

E 321e

**ENERPAC** 

Hydraulic Power for all Industrial Applications



**ENERPAC** 

A UNIT OF APPLIED POWER

# Hydraulic Power for all Industrial Applications

**E 321e**



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For your Safety and Basic Hydraulic Information, see our new 'Yellow Pages'.

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## System Components

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## Valves

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## Presses

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## Pullers

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## Tools

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# The World



Applied Power, founded in 1910, originally supplied hand grinding wheels, and later water pumps for the Ford Model T motor car. Subsequently, Applied Power became involved with high pressure hydraulics technology, which is the basis of its present Enerpac and Power-Packer businesses. Applied Power is now a large and diverse group, consisting of six companies, each a leader in its own field.

Enerpac manufactures and distributes high force hydraulic and other tools on a global basis for the manufacturing and construction industries, for production, maintenance and repair.

GB Electrical provides a wide array of electrical tools to the retail and wholesale electrical distribution markets, primarily in North America.

Power-Packer is an expert in hydraulic positioning systems for the automotive industry. Its convertible top actuators, suspension systems and roll stabilizer systems can be found in all major car makes.

Barry Controls specializes in noise and vibration control for the aviation industry worldwide.

Apitech's expertise is in digitally controlled valves, the key components in electro-hydraulic systems.

Wright Line develops office and laboratory technical furniture systems that help create more efficient working environments.

**L**ifting, pushing, pulling, bending, spreading, cutting, Lowering, pressing, punching . . . that is the real world of Enerpac. Providing the professionals with hydraulic tools to work with and be profitable.

Apart from their very attractive color, Enerpac products have one more thing in common; they are all Expert Designed. What does that mean? Being the first company worldwide with high pressure hydraulics, Enerpac had to learn by experience. Nothing was taken for granted since there were no established benchmarks. Every new project has been a learning process. Building experience by working hands-on with newly developed products. Adapting our ideas to developing tailor-made solutions and services for the young industrialized world.

Enerpac is grateful and proud of the way it has become the recognized global market leader in high pressure hydraulics.

Today there are new technologies to work with, to learn from and to understand and apply. Our customers can always be assured that an Enerpac high pressure hydraulic cylinder, tool or pump is Expert Designed. It will perform superbly for the job it was designed for, at all times.





# of Enerpac

## 10 Good Reasons to Work with Enerpac

- Expert Design
- Reliability
- Service Excellence
- Worldwide Experience
- Application Support
- Availability
- Quality
- Value
- Innovative Products
- Global Vision



**Total Quality**  
Every single product we make is individually tested to the most exacting standards. Only in this way can we guarantee to meet the quality, price and performance requirements of the markets we serve around the globe.

**Logistics Excellence**  
Maintaining service excellence in the changing world of modern distribution is Enerpac's mission. This demands the highest expertise in logistics. Expertise reflected in the way we serve our thousands of distributors worldwide, through our extensive range of products.



**A tradition of Innovation**  
Being the market leader means constantly finding new solutions to better meet the challenges of industry. Enerpac's list of innovations in its field is second to none - from Golden Ring bearings (for longer cylinder life) to Genesis Technology (for higher pump productivity), from WalkPac™ and composite hand pumps (for total portability) to the Turbo Air pump (for increased efficiency and durability).



# ENERPAC®

Hydraulic Technology Worldwide

**E**NERPAC hydraulic cylinders are available in over 100 different configurations.

Whatever the industrial application is - lifting, pushing, pulling, bending, holding... whatever the capacity, size, stroke or model the industry needs - single- or double-acting, solid or hollow plunger or spread type - there is an Enerpac cylinder to fit the application.

Most Enerpac cylinders are designed to ANSI B30.1.



### Golden Ring Design

The exclusive Golden Ring Design is a unique bearing design 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, Golden Ring cylinders give long, trouble-free operation.



**HARDENED SADDLE**  
prevents plunger from mushrooming and jamming in the top bearing. Snap-in design.

**PLUNGER WIPER**  
reduces contamination, extending cylinder life.

**GOLDEN RING**  
absorbs eccentric loading without galling cylinder parts.

**CHROME PLATED PLUNGER**  
resists wear and rust.

**GOLDEN RING**  
absorbs eccentric loading without galling cylinder parts.

**PLUNGER RETURN SPRING**  
enables fast plunger retraction on single-acting cylinders.































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



All ton values specified in this catalog are metric tonnes and are for cylinder class identification only. Please refer to the kN data for calculations.



# Cylinder Section Overview

Capacity ton (kN)	Stroke Range (mm)	Cylinder type and functions	Series	Page
5 - 95 (45-933)	16 - 362	General Purpose Cylinders, Single-Acting (incl. accessories)	 RC	 8 ▶
30 - 50 (292-498)	50 - 152	Aluminium Cylinders, Single-Acting	 RCA	 13 ▶
5 - 520 (45-5114)	6 - 62	Pancake and Low Height Cylinders, Single-Acting	  CLP RSM RCS	 14 ▶ 16 ▶
2,5 - 50 (24-505)	63 - 155	Pull Cylinders, Single-Acting	 BRC BRP	 18 ▶
13-145 (125-1429)	8- 258	Hollow Plunger Cylinders Single- and Double-Acting	 RCH RRH	 20 ▶ 22 ▶
4 - 23 (35-222)	28- 260	Precision Production Cylinders, Double-Acting (incl. mounting attachments)	 BRD	 24 ▶
10 - 520 (101-5108)	57-1219	Long Stroke Cylinders, Double-Acting	 RR	 26 ▶
50- 1000 (496-10260)	50 - 300	High Tonnage Cylinders, Single-Acting, Corrosion Protected	 CLS	 30 ▶
100-1000 (929-10265)	50 - 300	High Tonnage Cylinders, Double-Acting	 CLR	 34 ▶
50-1000 (496-10260)	50 - 300	High Tonnage Cylinders, Single-Acting with Mechanical Locknut, Corrosion Protected	 CLL	 38 ▶
N/A	N/A	Synchronous Lift Systems Stage Lift Systems Strand Lift Systems	  SL BLS ST	 42 ▶
1,5 - 150 (13-1335)	76 - 508	Aluminium Jacks Steel Jacks	 JHA JTA JH/JHL	 48 ▶
5 - 95 (45-931)	38 - 362	Cylinder - Pump Sets	 SC	 50 ▶



# RC-Series, Single-Acting Cylinders

▼ Shown from left to right: RC-506, RC-50, RC-2510, RC-154, RC-10010, RC-55, RC-1010



- Collar threads, plunger threads and base mounting holes enable easy fixturing (on most models)
- Designed for use in all positions
- Removable strap handles for unobstructed fixturing (RC-5013, RC-7513 and both 95 ton models)
- High strength alloy steel for durability
- Nickel plating available on most models (contact Enerpac for details)
- Heavy duty return springs
- Baked enamel finish for increased corrosion resistance
- CR-400 coupler and dust cap included on all models
- Plunger wiper reduces contamination, extending cylinder life

▼ Stage lifting set up in Greece, where assembled pipes, 25 meters in length, were stage lifted with six RC-2514 cylinders.



## The Industry Standard General Purpose Cylinder



### Saddles

All RC cylinders are equipped with hardened removable grooved saddles. For tilt and flat saddles, see the RC-Series accessory page.

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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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▼ RC cylinder mounting attachments greatly extend the application possibilities (available for 5, 10, 15 and 25 ton cylinders).



# Single-Acting, General Purpose Cylinders



## Golden Ring Design

Enerpac RC-Cylinders incorporate the Golden Ring Design, for long, trouble-free performance.

### ▼ QUICK SELECTION CHART

For complete technical information see next page.

Cylinder Capacity ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm <sup>2</sup> )	Oil Capacity (cm <sup>3</sup> )	Collapsed Height (mm)	Weight (kg)
5 (45)	16	RC-50**	6,5	10	41	1,0
	25	RC-51	6,5	16	110	1,0
	76	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
10 (101)	232	RC-59	6,5	151	323	2,8
	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
15 (142)	304	RC-1012	14,5	441	400	6,8
	356	RC-1014	14,5	516	450	8,2
	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
25 (232)	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
	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
30 (295)	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
	50 (498)	209	RC-308	42,1	880	387
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
75 (718)	337	RC-5013	71,2	2399	460	37,6
	156	RC-756	102,6	1601	285	29,5
95 (933)	333	RC-7513	102,6	3417	492	59,0
	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.

\*\* RC-50 cylinder has non removable grooved saddle and no collar thread.

## RC Series



Capacity:

**5-95 ton**

Stroke:

**16-362 mm**

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 Enerpac hydraulic hoses.

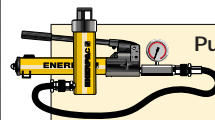
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### Gauges

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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### Pump and Cylinder Sets

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

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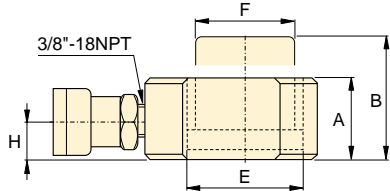
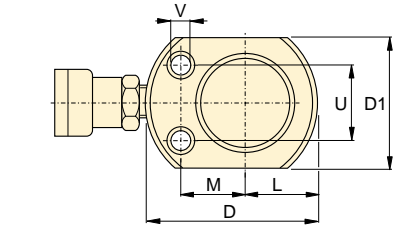


### Speed Chart

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

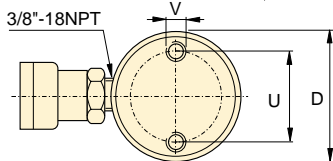
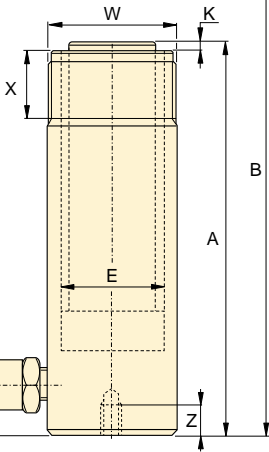
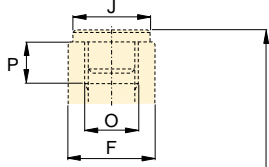
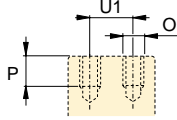
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# RC-Series, Single-Acting Cylinders

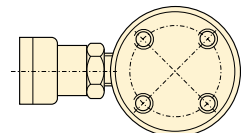


RC-50

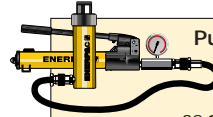
RC-101 only  
(U1 = 19 mm)



RC-51 to RC-7513 models



RC-1006 and RC-10010 models



## Pump and Cylinder Sets

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

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◀ For full features see previous page.

Cylinder Capacity	Stroke	Model Number	Cylinder Effective Area	Oil Capacity	Collapsed Height	Extended Height	Outside Dia.
ton (kN)	(mm)		(cm <sup>2</sup> )	(cm <sup>3</sup> )	A (mm)	B (mm)	D (mm)
5 (45)	16	RC-50**	6,5	10	41	57	58***
	25	RC-51	6,5	16	110	135	38
	76	RC-53	6,5	50	165	241	38
	127	RC-55*	6,5	83	215	342	38
	177	RC-57	6,5	115	273	450	38
10 (101)	232	RC-59	6,5	151	323	555	38
	26	RC-101	14,5	38	89	115	57
	54	RC-102*	14,5	78	121	175	57
	105	RC-104	14,5	152	171	276	57
	156	RC-106*	14,5	226	247	403	57
	203	RC-108	14,5	294	298	501	57
	257	RC-1010*	14,5	373	349	606	57
	304	RC-1012	14,5	441	400	704	57
15 (142)	356	RC-1014	14,5	516	450	806	57
	25	RC-151	20,3	51	124	149	69
	51	RC-152	20,3	104	149	200	69
	101	RC-154*	20,3	205	200	301	69
	152	RC-156*	20,3	308	271	423	69
	203	RC-158	20,3	411	322	525	69
	254	RC-1510	20,3	516	373	627	69
25 (232)	305	RC-1512	20,3	619	423	728	69
	356	RC-1514	20,3	723	474	830	69
	26	RC-251	33,2	86	139	165	85
	50	RC-252*	33,2	166	165	215	85
	102	RC-254*	33,2	339	215	317	85
	158	RC-256*	33,2	525	273	431	85
	210	RC-258	33,2	697	323	533	85
30(295)	261	RC-2510	33,2	867	374	635	85
	311	RC-2512	33,2	1033	425	736	85
	362	RC-2514*	33,2	1202	476	838	85
	209	RC-308	42,1	880	387	596	101
	50 (498)	51	RC-502	71,2	362	176	227
101		RC-504	71,2	719	227	328	127
159		RC-506*	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

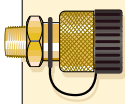
\* Available as set, see note on this page.

\*\* RC-50 cylinder has non removable grooved saddle and no collar thread.

\*\*\* D1 = 41 mm, L = 20 mm, M = 25 mm.



# 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)	Weight (kg)	Model Number
							Bolt Circle U (mm)	Thread V	Thd. Depth Z (mm)				
28,7	25,4	19	**	**	**	**	28	5,6 mm	—	—	—	1,0	RC-50**
28,7	25,4	19	25	6	1 <sup>3</sup> / <sub>4</sub> " - 16	14	25	1 <sup>1</sup> / <sub>4</sub> " - 20UN	14	1 <sup>1</sup> / <sub>2</sub> " - 16	28	1,0	RC-51
28,7	25,4	19	25	6	3 <sup>1</sup> / <sub>4</sub> " - 16	14	25	1 <sup>1</sup> / <sub>4</sub> " - 20UN	14	1 <sup>1</sup> / <sub>2</sub> " - 16	28	1,5	RC-53
28,7	25,4	19	25	6	3 <sup>1</sup> / <sub>4</sub> " - 16	14	25	1 <sup>1</sup> / <sub>4</sub> " - 20UN	14	1 <sup>1</sup> / <sub>2</sub> " - 16	28	1,9	RC-55*
28,7	25,4	19	25	6	3 <sup>1</sup> / <sub>4</sub> " - 16	16	25	1 <sup>1</sup> / <sub>4</sub> " - 20UN	14	1 <sup>1</sup> / <sub>2</sub> " - 16	28	2,4	RC-57
28,7	25,4	19	25	6	3 <sup>1</sup> / <sub>4</sub> " - 16	16	25	1 <sup>1</sup> / <sub>4</sub> " - 20UN	14	1 <sup>1</sup> / <sub>2</sub> " - 16	28	2,8	RC-59
42,9	38,1	19	—	—	#10 - 24UN	6	39	5 <sup>1</sup> / <sub>16</sub> " - 18UN	12	2 <sup>1</sup> / <sub>4</sub> " - 14	26	1,8	RC-101
42,9	38,1	19	35	6	1" - 8	19	39	5 <sup>1</sup> / <sub>16</sub> " - 18UN	12	2 <sup>1</sup> / <sub>4</sub> " - 14	28	2,3	RC-102*
42,9	38,1	19	35	6	1" - 8	19	39	5 <sup>1</sup> / <sub>16</sub> " - 18UN	12	2 <sup>1</sup> / <sub>4</sub> " - 14	26	3,3	RC-104
42,9	38,1	19	35	6	1" - 8	19	39	5 <sup>1</sup> / <sub>16</sub> " - 18UN	12	2 <sup>1</sup> / <sub>4</sub> " - 14	28	4,4	RC-106*
42,9	38,1	19	35	6	1" - 8	19	39	5 <sup>1</sup> / <sub>16</sub> " - 18UN	12	2 <sup>1</sup> / <sub>4</sub> " - 14	26	5,4	RC-108
42,9	38,1	19	35	6	1" - 8	19	39	5 <sup>1</sup> / <sub>16</sub> " - 18UN	12	2 <sup>1</sup> / <sub>4</sub> " - 14	28	6,4	RC-1010*
42,9	38,1	19	35	6	1" - 8	19	39	5 <sup>1</sup> / <sub>16</sub> " - 18UN	12	2 <sup>1</sup> / <sub>4</sub> " - 14	26	6,8	RC-1012
42,9	38,1	19	35	6	1" - 8	19	39	5 <sup>1</sup> / <sub>16</sub> " - 18UN	12	2 <sup>1</sup> / <sub>4</sub> " - 14	26	8,2	RC-1014
50,8	41,4	19	38	9	1" - 8	25	47	3 <sup>7</sup> / <sub>8</sub> " - 16UN	12	2 <sup>3</sup> / <sub>4</sub> " - 16	30	3,3	RC-151
50,8	41,4	19	38	9	1" - 8	25	47	3 <sup>7</sup> / <sub>8</sub> " - 16UN	12	2 <sup>3</sup> / <sub>4</sub> " - 16	30	4,1	RC-152
50,8	41,4	19	38	9	1" - 8	25	47	3 <sup>7</sup> / <sub>8</sub> " - 16UN	12	2 <sup>3</sup> / <sub>4</sub> " - 16	30	5,0	RC-154*
50,8	41,4	25	38	9	1" - 8	25	47	3 <sup>7</sup> / <sub>8</sub> " - 16UN	12	2 <sup>3</sup> / <sub>4</sub> " - 16	30	6,8	RC-156*
50,8	41,4	25	38	9	1" - 8	25	47	3 <sup>7</sup> / <sub>8</sub> " - 16UN	12	2 <sup>3</sup> / <sub>4</sub> " - 16	30	8,2	RC-158
50,8	41,4	25	38	9	1" - 8	25	47	3 <sup>7</sup> / <sub>8</sub> " - 16UN	12	2 <sup>3</sup> / <sub>4</sub> " - 16	30	9,5	RC-1510
50,8	41,4	25	38	9	1" - 8	25	47	3 <sup>7</sup> / <sub>8</sub> " - 16UN	12	2 <sup>3</sup> / <sub>4</sub> " - 16	30	10,9	RC-1512
50,8	41,4	25	38	9	1" - 8	25	47	3 <sup>7</sup> / <sub>8</sub> " - 16UN	12	2 <sup>3</sup> / <sub>4</sub> " - 16	30	11,8	RC-1514
65,0	57,2	25	50	10	1 <sup>1</sup> / <sub>2</sub> " - 16	25	58	1 <sup>1</sup> / <sub>2</sub> " - 13UN	19	3 <sup>5</sup> / <sub>16</sub> " - 12	49	5,9	RC-251
65,0	57,2	25	50	10	1 <sup>1</sup> / <sub>2</sub> " - 16	25	58	1 <sup>1</sup> / <sub>2</sub> " - 13UN	19	3 <sup>5</sup> / <sub>16</sub> " - 12	49	6,4	RC-252*
65,0	57,2	25	50	10	1 <sup>1</sup> / <sub>2</sub> " - 16	25	58	1 <sup>1</sup> / <sub>2</sub> " - 13UN	19	3 <sup>5</sup> / <sub>16</sub> " - 12	49	8,2	RC-254*
65,0	57,2	25	50	10	1 <sup>1</sup> / <sub>2</sub> " - 16	25	58	1 <sup>1</sup> / <sub>2</sub> " - 13UN	19	3 <sup>5</sup> / <sub>16</sub> " - 12	49	10,0	RC-256*
65,0	57,2	25	50	10	1 <sup>1</sup> / <sub>2</sub> " - 16	25	58	1 <sup>1</sup> / <sub>2</sub> " - 13UN	19	3 <sup>5</sup> / <sub>16</sub> " - 12	49	12,2	RC-258
65,0	57,2	25	50	10	1 <sup>1</sup> / <sub>2</sub> " - 16	25	58	1 <sup>1</sup> / <sub>2</sub> " - 13UN	19	3 <sup>5</sup> / <sub>16</sub> " - 12	49	14,1	RC-2510
65,0	57,2	25	50	10	1 <sup>1</sup> / <sub>2</sub> " - 16	25	58	1 <sup>1</sup> / <sub>2</sub> " - 13UN	19	3 <sup>5</sup> / <sub>16</sub> " - 12	49	16,3	RC-2512
65,0	57,2	25	50	10	1 <sup>1</sup> / <sub>2</sub> " - 16	25	58	1 <sup>1</sup> / <sub>2</sub> " - 13UN	19	3 <sup>5</sup> / <sub>16</sub> " - 12	49	17,7	RC-2514*
73,2	57,2	57	50	10	1 <sup>1</sup> / <sub>2</sub> " - 16	25	—	—	—	3 <sup>5</sup> / <sub>16</sub> " - 12	49	18,1	RC-308
95,2	79,5	33	71	2	—	—	95	1 <sup>1</sup> / <sub>2</sub> " - 13UN	19	5" - 12	55	15,0	RC-502
95,2	79,5	33	71	2	—	—	95	1 <sup>1</sup> / <sub>2</sub> " - 13UN	19	5" - 12	55	19,1	RC-504
95,2	79,5	35	71	2	—	—	95	1 <sup>1</sup> / <sub>2</sub> " - 13UN	19	5" - 12	55	23,1	RC-506*
95,2	79,5	35	71	2	—	—	95	1 <sup>1</sup> / <sub>2</sub> " - 13UN	19	5" - 12	55	37,6	RC-5013
114,3	95,2	30	71	5	—	—	—	—	—	5 <sup>3</sup> / <sub>4</sub> " - 12	44	29,5	RC-756
114,3	95,2	30	71	5	—	—	—	—	—	5 <sup>3</sup> / <sub>4</sub> " - 12	44	59,0	RC-7513
130,3	104,9	41	71	2	—	—	139	3 <sup>1</sup> / <sub>4</sub> " - 10UN	25	6 <sup>7</sup> / <sub>8</sub> " - 12	44	59,0	RC-1006*
130,3	104,9	41	71	2	—	—	139	3 <sup>1</sup> / <sub>4</sub> " - 10UN	25	6 <sup>7</sup> / <sub>8</sub> " - 12	44	72,6	RC-10010

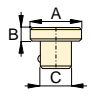
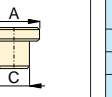
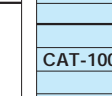
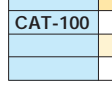
# RC-Series, Cylinder Accessories

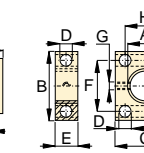
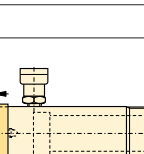
## ▼ SELECTION CHART

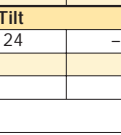
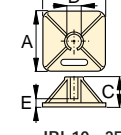
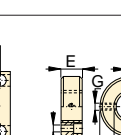
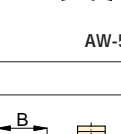
For use with Cylinder Capacity  ton (kN)	Saddles			Base Plate	Mounting Block	Clevis Eyes	
	Flat	Grooved <sup>1)</sup>	Tilt			Base <sup>4)</sup>	Plunger
5 (45)	A-53F <sup>2)</sup>	A-53G <sup>2)</sup>	-	-	RB-5 <sup>2)</sup> , AW-51 <sup>2)</sup> , AW-53 <sup>2)</sup>	REB-5 <sup>2)</sup>	REP-5 <sup>2)</sup>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

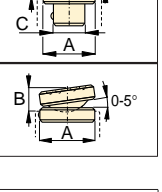
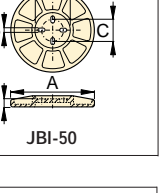
<sup>1)</sup> Standard on 5-30 ton RC-cylinders    <sup>2)</sup> Except RC-50    <sup>3)</sup> Except RC-101    <sup>4)</sup> Mounting screws are included.

## ▼ DIMENSION CHARTS

Model Nr.	Saddle Dimensions (mm)				Model Nr.	Tilt Saddle Dimensions (mm)			
	A	B	C			A	B	C	
	Flat					Tilt			
A-53F	25	6	17		CAT-10	35	15	22	
A-102F	35	6	22		CAT-50	50	21	35	
	Grooved					Tilt			
A-53G	25	6	17		CAT-100	71	24	-	
A-102G	35	6	22						
A-152G	38	9	22						
A-252G	50	9	35						

Model Nr.	Base Plate 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		

Model Nr.	Mounting Block Dimensions (mm)											
	A	B	C	D	E	F	G	H				
RB-5	1 1/2" - 16	88	76	-	25	-	-	-				
AW-51	1 1/2" - 16	70	59	10	24	54	1/4" - 20	41				
AW-53	1 1/2" - 16	72	7	7	19	57	1/4" - 20	10				
RB-10	2 1/4" - 14	114	88	-	25	-	-	-				
AW-102	2 1/4" - 14	100	82	16	30	76	7/16" - 20	58				
RB-15	2 3/4" - 16	101	114	-	38	-	-	-				
RB-25	3 5/16" - 12	127	127	-	50	-	-	-				

Type	Model Nr.	Clevis Eye Dimensions (mm)							
		A	B	C	D	E	F		
Base <sup>4)</sup>	REB-5	44	47	14	16	16	25		
	REB-10	63	66	25	22	25	35		
	REB-15	76	66	25	22	25	35		
	REB-25	95	79	38	31	31	41		
Plunger	REP-5	28	41	14	16	16	19		
	REP-10	42	61	25	22	25	28		
	REP-25	57	74	38	31	31	35		

**i** See our 'Yellow Pages' for application information on these accessories.

# Single-Acting, Aluminium Cylinders

▼ Shown from left to right: RCA-506, RCA-502



## RCA Series



Capacity:  
**30 - 50 ton**

Stroke:  
**50 - 153 mm**

Maximum Operating Pressure:  
**700 bar**



### Saddles

The RCA cylinders are equipped standard with grooved saddles.

For applications requiring a tilt saddle, the CAT-101 (50 ton) is available as an accessory.

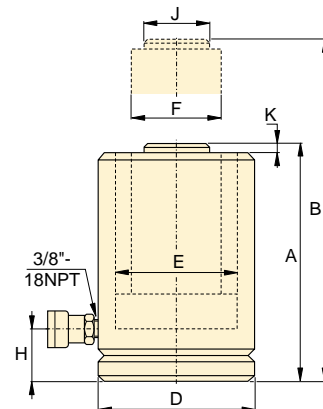
Page: 17

- Light weight, aluminium design for maximum portability
- ANSI B30.1 design and test specification approvals guarantee increased product life and user safety
- Designed for use in all positions
- Steel base-plate for increased durability
- Base and plunger are hard coat anodized
- CR-400 coupler and dust cap included on all models
- Plunger wiper extends life



### ◀ Light weight Hand Pump

If your choice is an RCA aluminium cylinder, then an Enerpac P-392 or P-802 composite hand pump would make the optimal light weight set.



Cylinder Capacity	Stroke	Model Number	Cylinder Effective Area	Oil Capacity	Coll. Height	Extnd. Height	Outside Dia.	Cyl. Bore Dia.	Plunger Dia.	Base to Adv. Port	Saddle Dia.	Saddle Protr. from Plgr.	Weight
					A	B							
ton (kN)	(mm)		(cm <sup>2</sup> )	(cm <sup>3</sup> )	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(kg)
30 (292)	51	RCA-302	41,7	212	181	232	120	72,9	57,2	57	50	1	5,4
	101	RCA-304	41,7	421	235	336	120	72,9	57,2	57	50	1	7,0
	153	RCA-306	41,7	638	292	445	120	72,9	57,2	57	50	1	10,0
50 (498)	50	RCA-502	71,2	356	177	227	149	95,2	79,2	45	71	3	9,8
	102	RCA-504	71,2	726	227	329	149	95,2	79,2	45	71	3	12,0
	153	RCA-506	71,2	1089	278	431	149	95,2	79,2	45	71	3	14,3



▼ Shown from left to right: CLP-2002, CLP-5002



## The Lowest Power Lifter

- Extremely low height for use in confined areas
- Safety lock nut for mechanical load holding
- Single-acting, load return
- Optional special synthetic coating for improved corrosion resistance and lower friction for smoother operation to withstand side load forces up to 3% of rated cylinder capacity without scoring
- Overflow port functions as a stroke limiter
- CR-400 coupler and dust cap included on all models

▼ Only the extreme low height CLP-cylinder fits in this confined area to lift the construction.



### Saddles

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



### 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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Cylinder Capacity	Stroke	Model Number*	Cylinder Effective Area	Oil Capacity
ton (kN)	(mm)		(cm <sup>2</sup> )	(cm <sup>3</sup> )
60 (606)	50	CLP-602	86,6	432
100 (1027)	50	CLP-1002	146,8	734
160 (1619)	45	CLP-1602	231,3	1040
200 (1999)	45	CLP-2002	285,6	1285
260 (2567)	45	CLP-2502	366,8	1650
400 (3916)	45	CLP-4002	559,5	2517
520 (5114)	45	CLP-5002	730,6	3287

\* For special synthetic coating add suffix 'C' to model number.

# Single-Acting, Pancake Lock Nut Cylinders



## Speed Chart

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

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## CLP Series



Capacity:

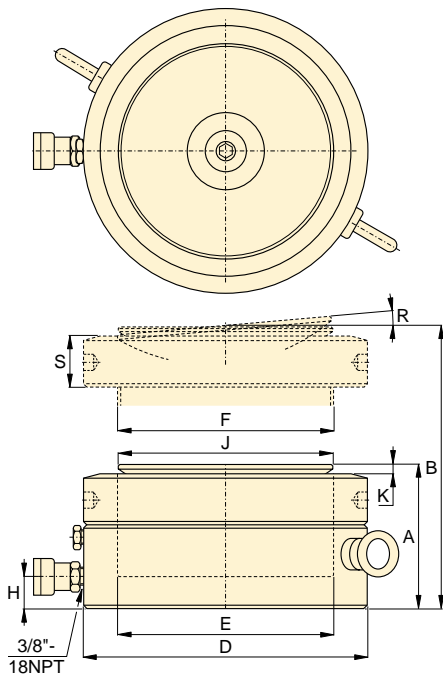
**60-520 ton**

Stroke:

**45-50 mm**

Maximum Operating Pressure:

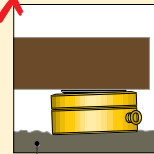
**700 bar**



**ALL CLP-SERIES CYLINDERS REQUIRE A SOLID LIFTING SURFACE FOR CORRECT SUPPORT.**

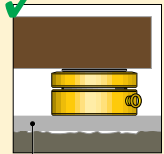
**USE OF PANCAKE CYLINDERS ON SURFACES SUCH AS SAND, MUD OR DIRT, MAY RESULT IN CYLINDER DAMAGE!**

**WRONG!**



Rough soil

**RIGHT!**



Flat Lifting Surface

For more safety instructions see our 'Yellow Pages'.

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Coll. Height	Ext. Height	Outside Diameter	Cyl. Bore Diameter	Plunger Diameter	Base to Adv. Port	Saddle Diameter	Saddle Protr. from Plgr.	Saddle Max. Tilt Angle	Lock Nut Height	Weight	Model Number*
A (mm)	B (mm)	D (mm)	E (mm)	F (mm)	H (mm)	J (mm)	K (mm)	R	S (mm)	(kg)	
125	175	140	105,0	Tr 104 x 4	19	96	6	5°	28	15	CLP-602
137	187	175	136,7	Tr 136 x 6	21	126	8	5°	31	26	CLP-1002
148	193	220	171,6	Tr 171 x 6	27	160	9	5°	40	44	CLP-1602
155	200	245	190,7	Tr 190 x 6	30	180	10	5°	43	57	CLP-2002
159	204	275	216,1	Tr 216 x 6	32	200	11	5°	44	74	CLP-2502
178	223	350	266,9	Tr 266 x 6	39	250	11	4°	55	134	CLP-4002
192	237	400	305,0	Tr 305 x 6	48	290	10	3°	62	189	CLP-5002

# RSM/RCS-Series, Low Height Cylinders

▼ 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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### Machine Lift

In very confined work areas a machine lift often offers the solution for lifting the first few millimetres.

