [2]	**A-53G** [2]	–	–	**RB-5** [2], **AW-51**[2], **AW-53**[2]	**REB-5** [2]	**REP-5** [2]
10 (101)	**A-12**[5], **A-102F**[3]	**A-102G** [3]	**CATS-12** [3]	**JBI-10** [3]	**RB-10, AW-102**	**REB-10**	**REP-10** [3]
15 (142)	–	**A-152G**	**CATS-12**	–	**RB-15**	**REB-15**	**REP-10**
25 (232)	**A-29** [5]	**A-252G**	**CATS-52**	**JBI-25**	**RB-25**	**REB-25**	**REP-25**
30 (295)	**A-29** [5]	**A-252G**	**CATS-52**	–	**RB-25**	–	**REP-25**
50 (498)	–	–	**CATS-100**	**JBI-50**	–	–	–
75 (718)	–	–	**CATS-100**	–	–	–	–
95 (933)	–	–	**CATS-100**	–	–	–	–

[1] Standard on 5-30 ton RC-cylinders [2] Except RC-50 [3] Except RC-101 [4] Mounting screws are included. [5] Used with Bender Sets.

▼ DIMENSION CHARTS

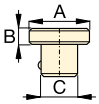
Model Number	Saddle Dimensions (mm)		
	A	B	C
	Flat		
A-53F	25	6	17
A-102F	35	6	22
A-12	51	48	1”-8 UNC
A-29	51	48	1½”-16 UNC
	Grooved		
A-53G	25	6	17
A-102G	35	6	22
A-152G	38	9	22
A-252G	50	9	35

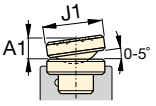
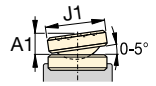
A-53F, A-102F



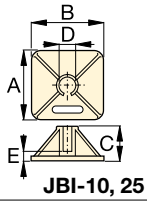
A-12, A-29



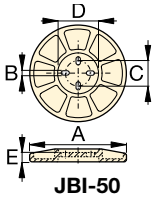


For Cylinder Capacity ton (kN)	Tilt Saddle Model Number	Addition to Collapsed Height A1 (mm)	Saddle Diameter J1 (mm)	
10 (101)	**CATS-12**	14	35	
15 (142)	**CATS-12**	11	35	
25 (232)	**CATS-52**	15	50	
30 (295)	**CATS-52**	15	50	
50 (498)	**CATS-100**	15	71	
75 (718)	**CATS-100**	15	71	
95 (933)	**CATS-100**	15	71	

Model Number	Base Plate Dimensions Dimensions (mm)				
	A	B	C	D	E
JBI-10	228	228	135	58	20
JBI-25	279	279	140	86	26
JBI-50	304	15	95	131	31

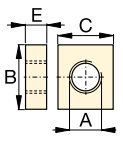


JBI-10, 25

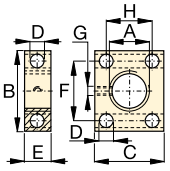


JBI-50

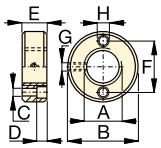
Model Number	Mounting Block Dimensions (mm)							
	A	B	C	D	E	F	G	H
RB-5	1½"-16UN	88	76	–	25	–	–	–
AW-51	1½"-16UN	70	59	10	24	54	¼"-16 UN	41
AW-53	1½"-16UN	72	7	7	19	57	¼"-20 UN	10
RB-10	2¼"-14UN	114	88	–	25	–	–	–
AW-102	2¼"-14UN	100	82	16	30	76	7⁄16"-20 UN	58
RB-15	2¾"-16UN	101	114	–	38	–	–	–
RB-25	3⁵⁄₁₆"-12UN	127	165	–	50	–	–	–



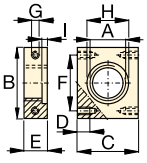
RB-5, -10
RB-15, -25



AW-51

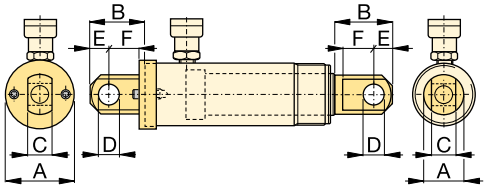


AW-53



AW-102 (l=4,8)

Type	Model Number	Clevis Eye Dimensions (mm)						Pin-to-Pin * (mm)
		A	B	C	D	E	F	
Base [4]	**REB-5**	44	47	14	16	16	25	60,2
	REB-10	63	66	25	22	25	35	78,0
	REB-15	76	66	25	22	25	35	78,0
	REB-25	95	79	38	31	31	41	87,6
Plunger	**REP-5**	28	45	14	16	16	19	-
	REP-10	42	61	25	22	25	28	-
	REP-25	57	71	38	31	31	35	-



REB **REP**

[4] Mounting screws are included.

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

The Enerpac Lightweight Aluminium Cylinders

▼ From left to right: **RAC, RACL, RACH, RAR**



RA Series

Capacity:
10 - 150 ton

Stroke:
50 - 250 mm

Maximum Operating Pressure:
700 bar



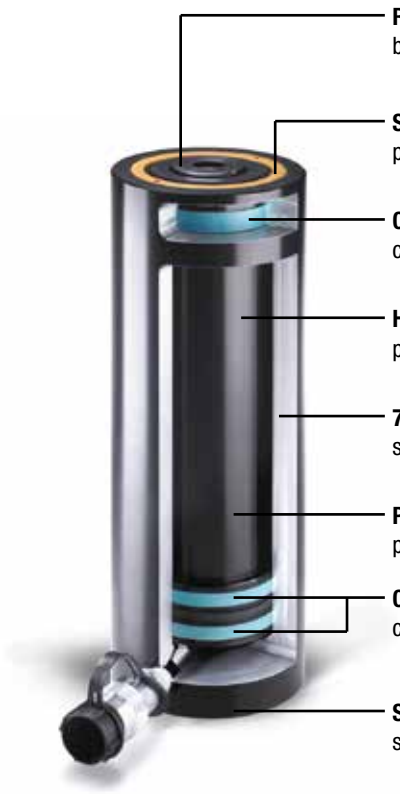
Think Safety

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, easy to carry and position to allow a higher cylinder capacity-to-weight-ratio**
- **Non-corrosive by design, aluminium 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 Aluminium 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.



Aluminium versus Steel

Aluminium 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. Aluminium cylinders should NOT be used in high-cycle applications such as production.

The Enerpac line of aluminium cylinders are designed to provide 5000 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 aluminium 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 aluminium cylinders to attach any device to the cylinder.

▼ Shown from left to right: **RAC-5010, RAC-15010, RAC-304, RAC-208**



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 **P-392** or **P-802** 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**
- **CR-400 coupler and dustcap included on all models**
- **All cylinders meet ASME B-30.1 standard.**

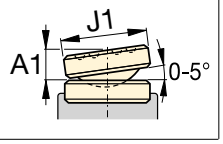
Cylinder Capacity at 700 bar ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm^2)
10 (88)	50	**RAC-102**	12,6
	100	**RAC-104**	12,6
	150	**RAC-106**	12,6
15 (137)	50	**RAC-152**	19,6
	100	**RAC-154**	19,6
	150	**RAC-156**	19,6
20 (218)	50	**RAC-202**	31,2
	100	**RAC-204**	31,2
	150	**RAC-206**	31,2
	200	**RAC-208**	31,2
	250	**RAC-2010**	31,2
30 (309)	50	**RAC-302**	44,2
	100	**RAC-304**	44,2
	150	**RAC-306**	44,2
	200	**RAC-308**	44,2
	250	**RAC-3010**	44,2
50 (496)	50	**RAC-502**	70,9
	100	**RAC-504**	70,9
	150	**RAC-506**	70,9
	200	**RAC-508**	70,9
	250	**RAC-5010**	70,9
100 (1002)	50	**RAC-1002**	143,1
	100	**RAC-1004**	143,1
	150	**RAC-1006**	143,1
	200	**RAC-1008**	143,1
	250	**RAC-10010**	143,1
150 (1589)	50	**RAC-1502**	227,0
	100	**RAC-1504**	227,0
	150	**RAC-1506**	227,0
	200	**RAC-1508**	227,0
	250	**RAC-15010**	227,0



◀ *The unique Enerpac RA-Series cylinders – lightweight and made of aluminium alloy – these RAC-506 cylinders are ideal for the positioning of tunnel elements under the river (High Speed Train Line, The Netherlands).*

Optional Bolt-on Tilt Saddle Dimensions (mm)

For Cylinder Model / Capacity ton	Tilt Saddle * Model Number	Tilt Saddle Diameter J1	Addition to Collapsed Height A1
RAC-20, 30	CATS-30	55	11
RAC-50	CATS-50	71	14
RAC-100	CATS-150	97	19
RAC-150	CATS-200	126	18

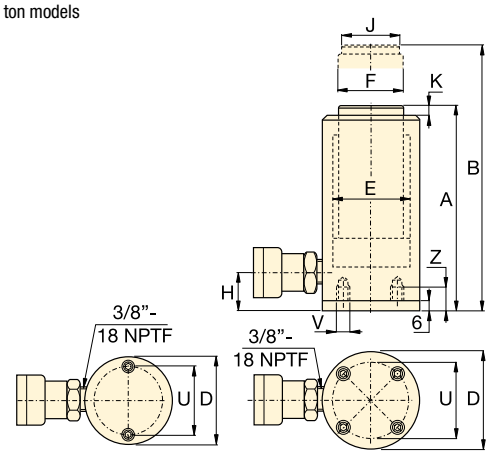


* Tilt saddles not available for 10 and 15 ton models

Optional Steel Base Plate

For Cylinder Model / Capacity ton	Base Plate [2] Model Number
RAC-10	JBA-10
RAC-15	JBA-15

[2] Base plate height of 6mm included on all 20-150 ton models. Base Plate is optional on 10-15 ton cylinders.



RAC-102 - RAC-156 RAC-202 - RAC-15010

RAC Series



Capacity:
10 - 150 ton

Stroke:
50 - 250 mm

Maximum Operating Pressure:
700 bar

Steel Base Plate
The steel base plate protects the cylinder from damage, it should not be removed.
See warning on page 11.

Oil Capacity (cm³)	Collapsed Height A (mm)	Extended Height B (mm)	Outside Diameter D (mm)	Cylinder Bore Diameter E (mm)	Plunger Diameter F (mm)	Bottom to Advance Port H (mm)	Saddle Diameter J (mm)	Saddle Protrusion from Plunger K (mm)	Bolt Circle U (mm)	Thread V (mm)	Thread Depth Z (mm)	(kg)	Model Number
60	154	201	58	40	32	23	24	3	39	M6	12	1,3	RAC-102
130	204	304	58	40	32	23	24	3	39	M6	12	1,7	RAC-104
190	254	404	58	40	32	23	24	3	39	M6	12	2,0	RAC-106
100	161	211	70	50	40	23	29	3	48	M6	12	1,9	RAC-152
200	211	311	70	50	40	23	29	3	48	M6	12	2,4	RAC-154
290	261	411	70	50	40	23	29	3	48	M6	12	2,9	RAC-156
156	174	224	85	63	50	27	40	3	70	M6	12	3,6	RAC-202
312	224	324	85	63	50	27	40	3	70	M6	12	4,1	RAC-204
468	274	424	85	63	50	27	40	3	70	M6	12	4,6	RAC-206
624	324	524	85	63	50	27	40	3	70	M6	12	5,1	RAC-208
780	374	624	85	63	50	27	40	3	70	M6	12	5,6	RAC-2010
221	181	231	100	75	60	32	40	3	80	M6	12	4,5	RAC-302
442	231	331	100	75	60	32	40	3	80	M6	12	5,2	RAC-304
663	281	431	100	75	60	32	40	3	80	M6	12	5,9	RAC-306
884	331	531	100	75	60	32	40	3	80	M6	12	6,6	RAC-308
1105	381	631	100	75	60	32	40	3	80	M6	12	7,3	RAC-3010
354	186	236	130	95	80	30	50	3	110	M6	12	8,5	RAC-502
709	236	336	130	95	80	30	50	3	110	M6	12	9,8	RAC-504
1063	286	436	130	95	80	30	50	3	110	M6	12	11,1	RAC-506
1417	336	536	130	95	80	30	50	3	110	M6	12	12,4	RAC-508
1771	386	636	130	95	80	30	50	3	110	M6	12	13,7	RAC-5010
715	221	271	180	135	110	46	94	3	150	M10	12	17,3	RAC-1002
1431	271	371	180	135	110	46	94	3	150	M10	12	19,6	RAC-1004
2147	321	471	180	135	110	46	94	3	150	M10	12	21,9	RAC-1006
2863	371	571	180	135	110	46	94	3	150	M10	12	24,2	RAC-1008
3578	421	671	180	135	110	46	94	3	150	M10	12	26,5	RAC-10010
1135	243	293	230	170	140	51	113	3	200	M10	12	25,3	RAC-1502
2270	293	393	230	170	140	51	113	3	200	M10	12	29,3	RAC-1504
3405	343	493	230	170	140	51	113	3	200	M10	12	33,3	RAC-1506
4540	393	593	230	170	140	51	113	3	200	M10	12	37,3	RAC-1508
5675	443	693	230	170	140	51	113	3	200	M10	12	41,3	RAC-15010

RACL-Series, Aluminium Lock Nut Cylinders

▼ Shown from left to right: **RACL-1006, RACL-504, RACL-5010**





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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- **Aluminium 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**
- **CR-400 coupler and dustcap included on all models**
- **All cylinders meet ASME B-30.1 standards.**

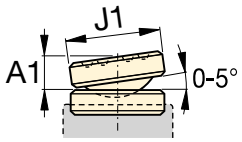
Cylinder Capacity @ 700 bar ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm^2)
20 (218)	50	**RACL-202**	31,2
	100	**RACL-204**	31,2
	150	**RACL-206**	31,2
	200	**RACL-208**	31,2
	250	**RACL-2010**	31,2
30 (309)	50	**RACL-302**	44,2
	100	**RACL-304**	44,2
	150	**RACL-306**	44,2
	200	**RACL-308**	44,2
	250	**RACL-3010**	44,2
50 (496)	50	**RACL-502**	70,9
	100	**RACL-504**	70,9
	150	**RACL-506**	70,9
	200	**RACL-508**	70,9
	250	**RACL-5010**	70,9
100 (1002)	50	**RACL-1002**	143,1
	100	**RACL-1004**	143,1
	150	**RACL-1006**	143,1
	200	**RACL-1008**	143,1
	250	**RACL-10010**	143,1
150 (1589)	50	**RACL-1502**	227,0
	100	**RACL-1504**	227,0
	150	**RACL-1506**	227,0
	200	**RACL-1508**	227,0
	250	**RACL-15010**	227,0



◀ *The portable lock nut cylinder RACL-1506 used for extended load supports during epoxy injection for bridge reinforcement.*

Optional Bolt-on Tilt Saddle Dimensions (mm)

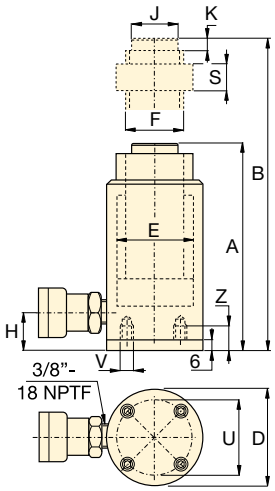
For Cylinder Model / Capacity ton	Tilt Saddle Model Number	Tilt Saddle Diameter J1	Addition to Collapsed Height A1
RACL-20, 30	CATS-30	55	11
RACL-50	CATS-50	71	14
RACL-100	CATS-150	97	19
RACL-150	CATS-200	126	18



Steel Base Plate Mounting Holes

Cylinder Model / Capacity ton	Bolt Circle U (mm)	Thread V (mm)	Thread Depth [1] Z (mm)
RACL-20	70	M6	12
RACL-30	80	M6	12
RACL-50	110	M6	12
RACL-100	150	M10	12
RACL-150	200	M10	12

[1] Including Base Plate Height of 6 mm and four (4) base plate bolts M6.



RACL Series



Capacity:
20 - 150 ton

Stroke:
50 - 250 mm

Maximum Operating Pressure:
700 bar

Oil Capacity (cm³)	Collapsed Height A (mm)	Extended Height B (mm)	Outside Diameter D (mm)	Cylinder Bore Diameter E (mm)	Plunger Diameter (Threaded) F (mm)	Bottom to Advance Port H (mm)	Saddle Diameter J (mm)	Saddle Protrusion from Plunger K (mm)	Lock Nut Height S (mm)	(kg)	Model Number
156	224	274	85	63	Tr 55 x 4	27	40	3	50	4,0	RACL-202
312	274	374	85	63	Tr 55 x 4	27	40	3	50	4,6	RACL-204
468	324	474	85	63	Tr 55 x 4	27	40	3	50	5,2	RACL-206
624	374	574	85	63	Tr 55 x 4	27	40	3	50	5,8	RACL-208
780	424	674	85	63	Tr 55 x 4	27	40	3	50	6,4	RACL-2010
221	231	281	100	75	Tr 60 x 4	33	40	3	50	5,4	RACL-302
442	281	381	100	75	Tr 60 x 4	33	40	3	50	6,1	RACL-304
663	331	481	100	75	Tr 60 x 4	33	40	3	50	6,8	RACL-306
883	381	581	100	75	Tr 60 x 4	33	40	3	50	7,5	RACL-308
1105	431	681	100	75	Tr 60 x 4	33	40	3	50	8,2	RACL-3010
354	236	286	130	95	Tr 80 x 4	30	50	3	50	9,3	RACL-502
709	286	386	130	95	Tr 80 x 4	30	50	3	50	10,6	RACL-504
1063	336	486	130	95	Tr 80 x 4	30	50	3	50	12,6	RACL-506
1417	386	586	130	95	Tr 80 x 4	30	50	3	50	13,2	RACL-508
1771	436	686	130	95	Tr 80 x 4	30	50	3	50	14,5	RACL-5010
716	296	346	180	135	Tr 110 x 6	46	94	3	75	21,9	RACL-1002
1431	346	446	180	135	Tr 110 x 6	46	94	3	75	24,2	RACL-1004
2147	396	546	180	135	Tr 110 x 6	46	94	3	75	26,5	RACL-1006
2863	446	646	180	135	Tr 110 x 6	46	94	3	75	28,8	RACL-1008
3578	496	746	180	135	Tr 110 x 6	46	94	3	75	31,1	RACL-10010
1135	323	373	230	170	Tr 140 x 6	51	113	3	80	32,2	RACL-1502
2270	373	473	230	170	Tr 140 x 6	51	113	3	80	36,2	RACL-1504
3405	423	573	230	170	Tr 140 x 6	51	113	3	80	40,2	RACL-1506
4540	473	673	230	170	Tr 140 x 6	51	113	3	80	44,2	RACL-1508
5675	523	773	230	170	Tr 140 x 6	51	113	3	80	48,2	RACL-15010

RACH, Aluminium Hollow Plunger Cylinders

ENERPAC

▼ Shown from left to right: **RACH-1504, RACH-15010, RACH-206, RACH-306**



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 **P-392** or **P-802** 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 sideload 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**
- **CR-400 coupler and dustcap included on all models**
- **All cylinders meet ASME B-30.1 standards.**

Cylinder Capacity @ 700 bar ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm^2)
20 (229)	50	**RACH-202**	32,7
	100	**RACH-204**	32,7
	150	**RACH-206**	32,7
	200	**RACH-208**	32,7
	250	**RACH-2010**	32,7
30 (358)	50	**RACH-302**	51,1
	100	**RACH-304**	51,1
	150	**RACH-306**	51,1
	200	**RACH-308**	51,1
	250	**RACH-3010**	51,1
60 (596)	50	**RACH-602**	84,7
	100	**RACH-604**	84,7
	150	**RACH-606**	84,7
	200	**RACH-608**	84,7
	250	**RACH-6010**	84,7
100 (1157)	50	**RACH-1002**	164,6
	100	**RACH-1004**	164,6
	150	**RACH-1006**	164,6
	200	**RACH-1008**	164,6
	250	**RACH-10010**	164,6
150 (1588)	50	**RACH-1502**	225,8
	100	**RACH-1504**	225,8
	150	**RACH-1506**	225,8
	200	**RACH-1508**	225,8
	250	**RACH-15010**	225,8

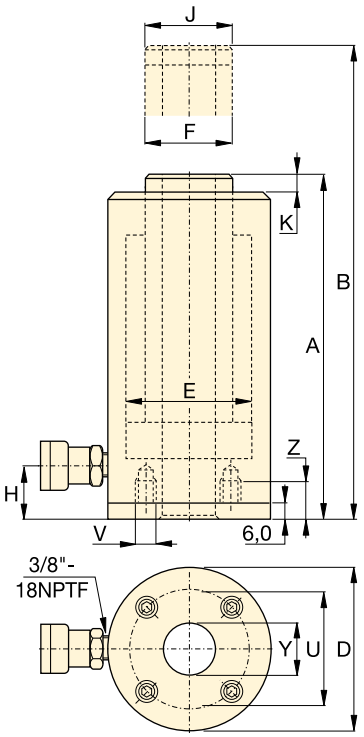


◀ *An RACH-306 powered by a P-392 hand pump used to extract corroded carriage pins of refuse collection vehicles.*

Single-Acting, Aluminium Hollow Plunger Cylinders

Steel Base Plate Mounting Holes			
Cylinder Model / Capacity ton	Bolt Circle U (mm)	Thread V (mm)	Thread Depth [1] Z (mm)
RACH-20	80	M6	12
RACH-30	110	M6	12
RACH-60	160	M6	12
RACH-100	220	M10	12
RACH-150	245	M10	12

[1] Including Base Plate Height of 6 mm and four (4) base plate bolts M6.



RACH Series



Capacity:
20 - 150 ton

Stroke:
50 - 250 mm

Center Hole Diameter:
27 - 79 mm

Maximum Operating Pressure:
700 bar

Oil Capacity (cm^3)	**Collapsed Height** A (mm)	Extended Height B (mm)	Outside Diameter D (mm)	Cylinder Bore Diameter E (mm)	Plunger Diameter F (mm)	Bottom to Advance Port H (mm)	Saddle Diameter J (mm)	Saddle Protrusion from Plunger K (mm)	Center Hole Diameter Y (mm)	(kg)	**Model Number**
164	188	238	100	75	55	29	55	10	27	5,2	**RACH-202**
327	251	351	100	75	55	29	55	10	27	6,1	**RACH-204**
491	315	465	100	75	55	29	55	10	27	7,1	**RACH-206**
654	378	578	100	75	55	29	55	10	27	8,0	**RACH-208**
818	442	692	100	75	55	29	55	10	27	9,0	**RACH-2010**
256	208	258	130	95	70	29	70	10	34	8,0	**RACH-302**
511	267	367	130	95	70	29	70	10	34	9,5	**RACH-304**
766	333	483	130	95	70	29	70	10	34	11,2	**RACH-306**
1022	395	595	130	95	70	29	70	10	34	12,9	**RACH-308**
1277	458	708	130	95	70	29	70	10	34	14,5	**RACH-3010**
423	251	301	180	130	100	61	100	12	54	16,2	**RACH-602**
847	315	415	180	130	100	61	100	12	54	19,5	**RACH-604**
1270	380	530	180	130	100	61	100	12	54	25,6	**RACH-606**
1694	445	645	180	130	100	61	100	12	54	26,0	**RACH-608**
2117	510	760	180	130	100	61	100	12	54	29,6	**RACH-6010**
823	258	308	250	185	145	61	145	14	79	33,8	**RACH-1002**
1646	325	425	250	185	145	61	145	14	79	39,8	**RACH-1004**
2487	391	541	250	185	145	61	145	14	79	46,2	**RACH-1006**
3291	459	659	250	185	145	61	145	14	79	52,2	**RACH-1008**
4114	527	777	250	185	145	61	145	14	79	58,8	**RACH-10010**
1129	280	330	275	205	150	61	145	14	79	48,9	**RACH-1502**
2258	360	460	275	205	150	61	145	14	79	55,7	**RACH-1504**
3387	430	580	275	205	150	61	145	14	79	63,0	**RACH-1506**
4517	500	700	275	205	150	61	145	14	79	70,1	**RACH-1508**
5646	570	820	275	205	150	61	145	14	79	77,2	**RACH-15010**

RAR, Double-Acting Aluminium Cylinders

▼ Shown from left to right: **RAR-5010, RAR-308, RAR-204**





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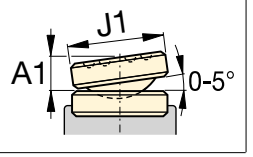
- **Double-acting for rapid retraction, regardless of hose lengths or system losses**
- **Composite bearings increase cylinder life and sideload resistance**
- **Hard-Coat finish on all surfaces resists damage and extends cylinder life**
- **Handles included on all models**
- **Steel base plate and saddle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

Cylinder Capacity @ 700 bar (ton)	Stroke (mm)	Model Number	Max. Cylinder Capacity (kN) Push	Cylinder Effective Area (cm^2) Push	Cylinder Effective Area (cm^2) Pull	Oil Capacity (cm^3) Push	Oil Capacity (cm^3) Pull
20	50	RAR-202	218	31,2	18,6	156	93
	100	RAR-204	218	31,2	18,6	312	186
	150	RAR-206	218	31,2	18,6	468	279
	200	RAR-208	218	31,2	18,6	624	372
	250	RAR-2010	218	31,2	18,6	780	465
30	50	RAR-302	309	44,2	24,5	221	123
	100	RAR-304	309	44,2	24,5	442	245
	150	RAR-306	309	44,2	24,5	663	368
	200	RAR-308	309	44,2	24,5	884	490
	250	RAR-3010	309	44,2	24,5	1105	613
50	50	RAR-502	496	70,9	26,7	354	134
	100	RAR-504	496	70,9	26,7	709	267
	150	RAR-506	496	70,9	26,7	1063	401
	200	RAR-508	496	70,9	26,7	1417	534
	250	RAR-5010	496	70,9	26,7	1771	668
100	50	RAR-1002	1002	143,1	79,5	715	398
	100	RAR-1004	1002	143,1	79,5	1431	795
	150	RAR-1006	1002	143,1	79,5	2147	1193
	200	RAR-1008	1002	143,1	79,5	2863	1590
	250	RAR-10010	1002	143,1	79,5	3578	1988
150	50	RAR-1502	1589	227,0	132,0	1135	660
	100	RAR-1504	1589	227,0	132,0	2270	1320
	150	RAR-1506	1589	227,0	132,0	3405	1980
	200	RAR-1508	1589	227,0	132,0	4540	2640
	250	RAR-15010	1589	227,0	132,0	5675	3300

▼ *An RAR-506 was easy to position under a bulldozer for repair of frame member.*

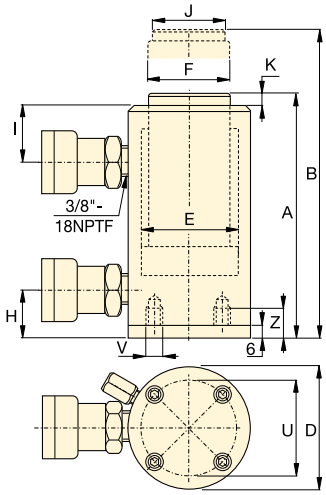


Optional Bolt-on Tilt Saddle Dimensions (mm)				
For Cylinder Model / Capacity ton	**Tilt Saddle Model Number**	Tilt Saddle Diameter J1	Addition to Collapsed Height A1	
RAR-20	**CATS-20**	42	10	
RAR-30	**CATS-30**	55	11	
RAR-50	**CATS-50**	71	14	
RAR-100	**CATS-101**	71	10	
RAR-150	**CATS-150**	97	19	



Steel Base Plate Mounting Holes			
Cylinder Model / Capacity ton	Bolt Circle U (mm)	Thread V (mm)	Thread Depth [1] Z (mm)
RAR-20	93	M6	12
RAR-30	105	M6	12
RAR-50	110	M6	12
RAR-100	165	M6	12
RAR-150	200	M6	12

[1] Including Base Plate Height of 6 mm and four (4) base plate bolts M6.



RAR Series



Capacity:
20 - 150 ton

Stroke:
50 - 250 mm

Maximum Operating Pressure:
700 bar

	Collapsed Height A (mm)	**Extended Height** B (mm)	Outside Diameter D (mm)	Cylinder Bore Diameter E (mm)	Plunger Diameter F (mm)	Bottom to Advance Port H (mm)	Top to Retract Port I (mm)	Saddle Diameter J (mm)	Saddle Protrusion from Plunger K (mm)	(kg)	**Model Number**
	189	239	113	63	40	30	50	30	3	7,4	**RAR-202**
	239	339	113	63	40	30	50	30	3	8,0	**RAR-204**
	289	439	113	63	40	30	50	30	3	8,6	**RAR-206**
	339	539	113	63	40	30	50	30	3	9,2	**RAR-208**
	389	639	113	63	40	30	50	30	3	9,8	**RAR-2010**
	201	251	125	75	50	30	55	40	3	8,6	**RAR-302**
	251	351	125	75	50	30	55	40	3	9,5	**RAR-304**
	301	451	125	75	50	30	55	40	3	10,4	**RAR-306**
	351	551	125	75	50	30	55	40	3	11,3	**RAR-308**
	401	651	125	75	50	30	55	40	3	12,2	**RAR-3010**
	201	251	145	95	75	30	56	50	3	11,1	**RAR-502**
	251	351	145	95	75	30	56	50	3	12,7	**RAR-504**
	301	451	145	95	75	30	56	50	3	14,3	**RAR-506**
	351	551	145	95	75	30	56	50	3	15,9	**RAR-508**
	401	651	145	95	75	30	56	50	3	17,5	**RAR-5010**
	251	301	185	135	90	43	80	75	3	16,4	**RAR-1002**
	301	401	185	135	90	43	80	75	3	19,3	**RAR-1004**
	351	501	185	135	90	43	80	75	3	22,2	**RAR-1006**
	401	601	185	135	90	43	80	75	3	25,1	**RAR-1008**
	451	701	185	135	90	43	80	75	3	28,0	**RAR-10010**
	248	298	230	170	110	38	75	94	3	24,2	**RAR-1502**
	298	398	230	170	110	38	75	94	3	28,9	**RAR-1504**
	348	498	230	170	110	38	75	94	3	33,2	**RAR-1506**
	398	598	230	170	110	38	75	94	3	37,9	**RAR-1508**
	448	698	230	170	110	38	75	94	3	42,6	**RAR-15010**

▼ RT-3311 Telescopic Cylinder (shown with plunger extended and retracted)



- **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**
- **CR-400 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 600 mm 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 EVOB-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

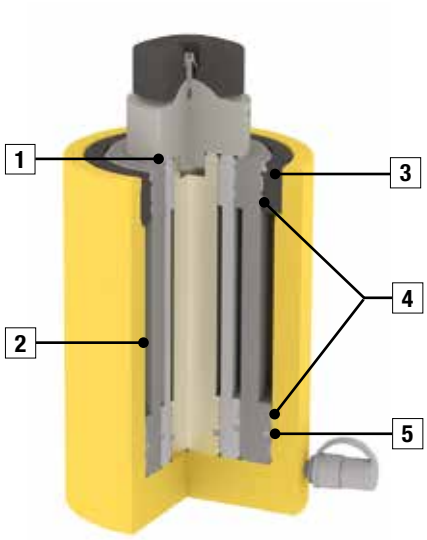
All RT-Series cylinders include integral tilt saddles with maximum tilt angles up to 5 degree.



◀ *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 ton (kN)	Maximum Stroke (mm)	Model Number	Collapsed Height A (mm)	Extended Height B (mm)
14,0 (137)	270	**RT-1510**	283	553
17,0 (166)	435	**RT-1817**	345	780
20,2 (198)	300	**RT-2111**	317	617
	500	**RT-2119**	395	895
31,5 (309)	300	**RT-3311**	352	652
	600	**RT-3323**	476	1076

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



1. **Wiper Ring** on each stage to minimize contamination.
2. **Nitrocarburized Coating** for maximum corrision protection and surface hardness. Exterior in nitrided and Enerpac yellow epoxy.
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.

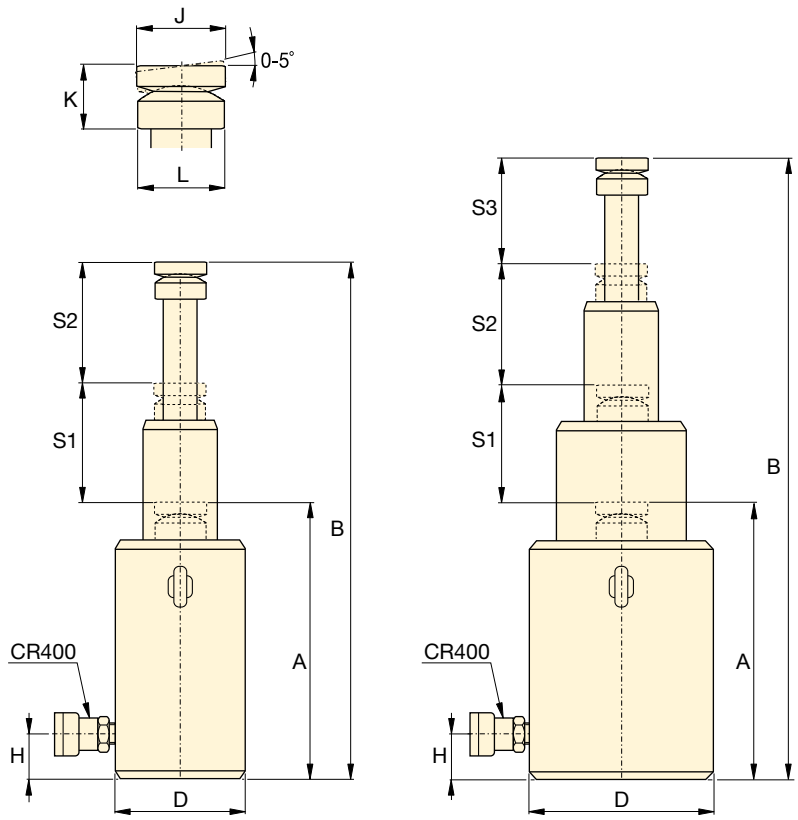
RT Series



Capacity:
14 - 31,5 ton

Stroke:
270 - 600 mm

Maximum Operating Pressure:
700 bar





Assisted-return Pumps with Venturi Valve Technology

To improve productivity and plunger retraction, Enerpac offers valve configurations designed to accelerate your cylinder retraction speeds, ZU4 and ZE-Series pumps feature **Venturi Valve Technology** to facilitate the faster return of single-acting load and spring-return cylinders. 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 (cm³)	1st Stage Capacity ton (kN)	1st Stage Stroke S1 (mm)	2nd Stage Capacity ton (kN)	2nd Stage Stroke S2 (mm)	3rd Stage Capacity ton (kN)	3rd Stage Stroke S3 (mm)	Outside Diameter D (mm)	Bottom to Advance Port H (mm)	Saddle Diameter J (mm)	Saddle Protrusion from Plgr. K (mm)	Saddle Support Diameter L (mm)	(kg)	Model Number
944	**36** (352)	135	**14** (137)	135	–	–	110	20	60	49	60	15,1	**RT-1510**
3092	**95** (929)	145	**41** (397)	145	**17,0** (166)	145	170	27	80	73	85	40,3	**RT-1817**
1487	**51** (496)	150	**20** (198)	150	–	–	125	23	60	53	66	21,8	**RT-2111**
4661	**126** (1237)	170	**51** (496)	170	**20,2** (198)	160	200	34	90	83	100	67,3	**RT-2119**
2359	**81** (792)	150	**32** (309)	150	–	–	160	25	80	66	89	39,9	**RT-3311**
8816	**202** (1985)	200	**81** (792)	200	**31,5** (309)	200	250	44	110	111	123	124,0	**RT-3323**

RLT-Series, Low-Height Telescopic Cylinders

ENERPAC

▼ RLT-Series, Low-Height Telescopic Cylinder



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**
- **CR-400 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 40 mm 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 ton (kN)	Maximum Stroke (mm)	Model Number	Collapsed Height A (mm)	Extended Height B (mm)	Oil Capacity (cm^3)
4,4 (43)	17	**RLT-40**	45,0	62,0	21
4,4 (43)	23	**RLT-41**	54,0	77,0	51
11,4 (111)	18	**RLT-110**	54,5	72,5	48
11,4 (111)	40	**RLT-111**	89,0	129,0	241
23,7 (232)	27	**RLT-230**	75,0	102,0	150
23,7 (232)	32	**RLT-231**	96,0	128,0	303
31,5 (309)	29	**RLT-311**	89,0	118,0	224
50,6 (496)	26	**RLT-501**	96,0	122,0	283
74,1 (727)	26	**RLT-741**	114,0	140,0	426

Low-Height Telescopic Cylinders, Single-Acting



Assisted-return Pumps with Venturi Valve Technology

To improve productivity and plunger retraction, Enerpac offers valve configurations designed to accelerate your cylinder retraction speeds, ZU4 and ZE-Series pumps feature **Venturi Valve Technology** to facilitate the faster return of single-acting load and spring-return cylinders. 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, 700 bar 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

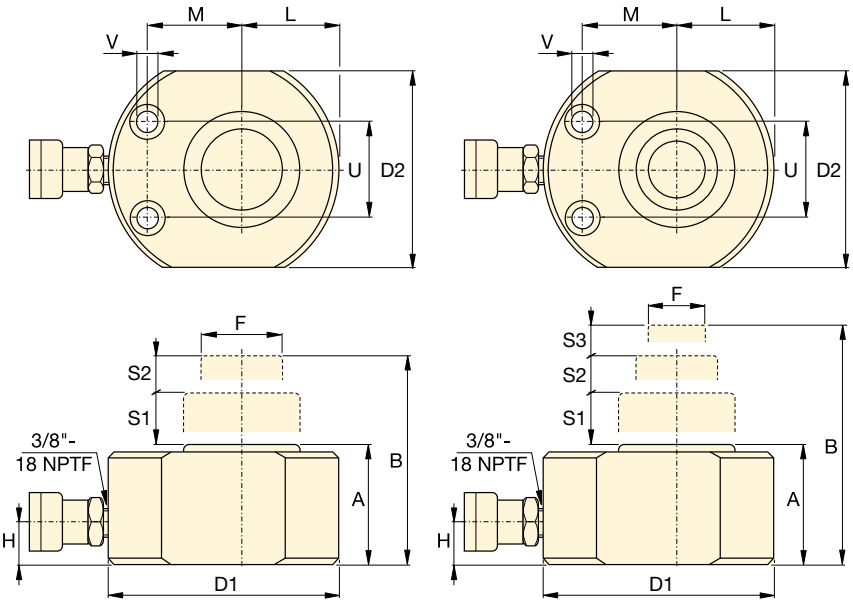


Capacity:
4,4 - 74,1 ton

Stroke:
17 - 40 mm

Maximum Operating Pressure:
700 bar

WARNING:
If several telescopic cylinders need to be controlled simultaneously Enerpac recommend the use of EVO or EVOB-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.



RLT-Cylinders
Mounting Hole Dimensions (mm)

Model Number	Bolt Distance U	Hole Diameter V	Counter Bore Diameter	Counter Bore Depth
RLT-40	37	6,5	11	7
RLT-41	50	9,0	14	9
RLT-110	50	9,0	14	9
RLT-111	76	13,0	20	13
RLT-230	67	13,0	20	13
RLT-231	76	6,5	11	7
RLT-311	76	13,0	20	13
RLT-501	76	6,5	11	7
RLT-741	117	9,0	14	9

1st Stage Capacity ton (kN)	1st Stage Stroke S1 (mm)	2nd Stage Capacity ton (kN)	2nd Stage Stroke S2 (mm)	3rd Stage Capacity ton (kN)	3rd Stage Stroke S3 (mm)	Outside Diameter D1 x D2 (mm)	Plunger Diameter F (mm)	Bottom to Advance Port H (mm)	Plunger to Base L (mm)	Plunger to Mounting Hole M (mm)	(kg)	Model Number
11,4 (111)	11	**4,4** (43)	6	-	–	83 x 56	25	20	29,0	33	1,8	**RLT-40**
23,7 (232)	11	**11,4** (111)	7	**4,4** (43)	5	102 x 80	25	20	41,0	39	3,1	**RLT-41**
23,7 (232)	11	**11,4** (111)	7	-	–	102 x 80	38	20	41,0	39	3,0	**RLT-110**
74,1 (727)	16	**31,5** (309)	13	**11,4** (111)	11	165 x 140	38	25	70,5	66	13,1	**RLT-111**
50,6 (496)	16	**23,7** (232)	11	-	–	140 x 114	57	20	58,0	56	7,6	**RLT-230**
94,7 (929)	16	**50,6** (496)	10	**23,7** (232)	6	178 x 162	57	29	89,0	70	17,3	**RLT-231**
74,1 (727)	16	**31,5** (309)	13	-	–	165 x 140	60	25	70,5	66	13,0	**RLT-311**
94,7 (929)	16	**50,6** (496)	10	-	–	178 x 162	78	29	89,0	70	17,3	**RLT-501**
143,5 (1407)	16	**74,1** (727)	10	-	–	216 x 196	95	35	108,0	78	30,4	**RLT-741**

▼ Shown from left to right: **RSM-1000, RSM-300, RSM-50, RCS-1002, RCS-302**



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-16 Lifting Wedge** and **SOH-Series Machine Lifts** are the perfect choice for lifting the first few millimeters.

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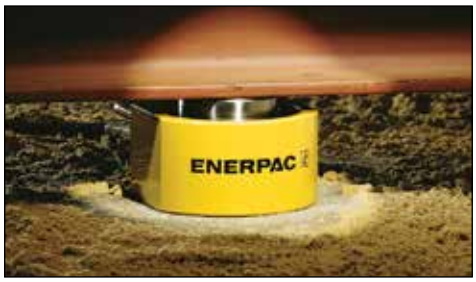
RSM-series, Flat-Jac® Cylinders

- **Compact, flat design for use where most other cylinders will not fit**
- **Single-acting, spring return**
- **RSM-750, 1000 and 1500 have handles for easy carrying**
- **Mounting holes permit easy fixturing**
- **Baked enamel finish for increased corrosion resistance**
- **CR-400 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**
- **CR-400 coupler and dust cap included on all models**
- **Grooved plunger end with threaded holes for mounting tilt saddles**
- **Integral handle on RCS-1002 for easy carrying**
- **Plated steel plungers.**

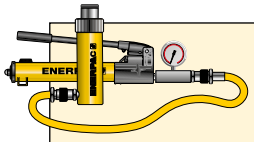
▼ *Only a couple of centimeters will do for an RSM-cylinder to lift a large construction.*



Cyl. Capacity ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm^2)	Oil Capacity (cm^3)
5 (45)	6	**RSM-50** [1)]	6,5	4
10 (101)	11	**RSM-100** *	14,5	18
20 (201)	11	**RSM-200** *	28,7	32
30 (295)	13	**RSM-300** *	42,1	55
45 (435)	16	**RSM-500** *	62,1	99
75 (718)	16	**RSM-750**	102,6	164
90 (887)	16	**RSM-1000**	126,7	203
150 (1386)	16	**RSM-1500**	198,1	317
10 (101)	38	**RCS-101** *	14,5	55
20 (201)	45	**RCS-201** *	28,7	129
30 (295)	62	**RCS-302** *	42,1	261
45 (435)	60	**RCS-502** *	62,1	373
90 (887)	57	**RCS-1002** *	126,7	722

[1)] RSM-50 is fitted with an AR-400 coupler.

* Available as set, see note on next page.



Cylinder-Pump Sets

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

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RSM, RCS Series



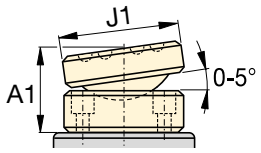
Capacity:
5 - 150 ton

Stroke:
6 - 62 mm

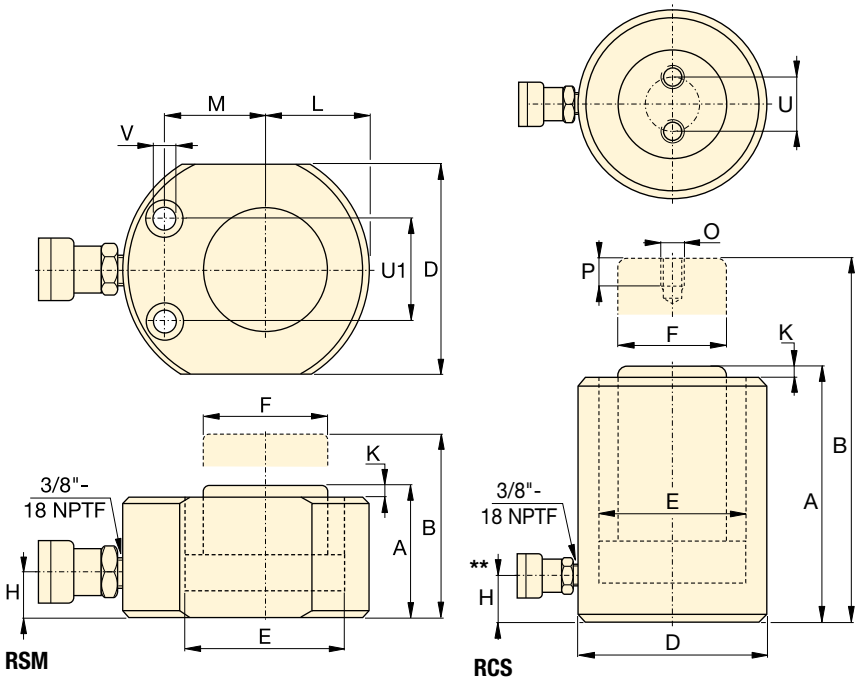
Maximum Operating Pressure:
700 bar

Optional Bolt On Tilt Saddle Dimensions (mm)

For Cylinder Model:	Model Number	J1	A1 *
RCS-101	CATS-13	35	20
RCS-201, -302, -502	CATS-53	50	25
RCS-1002	CATS-103	71	35



* A1 = Addition to Collapsed Height.





Power Box

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

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RSM Cylinder Mounting Hole Dimensions (mm)

Model Number	Bolt Circle U1	Hole Dia. V	Counter Bore Dia.	Counter Bore Depth
RSM-50	28,5	5,5	9,1	4,3
RSM-100	36,6	7,1	10,7	7,9
RSM-200	49,3	10,0	15,1	9,9
RSM-300	52,3	10,0	15,9	11,2
RSM-500	66,5	11,0	19,0	12,7
RSM-750	76,2	13,5	20,6	14,2
RSM-1000	76,2	13,5	20,6	14,2
RSM-1500	117,3	13,5	20,6	14,2

Collapsed Height A (mm)	Extended Height B (mm)	Outside Diameter D (mm)	Cylinder Bore Dia. E (mm)	Plunger Dia. F (mm)	Base to Advance Port H (mm)	Plunger Protrusion from Base K (mm)	Plunger to Base L (mm)	Plunger to Mtg. Hole M (mm)	Thread O (mm)	Thread Depth P (mm)	Bolt Circle U (mm)	(kg)	Model Number
32	38	58 x 41	28,7	25,4	16	1	20	22	–	–	–	1,0	RSM-50 [1]
43	54	82 x 55	42,9	38,1	19	1	27	34	–	–	–	1,4	RSM-100 *
51	62	101 x 76	60,5	50,8	19	1	39	39	–	–	–	3,1	RSM-200 *
58	71	117 x 95	73,2	63,4	19	2	47	44	–	–	–	4,5	RSM-300 *
66	82	140 x 114	88,9	69,8	19	2	57	53	–	–	–	6,8	RSM-500 *
79	95	165 x 139	114,3	82,6	19	2	69	66	–	–	–	11,3	RSM-750
85	101	178 x 153	127,0	92,2	19	2	76	74	–	–	–	14,5	RSM-1000
100	116	215 x 190	158,8	114,3	23	2	95	82	–	–	–	26,3	RSM-1500
88	126	69	42,9	38,1	17	5	–	–	M4	8	26	2,7	RCS-101 *
98	143	92	60,5	50,8	17	3	–	–	M5	8	40	5,0	RCS-201 *
117	179	101	73,2	66,5	19	3	–	–	M5	8	40	6,8	RCS-302 *
122	182	124	88,9	69,8	23	2	–	–	M5	8	40	10,0	RCS-502 *
141	198	165	127,0	92,2	31	1	–	–	M8	10	55	20,7	RCS-1002 *

** 5° angle position of coupler on RCS-101, 201, 302.

▼ **CULP50 Ultra-Flat Cylinder, with Stop Ring**



CULP Series

Capacity:
10 - 100 ton

Stroke:
6 mm

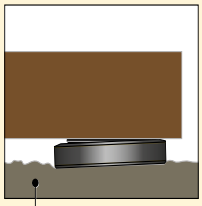
Maximum Operating Pressure:
700 bar

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

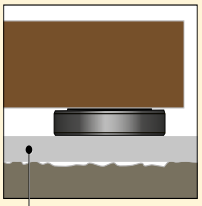
IMPORTANT!

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!



CORRECT!

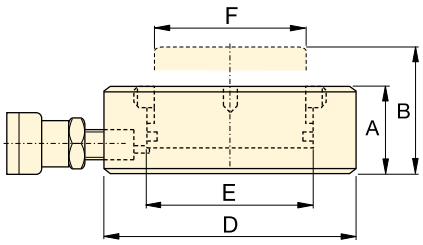


For more safety instructions see our 'Yellow Pages'.

Page: 312

▼ *The Ultra-Flat cylinders are designed for applications where high lifting forces are required in confined spaces starting at 2,8 cm.*







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 @ 700 bar **ton** (kN)	**Stroke** (mm)	**Model Number**	**Cylinder Effective Area** (cm^2)	**Oil Capacity** (cm^3)	**Collapsed Height** A (mm)	**Extended Height** B (mm)	Outside Diameter D (mm)	Cylinder Bore Diameter E (mm)	Plunger Diameter F (mm)	(kg)
10 (97)	6	**CULP10** [1]	13,9	8,3	27,5	33,5	72	42	38	1,0
20 (198)	6	**CULP20** [1]	28,3	17,0	32,0	38,0	90	60	55	1,7
30 (310)	6	**CULP30** [1]	44,2	26,5	35,0	41,0	105	75	67	2,5
50 (550)	6	**CULP50** [1]	78,5	47,1	44,5	50,5	140	100	90	5,4
100 (1078)	6	**CULP100** [2]	153,9	92,5	65,0	71,0	195	140	125	11,5

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

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



CUSP Series

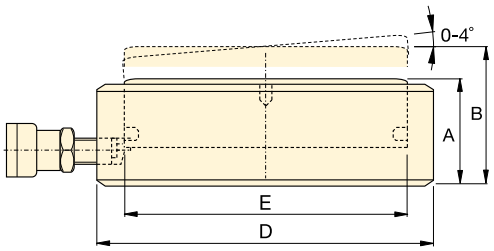
Capacity:
10 - 1000 ton

Stroke Straight / Tilted Stroke:
7 - 17 mm / 6 - 10 mm

Integrated:
Tilting Function

Maximum Operating Pressure:
700 bar

- **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!
CUSP-Cylinders DO NOT have a Stop Ring for stroke limitiation!

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 26 or more safety instructions in our Yellow Pages.

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Cylinder Capacity @ 700 bar ton (kN)	Tilted Stroke (mm)	Straight Stroke (mm)	Model Number	Tilting +/- (degree)	Cylinder Effective Area (cm^2)	Oil Capacity (cm^3)	Collapsed Height A (mm)	Extended Height B (mm)	Cylinder Outside Diameter D (mm)	Cylinder Bore Diameter E (mm)	(kg)
10 (97)	6	6,7	**CUSP10** [1]	2	13,9	9,3	35,5	41,5	72	42	1,2
20 (198)	6	7,0	**CUSP20** [1]	2	28,3	19,8	40,5	46,5	90	60	1,9
30 (310)	6	7,3	**CUSP30** [1]	2	44,2	32,1	42,5	48,5	105	75	2,7
50 (550)	10	13,3	**CUSP50** [1]	4	78,5	104	57,0	67,0	130	100	5,6
75 (792)	10	14,0	**CUSP75** [1]	4	113,1	158	60,5	70,5	150	120	8,0
100 (1078)	10	14,7	**CUSP100** [2]	4	153,9	226	63,5	73,5	170	140	10,8
150 (1589)	10	14,3	**CUSP150** [2]	3	227,0	324	65,0	75,0	200	170	15,3
200 (2090)	10	14,9	**CUSP200** [2]	3	298,6	446	69,0	79,0	229	195	21,5
250 (2542)	10	15,5	**CUSP250** [2]	3	363,1	569	72,5	82,5	252	215	27,3
300 (3167)	10	14,1	**CUSP300** [2]	2	452,4	637	72,5	82,5	282	240	34,4
400 (4008)	10	14,6	**CUSP400** [2]	2	572,6	837	77,5	87,5	316	270	46,2
500 (5115)	10	15,2	**CUSP500** [2]	2	730,6	1111	82,5	92,5	356	305	62,7
600 (5987)	10	15,6	**CUSP600** [2]	2	855,3	1334	87,5	97,5	386	330	78,4
750 (7527)	10	16,3	**CUSP750** [2]	2	1075,2	1757	93,5	103,5	432	370	105,2
1000 (10.165)	10	17,4	**CUSP1000** [2]	2	1452,2	2531	103,0	113,0	502	430	157,0

[1] Coupler AR630 including dustcap: Use HB7206 hose including AH630 coupler to connect to your pump.
[2] Coupler CR400 including dustcap: 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!

Page: **42**

▼ *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.*

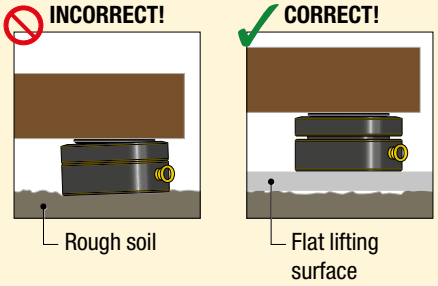


Cylinder Capacity ton	Stroke (mm)	Model Number	Maximum Cylinder Capacity at 700 bar ton (kN)	Side-load Resistance of Maximum Capacity	Cylinder Effective Area (cm^2)
60	50	**LPL-602**	**62** (606)	10%	86,6
100	50	**LPL-1002**	**102** (1002)	10%	143,1
150	45	**LPL-1602**	**162** (1589)	8%	227,0
200	45	**LPL-2002**	**202** (1985)	8%	283,5
250	45	**LPL-2502**	**259** (2541)	5%	363,1
400	45	**LPL-4002**	**409** (4008)	5%	572,6
500	45	**LPL-5002**	**522** (5114)	5%	730,6

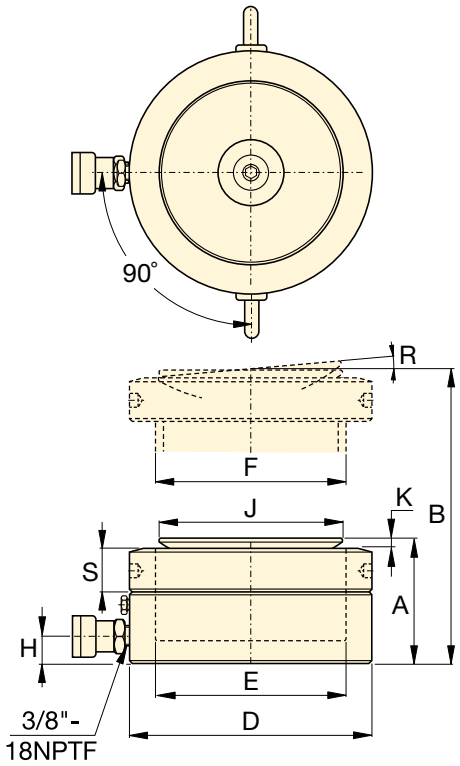
Single-Acting, Low-Height Lock Nut Cylinders

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 ton

Stroke:
45 - 50 mm

Maximum Operating Pressure:
700 bar



Longer Stroke Lock Nut Cylinders

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

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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.

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Synchronous Lifting Systems

Pumps for multiple lift point capabilities. The economical **EVOB-Series** for basic applications and the multi-functional **EVO-Series** lifting system.

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Oil Capacity (cm³)	Collapsed Height A (mm)	Extended Height B (mm)	Outside Diameter D (mm)	Cylinder Bore Diameter E (mm)	Plunger Diameter F (mm)	Base to Advance Port H (mm)	Saddle Diameter J (mm)	Saddle Protrusion from Plgr. K (mm)	Saddle Max. Tilt Angle R	Lock Nut Height S (mm)	(kg)	Model Number
433,0	126	176	140	105	Tr 105 x 4	19	96	7	5°	28	15	**LPL-602**
715,7	137	187	173	135	Tr 135 x 6	21	126	8	5°	31	25	**LPL-1002**
1021,4	148	193	220	170	Tr 170 x 6	27	160	9	5°	40	43	**LPL-1602**
1275,9	155	200	245	190	Tr 190 x 6	30	180	10	5°	43	55	**LPL-2002**
1633,7	159	204	275	215	Tr 215 x 6	32	200	12	5°	43	70	**LPL-2502**
2576,5	178	223	350	270	Tr 270 x 6	40	250	12	4°	55	129	**LPL-4002**
3287,8	192	237	400	305	Tr 305 x 6	49	290	10	3°	61,5	183	**LPL-5002**

▼ Shown from left to right: **BRC-25, BRC-46, BRP-306, BRP-606, BRP-106C**



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**
- **CR-400 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

BRC-25 and BRC-46 units have base, collar and plunger threads to affix a range of optional attachments and accessories, such as chains, saddles and extension tubes.

Page: 171

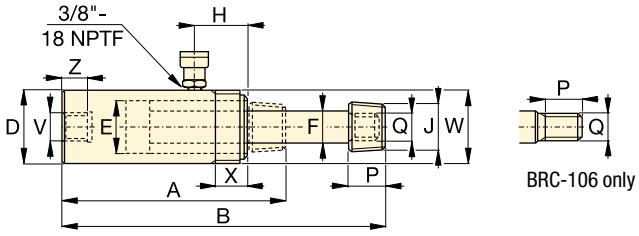
▼ *Lifting mining conveyor belt using pull cylinders for bearing maintenance.*



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



BRC Cylinder Mounting Dimensions (mm)				
Model Number	Base Mounting Hole V	Collar Thread W	Collar Thd. Lgth. X	Mtg. Thd. Lgth. Z
BRC-25	¾"-14 NPT	1½"- 16 UN	24	17
BRC-46	1¼"-11½ NPT	2¼"- 14 UN	26	24
BRC-106	M30 x 2	M85 x 2	25	24



BRC-25, -46, 106

BRC, BRP Series

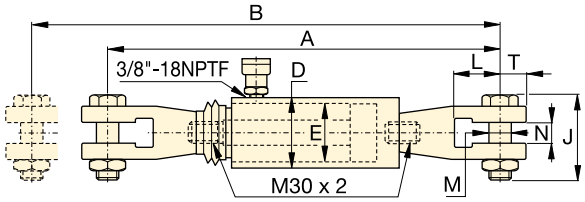


Capacity:
2,5 - 50 ton

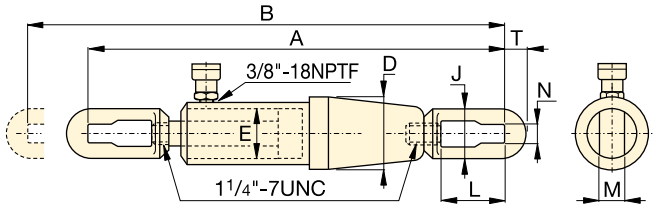
Stroke:
127 - 154 mm

Maximum Operating Pressure:
700 bar

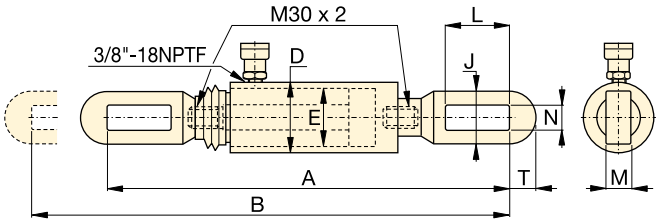
Cylinder Capacity ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm^2)	Oil Capacity (cm^3)	Coll. Height A (mm)	Ext. Height B (mm)	Outside Dia. D (mm)	Cylinder Bore Dia. E (mm)	Plunger Dia. F (mm)	Top to Inlet Port H (mm)	Saddle Diameter J (NPT)	Plunger Thread Length P (mm)	Plunger Outside Thread Q	(kg)
2,5 (24)	127	**BRC-25**	3,5	45	264	391	48	28,4	19,0	45	¾"- 14	28	$^{11}/_{16}$"- 24	1,8
5 (51)	140	**BRC-46**	7,3	101	301	441	57	42,9	30,2	42	1¼"- 11½	32	$1^{3}/_{16}$"- 16	4,5
10 (105)	151	**BRC-106**	15,0	228	289	440	85	54,1	31,8	39	–	25	M30x2	9,5



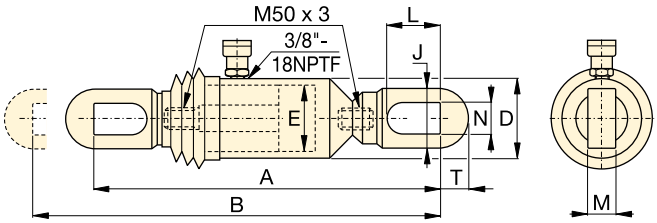
BRP-106C



BRP-306



BRP-106L



BRP-606

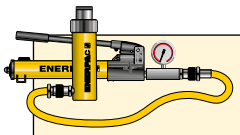
Cylinder Capacity ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm^2)	Oil Capacity (cm^3)	Coll. Height A (mm)	Ext. Height B (mm)	Outside Dia. D (mm)	Cyl. Bore Dia. E (mm)	Link Height J (mm)	Link Opening L (mm)	Link Thickness M (mm)	Link Width N (mm)	Slot to Link End T (mm)	(kg)
10 (110)	150	**BRP-106C**	15,8	238	601	751	85	54,1	105	87	30	35	32	15,3
	150	**BRP-106L**	15,8	238	573	723	85	54,1	64	119	22	30	32	13,3
30 (325)	154	**BRP-306**	46,4	715	1110	1264	137	88,9	114	155	35	40	55	63,1
50 (506)	153	**BRP-606**	72,1	1096	718	871	140	110,1	130	151	40	48	65	58,3

▼ Shown from left to right: **RCH-306, RCH-120, RCH-1003**



- **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**
- **RCH-120 includes AR-630 coupler and has 1/4" NPTF port**
- **RCH-121 and RCH-1211 have FZ-1630 reducer and AR-630 coupler, all other models feature CR-400 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.

Page: 60



Ultra-Lightweight Aluminium Cylinders

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

Page: 16



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 RCH-1003 used in an application for intermediate boom suspension on a dragline.*



Cylinder Capacity ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm^2)	Oil Capacity (cm^3)
12 (125)	8	**RCH-120**	17,9	14
	42	**RCH-121***	17,9	75
	42	**RCH-1211**	17,9	75
	76	**RCH-123**	17,9	136
20 (215)	49	**RCH-202***	30,7	150
	155	**RCH-206**	30,7	476
30 (326)	64	**RCH-302***	46,6	298
	155	**RCH-306**	46,6	722
60 (576)	76	**RCH-603***	82,3	626
	153	**RCH-606**	82,3	1259
95 (931)	76	**RCH-1003***	133,0	1011

* Available as set, see note on this page.

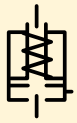


Hoses

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 - 95 ton

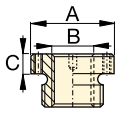
Stroke:
8 - 155 mm

Center Hole Diameter:
17,3 - 79,0 mm

Maximum Operating Pressure:
700 bar

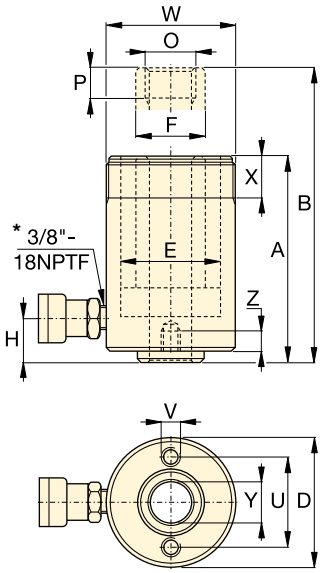
Optional Threaded Hollow Saddles

Saddle Type	Cylinder Model Number	Saddle Model Nr.	Saddle Dimensions (mm) A	B	C
Threaded Hollow	RCH-202, 206	HP-2015	53	1”- 8	9
	RCH-302, 306	HP-3015	63	1¼"- 7	9
	RCH-603, 606	HP-5016	91	1⅝"- 5½	12
	RCH-1003	HP-10016	126	2½"- 8	13



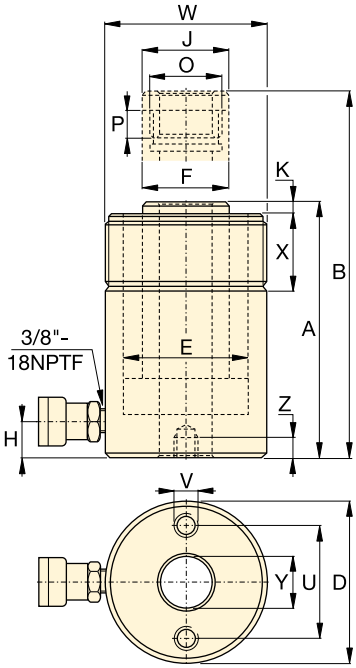
Smooth hollow saddles are standard on all RCH-models (except RCH-120, RCH-1211).

RCH-121 and RCH-1211 have a 47 mm dia. boss that protrudes 6 mm from base.



RCH-120 to RCH-123 models

* 1/4" NPTF for RCH-120 only



RCH-202 to RCH-1003 models

Base Mounting Hole Dimensions (mm)

Model Number	Bolt Circle U	Thread V	Thread Depth Z
RCH-120	50,8	5/16"-18 UNC	9,0
RCH-121	–	–	–
RCH-1211	–	–	–
RCH-123	50,8	5/16" - 18 UNC	12,7
RCH-202	82,6	3/8" - 16 UNC	9,4
RCH-206	82,6	3/8" - 16 UNC	9,4
RCH-302	92,2	3/8" - 16 UNC	14,0
RCH-306	92,2	3/8" - 16 UNC	14,0
RCH-603	130,3	½" - 13 UNC	14,0
RCH-606	130,3	½" - 13 UNC	14,0
RCH-1003	177,8	5/8" - 11 UNC	19,0

Coll. Height A (mm)	Ext. Height B (mm)	Outside Dia. D (mm)	Cyl. Bore Dia. E (mm)	Plgr. Dia. F (mm)	Cyl. Base to Advance Port H (mm)	Saddle Dia. J (mm)	Saddle Protrusion from Plgr. K (mm)	Plunger Internal Thread O	Plunger Thread Length P (mm)	Collar Thread W	Collar Thread Length X (mm)	Center Hole Dia. Y (mm)	(kg)	Model Number
55	63	69	54,1	35,1	9	–	–	¾"- 16 UN	16	2¾"- 16	30	17,3	1,5	RCH-120
120	162	69	54,1	35,1	25	–	–	–	–	2¾"- 16	30	19,5	2,8	RCH-121*
120	162	69	54,1	35,1	25	–	–	¾"- 16 UN	16	2¾"- 16	30	17,3	2,8	RCH-1211
184	260	69	54,1	35,1	25	–	–	–	–	2¾"- 16	30	19,5	4,4	RCH-123
162	211	98	73,1	54,1	19	54	9,7	1 9/16"- 16 UN	19	3⅞"- 12	38	26,9	7,7	RCH-202*
306	461	98	73,1	54,1	25	54	9,7	1 9/16"- 16 UN	19	3⅞"- 12	38	26,9	14,1	RCH-206
178	242	114	88,9	63,5	21	63	9,0	1 13/16"- 16 UN	22	4½"- 12	42	33,3	10,9	RCH-302*
330	485	114	88,9	63,5	25	63	9,0	1 13/16"- 16 UN	22	4½"- 12	42	33,3	21,8	RCH-306
247	323	159	123,9	91,9	31	91	12,0	2¾"- 16 UN	19	6¼"- 12	48	53,8	28,1	RCH-603*
323	476	159	123,9	91,9	31	91	12,0	2¾"- 16 UN	19	6¼"- 12	48	53,8	35,4	RCH-606
254	330	212	165,1	127,0	38	126	12,0	4"- 16 UN	25	8⅜"- 12	60	79,0	63,0	RCH-1003*

RRH-Series, Hollow Plunger Cylinders

ENERPAC

▼ Shown from left to right: **RRH-3010, RRH-1001, RRH-6010**



Versatility in Testing, Maintenance and Tensioning Applications

- **Relief valves prevent damage in case of over-pressurisation**
- **Baked enamel finish for increased corrosion resistance**
- **Collar threads enable easy fixturing (except RRH-1001 and RRH-1508)**
- **Double-acting version for fast retraction**
- **Nickel-plated, floating center tube increases product life**
- **Hollow plunger allows for both pull and push forces**
- **CR-400 coupler and dust cap included on all models**
- **Plunger wiper reduces contamination, extending cylinder life.**

Pump Selection

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

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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 ton	Stroke (mm)	Model Number	Max. Cylinder Capacity (kN)		Cylinder Effective Area (cm^2)		Oil Capacity (cm^3)	
			Advance	Retract	Advance	Retract	Advance	Retract
30	178	RRH-307	326	213	46,6	30,4	829	541
	258	RRH-3010	326	213	46,6	30,4	1202	784
60	89	RRH-603	576	380	82,3	54,2	733	482
	166	RRH-606	576	380	82,3	54,2	1366	900
	257	RRH-6010	576	380	82,3	54,2	2115	1393
95	38	RRH-1001	931	612	133,0	87,4	505	333
	76	RRH-1003	931	612	133,0	87,4	1011	666
	153	RRH-1006	931	612	133,0	87,4	2035	1337
	257	RRH-10010	931	612	133,0	87,4	3420	2246
145	203	RRH-1508	1429	718	204,1	102,6	4144	2083



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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RRH Series



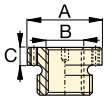


Capacity:
30 - 145 ton

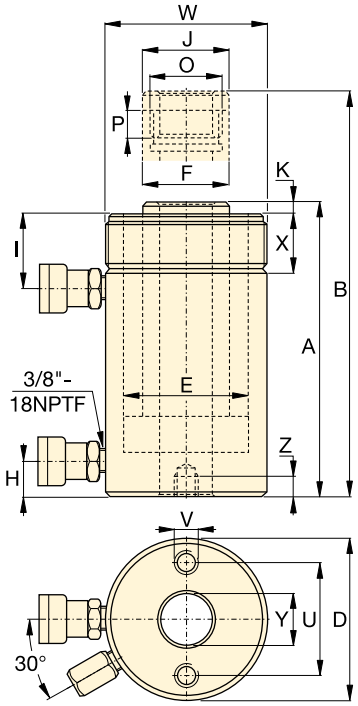
Stroke:
38 - 258 mm

Center Hole Diameter:
33,3 - 79,2 mm

Maximum Operating Pressure:
700 bar

Optional Threaded Hollow Saddles						
Saddle Type	**Cylinder Model Number**	**Saddle Model Nr.**	**Saddle Dimensions** (mm) A	B	C	
Threaded Hollow	**RRH-307, 3010**	**HP-3015**	63	1¼"- 7	9	
	RRH-603, 606, 6010	**HP-5016**	91	1⅝"- 5½	12	
	RRH-1001, 1003, RRH-1006, 10010	**HP-10016**	126	2½"- 8	13	

Smooth hollow saddles are standard on all RRH-models.



Base Mounting Hole Dimensions (mm)			
Model Number	Bolt Circle U	Thread V	Thread Depth Z
RRH-307	92,2	⅜" - 16	15,7
RRH-3010	92,2	⅜" - 16	15,7
RRH-603	130,0	½" - 13	14,0
RRH-606	130,0	½" - 13	14,0
RRH-6010	130,0	½" - 13	14,0
RRH-1001	177,8	⅝" - 11	19,0
RRH-1003	177,8	⅝" - 11	19,0
RRH-1006	177,8	⅝" - 11	19,0
RRH-10010	177,8	⅝" - 11	19,0
RRH-1508	–	–	–

	Coll. Height A (mm)	**Ext. Height** B (mm)	Out. Dia. D (mm)	Cyl. Bore Dia. E (mm)	Plgr. Dia. F (mm)	Cyl. Base to Adv. Port H (mm)	Cyl. Top to Return Port I (mm)	Saddle Dia. J (mm)	Saddle Protr. fr. Plgr. K (mm)	Thread O	Plunger Thread Length P (mm)	Collar Thread W	Collar Thread Length X (mm)	Center Hole Dia. Y (mm)	(kg)	**Model Number**
	330	508	114	88,9	63,5	25	60	63	9	1 13/16"-16	22	4½"-12	42	33,3	21	**RRH-307**
	431	689	114	88,9	63,5	25	60	63	9	1 13/16"-16	22	4½"-12	42	33,3	27	**RRH-3010**
	247	336	159	123,9	91,9	31	66	91	12	2¾"-16	19	6¼"-12	48	53,8	28	**RRH-603**
	323	489	159	123,9	91,9	31	66	91	12	2¾"-16	19	6¼"-12	48	53,8	35	**RRH-606**
	438	695	159	123,9	91,9	31	66	91	12	2¾"-16	19	6¼"-12	48	53,8	45	**RRH-6010**
	165	203	212	165,1	127,0	38	44	126	12	4"-16	25	–	–	79,2	33	**RRH-1001**
	254	330	212	165,1	127,0	38	85	126	12	4"-16	25	8⅜"-12	60	79,2	61	**RRH-1003**
	342	495	212	165,1	127,0	38	85	126	12	4"-16	25	8⅜"-12	60	79,2	79	**RRH-1006**
	460	717	212	165,1	127,0	38	85	126	12	4"-16	25	8⅜"-12	60	79,2	106	**RRH-10010**
	349	552	247	190,5	152,4	38	60	127	4	4¼"-12	25	–	–	79,2	111	**RRH-1508**

BRD-Series, Precision Production Cylinders

ENERPAC

▼ Shown from left to right: **BRD-2510, BRD-96, BRD-256, BRD-41, BRD-166**



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**
- **Imperial models (RD-series) available on request.**

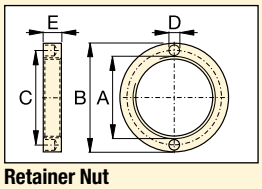
▼ *Clamping application using Enerpac BRD cylinders (with clevis eye attachments on both ends) for their high pressure capability and mounting flexibility.*



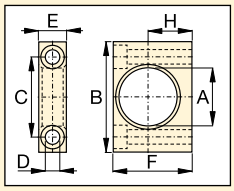
Cylinder Capacity (ton)	Stroke (mm)	Model Number	Max. Cylinder Capacity (kN)		Cylinder Effective Area (cm^2)		Oil Capacity (cm^3)		Coll. Height A (mm)	Extended Height B (mm)	Body Length C (mm)	Outside Dia. D (mm)	Cylinder Bore Dia. E (mm)	Plunger Dia. F (mm)
			Advance	Retract	Advance	Retract	Advance	Retract						
4	28	**BRD-41**	35	16	5,1	2,2	14	6	186	214	162	50	25,4	19,0
	79	**BRD-43**	35	16	5,1	2,2	40	17	237	316	213	50	25,4	19,0
	155	**BRD-46**	35	16	5,1	2,2	79	34	313	468	289	50	25,4	19,0
8	28	**BRD-91**	80	44	11,4	6,3	32	18	223	251	198	63,5	38,1	25,4
	79	**BRD-93**	80	44	11,4	6,3	90	50	274	353	249	63,5	38,1	25,4
	155	**BRD-96**	80	44	11,4	6,3	177	98	350	505	325	63,5	38,1	25,4
	257	**BRD-910**	80	44	11,4	6,3	293	162	452	709	427	63,5	38,1	25,4
15	159	**BRD-166**	142	77	20,3	10,6	323	169	389	548	359	80	50,8	35,0
	260	**BRD-1610**	142	77	20,3	10,6	528	276	491	751	461	80	50,8	35,0
23	159	**BRD-256**	222	98	31,7	13,7	504	218	424	583	397	92	63,5	47,8
	260	**BRD-2510**	222	98	31,7	13,7	824	356	526	786	499	92	63,5	47,8

▼ BRD CYLINDER ATTACHMENTS

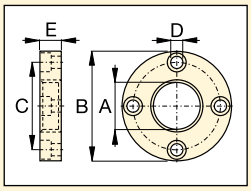




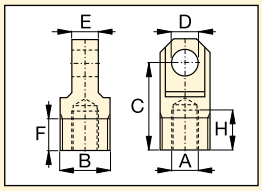
Retainer Nut
For locking foot or flange mountings. Tightens onto cylinder collar threads (Included with foot and flange mounting kits).



Foot Mounting
Mounts onto cylinder collar.



Flange Mounting
Mounts onto cylinder collar.



Clevis Eye
Threads onto plunger or into cylinder base.

Model Number	BRD-Cyl. (ton)	Dimensions (mm) A	B	C	D	E	F	H
Foot Mounting with Retainer Nut								
BAD-141	**4**	42,1	80	58,0	10,5	20,0	57,0	31,8
BAD-171	**8**	56,1	105	78,0	13,5	25,0	82,5	44,5
BAD-181	**15**	70,1	127	95,2	20,0	35,0	100,0	52,4
BAD-191	**23**	85,1	159	117,5	26,5	45,0	125,0	63,5
Flange Mounting with Retainer Nut								
BAD-142	**4**	42,1	98,4	78,6	11,0	19,0	–	–
BAD-172	**8**	56,1	121	98,4	11,0	25,4	–	–
BAD-182	**15**	70,1	143	115,9	14,0	35,0	–	–
BAD-192	**23**	85,1	165	135,7	17,0	44,5	–	–
Retainer Nut								
BAD-143	**4**	M42 x 1,5	57	49,5	6,3	9,5	–	–
BAD-173	**8**	M56 x 2	75	65,5	6,7	12,7	–	–
BAD-183	**15**	M70 x 2	92	81,0	6,7	19,0	–	–
BAD-193	**23**	M85 x 2	108	96,5	6,7	25,4	–	–
Clevis Eye (See chart below for mounting dimensions L, L1 and M)								
BAD-150	**4**	M16 x 1,5	M30 x 1,5	52,4	16,0	15,9	19,1	23,8
BAD-151	**8**	M22 x 1,5	M42 x 1,5	57,1	20,0	25,4	25,4	23,8
BAD-152	**15**	M30 x 1,5	M56 x 2	77,8	25,0	31,8	25,4	30,2
BAD-153	**23**	M42 x 1,5	M70 x 2	77,8	32,0	38,2	25,4	27,0

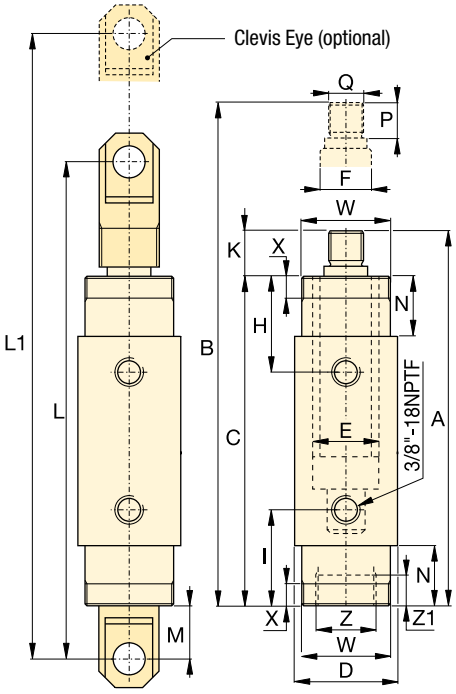
BRD Series



Capacity:
4 - 23 ton

Stroke:
28 - 260 mm

Maximum Operating Pressure:
700 bar



Top to Retract Port H (mm)	Bottom to Advance Port I (mm)	Plunger Protrusion K (mm)	Clevis Eye Mounting Dimensions L (mm)	L1 (mm)	M (mm)	Neck Length N (mm)	Plunger Thread Length P (mm)	Plunger External Thread Q (mm)	Cylinder Mounting Dimensions (mm) Collar Thread W	Collar Thread Length X	Internal Base Thread Z	Int. Base Thread Length Z1	(kg)	Model Number
47	47	24	258	286	41	29	22	M16 x 1,5	M42 x 1,5	11	M30 x 1,5	9	2,0	**BRD-41**
47	47	24	308	387	41	29	22	M16 x 1,5	M42 x 1,5	11	M30 x 1,5	9	2,6	**BRD-43**
47	47	24	385	540	41	29	22	M16 x 1,5	M42 x 1,5	11	M30 x 1,5	9	3,6	**BRD-46**
57	57	25	295	323	38	38	22	M22 x 1,5	M56 x 2	14	M42 x 1,5	14	3,0	**BRD-91**
57	57	25	346	425	38	38	22	M22 x 1,5	M56 x 2	14	M42 x 1,5	14	4,2	**BRD-93**
57	57	25	422	577	38	38	22	M22 x 1,5	M56 x 2	14	M42 x 1,5	14	5,6	**BRD-96**
57	57	25	524	781	38	38	22	M22 x 1,5	M56 x 2	14	M42 x 1,5	14	7,3	**BRD-910**
73	73	30	492	651	52	54	28	M30 x 1,5	M70 x 2	22	M56 x 2	24	10,2	**BRD-166**
73	73	30	593	853	52	54	28	M30 x 1,5	M70 x 2	22	M56 x 2	24	14,5	**BRD-1610**
89	89	27	524	683	53	70	25	M42 x 1,5	M85 x 2	29	M70 x 2	26	16,0	**BRD-256**
89	89	27	626	886	53	70	25	M42 x 1,5	M85 x 2	29	M70 x 2	26	20,3	**BRD-2510**

RR-Series, Double-Acting Cylinders

ENERPAC

▼ Shown from left to right: **RR-10013, RR-1502, RR-20013, RR-1010, RR-7513**



- **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**
- **CR-400 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 ton.

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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.*



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 ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm^2) Push	Cylinder Effective Area (cm^2) Pull	Oil Capacity (cm^3) Push	Oil Capacity (cm^3) Pull	Coll. Height (mm)
10 (101)	254	**RR-1010**	14,5	4,8	368	122	409
	305	**RR-1012**	14,5	4,8	442	147	457
30 (295)	209	**RR-308**	42,1	19,1	879	400	395
	368	**RR-3014**	42,1	19,1	1549	703	549
50 (498)	156	**RR-506**	71,2	21,5	1111	335	331
	334	**RR-5013**	71,2	21,5	2378	718	509
	511	**RR-5020**	71,2	21,5	3638	1099	733
75 (718)	156	**RR-756**	102,6	31,4	1601	490	347
	333	**RR-7513**	102,6	31,4	3417	1046	525
95 (933)	168	**RR-1006**	133,3	62,2	2238	1045	357
	333	**RR-10013**	133,3	62,2	4439	2071	524
	460	**RR-10018**	133,3	62,2	6132	2861	687
140 (1386)	57	**RR-1502**	198,1	95,4	1129	544	183
	156	**RR-1506**	198,1	95,4	3090	1488	385
	333	**RR-15013**	198,1	95,4	6597	3177	582
	815	**RR-15032**	198,1	95,4	16145	7775	1116
200 (1995)	152	**RR-2006**	285,0	145,3	4332	2209	430
	330	**RR-20013**	285,0	145,3	9405	4795	608
	457	**RR-20018**	285,0	145,3	13025	6640	765
	610	**RR-20024**	285,0	145,3	17385	8863	917
	914	**RR-20036**	285,0	145,3	26049	13280	1222
	1219	**RR-20048**	285,0	145,3	34741	17712	1527
325 (3201)	153	**RR-3006**	457,3	243,2	6997	3721	485
	305	**RR-30012**	457,3	243,2	13947	7418	638
	457	**RR-30018**	457,3	243,2	20889	11114	790
	609	**RR-30024**	457,3	243,2	27850	14811	943
	915	**RR-30036**	457,3	243,2	41843	22253	1247
	1219	**RR-30048**	457,3	243,2	55745	29646	1552
440 (4292)	152	**RR-4006**	613,1	328,1	9319	4987	538
	305	**RR-40012**	613,1	328,1	18700	10007	690
	457	**RR-40018**	613,1	328,1	28018	14995	843
	610	**RR-40024**	613,1	328,1	37400	20014	995
	914	**RR-40036**	613,1	328,1	56037	29988	1300
	1219	**RR-40048**	613,1	328,1	74737	39996	1605
520 (5108)	153	**RR-5006**	729,7	405,4	11164	6203	577
	305	**RR-50012**	729,7	405,4	22256	12365	730
	457	**RR-50018**	729,7	405,4	33347	18526	882
	609	**RR-50024**	729,7	405,4	44440	24689	1035
	915	**RR-50036**	729,7	405,4	66768	36973	1339
	1219	**RR-50048**	729,7	405,4	88951	49418	1644

RR Series



Capacity:
10 - 520 ton

Stroke:
57 - 1219 mm

Maximum Operating Pressure:
700 bar

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:

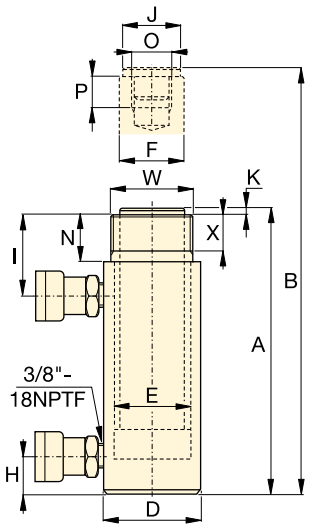
Saddle Type	Cylinder Model	Saddle Model Number
Flat	RR-10	**A-102F**
Tilt	RR-10	**CATS-12**
	RR-30	**CATS-52**
	RR-50	**CATS-100**
	RR-75	**CATS-100**

Standard Saddles:

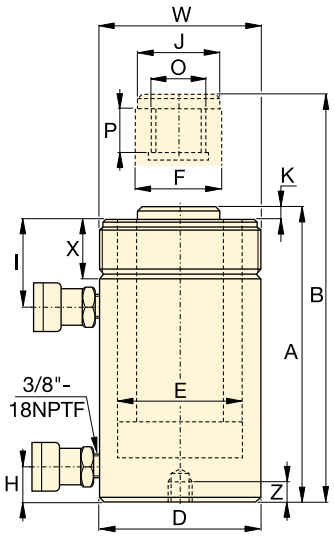
Grooved	RR-10	**A-102G**
	RR-30	**A-252G**

For additional information on saddles:

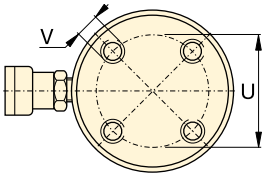
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RR-1010 - RR-3014

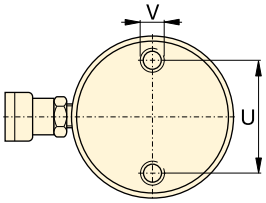


RR-506 - RR-50048



RR-1006 - RR-30048

No mounting holes on:
RR-506, 5013
RR-756, 7513
RR-1502, 15032



RR-4006 - RR-50048

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

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

RR-308/3014:	275 bar
RR-506/5013/5020:	480 bar
RR-756/7513:	495 bar

◀ For full features see previous page.

Cylinder Capacity ton	Stroke (mm)	Model Number	Max. Cylinder Capacity (kN) Push	Max. Cylinder Capacity (kN) Pull	Cylinder Effective Area (cm^2) Push	Cylinder Effective Area (cm^2) Pull	Oil Capacity (cm^3) Push	Oil Capacity (cm^3) Pull	Coll. Height A (mm)	Ext. Height B (mm)	Outside Dia. D (mm)
10	254	RR-1010 *	101	33	14,5	4,8	368	122	409	663	73
	305	RR-1012 *	101	33	14,5	4,8	442	147	457	762	73
30	209	RR-308 *	295	53	42,1	19,1	879	400	395	604	101
	368	RR-3014 *	295	53	42,1	19,1	1549	703	549	917	101
50	156	RR-506	498	103	71,2	21,5	1111	335	331	487	127
	334	RR-5013	498	103	71,2	21,5	2378	718	509	843	127
	511	RR-5020	498	103	71,2	21,5	3638	1099	733	1244	127
75	156	RR-756	718	156	102,6	31,4	1601	490	347	503	146
	333	RR-7513	718	156	102,6	31,4	3417	1046	525	858	146
95	168	RR-1006	933	435	133,3	62,2	2238	1045	357	525	177
	333	RR-10013	933	435	133,3	62,2	4439	2071	524	857	177
	460	RR-10018	933	435	133,3	62,2	6132	2861	687	1147	177
140	57	RR-1502	1386	668	198,1	95,4	1129	544	183	240	203
	156	RR-1506	1386	668	198,1	95,4	3090	1488	385	541	203
	333	RR-15013	1386	668	198,1	95,4	6597	3177	582	915	203
	815	RR-15032	1386	668	198,1	95,4	16145	7775	1116	1931	203
200	152	RR-2006	1995	1017	285,0	145,3	4332	2209	430	582	247
	330	RR-20013	1995	1017	285,0	145,3	9405	4795	608	938	247
	457	RR-20018	1995	1017	285,0	145,3	13025	6640	765	1222	247
	610	RR-20024	1995	1017	285,0	145,3	17385	8863	917	1527	247
	914	RR-20036	1995	1017	285,0	145,3	26049	13280	1222	2136	247
	1219	RR-20048	1995	1017	285,0	145,3	34741	17712	1527	2746	247
325	153	RR-3006	3201	1703	457,3	243,2	6997	3721	485	638	311
	305	RR-30012	3201	1703	457,3	243,2	13947	7418	638	943	311
	457	RR-30018	3201	1703	457,3	243,2	20889	11114	790	1247	311
	609	RR-30024	3201	1703	457,3	243,2	27850	14811	943	1552	311
	915	RR-30036	3201	1703	457,3	243,2	41843	22253	1247	2162	311
	1219	RR-30048	3201	1703	457,3	243,2	55745	29646	1552	2771	311
440	152	RR-4006	4292	2297	613,1	328,1	9319	4987	538	690	358
	305	RR-40012	4292	2297	613,1	328,1	18700	10007	690	995	358
	457	RR-40018	4292	2297	613,1	328,1	28018	14995	843	1300	358
	610	RR-40024	4292	2297	613,1	328,1	37400	20014	995	1605	358
	914	RR-40036	4292	2297	613,1	328,1	56037	29988	1300	2214	358
	1219	RR-40048	4292	2297	613,1	328,1	74737	39996	1605	2824	358
520	153	RR-5006	5108	2838	729,7	405,4	11164	6203	577	730	397
	305	RR-50012	5108	2838	729,7	405,4	22256	12365	730	1035	397
	457	RR-50018	5108	2838	729,7	405,4	33347	18526	882	1339	397
	609	RR-50024	5108	2838	729,7	405,4	44440	24689	1035	1644	397
	915	RR-50036	5108	2838	729,7	405,4	66768	36973	1339	2254	397
	1219	RR-50048	5108	2838	729,7	405,4	88951	49418	1644	2863	397

* For RR-1010 and RR-1012: N = 32 mm; for RR-308 and RR-3014: N = 55 mm.

Double-Acting Long Stroke Cylinders

Capacity:
10 - 520 ton

Stroke:
57 - 1219 mm

Maximum Operating Pressure:
700 bar

RR Series



Cyl. Bore Dia. E (mm)	Plgr. Dia. F (mm)	Base to Adv. Port H (mm)	Top to Ret. Port I (mm)	Saddle Dia. J (mm)	Saddle Protr. fr. Plgr. K (mm)	Plunger Internal Thread O	Plunger Thread Length P (mm)	Base Mounting Holes: Bolt Circle U (mm)	Base Mounting Holes: Thread V	Base Mounting Holes: Thread Depth Z (mm)	Collar Thread W	Collar Thread Length X (mm)	(kg)	Model Number
42,9	34,9	36	57	35	6	1"- 8	25	–	–	–	2¼"- 14	26	12	**RR-1010***
42,9	34,9	36	57	35	6	1"- 8	25	–	–	–	2¼"- 14	26	14	**RR-1012***
73,2	54,1	39	81	50	10	1½"- 16	25	–	–	–	3 5/16"- 12	49	18	**RR-308***
73,2	54,1	39	81	50	10	1½"- 16	25	–	–	–	3 5/16"- 12	49	29	**RR-3014***
95,2	79,5	28	76	71	2	1"- 12	25	–	–	–	5"- 12	44	30	**RR-506**
95,2	79,5	28	76	71	2	1"- 12	25	–	–	–	5"- 12	44	52	**RR-5013**
95,2	79,5	57	76	71	2	1"- 12	25	76	½"- 13	25	5"- 12	44	68	**RR-5020**
114,3	95,2	30	76	71	6	1"- 12	38	–	–	–	5¾"- 12	38	41	**RR-756**
114,3	95,2	30	81	71	6	1"- 12	38	–	–	–	5¾"- 12	38	68	**RR-7513**
130,3	95,2	38	71	76	3	1¾"- 12	35	139	¾"- 10	25	6 7/8"- 12	50	61	**RR-1006**
130,3	95,2	38	71	76	3	1¾"- 12	35	139	¾"- 10	25	6 7/8"- 12	50	93	**RR-10013**
130,3	95,2	41	92	76	3	1¾"- 12	35	139	¾"- 10	25	6 7/8"- 12	50	117	**RR-10018**
158,8	114,3	22	66	95	19	–	–	–	–	–	–	–	49	**RR-1502**
158,8	114,3	49	84	114	19	3 3/8"- 16	35	158	¾"- 16	28	8"- 12	55	93	**RR-1506**
158,8	114,3	49	84	114	19	3 3/8"- 16	35	158	¾"- 16	28	8"- 12	55	124	**RR-15013**
158,8	114,3	76	88	114	19	3 3/8"- 16	35	–	–	–	8"- 12	55	238	**RR-15032**
190,5	133,4	57	96	133	22	–	–	127	1"- 8	25	–	–	147	**RR-2006**
190,5	133,4	57	96	133	22	2½"- 12	63	127	1"- 8	25	9¾"- 12	54	199	**RR-20013**
190,5	133,4	85	101	133	22	2½"- 12	63	127	1"- 8	25	9¾"- 12	54	204	**RR-20018**
190,5	133,4	85	101	133	22	2½"- 12	63	127	1"- 8	25	9¾"- 12	54	279	**RR-20024**
190,5	133,4	85	101	133	22	2½"- 12	63	127	1"- 8	25	9¾"- 12	54	383	**RR-20036**
190,5	133,4	85	101	133	22	2½"- 12	63	127	1"- 8	25	9¾"- 12	54	483	**RR-20048**
241,3	165,1	88	114	165	28	2½"- 12	82	158	1¼"- 7	44	12¼"- 12	58	200	**RR-3006**
241,3	165,1	88	114	165	28	2½"- 12	82	158	1¼"- 7	44	12¼"- 12	58	312	**RR-30012**
241,3	165,1	88	114	165	28	2½"- 12	82	158	1¼"- 7	44	12¼"- 12	58	385	**RR-30018**
241,3	165,1	88	114	165	28	2½"- 12	82	158	1¼"- 7	44	12¼"- 12	58	469	**RR-30024**
241,3	165,1	88	114	165	28	2½"- 12	82	158	1¼"- 7	44	12¼"- 12	58	628	**RR-30036**
241,3	165,1	88	114	165	28	2½"- 12	82	158	1¼"- 7	44	12¼"- 12	58	780	**RR-30048**
279,4	190,5	108	133	190	28	3"- 12	95	203	1½"- 6	50	14 1/8"- 8	65	303	**RR-4006**
279,4	190,5	108	133	190	28	3"- 12	95	203	1½"- 6	50	14 1/8"- 8	65	399	**RR-40012**
279,4	190,5	108	133	190	28	3"- 12	95	203	1½"- 6	50	14 1/8"- 8	65	453	**RR-40018**
279,4	190,5	108	133	190	28	3"- 12	95	203	1½"- 6	50	14 1/8"- 8	65	597	**RR-40024**
279,4	190,5	108	133	190	28	3"- 12	95	203	1½"- 6	50	14 1/8"- 8	65	792	**RR-40036**
279,4	190,5	108	133	190	28	3"- 12	95	203	1½"- 6	50	14 1/8"- 8	65	980	**RR-40048**
304,8	203,2	120	152	203	28	3¼"- 12	108	203	1¾"- 5	57	15 5/8"- 8	79	432	**RR-5006**
304,8	203,2	120	152	203	28	3¼"- 12	108	203	1¾"- 5	57	15 5/8"- 8	79	589	**RR-50012**
304,8	203,2	120	152	203	28	3¼"- 12	108	203	1¾"- 5	57	15 5/8"- 8	79	680	**RR-50018**
304,8	203,2	120	152	203	28	3¼"- 12	108	203	1¾"- 5	57	15 5/8"- 8	79	816	**RR-50024**
304,8	203,2	120	152	203	28	3¼"- 12	108	203	1¾"- 5	57	15 5/8"- 8	79	1002	**RR-50036**
304,8	203,2	120	152	203	28	3¼"- 12	108	203	1¾"- 5	57	15 5/8"- 8	79	1224	**RR-50048**

▼ HCL-2006, HCG-2002, HCR-2006



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
- 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!

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)]**

▼ *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.*



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

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

HCG, HCR, HCL-Series Cylinders
- 50 - 1000 ton lifting capacity
- 50 - 300 mm 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.

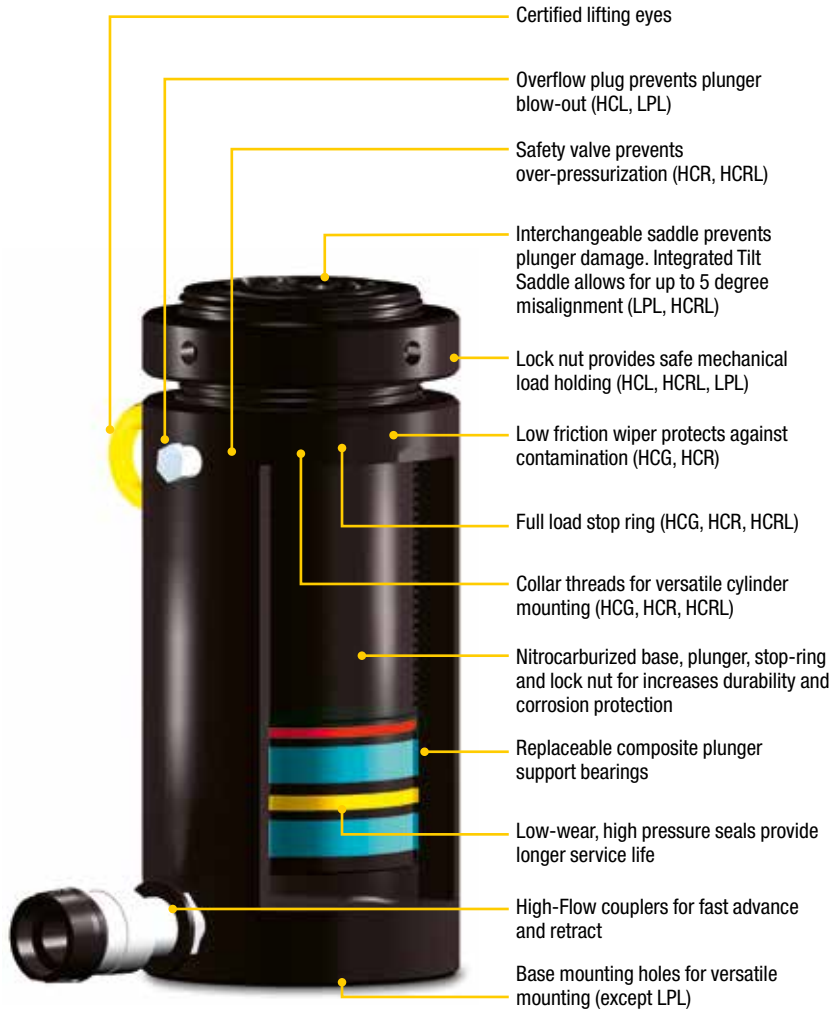
HCL-Series - lock nut, single-acting
- gravity return
- lock nut for mechanical load holding
- overflow port to prevent plunger blow out
- designed to withstand 10% side-load up to 90% of maximum stroke.

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 ton lifting capacity
- 150 - 300 mm stroke

LPL-Series - lock nut, low height, single-acting (see page 28)
- 60 - 500 ton lifting capacity;
- 45 - 50 mm 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 73 for more information on our pump offering.

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HCG HCR HCL HCRL Series



Capacity:
50 - 1000 ton

Stroke:
50 - 300 mm

Maximum Operating Pressure:
700 bar



Assisted Return Pumps
Enerpac HCG, HCL and LPL-Series cylinders are hydraulic advance and gravity return. To improve productivity and plunger retraction Enerpac offers assisted return on ZU4 and ZE-Series pumps featuring Enerpac Venturi valve technology, specifically to facilitate the faster return of single-acting, spring and gravity return cylinders. 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.

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Synchronous Lifting Systems
Pumps for multiple lift point capabilities. The economical **EVOB-Series** for basic applications and the multi-functional **EVO-Series** lifting system.