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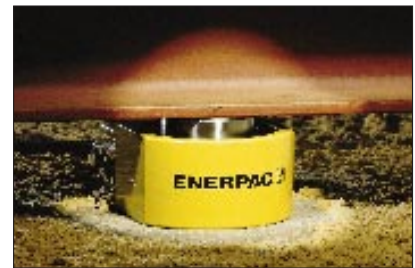
### RSM-series, Flat-Jac® Cylinders

- Compact, flat design for use where most other cylinders will not fit
- 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, except RSM-50 which is fitted with an AR-400 coupler.
- 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
- 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
- Hard chrome plated steel plungers

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

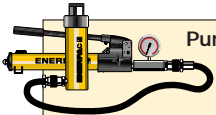


Cyl. Capacity ton (kN)	Stroke (mm)	Model Number	Cyl. Effect. Area (cm <sup>2</sup> )	Oil Cap. (cm <sup>3</sup> )
5 (45)	6	RSM-50	6,5	4
10 (101)	12	RSM-100	14,5	18
20 (201)	11	RSM-200	28,7	32
30 (295)	13	RSM-300	42,1	55
45 (435)	16	RSM-500	62,1	99
75 (718)	16	RSM-750	102,6	164
90 (887)	16	RSM-1000	126,7	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

\* Available as set, see note on next page.



# Single-Acting, Low Height Cylinders



## Pump and Cylinder Sets

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

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## RSM RCS Series



Capacity:

**5-150 ton**

Stroke:

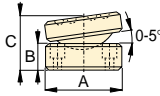
**6-62 mm**

Maximum Operating Pressure:

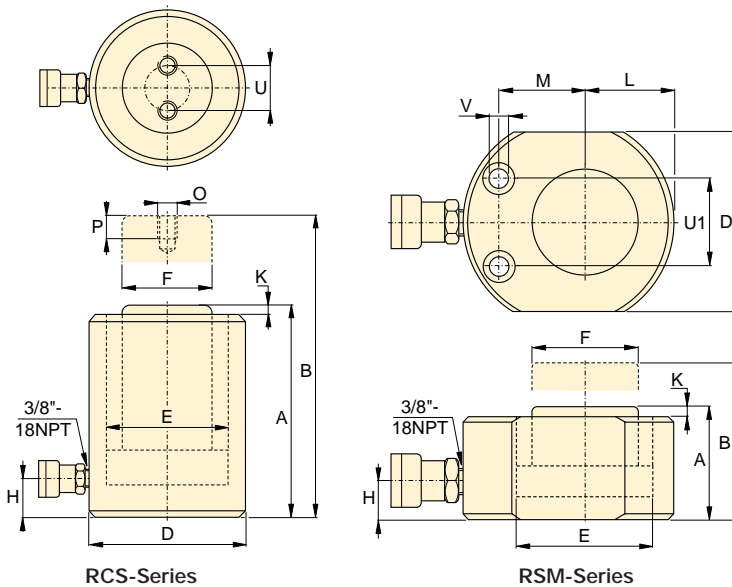
**700 bar**

### Optional Bolt On Tilt Saddle Dimensions (mm)

For Cylinder Model:	Model Number	A	B	C*
RCS-101	CAT-11	35	10	21
RCS-201, -302, -502	CAT-51	50	15	29
RCS-1002	CAT-101	71	17	35



\* 'C' dimension equals saddle protrusion from plunger. Mounting screws are included.



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

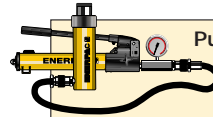
Collapsed Height A (mm)	Ext. Height B (mm)	Outside Diameter D (mm)	Cylinder Bore Dia. E (mm)	Plunger Dia. F (mm)	Base to Adv. Port. H (mm)	Plunger Protrusion from Base K (mm)	Plunger to Base L (mm)	Plunger to Mtg. Hole M (mm)	Thread O (mm)	Thread Depth P (mm)	Bolt Circle U (mm)	Weight (kg)	Model Number
32	38	58 x 41	28,7	25,4	16	1	20	22	-	-	-	1,0	RSM-50*
42	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	50,8	19	2	47	44	-	-	-	4,5	RSM-300
66	82	139 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	177 x 152	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	4,1	RCS-101*
98	143	92	60,5	50,8	17	3	-	-	M5	8	39	5,0	RCS-201*
117	179	101	73,2	66,5	19	3	-	-	M5	8	39	6,8	RCS-302*
122	182	127	88,9	69,8	23	2	-	-	M5	8	39	10,9	RCS-502*
141	198	165	127,0	92,2	31	1	-	-	M8	10	55	22,7	RCS-1002*

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



- High strength alloy steel construction
- Plunger blow-out protection to prevent rod over-extension
- Hard chrome-plated plunger for long life
- Baked enamel finish for increased corrosion resistance
- CR-400 coupler and dust cap included on all models
- Baked enamel finish for increased corrosion resistance
- Plunger wiper reduces contamination, extending cylinder life

## For use with Subassemblies and Modules



### Pump and Cylinder Sets

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

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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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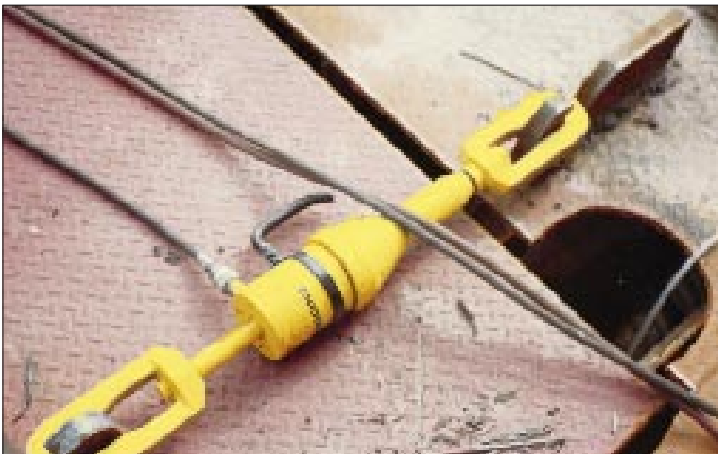


### Attachments and Accessories

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.

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▼ Ship building, welding and Enerpac pull cylinders go hand in hand.

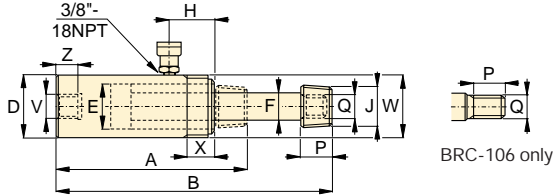


▼ In this roof construction an Enerpac pull cylinder is applied to position the parts to be welded.



# Single-Acting, Pull Cylinders

BRC Cylinder Mounting Dimensions (mm)				
Model Number	Base Mounting Hole V	Collar Thread W	Collar Thd. Lgth. X	Mtg. Thd. Lgth. Z
BRC-25	3/4" - 14 NPT	1 1/2" - 16 UN	24	17
BRC-46	1 1/4" - 11 1/2 NPT	2 1/4" - 16 UN	26	24
BRC-106	M30 x 2	M85 x 2	25	24



BRC-25 to BRC-106

**BRC/  
BRP  
Series**



Capacity:

**2,5 - 50 ton**

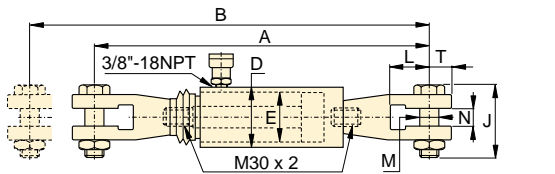
Stroke:

**63 - 155 mm**

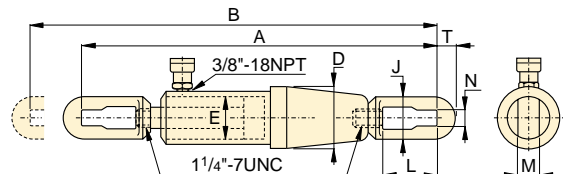
Maximum Operating Pressure:

**700 bar**

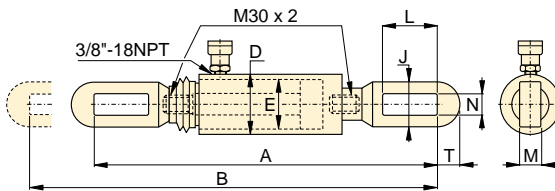
Cylinder Capacity	Stroke	Model Number	Cyl. Effect. Area	Oil Cap.	Coll. Height	Ext. Height	Outs. Dia.	Cyl. Bore Dia.	Plgr. Dia.	Top to Inlet Port	Saddle Diameter	Plgr. Thd. Lgth.	Plunger Outside Thread	Weight
ton (kN)	(mm)		(cm <sup>2</sup> )	(cm <sup>3</sup> )	A (mm)	B (mm)	D (mm)	E (mm)	F (mm)	H (mm)	J	P (mm)	Q	(kg)
2,5 (24)	127	BRC-25	3,5	45	264	391	48	28,4	19,0	45	3/4" - 14 NPT	-	1 1/16" - 24	1,8
5 (51)	140	BRC-46	7,3	101	301	441	57	42,9	30,2	42	1 1/4" - 11 1/2 NPT	-	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



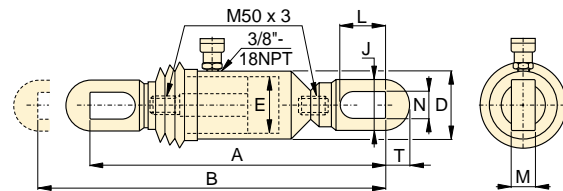
BRP-106C



BRP-302 and BRP-306



BRP-106L



BRP-606

Cylinder Capacity	Stroke	Model Number	Cyl. Effect. Area	Oil Cap.	Coll. Height	Ext. Height	Outside Dia.	Cyl. Bore Dia.	Link Height	Link Opening	Link Thickness	Link Width	Slot to Link End	Weight
ton (kN)	(mm)		(cm <sup>2</sup> )	(cm <sup>3</sup> )	A (mm)	B (mm)	D (mm)	E (mm)	J (mm)	L (mm)	M (mm)	N (mm)	T (mm)	(kg)
10 (105)	151	BRP-106C*	15,0	227	587	738	85	54,1	119	62	30	35	32	15,9
	151	BRP-106L*	15,0	227	541	692	85	54,1	67	115	22	30	32	13,2
30 (326)	63	BRP-302	46,6	294	1033	1096	136	88,9	114	145	35	39	50	34,0
	155	BRP-306	46,6	722	1085	1240	136	88,9	114	145	35	39	50	48,1
50 (505)	152	BRP-606*	72,1	1096	719	871	140	110,0	130	149	39	50	70	53,5

\* Fitted with rubber bellows for rod protection.



# RCH-Series, Hollow Plunger Cylinders

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

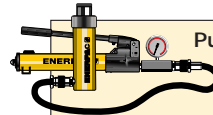


- Hollow plunger design allows for both pull and push forces
- Nickel-plated, floating center tube on models over 20 ton increases product life
- Baked enamel finish for increased corrosion resistance
- Collar threads for easy fixturing
- RCH-120 includes AR-630 coupler and has 1/4" NPT port
- RCH-121 and RCH-1211 have FZ-1630 reducer and AR-630 coupler, all other models feature CR-400 coupler

▼ Two RCH-121 cylinders (13 ton) are used here to clamp this large die. The hollow plunger allows fixturing the slot bolt.



## Versatility in Testing, Maintenance and Tensioning Applications



### Pump and Cylinder Sets

All cylinders marked with an \* are available as sets (cylinder, gauge, couplers, hose and pump) 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 Enerpac hydraulic hoses.

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### Saddles

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

saddles and all dimensional information.

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Cylinder Capacity	Stroke	Model Number	Cyl. Effect. Area	Oil Cap.
ton (kN)	(mm)		(cm <sup>2</sup> )	(cm <sup>3</sup> )
13 (125)	8	RCH-120	17,9	14
	42	RCH-121*	17,9	75
	42	RCH-1211	17,9	75
	76	RCH-123	18,5	141
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.

# Single-Acting, Hollow Plunger Cylinders

Optional Heat Treated Hollow Saddles					
Saddle Type	Cylinder Model Number	Saddle Model Nr.	Saddle Dimensions (mm)		
			A	B	C
Smooth* Hollow	RCH-202, 206	HP-2035	53	26,9	9
	RCH-302, 306	HP-3044	63	33,3	9
	RCH-603, 606	HP-5035	91	53,8	12
	RCH-1003	HP-10033	126	79,0	13
Threaded Hollow	RCH-202, 206	HP-2015	53	1" - 8	9
	RCH-302, 306	HP-3015	63	1 1/4" - 7	9
	RCH-603, 606	HP-5016	91	1 5/8" - 5 1/2	12
	RCH-1003	HP-10016	126	2 1/2" - 8	13

\* Standard on all RCH-models (except RCH 13 ton range).

## RCH Series

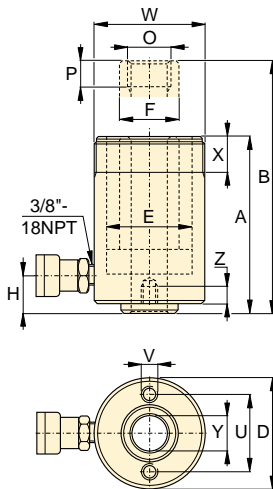


Capacity:  
**13-95 ton**

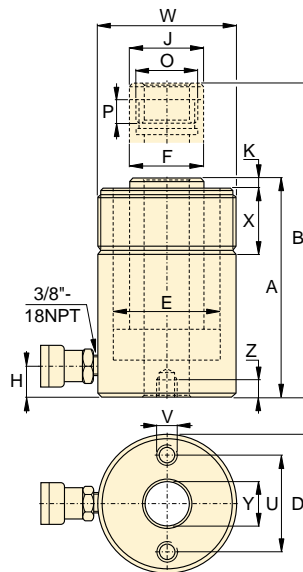
Stroke:  
**8-155 mm**

Maximum Operating Pressure:  
**700 bar**

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



RCH-120 to RCH-123 models



RCH-202 to RCH-1003 models

Base Mounting Hole Dimensions (mm)			
Model Number	Bolt Circle		Thread Depth Z
	U	V	
RCH-120	50,8	5/16" - 18 UNC	6,4
RCH-121	-	-	-
RCH-1211	-	-	-
RCH-123	50,8	5/16" - 18 UNC	12,7
RCH-202	82,6	3/8" - 16 UNC	15,7
RCH-206	82,6	3/8" - 16 UNC	15,7
RCH-302	92,2	3/8" - 16 UNC	14,0
RCH-306	92,2	3/8" - 16 UNC	14,0
RCH-603	130,3	1/2" - 13 UNC	14,0
RCH-606	130,3	1/2" - 13 UNC	14,0
RCH-1003	177,8	5/8" - 11 UNC	19,0

Coll. Height	Ext. Height	Out. Dia.	Cyl. Bore Dia.	Plgr. Dia.	Cyl. Base to Advance Port	Saddle Dia.	Saddle Protr. from Plgr.	Plunger Internal Thread	Plunger Thread Length	Collar Thread	Collar Thread Length	Center Hole Dia.	Weight	Model Number
A	B	D	E	F	H	J	K	O	P	W	X	Y	(kg)	
(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)		(mm)	(mm)		
55	63	69	54,1	35,1	9	-	-	3/4" - 16 UN	16	2 3/4" - 16	30	19,6	1,5	RCH-120
120	162	69	54,1	35,1	19	-	-	-	-	2 3/4" - 16	30	19,6	2,8	RCH-121*
120	162	69	54,1	35,1	19	-	-	3/4" - 16 UN	16	2 3/4" - 16	30	19,6	2,8	RCH-1211
184	260	69	54,1	35,1	19	-	-	-	-	2 3/4" - 16	30	19,6	4,4	RCH-123
162	212	98	73,1	54,1	19	54	6	1 9/16" - 16 UN	19	3 7/8" - 12	38	26,9	7,7	RCH-202*
306	461	98	73,1	54,1	25	54	6	1 9/16" - 16 UN	19	3 7/8" - 12	38	26,9	14,1	RCH-206
178	242	114	88,9	63,5	21	63	9	1 13/16" - 16 UN	22	4 1/2" - 12	42	33,3	10,9	RCH-302*
330	485	114	88,9	63,5	25	63	9	1 13/16" - 16 UN	22	4 1/2" - 12	42	33,3	21,8	RCH-306
247	323	159	123,9	91,9	31	91	12	2 3/4" - 16 UN	19	6 1/4" - 12	48	53,8	28,1	RCH-603*
323	476	159	123,9	91,9	31	91	12	2 3/4" - 16 UN	19	6 1/4" - 12	48	53,8	35,4	RCH-606
254	330	212	165,1	127,0	38	126	12	4" - 16 UN	25	8 3/8" - 12	60	79,0	63,0	RCH-1003*

# RRH-Series, Hollow Plunger Cylinders

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



- 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

## Versatility in Testing, Maintenance and Tensioning Applications



### 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 at this site to level bridge sections.



Cylinder Class	Stroke (mm)	Model Number	Max. Cylinder Capacity (kN)		Cylinder Effective Area (cm <sup>2</sup> )		Oil Capacity (cm <sup>3</sup> )	
			Advance	Retract	Advance	Retract	Advance	Retract
30 ton	178	RRH-307	326	213	46,6	30,4	829	541
	258	RRH-3010	326	213	46,6	30,4	1202	784
60 ton	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 ton	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 ton	203	RRH-1508	1429	718	204,1	102,6	4144	2083

# Double-Acting, Hollow Plunger Cylinders

Optional Heat Treated Saddles					
Saddle Type	Cylinder Model Number	Saddle Model Nr.	Saddle Dimensions (mm)		
			A	B	C
Smooth* Hollow	RRH-307, 3010	HP-3044	63	33,3	9
	RRH-603, 606, 6010	HP-5035	91	53,8	12
	RRH-1001, 1003, RRH-1006, 10010	HP-10033	126	79,0	13
	RRH-1508	HP-10032	126	80,0	13
Threaded Hollow	RRH-307, 3010	HP-3015	63	1 1/4" - 7	9
	RRH-603, 606, 6010	HP-5016	91	1 5/8" - 5 1/2	12
	RRH-1001, 1003, RRH-1006, 10010	HP-10016	126	2 1/2" - 8	13
	RRH-1508	HP-10015	126	2 1/2" - 8	13

\* Standard on all RRH-models.

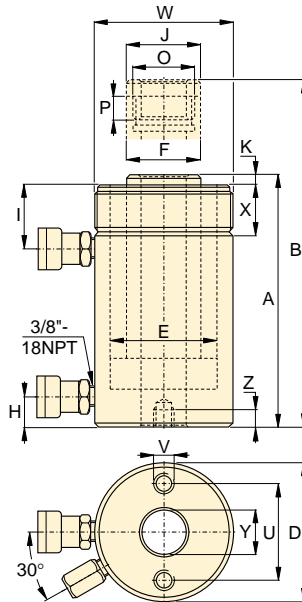
## RRH Series



Capacity:  
**30-145 ton**

Stroke:  
**38-258 mm**

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 Enerpac hydraulic hoses.

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Base Mounting Hole Dimensions (mm)

Model Number	Bolt Circle U	Thread V	Thread Depth Z
RRH-307	92,2	3/8" - 16	15,7
RRH-3010	92,2	3/8" - 16	15,7
RRH-603	130,0	1/2" - 13	14,0
RRH-606	130,0	1/2" - 13	14,0
RRH-6010	130,0	1/2" - 13	14,0
RRH-1001	177,8	5/8" - 11	19,0
RRH-1003	177,8	5/8" - 11	19,0
RRH-1006	177,8	5/8" - 11	19,0
RRH-10010	177,8	5/8" - 11	19,0
RRH-1508	-	-	-

Coll. Height	Ext. Height	Out. Dia.	Cyl. Bore Dia.	Plgr. Dia.	Cyl. Base to Adv. Port	Cyl. Top to Return Port	Saddle Dia.	Saddle Protr. fr. Plgr.	Thread	Plunger Thread Length	Collar Thread	Collar Thread Length	Center Hole Dia.	Weight	Model Number
A (mm)	B (mm)	D (mm)	E (mm)	F (mm)	H (mm)	I (mm)	J (mm)	K (mm)	O	P (mm)	W	X (mm)	Y (mm)	(kg)	
330	508	114	88,9	63,5	25	60	63	9	1 13/16" - 16	22	4 1/2" - 12	42	33,3	21	RRH-307
431	689	114	88,9	63,5	25	60	63	9	1 13/16" - 16	22	4 1/2" - 12	42	33,3	27	RRH-3010
247	336	159	123,9	91,9	31	66	91	12	2 3/4" - 16	19	6 1/4" - 12	48	53,8	28	RRH-603
323	489	159	123,9	91,9	31	66	91	12	2 3/4" - 16	19	6 1/4" - 12	48	53,8	35	RRH-606
438	695	159	123,9	91,9	31	66	91	12	2 3/4" - 16	19	6 1/4" - 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	8 3/8" - 12	60	79,2	61	RRH-1003
342	495	212	165,1	127,0	38	85	126	12	4" - 16	25	8 3/8" - 12	60	79,2	79	RRH-1006
460	717	212	165,1	127,0	38	85	126	12	4" - 16	25	8 3/8" - 12	60	79,2	106	RRH-10010
349	552	247	190,5	152,4	38	60	127	4	4 1/4" - 12	25	-	-	79,2	111	RRH-1508



# BRD-Series, Precision Production Cylinders

▼ 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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### Golden Ring Design

Enerpac BRD-Cylinders are provided with the Golden Ring Design, for long, trouble-free performance.

- 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

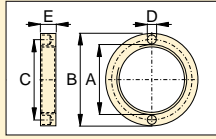


*This paper mill uses BRD cylinders for precision when trimming. ►*

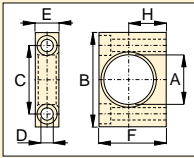
Cylinder Capacity (ton)	Stroke (mm)	Model Number	Max. Cylinder Capacity (kN)		Cylinder Effective Area (cm <sup>2</sup> )		Oil Capacity (cm <sup>3</sup> )		Coll. Height	Ext. Height	Body Length	Out. Dia.	Cyl. Bore Dia.	Plgr. Dia.
			Advance	Retract	Advance	Retract	Advance	Retract	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
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	65	38,1	25,4
	79	BRD-93	80	44	11,4	6,3	90	50	274	353	249	65	38,1	25,4
	155	BRD-96	80	44	11,4	6,3	177	98	350	505	325	65	38,1	25,4
	257	BRD-910	80	44	11,4	6,3	293	162	452	709	427	65	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

# Double-Acting, Precision Production Cylinders

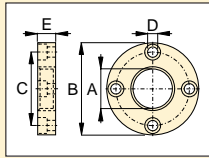
## ▼ BRD CYLINDER ATTACHMENTS



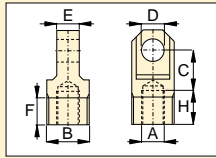
**Retainer Nut**  
For locking foot or flange mountings. Tightens onto cylinder collar threads (Included with foot and flange mounting kits)



**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
<b>Foot Mounting with Retainer Nut</b>								
BAD-141	4	42,1	105	58,0	10,5	20,0	57,0	31,8
BAD-171	8	56,1	127	78,0	13,5	25,0	82,5	44,5
BAD-181	15	70,1	159	95,2	20,0	35,0	100,0	52,4
BAD-191	23	85,1	199	117,5	26,5	45,0	125,0	63,5
<b>Flange Mounting with Retainer Nut</b>								
BAD-142	4	42,1	80	78,6	11,0	19,0	-	-
BAD-172	8	56,1	105	98,4	11,0	25,4	-	-
BAD-182	15	70,1	127	115,9	16,0	35,0	-	-
BAD-192	23	85,1	159	135,7	17,0	44,5	-	-
<b>Retainer Nut</b>								
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	-	-
<b>Clevis Eye</b>								
BAD-150	4	M16 x 1,5	M30 x 1,5	33,3	16,0	15,9	19,1	23,8
BAD-151	8	M22 x 1,5	M42 x 1,5	38,1	20,0	25,4	25,4	23,8
BAD-152	15	M30 x 1,5	M56 x 1,5	52,3	25,0	31,8	25,4	30,2
BAD-153	23	M42 x 1,5	M70 x 1,5	55,6	32,0	38,2	25,4	27,0

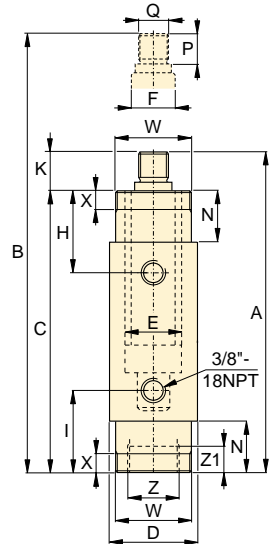
## BRD Series



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)	Neck Length N (mm)	Plunger Thread Length P (mm)	Plunger External Thread Q (mm)	Cylinder Mounting Dimensions (mm)				Weight (kg)	Model Number
						Collar Thread W	Collar Thread Length X	Int. Base Thread Z	Int. Base Thread Length Z1		
47	47	24	29	22	M16 x 1,5	M42 x 1,5	11	M30 x 1,5	9	2,0	BRD-41
47	47	24	29	22	M16 x 1,5	M42 x 1,5	11	M30 x 1,5	9	2,6	BRD-43
47	47	24	29	22	M16 x 1,5	M42 x 1,5	11	M30 x 1,5	9	3,6	BRD-46
57	57	25	38	22	M22 x 1,5	M56 x 2	14	M42 x 1,5	14	3,0	BRD-91
57	57	25	38	22	M22 x 1,5	M56 x 2	14	M42 x 1,5	14	4,2	BRD-93
57	57	25	38	22	M22 x 1,5	M56 x 2	14	M42 x 1,5	14	5,6	BRD-96
57	57	25	38	22	M22 x 1,5	M56 x 2	14	M42 x 1,5	14	7,3	BRD-910
73	73	30	54	28	M30 x 1,5	M70 x 2	22	M56 x 2	24	10,2	BRD-166
73	73	30	54	28	M30 x 1,5	M70 x 2	22	M56 x 2	24	14,5	BRD-1610
89	89	27	70	25	M42 x 1,5	M85 x 2	29	M70 x 2	26	16,0	BRD-256
89	89	27	70	25	M42 x 1,5	M85 x 2	29	M70 x 2	26	20,3	BRD-2510

# RR-Series, Double-Acting Cylinders

▼ 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 included on all models
- Plunger wiper reduces contamination, extending cylinder life

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



## Most Versatile Performers

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



### Golden Ring Design

Enerpac RR-Cylinders incorporate the Golden Ring Design, for long, trouble-free performance.



### Saddles

All RR-Series cylinders have plunger mounting holes for installation of CAT-Series tilt saddles.

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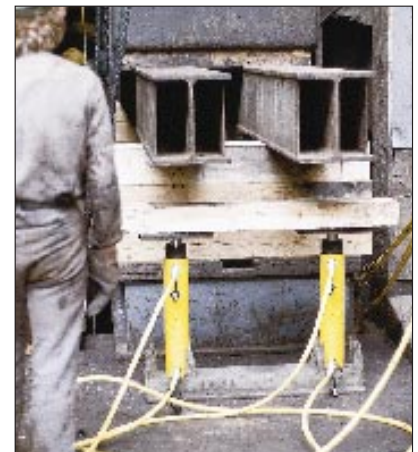


### Pump Selection

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

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▼ When it comes to precise and controlled positioning of heavy loads, RR cylinders are the best solution.



# Double-Acting Cylinders



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

## ▼ QUICK SELECTION CHART

For complete technical information see next page.

Cylinder Capacity ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm <sup>2</sup> )		Oil Capacity (cm <sup>3</sup> )		Coll. Height (mm)
			Push	Pull	Push	Pull	
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	387
	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	196
	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**



### Additional Stroke Lengths

RR-Series cylinders, 325 through 520 ton are available in additional stroke lengths. Please contact Enerpac for additional stroke length options.

### Enerpac CLR-Series

If your application does not require high precision, Enerpac CLR-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 Number	Saddle Model Number
Flat	RR-1010, 1012	A-102F
	RR-308, 3014	A-252G
Grooved	RR-1010, 1012	CAT-10
	RR-308, 3014	CAT-50
Tilt	RR-506, 5013	CAT-100
	RR-5020, 756	
	RR-7513	

For additional information on saddles:

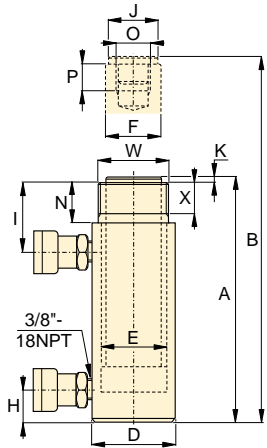
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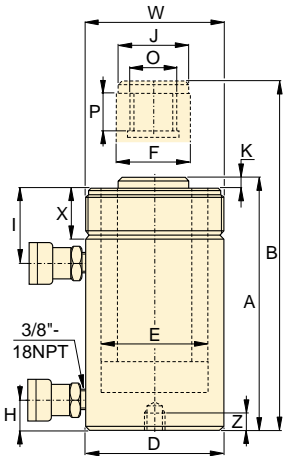
# RR-Series, Double-Acting Cylinders



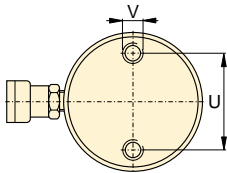
Cylinder retract capacity for certain RR cylinders may be less than theoretical values, as a result of reduced relief valve pressure settings.



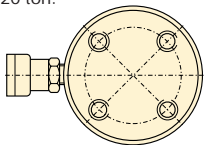
RR-1010 to RR-3014 models



2 mounting holes for RR-5020 only.



4 mounting holes for 95 ton, 140 ton (except RR-1502, 15032), 200 ton, 325 ton, 440 ton and 520 ton.



RR-506 to RR-50048 models

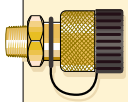
Base mounting hole location is for reference only, as it is affected by assembly.

◀ For full features see previous page.

Cylinder Capacity	Stroke	Model Number	Max. Cylinder Capacity (kN)		Cylinder Effective Area (cm <sup>2</sup> )		Oil Capacity (cm <sup>3</sup> )		Coll. Height	Ext. Height	Outside Dia.
			Push	Pull	Push	Pull	Push	Pull	A (mm)	B (mm)	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	387	596	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	196	253	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 Cylinders



### Couplers Included!

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

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			Collar Thread W	Collar Thread Length X (mm)	Weight (kg)	Model Number
								Bolt C. Dia. U (mm)	Thread V	Thd. Depth Z (mm)				
42,9	35,1	36	57	35	1	1"- 8	25	-	-	-	2 1/4" - 14	26	12	RR-1010*
42,9	35,1	36	57	35	1	1"- 8	25	-	-	-	2 1/4" - 14	26	14	RR-1012*
73,2	54,1	36	81	50	10	1 1/2" - 16	25	-	-	-	3 5/16" - 12	49	18	RR-308*
73,2	54,1	39	81	50	10	1 1/2" - 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	1/2" - 13	25	5" - 12	44	68	RR-5020
114,3	95,2	30	76	71	6	1" - 12	38	-	-	-	5 3/4" - 12	38	41	RR-756
114,3	95,2	30	81	71	6	1" - 12	38	-	-	-	5 3/4" - 12	38	68	RR-7513
130,3	95,2	38	71	76	3	1 3/4" - 12	35	139	3/4" - 10	25	6 7/8" - 12	50	61	RR-1006
130,3	95,2	38	71	76	3	1 3/4" - 12	35	139	3/4" - 10	25	6 7/8" - 12	50	93	RR-10013
130,3	95,2	41	92	76	3	1 3/4" - 12	35	139	3/4" - 10	25	6 7/8" - 12	50	117	RR-10018
158,8	114,3	22	66	95	15	-	-	-	-	-	-	-	49	RR-1502
158,8	114,3	49	84	95	15	3 3/8" - 16	35	158	3/4" - 16	28	8" - 12	55	93	RR-1506
158,8	114,3	49	84	95	15	3 3/8" - 16	35	158	3/4" - 16	28	8" - 12	55	124	RR-15013
158,8	114,3	76	88	95	15	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	2 1/2" - 12	63	127	1" - 8	25	9 3/4" - 12	54	199	RR-20013
190,5	133,4	85	101	133	22	2 1/2" - 12	63	127	1" - 8	25	9 3/4" - 12	54	204	RR-20018
190,5	133,4	85	101	133	22	2 1/2" - 12	63	127	1" - 8	25	9 3/4" - 12	54	279	RR-20024
190,5	133,4	85	101	133	22	2 1/2" - 12	63	127	1" - 8	25	9 3/4" - 12	54	383	RR-20036
190,5	133,4	85	101	133	22	2 1/2" - 12	63	127	1" - 8	25	9 3/4" - 12	54	483	RR-20048
241,3	165,1	88	114	165	28	2 1/2" - 12	82	158	1 1/4" - 7	44	12 1/4" - 12	58	200	RR-3006
241,3	165,1	88	114	165	28	2 1/2" - 12	82	158	1 1/4" - 7	44	12 1/4" - 12	58	312	RR-30012
241,3	165,1	88	114	165	28	2 1/2" - 12	82	158	1 1/4" - 7	44	12 1/4" - 12	58	385	RR-30018
241,3	165,1	88	114	165	28	2 1/2" - 12	82	158	1 1/4" - 7	44	12 1/4" - 12	58	469	RR-30024
241,3	165,1	88	114	165	28	2 1/2" - 12	82	158	1 1/4" - 7	44	12 1/4" - 12	58	628	RR-30036
241,3	165,1	88	114	165	28	2 1/2" - 12	82	158	1 1/4" - 7	44	12 1/4" - 12	58	780	RR-30048
279,4	190,5	108	133	190	28	3" - 12	95	203	1 1/2" - 6	50	14 1/8" - 8	65	303	RR-4006
279,4	190,5	108	133	190	28	3" - 12	95	203	1 1/2" - 6	50	14 1/8" - 8	65	399	RR-40012
279,4	190,5	108	133	190	28	3" - 12	95	203	1 1/2" - 6	50	14 1/8" - 8	65	453	RR-40018
279,4	190,5	108	133	190	28	3" - 12	95	203	1 1/2" - 6	50	14 1/8" - 8	65	597	RR-40024
279,4	190,5	108	133	190	28	3" - 12	95	203	1 1/2" - 6	50	14 1/8" - 8	65	792	RR-40036
279,4	190,5	108	133	190	28	3" - 12	95	203	1 1/2" - 6	50	14 1/8" - 8	65	980	RR-40048
304,8	203,2	120	152	203	28	3 1/4" - 12	108	203	1 3/4" - 5	57	15 5/8" - 8	79	432	RR-5006
304,8	203,2	120	152	203	28	3 1/4" - 12	108	203	1 3/4" - 5	57	15 5/8" - 8	79	589	RR-50012
304,8	203,2	120	152	203	28	3 1/4" - 12	108	203	1 3/4" - 5	57	15 5/8" - 8	79	680	RR-50018
304,8	203,2	120	152	203	28	3 1/4" - 12	108	203	1 3/4" - 5	57	15 5/8" - 8	79	816	RR-50024
304,8	203,2	120	152	203	28	3 1/4" - 12	108	203	1 3/4" - 5	57	15 5/8" - 8	79	1002	RR-50036
304,8	203,2	120	152	203	28	3 1/4" - 12	108	203	1 3/4" - 5	57	15 5/8" - 8	79	1224	RR-50048

▼ Shown from left to right: CLS-1002, CLS-506, CLS-502



- Single-acting, load return
- Special synthetic coating for improved corrosion resistance and lower friction for smoother operation
- Withstands sideload forces up to 5% of rated cylinder capacity without scoring
- Overflow port functions as a stroke limiter
- Interchangeable, hardened grooved saddles are standard
- CR-400 coupler and dust cap included on all models
- Plunger wiper reduces contamination, extending cylinder life

▼ CLS-cylinders doing their job, synchronised lifting a complete fly-over for exact positioning.



## The Single-Acting Heavy Lifting Solution



### Saddles

All CLS cylinders are equipped with bolt-on removable grooved saddles.

For information on optional tilt saddles, see selection chart.

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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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### Heavy Lifting

For heavy lifting in remote locations use the Enerpac Atlas gasoline powered pump with an extended high flow performance.

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### Lifting an Unbalanced Load?

See our 'Yellow Pages' for multi-cylinder set-ups.

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### Low Height - High Tonnage

When low height with high force is required, Pancake Cylinders with locknut offer the solution to lift the first few centimetres.

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# Single-Acting, High Tonnage Cylinders

## ▼ QUICK SELECTION CHART

For complete technical information see next page.

Cylinder Capacity ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm <sup>2</sup> )	Oil Capacity (cm <sup>3</sup> )	Collapsed Height (mm)	Weight (kg)
50 (496)	50	CLS-502	70,9	355	128	14
	100	CLS-504	70,9	709	178	18
	150	CLS-506	70,9	1064	228	23
	200	CLS-508	70,9	1418	278	28
	250	CLS-5010	70,9	1773	327	33
	300	CLS-5012	70,9	2127	378	38
100 (929)	50	CLS-1002	132,7	664	143	24
	100	CLS-1004	132,7	1327	193	32
	150	CLS-1006	132,7	1991	243	40
	200	CLS-1008	132,7	2654	293	49
	250	CLS-10010	132,7	3318	342	58
	300	CLS-10012	132,7	3981	392	66
150 (1390)	50	CLS-1502	198,6	993	165	43
	100	CLS-1504	198,6	1986	214	55
	150	CLS-1506	198,6	2979	264	69
	200	CLS-1508	198,6	3972	315	82
	250	CLS-15010	198,6	4965	365	95
	300	CLS-15012	198,6	5958	414	108
200 (1859)	50	CLS-2002	265,6	1330	193	66
	150	CLS-2006	265,6	3989	293	101
	250	CLS-20010	265,6	6648	392	136
250 (2562)	50	CLS-2502	366,1	1832	193	90
	150	CLS-2506	366,1	5496	293	137
	250	CLS-25010	366,1	9160	392	184
300 (3193)	50	CLS-3002	456,2	2281	235	137
	150	CLS-3006	456,2	6843	335	198
	250	CLS-30010	456,2	11405	435	258
400 (3919)	50	CLS-4002	559,9	2800	264	200
	150	CLS-4006	559,9	8399	365	275
	250	CLS-40010	559,9	13998	465	352
500 (5118)	50	CLS-5002	731,1	3656	294	289
	150	CLS-5006	731,1	10967	395	390
	250	CLS-50010	731,1	18278	495	489
600 (5983)	50	CLS-6002	854,8	4277	309	350
	150	CLS-6006	854,8	12830	410	465
	250	CLS-60010	854,8	21383	510	582
800 (8238)	50	CLS-8002	1176,9	5882	354	549
	150	CLS-8006	1176,9	17645	454	709
	250	CLS-80010	1176,9	29408	555	870
1000 (10260)	50	CLS-10002	1466,4	7329	385	729
	150	CLS-10006	1466,4	21986	484	921
	250	CLS-100010	1466,4	36643	585	1113

## CLS Series



Capacity:

**50-1000 ton**

Stroke:

**50 - 300 mm**

Maximum Operating Pressure:

**700 bar**



### Higher Capacities

1500 and 2000 ton models are available on request.

### Additional Stroke Lengths

Models above 150 ton are also available with standard stroke lengths of 100, 200 and 300 mm. Please contact Enerpac for ordering information.



### Optional features

To add optional features to your cylinders, add the following suffixes to the end of the model number.

Spring return	<b>E001</b>
Base: no synthetic coating	<b>E009</b>
Base & plunger: no synthetic coating	<b>E011</b>
Without plunger wiper seal	<b>E012</b>

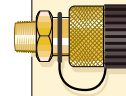
*Example:*

- For standard CLS-5006 cylinder, order: **CLS-5006**
- For CLS-5006 cylinder with spring return, order: **CLS-5006 E001**

Technical specifications for these features are available from Enerpac.

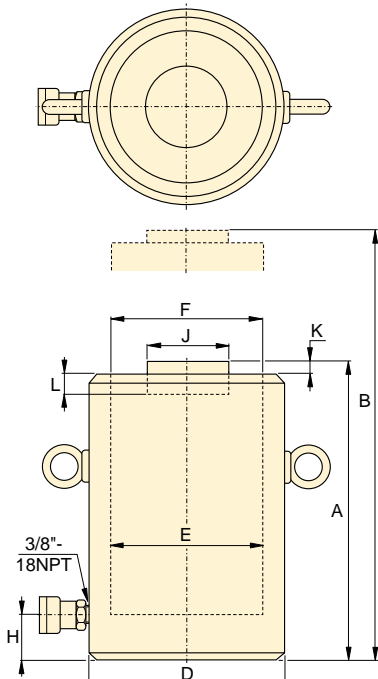


# CLS-Series, High Tonnage Cylinders

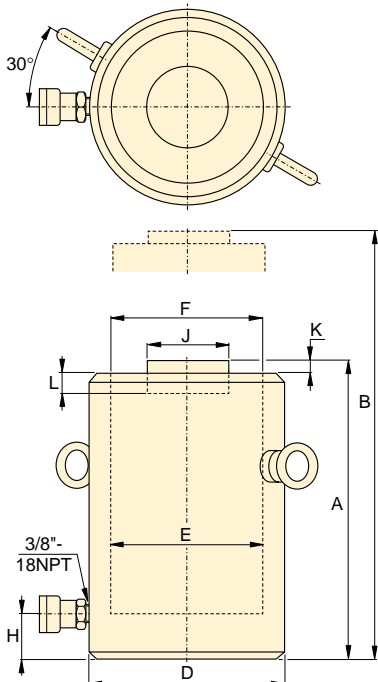


**Couplers Included!**

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



CLS-50 to CLS-250 models



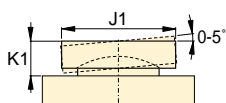
CLS-300 to CLS-1000 models

◀ For full features see previous page.

Cylinder Capacity ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm <sup>2</sup> )	Oil Capacity (cm <sup>3</sup> )
50 (496)	50	CLS-502	70,9	355
	100	CLS-504	70,9	709
	150	CLS-506	70,9	1064
	200	CLS-508	70,9	1418
	250	CLS-5010	70,9	1773
	300	CLS-5012	70,9	2127
100 (929)	50	CLS-1002	132,7	664
	100	CLS-1004	132,7	1327
	150	CLS-1006	132,7	1991
	200	CLS-1008	132,7	2654
	250	CLS-10010	132,7	3318
	300	CLS-10012	132,7	3981
150 (1390)	50	CLS-1502	198,6	993
	100	CLS-1504	198,6	1986
	150	CLS-1506	198,6	2979
	200	CLS-1508	198,6	3972
	250	CLS-15010	198,6	4965
	300	CLS-15012	198,6	5958
200 (1859)	50	CLS-2002	265,6	1330
	150	CLS-2006	265,6	3989
	250	CLS-20010	265,6	6648
250 (2562)	50	CLS-2502	366,1	1832
	150	CLS-2506	366,1	5496
	250	CLS-25010	366,1	9160
300 (3193)	50	CLS-3002	456,2	2281
	150	CLS-3006	456,2	6843
	250	CLS-30010	456,2	11405
400 (3919)	50	CLS-4002	559,9	2800
	150	CLS-4006	559,9	8399
	250	CLS-40010	559,9	13998
500 (5118)	50	CLS-5002	731,1	3656
	150	CLS-5006	731,1	10967
	250	CLS-50010	731,1	18278
600 (5983)	50	CLS-6002	854,8	4277
	150	CLS-6006	854,8	12830
	250	CLS-60010	854,8	21383
800 (8238)	50	CLS-8002	1176,9	5882
	150	CLS-8006	1176,9	17645
	250	CLS-80010	1176,9	29408
1000 (10260)	50	CLS-10002	1466,4	7329
	150	CLS-10006	1466,4	21986
	250	CLS-100010	1466,4	36643

# Single-Acting, High Tonnage Cylinders

## Optional Tilt Saddle \*



Capacity:  
**50-1000 ton**

Stroke:  
**50-300 mm**

Maximum Operating Pressure:  
**700 bar**

**CLS**  
Series



Collapsed Height A (mm)	Extended Height B (mm)	Outside Dia. D (mm)	Cylinder Bore Dia. E (mm)	Plunger Dia. F (mm)	Base to Adv. Port H (mm)	Standard Saddle Dia. J (mm)	Saddle Protr. from Plgr. K (mm)	Depth of Plunger Hole L (mm)	Weight (kg)	Model Number	* Optional Tilt Saddle		
											Saddle Dia. J1 (mm)	Saddle Height K1 (mm)	Saddle Model Number
128	178	125	95,0	95,0	30	71	3	12	14	CLS-502	71	24	CAT-100
178	278	125	95,0	95,0	30	71	3	12	18	CLS-504	71	24	CAT-100
228	378	125	95,0	95,0	30	71	3	12	23	CLS-506	71	24	CAT-100
278	478	125	95,0	95,0	30	71	3	12	28	CLS-508	71	24	CAT-100
328	578	125	95,0	95,0	30	71	3	12	33	CLS-5010	71	24	CAT-100
378	678	125	95,0	95,0	30	71	3	12	38	CLS-5012	71	24	CAT-100
143	193	165	130,0	130,0	30	71	3	12	24	CLS-1002	71	24	CAT-100
193	293	165	130,0	130,0	30	71	3	12	32	CLS-1004	71	24	CAT-100
243	392	165	130,0	130,0	30	71	3	12	40	CLS-1006	71	24	CAT-100
293	493	165	130,0	130,0	30	71	3	12	49	CLS-1008	71	24	CAT-100
343	593	165	130,0	130,0	30	71	3	12	58	CLS-10010	71	24	CAT-100
393	693	165	130,0	130,0	30	71	3	12	66	CLS-10012	71	24	CAT-100
165	215	205	159,0	159,0	39	130	2	25	43	CLS-1502	130	20	CAT-200
215	315	205	159,0	159,0	39	130	2	25	55	CLS-1504	130	20	CAT-200
265	415	205	159,0	159,0	39	130	2	25	69	CLS-1506	130	20	CAT-200
315	515	205	159,0	159,0	39	130	2	25	82	CLS-1508	130	20	CAT-200
365	615	205	159,0	159,0	39	130	2	25	95	CLS-15010	130	20	CAT-200
415	715	205	159,0	159,0	39	130	2	25	108	CLS-15012	130	20	CAT-200
193	243	235	183,9	183,9	50	130	2	25	66	CLS-2002	130	20	CAT-200
293	443	235	183,9	183,9	50	130	2	25	101	CLS-2006	130	20	CAT-200
393	643	235	183,9	183,9	50	130	2	25	136	CLS-20010	130	20	CAT-200
193	243	275	215,9	215,9	50	150	2	25	90	CLS-2502	150	21	CAT-250
293	443	275	215,9	215,9	50	150	2	25	137	CLS-2506	150	21	CAT-250
393	643	275	215,9	215,9	50	150	2	25	184	CLS-25010	150	21	CAT-250
235	285	310	241,0	241,0	59	139	5	25	137	CLS-3002	195	75	CAT-300
335	485	310	241,0	241,0	59	139	5	25	198	CLS-3006	195	75	CAT-300
435	685	310	241,0	241,0	59	139	5	25	258	CLS-30010	195	75	CAT-300
265	315	350	267,0	267,0	70	159	5	25	200	CLS-4002	225	85	CAT-400
365	515	350	267,0	267,0	70	159	5	25	275	CLS-4006	225	85	CAT-400
465	715	350	267,0	267,0	70	159	5	25	352	CLS-40010	225	85	CAT-400
295	345	400	305,1	305,1	80	179	5	25	289	CLS-5002	250	91	CAT-500
395	545	400	305,1	305,1	80	179	5	25	390	CLS-5006	250	91	CAT-500
495	745	400	305,1	305,1	80	179	5	25	489	CLS-50010	250	91	CAT-500
310	360	430	329,9	329,9	85	194	5	25	350	CLS-6002	275	96	CAT-600
410	560	430	329,9	329,9	85	194	5	25	465	CLS-6006	275	96	CAT-600
510	760	430	329,9	329,9	85	194	5	25	582	CLS-60010	275	96	CAT-600
355	405	505	387,1	387,1	100	224	5	25	549	CLS-8002	320	123	CAT-800
455	605	505	387,1	387,1	100	224	5	25	709	CLS-8006	320	123	CAT-800
555	805	505	387,1	387,1	100	224	5	25	870	CLS-80010	320	123	CAT-800
385	435	560	432,1	432,1	110	249	5	25	729	CLS-10002	360	136	CAT-1000
485	635	560	432,1	432,1	110	249	5	25	921	CLS-10006	360	136	CAT-1000
585	835	560	432,1	432,1	110	249	5	25	1113	CLS-100010	360	136	CAT-1000

▼ Shown from left to right: CLR-5006, CLR-100010, CLR-1006



- Double-acting, hydraulic return
- Safety valve in retract side of cylinder helps to prevent damage in case of accidental over-pressurization
- Special bearing design withstands sideload forces up to 5% of rated cylinder capacity
- Interchangeable, hardened grooved saddles are standard
- Baked enamel finish for increased corrosion resistance
- CR-400 coupler and dust cap included on all models
- Plunger wiper reduces contamination, extending cylinder life

▼ Three CLR cylinders laid in parallel push a pre-fabricated road underpass into position in a series of staged pushes.



## Double-Acting Power Lifters



### Saddles

All CLR cylinders are equipped with bolt-on removable grooved saddles.

For information on optional tilt saddles, see selection chart.

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### Safety Device

A pilot-operated check valve (V-42) can be inserted between cylinder and pump.

This valve provides a safety

lock on the cylinder under load at any position and remote control for unlocking.

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### Low Height - High Tonnage

When low height with high force is required, Pancake Cylinders with locknut offer the solution to lift the first few centimetres.

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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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▼ Replacing adjustment rolls under a fly-over with CLR cylinders, for controlled lifting and lowering.



# Double-Acting, High Tonnage Cylinders



## Pump Selection

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

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## RR-series

For loads below 100 ton Enerpac RR-cylinders are a good alternative.

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## CLR Series



Capacity:

**100-1000 ton**

Stroke:

**50 - 300 mm**

Maximum Operating Pressure:

**700 bar**

## ▼ QUICK SELECTION CHART

For complete technical information see next page.

Cylinder Class ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm <sup>2</sup> )		Oil Capacity (cm <sup>3</sup> )		Collapsed Height (mm)
			Push	Pull	Push	Pull	
100 (929)	50	CLR-1002	132,7	61,9	664	310	172
	100	CLR-1004	132,7	61,9	1327	619	222
	150	CLR-1006	132,7	61,9	1991	929	272
	200	CLR-1008	132,7	61,9	2654	1238	322
	250	CLR-10010	132,7	61,9	3318	1548	372
150 (1390)	300	CLR-10012	132,7	61,9	3981	1857	421
	50	CLR-1502	198,6	96,5	993	483	192
	100	CLR-1504	198,6	96,5	1986	965	242
	150	CLR-1506	198,6	96,5	2979	1448	292
	200	CLR-1508	198,6	96,5	3972	1930	342
200 (1859)	250	CLR-15010	198,6	96,5	4965	2413	391
	300	CLR-15012	198,6	96,5	5958	2895	442
	50	CLR-2002	265,6	126,5	1328	633	210
	150	CLR-2006	265,6	126,5	3984	1898	310
	250	CLR-20010	265,6	126,5	6640	3163	410
250 (2562)	50	CLR-2502	366,1	152,0	1831	760	237
	150	CLR-2506	366,1	152,0	5492	2280	337
	250	CLR-25010	366,1	152,0	9153	3800	436
300 (3193)	50	CLR-3002	456,2	151,1	2281	756	350
	150	CLR-3006	456,2	151,1	6843	2267	450
	250	CLR-30010	456,2	151,1	11405	3778	549
400 (3919)	50	CLR-4002	559,9	193,8	2800	969	380
	150	CLR-4006	559,9	193,8	8399	2907	480
	250	CLR-40010	559,9	193,8	13998	4845	579
500 (5118)	50	CLR-5002	731,1	248,4	3656	1242	424
	150	CLR-5006	731,1	248,4	10967	3726	525
	250	CLR-50010	731,1	248,4	18278	6210	625
600 (5983)	50	CLR-6002	854,8	294,9	4274	1475	445
	150	CLR-6006	854,8	294,9	12822	4424	545
	250	CLR-60010	854,8	294,9	21370	7373	644
800 (8238)	50	CLR-8002	1176,9	387,7	5885	1939	495
	150	CLR-8006	1176,9	387,7	17654	5816	595
	250	CLR-80010	1176,9	387,7	29423	9693	694
1000 (10265)	50	CLR-10002	1466,4	542,9	7332	2715	534
	150	CLR-10006	1466,4	542,9	21996	8144	635
	250	CLR-100010	1466,4	542,9	36660	13573	735



## Higher Capacities

1500 and 2000 ton models are available on request.

## Additional Stroke Lengths

Models above 150 ton are also available with standard stroke lengths of 100, 200 and 300 mm. Please contact Enerpac for ordering information.



## Optional features

To add optional features to your cylinders, add the following suffixes to the end of the model number.

Collar threads	E002
Plunger threads	E003
Base mounting holes	E004
Collar+plunger threads	E005
Collar threads+base mounting holes	E006
Plunger threads+base mounting holes	E007
Collar+plunger threads +base mounting holes	E008
Without plunger wiper seal	E012

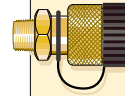
## Example:

- For CLR-5006 cylinder with collar threads and plunger threads, order: **CLR-5006 E005**

Technical specifications for these features are available from Enerpac.



# CLR-Series, High Tonnage Cylinders



### Couplers Included!

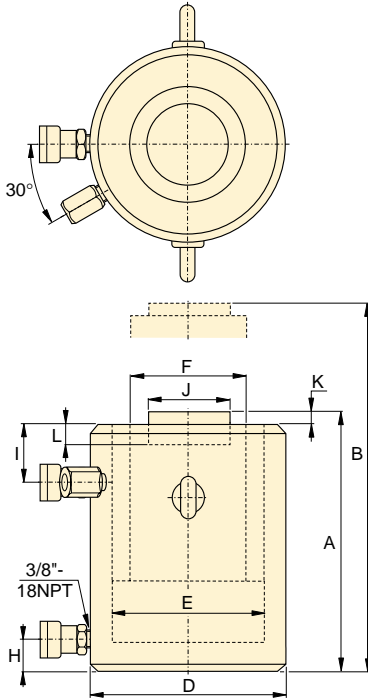
CR-400 couplers included on all models.  
Fits all HC-Series hoses.



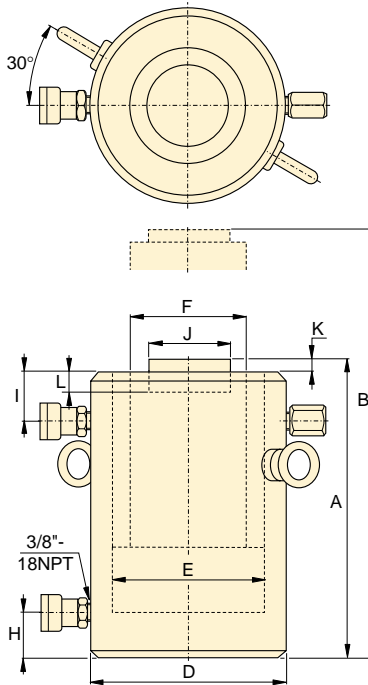
### Speed Chart

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

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CLR-100 to CLR-250 models



CLR-300 to CLR-1000 models

◀ For full features see previous page.

Cylinder Capacity (ton)	Stroke (mm)	Model Number	Maximum Cylinder Capacity (kN)		Cylinder Effective Area (cm <sup>2</sup> )		Oil Capacity (cm <sup>3</sup> )		
			Push	Pull	Push	Pull	Push	Pull	
100	50	CLR-1002	929	433	132,7	61,9	664	310	
	100	CLR-1004	929	433	132,7	61,9	1327	619	
	150	CLR-1006	929	433	132,7	61,9	1991	929	
	200	CLR-1008	929	433	132,7	61,9	2654	1238	
	250	CLR-10010	929	433	132,7	61,9	3318	1548	
150	50	CLR-1502	1390	675	198,6	96,5	993	483	
	100	CLR-1504	1390	675	198,6	96,5	1986	965	
	150	CLR-1506	1390	675	198,6	96,5	2979	1448	
	200	CLR-1508	1390	675	198,6	96,5	3972	1930	
	250	CLR-15010	1390	675	198,6	96,5	4965	2413	
200	50	CLR-2002	1859	885	265,6	126,5	1328	633	
	150	CLR-2006	1859	885	265,6	126,5	3984	1898	
	250	CLR-20010	1859	885	265,6	126,5	6640	3163	
	250	50	CLR-2502	2562	1064	366,1	152,0	1831	760
		150	CLR-2506	2562	1064	366,1	152,0	5492	2280
250		CLR-25010	2562	1064	366,1	152,0	9153	3800	
300	50	CLR-3002	3193	1057	456,2	151,1	2281	756	
	150	CLR-3006	3193	1057	456,2	151,1	6843	2267	
	250	CLR-30010	3193	1057	456,2	151,1	11405	3778	
400	50	CLR-4002	3919	1357	559,9	193,8	2800	969	
	150	CLR-4006	3919	1357	559,9	193,8	8399	2907	
	250	CLR-40010	3919	1357	559,9	193,8	13998	4845	
500	50	CLR-5002	5118	1739	731,1	248,4	3656	1242	
	150	CLR-5006	5118	1739	731,1	248,4	10967	3726	
	250	CLR-50010	5118	1739	731,1	248,4	18278	6210	
600	50	CLR-6002	5983	2064	854,8	294,9	4274	1475	
	150	CLR-6006	5983	2064	854,8	294,9	12822	4424	
	250	CLR-60010	5983	2064	854,8	294,9	21370	7373	
800	50	CLR-8002	8238	2714	1176,9	387,7	5885	1939	
	150	CLR-8006	8238	2714	1176,9	387,7	17654	5816	
	250	CLR-80010	8238	2714	1176,9	387,7	29423	9693	
1000	50	CLR-10002	10265	3801	1466,4	542,9	7332	2715	
	150	CLR-10006	10265	3801	1466,4	542,9	21996	8144	
	250	CLR-100010	10265	3801	1466,4	542,9	36660	13573	

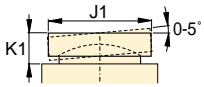
# Double-Acting, High Tonnage Cylinders

Capacity:  
**100-1000 ton**

Stroke:  
**50 - 300 mm**

Maximum Operating Pressure:  
**700 bar**

**CLR**  
Series



\* Optional Tilt Saddle

Collaps. Height	Extend. Height	Outside Dia.	Cyl. Bore Dia.	Plunger Dia.	Base to Advance Port	Top to Retract Port	Standard Saddle Dia.	Saddle Protr. from Plgr.	Depth of Plunger Hole	Weight (kg)	Model Number	Optional Tilt Saddle *		
												Saddle Dia. J1 (mm)	Saddle Height K1 (mm)	Saddle Model Number
172	222	165	130,0	95,0	30	64	71	2	13	27	CLR-1002	71	24	CAT-100
222	322	165	130,0	95,0	30	64	71	2	13	33	CLR-1004	71	24	CAT-100
272	422	165	130,0	95,0	30	64	71	2	13	37	CLR-1006	71	24	CAT-100
322	522	165	130,0	95,0	30	64	71	2	13	44	CLR-1008	71	24	CAT-100
372	622	165	130,0	95,0	30	64	71	2	13	50	CLR-10010	71	24	CAT-100
422	722	165	130,0	95,0	30	64	71	2	13	57	CLR-10012	71	24	CAT-100
192	242	205	159,0	114,0	39	69	100	2	25	47	CLR-1502	100	20	CAT-150
242	342	205	159,0	114,0	39	69	100	2	25	57	CLR-1504	100	20	CAT-150
292	442	205	159,0	114,0	39	69	100	2	25	67	CLR-1506	100	20	CAT-150
342	542	205	159,0	114,0	39	69	100	2	25	77	CLR-1508	100	20	CAT-150
392	642	205	159,0	114,0	39	69	100	2	25	87	CLR-15010	100	20	CAT-150
442	742	205	159,0	114,0	39	69	100	2	25	97	CLR-15012	100	20	CAT-150
210	260	235	183,9	133,1	50	80	100	2	25	67	CLR-2002	100	20	CAT-150
310	460	235	183,9	133,1	50	80	100	2	25	92	CLR-2006	100	20	CAT-150
410	660	235	183,9	133,1	50	80	100	2	25	117	CLR-20010	100	20	CAT-150
237	287	275	215,9	165,1	59	91	150	2	25	105	CLR-2502	150	21	CAT-250
337	487	275	215,9	165,1	59	91	150	2	25	141	CLR-2506	150	21	CAT-250
437	687	275	215,9	165,1	59	91	150	2	25	176	CLR-25010	150	21	CAT-250
350	400	310	241,0	197,1	59	137	139	5	25	204	CLR-3002	195	75	CAT-300
450	600	310	241,0	197,1	59	137	139	5	25	252	CLR-3006	195	75	CAT-300
550	800	310	241,0	197,1	59	137	139	5	25	299	CLR-30010	195	75	CAT-300
380	430	350	267,0	215,9	70	148	159	5	25	281	CLR-4002	225	85	CAT-400
480	630	350	267,0	215,9	70	148	159	5	25	342	CLR-4006	225	85	CAT-400
580	830	350	267,0	215,9	70	148	159	5	25	405	CLR-40010	225	85	CAT-400
425	475	400	305,1	247,9	80	167	179	5	25	411	CLR-5002	250	91	CAT-500
525	675	400	305,1	247,9	80	167	179	5	25	493	CLR-5006	250	91	CAT-500
625	875	400	305,1	247,9	80	167	179	5	25	575	CLR-50010	250	91	CAT-500
445	495	430	329,9	267,0	85	173	194	5	25	494	CLR-6002	275	96	CAT-600
545	695	430	329,9	267,0	85	173	194	5	25	586	CLR-6006	275	96	CAT-600
645	895	430	329,9	267,0	85	173	194	5	25	678	CLR-60010	275	96	CAT-600
495	545	505	387,1	317,0	100	188	224	5	25	759	CLR-8002	320	123	CAT-800
595	745	505	387,1	317,0	100	188	224	5	25	885	CLR-8006	320	123	CAT-800
695	945	505	387,1	317,0	100	188	224	5	25	1019	CLR-80010	320	123	CAT-800
535	585	560	432,1	342,9	110	198	249	5	25	1012	CLR-10002	360	136	CAT-1000
635	785	560	432,1	342,9	110	198	249	5	25	1168	CLR-10006	360	136	CAT-1000
735	985	560	432,1	342,9	110	198	249	5	25	1325	CLR-100010	360	136	CAT-1000

# CLL-Series, Lock Nut Cylinders

▼ Shown from left to right: CLL-5010, CLL-502, CLL-1006



- Single-acting, load return
- Safety Lock Nut for mechanical load holding
- Special synthetic coating for improved corrosion resistance and lower friction for smoother operation
- Withstands sideload forces up to 5% of rated cylinder capacity without scoring
- Overflow port functions as a stroke limiter
- Interchangeable, hardened grooved saddles are standard
- Plunger wiper reduces contamination, extending cylinder life

▼ For this curved bridge, CLL-cylinders were used to support the concrete beams, to level the pierhead and to place 4000 ton slide bearings between pier and pierhead.