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Enerpac High Tonnage Cylinders

ENERPAC



QUICK SELECTION

Cylinder Capacity ton	Stroke (mm)	Maximum Cylinder Capacity at 700 bar ton (kN)	HCG-Series Model Number Single-Acting Page: 46	HCG-Series Collapsed Height (mm)	HCR-Series Model Number Double-Acting Page: 50	HCR-Series Collapsed Height (mm)	HCL-Series Model Number Single-Acting With Lock Nut Page: 54	HCL-Series Collapsed Height (mm)	HCRL-Series * Model Number Double-Acting With Lock Nut Page: 58	HCRL-Series * Collapsed Height (mm)
50	50	56 (550)	HCG-502	183	HCR-502	183	HCL-502	164	–	–
	100		HCG-504	233	HCR-504	233	HCL-504	214	–	–
	150		HCG-506	283	HCR-506	283	HCL-506	264	HCRL-506	310
	200		HCG-508	346	HCR-508	346	HCL-508	314	HCRL-508	377
	250		HCG-5010	396	HCR-5010	396	HCL-5010	364	HCRL-5010	427
	300		HCG-5012	446	HCR-5012	446	HCL-5012	414	HCRL-5012	477
100	50	102 (1002)	HCG-1002	202	HCR-1002	202	HCL-1002	187	–	–
	100		HCG-1004	252	HCR-1004	252	HCL-1004	237	–	–
	150		HCG-1006	302	HCR-1006	302	HCL-1006	287	HCRL-1006	346
	200		HCG-1008	379	HCR-1008	379	HCL-1008	337	HCRL-1008	421
	250		HCG-10010	429	HCR-10010	429	HCL-10010	387	HCRL-10010	471
	300		HCG-10012	479	HCR-10012	479	HCL-10012	437	HCRL-10012	521
150	50	153 (1497)	HCG-1502	220	HCR-1502	220	HCL-1502	209	–	–
	100		HCG-1504	270	HCR-1504	270	HCL-1504	259	–	–
	150		HCG-1506	320	HCR-1506	320	HCL-1506	309	HCRL-1506	359
	200		HCG-1508	397	HCR-1508	397	HCL-1508	359	HCRL-1508	434
	250		HCG-15010	447	HCR-15010	447	HCL-15010	409	HCRL-15010	484
	300		HCG-15012	497	HCR-15012	497	HCL-15012	459	HCRL-15012	534
200	50	202 (1985)	HCG-2002	231	HCR-2002	231	HCL-2002	238	–	–
	100		HCG-2004	281	HCR-2004	281	HCL-2004	288	–	–
	150		HCG-2006	331	HCR-2006	331	HCL-2006	338	HCRL-2006	399
	200		HCG-2008	408	HCR-2008	408	HCL-2008	388	HCRL-2008	469
	250		HCG-20010	458	HCR-20010	458	HCL-20010	438	HCRL-20010	519
	300		HCG-20012	508	HCR-20012	508	HCL-20012	488	HCRL-20012	569
250	50	259 (2541)	HCG-2502	241	HCR-2502	241	HCL-2502	249	–	–
	100		HCG-2504	291	HCR-2504	291	HCL-2504	299	–	–
	150		HCG-2506	341	HCR-2506	341	HCL-2506	349	HCRL-2506	416
	200		HCG-2508	431	HCR-2508	431	HCL-2508	399	HCRL-2508	491
	250		HCG-25010	481	HCR-25010	481	HCL-25010	449	HCRL-25010	541
	300		HCG-25012	531	HCR-25012	531	HCL-25012	499	HCRL-25012	591
300	50	310 (3036)	HCG-3002	296	HCR-3002	296	HCL-3002	278	–	–
	100		HCG-3004	346	HCR-3004	346	HCL-3004	328	–	–
	150		HCG-3006	396	HCR-3006	396	HCL-3006	378	HCRL-3006	421
	200		HCG-3008	446	HCR-3008	446	HCL-3008	428	HCRL-3008	496
	250		HCG-30010	496	HCR-30010	496	HCL-30010	478	HCRL-30010	546
	300		HCG-30012	546	HCR-30012	546	HCL-30012	528	HCRL-30012	596

***** See page 58 for HCRL-cylinder maximum capacity.

Enerpac High Tonnage Cylinders

Capacity:
50 - 1000 ton

Stroke:
50 - 300 mm

Maximum Operating Pressure:
700 bar

HCG
HCR
HCL
HCRL
Series



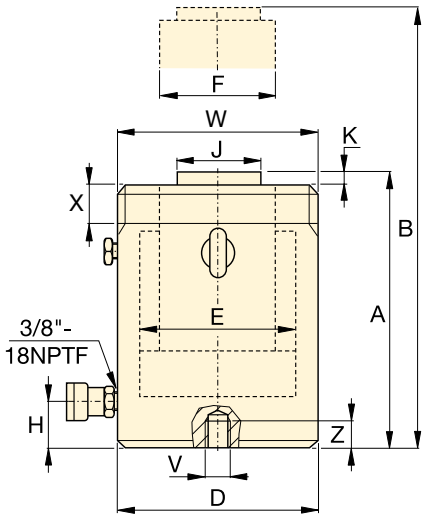


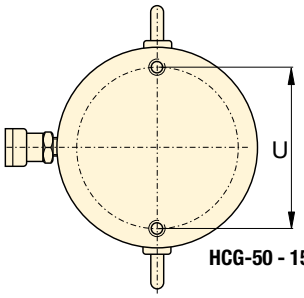




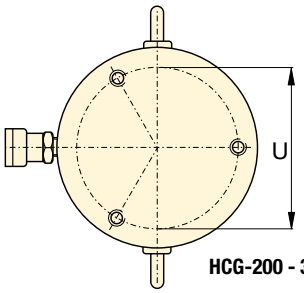
QUICK SELECTION

Cylinder Capacity ton	Stroke (mm)	Maximum Cylinder Capacity at 700 bar ton (kN)	HCG-Series Model Number Single-Acting Page: 48	HCG-Series Collapsed Height (mm)	HCR-Series Model Number Double-Acting Page: 52	HCR-Series Collapsed Height (mm)	HCL-Series Model Number Single-Acting With Lock Nut Page: 56	HCL-Series Collapsed Height (mm)
400	50	409 (4008)	HCG-4002	321	HCR-4002	321	HCL-4002	317
	100		HCG-4004	371	HCR-4004	371	HCL-4004	367
	150		HCG-4006	421	HCR-4006	421	HCL-4006	417
	200		HCG-4008	471	HCR-4008	471	HCL-4008	467
	250		HCG-40010	521	HCR-40010	521	HCL-40010	517
	300		HCG-40012	571	HCR-40012	571	HCL-40012	567
500	50	522 (5114)	HCG-5002	344	HCR-5002	344	HCL-5002	357
	100		HCG-5004	394	HCR-5004	394	HCL-5004	407
	150		HCG-5006	444	HCR-5006	444	HCL-5006	457
	200		HCG-5008	494	HCR-5008	494	HCL-5008	507
	250		HCG-50010	544	HCR-50010	544	HCL-50010	557
	300		HCG-50012	594	HCR-50012	594	HCL-50012	607
600	50	611 (5987)	HCG-6002	352	HCR-6002	352	HCL-6002	380
	100		HCG-6004	402	HCR-6004	402	HCL-6004	430
	150		HCG-6006	452	HCR-6006	452	HCL-6006	480
	200		HCG-6008	502	HCR-6008	502	HCL-6008	530
	250		HCG-60010	552	HCR-60010	552	HCL-60010	580
	300		HCG-60012	602	HCR-60012	602	HCL-60012	630
800	50	831 (8149)	HCG-8002	404	HCR-8002	404	HCL-8002	430
	100		HCG-8004	454	HCR-8004	454	HCL-8004	480
	150		HCG-8006	504	HCR-8006	504	HCL-8006	530
	200		HCG-8008	554	HCR-8008	554	HCL-8008	580
	250		HCG-80010	604	HCR-80010	604	HCL-80010	630
	300		HCG-80012	654	HCR-80012	654	HCL-80012	680
1000	50	1085 (10.644)	HCG-10002	442	HCR-10002	442	HCL-10002	484
	100		HCG-10004	492	HCR-10004	492	HCL-10004	534
	150		HCG-10006	542	HCR-10006	542	HCL-10006	584
	200		HCG-10008	592	HCR-10008	592	HCL-10008	634
	250		HCG-100010	642	HCR-100010	642	HCL-100010	684
	300		HCG-100012	692	HCR-100012	692	HCL-100012	734





HCG-50 - 150 ton



HCG-200 - 300 ton

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 ton models. Collar thread is optional on 300 ton models and higher.**

SELECTION CHART 50 - 300 TON HCG-MODELS

For 400 - 1000 ton models, see pages 48-49.
For full product features see pages 42-43.

Cylinder Capacity ton	Stroke (mm)	Model Number	Maximum Cylinder Capacity at 700 bar ton (kN)	Cylinder Efective Area (cm^2)	Oil Capacity (cm^3)	Collapsed Height A (mm)
50	50	**HCG-502**	56 (550)	78,5	393	183
	100	**HCG-504**			785	233
	150	**HCG-506** [1)]			1178	283
	200	**HCG-508**			1571	346
	250	**HCG-5010**			1963	396
	300	**HCG-5012** [1)]			2356	446
100	50	**HCG-1002**	102 (1002)	143,1	716	202
	100	**HCG-1004**			1431	252
	150	**HCG-1006**			2147	302
	200	**HCG-1008**			2863	379
	250	**HCG-10010**			3578	429
	300	**HCG-10012**			4294	479
150	50	**HCG-1502**	153 (1497)	213,8	1069	220
	100	**HCG-1504**			2138	270
	150	**HCG-1506**			3207	320
	200	**HCG-1508**			4276	397
	250	**HCG-15010**			5346	447
	300	**HCG-15012**			6415	497
200	50	**HCG-2002**	202 (1985)	283,5	1418	231
	100	**HCG-2004**			2835	281
	150	**HCG-2006**			4253	331
	200	**HCG-2008**			5671	408
	250	**HCG-20010**			7088	458
	300	**HCG-20012**			8506	508
250	50	**HCG-2502**	259 (2541)	363,1	1815	241
	100	**HCG-2504**			3631	291
	150	**HCG-2506**			5446	341
	200	**HCG-2508**			7261	431
	250	**HCG-25010**			9076	481
	300	**HCG-25012**			10.892	531
300	50	**HCG-3002**	310 (3036)	433,7	2169	296
	100	**HCG-3004**			4337	346
	150	**HCG-3006**			6506	396
	200	**HCG-3008**			8675	446
	250	**HCG-30010**			10.843	496
	300	**HCG-30012**			13.012	546

[1)] HCG-506 and HCG-5012: 7% side-load of maximum capacity.

Collar Thread * (mm)		
Model / Capacity ton	Thread Size W	Thread Length X
HCG-50	M130 x 2	30
HCG-100	M175 x 3	46
HCG-150	M215 x 3	55
HCG-200	M250 x 3	63
HCG-250	M280 x 3	64
HCG-300 *	M305 x 3	73

* Standard collar thread up to 250 ton models. Collar thread is optional on 300 ton 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 (mm)					
Model / Capacity ton	Bolt Circle U	Thread Size V	Minimum Thread Depth Z	Number of Holes	Angle from Coupler
HCG-50	105	M12 x 1,75	22	2	90°
HCG-100	150	M12 x 1,75	22	2	90°
HCG-150	185	M12 x 1,75	22	2	90°
HCG-200	215	M12 x 1,75	22	3	60°
HCG-250	245	M12 x 1,75	22	3	60°
HCG-300	260	M16 x 2	25	3	60°

Single-Acting, High Tonnage Cylinders

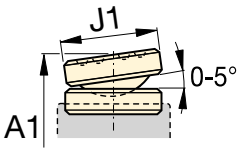
Capacity:
50 - 300 ton

Stroke:
50 - 300 mm

Maximum Operating Pressure:
700 bar

HCG Series





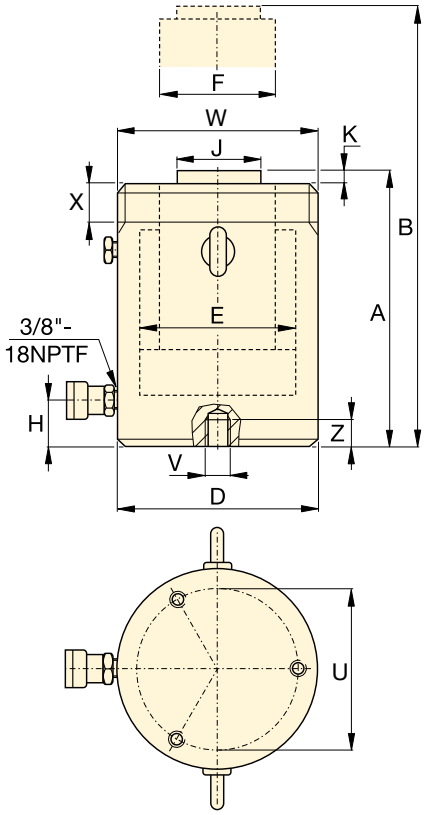
CATS-Series Tilt Saddle

Extended Height B (mm)	Outside Diameter D (mm)	Cylinder Bore Diameter E (mm)	Plunger Diameter F (mm)	Base to Advance Port H (mm)	Standard Saddle Diameter J (mm)	Saddle Protrusion from Plunger K (mm)	(kg)	Model Number	Optional Tilt Saddle		
									Saddle Diameter J1 (mm)	Collapsed Height [2] A1 (mm)	Saddle Model Number
233	130	100	70	38	50	3	17	HCG-502	71	197	CATS-50
333							20	HCG-504		247	
433							24	HCG-506 [1]		297	
546							29	HCG-508		360	
646							32	HCG-5010		410	
746							36	HCG-5012 [1]		460	
252	175	135	95	38	75	3	33	HCG-1002	71	212	CATS-101
352							40	HCG-1004		262	
452							46	HCG-1006		312	
579							58	HCG-1008		389	
679							65	HCG-10010		439	
779							71	HCG-10012		489	
270	215	165	120	41	94	3	56	HCG-1502	97	239	CATS-150
370							66	HCG-1504		289	
470							76	HCG-1506		339	
597							94	HCG-1508		416	
697							104	HCG-15010		466	
797							115	HCG-15012		516	
281	250	190	140	47	113	3	81	HCG-2002	126	249	CATS-200
381							95	HCG-2004		299	
481							109	HCG-2006		349	
608							136	HCG-2008		426	
708							150	HCG-20010		476	
808							164	HCG-20012		526	
291	280	215	170	53	140	4	107	HCG-2502	175	280	CATS-300
391							125	HCG-2504		330	
491							144	HCG-2506		380	
631							182	HCG-2508		470	
731							201	HCG-25010		520	
831							219	HCG-25012		570	
346	305	235	200	58	140	4	158	HCG-3002	175	335	CATS-300
446							182	HCG-3004		385	
546							206	HCG-3006		435	
646							230	HCG-3008		485	
746							254	HCG-30010		535	
846							278	HCG-30012		585	

[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 ton models and higher capacities.**



SELECTION CHART400 - 1000 TON HCG-MODELS

For 50 - 300 ton models, see pages 46-47.
For full product features see pages 42-43.

Cylinder Capacity ton	Stroke (mm)	Model Number	Maximum Cylinder Capacity at 700 bar ton (kN)	Cylinder Efective Area (cm^2)	Oil Capacity (cm^3)	Collapsed Height A (mm)
400	50	**HCG-4002**	409 (4008)	572,6	2863	321
	100	**HCG-4004**			5726	371
	150	**HCG-4006**			8588	421
	200	**HCG-4008**			11.451	471
	250	**HCG-40010**			14.314	521
	300	**HCG-40012**			17.177	571
500	50	**HCG-5002**	522 (5114)	730,6	3653	344
	100	**HCG-5004**			7306	394
	150	**HCG-5006**			10.959	444
	200	**HCG-5008**			14.612	494
	250	**HCG-50010**			18.265	544
	300	**HCG-50012**			21.918	594
600	50	**HCG-6002**	611 (5987)	855,3	4276	352
	100	**HCG-6004**			8553	402
	150	**HCG-6006**			12.829	452
	200	**HCG-6008**			17.106	502
	250	**HCG-60010**			21.382	552
	300	**HCG-60012**			25.659	602
800	50	**HCG-8002**	831 (8149)	1164,2	5821	404
	100	**HCG-8004**			11.642	454
	150	**HCG-8006**			17.462	504
	200	**HCG-8008**			23.283	554
	250	**HCG-80010**			29.104	604
	300	**HCG-80012**			34.925	654
1000	50	**HCG-10002**	1085 (10.644)	1520,5	7603	442
	100	**HCG-10004**			15.205	492
	150	**HCG-10006**			22.808	542
	200	**HCG-10008**			30.411	592
	250	**HCG-100010**			38.013	642
	300	**HCG-100012**			45.616	692

Optional Collar Thread (mm)		
Model / Capacity ton	Thread Size W	Thread Length X
HCG-400	M350 x 3	83
HCG-500	M400 x 4	90
HCG-600	M430 x 4	100
HCG-800	M505 x 5	122
HCG-1000	M570 x 5	137

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 (mm)					
Model / Capacity ton	Bolt Circle U	Thread Size V	Minimum Thread Depth Z	Number of Holes	Angle from Coupler
HCG-400	300	M16 x 2	25	3	60˚
HCG-500	340	M24 x 3	36	3	60˚
HCG-600	370	M24 x 3	36	3	60˚
HCG-800	440	M24 x 3	36	3	60˚
HCG-1000	500	M24 x 3	36	3	60˚



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

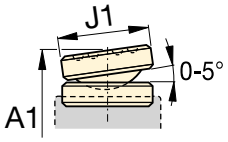
HCG Series



Capacity:
400 - 1000 ton

Stroke:
50 - 300 mm

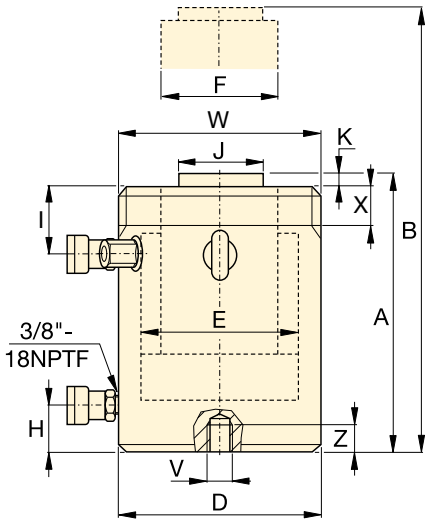
Maximum Operating Pressure:
700 bar

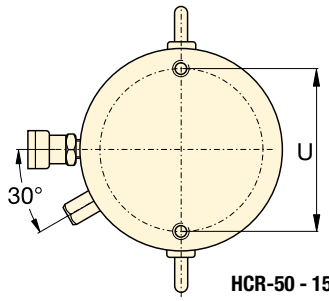


CATS-Series Tilt Saddle

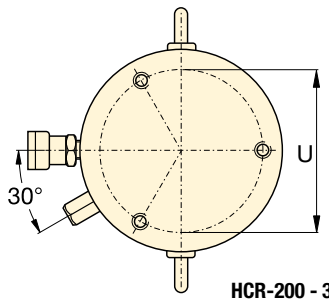
Extended Height B (mm)	Outside Diameter D (mm)	Cylinder Bore Diameter E (mm)	Plunger Diameter F (mm)	Base to Advance Port H (mm)	Standard Saddle Diameter J (mm)	Saddle Protrusion from Plunger K (mm)	(kg)	Model Number	Optional Tilt Saddle: Saddle Diameter J1 (mm)	Optional Tilt Saddle: Collapsed Height * A1 (mm)	Optional Tilt Saddle: Saddle Model Number
371	350	270	220	74	159	4	227	**HCG-4002**	210	369	**CATS-400**
471							257	**HCG-4004**		419	
571							287	**HCG-4006**		469	
671							317	**HCG-4008**		519	
771							347	**HCG-40010**		569	
871							378	**HCG-40012**		619	
394	400	305	250	79	179	4	319	**HCG-5002**	230	392	**CATS-500**
494							359	**HCG-5004**		442	
594							399	**HCG-5006**		492	
694							439	**HCG-5008**		542	
794							479	**HCG-50010**		592	
894							519	**HCG-50012**		642	
402	430	330	270	85	194	4	378	**HCG-6002**	250	405	**CATS-600**
502							424	**HCG-6004**		455	
602							470	**HCG-6006**		505	
702							516	**HCG-6008**		555	
802							562	**HCG-60010**		605	
902							608	**HCG-60012**		655	
454	505	385	320	100	224	4	606	**HCG-8002**	275	461	**CATS-800**
554							671	**HCG-8004**		511	
654							735	**HCG-8006**		561	
754							800	**HCG-8008**		611	
854							864	**HCG-80010**		661	
954							929	**HCG-80012**		711	
492	570	440	340	114	249	4	840	**HCG-10002**	300	519	**CATS-1000**
592							916	**HCG-10004**		569	
692							992	**HCG-10006**		619	
792							1068	**HCG-10008**		669	
892							1145	**HCG-100010**		719	
992							1221	**HCG-100012**		769	

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





HCR-50 - 150 ton



HCR-200 - 300 ton

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 ton models. Collar thread is optional on 300 ton models and higher.**

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

For 400 - 1000 ton models, see pages 52-53.
For full product features see pages 42-43.

Cylinder Capacity ton	Stroke (mm)	Model Number	Maximum Cylinder Capacity at 700 bar ton (kN)	Cylinder Efective Area (cm^2)	Oil Capacity (cm^3)	Collapsed Height A (mm)
50	50	**HCR-502**	56 (550)	78,5	393	183
	100	**HCR-504**			785	233
	150	**HCR-506 [1)]**			1178	283
	200	**HCR-508**			1571	346
	250	**HCR-5010**			1963	396
	300	**HCR-5012 [1)]**			2356	446
100	50	**HCR-1002**	102 (1002)	143,1	716	202
	100	**HCR-1004**			1431	252
	150	**HCR-1006**			2147	302
	200	**HCR-1008**			2863	379
	250	**HCR-10010**			3578	429
	300	**HCR-10012**			4294	479
150	50	**HCR-1502**	153 (1497)	213,8	1069	220
	100	**HCR-1504**			2138	270
	150	**HCR-1506**			3207	320
	200	**HCR-1508**			4276	397
	250	**HCR-15010**			5346	447
	300	**HCR-15012**			6415	497
200	50	**HCR-2002**	202 (1985)	283,5	1418	231
	100	**HCR-2004**			2835	281
	150	**HCR-2006**			4253	331
	200	**HCR-2008**			5671	408
	250	**HCR-20010**			7088	458
	300	**HCR-20012**			8506	508
250	50	**HCR-2502**	259 (2541)	363,1	1815	241
	100	**HCR-2504**			3631	291
	150	**HCR-2506**			5446	341
	200	**HCR-2508**			7261	431
	250	**HCR-25010**			9076	481
	300	**HCR-25012**			10.892	531
300	50	**HCR-3002**	310 (3036)	433,7	2169	296
	100	**HCR-3004**			4337	346
	150	**HCR-3006**			6506	396
	200	**HCR-3008**			8675	446
	250	**HCR-30010**			10.843	496
	300	**HCR-30012**			13.012	546

[1)] HCR-506 and HCR-5012: 7% side-load of maximum capacity.

Collar Thread * (mm)

Model / Capacity ton	Thread Size W	Thread Length X
HCR-50	M130 x 2	30
HCR-100	M175 x 3	46
HCR-150	M215 x 3	55
HCR-200	M250 x 3	63
HCR-250	M280 x 3	64
HCR-300 *	M305 x 3	73

* Standard collar thread up to 250 ton models. Collar thread is optional on 300 ton 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 (mm)

Model / Capacity ton	Bolt Circle U	Thread Size V	Minimum Thread Depth Z	Number of Holes	Angle from Coupler
HCR-50	105	M12 x 1,75	22	2	90°
HCR-100	150	M12 x 1,75	22	2	90°
HCR-150	185	M12 x 1,75	22	2	90°
HCR-200	215	M12 x 1,75	22	3	60°
HCR-250	245	M12 x 1,75	22	3	60°
HCR-300	260	M16 x 2	25	3	60°

Double-Acting, High Tonnage Cylinders

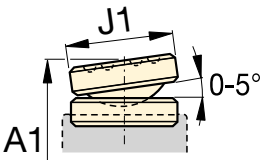
Capacity:
50 - 300 ton

Stroke:
50 - 300 mm

Maximum Operating Pressure:
700 bar

HCR Series





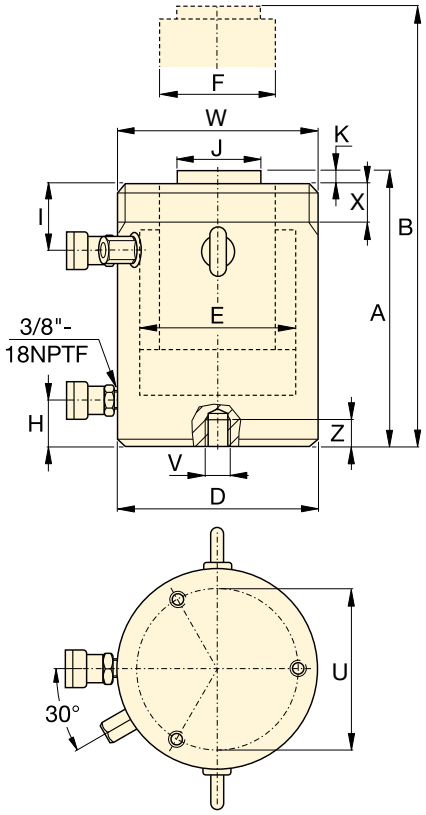
CATS-Series Tilt Saddle

Extended Height B (mm)	Outside Diameter D (mm)	Cylinder Bore Diameter E (mm)	Plunger Diameter F (mm)	Base to Advance Port H (mm)	Top to Retract Port I (mm)	Standard Saddle Diameter J (mm)	Saddle Protrusion from Plunger K (mm)	(kg)	Model Number	Optional Tilt Saddle		
										Saddle Diameter J1 (mm)	Collapsed Height [2] A1 (mm)	Saddle Model Number
233	130	100	70	38	45	50	3	17	HCR-502	71	197	CATS-50
333								21	HCR-504		247	
433								25	HCR-506 [1]		297	
546					55			31	HCR-508		360	
646								34	HCR-5010		410	
746								38	HCR-5012 [1]		460	
252	175	135	95	38	65	75	3	34	HCR-1002	71	212	CATS-101
352								41	HCR-1004		262	
452								48	HCR-1006		312	
579					80			59	HCR-1008		389	
679								66	HCR-10010		439	
779								73	HCR-10012		489	
270	215	165	120	41	70	94	3	56	HCR-1502	97	239	CATS-150
370								67	HCR-1504		289	
470								78	HCR-1506		339	
597					90			95	HCR-1508		416	
697								106	HCR-15010		466	
797								116	HCR-15012		516	
281	250	190	140	47	79	113	3	81	HCR-2002	126	249	CATS-200
381								96	HCR-2004		299	
481								111	HCR-2006		349	
608					97			139	HCR-2008		426	
708								153	HCR-20010		476	
808								168	HCR-20012		526	
291	280	215	170	53	79	140	4	107	HCR-2502	175	280	CATS-300
391								127	HCR-2504		330	
491								146	HCR-2506		380	
631					104			184	HCR-2508		470	
731								207	HCR-25010		520	
831								227	HCR-25012		570	
346	305	235	200	58	101	140	4	159	HCR-3002	175	335	CATS-300
446								183	HCR-3004		385	
546								208	HCR-3006		435	
646								232	HCR-3008		485	
746								257	HCR-30010		535	
846								281	HCR-30012		585	

[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 ton models and higher capacities.**



Optional Collar Thread (mm)

Model / Capacity ton	Thread Size W	Thread Length X
HCR-400	M350 x 3	83
HCR-500	M400 x 4	90
HCR-600	M430 x 4	100
HCR-800	M505 x 5	122
HCR-1000	M570 x 5	137

Collar thread is optional on 300 ton 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 (mm)

Model / Capacity ton	Bolt Circle U	Thread Size V	Minimum Thread Depth Z	Number of Holes	Angle from Coupler
HCR-400	300	M16 x 2	25	3	60°
HCR-500	340	M24 x 3	36	3	60°
HCR-600	370	M24 x 3	36	3	60°
HCR-800	440	M24 x 3	36	3	60°
HCR-1000	500	M24 x 3	36	3	60°

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

For 50 - 300 ton models, see pages 50-51.
For full product features see pages 42-43.

Cylinder Capacity ton	Stroke (mm)	Model Number	Maximum Cylinder Capacity at 700 bar ton (kN)	Cylinder Efective Area (cm^2)	Oil Capacity (cm^3)	Collapsed Height A (mm)
400	50	HCR-4002	409 (4008)	572,6	2863	321
	100	HCR-4004			5726	371
	150	HCR-4006			8588	421
	200	HCR-4008			11.451	471
	250	HCR-40010			14.314	521
	300	HCR-40012			17.177	571
500	50	HCR-5002	522 (5114)	730,6	3653	344
	100	HCR-5004			7306	394
	150	HCR-5006			10.959	444
	200	HCR-5008			14.612	494
	250	HCR-50010			18.265	544
	300	HCR-50012			21.918	594
600	50	HCR-6002	611 (5987)	855,3	4276	352
	100	HCR-6004			8553	402
	150	HCR-6006			12.829	452
	200	HCR-6008			17.106	502
	250	HCR-60010			21.382	552
	300	HCR-60012			25.659	602
800	50	HCR-8002	831 (8149)	1164,2	5821	404
	100	HCR-8004			11.642	454
	150	HCR-8006			17.462	504
	200	HCR-8008			23.283	554
	250	HCR-80010			29.104	604
	300	HCR-80012			34.925	654
1000	50	HCR-10002	1085 (10.644)	1520,5	7603	442
	100	HCR-10004			15.205	492
	150	HCR-10006			22.808	542
	200	HCR-10008			30.411	592
	250	HCR-100010			38.013	642
	300	HCR-100012			45.616	692



▲ *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.*

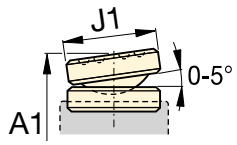
HCR Series



Capacity:
400 - 1000 ton

Stroke:
50 - 300 mm

Maximum Operating Pressure:
700 bar



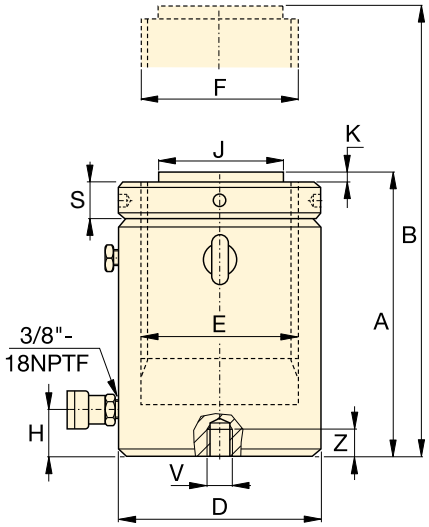
CATS-Series Tilt Saddle

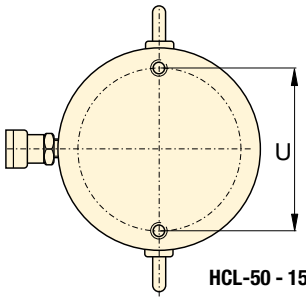
Extended Height B (mm)	Outside Diameter D (mm)	Cylinder Bore Diameter E (mm)	Plunger Diameter F (mm)	Base to Advance Port H (mm)	Top to Retract Port I (mm)	Standard Saddle Diameter J (mm)	Saddle Protrusion from Plunger K (mm)	(kg)	Model Number	Optional Tilt Saddle: Saddle Diameter J1 (mm)	Optional Tilt Saddle: Collapsed Height * A1 (mm)	Optional Tilt Saddle: Saddle Model Number
371	350	270	220	74	111	159	4	227	**HCR-4002**	210	369	**CATS-400**
471								258	**HCR-4004**		419	
571								289	**HCR-4006**		469	
671								321	**HCR-4008**		519	
771								352	**HCR-40010**		569	
871								383	**HCR-40012**		619	
394	400	305	250	79	121	179	4	320	**HCR-5002**	230	392	**CATS-500**
494								361	**HCR-5004**		442	
594								402	**HCR-5006**		492	
694								443	**HCR-5008**		542	
794								484	**HCR-50010**		592	
894								525	**HCR-50012**		642	
402	430	330	270	85	121	194	4	379	**HCR-6002**	250	405	**CATS-600**
502								427	**HCR-6004**		455	
602								474	**HCR-6006**		505	
702								521	**HCR-6008**		555	
802								568	**HCR-60010**		605	
902								615	**HCR-60012**		655	
454	505	385	320	100	143	224	4	608	**HCR-8002**	275	461	**CATS-800**
554								674	**HCR-8004**		511	
654								740	**HCR-8006**		561	
754								806	**HCR-8008**		611	
854								872	**HCR-80010**		661	
954								938	**HCR-80012**		711	
492	570	440	340	114	153	249	4	843	**HCR-10002**	300	519	**CATS-1000**
592								921	**HCR-10004**		569	
692								1000	**HCR-10006**		619	
792								1079	**HCR-10008**		669	
892								1158	**HCR-100010**		719	
992								1236	**HCR-100012**		769	

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

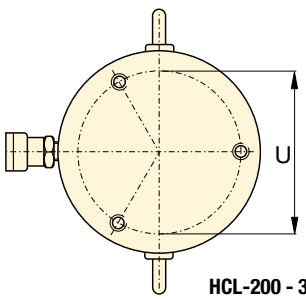
HCL-Series, Single-Acting, Gravity Return Cylinders

- **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.**





HCL-50 - 150 ton



HCL-200 - 300 ton

SELECTION CHART 50 - 300 TON HCL-MODELS

For 400 - 1000 ton models, see pages 56-57.

For full product features see pages 42-43.

Cylinder Capacity ton	Stroke (mm)	Model Number	Maximum Cylinder Capacity at 700 bar ton (kN)	Cylinder Efective Area (cm^2)	Oil Capacity (cm^3)	Collapsed Height A (mm)
50	50	**HCL-502**	56 (550)	78,5	393	164
	100	**HCL-504**			785	214
	150	**HCL-506**			1178	264
	200	**HCL-508**			1571	314
	250	**HCL-5010**			1963	364
	300	**HCL-5012**			2356	414
100	50	**HCL-1002**	102 (1002)	143,1	716	187
	100	**HCL-1004**			1431	237
	150	**HCL-1006**			2147	287
	200	**HCL-1008**			2863	337
	250	**HCL-10010**			3578	387
	300	**HCL-10012**			4294	437
150	50	**HCL-1502**	153 (1497)	213,8	1069	209
	100	**HCL-1504**			2138	259
	150	**HCL-1506**			3207	309
	200	**HCL-1508**			4276	359
	250	**HCL-15010**			5346	409
	300	**HCL-15012**			6415	459
200	50	**HCL-2002**	202 (1985)	283,5	1418	238
	100	**HCL-2004**			2835	288
	150	**HCL-2006**			4253	338
	200	**HCL-2008**			5671	388
	250	**HCL-20010**			7088	438
	300	**HCL-20012**			8506	488
250	50	**HCL-2502**	259 (2541)	363,1	1815	249
	100	**HCL-2504**			3631	299
	150	**HCL-2506**			5446	349
	200	**HCL-2508**			7261	399
	250	**HCL-25010**			9076	449
	300	**HCL-25012**			10.892	499
300	50	**HCL-3002**	310 (3036)	433,7	2169	278
	100	**HCL-3004**			4337	328
	150	**HCL-3006**			6506	378
	200	**HCL-3008**			8675	428
	250	**HCL-30010**			10.843	478
	300	**HCL-30012**			13.012	528

Base Mounting Holes (mm)					
Model / Capacity ton	Bolt Circle U	Thread Size V	Minimum Thread Depth Z	Number of Holes	Angle from Coupler
HCL-50	105	M8 x 1,25	10	2	90°
HCL-100	150	M12 x 1,75	17	2	90°
HCL-150	185	M12 x 1,75	22	2	90°
HCL-200	215	M12 x 1,75	22	3	60°
HCL-250	245	M12 x 1,75	22	3	60°
HCL-300	260	M16 x 2	25	3	60°

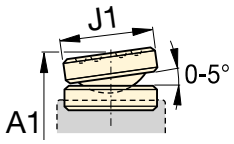
Capacity:
50 - 300 ton

Stroke:
50 - 300 mm

Maximum Operating Pressure:
700 bar

HCL Series





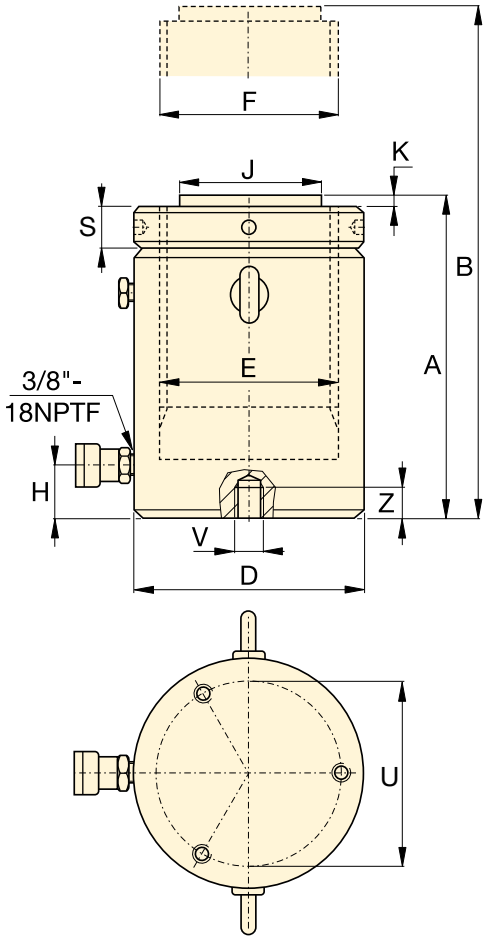
CATS-Series Tilt Saddle

Extended Height B (mm)	Outside Diameter D (mm)	Cylinder Bore Diameter E (mm)	Plunger Diameter (threaded) F (mm)	Base to Advance Port H (mm)	Standard Saddle Diameter J (mm)	Saddle Protrusion from Plunger K (mm)	Lock Nut Height S (mm)	(kg)	Model Number	Optional Tilt Saddle: Saddle Diameter J1 (mm)	Optional Tilt Saddle: Collapsed Height * A1 (mm)	Optional Tilt Saddle: Saddle Model Number
214	130	100	Tr 100 x 4	24	71	2	25	17	HCL-502	71	174	CATS-100
314								22	HCL-504		224	
414								27	HCL-506		274	
514								32	HCL-508		324	
614								38	HCL-5010		374	
714								43	HCL-5012		424	
237	175	135	Tr 135 x 6	33	71	2	33	35	HCL-1002	71	197	CATS-100
337								44	HCL-1004		247	
437								54	HCL-1006		297	
537								63	HCL-1008		347	
637								73	HCL-10010		397	
737								82	HCL-10012		447	
259	215	165	Tr 165 x 6	41	130	2	40	59	HCL-1502	126	225	CATS-201
359								73	HCL-1504		275	
459								87	HCL-1506		325	
559								102	HCL-1508		375	
659								116	HCL-15010		425	
759								130	HCL-15012		475	
288	250	190	Tr 190 x 6	47	130	2	45	85	HCL-2002	126	254	CATS-201
388								105	HCL-2004		304	
488								124	HCL-2006		354	
588								143	HCL-2008		404	
688								163	HCL-20010		454	
788								182	HCL-20012		504	
299	280	215	Tr 215 x 6	53	140	2	52	119	HCL-2502	175	288	CATS-300
399								143	HCL-2504		338	
499								167	HCL-2506		388	
599								192	HCL-2508		438	
699								216	HCL-25010		488	
799								240	HCL-25012		538	
328	305	235	Tr 235 x 6	58	140	2	56	158	HCL-3002	175	317	CATS-300
428								186	HCL-3004		367	
528								215	HCL-3006		417	
628								244	HCL-3008		467	
728								272	HCL-30010		517	
828								301	HCL-30012		567	

* 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 TON HCL-MODELS

For 50 - 300 ton models, see pages 54-55.
For full product features see pages 42-43.

Cylinder Capacity ton	Stroke (mm)	Model Number	Maximum Cylinder Capacity at 700 bar ton (kN)	Cylinder Efective Area (cm^2)	Oil Capacity (cm^3)	Collapsed Height A (mm)
400	50	HCL-4002	409 (4008)	572,6	2863	317
	100	HCL-4004			5726	367
	150	HCL-4006			8588	417
	200	HCL-4008			11.451	467
	250	HCL-40010			14.314	517
	300	HCL-40012			17.177	567
500	50	HCL-5002	522 (5114)	730,6	3653	357
	100	HCL-5004			7306	407
	150	HCL-5006			10.959	457
	200	HCL-5008			14.612	507
	250	HCL-50010			18.265	557
	300	HCL-50012			21.918	607
600	50	HCL-6002	611 (5987)	855,3	4276	380
	100	HCL-6004			8553	430
	150	HCL-6006			12.829	480
	200	HCL-6008			17.106	530
	250	HCL-60010			21.382	580
	300	HCL-60012			25.659	630
800	50	HCL-8002	831 (8149)	1164,2	5821	430
	100	HCL-8004			11.642	480
	150	HCL-8006			17.462	530
	200	HCL-8008			23.283	580
	250	HCL-80010			29.104	630
	300	HCL-80012			34.925	680
1000	50	HCL-10002	1085 (10.644)	1520,5	7603	484
	100	HCL-10004			15.205	534
	150	HCL-10006			22.808	584
	200	HCL-10008			30.411	634
	250	HCL-100010			38.013	684
	300	HCL-100012			45.616	734

Base Mounting Holes (mm)

Model / Capacity ton	Bolt Circle U	Thread Size V	Minimum Thread Depth Z	Number of Holes	Angle from Coupler
HCL-400	300	M16 x 2	25	3	60˚
HCL-500	340	M24 x 3	36	3	60˚
HCL-600	370	M24 x 3	36	3	60˚
HCL-800	440	M24 x 3	36	3	60˚
HCL-1000	500	M24 x 3	36	3	60˚



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

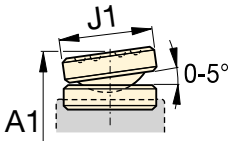
HCL Series



Capacity:
400 - 1000 ton

Stroke:
50 - 300 mm

Maximum Operating Pressure:
700 bar



CATS-Series Tilt Saddle

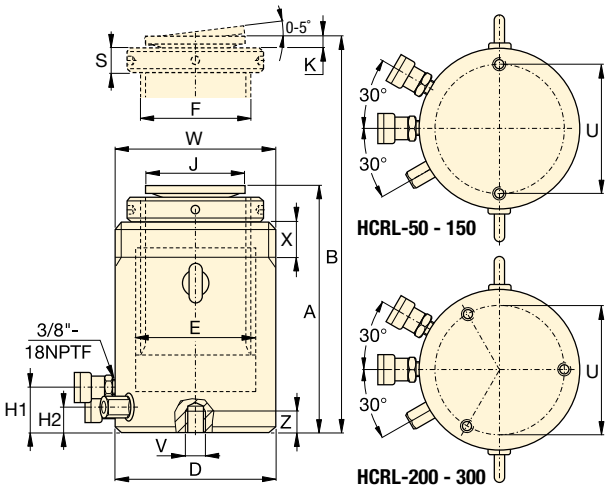
Extended Height B (mm)	Outside Diameter D (mm)	Cylinder Bore Diameter E (mm)	Plunger Diameter (threaded) F (mm)	Base to Advance Port H (mm)	Standard Saddle Diameter J (mm)	Saddle Protrusion from Plunger K (mm)	Lock Nut Height S (mm)	(kg)	Model Number	Optional Tilt Saddle: Saddle Diameter J1 (mm)	Optional Tilt Saddle: Collapsed Height * A1 (mm)	Optional Tilt Saddle: Model Number
367	350	270	Tr 270 x 6	67	159	5	65	236	**HCL-4002**	210	365	**CATS-400**
467								274	**HCL-4004**		415	
567								311	**HCL-4006**		465	
667								349	**HCL-4008**		515	
767								387	**HCL-40010**		565	
867								425	**HCL-40012**		615	
407	400	305	Tr 305 x 6	75	179	5	72	341	**HCL-5002**	230	405	**CATS-500**
507								390	**HCL-5004**		455	
607								439	**HCL-5006**		505	
707								489	**HCL-5008**		555	
807								538	**HCL-50010**		605	
907								587	**HCL-50012**		655	
430	430	330	Tr 330 x 6	81	194	5	80	427	**HCL-6002**	250	433	**CATS-600**
530								484	**HCL-6004**		483	
630								541	**HCL-6006**		533	
730								598	**HCL-6008**		583	
830								655	**HCL-60010**		633	
930								712	**HCL-60012**		683	
480	505	385	Tr 385 x 6	95	224	5	90	668	**HCL-8002**	275	487	**CATS-800**
580								746	**HCL-8004**		537	
680								825	**HCL-8006**		587	
780								904	**HCL-8008**		637	
880								982	**HCL-80010**		687	
980								1061	**HCL-80012**		737	
534	570	440	Tr 440 x 6	110	249	5	105	959	**HCL-10002**	300	561	**CATS-1000**
634								1059	**HCL-10004**		611	
734								1160	**HCL-10006**		661	
834								1260	**HCL-10008**		711	
934								1360	**HCL-100010**		761	
1034								1460	**HCL-100012**		811	

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

▼ **HCRL-2006, HCRL-506**



- **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 (mm)		
Model / Capacity ton	Thread Size W	Thread Length X
HCRL-50	M130 x 2	42
HCRL-100	M185 x 2	57
HCRL-150	M222 x 3	70
HCRL-200	M260 x 3	79
HCRL-250	M290 x 3	85
HCRL-300	M315 x 3	94

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

Base Mounting Holes (mm)			
Model / Capacity ton	Bolt Circle U	Thread Size V	Minimum Thread Depth Z
HCRL-50	105	M12 x 1,75	22
HCRL-100	150	M12 x 1,75	22
HCRL-150	185	M12 x 1,75	22
HCRL-200	215	M12 x 1,75	22
HCRL-250	245	M12 x 1,75	22
HCRL-300	260	M16 x 2	25

SELECTION CHART 50 - 300 TON HCRL-MODELS

For full product features see pages 42-43.

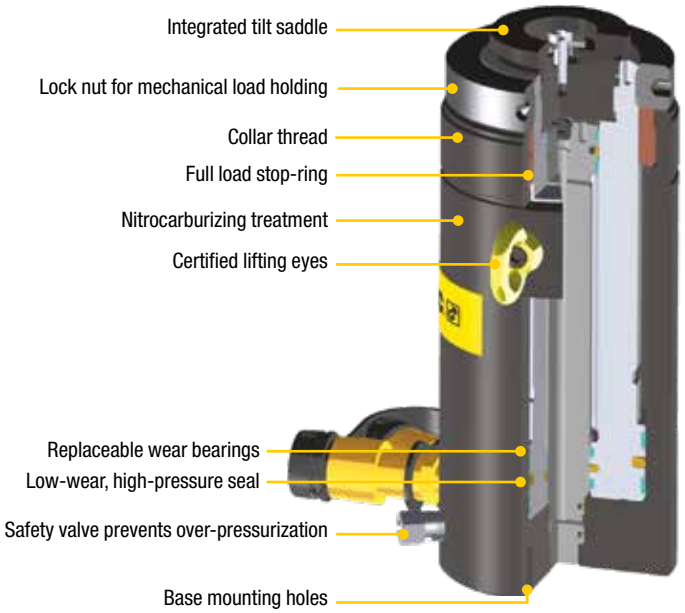
Cylinder Capacity * ton	**Stroke *** (mm)	**Model Number**	**Maximum Cylinder Capacity at 700 bar** ton (kN)	**Cylinder Effective Area** (cm^2)	**Oil Capacity** (cm^3)
50	150	**HCRL-506**	49 (479)	68,4	1025
	200	**HCRL-508**			1367
	250	**HCRL-5010**			1709
	300	**HCRL-5012**			2051
100	150	**HCRL-1006**	101 (990)	141,4	2121
	200	**HCRL-1008**			2827
	250	**HCRL-10010**			3534
	300	**HCRL-10012**			4241
150	150	**HCRL-1506**	153 (1501)	214,4	3216
	200	**HCRL-1508**			4288
	250	**HCRL-15010**			5360
	300	**HCRL-15012**			6432
200	150	**HCRL-2006**	204 (2001)	285,9	4288
	200	**HCRL-2008**			5718
	250	**HCRL-20010**			7147
	300	**HCRL-20012**			8577
250	150	**HCRL-2506**	251 (2463)	351,9	5278
	200	**HCRL-2508**			7037
	250	**HCRL-25010**			8796
	300	**HCRL-25012**			10.556
300	150	**HCRL-3006**	303 (2969)	424,1	6362
	200	**HCRL-3008**			8482
	250	**HCRL-30010**			10.603
	300	**HCRL-30012**			12.723

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



HCRL Series



Capacity:
50 - 300 ton

Stroke:
150 - 300 mm

Maximum Operating Pressure:
700 bar



Synchronous Lifting Systems

Pumps for multiple lift-point capabilities. The economical **EVOB-Series** for basic applications and the multi-functional **EVO-Series** lifting system.

Page: 282

Collapsed Height A (mm)	Extended Height B (mm)	Outside Diameter D (mm)	Cylinder Bore Diameter E (mm)	Plunger Diameter (threaded) F (mm)	Base to Advance Port H1 (mm)	Base to Retract Port H2 (mm)	Saddle Diameter J (mm)	Saddle Protrusion K (mm)	Lock Nut Height S (mm)	(kg)	Model Number
310	460	130	100	Tr 90 x 4	41	27	77	15	26	30	HCRL-506
377	577									36	HCRL-508
427	677									40	HCRL-5010
477	777									45	HCRL-5012
346	496	185	140	Tr 120 x 6	50	36	77	15	36	64	HCRL-1006
421	621									77	HCRL-1008
471	721									85	HCRL-10010
521	821									94	HCRL-10012
359	509	222	170	Tr 150 x 6	46	32	126	13	45	97	HCRL-1506
434	634									116	HCRL-1508
484	734									129	HCRL-15010
534	834									142	HCRL-15012
399	549	260	200	Tr 170 x 6	71	49	126	13	50	145	HCRL-2006
469	669									168	HCRL-2008
519	769									184	HCRL-20010
569	869									200	HCRL-20012
416	566	290	220	Tr 190 x 6	71	49	160	15	55	190	HCRL-2506
491	691									224	HCRL-2508
541	791									244	HCRL-25010
591	891									265	HCRL-25012
421	571	315	240	Tr 210 x 6	71	49	160	15	55	230	HCRL-3006
496	696									269	HCRL-3008
546	796									294	HCRL-30010
596	896									319	HCRL-30012

▼ SCR-1010H 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.
Page: 321

- **Optimum match of individual components**
- **All sets are ready-for-use**
- **Sets include 1,8 m 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 ton (kN)	Cylinder Model Number	Stroke (mm)	Collapsed Height (mm)
	**RC-Series, Single-Acting, General Purpose Cylinders** For maximum versatility. *Page:* 6	**5** (45)	RC-55	127	215
		10 (101)	RC-102	54	121
			RC-106	156	247
			RC-1010	257	349
		15 (142)	RC-154	101	200
			RC-156	152	271
		25 (232)	RC-252	50	165
			RC-254	102	215
			RC-256	158	273
			RC-2514	362	476
		50 (498)	RC-506	159	282
	**RCS-Series, Single-Acting, Low-Height Cylinders** Ideal where space is restricted. *Page:* 24	**10** (101)	RCS-101	38	88
		20 (201)	RCS-201	45	98
		30 (295)	RCS-302	62	117
		45 (435)	RCS-502	60	122
		90 (887)	RCS-1002	57	141
	**RCH-Series, Single-Acting, Hollow Cylinders** For pushing and pulling applications. *Page:* 32	**13** (125)	RCH-121	42	120
		20 (215)	RCH-202	49	162
		30 (326)	RCH-302	64	178
		60 (576)	RCH-603	76	247
		95 (933)	RCH-1003	76	254

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:
- RC-106, Single-Acting cylinder with 156 mm stroke

Selected pump:
- P-392, Lightweight hand pump

Set model number:
- SCR-106H

Included:
- HC-7206 hose
- GF-10B gauge
- GA-2 adaptor

SC Series



Capacity:
5 - 95 ton

Stroke:
38 - 362 mm

Maximum Operating Pressure:
700 bar



Power Box

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

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

Hand Pump P-142	Hand Pump P-392	Hand Pump P-80	Foot Pump P-392FP	XA-Series Air Pump XA-11	XC-Series Cordless Pump XC-1201ME [2]	**Accessories included** Hose Model Number	Gauge Model Number	Gauge Adaptor Model Nr.
								
3								
SCR-55H	–	–	–	–	–	HC-7206	GP-10S	GA-4
–	**SCR-102H**	–	**SCR-102FP**	**SCR-102XA**	**SCR-102XCE**	HC-7206	GF-10B	GA-2
–	**SCR-106H**	–	**SCR-106FP**	**SCR-106XA**	**SCR-106XCE**	HC-7206	GF-10B	GA-2
–	**SCR-1010H**	–	**SCR-1010FP**	**SCR-1010XA**	**SCR-1010XCE**	HC-7206	GF-10B	GA-2
–	**SCR-154H**	–	**SCR-154FP**	**SCR-154XA**	**SCR-154XCE**	HC-7206	GP-10S	GA-2
–	**SCR-156H**	–	**SCR-156FP**	**SCR-156XA**	**SCR-156XCE**	HC-7206	GP-10S	GA-2
–	**SCR-252H**	–	**SCR-252FP**	**SCR-252XA**	**SCR-252XCE**	HC-7206	GF-20B	GA-2
–	**SCR-254H**	–	**SCR-254FP**	**SCR-254XA**	**SCR-254XCE**	HC-7206	GF-20B	GA-2
–	**SCR-256H**	–	–	**SCR-256XA**	**SCR-256XCE**	HC-7206	GF-20B	GA-2
–	–	**SCR-2514H**	–	**SCR-2514XA** [1]	–	HC-7206	GF-20B	GA-2
–	–	**SCR-506H**	–	**SCR-506XA** [1]	–	HC-7206	GF-50B	GA-2
–	**SCL-101H**	–	**SCL-101FP**	**SCL-101XA**	–	HC-7206	GF-10B	GA-2
–	**SCL-201H**	–	**SCL-201FP**	**SCL-201XA**	–	HC-7206	GF-230B	GA-2
–	**SCL-302H**	–	**SCL-302FP**	**SCL-302XA**	**SCL-302XCE**	HC-7206	GF-230B	GA-2
–	**SCL-502H**	–	**SCL-502FP**	**SCL-502XA**	**SCL-502XCE**	HC-7206	GF-510B	GA-2
–	–	**SCL-1002H**	–	–	**SCL-1002XCE**	HC-7206	GF-510B	GA-2
SCH-121H	–	–	–	–	–	HB-7206	GF-120B	GA-4
–	**SCH-202H**	–	**SCH-202FP**	**SCH-202XA**	**SCH-202XCE**	HC-7206	GF-813B	GA-3
–	**SCH-302H**	–	**SCH-302FP**	**SCH-302XA**	**SCH-302XCE**	HC-7206	GF-813B	GA-3
–	–	**SCH-603H**	–	**SCH-603XA** [1]	**SCH-603XCE**	HC-7206	GF-813B	GA-3
–	–	**SCH-1003H**	–	–	–	HC-7206	GP-10S	GA-2

[1] With XA-12 air pump.

[2] Cordless Pump includes 230V Charger. For 115V charger replace the "E" by the "B" in the model number.

▼ From left to right: **P-142ALSS, P-392ALSS, V-152NV, V-66NV, RC-256NV, RC-106NV, RC-53NV**



RC, P, V Series

Cylinder Capacity:
5 - 25 ton

Stroke:
51 - 156 mm

Maximum Operating Pressure:
700 bar

Applications
For use in wet environments such as food processing, pulp and paper, mining, construction and applications in high temperature or in welding areas.

- **Corrosion resistant, nickel-plated valves and cylinders**
- **Stainless steel pump inserts will not corrode**
- **Viton® Seals provide heat and chemical resistance**
- **Anodized aluminum pump reservoirs and plastic encapsulated pump bodies resist wet environments**
- **Two-speed operation reduces pump handle strokes 78% compared to single-speed pumps**
- **Pump handles lock for easy carrying.**



Multifluid Hand Pumps
MP-Series corrosion resistant hand pumps for low pressure filling and high pressure testing applications, suitable for a wide range of fluids.

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Cylinder Capacity ton (kN)	Stroke (mm)	Model Number *	Oil Capacity (cm^3)	Pressure Rating (bar)	Collapsed Height (mm)	Extended Height (mm)	Outside Diameter (mm)	(kg)
5 (45)	76	**RC-53NV**	50	700	165	241	38	1,5
10 (101)	51	**RC-102NV**	78	700	121	175	57	2,3
10 (101)	156	**RC-106NV**	225	700	247	403	57	4,4
25 (232)	156	**RC-256NV**	528	700	273	431	85	10,0



Pump Type	Oil Capacity (cm^3)	Model Number *	Pressure Rating (bar)	Oil Displacement per Stroke (cm^3)	Port Dimension (NPTF)	Piston Stroke (mm)	(kg)
Two Speed	327	**P-142ALSS**	14 / 700	3,62 / 0,90	1/4"-18	12,7	2,0
	901	**P-392ALSS**	14 / 700	11,26 / 2,47	3/8"-18	25,4	4,1



Valve Type	Model Number *	Function	Pressure Rating (bar)	(kg)
Manual Check Valve	**V-66NV ***	Load holding with cylinders	700	1,8
Pressure Relief Valve	**V-152NV ***	Limits system pressure, ± 3% repeatability	55 -700	1,6

* For cylinder details see pages 7-9; for pump details see pages 74-75; for valve details see pages 142-143.

▼ SCR154PGH



- **Easy to carry sturdy tool box**
- **Complete and ready-to-use hydraulic sets**
- **Includes a single-acting cylinder, P-392 two-speed lightweight hand pump, gauge adaptor assembly, 1,8 metres hose and couplers**
- **All components ship inside tool box as one package.**

SC, SL, SR, SW Series



Capacity:
1 - 45 ton

Stroke:
11 - 156 mm

Maximum Operating Pressure:
700 bar



Gauge Adaptor Assembly

Power Box Sets include 45 degree angled gauge adaptor assembly for improved safe working conditions.

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	Cylinder Model	Cylinder Stroke (mm)	Cylinder Capacity ton (kN)	(kg)	Power Box Model Number
	**Lifting Wedge**				
	LW-16	21	**16** (157)	9,0	**SLW16PGH** [2]
	**Wedge Spread Cylinder**				
	WR-5	94 [1]	**1,0** (8,9)	12,0	**SWR5PGH**
	**General Purpose Cylinders**				
	RC-102	54	**10** (101)	12,3	**SCR102PGH**
	RC-106	156	**10** (101)	14,4	**SCR106PGH**
	RC-154	101	**15** (142)	15,0	**SCR154PGH**
	RC-156	152	**15** (142)	16,8	**SCR156PGH**
	**Low Height Cylinders**				
	RCS-101	38	**10** (101)	14,1	**SCL101PGH**
	RCS-201	45	**20** (201)	15,0	**SCL201PGH**
	**Flat-Jac® Cylinders**				
	RSM-100	11	**10** (101)	11,4	**SRS100PGH**
	RSM-200	11	**20** (201)	13,1	**SRS200PGH**
	RSM-300	13	**30** (295)	14,5	**SRS300PGH**
	RSM-500	16	**45** (435)	16,8	**SRS500PGH**

[1] Maximum spread of WR-5.
[2] With P-142 two-speed lightweight hand pump.

▼ *The Power Box – the portable tool set – applicable everywhere.*



▼ Shown from left to right: **JHA-356, JHA-156**



JH, JHA
Series

Capacity:
7 - 100 ton

Stroke:
76 - 155 mm

Maximum Operating Pressure:
700 bar

- **All-directional operation on 7, 15 and 35 ton JHA-series**
- **Internal relief valve to prevent overloading**
- **Machined flat front and bottom surfaces permit flush alignment in tight corners**
- **Chrome plated plungers**
- **Pumping handle included**
- **Automatic by-pass port to prevent over-extension (JH-series).**



Lifting Wedge and Machine Lifts

Ideal to lift the load the first few centimeters. The LW-16 Lifting Wedge requires a very small access gap of only 10 mm.

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Load Skates

For moving heavy loads easily and safely.

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Style	Jack Capacity ton (kN)	Stroke (mm)	Model Number	Jack Effective Area (cm^2)	Collapsed Height (mm)	Extended Height (mm)	Bottom Plate Dimensions W x L (mm)	Plunger Diameter (mm)	Pump Speed	(kg)
Aluminium Jacks	**7** (62)	76	**JHA-73**	9,6	133	209	73 x 158	30,2	Single	5,0
	15 (133)	153	**JHA-156**	20,3	247	401	92 x 238	41,4	Single	13,2
	35 (311)	155	**JHA-356**	45,6	257	412	117 x 254	54,1	Single	18,1
Steel Jacks	**30** (267)	155	**JH-306**	38,3	254	409	95 x 242	69,9	Single	26,8
	50 (445)	154	**JH-506**	62,1	260	414	127 x 258	88,9	2-Speed	40,8
	100 (890)	153	**JH-1006**	133,1	287	440	181 x 328	130,1	2-Speed	74,4

Industrial Steel Bottle Jacks

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



GBJ Series



Capacity:
2 - 100 ton

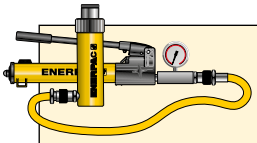
Stroke:
62 - 460 mm



Screw Extension Feature

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

- **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 20 ton through 50 ton models.**



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.

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Capacity ton (kN)	Stroke (mm)	Model Number	Screw Extension (mm)	Min. Height (mm)	Max. Height (mm)	Plunger diameter (mm)	Saddle Diameter (mm)	Bottom Dimensions W x L (mm)	(kg)
2 (19,6)	460	**GBJ002LA**	-	570	1030	29	-	75 x 116	10,3
2 (19,6)	105	**GBJ002A**	65	168	338	24	23,5	75 x 116	3,6
3 (29,4)	105	**GBJ003A**	65	168	338	24	23,5	75 x 116	3,7
5 (49,0)	150	**GBJ005A**	75	212	437	29	28,5	75 x 125	4,5
8 (78,4)	150	**GBJ008A**	75	219	444	37	38,0	90 x 144	6,2
10 (98,0)	150	**GBJ010A**	75	219	444	37	38,0	90 x 144	6,4
10 (98,0)	62	**GBJ010SA**	30	131	223	37	38,0	90 x 144	5,0
15 (147,0)	150	**GBJ015A**	75	228	453	45	45,0	112 x 163	8,8
20 (196,0)	150	**GBJ020A**	75	234	459	51	61,0	120 x 172	10,6
20 (196,0)	105	**GBJ020SA**	55	190	350	51	61,0	120 x 172	9,5
30 (294,0)	150	**GBJ030A**	75	242	467	58	69,0	144 x 196	15,5
50 (490,0)	140	**GBJ050A**	-	260	400	80	80,0	165 x 214	27,0
100 (980,0)	150	**GBJ100**	-	300	450	110	94,0	296 x 333	87,0

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

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



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



Safe, Efficient, Mobile Load Lifting

- **54, 90, 136 and 181 ton capacities with pneumatic or electric pumps for the toughest jobs**
- **102 mm 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 610 mm wide frame with no exposed fittings or hoses**
- **SUP-R-STACK™ Extension System allows lifting at all heights without blocking.**

Pendant cord

Supplied with 3,5 m pendant cord for air driven units with pneumatic valves and 6 m 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**

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

Capacity ton (kN)	Stroke (mm)	Model Number with Electric Pump (230V - 1 ph - 50Hz)	(kg)
54 (533)	356	**PREME06014L**	177
	686	**PREME06027L**	272
90 (889)	406	**PREME10016L**	231
	686	**PREME10027L**	272
	406	–	-
	686	–	-
136 (1333)	394	–	-
	673	–	-
	394	**PREME15016L**	258
	673	**PREME15027L**	321
181 (1778)	388	–	-
	617	–	-



SUP-R-STACK Extensions

Increase useful height from 127 to 457 mm.

Model No.	Size (mm)	Model No.	Size (mm)
PRE5	127	PRE11	279
PRE7	178	PRE14	356
PRE9	229	PRE18	457
PRES6024	Extension set includes **PRE5, PRE7, PRE11** and **PRE18**.		



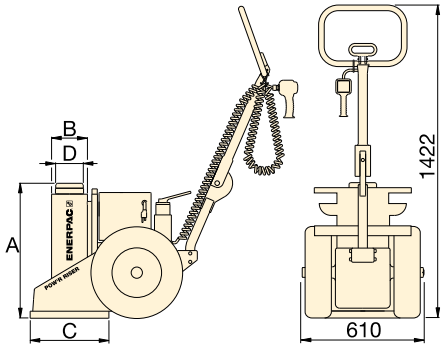
Spacers

Fine tune your extension stack height.

Model No.	Size (mm)	Model No.	Size (mm)
PRS1	25	PRS3	76
PRS2	51	–	–
PRS4	Set includes (2x) **PRS1,** (1x) **PRS2** and (1x) **PRS3**.		

Cap. (kN)	Swivel Load Saddle	Locking U-Rings 25 mm	76 mm	114 mm	140 mm	254 mm	Set Model Number	Locking U-Ring Sets Include: Quantity & model numbers 2x	1x	2x	1x
533	PRTS60	PRU11	PRU13	PRU14	–	PRU110	[1] PRUS126	PRU11	PRU13	PRU14	–
							[2] PRUS137	PRU11	PRU13	PRU14	PRU110
889	PRTS60	PRU11	PRU13	PRU14	–	PRU110	[1] PRUS126	PRU11	PRU13	PRU14	–
							[2] PRUS137	PRU11	PRU13	PRU14	PRU110
1333	PRTS150	PRU151	PRU153	–	PRU155	PRU1510	[3] PRUS1526	PRU151	PRU153	PRU155	–
							[2] PRUS1537	PRU151	PRU1510	PRU155	–
1778	PRTS200	PRU201	PRU203	–	PRU205	PRU2010	[3] PRUS2026	PRU201	PRU203	PRU205	–
							[2] PRUS2037	PRU201	PRU2010	PRU205	–

[1] For 356 mm and 406 mm stroke models
[2] For 686 mm stroke models
[3] For 394 mm stroke models.



Model Number with Air Pump	(kg)	A (mm)	B (mm)	C (mm)	D (mm)	Max. Additional Stack Height Using Optional Extension (mm)	Valve Type
PRAMA06014L	177	610	162	356	102	813*	Manual
PRAMA06027L	272	940	162	356	102	279	
PRAMA10016L	231	660	178	457	102	533**	
PRAMA10027L	272	940	178	457	102	279	
PRASA10016L	231	660	178	457	102	533**	Pneumatic
PRASA10027L	272	940	178	457	102	279	
PRASA15016L	258	660	203	457	127	533**	
PRASA15027L	321	940	203	457	127	279	
-	-	660	203	457	127	533**	Manual
-	-	940	203	457	127	279	
PRASA20016L	290	660	241	508	165	533**	Pneumatic
PRASA20027L	374	940	241	508	165	279	

* Based on one 457 mm and one 279 mm extension and one 76 mm spacer.
** Based on one 457 mm extension and one 76 mm spacer.

PR Series



Rated Lifting Capacity:
54 - 181 ton

Stroke:
356 - 686 mm

Maximum Operating Pressure:
700 bar



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 54 ton. For loads over 54 ton or strokes over 356 mm only one extension and one spacer can be used.
Spacers: Never exceed 76 mm in total spacer height.

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

Ordering Example:
Model No. PREME06014L is a 356 mm stroke, 54 ton model, with a manual valve and a 230 VAC, 1-ph, 50 Hz electric motor.

A Air Pump, 1416 l/min air consumption at 5,5 bar
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 54 ton 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 6,1 metres 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.



◀ *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.

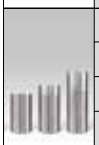
PL Series

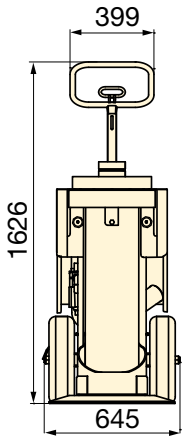


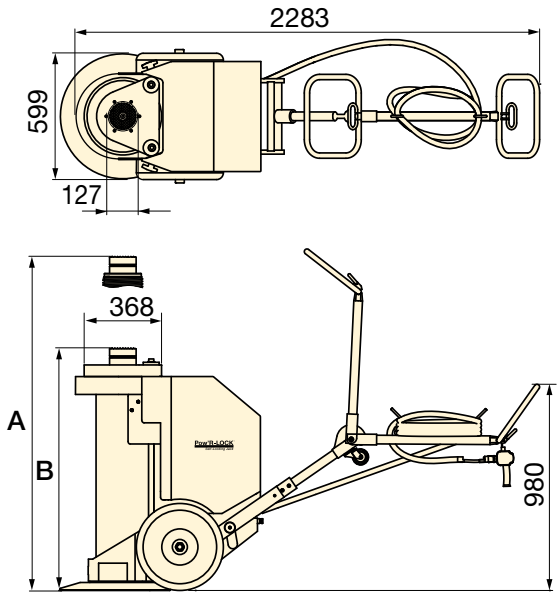
Rated Lifting Capacity:
181 ton

Stroke:
356 - 622 mm

Maximum Operating Pressure:
700 bar

	Model Number	Description	Height (mm)	PL20014-ASA	PL20025-ASA
	**PLC1**	Flat Load Cap	34	x	x
	**PLS1**	Spacer	26	x	x
	PLS2	Spacer	51	x	x
	**PLE5**	Extension	127	x	x
	PLE7	Extension	178	x	x
	PLE9	Extension	229	x	x
	PLE11	Extension	280	x	–
	PLE14	Extension	356	x	–
	**PLB12**	Extension base adapter	305	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 *
PLS20014-ASA	712 mm
PLS20025-ASA	229 mm

* 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 ton (kN)	Stroke (mm)	Model Number with Air Pump	Cylinder Lifting Speed [1] (mm/min) Load	No Load	Recommended Air Supply [2] (l/min)	(bar)	A [3] (mm)	B [3] (mm)	(kg)
181 (1779)	356	**PL20014-ASA**	51	61	3681 - 4247	3,8 - 6,9	1219	864	501
	622	**PL20025-ASA**	51	61			1778	1156	599

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

[2] Minimum dynamic air pressure of 3,8-4,1 bar. 6,2-6,9 bar required to achieve 1779 kN capacity.

[3] Height A and B are with Swivel Load Cap installed. Subtract 51 mm if flat load cap is used.

Custom Hydraulic Cylinders

ENERPAC

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.

Overview Custom Cylinders



▲ *Custom 500 ton double-acting cylinders with 1,83 m stroke for lifting electric rope shovels.*



◀ *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.*

CUSTOMIZABLE FEATURES:

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

Overview Custom 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.



▲ *Custom hydraulic pump for a bridge deck launching system.*

CUSTOMIZABLE FEATURES:

- Reservoir and Frame
- Valves
- Controls
- Oil
- Seals
- Pressure and Flow
- Coolers and Heaters
- Paint
- Motor Type



◀ *Private-label hand or foot pumps with fire-resistant oil and special exterior paint.*



◀ *XC-Series Cordless Pump with custom black shroud for private-label OEM customer to be used with a variety of hand held hydraulic tools.*



◀ *Electric pump with large cooler and controls for high-temperature applications.*

Hydraulic Pumps and Directional Valves

ENERPAC

Enerpac hydraulic pumps are available in over 1000 different configurations. Whatever your high-pressure pump needs are... speed, control, intermittent or heavy duty cycle 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 Wrench Pumps

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

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Pumps and Directional Valves Section Overview

Power Source	Pump Types	Maximum Reservoir Capacity (litres)	Max. Flow at Rated Pressure (l/min)	Maximum Power Consumption	Series		Page
Manual	**Lightweight Hand Pumps** Exclusively from Enerpac	2,5	2,47 (cm^3/stroke)	–	P		74 ▶
	ULTIMA Steel Hand Pumps **Low Pressure Hand Pumps**	7,4 3,3	4,75 9,50	– –	P P		76 ▶ 78 ▶
	Multifluid Hand Pumps Pumping Fluids up to 1000 bar	–	20,6 (cm^3/stroke)	–	MP		80 ▶
	Foot Pump For Hands Free Operation	0,5	2,47 (cm^3/stroke)	–	P		81 ▶
	Ultra-High Pressure Hand Pumps Pressure up to 2800 bar	1,0	2,49 (cm^3/stroke)	–	P, 11		82 ▶
Electric	**Battery Powered Hydraulic Pumps** Portable Cordless Hydraulic Power	2,0	0,25	0,37 (kW)	XC		84 ▶
	Battery Powered Hydraulic Pumps Cordless Hydraulic Power	8,0	0,52	1,0 (kW)	ZC		86 ▶
	Economy Pump Series Compact and Portable	3,8	0,32	0,37 (kW)	PU		88 ▶
	Submerged Pumps Powerful and Low-Noise	5,5	0,27	0,37 (kW)	PE		90 ▶
	E-Pulse® Hydraulic Pumps High Productivity, Innovative Design	3,0	0,50	0,63 (kW)	E E-Pulse®		94 ▶
	Z-Class Pumps Portable Hydraulic Power	39	1,0	1,25 (kW)	ZU		98 ▶
	Z-Class Pumps Powerful and Heavy-Duty	39	2,73	5,60 (kW)	ZE		104 ▶
Air	**Air Hydraulic Pumps** Single and Twin-Air Motor	1,3 8,0	0,13 0,15	255 (l/min) 510 (l/min)	PA PAM		110 ▶ 111 ▶
	Turbo II Air Hydraulic Pumps Compact Air Over Hydraulic	5,0	0,16	340 (l/min)	PATG		112 ▶
	Air Hydraulic Pumps For Productivity and Ergonomics	2,0	0,25	991 (l/min)	XA		114 ▶
	Z-Class Air Hydraulic Pumps Modular Air Pumps	39	1,31	2840 (l/min)	ZA		116 ▶
Gasoline	**Z-Class Gasoline Hydraulic Pumps** Gas Powered High Flow Pumps	39	1,64	4,8 (kW)	ZG5		118 ▶
	Z-Class Gasoline Hydraulic Pumps Gas Powered High Flow Pumps	39	3,30	9,7 (kW)	ZG6		118 ▶
Directional Control Valves Manual and Solenoid Valves, pump and remote mounted					VM, VE VC		120 ▶

▼ Shown from top to bottom: **P-802, P-842, P-202, P-142**



- **Lightweight and compact design**
- **Durable glass-filled nylon reservoir and nylon encapsulated aluminium 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 P-842 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'.

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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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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.

PC-20	Fits P-141, P-142
PC-25	Fits P-202, P-391, P-392



Power Box

Portable tool box with P-392 hand pump, gauge adaptor assembly, hose and RC-, RCS, RSM-or WR-Serie cylinder.

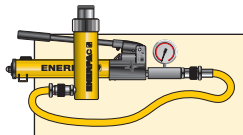
Page: 63

▼ *Cylinder-pump set SCR-254H used to support the construction while monitoring pressure and load with the gauge.*



Pump Type	Usable Oil Capacity (cm^3)	Model Number	Pressure Rating [2] (bar) 1st stage	Pressure Rating [2] (bar) 2nd stage	Oil Displacement per Stroke (cm^3) 1st stage	Oil Displacement per Stroke (cm^3) 2nd stage	Max. Handle Effort (kg)
Single-Speed	327	**P-141**	-	700	-	0,90	32,7
	901	**P-391**	-	700	-	2,47	38,6
Two-Speed	327	**P-142** [1]	13	700	3,62	0,90	35,4
	901	**P-202**	13	700	3,62	0,90	28,6
	901	**P-392** [1]	13	700	11,26	2,47	42,2
	2540	**P-802**	27	700	39,33	2,47	43,1
	2540	**P-842** [3]	27	700	39,33	2,47	43,1

[1] Available as set, see note on next page. P-392 also available in Power Box Set (page 63).
[2] Contact Enerpac for applications where operating pressure is less than 10% of pressure rating.
[3] P-842 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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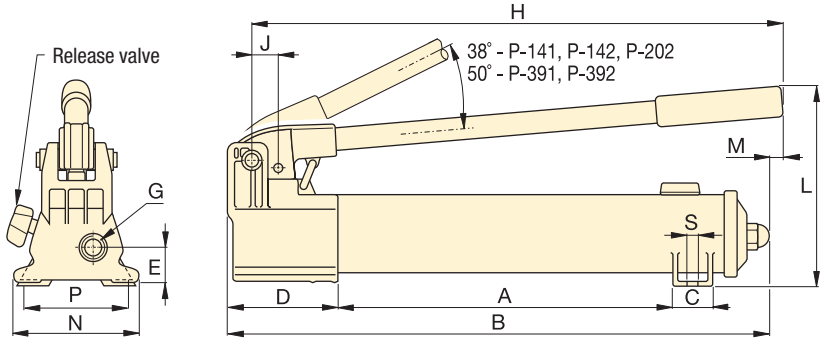
P Series



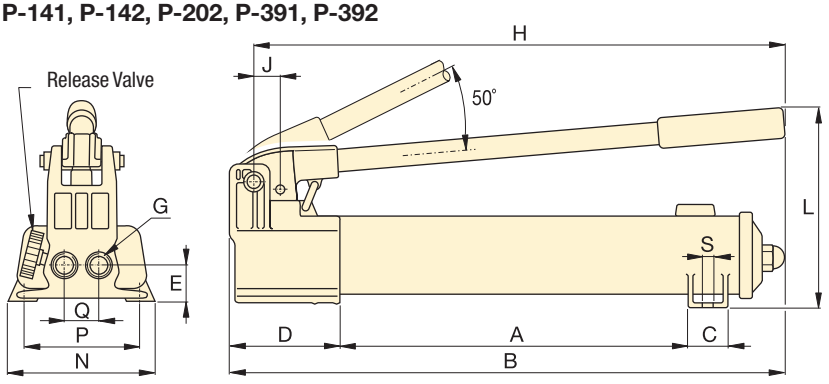
Reservoir Capacity:
327 - 2540 cm³

Flow at Rated Pressure:
0,90 - 2,47 cm³/stroke

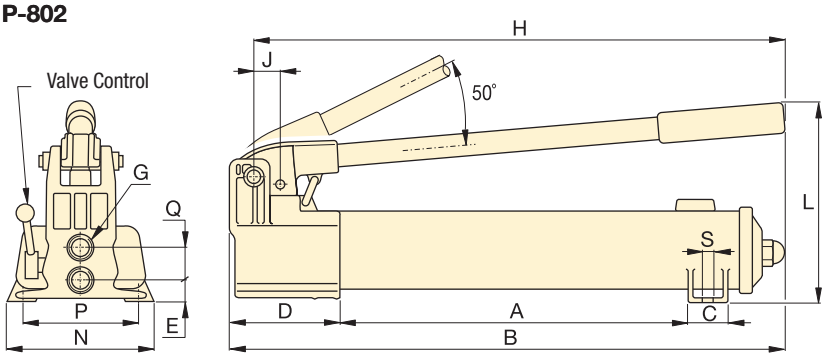
Operating Pressure:
700 bar



P-141, P-142, P-202, P-391, P-392



P-802



P-842



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 P-392FP

For handsfree operation the lightweight and robust **P-392FP** Foot Pump is the perfect choice.

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Piston Stroke	Dimensions (mm)														Weight	Model Number
(mm)	A	B	C	D	E	G	H	J	L	M	N	P	Q	S	(kg)	
12,7	185	336	28	85	28	¼"-18 NPTF	319	19	143	–	95	80	–	7	2,4	**P-141**
25,4	344	533	36	99	33	⅜"-18 NPTF	522	30	177	16	120	–	–	–	4,1	**P-391**
12,7	185	336	28	85	28	¼"-18 NPTF	319	19	143	–	95	80	–	7	2,4	**P-142** [1]
12,7	344	509	36	85	28	¼"-18 NPTF	400	19	144	16	95	–	–	–	3,4	**P-202**
25,4	344	533	36	99	33	⅜"-18 NPTF	522	30	177	16	120	–	–	–	4,1	**P-392** [1]
25,4	337	552	45	133	35	⅜"-18 NPTF	527	30	228	–	181	153	35	10	8,2	**P-802**
25,4	337	552	45	133	20	⅜"-18 NPTF	527	30	228	–	181	153	36	10	10,0	**P-842** [3]

▼ Shown from left to right: **P-77, P-80, P-84, P-801, P-39**



The Solution for Tough Jobs

- **Reduced handle effort and ergonomic grip for less operator fatigue**
- **Two-speed operation for fast and easy operation (except P-39)**
- **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 the P-84 and P-464 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 P-39, P-77, P-80 or P-801 to foot power with the **PC-11** 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.

Page: 140



4-Way Control Valve

P-84 and **P-464** 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: 316

▼ *In the absence of a power supply, the P-80 Hand Pump offers a powerful solution.*



Pump Type	Usable Oil Capacity (cm^3)	Model Number	Pressure Rating [2] (bar) 1st stage	Pressure Rating [2] (bar) 2nd stage	Oil Displacement per Stroke (cm^3) 1st stage	Oil Displacement per Stroke (cm^3) 2nd stage	Max. Handle Effort (kg)
Single	672	**P-39**	-	700	-	2,46	39
Two-Speed	672	**P-77**	34	700	16,39	2,46	40
	2200	**P-80** [1]	34	700	16,39	2,46	35
	4100	**P-801**	34	700	16,39	2,46	35
	2200	**P-84** [3]	34	700	16,39	2,46	35
	7423	**P-462**	14	700	126,20	4,75	49
	7423	**P-464** [3]	14	700	126,20	4,75	49

[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, P-464 is 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'.

Page: 321

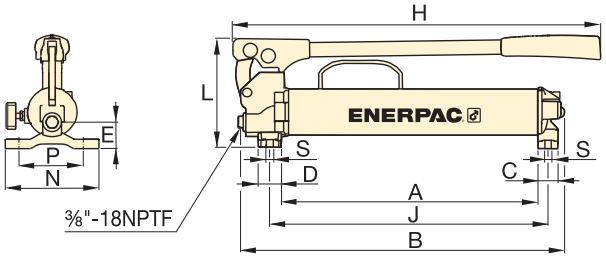
P Series



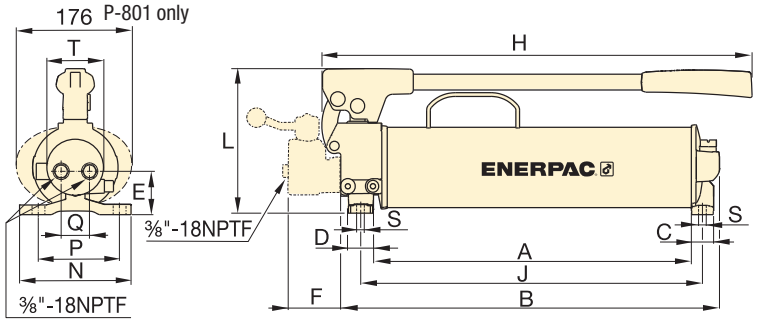
Reservoir Capacity:
672 - 7423 cm³

Flow at Rated Pressure:
2,46 - 4,75 cm³/stroke

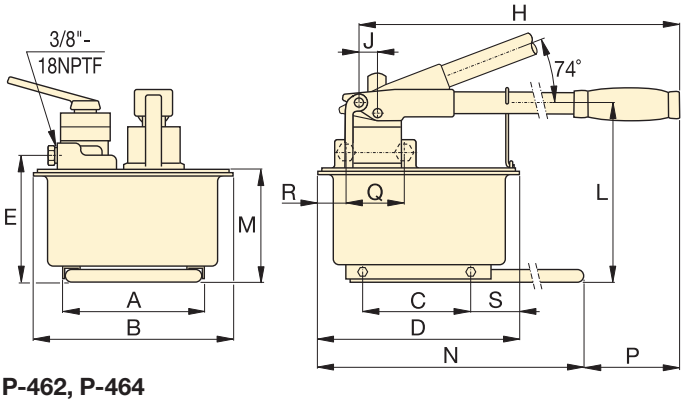
Maximum Operating Pressure:
700 bar



P-39, P-77



P-80, P-801, P-84

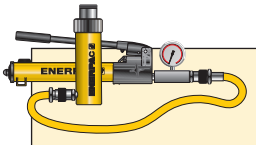


P-462, P-464



Extra Capacity Hand Pumps

P-462 and **P-464** feature extra large reservoirs and high first-stage flow rate. These pumps are ideally suited for powering high-capacity cylinders.



Pump-Cylinder Sets

The **P-80** is also available as 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 (mm)																	Model Number
(mm)	A	B	C	D	E	F	H	J	L	M	N	P	Q	R	S	T	(kg)	
25,4	383	480	30	35	37	–	550	416	163	–	140	111	–	–	8,4	–	6,2	**P-39**
25,4	391	487	30	35	47	–	550	424	163	–	140	111	–	–	8,4	–	7,1	**P-77**
25,4	428	511	30	35	55	–	579	460	195	–	150	121	42	–	8,4	74	10,7	**P-80** [1]
25,4	428	511	30	35	55	–	579	460	195	–	150	121	42	–	8,4	74	14,1	**P-801**
25,4	428	510	30	35	55	70	579	460	195	–	150	121	38	–	8,4	74	11,8	**P-84** [3]
38,1	210	308	163	320	195	–	671	25	270	175	650	92	–	–	80	–	27,7	**P-462**
38,1	210	308	163	320	195	–	671	25	270	175	650	92	89	68	80	–	27,7	**P-464** [3]

P-Series, Low Pressure Hand Pumps

ENERPAC

▼ Shown from left to right: **P-25, P-51, P-18**



When Less Than 700 bar is All You Need

- **P-25 and P-50 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.**



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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▼ *P-18 hand pump used for locking the rotating table for marble polishing.*



Pump Type	Usable Oil Capacity (cm^3)	Model Number *	Pressure Rating (bar)	Oil Displacement per Stroke (cm^3)	Max. Handle Effort (kg)
Single-Speed	360	**P-18**	200	2,46	16
	3277	**P-25**	175	9,50	27
	3277	**P-50**	350	4,75	27
	819	**P-51**	200	4,10	27

* For use with single-acting cylinders and tools

P Series



Reservoir Capacity:
360 - 3277 cm³

Flow at Rated Pressure:
2,46 - 9,50 cm³/stroke

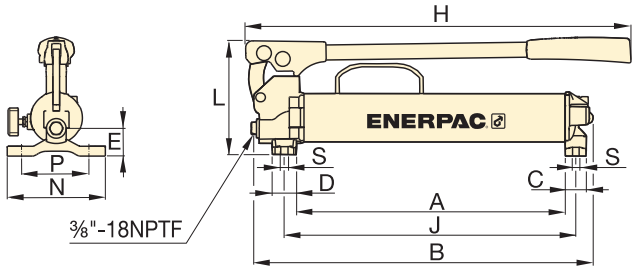
Maximum Operating Pressure:
175 - 350 bar



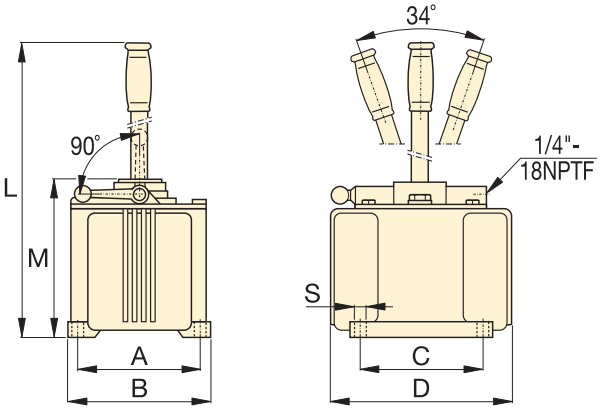
MP-Series Multifluid Hand Pumps

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

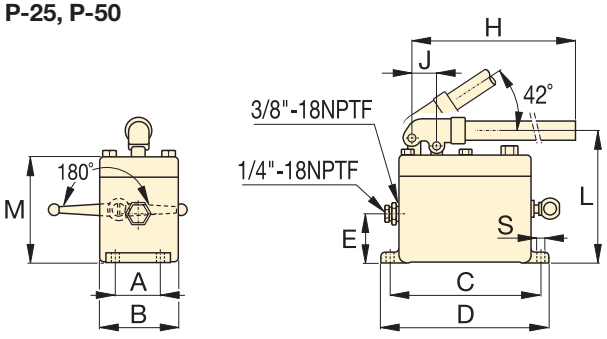
Page: 80



P-18



P-25, P-50



P-51

▼ *P-51 hand pumps used with RC-series cylinders to keep wooden layers under pressure during lamination of plates.*



Piston Stroke	Dimensions (mm)												Model Number *
(mm)	A	B	C	D	E	H	J	L	M	N	S	(kg)	
25,4	221	316	30	35	37	385	254	163	–	140	8,4	5,0	**P-18**
38,1	152	173	152	240	–	–	–	684	200	–	10	16,3	**P-25**
38,1	152	173	152	240	–	–	–	684	200	–	10	16,8	**P-50**
25,4	52	92	181	200	57	610	29	160	129	–	9	5,4	**P-51**

▼ MP-110



MP
Series

Flow at Rated Pressure:
1,6 - 20,6 cm³/stroke

Maximum Operating Pressure:
110 - 1000 bar



Optional Reservoir Kit

Includes 10 litres tank with skid frame, top plate with reservoir seal, suction pipe and mounting bolts. Useable oil capacity is 7,4 litres. Order modelnr.: **MP-10T**.

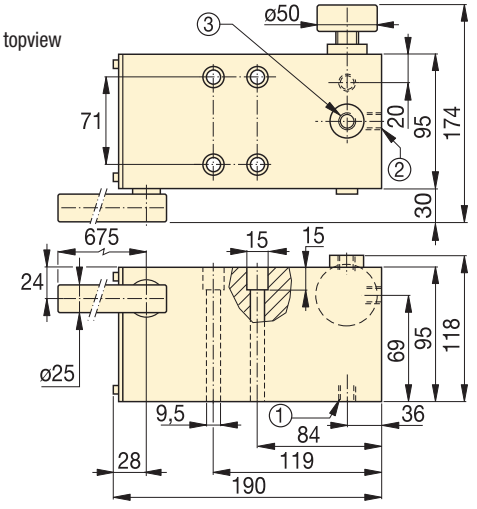


Stainless Steel Hand Pump

Also available as stainless steel hand pump, model number **11-400**.

Page: 82

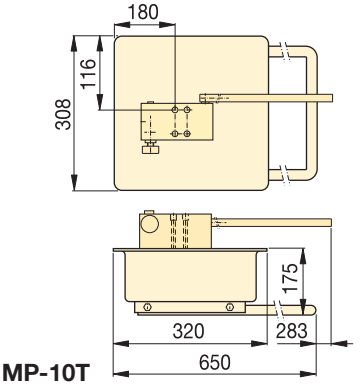
- **Superior corrosion resistance**
- **Standard Nitrile seals – can be used for a wide range of fluids such as demineralised water, oil/water emulsions, waterglycols, mineral oils**
- **Two speed pumps up to 1000 bar pressure**
- **Buna Nitrile seals can be exchanged with optional EPDM seal for use with Skydrol or brake fluids**
- **Impregnated aluminium 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.**



MP-110, 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 * (cm³)	Model Number **	Pressure Rating (bar) 1st stage	Pressure Rating (bar) 2nd stage	Oil Displacement per Stroke (cm³) 1st stage	Oil Displacement per Stroke (cm³) 2nd stage	Max. Handle Effort (kg)	Piston Stroke (mm)	(kg)
Two Speed	*	MP-110	35	110	52,6	20,60	45	27,1	6,6
	*	MP-350	35	350	52,6	7,15	45	27,1	6,6
	*	MP-700	35	700	52,6	2,63	45	27,1	6,6
	*	MP-1000	35	1000	52,6	1,60	45	27,1	6,6



MP-10T

* MP-Pump includes 1,5 mm 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.

Lightweight Hydraulic Foot Pump

▼ P-392FP



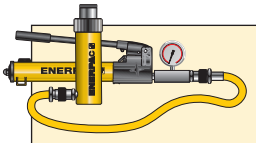
P Series



Reservoir Capacity:
492 cm³

Flow at Rated Pressure:
2,47 cm³/stroke

Maximum Operating Pressure:
700 bar



Pump-Cylinder Sets

The **P-392FP** is available as set (pump, cylinder, gauge, couplers and hose) for your ordering convenience.

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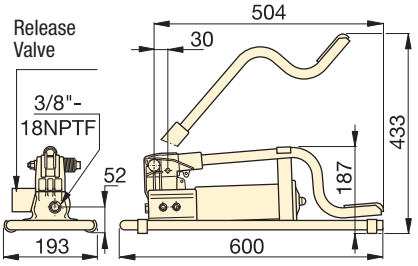


Hoses

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

Page: 128

- **Robust, durable and compact**
  - **Steel frame for maximum stability**
  - **Steel pumping handle**
  - **Aluminium 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.**



Usable Oil Capacity (cm³)	Model Number	Pressure Rating (bar) 1st stage	Pressure Rating (bar) 2nd stage	Oil Displacement per Stroke (cm³) 1st stage	Oil Displacement per Stroke (cm³) 2nd stage	Max. Handle Effort (kg)	Piston Stroke (mm)	(kg)
492	**P-392FP ***	15	700	11,26	2,47	42	25,4	7,0

* Available as set, see note on this page.

▼ *P-392FP offers the advantage of hands free operation to handle and control the tool or cylinder.*



▼ Shown from left to right: **11-100, P-2282**



Ultra-High Pressure up to 2800 bar

- **Two-speed operation on the P-2282 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 cone for 2800 bar 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 Nr. 72-750

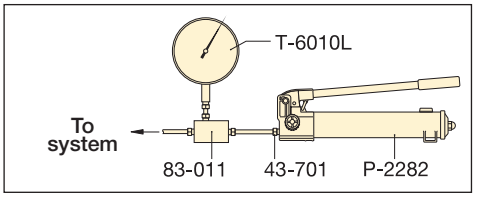
For 2800 bar applications requiring a shut-off valve or gauge snubber. Made of 318 Stainless Steel and utilizing .38 inch cone fittings, it is the perfect selection for use with your ultra-high pressure hand pump.



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.

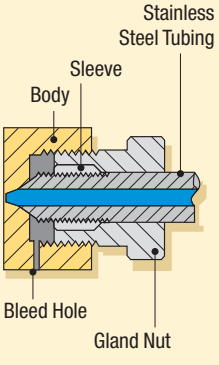
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▲ *Typical Test System*

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 2800 bar seal.



Pump Type	Usable Oil Capacity (cm^3)	Model Number	Pressure Rating * (bar) 1st stage	Pressure Rating * (bar) 2nd stage	Oil Displacement per Stroke (cm^3) 1st stage	Oil Displacement per Stroke (cm^3) 2nd stage	Max. Handle Effort (kg)
Two-Speed	983	**P-2282**	13	**2800**	16,22	0,61	48,1
Single-Speed	737	**11-100**	-	**700**	-	2,49	54,4
	737	**11-400**	-	**2800**	-	0,62	54,4

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

▼ Optional Ultra-High Pressure Fittings and Tubings

Description		Connection	Model Nr.
		2800 bar	
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		100 mm tube, O.D. .38" * 200 mm tube, O.D. .38" * 300 mm tube, O.D. .38" *	**45-116** **45-126** **45-136**
		700 bar 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 19 mm less than nominal size shown. These dimensions make distance between centers of valves and fittings multiples of 100 mm spaces.

P 11 Series



Reservoir Capacity:
737 - 983 cm³

Flow at Rated Pressure:
0,61 - 2,49 cm³/stroke

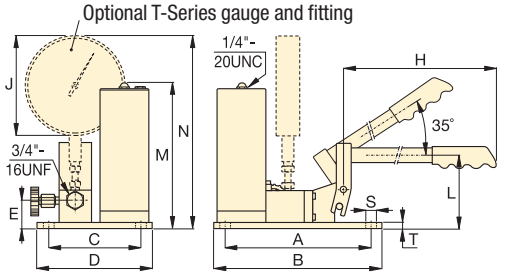
Maximum Operating Pressure:
700 - 2800 bar

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

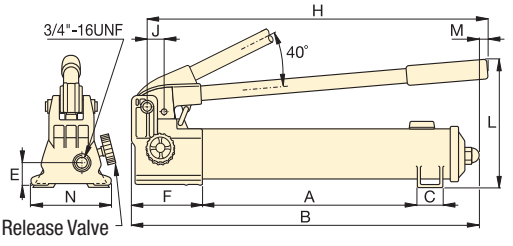
Stainless Steel Construction

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

11-100
11-400



P-2282



Piston Stroke (mm)	Dimensions (mm) A	B	C	D	E	F	H	J	L	M	N	S	T	(kg)	Model Number
25,4	344	558	35	–	31	133	527	29	228	7	120	–	–	6,4	**P-2282**
19,8	240	266	151	177	45	–	635	162	114	237	314	7	9	10,0	**11-100**
19,8	240	266	151	177	45	–	635	162	114	237	314	7	9	10,0	**11-400**

▼ Shown: **XC-1201ME**



- **Lightweight design with integrated handle and carrying strap for portability**
- **Bladder reservoir prevents contamination and allows pump usage in any position**
- **Powerful 0,37 kW motor and 28 Volt Lithium-Ion battery deliver exceptional speed and superior run time**
- **High-strength fiberglass reinforced composite shroud for superior durability in demanding job site environments**
- **Cordless technology eliminates tripping hazards found in other electric or air powered pumps**
- **Three valve options for single- and double-acting cylinders: 3-way/2-position, 4-way/3-position or Dump & Hold.**

Performance of a Powered Pump

Portability of a Hand Pump



Interactive Pendant on XC-1302S Models

Available only on **XC-1302S** pump models. The interactive pendant allows user to easily toggle from "jog operation" to "dump system pressure" with a push of a button. (Cord length is 3 metres.)



28-Volt Battery

The **XC-28V** with Lithium-Ion technology for maximum battery performance and superior run time.



Roll Cage

Optional Roll Cage XC-Series pumps. Please order model number **XCRCTK**.



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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◀ *Portable power and simplicity for the toughest jobs.*

XC-Series Cordless Pumps

The XC-Series cordless pump is ideal for jobs that require a combination of portability, speed, and safety. These cordless pumps are perfect for remote locations without access to power, but also indoors where trip hazards, ergonomics or size is a concern.

The XC-Series cordless pump is compatible with all Enerpac hydraulic tools and small to medium sized cylinders.The XC-Series cordless pump is CSA and CE compliant.

Lithium-Ion battery for superior run time:

- 279 cuts of 10 mm reinforcing bar using a WHC-750 Cutter
- 112 lifts with a WR-5 Spreader
- 44 splits on M27 - 8.8 nuts using a NC-3241 Nut Cutter
- 28 times lifting with a RC-104 cylinder (10 ton, 100 mm stroke).

Note: Actual number of cycles per charge will vary depending on condition of battery, tool and ambient conditions. Battery life with double-acting tools is approximately 75% of that for comparable, single-acting tools.

XC Series

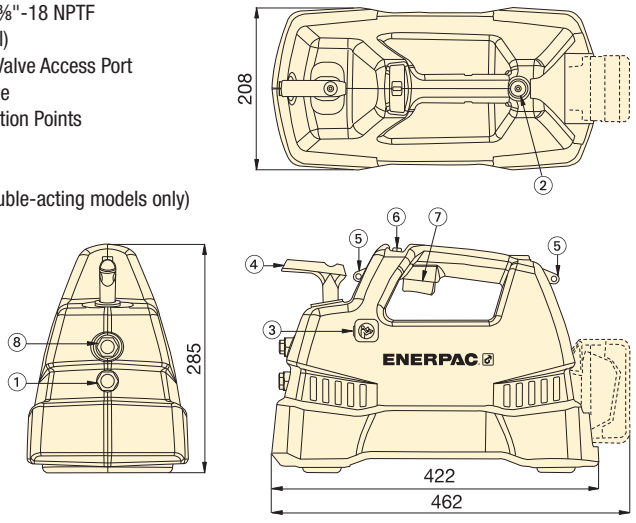


Reservoir Capacity:
1,0 - 2,0 litres

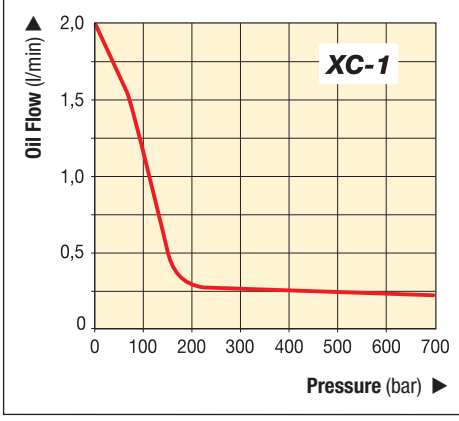
Flow at Rated Pressure:
0,25 l/min

Maximum Operating Pressure:
700 bar

① Outlet "Advance" Port ⅜"-18 NPTF
② Oil Fill (must use funnel)
③ User Adjustable Relief Valve Access Port
④ Directional Control Valve
⑤ Shoulder Strap Connection Points
⑥ Safety Lock Feature
⑦ On/Off Switch
⑧ Inlet "Retract" Port (double-acting models only)



OIL FLOW vs. PRESSURE



▼ **SELECTION CHART**

Pump Type (Used with cylinder)	Useable Oil Capacity (litres)	Model Number	Output Flow Rate (l/min) No Load	140 bar	700 bar	Valve Function	Charger Voltage (VAC)	(kg)
Single-Acting	1,0	XC-1201MB [1]	2,05	0,49	0,25	3-way, 2-pos.	115	10,0
	2,0	XC-1202MB	2,05	0,49	0,25	3-way, 2-pos.	115	11,0
	1,0	XC-1201ME [1]	2,05	0,49	0,25	3-way, 2-pos.	230	10,0
	2,0	XC-1202ME	2,05	0,49	0,25	3-way, 2-pos.	230	11,0
	1,0	XC-1201M [2]	2,05	0,49	0,25	3-way, 2-pos.	–	10,0
	2,0	XC-1202M [2]	2,05	0,49	0,25	3-way, 2-pos.	–	11,0
Single-Acting	2,0	XC-1302SB	2,05	0,49	0,25	Dump and Hold	115	11,4
	2,0	XC-1302SE	2,05	0,49	0,25	Dump and Hold	230	11,4
	2,0	XC-1302S [2]	2,05	0,49	0,25	Dump and Hold	–	10,2
Double-Acting	1,0	XC-1401MB	2,05	0,49	0,25	4-way, 3-pos.	115	10,0
	2,0	XC-1402MB	2,05	0,49	0,25	4-way, 3-pos.	115	11,0
	1,0	XC-1401ME	2,05	0,49	0,25	4-way, 3-pos.	230	10,0
	2,0	XC-1402ME	2,05	0,49	0,25	4-way, 3-pos.	230	11,0
	1,0	XC-1401M [2]	2,05	0,49	0,25	4-way, 3-pos.	–	10,0
	2,0	XC-1402M [2]	2,05	0,49	0,25	4-way, 3-pos.	–	11,0

[1] Available as a cylinder pump set, see page 60.
[2] Batteries and charger not included.

▼ *Take the battery pump anywhere without power cords or air hoses.*



▼ ZC3308JE



Tough.
Dependable.
Innovative.
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 1,0 kW 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, running approximately 50 cycles on a RC-1006 and approximately 90 cycles on a RC-504 cylinder on a single charge
- Convenient 3 m 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.*

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 82V lithium-ion battery. The lithium-ion battery is capable of providing impressive run times, even under extreme job site conditions.

- 50 times lifting with RC-1006 cylinder (95 ton, 168 mm stroke)
- 90 times lifting with RC-504 cylinder (50 ton, 101 mm 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

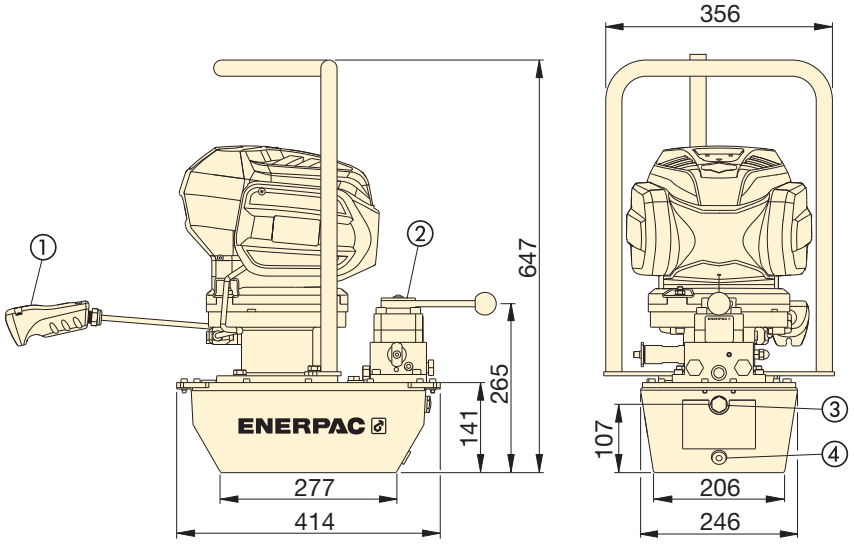


Reservoir Capacity:
8 litres

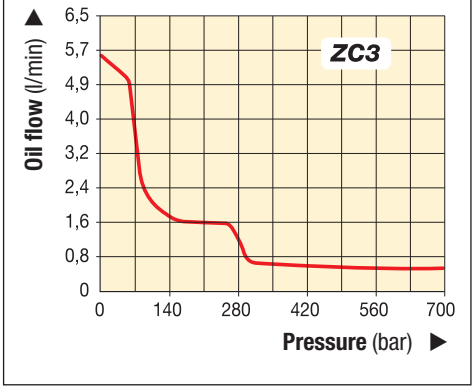
Flow at Rated Pressure:
0,52 l/min

Motor Size:
1,0 kW

Maximum Operating Pressure:
700 bar



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 (litres)	Manual Valve Model Number	Valve Function	Model Number *	Output Flow Rate (l/min) < 70 bar	< 275 bar	< 700 bar	Battery Charger Voltage V - Hz	** (kg)
Single-Acting	6,6	VM33	Advance/Neutral/Retract	**ZC3308JB**	5,0	1,3	0,52	115 - 60	29,7
				ZC3308JE				230 - 50	
Double-Acting	6,6	VM43	Advance/Neutral/Retract	**ZC3408JB**	5,0	1,3	0,52	115 - 60	29,7
				ZC3408JE				230 - 50	
Power Seater Post-Tensioning Tools	6,6	VM43LPS	Advance/Hold/Retract	**ZC3908JB**	5,0	1,3	0,52	115 - 60	33,3
				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 = 2,6 kg.

▼ PUJ-1200E



Heavy on Performance, Light on Weight

- **Lightweight and compact design: 11,8 to 18,6 kg**
- **Large easy-carry handle for maximum portability**
- **Two-speed operation reduces cycle times for improved productivity**
- **230 VAC 50/60-cycle universal motor will operate under poor voltage supply**
- **24 VAC remote motor control, 3 m 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 **G-2535L** gauge and **GA-3** 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.

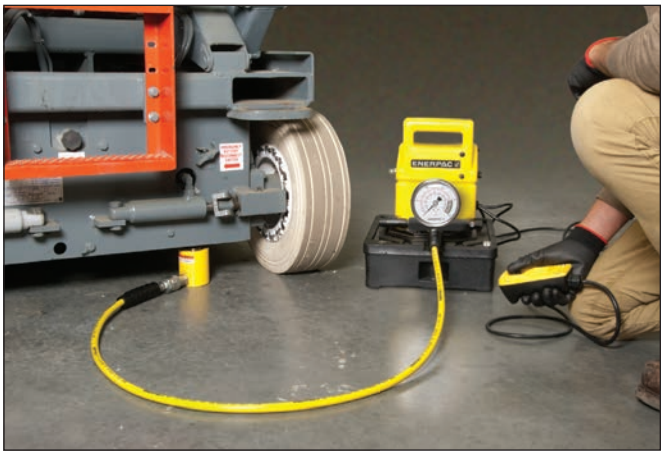
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Speed Chart

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 PUJ-1200E is used with a low-height cylinder RCS-302 to reposition a Scissor lift to simplify maintenance.*



Pump Type (Used with cylinder)	Usable Oil Capacity (litres)	Model Number *	Pressure Rating (bar) 1st stage	2nd stage
Single-Acting	1,9	PUD-1100E	13	700
	3,8	PUD-1101E	13	700
	1,9	PUJ-1200E	13	700
	3,8	PUJ-1201E	13	700
	1,9	PUD-1300E	13	700
	3,8	PUD-1301E	13	700
Double-Acting	1,9	PUJ-1400E	13	700
	3,8	PUJ-1401E	13	700

* For 115 volt applications replace 'E' suffix with 'B'.
** Electric dump valve for auto-retract of cylinders.

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'.

PUD-1100 Series

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

PUD-1300 Series

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

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PU Series

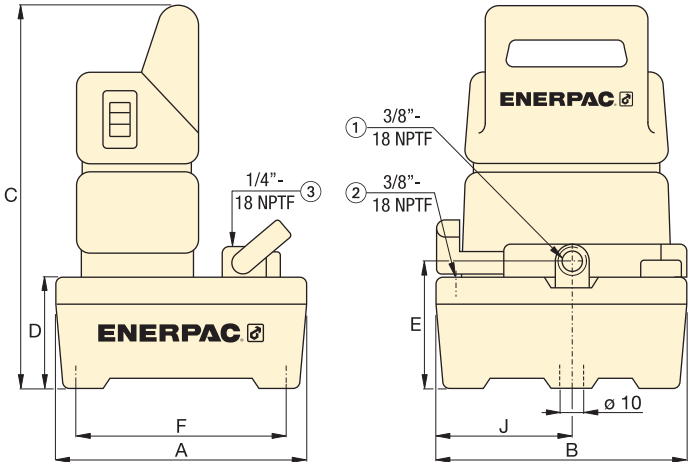


Reservoir Capacity:
1,9 - 3,8 litres

Flow at Rated Pressure:
0,32 l/min

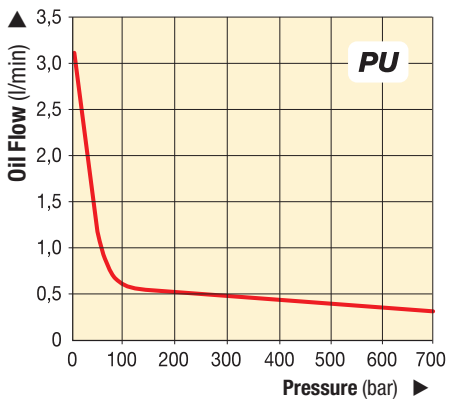
Motor Size:
0,37 kW

Maximum Operating Pressure:
700 bar



① Oil Outlet Port
② Tank Port
③ Gauge Port (PUJ-1200 and PUJ-1201 models only)

OIL FLOW VERSUS PRESSURE



Output Flow Rate (l/min) 1st stage	Output Flow Rate (l/min) 2nd stage	Valve Type	Valve Function	Current Draw (Amps)	Motor Voltage (VAC)	Sound Level (dBA)	Dimensions (mm) A	B	C	D	E	F	J	(kg)	Model Number *
3,31	0,32	Dump**	Advance/Retract	3,2	230	85	244	244	362	101	119	203	133	11,8	**PUD-1100E**
3,31	0,32			3,2	230	85	368	309	373	105	130	323	142	17,2	**PUD-1101E**
3,31	0,32	3/2 manual	Advance/ Hold/Retract	3,2	230	85	244	244	362	101	119	203	133	10,0	**PUJ-1200E**
3,31	0,32			3,2	230	85	368	309	373	105	130	323	142	15,4	**PUJ-1201E**
3,31	0,32	3/2 solenoid	Dump & Hold	3,2	230	85	244	244	362	101	119	203	133	12,0	**PUD-1300E**
3,31	0,32			3,2	230	85	368	309	373	105	130	323	142	17,5	**PUD-1301E**
3,31	0,32	4/3 manual	Advance/ Hold/Retract	3,2	230	85	244	244	362	101	119	203	133	13,2	**PUJ-1400E**
3,31	0,32			3,2	230	85	368	309	373	105	130	323	142	18,6	**PUJ-1401E**

▼ PEJ-1401E



Best Performance for Mid-Range Cylinders and Tools

- **Two-speed operation reduces cycle times for improved productivity**
- **Powerful 0,37 kW induction motor is submerged in the oil reservoir to run cooler, protect the motor, simplify the pump interface, save space and reduce noise**
- **Large 5,5 litres reservoir allows operation of a wide range of cylinders**
- **24 VDC remote pendant control on certain models for improved safety**
- **Externally adjustable relief valve allows control of operating pressure without opening the pump**
- **40-micron internal return line filter keeps oil clean, promoting longer pump life**
- **Full length side tube for easy monitoring of oil level.**



◀ *The Remote Jog model (PEJ-Series) of the Submerged Pump simplifies maintenance on this machine.*

▼ **SELECTION CHART**
For more technical information see next page.

3 BASIC PUMP TYPES Select the model that suits your application. For special requirements see page 93 or contact your Enerpac office.	
PEM Series: with Manual Valve • Ideal choice for most applications • Manual valve control, for both single-acting and double-acting applications • Manual motor control.	
PEJ Series: with Remote Jog • For light production and lifting applications • Manual valve control for single-acting or double-acting cylinders • Control pendant with 3 m cord for remote motor operation.	
PES Series: with Pressure Switch • Designed for continuous pressure applications, such as clamping, workholding and testing • All versions include manual valves for directional control.	

PE-Series Submerged Pump Application

The Submerged pump is best suited to power small to medium size cylinders or hydraulic tools, or whenever quiet, intermittent duty cycle is needed.

With its low sound level and the addition of the optional oil cooler, the Submerged pump is suited to light production work as well.

Its lightweight and compact design also make it ideal for applications which require some transport of the pump.

For further application assistance see the 'Yellow Pages' or contact your local Enerpac office.

PE Series

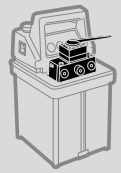
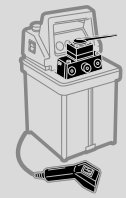


Reservoir Capacity:
5,5 litres

Flow at Rated Pressure:
0,27 l/min

Motor Size:
0,37 kW

Maximum Operating Pressure:
700 bar

Pump Type	Used with Cylinder	Valve Function	Valve Type	Usable Oil Capacity (litres)	Model Number 230 VAC, 1 ph *	(kg)
	Single-Acting	Advance/Retract	Manual, 3-way, 2-position	5,5	**PEM-1201E**	24,0
	Single-Acting	Advance/Hold/Retract	Manual, 3-way, 3-position	5,5	**PEM-1301E**	24,0
	Double-Acting	Advance/Hold/Retract	Manual, 4-way, 3-position	5,5	**PEM-1401E**	24,0
	Single-Acting	Advance/Retract	Manual, 3-way, 2-position	5,5	**PEJ-1201E**	24,9
	Single-Acting	Advance/Hold/Retract	Manual, 3-way, 3-position	5,5	**PEJ-1301E**	24,9
	Double-Acting	Advance/Hold/Retract	Manual, 4-way, 3-position	5,5	**PEJ-1401E**	24,9
	Single-Acting	Advance/Retract	Manual, 3-way, 2-position	5,5	**PES-1201E**	28,1
	Double-Acting	Advance/Hold/Retract	Manual, 4-way, 3-position	5,5	**PES-1401E**	28,1

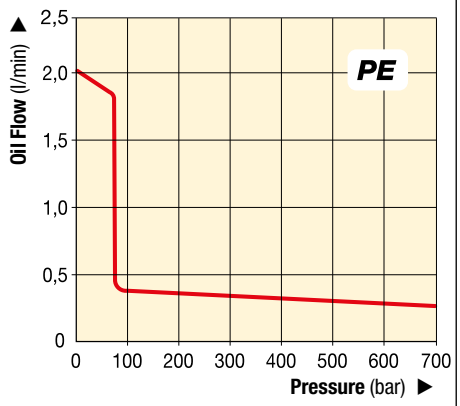
* For 115V replace suffix "E" with "B" in the model number.

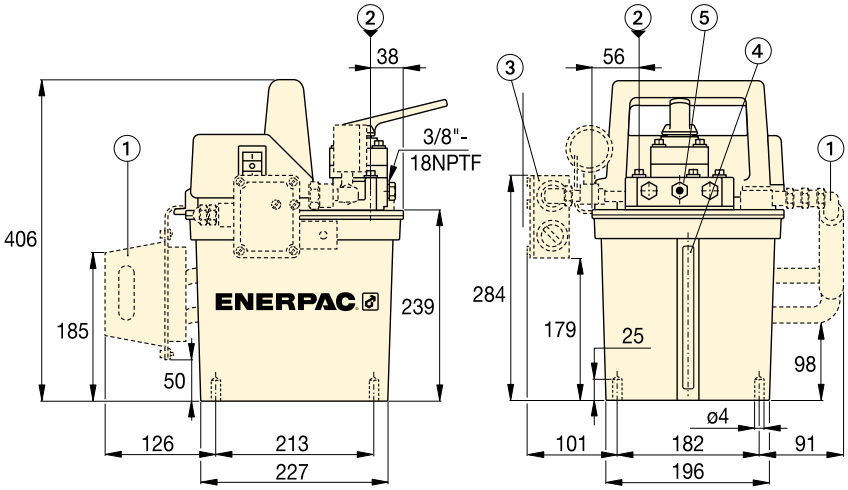
◀ For full features see previous page.

SUBMERGED PUMP PERFORMANCE							
Motor Size	Pressure Rating (bar)		Output Flow Rate at 50 Hz (l/min)		Motor Electrical Specifications *	Sound Level	Relief Valve Adjustment Range
(kW)	1st stage	2nd stage	1st stage	2nd stage	(Amps @ Volts-Ph-Hz)	(dBA)	(bar)
0,37	70	700	2,0	0,27	13 @ 115-1-50/60 6,75 @ 230-1-50/60	62-70	70-700

* At full load. See ordering matrix footnote for frequency notations.

OIL FLOW VERSUS PRESSURE





① Heat Exchanger (optional for all models)
② Fill Port
③ Pressure Switch (PES-series, optional for other models)
④ Oil Level Indicator
⑤ Adjustable relief valve



◀ *This Submerged pump quickly and quietly powers a hydraulic nut cutter in this maintenance application.*

CUSTOM BUILD YOUR SUBMERGED PUMP

If the Submerged Pump that would best fit your application cannot be found in the chart on page 91, here you can easily build your custom submerged pump.

▼ This is how a Submerged Pump Model Number is built up:

P	E	M	-	1	3	01	E
1 Product Type	2 Motor Type	3 Pump Type		4 Pump Series	5 Valve Type	6 Reservoir Size	7 Motor Voltage

1 Product Type

P = Pump

2 Motor Type

E = Electric Motor

3 Pump Type

J = Jog
M = Manual
S = Pressure Switch

4 Pump Series

1 = 0,37 kW, 700 bar

5 Valve Type

2 = 3-way, 2-position, normally open
3 = 3-way, 3-position, tandem center
4 = 4-way, 3-position, tandem center

6 Reservoir Capacity

01 = 5,5 litres

7 Motor Voltage and Heat Exchanger

B = 115 V, 1 Ph, 50/60 Hz
D = 115 V, 1 Ph, 50/60 Hz with Heat Exchanger
E = 230 V, 1 Ph, 50/60 Hz
F = 230 V, 1 Ph, 50/60 Hz with Heat Exchanger
I = 230 V, 1 Ph, 60 Hz

Ordering Example

Model Number: PEM-1301E

The PEM-1301E is a 0,37 kW, 700 bar, submerged electric pump, with 5,5 litres usable oil capacity, a 3-way, 3-position valve and a 230 V, 1 Phase, 50/60 Hz motor.

PE Series



Reservoir Capacity:
5,5 litres

Flow at Rated Pressure:
0,27 l/min

Motor Size:
0,37 kW

Maximum Operating Pressure:
700 bar



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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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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▼ EP3204JE-G, E-Pulse® Electric Hydraulic Pump



High productivity through innovative design

Performance

- Two-stage pump with high flow/pressure ratio: 2,13 l/min at 175 bar; 0,52 l/min at 700 bar
- Smart controls enable motor to maintain constant power across the pressure range
- 24VDC power regulator minimizes effects of poor power supply
- Six-piston block design provides even flow for smooth operation of cylinder or tool.

Durability

- Durable aluminium housing
- High-efficiency permanent magnet, direct drive motor enables continuous use and long service life
- Built-in thermal protection
- IP Rating: IP54 on the pump, IP67 on the pendant

Convenience

- Speed control with dial adjustment for precise operation
- Pendant and cord management system
- Integrated pressure gauge with scalereading in bar, MPA and psi
- Convenient oil fill port, oil level indicator and automatic breather.

Interactive Pendant

Integrated pendant control with a magnet that fits securely into the handle of the pump.

- Operation, programming and diagnostics status provided to operator with yellow, green, and red LED as well as vibration pulses.
- Fault codes warn operators of any issues related to voltage, temperature, button controls, or if professional service is required.



Variable Speed Control

Speed control with dial adjustment for precise tool or cylinder operation. The adjustable speed range is approximately 25 to 100% of full rated output.



Tie Down Bracket

Enables pump mounting to a work surface: **MBEP-1** optional Tie Down Bracket.



Manifold Mounting Bracket

Ability to mount AM21 and AM41 split-flow hydraulic manifolds: **MMBEP-1** optional Manifold Mounting Bracket.

E-Pulse® Pumps

The Enerpac E-Pulse drives high productivity through its innovative design. Smart controls enable the motor to maintain constant power providing higher flow than traditional pumps.

Adjustable speed control enables precision as required. E-Pulse is designed for convenience.

Features include a cord management system and integrated pendant control with a magnet that fits securely into the handle of the pump.

The durable aluminum housing is designed to give easy access for serviceability. E-Pulse is the heart to any hydraulic system, ensuring high performance and providing ultimate convenience.

E Series



Reservoir Capacity:
3,0 litres

Flow at Rated Pressure:
0,52 l/min

Motor Size:
0,63 kW

Maximum Operating Pressure:
700 bar

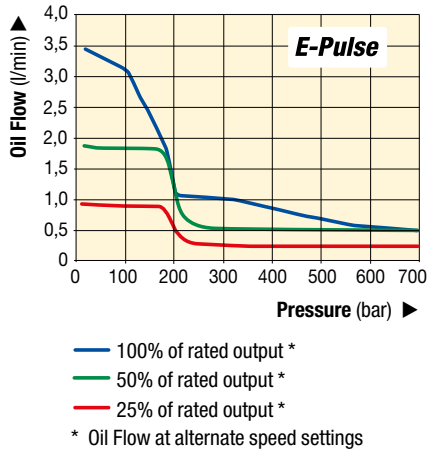


3/2 Jog, 3/2 Dump, 4/3 Jog
pendant with 3 metres cord



3/2 Dump and Hold
pendant with 3 metres cord

OIL FLOW vs. PRESSURE

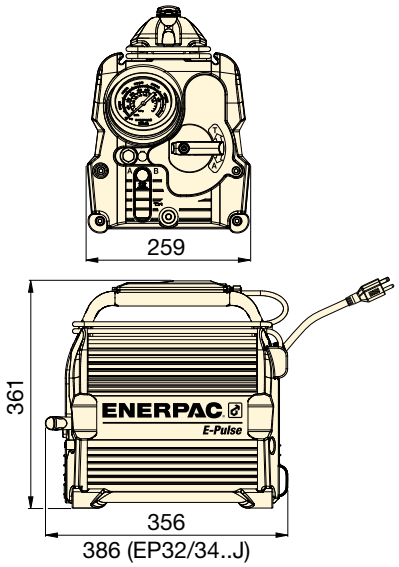


▼ PERFORMANCE CHART

Pump Series/Type	Output Flow Rate (l/min) 1 bar	175 bar	350 bar	700 bar	Motor Voltage (VAC)	Plug Type	Current Draw (Amps)	Sound Level (dBA)
EP3....B-G	3,61	2,13	0,95	0,52	100-120	NEMA 5-15	12	70-85
EP3....I-G					200-250	NEMA 6-15	7	
EP3....E-G					200-250	Schuko CEE 7/7	7	

▼ SELECTION CHART

Used with cylinder or tool	Useable Oil Capacity (litres)	Model Number	Valve Type	Valve Function	Remote Pendant Functions	(kg)
Single-Acting	3,0	EP3104DB-G	3/2 Solenoid	Dump	Advance	18,6
		EP3104DI-G				
		EP3104DE-G				
	3,0	EP3204JB-G	3/2 Manual	Jog	Motor On/Off	18,4
		EP3204JI-G				
		EP3204JE-G				
	3,0	EP3304SB-G	3/2 Solenoid	Hold and Dump	Advance/Retract	18,7
		EP3304SI-G				
		EP3304SE-G				
Double-Acting	3,0	EP3404JB-G	4/3 Manual	Jog	Motor On/Off	18,6
		EP3404JI-G				
		EP3404JE-G				



Z-Class Enerpac Power Pumps

ENERPAC

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.



Z Tough Dependable Innovative 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.

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 ZU and ZE-Series Electric Pumps. ▶

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.

Oil Flow Rate at 700 bar (l/min)	Z-Class Pump Series *	Electric Motor Power (kW)	Air Motor-Consumption (l/min)	Gasoline Engine Power (kW)	*Page:*
0,52	**ZC3**	1,0	–	–	**86**
0,55	**ZE3**	0,75	–	–	**104**
0,82	**ZE4(T)**	1,12	–	–	**104, 242**
1,00	**ZU4(T)**	1,25	–	–	**98, 238**
1,30	**ZA4(T)**	–	2840	–	**116, 244**
1,60	**ZG5**	–	–	4,8	**118**
1,64	**ZE5(T)**	2,24	–	–	**104, 242**
2,73	**ZE6**	5,60	–	–	**104**
3,30	**ZG6**	–	–	9,7	**118**

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

ZU-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

▼ Shown from left to right: **ZU4304ME, ZU4420SE-H, ZU4704PE-K**



- **High-efficiency two-speed pump design – higher oil flow and bypass pressure**
- **Powerful 1,25 kW 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.**

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

To improve productivity and plunger retraction, Enerpac offers valve configurations designed to accelerate your cylinder retraction speeds, ZU4-Series pumps feature **Venturi Valve Technology** to facilitate the faster return of single-acting gravity return cylinders. See valve type in ordering matrix and details in section Directional Control Valves.

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ZU4-Series, Pump Ordering Matrix

ZU4-Series



Reservoir Capacity:
4,6 - 39 litres

Flow at Rated Pressure:
1,0 l/min

Motor Size:
1,25 kW

Maximum Operating Pressure:
700 bar

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

	S/A or D/A [1]	Hold	Valve Type [2]	Reservoir Capacity (litres)	(kg)	Model Number 230 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	4,6	29	**ZU4104DE (B, I)**
	S/A		VE32D	6,8	31	**ZU4108DE (B, I)**
	S/A		VE32D	19,8	51	**ZU4120DE (B, I)**
	–		–	–	–	**–**
	–		–	–	–	**–**
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	4,6	29	**ZU4204SE (B, I)**
	S/A	●	VE32	6,8	31	**ZU4208SE (B, I)**
	S/A	●	VE32	19,8	51	**ZU4220SE (B, I)**
	S/A	●	VE33	6,8	37	**ZU4308SE (B, I)**
	S/A	●	VE33	19,8	57	**ZU4320SE (B, I)**
	S/A	●	VE33	39,0	79	**ZU4340SE (B, I)**
	S/A	●	VE33VAC	6,8	34	**ZU41108SE (B)**
	S/A	●	VE33VAC	19,8	53	**ZU41120SE (B)**
	S/A	●	VE33VAC	39,0	76	**ZU41140SE (B)**
	D/A	●	VE43	6,8	37	**ZU4408SE (B, I)**
	D/A	●	VE43	19,8	56	**ZU4420SE (B, I)**
	D/A	●	VE43	39,0	79	**ZU4440SE (B, I)**

▼ ZU-SERIES PUMP MODELS WITH MANUAL VALVES

	S/A or D/A [1]	Hold	Valve Type [2]	Reservoir Capacity (litres)	(kg) [5]	Model Number 230 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	4,6	27	**ZU4704ME (B, I)**	**–**	**ZU4704PE (B, I)**
	S/A		VM22	6,8	29	**ZU4708ME (B, I)**	**–**	**ZU4708PE (B, I)**
	S/A		VM22	19,8	49	**ZU4720ME (B, I)**	**–**	**ZU4720PE (B, I)**
	S/A		VM32	4,6	25	**ZU4204ME (B, I)**	**ZU4204JE (B, I)**	**–**
	S/A		VM32	6,8	28	**ZU4208ME (B, I)**	**ZU4208JE (B, I)**	**–**
	S/A		VM32	19,8	47	**ZU4220ME (B, I)**	**ZU4220JE (B, I)**	**–**
	S/A		VM32	39,0	70	**ZU4240ME (B, I)**	**ZU4240JE (B, I)**	**–**
	S/A	●	VM33	4,6	25	**ZU4304ME (B, I)**	**–**	**–**
	S/A	●	VM33	6,8	28	**ZU4308ME (B, I)**	**ZU4308JE (B, I)**	**ZU4308PE (B)**
	S/A	●	VM33	19,8	48	**ZU4320ME (B, I)**	**ZU4320JE (B, I)**	**ZU4320PE (B)**
	S/A	●	VM33	39,0	71	**ZU4340ME (B, I)**	**ZU4340JE (B, I)**	**ZU4340PE (B)**
	S/A	●	VM33VAC	6,8	29	**ZU41008ME (B)**	**ZU41008JE (B)**	**–**
	S/A	●	VM33VAC	19,8	48	**ZU41020ME (B)**	**ZU41020JE (B)**	**–**
	S/A	●	VM33L	6,8	30	**ZU4608ME (B)**	**ZU4608JE (B)**	**–**
	S/A	●	VM33L	19,8	49	**ZU4620ME (B)**	**ZU4620JE (B)**	**–**
	D/A	●	VM43	6,8	29	**ZU4408ME (B, I)**	**ZU4408JE (B, I)**	**ZU4408PE (B)**
	D/A	●	VM43	19,8	48	**ZU4420ME (B, I)**	**ZU4420JE (B, I)**	**ZU4420PE (B)**
	D/A	●	VM43	39,0	71	**ZU4440ME (B, I)**	**ZU4440JE (B, I)**	**ZU4440PE (B)**
	D/A	●	VM43L	4,6	30	**ZU4808ME (B)**	**ZU4808JE (B)**	**–**
	D/A	●	VM43L	19,8	50	**ZU4820ME (B)**	**ZU4820JE (B)**	**–**

[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**" indicates pump is available in 115V, 1-phase, 50/60 Hz. Model number order example: **ZU4208MB**.
"**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 0,5 kg and Classic Electric with pendant add 1,5 kg.

NOTE: Valve operation "**L**" available on pumps with manual valve. Substitute "**M**" for "**L**" valve operation. Example: **ZU4608LE**.



Roll Cage (R)

- **Protects and stabilizes the pump.**

Popular Pump Models with Factory Installed Roll Cage	
ZU4108DE-R (B, I)	ZU4308ME-R (B, I)
ZU4208JE-R (B, I)	ZU4320ME-R (B, I)
ZU4220JE-R (B, I)	ZU4408ME-R (B, I)
ZU4208SE-R (B, I)	ZU4420ME-R (B, I)
ZU4308JE-R (B, I)	ZU4408JE-R (B, I)
ZU4320JE-R (B, I)	ZU4420JE-R (B, I)
ZU4308SE-R (B, I)	ZU4408SE-R (B, I)
ZU4320SE-R (B, I)	ZU4420SE-R (B, I)

Accessory Kit Model Nr.	Fits on Reservoir
	
ZRC-04	4,6 and 6,8 litres [1]
ZRC-04H	4,6 and 6,8 litres [2]
ZRB-20	19,8 litres
ZRB-40	39 litres

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



Foot Switch (U)

- **3 metres cord, hands-free control.**

Popular Pump Models with Factory Installed Foot Switch	
ZU4108DE-U (B, I)	
ZU4208SE-U (B, I)	
ZU4220SE-U (B, I)	
ZU4320SE-U (B, I)	
ZU4408SE-U (B, I)	
ZU4420SE-U (B, I)	

Accessory Kit Model Nr.	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 bypass oil**
- **Increases oil life, reduces wear on hydraulic components.**

Popular Pump Models with Factory Installed Heat Exchanger	
ZU4108DE-H (B, I)	
ZU4208SE-H (B, I)	
ZU4308SE-H (B, I)	
ZU4408SE-H (B, I)	
ZU4420SE-H (B, I)	

Accessory Kit Model Nr.	Can be used on
	
ZHE-U115	115 V pumps
ZHE-U230	230V pumps

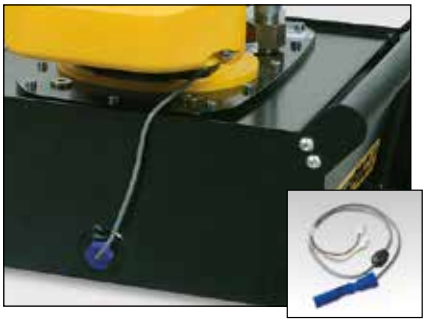


Pressure Transducer (T)

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

Popular Pump Models with Factory Installed Pressure Transducer, Requires LCD Electric Pump	
ZU4108DE-T (B, I)	
ZU4208SE-T (B, I)	
ZU4308SE-T (B, I)	
ZU4408SE-T (B, I)	
ZU4420SE-T (B, I)	

Accessory Kit Model Nr.	Adjustable Pressure Range (bar)	Switch-Point Repeat-ability (%)	Dead-band (bar)
			
ZPT-U4	3,5 - 700	± 0,5	3,5



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 Nr.	Operating Temperature (°C)	Maximum Pressure (bar)	(kg)
ZLS-U4	5 - 110	10	0,1

[1)] Level/Temperature switch (L) not available on 4,6 or 6,8 litres 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.**

Accessory Kit Model Nr.	Max. Pressure (bar)	Max. Oil Flow (l/min)	By-Pass Setting (bar)
ZPF	14	45	1,7



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 Nr.	Fits on Reservoir	(kg)
SBZ-4	4,6 and 6,8 litres [2)]	2,2
SBZ-4L	4,6 and 6,8 litres [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 63 mm face diameter, glycerin filled**
- **Dual scale in bar and PSI.**

Accessory Kit Model Nr.	Description
G2536L	0 - 1000 bar, 0 - 15.000 psi

ZU4 Series



Reservoir Capacity:
4,6 - 39 litres

Flow at Rated Pressure:
1,0 l/min

Motor Size:
1,25 kW

Maximum Operating Pressure:
700 bar

Heat Exchanger

Stabilizes oil temperature at a maximum of 54 °C at 21 °C 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 (bar)	Maximum Oil Flow (l/min)	Voltage (VDC)
900	20,7	26,5	12

* At 1,9 l/min at 21 °C ambient temperature.



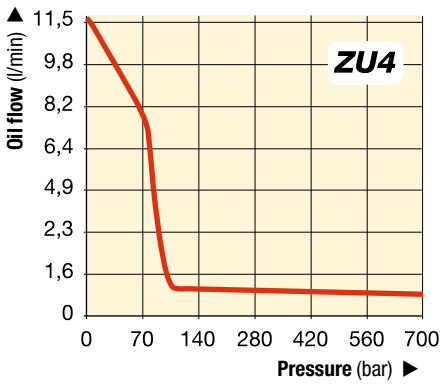
Hoses

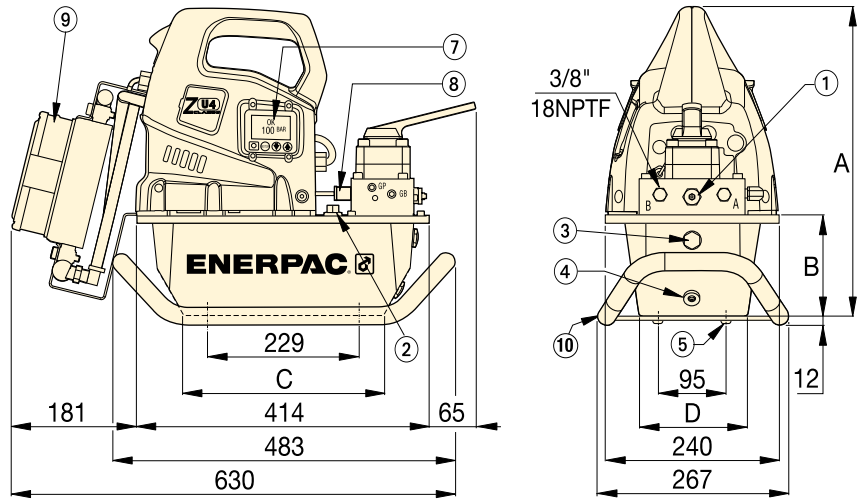
Enerpac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

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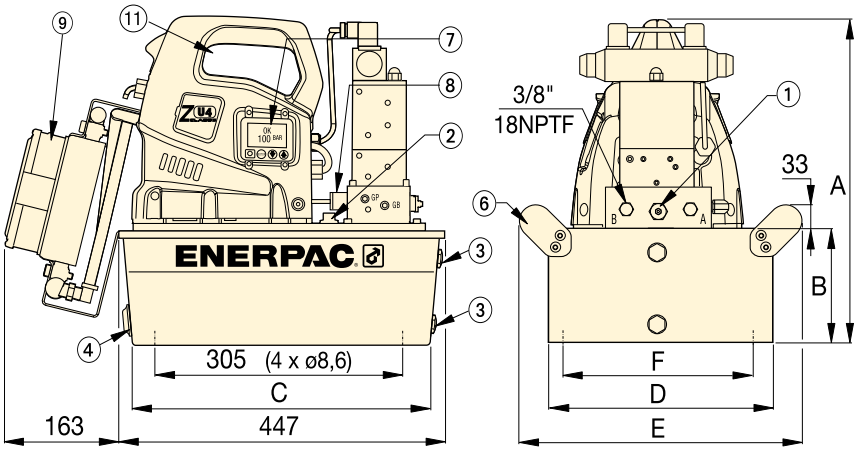
ZU4-SERIES PERFORMANCE CHART							
Motor Size	Output Flow Rate at 50 Hz (l/min)				Motor Electrical Specifications	Sound Level	Relief Valve Adjustment Range
(kW)	7 bar	50 bar	350 bar	700 bar	(Volts-Ph-Hz)	(dBA)	(bar)
1,25	11,5	8,8	1,2	1,0	115-1-50/60 230-1-50/60	85-90	140-700

OIL FLOW VERSUS PRESSURE





ZU4-Series with 4,6 and 6,8 litres reservoirs



ZU4-Series with 19,8 and 39 litres 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, 6 mm deep
⑥ Handles on all 19,8 and 39 litres reservoirs.

Options

⑦ Back-lit LCD Electric
⑧ Pressure transducer
⑨ Heat Exchanger
⑩ Skid Bar. Fits 4,6 and 6,8 litres reservoirs
⑪ Handle guard installed on all 19,8 and 39 litres reservoirs
⑫ Reservoir handles (not shown) included on all 19,8 and 39 litres reservoirs

Pump Dimensions (mm)						
Reservoir Capacity (litres)	A	B	C	D	E	F
4,6	424	142	279	152	-	-
6,8	424	142	279	206	-	-
19,8	465	180	413	422	500	396
39	551	269	399	503	576	480

ZU4-Series Ordering Guide

▼ 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	E	-	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 = 1,0 l/min @ 700 bar

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 = 4,6 litres
08 = 6,8 litres
20 = 19,8 litres
40 = 39,0 litres

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
H = Heat Exchanger
K = Skid Bar
L = Level/Temperature Switch
N = Lifting Eyes (no reservoir handles)
R = Roll Cage
T = Pressure Transducer
U = Foot Switch

ZU4 Series



Reservoir Capacity:
4,6 - 39 litres

Flow at Rated Pressure:
1,0 l/min

Motor Size:
1,25 kW

Maximum Operating Pressure:
700 bar

Speed Chart
To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.
Page: 321



Assisted Return Pumps with Venturi Valve Technology
To improve productivity and plunger retraction, Enerpac offers valve configurations designed to accelerate your cylinder retraction speeds, ZU4 and ZE-Series pumps feature **Venturi Valve Technology** to facilitate the faster return of single-acting gravity and spring return cylinders. See valve type in ordering matrix and details in section Directional Control Valves.
Page: 122



Spring Centred Valve Kits
VM and VC-Series manual 3-position valves can be easily converted into spring centred valves. With these retro-fit kits the handle will automatically move into the neutral valve position when released.
Page: 123

ZE-Series, Electric Pumps

ENERPAC

▼ Shown from left to right: **ZE3304ME-K, ZE4110DE-FHR**



- **High-efficiency pump design – higher oil flow and by-pass pressure**
- **High-strength, moulded 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 9,8, 19,8 and 39 litres reservoirs, oil level indicators on 4,6 and 6,8 litres reservoirs.**
- **40 micron filter breather with splash guard**
- **Durable steel reservoirs.**

▼ 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 3 m. 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 (VM33VAC) for faster retract of single-acting cylinders • Push-button control pendant with 3 m. cord controls the valve and motor.	

ZE-Series Pump Ordering Matrix

S/A or D/A [1]	Hold 	Valve Type [2]	Reservoir Capacity (litres)	ZE3-Series (0,75 kW) Output Flow Rate at 700 bar: 0,55 l/min		ZE4-Series (1,12 kW) Output Flow Rate at 700 bar: 0,82 l/min		ZE5-Series (2,24 kW) Output Flow Rate at 700 bar: 1,64 l/min		ZE6-Series (5,60 kW) Output Flow Rate at 700 bar: 2,73 l/min	
				Model Number [3] E = 230 V, 1 ph	(kg)	Model Number [3] E = 230 V, 1 ph	(kg)	Model Number [3] W = 400 V, 3 ph	(kg)	Model Number [3] W = 400 V, 3 ph	(kg)
		–	6,8	ZE3008NE (B, I, J, G, W)	45	ZE4008NE (B, I, J, G, W)	43	–	–	–	–
		–	9,8	ZE3010NE (B, I, J, G, W)	45	ZE4010NE (B, I, J, G, W)	49	ZE5010NW (J, G)	54	ZE6010NW (J, G)	72
		–	19,8	ZE3020NE (B, I, J, G, W)	57	ZE4020NE (B, I, J, G, W)	61	ZE5020NW (J, G)	66	ZE6020NW (J, G)	84
		–	39,0	ZE3040NE (B, I, J, G, W)	80	ZE4040NE (B, I, J, G, W)	84	ZE5040NW (J, G)	89	ZE6040NW (J, G)	107
	S/A	–	VM22	19,8	–	–	ZE4720ME (B, W)	65	–	–	–
	S/A	–	VM32	4,6	ZE3204ME (B)	39	–	–	–	–	–
	S/A	–	VM32	6,8	ZE3208ME (B, I, J, G, W)	41	ZE4208ME (B, I, J, G, W)	45	–	–	–
	S/A	–	VM32	9,8	ZE3210ME (B, I, J, G, W)	47	ZE4210ME (B, I, J, G, W)	51	ZE5210MW (J, G)	56	ZE6210MW (J, G)
	S/A	–	VM32	19,8	ZE3220ME (B, I, J, G, W)	59	ZE4220ME (B, I, J, G, W)	64	ZE5220MW (J, G)	68	ZE6220MW (J, G)
	S/A	●	VM33	4,6	ZE3304ME (B)	39	–	–	–	–	–
	S/A	●	VM33	6,8	ZE3308ME (B, I, J, G, W)	42	ZE4308ME (B, I, J, G, W)	46	–	–	–
	S/A	●	VM33	9,8	ZE3310ME (B, I, J, G, W)	48	ZE4310ME (B, I, J, G, W)	52	ZE5310MW (J, G)	57	ZE6310MW (J, G)
	S/A	●	VM33	19,8	ZE3320ME (B, I, J, G, W)	60	ZE4320ME (B, I, J, G, W)	64	ZE5320MW (J, G)	69	ZE6320MW (J, G)
	S/A	●	VM33	39,0	ZE3340ME (B, I, J, G, W)	83	ZE4340ME (B, I, J, G, W)	87	ZE5340MW (J, G)	92	ZE6340MW (J, G)
	S/A	●	VM33VAC	6,8	–	42	ZE41008ME (B, I, J, G, W)	46	–	–	–
	S/A	●	VM33VAC	19,8	–	60	ZE41020ME (B, I, J, G, W)	64	ZE51020MW (J, G)	69	ZE61020MW (J, G)
	S/A	●	VM33VAC	39,0	–	–	–	–	ZE51040MW (J, G)	92	ZE61040MW (J, G)
	S/A	●	VM33L	6,8	ZE3608ME (B, I, J, G, W)	42	–	–	–	–	–
	S/A	●	VM33L	19,8	ZE3620ME (B, I, J, G, W)	62	ZE4620ME (B, I, J, G, W)	66	–	–	–
	S/A	●	VM33L	39,0	ZE3640ME (B, I, J, G, W)	85	ZE4640ME (B, I, J, G, W)	89	–	–	–
	D/A	●	VM43	4,6	ZE3404ME (B)	39	–	–	–	–	–
	D/A	●	VM43	6,8	ZE3408ME (B, I, J, G, W)	42	ZE4408ME (B, I, J, G, W)	46	–	–	–
	D/A	●	VM43	9,8	ZE3410ME (B, I, J, G, W)	48	ZE4410ME (B, I, J, G, W)	52	ZE5410MW (J, G)	57	ZE6410MW (J, G)
	D/A	●	VM43	19,8	ZE3420ME (B, I, J, G, W)	60	ZE4420ME (B, I, J, G, W)	64	ZE5420MW (J, G)	69	ZE6420MW (J, G)
	D/A	●	VM43	39,0	ZE3440ME (B, I, J, G, W)	83	ZE4440ME (B, I, J, G, W)	87	ZE5440MW (J, G)	92	ZE6440MW (J, G)
	D/A	●	VM43L	6,8	ZE3808ME (B, I, J, G, W)	44	–	–	–	–	–
	D/A	●	VM43L	19,8	ZE3820ME (B, I, J, G, W)	62	ZE4820ME (B, I, J, G, W)	66	ZE5820MW (J, G)	71	ZE6820MW (J, G)
	D/A	●	VM43L	39,0	ZE3840ME (B, I, J, G, W)	85	ZE4840ME (B, I, J, G, W)	89	ZE5840MW (J, G)	94	ZE6840MW (J, G)
	S/A	–	VE32D	4,6	ZE3104DE (B, I, J, G, W)	43	–	–	–	–	–
	S/A	–	VE32D	6,8	ZE3108DE (B, I, J, G, W)	45	ZE4108DE (B, I, J, G, W)	49	–	–	–
	S/A	–	VE32D	9,8	ZE3110DE (B, I, J, G, W)	52	ZE4110DE (B, I, J, G, W)	55	ZE5110DW (J, G)	62	ZE6110DW (J, G)
	S/A	–	VE32D	19,8	ZE3120DE (B, I, J, G, W)	64	ZE4120DE (B, I, J, G, W)	68	ZE5120DW (J, G)	74	ZE6120DW (J, G)
	S/A	–	VE32D	39,0	–	–	ZE4140DE (B, I, J, G, W)	91	ZE5140DW (J, G)	97	ZE6140DW (J, G)
	S/A	●	VE33	4,6	ZE3304SE (B, I, J, G, W)	48	–	–	–	–	–
	S/A	●	VE33	6,8	ZE3308SE (B, I, J, G, W)	51	ZE4308SE (B, I, J, G, W)	55	–	–	–
	S/A	●	VE33	9,8	ZE3310SE (B, I, J, G, W)	57	ZE4310SE (B, I, J, G, W)	61	ZE5310SW (J, G)	67	ZE6310SW (J, G)
	S/A	●	VE33	19,8	ZE3320SE (B, I, J, G, W)	69	ZE4320SE (B, I, J, G, W)	73	ZE5320SW (J, G)	79	ZE6320SW (J, G)
	S/A	●	VE33	39,0	ZE3340SE (B, I, J, G, W)	92	ZE4340SE (B, I, J, G, W)	96	ZE5340SW (J, G)	102	ZE6340SW (J, G)
	S/A	●	VE33VAC	6,8	–	48	ZE41108SE (B, I, J, G, W)	52	–	–	–
	S/A	●	VE33VAC	19,8	–	66	ZE41120SE (B, I, J, G, W)	70	ZE51120SW (J, G)	76	ZE61120SW (J, G)
	S/A	●	VE33VAC	39,0	–	–	–	–	ZE51140SW (J, G)	99	ZE61140SW (J, G)
	D/A	●	VE43	4,6	ZE3404SE (B, I, J, G, W)	48	–	–	–	–	–
	D/A	●	VE43	6,8	ZE3408SE (B, I, J, G, W)	51	ZE4408SE (B, I, J, G, W)	55	–	–	–
	D/A	●	VE43	9,8	ZE3410SE (B, I, J, G, W)	57	ZE4410SE (B, I, J, G, W)	61	ZE5410SW (J, G)	67	ZE6410SW (J, G)
	D/A	●	VE43	19,8	ZE3420SE (B, I, J, G, W)	69	ZE4420SE (B, I, J, G, W)	73	ZE5420SW (J, G)	79	ZE6420SW (J, G)
	D/A	●	VE43	39,0	ZE3440SE (B, I, J, G, W)	92	ZE4440SE (B, I, J, G, W)	96	ZE5440SW (J, G)	102	ZE6440SW (J, G)

[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**" suffix model numbers shown are 230 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 "**E**" voltage suffix with selected voltage character. Model number order example: **ZE4108DB** is 115VAC, 1 phase, 50/60 Hz. See Ordering Guide page 109 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: **ZE3608LE**.



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 9,8; 19,8 and 39 litres reservoirs.

Accessory Kit Modelnr.	Fixed Temperature Signal (°C)	Operating Tempe-rature (°C)	Max. Pressure (bar)
ZLS-U4	80	5 - 110	10



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 Modelnr.	Maximum Pressure (bar)	Maximum Oil Flow (l/min)	By-pass Setting (bar)
ZPF	13,8	45,4	1,7



Roll Cage (R)

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



Skid Bar (K)

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



Foot Switch (U) [7]

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

[7] 15 V, requires Electric Box.

Accessory Kit Nr.	Fits on reservoir size:	(kg)
ZRC-04	4,6 and 6,8 litres [5]	5,5
ZRC-04H	4,6 and 6,8 litres [6]	6,5
ZRB-10	9,8 litres	6,0
ZRB-20	19,8 litres	6,0
ZRB-40	39 litres	6,0

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

Accessory Kit Nr.	Fits on reservoir size:	(kg)
SBZ-4	4,6 and 6,8 litres [5]	2,2
SBZ-4L	4,6 and 6,8 litres [6]	3,2

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

Accessory Kit Nr.	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 35-700 bar**
- **Includes glycerine filled 1000 bar 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:
4,6 - 39 litres

Flow at Rated Pressure:
0,55 - 2,73 l/min

Motor Size:
0,75 - 5,60 kW

Maximum Operating Pressure:
700 bar

Accessory Kit Modelnr.	Adjustable Pressure Range (bar)	Switch-point repea-tability	Dead-band (bar)
ZPT-U4	3,5 - 700	± 0,5%	3,5

Accessory Kit Modelnr.	Switch-point repea-tability	Deadband (bar)	Oil Ports (NPTF)
ZPS-E3	± 2%	8 - 38	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 3, 14, 35 and 145 bar 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 63 mm face diameter, glycerin filled**
- **Dual scale in bar and PSI.**

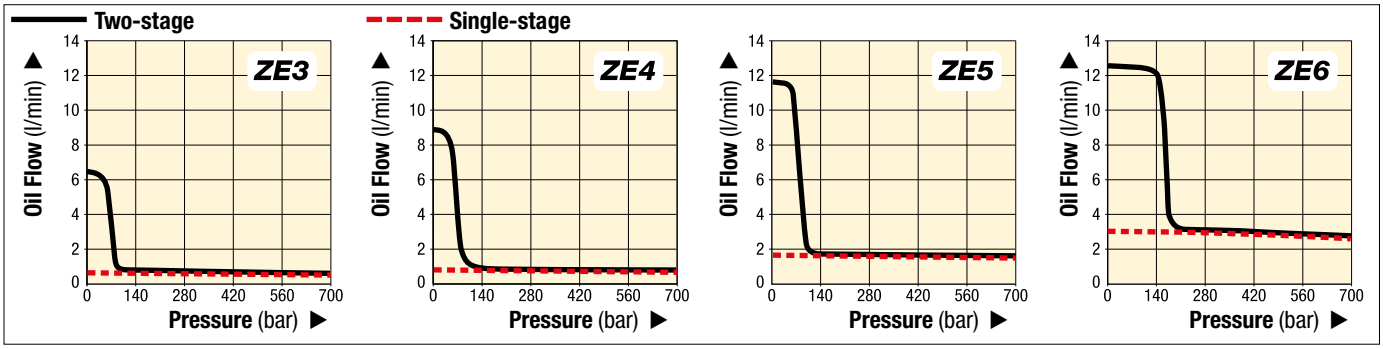
ZHE-Series Heat Exchangers

Heat exchanger stabilizes oil temperature at 54 °C at 21 °C ambient temperature. Thermal transfer at 1,9 l/min and 21 °C ambient temperature: 900 Btu/hour [950 kJ].

Do not exceed max. oil flow of 26,5 l/min and max. pressure of 20,7 bar. Not suitable for water-glycol or high water based fluids.

Accessory Kit Nr.	Fits on reservoir size:	(kg)
ZHE-E04	4,6 and 6,8 litres	4,1
ZHE-E10	9,8; 19,8 and 39 litres	4,1

Accessory Kit Model Nr.	Description
G2536L	0 - 1000 bar, 0 - 15.000 psi



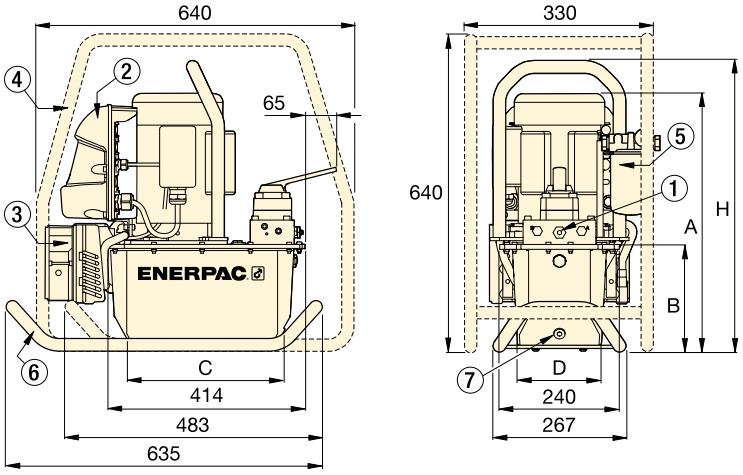
▼ ZE-SERIES PERFORMANCE CHART

Pump Series	Output Flow Rate at 50 Hz * (l/min) low pressure at 7 bar	low pressure at 50 bar	high pressure at 350 bar	high pressure at 700 bar	Pump Unit	Available Reservoir Sizes (litres)	Motor Size (kW)	Relief Valve Adjustment Range (bar)	Sound Level (dBA)
ZE3	0,59	0,59	0,57	**0,55**	Single-stage	4,6 - 6,8 - 9,8 19,8 - 39	0,75	70-700	75
	6,15	5,26	0,57	**0,55**	Two-stage				
ZE4	0,87	0,87	0,84	**0,82**	Single-stage	4,6 - 6,8 - 9,8 19,8 - 39	1,12	70-700	75
	8,88	8,20	0,84	**0,82**	Two-stage				
ZE5	1,75	1,72	1,68	**1,64**	Single-stage	9,8 - 19,8 - 39	2,24	70-700	75
	11,61	11,27	1,68	**1,64**	Two-stage				
ZE6	3,00	2,94	2,86	**2,73**	Single-stage	9,8 - 19,8 - 39	5,60	70-700	80
	12,29	12,15	2,86	**2,73**	Two-stage				

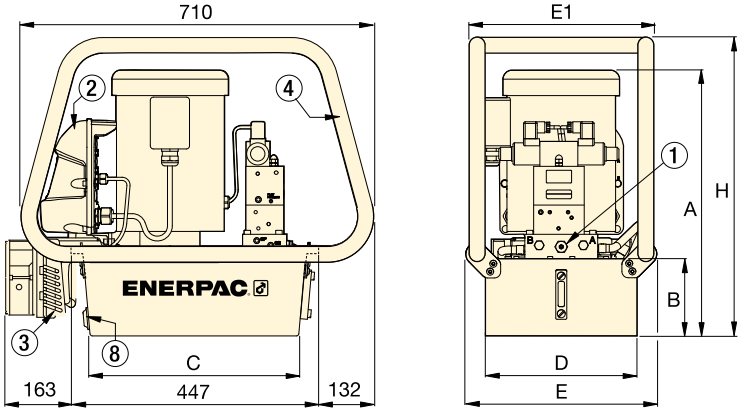
* Oil flow will be approximately 6/5 of these values at 60 Hz.

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 4,6 - 6,8 litres reservoir



ZE-Series Pumps with 9,8 - 19,8 - 39 litres 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 (litres)	ZE-Series Pump Dimensions (mm) A	B	C	D	E	E1	H
4,6	457	143	279	152	–	–	513
6,8	457	143	279	206	–	–	513
9,8	533	158	419	305	384	371	600
19,8	558	180	419	422	501	488	625
39	648	270	399	505	576	572	715

▼ 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 oredring matrix..

Z	E	4	4	20	M	E	-	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 = 0,55 l/min @ 700 bar
4 = 0,82 l/min @ 700 bar
5 [1] = 1,64 l/min @ 700 bar
6 [1] = 2,73 l/min @ 700 bar

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 = 4,6 litres
08 = 6,8 litres
10 = 9,8 litres
20 = 19,8 litres
40 = 39,0 litres

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

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)
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 4,6 or 6,8 litres 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 models with 3-phase motors are 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.

ZE Series



Reservoir Capacity:
4,6 - 39 litres

Flow at Rated Pressure:
0,55 - 2,73 l/min

Motor Size:
0,75 - 5,60 kW

Maximum Operating Pressure:
700 bar

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

To improve productivity and plunger retraction, Enerpac offers valve configurations designed to accelerate your cylinder retraction speeds, ZU4 and ZE-Series pumps feature **Venturi Valve Technology** to facilitate the faster return of single-acting gravity and spring return cylinders. See valve type in ordering matrix and details in section Directional Control Valves.

Page: 122

PA-Series, Air Hydraulic Foot Pumps

ENERPAC

▼ Shown: **PA-1150, PA-133**



PA
Series

Reservoir Capacity:
0,6 - 1,3 litres

Flow at Rated Pressure:
0,13 l/min

Air Consumption:
255 l/min

Maximum Operating Pressure:
700 bar



Reservoir Conversion Kit

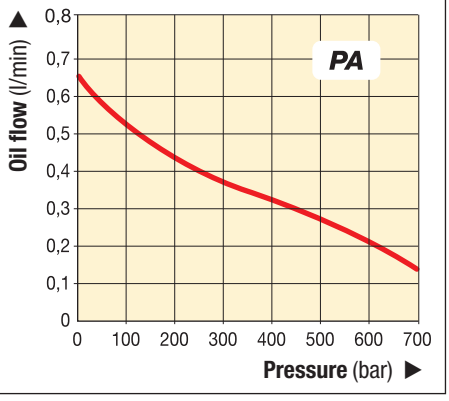
Double the reservoir capacity of your existing PA-133 with this easy to install conversion kit.

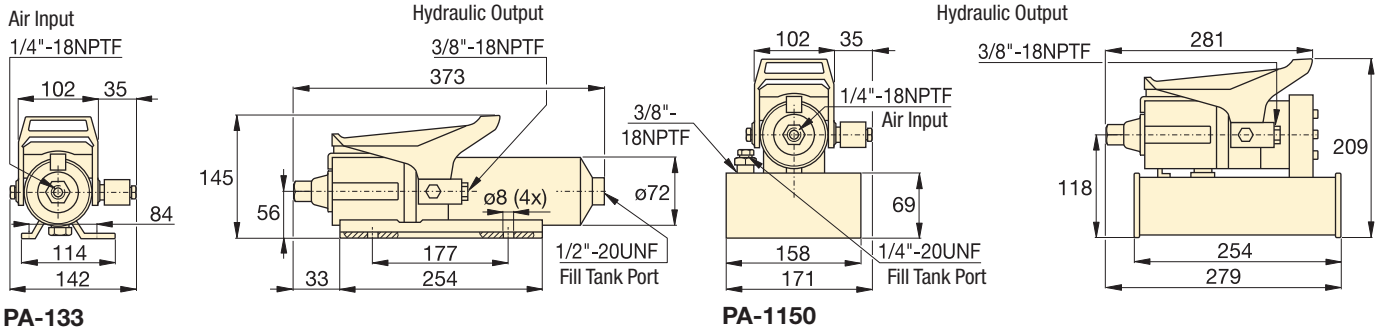
Model Number	PC-66

- **Rugged construction – built for long life and easy service**
- **Swivel coupling simplifies hydraulic connection and pump operation**
- **Three-position treadle provides cylinder advance, hold or retract operation**
- **Operates in all positions for increased versatility in use and mounting (except PA-1150)**
- **Base mounting slots provided on PA-133.**

OIL FLOW VERSUS PRESSURE

at 6,9 bar air pressure





PA-133 **PA-1150**

Used with Cylinder	Usable Oil Capacity (cm^3)	Model Number	Pressure Rating (bar)	Output Flow Rate (l/min) No load	Output Flow Rate (l/min) Load	Valve Function	Air Pressure Range * (bar)	Air Consumption (l/min)	Sound Level (dBA)	(kg)
Single-Acting	589	**PA-133**	700	0,65	0,13	Advance / Hold / Retract	4,1 - 8,3	255	85	5,4
	1311	**PA-1150**	700	0,65	0,13	Advance / Hold / Retract	4,1 - 8,3	255	85	8,2

* Recommended Regulator-Filter-Lubricator: RFL-102.

▼ Shown: **PAM-1041**



PAM Series

Reservoir Capacity:
4,0 - 8,0 litres

Flow at Rated Pressure:
0,15 l/min

Air Consumption:
510 l/min

Maximum Operating Pressure:
700 bar

- **Twin air motor configuration delivers high-flow performance in first stage, up to 14 bar, for rapid cylinder advance**
- **4 and 8 litres 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 with 4/3 manual locking valves instead. Add suffix "L" to pump model number.

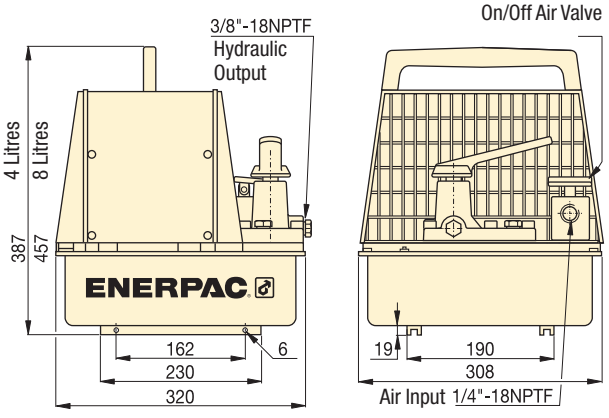
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Remote Air Valve

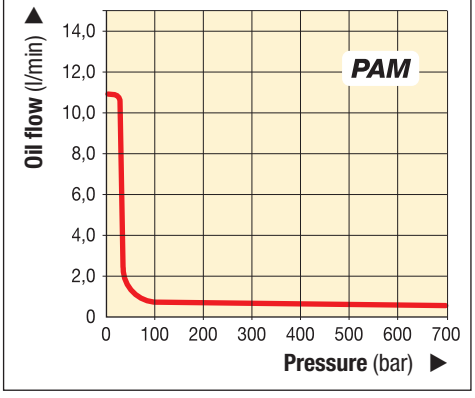
For remote operation of PAM-Series air pumps. Permits either hand or foot operation.

Model Number	VA-2



OIL FLOW VERSUS PRESSURE

at 6,9 bar air pressure



Used with Cylinder	Usable Oil Cap. (litres)	Model Number with Shroud	Pressure Rating (bar)	Output Flow Rate (l/min) 1st stage	Output Flow Rate (l/min) 2nd stage	Valve Function	Valve Type	Air Pressure Range * (bar)	Air Consumption (l/min)	Sound Level (dBA)	(kg)
Single-Acting	2,6	PAM-1021	700	10,65	0,15	Advance / Hold / Retract	3/2	4,1 - 8,3	510	87	22,7
	7,6	PAM-1022	700	10,65	0,15	Advance / Hold / Retract	3/2	4,1 - 8,3	510	87	27,2
Double-Acting	2,6	PAM-1041	700	10,65	0,15	Advance / Hold / Retract	4/3	4,1 - 8,3	510	87	22,7
	7,6	PAM-1042	700	10,65	0,15	Advance / Hold / Retract	4/3	4,1 - 8,3	510	87	27,2

* Recommended Regulator-Filter-Lubricator: RFL-102.

PA-Series, Turbo II Air Hydraulic Pumps

▼ Shown from top to bottom: **PAMG-1402N, PARG-1102N, PATG-1102N, PATG-1105N**



- **External adjustable pressure relief valve (behind sight glass)**
- **Return-to-tank port for use in remote valve applications**
- **Internal pressure relief valve provides overload protection**
- **Quieter operation – reduced noise level to 76 dBA**
- **Operating air pressure: 2,8 - 8,8 bar, enables pump to start at extremely low pressure**
- **High efficiency cast aluminium air motor**
- **Reinforced heavy-duty lightweight reservoir for applications in tough environments**
- **Air pendant for remote control operation.**

Compact Air Over Hydraulic



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	RFL-102



Large Reservoir Models

The Turbo II Air Pump is also available with an enlarged reservoir: **PATG-1105N, PAMG-1405N** and **PARG-1105N.**



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 (cm^3)	Model Number
Single-Acting	2081	PATG-1102N
	3770	PATG-1105N
Single-Acting	2081	PARG-1102N
	3770	PARG-1105N
Double-Acting	2081	PAMG-1402N
	3770	PAMG-1405N

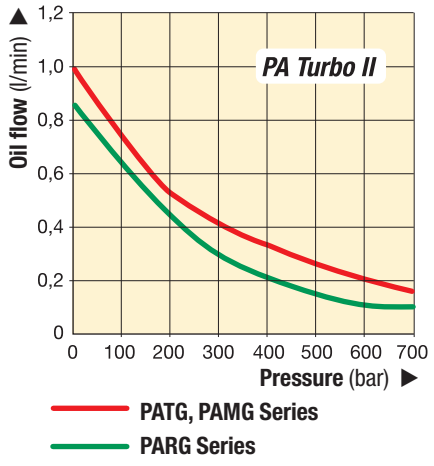
PATG-models use a foot or hand operated treadle to control air and valve functions.

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

PARG-models use air pendant for remote control.

OIL FLOW VERSUS PRESSURE

at 6,9 bar dynamic air pressure



PATG PAMG PARG Series



Reservoir Capacity:
2,5 - 5,0 litres

Flow at Rated Pressure:
0,10 - 0,16 l/min

Air Consumption:
227 - 340 l/min

Maximum Operating Pressure:
700 bar

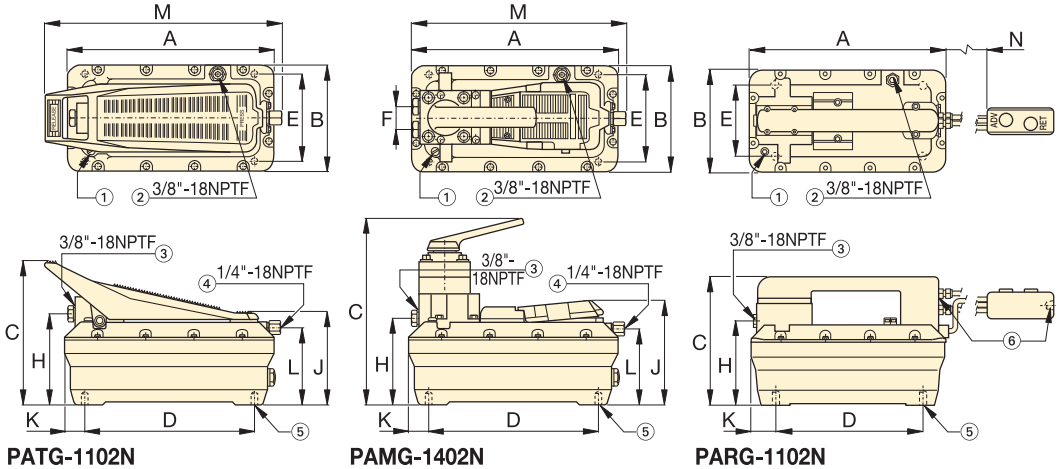
Maximum Pressure (bar)	Output Flow Rate (l/min) No Load	Output Flow Rate (l/min) Load	Pump Series	Valve Function	Air Pressure Range (bar)	Air Consumption at 5,2 bar air (l/min)	Sound Level (dBA)
700	1,00	0,16	**PATG**	A / H / R *	2,8 - 8,8	340	76
700	0,76	0,10	**PARG**	A / H / R *	2,8 - 10,3	227	76
700	1,00	0,16	**PAMG**	A / H / R *	2,8 - 8,8	340	76

* Valve function: Advance / Hold / Retract.

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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PATG-1102N
PATG-1105N

PAMG-1402N
PAMG-1405N

PARG-1102N
PARG-1105N

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 = 19 mm
⑥ Air Input with Filter on PARG models ¼"-18NPTF

Valve Operation	Turbo II Dimensions (mm) A	B	C	D	E	F	H	J	K	L	M	N	(kg)	Model Number
Treadle 3/3	313	165	211	230	102	–	129	146	42	113	347	–	8,2	**PATG-1102N**
	396	201	209	230	102	–	131	146	86	112	437	–	9,9	**PATG-1105N**
Air Pendant 3/3	313	165	200	230	102	–	129	–	42	–	–	4500	10,0	**PARG-1102N**
	396	201	209	230	102	–	131	–	86	–	–	4500	11,7	**PARG-1105N**
Manual 4/3	313	165	267	230	102	36	130	152	42	113	315	–	11,0	**PAMG-1402N**
	396	201	267	230	102	36	132	152	86	112	405	–	12,7	**PAMG-1405N**

▼ Shown: **XA11G**



- **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.**

Ex II 2 GD ck T4

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



Productivity & Ergonomics



Optional Pressure Gauge

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



4/3 Control Valve

For powering double-acting hydraulic cylinders and tools.



2 Litres 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 133 for details.

Model Number [1]	XSC1

[1] Accessories must be ordered separately.

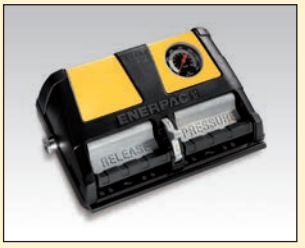


Production Application

XA11 pump is used with a 13 tons 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:
1,0 - 2,0 litres

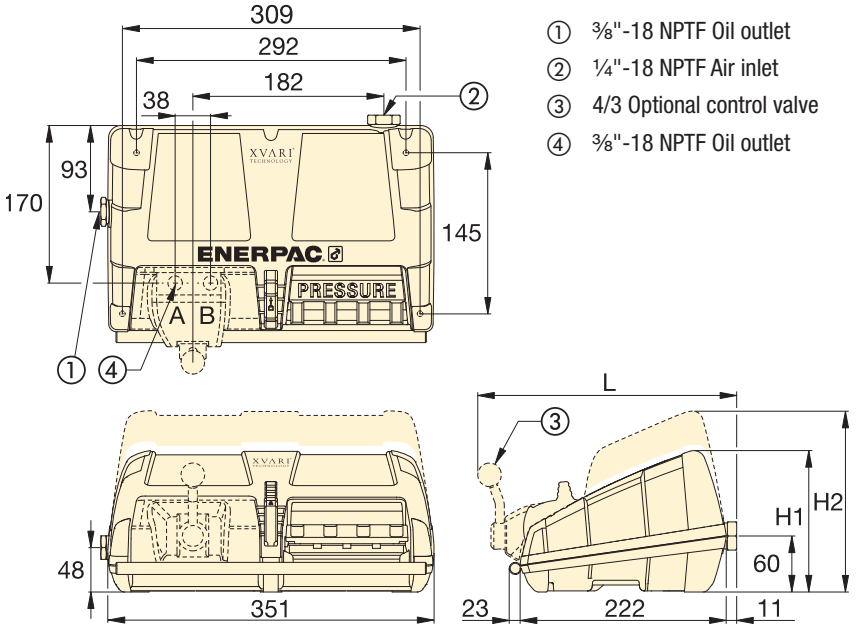
Flow at Rated Pressure:
0,25 l/min

Air Consumption:
283 - 991 l/min

Maximum Operating Pressure:
700 bar

▼ **XA-SERIES PERFORMANCE CHART**

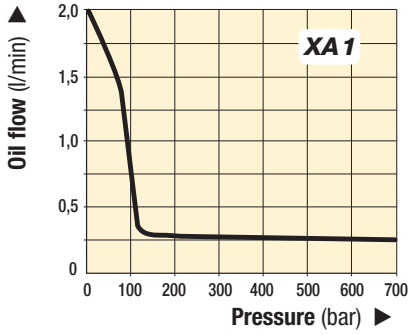
Maximum Pressure (bar)	Output Flow Rate (l/min) No load	Output Flow Rate (l/min) Load	Pump Series	Valve Function	Dynamic Air Pressure (bar)
700	2,0	0,25	**XA1**	Advance / Hold / Retract	2,1 - 8,6



① 3⁄8"-18 NPTF Oil outlet
② 1⁄4"-18 NPTF Air inlet
③ 4/3 Optional control valve
④ 3⁄8"-18 NPTF Oil outlet

OIL FLOW VERSUS PRESSURE

at 6,9 bar 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 [1]	RFL-102

▼ **SELECTION CHART**

For use with cylinder or tool	Usable Oil Capacity (litres)	Model Number [1]	Pressure Gauge	3-way 3-pos. Valve	4-way 3-pos. Valve	Dimensions (mm) H1	Dimensions (mm) H2	Dimensions (mm) L	(kg)
Single-acting	1,0	**XA11** [2]	–	•	–	152	–	–	8,6
	2,0	**XA12** [2]	–	•	–	–	170	–	10,2
Single-acting	1,0	**XA11G**	•	•	–	152	–	–	8,8
	2,0	**XA12G**	•	•	–	–	170	–	10,4
Double-acting	1,0	**XA11V**	–	–	•	152	–	279	10,1
	2,0	**XA12V**	–	–	•	–	170	279	11,7
Double-acting	1,0	**XA11VG**	•	–	•	152	–	279	10,3
	2,0	**XA12VG**	•	–	•	–	170	279	11,9

[1] High-Flow coupler CR-400 and accessories must be ordered separately. [2] Available as cylinder-pump set, see page 60.

ZA4-Series, Modular Air Hydraulic Pumps

ENERPAC

▼ Shown: **ZA4208MX, ZA4420MX**



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 bypass 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 10, 20 and 40 litres reservoirs, oil level indicators on 4 and 6,6 litres 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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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	Usable Oil Capacity (litres)	Manual Valve [1] Model Number	Valve Function	Model Number	Output Flow Rate [2] at 7 bar	at 50 bar	at 350 bar	at 700 bar	Relief Valve Adjustment Range (bar)	Maximum Air Consumption [3] (l/min)
–	4,0	–	–	**ZA4004NX**	14,0	11,0	1,8	**1,3**	–	2840
Single-acting	4,0	VM32	Advance / Retract	**ZA4204MX**	14,0	11,0	1,8	**1,3**	70 - 700	2840
	6,6	VM33	Advance / Hold /Retract	**ZA4308MX**	14,0	11,0	1,8	**1,3**	70 - 700	2840
	10,0	VM33L	Advance / Hold /Retract	**ZA4610MX**	14,0	11,0	1,8	**1,3**	70 - 700	2840
Double-acting	4,0	VM43	Advance / Hold /Retract	**ZA4404MX**	14,0	11,0	1,8	**1,3**	70 - 700	2840
	6,6	VM43	Advance / Hold /Retract	**ZA4408MX**	14,0	11,0	1,8	**1,3**	70 - 700	2840
	10,0	VM43L	Advance / Hold /Retract	**ZA4810MX**	14,0	11,0	1,8	**1,3**	70 - 700	2840
	20,0	VM43	Advance / Hold /Retract	**ZA4420MX**	14,0	11,0	1,8	**1,3**	70 - 700	2840
	40,0	VM43	Advance / Hold /Retract	**ZA4440MX**	14,0	11,0	1,8	**1,3**	70 - 700	2840

[1] See pages 122-123 for hydraulic symbols of these valves.
[2] Actual oil flow will vary with air supply.
[3] Dynamic air pressure range: 4 - 7 bar.

▼ **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 = 1,3 l/min @ 700 bar

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, useable oil
04 = 4 litres
08 = 6,6 litres
10 = 10 litres
20 = 20 litres
40 = 40 litres

6 Valve Operation
M = Manual valve
N = No valve

7 Motor Voltage
X = Not applicable

8 Options
F = Return Line Filter
G = 1000 bar gauge
H = Heat exchanger (on 4 and 6,6 litres reservoir only)
K = Skid Bar (on 4 and 6,6 litres reservoir only)
N = No reservoir handles (includes lifting eyes on 10, 20 and 40 litres)
R = Roll Cage

Ordering Example
Model Number: **ZA4208MX-FHK**
ZA4208MX-FHK is an air operated pump with a 3-way, 2-position manual valve, 6,6 litres reservoir, filter, heat exchanger and skid bar.

ZA4 Series



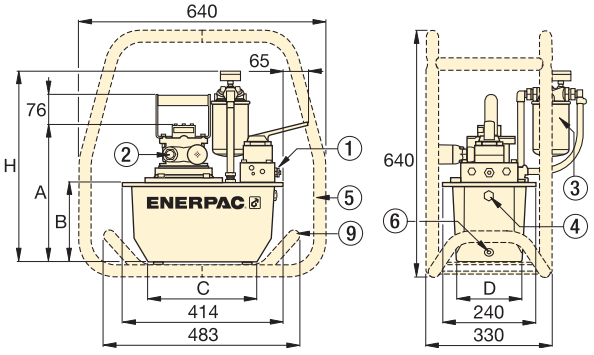
Reservoir Capacity:
4 - 40 litres

Flow at Rated Pressure:
1,3 l/min

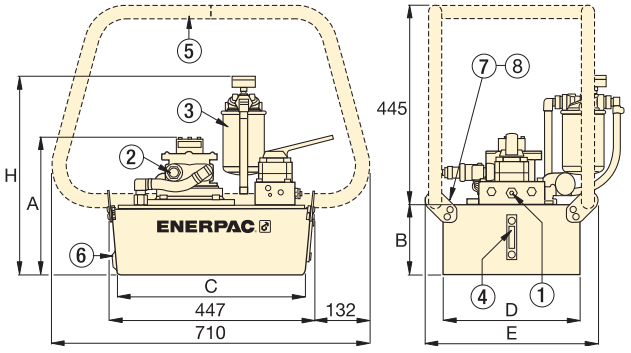
Air Consumption:
2840 l/min

Maximum Operating Pressure:
700 bar

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 (Modelnr. SBZ-4) (optional)



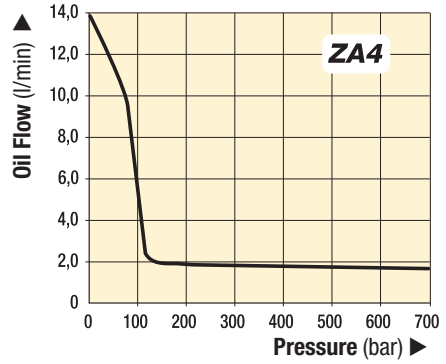
ZA4-Series Pumps with 4 - 6,6 litres reservoir



ZA4-Series Pumps with 10, 20 and 40 litres reservoir

Sound Level (dBA)	Motor Size (kW)	Dimensions (mm) A	B	C	D	E	H	(kg)	Model Number
80 - 95	3,0	295	142	279	152	–	429	27	ZA4004NX
80 - 95	3,0	295	142	279	152	–	429	30	ZA4204MX
80 - 95	3,0	356	203	279	205	–	490	34	ZA4308MX
80 - 95	3,0	330	180	414	421	500	467	51	ZA4610MX
80 - 95	3,0	295	142	279	152	–	429	31	ZA4404MX
80 - 95	3,0	356	203	279	205	–	490	35	ZA4408MX
80 - 95	3,0	305	155	419	305	384	442	40	ZA4810MX
80 - 95	3,0	330	180	414	421	500	467	52	ZA4420MX
80 - 95	3,0	419	269	399	505	584	556	75	ZA4440MX

OIL FLOW VERSUS PRESSURE
at 7 bar air & 2000 l/min air consumption



ZG-Series, Gasoline Hydraulic Pumps

ENERPAC

▼ Shown from left to right: **ZG6440MX-BFCH, ZG5420MX-B**



Z Tough, Dependable, Innovative CLASS

- **Features Z-Class high efficiency pump design, higher oil flow and bypass 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 three 4-cycle engine sizes: 4,1 kW Honda and 4,8 kW and 9,7 kW Briggs & Stratton**
- **Full sight oil level glass on all reservoirs allow quick and easy oil level monitoring.**

ZG6-Series

- **Easy serviceable 9,7 kW, 4-cycle gasoline engine with electric start, pressurized oil and 12 Volt charge output for accessories**
- **Dual forced air heat exchangers 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.

Page: 122

▼ **SELECTION CHART**

Used with Cylinder	Reservoir Size (litres)	Manual Valve [1] Model Number	Valve Function	Model Number with Roll Cage	Output Flow Rate (l/min) at 7 bar	at 50 bar	at 350 bar	at 700 bar	4-Cycle Engine Type and Size
Single-Acting	9,8	VM33	Advance / Hold / Retract	**ZG5310MX-R**	11,5	10,7	1,8	**1,6**	Honda 4,1 kW
	9,8	VM33	Advance / Hold / Retract	**ZG5320MX-R**	11,5	10,7	1,8	**1,6**	
Double-Acting	9,8	VM43	Advance / Hold / Retract	**ZG5410MX-R**	11,5	10,7	1,8	**1,6**	
	19,8	VM43	Advance / Hold / Retract	**ZG5420MX-R**	11,5	10,7	1,8	**1,6**	
Single-Acting	9,8	VM33	Advance / Hold / Retract	**ZG5310MX-BR**	6,5	6,2	1,8	**1,6**	Briggs & Stratton 4,8 kW
	19,8	VM33	Advance / Hold / Retract	**ZG5320MX-BR**	6,5	6,2	1,8	**1,6**	
Double-Acting	9,8	VM43	Advance / Hold / Retract	**ZG5410MX-BR**	6,5	6,2	1,8	**1,6**	
	19,8	VM43	Advance / Hold / Retract	**ZG5420MX-BR**	6,5	6,2	1,8	**1,6**	
	39	VM43L	Advance / Hold / Retract	**ZG5840MX-BR**	6,5	6,2	1,8	**1,6**	
Double-Acting	39	VM43	Advance / Hold / Retract	**ZG6440MX-BCFH**	14,7	14,5	3,7	**3,3**	Briggs & Stratton 9,7 kW
	39	VM43L	Advance / Hold / Retract	**ZG6840MX-BCFH**	14,7	14,5	3,7	**3,3**	

[1] See pages 122-123 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 1500 m. 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

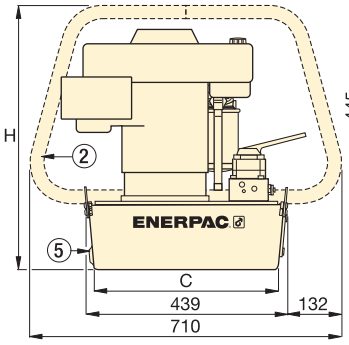


Reservoir Capacity:
10 - 20 - 40 litres

Flow at Rated Pressure:
1,6 - 3,3 l/min

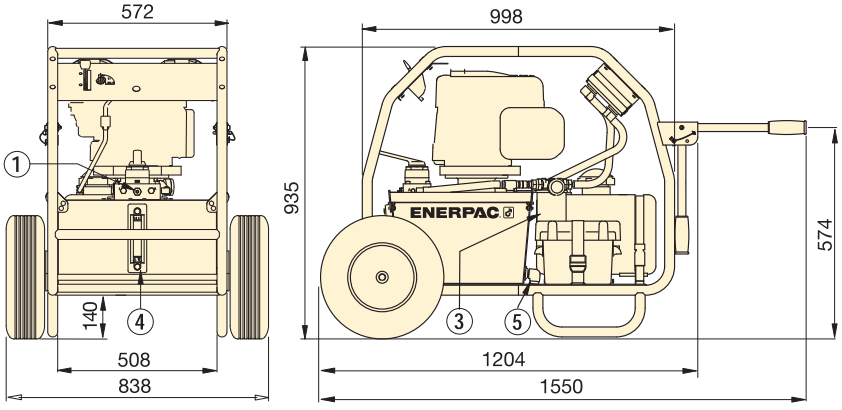
Engine Size:
4,1 - 4,8 - 9,7 kW

Maximum Operating Pressure:
700 bar



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



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.

Page: 128

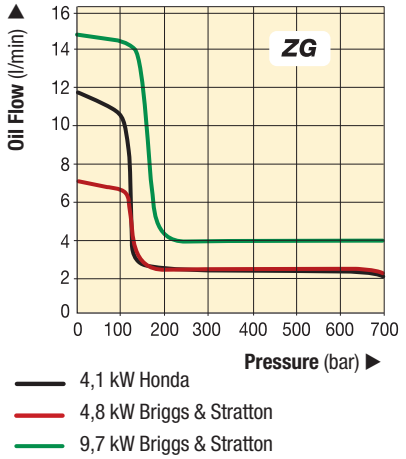
Speed Chart

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

Page: 321

	Relief Valve Adjustment Range (bar)	Sound Level (dBA)	Dimensions (mm) B	C	D	E	H	(kg)	Model Number with Roll Cage
	70 - 700	88 - 93	155	419	305	384	600	52	ZG5310MX-R
			180	414	421	500	625	64	ZG5320MX-R
			155	419	305	384	600	52	ZG5410MX-R
			180	414	421	500	625	64	ZG5420MX-R
	70 - 700	88 - 93	155	419	305	384	600	50	ZG5310MX-BR
			180	414	421	500	625	63	ZG5320MX-BR
			155	419	305	384	600	50	ZG5410MX-BR
			180	414	421	500	625	63	ZG5420MX-BR
			269	399	505	557	714	86	ZG5840MX-BR
	70 - 700	88 - 93	–	–	–	–	–	152	ZG6440MX-BCFH
			–	–	–	–	–	155	ZG6840MX-BCFH

OIL FLOW VERSUS PRESSURE



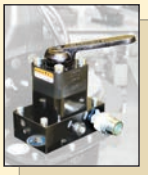
Directional Control Valves

ENERPAC

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 700 bar, 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.



Assisted Return Pumps

To improve productivity and plunger retraction, Enerpac offers valve configurations designed to accelerate your cylinder retraction speeds.

ZU4 and ZE-Series pumps feature **Venturi Valve Technology** to facilitate the faster return of single-acting gravity and spring return cylinders.



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".

Page: 142

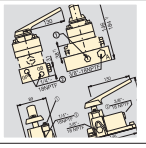
Valving Help

See Basic System Set-Up and Valve Information in our 'Yellow Pages'.

Page: 322



Directional Control Valves Section Overview

Valve Type	Series		Page
Pump Mounted Manual and Solenoid Directional Control Valves	VM VE		122 ▶
Remote Mounted Manual Directional Control Valves	VC		124 ▶
Valve Dimensions	VM VE VC		125 ▶

▼ Shown from left to right: **VM32, VE33, VM33, VM43L, VE43**



Reliable Control of Single and Double-Acting Cylinders and Tools

- **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.

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	
Solenoid 24 VDC	Double-acting	4-Way, 3-Position, Tandem Center	

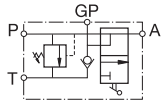
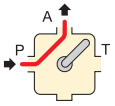
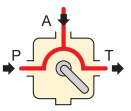
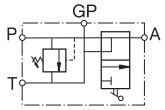
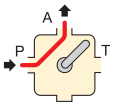
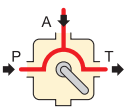
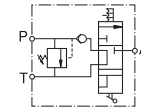
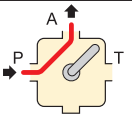
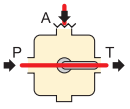
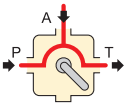
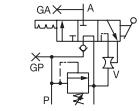
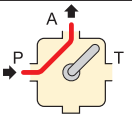
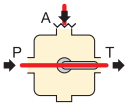
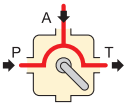
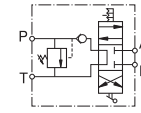
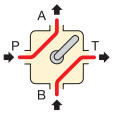
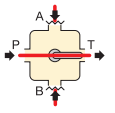
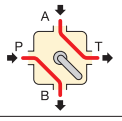
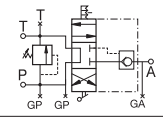
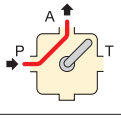
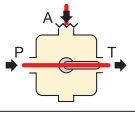
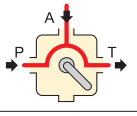
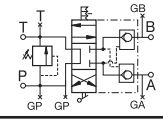
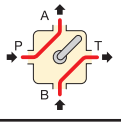
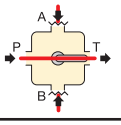
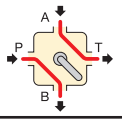
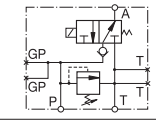
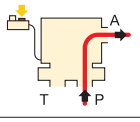
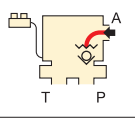
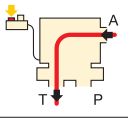
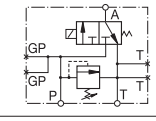
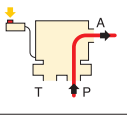
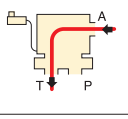
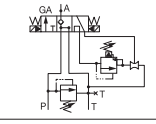
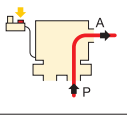
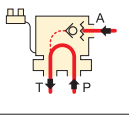
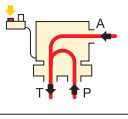
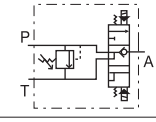
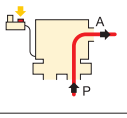
For remote valve information, see page 124.
See page 125 for valve dimensions.

VM VE Series



Maximum Flow Capacity:
17 l/min

Maximum Operating Pressure:
700 bar

Model Number	Hydraulic Symbol	Schematic Flowpath			(kg)
		Advance	Neutral	Retract	
VM22					2,5
VM32					2,5
VM33					3,0
VM33VAC					3,5
VM43					3,1
VM33L					4,8
VM43L					4,9
VE32 [1]					3,9
VE32D [1]					3,9
VE33VAC					10,0
VE33 [1]					9,3
VE43 [1]					9,3

[1] When ordering Enerpac VE-Series solenoid valves, the pendant must be ordered separately for Z-Class electric pumps. See page 107 for pendant ordering details.

Assisted Return Pumps with Venturi Valve Technology

To improve productivity and plunger retraction, Enerpac offers valve configurations designed to accelerate your cylinder retraction speeds, ZU4 and ZE-Series pumps feature **Venturi Valve Technology** to facilitate the faster return of single-acting gravity and spring return cylinders.

See valve type in ZU4 and ZE-pump ordering matrix on pages 103 and 109.

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 Centred Valve Kits

VM and VC-Series manual 3-position valves can be easily converted into spring centred valves. With these retro-fit 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: **VC-20, VC-4L**



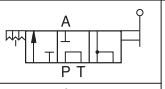
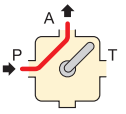
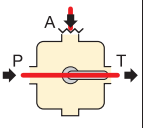
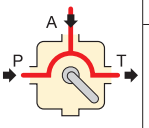
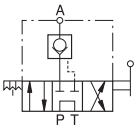
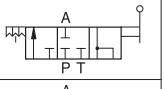
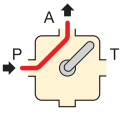
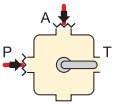
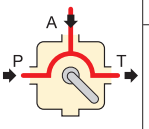
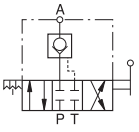
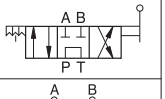
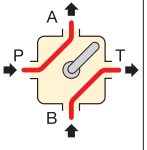
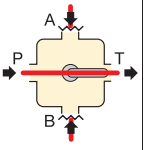
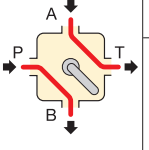
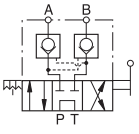
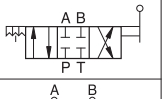
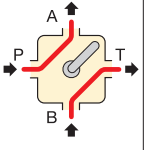
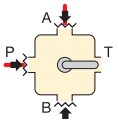
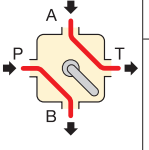
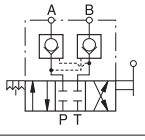
Remote Control of Single and Double-Acting Cylinders and Tools



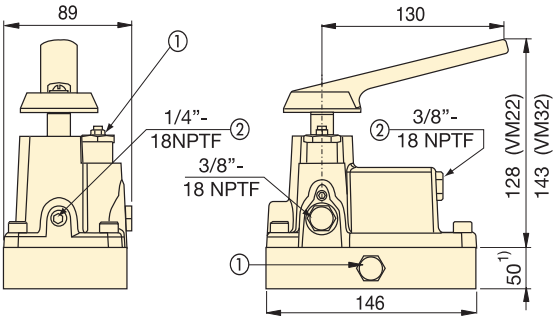
Locking Valves

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			(kg)
					Advance	Hold	Retract	
Manual	Single-Acting	3-Way, 3-Position, Tandem Center	**VC-3**					2,9
Manual	Single-Acting	3-Way, 3-Position, Tandem Center, Locking	**VC-3L**					4,7
Manual	Single-Acting	3-Way, 3-Position, Closed Center	**VC-15**					2,9
Manual	Single-Acting	3-Way, 3-Position, Closed Center, Locking	**VC-15L**					4,7
Manual	Double-Acting	4-Way, 3-Position, Tandem Center	**VC-4**					2,9
Manual	Double-Acting	4-Way, 3-Position, Tandem Center, Locking	**VC-4L**					4,7
Manual	Double-Acting	4-Way, 3-Position, Closed Center	**VC-20**					2,9
Manual	Double-Acting	4-Way, 3-Position, Closed Center, Locking	**VC-20L**					4,7

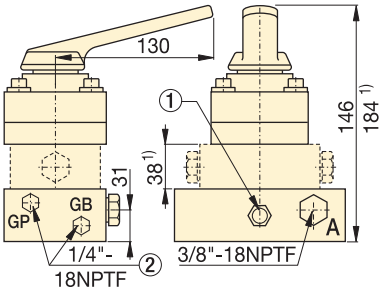
Pump Mounted Directional Control Valves



① User Adjustable Relief Valve
② Auxiliary Port

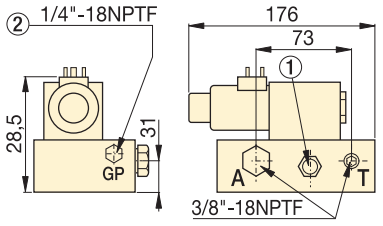
VM22, VM32

1) VM22 only

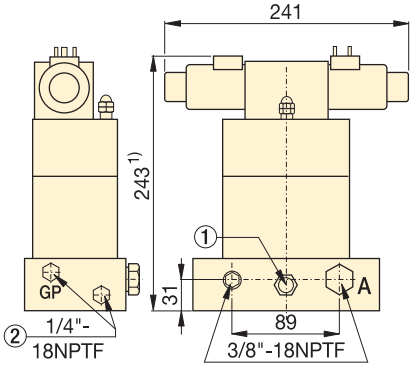


VM33, VM33L, VM33VAC, VM43, VM43L

1) VM33VAC, VM33L and VM43L only

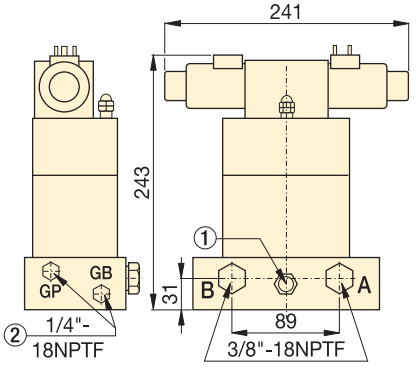


VE32D



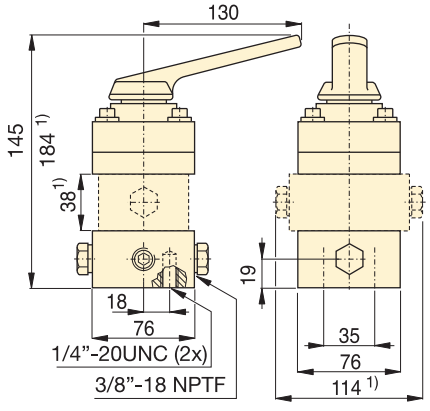
VE33, VE33VAC

1) VE33VAC is 38 mm higher: 281 mm



VE43

Remote Manual Directional Control Valves



VC-3, VC-3L, VC-15, VC-15L
VC-4, VC-4L, VC-20, VC-20L

1) VC-3L, VC-15L, VC-4L and VC-20L only

VM
VE
VC
Series



Maximum Flow Capacity:
17 l/min

Maximum Operating Pressure:
700 bar



Spring Centred Valve Kits

VM and VC-Series manual 3-position valves can be easily converted into spring centred valves. With these retro-fit 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**



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: 126



Fittings

For additional fittings see the fitting page of the System Components section in this catalogue.

Page: 133

Valving Help

See Basic System Set-Up and Valve Information in our 'Yellow Pages'.

Page: 322

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.

Page: 310

Maintain System Integrity

Use Enerpac System Components, designed to interface with Enerpac cylinders, pumps and tools to ensure your system operates at peak performance.



System Components & Control Valves Overview

Component Type	Series	Page
Hoses	H700	 128 ▶
Couplers	A, C, F, T	 130 ▶
Hydraulic Oil	HF	 132 ▶
Manifolds	A	 132 ▶
Control Manifolds	AM	 132 ▶
Fittings	BFZ, FZ XSC	 133 ▶
Force Gauges Pressure Gauges	GF GP	 134 ▶
Pressure Gauges, glycerine filled Pressure Gauges, dry	G H	 136 ▶
Test System Gauges	T	 138 ▶
Digital Pressure Gauges	DGR	 139 ▶
Gauge Adaptor Assembly	GA45	 140 ▶
4-Way manifold assembly with gauges	AMGC	 140 ▶
Gauge Accessories	GA NV, V	 141 ▶
Pressure and Flow Control Valves	V	 142 ▶

▼ HC-7206



Thermo-Plastic Safety Hoses (700-Series)

- For demanding applications, featuring a 4:1 safety factor
- Maximum working pressure of 700 bar
- Outside jacket is polyurethane, to provide maximum abrasion resistance
- Exhibits low volumetric expansion under pressure to enhance overall system efficiency
- Crimped-on rubber strain relief for improved life and durability on all models.

▼ *To prevent back pressure and to increase cylinder retraction speed, when using long hoses with single-acting cylinders, the Enerpac HC-7300-Series of hoses with increased internal diameter is the best choice.*



Safety and Quality

To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

WARNING !

- **Do not exceed 700 bar maximum pressure.**
- **Do not handle hoses which are under pressure.**

More safety instructions in our 'Yellow pages'.

Page: 312

▼ Hose End Couplings

¼" NPTF	
⅜" NPTF	
A-604	
A-630	
AH-604	
AH-630	
C-604	
CH-604	

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 6,4 mm inside diameter hoses:
Capacity (cm^3) = 32,1699 x Length (m)
For 9,7 mm inside diameter hoses:
Capacity (cm^3) = 73,8981 x Length (m)

H700 Series



Inside Diameter:
6,4 - 9,7 mm

Length:
0,6 - 15 m

Maximum Operating Pressure:
700 bar

Internal Diameter (mm)	Hose End Assemblies and Couplers * End one	End two	Hose Length (m)	Model Number	(kg)
6,4	¼" NPTF		–	–	–
			–	–	–
		A-630	1,8	HB-7206QB	1,1
			–	–	–
		CH-604	1,8	HC-7206Q	1,0
	⅜" NPTF	⅜" NPTF	0,6	H-7202	0,5
			0,9	H-7203	0,7
			1,8	H-7206	0,9
			3,0	H-7210	1,4
			6,1	H-7220	2,8
			9,1	H-7230	4,5
			15	H-7250	7,0
		A-604	–	–	–
			1,8	HA-7206B	1,1
			–	–	–
		AH-604	–	–	–
			–	–	–
			1,8	HA-7206	1,0
			3,0	HA-7210	1,5
		AH-630	1,8	HB-7206	1,0
		C-604	0,9	HC-7203B	1,0
			1,8	HC-7206B	1,3
			3,0	HC-7210B	1,8
		CH-604	0,9	HC-7203	0,8
			1,8	HC-7206	1,0
			3,0	HC-7210	1,5
			6,1	HC-7220	2,9
	CH-604	CH-604	1,8	HC-7206C	1,1
			6,1	HC-7220C	3,0
			15	HC-7250C	7,0
9,7	⅜" NPTF	⅜" NPTF	1,8	H-7306	1,6
			3,0	H-7310	2,4
			6,1	H-7320	4,5
			9,1	H-7330	7,3
			15	H-7350	11,5
		CH-604	1,8	HC-7306	1,7
			3,0	HC-7310	2,5
			6,1	HC-7320	5,1

* 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.

Page: 140



Torque Wrench Hoses

Use Enerpac twin safety hoses with double-acting wrenches to ensure the integrity of your hydraulic system.

Page: 231



Fittings

For additional fittings see the fitting page of the System Components section.

Page: 133



Premium Hydraulic Oil

Use only genuine Enerpac hydraulic oil. Wrong fluid can destroy seals and pump and will render your warranty null and void your guarantee.

Page: 132

▼ Shown: **FH-604, FR-400, AR-630, C-604, AH-604, AR-400**



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 aluminium dust cap

1/4" Regular Couplers
- For use with small cylinders and hand pumps
- Includes female aluminium dust cap

1/4" Spin-on Torque Wrench Couplers
- For use with 700 bar S, W, RSL and DSX-Series torque wrenches, THQ-Series hoses and 700 bar torque wrench pumps

1/4" Lock-ring Torque Wrench Couplers
- For use with 800 bar HXD and SQD-Series torque wrenches, THC-Series hoses and 800 bar torque wrench pumps.