## To Secure Loads Mechanically



### Saddles

All CLL cylinders are equipped with bolt-on removable grooved saddles.

For information on optional tilt saddles, see selection chart at next page.

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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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### Low Height - High Tonnage

When low height with high force is required, Pancake Cylinders with locknut offer the solution to lift the first few centimetres.

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▼ CLL cylinder, mechanically locked, after positioning the curved bridge.



# Single-Acting, Lock Nut Cylinders

## ▼ QUICK SELECTION CHART

For complete technical information see next page.

Cylinder Capacity ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm <sup>2</sup> )	Oil Capacity (cm <sup>3</sup> )	Collapsed Height (mm)	Weight (kg)
50 (496)	50	CLL-502	70,9	355	164	15
	100	CLL-504	70,9	709	214	20
	150	CLL-506	70,9	1064	264	25
	200	CLL-508	70,9	1418	314	30
	250	CLL-5010	70,9	1773	364	35
	300	CLL-5012	70,9	2127	414	40
100 (929)	50	CLL-1002	132,7	664	187	30
	100	CLL-1004	132,7	1327	237	39
	150	CLL-1006	132,7	1991	287	48
	200	CLL-1008	132,7	2654	337	56
	250	CLL-10010	132,7	3318	387	64
	300	CLL-10012	132,7	3981	437	73
150 (1390)	50	CLL-1502	198,6	993	209	53
	100	CLL-1504	198,6	1986	259	66
	150	CLL-1506	198,6	2979	309	78
	200	CLL-1508	198,6	3972	359	92
	250	CLL-15010	198,6	4965	409	104
	300	CLL-15012	198,6	5958	459	117
200 (1859)	50	CLL-2002	265,6	1330	243	83
	150	CLL-2006	265,6	3989	343	117
	250	CLL-20010	265,6	6648	443	152
250 (2562)	50	CLL-2502	366,1	1832	249	116
	150	CLL-2506	366,1	5496	349	162
	250	CLL-25010	366,1	9160	449	210
300 (3193)	50	CLL-3002	456,2	2281	295	173
	150	CLL-3006	456,2	6843	395	233
	250	CLL-30010	456,2	11405	495	293
400 (3919)	50	CLL-4002	559,9	2800	335	250
	150	CLL-4006	559,9	8399	435	327
	250	CLL-40010	559,9	13998	535	402
500 (5118)	50	CLL-5002	731,1	3653	375	367
	150	CLL-5006	731,1	10959	475	466
	250	CLL-50010	731,1	18265	575	567
600 (5983)	50	CLL-6002	854,8	4277	395	446
	150	CLL-6006	854,8	12830	495	562
	250	CLL-60010	854,8	21383	595	679
800 (8238)	50	CLL-8002	1176,9	5882	455	709
	150	CLL-8006	1176,9	17645	555	870
	250	CLL-80010	1176,9	29408	655	1029
1000 (10260)	50	CLL-10002	1466,4	7329	495	949
	150	CLL-10006	1466,4	21986	595	1141
	250	CLL-100010	1466,4	36643	695	1333

## CLL Series



Capacity:

**50-1000 ton**

Stroke:

**50-300 mm**

Maximum Operating Pressure:

**700 bar**



### Higher Capacities

1500 and 2000 ton models are available on request.

### Additional Stroke Lengths

Models above 150 ton are also available with standard stroke lengths of 100, 200 and 300 mm. Please contact Enerpac for ordering information.



### Optional features

To add optional features to your cylinders, add the following suffixes to the end of the model number.

Spring return	E001
Base: no synthetic coating	E009
Base & plunger: no synthetic coating	E011
Without plunger wiper seal	E012

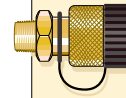
### Example:

- For standard CLL-5006 cylinder, order: **CLL-5006**
- For CLL-5006 cylinder with spring return, order: **CLL-5006 E001**

Technical specifications for these features are available from Enerpac.

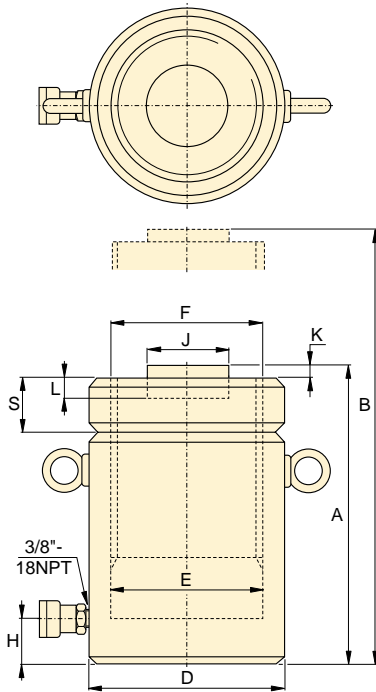


# CLL-Series, Lock Nut Cylinders

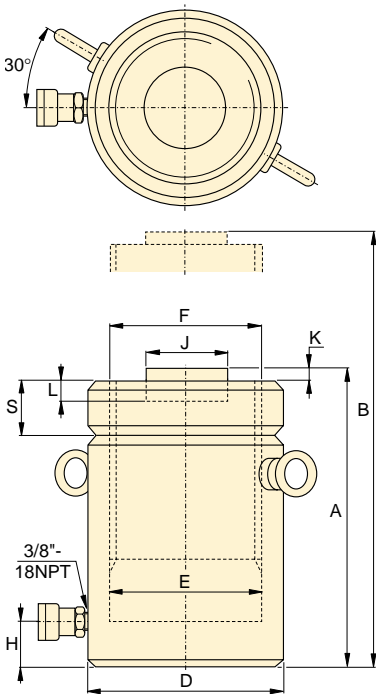


**Couplers Included!**

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



CLL-50 to CLL-250 models



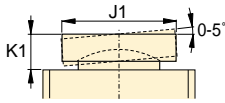
CLL-300 to CLL-1000 models

◀ For full features see previous page.

Cylinder Capacity ton (kN)	Stroke (mm)	Model Number	Cylinder Effective Area (cm <sup>2</sup> )	Oil Capacity (cm <sup>3</sup> )
50 (496)	50	CLL-502	70,9	355
	100	CLL-504	70,9	709
	150	CLL-506	70,9	1064
	200	CLL-508	70,9	1418
	250	CLL-5010	70,9	1773
	300	CLL-5012	70,9	2127
100 (929)	50	CLL-1002	132,7	664
	100	CLL-1004	132,7	1327
	150	CLL-1006	132,7	1991
	200	CLL-1008	132,7	2654
	250	CLL-10010	132,7	3318
	300	CLL-10012	132,7	3981
150 (1390)	50	CLL-1502	198,6	993
	100	CLL-1504	198,6	1986
	150	CLL-1506	198,6	2979
	200	CLL-1508	198,6	3972
	250	CLL-15010	198,6	4965
	300	CLL-15012	198,6	5958
200 (1859)	50	CLL-2002	265,6	1330
	150	CLL-2006	265,6	3989
	250	CLL-20010	265,6	6648
250 (2562)	50	CLL-2502	366,1	1832
	150	CLL-2506	366,1	5496
	250	CLL-25010	366,1	9160
300 (3193)	50	CLL-3002	456,2	2281
	150	CLL-3006	456,2	6843
	250	CLL-30010	456,2	11405
400 (3919)	50	CLL-4002	559,9	2800
	150	CLL-4006	559,9	8399
	250	CLL-40010	559,9	13998
500 (5118)	50	CLL-5002	731,1	3653
	150	CLL-5006	731,1	10959
	250	CLL-50010	731,1	18265
600 (5983)	50	CLL-6002	854,8	4277
	150	CLL-6006	854,8	12830
	250	CLL-60010	854,8	21383
800 (8238)	50	CLL-8002	1176,9	5882
	50	CLL-8006	1176,9	17645
	250	CLL-80010	1176,9	29408
1000 (10260)	50	CLL-10002	1466,4	7329
	150	CLL-10006	1466,4	21986
	250	CLL-100010	1466,4	36643

# Single-Acting, Lock Nut Cylinders

## Optional Tilt Saddle \*



Capacity:

**50-1000 ton**

Stroke:

**50-300 mm**

Maximum Operating Pressure:

**700 bar**

**CLL**  
Series



Coll. Height A (mm)	Ext. Height B (mm)	Outs. Dia. D (mm)	Cyl. Bore Dia. E (mm)	Plunger Dia. (threaded) F (mm)	Base to Adv. Port H (mm)	Standard Saddle Dia. J (mm)	Saddle Protr. from Plgr. K (mm)	Depth of Plunger Hole L (mm)	Lock-nut Height S (mm)	Weight (kg)	Model Number	* Optional Tilt Saddle		
												Saddle Dia. J1 (mm)	Saddle Height K1 (mm)	Saddle Model Number
164	214	125	95,0	Tr 95 x 4	30	71	3	12	36	15	CLL-502	71	24	CAT-100
214	314	125	95,0	Tr 95 x 4	30	71	3	12	36	20	CLL-504	71	24	CAT-100
264	414	125	95,0	Tr 95 x 4	30	71	3	12	36	25	CLL-506	71	24	CAT-100
314	514	125	95,0	Tr 95 x 4	30	71	3	12	36	30	CLL-508	71	24	CAT-100
364	614	125	95,0	Tr 95 x 4	30	71	3	12	36	35	CLL-5010	71	24	CAT-100
414	714	125	95,0	Tr 95 x 4	30	71	3	12	36	40	CLL-5012	71	24	CAT-100
187	237	165	130,0	Tr 130 x 6	30	71	3	12	44	30	CLL-1002	71	24	CAT-100
237	337	165	130,0	Tr 130 x 6	30	71	3	12	44	39	CLL-1004	71	24	CAT-100
287	437	165	130,0	Tr 130 x 6	30	71	3	12	44	48	CLL-1006	71	24	CAT-100
337	537	165	130,0	Tr 130 x 6	30	71	3	12	44	56	CLL-1008	71	24	CAT-100
387	637	165	130,0	Tr 130 x 6	30	71	3	12	44	64	CLL-10010	71	24	CAT-100
437	737	165	130,0	Tr 130 x 6	30	71	3	12	44	73	CLL-10012	71	24	CAT-100
209	259	205	159,0	Tr 159 x 6	39	130	2	25	44	53	CLL-1502	130	20	CAT-200
259	359	205	159,0	Tr 159 x 6	39	130	2	25	44	66	CLL-1504	130	20	CAT-200
309	459	205	159,0	Tr 159 x 6	39	130	2	25	44	78	CLL-1506	130	20	CAT-200
359	559	205	159,0	Tr 159 x 6	39	130	2	25	44	92	CLL-1508	130	20	CAT-200
409	659	205	159,0	Tr 159 x 6	39	130	2	25	44	104	CLL-15010	130	20	CAT-200
459	759	205	159,0	Tr 159 x 6	39	130	2	25	44	117	CLL-15012	130	20	CAT-200
243	293	235	184,0	Tr 184 x 6	50	130	2	25	50	83	CLL-2002	130	20	CAT-200
343	493	235	184,0	Tr 184 x 6	50	130	2	25	50	117	CLL-2006	130	20	CAT-200
443	693	235	184,0	Tr 184 x 6	50	130	2	25	50	152	CLL-20010	130	20	CAT-200
249	299	275	216,0	Tr 216 x 6	50	150	2	25	56	116	CLL-2502	150	21	CAT-250
349	499	275	216,0	Tr 216 x 6	50	150	2	25	56	162	CLL-2506	150	21	CAT-250
449	699	275	216,0	Tr 216 x 6	50	150	2	25	56	210	CLL-25010	150	21	CAT-250
295	345	310	241,0	Tr 241 x 6	59	139	5	25	60	173	CLL-3002	195	75	CAT-300
395	545	310	241,0	Tr 241 x 6	59	139	5	25	60	233	CLL-3006	195	75	CAT-300
495	745	310	241,0	Tr 241 x 6	59	139	5	25	60	293	CLL-30010	195	75	CAT-300
335	385	350	267,0	Tr 266 x 6	70	159	5	25	70	250	CLL-4002	225	85	CAT-400
435	585	350	267,0	Tr 266 x 6	70	159	5	25	70	327	CLL-4006	225	85	CAT-400
535	785	350	267,0	Tr 266 x 6	70	159	5	25	70	402	CLL-40010	225	85	CAT-400
375	425	400	305,0	Tr 305 x 6	80	179	5	25	80	367	CLL-5002	250	91	CAT-500
475	625	400	305,0	Tr 305 x 6	80	179	5	25	80	466	CLL-5006	250	91	CAT-500
575	825	400	305,0	Tr 305 x 6	80	179	5	25	80	567	CLL-50010	250	91	CAT-500
395	445	430	330,0	Tr 330 x 6	85	194	5	25	85	446	CLL-6002	275	96	CAT-600
495	645	430	330,0	Tr 330 x 6	85	194	5	25	85	562	CLL-6006	275	96	CAT-600
595	845	430	330,0	Tr 330 x 6	85	194	5	25	85	679	CLL-60010	275	96	CAT-600
455	505	505	387,0	Tr 387 x 6	100	224	5	25	100	709	CLL-8002	320	123	CAT-800
555	705	505	387,0	Tr 387 x 6	100	224	5	25	100	870	CLL-8006	320	123	CAT-800
655	905	505	387,0	Tr 387 x 6	100	224	5	25	100	1029	CLL-80010	320	123	CAT-800
495	545	560	432,0	Tr 432 x 6	110	249	5	25	110	949	CLL-10002	360	136	CAT-1000
595	745	560	432,0	Tr 432 x 6	110	249	5	25	110	1141	CLL-10006	360	136	CAT-1000
695	945	560	432,0	Tr 432 x 6	110	249	5	25	110	1333	CLL-100010	360	136	CAT-1000

▼ Positioning of two enormous vessels, using a combination of stage and synchronized lifting in Malaysia.



- Digital technology controls automatic synchronization of up to 8 cylinders, parallel set-ups allow for even more lifting points
- Can effectively and efficiently be operated by one person, computer control offers all features at a friendly interface
- High accuracy (+/- 1 mm) sensors are attached to the load to ensure accurate positional control
- Utilizes standard hydraulic components, allowing use of your present equipment

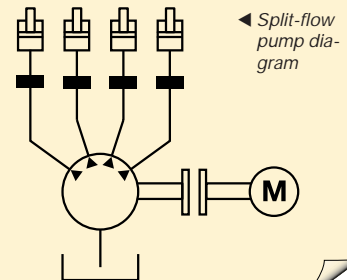
## Computer Controlled Lifting & Lowering Systems:

## A Marriage between Hydraulics and Electronics



### Split Flow Pumps

For applications that do not require the high accuracy of electronic synchronous lifting, a split flow pump may provide the cost effective solution.



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◀ Here a bridge deck is being re-leveled after major maintenance work.

▼ Even positioning and leveling large machining centers benefits from synchronized techniques.



# Synchronized Lifting & Lowering Systems

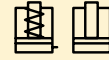


Applications that may require synchronous control:

- Bridge lifting
- Lifting and lowering of heavy equipment
- Shiplifts
- Die separation
- Structural testing
- Lifting and weight measuring of oil platforms
- Synchronized pressing
- Horizontal load shifting

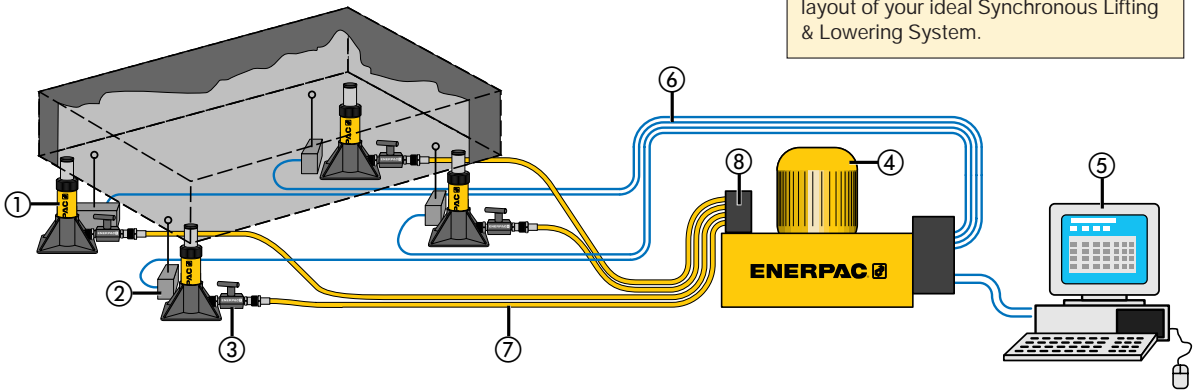
The possible applications of the system are too numerous to show in this catalog. Synchronized lifting, lowering and positioning using computer technology and high pressure hydraulics has become popular in many industries around the globe. Basically the lifting or lowering capacity of the system is unlimited. By adding more or larger hydraulic cylinders to the setup, the system will allow jobs of 50,000 ton or even more.

## SL Series



### Call Enerpac!

Contact your distributor or the Enerpac office nearest to you for advice and technical assistance in the layout of your ideal Synchronized Lifting & Lowering System.



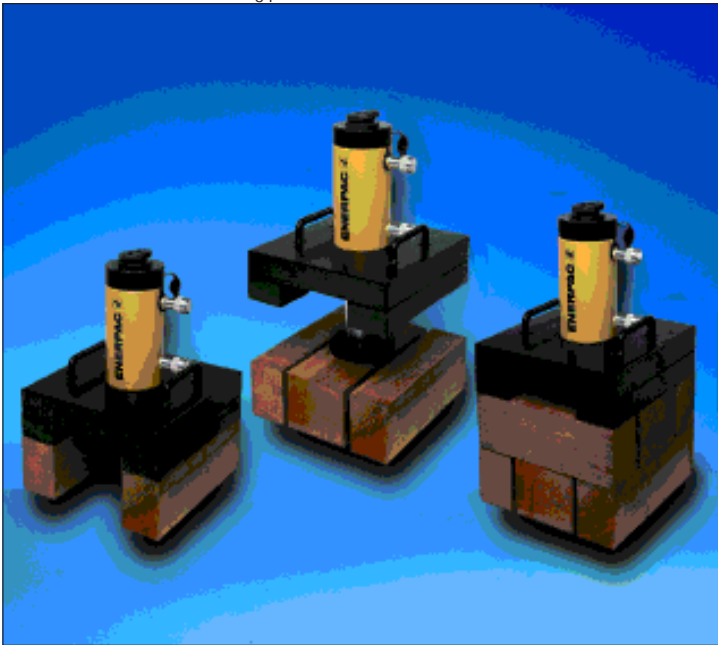
- ① Hydraulic Cylinder      ③ Valve      ⑤ Personal computer      ⑦ Hydraulic hoses
- ② Electronic sensor      ④ Pump Unit      ⑥ Electronic cables      ⑧ Valves

### ▼ TYPICAL SYSTEM COMPONENTS

<b>Control Devices</b>		<ul style="list-style-type: none"> <li>• Microprocessor based control unit or personal computer with user-friendly interface</li> </ul>	<b>Power Source</b>		<ul style="list-style-type: none"> <li>• Split Flow pumps equipped with solenoid valves provide directional control of lifting cylinders</li> </ul>
		<ul style="list-style-type: none"> <li>• Receives data from electronic sensors, located at each lifting point</li> <li>• Distributes output control signals from controller to cylinder control valves</li> </ul>		<b>Electronic Sensors &amp; Cylinders</b>	



▼ Shown: BLS-506 in three lifting positions.



## The Most Simple Solution to Higher Lifting Jobs



### Lifting height

Stage-lift cylinders overcome the usual limitation of lift 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.

- Double-acting cylinder with solid plunger design
- Simple three-stage operation
- Swivel saddle and large support attachments for stability
- Anti-rotation device
- Built-in overload protection



### Split Flow Pumps

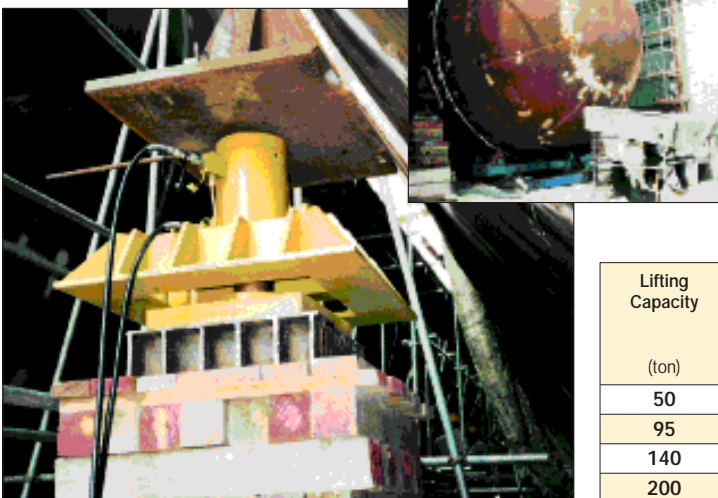
Multi-cylinder arrangements can be powered and fully synchronised by Enerpac split-flow pumps.

Page:  80



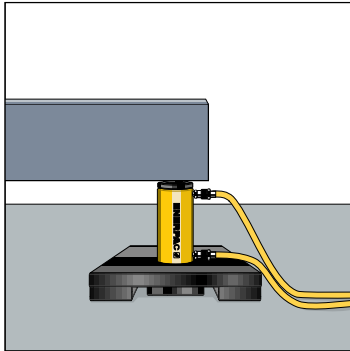
To avoid overload situations, cylinders should be used within 80% of their maximum capacity.

▼ Typical stage-lift application using a custom built Enerpac system to lift this pressure vessel.

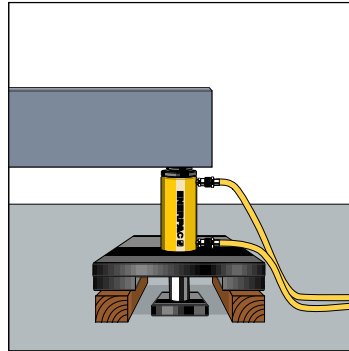


Lifting Capacity (ton)	Model Number	Stroke (mm)	Maximum Cylinder Capacity (kN)	
			Push	Pull
50	BLS-506	155	498	103
95	BLS-1006	168	933	435
140	BLS-1506	155	1386	668
200	BLS-2006	155	1859	885

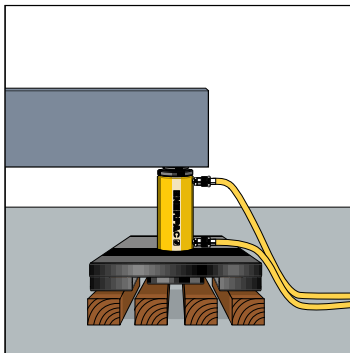
# Double-Acting, Stage-Lift Cylinders



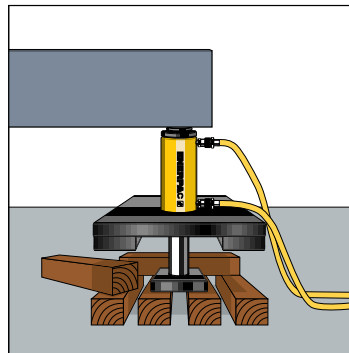
1 The Stage Lift cylinder is placed on a solid support under the load (retracted plunger).



2 Plunger extends, lifting the load and giving clearance to insert two outer blocks under the spreading plate.



3 Plunger retracts, giving clearance to position the central blocks which will support the plunger plate for the next extension.



4 Plunger extends, lifting the load and giving clearance to insert two new blocks, placed crosswise under the spreading plate.

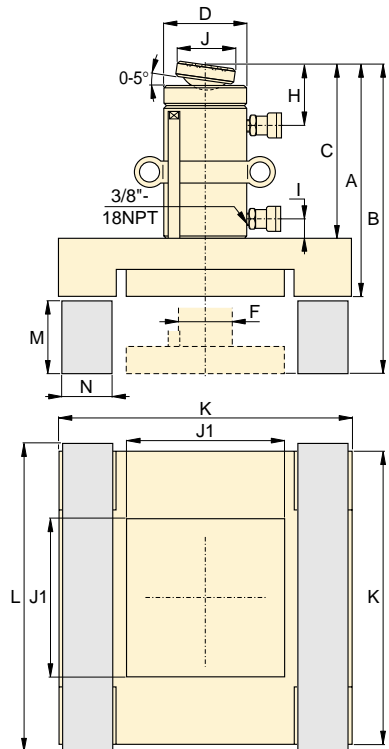
## BLS Series



Capacity:  
**50 - 200 ton**

Stroke:  
**155 - 168 mm**

Maximum Operating Pressure:  
**700 bar**



For Lifting Capacity (ton)	Support Block Material *	Block Dimensions (mm)		
		L	M	N
50	Azobe Wood	565	140	120
95	Azobe Wood	720	150	160
140	Solid Aluminium	500	140	115
200	Solid Aluminium	575	140	135

\* Support blocks are not supplied by Enerpac.

Cylinder Effective Area (cm <sup>2</sup> )		Oil Capacity (cm <sup>3</sup> )		Dimensions (mm)										Weight (kg)	Model Number
Push	Pull	Push	Pull	A	B	C	D	F	H	I	J	J1	K		
71,2	21,5	1111	335	408	563	322	127	79	57	36	50	240	515	170	BLS-506
133,3	62,2	2238	1045	448	616	346	175	105	76	23	71	320	670	231	BLS-1006
198,1	95,4	3090	1488	472	624	370	203	114	94	39	130	230	475	322	BLS-1506
265,6	126,5	3984	1898	512	664	392	248	133	102	37	130	270	550	373	BLS-2006

▼ Shown Strand Lift Cluster ST-132



- 132 ton capacity per cluster, capacity can be increased by using more clusters
- Positive hydraulic seating of strand chucks
- Ideal for lifting or lowering loads over long distances
- Loads can be locked or secured at any stage
- Maximum lifting capability determined by strand capacity (not by hydraulic capacity)

▼ To lift a 112 ton boring machine in a deep tunnel project, workers thread strand through the ST-132 strand lift cluster. Due to the lift height required and the low ceiling, the ST-132 Strand Lift was the only solution.



## From the Leader in Heavy Lifting Technology



### Lifting in Unusual Situations

When loads need to be lifted or lowered in tight areas or in situations where overhead clearance is limited, Enerpac offers this economical alternative to traditional rigging equipment.



### Lifting Eye SLEA-200

Provides the interface between the ST-132 cluster and the load. Includes 12 SC-22 chucks.

Weight: 309 kg



### Strand Chucks SC-11

Twenty-four SC-11 chucks are included with the ST-132. Spare chucks can be purchased under these numbers.



### Strand Lift Pump PST-8418

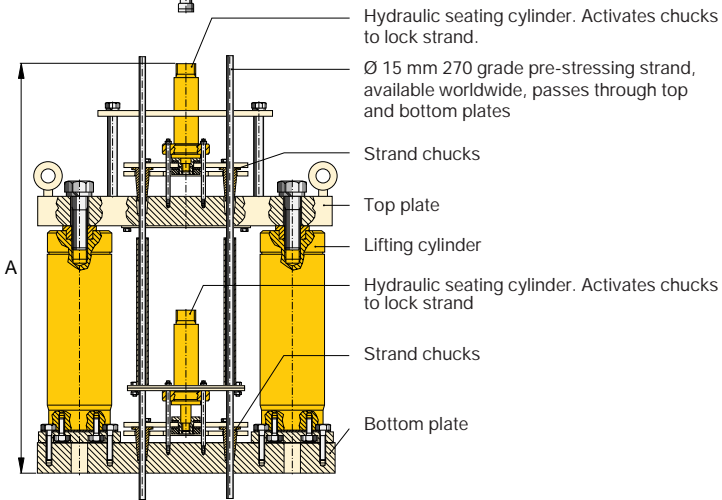
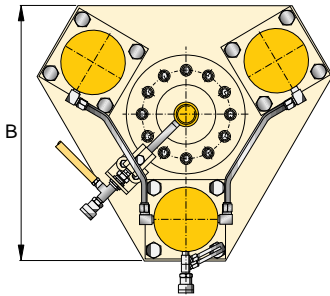
Specifically designed to operate the ST-132 cluster. One pump can control up to four clusters.

Providing independent, manual control of each cluster.

Lifting Capacity	System Pressure at Full Capacity	Required Strands at Full Capacity	Model Number
ton (kN)	(bar)	(not included)*	
132 (1174)	300	12	ST-132

\* System uses 15 mm diameter 270 Grade pre-stressing strand.

# Strand Lift System



**ST Series**



Rated Capacity per Cluster:  
**132 ton**

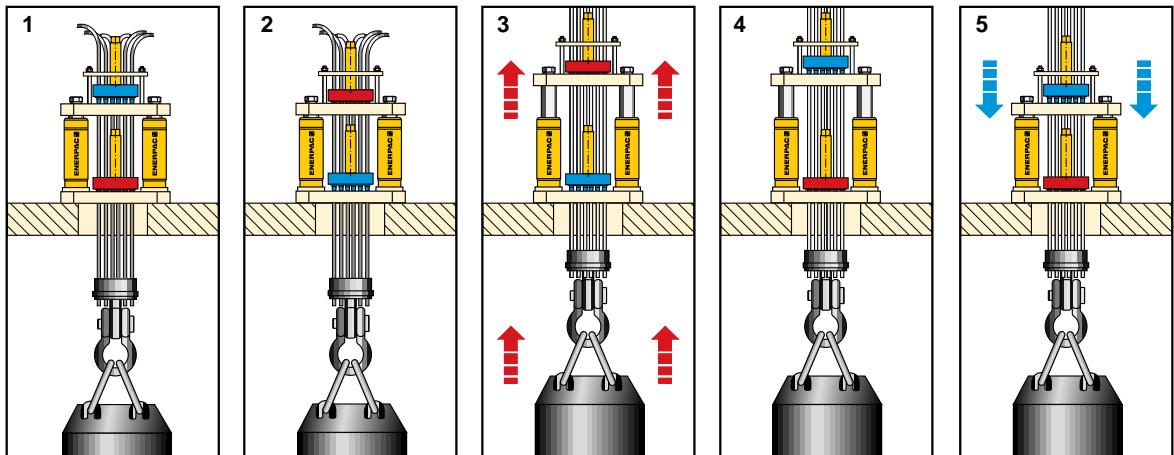
Operating Pressure at Rated Load:  
**300 bar**



**Hoses**

To maintain the integrity of your system, demand only genuine Enerpac safety hoses. Long lengths available for strand lift systems.

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■ Clamped  
■ Unclamped

**Lifting Sequence**

- 1 Chucks lock strands in bottom plate
- 2 Chucks lock strands in top plate
- 3 Lifting load with top plate
- 4 Chucks lock strand in bottom plate
- 5 Top plate being retracted to repeat sequence

Lifting rate (using the PST-8418 pump)	Oil Capacity	Dimensions (mm)			Weight
		Cluster Height A		Cluster Width B	
		Retracted	Extended		
(m/hr)	(cm <sup>3</sup> )				(kg)
1 cluster 6,7	7210	1073	1403	660	880
2 clusters 5,5	14420				
3 clusters 4,3	21630				
4 clusters 3,1	28841				



# Saf-T-Lite® Aluminium Jacks

▼ Shown from left to right: JHA-356, JHA-73, JTA-76



## JHA/JTA Series



Capacity:  
**7-150 ton**

Stroke:  
**76-155 mm**

Maximum Operating Pressure:  
**700 bar**

- All-directional operation on 7, 15 and 35 ton conventional models
- Two-directional operation (vertical and horizontal) on 75 and 150 ton conventional models
- Internal relief valve to prevent overloading
- Machined flat front and bottom surfaces permit flush alignment in tight corners
- Includes pumping handle



### Toe-Lift and Load Skates

See the tool section in this catalog for more toe-lifts and load skates for easy transportation.