* Hydraulic Tool Manufacturers Association.

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: 312

F-Series

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.

▼ *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.*





CT-604 Safety Tool

Use the Enerpac CT-604 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 CT-604 is Enerpac-engineering safe for use at 700 bar.

NOTE: For use on C-Series 700 bar High-Flow Couplers only

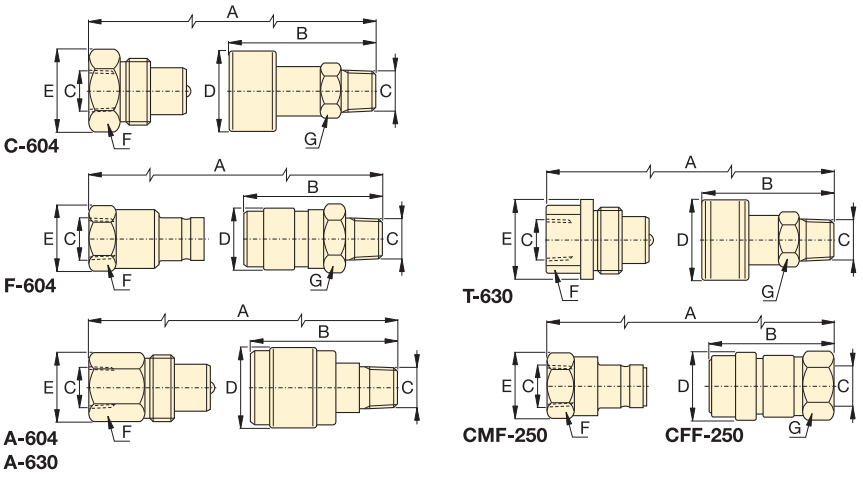
A, C, F, T Series



Maximum Flow Capacity:
6,1 - 40,0 l/min

Thread:
¼" - ⅜" NPTF

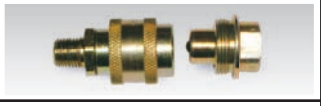
Maximum Operating Pressure:
700 - 800 bar





Metal Dust Caps

Steel dust caps are available for the C-604 series couplers.
Order model number:
CD-411M for female half
CD-415M for male half

Maximum Flow Capacity (l/min)	Coupler Type	Model Numbers			Dimensions (mm)							Dust Cap(s) Modelnr.
		Complete Set	Female Half	Male Half	A*	B	C	D	E	F	G	
35	700 bar High-Flow Coupler 	C-604	CR-400	CH-604	83	64	⅜" NPTF	35	36	32	25	(2x) CD-411
40	700 bar Flush-Face coupler 	F-604	FR-400	FH-604	111	72	⅜" NPTF	31	31	27	29	–
7,6	700 bar Regular Spee-D-Coupler© 	A-604	AR-400	AH-604	77	42	⅜" NPTF	28	26	23	19	Z-410 female only
7,6	700 bar Regular Coupler 	A-630	AR-630	AH-630	66	35	¼" NPTF	22	20	19	15	Z-640 female only
11,4	700 bar Spin-on Coupler 	T-630	TR-630	TH-630	73	60	¼" NPTF	29	29	19	21	–
6,1	800 bar Lock-ring Coupler 	–	CFF-250	CMF-250	76	58	¼" NPTF	23	28	24	22	–

* Value A is total length when male and female half are connected.

▼ Shown: **HF-95T, HF-95X, HF-95Y**



The Genuine Range

- **Maximum pump volumetric efficiency**
- **Maximum internal heat transfer**
- **Prevents pump cavitation**
- **Additives prevent rust, oxidation and sludge**
- **High viscosity index**
- **Maximum film protective lubricity.**

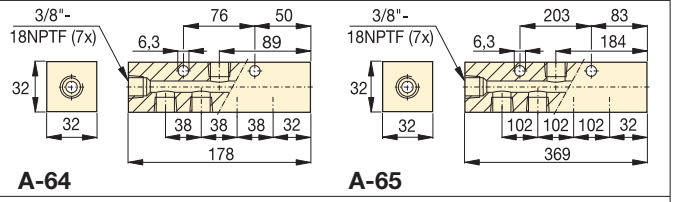
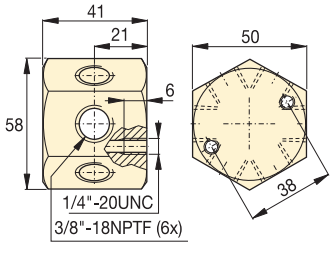
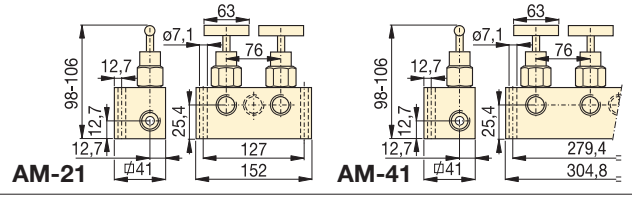
Hydraulic Oil

Contents	Model Number	
1 litre	**HF-95X**	Use only genuine Enerpac Hydraulic Oil. The use of any other fluid will render your Enerpac warranty null and void.
5 litres	**HF-95Y**	
20 litres	**HF-95T**	

▼ **OIL SPECIFICATION CHART**

Viscocity Index	100 min
Viscocity (cSt @ 40 ˚C)	32
API Gravity	31-33
Density (cSt @ 15 ˚C)	875
Flash point	204 ˚C
Pour point	-32 ˚C
Colour	Blue
Working Temperature Range	0 - 60 ˚C
Ideal working temperature	40 ˚C

Manifolds

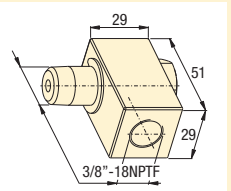
Description		Model Number	Dimensions (mm)
7-port Manifold, short		**A-64**	
7-port Manifold, long allows direct mounting of control valves to the manifold.		**A-65**	
6-port Manifold, hexagon Plugs furnished for all ports ⅜"-18 NPTF.		**A-66**	
Control Manifolds * For control of two or four single-acting cylinders simultaneously. AM-21 with 5 ports ⅜"NPTF. AM-41 with 7 ports ⅜"NPTF.		**AM-21**	
		AM-41	

* See page 140 for AMGC-Series 4-way manifold assembly complete with gauges.



3/8" Swivel Connector

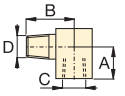
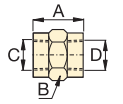
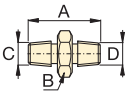
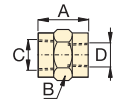
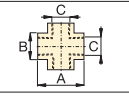
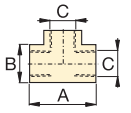
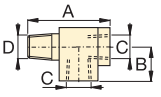
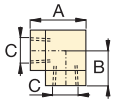
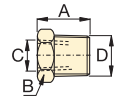
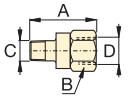
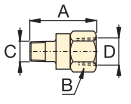
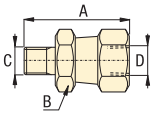
360 degree swivel coupler for optimal orientation of the hydraulic connection on cylinders, pumps and hoses.
Order Model Number. **XSC-1**



A, AM
BFZ
FZ
HF
Series



700 bar Fittings

		Model Number	Dimensions (mm)				
			A	B	C	D	
Street Elbow From: ⅜"-NPTF Male To: ⅜"-NPTF Female		**FZ-1616**	23	33	⅜"-18 NPTF	⅜"-18 NPTF	
Reducing Connector From: ⅜"-NPTF Female To: ¼"-NPTF Female		**FZ-1615**	28	25	⅜"-18 NPTF	¼"-18 NPTF	
From: ½"-NPTF Female To: ⅜"-NPTF Female		**FZ-1625**	47	29	½"-14 NPTF	⅜"-18 NPTF	
Hexagon Nipple From: / To: ¼"-NPTF / ¼"-NPTF		**FZ-1608**	38	16	¼"-18 NPTF	¼"-18 NPTF	
⅜"-NPTF / ⅜"-NPTF		**FZ-1619**	51	19	⅜"-18 NPTF	⅜"-18 NPTF	
⅜"-NPTF / ⅜"-NPTF		**FZ-1617**	37	19	⅜"-18 NPTF	⅜"-18 NPTF	
Coupling From: / To: ⅜"-NPTF / ⅜"-NPTF		**FZ-1614**	29	23	⅜"-18 NPTF	⅜"-18 NPTF	
¼"-NPTF / ¼"-NPTF		**FZ-1605**	29	19	¼"-18 NPTF	¼"-18 NPTF	
Cross From: ⅜"-NPTF Female To: ⅜"-NPTF Female		**FZ-1613**	45	25	⅜"-18 NPTF	–	
Tee From: / To: ⅜"-NPTF / ⅜"-NPTF		**FZ-1612**	45	25	⅜"-18 NPTF	–	
¼"-NPTF / ¼"-NPTF		**FZ-1637**	45	24	¼"-18 NPTF	–	
Street Tee From: ⅜"-NPTF Female To: ⅜"-NPTF Male		**BFZ-16312**	56	26	⅜"-18 NPTF	⅜"-18 NPTF	
Elbow From: / To: ⅜"-NPTF / ⅜"-NPTF		**FZ-1610**	33	20	⅜"-18 NPTF	–	
¼"-NPTF / ¼"-NPTF		**FZ-1638**	36	24	¼"-18 NPTF	–	
Reducer From: / To: ⅜"-NPTF / ¼"-NPTF		**FZ-1630**	19	19	¼"-18 NPTF	⅜"-18 NPTF	
¼"-NPTF / ½"-NPTF		**BFZ-1630**	28	22	¼"-18 NPTF	½"-14 NPTF	
⅜"-NPTF / G¼"		**BFZ-16301**	19	19	G¼"	⅜"-18 NPTF	
Adaptor From: / To: G¼" / ¼"-NPTF		**BFZ-16411**	35	19	¼"-18 NPTF	G¼"	
G¼" / ⅛"-NPTF		**BFZ-16421**	31	19	⅛"-27 NPTF	G¼"	
G⅜" / ¼"-NPTF		**BFZ-16323**	43	24	¼"-18 NPTF	G⅜"	
G⅜" / ⅜"-NPTF		**BFZ-16324**	43	24	⅜"-18 NPTF	G⅜"	
Adaptor From: / To: ¼"-NPTF / ⅜"-NPTF		**FZ-1055**	44	23	¼"-18 NPTF	⅜"-18 NPTF	
¼"-NPTF / ⅛"-NPTF		**FZ-1642**	30	19	⅛"-27 NPTF	¼"-18 NPTF	
½"-NPTF / ⅜"-NPTF		**FZ-1634**	42	28	⅜"-18 NPTF	½"-18 NPTF	
Swivel Fitting From: ⅜"-NPTF Male To: ⅜"-NPTF Female		**FZ-1660**	40	22	⅜"-18 NPTF	⅜"-18 NPTF	

▼ Shown from left to right: **GF-230B, GF-835B, GP-10S**



- **GF-series gauges: calibrated with dual scale reading for pressure (bar) and force (kN)**
- **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 100 mm**
- **Fast, easy installation**
- **Stainless steel gauge cases for corrosion resistance.**

▼ *A GP-10S 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 V-10

For automatic control of gauge fluctuations, the V-10 Auto-Damper Valve controls the movement of the gauge needle by restricting oil flow in and out of the gauge. No adjustments needed.

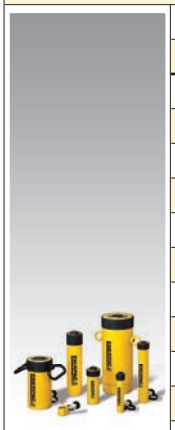
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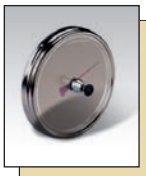


Snubber Valve V-91

Infinitely adjustable for metering oil out of a gauge. The V-91 Snubber Valve is also suitable as a shut-off valve to protect the gauge during high cycle applications.

Page: 142

	Used With
	All cylinders
	All cylinders
	5 ton RC, RSM-cylinders
	10 ton RC, RCS, RSM-cylinders
	All 25 ton RC-cylinders
	All 50 ton RC, RR-cylinders
	13 ton RCH-Series
	RCS-201, 302
	RCS-502, 1002
	RCH-202, 302, 603
	25, 30, 50 ton RC, RCS, RSM, RR
	75 and 95 ton RC, RR-cylinders
	150 and 200 ton RR-cylinders
	10 ton VLP Presses
	25 ton XLP Presses
	50 ton XLP, BPR Presses
	100 ton VLP, BPR Presses
	200 ton VLP, BPR Presses



Maximum Indicator Pointer

Indicator retains peak readings of pressure or force generated by the system.

Can easily be installed on GP and H-Series gauges.
Order model nr: **BSA-881**.

Pressure Gauges

To measure the input pressure into cylinders or high pressure systems. Also for all testing applications.

Force Gauges

To measure external load supported by a cylinder or jack in kN. 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

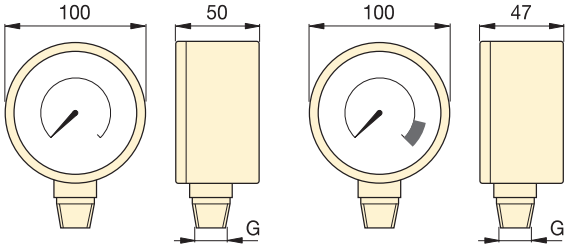


Pressure Range:
0 - 1000 bar

Force Range:
0 - 2000 kN

Gauge Face Diameter:
100 mm

Accuracy, % of full scale:
± 1%



GP-serie GF-serie

Gauge Type and Calibration				Units per Division	Model Number *	Thread G	Gauge Adaptor		
									
							Required		
bar	psi	bar	kN				GA-1	GA-2	GA-3
0-700	0-10.000	–	–	10 bar, 100 psi	**GP-10S**	½" NPTF	●	●	
0-1000	0-15.000	–	–	10 bar, 200 psi	**GP-15S**	½" NPTF	●	●	
–	–	0-700	0-45	10 bar, 0,5 kN	**GF-5B**	½" NPTF	●	●	
–	–	0-700	0-100	10 bar, 1 kN	**GF-10B**	½" NPTF	●	●	
–	–	0-700	0-232	10 bar, 2 kN	**GF-20B**	½" NPTF	●	●	
–	–	0-700	0-500	10 bar, 5 kN	**GF-50B**	½" NPTF	●	●	
–	–	0-700	0-124	10 bar, 1 kN	**GF-120B**	½" NPTF	●	●	
–	–	0-700	0-175/275	10 bar, 2 + 5 kN	**GF-230B**	½" NPTF	●	●	
–	–	0-700	0-450/900	10 bar, 5 + 10 kN	**GF-510B**	½" NPTF	●	●	
–	–	0-700	0-210/320/570	10 bar, 5 kN	**GF-813B**	¼" NPTF			●
–	–	0-700	0-232/300/500	10 bar, 5 kN	**GF-835B**	¼" NPTF			●
–	–	0-700	0-720/930	10 bar, 10 kN	**GF-871B**	¼" NPTF			●
–	–	0-700	0-1400/2000	10 bar, 25 kN	**GF-200B**	¼" NPTF			●
–	–	0-700	0-100	10 bar, 1 kN	**GF-10B**	½" NPTF	●	●	
–	–	0-700	0-232	10 bar, 2 kN	**GF-20B**	½" NPTF	●	●	
–	–	0-700	0-500	10 bar, 5 kN	**GF-50B**	½" NPTF	●	●	
–	–	0-700	0-720/930	10 bar, 10 kN	**GF-871B**	¼" NPTF			●
–	–	0-700	0-1400/2000	10 bar, 25 kN	**GF-200B**	¼" NPTF			●

* GF-Series Force gauges with imperial scale reading (psi, lbs) are available by changing the suffix 'B' into 'P'.

▼ Shown from left to right: **H4049L, G-2534R, G-4089L, G-2535L, G-4040L**



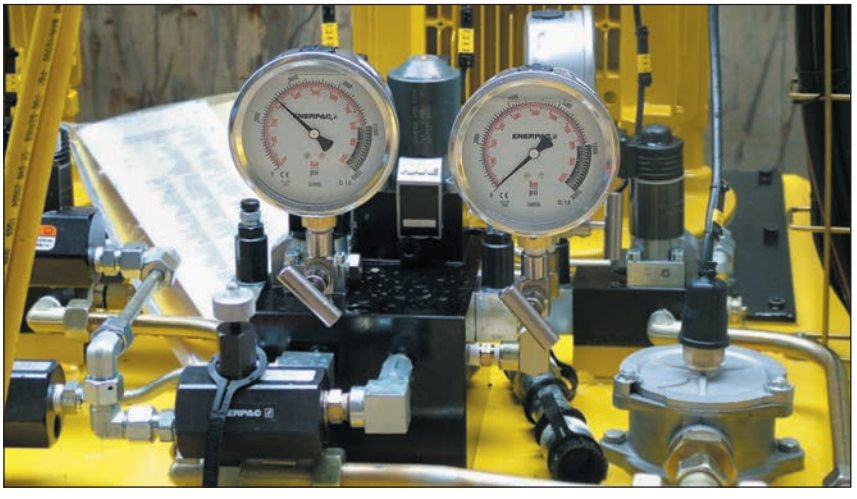
Visual Reference of System Pressure

Glycerine Filled (G-Series)

- **Dual scale reading calibrated in bar and psi**
- **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 bar and psi**
- **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** improves safe working conditions.

Page: 140



Gauge Adaptor

For easy gauge installation into almost any system, Enerpac offers a complete line of gauge adaptors.

Page: 141



Snubber Valve V-91

Infinitely adjustable for metering oil out of a gauge. The V-91 Snubber Valve is also suitable as a shut-off valve to protect the gauge during high cycle applications.

Page: 142

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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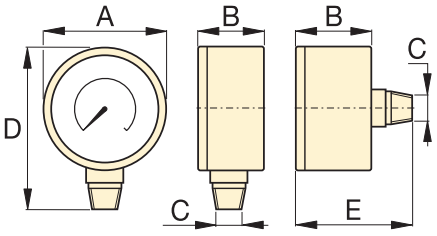
G H Series



Pressure Range:
0 - 1000 bar

Face Diameter:
63 - 100 mm

Accuracy, % of full scale:
± 1,0 - 1,5%



Size (mm)	Connection	Dimensions (mm)				
		A	B	C	D	E
63	Lower Mount	63	37	¼" NPTF	84	–
63	Center Rear	63	37	¼" NPTF	–	63
100	Lower Mount	100	29	¼" NPTF	121	–
100	Lower Mount	100	49	½" NPTF	136	–

Note: dimensions for reference only.



Maximum Indicator Pointer
Indicator retains peak readings of pressure or force generated by the system.

Can easily be installed on GP and H-Series ø 100 mm gauges. Order model nr: **BSA-881**.

▼ SELECTION CHART

Gauge Series	Pressure Range		Model Number				Major Graduation		Minor Graduation		Major Graduation		Minor Graduation	
			ø 63 ¼" NPTF Lower Mount	ø 63 ¼" NPTF Center Rear	ø 100 ¼" NPTF Lower Mount	ø 100 ½" NPTF Lower Mount	bar				psi			
	(bar)	(psi)	Accuracy: ± 1,5 %		Accuracy: ± 1,0 %		ø 63	ø 100	ø 63	ø 100	ø 63	ø 100	ø 63	ø 100
G-Series	0-7	0-100	G2509L	–	–	–	1	–	0,01	–	10	–	2	–
	0-11	0-160	G2510L	–	–	–	1	–	0,02	–	10	–	2	–
	0-14	0-200	G2511L	–	–	–	1	–	0,02	–	50	–	5	–
	0-20	0-300	G2512L	–	–	–	5	–	0,50	–	50	–	5	–
	0-40	0-600	G2513L	–	–	–	10	–	1	–	100	–	10	–
	0-70	0-1.000	G2514L	G2531R	–	–	10	–	1	–	100	–	20	–
	0-140	0-2.000	G2515L	–	–	–	10	–	5	–	500	–	50	–
	0-200	0-3.000	G2516L	–	–	–	50	–	5	–	500	–	50	–
	0-400	0-6.000	G2517L	G2534R	–	–	100	–	10	–	1000	–	100	–
	0-700	0-10.000	G2535L	G2537R	G4088L	G4039L	100	100	10	10	2000	1000	200	100
	0-1000	0-15.000	G2536L	G2538R	G4089L	G4040L	100	100	20	20	3000	3000	200	200
H-Series	0-700	0-10.000	–	–	H4049L	H4071L	–	100	–	10	–	1000	–	100

▼ Gauge shown: **T-6003L**



T
Series

Pressure Range:
0 - 3500 bar

Face Diameter:
162 - 192 mm

Accuracy, % of full scale:
± 0,5 - 1,5%

- **Dual scale reading calibrated in bar and psi**
- **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**
- **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 2800 and 3500 bar models.**



Cone Mount Gauge Adaptor

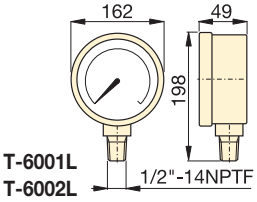
Contains fittings to connect ¼" cone fitting gauge to ⅜" cone system. Kit includes 43-301 tee, 43-704 gauge adaptor and 45-116 tubing. Order model number: **83-011**.

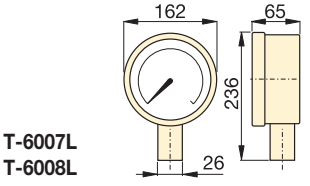
Page: 83



Cone Mount Gauge Connector

For connecting gauges with 0.25" cone fitting directly to model number **11-100** or **11-400** pump (page 82). May be used with other 0.25" cone systems
Order model number: **43-704**





▼ *An Enerpac P-2282 hand pump equipped with a T-6011L test system gauge is used for proof pressure testing of hydraulic valves.*



Pressure Range (bar)	Pressure Range (psi)	Model Number: Alloy Steel ½" NPTF	Model Number: Stainless Steel 0,25 cone	Number Intervals (bar)	Gradu-ation Inter-vals (bar)	Number Intervals (psi)	Gradu-ation Inter-vals (psi)
0-70 [1]	0-1000	**T-6001L**	–	10	1	100	10
0-350 [1]	0-5000	**T-6002L**	–	50	5	500	50
0-700 [1]	0-10.000	**T-6003L**	**T-6007L**	100	10	1.000	100
0-1400 [1]	0-20.000	–	**T-6008L**	200	20	1.000	100
0-2800 [2]	0-40.000	–	**T-6010L**	500	20	5.000	200
0-3500 [2]	0-50.000	–	**T-6011L**	500	50	5.000	200

[1] Acccuracy ± 0,5%
[2] Acccuracy ± 1,5%

Digital Hydraulic Pressure Gauge

▼ Gauge shown: **DGR-2**



DGR Series

Pressure Range:
0 - 1380 bar

Voltage:
3 Volt (battery)

Accuracy, % of full scale:
± 0,25%

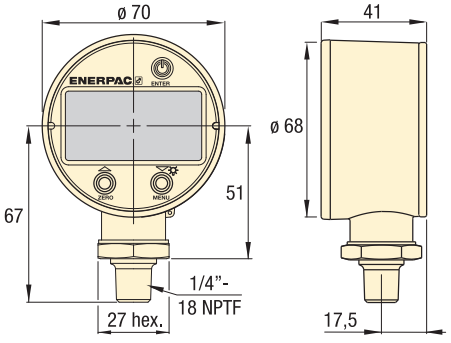
- **Rated for system pressure up to 1380 bar**
- **Displays in bar, psi, MPa and kg/cm²**
- **Zero reset - ensures that gauge reads actual pressure**
- **IP65 protection, UL listed, CE and RoHS compliant**
- **Batteries included, condition indicator on read-out**
- **Shut-off selectable – menu driven**
- **Back-lit readout allows easy reading in less than ideal lighting**
- **Protective cover included.**



Gauge Adaptor

For easy gauge installation into almost any system, Enerpac offers a complete line of gauge adaptors. Maximum operating pressure 700 bar.

Page: 141



High Pressure Rating (bar)		High Pressure Rating (MPa)		Model Number	High Pressure Rating (psi)		High Pressure Rating (kg/cm²)	
Range	Resolution	Range	Resolution		Range	Resolution	Range	Resolution
0-1380	0,1	0-140	0,01	**DGR-2**	0-20.000	1	0-1400	0,1

Weight: 0,23 kg.

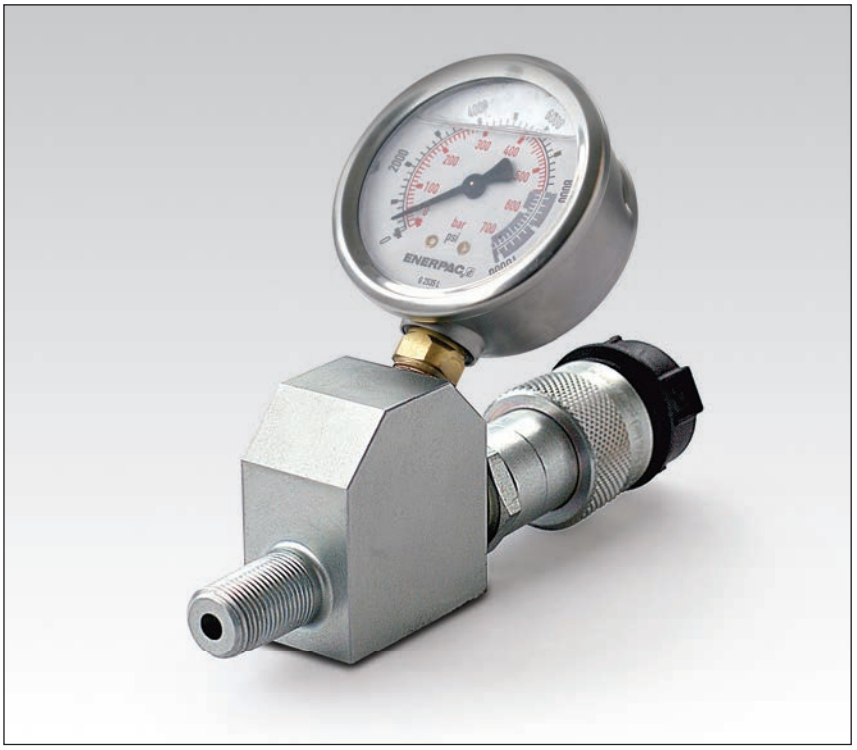
▼ *Greater accuracy and easier to read: enhance your ability to monitor and control hydraulic system pressure up to 1380 bar.*



Gauge Adaptor Assembly

ENERPAC

▼ Shown: **GA45GC**



GA45GC, AMGC Series

Connection 1:
3/8" NPTF male

Connection 2:
CR-400 coupler

Maximum Operating Pressure:
700 bar

- **45° angled gauge improves visibility**
- **Slim and narrow design**
- **Easy to fit in a broad range of systems**
- **Maximize controlled load movement**
- **Glycerin dampened gauge with dual scale**
- **Enerpac High-Flow female coupler CR400.**



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, 700 bar 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**



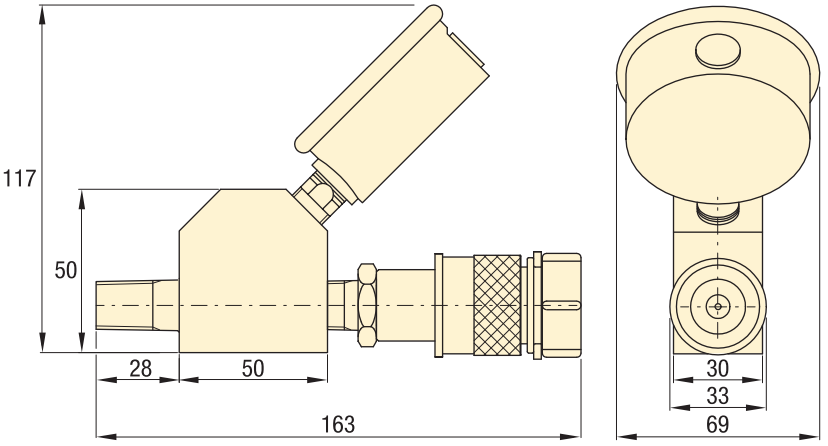
Power Box

Portable tool box with hand pump, **GA45GC** gauge adaptor assembly, hose and RC, RSM, RCS-cylinder, WR5 wedgie or LW16-lifting wedge.

Page: 63

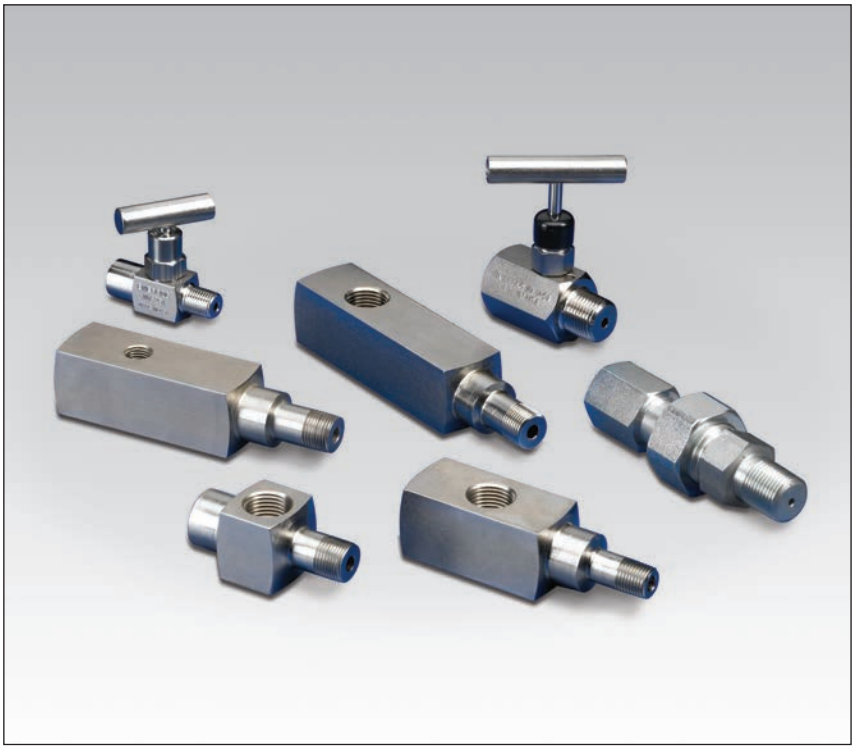
▼ *The Gauge Adaptor Assembly is the window to your system; allows easy reading of the pressure for safe operation.*





Model Number	Gauge Port (1/4" NPTF)	Male End (NPTF)	Female End (3/8" NPTF)	Gauge Range (bar)	Gauge Range (psi)
GA45GC	G2535L	⅜" -18	CR-400	0 - 700	0 - 10.000

▼ Shown from left to right: **GA-3, V-91, GA-1, GA-2, GA-4, NV-251, GA-918**



GA, NV, V Series

Maximum Operating Pressure:
700 bar

▼ *A gauge is easily installed into your hydraulic system using a gauge adaptor.*

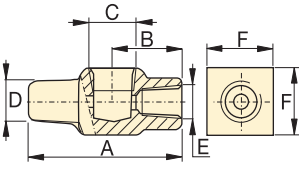




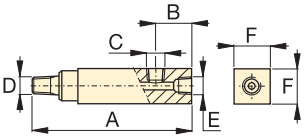
Gauge Adaptors (GA-Series)

- 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
- GA-918 provides for swivel connection.

Model Number	Gauge Port (NPTF)	Male End (NPTF)	Female End (NPTF)	Dimensions (mm) A	B	C	D	E	F
GA-1	½"	⅜"	⅜"	71	31	½" NPTF	⅜" NPTF	⅜" NPTF	32
GA-2	½"	⅜"		155	35	½" NPTF	⅜" NPTF	⅜" NPTF	32
GA-3	¼"	⅜"		133	35	¼" NPTF	⅜" NPTF	⅜" NPTF	32
GA-4	½"	¼"		111	35	½" NPTF	¼" NPTF	⅜" NPTF	32



GA-1



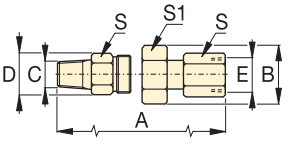
GA-2, GA-3, GA-4



Swivel Adaptor (GA-918)

- Simplifies gauge installation and reading.

Model Number	Dimensions (mm) A	B	C	D	E	S	S1
GA-918	117	43	½" NPTF	28,5	½" NPTF	29	38





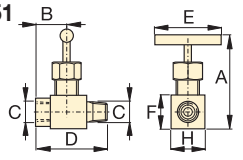


Needle Valves (V- and NV-Series)

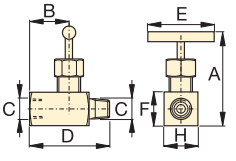
- Both NV-251 and V-91 provide positive shut-off
- 303 stainless steel stem, 16 threads/in (NV-251).

Model Number	Orifice (mm)	Thread Size	Dimensions (mm) A	B	C	D	E	F	H
NV-251	4,3	¼" NPTF	57	29	¼" NPTF	57	46	19	19
V-91	4,8	½" NPTF	89	32	½" NPTF	64	32	37	37

NV-251



V-91



▼ From left to right: **V-152, V-66, V-82, V-161, V-42, V-17**



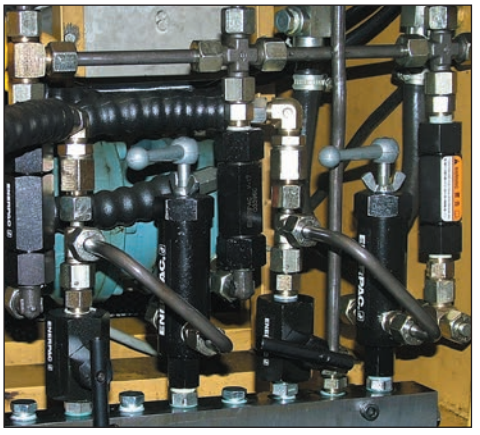
Your Hydraulic Control Solution

Valve Applications

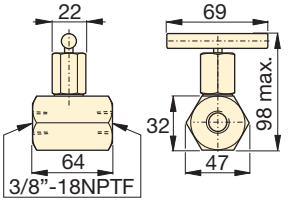
To see these valves used in typical hydraulic circuits, please see our 'Yellow Pages'.

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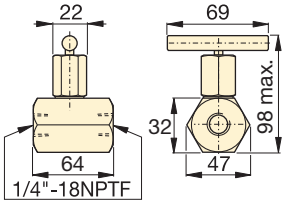
▼ *The V-152 pressure relief valve limits the pressure or force developed in the hydraulic system.*



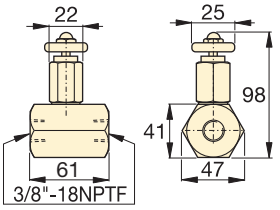
- **All valves are rated for 700 bar operating pressure**
- **All valves feature NPTF porting to insure against leakage at rated pressure**
- **All valves are painted, coated, or plated for corrosion resistance**
- **Viton® seals (in V-66NV and V-152NV) for high temperature applications, nickel-plated for maximum corrosion resistance.**



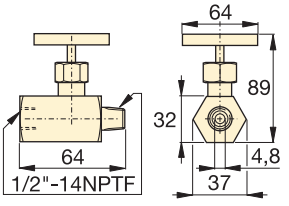
V-82



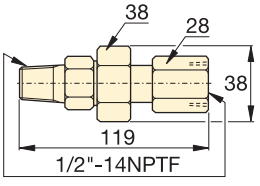
V-182



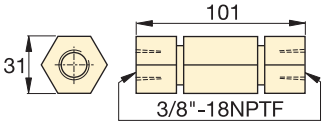
V-8F



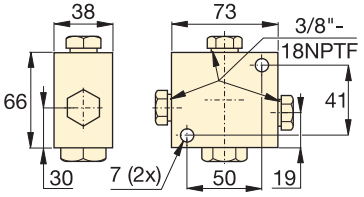
V-91



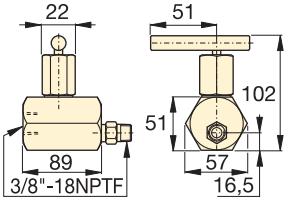
V-10



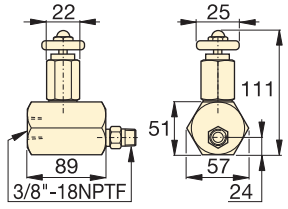
V-17



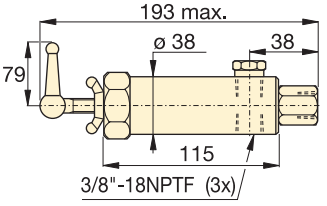
V-42



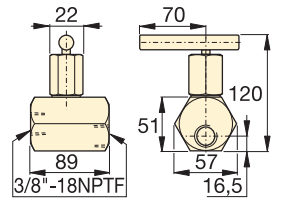
V-66, V-66NV



V-66F



V-152, V-152NV



V-161

Valve dimensions in mm



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

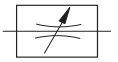
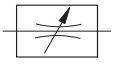
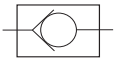
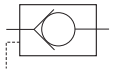
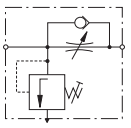
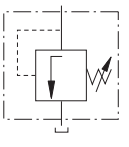
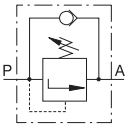
For additional fittings see the fitting page of the System Components section in this catalogue.

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V Series



Maximum Operating Pressure:
700 bar

Valve Type and Model Number		Description		Hydraulic Symbol
Needle Valve **V-82** **V-182** **V-8F**		**V-82**: To control cylinder speed. Can also be used as shut-off valve for temporary load holding. ⅜" NPTF ports, nickle plated. **V-182**: Same as V-82, but with ¼" NPTF female ports, nickle plated.	Also suitable for gauge snubbing (also V-82). **V-8F**: Like V-82, but with very fine metering for precise flow control 0,16-14,7 l/min at 275 bar. **Not recommended as shut-off valve.**	
Snubber Valve **V-91**		**V-91**: 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 GA-1, GA-2 or GA-4 gauge adaptors.	
Auto Damper® Valve **V-10**		**V-10**: 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 GA-1, GA-2 or GA-4 gauge adaptors.	
Check Valve **V-17**		**V-17**: Ruggedly built to resist shock and operate with low pressure drop. Closes smoothly without pounding. ⅜" NPTF female port.		
Pilot Operated Check Valve **V-42**		**V-42**: 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 presure ratio 14% (6,5:1).	
Manually Operated Check Valve **V-66, V-66NV *** **V-66F**		**V-66, V-66NV**: For load holding applications with single and double acting cylinders. Valves allow oil to flow back to tank when cylinder retracts. V-66NV with Viton seals, nickel-plated.	V-66F: Similar to V-66, but with very fine metering capability for precise flow control. V-66F is not designed for load holding.	
Pressure Relief Valve **V-152** **V-152NV ***		**V-152**: 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: • 0,9 m return line hose kit, • ± 3% repeatability, • 55-700 bar adjustment range.	
Sequence Valve **V-161**		**V-161**: To control oil flow to a secondary circuit. Flow is blocked until system pressure rises to the V-161 setting. When this pressure level is reached, the V-161 opens to allow flow to the secondary circuit.	A pressure differential is always maintained between the primary and secondary circuit. **Mininum operating pressure: 140 bar.**	

* See page 62 for more information about products for use in high temperature and extreme environment applications.

Enerpac Hydraulic Presses

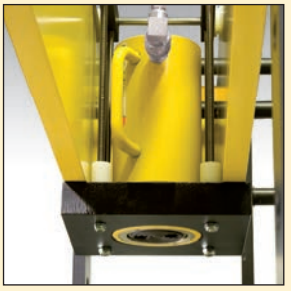
Enerpac Hydraulic Presses are available in a variety of capacities and sizes. The press frames are designed for maximum strength and durability. Strong frames and powerful high-pressure hydraulics will provide years of dependable service in many applications.

Enerpac Presses are available in Bench, C-Frame, Arbor, Workshop and Roll-Frame models.

These Press features increase productivity and broaden the range of applications:

Side-to-side cylinder movement

Lateral movement capability of cylinder in upper bed.



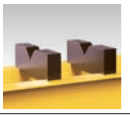
Winch

Movable upper and lower bed with self-braking winch on XLP-Series presses.





Hydraulic Presses Section Overview

Capacity ton (kN)	Press type and functions	Series		Page
10 (101)	**Bench Presses**	**VLP**		**146** ▶
25 - 200 (232 - 1995)	**Workshop Presses**	**XLP VLP**		**146** ▶
50 - 200 (498 - 1995)	**Roll-Frame Presses**	**BPR**		**148** ▶
5 - 20 (45 - 178)	**C-Clamp Presses**	**A**		**150** ▶
10 - 30 (101 - 295)	**Arbor Presses**	**A**		**150** ▶
10 - 200 (101 - 1995)	**Press Accessories Press Application Idea**	**VB, A, IPL**		**152** ▶
900 - 90.000 kg	**Tension Meters Load Cells**	**TM LH**		**153** ▶

Available in capacities from 10 to 200 ton, each Enerpac press consists of three basic high quality components: a press frame, a power source and a cylinder.

Press Frame

Press frames include features like workpiece side-loading and height adjustment of the upper and lower bed.

Power Source

Depending on the production requirements, Enerpac presses can be powered by manual, air-hydraulic and electric-drive power sources.

Cylinder

Depending on the application, double-acting cylinders offer increased efficiency. Check out the Selection Charts for the press best suited for your needs.

Gauge

All Workshop presses and Roll-Frame Presses feature an easy to monitor pressure/force gauge for increased safety.

IMPORTANT!

The pressframe of the workshop presses are exclusively designed for pressing operations, not for pulling. For pulling applications please contact Enerpac.

In order to fully comply with CE regulations, some presses must be equipped with specific safety components, such as spring centered valves, two-hand control devices, guards or others.

Enerpac standard general purpose presses are supplied without guards, and have a plunger speed of less than 10 mm/second. However, your application may require that measures should be taken to reduce the risk of injury to operators and other personnel by providing appropriate safeguarding, training and conducting a risk assessment, which eliminates or reduces danger.

Health & safety within your workplace is your responsibility, not that of Enerpac.

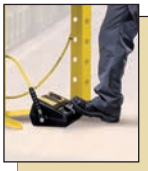
Advice on such matters is available from your local enforcement agency. If you require any further information on Enerpac accessories that may help you conform to the Machinery Directive or European legislation contact Enerpac.

CE

▼ From left to right: **XLP-506XA12G, XLP-256XA11G**



No Workshop can do without one



XA-Series Foot Pump

The XLP-press with XA-Series air powered foot pump: no need to fully lift up foot – rest bodyweight on heel, resulting in a handsfree and stable working position – safe and controlled press operation (see page 114 for XA-Series Pumps).



Gauges

All press models include a gauge and gauge adaptor, matching the press capacity.



Easy grip forklift access

Cut-away in lower frame for pallet truck access allows easy transportation of 50 and 75 ton XLP-series presses.



Side-to-side cylinder movement

Cylinder can be positioned horizontally side-to-side on all XLP-Series presses.

XLP-Series Presses

- **Multi-functional presses in kit form (50 and 75 ton presses)**
- **Easy grip forklift access on 50 and 75 ton presses**
- **Height adjustment of upper or lower bed with winch (50 & 75 ton)**
- **Width adjustment allows cylinder to move from side-to-side**
- **Pump options include XA-Series air-operated foot pump**
  - **pressure gauge integrated in pump for optimal control**
  - **suitable for delicate pressing jobs from variable oil flow.**

VLP-Series presses

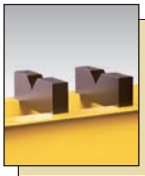
- **Unique "Hydrajust" bed positioning device on 100 and 200 ton VLP-presses allows adjustment of the lower bed.**

▼ **SELECTION CHART**

Press Capacity ton (kN)	Maximum Daylight (mm) Vertical	Horizontal	Press Model Number	Power Source: Pump Type Man.	Elec.	Air	Valve Type Man.	Elec.	Pump Model Nr.	Page:	Cylinder:		Stroke (mm)	Cylinder Model Nr.	Page:
10 (101)	430	435	**VLP-106P142**	●			●		P-142	**74**	●		156	RC-106	**6**
	430	435	**VLP-106PAT1**			●	●		PATG-1102N	**112**	●		156	RC-106	**6**
25 (232)	1265	510	**XLP-256P392**	●			●		P-392	**74**	●		158	RC-256	**6**
	1265	510	**XLP-256XA11G**			●	●		XA-11G	**114**	●		158	RC-256	**6**
50 (498)	980	990	**XLP-506P802 ***	●			●		P-802	**76**	●		159	RC-506	**6**
	980	990	**XLP-506XA12G ***			●	●		XA-12G	**114**	●		159	RC-506	**6**
	980	990	**XLP-506ZES ***		●			●	ZE4410SE-E050	**104**		●	156	RR-506	**38**
	980	990	**XLP-5013ZES ***		●			●	ZE4410SE-E050	**104**		●	334	RR-5013	**38**
75 (718)	970	990	**XLP-756XA12G ***			●	●		XA-12G	**114**	●		156	RC-756	**6**
100 (933)	989	990	**VLP-1006ZES**		●			●	ZE5420SW-E050	**104**		●	168	RR-1006	**38**
	989	990	**VLP-10013ZES**		●			●	ZE5420SW-E050	**104**		●	333	RR-10013	**38**
200 (1995)	1340	1220	**VLP-20013ZES**		●			●	ZE6420SW	**104**		●	330	RR-20013	**38**

* 50 and 75 ton XLP-Series presses can be ordered as factory assembled press frame.
Add suffix "M" to press model number. Example: **XLP-506XA12G-M**.

= Single-Acting = Double-Acting



Optional V-Blocks

To facilitate positioning of pipes and bars, or placed upside-down, to serve as a convenient worktable. Featuring precise fit into the press bolster. Each model number includes two V-blocks.

To be used with press (ton)	V-Blocks Model Number
10	VB-10
25	VB-25
50	VB-501
75, 100	VB-101
200	A-200

"Hydrajust" Bed Positioning

Allows vertical adjustment of the lower bed on 100 and 200 ton VLP presses.

IMPORTANT: The "Hydrajust" bed positioning is not designed to withstand full cylinder capacity, only to be used for bed adjustment.

Page: 152

XLP, VLP Series



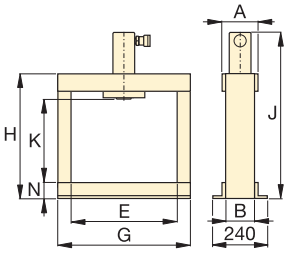
Capacity:
10 - 200 ton

Maximum Daylight x Width:
1340 x 1220 mm

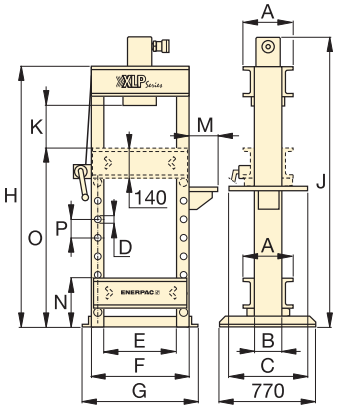
Maximum Operating Pressure:
700 bar

IMPORTANT!

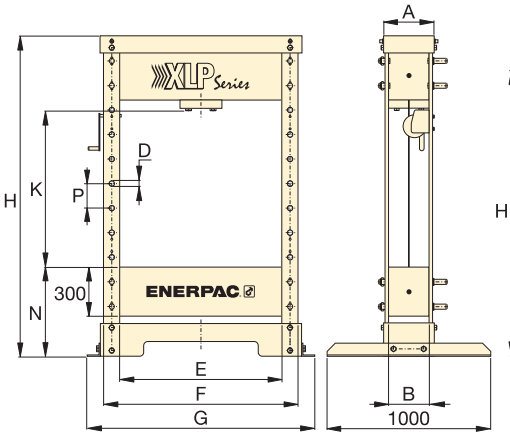
The pressframe of the workshop presses are exclusively designed for pressing operations, not for pulling. For pulling applications please contact Enerpac.



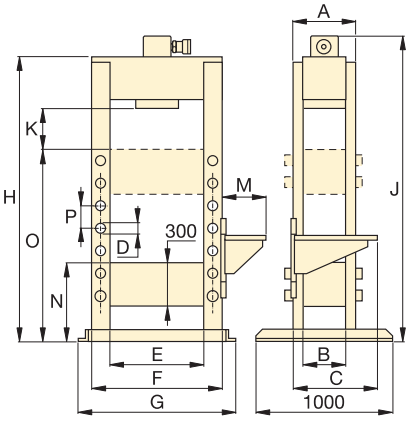
VLP 10 ton



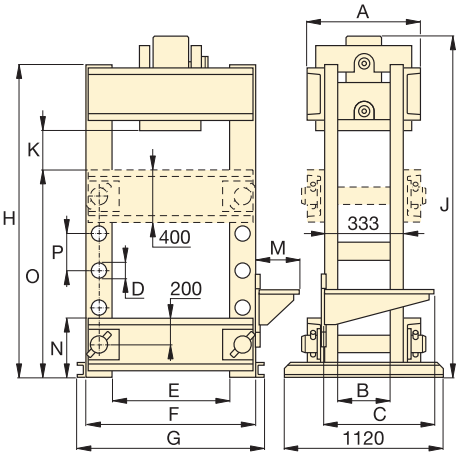
XLP 25 ton



XLP 50 and 75 ton



VLP 100 ton



VLP 200 ton

Speed (mm/s) **		Dimensions (mm)															Press Model Number
Rapid Advance	Pressing	A	B	C	D	E	F	G	H	J	K	M	N	O	P	(kg)	
{2,5} **	{0,6} **	110	80	–	–	435	–	542	620	748	430	–	80	–	–	49	VLP-106P142
10,0	1,8	110	80	–	–	435	–	542	620	748	430	–	80	–	–	54	VLP-106PAT1
{3,4} **	{0,7} **	260	140	510	32	510	630	700	1622	1740	370-1265	140	212	1070	122	165	XLP-256P392
10,0	1,3	260	140	610	32	510	630	700	1622	1740	370-1265	323	212	1070	122	170	XLP-256XA11G
{5,5} **	{0,3} **	310	240	–	32	990	1190	1390	1995	–	210-980	–	540	–	150	595	XLP-506P802 *
4,7	0,6	310	240	–	32	990	1190	1390	1995	–	210-980	–	540	–	150	600	XLP-506XA12G *
10,0	2,0	310	240	–	32	990	1190	1390	1995	–	210-980	–	540	–	150	660	XLP-506ZES *
10,0	2,0	310	240	–	32	990	1190	1390	1995	–	210-980	–	540	–	150	700	XLP-5013ZES *
3,2	0,4	420	330	–	40	990	1240	1430	1995	–	210-970	–	540	–	150	900	XLP-756XA12G *
10,0	2,1	400	340	560	40	990	1240	1400	1879	1885	239	425	540	1290	150	970	VLP-1006ZES
10,0	2,1	400	340	560	40	990	1240	1400	1879	2050	239	425	540	1290	150	993	VLP-10013ZES
6,6	1,6	553	233	560	76	1220	1620	1740	2285	2370	377	425	453	1415	254	1992	VLP-20013ZES

** {…} = advance speed in mm per handpump stroke.

▼ Shown: **BPR-5075**



Expert Designed Versatility

- **Quality welded frame for maximum strength and long life**
- **Frame rolls easily on 4 steel roller bearings**
- **Exclusive 'Hydra-Lift' bolster for effortless adjustment of the vertical daylight**
- **Standad roller head design allows lateral movement and locking of the cylinder up to 300 mm left or right of centre**
- **All models in the quick selection chart have been matched to an electric pump, double-acting cylinder, hose and gauge, offering the complete package**
- **Roll-Frame design features a stationary bed with the ability to support heavy loads**
- **Hydraulic clamp cylinder locks roll-frame into position.**



Cylinder adjustment

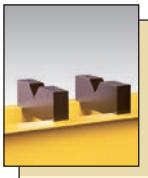
Cylinder adjustment allows horizontal side to side cylinder positioning.



Hydra-Lift

Allows easy, effortless daylight adjustment. Standard on all Roll-Frame presses.

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Optional V-Blocks

These V-Blocks are designed for easy fixturing of round stock and other non-uniform materials. Featuring precise fit into the press bolster.

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▼ **SELECTION CHART**

Press Capacity ton (kN)	Vertical Daylight A (mm) min.	Vertical Daylight A (mm) max.	Maximum Bed Width E (mm)	Electric Pump Model Number	Page	Press Model Number	Double-Acting Cylinder Stroke (mm)	Double-Acting Cylinder Model Number	Page	Speed (mm/sec) Rapid Advance	Speed (mm/sec) Pressing
50 (498)	152	942	730	ZE5420SW-S	**104**	**BPR-5075**	334	RR-5013	**38**	4,1	3,9
100 (933)	159	1048	889	ZE3420SW	**104**	**BPR-10075**	333	RR-10013	**38**	7,7	0,7
200 (1995)	279	1295	1219	ZE4420SW	**104**	**BPR-20075**	330	RR-20013	**38**	5,2	0,5



▲ *For offshore application high capacity spring loaded cylinders need to be assembled and tested. A special 100 ton roll frame press, with long stroke cylinder has been constructed. All movements are operated and monitored through a PLC controlled pendant.*

BPR Series



Capacity:
50 - 200 ton

Maximum Daylight x Width:
1295 x 1222 mm

Maximum Operating Pressure:
700 bar



Gauges

All press models include a gauge and gauge adaptor, matching the press capacity:

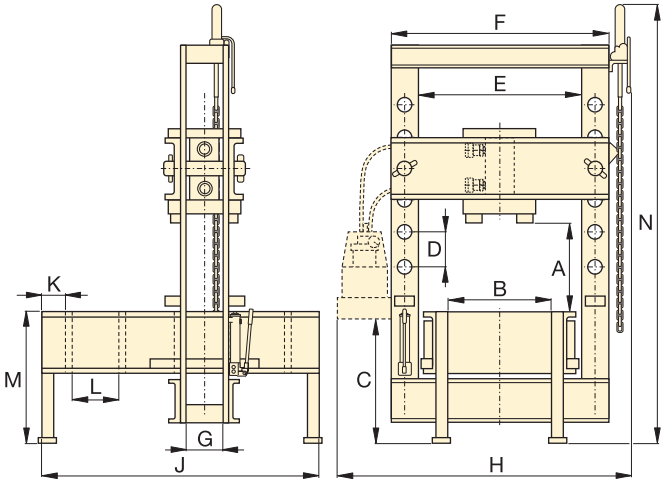
Press Capacity ton	Gauge Model Number	Adaptor Model Number
50	GF-50B	GA-2
100	GF-871B	GA-3
200	GF-200B	GA-3

For more information on gauges, please refer to the System Components section.

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IMPORTANT!

The frameworks of the presses are exclusively designed for pressing operations, not for pulling. For pulling applications please contact Enerpac.





Spring Centred Valves

Manual valves on electric and air pumps of Enerpac presses are Spring Centred Valves. The handle will automatically move into the neutral valve position when released.

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Roll-Frame Press Dimensions (mm)															Press Model Number
A (min.-max.)	B	C	D	E	F	G	H	J	K	L	M	N	(kg)	
152 - 942	526	971	264	730	933	127	1420	1626	203	270	762	2870	917	BPR-5075
159 - 1048	673	965	222	889	1143	146	1605	1676	203	270	813	3021	1767	BPR-10075
279 - 1295	984	933	254	1219	1626	232	2150	2197	203	381	915	3200	4186	BPR-20075

▼ Shown from left to right: **A-220, A-330 and A-310**



The Standard Workshop Tools

C-Clamp Press

- **5, 10 and 20 ton capacity**
- **Operational in all positions.**

Arbor Press

- **10 and 30 ton capacity**
- **Foot mounting holes for horizontal or vertical positioning**
- **Machined working surfaces for easier fixturing**
- **Slotted back to simplify loading and unloading of longer parts.**



Push Pin A-183

For applications requiring precision pressing, such as shaft removal and insertion. This attachment fits 10 ton cylinders and requires the use of a threaded adaptor saddle (**A-13**).

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Smooth Saddle A-185

For pressing applications of delicate parts, such as aluminium castings, this saddle decreases surface marks during the pressing application. Requires 10 ton cylinder and threaded adaptor saddle (**A-13**).

Page: 173

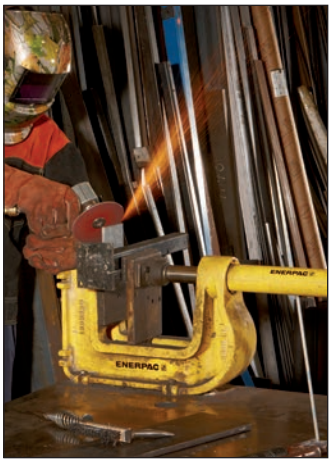


10 ton Bench Presses

For 10 ton VLP-Series Bench Presses selection see:

Page: 146

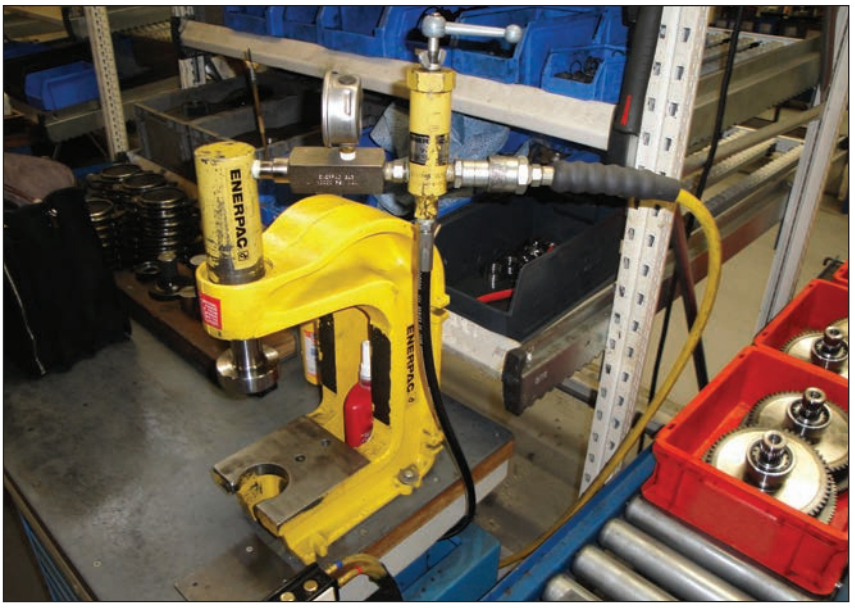
▼ *A-310 Arbor Press*



▼ **SELECTION CHART**

Press Type	Press Capacity ton (kN)	Maximum Vertical Daylight (mm)	Maximum Bed Width (mm)	Press Model Number	Cylinder Model Number *	Page:
C-Clamp	**5** (45)	165	51	**A-205**	5 ton RC-cylinder *	6
	10 (101)	228	57	**A-210**	10 ton RC-cylinder *	6
	20 (178)	305	70	**A-220**	25 ton RC-cylinder **	6
Arbor	**10** (101)	227	135	**A-310**	10 ton RC-cylinder *	6
	30 (295)	260	178	**A-330**	RC-308 *	6

* Recommended cylinder must be ordered separately.
** Must be limited to 20 ton.



▲ *RC-308 cylinder mounted in A-330 Arbor Press powered by a PATG-Turbo Air pump for controlled pressing of bearings for sprockets of weaving machines. The V-152 Pressure Relief Valve controls the pressing force.*

A Series



Capacity:
5 - 30 ton

Maximum Daylight x Width:
305 x 178 mm

Maximum Operating Pressure:
700 bar

IMPORTANT!
For high-cycle production applications, the C-Clamp and Arbor presses should be limited to 50% of their capacity.



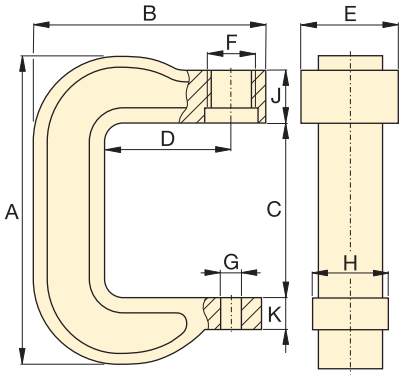
Hydraulic Cylinders
Cylinders for C-Clamps and Arbor Presses must be ordered separately.

Page: 6

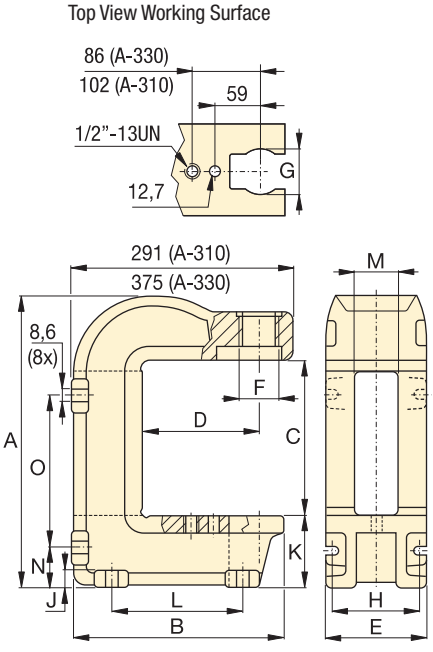


Hydraulic Pumps
Pumps for C-Clamps and Arbor Presses must be ordered separately.

Page: 73

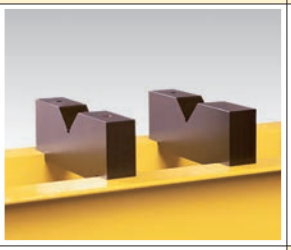


A-205, A-210, A-220



A-310, A-330

Press Dimensions (mm)																Press Model Number
A	B	C	D	E	F	G	H	J	K	L	M	N	O	(kg)	
291	203	165	95	73	1½" -16 UNS	26	51	66	25	–	–	–	–	7	**A-205**
406	283	228	152	83	2¼"-14 UNS	26	76	64	41	–	–	–	–	17	**A-210**
540	346	305	152	121	$3^{5}/_{16}$"-12 UNS	26	95	70	44	–	–	–	–	38	**A-220**
414	281	230	152	135	2¼"-14 UNS	63	122	19	97	175	65	54	219	27	**A-310**
557	353	260	152	178	$3^{5}/_{16}$"-12 UNS	63	140	25	165	203	67	98	276	86	**A-330**

Description	Press Capacity and Press Series	Model Number		Features
V-Blocks	10 ton Bench VLP-Presses	**VB-10**		• Facilitate positioning of pipes and bars • All V-Block model numbers include 2 V-blocks.
	25 ton Workshop XLP-Presses	**VB-25**		
	50 ton Workshop XLP-Presses	**VB-501**		
	75 ton XLP- and 100 ton VLP-Presses	**VB-101**		
	200 ton Workshop VLP-Press	**A-200**		
	200 ton BPR-Roll-Frame Press	**A-200R**		
Hydra-Lift	50 ton BPR-Roll-Frame Press	**IPLR-100**		• Allows easy, effortless daylight adjustments • Includes accessory chain.
	100 ton BPR-Roll-Frame Press	**IPLR-100**		
	200 ton BPR-Roll-Frame Press	**IPLR-200**		
Hydrajust Bed Positioning	100 ton Workshop VLP-Presses	**VHJ-100**		• Allowing effortless daylight adjustment by moving the lower bed up and down • Can be used with presses equipped with double-acting cylinder.
	200 ton Workshop VLP-Press	**BSS-5380**		
	IMPORTANT! The "Hydrajust" bed positioning is not designed to withstand full cylinder capacity, only to be used for bed adjustment.			

▼ PRESS APPLICATION IDEAS



◄ 600 Ton High-Accuracy Collar Press

For production of accelerator coils, sheet metal needs to be formed into a specific shape and size. The end product of this forming is a cylindrical collar, which has a very solid structure, specific shape, and a tight tolerance for circularity and concentricity.

The Enerpac team was consulted to accomplish this task using proven high-pressure technology. The 600-ton press consisted of two separate hydraulic systems. The first system featured eight 25-ton cylinders, to position the sheets, while the second system featured eight 75-ton cylinders, to press the sheets into the correct shape. The results were a hydraulic press system that increased productivity and lowered operating costs.

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.

Enerpac was consulted to assist in the design of a high accuracy production press. Control of the press force is monitored along with the temperature of the coils during forming by a PLC Control System.



▼ Shown: **LH-102** and **TM-5** (in middle)



TM LH Series



Capacity:
900 - 90.000 kg

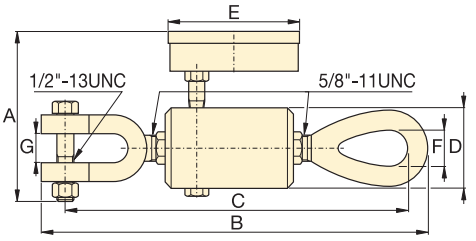
Accuracy, % of full scale:
± 2%

TM and LH models are 100% tested to verify accuracy within a ± 2% range.

If your application requires a calibrated tool, it must be submitted for certification testing. Certification is NOT available from Enerpac.

Tension Meter TM-5

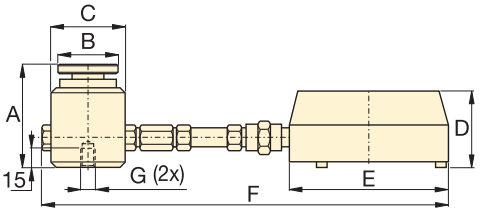
- **Accuracy ± 2% of full scale**
- **Zinc and bronze plated to resist corrosion**
- **Dual-range readout in kilograms and pounds**
- **Maximum indicating pointer reading for pre-selected forces or to maintain force readings**
- **Cushioned metal case provides safe storage and transport.**



TM-5

Load Cells LH-Series

- **Accuracy ± 2% of full scale**
- **Swivel loading pad reduces eccentric loading for improved accuracy**
- **Maximum indicating pointer reading pre-selected forces or to maintain maximum force readings**
- **Dual-range readout in kilograms and pounds.**



LH-Series

▼ **SELECTION CHART**

Type	Gauge Capacity (kg)	Gauge Capacity (lbs)	Model Number	Minimum Reading (kg)	Minimum Reading (lbs)	Gauge Scale Increments (kg)	Gauge Scale Increments (lbs)	Dimensions (mm) A	B	C	D	E	F	G *
Direct Mounted	4.500	10.000	**TM-5**	500	1.000	100	100	120	247	236	50	93	22	19
Direct Mounted Load Cell	900	2.000	**LH-10**	100	200	20	20	77	44	57	60	101	215	¼"- 20, 44,5 BC
	4.500	10.000	**LH-50**	500	1.000	100	100	77	44	57	60	101	215	¼"- 20, 44,5 BC
Remote Mounted with 0,6 m Hose	900	2.000	**LH-102**	100	200	20	20	77	44	57	60	147	846	¼"- 20, 44,5 BC
	4.500	10.000	**LH-502**	500	1.000	100	100	77	44	57	60	147	846	¼"- 20, 44,5 BC
	9.000	20.000	**LH-1002**	1.000	2.000	200	200	77	44	57	60	147	846	¼"- 20, 44,5 BC
Remote Mounted with 1,8 m Hose	21.000	50.000	**LH-2506**	3.000	5.000	500	500	101	69	85	60	147	2094	⅜"- 24, 63 BC
	45.000	100.000	**LH-5006**	5.000	5.000	1.000	1.000	132	101	127	60	147	2135	⅜"- 24, 89 BC
	90.000	200.000	**LH-10006**	10.000	10.000	1.000	2.500	158	127	158	60	147	2166	⅜"- 24, 102 BC

* BC = Bolt Circle

Hydraulic and Mechanical Pullers

ENERPAC

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 0,28 to 0,4 times the shaft diameter in mm. Use the following chart:

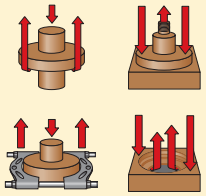
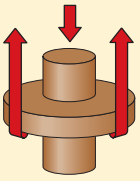
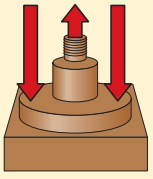
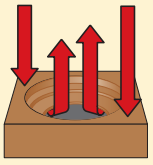
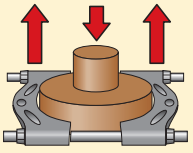
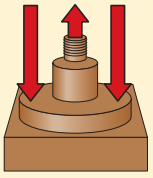
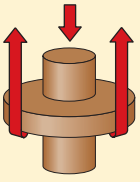
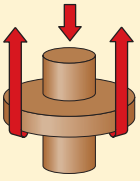
Shaft Diameter	Puller Capacity
0 - 25 mm	13 ton
25 - 50 mm	22 ton
50 - 89 mm	33 ton
89 - 140 mm	45 ton

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 ton	Puller Type	Series	Page
	13-45	**Master Puller Sets** Max. Reach: 252 - 700 mm Max. Spread: 247 - 1100 mm	BHP	 156 ▶
	13-45	**Grip Puller Sets** Max. Reach: 252 - 700 mm Max. Spread: 249 - 1100 mm	BHP	 157 ▶
	6-22	**Cross Bearing Puller Sets** Max. Reach: 357 - 864 mm Max. Spread: 260 - 580 mm	BHP	 158 ▶
	6-22	**Bearing Cup Pullers** Max. Reach: 115 - 150 mm Max. Spread: 145 - 240 mm	BHP	 159 ▶
	6-22	**Bearing Separators** Max. Width: 110 - 260 mm Max. Spread: 110 - 250 mm	BHP	 159 ▶
	3-13	**Mechanical Lock-Grip Pullers** Max. Reach: 102 - 215 mm Max. Spread: 132 - 300 mm	LGM	 160 ▶
	10-64	**Hydraulic Lock-Grip Pullers** Max. Reach: 215 - 408 mm Max. Spread: 300 - 660 mm	LGH	 164 ▶
	100	**Posi Lock® Hydraulic Pullers** Max. Reach: 1219 mm Max. Spread: 190 - 1778 mm	EPH	 166 ▶

▼ Shown: **Master Puller Set BHP-3751G**



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 *	**13 ton**	**22 ton**	**33 ton**	**45 ton ****	***Page:***
	Model Number ▶	**BHP-1752** [1]	**BHP-2751G**	**BHP-3751G**	**BHP-5751G**	
	Included Hydraulics **Set Weight ▶**	37 kg	90 kg	172 kg	298 kg	
	• Hand Pump	P-142	P-392	P-392	P-80	**74-77** ▶
	• Cylinder	RWH-121900	RCH-202	RCH-302	RCH-603	**32** ▶
	• Saddle	–	HP-2015	HP-3015	HP-5016	**33** ▶
	• Hose	HB-7206C	HC-7206C	HC-7206C	HC-7206C	**128** ▶
	• Gauge + Adaptor	GA45GC	GA45GC	GA45GC	GA45GC	**140** ▶
	Included Pullers					
10	Grip Puller	BHP-1762	BHP-252	BHP-352	BHP-552	**157** ▶
20	Cross Bearing Puller	BHP-1772	BHP-262	BHP-362	BHP-562	**158** ▶
30	Bearing Cup Puller	BHP-180	BHP-280	BHP-380	BHP-580	**159** ▶
40	Bearing Separator	BHP-181	BHP-282	BHP-382	BHP-582	**160** ▶
	• Case	CM-6	CW-350	CW-350	CW-750	

* See warning on this page.
** Puller capacity at 540 bar; maximum cylinder capacity at 700 bar is 60 ton.
[1] Includes Adaptor FZ-1630.

▼ Shown: **Grip Puller Set BHP-351G**



- **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.**

BHP Series



Capacity:
13, 22, 33 and 45 ton

Reach:
252 - 700 mm

Spread:
249 - 1100 mm

Maximum Operating Pressure:
700 bar

Ordering Example

Model Number BHP-251G:

includes Grip Puller BHP-252 and a full hydraulic set. (Hand pump, cylinder, saddle, hose, gauge and gauge adaptor).

Model Number BHP-252:

includes Grip Puller mechanical parts only, for use with your existing hydraulics.

▼ SELECTION CHART

Grip Puller Set Capacity **		**13 ton**	**22 ton**	**33 ton**	**45 ton *****
	Model Number ▶	**BHP-152** [1]	**BHP-251G**	**BHP-351G**	**BHP-551G**
Included Hydraulics	**Set Weight ▶**	22 kg	56 kg	91 kg	160 kg
• Hand Pump		P-142	P-392	P-392	P-80
• Cylinder		RWH-121900	RCH-202	RCH-302	RCH-603
• Saddle		–	HP-2015	HP-3015	HP-5016
• Hose		HB-7206C	HC-7206C	HC-7206C	HC-7206C
• Gauge + Adaptor		GA45GC	GA45GC	GA45GC	GA45GC
10 Grip Puller	**Model Number ▶**	**BHP-1762 ***	**BHP-252 ***	**BHP-352 ***	**BHP-552 ***
Maximum Spread (mm)	2-jaw	249	400	593	899
	3-jaw	249	499	800	1100
Maximum Reach (mm)	2-jaw	252	300	387	700
	3-jaw	252	300	387	700
Jaw (mm)	Thickness	15	20	24	30
	Width	23	27	38	39
Adjusting Screw (mm)	Thread	¾"- 16 UNF	1"- 8 UNC	1¼"- 7 UNC	1⅝"- 5.5 UNS
	Length	400	670	790	975
• Case		CW-166	CW-166	CW-350	CW-750

[1] Includes Adaptor FZ-1630.
* Grip Puller order number without hydraulics.
** See warning on page 156.
*** Puller capacity at 540 bar; maximum cylinder capacity at 700 bar is 60 ton.

BHP-Series, Cross Bearing Puller Sets

ENERPAC

▼ Shown: **Cross Bearing Puller Set BHP-361G**



- **Precise hydraulic control allows fast, efficient and safe pulling**
- **High quality, forged steel components provide superior reliability and service.**

BHP Series



Capacity:
6, 11, 16 and 22 ton

Reach:
357 - 864 mm

Spread:
260 - 580 mm

Maximum Operating Pressure:
350 bar

The cross bearing puller without hydraulics, bearing cup puller and a bearing separator can be ordered separately, see items nr. 10, 20 , 30 and 40.

▼ **SELECTION CHART**

Cross Bearing Puller Set Capacity		**6 ton**	**11 ton**	**16 ton**	**22 ton**
	Model Number ▶	**BHP-162** [1]	**BHP-261G**	**BHP-361G**	**BHP-561G**
Included Hydraulics	**Set Weight ▶**	26 kg	62 kg	121 kg	185 kg
• Hand Pump		P-142	P-392	P-392	P-80
• Cylinder		RWH-121900	RCH-202	RCH-302	RCH-603
• Saddle		–	HP-2015	HP-3015	HP-5016
• Hose		HB-7206C	HC-7206C	HC-7206C	HC-7206C
• Gauge + Adaptor		GA45GC	GA45GC	GA45GC	GA45GC
20 Cross Bearing Puller [2]	**Model Number ▶**	**BHP-1772**	**BHP-262**	**BHP-362**	**BHP-562**
Spread (mm)	Maximum	260	345	440	580
	Minimum	115	140	180	220
Reach (mm)	Maximum	357	570	710	864
Adjusting Screw (mm)	Diameter	¾"- 16 UNF	1"- 8 UNC	1¼"- 7 UNC	1⅝"- 5.5 UNS
	Length	400	675	795	975
Leg (mm)	Length	105	239	203	609
	Length	357	419	457	863
	Length	–	571	711	–
	Length	–	114	–	–
Upper Leg Ends (mm)	Thread	¾"- 16 UNF	¾"- 16 UNF	1-14 UNS	1¼"- 12 UNF
Lower Leg Ends (mm)	Thread	⅝"- 18 UNF	⅝"- 18 UNF	1-14 UNS	1¼"- 12 UNF
30 Bearing Cup Puller [2]	**Model Number ▶**	**BHP-180**	**BHP-280**	**BHP-380**	**BHP-580**
40 Bearing Separator [2]	**Model Number ▶**	**BHP-181**	**BHP-282**	**BHP-382**	**BHP-582**
• Wooden Case		CM-6	CW-187	CW-350	CW-750

[1] Includes Adaptor FZ-1630.

[2] Can be ordered separately without hydraulic components, see next page.

▼ Shown: **BHP-380**



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:
6, 11, 16 and 22 ton

Maximum Reach:
115 - 150 mm

Spread Range:
145 - 240 mm

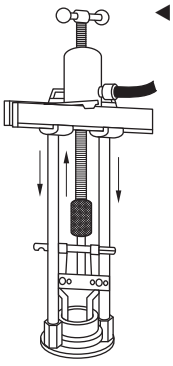
Maximum Operating Pressure:
350 bar

▼ **SELECTION CHART**

Capacity *		6 ton	11 ton	16 ton	22 ton
30 Bearing Cup Puller					
Model Number ▶		**BHP-180**	**BHP-280**	**BHP-380**	**BHP-580**
Spread (mm)	Max.	145	160	240	240
	Min.	40	32	60	60
Reach (mm)	Max.	115	140	150	150
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.



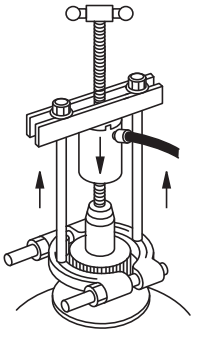
◀ *Bearing Cup Puller shown with Crosshead Puller Attachment.*

▼ Shown: **BHP-382**



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 *		6 ton	11 ton	16 ton	22 ton
40 Bearing Puller					
Model Number ▶		**BHP-181**	**BHP-282**	**BHP-382**	**BHP-582**
Spread (mm)	Max.	110	134	250	250
	Min.	10	12	17	17
Width (mm)		110	155	260	260
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

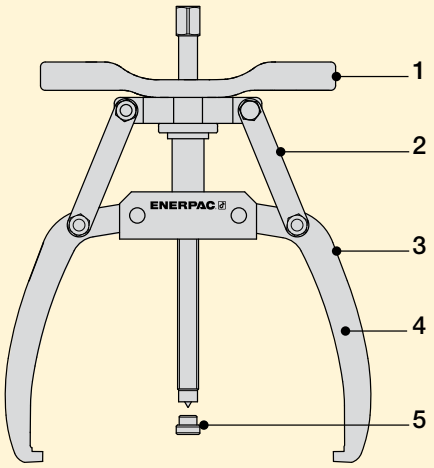
Bearing Separator has wedge shaped edges for placing puller behind hard to reach bearings, gears, etc., where clearance prevents direct application of grip puller arms.

The Bearing Separator can be used with the Cross Bearing Puller or the Grip Puller.

▼ 2 and 3-Jaw Mechanical Lock-Grip Pullers

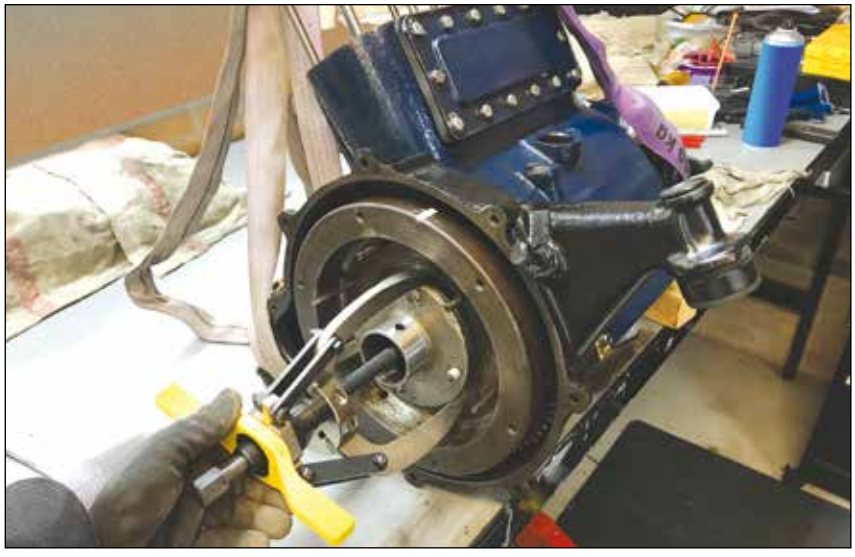


- **Quickly and easily mount on a wide range of applications**
- **Lock-on jaws offer a secure grip for safe and easy operation**
- **Synchronous jaw movement enables entire pulling job to be performed by a single operator**
- **Available in 2 and 3-jaw configurations.**



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, Mechanical Lock-Grip Pullers

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.

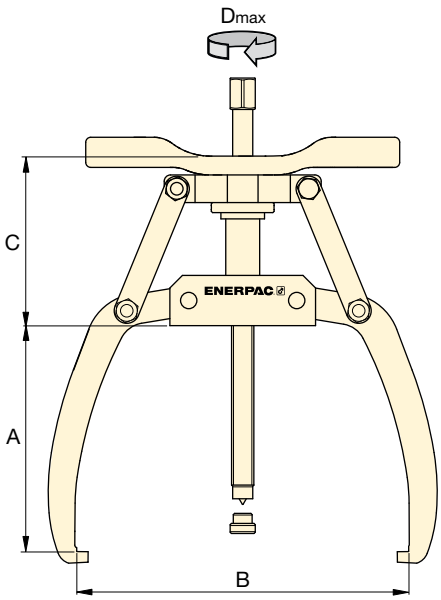
LGM Series



Puller Capacity:
3 - 40 ton

Maximum Reach:
102 - 335 mm

Maximum Spread:
132 - 635 mm

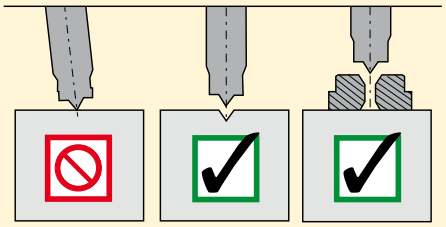


IMPORTANT!
Always wear safety goggles and gloves while using pullers.

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 (mm) Maximum Reach A	Minimum Spread Diameter B	Maximum Spread Diameter B	C	Number of Jaws	Puller Capacity US ton (kN)	Maximum Torque Dmax (Nm)	(kg)	Replacement Point Protector Part Number
LGM203	102	28	132	60	2	**3** (27)	41	1,7	**SGM0404**
LGM305	102	28	132	60	3	**5** (45)	68	2,1	
LGM204	142	30	186	90	2	**4** (36)	68	2,5	
LGM306	142	30	186	90	3	**6** (49)	100	3,1	
LGM207	177	35	260	134	2	**7** (62)	117	4,9	**SGM0704**
LGM308	177	35	260	134	3	**8** (71)	134	6,9	
LGM211	215	84	300	126	2	**11** (98)	203	6,7	
LGM318	215	110	390	140	3	**18** (160)	332	9,9	
LGM324	265	90	460	140	3	**24** (214)	443	13,9	**LGH14K6**
LGM340	335	100	635	210	3	**40** (356)	996	36,0	**LGH24K6**

▼ 2 and 3-Jaw Hydraulic Lock-Grip Pullers

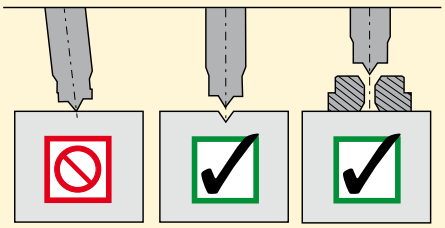


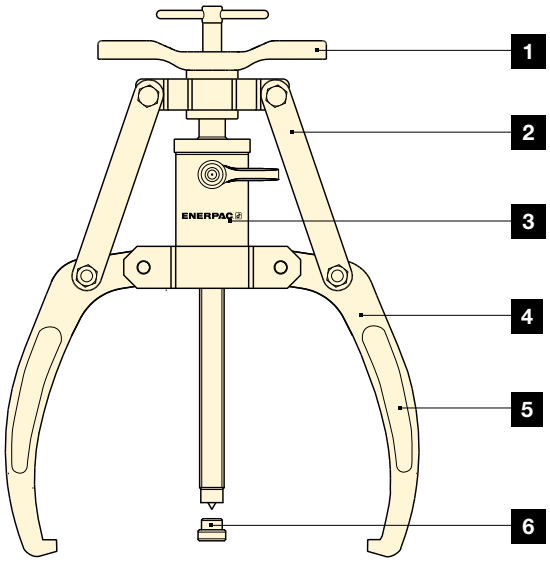
- **Quickly and easily mount on a wide range of applications**
- **Hydraulically applied pulling force increases pulling capacity, reducing operator fatigue**
- **Lock-on jaws offer a secure grip for safe and easy operation**
- **Synchronous jaw movement enables entire pulling job to be performed by a single operator**
- **Available in 2 and 3-jaw configurations with or without a detachable hollow cylinder.**

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.





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.

LGH-Series, 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 700 bar hydraulic cylinder.
LGH-Series pullers can apply up to 64 tons of force and are perfect for removing larger shaft-mounted objects up to 660 mm 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

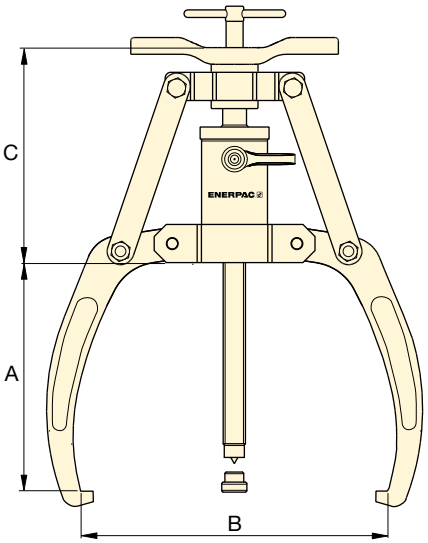


Puller Capacity:
10 - 64 ton

Maximum Reach:
215 - 408 mm

Maximum Spread:
300 - 660 mm

Maximum Operating Pressure:
700 bar



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 (mm) Max. Reach A	Minimum Spread Diameter B	Maximum Spread Diameter B	C	Number of Jaws	Puller Capacity US ton (kN)	(kg)	Replacement Point Protector Part Number	Hydraulic Puller Sets Model Number: Hand Pump P392 / Gauge Ass'y GA45GC	Air Pump XA11G / Integrated Gauge	Electric Pump PUD1300E* / Gauge G2535L	Cordless Pump XC1201ME* / Gauge Ass'y GA45GC
LGH210	215	84	300	192	2	**10** (92)	10	**SGM0704**	–	–	–	–
LGH310	215	84	300	192	3	**10** (92)	13	**SGM0704**	**LGHS310H**	**LGHS310A**	**LGHS310EE***	**LGHS310CE***
LGH214	260	125	380	186	2	**14** (125)	14	**LGH14K6**	–	–	–	–
LGH314	260	125	380	186	3	**14** (125)	18	**LGH14K6**	**LGHS314H**	**LGHS314A**	**LGHS314EE***	**LGHS314CE***
LGH224	336	165	480	325	2	**24** (215)	37	**LGH24K6**	–	–	–	–
LGH324	336	165	480	325	3	**24** (215)	47	**LGH24K6**	**LGHS324H**	**LGHS324A**	**LGHS324EE***	**LGHS324CE***
LGH253	408	230	660	473	2	**53** (467)	111	**LGH253K6**	–	–	–	–
LGH364	408	230	660	473	3	**64** (576)	139	**LGH253K6**	**LGHS364H**	**LGHS364A**	**LGHS364EE***	**LGHS364CE***

[1] Hydraulic puller models include cylinder. To receive puller without cylinder add "NC" after LGH (Example: **LGHNC210**).

* E = for 230V applications. For 115V applications change last suffix from E into B. Example **LGHS310EB**.

Hydraulic Lock-Grip Master Puller Sets

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, electric or battery-powered cordless pump.



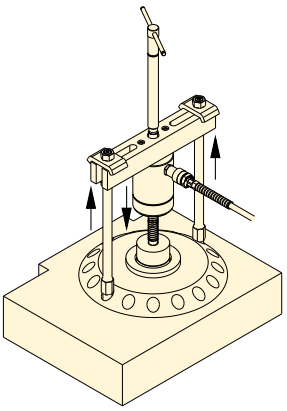
Cross Puller:
Hydraulically powered via a detachable hydraulic cylinder and pump. The Cross Puller can be used individually as a 'push' puller, or in conjunction with the Bearing Separator or Bearing Cup Puller.



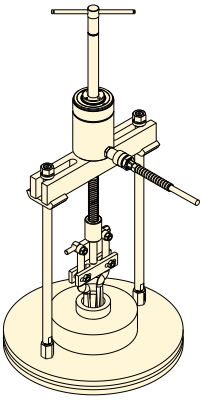
Bearing-Cup Puller:
Specifically designed to pull cup style bearings and other applications requiring an internal style puller.



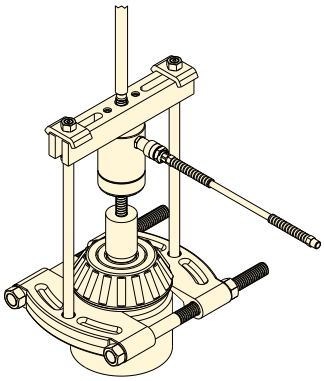
Bearing Separator (used with Cross Bearing Puller):
Features narrow edges, which enable puller to be placed behind hard to reach bearings, gears, etc., where limited clearance prevents the direct application of puller arms.



▲ *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 (mm) A	B min.	Thread Size C	(kg) *
BHP112	280	115	⅝"-18 UNF	2,0
BHP172	280	115	⅝"-18 UNF	2,1
BHP272	370	140	⅝"-18 UNF	2,4
BHP672	615	220	1¼"-12 UNF	6,4

* With slotted crosshead, cylinder and spindle.

Model Number	Bearing Separator (mm) A	B min.	B max.	Thread Size C	(kg)
BHP181	110	10	110	⅝"-18 UNF	2,8
BHP282	156	12	134	⅝"-18 UNF	5,7
BHP292	182	13	210	⅝"-18 UNF	12,5
BHP682	300	20	300	1¼"-12 UNF	43,5

Model Number	Bearing Cup Puller (mm) A	B	C min.	C max.	(kg)
BHP180	135	236	40	145	2,0
BHP190	164	265	40	145	2,0
BHP280	164	265	40	145	2,4
BHP580	150	310	60	240	6,4

Hydraulic Lock-Grip Master Puller Sets

▼ LGHMS Master Puller Set with Hand Pump Option



LGHMS
Series

Puller Capacity:
10 - 64 ton

Maximum Reach:
215 - 408 mm

Maximum Spread:
300 - 660 mm

Maximum Operating Pressure:
700 bar

- **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, electric or battery-powered pump for an optimal solution to every application.**

Puller Dimensions
See dimensional information for LGH-pullers on page 5.
For dimensions of BHP-puller attachments, see page 6.

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 upto 700 bar. 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.
	Hand Pump P392 Gauge Ass'y GA45GC	Air Pump XA11G Integrated Gauge	Electric Pump PUD1300E* Gauge G2535L	Cordless Pump XC1201ME* Gauge Ass'y GA45GC	Hydraulic Hose Model Nr.					
US ton (kN)							US-ton (kN)			
10 (92)	LGHMS310H	LGHMS310A	LGHMS310EE*	LGHMS310CE*	HC7206C	LGH310	**7** (75)	BHP112	BHP181	BHP180
14 (125)	LGHMS314H	LGHMS314A	LGHMS314EE*	LGHMS314CE*	HC7206C	LGH314	**7** (75)	BHP172	BHP282	BHP190
24 (215)	LGHMS324H	LGHMS324A	LGHMS324EE*	LGHMS324CE*	HC7206C	LGH324	**12** (107)	BHP272	BHP292	BHP280
64 (576)	LGHMS364H	LGHMS364A	LGHMS364EE*	LGHMS364CE*	HC7206C	LGH364	**25** (227)	BHP672	BHP682	BHP580

* E = for 230V applications. For 115V applications change last suffix from E into B. Example: **LGHMS310CB**.

▼ EPH-1003E



High-Tech Pulling

Posi Lock® Pullers

The puller that meets the safety challenge. A control cage holds the pulling jaws securely in working position. This patented feature reduces the possibility of the puller jaws slipping off the work surface, thereby increasing productivity and tool life and reducing dangerous situations for the user.

- **Roller cart with power lift**
- **Hydraulically actuated lift cylinder on cart extends puller from ground to a height of 1,69 m**
- **Adjustable jaw tips**
- **Includes ZE3-Series 230 Volt electric one stage pump with remote pendant for fingertip control of the removal process**



◀ *EPH-1003E used in maintenance on mining equipment.*

EPH Series



Capacity:
100 ton

Maximum Reach:
1219 mm

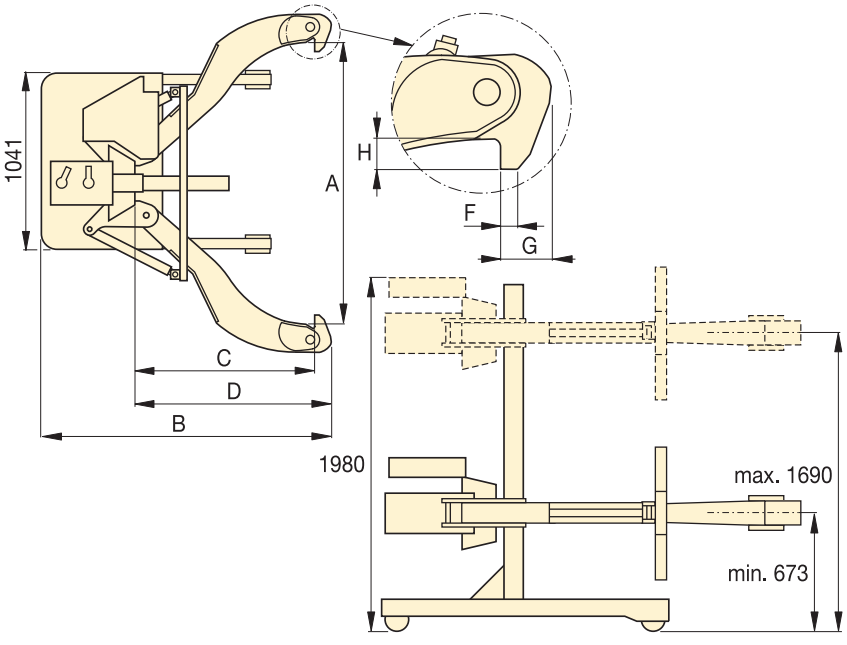
Spread Range:
190 - 1778 mm

Maximum Operating Pressure:
700 bar

Pushing Adaptors

All Posi Lock® 100 Ton Hydraulic Pullers include following pushing adaptors.

Diameter (mm)	Length (mm)	Model Number
89	737	**EPHT-1162**
89	483	**EPHT-1163**
89	229	**EPHT-1164**



▼ *The EPH-1002E quickly and easily removes this drive coupler from its shaft.*



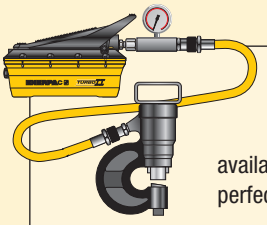
Number of Jaws	Spread Range ø A (mm)	Capacity ton (kN)	Model Number	Cylinder Stroke (mm)	Overall Length B (mm)	Reach C (mm)	Jaw Length D (mm)	Jaw Width F (mm)	Tip Clearance G (mm)	Tip Depth H (mm)	(kg)
2	190 - 1778	**100** (980)	**EPH-1002E**	250	1955	1219	1346	32	89	89	771
3	190 - 1778	**100** (980)	**EPH-1003E**	250	1955	1219	1346	32	89	89	907

Enerpac Hydraulic Tools

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 load skates, as well as hole punches, pipe benders 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.



Tool-Pump Sets

Most hydraulic tools in this section are available in sets, for a perfect tool-pump match.

Hydraulic System Set-up

Check out our 'Yellow Pages' section for help on system set-ups and valving configurations.

Page: 316



Bolting Tools

More Enerpac Tools you will find in our Bolting Tools section in this catalogue.

Page: 188



Hydraulic Tools Section Overview

Capacity ton (kN)	Tool type and functions	Series		Page
2,5 - 12,5 (22 - 116)	**Maintenance Sets**	**MS**		**170** ▶
35 - 50 (311 - 498)	**Punches** **Punch-Pump Sets**	**MSP** **SP** **STP**		**174** ▶ **176** ▶
16 (157)	**Lifting Wedge**	**LW** **LWC**		**178** ▶
8,5 - 20 (75 - 178)	**Machine Lifts**	**SOH**		**179** ▶
1 - 80 (8,9 - 712)	**Heavy-Duty Load Skates**	**ER** **ES** **ELP**		**180** ▶
19 - 453 litres	**Industrial Storage Cases**	**CM**		**182** ▶
0,75 - 1,0 (6 - 8,9)	**Hydraulic Wedgie** **Spread Cylinders**	**A** **WR**		**183** ▶
3 - 20 (26 - 178)	**Hydraulic Cutterheads** **Cutterhead-Pump Sets**	**WHC** **WHR** **STC**		**184** ▶
3 - 20 (26 - 178)	**Self-Contained Hydraulic Cutters**	**WMC**		**185** ▶
Nominal Pipe Bore ½ - 4 inch	**Pipe Bender Sets**	**STB**		**186** ▶

▼ Shown: **MS2-10**



The Universal Hydraulic Tool Box

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 ton.

- **All sets include Enerpac pump, hose, cylinder and gauge**
- **Lock-on or threaded connectors**
- **Complete maintenance set for almost every maintenance application.**



More Information

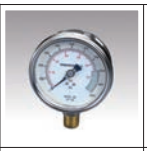
For detailed information on all included attachments, see the next pages.

Page: 172



Clamping a workpiece is just one of the many applications for the Enerpac maintenance sets. ▶

▼ **QUICK SELECTION CHART**

Capacity using attachments* ton (kN)	Set Model Number						Number of Attachment Components	(kg)
2,5 (22)	**MS2-4**	P-142	HC-7206	RC-55	GP-10S	GA-4	33	26
2,5 (22)	**MSFP-5**	P-142	HC-7206	RC-55	GP-10S	GA-4	24	20
5,0 (50)	**MSFP-10**	P-392	HC-7206	RC-106	G2535L	GA-3	23	48
5,0 (50)	**MS2-10**	P-392	HC-7206	RC-106	GP-10S	GA-2	35	63
12,5 (116)	**MS2-20**	P-392	HC-7206	RC-256	GP-10S	GA-2	13	95
5,0-12,5 (50-116)	**MS2-1020**	P-392	HC-7206	RC-102, -106, -256	GP-10S	GA-2	53	158

* If no attachments are being used, capacity is double these values. Maximum operating pressure is then 700 bar.

CAUTION!
When cylinders are used with maintenance set attachments or components, the maximum system pressure must be limited to half the rated pressure (350 bar).

WARNING!
Only use attachments provided with set. Non-Enerpac attachments and longer extension tubes will reduce column strength, potentially creating unsafe conditions.

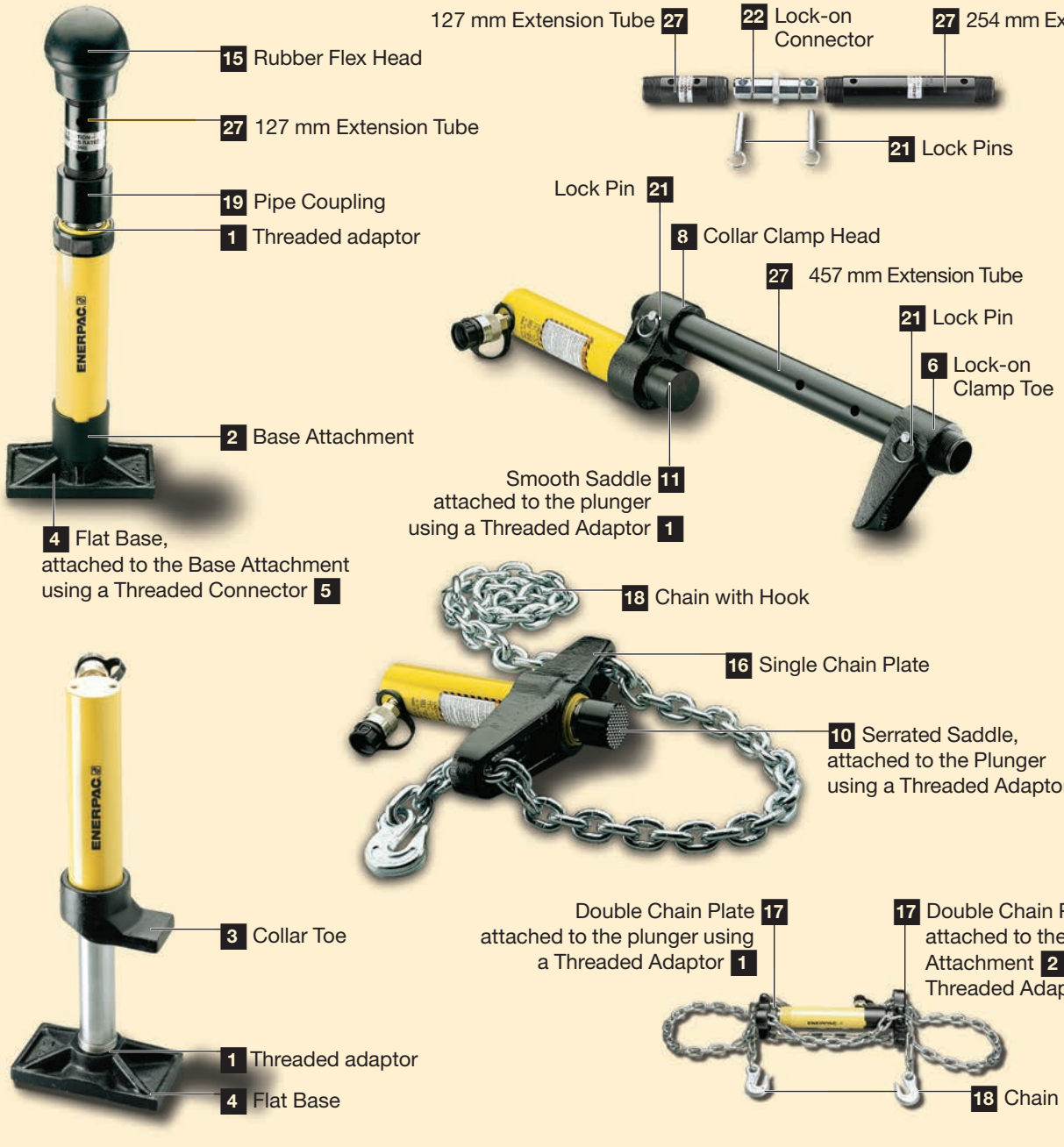
MS Series



Capacity (using attachments):
2,5 - 12,5 ton

Maximum Operating Pressure:
350 bar

▼ **APPLICATION EXAMPLES**



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 (350 bar).

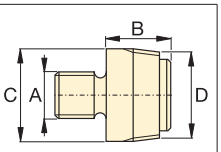
Note: All dimensions in millimetres.

Set Model Number	MS2-4	MSFP-5	MSFP-10	MS2-10	MS2-20	MS2-1020
Base, Collar and Plunger Attachments	**2,5 ton**	**2,5 ton**	**5,0 ton**	**5,0 ton**	**12,5 ton**	**5,0 - 12,5 ton**
Cylinder Model(s)	RC-55	RC-55	RC-106	RC-106	RC-256	RC-102, 106, 256
1	A-23	A-23	A-13	A-13	A-28	A-13, A-28
2	A-25	A-25	A-21	A-21	A-27	A-21, A-27
3	A-1034	A-1034	A-20	A-20	A-595	A-20, A-595
4	MZ-4010	MZ-4010	A-14	A-14	A-243	A-14, A-243
5	A-545	A-545	A-10	A-10	–	A-10 (2x)
6	–	–	–	A-8	–	A-8
7	A-530	A-530	A-6	A-6	–	A-6
8	MZ-4011	–	–	A-192	–	A-192
9	–	–	–	A-305	–	A-305
10	A-531	A-531	A-18	A-18	–	A-18
11	–	–	–	A-185	–	A-185
12	A-532	A-532	A-15	A-15	–	A-15
13	–	–	–	–	A-607	A-607
14	A-629	A-629	A-129	A-129	–	A-129
15	A-539	A-539	A-128	A-128	–	A-128
Chains and Attachments for Pulling Applications	**2,5 ton**	**2,5 ton**	**5,0 ton**	**5,0 ton**	**12,5 ton**	**5,0 - 12,5 ton**
16	A-558	–	–	A-132	A-238	A-132, A-238
17	–	–	–	A-5 (2x)	–	A-5 (2x)
18	A-557 (2x)	–	–	A-141 (2x)	A-218 (2x)	A-141 (2x),
						A-18 (2x)
Extension Tubes, Connectors and Adaptors	**2,5 ton**	**2,5 ton**	**5,0 ton**	**5,0 ton**	**12,5 ton**	**5,0 - 12,5 ton**
19	A-544	–	–	A-19 (2x)	A-242 (2x)	A-19 (2x)
						A-242 (2x)
20	WR-5	WR-5	WR-5	A-92	–	A-92
21	MZ-4013 (4x)	MZ-4013 (4x)	A-16 (4x)	A-16 (4x)	–	A-16 (4x)
22	MZ-4007 (3x)	MZ-4007 (3x)	MZ-1050 (3x)	MZ-1050 (2x)	–	MZ-1050 (3x)
23	MZ-4008 (2x)	–	–	MZ-1051	–	MZ-1051 (2x)
24	MZ-4009	MZ-4009	MZ-1052	MZ-1052	–	MZ-1052
25	–	–	–	A-285	–	A-285
26	A-650	–	–	–	–	–
27 **Length** (mm) 76	MZ-4002	MZ-4002	–	–	–	–
127	MZ-4003	MZ-4003	MZ-1002	MZ-1002	–	MZ-1002
254	MZ-4004	MZ-4004	MZ-1003	MZ-1003	A-239	MZ-1003
254						A-239
457	MZ-4005 (2x)	MZ-4005	MZ-1004	MZ-1004	A-240	MZ-1004 (2x)
457						A-240
584	MZ-4006	MZ-4006	–	–	–	–
762	–	–	MZ-1005	MZ-1005	A-241	MZ-1005 (2x)
762	–	–	–	–	–	A-241
28 **Storage Case**	CM-6	CM-6	CW-350	CW-350	CW-350	CW-750
Set Weight (kg)	26	20	48	63	95	158

Base, Collar and Plunger Attachments

1 Threaded Adaptor

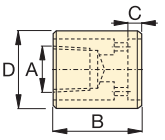




ton	Model Nr.	A	B	C	D
2,5	A-23	¾"- 16 UN	28	26	¾"- 14 NPT
5,0	A-13	1"- 8 UN	31	42	1¼"- 11½ NPT
12,5	A-28	1½"- 16 UN	47	69	2"- 11½ NPT

2 Base Attachment

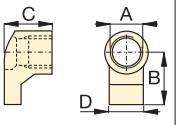




ton	Model Nr.	A	B	C	D
2,5	A-25	¾"- 14 NPT	50	12	44
5,0	A-21	1¼"- 11½ NPT	57	12	65
12,5	A-27	2"- 11½ NPT	63	12	98

3 Collar Toe

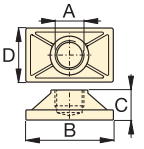




ton	Model Nr.	A	B	C	D
2,5	A-1034	1½"- 16 UN	54	50	31
5,0	A-20	2¼"- 14 UN	80	57	57
12,5	A-595	3 5/16"- 12 UN	103	51	80

4 Flat Base



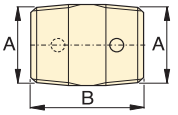


ton	Model Nr.	A	B	C	D
2,5	MZ-4010	¾"- 14 NPT	114	31	63
5,0	A-14	1¼"- 11½ NPT	165	35	88
12,5	A-243*	2"- 11½ NPT	165	58	165

* A-243 is a round base model.

5 Threaded Connector

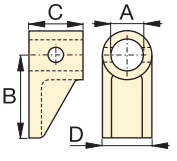




ton	Model Nr.	A	B
2,5	A-545	¾"- 14 NPT	35
5,0	A-10	1¼"- 11½ NPT	41

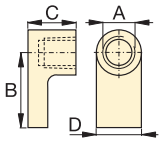
6 Lock-on Clamp Toe





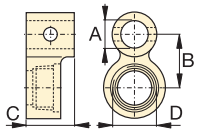
ton	Model Nr.	A	B	C	D
5,0	A-8	43	105	50	57

7 Threaded Plunger Toe

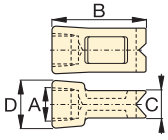
ton	Model Nr.	A	B	C	D
2,5	A-530	¾"- 14 NPT	57	25	33
5,0	A-6	1¼"- 11½ NPT	82	31	57

8 Collar Clamp Head

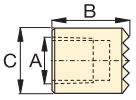
ton	Model Nr.	A	B	C	D
2,5	MZ-4011	¾"-14 NPT	49	76	1½"-16 UN
5,0	A-192	42	63	50	2¼"-14 UN

9 Spreader Toe

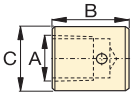
ton	Model Nr.	A	B	C	D
5,0	A-305	1¼"-11½ NPT	114	25	50

10 Serrated Saddle

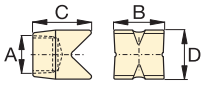
ton	Model Nr.	A	B	C
2,5	A-531	¾"- 14 NPT	27	31
5,0	A-18	1¼"- 11½ NPT	38	50

11 Smooth Saddle

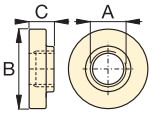
ton	Model Nr.	A	B	C
5,0	A-185	1¼"- 11½ NPT	38	50

12 90° V-Base

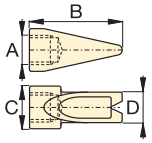
ton	Model Nr.	A	B	C	D
2,5	A-532	¾"- 14 NPT	38	47	25
5,0	A-15	1¼"- 11½ NPT	54	57	54

13 Plunger Base

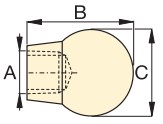
ton	Model Nr.	A	B	C
12,5	A-607	2"-11½ NPT	166	38

14 Wedge Head

ton	Model Nr.	A	B	C	D
2,5	A-629	¾"- 14 NPT	69	33	28
5,0	A-129	1¼"- 11½ NPT	101	50	44

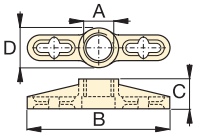
15 Rubber Flex Head

ton	Model Nr.	A	B	C
2,5	A-539	¾"- 14 NPT	44	69
5,0	A-128	1¼"-11½ NPT	86	86

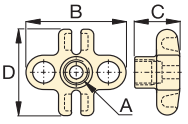
Chains and Attachments for Pulling

16 Single Chain Plate

ton	Model Nr.	A	B	C	D
2,5	A-558	1½"- 16 UN	196	39	44
5,0	A-132	2¼"- 14 UN	307	63	79
12,5	A-238	3⁵⁄₁₆"- 12 UN	450	102	125

17 Double Chain Plate

ton	Model Nr.	A	B	C	D
5,0	A-5	1¼"-11½ NPT	130	50	126

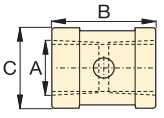
18 Chain with Hook



ton	Model Nr.	Chain Length
2,5	A-557	1,5 metres
5,0	A-141	1,8 metres
12,5	A-218	2,4 metres

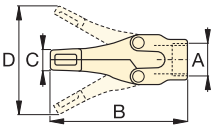
Tubes, Connectors and Adaptors

19 Pipe Coupling

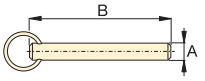
ton	Model Nr.	A	B	C
2,5	A-544	¾"- 14 NPT	42	33
5,0	A-19	1¼"- 11½ NPT	49	54
12,5	A-242	2"-11½ NPT	88	82

20 Spreader

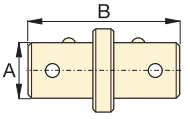
ton	Model Nr.	A	B	C	D
1,0	WR-5	—	223	12,8	94
1,0	A-92	2¼"-14 UN	244	35	158

21 Lock Pin

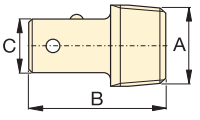
ton	Model Nr.	A	B
2,5	MZ-4013	7,9	41
5,0	A-16	11,2	82

22 Lock-on Connector

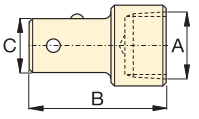
ton	Model Nr.	A	B
2,5	MZ-4007	19	79
5,0	MZ-1050	33	127

23 Male Lock-on Adaptor

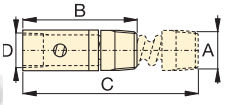
ton	Model Nr.	A	B	C
2,5	MZ-4008	¾"-14 NPT	60	19
5,0	MZ-1051	1¼"-11½ NPT	90	33

24 Female Lock-on Adaptor

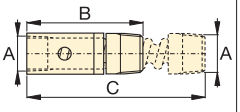
ton	Model Nr.	A	B	C
2,5	MZ-4009	¾"-14 NPT	65	19
5,0	MZ-1052	1¼"-11½ NPT	96	33

25 Adjustable Extension

ton	Model Nr.	A	B	C	D
5,0	A-285	1¼"-11½ NPT	335	441	33

26 Slip-on Extension

ton	Model Nr.	A	B	C
2,5	A-650	¾"- 14 NPT	200	365

▼ Shown: **SP-35S**



- **12,7 mm 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 steel case keeps tools and dies together and provides for easy carrying and storage**
- **CR-400 coupler included.**

▼ *SP-Series, Lightweight Hydraulic Punch – Much Faster than Drilling.*



Much Faster than Drilling



Tool Kit SPK-10

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 **SPK-10**.



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

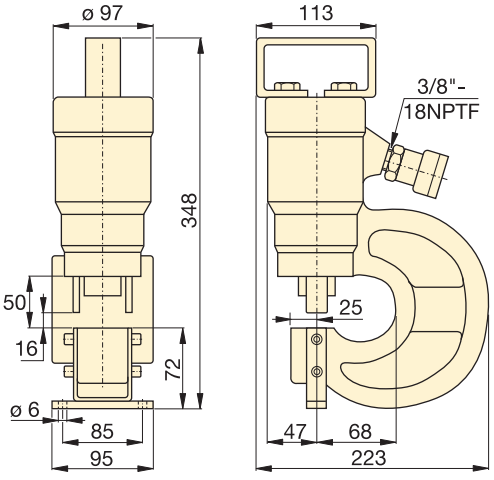
[1] Material thickness should not exceed hole diameter

Single-Acting, Spring Return Hydraulic Punch

▼ QUICK SELECTION CHART

Included						Model Number	
*	Punch & Die Set	Pump	Hose	Gauge	Gauge Adaptor		(kg)
SP-35	Standard**	P-392	HC-7206	GP-10S	GA-2	**STP-35H**	25
SP-35	Standard**	PATG-1102N	HC-7206	GP-10S	GA-2	**STP-35A**	29
SP-35	–	–	–	–	–	**SP-35**	16
SP-35	Standard**	–	–	–	–	**SP-35S**	18
SP-35	Standard**	PUD-1100E	HC-7206	–	–	**SP-35SPE**	29
SP-35	Metric***	–	–	–	–	**MSP-351**	21
SP-35	Metric***	PUD-1100E	HC-7206	–	–	**MSP-351PE**	32

* Punch oil capacity: 76 cm³
Includes the following punch and die sets:
** SPD-438, SPD-688, SPD-563 and SPD-813
*** SPD-375, SPD-531, SPD-438 and SPD-688



	Model Nr. Standard Punch & Die Set	Maximum allowable material thickness to be punched (mm) Material thickness should not exceed hole diameter										
		1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)
	SPD-313	7,9	7,9	6,4	6,4	6,4	6,4	3,3	4,8	6,4	6,4	6,4
	SPD-375	9,7	9,7	7,9	7,9	7,9	7,9	4,8	6,4	7,9	7,9	7,9
	SPD-438	11,2	11,2	9,7	9,7	9,7	7,9	4,8	7,9	7,9	7,9	7,9
	SPD-531	12,7	12,7	11,2	11,2	11,2	9,7	6,4	7,9	9,7	9,7	9,7
	SPD-563	12,7	12,7	12,7	11,2	12,7	11,2	6,4	9,7	11,2	11,2	11,2
	SPD-688	12,7	12,7	12,7	11,2	12,7	10,2	6,4	7,9	10,2	10,2	10,2
	SPD-781	12,7	12,7	12,7	11,2	12,7	9,7	6,4	7,9	9,7	9,9	9,7
	SPD-813	12,7	12,7	12,7	11,2	12,7	7,9	4,8	7,9	7,9	7,9	7,9
	SPD-458	7,9	7,9	6,4	6,4	6,4	6,4	3,3	4,8	6,4	6,4	6,4
	SPD-549	9,7	9,7	7,9	7,9	7,9	7,9	4,8	6,4	7,9	7,9	7,9
	SPD-639	11,2	11,2	9,7	9,7	9,7	7,9	4,8	7,9	7,9	7,9	7,9
	SPD-728	12,7	12,7	11,2	11,2	11,2	9,7	6,4	7,9	9,7	9,7	8,6
	SPD-106	7,9	7,9	6,4	6,4	6,4	6,4	3,3	4,8	6,4	6,4	6,4
	SPD-125	9,7	9,7	7,9	7,9	7,9	7,9	4,8	6,4	7,9	7,9	7,9
	SPD-188	11,2	11,2	9,7	9,7	9,7	7,9	4,8	7,9	7,9	7,9	7,9
	SPD-250	12,7	12,7	11,2	11,2	11,2	9,7	6,4	7,9	9,7	9,7	9,7

MSP SP STP Series



Capacity:
35 ton

Hole Sizes:
7,9 - 20,6 mm

Maximum Operating Pressure:
700 bar

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 Ton Hydraulic Punch

▼ Shown: **SP-50100**



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**
- **CR-400 female couplers included.**



Depth Stop

For simplified repetitive punching applications an adjustable Depth Stop is available.Order model number: **SP-110**.



Foot Mounting Kit

A foot mounting kit for easy mounting of the 50 ton punch to workbench or fixture is available. Order model number: **SP-120**.



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 SP-120 and SP-110 assembled.*



50 Ton Double-Acting Hydraulic Punch

▼ QUICK SELECTION CHART PUNCH SETS

Included				Set Model Number	
Model Number Punch*	Punch & Die Sets	Electric Pump	Hydraulic Hose (2x)		(kg)
SP-50	All **	–	–	**SP-50100**	116
SP-50	All **	ZE4410SE	HC-7206	**SP-5000E**	174

* Punch Oil Capacity:
Advance: 278 cm^3
Retract: 229 cm^3

** All standard sets from chart below.

SP Series



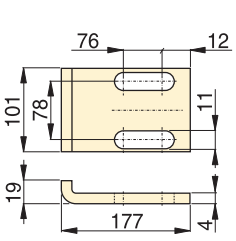
Capacity:
50 ton (490 kN)

Hole Sizes:
13,5 - 26,2 mm

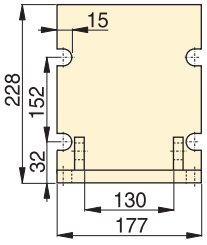
Maximum Operating Pressure:
700 bar

CAUTION!
Material thickness should not exceed hole diameter.

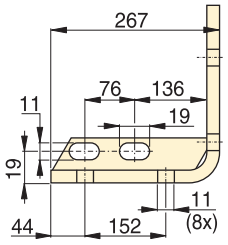
CAUTION!
Chart below is for reference only! Maximum allowable material thickness to be punched varies with set wear.

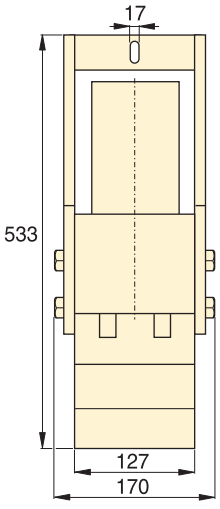


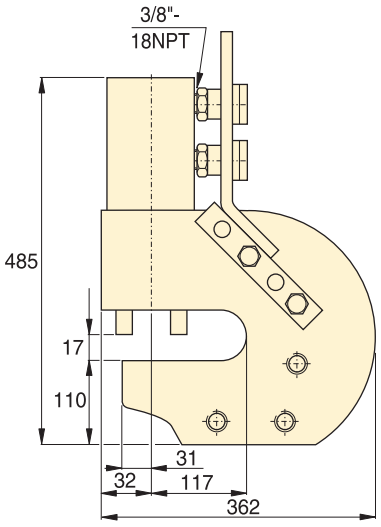
SP-110



SP-120







SP-50

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 (mm)	Bolt Size (mm)	Model Numbers Standard Punch and Die Set	Maximum Allowable Material Thickness To Be Punched (mm)										
				1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)
●	13,5	M12	**SP-150**	13,5	13,5	13,5	13,5	13,5	12,4	8,1	10,2	12,4	12,4	12,4
●	16,7	M16	**SP-170**	–	–	–	–	–	13,0	8,1	10,2	13,0	13,0	13,0
●	19,8	M18	**SP-190**	–	–	–	–	–	12,4	8,1	10,2	12,4	12,7	12,4
●	23,1	M20	**SP-121**	14,2	14,2	14,2	12,7	14,2	8,9	5,6	8,9	8,9	8,9	8,9
●	26,2	M24	**SP-123**	14,2	14,2	14,2	11,2	14,2	7,9	4,8	7,9	7,9	7,9	7,9

LW-Series, Hydraulic Vertical Lifting Wedges

ENERPAC

▼ Shown: **LWC16, LW16 with SB2 and optional LWB1**



LW Series

Maximum Lifting Force:
16 ton (157 kN)

Minimum Clearance:
10 mm

Maximum Lift Height *:
51 - 69 mm

Maximum Operating Pressure:
700 bar

* Using Stepped Block LWB1



Power Box

Tool box with hand pump, gauge adaptor assembly, hose and LW-16.

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Control Manifolds

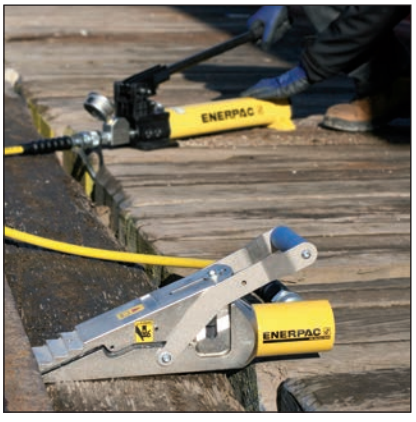
Control Manifold to control two or four LW16 lifting wedges simultaneously.

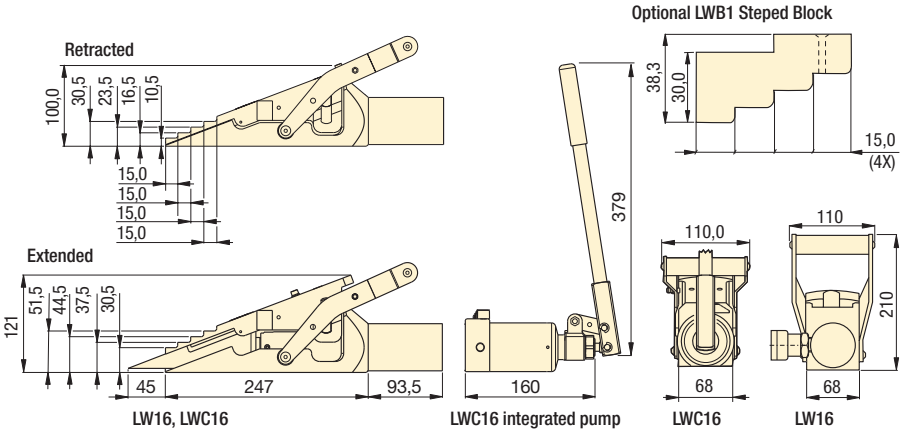
AM-21 with 3 ports 3/8" NPTF
AM-41 with 5 ports 3/8" NPTF.

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- **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.**

▼ *For lifting heavy equipment with minimum floor clearance the LW-16 is the ideal tool.*





Max. Lifting Force ton (kN)	Model Number	Minimum Clearance Gap (mm)	Max. Lift per Stage (mm)	Max. Lifting Height (mm)	Max. Lifting Height using Stepped Block LWB1 (mm)	Oil Capacity (cm^3)	Pump Power Source	(kg)
16 (157)	LW-16 [1]	10	21	51,5	69	78	External	7,0
	LWC16 [2]					–	Integrated	10,0

[1] Includes SB2
[2] Includes SB2, LWB1, and carrying case.

▼ SOH-10-6



SOH
Series

Lifting Capacity:
8,5 - 20 ton

Stroke:
136 - 157 mm

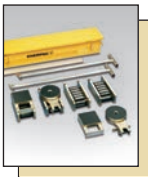
Toe Clearance:
20 mm

Maximum Operating Pressure:
700 bar



RSM-Series Flat-Jac®
Low height, single acting spring-return cylinders are ideal for space restricted applications.

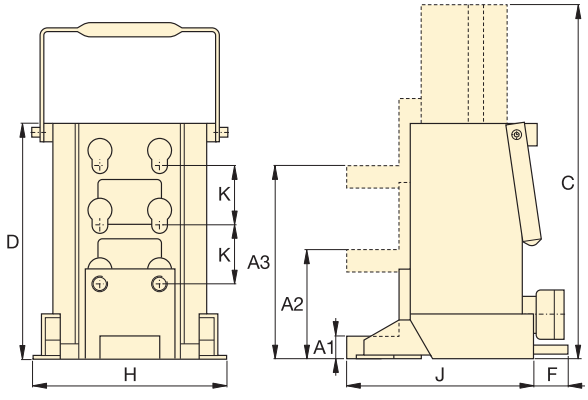
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Load Skates
In combination with the Enerpac Machine Lifts we recommend Load Skates for moving heavy loads.

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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-Series DUO Cylinder with CR-400 coupler.**



▼ *Limited access under this machine makes the Enerpac hydraulic machine lift the perfect solution.*

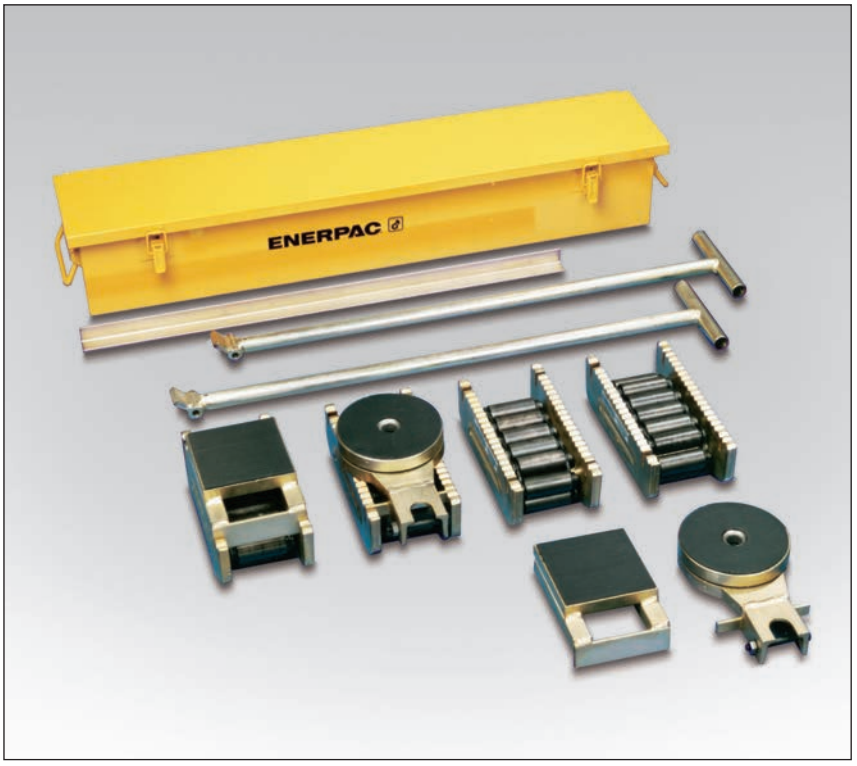


Capacity	Toe Clearance (mm)			Stroke	Model Number	Oil Capacity	Dimensions (mm)						
ton (kN)	Minimum A1	Central A2	Maximum A3	(mm)		(cm^3)	Total Ext. Height C	Total Body Height D	F	H	J	K	(kg)
8,5 (75)	20	95	169	136	**SOH-10-6**	224	430	294	–	190	214	74	26
20 (178)	30	110	190	157	**SOH-23-6**	525	472	320	65	265	250	80	45

ER-Series, Heavy Duty Caterroller™ Load Skates

ENERPAC

▼ Shown: **Set ERS-20**



Move Heavy Loads Easily and Safely

Sets (see table) include all components necessary to handle a variety of applications.

Two **ELB-1** link-up bars, two **ERH-1** handles (875 mm long) and one EMB-1 metal box are included.

Optional long handle **ERH-2** (1180 mm) available for 60 and 80 ton only.

- **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.**



Lifting Wedge and Machine Lifts

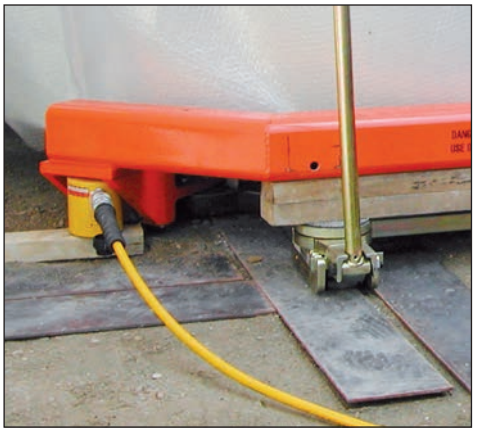
To place the Load Skates, the load must first be lifted. This can be done easily and safely using the Enerpac Lifting Wedge or Machine Lifts.

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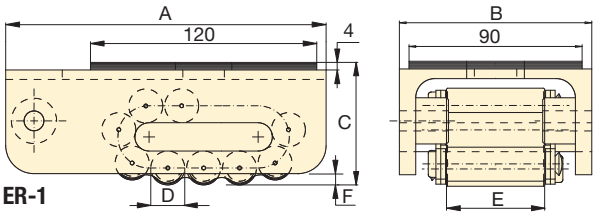
▼ *Heavy transport using Load Skates. The machine is first lifted, using SOH-Series Enerpac Machine Lifts.*



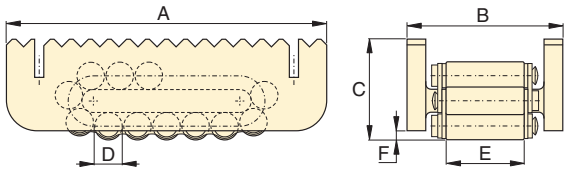
▼ *Chemical tank transportation: The first few centimetres the load was lifted with RCS-Series low height cylinders and then moved on to load skates for transportation.*



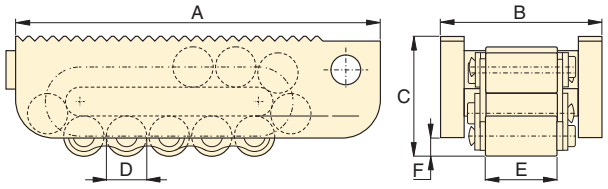
Heavy Duty Caterroller™ Load Skates



ER-1

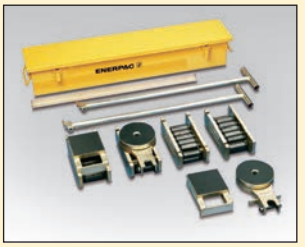


ER-10, ER-15, ER-30

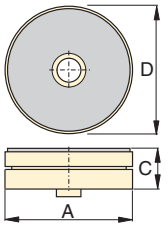


ER60, ER-80

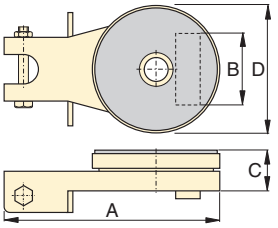
EL
ER
ES
Series



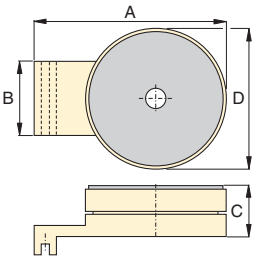
Maximum Carrying Capacity:
80 ton (711 kN)



ES-1,
Turntable Swivel

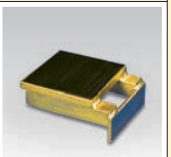


ES-10, ES-15, ES-30
Turntable Swivel

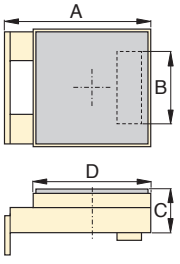


ES-60, ES-80 ,
Turntable Swivel

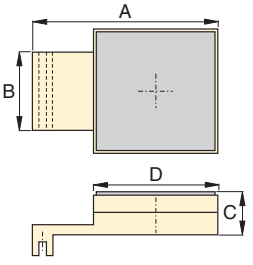
Load Skates may be ordered separately or as a matched set.

Set Capacity * ton (kN)	Set Model Number	Load Skates (4x)	Turntable Swivels (2x)	Leveling Plates (2x)	Weight including handles and metal box (kg)
					
20 (178)	**ERS-20**	ER-10	ES-10	ELP-10	49
30 (267)	**ERS-30**	ER-15	ES-15	ELP-15	55
60 (533)	**ERS-60**	ER-30	ES-30	ELP-30	75

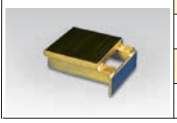
* Sets are designed to enable two skates to take full load for extra safety on uneven floor surfaces



ELP-10, ELP-15, ELP-30
Levelling Plate



ELP-60, ELP-80
Levelling Plate

	Capacity ton (kN)	Model Number	Dimensions (mm) A	B	C	D	E	F	Contact Rolls per Skate	Rollers per Skate	(kg)
Load Skates	**1** (8,9)	**ER-1**	170	100	65	18	51	6	4	11	3,8
 ER-1 ER-10	**10** (89)	**ER-10**	210	102	66	18	51	6	5	15	5,2
	15 (133)	**ER-15**	220	115	75	24	60	10	4	13	7,3
	30 (267)	**ER-30**	270	130	92	30	68	10	4	13	13,0
	60 (533)	**ER-60**	380	168	125	42	76	16	4	13	31,9
	80 (711)	**ER-80**	530	182	145	50	86	19	6	17	60,9
Turntable Swivel	**1** (8,9)	**ES-1**	207	–	26	90	–	–	–	–	1,1
 ES-1 ES-10	**10** (89)	**ES-10**	220	73	42	130	–	–	–	–	3,7
	15 (133)	**ES-15**	220	86	42	130	–	–	–	–	3,7
	30 (267)	**ES-30**	250	96	48	150	–	–	–	–	5,3
	60 (533)	**ES-60**	275	114	61	190	–	–	–	–	13,7
	80 (711)	**ES-80**	360	128	61	220	–	–	–	–	18,9
Levelling Plate	**10** (89)	**ELP-10**	149	73	42	120	–	–	–	–	3,7
	**15** (133)	**ELP-15**	149	86	42	120	–	–	–	–	3,7
	30 (267)	**ELP-30**	178	96	48	130	–	–	–	–	5,3
	60 (533)	**ELP-60**	270	114	61	180	–	–	–	–	13,8
	80 (711)	**ELP-80**	350	128	61	200	–	–	–	–	18,8

▼ CM-16



CM Series

Case Size:
19 - 453 litres

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 rust-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 ton.

Page: 170



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.

Page: 155

▼ *When not storing the lifting system, this heavy-duty storage case doubles as a work station.*

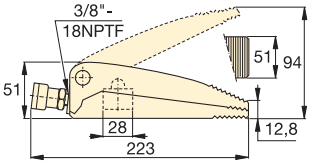


Case Size (litres)	Model Number	Inside Dimensions L x W x H (mm)	Thickness (mm)	(kg)
19	**CM-6**	597 x 178 x 203	0,9	7
32	**CM-1**	622 x 282 x 165	0,9	8
127	**CM-4**	778 x 454 x 354	1,5	16
212	**CM-7**	1210 x 387 x 457	1,9	57
453	**CM-16**	1216 x 606 x 557	1,5	55

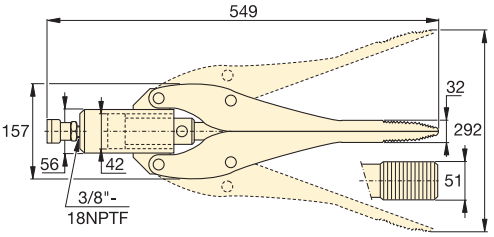
▼ Shown clockwise from top: **WR-15, WR-5, A-92**



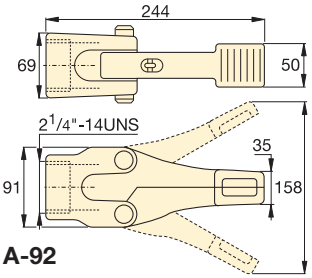
- **WR-5: For use in very confined work areas**
- **WR-15: For long stroke spreading applications**
- **Single-acting, spring return**
- **A-92: Spreader attachment; threads on 10 ton RC-Series cylinders * (except RC-101).**



WR-5



WR-15



A-92

Cylinder Capacity ton (kN)	Tip Clearance (mm)	Model Number	Maximum Spread (mm)	Cylinder Effective Area (cm^2)	Oil Capacity (cm^3)	(kg)
1,0 (8,9)	12,8	**WR-5**	94	6,5	10	2,3
0,75 (6)	32,0	**WR-15**	292	14,5	64	11,3
1,0 (8,9)	35,0	**A-92 ***	158	–	–	3,6

* Maximum system pressure must be limited to half the rated pressure (350 bar).

A WR Series



Capacity:
0,75 - 1,0 ton

Tip Clearance:
12,8 - 35 mm

Maximum Spread:
94 - 292 mm

Maximum Operating Pressure:
700 bar



RC-Series Cylinders
10 ton RC-Series DUO cylinders (except RC-101) fit into A-92 Spreader Attachment.
Page: 6



Power Box
Tool box with P-392 hand pump, gauge adaptor assembly, hose and WR-5.
Page: 63



Best Match Hand Pump
To power your WR-5 and WR-15 the **P-392** hand pump is an ideal choice. Use Enerpac H700-Series hose (page 128) for hydraulic connection.
Page: 74

▼ *A WR-5 wedgie cylinder is used to loosen a bridge bearing.*



▼ Shown from left to right: **WHC-4000, WHC-750**

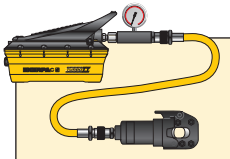


WHC, WHR, STC Series

Capacity:
3 - 20 ton

Cutting Capacity:
ø 13 - 101 mm

Maximum Operating Pressure:
700 bar



Tool-Pump Sets
Cutterheads marked with an * are available as sets (pump, tool, gauge, couplers and hose) for your ordering convenience.

Cutterhead Model Nr.	Pump Model Nr.	Set Model Number
WHC-750	P-392	**STC-750H**
WHC-750	P-392FP	**STC-750FP**
WHC-750	PATG-1102N	**STC-750A**
WHC-1250	P-392	**STC-1250H**
WHC-1250	P-392FP	**STC-1250FP**
WHC-1250	PATG-1102N	**STC-1250A**

- **Single-acting, spring return on all models, except WHR-1250**
- **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 700 bar pressure rating (except WHR-1250, which requires 4-way valve)**
- **CR-400 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 mm)**

Cutter Head Operation	Capacity ton	Model Number	Oil Capacity (cm³)	Length (mm)	Steel Wire Rope, Hempcore or IWRC 6x7 6x12 6x19	Round Bar: Copper Wire or Bar	Round Bar: Aluminium Wire or Bar	Round Bar: Soft Steel Bolts	Round Bar: Reinforcing Bar	Wire Strand: Bare Copper Wire Strands	Wire Strand: Bare Aluminium Wire Strands 6x7	Wire Strand: ACSR	Wire Strand: Guy Steel Wire Strands 1x7 1x19	Cable: Telephone Cable CPP	Cable: Underground Cable (Power)	(kg)	Replacement Blades
Single-Acting	**4**	**WHC-750***	19,7	127	19	19	19	19	13	19	19	19	16	☆	☆	3,2	**WCB-750**
	20	**WHC-1250***	134,4	279	31	31	31	31	25	31	31	31	22	☆	☆	11,3	**WCB-1250**
	13	**WHC-2000**	119,6	381	25	31	31	22	☆	50	50	50	19	☆	☆	10,4	**WCB-2000**
	3	**WHC-3380**	65,5	482	☆	☆	☆	☆	☆	76	76	☆	☆	85	85	9,1	**WCB-3380**
	8	**WHC-4000**	137,7	609	☆	☆	☆	☆	☆	89	89	☆	☆	101	101	14,5	**WCB-4000**
Dbl.-Act.	**20**	**WHR-1250**	122,9	419	31	31	31	31	25	31	31	31	22	☆	☆	11,8	**WCB-1250**

* Available in sets with P-392 Hand Pump, P-392FP Foot Pump or PATG-1102N Turbo Air Pump.
☆ Will not cut designated material.

▼ Shown from left to right: **WMC-2000, WMC-750**



WMC Series



Capacity:
3 - 20 ton

Cutting Capacity:
ø 14 - 85 mm

- **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**
- **Light weight self-contained tool, can be used anywhere.**



Replacement Blades

60-62HRc hardened replacement blades.

For Cutter Model Number	Order Blades Model Number
WMC-580	**WCB-750**
WMC-750	**WCB-750**
WMC-1000	**WCB-1000**
WMC-1250	**WCB-1250**
WMC-1580	**WCB-1580**
WMC-2000	**WCB-2000**
WMC -3380	**WCB-3380**

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 mm)**

Capacity	Model Number	Length	Steel Wire Rope, Hempcore or IWRC	Round Bar				Wire Strand					Cable		
				Copper Wire or Bar	Aluminium Wire or Bar	Soft Steel Bolts	Reinforcing Bar	Bare Copper Wire Strands	Bare Aluminium Wire Strands	ACSR Wire Strands	Guy Steel Wire Strands	Guy Steel Wire Strands	Telephone Cable CPP	Underground Cable (Power)	
ton		(mm)	6x7 6x12 6x19						6x7		1x7	1x19			(kg)
4	**WMC-580**	381	16	16	16	16	10	16	16	16	14	14	☆	☆	3,6
4	**WMC-750**	381	17	19	19	17	13 **	19	19	19	14	14	☆	☆	3,6
20	**WMC-1000 ***	679	☆	19	19	19	19	☆	☆	☆	☆	☆	☆	☆	11,3
20	**WMC-1250**	679	31	28	31	31	22	31	31	31	22	22	☆	☆	10,4
6	**WMC-1580**	558	19	19	19	19	☆	38	38	38	16	16	☆	☆	6,8
13	**WMC-2000**	628	25	31	31	22	☆	50	50	50	19	19	☆	☆	10,9
3	**WMC-3380**	660	☆	☆	☆	☆	☆	76	76	☆	☆	☆	85	85	10,0

* Cuts 12 mm alloy chain grade 70 (type G7 transport or tie-down) or grade 80 (for overhead lifting applications).
** Low Alloy. ☆ Will not cut designated material.

STB-Series, Pipe Bender Sets

ENERPAC

▼ Shown: **STB-101H**



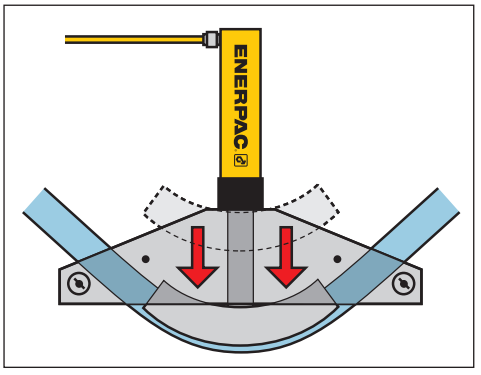
Quick, Safe and Wrinkle-free Bending

'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 and manual, air or electric pump**
- **Sets are also available without hydraulics**
- **Bending shoes and bending frame are lightweight, heat-treated aluminium**
- **All sets include sturdy steel storage case**
- **All sets include BZ-12091 angle indicator for accurate bending**
- **BZ-12377 Shoe Lock Pin included in every set**
- **Eject-O-Matic™ benders (STB-202 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 *		Cylinder *	Hose *	Saddle *	
										(kg)
One Shot	Sweep									
½ - 2	–	STB-101X	–	–	–	–	–	-	A-12	40
		STB-101N	–	–	–	–	RC-1010	HC-7206	A-12	48
		STB-101H	P-392	–	–	–	RC-1010	HC-7206	A-12	52
		STB-101A	–	PATG-1102N	–	–	RC-1010	HC-7206	A-12	54
		STB-101E	–	–	PUJ-1200E [2]	–	RC-1010	HC-7206	A-12	57
1 - 2	2½ - 4	STB-221X	–	–	–	–	–	-	A-29	104
		STB-221N	–	–	–	–	RC-2510	HC-7206	A-29	119
		STB-221H	P-80	–	–	–	RC-2510	HC-7206	A-29	130
1¼ - 4	–	STB-202X[1]	–	–	–	–	–	-	A-29	143
		STB-202N[1]	–	–	–	–	RR-3014	HC-7206 (2x)	A-29	174
		STB-202E[1]	–	–	–	ZU4408SE [2]	RR-3014	HC-7206 (2x)	A-29	212

* See corresponding sections in this catalog for more detailed specifications.

[1] Eject-O-Matic™ [2] For 115 volt applications replace the last digit of Set Model Number and pump from 'E' to 'B'.

Nominal Pipe Size (inch)	Wall Thick-ness (mm)	Sche-dule Pipe *	Pipe Bend Inside Radius (inch)	STB-101 ø ½ - 2" One Shot	STB-221 ø 1 - 2" One Shot ø 2¼ - 4" Sweep	STB-202 ø 1¼ - 4" One Shot	One Shot Bending Shoe Model Number	Sweep Bending Shoe Model Number
½	2,8	40	2⅞	Yes	–	–	BZ-12011	–
	3,7	80		Yes	–	–		
	4,7	160		WS	–	–		
	7,5	DEH		WS	–	–		
¾	2,9	40	4	Yes	–	–	BZ-12021	–
	3,9	80		Yes	–	–		
	5,5	160		WS	–	–		
	7,8	DEH		WS	–	–		
1	3,4	40	5⅛	Yes	Yes	–	BZ-12031	–
	4,5	80		Yes	Yes	–		
	6,4	160		WS	WS	–		
	9,1	DEH		–	WS	–		
1¼	3,6	40	6 7/16	Yes	Yes	Yes	BZ-12041	–
	4,9	80		Yes	Yes	Yes		
	6,4	160		WS	WS	Yes		
	8,7	DEH		–	WS	WS		
1½	3,7	40	7 5/16	Yes	Yes	Yes	BZ-12051	–
	5,1	80		Yes	Yes	Yes		
	7,1	160		WS	WS	Yes		
	10,2	DEH		–	WS	WS		
2	3,9	40	8 5/16	–	Yes	Yes	BZ-12061	–
	5,5	80		–	Yes	Yes		
	8,7	160		–	WS	Yes		
2½	5,2	40	9½	–	Yes	Yes	BZ-12341	BZ-12382
	7,0	80		–	WS	Yes		
	9,5	160		–	WS	Yes		
3	5,5	40	11¼	–	Yes	Yes	BZ-12351	BZ-12383
	7,6	80		–	WS	Yes		
3½	5,7	40	15½	–	Yes	Yes	BZ-12391	BZ-12384
	8,1	80		–	WS	Yes		
4	6,0	40	17¾	–	Yes	Yes	BZ-12392	BZ-12385
	8,6	80		–	–	Yes		

* Schedule Pipe: 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.

STB Series



Nominal Pipe Size:
ø ½ - 4 inch

Maximum Bending:
90°

Maximum Operating Pressure:
700 bar

All bender sets are designed to bend mild steel pipe. For other material please consult Enerpac.

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
BZ-12371	BZ-12375	BZ-12071	BZ-12011	BZ-12021	BZ-12031	BZ-12041	BZ-12051	BZ-12061	–	–	STB-101X STB-101N STB-101H STB-101A STB-101E
BZ-12372	BZ-12376	BZ-13401	BZ-12031	BZ-12041	BZ-12051	BZ-12061	BZ-12382 3)	BZ-12383 3)	BZ-12384 3)	BZ-12385 3)	STB-221X STB-221N STB-221H
BZ-12374	BZ-12376	BZ-13401	-	BZ-12041	BZ-12051	BZ-12061	BZ-12341	BZ-12351	BZ-12391	BZ-12392	STB-202X 1) STB-202N 1) STB-202E 1)

Enerpac's Bolting Solutions cater to the complete bolting work-flow, 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

Enerpac offers a variety of controlled tightening options to best meet the requirements of your application. From mechanical torque multipliers to hydraulic, pneumatic and electric 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 work-flow 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.

Torque Tightening

See our 'Yellow Pages' for information on torque tightening. See our Bolting Safety Instructions on enerpac.com.

Page: 324



Bolting Tools & Pumps Section Overview

Applications	Capacity	Tool type and functions	Series		Page
Controlled Tightening and Loosening	1015 - 10.845 Nm 750 - 8000 Ft.lbs	**Manual Torque Multipliers** Accurate, Efficient Torque Multiplication	E		190 ▶
	1952 - 35.455 Nm 1440 - 26.150 Ft.lbs	**Square Drive Hydraulic Torque Wrenches** Rigid steel design & maximum versatility	S		192 ▶
	19-155 mm I ¾ - 6⅛" 27-120 mm I 1 1/16-4 15/16"	**Heavy-Duty Impact Sockets** **Back-Up Spanners for Torque Wrenches**	BSH BUS		196 ▶ 197 ▶
	2766 - 47.454 Nm 2040 - 35.000 Ft.lbs	**Hexagon Hydraulic Torque Wrenches** **Ultra-Slim Stepped Width Cassettes**	W W-SL		198 ▶ 208 ▶
	1909 - 37.965 Nm 1408 - 28.002 Ft.lbs	**Hexagon and Square Drive Torque Wrenches** One drive, two tools	RSL, RLP RSL, RSQ		212 ▶ 222 ▶
	1356 - 8135 Nm 1000 - 6000 Ft.lbs	**Pneumatic Torque Wrenches** **Electric Torque Wrenches**	PTW ETW		224 ▶ 226 ▶
	200 - 10.000 Nm 148 - 7375 Ft.lbs	**Mobile Calibration System** For continuous rotation tools and hydraulic wrenches	MCS		230 ▶
		Selection Matrix Optimum Wrenches - Pump - Hoses			231 ▶
	Flow: 0,25 l/min Power: 0,37 kW	**Battery-Powered Torque Wrench Pumps** Cordless Hydraulic Power	XC		232 ▶
	Flow: 0,52 l/min Power: 0,63 kW	**E-Pulse® Electric Torque Wrench Pumps** Compact and Portable	E E-Pulse®		234 ▶
	Flow: 0,50 l/min Power: 0,75 kW	**Electric Torque Wrench Pumps** Lightweight	TQ		236 ▶
	Flow: 0,90 l/min Power: 1,25 kW	**Portable Electric Torque Wrench Pumps** Z-Class innovation	ZU4T		238 ▶
	Flow: 0,82-1,64 l/min Power: 1,1 - 2,2 kW	**Electric Torque Wrench Pumps** Z-Class innovation	ZE4T ZE5T		242 ▶
	Flow: 1,0 l/min Air: 2840 l/min	**Air Driven Torque Wrench Pumps** Z-Class innovation	ZA4T		244 ▶
	Flow: 0,33 l/min Power: 1,25 kW	**Electric Tensioning Pumps** Z-Class Tensioning pumps upto 1500 bar	ZUTP		248 ▶
	Flow: 0,07 l/min Air: 590 l/min	**Ultra-High Pressure Air Pump** Upto 1500 bar	ATP		250 ▶
	Flow: 0,61 cm^3/stroke	**1500 bar High-Pressure Hand Pump** **1500 bar Hoses and Couplers**	HPT B, HT		251 ▶
Joint Assembly and Joint Separation	Hexagon: 10 - 75 mm Bolt range: M6 - M48	**Hydraulic Nut Cutters**	NC		252 ▶
	Hexagon: 70 - 130 mm Bolt range: M45 - M90	**Hydraulic Nut Splitters**	NS		254 ▶
	8 - 14 ton (72 - 125 kN)	**Step-type Industrial Spreaders**	FSC FSH, FSM		256 ▶
	1 - 9 ton (10 - 90 kN)	**Flange Alignment Tools** Mechanical and Hydraulic	ATM		258 ▶
	ø 1 - 12 inch flanges	**QuickFace – Mechanical Pipe Flange Face Tool** Refacing of flat pipe flange surfaces	FF		260 ▶
	Equalizer Flange Maintenance Tools - Overview Flange Spreading and Pulling Tools, Wind Tower Flange Alignment Tool, Hand Pumps & Hoses				263 ▶

▼ 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**
- **Torque multiplier accuracy ± 5%**
- **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.



◀ *Enerpac Reaction Bar Torque Multiplier E393 used to manually torque bolts up to 4300 Nm.*

▼ **SELECTION CHART**

Torque Multiplier Type	Nominal Torque Output (Nm)	Nominal Torque Output (Ft.lbs)	Model Number
Reaction Bar Multiplier	1020	750	E290PLUS
	1358	1000	E291
	1627	1200	E391
	2983	2200	E392
	4340	3200	E393
Reaction Plate Multiplier	2983	2200	E492
	4339	3200	E493
	6779	5000	E494
	10.846	8000	E495

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 4300 Nm output torque,
- On flanges and applications where neighbouring bolt or nut is available to react against
- When extreme reaction forces are generated.

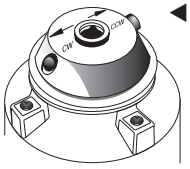
E Series



Nominal Torque Output:
1020 - 10.846 Nm

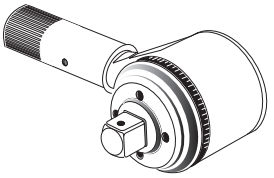
Torque Ratio:
3,3:1 - 52:1

Output Ratio Accuracy:
± 5 %



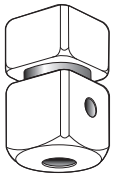
◀ **Selector Pawl**

Models with anti-backlash protection have directional selector pawls. Set the pawl for clockwise or counter-clockwise rotation.



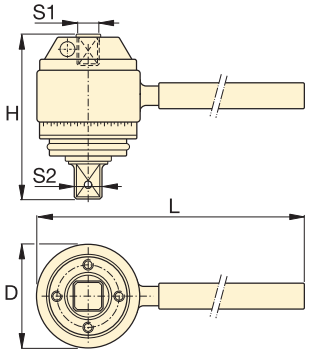
▲ **Angle-of-Turn Protractor**

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.

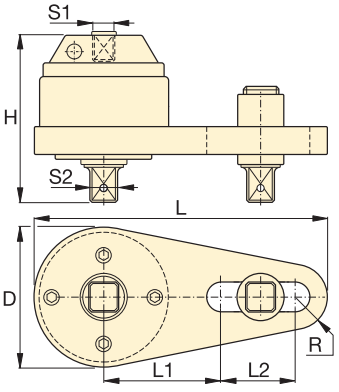


◀ **Shearable Square Drive**

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.



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.



Hydraulic 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] (Nm)	Input Torque [2] (Ft.lbs)	Torque Ratio	Input Female Square Drive S1 (inch)	Output Male Square Drive S2 (inch)	Output Male Square Drive Replaceable Shear Drive Model Nr.	Over-load protection	Anti-Backlash	Dimensions (mm) D	H	L	L1	L2	R	(kg)	Model Number
309	237	3,3 : 1	½	¾	–	No	No	71	83	217	–	–	–	1,8	E290PLUS
411	303	3,3 : 1	½	¾	–	No	No	71	83	443	–	–	–	2,5	E291
271	200	6 : 1	½	¾	E391SDK	Yes	No	100	102	497	–	–	–	4,1	E391
220	162	13,6 : 1	½	1	E392SDK	Yes	Yes	103	146	497	–	–	–	6,9	E392
235	173	20,25 : 1	½	1	E393SDK	Yes	Yes	103	165	497	–	–	–	8,3	E393
219	162	13,6 : 1	½	1	E392SDK	Yes	Yes	124	140	356	140	124	32	7,8	E492
234	173	18,5 : 1	½	1	E393SDK	Yes	Yes	124	163	356	140	124	32	8,9	E493
256	189	26,5 : 1	½	1½	E494SDK	Yes	Yes	143	222	378	178	89	42	15,4	E494
209	154	52 : 1	½	1½	E495SDK	Yes	Yes	148	273	387	178	89	48	22,8	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.

▼ Shown: **S3000PX**



Setting New Standards in Safety, Simplicity and Performance

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 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

- **Available with optional 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.**

[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 S-Series (X-Edition) tool. Straight positioning handles are available as accessories.

Compatible S-Series (X-Edition) wrenches	Model Nr. Angled positioning handles (standard)	Model Nr. Straight positioning handles (optional)
S1500X, S3000X	**SWH6A**	**SWH6S**
S6000X, S11000X	**SWH10A**	**SWH10S**
S25000X	**SWH10EA [2)]**	

[2)] SWH10EA is an eyebolt handle.



TSP - Pro Series Swivel

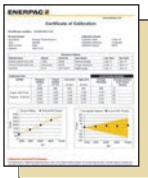
The optional TSP300 tilt and swivel manifold with robust interlocking design provides 360° X-axis rotation and 160° Y-axis rotation.

How to Order [1)]

Factory fitted to S-Series (X-Edition) wrenches: Insert a "P" prior to the "X" in the tool model number, example: **S1500PX**.

Order as an accessory using the model number: **TSP300**, which can be fitted to existing S-Series (X-Edition) wrenches. Includes male and female couplers.

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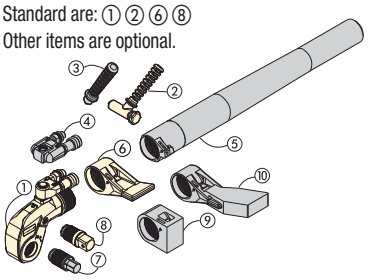


ATEX declared. Calibration certificate included.

All X-edition tools are CE - ATEX declared and are shipped complete with a calibration certificate.

CE Ex II 2 GD T4

Standard are: ① ② ⑥ ⑧
Other items are optional.



① Drive Unit
② Angeled Positioning Handle
③ Straight Positioning Handle
④ Pro Series Swivel
⑤ Reaction Tube Extension
⑥ Standard Reaction Arm
⑦ Allen Drive
⑧ Square Drive
⑨ Short Reaction Arm
⑩ Extended Reaction Arm

250%

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



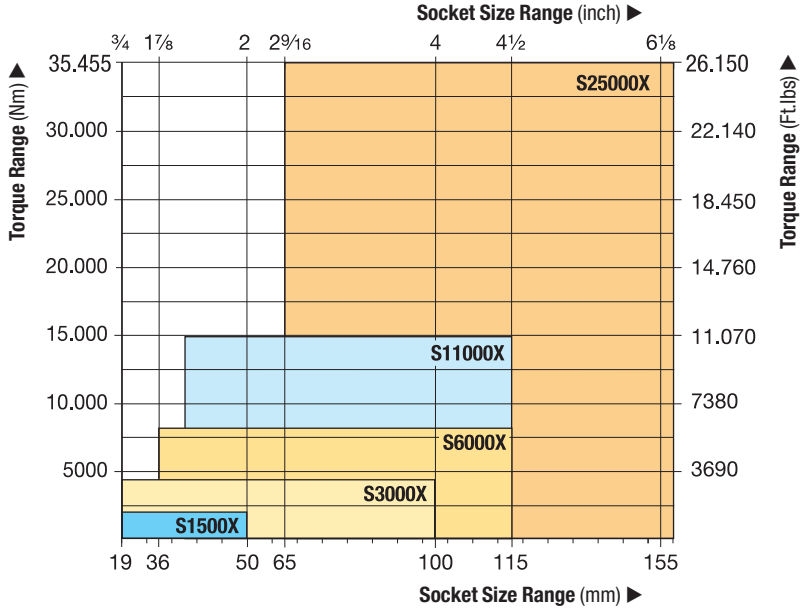
Nominal Torque Output:
35.455 Nm

Square Drive Range:
¾ - 2½ inch

Nose Radius:
25 - 64 mm

Maximum Operating Pressure:
690 bar

TORQUE WRENCH SELECTION (based on socket size range)





Accessory Options

A full list of optional accessories is available for maximum versatility.

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▼ *The rigid steel design of the S-Series torque wrenches provides durability, reliability and safety.*

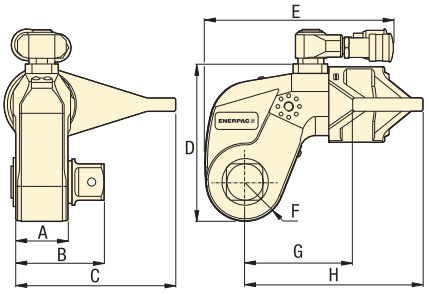




Use only Heavy Duty Impact Sockets

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 690 bar (Nm)	Nominal Torque at 690 bar (Ft.lbs)	Minimum Torque at 69 bar (Nm)	Minimum Torque at 69 bar (Ft.lbs)	Square Drive Size (inch)	Square Drive Model Nr. (included with wrench)	Angle-of-Turn Model Nr. (optional)	Torque Wrench Model Number *	Dimensions (mm) A	B	C	D	E	F	G	H	(kg)
1952	1440	195	144	¾	SD15-012	AOT15	**S1500X**	39	65	108	97	136	25	70	129	3,2
4373	3225	438	323	1	SD30-100	AOT30	**S3000X**	48	78	135	128	173	33	90	161	5,6
8338	6150	834	615	1½	SD60-108	AOT60	**S6000X**	55	92	169	157	192	40	110	188	9,2
15.151	11.175	1516	1118	1½	SD110-108	AOT110	**S11000X**	72	114	197	190	228	50	133	229	15,8
35.455	26.150	3545	2615	2½	SD250-208	AOT250	**S25000X**	89	143	246	244	287	64	182	295	32,2

* To order a S-Series (X-edition) torque wrench fitted with a TSP300 tilt and swivel manifold, insert a "P"prior to the "X" in the tool model number, example: **S1500PX**.

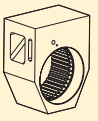
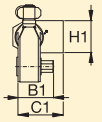
Maximum Torque at 690 bar:
35.455 Nm

Hexagon Size Allen Drive:
½ - 2¼ inch

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** (Nm)	**Model Number**	**Dim.** B1 (mm)	**Hexagon Size [1]** (mm)	**Maximum Torque** (Nm)	**Model Number**	**Dim.** B1 (mm)	**Model Number**	**Dimensions** (mm) C1	H1
S1500X (1952 Nm)	½	481	**SDA15-008**	66	**14**	644	**SDA15-14**	66	**SRA15X**	67,5	74
	⅝	936	**SDA15-010**	67	**17**	1152	**SDA15-17**	68			
	¾	1620	**SDA15-012**	71	**19**	1607	**SDA15-19**	70			
	⅞	1952	**SDA15-014**	74	**22**	1952	**SDA15-22**	73			
	1	1952	**SDA15-100**	77	**24**	1952	**SDA15-24**	74			
S3000X (4373 Nm)	⅝	936	**SDA30-010**	77	**17**	1152	**SDA30-17**	77	**SRA30X**	80,0	74
	¾	1620	**SDA30-012**	80	**19**	1607	**SDA30-19**	79			
	⅞	2569	**SDA30-014**	83	**22**	2488	**SDA30-22**	82			
	1	3830	**SDA30-100**	86	**24**	3234	**SDA30-24**	84			
	1⅛	4373	**SDA30-102**	88	**27**	4373	**SDA30-27**	85			
	1¼	4373	**SDA30-104**	89	**30**	4373	**SDA30-30**	87			
	–	–	**–**	–	**32**	4373	**SDA30-32**	88			
S6000X (8338 Nm)	⅝	936	**SDA60-010**	85	**17**	1152	**SDA60-17**	86	**SRA60X**	91,5	89
	¾	1620	**SDA60-012**	89	**19**	1607	**SDA60-19**	88			
	⅞	2569	**SDA60-014**	92	**22**	2488	**SDA60-22**	91			
	1	3830	**SDA60-100**	95	**24**	3234	**SDA60-24**	93			
	1⅛	5457	**SDA60-102**	97	**27**	4603	**SDA60-27**	94			
	1¼	7484	**SDA60-104**	98	**30**	6311	**SDA60-30**	96			
	–	–	**–**	–	**32**	7660	**SDA60-32**	97			
S11000X (15.151 Nm)	**1¼**	7484	**SDA110-104**	115	**30**	6311	**SDA110-30**	112	**SRA110X**	127,5	106
	1⅜	9958	**SDA110-106**	117	**32**	7660	**SDA110-32**	114			
	1½	12.928	**SDA110-108**	118	**36**	10.901	**SDA110-36**	117			
	1⅝	15.151	**SDA110-110**	122	**41**	15.151	**SDA110-41**	121			
	1¾	15.151	**SDA110-112**	125	**46**	15.151	**SDA110-46**	127			
S25000X (35.455 Nm)	**1½**	12.928	**SDA250-108**	141	**36**	10.901	**SDA250-36**	140	**SRA250X**	158,5	135
	1⅝	16.433	**SDA250-110**	145	**41**	16.107	**SDA250-41**	144			
	1¾	20.520	**SDA250-112**	148	**46**	22.744	**SDA250-46**	148			
	1⅞	25.245	**SDA250-114**	149	**50**	29.211	**SDA250-50**	151			
	2	30.635	**SDA250-200**	151	**55**	35.455	**SDA250-55**	154			
	2¼	35.455	**SDA250-204**	154	**60**	35.455	**SDA250-60**	158			
	–	–	**–**	–	**65**	35.455	**SDA250-65**	161			
	–	–	**–**	–	**70**	35.455	**SDA250-70**	164			
	–	–	**–**	–	**75**	35.455	**SDA250-75**	168			
	–	–	**–**	–	**85**	35.455	**SDA250-85**	175			

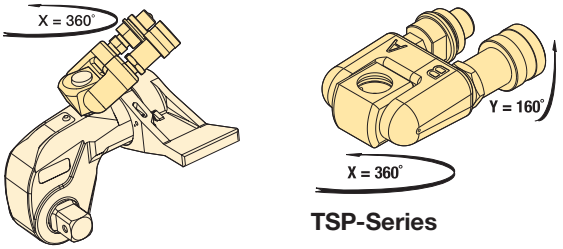
[1] See page 323 for table of hexagon sizes of bolts, nuts and related thread diameters.

TSP RTEX SRSX Series



TSP-Series, Pro Series Swivel

- Robust interlocking design
- 360° X-axis and 160° Y-axis rotation
- Increases tool fit in restricted access areas
- Simplifies hose placement
- Includes male and female couplers

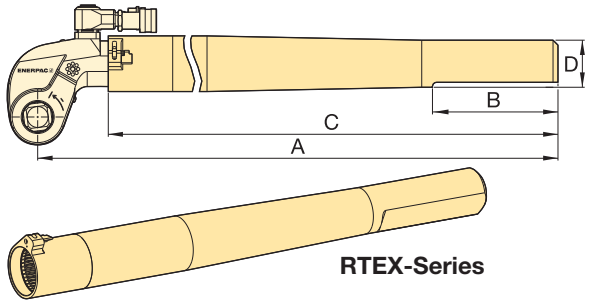


TSP-Series

For Torque Wrench Model Number	Model Number [1]	Maximum Pressure (bar)	(kg)
S1500X, S3000X, S6000X, S11000X, S25000X	TSP300	690	0,2

[1] To order a S-Series (X-edition) torque wrench fitted with a TSP300 tilt and swivel manifold, insert a "P"prior to the "X" in the tool model number, example: **S1500PX**.
TSP300 is designed for X-Edition tools only, and is not compatible with standard edition tools. For replacement components for existing tools, refer to repair sheet on www.enerpac.com

RTEX-Series, Reaction Tube Extensions



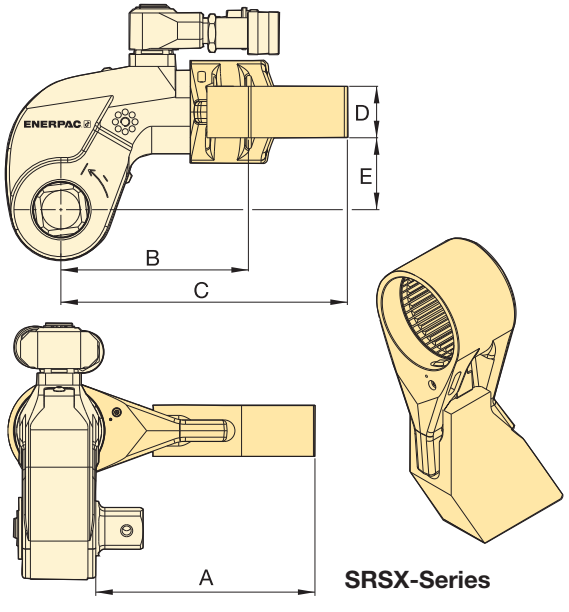
RTEX-Series

- Full torque rated
- Increases tool fit in restricted access areas

For Torque Wrench Model Number	Model Number	Dimensions (mm)				(kg) *
		A	B	C	D	
S1500X	RTE15X	706	152	636	58	4,6
S3000X	RTE30X	733	152	647	57	5,5
S6000X	RTE60X	747	152	659	65	7,7
S11000X	RTE110X	769	152	675	76	11,2
S25000X	RTE250X	813	152	685	100	17,3

* Weights indicated are for the accessories only and do not include the wrench.

SRSX-Series, Extended Reaction Arms



SRSX-Series

- Lightweight interchangeable design

For Wrench Model	Max. Torque (Nm)	Model Number	Dimensions (mm)					(kg) *
			A	B	C	D	E	
S1500X	1801	SRS151X	94	86	127	24	34	0,8
	1641	SRS152X	119	97	138	24	34	1,0
	1533	SRS153X	145	109	148	24	34	1,2
S3000X	3918	SRS301X	111	106	168	34	48	1,6
	3712	SRS302X	137	117	182	34	48	2,0
	3574	SRS303X	162	132	198	34	48	2,5
S6000X	7842	SRS601X	138	128	192	39	62	2,3
	7454	SRS602X	163	144	207	39	62	2,7
	7175	SRS603X	189	159	222	39	62	3,4
S11000X	14.650	SRS1101X	149	157	232	46	76	4,4
	13.957	SRS1102X	175	172	247	46	76	5,1
	13.391	SRS1103X	200	187	261	46	76	5,8
S25000X	33.538	SRS2501X	183	209	295	50	100	7,6
	32.049	SRS2502X	208	222	310	50	100	8,4
	30.750	SRS2503X	233	236	326	50	100	10,0

* Weights indicated are for the accessories only and do not include the wrench.

- **Heavy-duty impact sockets**
- **Supplied with "Pin and O-Ring"**

BSH
Series

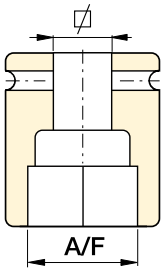


Hexagon Sizes (A/F):
19 - 155 mm | ¾ - 6⅛"

Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.

Page: 324



Hexagon Bolt and Nut Sizes

See the table of hexagon sizes of bolts, nuts and related thread diameters.

Page: 323

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	2⅜"	BSH10238	1½"	BSH1538	2⅞"	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	1⅝"	BSH15163	3"	BSH15300	2⅝"	BSH25263	4⅜"	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	2⅝"	BSH10263	1¾"	BSH15175	3⅛"	BSH15313	2¾"	BSH2570	4⅝"	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	–	–

Back-Up Spanners for Torque Wrenches

▼ **BUS03 Back-Up Spanner** (safety cable not shown)



- **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.**

BUS
Series

Hexagon Sizes (A/F):
27 - 120 mm

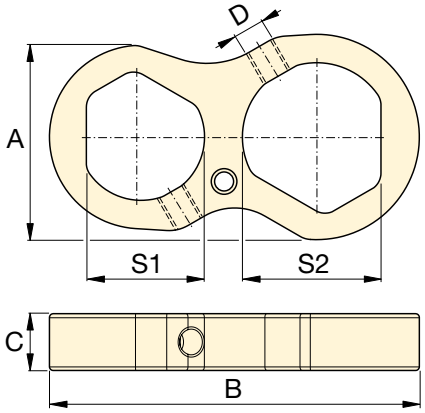
Hexagon Sizes (A/F):
1 1/16 - 4 15/16 inch

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.



▼ **SELECTION CHART BACK-UP SPANNERS**

Hexagon Sizes (A/F)		Model Number	Dimensions (mm)				
S1 to S2 (mm)	S1 to S2 (inch)		A	B	C	D	(kg)
27 - 32	1 1/16 - 1 1/4"	**BUS 01**	51	98	15	M8	0,3
36 - 41	1 7/16 - 1 5/8"	**BUS 02**	62	119	15	M8	0,4
46 - 50	1 13/16 - 2"	**BUS 03**	75	141	20	M8	0,6
55 - 60	2 3/16 - 2 3/8"	**BUS 04**	89	166	20	M12	0,8
65 - 70	2 9/16 - 2 3/4"	**BUS 05**	100	190	25	M16	1,0
75 - 80	2 15/16 - 3 1/8"	**BUS 06**	112	213	25	M16	1,3
–	3 1/2 - 3 7/8"	**BUS 07**	135	257	30	M20	2,2
–	4 1/4 - 4 5/8"	**BUS 08**	163	310	30	M20	3,3
85 - 90	-	**BUS 09**	126	242	25	M16	1,7
95 - 100	3 3/4 - 3 15/16"	**BUS 10**	138	266	30	M20	2,3
105 - 110	4 1/8 - 4 15/16"	**BUS 11**	153	297	30	M20	3,1
115 - 120	-	**BUS 12**	165	320	30	M20	3,5

▼ *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**



Setting New Standards in Safety, Simplicity and Performance

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

- **Available with optional 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.**



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 Nr. Angled positioning handles (standard)	Model Nr. Straight positioning handles (optional)
W2000X, W4000X	**SWH6A**	**SWH6S**
W8000X, W15000X	**SWH10A**	**SWH10S**
W22000X, W35000X	**SWH10EA [2)]**	

[2)] SWH10EA is an eyebolt handle.



TSP - Pro Series Swivel

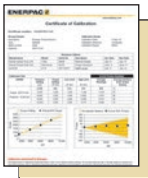
The optional TSP300 tilt and swivel manifold with robust interlocking design provides 360° X-axis rotation and 160° Y-axis rotation.

How to Order [1)]

Factory fitted to W-Series (X-Edition) drive units: Insert a "P" prior to the "X" in the tool model number, example: **W2000PX**.

Order as an accessory using the model number: **TSP300**, which can be fitted to existing W-Series (X-Edition) drive units. Includes male and female couplers.

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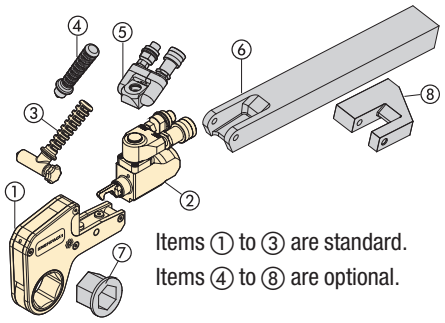
ATEX declared.
Calibration certificate included.

All X-edition tools are CE - ATEX declared and are shipped complete with a calibration certificate.

CE Ex II 2 GD T4

[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

Double-Acting Hydraulic Hexagon Torque Wrenches, X-Edition



Items ① to ③ are standard.
Items ④ to ⑧ are optional.

① Hexagon Cassette (pages 200-207)
② Drive Unit (page 199)
③ Angled Positioning Handle (page 198)
④ Straight Positioning Handle (page 198)
⑤ Pro Series Swivel (page 210)
⑥ Extended Reaction Arm (page 210)
⑦ Reducer Insert (pages 200-207)
⑧ Reaction Paddle (page 210)

W Series X-Edition



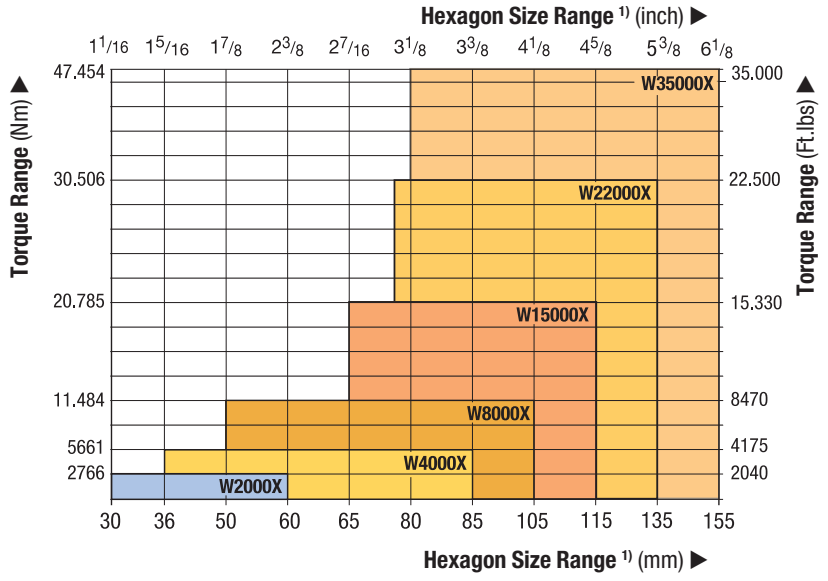
Nominal Torque at 690 bar:
47.454 Nm

Hexagon Range:
30 - 155 mm / 1 1/16 - 6 1/8 ”

Nose Radius:
31 - 115 mm

Maximum Operating Pressure:
690 bar

DRIVE UNIT AND INTERCHANGEABLE CASSETTE SELECTION



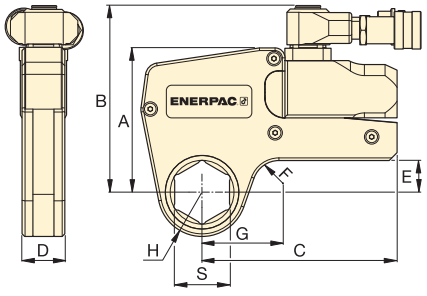
1) See page 323 for table of hexagon sizes of bolts, nuts and related thread diameters.



Torque Wrench Pump Selection Matrix

For optimum speed and performance see the torque wrench and pump matrix.

Page: 231



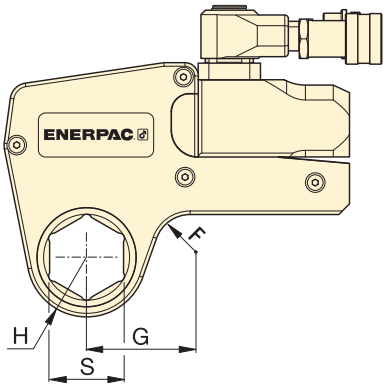


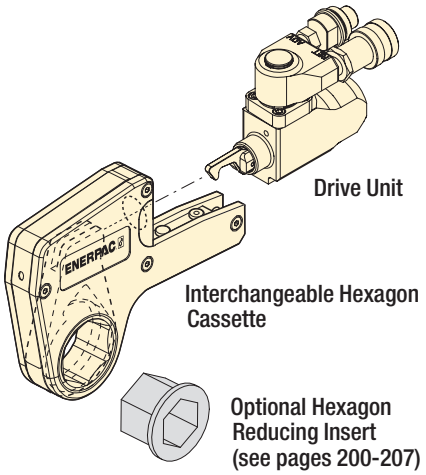
These rigid steel wrenches with low profile interchangeable hexagon cassettes guarantee durability and maximum versatility in bolting applications. ▶

▼ SELECTION CHART

Hexagon Range *  Page: 200		Nominal Torque at 690 bar		Drive Unit Model Number ** 	Minimum Torque		Dimensions (mm) (see pages 200-207 for dimensions G, H and S)						Weight (drive unit without hexagon cassette)
(mm)	(inch)	(Nm)	(Ft.lbs)		(Nm)	(Ft.lbs)	A	B	C	D	E	F	(kg)
30 - 60	1 1/16 - 2 3/8	2766	2040	**W2000X**	276	204	109	141	148	32	24	20	1,4
36 - 85	1 5/16 - 3 3/8	5661	4175	**W4000X**	566	417	136	167	178	41	33	20	2,0
50 - 105	1 7/8 - 4 1/8	11.484	8470	**W8000X**	1148	847	172	205	208	53	42	25	3,0
65 - 115	2 7/16 - 4 5/8	20.785	15.330	**W15000X**	2078	1533	207	240	253	63	50	20	5,0
75 - 135	2 15/16 - 5 3/8	30.506	22.500	**W22000X**	3050	2250	227	266	297	77	48	35	7,7
80 - 155	3 1/8 - 6 1/8	47.454	35.000	**W35000X**	4745	3500	268	301	345	91	69-73	50	11,4

* With in-line reaction foot.
** To order a W-series wrench fitted with the TSP swivel, suffix the model number with "-P". Example: **W2000PX**.





W Series X-Edition



Nominal Torque at 690 bar:
2766 Nm

Hexagon Range:
1 1/16 - 2 3/8 inch

Maximum Operating Pressure:
690 bar



Metric Sizes
For metric sizes of hexagon cassettes and reducer inserts see:
Page: 206

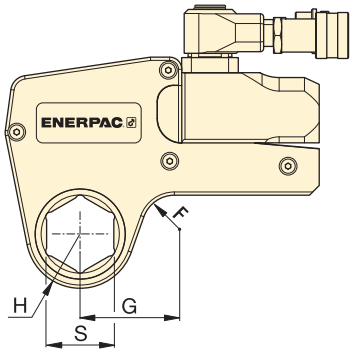
Hexagon Bolt and Nut Sizes
See the table for hexagon sizes of bolts, nuts and related thread diameters.
Page: 323

▼ **SELECTION CHART**

Drive Unit Model Number	Hexagon Size [1] S (inch)	Nose Radius H (mm)	Dim. G (mm)	Model Number	(kg)	Hexagon Reducer (inch)	Model Number	Hexagon Reducer (inch)	Model Number	Hexagon Reducer (inch)	Model Number
W2000X	1 1/16	31,0	53,7	W2101X	2,1	–	–	–	–	–	–
	1 1/8	31,0	53,7	W2102X	2,1	–	–	–	–	–	–
	1 3/16	31,0	53,7	W2103X	2,1	–	–	–	–	–	–
	1 1/4	31,0	53,7	W2104X	2,1	–	–	–	–	–	–
	1 5/16	31,0	53,7	W2105X	2,1	–	–	–	–	–	–
	1 3/8	31,0	53,7	W2106X	2,1	–	–	–	–	–	–
	1 7/16	31,0	53,7	W2107X	2,1	1 7/16 - 1 1/8	W2107R102	–	–	–	–
	1 1/2	33,5	58,2	W2108X	2,2	–	–	–	–	–	–
	1 9/16	33,5	58,2	W2109X	2,2	–	–	–	–	–	–
	1 5/8	33,5	58,2	W2110X	2,2	1 5/8 - 1 1/4	W2110R104	1 5/8 - 1 3/16	W2110R103	–	–
	1 11/16	36,5	60,5	W2111X	2,2	–	–	–	–	–	–
	1 3/4	36,5	60,5	W2112X	2,2	–	–	–	–	–	–
	1 13/16	36,5	60,5	W2113X	2,2	1 13/16 - 1 7/16	W2113R107	1 13/16 - 1 1/4	W2113R104	–	–
	1 7/8	39,0	63,1	W2114X	2,2	–	–	–	–	–	–
	1 5/16	39,0	63,1	W2115X	2,2	–	–	–	–	–	–
	2	39,0	63,1	W2200X	2,2	2 - 1 5/8	W2200R110	2 - 1 7/16	W2200R107	–	–
	2 1/16	41,8	68,6	W2201X	2,3	–	–	–	–	–	–
	2 1/8	41,8	68,6	W2202X	2,3	–	–	–	–	–	–
	2 3/16	41,8	68,6	W2203X	2,3	2 3/16 - 1 13/16	W2203R113	2 3/16 - 1 5/8	W2203R110	2 3/16 - 1 7/16	W2203R107
	2 1/4	44,5	64,8	W2204X	2,2	–	–	–	–	–	–
	2 5/16	44,5	64,8	W2205X	2,2	–	–	–	–	–	–
	2 3/8	44,5	64,8	W2206X	2,2	2 3/8 - 2	W2206R200	2 3/8 - 1 7/8	W2206R114	2 3/8 - 1 13/16	W2206R113
	–	–	–	–	–	2 3/8 - 1 1/2	W2206R108	2 3/8 - 1 7/16	W2206R107	2 3/8 - 1 5/16	W2206R110

[1] See page 323 for table of hexagon sizes of bolts, nuts and related thread diameters.

W4000X-Series, Inch-Cassettes & Reducer Inserts



Nominal Torque at 690 bar:
5661 Nm

Hexagon Range:
1 5/16 - 3 3/8 inch

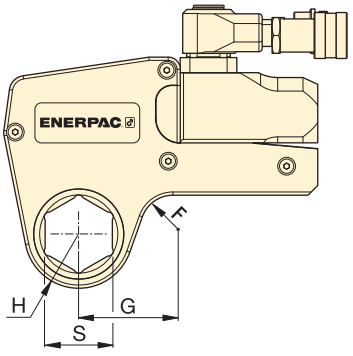
Maximum Operating Pressure:
690 bar

W
Series
X-Edition



Drive Unit Model Number	Hexagon Size [1] S (inch)	Nose Radius H (mm)	Dim. G (mm)	Model Number	(kg)	Hexagon Reducer (inch)	Model Number	Hexagon Reducer (inch)	Model Number	Hexagon Reducer (inch)	Model Number
W4000X	1 5/16	37,0	61,0	W4105X	3,7	–	–	_	–	–	–
	1 3/8	37,0	61,0	W4106X	3,7	–	–	–	–	–	–
	1 7/16	37,0	61,0	W4107X	3,7	–	–	–	–	–	–
	1 1/2	37,0	61,0	W4108X	3,7	–	–	–	–	–	–
	1 9/16	37,0	61,0	W4109X	3,7	–	–	–	–	–	–
	1 5/8	37,0	61,0	W4110X	3,7	–	–	–	–	–	–
	1 11/16	39,5	64,0	W4111X	3,8	–	–	–	–	–	–
	1 3/4	39,5	64,0	W4112X	3,8	–	–	–	–	–	–
	1 13/16	39,5	64,0	W4113X	3,8	–		–	–	–	–
	1 7/8	41,5	66,7	W4114X	3,9	–	–	–	–	–	–
	1 15/16	41,5	66,7	W4115X	3,9	–	–	–	–	–	–
	2	41,5	66,7	W4200X	3,9	2 - 1 7/16	W4200R107	–	–	–	
	2 1/16	44,0	73,4	W4201X	4,0	–	–	–	–	–	–
	2 1/8	44,0	73,4	W4202X	4,0	–	–	–	–	–	–
	2 3/16	44,0	73,4	W4203X	4,0	2 3/16 - 1 5/8	W4203R110	2 3/16 - 1 7/16	W4203R107	2 3/16 - 1 1/4	W4203R104
	2 1/4	46,5	70,6	W4204X	4,1	–	–	–	–	–	–
	2 5/16	46,5	70,6	W4205X	4,1	–	–	–	–	–	–
	2 3/8	46,5	70,6	W4206X	4,1	2 3/8 - 2	W4206R200	2 3/8 - 1 13/16	W4206R113	2 3/8 - 1 7/16	W4206R107
	–	–	–	–	–	2 3/8 - 1 3/8	W4206R106	–	–	–	–
	2 7/16	49,5	76,2	W4207X	4,1	2 7/16 - 2	W4207R200	–	–	–	–
	2 1/2	49,5	76,2	W4208X	4,1	2 1/2 - 2	W4208R200	2 1/2 - 1 7/16	W4208R113	2 1/2 - 2 1/16	W4208R201
	2 9/16	49,5	76,2	W4209X	4,1	2 9/16 - 2 3/16	W4209R203	2 9/16 - 2 1/8	W4209R202	2 9/16 - 2 1/16	W4209R201
	–	–	–	–	–	2 9/16 - 2	W4209R200	2 9/16 _ 1 13/16	W4209R113	–	–
	2 5/8	52,5	78,3	W4210X	4,2	–	–	–	–	–	–
	2 11/16	52,5	78,3	W4211X	4,2	–	–	–	–	–	–
	2 3/4	52,5	78,3	W4212X	4,2	2 3/4 - 2 3/8	W4212R206	2 3/4 - 2 3/16	W4212R203	2 3/4 - 2 1/8	W4212R202
	2 13/16	55,3	81,6	W4213X	4,3	–	–	–	–	–	–
	2 7/8	55,3	81,6	W4214X	4,3	–	–	–	–	–	–
	2 15/16	55,3	81,6	W4215X	4,3	2 15/16 - 2 9/16	W4215R209	2 15/16 - 2 3/8	W4215R206	2 15/16 - 2 3/16	W4215R203
	–	–	–	–	–	2 15/16 - 2	W4215R200	–	–	–	–
	3	58,5	83,5	W4300X	4,4	3 - 2 3/16	W4300R203	–	–	–	–
	3 1/16	58,5	83,5	W4301X	4,4	–	–	–	–	–	–
	3 1/8	58,5	83,5	W4302X	4,4	3 1/8 - 2 3/4	W4302R212	3 1/8 - 2 9/16	W4302R209	3 1/8 - 2 3/8	W4302R206
	–	–	–	–	–	3 1/8 - 2 5/16	W4302R205	3 1/8 - 2 1/4	W4302R204	3 1/8 - 2 3/16	W4302R203
	–	–	–	–	–	3 1/8 - 2 3/16	W4302R203	3 1/8 - 2 1/8	W4302R202	3 1/8 - 2	W4302R200
	3 3/16	62,0	85,5	W4303X	4,5	–	–	–	–	–	–
	3 1/4	62,0	85,5	W4304X	4,5	–	–	–	–	–	–
	3 5/16	62,0	85,5	W4305X	4,5	–	–	–	–	–	–
	3 3/8	62,0	85,5	W4306X	4,5	–	–	–	–	–	–

[1] See page 323 for table of hexagon sizes of bolts, nuts and related thread diameters.



Nominal Torque at 690 bar:
11.484 Nm

Hexagon Range:
1⅞ - 4⅛ inch

Maximum Operating Pressure:
690 bar

W
Series
X-Edition

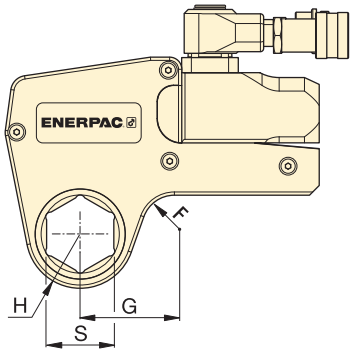


▼ **SELECTION CHART**

Drive Unit Model Number	Hexagon Size [1] S (inch)	Nose Radius H (mm)	Dim. G (mm)	Model Number	(kg)	Hexagon Reducer (inch)	Model Number	Hexagon Reducer (inch)	Model Number	Hexagon Reducer (inch)	Model Number
W8000X	1⅞	45,0	78,2	W8114X	8,1	–	–	–	–	–	–
	1 15/16	45,0	78,2	W8115X	8,1	–	–	–	–	–	–
	2	45,0	78,2	W8200X	8,1	–	–	–	–	–	–
	2 1/16	48,0	80,0	W8201X	8,1	–	–	–	–	–	–
	2⅛	48,0	80,0	W8202X	8,1	–	–	–	–	–	–
	2 3/16	48,0	80,0	W8203X	8,1	–	–	–	–	–	–
	2¼	51,0	82,5	W8204X	8,1	–	–	–	–	–	–
	2 5/16	51,0	82,5	W8205X	8,1	–	–	–	–	–	–
	2⅜	51,0	82,5	W8206X	8,1	–	–	–	–	–	–
	2 7/16	52,5	85,9	W8207X	8,1	–	–	–	–	–	–
	2½	52,5	85,9	W8208X	8,1	–	–	–	–	–	–
	2 9/16	52,5	85,9	W8209X	8,1	2 9/16 - 2	W8209R200		–		
	2⅝	56,0	84,8	W8210X	8,1	–	–	–	–	–	–
	2 11/16	56,0	84,8	W8211X	7,9	–	–	–	–	–	–
	2¾	56,0	84,8	W8212X	7,9	2¾ - 2 3/16	W8212R203		–		
	2 13/16	58,0	85,0	W8213X	7,9	–	–	–	–	–	–
	2⅞	58,0	85,0	W8214X	7,9	–	–	–	–	–	–
	2 15/16	58,0	85,0	W8215X	7,9	2 15/16 - 2⅜	W8215R206	2 15/16 - 2 3/16	W8215R203		
	3	60,5	89,5	W8300X	8,0	–	–	–	–	–	–
	3 1/16	60,5	89,5	W8301X	8,0	–	–	–	–	–	–
	3⅛	60,5	89,5	W8302X	8,0	3⅛ - 2 9/16	W8302R209	3⅛ - 2⅜	W8302R206	3⅛ - 2 3/16	W8302R203
	–	–	–	–	–	3⅛ - 2	W8302R200		–		
	3 3/16	66,0	92,2	W8303X	8,2	–	–	–	–	–	–
	3¼	66,0	92,2	W8304X	8,2	–	–	–	–	–	–
	3 5/16	66,0	92,2	W8305X	8,2	–	–	–	–	–	–
	3⅜	66,0	92,2	W8306X	8,2	–	–	–	–	–	–
	3 7/16	66,0	92,2	W8307IX	8,2	–	–	–	–	–	–
	3½	66,0	92,2	W8308X	8,2	3½ - 3	W8308R300	3½ - 2 15/16	W8308R215	3½ - 2¾	W8308R212
	3 9/16	74,0	102,9	W8309X	8,8	–	–	–	–	–	–
	3⅝	74,0	102,9	W8310X	8,8	–	–	–	–	–	–
	3 11/16	74,0	102,9	W8311X	8,8	–	–	–	–	–	–
	3¾	74,0	102,9	W8312X	8,8	3¾ - 3⅛	W8312R302	3¾ - 2 15/16	W8312R215	3¾ - 2¾	W8312R212
	3 13/16	74,0	102,9	W8313X	8,8	–	–	–	–	–	–
	3⅞	74,0	102,9	W8314X	8,8	3⅞ - 3⅛	W8314R302	3⅞ - 2 15/16	W8314R215		–
	3 15/16	79,5	110,0	W8315X	9,3	–	–	–	–	–	–
	4	79,5	110,0	W8400X	9,3	–	–	–	–	–	–
	4 1/16	79,5	110,0	W8401IX	9,3	–	–	–	–	–	–
	4⅛	79,5	110,0	W8402X	9,3	–	–	–	–	–	–

[1] See page 323 for table of hexagon sizes of bolts, nuts and related thread diameters.

W15000X-Series, Inch-Cassettes & Reducer Inserts



Nominal Torque at 690 bar:
20.785 Nm

Hexagon Range:
2⅛ - 4⅝ inch

Maximum Operating Pressure:
690 bar

W
Series
X-Edition



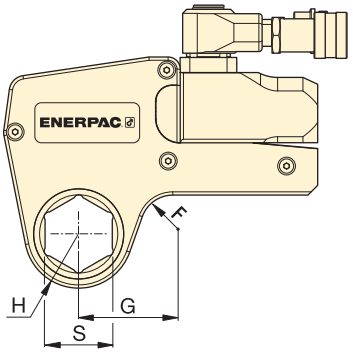
▼ **SELECTION CHART**

Drive Unit Model Number	Hexagon Size [1] S (inch)	Nose Radius H (mm)	Dim. G (mm)	Model Number	(kg)	Hexagon Reducer (inch)	Model Number	Hexagon Reducer (inch)	Model Number	Hexagon Reducer (inch)	Model Number
W15000X	2 7/16	59,0	88,6	W15207X	13,6	–	–	–	–	–	–
	2 1/2	59,0	88,6	W15208X	13,6	–	–	–	–	–	–
	2 9/16	59,0	88,6	W15209X	13,6	–	–	–	–	–	–
	2 5/8	59,0	88,6	W15210X	13,6	–	–	–	–	–	–
	2 11/16	59,0	88,6	W15211X	13,6	–	–	–	–	–	–
	2 3/4	59,0	88,6	W15212X	13,6	–	–	–	–	–	–
	2 13/16	62,0	90,5	W15213X	13,7	–	–	–	–	–	–
	2 7/8	62,0	90,5	W15214X	13,7	–	–	–	–	–	–
	2 15/16	62,0	90,5	W15215X	13,7	–	–	–	–	–	–
	3	64,5	92,9	W15300X	13,8	3 - 2 1/8	W15300R202	–	–	–	–
	3 1/16	64,5	92,9	W15301X	13,8	–	–	–	–	–	–
	3 1/8	64,5	92,9	W15302X	13,8	3 1/8 - 2 9/16	W15302R209	–	–	–	
	3 3/16	69,5	96,6	W15303X	14,1	–	–	–	–	–	–
	3 1/4	69,5	96,6	W15304X	14,1	–	–	–	–	–	–
	3 5/16	69,5	96,6	W15305X	14,1	–	–	–	–	–	–
	3 3/8	69,5	96,6	W15306X	14,1	–	–	–	–	–	–
	3 7/16	69,5	96,6	W15307IX	14,1	–	–	–	–	–	–
	3 1/2	69,5	96,6	W15308X	14,1	3 1/2 - 2 15/16	W15308R215	3 1/2 - 2 3/4	W15308R212	–	–
	3 9/16	75,0	101,8	W15309X	14,6	–	–	–	–	–	–
	3 5/8	75,0	101,8	W15310X	14,6	–	–	–	–	–	–
	3 11/16	75,0	101,8	W15311X	14,6	–	–	–	–	–	–
	3 3/4	75,0	101,8	W15312X	14,6	3 3/4 - 3 1/8	W15312R302	3 3/4 - 2 15/16	W15312R215	–	–
	3 13/16	75,0	101,8	W15313X	14,5	–	–	–	–	–	–
	3 7/8	75,0	101,8	W15314X	14,5	3 7/8 - 3 1/8	W15314R302	3 7/8 - 2 15/16	W15314R215	–	–
	3 15/16	80,5	103,1	W15315X	14,8	–	–	–	–	–	–
	4	80,5	103,1	W15400X	14,8	–	–	–	–	–	–
	4 1/16	80,5	103,1	W15401IX	14,8	–	–	–	–	–	–
	4 1/8	80,5	103,1	W15402X	14,8	4 1/8 - 3 1/2	W15402R308	4 1/8 - 3 5/16	W15402R305	4 1/8 - 3 1/4	W15402R304
	4 3/16	80,5	103,1	W15403IX	14,8	–	–	–	–	–	–
	4 1/4	80,5	103,1	W15404X	14,8	4 1/4 - 3 1/2	W15404R308	4 1/4 - 3 1/8	W15404R302	–	–
	4 5/16	87,5	114,8	W15405X	15,1	–	–	–	–	–	–
	4 3/8	87,5	114,8	W15406X	15,1	–	–	–	–	–	–
	4 7/16	87,5	114,8	W15407X	15,1	–	–	–	–	–	–
	4 1/2	87,5	114,8	W15408IX	15,1	–	–	–	–	–	–
	4 9/16	87,5	114,8	W15409IX	15,1	–	–	–	–	–	–
	4 5/8	87,5	114,8	W15410IX	15,1	4 5/8 - 3 15/16	W15410R315	4 5/8 - 3 7/8	W15410R314	4 5/8 - 3 3/4	W15410R312
	–	–	–	–	–	4 5/8 - 3 1/2	W15410R308	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–

[1] See page 323 for table of hexagon sizes of bolts, nuts and related thread diameters.

W22000X, Inch-Cassettes & Reducers

ENERPAC



Nominal Torque at 690 bar:
30.506 Nm

Hexagon Range:
2 15/16 - 5 3/8 inch

Maximum Operating Pressure:
690 bar

W
Series
X-Edition

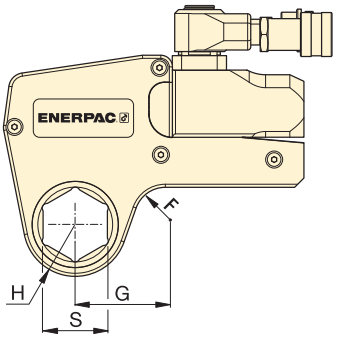


▼ **SELECTION CHART**

Drive Unit Model Number	Hexagon Size [1] S (inch)	Nose Radius H (mm)	G (mm)	Model Nr. Cassette	(kg)	Hexagon Reducer (inch)	Model Number Reducer	Hexagon Reducer (inch)	Model Number Reducer	Hexagon Reducer (inch)	Model Number Reducer
W22000X	2 15/16	67,0	102,1	W22215X	22,1	–	–	–	–	–	–
	3	67,0	102,1	W22300X	22,0	–	–	–	–	–	–
	3 1/16	67,0	102,1	W22301X	21,9	–	–	–	–	–	–
	3 1/8	67,0	102,1	W22302X	21,6	3 1/8 - 2 3/8	W22302R206	3 1/8 - 2 3/16	W22302R203	–	–
	3 3/16	72,4	107,4	W22303X	22,9	–	–	–	–	–	–
	3 1/4	72,4	107,4	W22304X	22,8	–	–	–	–	–	–
	3 5/16	72,4	107,4	W22305X	22,6	–	–	–	–	–	–
	3 3/8	72,4	107,4	W22306X	22,5	–	–	–	–	–	–
	3 7/16	72,4	107,4	W22307IX	22.8	–	–	–	–	–	–
	3 1/2	72,4	107,4	W22308X	22,2	3 1/2 - 2 3/4	W22308R212	3 1/2 - 2 9/16	W22308R209	3 1/2 - 2 3/8	W22308R206
	3 9/16	77,9	113,0	W22309X	23,4	–	–	–	–	–	–
	3 5/8	77,9	113,0	W22310X	23,3	–	–	–	–	–	–
	3 11/16	77,9	113,0	W22311X	23,1	–	–	–	–	–	–
	3 3/4	77,9	113,0	W22312X	22,9	3 3/4 - 2 15/16	W22312R215	–	–	–	–
	3 13/16	77,9	113,0	W22313X	22,8	–	–	–	–	–	–
	3 7/8	77,9	113,0	W22314X	22,6	3 7/8 - 3 1/8	W22314R302	3 7/8 - 2 15/16	W22314R215	3 7/8 - 2 3/4	W22314R212
	3 15/16	85,1	119,9	W22315X	24,3	–	–	–	–	–	–
	4	85,1	119,9	W22400X	24,1	–	–	–	–	–	–
	4 1/16	85,1	119,9	W22401IX	24,0	–	–	–	–	–	–
	4 1/8	85,1	119,9	W22402X	23,6	–	–	–	–	–	–
	4 3/16	85,1	119,9	W22403IX	23,6	–	–	–	–	–	–
	4 1/4	85,1	119,9	W22404X	24,6	4 1/4 - 3 1/2	W22404R308	4 1/4 - 3 1/8	W22404R302	4 1/4 - 2 15/16	W22404R215
	4 5/16	89,9	125,0	W22405X	24,6	–	–	–	–	–	–
	4 3/8	89,9	125,0	W22406X	24,5	–	–	–	–	–	–
	4 7/16	89,9	125,0	W22407X	24,3	–	–	–	–	–	–
	4 1/2	89,9	125,0	W22408IX	24,1	–	–	–	–	–	–
	4 9/16	89,9	125,0	W22409IX	23.9	–	–	–	–	–	–
	4 5/8	89,9	125,0	W22410IX	23,6	4 5/8 - 3 7/8	W22410R314	4 5/8 - 3 3/4	W22410R312	4 5/8 - 3 1/2	W22410R308
	4 3/4	95,0	130,0	W22412X	24,7		–	–	–	–	–
	4 7/8	95,0	130,0	W22414X	24,3	–	–	–	–	–	–
	5	95,0	130,0	W22500X	23,8	5 - 4 1/4	W22500R404	5 - 4 1/8	W22500R402	5 - 3 7/8	W22500R314
	5 1/8	100,0	134,8	W22502X	25,0	–	–	–	–	–	–
	5 3/16	100,0	134,8	W22503IX	24,8	–	–	–	–	–	–
	5 1/4	100,0	134,8	W22504IX	24,5	–	–	–	–	–	–
	5 3/8	100,0	134,8	W22506X	23,9	5 3/8 - 4 5/8	W22506R410	5 3/8 - 4 1/4	W22506R404	5 3/8 - 4 1/8	W22506R402
	–	–	–	W22506X	23,9	5 3/8 - 3 7/8	W22506R314	–	–	–	–

[1] See page 323 for table of hexagon sizes of bolts, nuts and related thread diameters.