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*Enerpac high quality aluminium jacks are a great tool for precise positioning out in the field. ▶*



Style	Jack Capacity ton (kN)	Toe Height (mm)	Stroke (mm)	Model Number	Jack Effective Area (cm <sup>2</sup> )	Collapsed Height (mm)	Extended Height (mm)	Outside Dimensions (L x W) (mm)	Plunger Diameter (mm)	Pump Speed	Weight (kg)
Conventional Jack	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
	75 (667)	–	153	JHA-756	102,6	285	439	174 x 325	114,3	Single	42,6
	150 (1335)	–	155	JHA-1506	197,9	327	482	241 x 407	158,8	2-Speed	95,3
Toe-Lift Jack	7 (62)	50	153	JTA-76	20,3	319	473	92 x 295	41,4	Single	26,3
	17 (151)	50	155	JTA-176	45,6	360	515	117 x 333	54,1	Single	39,0
	35 (311)	65	153	JTA-356	102,6	422	576	174 x 422	82,6	Single	95,3

# Premium Steel Jacks

▼ Shown from left to right: JH-506, JH-3, JH-5, JHL-1.5, JH-12



## JH/JHL Series



Capacity:  
**1,5 - 100 ton**

Stroke:  
**130 - 508 mm**

Maximum Operating Pressure:  
**700 bar**



### Screw Feature

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

### Premium Industrial Line

- Automatic by-pass port to prevent over-extension
- Long stroke versions available (JHL-1.5, JHL-3)
- Pump handle included

### On 30, 50 and 100 ton models:

- Chrome plated plungers
- Machined flat front and bottom surfaces permit flush alignment in tight corners
- Internal relief valve to prevent overloading

▼ Creativity is the limit with Enerpac Aluminium Jacks.



Jack Capacity ton (kN)	Stroke (mm)	Model Number	Additional Screw Extension (mm)	Collapsed Height (mm)	Outside Dimensions L x W (mm)	Pump Speed	Weight (kg)
1,5 (13)	131	JH-1.5	54	190	92 x 127	Single	4,1
	457	JHL-1.5	-	551	92 x 127	Single	6,4
3 (26)	149	JH-3	68	222	108 x 139	Single	5,9
	508	JHL-3	-	668	108 x 139	Single	11,8
5 (44)	158	JH-5	85	241	122 x 171	Single	7,7
8 (71)	158	JH-8	85	241	134 x 196	Single	8,6
12 (106)	130	JH-12	85	225	146 x 146	Single	11,8
20 (178)	165	JH-20	-	279	134 x 160	Single	19,1
30 (267)	155	JH-306	-	254	95 x 242	Single	26,8
50 (445)	154	JH-506	-	260	127 x 258	2-Speed	40,8
100 (890)	153	JH-1006	-	287	181 x 328	2-Speed	74,4

# Single-Acting Cylinder-Pump Sets

▼ Shown cylinder-pump set: SCR-1010H



## The Quickest and Easiest Way to Start Working Right Away

- Optimum match of individual components
- All sets are ready-for-use
- Sets include 1,8 m safety hose, calibrated gauge with gauge adaptor
- All hand pumps are two-speed







### Speed Chart

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

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### 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)
 <p><b>Single-Acting, General Purpose Cylinders:</b> For maximum versatility. RC-Series</p>	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
	95 (933)	RC-1006	168	357
 <p><b>Single-Acting, Low Height Cylinders:</b> Ideal where space is restricted. RCS-Series</p>	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
 <p><b>Single-Acting, Hollow Cylinders:</b> For pushing and pulling applications. RCH-Series</p>	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
 <p><b>Pull Cylinders:</b> For use with subassemblies and modules. BRP-Series</p>	10 (105)	BRP-106C	151	587
		BRP-106L	151	541
	30 (326)	BRP-302	63	1033
		BRP-306	155	1085
	50 (505)	BRP-606	152	719

# Single-Acting Cylinder-Pump Sets

## SET SELECTION:

- 1 Select the cylinder
- 2 Select the pump
- 3 Find the set model number in the blue matrix

## SELECTION EXAMPLE

### Selected cylinder:

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

### Selected pump:

- P-392, Light weight hand pump

### Set model number:

- SCR-106H

### Included:

- HC-7206 hose
- GF-10S gauge
- GA-2 adaptor

SC Series



Capacity:

**5-95 ton**

Stroke:

**38-362 mm**

Maximum Operating Pressure:

**700 bar**

## 2 Pump selection (See Pump Section of this catalog for full product descriptions)

## Accessories included

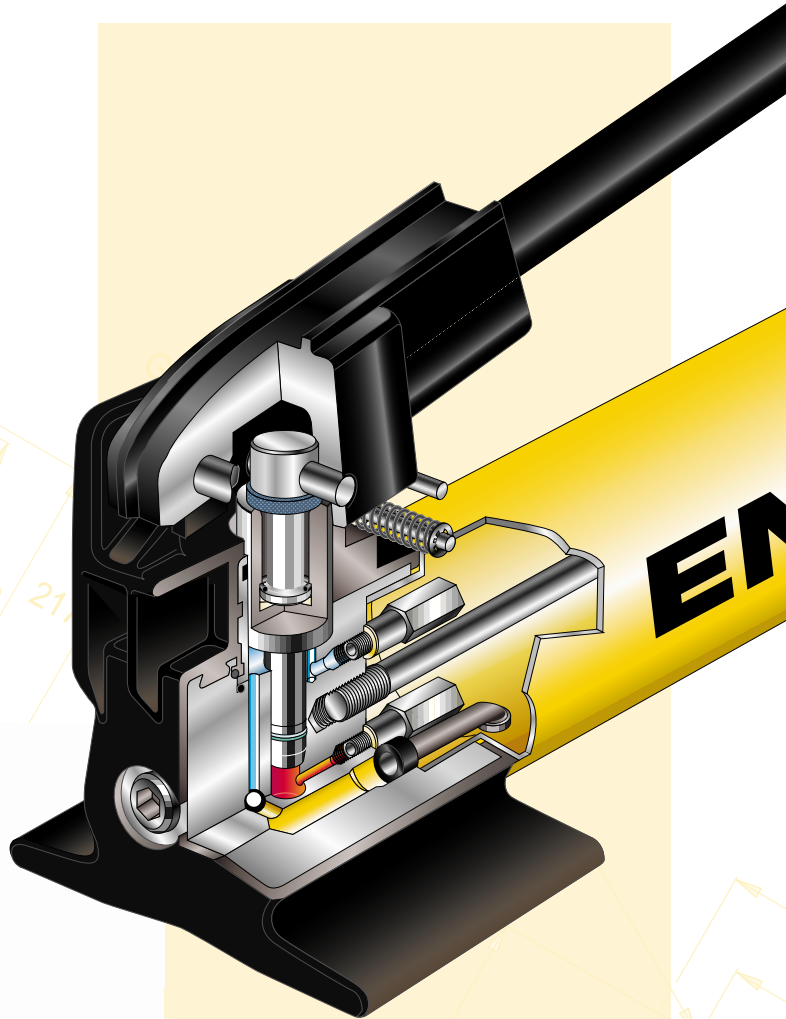
Hand Pump P-142	Hand Pump P-392	Hand Pump P-80	Hand Pump P-462	WalkPac™ Battery Pump* PBM-12001E	Turbo Air Pump PAT-1102N	Hose Model Number	Gauge Model Number	Gauge Adaptor Model Nr.
SCR-55H	-	-	-	-	-	HC-7206Q	GP-10S	GA-4
-	SCR-102H	-	-	SCR-102B	SCR-102A	HC-7206	GF-10S	GA-2
-	SCR-106H	-	-	SCR-106B	SCR-106A	HC-7206	GF-10S	GA-2
-	SCR-1010H	-	-	SCR-1010B	SCR-1010A	HC-7206	GF-10S	GA-2
-	SCR-154H	-	-	SCR-154B	SCR-154A	HC-7206	GP-10S	GA-2
-	SCR-156H	-	-	SCR-156B	SCR-156A	HC-7206	GP-10S	GA-2
-	SCR-252H	-	-	SCR-252B	SCR-252A	HC-7206	GF-20S	GA-2
-	SCR-254H	-	-	SCR-254B	SCR-254A	HC-7206	GF-20S	GA-2
-	SCR-256H	-	-	SCR-256B	SCR-256A	HC-7206	GF-20S	GA-2
-	-	SCR-2514H	-	-	SCR-2514A	HC-7206	GF-20S	GA-2
-	-	SCR-506H	-	-	SCR-506A	HC-7206	GF-50S	GA-2
-	-	-	SCR-1006H	-	-	HC-7206	GF-871	GA-2
-	SCL-101H	-	-	SCL-101B	SCL-101A	HC-7206	GF-10S	GA-2
-	SCL-201H	-	-	SCL-201B	SCL-201A	HC-7206	GF-230	GA-2
-	SCL-302H	-	-	SCL-302B	SCL-302A	HC-7206	GF-230	GA-2
-	SCL-502H	-	-	-	SCL-502A	HC-7206	GF-510	GA-2
-	-	SCL-1002H	-	-	-	HC-7206	GF-510	GA-2
SCH-121H	-	-	-	-	-	HB-7206	GF-120	GA-4
-	SCH-202H	-	-	SCH-202B	SCH-202A	HC-7206	GF-813S	GA-2
-	SCH-302H	-	-	SCH-302B	SCH-302A	HC-7206	GF-813S	GA-3
-	-	SCH-603H	-	-	SCH-603A	HC-7206	GF-813S	GA-2
-	-	SCH-1003H	-	-	-	HC-7206	GP-10S	GA-2
-	SCP-106CH	-	-	-	-	HC-7206	GP-10S	GA-2
-	SCP-106LH	-	-	-	-	HC-7206	GP-10S	GA-2
-	SCP-302H	-	-	-	-	HC-7206	GP-10S	GA-2
-	-	SCP-306H	-	-	-	HC-7206	GP-10S	GA-2
-	-	SCP-606H	-	-	-	HC-7206	GP-10S	GA-2

\* All WalkPac™ sets include HC-7206C hose.



**E**NERPAC hydraulic pumps are available in over 1000 different configurations. Whatever your high-pressure pump needs are, you will find an Enerpac pump suited to the application.

Featuring Hand, Battery, Electric, Air and Gasoline powered models, plus 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 review our 'Yellow Pages'.

If you require further assistance, contact the Enerpac office located near you.

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# Hydraulic Pumps Section Overview

Power Source	Pump Types		Maximum Reservoir Capacity (litres)	Max.Flow at Rated Pressure (l/min)	Series		Page
Hand	Light Weight Hand Pumps		2,5	2,47 (cm <sup>3</sup> /stroke)	P		54 ▶
	Steel Hand Pumps		7,4	4,75 (cm <sup>3</sup> /stroke)	P		56 ▶
	High Flow Hand Pumps		3,3	25,40	P/PL		58 ▶
	Ultra-High Pressure Hand Pumps		1,0	2,49 (cm <sup>3</sup> /stroke)	P/11		60 ▶
Battery	WalkPac™ Battery Powered Pumps		0,6	0,16	PB		62 ▶
Electric	Economy Series Compact and Portable		3,8	0,32	PU		64 ▶
	Titan Series High Performance, Intermittent Use		40	0,98	PU		66 ▶
	Submerged Series Powerful and Low-Noise		5,5	0,27	PE		70 ▶
	Hushh, 2000, 3000 and 5000 Series The Industrial Standard		40	1,52	PE		74 ▶
	8000- and 9000-Series High Flow / Split Flow Pumps		80	8,0	PP		80 ▶
Air	Air Hydraulic Pumps The Maximum Flow Series Air Pump		5,0	5,0	PA		82 ▶
	Turbo and Air Hydraulic Pumps Single and Twin-Air		5,0	0,13	PA		84 ▶
	Air Pumps - Modular Air Series Modular Design		40	1,2	PA		88 ▶
Gasoline	Atlas Series Your Gasoline Pump Solution		40	1,64	PG		90 ▶
	800 Series For the Largest Jobs		95	5,7	EG		92 ▶

# Light Weight Hand Pumps

▼ Pumps shown, from top to bottom: P-802, P-842, P-202, P-142



- Light weight 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 light weight construction for easy carrying
- Large oil capacities to power a wide range of cylinders or tools
- Non-conductive fiberglass handle for operator safety
- Internal pressure relief valve for overload protection

▼ P-392 in action with RSM-500 cylinders.



## Exclusively from Enerpac

**i** **Cylinder Matching Chart**  
For help in selecting the correct hand pump for your application, please refer to the Cylinder Matching Chart located in the 'Yellow Pages'.  
*Page:* 96

**i** **Speed Chart**  
To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the 'Yellow Pages'.  
*Page:* 103

**Tank Kits:**  
When a return-to-tank port is required, the Tank Kits provide a 7/16"-20 port at the rear of the reservoir.

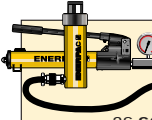
PC-20	Fits P-141, P-142
PC-25	Fits P-202, P-391, P-392

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

\* Available as set, see note on next page.

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

# Light Weight Hand Pumps



**Pump and 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:

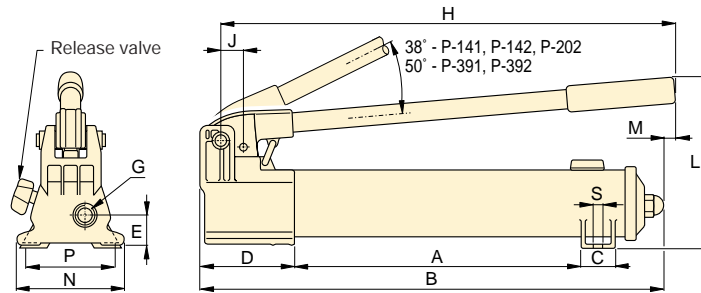
**327 - 2540 cm<sup>3</sup>**

Flow at Rated Pressure:

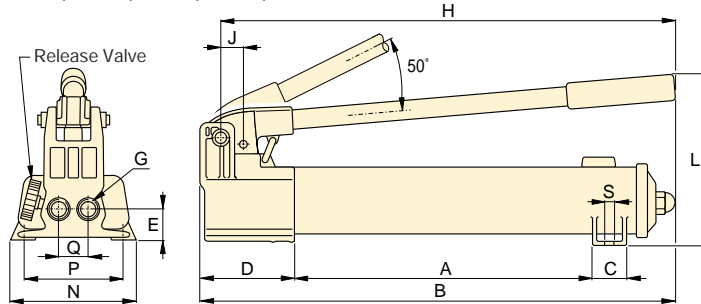
**0,90 - 2,47 cm<sup>3</sup>/stroke**

Operating Pressure:

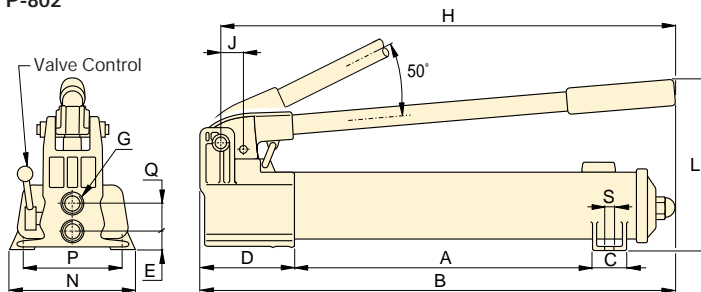
**700 bar**



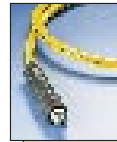
P-141, P-142, P-202, P-391, P-392



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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### 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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### Aluminium Reservoir

For applications where composite reservoirs may not be suitable, the P-392AL utilizes an extruded aluminium reservoir. Also included is a second handle for two-hand use.

Piston Stroke (mm)	Dimensions (mm)														Weight (kg)	Model Number
	A	B	C	D	E	G	H	J	L	M	N	P	Q	S		
12,7	185	336	28	85	28	1/4" - 18 NPT	319	19	143	-	95	80	-	7	2,0	P-141
25,4	344	533	36	99	33	3/8" - 18 NPT	522	30	177	16	120	-	-	-	4,1	P-391
12,7	185	336	28	85	28	1/4" - 18 NPT	319	19	143	-	95	80	-	7	2,0	P-142*
12,7	344	509	36	85	28	1/4" - 18 NPT	400	19	144	16	95	-	-	-	3,4	P-202*
25,4	344	533	36	99	33	3/8" - 18 NPT	522	30	177	16	120	-	-	-	4,1	P-392*
25,4	337	552	45	133	35	3/8" - 18 NPT	527	55	228	-	120	152	35	10	8,2	P-802
25,4	337	552	45	133	20	3/8" - 18 NPT	527	55	228	-	120	152	36	10	10,0	P-842



▼ Shown from left to right: P-84, P-80, P-462, P-39



- Two-speed operation for reduced operator fatigue (except P-39)
- 4-way valving on the P-84 and P-464 for operation of double-acting cylinders
- External load release valve on remaining models for single-acting cylinder operation
- Internal pressure relief valves for overload protection
- Large oil capacities to power a wide range of cylinders or tools

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



## Steel - The Solution for Tough Jobs

**i Two Speed**  
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 to foot power with the **PC-10 Kit**. Includes instructions for easy conversion.

**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: 105*

**4-Way Control Valve**  
P-84 and P-464 feature a VM-4 manual 4-way control valve, designed for use with one double-acting or two single-acting cylinders. For system Set-up information: *Page: 98*

Pump Type	Usable Oil Capacity (cm <sup>3</sup> )	Model Number	Pressure Rating** (bar)		Oil Displacement per Stroke (cm <sup>3</sup> )		Max. Handle Effort (kg)
			1 <sup>st</sup> stage	2 <sup>nd</sup> stage	1 <sup>st</sup> stage	2 <sup>nd</sup> stage	
Single	655	P-39	N/A	700	N/A	2,62	50
Two-Speed	2200	P-80*	25	700	16,22	2,46	47
	4080	P-801	25	700	16,22	2,46	47
	2200	P-84	25	700	16,22	2,46	47
	7423	P-462*	14	700	126,20	4,75	49
	7423	P-464	14	700	126,20	4,75	49

\* Available as a set, see note on next page.

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

# Steel Hand Pumps

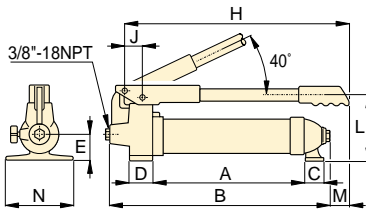
**P**  
Series



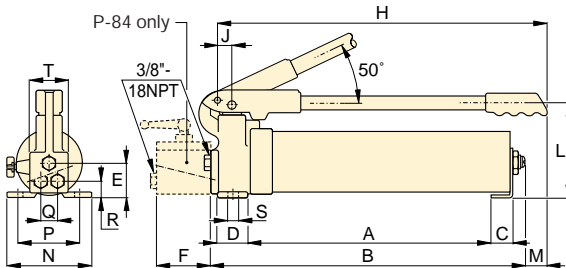
Reservoir Capacity:  
**655-7423 cm<sup>3</sup>**

Flow at Rated Pressure:  
**2,46-4,75 cm<sup>3</sup>/stroke**

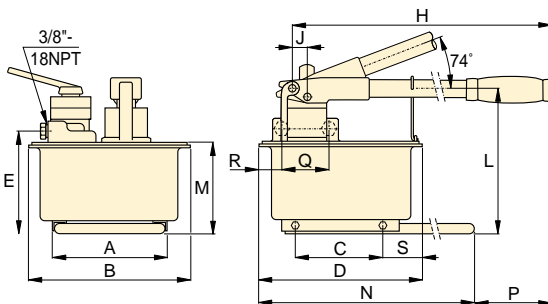
Maximum Operating Pressure:  
**700 bar**



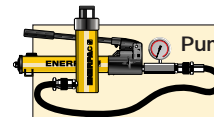
P-39



P-80, P-801, P-84



P-462, P-464



**Pump and Cylinder sets**

P-80 and P-462  
also available as set  
(pump, cylinder, gauge,  
couplers and hose) for your  
ordering convenience.

Page: 50



## 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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## Cylinder Matching Chart

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

Page: 96

Piston Stroke	Dimensions (mm)																Weight (kg)	Model Number
	(mm)	A	B	C	D	E	F	H	J	L	M	N	P	Q	R	S		
20,6	393	520	33	38	32	-	464	30	119	65	133	-	-	-	-	-	5,9	P-39
25,4	425	539	25	44	54	-	527	29	174	19	146	121	-	21	8	67	10,9	P-80*
25,4	659	782	25	44	54	-	772	29	174	-	146	121	-	21	8	67	14,1	P-801
25,4	425	539	25	44	-	64	527	29	174	19	146	121	38	43	8	67	13,2	P-84
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

▼ Shown from left to right: PL-3007R, P-51, P-18, P-25



## When a High Flow Counts



### Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. Refer to the

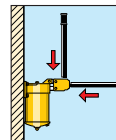
System Components section for a full range of gauges.

Page: 105



### Foot Pump Conversion Kits

Convert your P-18 to foot power with the PC-10 Kit. Includes instructions for easy conversion.



### Application

The pump handle on PL-series pumps can be used in vertical and horizontal position.

### P-series

- Bi-directional pumping on the P-25 and P-50 allows operation on both handle strokes
- External load-release valve
- Internal pressure-relief valve for overload protection

### PL-series

- Pump available with reservoir or without reservoir for flange mounting on separate tank
- Pump handle can be used horizontally and vertically
- Interchangeable pump bodies due to same mounting pattern
- Pumps without reservoir include reservoir gasket
- Lightweight and compact design

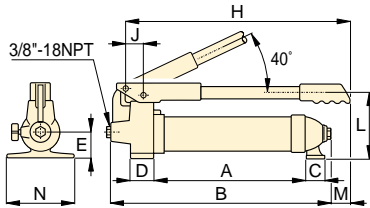
▼ The PL-3007F mounted on a 20 litres reservoir.



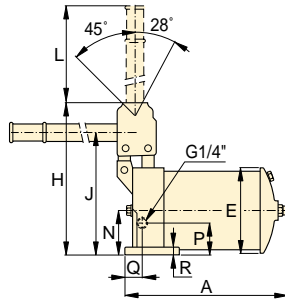
Pump Type	Usable Oil Capacity (cm <sup>3</sup> )	Model Number	Pressure Rating (bar)	Oil Displacement per Stroke (cm <sup>3</sup> )	Max. Handle Effort (kg)
Single-Speed	295	P-18	200	2,62	26
	3277	P-25	175	9,50	27
	3277	P-50	350	4,75	27
	819	P-51	200	4,10	27
Single-Speed	1800	PL-3007R	300	7,00	40
	1800	PL-2509R	250	9,10	40
	1800	PL-2011R	200	11,30	40
	1800	PL-1317R	130	17,60	40
	1800	PL-1025R	90	25,40	40
Single-Speed	*	PL-3007F	300	7,00	40
	*	PL-2509F	250	9,10	40
	*	PL-2011F	200	11,30	40
	*	PL-1317F	130	17,60	40
	*	PL-1025F	90	25,40	40

\* Requires the use of an external reservoir

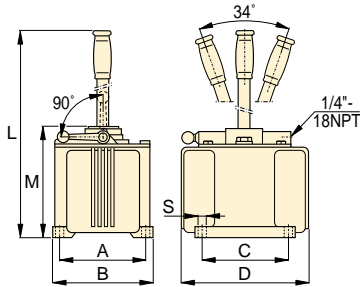
# Low Pressure / High Flow Hand Pumps



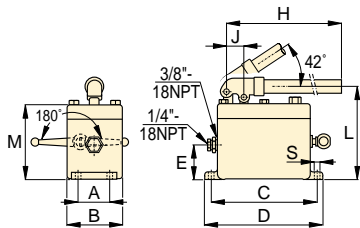
P-18



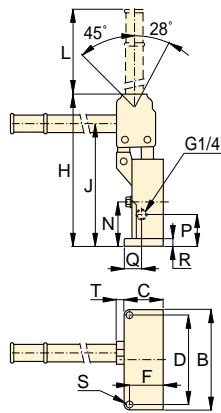
PL-series R



P-25, P-50

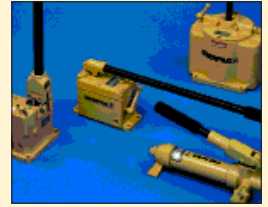


P-51



PL-series F

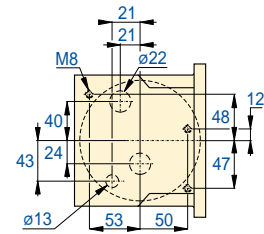
**P/PL Series**



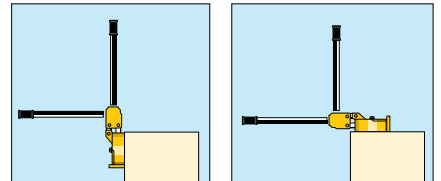
Reservoir Capacity:  
**295-3280 cm<sup>3</sup>**

Flow at Rated Pressure:  
**2,62-25,4 cm<sup>3</sup>/stroke**

Operating Pressure:  
**90-350 bar**



PL-series F mounting dimensions (mm)



Piston Stroke	Dimensions (mm)																Weight (kg)	Model Number
	A	B	C	D	E	F	H	J	L	M	N	P	Q	R	S	T		
20,6	210	327	33	38	48	-	216	30	111	13	133	-	-	-	-	-	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
36,0	275	159	86	135	134	64	237	203	532	-	70	41	36	12	11	13	6,3	PL-3007R
36,0	275	159	86	135	134	64	237	203	532	-	70	41	36	12	11	13	6,3	PL-2509R
36,0	275	159	86	135	134	64	237	203	532	-	70	41	36	12	11	13	6,3	PL-2011R
36,0	275	159	86	135	134	64	237	203	532	-	70	41	36	12	11	13	6,3	PL-1317R
36,0	275	159	86	135	134	64	237	203	532	-	70	41	36	12	11	13	6,3	PL-1025R
36,0	-	159	62	135	-	64	237	203	532	-	70	41	36	12	11	13	4,3	PL-3007F
36,0	-	159	62	135	-	64	237	203	532	-	70	41	36	12	11	13	4,3	PL-2509F
36,0	-	159	62	135	-	64	237	203	532	-	70	41	36	12	11	13	4,3	PL-2011F
36,0	-	159	62	135	-	64	237	203	532	-	70	41	36	12	11	13	4,3	PL-1317F
36,0	-	159	62	135	-	64	237	203	532	-	70	41	36	12	11	13	4,3	PL-1025F



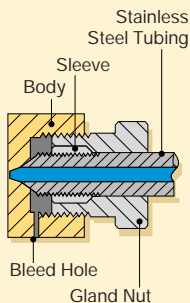
▼ Shown from left to right: 11-100, P-2282



- 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, alcohol, diesters, silicones, soluble oils and petroleum
- Large release knob for improved control of pressure release
- Outlet ports are 3/4"-16 cone for 2800 bar rating
- 3/8" NPT adaptor included with P-2282, for applications under 700 bar

### 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.



## Ultra-High Pressure up to 2800 bar



### 2-Way Shut-Off Valve 72-750

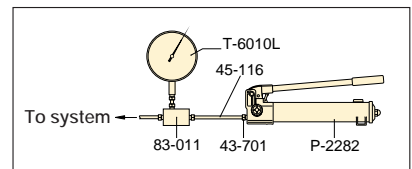
For 2800 bar applications requiring a shut-off valve or gauge snubber. Made of 318 Stainless Steel and utilizing .38 inch cone fittings, it is the perfect selection for use with your Ultra-High Pressure hand pump.



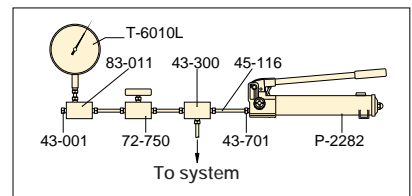
### Test System Gauges

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

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▲ Typical Test System



▲ Test System with Gauge Snubber

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

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

# Ultra-High Pressure Hand Pumps

## ▼ Optional Ultra-High Pressure Fittings and Tubings

Description	Connection	Model Nr.
<b>2800 bar</b>		
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
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
<b>700 bar only</b>		
Adaptor	.38F cone to 1/4" M NPTF	41-146
	.38F cone to 3/8" M NPTF	41-166
Adaptor	.38F cone to 1/4" F NPTF	41-246
	.38F cone to 3/8" F NPTF	41-266

Note: .25" cone fittings use 9/16"-18 threads, 3/8" cone threads use 3/4"-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:

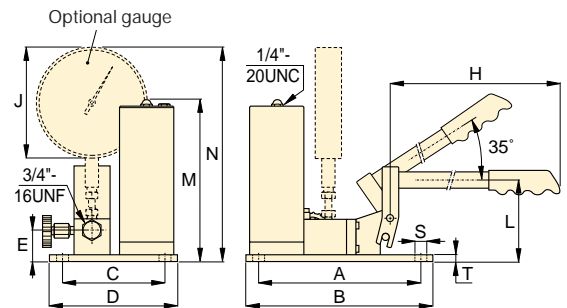
**737-983 cm<sup>3</sup>**

Flow at Rated Pressure:

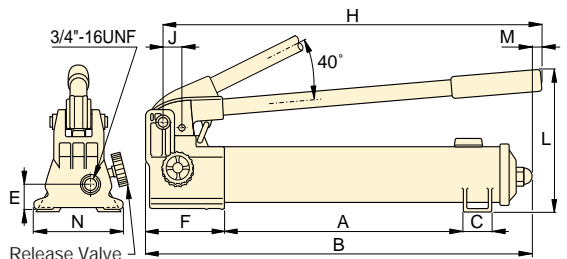
**0,61- 2,49 cm<sup>3</sup>/stroke**

Operating Pressure:

**700 - 2800 bar**



11-100, 11-400



P-2282

Piston Stroke	Dimensions (mm)													Weight (kg)	Model Number
	A	B	C	D	E	F	H	J	L	M	N	S	T		
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

# WalkPac™ - Battery Powered Pumps

▼ Shown from left to right: PBR-12001E, PBM-11001E, PBR-13001E



- Light weight, integral battery for improved ergonomics and maximum portability
- Micro piston pump technology and direct drive for high efficiency and longer life
- Quiet and smooth operation plus ergonomic styling allow user to “wear” the pump
- Powerful 24 volt interchangeable battery pack for high performance and long life
- “Intelligent” battery charger provides fast one-hour charge and complete battery conditioning for trouble free operation
- CR-400 coupler and dust cap included

▼ No need for long power cables or air hoses. You can take your WalkPac™ anywhere you need.



## Pick Up the Power



### Additional Battery Packs

WalkPac™ battery packs and chargers are also available separately.

Battery Charger 115 VAC	<b>BC-1724B</b>
Battery Charger 230 VAC	<b>BC-1724E</b>
Battery Pack	<b>BP-1724</b>

### Pendant Extension Cables

These cables allow the pump to be operated at a greater distance for increased safety and flexibility. For use with all PBR-version WalkPacs.

1,8 m Cable	<b>RPC-02</b>
5,5 m Cable	<b>RPC-06</b>
13,7 m Cable	<b>RPC-15</b>



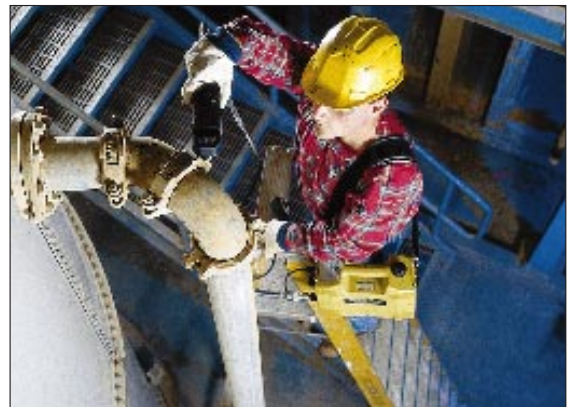
### Foot Switch

Operate your WalkPac™ keeping both hands free to position the tool. Includes 3 m cable.

For use with all PBR-version WalkPacs.

Foot Switch (11000, 12000-Series)	<b>WFS-1</b>
Foot Switch (13000-Series)	<b>WFS-2</b>

▼ The included shoulder strap allows easy use of the WalkPac™ even in difficult locations.



# WalkPac™ - Battery Powered Pumps



## WalkPac™ Performance

The most commonly asked question concerning battery powered equipment is: "How long will it last on a charge?"

Although ambient temperature, tool condition, operating pressure and frequency of use will affect actual battery life, as a rule of thumb you should expect this type of performance:

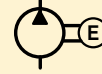
### Tool Type

Tool Type	Number of Operations
Nut Cutter, 20 ton, 38 mm nuts	40
Electrical Lug Crimping, 1,5 ton	70
Hydraulic Knock-Out, 12 ton, 152 mm	25
Rebar Cutter, 20 ton, 12 mm bar	28

For applications requiring more battery life, a second pack can be charging, ready for use when needed.

### Number of Operations

## PB Series



Reservoir Capacity:  
**622 cm<sup>3</sup>**

Flow at Rated Pressure:  
**0,164 l/min**

Operating Pressure:  
**700 bar**



## WalkPac and Cylinder Sets

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

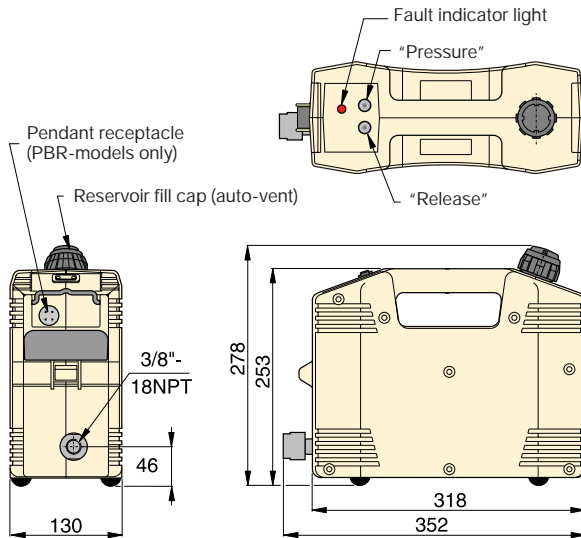
Page: 50



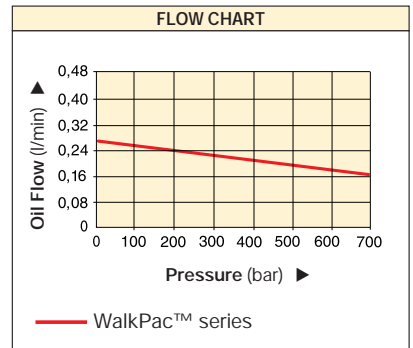
## Speed Chart

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

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PBR-13001E



Pump Type	Usable Oil Capacity (cm <sup>3</sup> )	Model Number	Pressure Rating (bar)	Output Flow Rate (l/min)	Valve Function	Valve Type	Sound Level (dBA)	Weight including battery (kg)
Manual	622	PBM-11001E	700	0,164	Dump	Electric	68	8,6
	622	PBM-12001E*	700	0,164	Manual Release	Manual	68	8,4
	622	PBR-13001E	700	0,164	Dump and Hold	Electric	68	8,6
Remote (with pendant)	622	PBR-11001E	700	0,164	Dump	Electric	68	8,6
	622	PBR-12001E	700	0,164	Manual Release	Manual	68	8,4
	622	PBR-13001E	700	0,164	Dump and Hold	Electric	68	8,6

Note: To order your WalkPac™ without the battery charger, please delete the "E" suffix in the model number.

\* Available as a set, see note on this page.



▼ Shown: PUJ-1200E



- Light weight 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 on voltages as low as 115 volts
- 24 VDC 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

▼ An Economy pump PUJ-1200E is used with an RC-2514 to reposition a stamping die to simplify maintenance.



## Heavy on Performance, Light on Weight



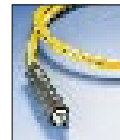
### Gauges

Minimize the risk of over-loading and ensure long, dependable service from your equipment. For use with the Economy pump the following gauges are suggested:

For Pump Model Number	Gauge Model Number	Gauge Adaptor Model Nr.
PUD-1100E, 1101E	G-2535L	GA-3
PUJ-1200E, 1201E	G-2535L	-
PUJ-1400E, 1401E	G-2535L	GA-3

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'.

Page: 103

Pump Type  (Used with cylinder)	Usable Oil Capacity  (litres)	Model Number*	Pressure Rating  (bar)	
			1 <sup>st</sup> stage	2 <sup>nd</sup> 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
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.

# Economy Electric Pumps



## About the Economy Pump

The Economy pump is best suited to power small to medium size cylinders or hydraulic tools. Its light weight 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 Series

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

## PUJ Series

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

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## PU Series



Reservoir Capacity:

**1,9 - 3,8 litres**

Flow at Rated Pressure:

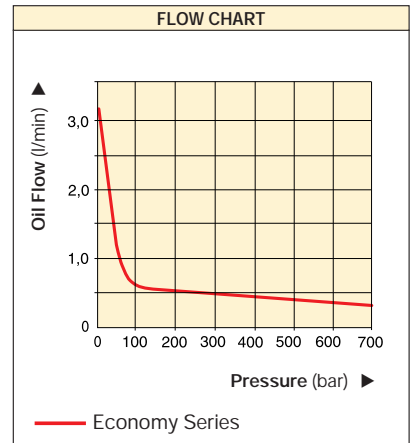
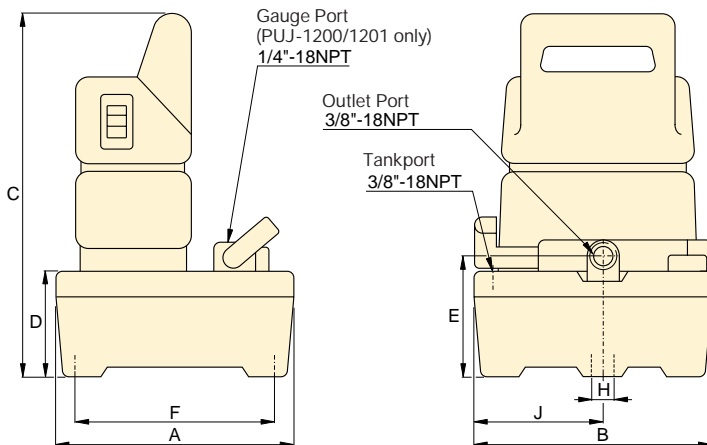
**0,32 l/min**

Motor Size:

**0,37 kW**

Maximum Operating Pressure:

**700 bar**



Output Flow Rate (l/min)	Valve Type	Current Draw (Amps)	Motor Voltage (VAC)	Sound Level (dBA)	Dimensions (mm)								Weight (kg)	Model Number*
					A	B	C	D	E	F	H	J		
3,31	Dump**	3,2	230	85	244	244	362	101	119	203	10	133	11,8	PUD-1100E
0,32		3,2	230	85	368	309	373	105	130	323	10	142	17,2	PUD-1101E
3,31	3-way, 2-pos.	3,2	230	85	244	244	362	101	119	203	10	133	10,0	PUJ-1200E
0,32		3,2	230	85	368	309	373	105	130	323	10	142	15,4	PUJ-1201E
3,31	4-way, 3-pos.	3,2	230	85	244	244	362	101	119	203	10	133	13,2	PUJ-1400E
0,32		3,2	230	85	368	309	373	105	130	323	10	142	18,6	PUJ-1401E

▼ Shown from left to right: PUD-3309E, PUM-3209E, PUR-3420E



- Patented Genesis technology:
  - coaxial piston design allows high performance in the most compact and light weight package, starting at 28,1 kg
  - first-stage piston pump enables higher by-pass pressure for improved productivity
- Powerful 0,84 kW universal motor for a high power to weight ratio, and the ability to run on as little as 50% of rated line voltage
- Ergonomic motor shroud is lined with sound reduction material while providing protection for the motor
- Four reservoir sizes to operate a wide range of cylinders and tools
- 24-VDC remote pendant controls for safer operation
- Externally adjustable relief valve allows control of operating pressure without opening the pump
- Analog reservoir sight gauge for ease in monitoring oil level also includes filtered breather



◀ A Titan PJJ-3309E is used with a hydraulic cutter to cut wire rope.

## Featuring Genesis Technology

### ▼ SELECTION CHART

For more technical information see next page.

5 BASIC PUMP TYPES	
Select the model that suits your application. For special requirements see <b>page 69</b> or contact your Enerpac office.	
<b>PUD Series: with Dump Valve</b> <ul style="list-style-type: none"> <li>• Ideal for punching, crimping and cutting</li> <li>• For use when load-holding is not required (3100 Series)</li> <li>• Control pendant with 3 m cord controls valve and motor</li> <li>• Provides Advance-Hold-Retract for single-acting cylinders (3300 Series)</li> </ul>	
<b>PUM Series: with Manual Valve</b> <ul style="list-style-type: none"> <li>• Ideal choice for most applications</li> <li>• Manual valve control, for single-acting or double-acting applications</li> <li>• Manual motor control</li> </ul>	
<b>PUR Series: with Solenoid Valve</b> <ul style="list-style-type: none"> <li>• Ideal for lifting applications or wherever remote control is required</li> <li>• All valves are 3 position for Advance-Hold-Retract</li> <li>• Control pendant with 3 m cord for remote valve operation</li> </ul>	
<b>PUF Series: with Solenoid Valve</b> <ul style="list-style-type: none"> <li>• Identical to PUR-series, except pendant is replaced with foot switch for hands-free operation</li> </ul>	
<b>PJJ Series: with Manual Valve</b> <ul style="list-style-type: none"> <li>• For light production and lifting applications</li> <li>• Manual valve control for single-acting or double-acting cylinders</li> <li>• Control pendant with 3 m cord for remote motor operation</li> </ul>	

\* See Valves section for technical information on valve types.



## Titan Pump Application

The Titan pump is best suited to power medium to large size cylinders or hydraulic tools, or wherever high speed, intermittent hydraulic power is needed. Patented Genesis Technology provides high by-pass pressures for increased productivity, specifically in applications using long hose runs and high pressure drop circuits like heavy lifting or certain double-acting tools.

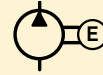
Its light weight and compact design make it ideal for applications which require easy transport of the pump. It utilizes a Universal motor which will work well on long extension cords or generator driven electrical power supplies.

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



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## PU Series



Reservoir Capacity:

**5, 9, 20 and 40 litres**

Flow at Rated Pressure:

**0,98 l/min**

Motor Size:

**0,84 kW**

Maximum Operating Pressure:

**700 bar**

Pump Type	Used with Cylinder	Valve Function	Valve Type*	Pump Control	Usable Oil Capacity (litres)	Model Number 230 VAC 1 Phase	Weight (kg)
	Single-Acting	Advance/Retract	Dump	Remote	5	PUD-3105E	28,6
	Single-Acting	Advance/Retract	Dump	Remote	9	PUD-3109E	32,2
	Single-Acting	Advance/Hold/Retract	Dump and Hold	Remote	9	PUD-3309E	32,2
	Single-Acting	Advance/Hold/Retract	Dump and Hold	Remote	20	PUD-3320E	49,4
	Single-Acting	Advance/Retract	VM-2	Manual	9	PUM-3209E	28,1
	Single-Acting	Advance/Retract	VM-2	Manual	20	PUM-3220E	45,8
	Single-Acting	Advance/Retract	VM-2	Manual	40	PUM-3240E	66,7
	Single-Acting	Advance/Hold/Retract	VM-3	Manual	9	PUM-3309E	28,1
	Single-Acting	Advance/Hold/Retract	VM-3	Manual	20	PUM-3320E	45,4
	Single-Acting	Advance/Hold/Retract	VM-3	Manual	40	PUM-3340E	66,7
	Double-Acting	Advance/Hold/Retract	VM-4	Manual	9	PUM-3409E	28,1
	Double-Acting	Advance/Hold/Retract	VM-4	Manual	20	PUM-3420E	45,4
	Double-Acting	Advance/Hold/Retract	BVS-4	Remote	9	PUR-3409E	38,1
	Double-Acting	Advance/Hold/Retract	BVS-4	Remote	20	PUR-3420E	55,3
	Double-Acting	Advance/Hold/Retract	BVS-4	Remote	40	PUR-3440E	76,7
	Double-Acting	Advance/Hold/Retract	BVS-4	Remote (Foot)	9	PUF-3409E	38,1
	Double-Acting	Advance/Hold/Retract	BVS-4	Remote (Foot)	20	PUF-3420E	55,3
	Single-Acting	Advance/Retract	VM-2	Remote (Man.)	9	PUJ-3209E	30,8
	Single-Acting	Advance/Hold/Retract	VM-3	Remote (Man.)	9	PUJ-3309E	30,8
	Double-Acting	Advance/Hold/Retract	VM-4	Remote (Man.)	9	PUJ-3409E	30,8
	Double-Acting	Advance/Hold/Retract	VM-4	Remote (Man.)	20	PUJ-3420E	48,1

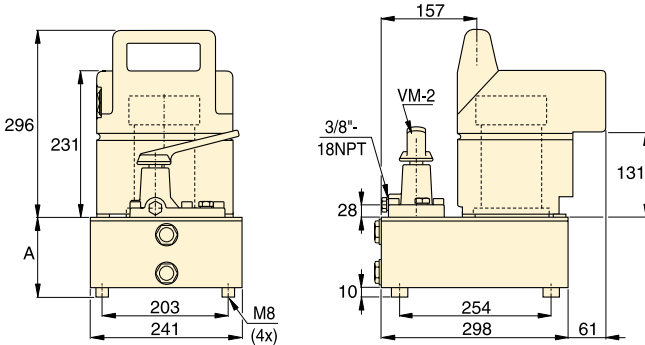


# Titan Electric Pumps

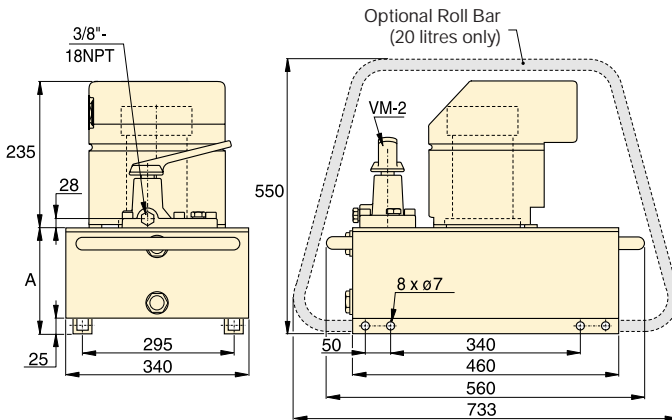
◀ For full features see previous page.

TITAN PERFORMANCE CHART							
Motor Size (kW)	Pressure Rating (bar)		Output Flow Rate (l/min)		Motor Electrical Specifications* (Amps @ Volts-Ph-Hz)	Sound Level (dBA)	Relief Valve Adjustment Range (bar)
	1 <sup>st</sup> stage	2 <sup>nd</sup> stage	1 <sup>st</sup> stage	2 <sup>nd</sup> stage			
0,84	110	700	10,5	0,98	25 @ 115-1-50/60 12,5 @ 230-1-50/60	83-88	140-700

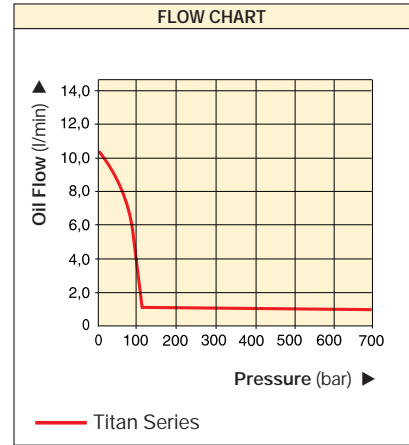
\* At full load



5 and 9 litres reservoir



20 and 40 litres reservoir



### Speed Chart

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

Page: 103

Reservoir Dimensions	
Usable Oil Capacity (litres)	Reservoir Height A (mm)
5	119
9	169
20	185
40	315



◀ A special bolting version of the Titan is used with an Enerpac Torque Wrench in the installation of a draw bar.

A Titan PUM-3309E is used with an NC-3241 Nut Splitter to remove nuts in the repair of a loading bucket. ▶



## CUSTOM BUILD YOUR TITAN PUMP

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

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



1	2	3	4	5	6	7	8
Product Type	Motor Type	Pump Type	Pump Series	Valve Type	Reservoir Size	Motor Voltage	Options

### 1 Product Type

P = Pump

### 2 Motor Type

U = Universal Motor

### 3 Pump Type

D = Dump\*  
 F = Foot Switch  
 J = Jog  
 M = Manual  
 R = Remote (Solenoid)  
 N = No Valve

### 4 Pump Series

3 = 0,84 kW, 700 bar

### 5 Valve Type

0 = No Valve  
 1 = Dump  
 2 = 3-way, 2-position  
 3 = 3-way, 3-position  
 4 = 4-way, 3-position  
 6 = 3-way, 3-position, with Locking Valve  
 8 = 4-way, 3-position, with Locking Valve

### 6 Reservoir Capacity

05 = 5 litres\*\*  
 09 = 9 litres  
 20 = 20 litres  
 40 = 40 litres

### 7 Motor Voltage

B = 115 V, 1 Ph, 50/60 Hz  
 E = 230 V, 1 Ph, 50/60 Hz

### 8 Options: (leave blank if not required)

R = Roll Bar (20 litres only)  
 E = EPR Seals  
 V = Viton Seals

\* Available with dump valve and 3-way, 3-position valve type

\*\* Consult Enerpac for duty cycle

#### Ordering Example 1

#### Model Number: PUR-3420E

PUR-3420E is a 0,84 kW, 700 bar, electric pump, with a 4-way, 3-position valve, remote control, a 20 litres reservoir and a 230 V, 1 Phase, 50/60 Hz motor.

#### Ordering Example 2

#### Model Number: PUM-3305E

PUM-3305E is a 0,84 kW, 700 bar, electric pump, with a 3-way, 3-position valve, a 5 litres reservoir and a 230 V, 1 Phase, 50/60 Hz motor.



### Post-Tensioning Model

Developed exclusively for this tough application, the Titan Post-Tensioning Pump includes an integral roll-cage and cooler to extend pump life and service intervals for this market. To order your 230 VAC Titan Post-Tensioning pump,

use the following model numbers:

Valve	Model Number
VM-2	PUM-3205FPT
VM-4	PUM-3405FPT
VM-4 (Power Seat)	PUM-3805FPT

For other voltages and CSA information, please contact your Enerpac office.

## PU Series



Reservoir Capacity:

**5, 9, 20 and 40 litres**

Flow at Rated Pressure:

**0,98 l/min**

Motor Size:

**0,84 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.

For all Titan pumps, we suggest the **GP-10S**, with gauge adaptor **GA-2**. For a full range of gauges, please refer to the System Components section.

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▼ Shown: PEJ-1401E



- 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 safer operation
- 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 of the Submerged Pump simplifies repair on this construction crane.

## Best Performance on Mid-Range Cylinders and Tools

### ▼ SELECTION CHART

For more technical information see next page.

#### 5 BASIC PUMP TYPES

Select the model that suits your application. For special requirements see **page 73** or contact your Enerpac office.

#### PED Series: with Dump Valve

- Ideal for punching, crimping and cutting
- For use when load holding is not required
- Control pendant with 3 m cord controls valve and motor

#### PEM Series: with Manual Valve

- Ideal choice for most applications
- Manual valve control, for both single-acting and double-acting applications
- Manual motor control



#### PER Series: with Solenoid Valve

- Ideal for production and lifting
- All valves are 3 position for Advance-Hold-Retract
- Control pendant with 3 m cord for remote valve operation



#### 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

\* See the Valve Section of this catalog for technical information on valve types.

# Submerged Electric Pumps



## Submerged Pump Application

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

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## 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	Weight (kg)
	Single-Acting	Advance/Retract	Dump	5,5	<b>PED-1001E</b>	24,9
	Single-Acting	Advance/Retract	Manual, 3-way, 2-position	5,5	<b>PEM-1201E</b>	24,0
	Single-Acting	Advance/Hold/Retract	Manual, 3-way, 3-position	5,5	<b>PEM-1301E</b>	24,0
	Double-Acting	Advance/Hold/Retract	Manual, 4-way, 3-position	5,5	<b>PEM-1401E</b>	24,0
	Single-Acting	Advance/Hold/Retract	Solenoid, 3-way, 3-position	5,5	<b>PER-1301E</b>	29,5
	Double-Acting	Advance/Hold/Retract	Solenoid, 4-way, 3-position	5,5	<b>PER-1401E</b>	29,5
	Single-Acting	Advance/Retract	Manual, 3-way, 2-position	5,5	<b>PEJ-1201E</b>	24,9
	Single-Acting	Advance/Hold/Retract	Manual, 3-way, 3-position	5,5	<b>PEJ-1301E</b>	24,9
	Double-Acting	Advance/Hold/Retract	Manual, 4-way, 3-position	5,5	<b>PEJ-1401E</b>	24,9
	Single-Acting	Advance/Retract	Manual, 3-way, 2-position	5,5	<b>PES-1201E</b>	28,1
	Double-Acting	Advance/Hold/Retract	Manual, 4-way, 3-position	5,5	<b>PES-1401E</b>	28,1

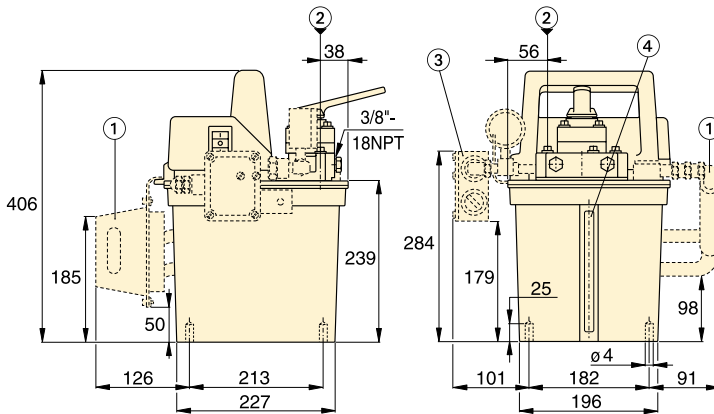


# Submerged Electric Pumps

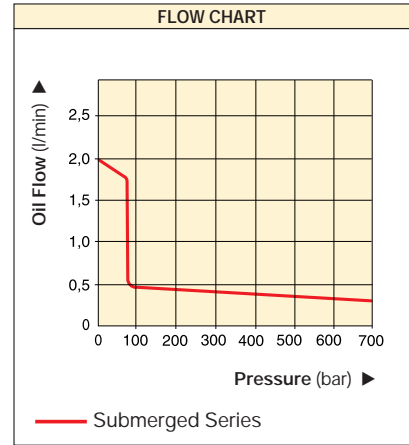
◀ For full features see previous page.

SUBMERGED PUMP PERFORMANCE							
Motor Size (kW)	Pressure Rating (bar)		Output Flow Rate (l/min)		Motor Electrical Specifications* (Amps @ Volts-Ph-Hz)	Sound Level (dBA)	Relief Valve Adjustment Range (bar)
	1 <sup>st</sup> stage	2 <sup>nd</sup> stage	1 <sup>st</sup> stage	2 <sup>nd</sup> stage			
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.



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



### 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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◀ This PED-1001E Submerged pump quickly and quietly powers a hydraulic nut cutter in this bucket maintenance application.

# Submerged Electric Pumps

## CUSTOM BUILD YOUR SUBMERGED PUMP

If the Submerged Pump that would best fit your application cannot be found in the chart on page 71, here you can easily build your custom submerged pump.

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

<b>P</b>	<b>E</b>	<b>M</b>	<b>-</b>	<b>1</b>	<b>3</b>	<b>01</b>	<b>E</b>
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

D = Dump

J = Jog

M = Manual

R = Remote (Solenoid)

S = Pressure Switch

### 4 Pump Series

1 = 0,37 kW, 700 bar

### 5 Valve Type

0 = Dump

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

### Ordering Example

#### Model Number: PER-1301E

The PER-1301E is a 0,37 kW, 700 bar, submerged electric pump, with 5,5 litres usable oil capacity, a 3-way, 3-position, solenoid remote 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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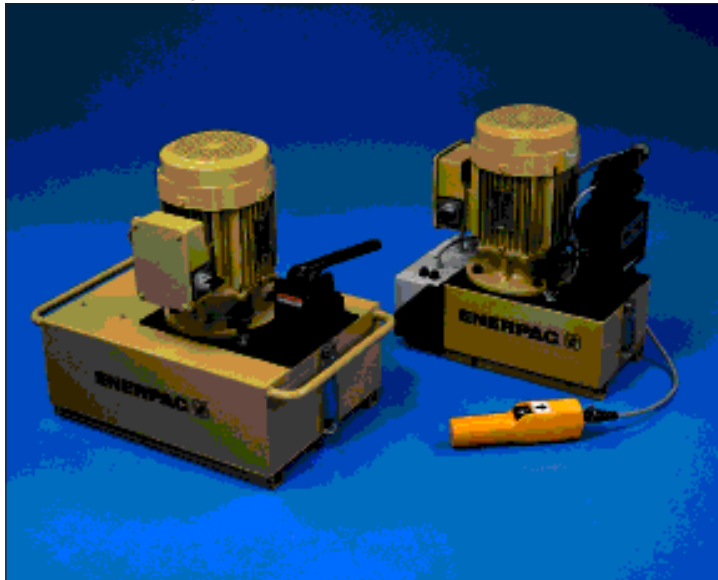
### Gauges

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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▼ Shown from left to right: PEM-3420W, PER-3405WS



## The Standard for Industrial Applications

All models in the chart below are the industries most commonly selected pump configurations. See the Hushh Pump ordering matrix for more options. *Page: 79*

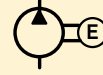
5 BASIC PUMP CONFIGURATIONS Select your hushh pump model here for most applications. For special requirements see the hushh pump ordering matrix. <i>Page: 79</i>	Pump Type	Used with Cylinder		Valve Function			Valve** Model Number	Reservoir Capacity (litres)
<b>PEN-Series without Valve</b> • Ideal for matching your valving to your needs, for example in production applications.								5
								8
								20
								40
<b>PED-Series with Dump Valve</b> • Ideal for punching, crimping and cutting • For use when load holding is not required • Control pendant with 3m cord controls valve and motor		•		•		•		5
		•		•		•		8
		•		•		•		20
<b>PEM-Series with Manual Valve</b> • Ideal choice for most applications • Manual valve control, for both single-acting or double-acting applications • Manual motor control		•		•	•	•	VM-3	8
		•		•	•	•	VM-3L	20
			•	•	•	•	VM-4	20
			•	•	•	•	VM-4L	20
			•	•	•	•	VM-4	40
<b>PER-Series with Solenoid Valve</b> • Ideal for production and lifting applications • All valves are 3-position for Advance-Hold-Retract • Control pendant with 3m cord for remote valve operation		•		•	•	•	BVS-3	5
			•	•	•	•	BVS-4	5
			•	•	•	•	BVS-4	8
			•	•	•	•	BVS-4	20
			•	•	•	•	BVS-4	40
<b>PES-Series with Pressure Switch and Manual Valve</b> • For continuous-pressure applications such as clamping • Includes a manual valve and a pressure gauge • Adjustable pressure switch turns pump off when desired pressure is reached.		•		•		•	VM-2	8
		•		•	•	•	VM-3	20
			•	•	•	•	VM-4	20
			•	•	•	•	VM-4	40

\* All models in this chart are 400 VAC, 3 phase at 50 Hz. For other options please refer to the Hushh Pump ordering matrix on page 79.

# Hushh Electric Pumps

- Available as two-stage model for reduced cycle times and improved productivity
- Totally enclosed fan-cooled motors are ideal for outdoor use in many environments
- 24-VAC solenoid valves and remote pendant controls for safer operation
- Adjustable pressure relief valve
- 71-73 dBA for quiet in-plant applications with electric motor

**PE Series**



Reservoir Capacity:

**5, 8, 20 and 40 litres**

Flow at Rated Pressure:

**0,55 - 1,52 l/min**

Motor Size:

**0,75 - 1,1 and 2,2 kW**

Maximum Operating Pressure:

**700 bar**



### Single Stage or Two Stage

Choose Single Stage operated pumps, for applications that require constant flow regardless of pressure, such as testing or clamping.

Two Stage operated pumps have an increased output flow (appr. 10x higher) at pressures below 65 bar. This allows fast plunger movement towards the load, for reduced cycle times and increased productivity.

2000-Series Output Flow Rate at 700 bar: 0,55 l/min				3000-Series Output Flow Rate at 700 bar: 0,82 l/min				5000-Series Output Flow Rate at 700 bar: 1,52 l/min			
Single Stage		Two Stage		Single Stage		Two Stage		Single Stage		Two Stage	
Model Number	Weight (kg)	Model Number	Weight (kg)	Model Number	Weight (kg)	Model Number	Weight (kg)	Model Number	Weight (kg)	Model Number	Weight (kg)
PEN-2005WS	27	-	-	-	-	-	-	-	-	-	-
PEN-2008WS	29	-	-	PEN-3008WS	33	-	-	-	-	-	-
PEN-2020WS	44	-	-	-	-	PEN-3020W	49	PEN-5020WS	49	-	-
-	-	-	-	-	-	-	-	-	-	PEN-5040W	78
PED-2105WS	29	-	-	-	-	-	-	-	-	-	-
PED-2108WS	31	PED-2108W	32	PED-3108WS	35	-	-	-	-	-	-
PED-2120WS	46	PED-2120W	47	-	-	PED-3120W	51	PED-5120WS	51	PED-5120W	52
PEN-2308WS	32	-	-	PEN-3308WS	37	-	-	-	-	-	-
-	-	-	-	PEN-3620WS	52	PEN-3620W	53	-	-	-	-
PEN-2420WS	47	PEN-2420W	48	-	-	PEN-3420W	51	-	-	-	-
PEN-2820WS	49	PEN-2820W	50	-	-	PEN-3820W	53	PEN-5820WS	53	PEN-5820W	54
-	-	PEN-2440W	66	-	-	-	-	-	-	-	-
PER-2305WS	37	-	-	PER-3305WS	41	-	-	PER-5305WS	44	-	-
PER-2405WS	40	PER-2405W	41	PER-3405WS	43	-	-	PER-5405WS	46	-	-
-	-	PER-2408W	44	-	-	-	-	-	-	-	-
-	-	PER-2420W	59	-	-	-	-	-	-	-	-
-	-	PER-2440W	77	-	-	-	-	-	-	-	-
PES-2208WS	35	-	-	PES-3208WS	37	-	-	-	-	-	-
-	-	PES-2320W	48	PES-3320WS	49	-	-	-	-	-	-
-	-	PES-2420W	51	-	-	PES-3420W	52	PES-5420WS	57	-	-
-	-	-	-	-	-	-	-	-	-	PES-5440W	84

\*\*See Valve Section for technical information.