W35000X, Inch-Cassettes & Reducer Inserts



W
Series
X-Edition



Nominal Torque at 690 bar:
47.454 Nm

Hexagon Range:
3⅛ - 6⅛ inch

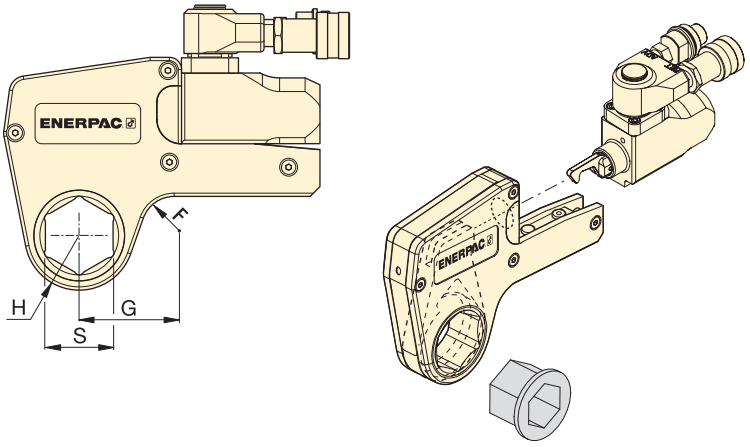
Maximum Operating Pressure:
690 bar

Hexagon Bolt and Nut Sizes
See the table for hexagon sizes of bolts, nuts and related thread diameters.

Page: 323

▼ **SELECTION CHART**

Drive Unit Model Number	Hexagon Size S (inch)	Nose Radius H (mm)	G (mm)	Model Nr. Cassette	(kg)	Hexagon Reducer (inch)	Model Number Reducer
W35000X	3⅛	76,0	126,8	W35302X	32,8	3⅛ – 2	W35302R200
	3³⁄₁₆	76,0	126,8	W35303X	32,7	–	–
	3¼	76,0	126,8	W35304X	32,5	–	–
	3⁵⁄₁₆	76,0	126,8	W35305X	32,4	–	–
	3⅜	76,0	126,8	W35306X	32,2	–	–
	3⁷⁄₁₆	76,0	126,8	W35307IX	32,0	–	–
	3½	76,0	126,8	W35308X	31,8	3½ - 2⁵⁄₁₆	W35308R205
	3⁹⁄₁₆	81,5	132,5	W35309X	32,4	–	–
	3⅝	81,5	132,5	W35310X	33,3	–	–
	3¹¹⁄₁₆	81,5	132,5	W35311X	33,1	–	–
	3¾	81,5	132,5	W35312X	32,9	–	–
	3¹³⁄₁₆	81,5	132,5	W35313X	32,7	–	–
	3⅞	81,5	132,5	W35314X	32,4	3⅞ - 2¹¹⁄₁₆	W35314R211
	3¹⁵⁄₁₆	87,0	137,0	W35315X	34,1	3¹⁵⁄₁₆ - 2¹³⁄₁₆	W35315R213
	4	87,0	137,0	W35400X	33,9		–
	4¹⁄₁₆	87,0	137,0	W35401IX	33,7	–	–
	4⅛	87,0	137,0	W35402X	33,5	–	–
	4³⁄₁₆	87,0	137,0	W35403IX	33,3	–	–
	4¼	87,0	137,0	W35404X	33,0	4¼ - 3¹⁄₁₆	W35404R301
	4⁵⁄₁₆	93,0	143,0	W35405X	34,9	–	–
	4⅜	93,0	143,0	W35406X	34,7	–	–
	4⁷⁄₁₆	93,0	143,0	W35407X	34,5	–	–
	4½	93,0	143,0	W35408IX	34,3	–	–
	4⁹⁄₁₆	93,0	143,0	W35409IX	34,1	–	–
	4⅝	93,0	143,0	W35410IX	33,7	4⅝ - 3⅝	W35410R310
	4¾	98,5	148,5	W35412X	35,6	4¾ - 3¾	W35412R312
	4⅞	98,5	148,5	W35414X	34,9	–	–
	5	98,5	148,5	W35500X	34,3	5 - 4	W35500R400
	5⅛	103,0	153,0	W35502X	35,8	5⅛ - 4⅛	W35502R402
	5³⁄₁₆	103,0	153,0	W35503IX	35,6	–	–
	5¼	103,0	153,0	W35504IX	35,2	–	–
	5⅜	103,0	153,0	W35506X	34,6	5⅜ - 4⁵⁄₁₆	W35506R405
	5½	108,5	158,5	W35508X	36,2	–	–
	5⁹⁄₁₆	108,5	158,5	W35509X	36,0	–	–
	5⅝	108,5	158,5	W35510X	35,6	–	–
	5¾	108,5	164,0	W35512X	34,9	5¾ - 4¾	W35512R412
	5⅞	114,0	164,0	W35514X	36,7	5⅞ - 4⅞	W35514R414
	6	114,0	164,0	W35600X	36,1	–	
	6⅛	114,0	164,0	W35602X	35,3	6⅛ - 5⅛	W35602R502



W Series X-Edition



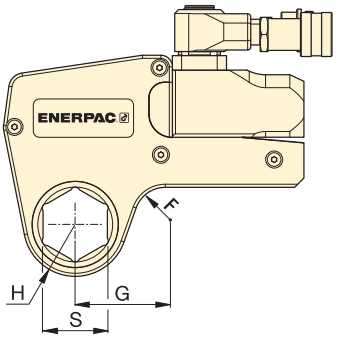
Hexagon Range:
24 - 105 mm

Maximum Operating Pressure:
690 bar

▼ **SELECTION CHART**

Drive Unit Model Number	Hexagon Size [1] S (mm)	Nose Radius H (mm)	Dim. G (mm)	Model Nr. Cassette	(kg)	Hexagon Reducer (mm)	Model Number Reducer	Hexagon Reducer (mm)	Model Number Reducer	Hexagon Reducer (mm)	Model Number Reducer
W2000X (2766 Nm)	30	31	54	W2103X	2,1	–	–	–	–	–	–
	32	31	54	W2104X	2,1	–	–	–	–	–	–
	36	31	54	W2107X	2,1	–	–	–	–	–	–
	38	34	58	W2108X	2,2	–	–	–	–	–	–
	41	34	58	W2110X	2,2	41 - 32	W2110R104	41 - 30	W2110R103	41 - 24	W2110R024M
	46	34	61	W2113X	2,2	46 - 36	W2113R107	46 - 32	W2113R104	–	–
	50	39	63	W2200X	2,2	50 - 41	W2200R110	50 - 36	W2200R107		–
	55	42	69	W2203X	2,3	55 - 46	W2203R113	55 - 41	W2203R110	55 - 36	W2203R107
	60	45	65	W2206X	2,2	60 - 50	W2206R200	60 - 46	W2206R113	60 - 41	W2206R110
	–	–	–	–	–	60 - 36	W2206R107	–	–	–	–
W4000X (5661 Nm)	36	37	61	W4107X	3,7	–	–	–	–	–	–
	41	37	61	W4110X	3,7	–	–	–	–	–	–
	46	40	64	W4113X	3,8	–	–	–	–	–	–
	50	42	67	W4200X	3,9	50 - 36	W4200R107	–	–	–	–
	55	44	73	W4203X	4,0	55 - 41	W4203R110	55 - 36	W4203R107	55 - 32	W4203R104
	60	47	71	W4206X	4,1	60 - 50	W4206R200	60 - 46	W4206R113	60 - 36	W4206R107
	65	50	76	W4209X	4,1	65 - 55	W4209R203	65 - 50	W4209R200	65 - 46	W4209R113
	70	53	78	W4212X	4,2	70 - 60	W4212R206	70 - 55	W4212R203	–	–
	75	55	82	W4215X	4,3	75 - 65	W4215R209	75 - 60	W4215R206	–	–
	–	–	–	W4215X		75 - 55	W4215R203	75 - 50	W4215R200	–	–
	80	59	84	W4302X	–	–	–	80 - 70	W4302R212	80 - 65	W4302R209
	–	–	–	W4302X	–	80 - 55	W4302R203	80 - 50	W4302R200	–	–
	85	62	86	W4085MX	4,5	–	–	–	–	–	–
W8000X (11.484 Nm)	50	45	78	W8200X	8,1	–	–	–	–	–	–
	55	48	80	W8203X	8,1	–	–	–	–	–	–
	60	51	83	W8206X	8,1	–	–	–	–	–	–
	65	56	85	W8209X	8,1	65 - 50	W8209R200	–	–	–	–
	70	56	85	W8212X	7,9	70 - 55	W8212R203	–	–	–	–
	75	58	85	W8215X	7,9	75 - 60	W8215R206	75 - 55	W8215R203	–	–
	80	61	90	W8302X	8	80 - 65	W8302R209	80 - 60	W8302R206	80 - 55	W8302R203
	–	–	–	–	–	80 - 50	W8302R200	–	–	–	–
	85	66	92	W8085MX	8,2	85 - 70	W8085R070M	85 - 65	W8085R065M	85 - 60	W8085R060M
	–	–	–	–	–	85 - 55	W8085R055M	–	–	–	–
	90	74	103	W8090MX	8,8	90 - 75	W8090R075M	–	–	–	–
	95	74	103	W8312X	8,8	95 - 80	W8312R302	95 - 75	W8312R215	–	–
	100	80	110	W8315X	9,3	–	–	–	–	–	–
	105	80	110	W8402X	9,3	–	–	–	–	–	–

[1] See page 323 for table of hexagon sizes of bolts, nuts and related thread diameters.



Hexagon Range:
50 - 155 mm

Maximum Operating Pressure:
690 bar

W
Series
X-Edition



▼ **SELECTION CHART**

Drive Unit Model Number	Hexagon Size [1] S (mm)	Nose Radius H (mm)	Dim. G (mm)	Model Nr. Cassette	(kg)	Hexagon Reducer (mm)	Model Number Reducer	Hexagon Reducer (mm)	Model Number Reducer
W15000X (20.785 Nm)	65	59	89	W15209X	13,6	–	–	–	–
	70	59	89	W15212X	13,6	–	–	–	–
	75	62	91	W15215X	13,7	–	–	–	–
	80	65	93	W15302X	13,8	80 - 65	W15302R209	–	–
	85	70	97	W15085MX	14,1	85 - 70	W15085R070M	–	–
	90	75	102	W15090MX	14,5	90 - 75	W15090R75M	–	–
	95	75	102	W15312X	14,6	95 - 80	W15312R302	95 - 75	W15312R215
	100	81	103	W15315X	14,8	–	–	–	–
	105	81	103	W15402X	14,8	105 - 90	W15402R090M	–	–
	110	88	115	W15405X	15,1	110 - 95	W15110R095M	–	–
	115	88	115	W15115MX	15,1	115 - 100	W15115R100M	–	–
W22000X (30.506 Nm)	75	67	102	W22215X	22,0	–	–	–	–
	80	67	102	W22302X	21,6	80-60	W22302R206	80 - 55	W22302R203
	85	73	107	W22085MX	22,5	85-65	W22085MR209	85 - 60	W22085MR206
	90	78	113	W22090MX	23,4	90-70	W22090MR212	90 - 60	W22090MR206
	95	78	113	W22312X	22,9	95-75	W22312R215	–	–
	100	85	120	W22315X	24,3	–	–	–	–
	105	85	120	W22402X	23,4	–	–	–	–
	110	90	125	W22405X	24,6	–	–	–	–
	115	90	125	W22115MX	24,0	–	–	–	–
	120	95	130	W22412X	24,7	–	–	–	–
	123	95	130	W22123MX	24,4	–	–	–	–
	130	100	135	W22502X	25,0	–	–	–	–
	135	100	135	W22506X	23,9	135 - 105	W22506R402	–	–
W35000X (47.454 Nm)	80	77	129	W35302X	32,8	80 - 50	W35302R200	–	–
	85	77	129	W35085MX	32,3	–	–	–	–
	90	82	135	W35090MX	33,5	90 - 60	W35090R206	–	–
	95	82	135	W35312X	32,9	–	–	–	–
	100	88	139	W35315X	34,1		–	–	–
	105	88	139	W35402X	33,5	–	–	–	–
	110	94	146	W35405X	34,9	110 - 85	W35405R085M	–	–
	115	94	146	W35115MX	34,2	–	–	–	–
	120	100	153	W35412X	35,6	120 - 95	W354121R312	–	–
	123	100	153	W35123MX	35,0	–	–	–	–
	130	104	160	W35502X	35,8	130 - 105	W35502R402	–	–
	135	104	160	W35506X	34,6	135 - 110	W35506R405	–	–
	140	110	163	W35508X	36,2	140 - 115	W35508R115M	–	–
	145	110	163	W35512X	34,9	145 - 120	W35512R412	–	–
	150	115	169	W35514X	36,7	–	–	–	–
	151	115	169	W35151MX	36,5	–	–	–	–
	155	115	169	W35602X	35,3	155 - 130	W35602R502	–	–

[1] See page 323 for table of hexagon sizes of bolts, nuts and related thread diameters.

W-SL, Series, UltraSlim Bi-Hexagonal Cassettes

ENERPAC

▼ W4206SL ultraslim bi-hexagonal stepped width cassette with W4000X drive unit



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
- Calibration certificate shipped with every cassette.

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

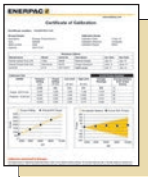
High endurance components keep working when others fail.



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



ATEX declared.
Calibration certificate included.

All UltraSlim Series cassettes are CE - ATEX declared and are shipped complete with a calibration certificate.

CE Ex II 2 GD T4



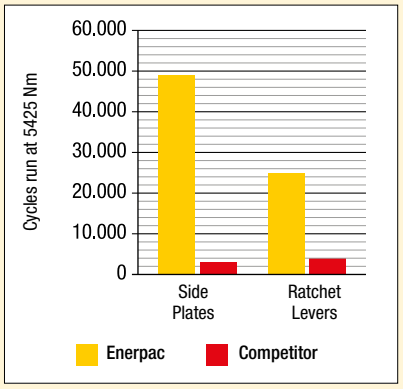
Slim enough to fit and tough enough to last. This UltraSlim wrench is the perfect controlled bolting solution for this oil and gas flange. ▶

UltraSlim 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 46 mm UltraSlim cassettes and three competitor 46 mm cassettes were tested at 5425 Nm for 50.000 cycles. The Enerpac side plates never broke for the full duration of the test.*

W-SL Series UltraSlim



Nominal Torque Output:
5911 Nm

Bi-Hexagonal Range:
46 - 75 mm / 1 13/16 - 2 15/16"

Maximum Operating Pressure:
690 bar



Torque Pump Selection Matrix

System matched air and electric torque pumps that are ideal for use with hydraulic wrenches.

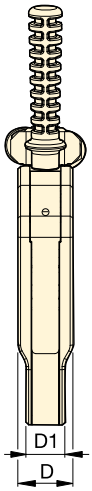
Page: 231

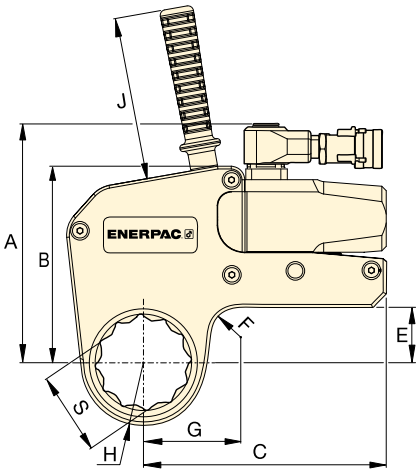


Torque Wrench Hoses

Use Enerpac THQ-700 Series hoses with W-Series torque wrenches to ensure the integrity of your hydraulic system.

2 meters long, 2 hoses	**THQ-702T**
6 meters long, 2 hoses	**THQ-706T**
12 meters long, 2 hoses	**THQ-712T**





▼ SELECTION CHART

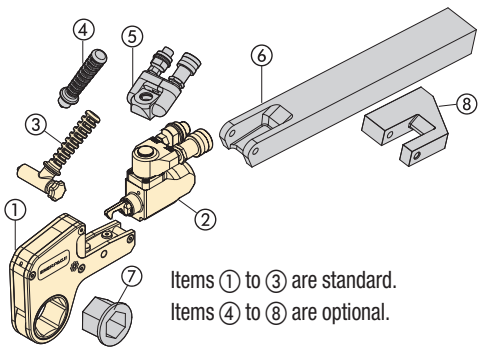
Hexagonal Size S (mm)	Hexagonal Size S (inch)	Nominal Torque @ 690 bar (Nm)	UltraSlim Cassette * Model Nr.	Minimum Torque @ 69 bar (Nm)	Nose Radius H (mm)	Dimensions (mm) G	A	B	C	D	D1	E	F	J	(kg)	Drive Unit Model Nr. ** (sold separately)
46	**1 13/16**	2685	**W2113SL**	269	36,5	59,6									2,2	
55	**2 3/16**	2685	**W2203SL**	269	41,5	63,2	140,7	109,3	147,7	32,4	25,4	24,0	20,0	120	2,2	**W2000X**
60	**2 3/8**	2685	**W2206SL**	269	44,5	65,1									2,2	
46	**1 13/16**	5911	**W4113SL**	591	39,5	67,2									4,6	
55	**2 3/16**	5911	**W4203SL**	591	44,0	68,7									4,6	
60	**2 3/8**	5911	**W4206SL**	591	48,0	71,6									4,7	
65	**2 9/16**	5911	**W4209SL**	591	50,5	74,1	175,6	144,5	178,5	40,5	28,6	40,8	20,0	120	4,7	**W4000X**
70	**2 3/4**	5911	**W4212SL**	591	53,5	75,6									4,7	
75	**2 15/16**	5911	**W4215SL**	591	56,0	76,0									4,7	

* Bi-Hexagonal Cassette includes top mounted straight handle.

** Cassette may also be used with W2000PX and W4000PX drive units, featuring double-swivel manifolds. Weight of drive units: W2000X = 1,4 kg; W4000X = 2,0 kg.

Accessories for W-Series, X-Edition Wrenches

ENERPAC



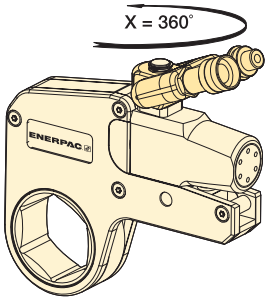
Items ① to ③ are standard.
Items ④ to ⑧ are optional.

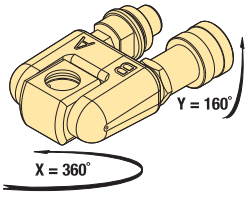
① Hexagon Cassette
② Drive Unit
③ Angled Positioning Handle
④ Straight Positioning Handle
⑤ Pro Series Swivel
⑥ Extended Reaction Arm
⑦ Reducer Insert
⑧ Reaction Paddle

TSP
WTE
WRP
Series



TSP-Series, Pro Series Swivel





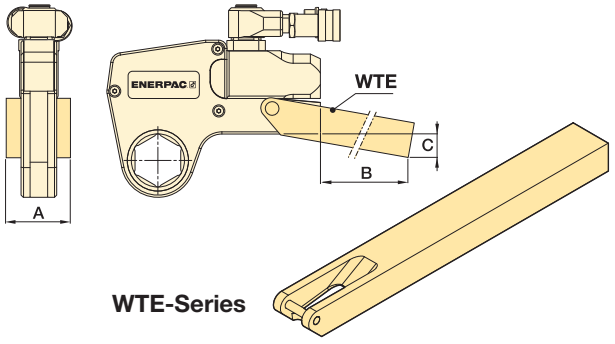
TSP-Series

- **Robust interlocking design**
- **360° X-axis and 160° Y-axis rotation**
- **Increases tool fit in restricted access areas**
- **Simplifies hose placement**
- **Includes male and female couplers**

For Torque Wrench Model Number	Model Number [1]	Maximum Pressure (bar)	(kg)
W2000X, W4000X, W8000X, W15000X, W22000X, W35000X	**TSP300**	690	0,2

[1] To order a W-Series (X-edition) drive unit fitted with a TSP300 tilt and swivel manifold, insert a "P"prior to the "X" in the tool model number, example: **W2000PX**.
TSP300 is designed for X-Edition tools only, and is not compatible with standard edition tools.
For replacement components for existing tools, refer to repair sheet on www.enerpac.com

WTE-Series, Extended Reaction Arm



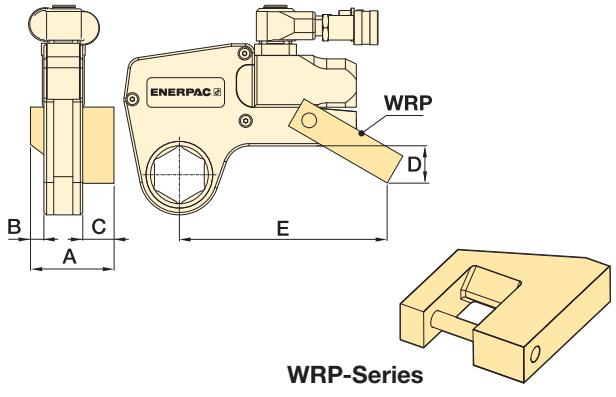
WTE-Series

- **Full torque rated**
- **Increases tool fit in restricted access areas.**

For Torque Wrench Model Number	Model Number	Dimensions (mm) A	B	C	(kg) *
W2000X	**WTE20**	56	398	76	2,6
W4000X	**WTE40**	66	436	74	4,6
W8000X	**WTE80**	85	449	55	7,6
W15000X	**WTE150**	102	498	72	12,0
W22000X	**WTE220**	114	524	77	17,3
W35000X	**WTE350**	127	419	133	17,8

* Weights indicated are for the accessories only and do not include the wrench.

WRP-Series, Low Profile Reaction Paddles



WRP-Series

- **Lightweight interchangeable design**
- **Allows for offset reaction when in-line reaction is not available.**

For Torque Wrench Model Nr.	Model Number	Dimensions (mm) A	B	C	D	E	(kg) *
W2000X	**WRP20**	84	16	35	45	148	0,4
W4000X	**WRP40**	109	21	47	59	190	0,8
W8000X	**WRP80**	137	26	57	69	223	2,0
W15000X	**WRP150**	165	32	69	87	257	3,9
W22000X	**WRP220**	207	37	91	134	317	7,2
W35000X	**WRP350**	225	42	91	182	367	10,6

* Weights indicated are for the accessories only and do not include the wrench.

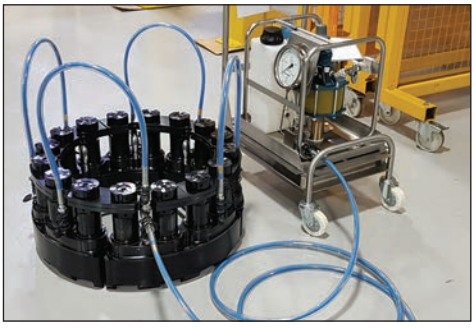
Custom Torque Wrenches and Bolt Tensioners

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 4200 kN.*

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

- **Accuracy of ±3%**

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)		Back-Up Spanner Model Number
mm	inch	
27 - 32	1 1/16 - 1 1/4"	BUS 01
36 - 41	1 7/16 - 1 5/8"	BUS 02
46 - 50	1 13/16 - 2"	BUS 03
55 - 60	2 3/16 - 2 3/8"	BUS 04
65 - 70	2 9/16 - 2 3/4"	BUS 05
75 - 80	2 15/16 - 3 1/8"	BUS 06
–	3 1/2 - 3 7/8"	BUS 07
–	4 1/4 - 4 5/8"	BUS 08
85 - 90	–	BUS 09
95 - 100	3 3/4 - 3 15/16"	BUS 10
105 - 110	4 1/8 - 4 15/16"	BUS 11
115 - 120	–	BUS 12

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Torque Pumps

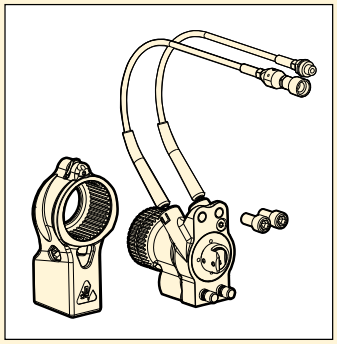
Visit enerpac.com for system matched air and electric torque pumps that are ideal for use with hydraulic torque wrenches.

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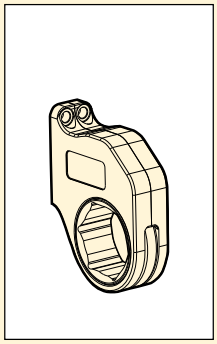
Drive Units for Hexagon & Square Drive Cassettes

One Drive, Two Tools

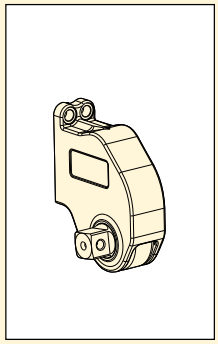
One RSL-Hydraulic Drive Unit fits RLP-Hexagon Cassette or RSQ-Square Drive Cassette.



RSL



RLP... / RLP...SL



RSQ

RSL Series



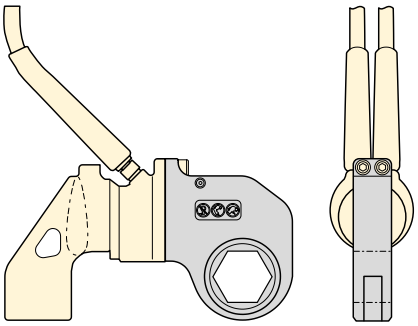
Maximum Torque at 690 bar:
1909 - 37.965 Nm

Hexagon Range:
⅞ - 6⅛ inch

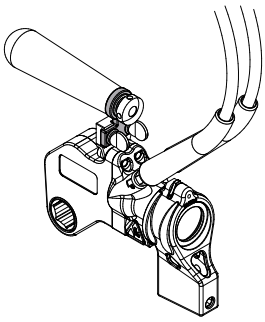
Hexagon Range:
26 - 155 mm

Maximum Operating Pressure:
690 bar

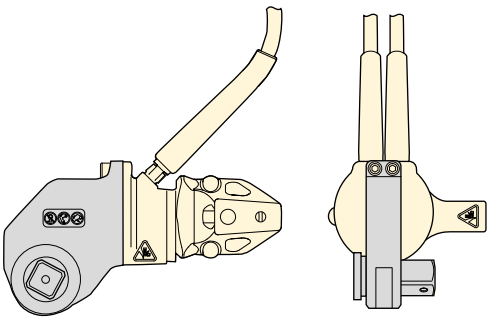
▼ **RSL-Torque Wrench Drive Unit shown with RLP-Low Profile Hexagon Cassette**



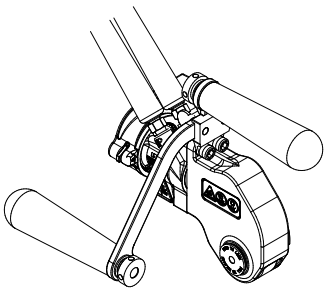
▼ Contact Enerpac for optional handles.



▼ **RSL-Torque Wrench Drive Unit shown with RSQ-Square Drive Cassette**



▼ Contact Enerpac for optional handles.



▼ **SELECTION CHART**

Hexagon Cassette Range (A/F) (see pages 214 - 218 for sizes and model numbers		Drive Unit Model Number	Maximum Torque Output		
(inch)	(mm)		(Ft.lbs)	(Nm)	(kg)
⅞ - 2⅜	26 - 60	**RSL1500**	1408	1909	1,6
1⁵⁄₁₆ - 2¹⁵⁄₁₆	33 - 75	**RSL3000**	3080	4176	2,6
1¹¹⁄₁₆ - 3⅛	46 - 80	**RSL5000**	5303	7190	4,1
2⅜ - 3⅛	60 - 80	**RSL8000**	7862	10.659	4,9
2⁷⁄₁₆ - 4⅝	62 - 110	**RSL11000**	11.154	15.123	5,3
2¹⁵⁄₁₆ - 4⅝	75 - 115	**RSL19000**	18.843	25.547	9,1
3⅛ - 6⅛	80 - 155	**RSL28000**	28.002	37.965	10,0

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.

Page: 324



Torque Wrench Hoses

Use Enerpac THQ-Series torque wrench hoses with RSL-Series torque wrenches to ensure the integrity of your hydraulic system.

Page: 222



RLP-Low Profile Hexagon Cassettes

For the metric and imperial sizes of hexagon cassettes see pages 214 - 218.

Page: 214



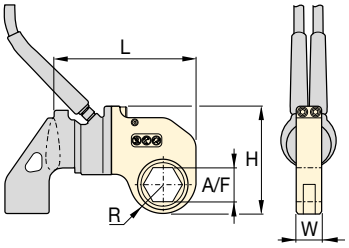
RSQ-Square Drive Cassettes

RSQ-Square Drive Cassettes are interchangeable with the RLP-Hexagon Cassettes. They all use the same RSL-drive unit.

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Hexagon Cassettes for RSL-Series

ENERPAC



Hexagon Range:
⅞ - 6⅛ inch

Hexagon Range:
26 - 155 mm

Maximum Operating Pressure:
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	26	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

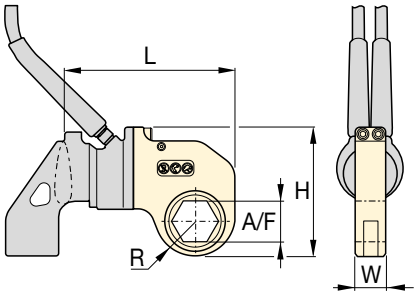
Hexagon Range:
⅞ - 6⅛ inch

Hexagon Range:
26 - 155 mm

Maximum Operating Pressure:
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
	1¾	–	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
	1⅞	–	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
	2⅛	–	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
	2¼	–	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
	2⅜	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
	2½	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
	2⅝	–	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
	2¾	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
	2⅞	–	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
	3⅛	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	2⅜	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
	2½	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
	2⅝	–	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
	2¾	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
	2⅞	–	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
	3⅛	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

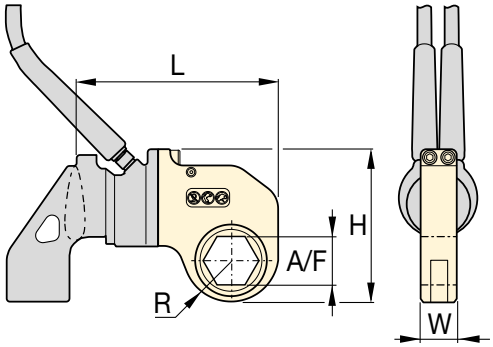
Hexagon Range:
⅞ - 6⅛ inch

Hexagon Range:
26 - 155 mm

Maximum Operating Pressure:
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

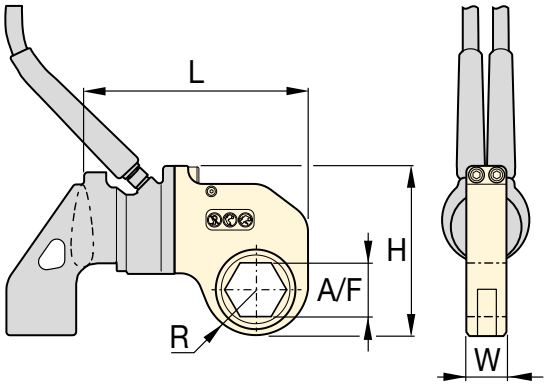
Hexagon Range:
⅞ - 6⅛ inch

Hexagon Range:
26 - 155 mm

Maximum Operating Pressure:
690 bar

RSL
Series





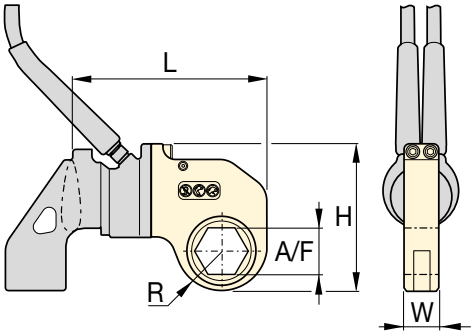
▼ **SELECTION CHART**

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)
RSL19000	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
	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 inch

Hexagon Range:
26 - 155 mm

Maximum Operating Pressure:
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
	3⅜	–	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
	3⅝	–	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
	3⅞	–	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
	3⅝	–	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
	3 11⁄16	–	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
	3 13⁄16	–	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
	3 15⁄16	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
	4⅛	–	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
	4⅜	–	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
	4⅝	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
	4⅞	–	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
	4⅝	–	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
	5⅜	–	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
	5⅝	–	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 -29 °C to 400 °C (-20 °F to 750 °F)
- Can of 1,8 kg (4 lb).

▼ TWMPS503



for RSL Series

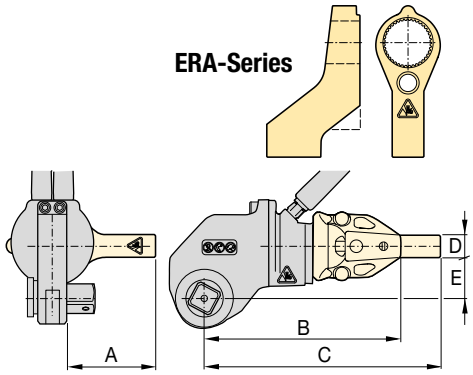


ERA-Series, Extended Reaction Arms

For Torque Wrench Model Nr.	Model Number	Dimensions (mm) A	B	C	D	E	(kg)
RSL1500	ERA15114	87	145	195	29	36	0,9
	ERA15228	113	181	230	29	36	1,8
	ERA15342	139	226	276	29	36	2,7
	ERA15456	164	236	286	29	36	3,6
	ERA15570	189	287	337	29	36	4,5
RSL3000	ERA30114	105	195	257	34	41	2,7
	ERA30228	131	231	293	34	41	3,6
	ERA30342	156	266	328	34	41	4,5
	ERA30456	181	302	364	34	41	5,4
RSL5000	ERA50114	131	208	284	44	48	4,1
	ERA50228	156	243	320	44	48	5,0
	ERA50342	181	279	355	44	48	5,9
	ERA50456	207	314	391	44	48	6,8
RSL11000	ERA110114	125	219	296	51	59	6,3
	ERA110228	150	255	331	51	59	7,3
	ERA110342	176	291	367	51	59	8,2
	ERA110456	201	326	402	51	59	9,1
RSL28000	ERA280228	171	335	411	57	85	11,3
	ERA280342	197	370	447	57	85	13,6

NOTE: Extended Reaction Arms for RSL8000 and RSL19000 are available on request.

- Only to be used on RSL-drive units with RSQ-square drive wrenches
- Used in place of standard reaction arm
- Lightweight interchangeable design
- Full torque rated.

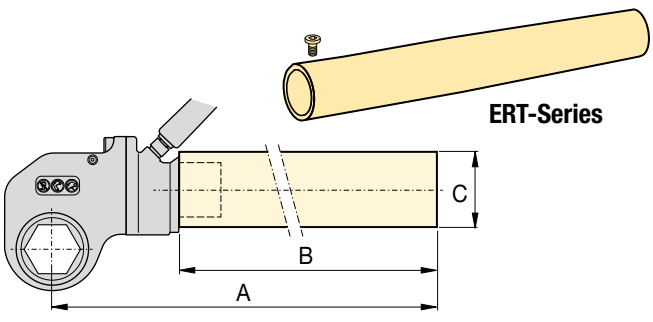


ERT-Series, Extended Reaction Tubes

For Torque Wrench Model Nr.	Model Number	Dimensions (mm) A	B	Ø C	(kg)
RSL1500	ERT152	157	51	57	0,9
	ERT156	259	152	57	1,6
	ERT159	335	229	57	2,5
	ERT1512	411	305	57	3,4
	ERT1524	716	610	57	6,7
RSL3000	ERT3012	429	305	70	3,0
	ERT3024	734	610	70	5,9
RSL5000	ERT5012	451	305	89	5,6
	ERT5024	756	610	89	11,3
RSL11000	ERT1106	330	152	95	2,1
	ERT11012	483	305	95	4,1
	ERT11018	635	457	95	6,1
	ERT11024	787	610	95	8,4
RSL19000	ERT19024	800	610	127	16,7
RSL28000	ERT2806	351	152	127	3,6
	ERT28012	503	305	127	7,3
	ERT28018	655	457	127	10,9
	ERT28024	808	610	127	16,6

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

- Accuracy of ±3%

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)		Back-Up Spanner Model Number
mm	inch	
27 - 32	1 1/16 - 1 1/4"	BUS 01
36 - 41	1 7/16 - 1 5/8"	BUS 02
46 - 50	1 13/16 - 2"	BUS 03
55 - 60	2 3/16 - 2 3/8"	BUS 04
65 - 70	2 9/16 - 2 3/4"	BUS 05
75 - 80	2 15/16 - 3 1/8"	BUS 06
–	3 1/2 - 3 7/8"	BUS 07
–	4 1/4 - 4 5/8"	BUS 08
85 - 90	–	BUS 09
95 - 100	3 3/4 - 3 15/16"	BUS 10
105 - 110	4 1/8 - 4 15/16"	BUS 11
115 - 120	–	BUS 12

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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.

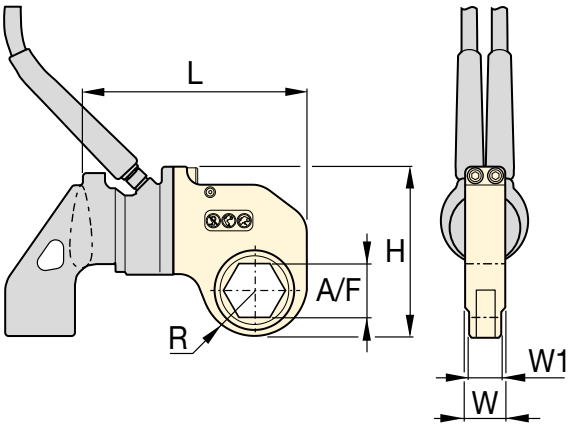
RSL Series



Hexagon Range:
1¼ - 3³⁄₁₆ inch

Hexagon Range:
32 - 80 mm

Maximum Operating Pressure:
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 THQ-700 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 Nr.	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	5659	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	5659	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	7576	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	7576	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	7576	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.

▼ RSL drive unit with interchangeable 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 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

- Accuracy of ±3%

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)		Back-Up Spanner Model Number
mm	inch	
27 - 32	1 1/16 - 1 1/4"	BUS 01
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46 - 50	1 13/16 - 2"	BUS 03
55 - 60	2 3/16 - 2 3/8"	BUS 04
65 - 70	2 9/16 - 2 3/4"	BUS 05
75 - 80	2 15/16 - 3 1/8"	BUS 06
–	3 1/2 - 3 7/8"	BUS 07
–	4 1/4 - 4 5/8"	BUS 08
85 - 90	–	BUS 09
95 - 100	3 3/4 - 3 15/16"	BUS 10
105 - 110	4 1/8 - 4 15/16"	BUS 11
115 - 120	–	BUS 12

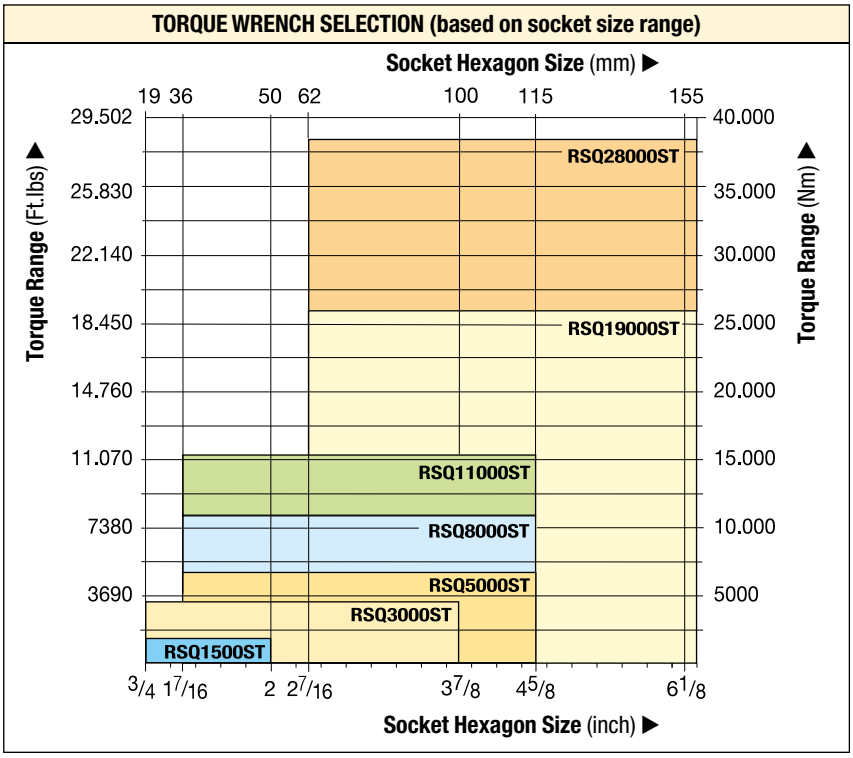
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Torque Wrench Hoses

Use Enerpac THQ-700 Series torque wrench hoses with RSL-Series torque wrenches to ensure the integrity of your hydraulic system.

2 meters long, 2 hoses	THQ-702T
6 meters long, 2 hoses	THQ-706T
12 meters long, 2 hoses	THQ-712T



RSL Series



Maximum Torque Output:
1408 - 28.002 Ft.lbs

Maximum Torque Output:
1909 - 37.965 Nm

Square Drive Range:
¾ - 2½ inch

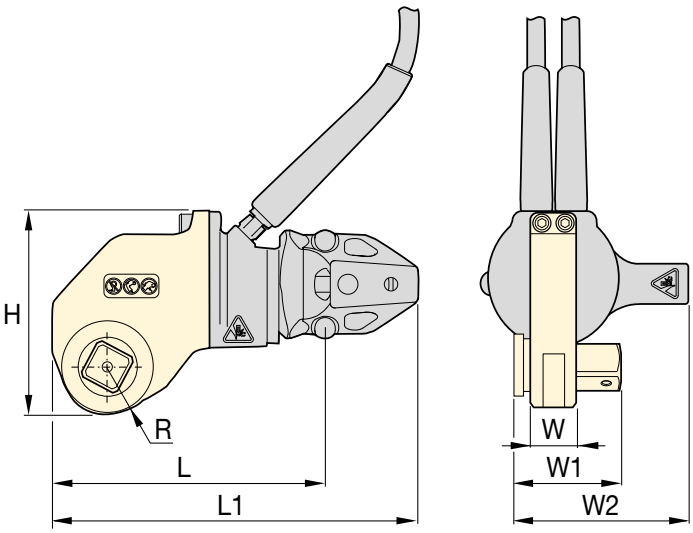
Maximum Operating Pressure:
690 bar



BSH-Series Sockets

Heavy-Duty Impact Sockets for power driven torqueing equipment.

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Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.



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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▼ SELECTION CHART

Maximum Torque Output (Ft.lbs)	Maximum Torque Output (Nm)	Square Drive Size (inch)	Square Drive Cassette Model Number [1]	Square Drive Torque Wrench Set Model Number [2]	Dimensions (mm) W	W1	W2	H	L	L1	R	Weight (kg) Drive Unit (without reaction arm)	Reaction Arm	Square Drive Cassette
1408	1909	¾	**RSQ1500**	**RSQ1500ST**	32	58	101	114	160	189	24	1,6	0,5	1,3
3080	4176	1	**RSQ3000**	**RSQ3000ST**	38	73	124	141	195	262	32	2,6	1,0	2,4
5303	7190	1½	**RSQ5000**	**RSQ5000ST**	45	94	160	163	235	296	39	4,1	1,8	4,1
7862	10.659	1½	**RSQ8000**	**RSQ8000ST**	61	105	160	169	241	300	39	4,8	2,0	5,3
11.154	15.123	1½	**RSQ11000**	**RSQ11000ST**	64	118	170	201	284	315	48	5,3	3,0	8,4
18.843	25.547	2½	**RSQ19000**	**RSQ19000ST**	83	162	265	241	342	482	64	9,1	7,1	13,1
28.002	37.965	2½	**RSQ28000**	**RSQ28000ST**	89	166	227	263	358	536	64	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.

▼ PTW1000

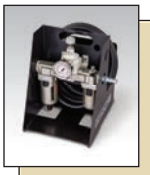


Continuous Rotation Controlled Torque

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 3 m long, ½" inch (13 mm) 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 8,3 bar, and must be capable of providing a volume of at least (85 m^3/h) at 6,9 bar. A separate ½" inch hose (not included) must be used to connect the FRL to the air supply.

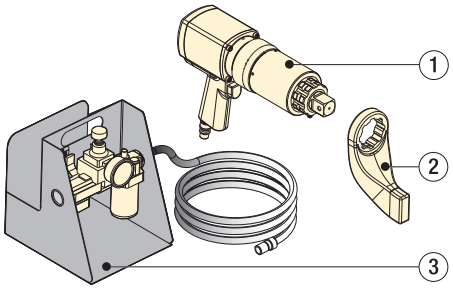
* See instruction manual for comprehensive instructions.

PTW Series

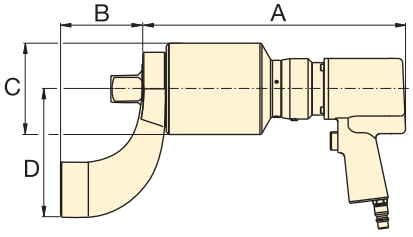


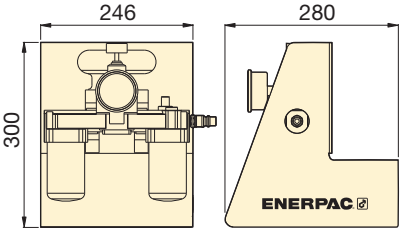
Nominal Torque Output:
8135 Nm

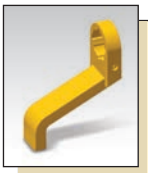
Square Drive Range:
¾ - 1 - 1½ inch



① PTW Torque Wrench
② Standard Reaction Arm
③ FRL120C Filter-Regulator-Lubricator with 3 meters air hose







Accessories

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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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 (Nm)	Minimum Torque (Ft.lbs)	Nominal Torque (Nm)	Nominal Torque (Ft.lbs)	Square Drive (inch)	Model Number [1] (FRL120C included)	Speed (RPM)	Dimensions (mm) A	B	C	D	(kg) [2]
407	300	1356	1000	¾	**PTW1000-75C**	12,6	272	83	72	130	7,9
407	300	1356	1000	1	**PTW1000C**	12,6	272	83	72	130	8,2
678	500	2712	2000	1	**PTW2000C**	8,0	286	83	79	133	8,8
1220	900	4067	3000	1	**PTW3000C**	3,1	343	83	95	133	10,4
1763	1300	8135	6000	1½	**PTW6000C**	2,5	366	114	127	178	17,7

[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 1,3 kg and for PTW6000 is 3,5 kg.

▼ **TW3000EI** (torque wrench shown without servo motor cable)



Versatility
- **Patented firmware design provides accurate fastening on soft or pre-tightened joints when accuracy is critical**
- **Single control box may be used to operate multiple wrench models**
- **Wrenches and control boxes may be purchased separately or as a calibrated set.**

Performance
- **High speed continuous rotation gets the job done faster**
- **Torque and angle functionality allows input of nominal torque value followed by a specific angle of rotation**
- **Pass/Fail LED indicator on back of tool verifies fastening has been completed according to specified input.**

Simplicity
- **Control box with 7-inch touchscreen simplifies tool operation**
- **Controls on back of wrench enable operator to monitor and manage the fastening process without returning to the control box**
- **Brightly lit three line LED display on wrench is easy to read in any environment, even in bright sunlight.**

Traceability
- **Fastening record can be viewed on-screen and transferred through standard USB connection on the control box**
- **Each tool is performance tested and shipped complete with a factory calibration certificate.**

Safety
- **Lift points on wrench enable use with positioning handle or lifting device for greater handling safety**
- **Ground fault detector protects operator in the event of insufficient grounding.**

Your Simple Solution for Smart Bolting



Touchscreen Control Box

ETW-Series tools feature an easy to use, interactive touch-screen control box, which helps make even the most complex jobs simple to complete.
Single control box may be used to operate multiple wrench models.
Firmware upgrades may be uploaded online and easily transferred to the tool via a USB connection.



Easy Access to Controls

Controls on back of wrench with LED display allow user to directly input desired torque, change direction of rotation, and monitor the fastening process.

Certifications and Declarations

All ETW-Sets and TW-tools are:
- CE declared
- Shipped complete with a calibration certificate
- Certified for North American Electrical Safety by CSA International
- Carry a CSA US and Canada mark.

▼ *ETW-Series Electric Torque Wrenches are ideal for high volume fastening applications that require precision and traceability, such as this wind tower job.*



ETW-Series, Electric Torque Wrenches

Enerpac ETW-Series Electric Torque Wrenches are particularly well suited to complex jobs which demand precision and traceability.

The ETW-Series tools feature an automatic mode, which helps simplify and automate complex jobs, including those with torque and angle specifications, through the creation of presets.

Using the touchscreen, simply input the number of fasteners and desired torque value for each fastening step, followed by the required angle of turn. This sequence may then be saved as an automatic preset for future use.

For simpler jobs, torque values may be input with a digital slider on the touchscreen, or directly into the rear control panel of the wrench.

Once the input torque is achieved, the tool stalls, and a pass/fail indicator verifies that it is ready to move on to the next fastener.

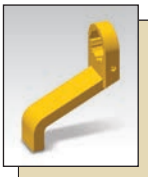
When the job is completed, the fastening record can be viewed on the touch screen, or exported to a computer via a USB connection on the control box.

ETW Series



Nominal Torque Output:
8135 Nm

Square Drive Range:
1 - 1½ inch



Accessories

Enerpac offers a full line of accessories including a range of reaction arms and drives.

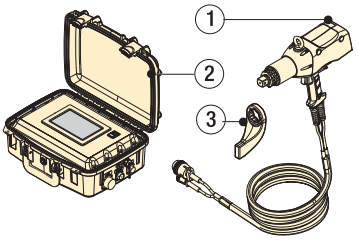
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BSH-Series Sockets

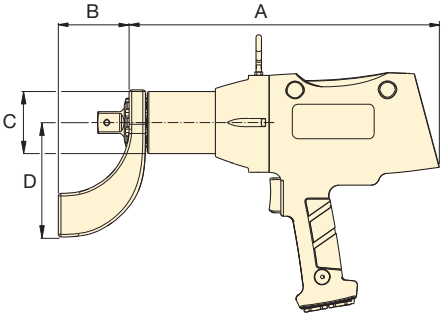
Heavy-Duty Impact Sockets for power driven torquing equipment.

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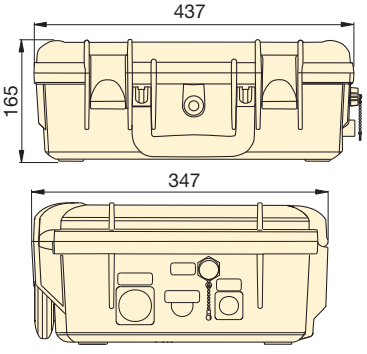


ETW-Set

① ETW Torque Wrench with 6m servo motor cable
② Control Box with 2m power cord
③ Standard Reaction Arm



ETW-torque wrench



ETWCB-control box

Voltage: (Model Number ending with suffix)

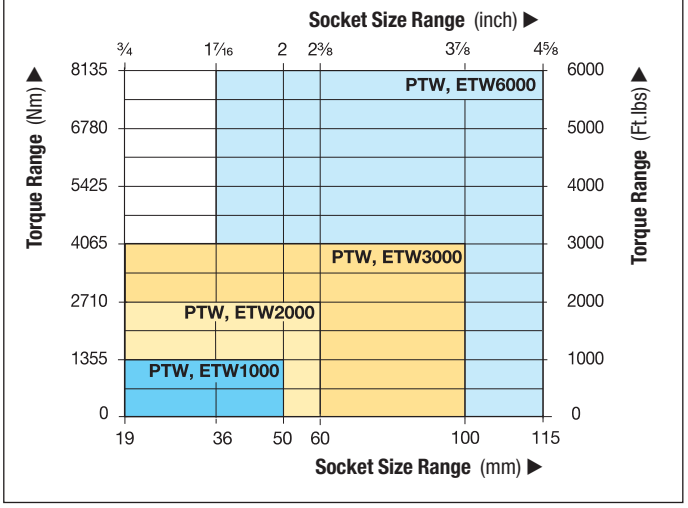
B = 115V, 60 Hz
I = 230V, 60 Hz (with NEMA 6-15 plug)
E = 230V, 50 Hz (with commonly used European (SCHUKO) plug)

Minimum Torque (Nm)	Minimum Torque (Ft.lbs)	Nominal Torque (Nm)	Nominal Torque (Ft.lbs)	Square Drive (inch)	ETW-Set Model Number	ETW-Set includes Wrench Model Nr. [2]	ETW-Set includes Control Box Model Nr. [2]	Voltage	Nominal Speed (RPM)	Dimensions (mm) A	B	C	D	(kg) [1]
270	200	1355	1000	1	**ETW1000B**	**TW1000B**	**ETWCB-B**	115V 60 Hz	9,8	365	83	72	130	8,2
270	200	1355	1000	1	**ETW1000I**	**TW1000EI**	**ETWCB-I**	230V 60 Hz	15,2	365	83	72	130	8,2
270	200	1355	1000	1	**ETW1000E**	**TW1000EI**	**ETWCB-E**	230V 50 Hz	15,2	365	83	72	130	8,2
540	400	2710	2000	1	**ETW2000B**	**TW2000B**	**ETWCB-B**	115V 60 Hz	5,8	380	83	79	133	8,9
540	400	2710	2000	1	**ETW2000I**	**TW2000EI**	**ETWCB-I**	230V 60 Hz	9,0	380	83	79	133	8,9
540	400	2710	2000	1	**ETW2000E**	**TW2000EI**	**ETWCB-E**	230V 50 Hz	9,0	380	83	79	133	8,9
810	600	4065	3000	1	**ETW3000B**	**TW3000B**	**ETWCB-B**	115V 60 Hz	2,8	436	83	95	133	11,9
810	600	4065	3000	1	**ETW3000I**	**TW3000EI**	**ETWCB-I**	230V 60 Hz	4,3	436	83	95	133	11,9
810	600	4065	3000	1	**ETW3000E**	**TW3000EI**	**ETWCB-E**	230V 50 Hz	4,3	436	83	95	133	11,9
1625	1200	8135	6000	1½	**ETW6000B**	**TW6000B**	**ETWCB-B**	115V 60 Hz	1,9	453	114	127	178	19,1
1625	1200	8135	6000	1½	**ETW6000I**	**TW6000EI**	**ETWCB-I**	230V 60 Hz	2,9	453	114	127	178	19,1
1625	1200	8135	6000	1½	**ETW6000E**	**TW6000EI**	**ETWCB-E**	230V 50 Hz	2,9	453	114	127	178	19,1

[1] Wrench weight does not include reaction arm. Standard reaction arm weight for ETW1000, ETW2000, ETW3000 is 1,3 kg and for ETW6000 is 3,5 kg. Standard reaction arm included with TW-model. Weight of the control box is 9 kg.

[2] Use of ETW requires both wrench and control box. These may be purchased separately, or as a calibrated set.

TORQUE WRENCH SELECTION



PTW, ETW Series



Nominal Torque Output:
8135 Nm

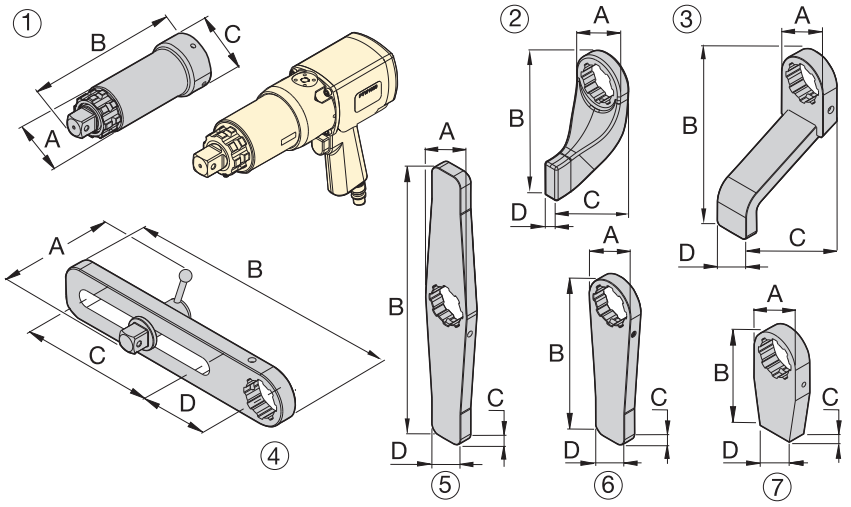
Square Drive Range:
1 - 1½ inch



BSH-Series Sockets

Heavy-Duty Impact Sockets for power driven torquing equipment.

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PTW and ETW-Accessories

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.

Optional Accessories

For use with PTW and ETW1000, 2000, 3000-models				Dimensions (mm)			
Nr.	Description	Model Nr.	Application	A	B	C	D
1	Extended Drive, 6 inch (152 mm)	**ED6TWS**	Nose extension, primarily for truck wheel bolts	62	206	73	–
1	Extended Drive, 12 inch (305 mm)	**ED12TWS**	Nose extension, primarily for truck wheel bolts	62	384	73	–
1	Extended Drive, 18 inch (457 mm)	**ED18TWS**	Nose extension, primarily for truck wheel bolts	62	511	73	–
2	Standard Reaction Arm	**RATWS**	Standard arm included with PTW and ETW model	76	172	102	21
3	Extended Reaction Arm	**ERATWS**	Long plate for use with deep well sockets	73	150	202	51
4	Sliding Reaction Arm	**SLRATWS**	For widely spaced and uneven bolt centers	112	381	203	102
5	Double Straight Reaction Arm	**DSATWS**	Reduces time to reposition arm *	73	406	19	102
6	Straight Reaction Arm	**SRATWS**	Long plate for wide spaced reaction points	73	240	19	51
7	Blank Reaction Arm **	**BLTWS**	Weldable blank for custom applications **	72	151	25	51
For use with PTW and ETW6000-models							
1	Extended Drive 6 inch (152 mm)	**ED6TWL**	Nose extension, primarily for truck wheel bolts	84	232	102	–
1	Extended Drive 12 inch (305 mm)	**ED12TWL**	Nose extension, primarily for truck wheel bolts	84	384	102	–
2	Standard Reaction Arm	**RATWL**	Standard arm included with PTW and ETW model	102	229	146	32
3	Extended Reaction Arm	**ERATWL**	Long plate for use with deep well sockets	102	254	184	64
4	Sliding Reaction Arm	**SLRATWL**	For widely spaced and uneven bolt centers	152	419	190	114
5	Double Straight Arm	**DSATWL**	Reduces time to reposition arm *	102	508	32	57
6	Straight Reaction Arm	**SRATWL**	Long plate for wide spaced reaction points	102	305	32	57
7	Blank Reaction Arm **	**BLTWL**	Weldable blank for custom applications **	102	152	32	57

* Time to reposition arm when repeatedly moving from tightening to loosening.

** WARNING: Blank reaction arms must be heat treated to HRc 38-42 prior to use.

Typical PTW and ETW-Series Torque Wrench Applications

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



MCS-Series, Mobile Calibration System

ENERPAC

▼ **MCS7500C, Mobile Calibration System**



MCS Series

Measurable Output Torque Range:
200 - 10.000 Nm

Female Square Drive:
1½ inch

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 FSD from 2% to 8% of torque range and 1% of reading from 8% to 100% of torque range.



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 and RSL-Series Square Drive Wrenches as well as most competitive hydraulic wrenches to maximum 10.000 Nm (7375 Ft.lbs).

Versatility

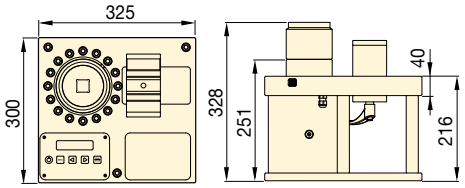
- **Accurately measures torque output for continuous rotation tools and hydraulic (*) torque wrenches from 200 - 10.000 Nm (148 - 7375 Ft.lbs)**
- **Adaptable design enables use with a large variety of Enerpac and competitive wrenches**
- **Internal Li-ion battery pack, external power via 5V DC USB power 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.**



Minimum Measurable Torque Output		Nominal Measurable Torque Output		Female Square Drive	Model Number **	Description	
(Nm)	(Ft.lbs)	(Nm)	(Ft.lbs)	(inch)			(kg)
200	148	10.000	7375	1½	**MCS7500C**	MCS with carrying case	40

* Additional Reaction Block and appropriate Adaptor is required with the use of S and RSL-Series square drive hydraulic wrenches.
** Not suitable for use with impact tools.

Selection Matrix – Optimum Wrench-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 XC-Series	E-Pulse® E-Series	TQ-Series	ZU4T-Series	ZE-T-Series	ZA4T-Series
								
			Page: 232	Page: 234	Page: 236	Page: 238	Page: 242	Page: 246
		Speed:						
		Oil Flow at 700 bar:	0,25 l/min	0,52 l/min	0,5 l/min	1,0 l/min	0,8 - 1,6 l/min	1,0 l/min
		Reservoir Capacity:	2,0 litres	3,0 litres	4,0 litres	4,6 - 6,8 litres	4,6 - 19,8 litres	4,6 - 39 litres
		Duty Cycle:	Intermittent	Heavy-Duty	Standard	Standard	Heavy-Duty	Heavy-Duty
		Weight:						
		Field/Factory Work:	Field	Field/Factory	Field/Factory	Field	Factory	Field
S-Series	 192	S1500X	Optimal	Optimal	Optimal	Optimal	Optimal	Optimal
		S3000X						
		S6000X	–					
		S11000X		Acceptable	Acceptable			
		S25000X						
W-Series	 198	W2000X	Optimal	Optimal	Optimal			
		W4000X						
		W8000X	–					
		W15000X		Acceptable	Acceptable			
		W22000X						
		W35000X						
RSL-Series	 212	RSL1500	Optimal	Optimal	Optimal	Optimal	Optimal	Optimal
		RSL3000						
		RSL5000						
		RSL8000	–	Acceptable	Acceptable			
		RSL11000						
		RSL19000						
		RSL28000						

XC-Series, Portable Cordless Pumps
Battery Torque Wrench Pump is 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.

E-Series, E-Pulse Portable Wrench Pumps
High-efficiency permanent magnet, direct drive motor for continuous use and long service life. Ideal pump for high volume fastening applications where weight is critical. Durable rugged roll-cage design. E-Pulse pumps feature an interactive pendant for operation, programming and diagnostics.

TQ-700 Series Electric Wrench Pumps
Designed for both portability and production, the TQ-700 features optimized flow technology to deliver superior bolting speed.

ZU4T – Electric Wrench Pumps
Utilizing a universal motor, the ZU4-Series works well with long extension cords or generator driven electrical power supplies. ZU4-pumps are available in **Pro** and **Classic** formats.

ZU4T Pro Pumps have an LCD feature to display torque or pressure, selectable torque wrench, and self-diagnostics – premium features not available on any other pump.

ZU4T Classic Pumps feature an analogue gauge and a basic electrical package to deliver durable, safe and efficient hydraulic power.

ZE4T, ZE5T-Series Electric Wrench Pumps
The ZE-Series features premium options, such as the LCD to display torque or pressure values, and self-diagnostics. These pumps utilize an induction motor, making the ZE-Series the coolest and quietest pumps in their class.

ZA4T-Series Air Driven Wrench Pumps
Utilizing the highly efficient design of the Z-Class pumping element, this air driven pump is best suited to power medium to large size torque wrenches.

THQ-Series, Torque Wrench Hoses
Use Enerpac THQ-700 Series torque wrench hoses with S, W and RSL-Series torque wrenches to ensure the integrity of your hydraulic system.

▼ XC1502TE



Portable Battery Pump for Torque Applications

- **Ideal for maintenance bolting applications requiring portability and convenience**
- **Interactive pendant provides visual and vibration feedback of pump operation**
- **Superior run-time with 5Ah, 28V battery**
- **6 metres detachable pendant control**
- **100 mm glycerine-filled gauge for easy viewing**
- **Bladder reservoir allows pump to be used in any position**
- **High-strength fiberglass reinforced composite housing provides superior durability in demanding job site environments**
- **Integrated handle and carrying strap for portability.**



28-Volt Battery

The **XC28V5** 5 Amps battery with Lithium-Ion technology for maximum battery performance.



Roll Cage

Roll cage accessory option for both XC-TW and XC pump. Please order model number **XCRCTK**.



Torque Wrenches

The following torque wrenches are ideal for use with the XC-Series Cordless Torque Wrench Pumps:

S-Series	W-Series	RSL-Series
S1500X	W2000X	RSL1500
S3000X	W4000X	RSL3000
		RSL5000

Larger torque wrenches will work with the pump, battery run time and application speed will be impacted.

XC-Series, Cordless Torque Wrench Pumps

Battery-Powered Torque Wrench Pumps

The XC-Series Cordless Torque Wrench pump is ideal for maintenance applications in the PowerGen, Oil & Gas and MRO markets. This portable pump is perfect for remote locations, sites that do not have access to power or where trip hazards are a concern.

The interactive pendant allows the user to set and clear pressure and operate in manual or auto-cycle mode.
The pump has an easily accessible user adjustable valve for precise pressure control.

Torque Wrench	Nut A/F (mm)	Stud (mm)	Pressure (bar)	Torque (Nm)	Fasteners torqued
S3000X	60	38	330	2035	32
W2000X	60	38	350	1356	52

XC Series

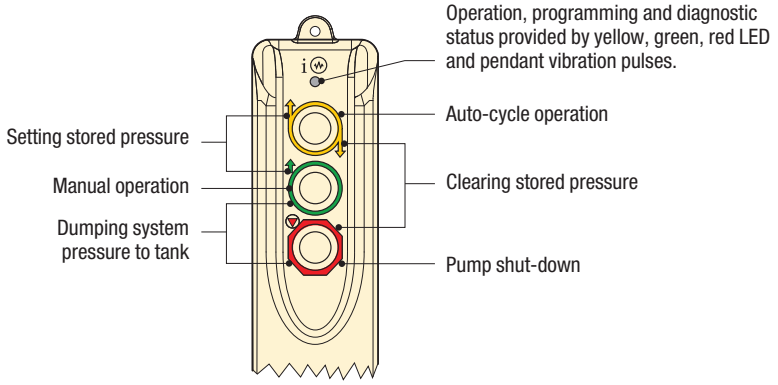


Reservoir Capacity:
2,0 litres

Flow at Rated Pressure:
0,25 l/min

Motor Size:
0,37 kW

Maximum Operating Pressure:
700 bar

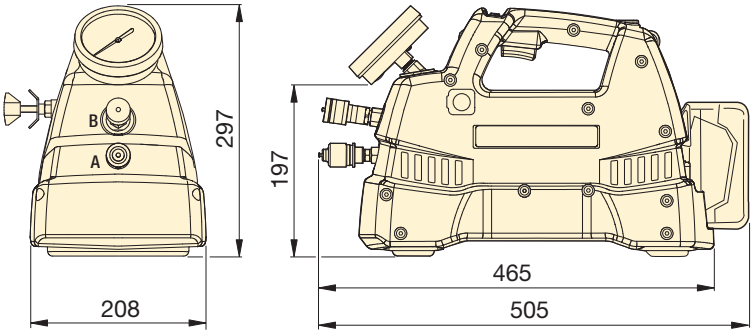




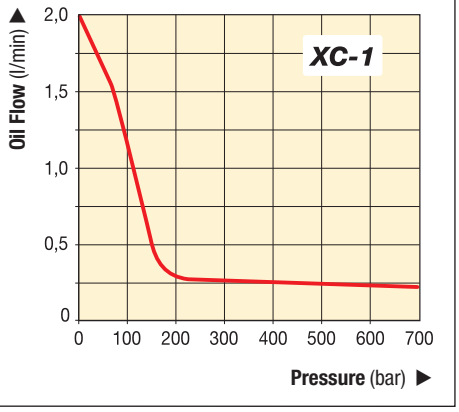
Torque Wrench Hoses

Use Enerpac 700 bar THQ-700 Series torque wrench hoses with torque wrenches and pumps

2 m long, 2 hoses	**THQ-702T**
6 m long, 2 hoses	**THQ-706T**
12 m long, 2 hoses	**THQ-712T**



OIL FLOW vs. PRESSURE



▼ SELECTION CHART

Description	Useable Oil Capacity (litres)	Model Number	Output Flow Rate (l/min) No Load	140 bar	700 bar	Included with pump	(kg) [1]
Cordless Pump Kit	2,0	**XC-1502TB**	2,05	0,49	0,25	2 batteries and 115V charger	12
Cordless Pump Kit	2,0	**XC-1502TE**	2,05	0,49	0,25	2 batteries and 230V charger	12
Cordless Pump	2,0	**XC-1502T**	2,05	0,49	0,25	No batteries or charger	12

[1] Weight includes oil, without battery. battery weight 1,1 kg.

▼ EP3504TE, E-Pulse Torque Wrench Pump



Performance

- Two-stage pump with high by-pass pressure: 3,6 l/min at 200 bar, 0,52 l/min at 700 bar
- Smart controls enable motor to maintain constant power across the pressure range
- 24VDC power regulator minimizes effects of poor power supply
- Six-piston block design provides even flow for smooth operation of cylinder or tool.

Durability

- Durable aluminium housing
- Integrated heat exchanger minimizes heat buildup
- High-efficiency permanent magnet, direct drive motor enables continuous use and long service life
- Built-in thermal protection
- IP Rating: IP54 on the pump, IP67 on the pendant.

Convenience

- Integrated calibrated pressure gauge
- Interactive pendant with smart controls
- Pendant and cord management system
- Intelligent Auto-Cycle enables press and release actuation to cycle torque wrench until final torque is achieved
- User can set pressure and operate in manual or auto-cycle mode
- Convenient oil fill port, oil level indicator and automatic breather.

Productivity through innovation

Bolting Integrity Software

A 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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Torque Wrenches

The following torque wrenches are ideal for use with the E-Pulse Torque Wrench Pumps:

S-Series	W-Series	RSL-Series
S1500X	W2000X	RSL1500
S3000X	W4000X	RSL3000
S6000X	W8000X	RSL5000

Larger torque wrenches will work with the pump, but application speed will be impacted.

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Torque Wrench Hoses

Use Enerpac 700 bar THQ-700 Series torque wrench hoses with torque wrenches and pumps

2 m long, 2 hoses	**THQ-702T**
6 m long, 2 hoses	**THQ-706T**
12 m long, 2 hoses	**THQ-712T**

E-Pulse Torque Wrench Pumps

The Enerpac E-Pulse Electric Torque Wrench Pump, through its innovative design, is ideal for high volume fastening applications where weight is a critical factor. Smart controls enable the motor to maintain constant power providing higher flow than traditional pumps.

The durable aluminum housing, integrated heat exchanger and highly efficient permanent magnet motor minimize heat buildup in the toughest environments. The interactive pendant provides the operator a number of usage options for optimal efficiency. The E-Pulse Torque Wrench Pump is the pinnacle of bolting equipment.

E Series

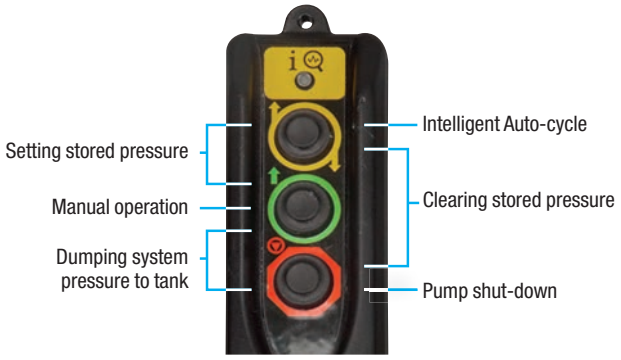


Reservoir Capacity:
3,0 litres

Flow at Rated Pressure:
0,52 l/min

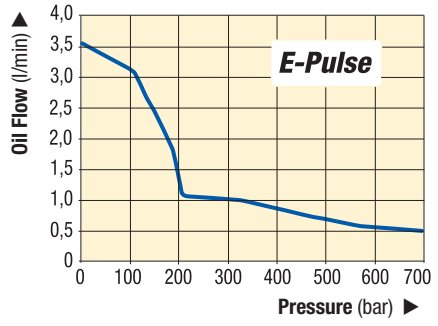
Motor Size:
0,63 kW

Maximum Operating Pressure:
700 bar



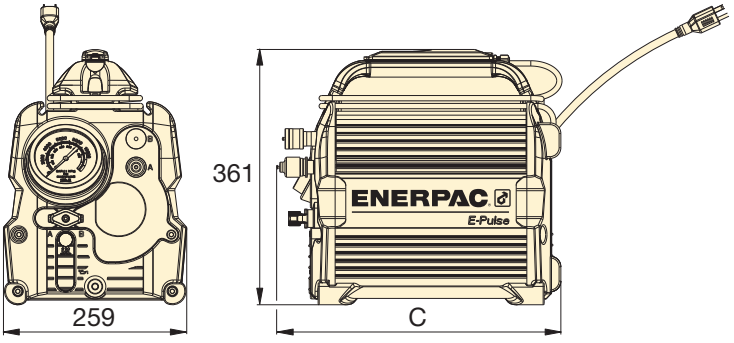
Pendant with 6 metre cord

OIL FLOW vs. PRESSURE



Interactive Torque Wrench Pendant

- User can set pressure and operate in manual or auto-cycle mode
- Intelligent Auto-Cycle enables press and release actuation to cycle torque wrench until final torque is achieved.





▲ *EP3504T-EM multi-port manifold pump*

▼ SELECTION CHART

Number of Wrenches pump can operate	Useable Oil Capacity (litres)	Model Number	Output Flow Rate (l/min) 1 bar	175 bar	350 bar	700 bar	Motor Voltage (VAC)	Current Draw (Amps)	Plug Type	Sound Level (dBA)	Dimension C (mm)	(kg) [1]
1	3,0	**EP3504TB**	3,61	2,13	0,95	0,52	100-120	12	NEMA 5-15	70-85	401	20,4
		EP3504TI	3,61	2,13	0,95	0,52	200-250	7	NEMA 6-15	70-85	401	20,4
		EP3504TE	3,61	2,13	0,95	0,52	200-250	7	Schuko CEE 7/7	70-85	401	20,4
2	3,0	**EP3504TB-M ***	3,61	2,13	0,95	0,52	100-120	12	NEMA 5-15	70-85	429	21,7
		EP3504TI-M *	3,61	2,13	0,95	0,52	200-250	7	NEMA 6-15	70-85	429	21,7
		EP3504TE-M *	3,61	2,13	0,95	0,52	200-250	7	Schuko CEE 7/7	70-85	429	21,7

* Pump model with multi-port manifold.

[1] with oil

▼ TQ-700E



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 6 m pendant control – immediate productivity for crews operating the pump**
- **IP55 Rating for Superior Dust and Water Protection**
- **Transparent gauge overlays in Nm and Ft.lbs for all Enerpac S, W and RSL-Series torque wrenches provide a quick torque reference.**



Four Port Manifold

The TQ-700 offers an optional four wrench manifold as an accessory factory installed. (Add suffix "M" at the end of the model number. For example: **TQ-700EM**).



Torque Wrench Hoses

Use Enerpac 700 bar THQ-700 Series torque wrench hoses with torque wrenches and pumps.

2 m long, 2 hoses	**THQ-702T**
6 m long, 2 hoses	**THQ-706T**
12 m long, 2 hoses	**THQ-712T**



Hydraulic Torque Wrenches

Enerpac offers a complete range of square drive and hexagon cassette torque wrenches.

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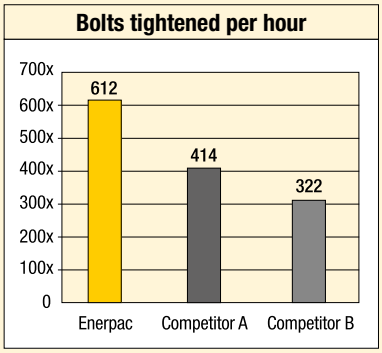
The TQ-700E and the W-Series wrenches are a productive combination in wind applications. ▶

TQ-700 Applications

The TQ-700 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:
4,0 litres

Flow at Rated Pressure:
0,5 l/min

Motor Size:
0,75 kW

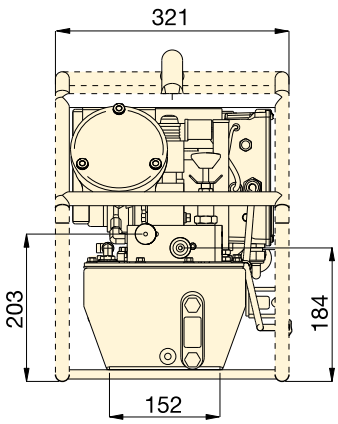
Maximum Operating Pressure:
700 bar

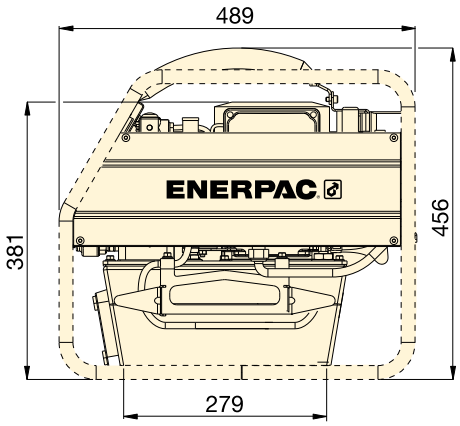


Torque Pump Selection Matrix

For optimum speed and performance see the torque pump and hose selection matrix.

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For Use with Torque Wrenches	Pressure Rating (bar)	Model Number [1]	Useable Oil Capacity (litres)	Motor Size (kW)	Motor Electrical Specifications (Volt - Ph - Hz)	Sound Level (dBA)	(kg)
All S, W, RSL and DSX-Series	700	**TQ-700B**	4,0	0,75	115 - 1 - 50/60	82 - 85	31
	700	**TQ-700E** [2]	4,0	0,75	230 - 1 - 50	82 - 85	30
	700	**TQ-700I** [3]	4,0	0,75	230 - 1 - 60	82 - 85	30

[1] All models meet CE safety requirements and all TÜV requirements.
[2] TQ-700E with European plug and CE EMC directive compliant.
[3] TQ-700I with NEMA 6-15 plug.

▼ *The TQ-700E and the W-Series wrenches are a productive combination.*



ZU4T-Series, Electric Torque Pumps

ENERPAC

▼ ZU4204TE-Q (Pro-Serie), ZU4204BE-Q (Classic)



Z Tough, Dependable Innovative CLASS

- **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 1,25 kW 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 auto cycle feature).**



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.



Pro-Series

Back-lit LCD and Pressure Transducer featuring Auto-Cycle Technology.

- Torque wrench model is selectable
- “Auto cycle” 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.



◀ *Any brand of hydraulic torque wrench can be powered by the portable ZU4-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 Wrench Pump

- 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 Wrench Pump

- 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!
- Auto-Cycle feature provides continuous cycle operation of the torque wrench as long as the advance button is pressed (pump can be used with or without Auto-Cycle feature).

ZU4T-Series, Torque Pump Ordering Guide
Page: 241

ZU4T Series



Reservoir Capacity:
4,6 - 6,8 litres

Flow at Rated Pressure:
1,0 l/min

Motor Size:
1,25 kW

Maximum Operating Pressure:
700 bar

Bolting Integrity Software

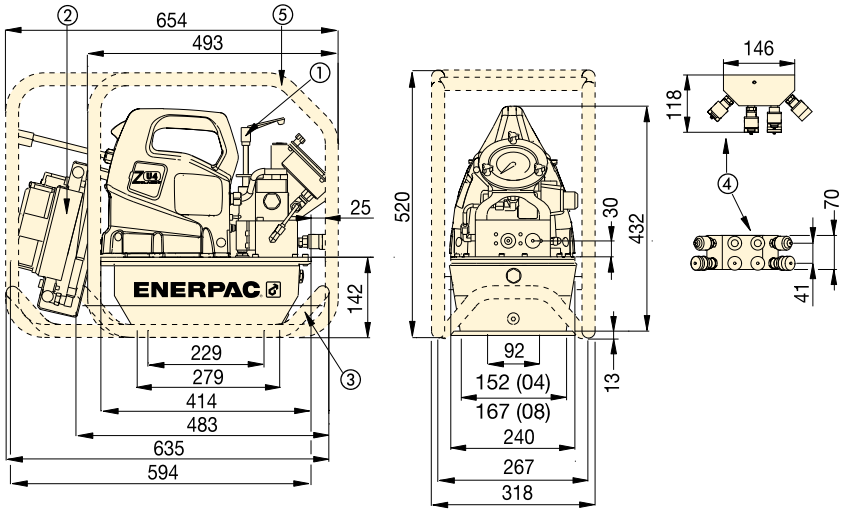
Enerpac Bolting Integrity Software Solutions play a key role in implementing and managing an Integrity Program for bolted connections. The software offers Tool selection, Bolt Load calculations and Tool pressure settings, as well as, a combined Application Data Sheet and Joint Completion Report. Custom Joint information can also be entered.

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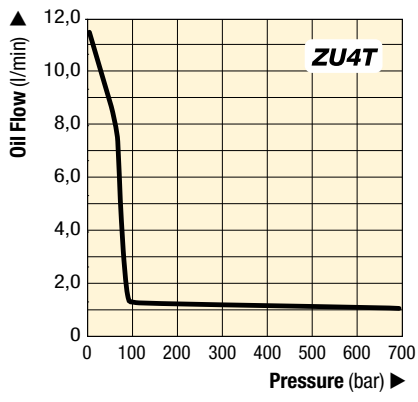
Overlay Kit with Gauge

Available separately for use with ZU4T-Series Classic: **GT-4015Q** includes gauge and torque overlays for all RSL, S- and W-Series torque wrenches.



① User adjustable relief valve
② Heat Exchanger (optional)
③ Skidbar (optional)
④ 4-wrench manifold (optional)
⑤ Roll cage (optional)

OIL FLOW VERSUS PRESSURE



ZU4T-Series Torque Pumps

ZU4T-Series Performance Chart

Motor Size (kW)	Output Flow Rate (l/min) 7 bar	50 bar	350 bar	700 bar	Motor Electrical Specification (Volt - Phase - Hz)	Sound Level (dBA)	Relief Valve Adjustment Range (bar)
1,25	11,5	8,8	1,2	1,0	115 - 1 - 50/60 208-240 - 1 - 50/60	85-90	124-700



4-Wrench Manifold

- **For simultaneous operation of multiple torque wrenches.**

Accessory Kit * Model Nr.	Can be used on ZU4T-Series torque pumps
ZTM-Q *	for 700 bar torque wrenches

* 4-Wrench Manifold adds 2,7 kg to pump weight.



Skid Bar

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

Accessory Kit Model Nr.	Can be used on ZU4T-Series torque pumps
SBZ-4	4,6 and 6,8 litres reservoir [1]
SBZ-4L	4,6 and 6,8 litres reservoir [2]

[1] Without heat exchanger 2,2 kg.
[2] With heat exchanger 3,2 kg.



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 Nr.	Can be used on ZU4T-Series torque pumps
ZHE-U115	115 V pumps
ZHE-U230	230 V pumps

* Heat Exchanger adds 4,1 kg to pump weight.



Roll Cage

- **Protects pump**
- **Provides greater pump stability.**

Thermal Transfer * (Btu/h)	Max. Pressure (bar)	Max. Oil Flow (l/min)	Voltage (VDC)
900	20,7	26,5	12

* At 1,9 l/min at 21 °C ambient temperature. Do not exceed maximum oil flow and pressure ratings. Heat exchanger is not suitable for water-glycol or high water-based fluids.

▼ *These rigid steel wrenches with low profile interchangeable hexagon cassettes guarantee durability and maximum versatility in bolting applications.*



Accessory Kit Model Nr.	Can be used on ZU4T-Series torque pumps
ZRC-04	4,6 and 6,8 litres reservoir [1]
ZRC-04H	4,6 and 6,8 litres reservoir [2]

[1] Without heat exchanger 4,3 kg.
[2] With heat exchanger 4,3 kg.



Torque Wrench Hoses

Use Enerpac twin safety hoses to connect your torque wrench to the pump.

For 700 bar	Model-Nr.
2 m long, 2 hoses	THQ-702T
6 m long, 2 hoses	THQ-706T
12 m long, 2 hoses	THQ-712T

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	E	-	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 = 1,0 l/min @ 700 bar

4 Valve Type
2 = Torque wrench valve

5 Reservoir Size
04 = 4,6 litres
08 = 6,8 litres

6 Valve Operation
T = **Pro Series pump** with solenoid valve and pendant, LCD Electric and pressure transducer
B = **Classic 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:
4,6 - 6,8 litres

Flow at Rated Pressure:
1,0 l/min

Motor Size:
1,25 kW

Maximum Operating Pressure:
700 bar



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

		Factory Installed Accessories				
ZU4T Classic [1] Model Numbers 230 VAC, 1 ph [2]	Reservoir Capacity (litres)	Heat Exchanger	Roll Cage	Skid Bar	4-Wrench Manifold	(kg)
ZU4204BE-Q (B, I)	4,6					33
ZU4208BE-Q (B, I)	6,8					35
ZU4204BE-QH (B, I)	4,6	●				40
ZU4208BE-QH (B, I)	6,8	●				39
ZU4204BE-QR (B)	4,6		●			37
ZU4208BE-QR (B)	6,8		●			39
ZU4204BE-QHR (B)	4,6	●	●			41
ZU4208BE-QHR (B, I)	6,8	●	●			44
ZU4208BE-QHK (B, I)	6,8	●		●		42
ZU4208BE-QHM (B, I)	6,8	●			●	42
ZU4208BE-QMR (B)	6,8		●		●	42
ZU4208BE-QHMR (B, I)	6,8	●	●		●	46

▼ ZU4T-SERIES PRO TORQUE PUMP MODELS

		Factory Installed Accessories				
ZU4T Pro Model Numbers 230 VAC, 1 ph [3]	Reservoir Capacity (litres)	Heat Exchanger	Roll Cage	Skid Bar	4-Wrench Manifold	(kg)
ZU4204TE-Q (B, I)	4,6					31
ZU4208TE-Q (B, I)	6,8					34
ZU4204TE-QH (B, I)	4,6	●				35
ZU4208TE-QH (B, I)	6,8	●				38
ZU4204TE-QR (B)	4,6		●			35
ZU4208TE-QR (B)	6,8		●			38
ZU4204TE-QHR (B)	4,6	●	●			40
ZU4208TE-QHR (B, I)	6,8	●	●			42
ZU4208TE-QHK (B, I)	6,8	●		●		41
ZU4208TE-QHM (B, I)	6,8	●			●	41
ZU4208TE-QMR (B)	6,8		●		●	41
ZU4208TE-QHMR (B, I)	6,8	●	●		●	45

[1] Classic Electric Pump has traditional electro-mechanical components (transformers, relays, switches) in place of solid-state electronics.
[2] "**B**" indicates pump is 115V, 1-phase, 50/60 Hz. Model number example: **ZU4204BB-QHR**.
"**I**" indicates pump is 208-240V, 1-phase, 50/60 Hz with NEMA 6-15 plug. Model number example: **ZU4208BI-QHR**.
[3] "**B**" indicates pump is 115V, 1-phase, 50/60 Hz. Model number example: **ZU4204TB-QHR**.
"**I**" indicates pump is 208-240V, 1-phase, 50/60 Hz with NEMA 6-15 plug. Model number example: **ZU4204TI-QHR**.

▼ ZE4204TE-QHR



Tough,
Dependable
Innovative
CLASS

- **Auto-Cycle feature provides continuous cycle operation of the torque wrench as long as the advance button is pressed (pump can be used with or without auto cycle 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 Auto-Cycle Technology.

- Torque wrench model is selectable
- "Auto cycle" 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.

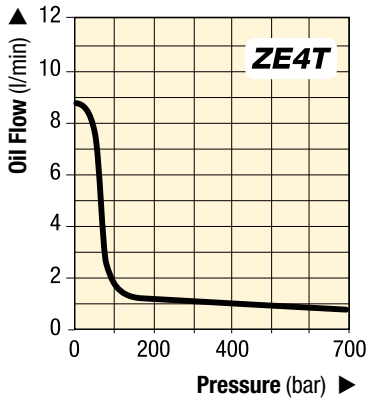
Bolting Integrity Software

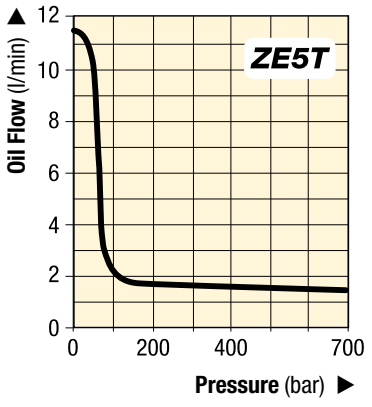
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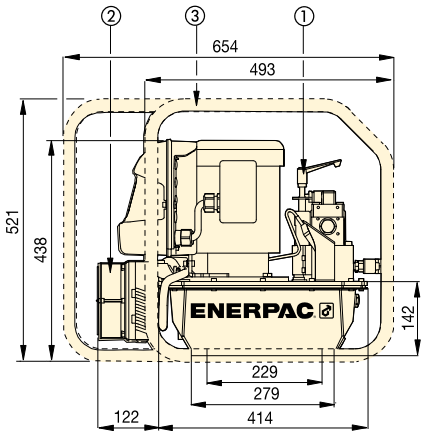


◀ *The ZE4T-Series torque wrench pumps are perfectly matched for this W2000X wrench.*

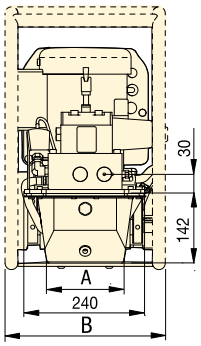
ZE4T AND ZE5T-SERIES OIL FLOW VERSUS PRESSURE







① User adjustable relief valve
② Heat exchanger (optional)
③ Roll cage (optional)



Reservoir Capacity (litres)	A (mm)	B (mm)
4,6	152	330
6,8	206	330
19,8	422	488

ZE4T and ZE5T-Series

▼ PERFORMANCE CHART

Pump Series	Output Flow Rate at 50 Hz (l/min) 7 bar	50 bar	350 bar	700 bar	Motor Size (kW)	Relief Valve Adjustment Range (bar)	Sound Level (dBA)
ZE4T	8,8	8,1	0,9	0,8	1,1	70 - 700	75
ZE5T	11,8	11,2	1,7	1,6	2,2	70 - 700	75

For Use With Wrenches	Model Number [1]	Reservoir Capacity (litres)	Factory Installed Accessories: Heat Exchanger	Roll Cage	4-Wrench Manifold	(kg)
All S, W, RSL and DSX	**ZE4204TE-QR (B)**	4,6		●		54
	ZE4204TE-QHR (B)	4,6	●	●		59
	ZE4208TE-QHR (B)	6,8	●	●		61
	ZE4208TE-QHMR (B)	6,8	●	●	●	64
All S, W, RSL and DSX	**ZE5204TW-QHR (G, J)**	4,6	●	●		64
	ZE5208TW-QHR (G, J)	6,8	●	●		67
	ZE5208TW-QHMR (G, J)	6,8	●	●	●	70
	ZE5220TW-QHR (G, J)	19,8	●	●		88

[1] "**B**" suffix model numbers shown are 115 VAC, 1-phase, 50/60 Hz. Model number order example: **ZE4204TB-QR**.
"**E**" indicates pump available in 208-240 VAC, 1 phase, 50/60 Hz with European plug and CE EMC compliant.
"**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**.

ZE4T ZE5T Series

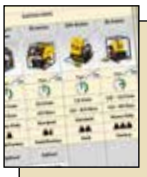


Reservoir Capacity:
4,6 - 19,8 litres

Flow at Rated Pressure:
0,82 - 1,64 l/min

Motor Size:
1,1 - 2,2 kW

Maximum Operating Pressure:
700 bar



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 700 bar THQ-700 Series torque wrench hoses with torque wrenches and pumps.

2 m long, 2 hoses	**THQ-702T**
6 m long, 2 hoses	**THQ-706T**
12 m long, 2 hoses	**THQ-712T**

▼ **ZA4204TX-QR**



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 bypass pressure (180 bar) for faster torque cycles**
- **Improved wrench performance at low pressure**

Standard ZA4T-pump models:

- **Two-speed operation and 100 bar by-pass pressure reduces cycle time for improved productivity**
- **Glycerin filled pressure gauge with transparent overlays in Nm and Ft.lbs 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 6 m.**



Torque Wrench Hoses

Use Enerpac twin safety hoses to connect your torque wrench to the pump.

For 700 bar	Model-Nr.
2 m long, 2 hoses	**THQ-702T**
6 m long, 2 hoses	**THQ-706T**
12 m long, 2 hoses	**THQ-712T**



Gauge with Overlay Kit

Gauge Overlay Kits are available separately for use with ZA4T-Series pumps:

GT-4015Q includes gauge and overlays for all S-, W and RSL-Series torque wrenches.



Torque Pump Selection Matrix

For optimum speed and performance see the torque pump selection matrix.

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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:
4,6 - 6,8 litres

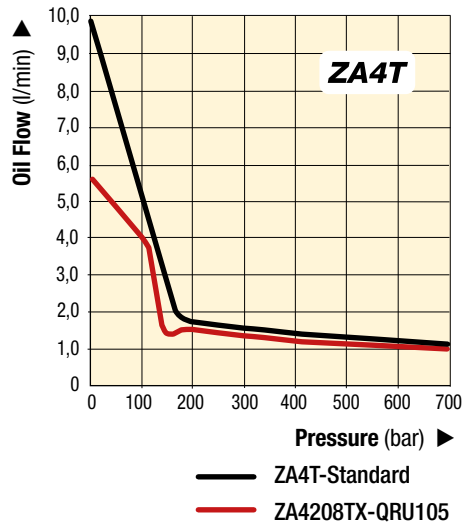
Flow at Rated Pressure:
1,0 l/min

Air Consumption:
600 - 2840 l/min

Maximum Operating Pressure:
700 bar

OIL FLOW VERSUS PRESSURE

6,9 bar dynamic air pressure at 2840 l/min



Accessory Options

Available by placing the following additional suffix at the end of the model number:

K = Skid bar
M = 4-wrench manifold
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 (bar)	Model Number	Reservoir Capacity (litres)	(kg)
all S, W, RSL, DSX and HMT-Series	700	ZA4208TX-QRU105 *	6,8	45
	700	ZA4204TX-Q	4,6	42
	700	ZA4208TX-Q	6,8	47
	700	ZA4204TX-QR **	4,6	46
	700	ZA4208TX-QR **	6,8	51

* Standard with roll cage, with THQ706T hose and fine air pressure adjustment for very accurate torque control. Pump weight 45 kg, complete set including hose weight 58 kg.

** With Roll Cage.



Skid Bar

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

Accessory Kit * Model Nr.	Can be used on ZA4T-Series torque pumps
SBZ-4	Reservoir 04 and 08

* Add suffix **K** for factory installation.
Weight skid bar 2,2 kg.
Ordering Example: ZA4208TX-QK



4-Wrench Manifold

- **For simultaneous operation of multiple torque wrenches**
- **Can be factory installed or ordered separately.**

Accessory Kit * Model Nr.	Can be used on ZA4T-Series torque pumps
ZTM-Q	for 700 bar 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 4,5 kg.
Ordering Example: ZA4208TX-QM



Roll Cage

- **Protects pump**
- **Provides greater pump stability.**

Accessory Kit * Model Nr.	Can be used on ZA4T-Series torque pumps
ZRC-04	Reservoir 04 and 08

* Add suffix **R** for factory installation.
Roll cage weight 3,4 kg.
Ordering Example: ZA4208TX-QR



Torque Wrench Couplers

For Enerpac torque wrench couplers see our “System Components” section in this catalogue.

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PowaPak™ Air Torque Pump

ZA4208TX-QR0P Pump with Stainless Steel Roll Cage and Certified Lifting Eye.
See enerpac.com for details.



Torque Wrench Hoses

Use Enerpac twin safety hoses to connect your torque wrench to the pump.

For 700 bar	Model-Nr.
2 m long, 2 hoses	THQ-702T
6 m long, 2 hoses	THQ-706T
12 m long, 2 hoses	THQ-712T

Ordering Matrix and Specifications

▼ **This is how a ZA4T-Series 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	8 Options

1 Product Type
Z = Pump series

2 Motor Type
A = Air motor

3 Flow Group
4 = 1,0 l/min @ 700 bar

4 Valve Type
2 = Torque Wrench Valve

5 Reservoir Size
04 = 4,6 litres
08 = 6,8 litres

6 Valve Operation
T = Air operated valve with pendant

7 Voltage
X = Not applicable

8 Options
Q = 700 bar couplers for use with Enerpac or other torque wrenches
K = Skid bar
M = 4-wrench manifold
R = Roll cage

ZA4T Series



Reservoir Capacity:
4,6 - 6,8 litres

Flow at Rated Pressure:
1,0 l/min

Air Consumption:
600 - 2840 l/min

Maximum Operating Pressure:
700 bar

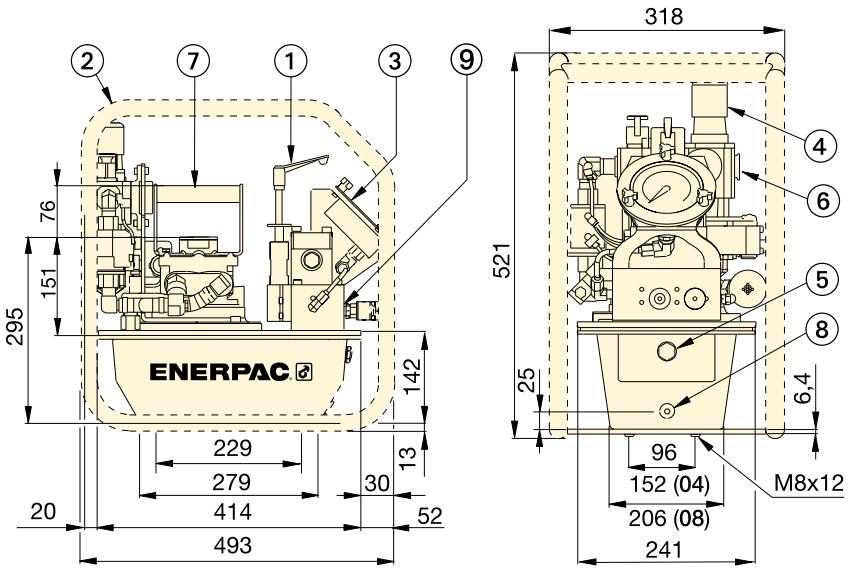
How to order your ZA4T-Series torque pump

Model No. ZA4208TX-QMR

700 bar pump for use with Enerpac S-, W-, RSL, DSX and HMT-Series and other 700 bar torque wrenches, 6,8 litres reservoir,4-wrench manifold, and roll cage.

Refer to the selection matrix for optimum wrench and pump combinations.

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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 (l/min) 7 bar	50 bar	350 bar	700 bar	By-pass pressure (bar)	Dynamic Air Pressure Range (bar)	Air Consumption (l/min)	Sound Level (dBA)	Relief Valve Adjustment Range (bar)
ZA4208TX-QRU105	5,7	4,5	1,4	1,0	180	7,0	600 - 2840	85-90	124 - 700
ZA4T Standard	9,8	8,2	1,4	1,0	100	4,0 - 6,9	600 - 2840	85-90	124 - 700

▼ ZUTP-1500SE-H



Reliability, Power and Precision

- Solenoid-operated valve with 6 m 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 provides high flow at low pressure for fast system fills and controlled flow at high pressure for accurate operation
- 1,25 kW heavy-duty universal motor provides the best performance-to-weight ratio
- Replaceable 10 micron reservoir breather and inline high pressure filter helps maintain oil cleanliness for optimum performance
- Panel-mounted 153 mm pressure gauge, with polycarbonate cover, is set into the protective metal shroud for improved visibility.