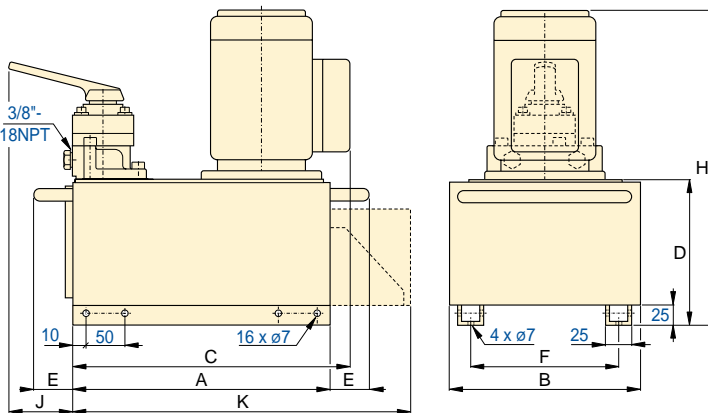
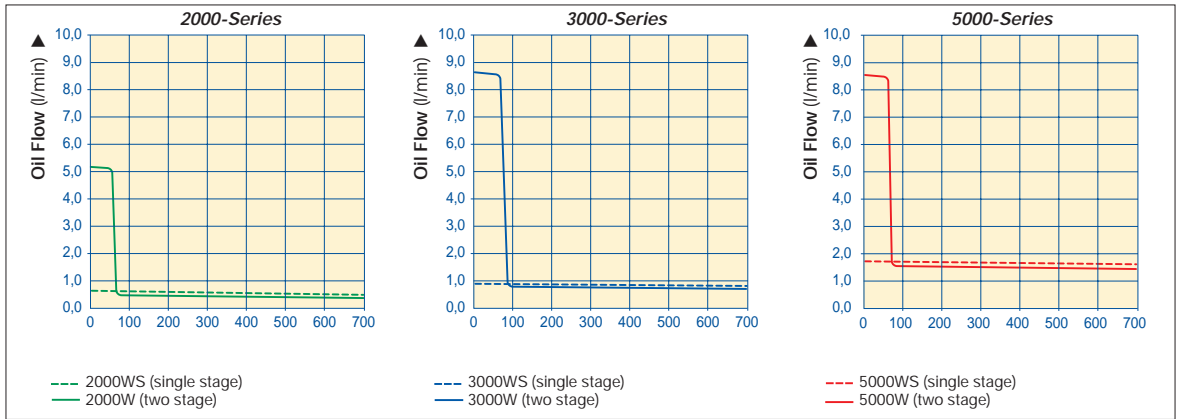


## ▼ PERFORMANCE CHART

Hushh Pump Series	Operation	Output Flow Rate (l/min)		Pressure Rating (bar)		Type of Pump		Motor Size		Relief Valve Adjustment Range (bar)	Usable Oil Capacity (litres)	Sound Level (dBA)
		1 <sup>st</sup> stage	2 <sup>nd</sup> stage	1 <sup>st</sup> stage	2 <sup>nd</sup> stage	1 <sup>st</sup> stage	2 <sup>nd</sup> stage	RPM	kW			
2000	Single-stage	-	0,55	-	700	-	2x Rad.pist.	1390	0,75	70-700	5,0	71
	Two-stage	5,1	0,55	65	700	gerotor	2x Rad.pist.	1390	0,75			
3000	Single-stage	-	0,82	-	700	-	3x Rad.pist.	1390	1,10	70-700	7,5 20,0	73
	Two-stage	8,5	0,82	65	700	gerotor	3x Rad.pist.	1390	1,10			
5000	Single-stage	-	1,52	-	700	-	3x Rad.pist.	1390	2,20	70-700	40,0	73
	Two-stage	8,5	1,52	65	700	gerotor	3x Rad.pist.	1390	2,20			

All models shown are 400 VAC, 3 phase, 50 Hz. See the Hushh Pump ordering matrix (page 79) for more options.  
 Note: Single-stage, 5000 Series models are not available with 115 VAC, 1 phase or 230 VAC, 1 phase.

## ▼ FLOW CHARTS



**i Speed Chart**

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

Page: **103**

Reservoir Capacity (litres)	Pump Dimensions (mm)								
	A	B	C	D	E	F	H <sup>1)</sup>	J <sup>2)</sup>	K <sup>3)</sup>
5	304	205	335	159	-	165	409	73	405
8	304	205	335	191	-	165	440	73	405
20	460	340	-	191	50	295	440	73	-
40	460	340	-	320	50	295	615	73	-

<sup>1)</sup> Add 25mm for all 5000 single stage versions or all pumps with 230VAC, 1phase motors.

<sup>2)</sup> Only for pumps with manual valves (PEM- and PES-models).

<sup>3)</sup> Only for 5 and 8 litres pumps with electric valves.

# Hushh Electric Pumps



## Application Tip

The Hushh-Series is the most versatile of the Enerpac pump line. It is best suited to power most medium to large size cylinders or multiple cylinder circuits. Due to its wide selection of reservoir, valve and control options, the Hushh-Series is well suited to production work as well as many lifting applications. With the smaller

reservoirs it is light enough for some portable applications, as long as the available power supply is stable. The Hushh-Series induction motor needs a steady supply of A.C. power.

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

▼ This PEM-3240W Hushh electric pump features a 40 litres reservoir for this multi-cylinder system.



▼ Reliability is the key issue when working on projects like this.



▼ This Hushh pump equipped with pressure gauge and flow control valves, is used for concrete form removal.



## PE Series



Reservoir Capacity:

**5, 8, 20 and 40 litres**

Flow at Rated Pressure:

**0,55 - 1,52 l/min**

Motor Size:

**0,75, 1,1 and 2,2 kW**

Maximum Operating Pressure:

**700 bar**



For additional models (such as one-stage) and options, see the matrix and accessories pages.

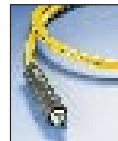
Page: 79



## 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: 112


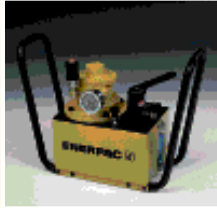

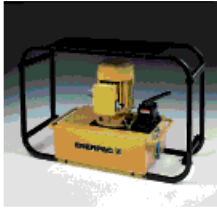





## Hoses

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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# Hushh Pump Accessories & Options

Description		Model Number	Features	Ordering Information
Oil Reservoir		Available for all models	<ul style="list-style-type: none"> <li>• Robustly constructed</li> <li>• Easy to read oil level indicator</li> <li>• Filled with premium hydraulic oil</li> <li>• Usable oil capacities of 5, 7½, 20 or 40 litres</li> </ul>	To order refer to the Hushh-Pump matrix on page 79.
Carrying Handle		PPH-58	<ul style="list-style-type: none"> <li>• Attached to the reservoir mounting rails</li> <li>• For easy portability and facilitating crane hoisting of 5 and 8 litres reservoirs</li> <li>• Dimensions (L x W x H) 570 x 185 x 415 mm</li> </ul>	Available as an accessory only.
Heat Exchanger		PAC-230	<ul style="list-style-type: none"> <li>• For use in production applications or anytime the pump will run for more than 1 hour at a time</li> <li>• Available as an option or an accessory</li> </ul>	To order installed on your pump, refer to the Hushh-Pump matrix on page 79 for correct voltage.
Roll Bar		PPK-20 (20 ltr) PPK-40 (40 ltr)	<ul style="list-style-type: none"> <li>• Attached to the reservoir mounting rails, it protects your Hushh-Pump in severe applications</li> <li>• Incorporates a top cover plate</li> <li>• Dimensions (L x W x H) PPK-20 770 x 315 x 565 mm PPK-40 770 x 315 x 595 mm</li> </ul>	Available as an accessory only.
Oil Filter Kit		PFC-25	<ul style="list-style-type: none"> <li>• Extends service life of oil and pump</li> <li>• 25 micron filter rating</li> <li>• Filters return-line oil</li> </ul>	Available as an accessory only.
Caster Kit		PC-95	<ul style="list-style-type: none"> <li>• A set of 4 casters</li> <li>• For applications requiring mobility</li> <li>• Attached to the reservoir mounting rails, it allows the pump to be easily rolled on the shop floor</li> </ul>	Available as an accessory only. Cannot be used with Roll Bars.
Motor Voltage		Available for all models	<ul style="list-style-type: none"> <li>• 5 Different types of motor voltages for AC supply</li> <li>• 1- or 3-phase</li> <li>• 50 Hz frequency</li> <li>• With or without Heat Exchanger</li> </ul>	To order, refer to the Hushh-Pump matrix on page 79 for correct voltage.

# Hushh Pump Ordering Matrix

## CUSTOM BUILD YOUR HUSHH PUMP

If the Hushh Pump that would best fit your application cannot be found in the chart on page 75, here you can easily build your custom Hushh pump.

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



1	2	3	4	5	6	7	8
Product Type	Motor Type	Valve Operation	Pump Series	Valve Type	Reservoir Capacity	Motor Voltage	Options

### 1 Product Type

P = Pump

### 2 Motor Type

E = Electric Motor

### 3 Valve Operation

D = Dump  
M = Manual  
R = Remote (Solenoid)  
S = Pressure Switch  
N = No Valve\*\*

### 4 Pump Series

2 = 0,55 l/min (0,75 kW)  
3 = 0,82 l/min (1,10 kW)  
5 = 1,52 l/min (2,20 kW)

### 5 Valve Type

0 = No valve\*\*  
1 = Dump Valve  
2 = 3-way, 2-position, manual valve  
3 = 3-way, 3-position, manual or solenoid valve  
4 = 4-way, 3-position, manual or solenoid valve  
6 = 3-way, 3-position, manual locking valve with pilot operated check  
8 = 4-way, 3-position, manual locking valve with pilot operated check

### 6 Reservoir Capacity

05 = 5 litres  
08 = 8 litres  
20 = 20 litres  
40 = 40 litres

### 7 Motor Voltage

A = 115 V, 1 ph, 50 Hz\*  
C = 115 V, 1 ph, 50 Hz, with Heat Exchanger\*  
E = 230 V, 1 ph, 50 Hz\*  
F = 230 V, 1 ph, 50 Hz, with Heat Exchanger\*  
K = 440 V, 3 ph, 50 Hz  
L = 440 V, 3 ph, 50 Hz, with Heat Exchanger  
T = 230 V, 3 ph, 50 Hz  
U = 230 V, 3 ph, 50 Hz, with Heat Exchanger  
W = 400 V, 3 ph, 50 Hz  
X = 400 V, 3 ph, 50 Hz, with Heat Exchanger

### 8 Options

blanc = Two stage  
E = EPR Seals  
S = Single stage  
V = Viton Seals

\* Not available for 5000-Series single stage models.

\*\* For remote valve or valve block, use a BSS-1090 high pressure connecting plate

#### Ordering Example 1

#### Model Number: PEM-3305WS

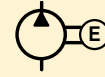
PEM-3305WS is a 1,1 kW, 700 bar pump, single stage, oil flow 0,55 l/min, with a 3-way, 3-position manual valve (VM-3), a 5 litres reservoir, and 400V, 3 phase, 50 Hz motor.

#### Ordering Example 2

#### Model Number: PER-2405W

PER-2405W is a 0,75 kW two stage pump, with a 0,82 l/min oil flow at 700 bar, a 4-way, 3-position solenoid valve (BVS-4), a 5 litres reservoir and a 400V, 3 phase, 50 Hz motor.

## PE Series



Reservoir Capacity:

**5, 8, 20 and 40 litres**

Flow at Rated Pressure:

**0,55 - 1,52 l/min**

Motor Size:

**0,75 - 1,1 and 2,2 kW**

Maximum Operating Pressure:

**700 bar**



### Viton and EPR Seals

Enerpac pumps and components are shipped with Polyurethane and Buna N seals for most sealing requirements. These seal compounds offer the best performance and durability for most applications.

For applications that require specialized seals, Enerpac does make available Viton and EPR seals as options for certain pumps. The use of these seals may reduce life between seal changes, but may be the only solution to the application.

**Viton:** Sometimes required for seal compatibility issues, such as with most glycols, but most commonly recommended for high temperature applications.

**EPR:** Generally required for use with fire-resistant fluids such as phosphate esters. When used, they must *not* be exposed to mineral-base fluids!



### Valve Selection

For help in selecting the right valve for your application, refer to the Valve Information page of our 'Yellow Pages'.

Page: 104



▼ Shown: PPE-9483-4



## The Axial Piston Pump with four independent outlets

- Single-speed operation with two and four independent split-flow outlets
- Two-speed operation with high-flow outlet
- Oil delivery of each outlet remains equal regardless of pressure
- 60 litres usable oil capacity allows operation of a wide range of cylinders
- Powerful 4 and 9,5 kW motor, available in three voltage options

▼ To lift a rigid construction, four double-acting RR-2006 cylinders are powered by a 4-split electric pump.



### 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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### Locking Valves

Pumps with VM-3 or VM-4 manual valves may be ordered with locking valves.

This locking feature provides a hydraulic lock for the cylinder using pilot-operated check valves.

To order this option, just place an "L" suffix at the end of the model number. For more information, contact your local Enerpac office.

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Pump Type	Motor Size (kW)	Usable Oil Capacity (litres)	Pump Series*	Pressure Rating (bar)		Output Flow Rate (l/min)	
				1st stage	2nd stage	1st stage	2nd stage
two-speed	4,0	60	PPN-8000	190	700	14,5	1 x 4,2
	9,5	60	PPN-9000	300	700	14,5	1 x 8,0
single-speed	9,5	60	PPN-9000-2	–	700	–	2 x 5,0
	9,5	60	PPN-9000-4	–	700	–	4 x 2,5

\* The "N" in the model number stands for No Valve. All pump models can be ordered with Manual or Solenoid Valves. See selection chart on next page.

# 8000 and 9000 Series, Electric Pumps

▼ This is how 8000- and 9000-Series Pump Model Numbers are built up:



## 1 Product Type

PP = Power Pump

## 2 Valve Control

N = No Valve  
M = Manual  
E = Solenoid (Electrical)

## 3 Pump Series

8 = 8000-Series, 4 kW  
9 = 9000-Series, 9,5 kW

## 4 Valve Type

0 = No Valve  
3 = 3-way, 2-position, manual valve  
4 = 4-way, 3-position, manual or solenoid valve

## 5 Reservoir Capacity

8 = 80 Litres

## 6 Motor Voltage\*

3 = 400 V, 3 ph, 50 Hz  
5 = 230 V, 3 ph, 50 Hz  
6 = 440 V, 3 ph, 50 Hz

\* In the selection chart below only 400V models (suffix 3) are shown. To order 230V or 440V models, change this suffix to 5 or 6.

## 7 Split-Flow Outlets

9000-Series only  
2 = 2 equal flow outlets of 5,0 l/min. at 700 bar  
4 = 4 equal flow outlets of 2,5 l/min. at 700 bar

## PP Series



Reservoir Capacity:

**80 litres**

Flow at Rated Pressure:

**4 x 2,5 to 8,0 l/min**

Motor Size:

**4,0 - 9,5 kW**

Maximum Operating Pressure:

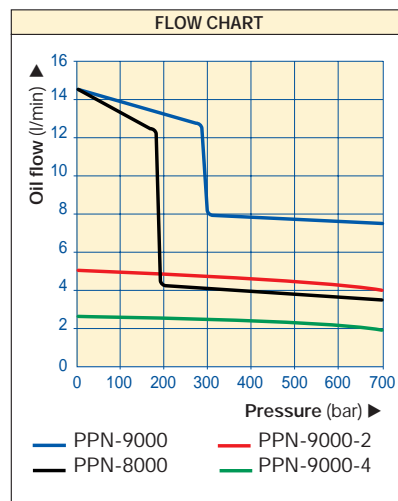
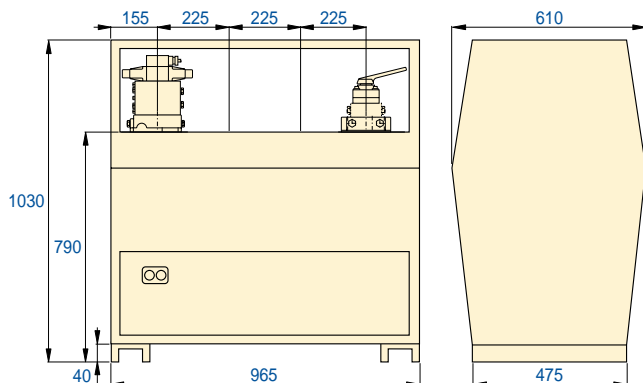
**700 bar**



## 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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Used with Cylinder*	Valve Control	Valve Function			Valve Model Number	8000-Series High-flow outlet		9000-Series High-flow outlet		9000-Series 2 Split-flow outlets		9000-Series 4 Split-flow outlets	
		▲	▲	▲		Model Number	Weight (kg)	Model Number	Weight (kg)	Model Number	Weight (kg)	Model Number	Weight (kg)
N/A	N/A	-	-	-	-	PPN-8083	274	PPN-9083	303	PPN-9083-2	304	PPN-9083-4	328
•	Manual	•	•	•	VM-3	PPM-8383	275	PPM-9383	316	PPM-9383-2	319	PPM-9383-4	333
•	Manual	•	•	•	VM-4	PPM-8483	275	PPM-9483	316	PPM-9483-2	319	PPM-9483-4	333
•	Solenoid	•	•	•	BVS-4	PPE-8483	286	PPE-9483	330	PPE-9483-2	340	PPE-9483-4	372

\* = Single-Acting = Double-Acting

▼ Shown: PAH-90



- Converts 2-7 bar air pressure to 18-900 bar hydraulic pressure
- Can be used with hydraulic oil or other non corrosive liquids such as water, kerosene, gasoline etc.
- Six models offer many pressure-flow combinations
- User supplied valving and reservoir provides system flexibility
- Exhaust-air muffler lowers sound level for reduced operator fatigue
- Heavy duty construction for long life, even in harsh environments
- Ideal for multi-fluid testing applications

## The High-Flow 'Multi-Fluid' Pump



### RFL-102 Regulator-Filter-Lubricator

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



### Hoses

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

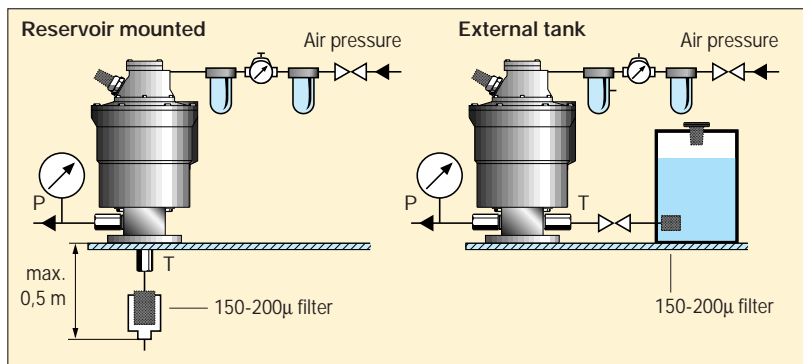
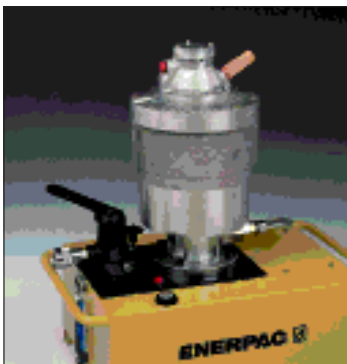
Page: 106



### Gauges

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

Page: 105



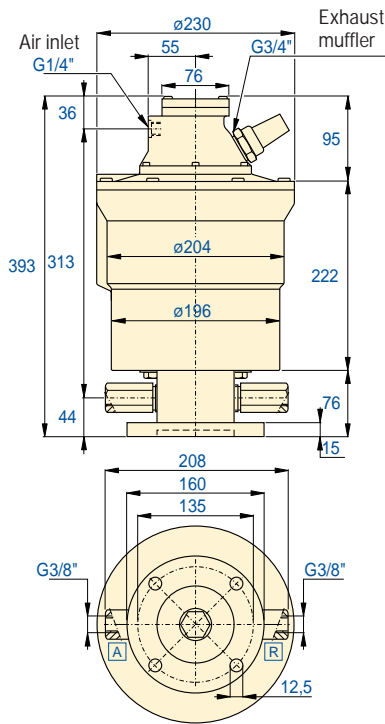
# Air Hydraulic Pumps



All PAH-Series air hydraulic pumps require a user supplied remote valve and reservoir.

For more ordering information, call your Enerpac distributor. For a full range of valves, please refer to the valve section of this catalogue.

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Maximum Pressure Rating	Output Flow Rate (l/min)		Model Number	Air Pressure Range	Pressure Intensification Ratio	Sound Level	Weight
	no load	load					
56 (bar)	13,0	5,0	PAH-05	2-7 (bar)	1:9	80-85 (dBA)	19 (kg)
120	8,5	2,0	PAH-12	2-7	1:20	80-85	19
220	6,8	1,7	PAH-22	2-7	1:36	80-85	19
400	4,2	1,3	PAH-40	2-7	1:67	80-85	19
800	2,1	0,38	PAH-80	2-7	1:127	80-85	19
900	1,5	0,17	PAH-90	2-7	1:165	80-85	19

## PAH Series



Pressure Intensification Ratio:

**1:9 - 1:165**

Flow at Rated Pressure:

**0,17-5,00 l/min**

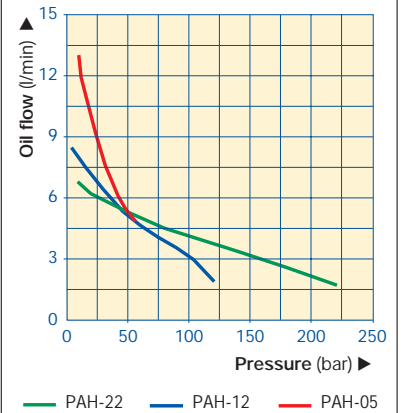
Air Consumption:

**3000 l/min**

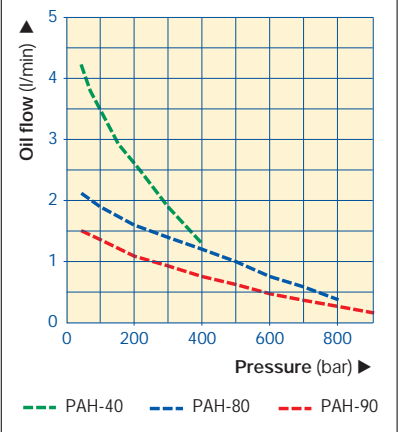
Maximum Operating Pressure:

**56-900 bar**

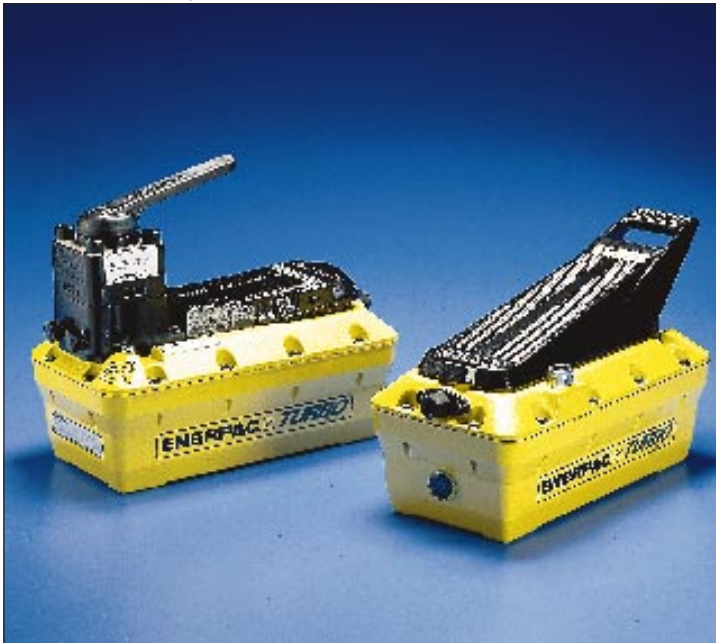
FLOW CHART



FLOW CHART



▼ Shown from left to right: PAM-1402N, PAT-1102N



- 'Turbo' feature utilizes exhaust air to help power the pump, developing 700 bar hydraulic pressure with only 5,5 bar air pressure
- Patented "Air Saver" feature for lower air consumption and lower operating costs
- Air exhaust muffler for quieter operation and reduced operator fatigue
- Return-to-tank port for use in remote valve applications
- Air and oil inlet filters for reduced risk of damage from contamination
- Extensive use of engineered plastics for light weight, corrosion resistance and durability
- Internal pressure relief valve for overload protection

▼ Easily operated by hand or by foot



## The New Standard in Air Hydraulic Pumps



### RFL-102 Regulator-Filter-Lubricator

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



### Large Reservoir Models

The Turbo Air Pump is also available with an enlarged reservoir: **PAT-1105N** and **PAM-1405N**.

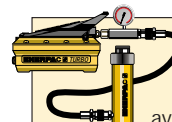


### Hoses

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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### Pump and Cylinder Sets

Turbo pumps are also available as **sets** (Turbo pump, cylinder, gauge, couplers and hose) for your ordering convenience.

Page: 50

Used with Cylinder	Usable Oil Capacity (cm <sup>3</sup> )	Model Number
Single-Acting	2081	<b>PAT-1102N</b>
	4227	<b>PAT-1105N</b>
Double-Acting	2081	<b>PAM-1402N</b>
	4227	<b>PAM-1405N</b>

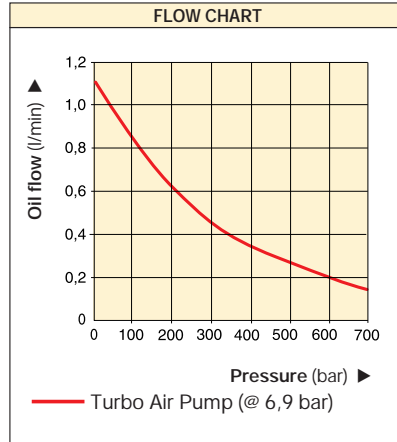


# Turbo Air Hydraulic Pumps



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

The PAM-models use a treadle with a locking feature, controlling a standard VM-4 valve.



**PAT  
PAM  
Series**



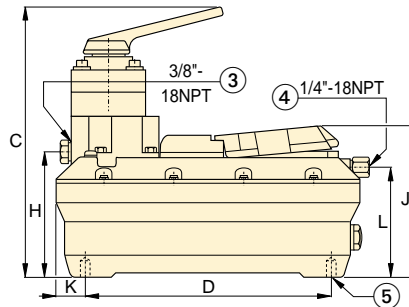
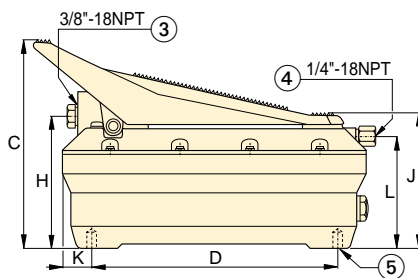
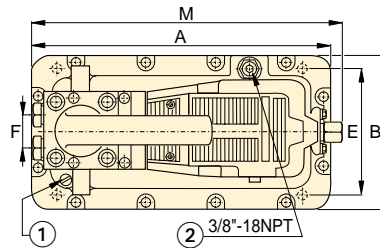
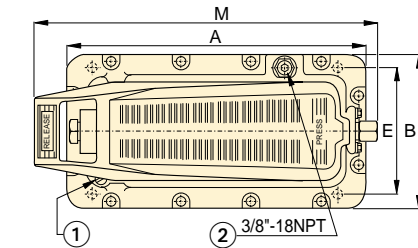
Reservoir Capacity:  
**2,5 and 5,0 litres**

Flow at Rated Pressure:  
**0,13 l/min**

Air Consumption:  
**340 l/min**

Maximum Operating Pressure:  
**700 bar**

Pressure Rating (bar)	Output Flow Rate (l/min)		Valve Function	Air Pressure Range (bar)	Air Consumption (l/min)	Sound Level (dBA)
	No load	Load				
700	1,1	0,13	Advance/Hold/Retract	2,7-10,3	340	79



- 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

PAT-1102N and PAT-1105N

PAM-1402N and PAM-1405N

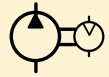
Dimensions (mm)											Weight (kg)	Model Number
A	B	C	D	E	F	H	J	K	L	M		
306	157	208	229	101	-	128	137	38	112	347	6,4	PAT-1102N
396	201	216	229	101	-	137	146	83	120	437	9,1	PAT-1105N
306	157	272	229	101	36	129	152	38	112	315	7,3	PAM-1402N
396	201	282	229	101	36	139	160	83	120	405	10,0	PAM-1405N

# Air Hydraulic Pumps

▼ Shown from top to bottom: PA-1150, PA-133



## PA Series



Reservoir Capacity:  
**0,6-1,3 litres**

Flow at Rated Pressure:  
**0,13 l/min**

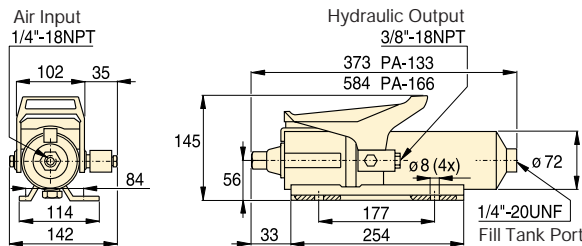
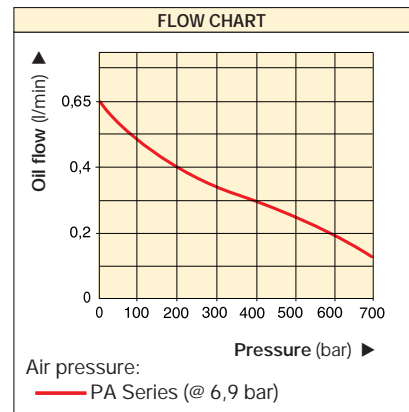
Air Consumption:  
**255 l/min**

Maximum Operating Pressure:  
**700 bar**

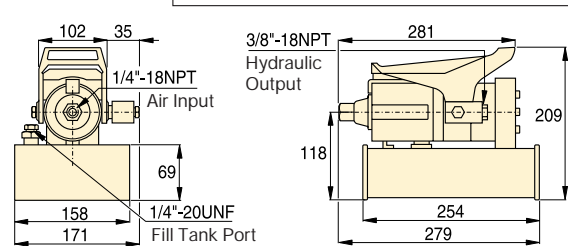


**PC-66 Reservoir Conversion Kit**  
Double the reservoir capacity of your existing PA-133 with this easy to install conversion kit.

- 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



PA-133, PA-166 (mm)



PA-1150 (mm)

Used with Cylinder	Usable Oil Capacity (cm <sup>3</sup> )	Model Number	Pressure Rating (bar)	Output Flow Rate (l/min)		Valve Function	Air Pressure Range* (bar)	Air Consumption (l/min)	Sound Level (dBA)	Weight (kg)
				No load	Load					
Single-Acting	589	PA-133	700	0,65	0,13	Advance/Hold/Retract	2,7-6,9	255	85	5,4
	1179	PA-166	700	0,65	0,13	Advance/Hold/Retract	2,7-6,9	255	85	7,3
	1311	PA-1150	700	0,65	0,13	Advance/Hold/Retract	2,7-6,9	255	85	8,2

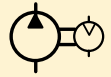
\* Recommended Regulator-Filter-Lubricator: RFL-102

# 10 Series, Air Hydraulic Pumps

▼ 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**



### Locking Valves

Pumps with VM-4 manual valves are available with VM-4L manual locking valves instead. Add suffix "L" to pump model number.