Applications

The Enerpac ZUTP-Series electric pump is ideally suited for use with hydraulic bolt tensioning tools and hydraulic nuts. See our Bolting Tools catalogue and website.

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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Bolting Integrity Software

Visit www.enerpac.com to access our free on-line bolting software application and obtain information on tool selection, bolt load calculations and tool pressure settings. A combined application data sheet and joint completion report is also available.

Page: 324



◀ *The ZUTP-1500 pump is rugged, lightweight, compact for tight openings, and delivers hassle-free operation of bolt tensioning in remote locations with up to two times the speed of competitive pumps.*

ZUTP-Tensioning Pumps

The ZUTP-Series of 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 **ZUTP1500-S Series** 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.

ZUTP Series

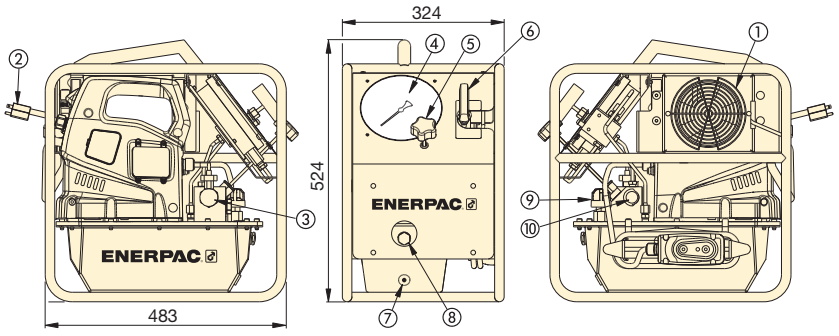


Reservoir Capacity:
4,0 litres

Flow at Rated Pressure:
0,33 l/min

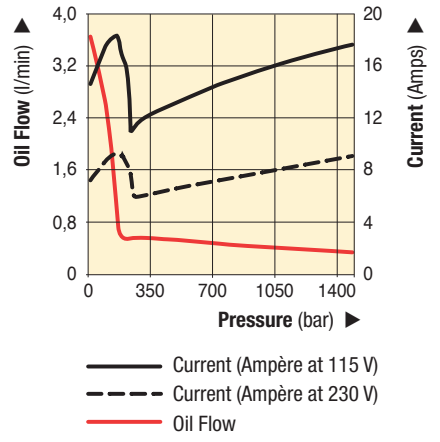
Motor Size:
1,25 kW

Maximum Operating Pressure:
1500 bar



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)

OIL FLOW VERSUS PRESSURE



1500 bar HIGH PRESSURE PUMP

Pump Type	Useable Oil Capacity (litres)	Valve Type	Model Number [1]	Pressure Rating (bar)	Output Flow Rate at 0 bar (l/min)	Output Flow Rate at 1500 bar (l/min)	Motor Electrical Specification (50 Hz)	Motor Size (kW)	Sound Level (dBA)	(kg)
Two speed	4,0	Solenoid	ZUTP-1500SB	1500	3,80	0,33	115 VAC, 1-ph	1,25	89	29,5
			ZUTP-1500SE [2]				230 VAC, 1-ph [2]			
			ZUTP-1500SI [3]				230 VAC, 1-ph [3]			
Two speed	4,0	Solenoid	ZUTP-1500SB-H [4]	1500	3,80	0,33	115 VAC, 1-ph	1,25	89	34,0
			ZUTP-1500SE-H [2] [4]				230 VAC, 1-ph [2]			
			ZUTP-1500SI-H [3] [4]				230 VAC, 1-ph [3]			
Two speed	4,0	Jog	ZUTP-1500B	1500	3,80	0,33	115 VAC, 1-ph	1,25	89	29,5
			ZUTP-1500E [2]				230 VAC, 1-ph [2]			
			ZUTP-1500I [3]				230 VAC, 1-ph [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.

▼ ATP-1500



ATP Series

Reservoir Capacity:
3,8 litres

Flow at Rated Pressure:
0,07 l/min

Maximum Operating Pressure:
1500 bar

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. See our Bolting Tools catalogue or enerpac.com

ATEX Certified

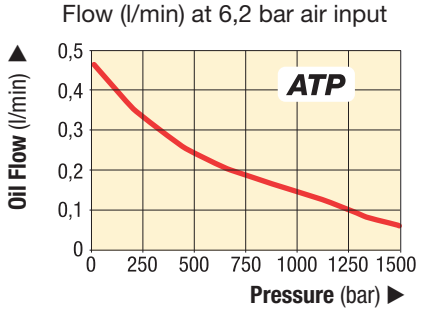
The ATP-Pump is tested and certified according ATEX.

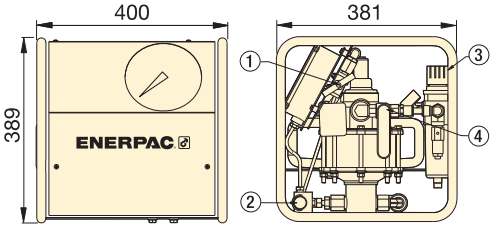
Ex II 2 GD ck T4

Page: 310

- **General purpose, high pressure air driven two speed pump unit for products requiring up to 1500 bar 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 glycerin filled gauge**
- **Safety relief valve limits output pressure.**

OIL FLOW VERSUS PRESSURE





① Shut-off Valve
② Out Port 1/4" BSPM with BR-150 coupler
③ Filter/Regulator
④ Air On/Off Valve
Air Inlet 1/2" NPTF

1500 bar HIGH PRESSURE AIR PUMP

Pump Type	Useable Oil Capacity (litres)	Pressure Rating (bar)	Model Number	Output Flow Rate at 0 bar (l/min)	Output Flow Rate at 1500 bar (l/min)	Air Pressure Range (bar)	Air Consumption (l/min)	Sound Level (dBA)	(kg)
Two speed	3,8	1500	**ATP-1500**	0,43	0,07	5,5 - 6,2	594	70	32

High Pressure Hand Pump and Accessories

▼ HPT-1500



HPT, HT, B Series

Reservoir Capacity:
2,5 litres

Flow at Rated Pressure:
0,61 cm³/stroke

Maximum Operating Pressure:
1500 bar

Ultra-high pressure

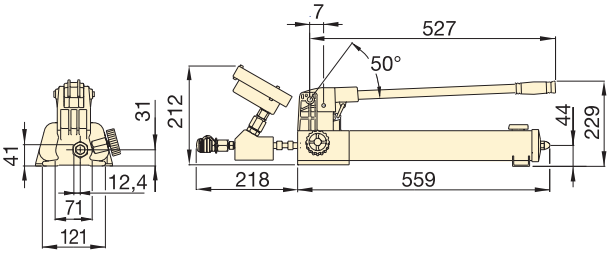
This pump operates at ultra-high pressure, use only the specified fittings and hoses designed for these pressures.



Applications

The hand pump is ideally suited for use with hydraulic bolt tensioning tools and hydraulic nuts.

- **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 1500 bar.**



1500 bar ULTRA-HIGH PRESSURE PUMP

Pump Type	Useable Oil Capacity (litres)	Model Number	Pressure Rating (bar) 1st stage	Pressure Rating (bar) 2nd stage	Oil Displacement per Stroke (cm^3) 1st stage	Oil Displacement per Stroke (cm^3) 2nd stage	High Pressure Oil Port with female coupler	(kg)
Two Speed	2,54	**HPT-1500**	14	1500	16,22	0,61	1/4" BSPP + BR-150	9,0

1500 bar HOSES

Model Number		Hose End 1	Hose End 2	Length (m)
HT-1503		1/4" BSPM 120° Cone	1/4" BSPM 120° Cone	1,0
HT-1510		1/4" BSPM 120° Cone	1/4" BSPM 120° Cone	3,0
HT-1503HR*		BH-150	BR-150	1,0
HT-1510HR*		BH-150	BR-150	3,0

* Includes dust caps.

1500 bar COUPLERS

Description		Complete Set	Female Half	Male Half
Quick Disconnect Coupler *		B-150	BR-150	BH-150
Quick Disconnect Coupler and Adaptor Kit *		BW-150AW	–	–
Quick Disconnect Blanking Coupler Set *		B-150B	–	–

* Includes dust caps.

Single-Acting Hydraulic Nut Splitters

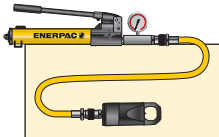
ENERPAC

▼ Shown from left to right: **NC-3241, NC-1319, NC-1924**



The safest and easiest way to remove corroded and frozen nuts

- **Compact and ergonomic design, easy to use**
- **Unique angled head design**
- **Two blade 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. A CR-400 coupler is standard.**



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 Nr.	Hand Pump Model Nr.	Set Model Nr
NC-1924	P-392	**STN-1924H**
NC-2432	P-392	**STN-2432H**
NC-3241	P-392	**STN-3241H**



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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▼ *Enerpac hydraulic nut splitters – the safest and easiest way to remove corroded and frozen nuts*



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 Cutters

Nut splitting with the Enerpac Hydraulic Nut Cutters 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

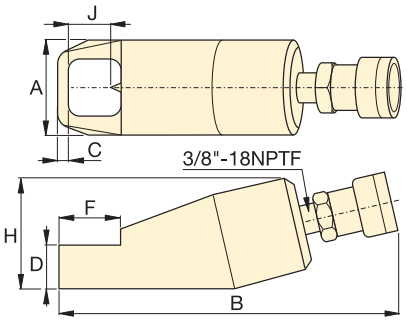


Capacity:
49 - 882 kN (5 - 90 ton)

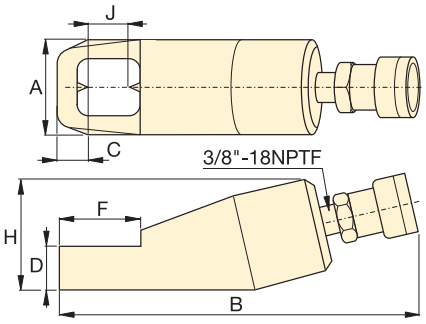
Bolt Range:
M6 - M48

Maximum Operating Pressure:
700 bar

For Nut Splitter Model Nr.	Replacement Chisel Model Numbers	
	Moving	Static
NC-1319	**NCB-1319**	–
NC-1924	**NCB-1924**	–
NC-2432	**NCB-2432**	–
NC-3241	**NCB-3241**	–
NC-4150	**NCB-4150**	–
NC-5060	**NCB-5060**	–
NC-6075	**NCB-6075**	–
NC-1924D	**NCB-1924**	**NCB-1924D**
NC-2432D	**NCB-2432**	**NCB-2432D**
NC-3241D	**NCB-3241**	**NCB-3241D**



Single Blade Models (NC)



Double Blade Models (NC-D)



	Bolt Range (mm)	Hexagon Nut Range (mm)	Capacity ton (kN)	Oil Capacity (cm^3)	Model Number	Dimensions (mm) A	B	C	D	F	H	J	(kg)
	**M6 - M12**	10 - 19	**5** (49)	15	**NC-1319**	40	170	7	19	28	48	21	1,2
	M12 - M16	19 - 24	**10** (98)	20	**NC-1924** *	54	191	10	26	40	62	25	2,0
	M16 - M22	24 - 32	**15** (147)	60	**NC-2432** *	64	222	13	29	51	72	33	3,0
	M22 - M27	32 - 41	**20** (196)	80	**NC-3241** *	75	244	17	36	66	88	43	4,4
	M27 - M33	41 - 50	**35** (343)	155	**NC-4150**	94	288	21	45	74	105	54	8,2
	M33 - M39	50 - 60	**50** (490)	240	**NC-5060**	106	318	23	54	90	128	60	11,8
	M39 - M48	60 - 75	**90** (882)	492	**NC-6075**	156	393	26	72	110	181	80	34,1
	**M12 - M16**	19 - 24	**10** (98)	20	**NC-1924D**	54	168	22	25	50	66	26	3,8
	M16 - M22	24 - 32	**15** (147)	60	**NC-2432D**	64	275	25	31	65	78	33	5,4
	M22 - M27	32 - 41	**20** (196)	80	**NC-3241D**	77	305	31	37	80	90	43	7,2

Ordering Notes: Maximum allowable hardness to split is HRc-44. Not to be used on square nuts or stainless steel.
* Available as Tool-Pump Set, see note on page 252.

▼ Shown: **NS-Series Hydraulic Nut Splitters**



Power and Precision High Performance Nut Splitter

- **Specially designed to suit standard ANSI B16.5 / BS1560 flanges**
- **Single-acting (spring return) cylinder**
- **Tri-blade technology provides three cutting surfaces on a single blade**
- **Interchangeable heads provide maximum nut range flexibility**
- **Preset scale allows controlled blade extension, which avoids damage to bolt threads**
- **Grip tape and handle included for more secure manoeuvrability**
- **Nickel-plated cylinder body for excellent corrosion protection and improved durability in harsh environments**
- **Internal Pressure Relief Valve for overload protection**
- **CR-400 coupler and dustcap included on all models.**



Blade Cutting Depth Scale

Adjustable cutting depth scale for controlled blade extension, which avoids damage to bolt threads. The scale indicates the bolt range in metric and imperial values on each cutting head.



Hydraulic Nut Cutters

The NC-Series models are available featuring an angle-head design for 10 - 75 mm hexagon nuts.

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Joint Separation Tools

Flange Spreading Wedges (FSC, FSH, FSM-Serie) provide quick and easy joint separation using hydraulic or mechanical force.

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Flange Alignment Tools

The ATM-Series provide safe and high-precision flange alignment tools that fit most commonly used ANSI, API, BS and DIN flanges.

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◀ *Heavily corroded and weathered nuts are quickly split and removed using a NS-Series Nut Splitter.*

Nut Splitter Sets

To provide maximum flexibility, NS-Series Nut Splitters can also be ordered in sets (NS-xxxSy). Select Nut Splitter size and pump style from the chart below. To order additional Cutting Heads (NSH-xxxxxx), Cylinders (NSC-xxx) or Replacement Blades (NSB-xxx), see Selection Chart below.

SET SELECTION:

1. **Select your Nut Splitter**
2. **Select your pump type**

NS Series



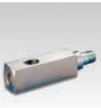
Capacity:
917 - 1711 kN

Hexagon Nut Size:
70 - 130 mm

Bolt Range:
M45 - M90

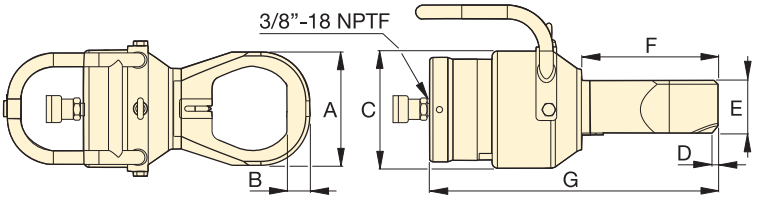
Maximum Operating Pressure:
700 bar

▼ TOOL-PUMP SET SELECTION CHART

1 Nut Splitter Model Nr.	Tool-Pump Set Model Nr.	2 Pump Selection				Accessories Included			
		Hand Pump Model Nr.	Air Pump Model Nr.	Cordless Pump (230V) Model Nr.	Electric Pump (230V) Model Nr.	Pressure Gauge Model Nr.	Gauge Adaptor Model Nr.	Hydraulic Hose Model Nr.	Storage Case Model Nr.
									
NS-70105	**NS-70105SH**	P-392	–	–	–	GP-10S	GA-2	HC-7206	CM-4
	NS-70105SA	–	XA-11G [2]	–	–	[2]	–	HC-7206	CM-4
	NS-70105SCE [1]	–	–	XC-1202ME	–	GA45GC		HC-7206	CM-4
	NS-70105SEE [1]	–	–	–	PUD-1100E	GP-10S	GA-2	HC-7206	CM-7
NS-110130	**NS-110130SH**	P-802	–	–	–	GP-10S	GA-2	HC-7206	CM-4
	NS-110130SA	–	XA-11G [2]	–	–	[2]	–	HC-7206	CM-4
	NS-110130SCE [1]	–	–	XC-1202ME	–	GA45GC		HC-7206	CM-4
	NS-110130SEE [1]	–	–	–	PUD-1100E	GP-10S	GA-2	HC-7206	CM-7

[1] For set with 115 Volt pump application replace last suffix "E"with "B" in model number.
Example : **NS-70105SCB** (set with XC-cordless pump, 115V);
Example: **NS-110130SEB** (set with PU-Series electric pump, 115 V)

[2] XA-11G air pump features an integrated pressure gauge.



▼ NUT SPLITTER SPECIFICATIONS

Bolt Range (mm)	Hexagon Nut Range [1] (mm)	Capacity ton (kN)	Oil Capacity (cm^3)	Model Number [2] 	Dimensions (mm) A	B	C	D	E	F	G	(kg)	Cylinder [3] 	Cutting Head [3] 	Replacement Blade 
M45 - M52	70 - 80	**103** (917)	377	**NS-7080**	132	28	180	8,0	81	186	412	37,0	NSC-70	NSH-7080	NSB-70
M45 - M56	70 - 85	**103** (917)	377	**NS-7085**	145	30	180	8,0	81	196	422	37,0	NSC-70	NSH-7085	NSB-70
M45 - M64	70 - 95	**103** (917)	377	**NS-7095**	160	32	180	8,0	81	201	432	38,5	NSC-70	NSH-7095	NSB-70
M45 - M72	70 - 105	**103** (917)	377	**NS-70105**	174	35	180	9,0	81	209	443	39,5	NSC-70	NSH-70105	NSB-70
M76 - M80	110 - 115	**193** (1711)	819	**NS-110115**	189	36	234	3,7	111	234	472	69,0	NSC-110	NSH-110115	NSB-110
M76 - M90	110 - 130	**193** (1711)	819	**NS-110130**	219	41	234	2,5	111	242	493	71,5	NSC-110	NSH-110130	NSB-110

[1] Maximum allowable hardness to split is HRc-44. See page 323 for hexagon bolt and nut sizes and related thread diameters.

[2] NS-Series Nut Splitters ship in two cases: One containing the NSC-Cylinder and one containing the NSH-Cutting Head. Assembly required.

[3] Both, the NSH-head and the NSC-cylinder include a cutting blade.

▼ FSC-14, FSM-8 and FSH-14 with safety blocks SB-1



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 6 mm**
- **Few moving parts mean durability and low maintenance**
- **Safety block SB-1 included with FSC-14, FSH-14 and FSM-8**
- **Ratchet spanner SW-22 included with FSM-8 mechanical spreader**
- **Single-acting cylinder included with FSH-14 hydraulic spreader.**



FSC-14 with integrated hand pump

Powered by a built-in hydraulic hand pump, the FSC-14 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 6 mm.



Stepped Blocks FSB-1

Use stepped blocks to increase wedge opening up to 80 mm. Fits both FSC, FSH and FSM-models.



AM-Series Control Manifolds

For simultaneously and even spreading of flange joints, 180° apart with FSH-14.

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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 FSH-14 spreaders used simultaneously with Enerpac handpump, hoses and AM-21 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]:
6 mm / 80 mm

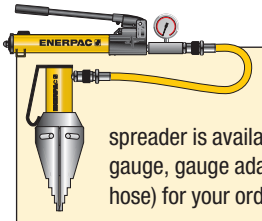
Maximum Spread Force:
8 - 14 US tons

Maximum Operating Pressure:
700 bar (FSH-14)



Safety Lanyard FSC-1

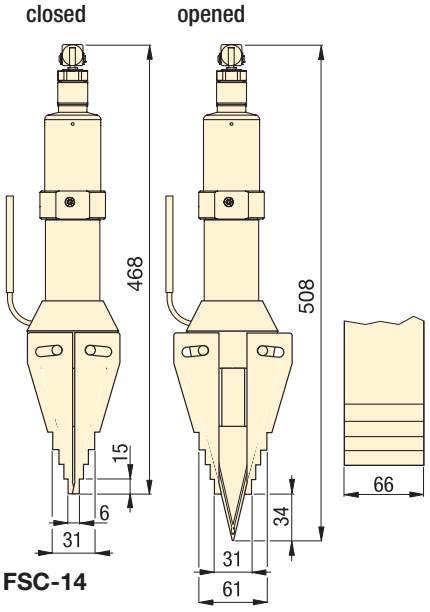
Recommended safety accessory to compliment the safe hands-free bolting. Includes steel cable with carabiners.

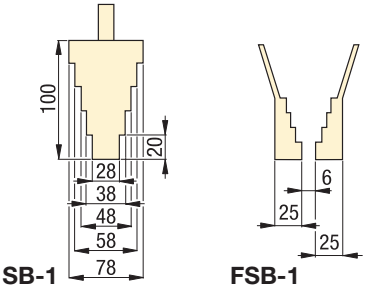


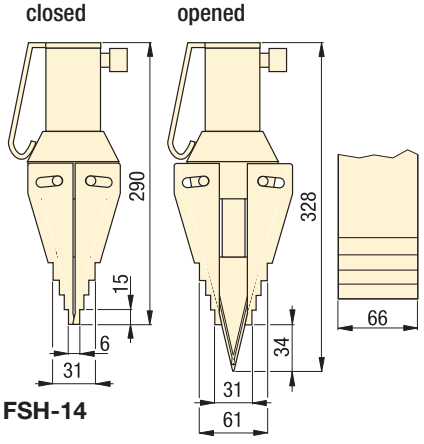
Tool-Pump Sets

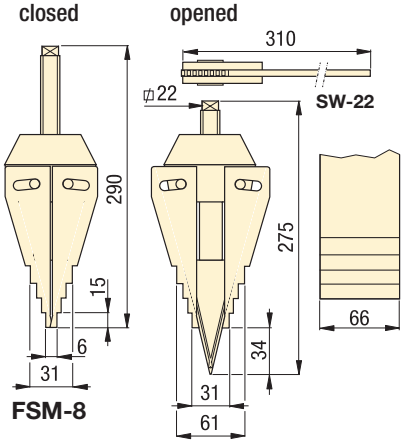
The hydraulic flange spreader is available as set (pump, tool, gauge, gauge adaptor, couplers and hose) for your ordering convenience.

Spreader Model Nr.	Handpump Model Nr.	Set Model Number
FSH-14	P-392	**STF-14H**









Maximum Spreading Force US tons (kN)	Model Number	Tip Clearance (mm)	Maximum Spread [1] (mm)	Spreader Type	Oil Capacity (cm³)	(kg)
14 (118)	**FSC-14**	6	80	Integral hydraulics	–	9,0
14 (125)	**FSH-14 ***	6	80	External hydraulics	78	7,1
8 (72)	**FSM-8**	6	80	Mechanical	–	6,5

[1] Using stepped blocks FSB-1

* Available as pump-tool set, see note on this page.

▼ *Flange maintenance and joint separation with FSH-14 Hydraulic Wedge Spreader.*



▼ From left to right: **ATM-4, ATM-9, ATM-2** (ATM-9 shown without pump and hose)



The faster, simpler and safer way to align flanges.

- **Enerpac ATM-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**
- **Each ATM-model contains a tool and kit box.**



Adjustable Reach

The highly adjustable reach of the wing and drop leg on ATM-4 and ATM-9 allow precise alignment.



Gauge and Adaptor

The ATM-9 includes P-142 hand pump and HC-7206C 1,8 m long hose. Enerpac recommend the use of the pressure gauge **GP-10S** and gauge adaptor **GA-4** for easy mounting of the gauge onto your system or use **GA45GC** Gauge Adapotor Assembly.

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▼ *The compact ATM-2 is actuated by simply hand turning the crank.*



▼ *The ATM-9 is shown here with optional pressure gauge and gauge adaptor.*



Applications

Enerpac ATM-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.

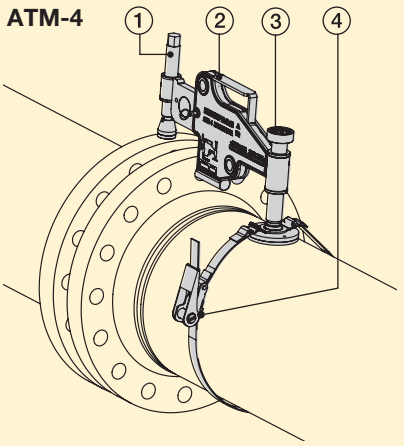
① Extendable wing provides usage on wide variety of flanges.

② Portable, light weight 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.

ATM-4



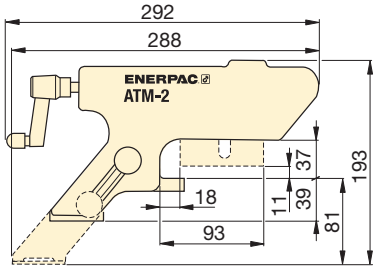
ATM Series



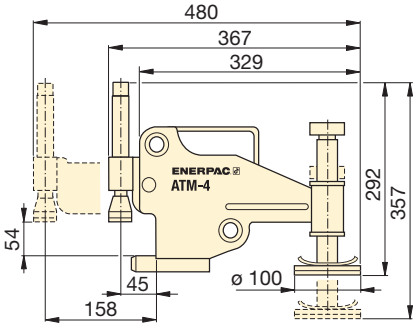
Minimum Bolt Size:
16 - 35,5 mm

Flange Wall Thickness:
14 - 228 mm

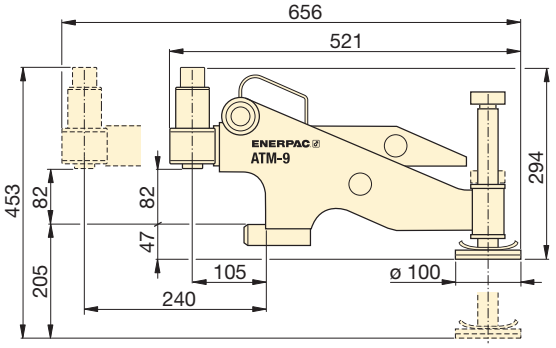
Maximum Lifting Force:
1 - 9 ton (10 - 90 kN)



ATM-2



ATM-4



ATM-9

Maximum Lifting Force (ton)	Maximum Lifting Force (kN)	Model Number	Minimum Bolt Size (mm)	Minimum Bolt Size (inch)	Flange Wall Thickness (mm)	Flange Wall Thickness (inch)	(kg)
1	10	ATM-2	16	.63	14 - 82	.55 - 3.29	1,6
4	40	ATM-4	24	.95	30 - 133	1.18 - 5.23	8,6
9	90	ATM-9 *	35,5	1.40	93 - 228	3.66 - 9.00	14,5

* ATM-9 includes an Enerpac hand pump and hydraulic hose (gauge and adaptor sold separately). ATM-9 weight includes tool only.



Cylinder-Pump Sets

Hydraulic cylinders, jacks and lifting wedges can also be used to assist in pipe line positioning and aligning.

Page: 60



Pipe Flange Face Tool

The portable, hand powered tool FF-120 makes even the hardest to reach pipe flanges resurfaceable in a safe and convenient way.

Page: 260

▼ *The ATM-Series – the faster, simpler and safer way to align flanges.*



▼ FF-120



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 (15 kg in storage box)**
- **Adjustable cutting head for reface of flat flange surfaces of pipes with flange outside diameter facing range 25,4 - 304,8 mm [1 - 12 inch]**
- **Interchangeable collets for ID mounting range 25,4 - 152,4 mm [1-6 inch] 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), flat-face (FF) or lens-ring joint flanges**
- **Tool body with expanding collets centers itself providing real concentric operation.**

▼ *The Enerpac FF-120 used to face a pipe flange.*





Complete in Wheeled Carrying Case

The **FF-120** comes as portable set (15 kg). 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 1,6 - 2,4 µ.
FSF-kit with feed screw and nut ½"-11 UNF for surface roughness Ra 3,2 - 6,3 µ.



Joint Separation Tools

FSC, FSH, FSM-Series parallel wedge spreaders provide quick and easy joint separation using hydraulic or mechanical force.

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Flange Alignment Tools

The ATM-Series provide safe and high-precision flange alignment tools that fit most commonly used ANSI, API, BS and DIN flanges.

Page: 258



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.

QuickFace – Mechanical Pipe Flange Face Tool

Mechanical Flange Face Tool

Portable, hand powered tool makes even the hardest to reach pipe flanges resurface-able in a safe and convenient way.

Makes refacing easy

A simple and cost effective solution – the FF-120 turns a two man operation with heavy equipment, compressors and portable generators into a one man job.

The FF-120 has interchangeable lead screws that make it suitable for resurfacing damaged flat-faced, raised-face or lens-ring joint flanges to the high safety standards required. 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 3,2-12,5 µ (125-500 micro inches). The FF-120 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 FF-120 is the perfect solution to all of your small diameter facing problems.

FF Series



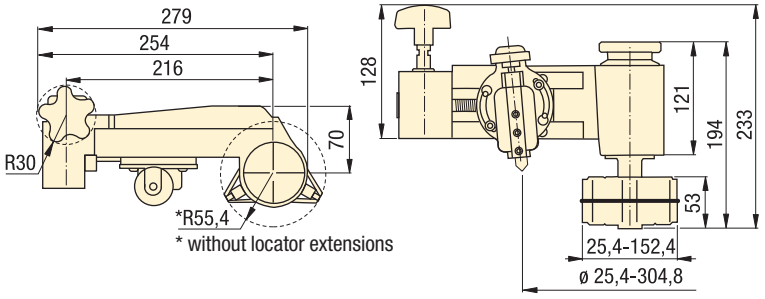
Pipe Flange Cutting Diameter Range:
ø 25-305 mm / 1-12"

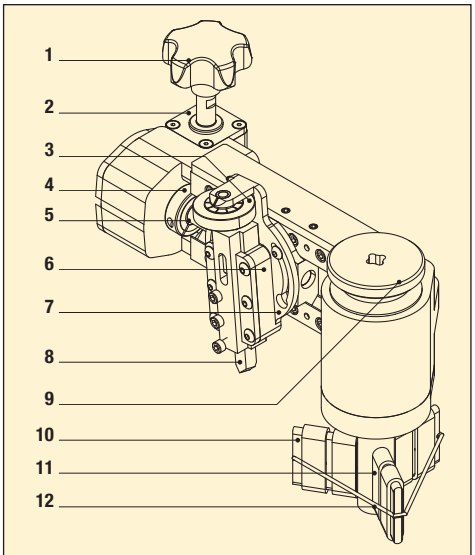
Internal Pipe Mounting Range:
ø 25-152 mm / 1-6"

Cutting Resultant Roughness:
Ra 3,2 - 12,5 µ



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 25,4-304,8 mm [1-12 inch].
4. Interchangeable lead screws enable selection of surface finish between Ra 3,2-12,5 µ.
5. Utilizes standard 3/8 inch or 10 mm tool steel.
6. Range of interchangeable collets allow the tool to accommodate ø 25,4 - 152,4 mm (1 - 6 inch) pipe ID.
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: 0,127 mm (.005 inch) 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 FF-120 QuickFace has same precision and quality of finish as a lathe.*



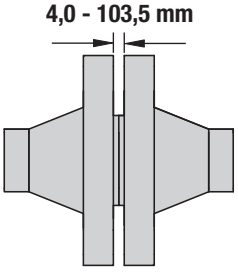
▼ SELECTION CHART

Pipe Flange Cutting Diameter Range		Internal Pipe Mounting Diameter Range		Cutting Resultant Roughness	Model Number	
(mm)	(inch)	(mm)	(inch)	(Ra µ)		(kg)
25,4 - 304,8	1,0 - 12,0	25,4 - 152,4	1,0 - 6,0	3,2 - 12,5	**FF-120**	6,8

Equalizer Flange Spreading Tools

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 Flange Spreading Wedges:

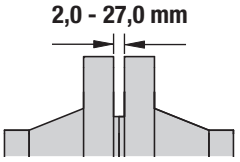


An innovative flange spreading wedge for use on small, medium or large flange joints with a minimum access gap of 4 mm. The SWi range includes ATEX approved options.

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 240 kN of spreading force when used in pairs, which provides additional confidence when spreading.
- Narrower jaws - the SWi5T tools are only 50 mm 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.

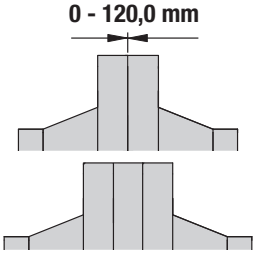
MG Flange Spreading Tool:



A mechanical tool for small diameter, low pressure flanges with a minimum access gap of 2 mm.

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.

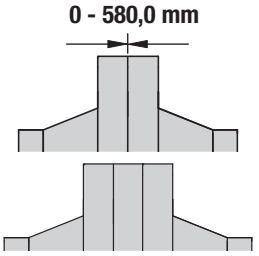
SG Flange Spreading Tools:



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 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 aplications.

Equalizer Flange Maintenance Tools – Overview

Capacity (kN)	Spreading Distance (mm)	Tool Type and Function	Series		Page
77 - 240	4 - 103	**Flange Spreading Tools and Kits** Flange Spreading Wedges	SWi		264 ▶
140 - 240	6 - 103	**Flange Spreading Tools and Kits** Flange Spreading Wedges, ATEX-Certified	SWi		266 ▶
37 - 150	0 - 115	**Flange Spreading Tools and Kits** Hydraulic and Mechanical	SG		268 ▶
180 - 250	0 - 120	**Flange Spreading Tools and Kits** Hydraulic	SG		270 ▶
100	0 - 580	**Flange Spreading Tools and Kits** Secure-Grip Valve Change-Out Tools, Hydraulic	VC		272 ▶
68	2 - 27	**Flange Spreading Tool and Kit** Mechanical	MG		274 ▶
100	570 - 0	**Flange Pulling Tool** Hydraulic	FC		275 ▶
40 - 270	42 - 65	**Flange Alignment Tools and Kits** Wind Turbine Tower Flange Alignment Tools Hydraulic and Mechanical	TFA		276 ▶
0,3 - 1,0 ltr 2-Speed	–	**Hydraulic Sealed Hand Pumps** Standard and ATEX-Certified	HP		277 ▶
2 - 6 m	–	**Hydraulic Hoses** Standard and ATEX-Certified	144 302		277 ▶

▼ SWi2025TI



SWi

FLANGE
SPREADING WEDGES

Spreading Force:
77,0 - 240,0 kN

Spreading Distance:
4,0 - 103,5 mm

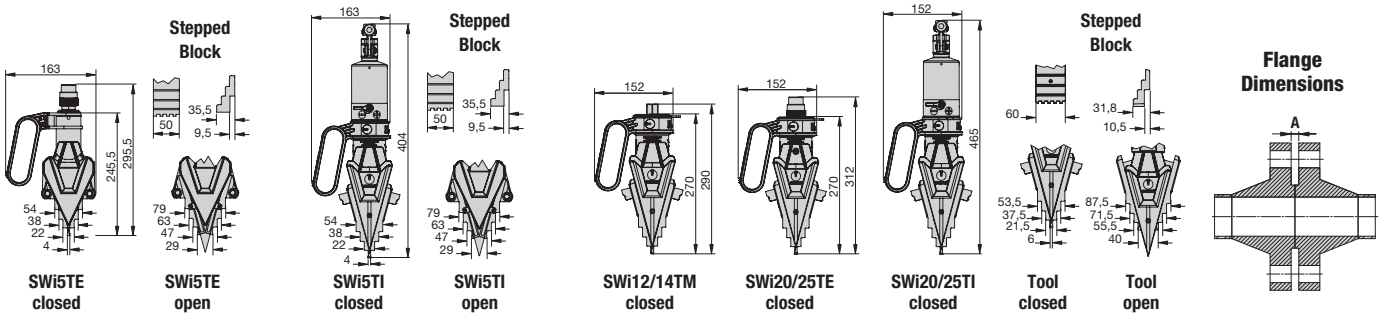
Maximum Operating Pressure:
700 bar *

* 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 – 1,0 m 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 (kN)	Spreading Distance Maximum * (mm)	Flange Dimensions Minimum Access Gap A (mm)	Jaw Width (mm)	Tool Weight (kg)	Kit Weight (kg)	Case Dimensions (mm)	Tool Number
SWi5TE-S	External Hydraulic	77,0	101,0	4,0	50,0	5,2	8,7	580 x 340 x 180	SWi5TE
SWi5TE-T	External Hydraulic	77,0	101,0	4,0	50,0	5,2	14,4	580 x 340 x 180	SWi5TE
SWi5TI-S	Integral Hydraulic	77,0	101,0	4,0	50,0	7,0	10,5	580 x 330 x 180	SWi5TI
SWi1214TMSTDSPB	Mechanical	140,0	103,5	6,0	60,0	6,2	13,0	580 x 330 x 165	SWi12/14TM
SWi2025TEMINSPB	External Hydraulic	240,0	103,5	6,0	60,0	6,4	11,6	580 x 330 x 165	SWi20/25TE
SWi2025TESTDSPB	External Hydraulic	240,0	103,5	6,0	60,0	6,4	20,7	920 x 500 x 205	SWi20/25TE
SWi2025TEMAXSPB	External Hydraulic	240,0	103,5	6,0	60,0	6,4	33,0	920 x 500 x 205	SWi20/25TE
SWi2025TISTDSPB	Integral Hydraulic	240,0	103,5	6,0	60,0	8,5	13,8	580 x 330 x 165	SWi20/25TI

* Using stepped blocks.

Equalizer Flange Spreading Tools

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 700 bar Hydraulic Hose, 2 m with 90° Elbow
1 x 700 bar 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 700 bar Hydraulic Hoses, 2 m with 90° Elbow
1 x 700 bar 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

Equalizer Flange Spreading Tools

▼ SWi20/25TEEX



SWi

ATEX CERTIFIED FLANGE SPREADING WEDGES

Spreading Force:
140,0 - 240 kN

Spreading Distance:
6,0 - 103,5 mm

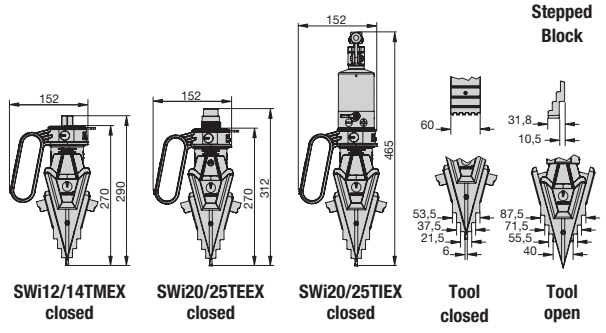
Maximum Operating Pressure:
700 bar *

* Only relevant for hydraulic tools

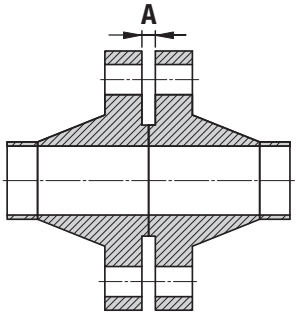
- **ATEX certified**
- **Practical, portable and lightweight**
- **Revolving handle to aid horizontal or vertical spreading**
- **Removable handle for improved access**
- **No finger pinch-point**
- **Increased step-depth on upper steps**
- **Safety lanyard – 1,0 m length**
- **Forged key components 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.



Flange Dimensions



Model Number Tool Kit	Type	Maximum Spreading Force Per Tool (kN)	Spreading Distance Maximum * (mm)	Flange Dimensions Minimum Access Gap A (mm)	Jaw Width (mm)	Tool Weight (kg)	Kit Weight (kg)	Case Dimensions (mm)	Tool Number
SWi1214TMSTDEX	Mechanical	140,0	103,5	6,0	60,0	6,2	17,0	580 x 400 x 180	SWi12/14TMEX
SWi2025TEMINEX	External Hydraulic	240,0	103,5	6,0	60,0	6,4	15,0	580 x 400 x 180	SWi20/25TEEX
SWi2025TESTDEX	External Hydraulic	240,0	103,5	6,0	60,0	6,4	27,5	680 x 560 x 180	SWi20/25TEEX
SWi2025TEMAXEX	External Hydraulic	240,0	103,5	6,0	60,0	6,4	38,8	930 x 600 x 180	SWi20/25TEEX
SWi2025TISTDEX	Integral Hydraulic	240,0	103,5	6,0	60,0	8,5	17,5	580 x 400 x 180	SWi20/25TIEX

* Using stepped blocks.

Equalizer Flange Spreading Tools

SWi12/14TMEX -
ATEX Certified Mechanical Flange Spreading Wedge

II 2G Ex h IIB T5 Gb
II 2D Ex h IIIC T85°C 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 Aluminium 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 T100°C 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 Aluminium 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 T100°C 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 Aluminium Carry Case with Protective Foam Inserts

SWi2025TESTDEX - SWi20/25TEEX STD Kit



1 x SWi20/25TEEX Flange Spreading Tool
1 x 700 bar ATEX Hydraulic Hose, 2 m with 90° Elbow
1 x 700 bar 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 Aluminium Carry Case with Protective Foam Inserts

SWi2025TEMAXEX - SWi20/25TEEX MAX Kit



2 x SWi20/25TEEX Flange Spreading Tools
2 x 700 bar ATEX Hydraulic Hose, 2 m with 90° Elbow
1 x 700 bar 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 Aluminium 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 vapours (Ethylene group) and **Group IIIC** of dust (conductive dust)
- For hydraulic tools **T5** means that minimum ignition temperature of gas or vapor >**100°C**; **T100°C** means that minimum ignition temperature of a dust cloud ≥**150°C** and minimum ignition temperature of a 5mm dust layer ≥ **175°C**
- For mechanical tools **T6** means that minimum ignition temperature of gas or vapor >**85°C**; **T85°C** means that minimum ignition temperature of a dust cloud ≥**127,5°C** and minimum ignition temperature of a 5mm dust layer ≥ **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":

Equalizer Flange Spreading Tools

▼ SG11TM



SG

FLANGE
SPREADING TOOLS

Spreading Force:
37,0 - 150,0 kN

Spreading Distance:
0 - 115 mm

Maximum Operating Pressure:
700 bar *

* Only relevant for hydraulic tools

- **For use on all flange types with bolt-hole sizes ranging from 17,5 mm to 62,0 mm**
- **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.

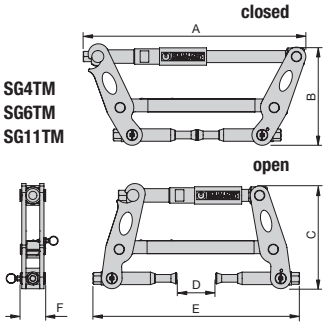
Caution

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.

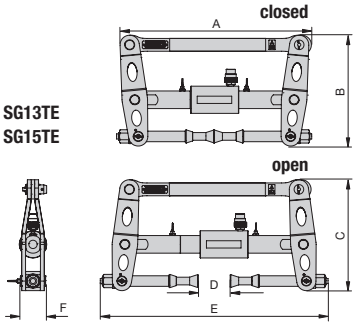
OPERATING BENEFITS

- **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**

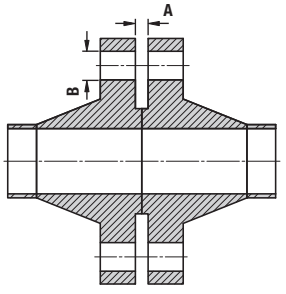
SG4TM
SG6TM
SG11TM



SG13TE
SG15TE

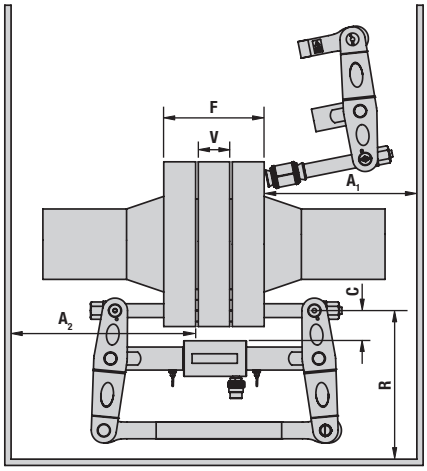


Flange Dimensions



Model Number Tool Kit	Type*	Maximum Spreading Force Per Tool (kN)	Spreading Distance Maximum (mm)	Flange Dimensions (mm)		Tool Dimensions (mm)						Tool Weight (kg)	Kit Weight (kg)	Case Dimensions (mm)	Tool Number
				Minimum Access Gap A	Bolt-hole Diameter B	A	B	C	D	E	F				
SG4TMSTD	M	37,0	75	0	17,5 - 23	398	190	182	75	385	48	4,5	12,8	520x375x165	SG4TM
SG6TMSTD	M	60,0	80	0	24 - 30	468	245	252	80	444	52	7,5	16,0	640x540x165	SG6TM
SG11TMSTD	H	110,0	90	0	30 - 39	516	250	263	90	462	60	10,5	20,0	640x540x165	SG11TM
SG13TESTD	H	130,0	115	0	38 - 49	516	303	314	115	630	72	21,5	40,5	890x570x165	SG13TE
SG15TESTD	H	150,0	100	0	47,5 - 62	600	346	380	100	720	80	26,0	45,0	890x570x165	SG15TE

* M = Mechanical
H = Hydraulic



SG

FLANGE
SPREADING TOOLS

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. (mm)	Max. (mm)	Measured: From / To	Min. (mm)	Max. (mm)	Measured: From / To	Max. (mm)	Measured: From / To	Min. (mm)	Measured: From / To	Min. (mm)	Measured: From / To	Min. (mm)	Measured: From / To	
SG4TMSTD	60	185	Outside face of flange / Outside face of flange	0*	45*	Inside face of flange / Inside face of flange	50	Bolt-hole circle / Largest OD of valve/spacer	170	Bolt-hole circle / Closest obstruction	170	Outside face of flange / Closest obstruction	200	Inner face of flange / Closest obstruction	SG4TM
SG6TMSTD	60	210		0*	50*		55		230		200		234		SG6TM
SG11TMSTD	96	240		0*	60*		60		240		223		258		SG11TM
SG13TESTD	120	310		0*	95*		70		280		310		260		SG13TE
SG15TESTD	140	400		0*	80*		80		370		380		315		SG15TE

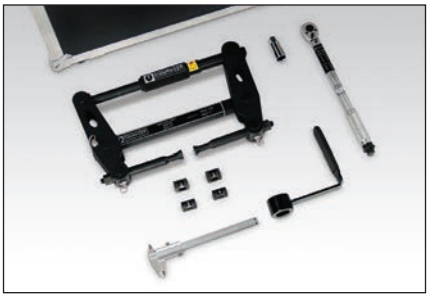
* Short Collet Holder Kits (SCH) are available which can offer improved range of application.

SG4TM MECHANICAL TOOL KIT



1 X SG4TM Tool
1 X 150 mm 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 Aluminium Carry Case with Protective Foam Inserts

SG6TM MECHANICAL TOOL KIT



1 x SG6TM Tool
1 X 150 mm 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 Aluminium Carry Case with Protective Foam Inserts

SG11TM MECHANICAL TOOL KIT



1 x SG11TM Tool
1 x 150 mm 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 Aluminium Carry Case with Protective Foam Inserts

SG13TE HYDRAULIC TOOL KIT



1 x SG13TE Tool
1 x 700 bar HP550S Single Port Sealed Hand Pump with Gauge
1 x 700 bar Hydraulic Hose, 2 m
1 x 150 mm 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 Aluminium Carry Case with Protective Foam Inserts

SG15TE HYDRAULIC TOOL KIT



1 x SG15TE Tool
1 x 700 bar HP550S Single Port Sealed Hand Pump with Gauge
1 x 700 bar Hydraulic Hose, 2 m
1 x 300 mm 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 Aluminium Carry Case with Protective Foam Inserts

Equalizer Flange Spreading Tools

▼ SG18TE & SG25TE



SG

FLANGE
SPREADING TOOLS

Spreading Force:
180,0 - 250,0 kN

Spreading Distance:
0 - 120 mm

Maximum Operating Pressure:
700 bar

- **Applicable for larger-sized flanges**
- **Actuated by an external hand pump**
- **Suitable for bolt holes from 59,5 mm to 108 mm**

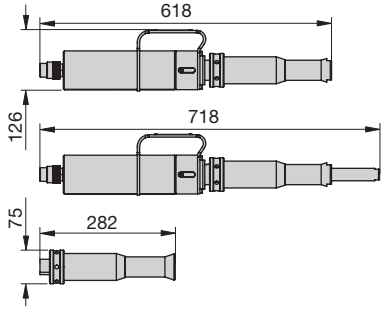
Range of Application

For a detailed range of application please request the Secure-Grip In-Line Hydraulic Operator Instruction Sheet.

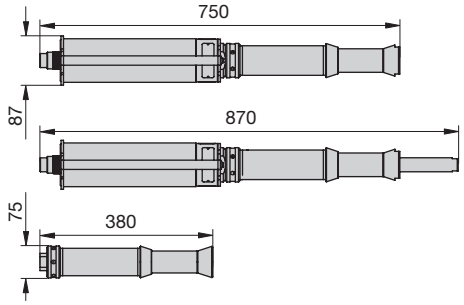
Caution

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.

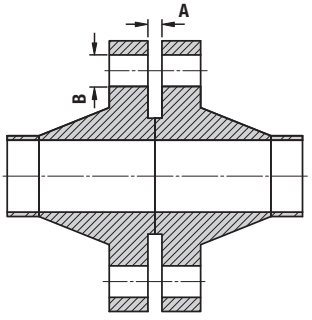
SG18TE



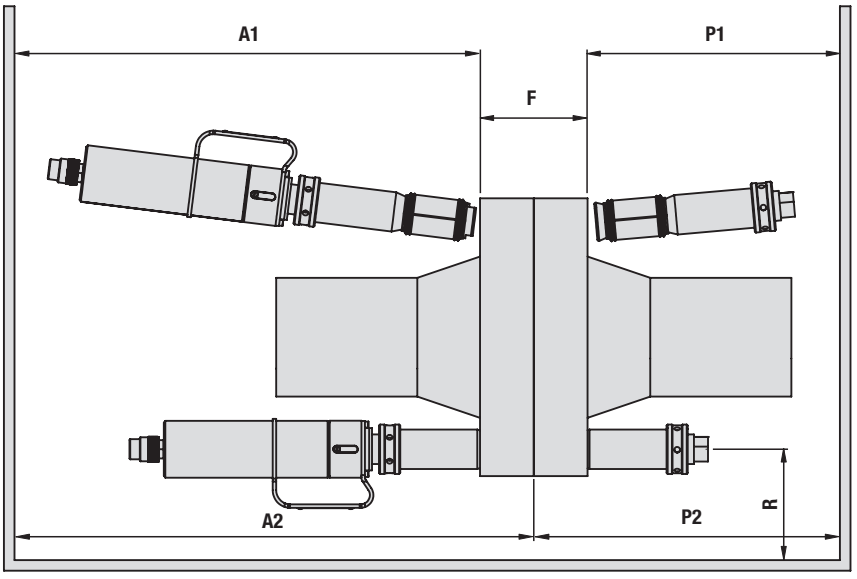
SG25TE



Flange Dimensions



Model Number Tool Kit	Type	Maximum Spreading Force Per Tool (kN)	Spreading Distance Maximum (mm)	Flange Dimensions (mm)		Tool Weight (kg)	Kit Weight (kg)	Case Dimensions (mm)	Tool Number
				Minimum Access Gap A	Bolt-hole Diameter B				
SG18TESTD	Hydraulic	180,0	100	0	59,5 - 75	14	45	890 x 570 x 165	SG18TE
SG25TESTD	Hydraulic	250,0	120	0	75 - 108	24	50	890 x 570 x 165	SG25TE



SG

FLANGE
SPREADING TOOLS

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. (mm)	Max. (mm)	Measured: From / To	Min. (mm)	Measured: From / To	Min. (mm)	Measured: From / To	Min. (mm)	Measured: From / To	Min. (mm)	Measured: From / To	Min. (mm)	Measured: From / To	
SG18TESTD	190	450	Outside face of flange/ Outside face of flange	55	Bolt-hole circle / Closest obstruction	620	Outside face of flange/ Closest obstruction	900	Inner face of flange/ Closest obstruction	283	Outside face of flange/ Closest obstruction	283	Inner face of flange/ Closest obstruction	SG18TE
SG25TESTD	210	570		55		750		1100		380		380		SG25TE

SG18TE HYDRAULIC TOOL KIT



1 x SG18TE Tool
1 x Spreading Plug
1 x 700 bar HP550S Single Port Sealed Hand Pump with Gauge
1 x 700 bar Hydraulic Hose, 2 m
1 x 300 mm Vernier Calliper
1 x 12.5 mm Spacer Plate
1 x 5mm Allen Key
1 x 50 mm Spacer
1 x Safety Block
2 x M60 (2-3/8") Collets
2 x M64 (2-1/2") Collets
2 x M70 (2-3/4") Collets
1 x Aluminium Carry Case with Protective Foam Inserts

SG25TE HYDRAULIC TOOL KIT



1 x SG25TE Tool
1 x Spreading Plug
1 x 700 bar HP550S Single Port Sealed Hand Pump with Gauge
1 x 700 bar Hydraulic Hose, 2 m
1 x 300 mm Vernier Calliper
1 x 12.5 mm Spacer Plate
1 x Safety Block
1 x Aluminium Carry Case with Protective Foam Inserts

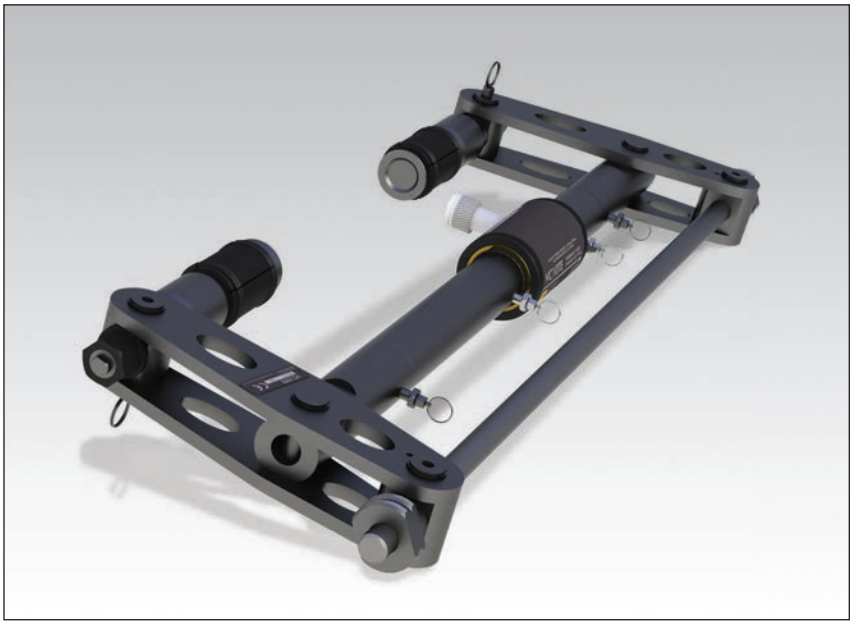
SG25TE COLLETS (AVAILABLE SEPARATELY)

Model Number	Description
673601-01	2 x M76 (3") Collets
674801-01	2 x M90 (3-1/2") Collets
673901-01	2 x M80 (3-1/4") Collets
675101-01	2 x M95 (3-3/4") Collets
674501-01	2 x M84 (3-3/8") Collets
675601-01	2 x M100 (4") Collets

Equalizer Flange Spreading Tools

EQUALIZER™ AN ENERPAC BRAND

▼ VC10TE



VC

VALVE CHANGE-OUT TOOLS

Spreading Force:
100 kN

Spreading Distance:
0 - 580 mm

Maximum Operating Pressure:
700 bar

- **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**

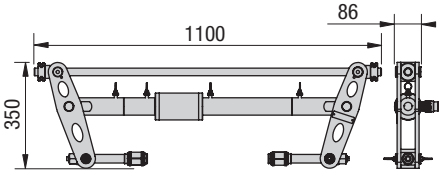
PATENTED SECURE-GRIP SYSTEM:

- **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**

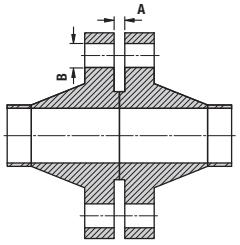
Caution

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.

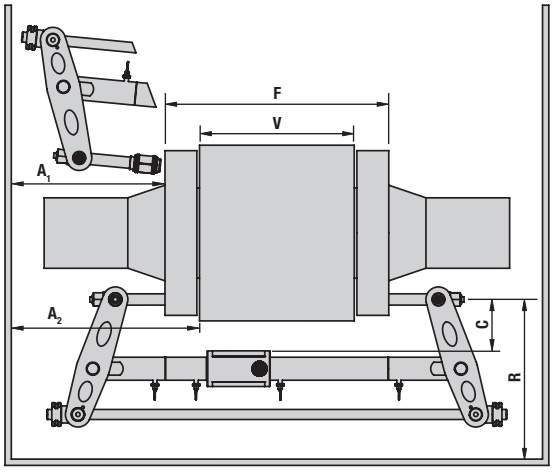


Flange Dimensions



Model Number Tool Kit	Type*	Maximum Spreading Force Per Tool (kN)	Spreading Distance Maximum (mm)	Flange Dimensions (mm)		Tool Kit Weight (kg) (2 per Maxi Kit)	Pump Kit Weight (kg)	Gross Kit Weight (kg)	Tool Case Dimensions (mm)	Pump Case Dimensions (mm)	Tool Number
				Minimum Access Gap A	Bolt-hole Diameter B						
VC10/13TESTD	H	100	580	0	38 - 49	50	27	77	550x1200x170	550x1200x170	VC10/13TE
VC10/13TEMAX	H	100	580	0	38 - 49	50	30	130	550x1200x170	550x1200x170	VC10/13TE
VC10/15TESTD	H	100	560	0	47,5 - 62	53	27	80	550x1200x170	550x1200x170	VC10/15TE
VC10/15TEMAX	H	100	560	0	47,5 - 62	53	30	136	550x1200x170	550x1200x170	VC10/15TE
VC10/18TESTD	H	100	514	0	59,5 - 75	58	27	85	550x1200x170	550x1200x170	VC10/18TE
VC10/18TEMAX	H	100	514	0	59,5 - 75	58	30	146	550x1200x170	550x1200x170	VC10/18TE
VC10/25TESTD	H	100	490	0	75 - 108	58	27	85	550x1200x170	550x1200x170	VC10/25TE
VC10/25TEMAX	H	100	490	0	75 - 108	58	30	146	550x1200x170	550x1200x170	VC10/25TE

* H = Hydraulic



VC

VALVE
CHANGE-OUT TOOLS

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. (mm)	Max. (mm)	Measured: From / To	Min. (mm)	Max. (mm)	Measured: From / To	Measured: From / To	Measured: From / To	Measured: From / To	Measured: From / To	
VC10/13TESTD	110	690	Outside face of flange / Outside face of flange	0*	580*	Inside face of flange / Inside face of flange	Bolt-hole circle / Largest OD of valve/spacer - max. 130 mm	Bolt-hole circle / Closest obstruction - min. 360 mm	Outside face of flange / Closest obstruction - min. 300 mm	Inner face of flange / Closest obstruction - min. 370 mm	VC10/13TE
VC10/13TEMAX	110	690		0*	580*						VC10/13TE
VC10/15TESTD	130	690		0*	560*						VC10/15TE
VC10/15TEMAX	130	690		0*	560*						VC10/15TE
VC10/18TESTD	176	690		0*	514*						VC10/18TE
VC10/18TEMAX	176	690		0*	514*						VC10/18TE
VC10/25TESTD	200	690		0*	490*						VC10/25TE
VC10/25TEMAX	200	690		0*	490*						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 Aluminium 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 Aluminium 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 Aluminium Carry Case with Protective Foam Inserts

VC10/25TE
1 x VC10/25TE Tool
1 x Aluminium Carry Case with Protective Foam Inserts

PUMP KITS



For STD Tool Kits
1 x 700 bar HP550S Single Port Hydraulic Hand Pump
1 x Hydraulic Gauge with Manifold
1 x 700 bar Hydraulic Hose, 2,0 m
1 x Secure Grip Safety Block
1 x Square Drive Flexible Handle
1 x Vernier Calliper
1 x Aluminium Carry Case with Protective Foam Inserts

For MAX Tool Kits
1 x 700 bar HP1000D Twin Port Hydraulic Hand Pump
2 x Hydraulic Gauges with Manifolds
2 x 700 bar Hydraulic Hoses, 2,0 m
2 x Secure Grip Safety Blocks
1 x Square Drive Flexible Handle
1 x Vernier Calliper
1 x Aluminium 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

Equalizer Flange Spreading Tools

EQUALIZER™ AN ENERPAC BRAND

▼ MG7TM



MG

FLANGE SPREADING TOOL

Spreading Force:
68,0 kN

Spreading Distance:
2,0 - 27,0 mm

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 68,0 kN**

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

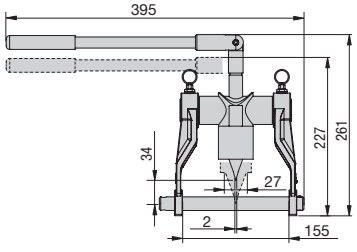
- **Locks on to flange joint**
- **Safe, quick and easy operation**
- **Saves time and cost**

MG7TMSTD Standard Kit

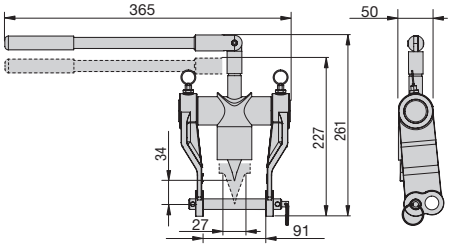


1 x MG7TM Tool
2 x Spreading Bar
1 x Moulded Plastic Carry Case

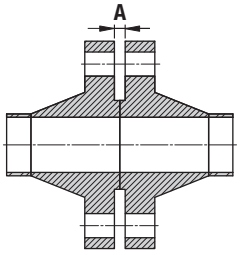
Tool retracted and advanced using large (Ø 20mm) spreading bar



Tool retracted and advanced using small (Ø 16mm) spreading bar



Flange Dimensions



Model Number Tool Kit	Type	Maximum Spreading Force Per Tool (kN)	Spreading Distance Maximum (mm)	Flange Dimensions Minimum Access Gap A (mm)	Wedge Width (mm)	Tool Weight (kg)	Kit Weight (kg)	Case Dimensions (mm)	Tool Number
MG7TMSTD	Mechanical	68,0	27,0	2,0	45,0	5,0	5,5	360 x 300 x 90	MG7TM

Equalizer Flange Pulling Tool

▼ FC10TE



FC

FLANGE
CLOSING TOOLS

Closing Force:
100 kN

Closing Distance:
570 - 0 mm

Maximum Operating Pressure:
700 bar

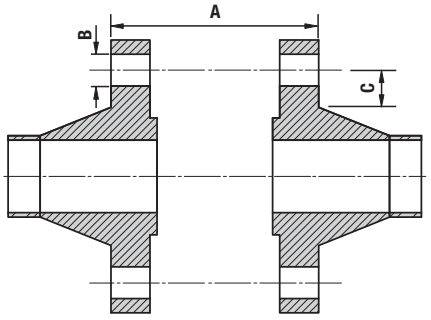
Caution

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 light weight**
- **Subsea compatible**
- **Reciprocating hydraulic action**

OPERATING BENEFITS

- **Reduction in operator fatigue**
- **Reduction in pinch point**
- **Quick and easy to use**



Flange Dimensions

FC10TESTD STD Kit



1 x FC10TE Tool
1 x 700 bar Hydraulic Hose, 2 m long
1 x 700 bar HP550S Single Port Sealed Hand Pump with Gauge
1 x Aluminium Carry Case with Protective Foam Inserts

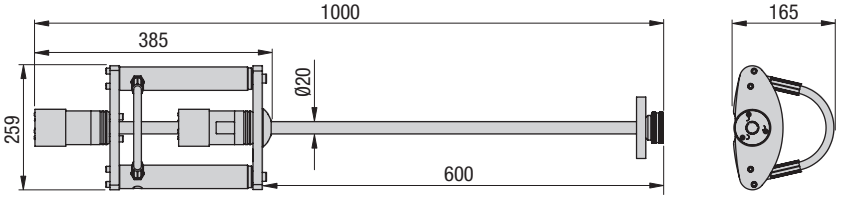
FC10TEMAX MAX Kit



2 x FC10TE Tool
2 x 700 bar Hydraulic Hoses, 2 m long
1 x 700 bar HP550D Twin Port Sealed Hand Pump with Gauge
1 x Aluminium Carry Case with Protective Foam Inserts

Model Number Tool Kit	Type	Maximum Closing Force Per Tool (kN)	Closing Distance (mm)	Flange Dimensions (mm)			Tool Weight (kg)	Kit Weight (kg)	Box/Case Dimensions (mm)	Tool Number
				A	B min	C min				
FC10TESTD	Hydraulic	100	570	16-570	25,4*	32	11	23,5	890 x 570 x 165	FC10TE
FC10TEMAX	Hydraulic	100	570	16-570	25,4*	32	11	36,5	890 x 570 x 165	FC10TE

* For hole diameter greater than 45mm, please contact Enerpac.



Equalizer Flange Alignment Tools

▼ **TFA15TI**



TFA

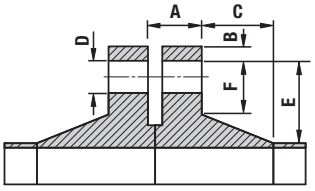
WIND TURBINE TOWER
FLANGE ALIGNMENT TOOLS

Hook Force:
40 - 270 kN

Aligning Distance:
42 - 65 mm

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



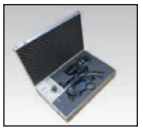
1 x TFA4TM Tool
1 x Torque Wrench
1 x Moulded Plastic Carry Case

TFA12TE / TFA15TE External Hydraulic Tool Kit



1 x TFA12TE or TFA15TE Tool
1 x Safety Lanyard
1 x Aluminium Carry Case with Protective Foam Inserts

TFA12TI / TFA15TI Internal Hydraulic Tool Kit

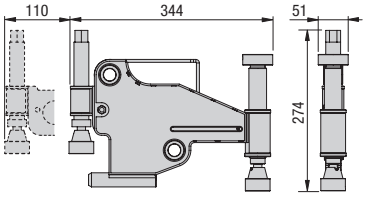


1 x TFA12TI or TFA15TI Tool
1 x Aluminium Carry Case with Protective Foam Inserts

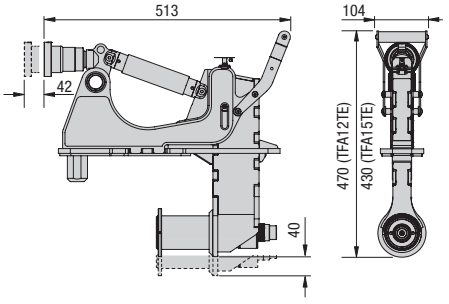
Model Number Tool Kit	Type*	Maximum Hook Force Per Tool (kN)	Maximum Aligning Distance (mm)	Maximum Operating Pressure (bar)	Flange Dimensions (mm)						Tool Weight (kg)	Kit Weight (kg)	Box/Case Dimensions (mm)	Tool Number
					A	B	C	D min	E	F min				
TFA4TMSTD	M	40	42	-	36-135	0-55	0-231	25	0-105	24	8,1	18,0	600x370x200	TFA4TM
TFA12TEMIN	H	240	65	510	129-178	110-241	0-167	45	87-125	62	19,3	28,4	640x540x165	TFA12TE
TFA15TEMIN	H	270	65	700	89-138	110-241	0-167	45	87-125	62	18,9	28,0	640x540x165	TFA15TE
TFA12TIMIN	H	240	65	-	129-178	113-241	0-167	45	87-125	62	21,9	31,0	585x900x160	TFA12TI
TFA15TIMIN	H	270	65	-	89-138	113-241	0-167	45	87-125	62	21,5	30,6	585x900x160	TFA15TI

* M = Mechanical
H = Hydraulic

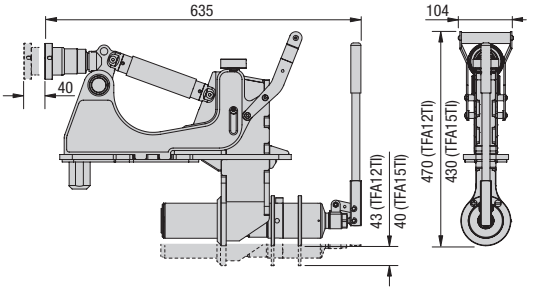
TFA4TM



TFA12TE
TFA15TE



TFA12TI
TFA15TI



▼ HP350D



HP

HYDRAULIC SEALED HAND PUMPS

Maximum Pressure Rating:

1st Stage: 13,8 bar
2nd Stage: 700 bar

Pump Type:

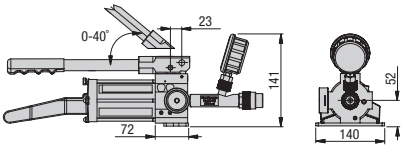
2-Speed

- **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 T100°C Db**

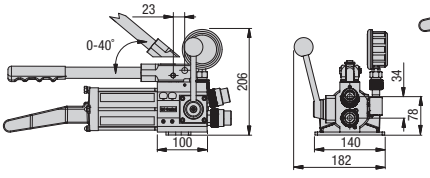
Pump Ratings

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 700 bar and is delivered from threaded 3/8" NPT output ports. The pumps and hoses can be used with any 700 bar 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

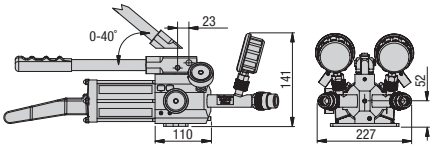
HP350/550/1000S



HP350/550/1000SD



HP350/550/1000D



700 BAR HOSES

AVAILABLE TO PURCHASE SEPARATELY

Model Number	Description
302701-01	HYDRAULIC HOSE 2M
302702-01	HYDRAULIC HOSE 4M
302705-01	HYDRAULIC HOSE 3M
302706-01	HYDRAULIC HOSE 5M
302707-01	HYDRAULIC HOSE 6M
1440008-01	ATEX HYDRAULIC HOSE 2M
1440013-01	ATEX HYDRAULIC HOSE 4M
1440014-01	ATEX HYDRAULIC HOSE 6M

Model Number Hand Pump Kit		Type*	Nominal Oil Capacity (cc)	Useable Oil Capacity (cc)	Oil Volume per Stroke (cc)		Max. Handle Effort (kgf)	Piston Stroke (mm)	Overall Length (mm)	Box Dimensions (mm)	Pump Weight (kg)	Kit Weight (kg)	Tool Number
Standard	ATEX				1st Stage	2nd Stage							
HP350SMIN	HP350SMINEX	SA, SP	350	300	3,62	0,77	33	18	554	250 x 180 x 600	4,4	4,9	HP350S
HP550SMIN	HP550SMINEX	SA, SP	550	580	3,62	0,77	25	18	643	250 x 180 x 700	5,1	5,9	HP550S
HP1000SMIN	HP1000SMINEX	SA, SP	1000	1110	3,62	0,77	21	18	867	250 x 180 x 900	6,1	7,1	HP1000S
HP350DMIN	HP350DMINEX	SA, TP	350	300	3,62	0,77	33	18	580	250 x 180 x 600	6,5	7,2	HP350D
HP550DMIN	HP550DMINEX	SA, TP	550	580	3,62	0,77	25	18	669	250 x 180 x 700	7,2	8,1	HP550D
HP1000DMIN	HP1000DMINEX	SA, TP	1000	1110	3,62	0,77	21	18	893	250 x 180 x 900	7,1	9,3	HP1000D
HP350SDMIN	–	DA	350	300	3,62	0,77	33	18	456	250 x 180 x 600	5,3	5,7	HP350SD
HP550SDMIN	–	DA	550	580	3,62	0,77	25	18	579	250 x 180 x 700	5,7	6,0	HP550SD
HP1000SDMIN	–	DA	1000	1110	3,62	0,77	31	18	769	250 x 180 x 900	5,9	6,3	HP1000SD

* SA = Single Acting DA = Double Acting
SP = Single Port TP = Twin Port

Enerpac Heavy Lifting Technology

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.



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

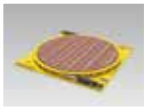


Transportation



Special high tonnage cylinders for the Pioneering Spirit lifting beams

Heavy Lifting Technology - Section Overview

Capacity ton (kN)	Capabilities	Series		Page
Flow: 0,27 - 4,20 l/min **Power: 0,75 - 15 kW**	**Split-Flow Hydraulic Pumps** Multiple outlets with equal oil flow	**SFP**		**280** ▶
Flow: 0,82 - 1,64 l/min **Power: 1,1 - 2,2 kW**	**Synchronous Lifting Systems, basic models** The economical solution to basic applications	**EVOB**		**282** ▶
Flow: 0,75 - 4,80 l/min **Power: 3,5 - 7,5 kW**	**Synchronous Lifting Systems, standard models** The multi-functional synchronous lifting system	**EVO**		**284** ▶
50 -100 (500 - 1000)	**Self-Locking Cube Jack** Incremental lifting, automated mechanical locking	**SCJ**		**286** ▶
50 - 200 (498 - 1995)	**Climbing Jacks** A simple solution to incremental lifting	**BLS**		**290** ▶
125 - 750 (1250 - 7500)	**Jack-Up Systems** Synchronically lift, mechanically hold	**JS**		**292** ▶
15 - 1250 (147 - 12.250)	**Heavy Lifting Strand Jacks** High capacity precision control	**HSL**		**294** ▶
55 - 110 (539 - 1078)	**Synchronous Hoisting Systems - SyncHoist** Precision positioning jacks	**SHS**		**296** ▶
110 - 225 (1078 - 2205)	**Autonomous Hoisting Systems - SyncHoist** Wireless remote control, integrated hydraulics	**SHAS**		**298** ▶
100 - 1100 (1000 - 10.500)	**Telescopic Hydraulic Gantries** Precision lift and position of heavy loads	**SL** **SBL**		**300** ▶
100 - 250 (860- 2500)	**Skidding Systems** The ideal jack and slide solution	**HSK** **LH**		**302** ▶
127 (1250) **Speed: 0,8 - 1,2 m/min**	**Trolley System** Synchronized travel	**ETR**		**304** ▶
200 - 400 (2000- 4000)	**Turntables** Controlled rotation of heavy loads	**ETT**		**306** ▶
60 (600) **Speed: 3 - 1,5 km/hr**	**Self-Propelled Modular Transporters** Hydraulic strength in a linear drive transport system	**SPMT**		**307** ▶
–	**Custom Solutions - Experience and Expertise** **Project Gallery – Custom Heavy Lifting Solutions**	–		**308** ▶ **309** ▶

▼ SFP 613SW with 150 litres reservoir (shown with 6 split-flow outlets)



Multiple Outlets with Equal Oil Flow

- **Smart valve technology allows both controlled lifting and lowering of multiple points**
- **2, 4, 6 or 8 split-flow outlets**
- **Valve operation with advance/hold/retract function**
- **Joystick (manual) or pendant (solenoid) control**
- **Flow per outlet from 0,27 to 4,2 l/min at 700 bar**
- **For double and single-acting cylinders**
- **Pressure compensated flow control per circuit**
- **Adjustable pressure relief valve per circuit**
- **All models include pressure gauge per circuit**
- **Reservoir: 20, 40 or 150 litres (9, 20 or 135 litres useable oil capacity)..**

Split-Flow Pump Applications

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.

Pressure compensated flow control

This unique feature to our Split-Flow Pumps will ensure both smooth lifting and lowering, independent of load distribution.

For lifting applications Split-Flow Pumps are an efficient and safer alternative than using individual pumps. Where synchronization of maximum 4% is acceptable, Split-Flow pumps are a safe and economical solution.

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.

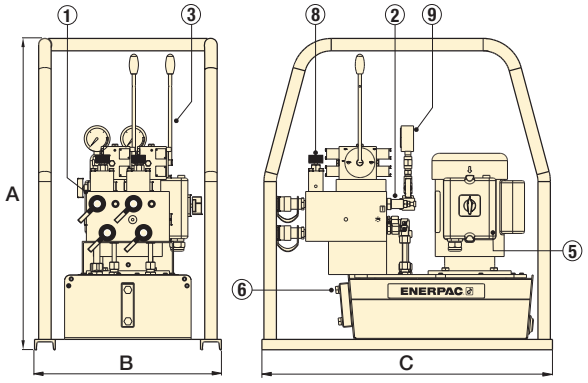


Remote Control Pendant

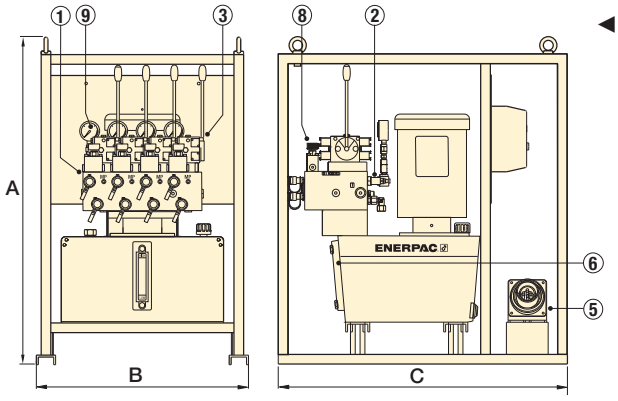
Split-Flow pumps with solenoid valves include a remote pendant with selector switches for each individual outlet, allowing single or multiple cylinder operation.



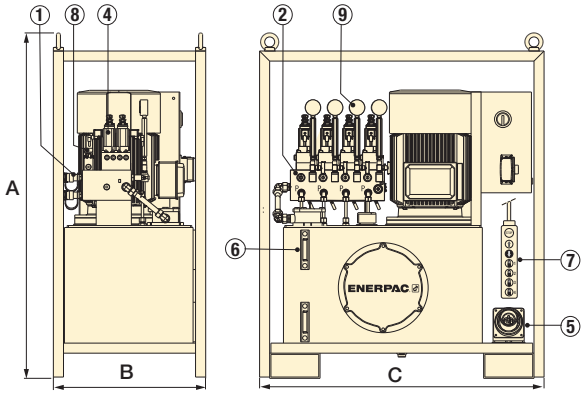
◀ *During manufacturing of container units, the Enerpac SFP404SW Split-Flow Pump with 4 outlets provide both lifting and load distribution function. The container units weight between 70 and 120 ton and are complete equipped as full operational shelter for specific applications in power-generation, mining and construction industries for on-site use.*



◀ **SFP-Series with 9 litres reservoir (shown with 2 split-flow outlets)**



◀ **SFP-Series with 20 litres reservoir (shown with 4 split-flow outlets)**



◀ **SFP-Series with 135 litres reservoir (shown with 4 split-flow outlets)**

SFP Series



Reservoir Capacity:
20 - 40 - 150 litres

Split-Flow Outlets:
2, 4, 6 and 8 outlets

Flow at Rated Pressure:
0,27 - 4,20 l/min

Maximum Operating Pressure:
700 bar



Lifting Cylinders

For a complete line of Enerpac cylinders, see the Cylinder and Lifting Products in our catalogue.

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Number of Split-Flow Outlets	Usable Oil Capacity (litres)	Oil Flow per Outlet @ 700 bar (l/min)	Pump Model Number 4/3 Valve Operation Advance/Hold/Retract Manual (Joystick)	Pump Model Number 4/3 Valve Operation Advance/Hold/Retract 24 V Solenoid (Pendant)	Motor Size 400 V, 3ph 50 Hz (kW)	Dimensions (mm) A	Dimensions (mm) B	Dimensions (mm) C	(kg)
2	9	0,27	SFP 202ME *	–	0,75 *	750	450	700	86
	9	0,27	SFP 202MW	–	0,75	750	450	700	86
	20	1,30	SFP 213MW	SFP 213SW	5,5	1019	660	900	240
	135	2,80	SFP 228MW	SFP 228SW	7,5	1372	605	1130	488
	135	4,20	SFP 242MW	SFP 242SW	11	1372	605	1130	526
4	20	0,45	SFP 404MW	SFP 404SW	5,5	1019	660	900	240
	135	0,90	SFP 409MW	SFP 409SW	5,5	1372	605	1130	475
	135	1,40	SFP 414MW	SFP 414SW	7,5	1372	605	1130	488
	135	2,10	SFP 421MW	SFP 421SW	11	1372	605	1130	526
6	20	0,45	–	SFP 604SW	5,5	1019	660	900	240
	135	1,30	–	SFP 613SW	11	1372	805	1200	550
8	135	1,30	–	SFP 813SW	15	1372	805	1200	590

* **SFP....ME**: 230V, 1 ph, 50 Hz
SFP....MW: 400V, 3 ph, 50 Hz

① Manifold with split-flow outlets and CR-400 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 receptacle
⑥ Oil sight gauge(s)
⑦ Remote control pendant with 5 m cord
⑧ Return flow control valve in each circuit
⑨ Hydraulic pressure gauge in each circuit

▼ *Split-Flow Pump SFP409MW with 4 outlets and manual valves.*



▼ EVOB 816W



The economical solution to basic lifting applications

- **Pumps to control 4 to 8 lifting points**
- **Intuitive user interface provides easy set-up and control**
- **For use with standard single- or double-acting cylinders**
- **Built in warning and stop alarms for optimum safety**
- **Available in two oil flow options.**

The Basic EVOB-System

Leveraging Enerpac's market leading Z-Class pumps and components from the standard EVO, the Basic EVOB offers an economical solution to basic applications requiring stroke only control for a maximum of 8 lifting points.

The Basic EVOB-System has three work modes. The operator can navigate to any of these menus:

1. Manual
2. Automatic
3. Depressurize.

Typical Synchronous Lifting Applications

- Bridge lifting and repositioning
- Bridge launching
- Bridge maintenance
- Incremental launching and box jacking
- Lifting and lowering of heavy equipment
- Lifting, lowering, levelling and weighing of heavy structures and buildings
- Structural and pile testing
- Lifting and weighing of oil platforms
- Foundation levelling of onshore and offshore wind turbines
- De-propping/load transfer from temporary steel work
- Foundation shoring.

▼ *Bridge maintenance: A 200 ton bridge was lifted using 8 cylinders to replace the old bearings.*



▼ *Foundation repair: Synchronous lift system used to lift a 1000 ton building.*



EVOB-Basic Synchronous Lifting Systems

What is Synchronous Lifting?

To achieve high-precision movement of heavy objects it is necessary to control and synchronize the movements of multiple lifting points.

The PLC-control uses feedback from multiple sensors to control the lifting, lowering and positioning of any large, heavy or complex structure, regardless of weight distribution.

By varying the oil flow to each cylinder, the system maintains very accurate positional control. By eliminating manual intervention, the sync lift helps maintain structural integrity and increases the productivity and safety of the lift.

PLC-controlled synchronous lifting systems reduce the risk of bending, twisting or tilting, due to uneven weight distribution or load-shifts between the lift points.

EVOB Series



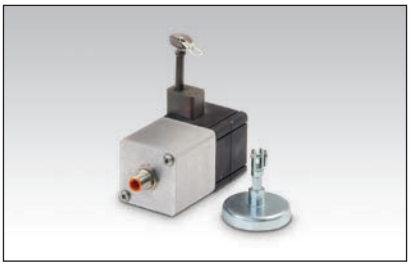
Number of Lifting Points:
4 - 8

Reservoir Capacity:
40 litres

Flow at Rated Pressure:
0,82 - 1,64 l/min

Motor Size:
1,12 - 2,24 kW

Maximum Operating Pressure:
700 bar



Wire Stroke Sensors

- **Ordered separately, requires one for each lifting point**
- **Provides stroke feedback to controls**
- **Includes magnets for mounting.**



Stroke Sensor Cables

- **Ordered separately, requires one for each stroke sensor**
- **Can be connected together for additional length.**



Lifting Cylinders

For a complete line of Enerpac cylinders, see the Cylinder and Lifting Products in our catalogue.

Page: 5

Stroke Sensor Model Number	Measuring Range (mm)
EVO-WSS-500	500
EVO-WSS-1000	1000

Sensor Cable Model Number	Cable Length (metres)
EVO-SC-25	25
–	–



Multi-functional Synchronous Lifting Systems

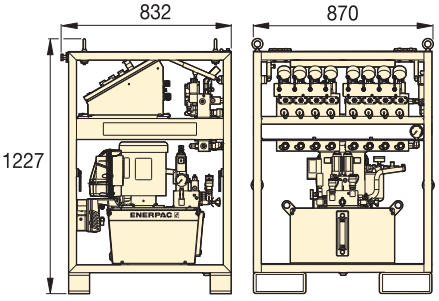
For more than 8 lifting points, to link up to 4 systems together and weighing system see the EVO-Standard Series.

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Voltage Options: To select voltage, change suffix W into required suffix.

B	=	115 V, 1 Ph, 50-60 Hz
E	=	208-240 V, 1 Ph, 50-60 Hz
G	=	208-240 V, 3 Ph, 50-60 Hz
W	=	380-415 V, 3 Ph, 50-60 Hz
J	=	460-480 V, 3 Ph, 50-60 Hz
R	=	575 V, 3 Ph, 60 Hz.

Example: **EVOB408E**. EVOB Basic Pump for 4 lift points, 0,82 l/min at 700 bar, and 1,12 kW motor 208-240 V, 1 Ph, 50-60 Hz.



▼ *Box jacking: Multi-point synchronous system to push hydraulically the tunnel segments under the railway.*



EVOB-Series (Basic)

Lifting Points	Oil Flow at 50 Hz [1] (l/min) (< 80 bar)	Oil Flow at 50 Hz [1] (l/min) (> 80 bar)	Model Number [2]	Usable Oil Capacity (litres)	Motor Size (kW)	(kg)
4	8,88	0,82	**EVOB408E**	20	1,12	278
4	11,61	1,64	**EVOB416W**	20	2,24	284
8	8,88	0,82	**EVOB808E**	20	1,12	278
8	11,61	1,64	**EVOB816W**	20	2,24	284

[1] Oil flow will be approximately 6/5 of these values at 60 Hz.
[2] For other voltages options see information above this selection chart.

▼ EVO 841460W



The multi-functional synchronous lifting systems

- **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 700 bar hydraulic power unit and 250 litres reservoir**
- **Network capability to link up to 4 EVO-units (HPUs) to a separate EVO-master control box via wireless control**
- **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.**

EVO-System Work Modes

The application possibilities are infinite with the standard EVO-System, powering interlinked hydraulic cylinders – single or double-acting, push or pull, stage lift, hollow plunger or lock nut cylinders. The EVO-System has 9 work modes. The operator can navigate to any of these menus:

1. Manual
2. Pre-Load
3. Automatic
4. Retract Fast
5. Depressurize
6. Tilting
7. Stage Lift
8. Weighing *
9. Center of Gravity determination *

* Available in the **EVO-W-models**.

Typical Synchronous Lifting Applications

- Bridge lifting and repositioning
- Bridge launching
- Bridge maintenance
- Incremental launching and box jacking
- Lifting and lowering of heavy equipment
- Lifting, lowering, levelling and weighing of heavy structures and buildings
- Structural and pile testing
- Lifting and weighing of oil platforms
- Foundation levelling of onshore and offshore wind turbines
- De-propping/load transfer from temporary steel work
- Foundation shoring.



◀ *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.*

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 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”.

EVO-W Weighing System
Weighing applications with 1% accuracy
- Includes calibrated sensors and auto-calibration of external load cells.
- Center of gravity determination functionality.
- Parameters for “waiting time for stabilization” and “number of cycles”.

Global standardized system
- Enerpac global coverage ensures local support.

EVO Series



Number of Lifting Points:
4 - 8 -12 (up to 48)

Reservoir Capacity:
250 litres

Flow at Rated Pressure:
0,75 - 4,80 l/min

Motor Size:
3,50 - 7,50 kW

Maximum Operating Pressure:
700 bar



Stroke Sensors and Cables

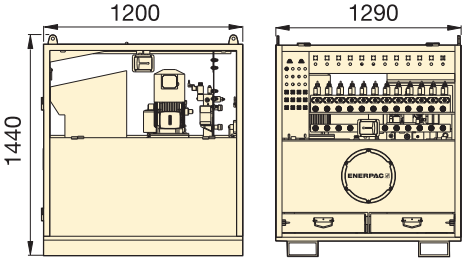
Optional accessories required for each lifting point and stroke sensor.

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EVO-Master Control Box

Required to link up to 4 standard EVO-pumps together to achieve a maximum of 48 lifting points. Contact Enerpac for more information.

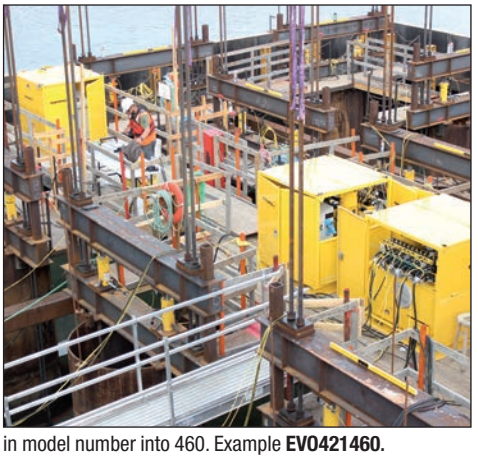


EVO-Series (Standard)

Lifting Points	Variable Oil Flow at 50 Hz [1] (l/min) (< 125 bar)	Variable Oil Flow at 50 Hz [1] (l/min) (> 125 bar)	Model Number [2] 380-415 V, 3ph, 50-60Hz	Usable Oil Capacity (litres)	Motor Size (kW)	Motor Speed [4]	(kg)
4	4,0 - 13,3	0,75 - 2,51	**EVO 421380**	250	3,5	VFDM	910
4	4,0 - 13,3	0,75 - 2,51	**EVO 421380 W** [3]	250	3,5	VFDM	910
4	4,7 - 15,6	1,44 - 4,80	**EVO 440380**	250	7,5	VFDM	1005
4	4,7 - 15,6	1,44 - 4,80	**EVO 440380 W** [3]	250	7,5	VFDM	1005
8	4,0 - 13,3	0,75 - 2,51	**EVO 821380**	250	3,5	VFDM	910
8	4,0 - 13,3	0,75 - 2,51	**EVO 821380 W** [3]	250	3,5	VFDM	910
8	4,7 - 15,6	1,44 - 4,80	**EVO 840380**	250	7,5	VFDM	910
8	4,7 - 15,6	1,44 - 4,80	**EVO 840380 W** [3]	250	7,5	VFDM	910
12	4,0 - 13,3	0,75 - 2,51	**EVO 1221380**	250	3,5	VFDM	920
12	4,0 - 13,3	0,75 - 2,51	**EVO 1221380 W** [3]	250	3,5	VFDM	920
12	4,7 - 15,6	1,44 - 4,80	**EVO 1240380**	250	7,5	VFDM	1025
12	4,7 - 15,6	1,44 - 4,80	**EVO 1240380 W** [3]	250	7,5	VFDM	1025

[1] Oil flow will be approximately 6/5 of these values at 60 Hz. [2] For 460-480 VAC, 3 phase, 50-60 Hz change 380 in model number into 460. Example **EVO421460.**
[3] Model numbers with suffix **W** are pumps for weighing systems. [4] VFDM = Variable Frequency Drive15-50 Hz.

▼ *Precision levelling caisson pier box: 3 EVO-Systems connected with 32 jacks lowered the 1100 ton bascule pier box.*



▼ SCJ-50, 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% less cycles than climbing jacks**
- **End block with adjustable swivel saddle allows fine adjustment during set-up: 50 mm screw extension**
- **Can be operated with Enerpac's 700 bar 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 3 metres. The cribbing blocks are lightweight and can be handled manualy.

Markets & Applications

Applications with a minimum starting height of 494 or 558 mm and requirement to lift up to 2067 or 3006 mm.

- 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.

▼ *Typical set-up with 4 Self-Locking Cube Jacks and cribbing blocks to lift a transformer (hydraulic power pack and hoses not shown).*



Self-Locking Cube Jack

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

If synchronization is required, the Cube Jack can accommodate stroke sensors and be used with any Enerpac Computer Controlled Synchronous Lifting System.

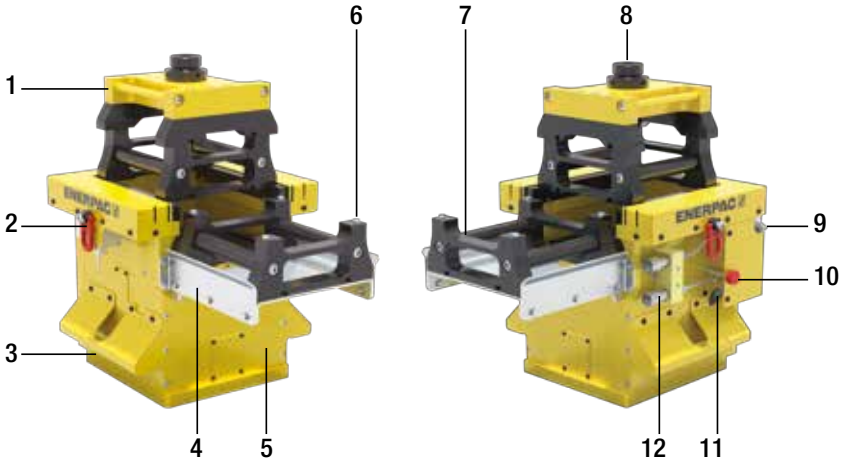
SCJ Series



Capacity Per Cube Jack:
500 - 1000 kN

Maximum Lifting Height:
2067 - 3006 mm

Maximum Operating Pressure:
700 bar



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)



▲ *Cube Jack close-up of lifting and lowering valving mode and lock handle.*

▼ *Optional wire stroke sensor can provide stroke feedback to pump control.*



▼ SCJ-100, 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 SCJ-50**
  18x on SCJ-100
- **– 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 Nr.
1x Cribbing Block, 50 ton	SCJ5B
1x Cribbing Block, 100 ton	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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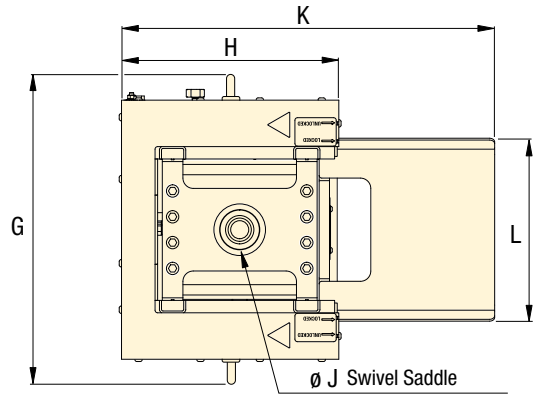
▼ *Forklift tabs on Cube Jacks for easy transportation and positioning with a pallet truck. See dimensions D and I to select the right pallet truck size.*



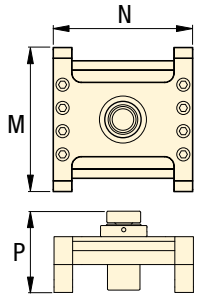
Self-Locking Cube Jacks

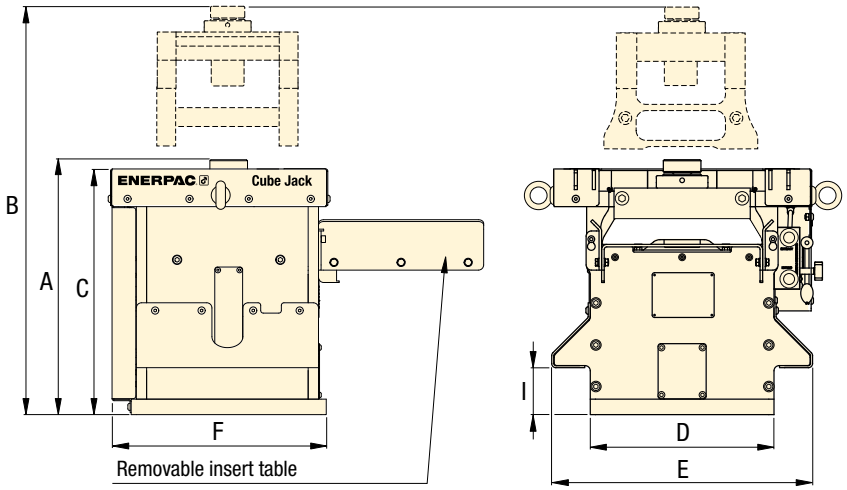
Lifting Capacity per Base Unit ton (kN)	Lifting Stroke (mm)	Model Number	Maximum Sideload at full extension	Oil Capacity per Base Unit (cm³) Advance	Retract
50 (500)	156	**SCJ-50**	1,5%	1229	623
100 (1000)	156	**SCJ-100**	1,5%	2500	1400

Self-Locking Cube Jack and Accessories

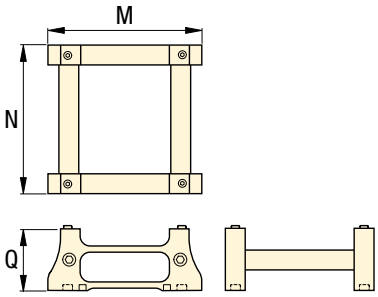


End Block with Swivel Saddle





Basic Unit



Cribbing Block

SCJ Series



Capacity Per Cube Jack:
500 - 1000 kN

Maximum Lifting Height:
2067 - 3006 mm

Maximum Operating Pressure:
700 bar

▼ *SCJ-100 Self-Locking Cube Jack at maximum height of 3006 mm with 18 cribbing blocks.*



Base Unit		End Block		Cribbing Block		Transport Frame *	
Model Number	(kg)	Model Number	(kg)	Model Number	(kg)	Model Number	(kg)
SCJ-50	360	**SCJ5EB**	40	**SCJ5B**	16	**SCJ5F**	110
SCJ-100	820	**SCJ10EB**	100	**SCJ10B**	23,5	**SCJ10F**	250

Dimensions (mm)																Model Number
A	B	C	D	E	F	G	H	I	J	K	L	M	N	P Min.	P Max.	Q	
494	2067	476	356	505	443	556	428	91	125	726	351	300	310	175	225	125	**SCJ-50**
558	3006	526	506	655	636	772	598	101	170	1046	504	450	460	189	239	125	**SCJ-100**

* Dimensions Transport Frame L x W x H: **SCF5F**: 920 x 850 x 860 mm
SCF10F: 1600 x 1200 x 1500 mm

▼ BLS-1006



- **Climbing jacks include integral tilt saddles with maximum tilt angles up to 5 degree**
- **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 included on all models.**

▼ *Synchronous Stage Lifting: 48 double-acting jacks (25 and 50 ton) are networked in to a 16 points synchronous system to lift this 50 metres long, 1000 ton building up to a height of 2,5 metres to construct a new floor level.*



A Simple Solution to Incremental Lifting

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 20 m lifting height, see our JS-Series Jack-Up Systems.

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Cylinder Capacity ton	Stroke (mm)	Model Number	Max. Cylinder Capacity (kN) Push	Pull
50	150	**BLS-506**	498	103
95	161	**BLS-1006**	933	435
140	151	**BLS-1506**	1386	668
200	151	**BLS-2006**	1995	1017



◀ *Typical stage-lift application using a custom built Enerpac system to lift the 360 ton Akkerwinde wooden bridge in the Netherlands.*

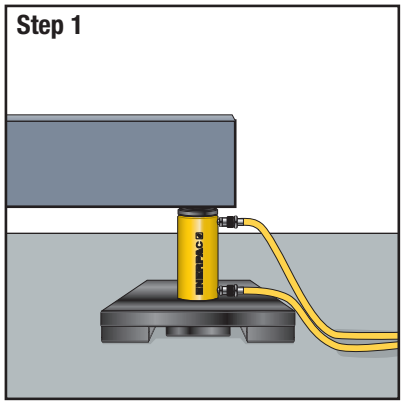
BLS Series

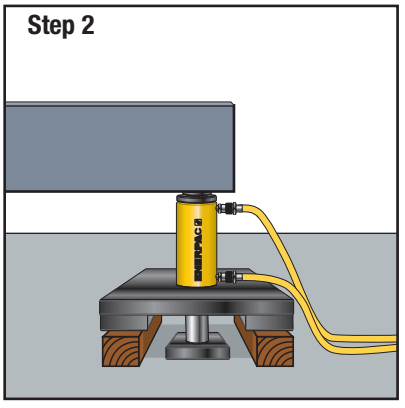


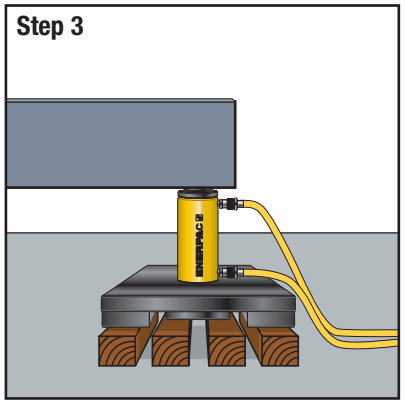
Capacity per Lifting Point:
50 - 200 ton

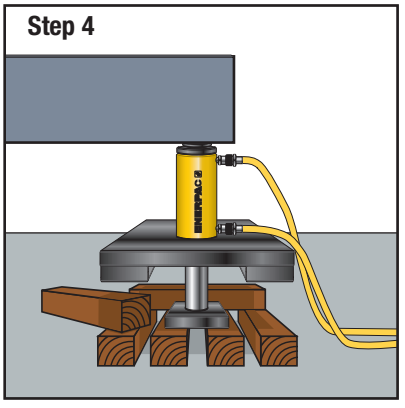
Stroke per Stage:
150 - 161 mm

Maximum Operating Pressure:
700 bar









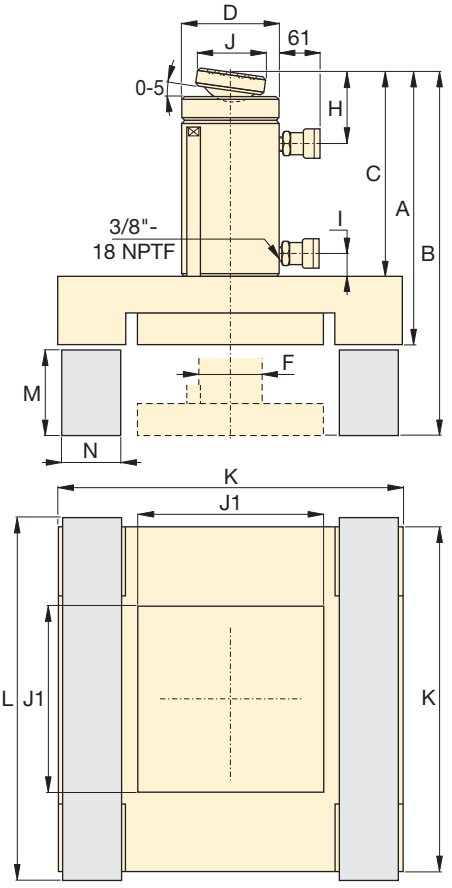
▲ **Stage Lifting Sequence**

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 (cm^2)		Oil Capacity (cm^3)		Dimensions (mm)										Cribbing Blocks * and Dimensions (mm)					Model Number
Push	Pull	Push	Pull	A	B	C	D	F	H	I	J	J1	K	Material	L	M	N	(kg)	
71,2	21,5	1111	335	406	556	318	127	79	56	36	50	240	515	Azobe Wood	565	140	120	170	**BLS-506**
133,3	62,2	2238	1045	445	606	343	177	95	76	24	71	330	670		720	150	160	315	**BLS-1006**
198,1	95,4	3090	1488	472	624	370	203	114	94	39	130	230	475	Solid Aluminium or Steel	500	140	115	322	**BLS-1506**
285,6	145,6	4332	2209	510	661	387	248	133	102	37	130	270	550		575	140	135	373	**BLS-2006**

* Cribbing blocks are not supplied by Enerpac.

▼ **JS-250, 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**
- **Lifting barrels are stacked together to mechanically hold the load**
- **Up to 5% 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 levelling 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 2000 ton (500 ton per tower) jack-up system from 20m to 36m for future projects..*



▼ *JS125 Jack-Up on a Base Frame Trolley.*



▼ *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 1000 ton (250 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.

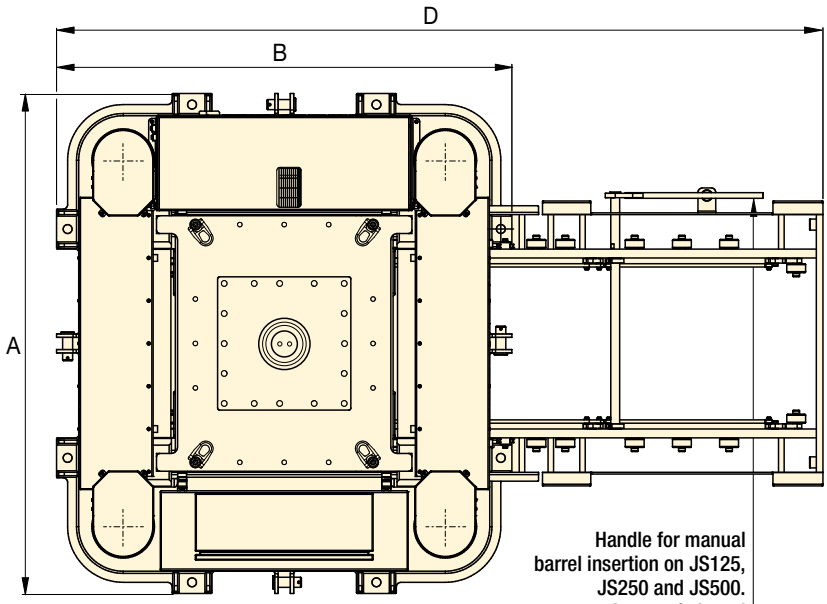
Each unit's lifting and lowering operations occur simultaneously; the computer control unit's synchronous technology maintains the balance of the load.

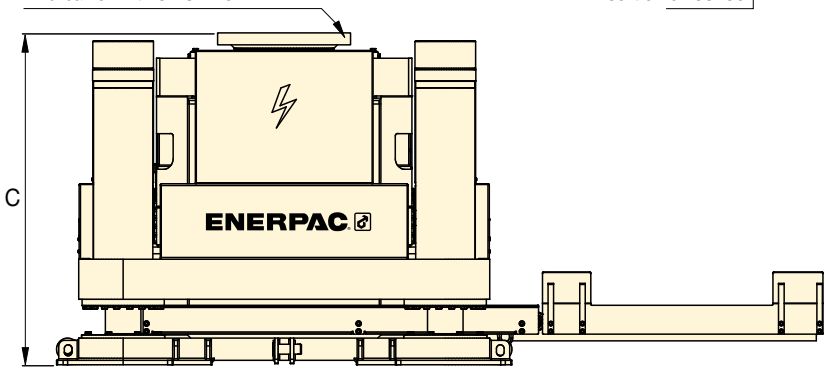
JS Series

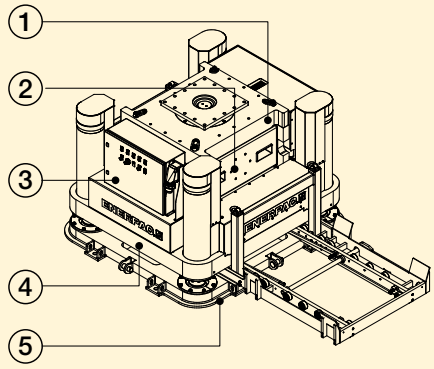


Capacity Per Lifting Tower:
125 - 750 ton

Lifting Height:
Up to 6 - 20 metres







Enerpac Jack Up Systems

① End Barrel
② Barrel
③ Electric Powerpack
④ Lifting Frame
⑤ Base Frame

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

Jack-Up Systems

Capacity per Tower ton (kN)	Model Number	Maximum Sideload	Base Frame Dimensions (mm) A	B	C	D	Barrel Dimensions L x W x H (mm)	(kg) *
125 (1250)	**JS125**	3% @ 6m	1200	1100	955	1850	600x600x300	2400
250 (2500)	**JS250**	3% @ 10m	2250	2050	1475	3450	1150x1150x500	7500
500 (5000)	**JS500**	4% @ 15m	2800	2300	1700	4280	1700x1700x700	13.750
750 (7500)	**JS750**	4% @ 20m	3670	3250	2375	6100	2300x2300x1000	24.000

* Weight per jack up unit, excluding barrels.

▼ *Enerpac Jack-Up System lifts 1500 ton span on Fore River Bridge.*



▼ Shown: **HSL50006 Strand Jack**



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: 15,7 mm and 18 mm (.62 and .71 inch)**
- **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.

▼ *Songdo Bridge, South Korea: Four HSL85007 strand jacks were installed on top of a temporary bent tower and simultaneously lifted both pylons up to their permanent position at 75 degrees. The lift was monitored and controlled using a computer controlled strand jack system with 30 kW hydraulic power units.*



▼ *HSL85007 Strand Jack System used on Enerpac custom Self Erecting Tower.*



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.

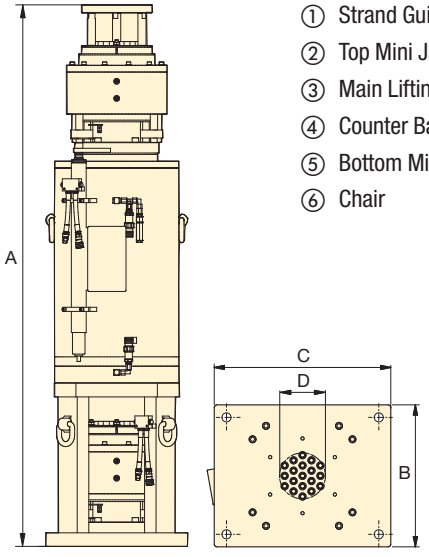
HSL Series



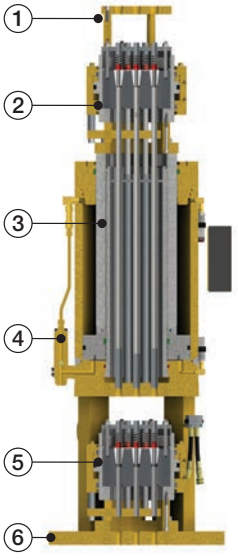
Capacity:
15 - 1250 ton

Stroke:
250 - 600 mm

Maximum Operating Pressure:
350 bar



① Strand Guide
② Top Mini Jack
③ Main Lifting Jack
④ Counter Balance Valve
⑤ Bottom Mini Jack
⑥ Chair



Strand Diameter	Capacity *		Model Number	Number of Strands	Stroke	Dimensions (mm)				
mm (inch)	ton	(kN)			(mm)	A	B	C	D	(kg)
15,7 (.62)	**30**	(300)	**HSL3006**	3	480	1851	350	500	59	500
	70	(700)	**HSL7006**	7	480	1915	360	575	93	640
	200	(2000)	**HSL20006**	19	480	1992	522	650	169	1300
	300	(3000)	**HSL30006**	31	480	2046	673	673	216	2180
	500	(5000)	**HSL50006**	48	480	2136	733	733	273	3150
18 (.71)	**15**	(150)	**HSL1507**	1	250	1242	220	220	20	100
	45	(450)	**HSL4507**	3	480	1728	350	500	73	500
	60	(600)	**HSL6007**	4	480	1752	400	625	88	650
	100	(1000)	**HSL10007**	7	480	1926	408	625	116	850
	200	(2000)	**HSL20007**	12	480	2001	522	650	165	1400
	300	(3000)	**HSL30007**	19	480	2055	673	673	210	2180
	450	(4500)	**HSL45007**	31	480	2223	733	733	272	3050
	650	(6500)	**HSL65007**	43	480	2237	850	850	351	3950
	850	(8500)	**HSL85007**	55	480	2402	900	900	364	5000
	1000	(10.000)	**HSL100007**	66	480	2558	1092	1092	436	7650
	1250	(12.500)	**HSL125007**	84	600	2658	1100	1100	458	8300

* Capacity is based on 2,5 minimum safety factor over strand breaking load.

▼ Strand Jack Accessories

Contact Enerpac for assistance by email at **integratedsolutions@enerpac.com**



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.



Strand Guides

Provides a guide for the strand as a strand jack lifts the load.



Strand Recoilers

Passively pays in or pays out strands while jacking and lowering.



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.

▼ SHS-Series 4-Point SyncHoist System



Accurate Hoisting and Load Positioning Enhancing a Crane's Capability

- **High precision load manoeuvering, 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: system warning functions**
- **Automatic control: fully PLC-monitorized system with programmable functions using touch screen and system 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
- Pre-programmed positioning, tilting and aligning.

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 monitorized cylinders.*



▼ *An SyncHoist system used to align steel blocks of the ship's control tower sections allowing gradual lift ingand positioning of the load.*



▼ *SyncHoist lifts and positions Brisbane Riverwalk concrete girders.*



SyncHoist - High Precision Load Positioning

What is SyncHoist?

Enerpac SHS-Series 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 pre-programmed positioning, tilting and aligning of loads.

- Patented system
- Complete system tested in compliance with Europenan lifting directive and safety requirements

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.

System management and control

Contact Enerpac for the following options, or other customised stroke, capacity and control configurations.

1. Manual control

- Valves with manual levers
- Warnings for thermal motor protection
- Visual check: oil level, filter indicator.

2. Automatic control

- Load and stroke monitoring, and stroke control
- PLC-control and touch screen
- Solenoid valves with pendant
- Pre-programmable motions and data recording
- System warnings for:
  – maximum cylinder load control setting
  – stroke and position control
  – thermal motor protection
  – oil level and filter indicator.

SyncHoist Power Packs

SyncHoist Power Packs are specifically designed to work with the SyncHoist cylinders to insure proper operation of the system. Contact Enerpac for assistance at **enerpac.com/contact-us**

SHAS-Series, Wireless SyncHoist

See next page for wireless remote control system with integrated hydraulics.

SHS Series

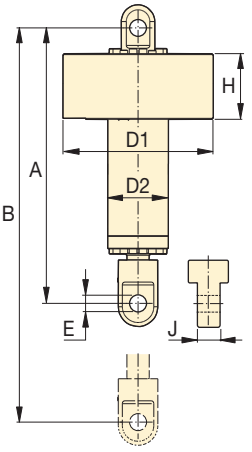


Capacity Per Lifting Point:
55 - 85 - 110 ton

Maximum Stroke:
500 - 1000 - 1500 mm

Accuracy Over Full Stroke:
± 1,0 mm

Maximum Operating Pressure:
700 bar



Capacity ton (kN)	Total Load ton (kN)	Cylinder Stroke (mm)	Model Number [1] 400 VAC, 3 ph - 50 Hz	Control System	Motor Size (kW)	Number of Pump Outlets and Oil Flow [2] (l/min)	Cylinder Dimensions (mm) A	B	D1	D2	E	H	J	(kg) [3]
4 x 55 (539)	220 (2156)	500	SHS 45520 MW	Manual	7,5	4 x 1,4	1300	1800	690	245	59	385	80	450
		1000	SHS 45540 MW				1800	2800						625
		1500	SHS 45560 MW				2300	3800						800
		500	SHS 45520 AW	Automatic	15	4 x 2,1	1300	1800						450
		1000	SHS 45540 AW				1800	2800						625
		1500	SHS 45560 AW				2300	3800						800
4 x 85 (833)	340 (3332)	500	SHS 48520 MW	Manual	11	4 x 2,1	1330	1830	690	265	72	385	100	500
		1000	SHS 48540 MW				1830	2830						700
		1500	SHS 48560 MW				2330	3830						900
		500	SHS 48520 AW	Automatic	15	4 x 2,1	1330	1830						500
		1000	SHS 48540 AW				1830	2830						700
		1500	SHS 48560 AW				2330	3830						900
4 x 110 (1078)	440 (4312)	1000	SHS 411040 MW	Manual	11	4 x 2,1	1855	2855	780	315	85	395	124	970
		1500	SHS 411060 MW				2355	3855						1235
		1000	SHS 411040 AW	Automatic	15	4 x 2,1	1855	2855						970
		1500	SHS 411060 AW				2355	3855						1235

[1] With 4 cylinders and one 400 VAC-3 phase-50 Hz Powerpack (suffix W). For 460-480 VAC-3 phase-60 Hz Powerpack change suffix W into J. Example: **SHS 45560 MJ**.
[2] Pump and cylinders include 4x 25 meters hydraulic hoses with couplers.
[3] Weight per cylinder

▼ SHAS 411040WE Autonomous SyncHoist System demonstrated using a load simulation



Accurate Hoisting and Load Positioning Enhancing a Crane's Capability

- **High precision load manoeuvering using one crane**
- **Vastly improving worker safety, operating speed and control**
- **Integrated PLC-controlled hydraulics in each lifting device – no need for external powerpack and hydraulic hoses**
- **Wireless control for safe operation**
- **Quick installation, set-up and operation - one electric connection per lifting point**
- **Cost reduction compared to conventional load positioning methods.**

Autonomous SyncHoist System

Enerpac Autonomous SyncHoist System 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.

Functions

- High precision horizontal and vertical load positioning
- Pre-programmed positioning, tilting and aligning.

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.

▼ *A single operator controls and oversees the entire hoisting job - the portable wireless control allows him to be at a safe distance.*



▼ *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.*



▼ *Offshore wind turbine base foundations installed with a wireless SyncHoist System to ensure the foundation remained vertical during lowering and positioning.*



SyncHoist - High Precision Load Positioning

What is SyncHoist?

Enerpac SHAS-Series SyncHoist is a hydraulically actuated auxiliary attachment for high precision load positioning for cranes.

The autonomous system (SHAS) with integrated PLC-controlled hydraulics, monitors and guides the powerful double-acting push-pull cylinders which are integrated into the lifting points.

The SyncHoist system can be used for pre-programmed positioning, tilting and aligning of loads.

- Complete system in compliance with European lifting directive and safety requirements

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 risk. The SyncHoist system can be used for controlled hydraulic horizontal and vertical material handling.

Autonomous system

- Wireless remote control
- Only one electric power connection per lifting point
- Integrated hydraulics, PLC and controls
- No need for hydraulic hoses and cables
- No need for mid-hoist disconnection of hoses and movement of pump.

Modular system

- Standard with four lifting devices.
- Quick installation, set-up and operation.

PLC-controlled system

- Pre-programmable motions
- Data recording
- Load control
- Stroke control
- Alarms for overload
- Real time indication of force and stroke per lifting point
- Controlled adjustment of forces per lifting point during entire operation.

Wireless controls

- Operate from safe distance
- Portable, no cables
- Siemens wireless 7 inch touch screen control panel
- Emergency stop, TÜV certified in PROFISAFE.

SHAS Series



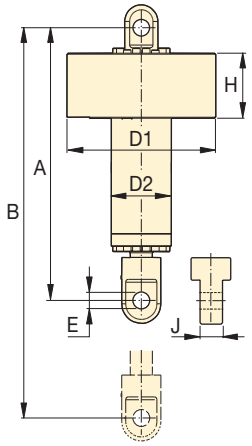
Capacity Per Lifting Point:
110 - 225 ton

Maximum Stroke:
1000 - 1500 mm

Accuracy Over Full Stroke:
± 1,0 mm



SyncHoist system mounted in an auxiliary frame for levelling and positioning steel structures during construction of an oil & gas installation. ▶



Capacity **ton** (kN)	Total Load **ton** (kN)	Cylinder Stroke (mm)	Model Number [1] 400-500 VAC, [2] 3ph - 50-60Hz	Control System	Motor Size (kW)	Dimensions (mm) A	B	D1	D2	E	H	J	(kg) [3]
4 x 110 (4 x 1078)	**440** (4312)	1000	**SHAS 411040 WE**	Wireless	4 x 4,0	1855	2855	1063	315	85	540	124	1183
		1500	**SHAS 411060 WE**			2355	3855	1063	315	85	540	124	1448
4 x 225 (4 x 2204)	**900** (8820)	1000	**SHAS 422540 WE**	Wireless	4 x 8,0	2140	3140	1235	420	142	580	190	3219
		1500	**SHAS 422560 WE**			2640	3640	1235	420	142	580	190	3414

[1] Standard with 4 lifting points. For more or less lifting points contact Enerpac.
[2] WE = with European electrical wiring. Change into suffix "WU" for US-market. Example: **SHAS 411060 WU**.
[3] Weight per cylinder.

▼ **SBL1100 with optional skid tracks, header beams, powered side shifts and lifting anchors**



Precision Lift and Position of Heavy Loads

The Ultimate in Safety and Control

- **Self-contained hydraulics and electronics**
- **Intelli-Lift wireless control system**
- **Self-propelled wheels or tank rollers**
- **Foldable boom on SBL900 and SBL1100**
- **Full range of supplementary equipment: header beams, lifting anchors, side shifts and skid tracks**
- **Designed and tested to meet ASME B30.1-2015 safety standards**
- **Lloyds witness tested to 125% of maximum working load.**



Intelli-Lift Wireless Control

The Intelli-Lift wireless control system is included with all Enerpac 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 24 mm (0.95 inch)
- Automatic synchronization of travelling with an accuracy of 15 mm (0.60 inch)
- Overload and stroke alarms
- Remote side shift control
- Emergency stop switch.

▼ *Two SBL1100 telescopic hydraulic gantry systems lifted the 1300 ton hydrocracker off the barge onto a SPMT Self-Propelled Modular Transporter.*



Maximum Capacity (with 4 towers) (kN)	Model Number (4 towers)	Retracted Height A (mm)
1000	**SL100**	2121
2000	**SL200**	2802
3000	**SL300**	2705
4000	**SL400N**	3905
4000	**SL400**	3166
5200	**SBL500**	3028
8976	**SBL900**	5004
10.500	**SBL1100**	4370

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:

- **SL-Series Super Lift**
  The cost-effective SL-Series Super Lift offer control and stability for everyday lifting applications below 4000 kN up to 9 metres.
- **SBL-Series Super Boom Lift**
  The heavy-duty SBL-Series Super Boom Lift boom style gantries offer increased lifting capacity of over 4000 kN to heights of 12 metres.

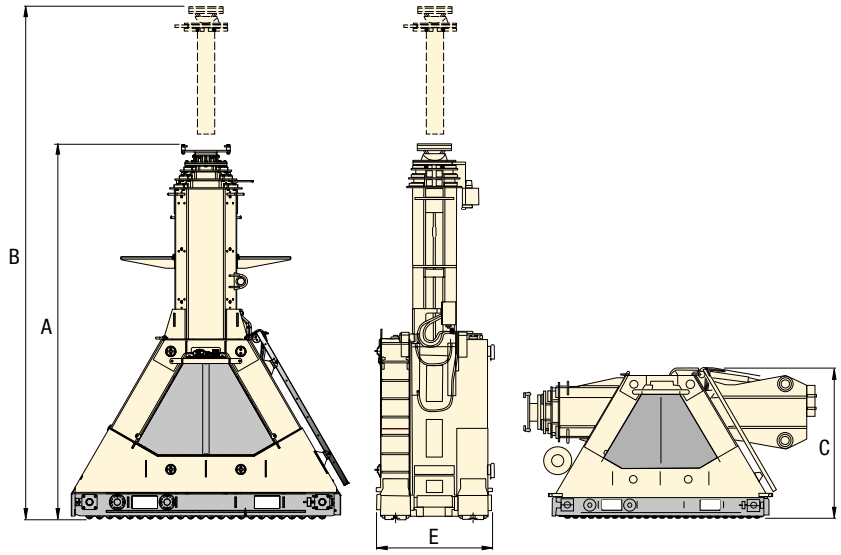
All Enerpac gantries are delivered with specific properties and control systems to ensure optimum stability and safety.

SL, SBL Series



Capacity with 4 towers:
1000 - 10.500 kN

Lift Height:
3,5 - 12 meters



Stage 1 Max. Height B (mm)	Stage 1 Max. Capacity (kN)	Stage 2 Max. Height B (mm)	Stage 2 Max. Capacity (kN)	Stage 3 Max. Height B (mm)	Stage 3 Max. Capacity (kN)	Transport Height C (mm)	Skid Track Width E (mm)	Weight (kg) [1]	Model Number (4 towers)
3400	250	4750	150	–	–	1930	812	1735	**SL100**
4716	500	6700	340	–	–	2611	812	2200	**SL200**
4615	750	6710	500	–	–	2900	812	3250	**SL300**
4365	1000	6025	700	7700	500	2725	812	3600	**SL400N**
5224	1000	7232	1000	9140	460	3170	1218	4600	**SL400**
4998	1300	6908	1300	8618	750	3028	1218	6300	**SBL500**
8304	2244	11.304	1481	–	–	2243	1218	13.350	**SBL900**
7004	2625	9668	1699	12.002	945	2244	1218	11.950	**SBL1100**

[1] Weight per tower

▼ Optional Gantry Accessories

Contact Enerpac for assistance by email at **enerpac.com/contact-us**



Skid Tracks

Allows for easy levelling of the gantry tower and reduce ground bearing pressure, available in two standard lengths, 3 and 6 m.



Header Beams

Sold in pairs and includes lifting points and fork pockets for easy positioning on gantry towers. Available in standard lengths of 8, 10 and 12 meters



Powered Side Shift

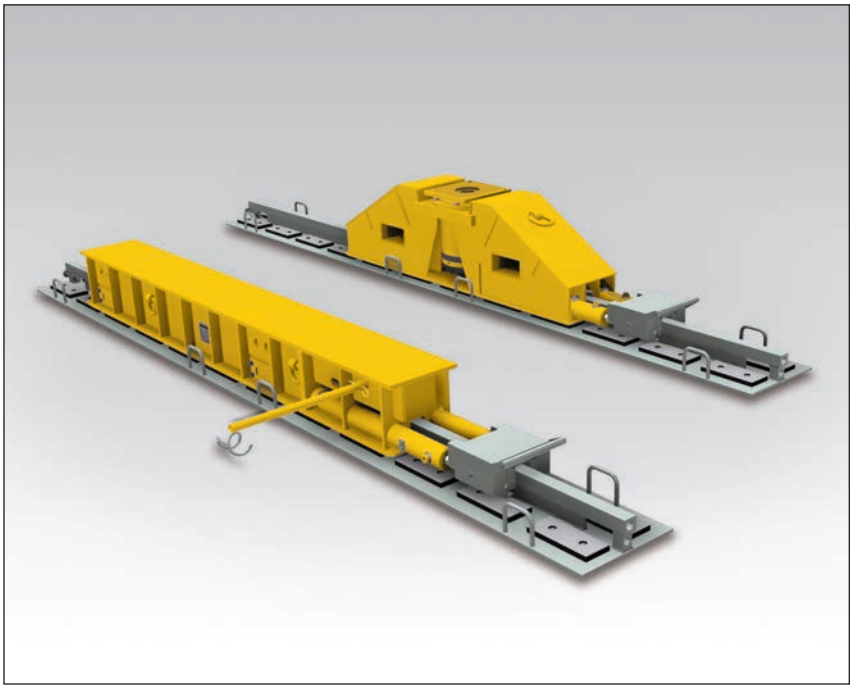
Electric propulsion controlled by standard gantry controls. Each set consists of 4 units.



Lifting Anchors

Designed to transfer the load to the top of the header beam. Can accommodate a 250 ton shackle or attach directly to the lifted load.

▼ Shown: **HSK1250 Skidding System**



HSK-Series, Skidding System

- **PTFE skid pads with dimpled surface for low friction and long lifetime**
- **Easy to replace skid pads, no tools necessary**
- **Bi-directional operation using push-pull cylinders avoid the need to reposition cylinders for switching direction**
- **Large load support surface on the skid beams for distributing load**
- **Bottom of skid shoes equipped with stainless steel sliding plates.**

LH-Series, Low-Height Skidding System

- **2-in-1 track design for added support**
- **Intuitive pump controls (SFP-Series Split-Flow Pump)**
- **Easily reversible to change skidding direction**
- **Portable design for quick setup**
- **400 ton skidding capacity with two push-pull units.**

▼ *A custom hydraulic Low-Height Skidding System will provide the maintenance team with the ability to maneuver and transport transformers with physical access limitations.*



The Ideal Jack and Slide Solution

Skidding Systems

The skidding system is comprised of a series of skid beams moved by hydraulic push-pull cylinders, travelling over a pre-constructed track.

A series of special PTFE coated pads are placed on the skid tracks. The PTFE surface is matched with a sliding plate under the Enerpac skid beams, designed to achieve minimum friction coefficients. The skid beams are connected by hoses to a hydraulic electric or diesel driven power pack.

In addition to our standard skidding systems, we have the capability to create customized skidding systems to meet your specific requirements.



Controls

Enerpac offers several options for controlling our skidding systems. Wireless Controls allows the operator the freedom to view the skidding operation from multiple locations while providing complete control of all system functions.
Manual controls offer a cost-effective solution by utilizing manual hydraulic valves mounted directly on the skidding system power unit.

▼ *HSKJ-2500 Skid Shoe Jack.*

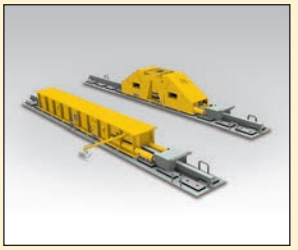


Skidding Systems

Enerpac Skidding Systems are available in several versions:

- **B-Series (Skid Beam)** utilizes a tall skid beam with built-in push-pull cylinders. Skidding direction can be easily switched by flipping a lever on the attached gripper box.
- **J-Series (Skid Jack)** provides the same functionality as the B-Series with the added benefit of having a built-in cylinder for lifting or leveling the load.
- **LH-Series (Low-Height)** includes low-height skid beams that can fit in tight spaces while still offering high capacity. We also offer a track support for added rigidity when the surface is not fully supported.

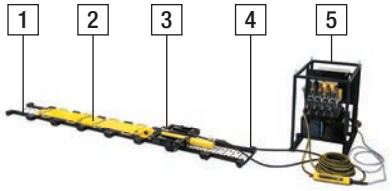
HSK LH Series



Capacity:
100 - 250 ton

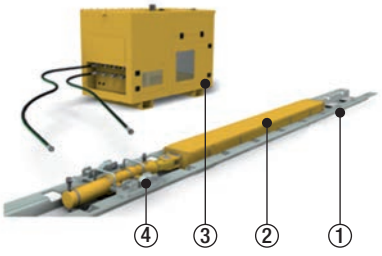
Push/Pull Stroke:
600 mm

Lifting Stroke:
175 mm



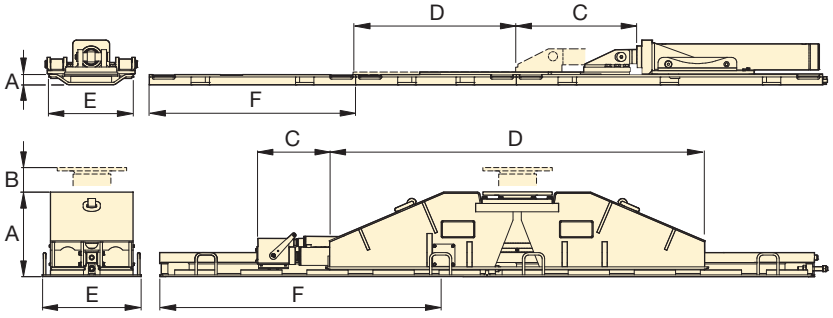
LH-Series Skidding System Requirements

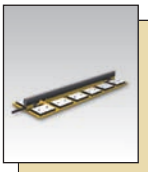
1 Skid Track (required)
2 Skid Beam (required)
3 Push-Pull Cylinder Unit (required)
4 Hydraulic Hoses (required)
5 Split-Flow Electric Pump (required)
6 Track Support (optional, not shown)
7 Storage/Transport Frame (optional, not shown)
8 Pump Cart (optional, not shown)



HSK-Series Skidding System Requirements

① Skid Track
② Skid Beam
③ Hydraulic Power Pack
④ Hydraulic Push-Pull Unit





Skid Tracks

Include specially constructed and easily replaceable PTFE coated pads. Skid track is sold separately.



Hydraulic Power Packs

Enerpac offers a comprehensive range of hydraulic power packs that are optimized for use with Skidding Systems.

▼ *Low-Height Skidding System assembly (LH400).*



Skidding Systems

Maximum Capacity (per beam) ton (kN)	Maximum Push-Pull Capacity ton (kN) Push	Pull	Model Number	Skid Beam Height (with track) A (mm)	Lifting Stroke B (mm)	Push-Pull Stroke C (mm)	Skid Beam Length D (mm)	Skid Beam Weight (kg)	Skid Track Width E (mm)	Skid Track Length F (mm)	Skid Track Weight (kg)
100 (860)	**25** (255)	**11** (98)	**LH400**	92	–	600	1080	63	250	955	67
125 (1250)	**22** (220)	**16** (160)	**HSKB1250**	309	–	600	2500	740	400	1983	120
125 (1250)	**22** (220)	**16** (160)	**HSKJ1250**	502	175	600	1690	790	400	1983	120
200 (2000)	**25** (255)	**14** (141)	**HSKLH2000**	204	–	600	2902	340	540	1998	120
250 (2500)	**40** (400)	**26** (260)	**HSKB2500**	374	–	600	3000	1020	600	1946	290
250 (2500)	**40** (400)	**26** (260)	**HSKJ2500**	600	175	600	1784	1450	600	1946	290

▼ **ETR125, Enerpac Trolley System** (shown with optional Trolley Tracks)



Safe & synchronized travel

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.

- **High transport speed – up to 70 m/hour (unloaded)**
- **Suited for repetitive movements**
- **Runs on pre-constructed steel beams**
- **Ease of maintenance – long maintenance intervals and no consumables**
- **Clean usage – electric driven**
- **Built-in synchronization – no need for forced external mechanical connection to synchronize movements**
- **Easy transport - fits in a container**
- **Modular system – expandable for project need.**



RCU3, Wireless Control Unit

The RCU3 is ordered separately and controls 4 x ETR125 Trolleys. The wireless control offers superior safety and control and includes the following features:

- Automatic synchronization of traveling with an accuracy of 15 mm (0.60 inch).
- Local control with pendant at each trolley
- Encrypted bi-directional communication that eliminates interference from other devices
- Remote operation using multi channel wireless (2.4GHz) or wired (RS-485) control
- High and low speed settings
- Emergency stop switch.

▼ *The trolley system was successfully deployed on a jack-up vessel for a Geotechnical & Offshore Solutions project. This involved the movement of 500 ton offshore wind monopile transition pieces some 90m across the ship's deck to within range of the on-board crane for offshore installation.*



▼ *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-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.

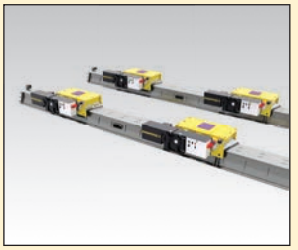
Testing

Each trolley is tested under witness of Lloyd's Register. Trolleys are statically tested at overload and are subject to a loaded functional test. Customers are invited to witness this F.A.T.

Customization

Contact Enerpac for advice and technical assistance in the layout of your ideal Trolley System or visit us at enerpac.com, or ask for assistance: **enerpac.com/contact-us**

ETR Series



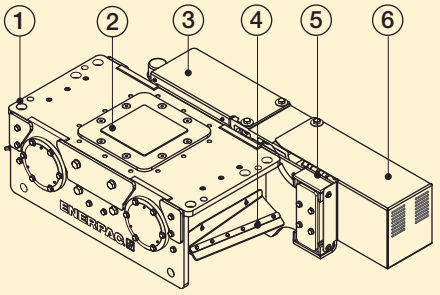
Capacity Per Trolley:
1250 kN (127 ton)

Travel Speed :
0,8 - 1,2 m/min

Motor Power:
0,55 kW

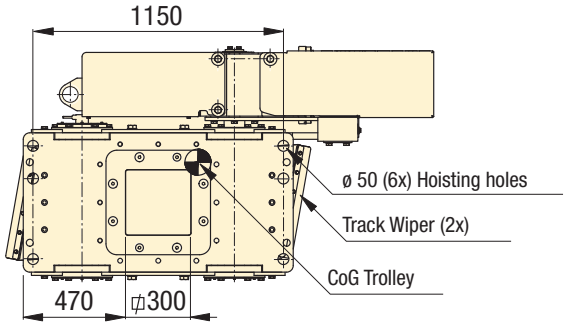
Comparison Between Skidding Systems and Trolley Systems

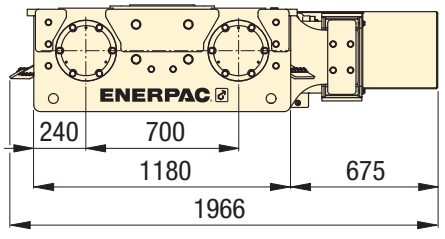
System Type	Skidding System	Trolley System
Movement	Incremental	Continous (no stick-slip)
Travel Speed	Slow	Fast
Power	Separate hydraulic pump	Self-contained electric drive
Controls	Typical at hydraulic pump	Wireless radio controlled
Operation	Requires coordinated steps	Simple forward/reverse
Maintenance	Regular required	Periodical required only, less wear parts

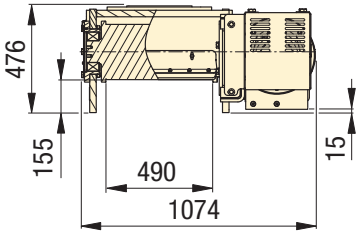


ETR125 Trolley System

① Hoisting Holes (6x)
② Load Interface (composite bearing plate)
③ Gearbox
④ Track Wipers
⑤ Electrical Enclosure with local controls
⑥ Electromotor







ETR125



Trolley Tracks

Allows for easy levelling and reduce ground bearing pressure. The trolley tracks are available in lengths of 3 and 6 metres and fit into a 20 feet container.
Trolley Tracks have fork pockets for hoisting and positioning. Tracks must be positioned on suitable cribbing material to achieve desired ground bearing pressure.

Trolley System

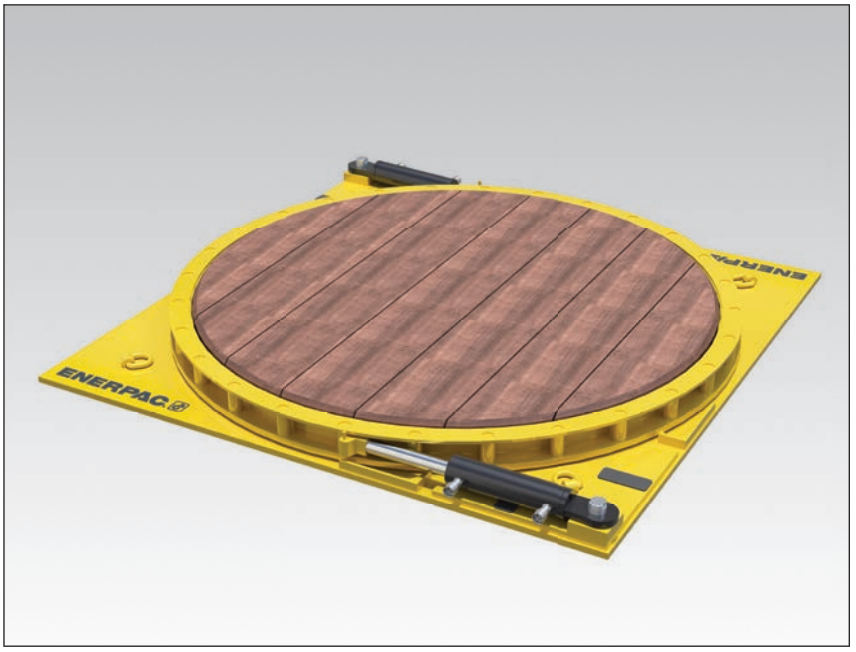
Capacity per Trolley Unit (kN)	Model Number (one unit)	Max. Sideload 1,5% (kN)	Max. Load Pressure (N/mm²)	Travel Speed (m/min) Low	Travel Speed (m/min) High [1]	Motor Specifications [2] (kW)	(VAC)	(A)	(kg)
1250	**ETR125**	18,75	40	0,8	1,2	0,55	400-480	32	1835

[1] High travel speed unloaded only.
[2] Sound Level <80 dBA.

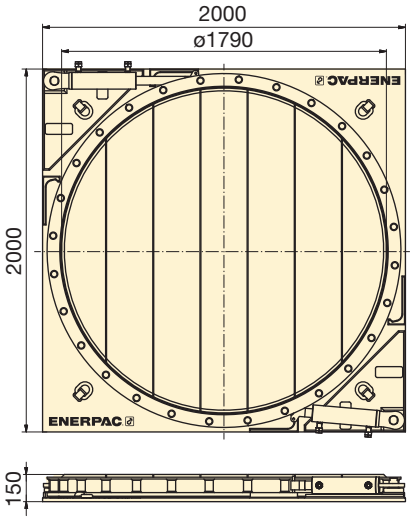
Trolley Tracks

Model Number	Dimensions (mm) Length	Width	Height	Max. Incli-nation (degree)	(kg)
TRT125-3	3000	700	385	0,2	1000
TRT125-6	6000	700	385	0,2	2000

▼ ETT400 Turntable



- Safe and controlled rotation of heavy loads
- Easily change rotation direction
- Dual capacity: 200 ton with one cylinder, 400 ton with two cylinders
- Compact size for use in applications with limited space
- Compatible with standard Enerpac pumps
- Hardwood surface.



▼ SELECTION CHART

Maximum Load Capacity (kN)	Model Number	Cylinder Capacity * (kN)	Cylinder Oil Capacity * (cm³) advance	retract	No. of Cylinders *	Rotation per Stroke (degrees)	Platform Diameter (mm)	(kg)
2000	**ETT200**	222	792	344	1	12,5	1790	1700
4000	**ETT400**	222	792	344	2	12,5	1790	1725

* Per cylinder. Cylinder modelnumber: **BRD259-ETT**

ETT Series

Maximum Capacity:
200 - 400 ton

Cylinder Capacity:
25 ton (222 kN)

Maximum Operating Pressure:
700 bar

Safe and controlled rotation

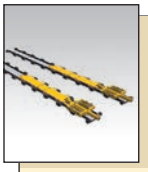
The ETT-Series is your solution for rotating heavy loads during, before or after a lifting and skidding operation.



SFP-Series, Split-Flow Pump

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.

Page: 280



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.

Page: 302



Telescopic Hydraulic Gantries

The ETT-Series in combination with our hydraulic gantry SL-Series makes load handling in the most demanding situations easy.

Page: 300

SPMT, Self-Propelled Modular Transporter

▼ SPMT600-360 with MTPP-360 hydraulic power unit (HPU)



SPMT
Series

Capacity:
60 ton (600 kN)

Transport Speed (unloaded - loaded):
3 - 1,5 km/h

Motor Size:
54 kW

- **Modular design for multiple configurations.**
- **Minimized height and slim design are ideal for in-plant operation**
- **Intelli-Drive wireless control system is intuitive and easy to use**
- **One power pack can operate 2-3 trailers maximum depending on model**
- **Two trailers and power pack can be shipped inside a 20 ft. container**
- **Hydraulic power unit is tier-4 diesel engine for reduced emissions.**

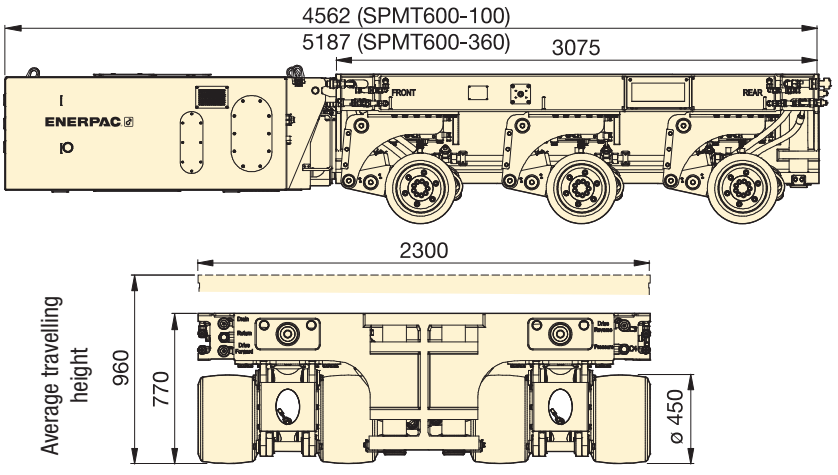
Self-Propelled Modular Transporter

The Enerpac Self-Propelled Modular Transporter (SPMT) features a minimized height and slim design, which makes it very easy to operate in confined spaces. Each wheel unit has a steering function as well as a lifting cylinder at its disposal. Two axles are driven, the centre axle is non-driven. Wheel propulsion is established by wheel drives.

The SPMT is operated by the Intelli-Drive Remote Controller. This remote controller can be used both hard wired and wireless (based on radio frequency).

The SPMT is a modular system and can be built up to a maximum configuration of six transporters in a row and two in the width. This is the maximum setup of units that can work together on just one Intelli-Drive Remote Controller.

The SPMT is a modular system comprised of trailers with 3 axle lines each and diesel hydraulic power units (HPU). Depending on the model number, the trailers and HPUs can be configured to a maximum of 4 trailers in 2 rows (4x2) or 6 trailers in 2 rows (6x2).



Capacity (per trailer) ton (kN)	Model Number	Maximum Configuration (trailer in rows)	Steering Range (degrees)	Lifting Stroke (mm)	HPU * (kg)	Trailer (kg)
60 (600)	**SPMT600-100**	4 x 2	-50° – +50°	384	2500	8000
	SPMT600-360	6 x 2	-179° – +179°	384	2800	8300

* HPU = 54 kW Power Pack Diesel is sold separately.

▼ *Turbine rotor transport.*



Custom Heavy Lifting Solutions

When your application requires something other than our standard product offering, look to Enerpac Heavy Lifting Technology, Experience and Expertise.

Our group of engineers, designers and specialist, will work with you to understand your specific application and provide a turn-key solution that will exceed your expectations.



STEEL FABRICATION
Enerpac has a dedicated facility for steel fabrication and welding. We design and manufacture custom structures used in demanding heavy-lifting applications.



ENGINEERING
Enerpac has a multi-disciplined engineering team capable of design and development of all aspects of an Heavy Lifting system. Leveraging design and application experience with the latest in computer software, rapid prototyping and analysis methods ensures delivery of the highest quality systems.



ELECTRONICS
Enerpac designs all control systems in-house. This capability keeps control technology close to the design engineers who are developing the rest of the system. In doing so, we can tailor the control system to match unique project requirements.



MACHINING
Enerpac utilizes the latest in CNC machining technologies and manufactures all large and special hydraulic cylinders in-house.
We can machine diameters up to 1000 mm with lengths to 6000 mm.



FIELD SUPPORT
Enerpac Heavy Lifting Technology is available to provide on-site support including training and troubleshooting of systems. We also stock repair parts and consumable items at several locations to ensure fast delivery and minimal downtime.



HYDRAULIC POWER UNITS
Enerpac designs, assembles and tests small to large hydraulic power units in-house. Power units range from 0,5 to 240 kW and are tested with the system they are intended to operate.



MAINTENANCE and REPAIR
Due to the unique nature of Enerpac Heavy Lifting Technology, we offer complete maintenance and repair services. Our M&R group is available to assist customers who do not have access to local service facilities qualified to work on these systems.

Custom Heavy Lifting Solutions



OFFSHORE GANTRY CRANE
The Enerpac Over Head Travel Crane (OHTC) comprises two pairs of lifting beams, with an overall width of 30m, and a lifting capacity of 4800 ton for lifting, moving and lowering the concrete blocks for the offshore highway.



STRAND JACK GANTRY
The strand jack gantry is a steel structure to facilitate erection and skidding back, forth and sideways of heavy loads. The Enerpac strand jack gantry can be used with either skidding systems or hydraulic gantries on top.



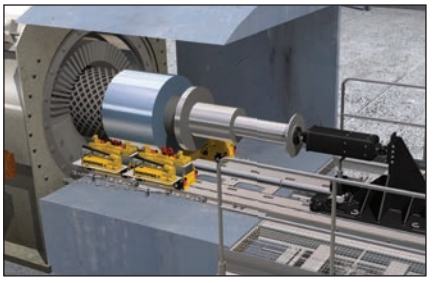
TRAVEL GANTRY
The travel gantry combines the safety and efficiency of a hydraulic gantry with the ease of use of SPMT (self-propelled modular transporter) technology. With a lifting capacity of 67 ton, the travel gantry sets a new standard in equipment and container handling.



BRIDGE LAUNCHING SYSTEMS
Spindle Bar System: group of in-line hollow plunger cylinders. The hollow plungers allow the steel bars to be inserted through the cylinders, which are used for pushing, pulling and braking. **Enerpac Enerlauncher** is an automatic and synchronous incremental hydraulic tandem launching system with a 800 ton lifting section and an 300 ton push/pull section.



JACK-UP SYSTEMS
The jack-up system is a custom developed multipoint lifting system – synchronically lift and mechanically hold. A typical system setup includes four jack-up units positioned under each corner of a load.



ROTOR REMOVAL AND INSTALLATION SYSTEM
The generator rotor removal and installation system is a custom developed product for removing and installing the rotor (field) in a power plant's generator. The system is designed to comply with the varying dimensions and challenging accessibility of a plant's generator.



CUSTOM HYDRAULIC PRESSES
Our hydraulic presses can be configured to fulfill a broad range of applications. Each press is designed and manufactured according to customer specifications and in cooperation with our engineering team.



SELF-ERECTING TOWER
The Enerpac Self Erecting Tower (ESET) is a self-erecting tower lift system that enables you to build a free standing gantry from ground level. The ESET can be supplied in various capacities and lifting heights and is built with standard modular components, enabling a flexible solution to future project demands.



LAS VEGAS WHEEL
Our expertise has been acknowledged by the world's leading industrial professionals and has contributed to the successful movement of a number of the most recognizable structures on earth. At the time of construction the Las Vegas High Roller was the largest observation wheel in the world. A custom hydraulic drive system was developed to propel the wheel for daily use and was also used to construct the wheel in sections.

Enerpac 'Yellow Pages' stand for Hydraulic Information!

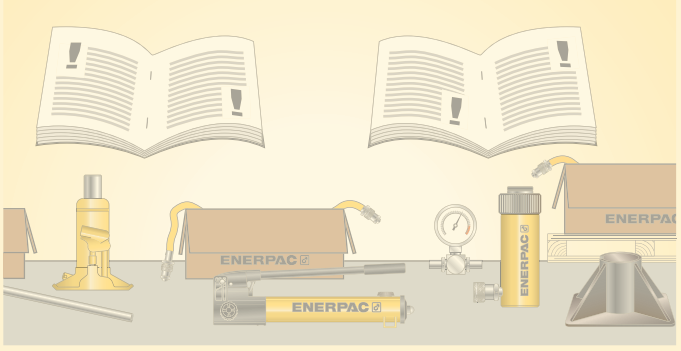
If selecting hydraulic equipment is not your daily routine, then you will appreciate these pages. The 'Yellow Pages' are designed to help you work with hydraulics. They will help you to better understand the basics of hydraulics, of system set-ups and of the most commonly used hydraulic techniques. The 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.

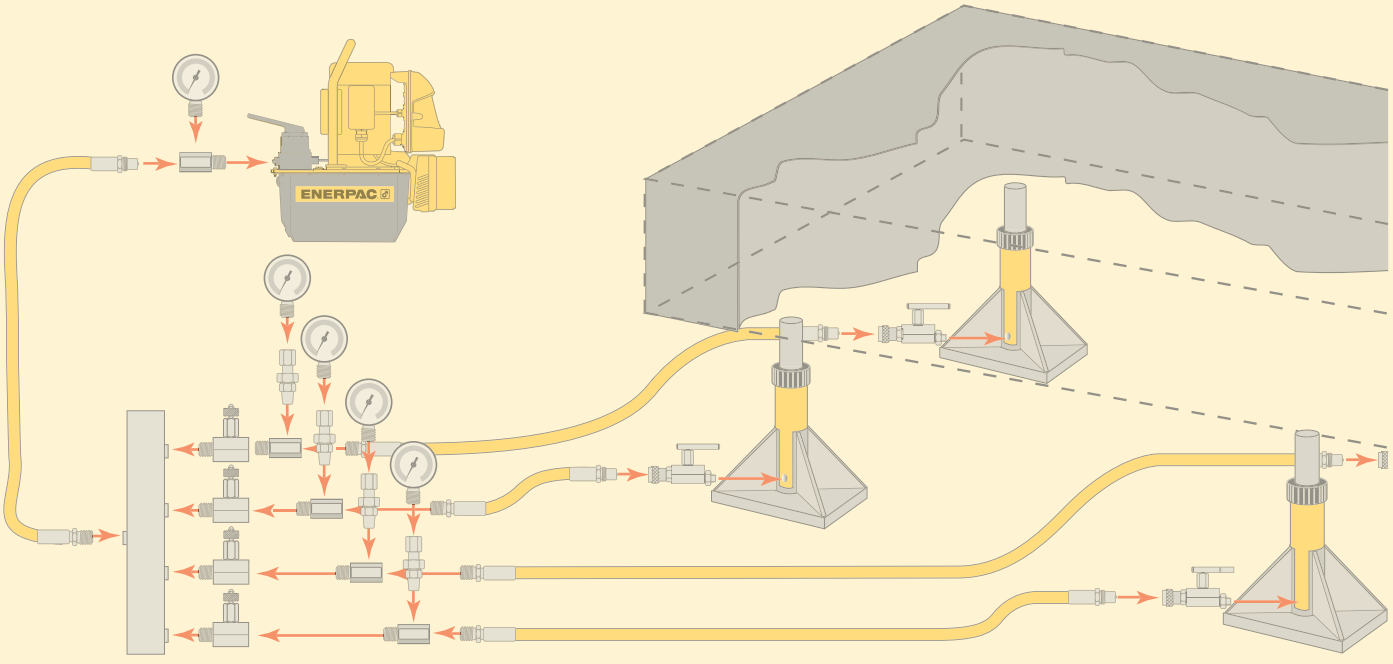
ENERPAC WARRANTY STATEMENT

Visit our website for the complete Global Lifetime Warranty or call your Authorized Service Center.

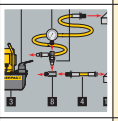
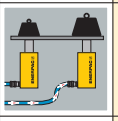
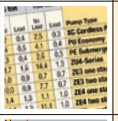
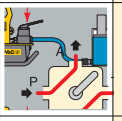
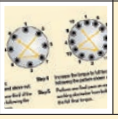
Learn more about hydraulics

Visit **www.enerpac.com** to learn more about hydraulics and system set-ups.





Yellow Pages Section Overview

Section		Page
Safety Instructions		312-313 ▶
Pump Selection Selection Worksheet		314 ▶ 315 ▶
Basic System Set-ups		316-317 ▶
Basic Hydraulics		318-319 ▶
Conversion Tables Cylinder Speed Charts		320 ▶ 321 ▶
Valve Information Hexagon Bolt and Nut Sizes		322 ▶ 323 ▶
Torque Tightening		324-325 ▶

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.

ISO 1402, ISO 4672, ISO 6803
Enerpac thermoplastic hoses are related to the criteria set forth in these standards.

Ex II 2 GD ck T4

ATEX 95 Certified
The ATP, ZA and XA-Series air pumps and S and W-Series torque wrenches are tested and certified according 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.
ATP, ZA and XA-Series air pumps are marked: Ex II 2 GD ck T4.

Product Design Criteria
All hydraulic components are designed and tested to be safe for use at maximum 700 bar (10.000 psi) 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, national recognized testing laboratories.

EMC Directive
Where specified, Enerpac electric power pumps meet the requirements for Electromagnetic Compatibility per EMC Directive 2004/108/EC.

CE

CE Marking & Conformity
Enerpac provides a Declaration of Conformity and CE marking for products that conform with the European Community Directives.

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).

Safety Instructions

ENERPAC



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 photo's 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.

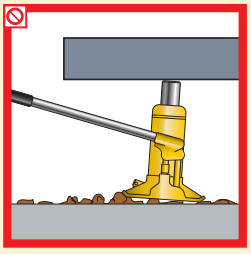
Check to see if all safety measures have been taken to avoid the risk of injury and property damage from your application or system.

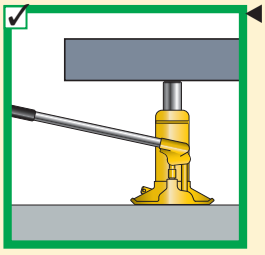
Enerpac can not be held responsible for damage or injury, caused by unsafe use, maintenance or application of its products.

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.

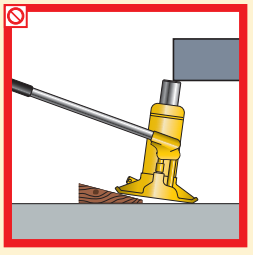
In addition to these tips, every Enerpac product comes with instructions spelling out specific safety information. Please read them carefully.

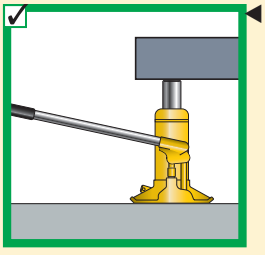
Jacks



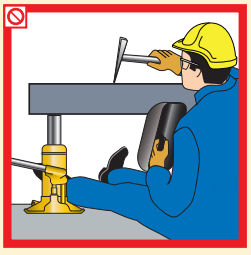


Provide a level and solid support for the entire jack base area.



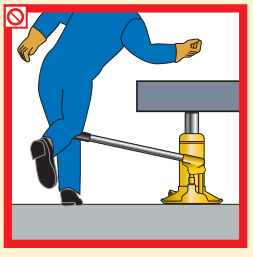


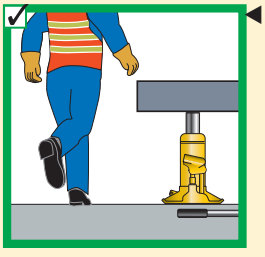
The entire jack saddle must be in contact with the load. Movement of the load to be in the same direction as jack plunger.





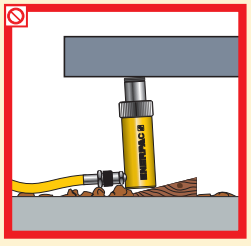
Never place any part of your body under the load. Ensure the load is on a solid support before venturing under.

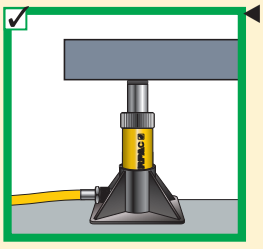




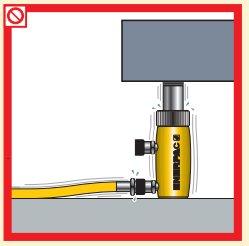
Remove the jack handle when it is not being used.

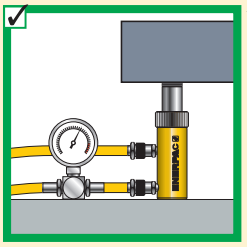
Cylinders





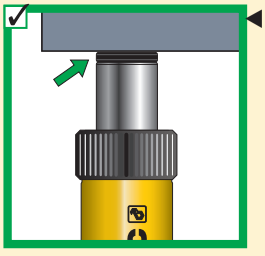
Provide a solid support for the entire cylinder base area. Use cylinder base attachment for more stability.



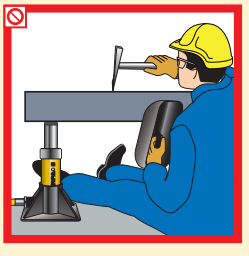


Both couplers must be connected when using double-acting cylinders. Ensure return hose is fitted.





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.

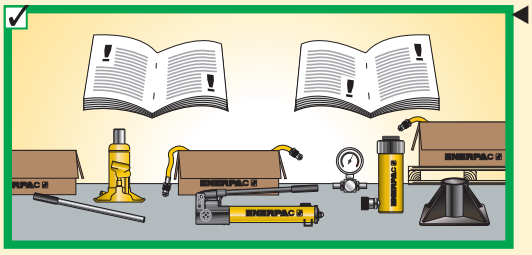




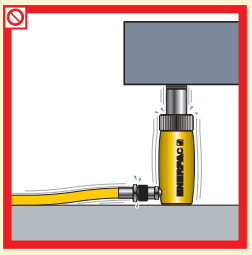
Keep hydraulic equipment away from open fire and temperatures above 65 °C (150 °F).

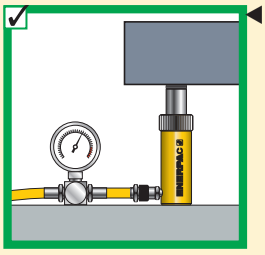
General

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



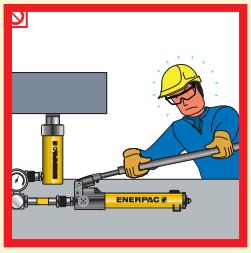
Always read instructions and safety warnings that come with your Enerpac hydraulic equipment.

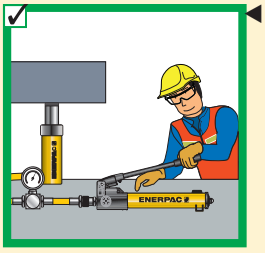




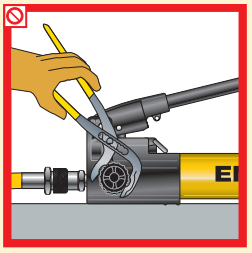
Don't override the factory setting of relief valves. Always use a gauge to check system pressure.

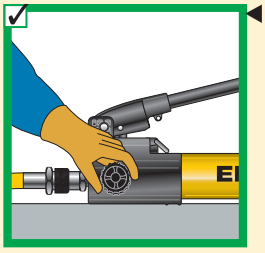
Pumps



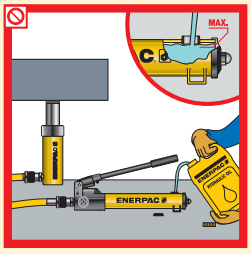


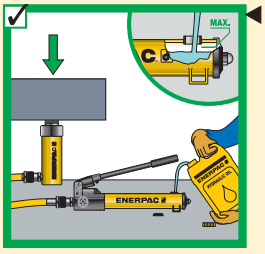
Don't use handle extenders. Hand pumps should be easy to operate when used correctly.





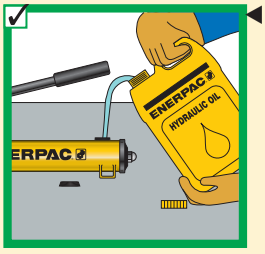
Close release valve finger tight. Using force will ruin the valve.





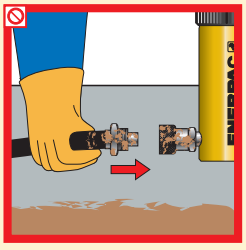
Fill pump only to recommended level. Fill only when connected cylinder is fully retracted.

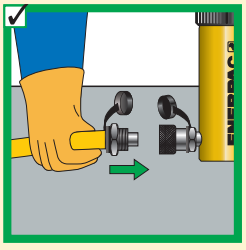




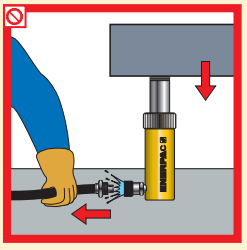
Use only genuine Enerpac hydraulic oil. Wrong fluid can destroy seals and pump and will render your warranty null and void your guarantee.

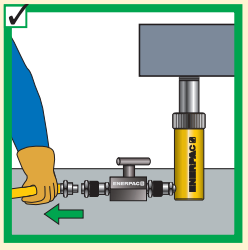
Hoses and couplers



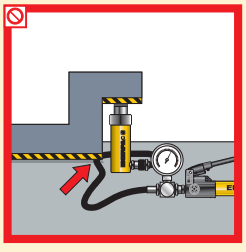


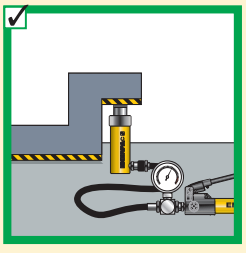
Clean both coupler parts before connecting. Use dust caps when coupler parts are not connected.



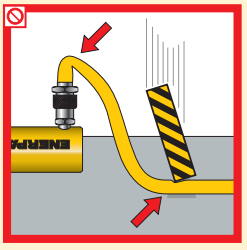


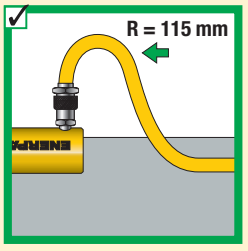
Detach cylinder only when fully retracted or use shut-off valves or safety valves to lock-in cylinder pressure.



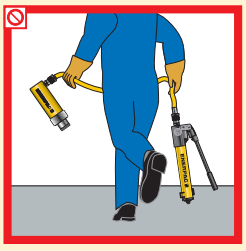


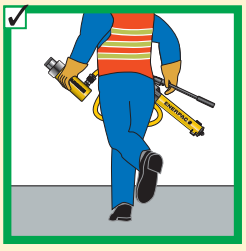
Keep hoses away from the area beneath loads.



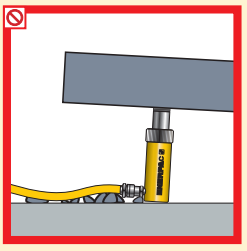


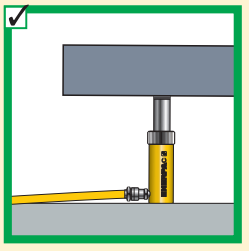
Don't kink hoses. Bending radius should be at least 115 millimetres. Don't drive over or drop heavy objects on hoses.





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 (ton) ▶ / ▼ Stroke	5 t	10 t	15 t	25 t	30 t	50 t	60 t	75 t	100 t	150 t
< 25 mm										
25 mm										
50 mm										
75 mm										
100 mm										
125 mm										
150 mm										
175 mm										
200 mm										
225 mm										
250 mm										
300 mm										
325 mm										
350 mm										
	 P-392 Page: 74			 P-80 Page: 76		 P-462 Page: 76				

Note: Selection based on oil capacity requirements of cylinders.

▼ POWER PUMP SELECTION CHART

Oil Flow *	Low (0,1 - 0,3 l/min)		Medium (0,5 -2,0 l/min)		High (2,0 - 4,2 l/min)	
Oil Capacity	1,9 - 3,8 litres	3,0 litres	4,6 - 39 litres	4,6 - 39 litres	9,8 - 39 litres	9, 20, 135 litres
Duty Cycle **	Intermittent	Extended	Intermittent	Extended	Extended	Extended
Portability ***	Portable	Portable	Portable	Stationary	Stationary	Stationary
Recommended Series	**PU-Series Economy**	**E-Series E-Pulse®**	**ZU4-Series**	**ZE3-, ZE4- and ZE5-Series**	**ZE6-Series**	**SFP-Series Split-Flow**
						
Page: 88	Page: 90	Page: 98	Page: 104	Page: 104	Page: 280	

* 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

Available power source: ☐ **Manual** ☐ **Battery** ☐ **Electric** ☐ **Compressed Air** ☐ **Petrol**

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.

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 321 for number of mm per stroke)		
Selected Hand Pump:		▶	
Electric or Compressed Air Pump			
Need for portability:			
Duty cycle:	Intermittent or extended		
Required useable oil capacity:	Intermittent = 1,2 x oil capacity		
	high cycle = 2 x oil capacity		
Available Voltage:			
Lifting speed (Important/not important):	Use speed chart on page 321		
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 (kN or bar scale):	GF-series glycerine filled for high cycle	▶	
Gauge Adapter:		▶	
Fittings:		▶	
Pressure Relief Safety Valve:		▶	
Load-holding Valve(s):		▶	
Hydraulic Oil:		▶	

Basic System Set-ups

ENERPAC

1 Cylinder
Applies hydraulic force.
Page **5**

2 Cylinder Base Plate
For applications like lifting where additional cylinder stability is required.
Page **10**

3 Pump
Provides hydraulic flow.
Page **73**

4 Hose
Transports hydraulic fluid.
Page **128-129**

5 Male Coupler
For quick connection of the hose to system components.
Page **130-131**

6 Female Coupler
For quick connection of the hose end to the system components.
Page **130-131**

7 Gauge
To monitor pressure of the hydraulic circuit.
Page **134-140**

8 Gauge Adaptor
For quick and easy gauge installation.
Page **140-141**

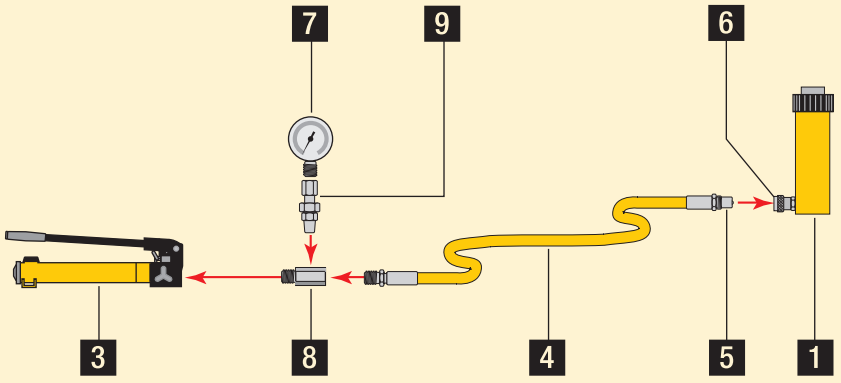
9 Swivel Connector
Allows proper alignment of valves and/or gauges. Used when units being connected cannot be rotated.
Page **141**

10 Auto-Damper Valve V-10
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 **142-143**

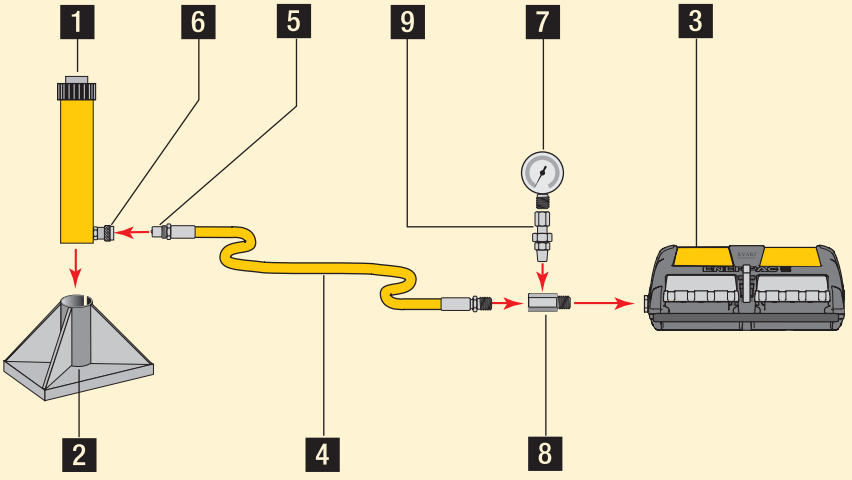
11 4-Way Directional Control Valve
Controls the direction of hydraulic fluid in a double-acting system.
Page **122-123**

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.

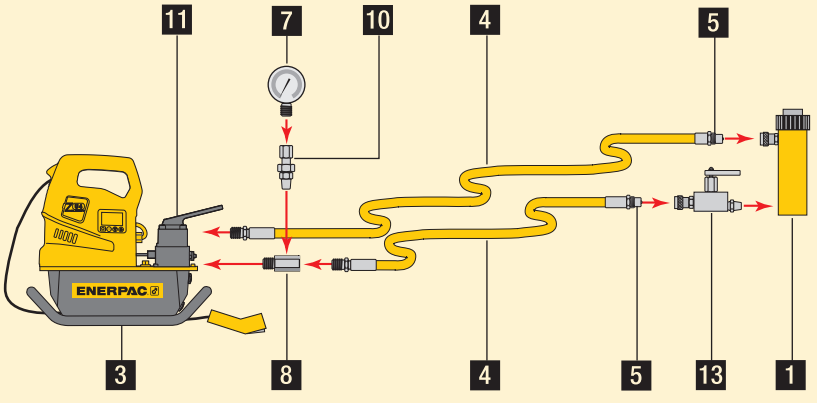
Examples of pump, hose and cylinder sets can be found on pages 60-63.



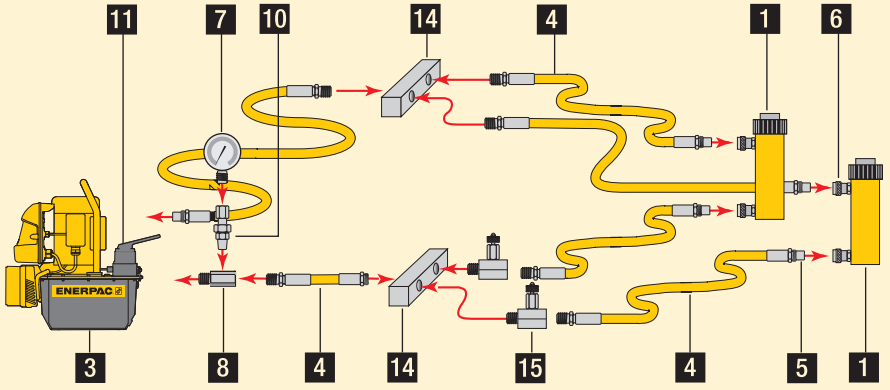
Single-acting cylinder with longer stroke used for lifting applications.



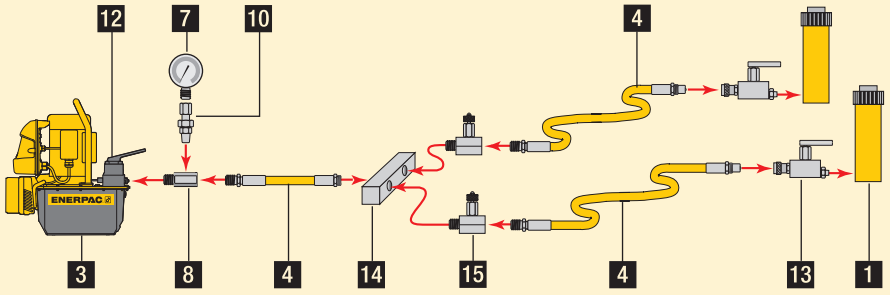
Double-acting cylinder set-up used for lifting applications where a slow controlled descent of the load must be maintained.



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.

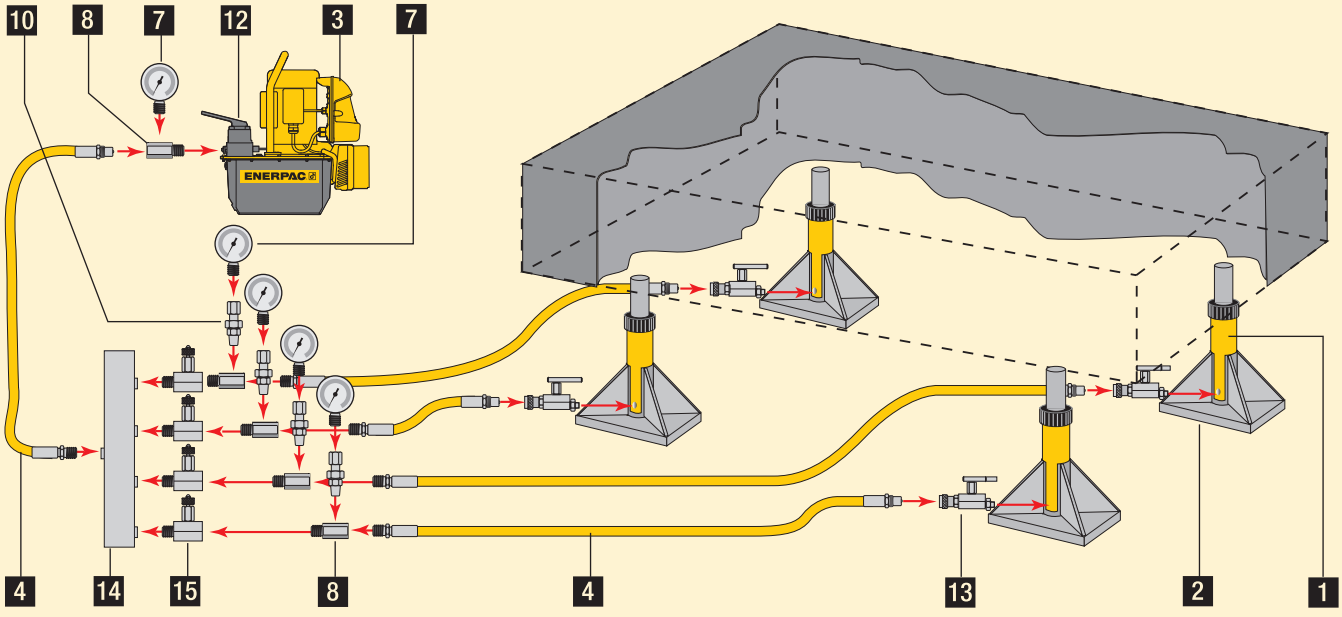
12 3-Way Directional Control Valve
Controls the direction of hydraulic fluid in a single-acting system.
Page **122-123**

13 Safety Holding Valve
Controls load descent in lifting applications.
Page **142-143**

14 Manifold
Allows distribution of hydraulic fluid from one power source to several cylinders.
Page **132**

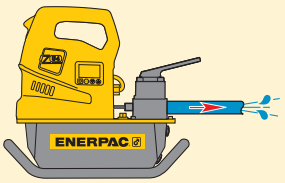
15 Needle valve
Regulates the flow of hydraulic fluid to or from the cylinders.
Page **142-143**

www.enerpac.com
Visit our web site to learn more about hydraulics and system set-ups.



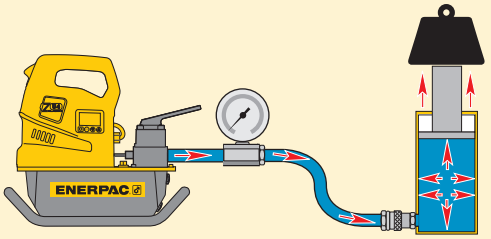
Flow

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.

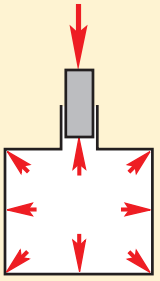


Figure 1

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).

INCORRECT! **CORRECT!**

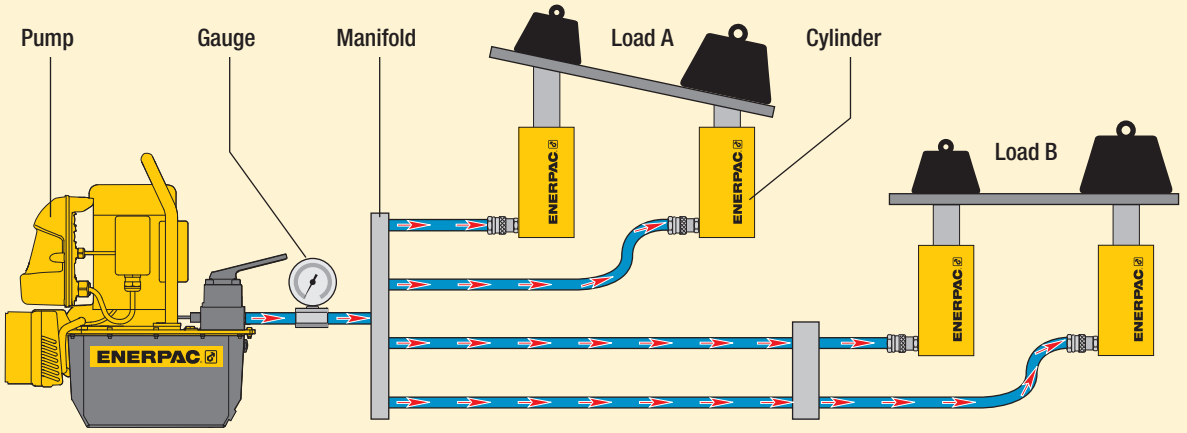


Figure 2

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.

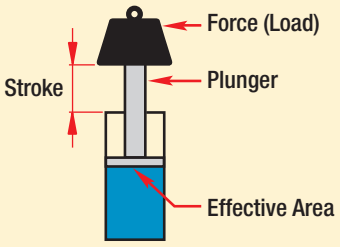
Page: 127

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 RC-106 cylinder with 14,5 cm^2 effective area operating at 700 bar will generate what force?
Force = 7000 N/cm^2 x 14,5 cm^2 = 101500 N = 101,5 kN

Example 2
An RC-106 cylinder lifting 7000 kg will require what pressure?
Pressure = 7000 x 9,8 N ÷ 14,5 cm^2 = 4731,0 N/cm^2 = 473 bar.

Example 3
An RC-256 cylinder is required to produce a force of 190.000 N. What pressure is required?
Pressure = 190.000 N ÷ 33,2 cm^2 = 5722,9 N/cm^2 = 572 bar.

Example 4
Four RC-308 cylinders are required to produce a force of 800.000 N.
What pressure is required?
Pressure = 800.000 N ÷ (4 x 42,1 cm^2) = 4750,6 N/cm^2 = 476 bar.
Remember, since four cylinders are used together, the area for one cylinder must be multiplied by the number of cylinders used.

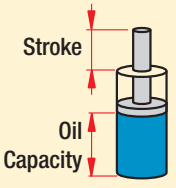
Example 5
A HCL-2506 cylinder is going to be used with a power source that is capable of 500 bar. What is the theoretical force available from that cylinder?
Force = 5000 N/cm^2 x 363,1 cm^2 = 1.815.500 N = 1815 kN.

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 RC-158 cylinder with 20,3 cm^2 effective area and 200 mm stroke requires what volume of oil?
Oil Capacity = 20,3 cm^2 x 20 cm = 406 cm^3

Example 2:
An RC-5013 cylinder has an effective area of 71,2 cm^2 and a stroke of 320 mm. How much oil will be required?
Oil Capacity = 71,2 cm^2 x 32 cm = 2278,4 cm^3

Example 3:
An RC-10010 cylinder has an effective area of 133,3 cm^2 and a stroke of 260 mm. How much oil will it require?
Oil Capacity = 133,3 cm^2 x 26 cm = 3466 cm^3

Example 4:
Four RC-308 cylinders are being used, each with an effective area of 42,1 cm^2 and a stroke of 209 mm. How much oil will be required?
Oil Capacity = 42,1 cm^2 x 20,9 cm = 880 cm^3 for one cylinder
Multiply by four to obtain the required capacity: 3520 cm^3

CAUTION!
Enerpac oil will compress 2,28% at 350 bar and 4,1% at 700 bar.

Page: 132

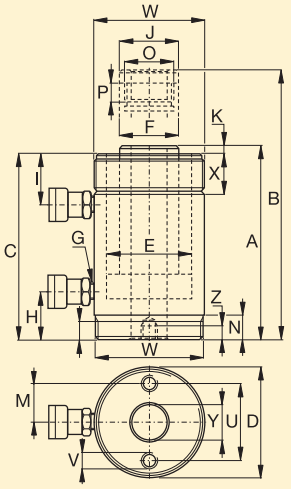
Conversion Tables

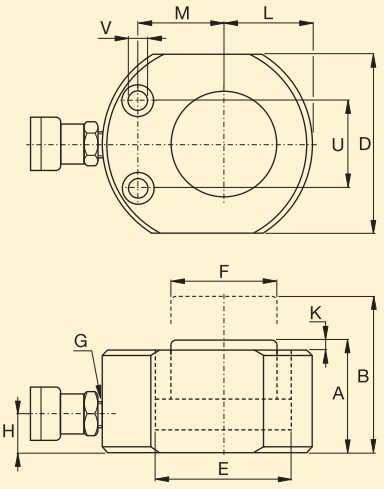
ENERPAC

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 Z1 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
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 centre
N = Length of smaller cylinder part
O = Plunger hole or thread of saddle
P = Plunger thread length
Q = Plunger outside thread
U = Pitch (BC) of mounting holes
V = Thread of cylinder mounting holes
W = Collar thread
X = Collar thread length
Y = Centre hole diameter
Z = Internal base thread
Z1 = 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 metric tonnes and are for cylinder class identification only.
Please refer to the kN data for calculations.

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	= 2,205 lbs
	= 9,806 N
1 metric ton	= 2205 lbs
	= 1000 kg
1 ton (short)	= 2000 lbs
	= 907,18 kg

Torque:

1 Nm	= 0,738 Ft.lbs
	= 0,102 kgf.m
1 Ft.lbs	= 1,356 Nm
	= 0,138 kgf.m

Temperature:

To Convert °C to °F:
$T\ ^{\circ}F = (T_{^{\circ}C} \times 1{,}8) + 32$

To Convert °F to °C:
$T\ ^{\circ}C = (T_{^{\circ}F} - 32) \div 1{,}8$

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 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

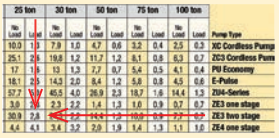
Cylinder Speed

This chart will help you calculate the time required for an Enerpac cylinder to lift a load when powered by a 700 bar 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.

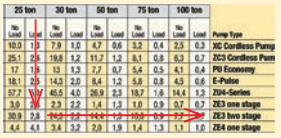
To determine: Cylinder plunger speed

An RC-256 cylinder (25 ton) is powered by a ZE3-Series two stage pump. While lifting the load, the cylinder plunger travels at 2,8 mm per second. While extending towards the load, the cylinder plunger travels at 30,9 mm per second.



To determine: Best matching pump

Your 25 ton cylinder needs to move a load at a speed of 3,0 mm per second. Simply go down from the top of the chart, to the value of 2,8 mm per second. Follow the chart to the right to find that the ZE3-Series pump is most suitable for your application.



Millimetres of RC-Series cylinder plunger travel per hand pump plunger stroke

Cyl. Capacity ▶	5 ton		10 ton		15 ton		25 ton		30 ton		50 ton		75 ton		100 ton			
▼ 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	1,4	1,4	0,6	0,6	0,4	0,4	0,3	0,3	0,2	0,2	0,1	0,1	0,1	0,1	0,1	0,1	**P-141**	**74**
	3,9	3,9	1,7	1,7	1,2	1,2	0,7	0,7	0,6	0,6	0,3	0,3	0,2	0,2	0,2	0,2	**P-391**	**74**
	17,6	3,9	7,8	1,7	5,5	1,2	3,4	0,7	2,6	0,6	1,6	0,3	1,0	0,2	0,8	0,2	**P-392**	**74**
	25,3	3,8	11,2	1,7	7,9	1,2	4,9	0,7	3,7	0,6	2,3	0,3	1,5	0,2	1,1	0,2	**P-77/80/801/84**	**76**
	61,4	3,9	27,1	1,7	19,3	1,2	11,8	0,7	9,0	0,6	5,5	0,3	3,5	0,2	2,8	0,2	**P-802/842**	**76**
	197	7,4	87,1	3,3	61,8	2,3	37,9	1,4	29,0	1,1	17,7	0,7	11,4	0,4	8,8	0,3	**P-462/464**	**76**

Millimetres per Second of RC-Series Cylinder Plunger Travel

Cyl. Capacity ▶	5 ton		10 ton		15 ton		25 ton		30 ton		50 ton		75 ton		100 ton			
▼ 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 50 Hz)	51,3	6,4	23,0	2,9	16,4	2,1	10,0	1,3	7,9	1,0	4,7	0,6	3,2	0,4	2,5	0,3	**XC Cordless Pump**	**84**
	128,2	13,3	57,5	6,0	41,1	4,3	25,1	2,6	19,8	1,2	11,7	1,2	8,1	0,8	6,3	0,7	**ZC3 Cordless Pump**	**86**
	86	8,3	38	3,7	27	2,6	17	1,6	13	1,3	7,7	0,7	5,4	0,5	4,1	0,4	**PU Economy**	**88**
	92,3	12,8	41,4	5,7	29,6	4,1	18,1	2,5	14,3	2,0	8,4	1,2	5,8	0,8	4,5	0,6	**E-Pulse**	**94**
	295	25,6	132	11,5	94,4	8,2	57,7	5,0	45,5	4,0	26,9	2,3	18,7	1,6	14,4	1,3	**ZU4-Series**	**96, 98**
	15,1	14,1	6,8	6,3	4,8	4,5	3,0	2,8	2,3	2,2	1,4	1,3	1,0	0,9	0,7	0,7	**ZE3 one stage**	**96, 104**
	158	14,1	70,7	6,3	50,5	4,5	30,9	2,8	24,3	2,2	14,4	1,3	10,0	0,9	7,7	0,7	**ZE3 two stage**	**96, 104**
	22,3	21,0	10,0	9,4	7,1	6,7	4,4	4,1	3,4	3,2	2,0	1,9	1,4	1,3	1,1	1,0	**ZE4 one stage**	**96, 104**
	228	21,0	102	9,4	72,9	6,7	44,6	4,1	35,2	3,2	20,8	1,9	14,4	1,3	11,1	1,0	**ZE4 two stage**	**96, 104**
	44,9	42,1	20,1	18,9	14,4	13,5	8,8	8,2	6,9	6,5	4,1	3,8	2,8	2,7	2,2	2,1	**ZE5 one stage**	**96, 104**
	298	42,1	133	18,9	95,3	13,5	58,3	8,2	46,0	6,5	27,2	3,8	18,9	2,7	14,5	2,1	**ZE5 two stage**	**96, 104**
	76,9	70,0	34,5	31,4	24,6	22,4	15,1	13,7	11,9	10,8	7,0	6,4	4,9	4,4	3,8	3,4	**ZE6 one stage**	**96, 104**
	315	70,0	141	31,4	101	22,4	61,7	13,7	48,7	10,8	28,8	6,4	20,0	4,4	15,4	3,4	**ZE6 two stage**	**96, 104**
	53,8	53,8	24,1	24,1	17,2	17,2	10,5	10,5	8,3	8,3	4,9	4,9	3,4	3,4	2,6	2,6	**SFP421 (11 kW)**	**280**
Air Driven Pumps (at 6,9 bar air pressure)	51,3	6,4	23,0	2,9	16,4	2,1	10,0	1,3	7,9	1,0	4,7	0,6	3,2	0,4	2,5	0,3	**XA-Series**	**114**
	25,9	4,2	11,6	1,9	8,2	1,3	5,0	0,8	4,0	0,6	2,3	0,4	1,6	0,3	1,3	0,2	**PATG-serie Turbo II Air**	**112**
	17	3,4	7,6	1,5	5,4	1,1	3,3	0,7	2,6	0,5	1,5	0,3	1,1	0,2	0,8	0,2	**PA-Series**	**110**
	277	3,8	123	1,7	88	1,2	53	0,7	42	0,6	25	0,3	17	0,2	13,0	0,2	**PAM-Series**	**111**
	357	33,6	160	15,1	114	10,8	69,9	6,6	55,1	5,2	32,6	3,1	22,6	2,1	17,4	1,6	**ZA-Series**	**116**
Gasoline Engine	295	41	132	18,4	94,4	13,1	57,7	8,0	45,5	6,3	26,9	3,7	18,7	2,6	14,4	2,0	**ZG5-Series 4,1 kW**	**118**
	166	41	74,7	18,4	53,4	13,1	32,6	8,0	25,7	6,3	15,2	3,7	10,6	2,6	8,1	2,0	**ZG5-Series 4,8 kW**	**118**
	376	85	169	37,9	121	27,1	73,8	16,6	58,2	13,1	34,4	7,7	23,9	5,4	18,4	4,1	**ZG6-Series 9,7 kW**	**118**

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 700 bar (2nd stage).

Example: At what speed (V) will the RC-256 (25 ton) cylinder move when powered by a ZE3-Series pump?
RC-256 Cylinder Effective Area = 33,2 cm^2
ZE3-Series pump oil Flow (no load) = 6150 cm^3/min

$$\text{Cylinder Plunger Speed (mm/sec)} = \frac{\text{Pump Oil Flow } (cm^3/min) \times 10}{\text{Cylinder Effective Area } (cm^2) \times 60}$$

$$\text{Speed V} = \frac{6150\ cm^3/min \times 10}{33,2 \times 60} = 30,9\ mm/sec$$

Valve Information

ENERPAC

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.

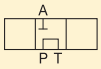
Double-Acting cylinders require a 4-way valve, providing control of the flow to each cylinder port.

Positions

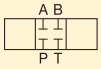
The number of control points a valve can provide. A 2-position valve has the ability to control only the advance or retraction of the cylinder. To be able to control the cylinder with a hold position, the valve requires a 3rd position.

Centre Configuration

The centre position of a valve is the position at which there is no movement required of the hydraulic component, whether a tool or cylinder.

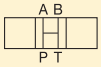


The most common is the **Tandem Centre**. This configuration provides for little to no movement of the cylinder and the unloading of the pump. This provides for minimum heat build-up.

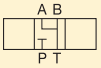


The next most common is the **Closed Centre** configuration, which is used mostly for independent control of multi-cylinder applications. This configuration again provides for little to no movement of the cylinder, but also dead-heads the pump, isolating it from the circuit.
Use of this type of valve may require some means of unloading the pump to prevent heat build-up.

There are many more type of valves, such as Open Centre and Float Centre. These valves are used mostly in complex hydraulic circuits and require other special considerations.



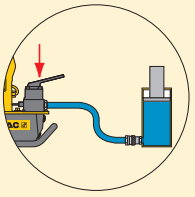
Open Centre



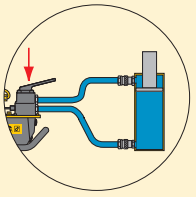
Float Centre

Directional Control Valves

3-Way Valves
are used with single-acting cylinders.

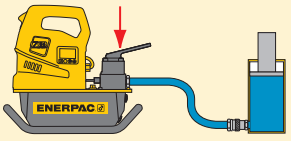


4-Way Valves
are used with double-acting cylinders.

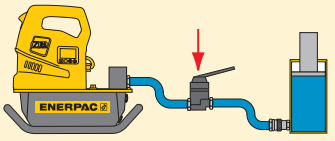


Valves may be either pump mounted or remote mounted.

Pump Mounted

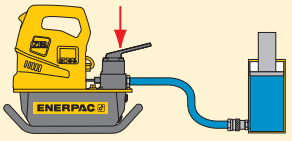


Remote Mounted

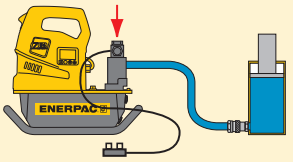


Valves may be either manually or solenoid operated.

Manually Operated

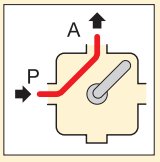


Solenoid Operated

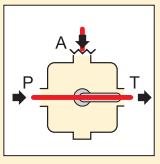


Advance Hold Retract

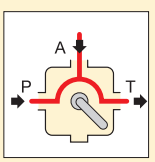
Single-acting cylinder
Controlled by a 3-way, 3-position valve.



Advance
The oil flows from the pump pressure port P to the cylinder port A: the cylinder plunger will extend.

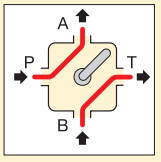


Hold
The oil flows from the pump pressure port P to the tank T. The cylinder port A is closed: the cylinder plunger will maintain its position.

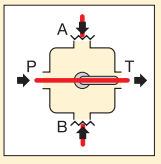


Retract
The oil flows from the pump and cylinder port A to the tank T: the cylinder plunger will retract.

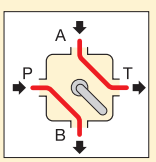
Double-acting cylinder
Controlled by a 4-way, 3-position valve.



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.

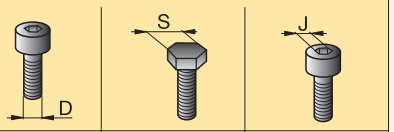


Retract
The oil flows from the pump pressure port P to cylinder port B and from cylinder port A to tank T: the cylinder plunger will retract.

© Enerpac

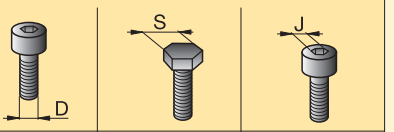
Hexagon Nut and Bolt Sizes

METRIC SIZES



Thread Size D (mm)	Hexagon Size S (mm)	Hexagon Size J (mm)
M 10	17	8
M 12	19	10
M 14	22	12
M 16	24	14
M 18	27	14
M 20	30	17
M 22	32	17
M 24	36	19
M 27	41	19
M 30	46	22
M 33	50	24
M 36	55	27
M 39	60	27 (30)
M 42	65	32
M 45	70	-
M 48	75	36
M 52	80	36
M 56	85	41
M 60	90	46
M 64	95	46
M 68	100	50
M 72	105	55
M 76	110	60
M 80	115	65
M 85	120	70
M 90	130	70 (75)
M 95	135	-
M 100	145	85
M 105	150	-
M 110	155	-
M 115	165	-
M 120	170	-
M 125	180	-
M 130	185	-
M 140	200	-
M 150	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 manufacturers 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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Torque Tightening

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 Catalogue**.

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.

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.

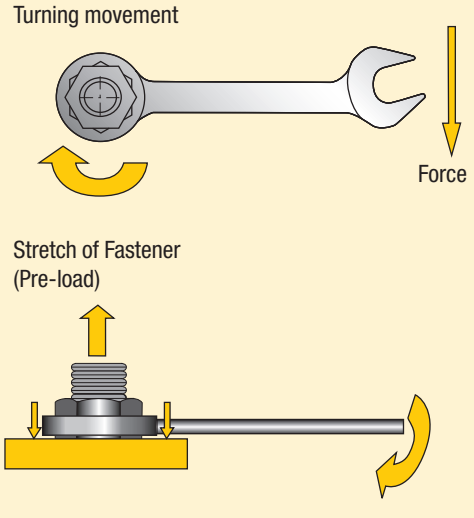
Torque Tightening and Preload

The amount of preload created when torqueing is largely dependant 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



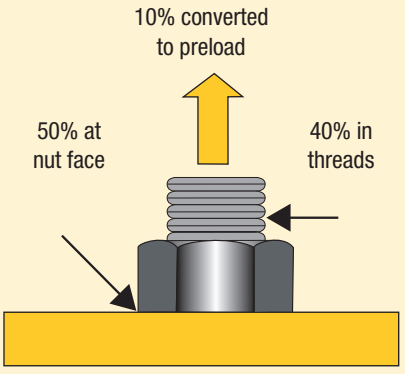
Preload (residual load) =
Applied Torque *minus* Frictional Losses

Lubrication Reduces Friction

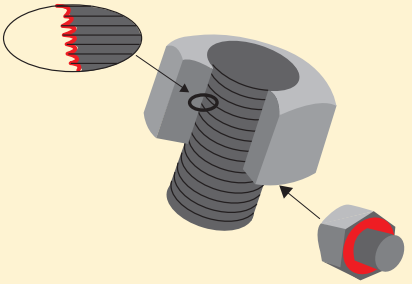
Lubrication reduces the friction during tightening, decreases bolt failure during installation and increases bolt service life. Variation in friction coefficients affect the amount of preload achieved at a specified torque. Higher friction results in less conversion of torque to preload. The value for 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)



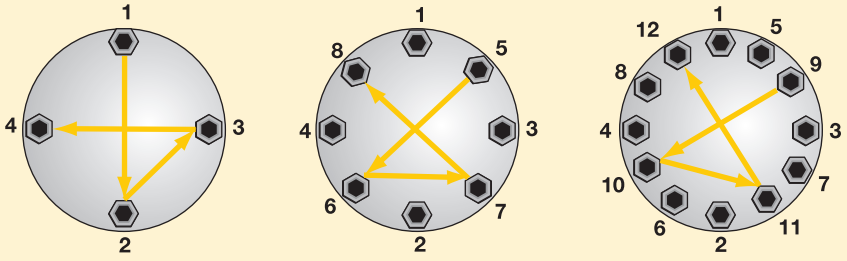
Friction points should always be lubricated when using the torque tightening method.

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.

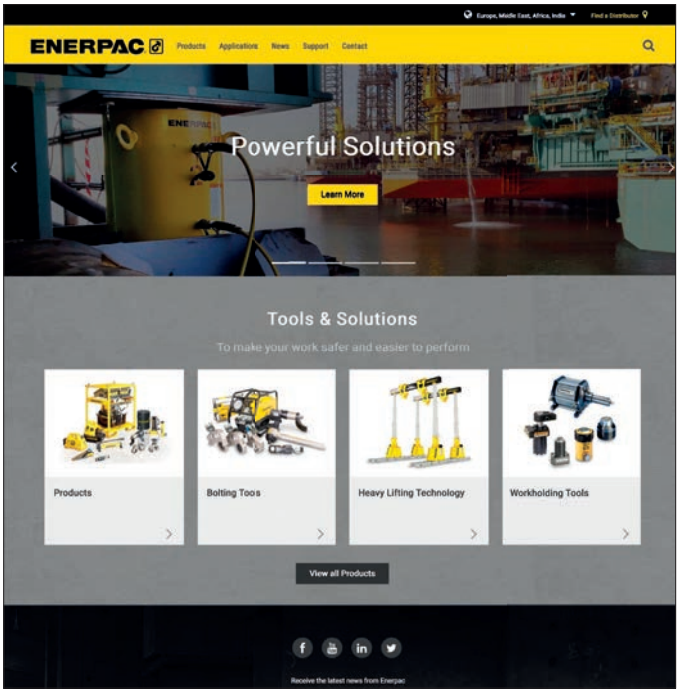
Breakout Torque

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.

About Enerpac



Enerpac is the leading global provider of high-pressure hydraulic tools and solutions with a broad range of products, local expertise and worldwide distribution network. With a proven track record in a wide range of markets, Enerpac designs and manufactures high-quality tools and solutions for all industrial applications.

Enerpac has gained unique experience in delivering hydraulic solutions for the controlled movement and positioning of heavy objects. Enerpac supports your business by offering the right solutions and service to help you get your work done efficiently and safely.

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E415e



E215e



9508



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Enerpac Academy & EMP – Enerpac Maintenance Program

Do you work with high-pressure hydraulic tools regularly or even every day? Operating such tools requires sound knowledge of how they work and this should be maintained. Effective use of these tools boosts safety and reduces risk - both for you as the operator and for the environment within which the tools are used. Having the right training will enable you to use the tools safely and properly.

Enerpac Academy is our in-house training centre, set up exclusively for Enerpac business partners, Enerpac users and Enerpac employees: training programs ranging from tool expertise, repairs and maintenance, to safe operation of high-pressure hydraulic tools.

Putting theory into practice

The training courses are interactive and benefit from a highly diverse program that puts the covered theory into practice right away. Our training services are grounded in many years of experience in providing and applying Enerpac tools.

Tailored training

Enerpac Academy offers you the exclusive opportunity to train your (new) employees in making proper use of Enerpac tools. Our trainings can also be done on-site.

Safety training: Safe use of Enerpac high pressure hydraulic tools, user and environmental safety.

Controlled bolting trainings: Bolting tool theory, tool applications, hands-on training on safe and efficient use of torque wrenches, tensioners and pumps.

General hydraulic sales training: Knowledge of hydraulics, hydraulic tools and applications.

Tool repair training: Repair and maintenance of general Enerpac tools.

Application training: Tool feature and benefits, tool application review, safe use of hydraulic tools and market information.



Enerpac Academy – The Power of Knowledge

- Specialist in-house Enerpac training center
- Standard and tailored training programs
- Highly experienced trainers
- Selection of training courses with a proven (value adding) track record
- Knowledge and experience sharing
- User and tool safety come first.

Training Centre Locations

- Ede (The Netherlands)
- Hosur, Tamil Nadu (India)
- Columbus, Wisconsin (USA)
- Sydney (Australia)
- Singapore

EMP – Enerpac Maintenance Program

EMP is a preventive maintenance program. Your Enerpac Authorized Service Centre will check the tools on essential points: leaking, oil level and quality, maximum pressure setting, and damage. EMP reduces operational risks, increases safety and minimises 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.

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