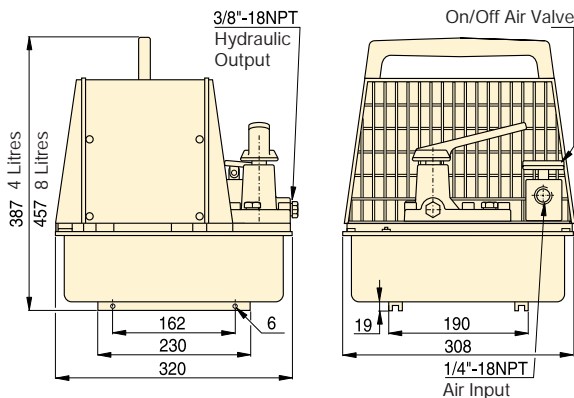
Page: 122



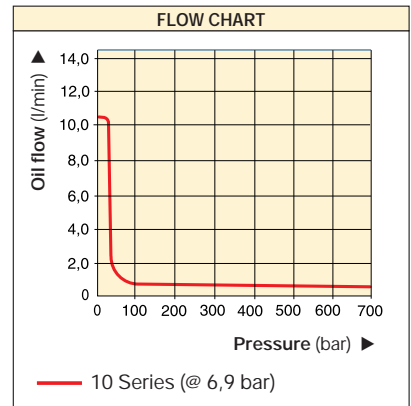
### VA-2 Remote Valve

For remote operation of PAM-10 series air pumps. Permits either hand or foot operation.

- Twin air motor configuration delivers high-flow performance in first stage, up to 4 bar, for rapid cylinder advance
- 4 and 8 litres reservoirs for use with a wide range of cylinders
- Integral shroud or optional roll bars protect air motors and provide easy carry



PAM-Series (mm)



Used with Cylinder	Usable Oil Cap. (litres)	Model Number with Shroud	Model Number with Roll Bars	Pressure Rating (bar)	Output Flow Rate (l/min)		Valve Function	Valve Model	Air Pressure Range* (bar)	Air Consumption (l/min)	Sound Level (dBA)	Weight (kg)
					1 <sup>st</sup> stage	2 <sup>nd</sup> stage						
Single-Acting	2,6	PAM-1021	EAM-1021	700	10,65	0,15	Adv./Hold/Retr.	VM-2	2,7-6,9	510	87	22,7
	7,6	PAM-1022	EAM-1022	700	10,65	0,15	Adv./Hold/Retr.	VM-2	2,7-6,9	510	87	27,2
Double-Acting	2,6	PAM-1041	EAM-1041	700	10,65	0,15	Adv./Hold/Retr.	VM-4	2,7-6,9	510	87	22,7
	7,6	PAM-1042	EAM-1042	700	10,65	0,15	Adv./Hold/Retr.	VM-4	2,7-6,9	510	87	27,2

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

▼ Shown: PAM-2208



- Available as two-stage model for reduced cycle times and improved productivity
- 70-700 bar user adjustable pressure relief valve for pre-setting maximum system pressure
- Oil level indicator allows quick and easy oil level monitoring



◀ This Air Hydraulic Pump has been modified to operate in a unique testing environment.



### Single Stage or Two Stage

Choose Single Stage operated pumps, for applications that require constant flow regardless of pressure, such as testing or clamping.

Two Stage operated pumps have an increased output flow (appr. 10x higher) at pressures below 65 bar. This allows fast plunger movement towards the load, for reduced cycle times end increased productivity.

## Power Large Hydraulic Jobs with Compressed Air



### PFC-25 Oil Filter Kit

The oil filter kit is easily installed to the Air Hydraulic Pump, providing 25-micron filtration for continuous duty applications.

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### RFL-102 Regulator-Filter-Lubricator

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



### Roll Bars

To protect your Air Hydraulic Pump when used in harsh environments, Roll Bars are available.

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2 BASIC PUMP CONFIGURATIONS		Used with Cylinder		Valve Function			Valve* Model Number	Usable Oil Cap. (litres)	Single Stage – 1,2 l/min at 700 bar	Two Stage 10,8 l/min at 65 bar 1,2 l/min at 700 bar		
Select your pump model here. For special requirements see the ordering matrix. <small>Page: 89</small>									Model Number	Weight (kg)	Model Number	Weight (kg)
<b>PAN-Series without valve</b>							–	5,0	PAN-2005S	24	–	–
• Ideal for matching your valving to your system requirements.							–	7,5	–	–	PAN-2008	28
							–	20,0	–	–	PAN-2020	43
<b>PAM-Series with manual valve</b>		•		•	•	•	VM-2	5,0	PAM-2205S	26	–	–
• Ideal for most applications			•	•	•	•	VM-4	5,0	–	–	PAM-2405	27
• Manual valve control for both single and double-acting cylinders		•		•	•	•	VM-2	7,5	PAM-2208S	29	PAM-2208	30
		•		•	•	•	VM-3L	40,0	–	–	PAM-2640	65

\* See Valve Section for technical information.

# Air Hydraulic Pumps

## CUSTOM BUILD YOUR AIR HYDRAULIC PUMP

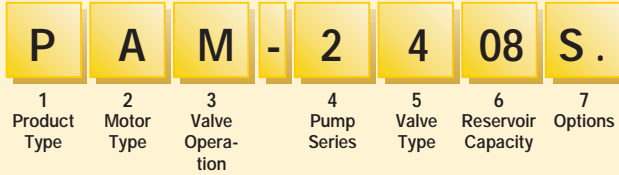
If the Air Hydraulic pump that would best fit your application cannot be found in the charts, here you can easily build your custom pump.

### Ordering Example

#### Example: PAM-2208

The PAM-2208 is an air operated, two stage hydraulic pump with a 3-way, 2-position manual valve and an 8 litres reservoir.

▼ This is how an Air Hydraulic Pump model number is built up:



### 1 Product Type

P = Pump

### 2 Motor Type

A = Air Motor

### 3 Valve Operation

M = Manual  
N = No Valve

### 4 Pump Series

2 = 1,2 l/min (2,2 kW)

### 5 Valve Type

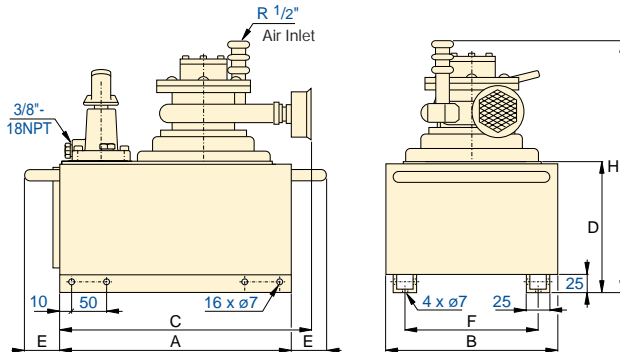
0 = No Valve  
2 = 3-way, 2-position (VM-2)  
3 = 3-way, 3-position (VM-3)  
4 = 4-way, 3-position (VM-4)  
6 = 3-way, 3-position, Locking (VM-3L)  
8 = 4-way, 3-position, Locking (VM-4L)

### 6 Reservoir Capacity

05 = 5 litres  
08 = 8 litres  
20 = 20 litres  
40 = 40 litres

### 7 Options

blanc = Two stage  
S = Single stage  
V = Viton Seals



## PAN/PAM Series



Reservoir Capacity:

**5, 8, 20 and 40 litres**

Flow at Rated Pressure:

**1,2 l/min**

Air Consumption:

**2400 l/min**

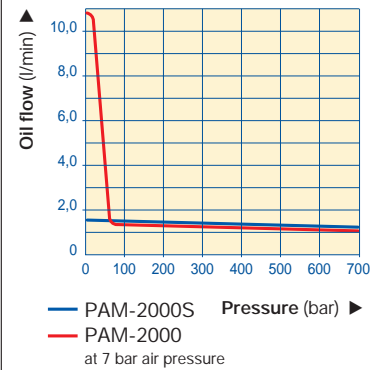
Motor Size:

**2,2 kW**

Maximum Operating Pressure:

**700 bar**

FLOW CHART



Air Pressure Range (bar)	Air Consumption (l/min)	Sound Level (dBA)
4-7	2400	80-85
4-7	2400	80-85
4-7	2400	80-85
4-7	2400	80-85
4-7	2400	80-85
4-7	2400	80-85

Reservoir Size (litres)	Pump Dimensions (mm)						
	A	B	C	D	E	F	H
5	304	205	335	159	-	165	335
8	304	205	335	191	-	165	367
20	460	340	-	191	50	295	367
40	460	340	-	320	50	295	496



▼ Shown from left to right: PGM-3410R, PGM-2408R, PGM-5410R



## Featuring Genesis Technology



### Hoses:

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

specify only Enerpac hydraulic hoses.

Page: 106



### 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: 105

- Patented Genesis Technology means
  - coaxial piston design ensures high performance
  - first-stage piston pump for improved efficiency
- High by-pass pressures improve productivity
- All Atlas pumps feature sturdy Roll Cages for use in tough environments
- 4, 8, 20 and 40 litres reservoirs for use with a wide range of cylinders
- Available in three four-cycle motor sizes: 1,8, 3,7 and 4,0 kW

▼ This PGM-5310R is used to power a hydraulic re-bar cutter on a construction site before power was available.



Used with Cylinder	Usable Oil Capacity (litres)	Model Number	Pressure Rating (bar)	Output Flow Rate (l/min)	
				1 <sup>st</sup> stage	2 <sup>nd</sup> stage
Single-Acting	3,8	PGM-2304R*	700	3,2	0,66
Double-Acting	3,8	PGM-2404R*	700	3,2	0,66
Single-Acting	7,6	PGM-2308R*	700	3,2	0,66
Double-Acting	7,6	PGM-2408R*	700	3,2	0,66
Single-Acting	9,5	PGM-3310R	700	7,8	0,90
	18,9	PGM-3320R	700	7,8	0,90
Double-Acting	9,5	PGM-3410R	700	7,8	0,90
	18,9	PGM-3420R	700	7,8	0,90
Single-Acting	9,5	PGM-5310R	700	7,8	1,6
	18,9	PGM-5320R	700	7,8	1,6
Double-Acting	9,5	PGM-5410R	700	7,8	1,6
	18,9	PGM-5420R	700	7,8	1,6
	37,8	PGM-5440R	700	7,8	1,6

\* Note: The PGM-20 series are available with a carrying handle instead of a rollcage. For ordering omit the 'R' from the model number

# Atlas Series, Gasoline Pumps

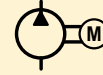


## Atlas Gasoline Pump Performance

Elevation can affect the performance of any gasoline engine. Atlas pumps are designed to develop rated performance at elevations up to 1500 m.

For applications above this elevation, please consult your Enerpac office.

## PGM Series



Reservoir Capacity:

**4, 8, 20 and 40 litres**

Flow at Rated Pressure:

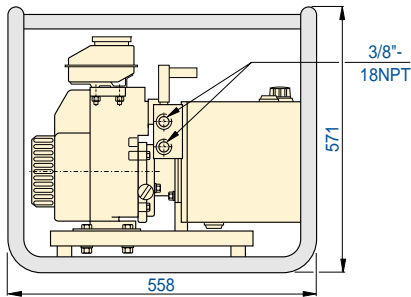
**0,66 - 1,6 l/min**

Motor Size:

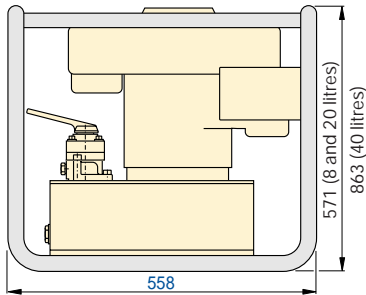
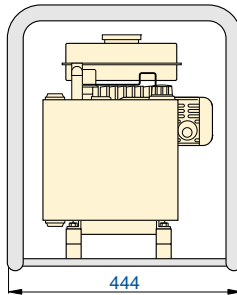
**1,8 - 4,0 kW**

Maximum Operating Pressure:

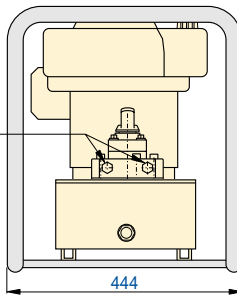
**700 bar**



PGM-20 series



PGM-30 and PGM-50 series

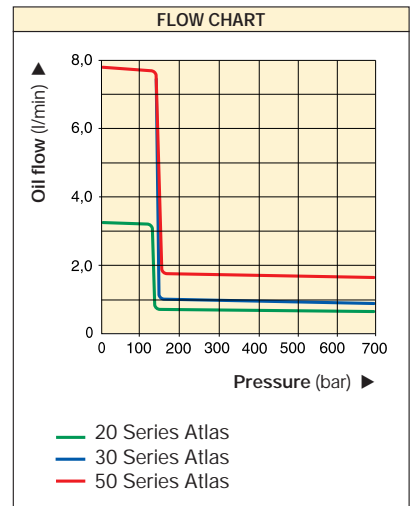


## Speed Chart

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

Page: 103

By-Pass Pressure (bar)	Valve Type	Valve Function	Motor Size (kW)	Sound Level (dBA)	Weight (kg)
140	3-way, 3-position	Advance/ Hold/Retract	1,8	89	25
140	4-way, 3-position			89	25
140	3-way, 3-position	Advance/ Hold/Retract	1,8	89	33
140	4-way, 3-position			89	33
140	3-way, 3-position	Advance/ Hold/Retract	3,7	93	40
140	3-way, 3-position			93	40
140	4-way, 3-position			93	40
140	4-way, 3-position			93	40
140	3-way, 3-position	Advance/ Hold/Retract	4,0	93	48
140	3-way, 3-position			93	84
140	4-way, 3-position			93	48
140	4-way, 3-position			93	84
140	4-way, 3-position			93	93

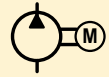


# 800 Series, Gasoline Pumps

▼ Shown: EGM-8418



## EGM Series



Reservoir Capacity:  
**95 litres**

Flow at Rated Pressure:  
**5,7 l/min**

Motor Size:  
**13,2 kW**

Maximum Operating Pressure:  
**700 bar**

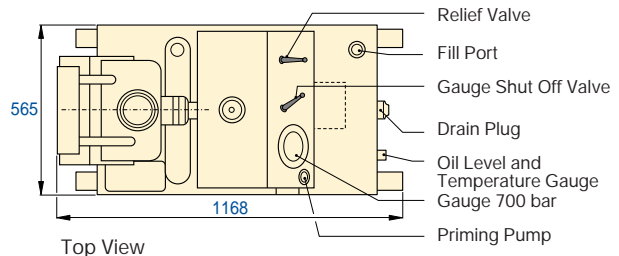
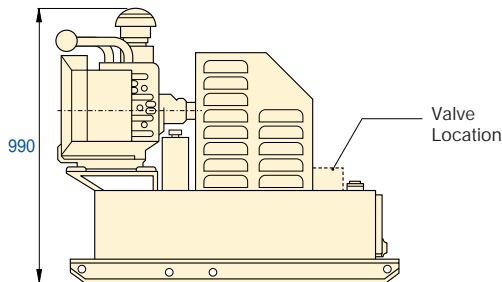
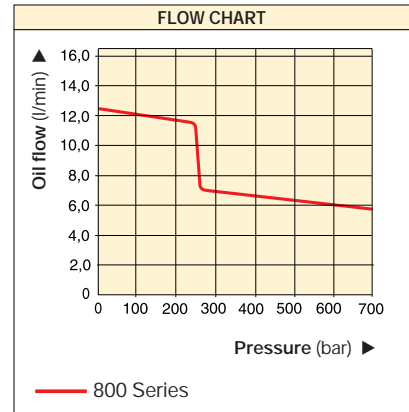


### Locking Valves

Pumps with VM-4 manual valves are available with VM-4L manual valves. Add suffix "L" to pump model number.

Page: 122

- Industrial grade, 13,2 kW, twin-cylinder motor
- Panel mounted pressure gauge and adjustable relief valve for system pressure control
- Two-speed pump design, with high by-pass pressure, for rapid cylinder advance
- Built in oil temperature and oil level gauge
- External adjustable relief valve (80-700 bar) allows control of operating pressure without opening the pump
- Integral priming circuit guarantees quick starts after transport



Used with Cylinder	Usable Oil Capacity (litres)	Model Number	Pressure Rating (bar)	Output Flow Rate (l/min)		By-Pass Pressure (bar)	Valve Type	Valve Function	Sound Level (dBA)	Weight (kg)
				1 <sup>st</sup> stage	2 <sup>nd</sup> stage					
Single-Acting	68	EGM-8218	700	12,8	5,7	250	3-way, 2-pos.	Adv./Retr.	94	403
Double-Acting	68	EGM-8418	700	12,8	5,7	250	4-way, 3-pos.	Adv./Hold/Retr.	94	403



## 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 is certified for several quality standards. These standards require compliance with standards for management, administration, product development and manufacturing.

**ISO 9001** Enerpac worked hard to earn the quality rating ISO 9001, in its ongoing pursuit of excellence.

**ANSI B30.1**  
Our cylinders fully comply with the criteria set forth by the American National Standards Institute (except 'BRD' and 'CL' series).

**UL approved**  
All electrical components used on Enerpac products carry the UL rating when possible.

**IP 55F**  
All electric motors used on Enerpac power pumps meet this protection and insulation classification.

**DIN 20024**  
Enerpac thermoplastic hoses are related to the criteria set forth in Deutsche Industrie Norm 20024.

**Canadian Standards Association**  
Where specified, Enerpac electric pump assemblies meet the design, assembly and test requirements of the Canadian Standards Association.

**Product Design Criteria**  
All hydraulic components are designed and tested to be safe for use at maximum 700 bar pressure unless otherwise specifically noted.

**EMC Directive 89/336/EEC**  
Where specified, Enerpac electric power pumps meet the requirements for Electromagnetic Compatibility per EMC Directive 89/336/EEC.

**World Standard Guarantee**  
All Enerpac products are guaranteed against defects in workmanship and materials for as long as you own them.

**CE Marking & Conformity**  
Enerpac provides a Declaration of Conformity and CE marking for products that conform with the European Community Directives.

### Lifetime guarantee

Enerpac guarantees that Enerpac's products will be free from defects in materials and workmanship for as long as they are owned by the Customer. This guarantee does not cover ordinary wear and tear, abuse, improper use (including repairs or attempted repairs other than by Enerpac or its authorized service representatives), alterations or products which have not been used or maintained in accordance with Enerpac's written instructions.

The foregoing warranty is exclusive and is in lieu of all other express and implied warranties, including but not limited to implied warranties of merchantability and fitness for a particular purpose.

Enerpac, at its option, will authorize its authorized service representatives to repair or replace, or refund the purchase price of, any products (or parts thereof) which are covered by this guarantee and which are found to be defective. If a claim arises, the Customer must contact Enerpac to arrange return shipment to Enerpac.

The remedy of repair, replacement or refund is customer's exclusive remedy in the event of breach of this guarantee. Enerpac shall not be liable for any incidental, consequential or special damages or for any loss, damage or expense arising from the sale, use or installation of the products or from any other cause whatsoever.

Section		Page
Safety Instructions		94-95 ▶
Pump Selection and Selection Worksheet		96-97 ▶
Basic System Set-ups		98-99 ▶
Basic Hydraulics		100-101 ▶
Conversion Tables and Speed Charts		102-103 ▶
Valve Information		104 ▶



# Safety Instructions



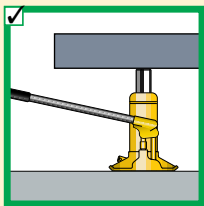
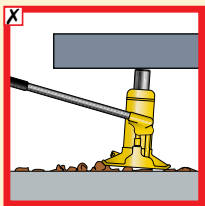
Hydraulic power is one of the safest methods of applying force to your work - when used correctly. And to that end we offer some DOs and DON'Ts, simple common sense points which apply to practically all Enerpac hydraulic products.

The line drawings and application photo's of Enerpac products throughout this catalog are used to portray how some of our

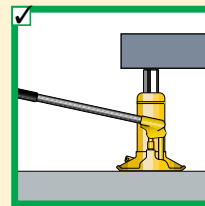
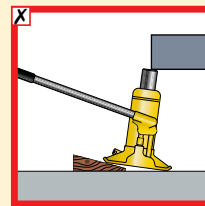
customers have used hydraulics in industry. In designing similar systems, care must be taken to select the proper components that provide safe operation and fit your needs. Check to see if all safety measures have been taken to avoid the risk of injury and property damage from your application or system. Enerpac can not be hold responsible for damage or injury, caused by un-safe 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.

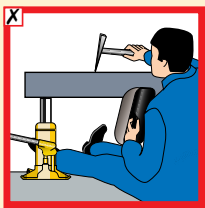
## Jacks



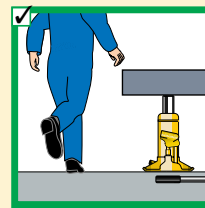
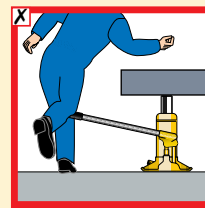
Provide a level and solid support for the entire jack base area.



The entire jack saddle must be in contact with the load. Movement of the load to be in the same direction as jack plunger.

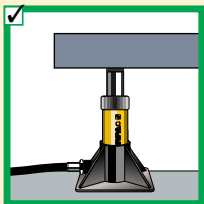
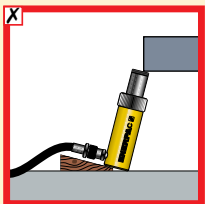


Never place any part of your body under the load. Ensure the load is on a solid support before venturing under.

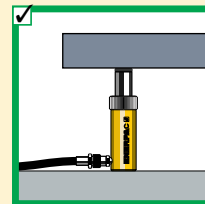
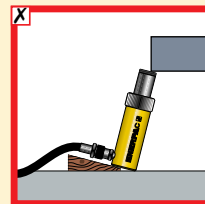


Remove the jack handle when it is not being used.

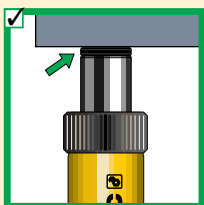
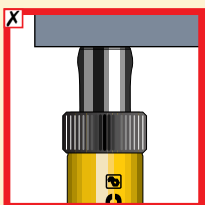
## Cylinders



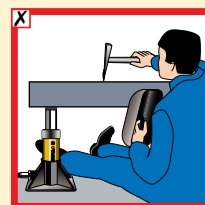
Provide a solid support for the entire cylinder base area. Use cylinder base attachment for more stability.



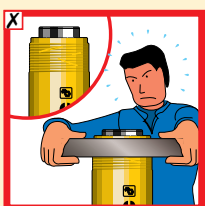
The entire cylinder saddle must be in contact with the load. Movement of the cylinder must be parallel with the movement of the load.



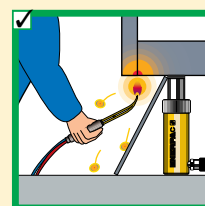
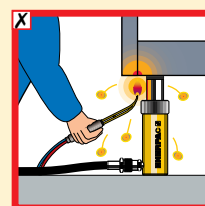
Do not use cylinder without saddle. This will cause plunger to "mushroom". Saddles distribute load evenly on the plunger.



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.



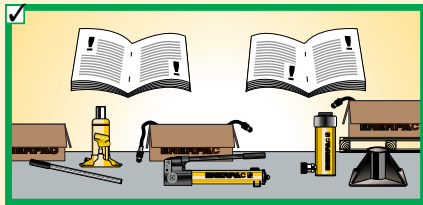
Keep hydraulic equipment away from open fire and temperatures above 65 °C (150 °F).



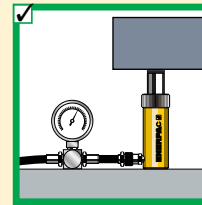
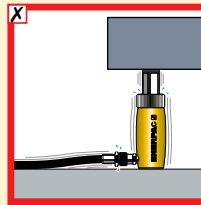


## General

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

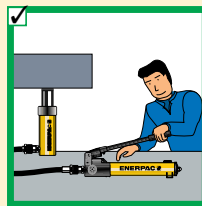
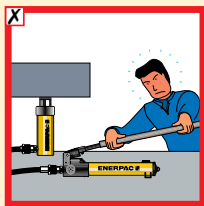


Always read instructions and safety warnings that come with your Enerpac hydraulic equipment.

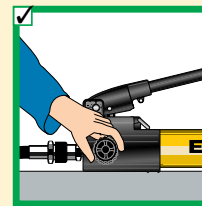
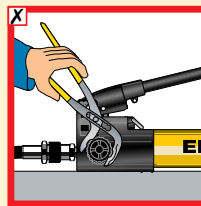


Don't override the factory setting of relief valves. Always use a gauge to check system pressure.

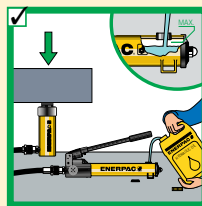
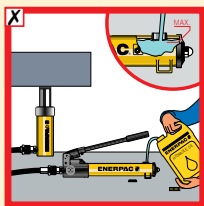
## Pumps



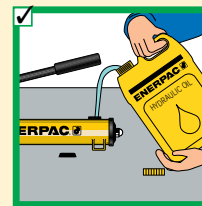
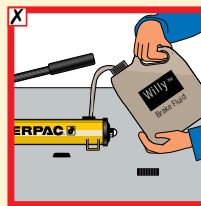
Don't use handle extenders. Hand pumps should be easy to operate when used correctly.



Close release valve finger tight. Using force will ruin the valve.

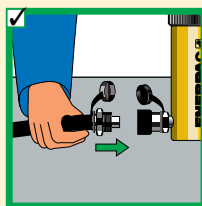
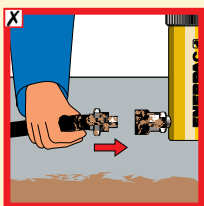


Fill pump only to recommended level. Fill only when connected cylinder is fully retracted.

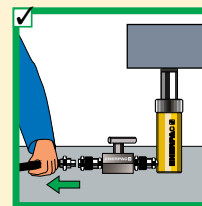
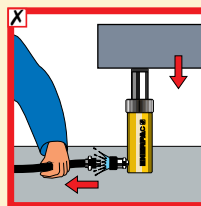


Use only genuine Enerpac hydraulic oil. Wrong fluid can destroy seals and pump and will render your warranty null and void your guarantee.

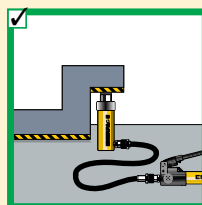
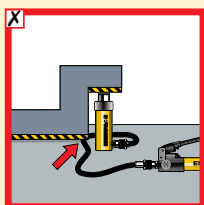
## Hoses and couplers



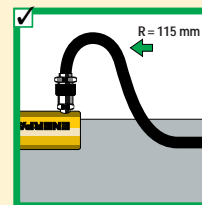
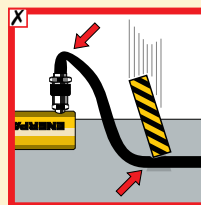
Clean both coupler parts before connecting. Use dust caps when coupler parts are not connected.



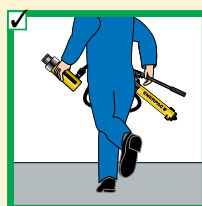
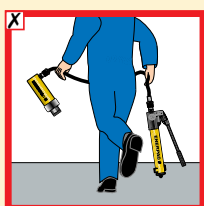
Detach cylinder only when fully retracted or use shut-off valves or safety valves to lock-in cylinder pressure



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.







- Lift slowly and check often
- Avoid standing in the line of force
- Anticipate possible problems and take steps to avoid them





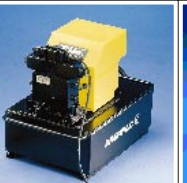


# Pump Selection

## ▼ HAND PUMP AND SINGLE-ACTING CYLINDER MATCHING CHART

Capacity (ton) ▶	5 t	10 t	15 t	25 t	30 t	50 t	60 t	75 t	100 t	150 t
▼ Stroke										
< 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										
										
	<b>P-392</b>		<b>P-80</b>		<b>P-462</b>					
	Page: 54		Page: 56		Page: 56					

Note: Selection based on oil capacity requirements of cylinders.

## ▼ POWER PUMP SELECTION CHART

Flow*	Low (0,1 - 0,3 l/min)		Medium (0,5 - 2,0 l/min)		High (2,0 - 14,5 l/min)
Usable Oil Capacity	1,9 - 3,8 litres	5,7 litres	5 - 38 litres	5 - 40 litres	60 litres
Duty Cycle**	Intermittent	Continuous	Intermittent	Continuous	Both
Portable/Stationary***	Portable	Stationary	Portable	Stationary	Stationary
Recommended Series	<b>Economy</b>	<b>Submerged</b>	<b>Titan</b>	<b>Hushh</b>	<b>8000/9000 Series</b>
					
	Page: 64	Page: 70	Page: 66	Page: 74	Page: 80

\* Flow

- Determined by motor size
- Directly affects electrical power requirements
- Determines cylinder or tool speed

\*\* Duty Cycle

- Continuous would be applications requiring more than one hour of continuous pump use
- Intermittent would be used less than one hour of continuous pump use

\*\*\* Portability

- |                               |                                  |
|-------------------------------|----------------------------------|
| <u>Portable</u>               | <u>Stationary</u>                |
| • Ergonomic handles           | • Mounting options               |
| • Flexible power requirements | • 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 in tons:	Total load	<input type="text"/>	
	Number of cylinders required:	Number of lifting points	<input type="text"/>	
	Force per cylinder in ton:	Should be 80% of total cylinder cap.	<input type="text"/>	
	Stroke required:	Plunger travel	<input type="text"/>	
	Single or double-acting (D/A):	D/A used when pull force is required, or retract speed is critical	<input type="text"/>	
	Type of plunger required:	Hollow or solid	<input type="text"/>	
	Collapsed height required:		<input type="text"/>	
	Optional saddle required:	Tilt, Grooved, Flat	<input type="text"/>	
	Cylinder base:	Improves stability	<input type="text"/>	
	Cylinder attachments: (RC-series)	Expanded functions	<input type="text"/>	
	Selected cylinder model:		<input type="text"/>	<input type="text"/>
	Including coupler model:		<input type="text"/>	

## Pump Selection

The three most commonly selected pumps are hand pumps, electric pumps and air-driven pumps. Battery and gas powered pumps, however can be selected in the same way.

Available power source:  Manual  Electric  Compressed Air  Petrol

Hand pump  
 Single or double acting operation  
 Not for high cycle applications  
 Use 4-way valve for D/A applications  
 Check speed chart on page 103 for number of mm per stroke)

Selected hand pump:  ▶

Electric or Compressed Air pump  
 Need for portability:  
 Duty cycle: Intermittent or high  
 Required usable 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 103  
 Type of control: Manual/remote pendant  
 Type of actuation/function: Advance/hold/retract  
 Accessories: Roll bar, Caster kit, ...

Selected pump:  ▶

Including Coupler: Oil connection

## System Components

Number of hoses and length required:

Selected Hoses:  ▶

Manifold or tee:	▶	<input type="text"/>
Extra hose per manifold (2):	▶	<input type="text"/>
Gauge (ton, kN or bar scale):	▶	<input type="text"/>
Gauge adapter:	▶	<input type="text"/>
Fittings:	▶	<input type="text"/>
Pressure Relief Safety Valve:	▶	<input type="text"/>
Load-holding Valve(s):	▶	<input type="text"/>
Hydraulic oil:	▶	<input type="text"/>



**1 Cylinder**  
Applies hydraulic force.  
*Page 7*

**2 Cylinder Base Plate**  
For applications like lifting where additional cylinder stability is required.  
*Page 12*

**3 Pump**  
Provides hydraulic flow.  
*Page 53*

**4 Hose**  
Transports hydraulic fluid.  
*Page 106-107*

**5 Male Coupler**  
For quick connection of the hose to system components.  
*Page 108-109*

**6 Female Coupler**  
For quick connection of the hose end to the system components.  
*Page 108-109*

**7 Gauge**  
To monitor pressure of the hydraulic circuit.  
*Page 112-118*

**8 Gauge adaptor**  
For quick and easy gauge installation. *Page 118*

**9 Swivel connector**  
Allows proper alignment of valves and/or gauges. Used when units being connected cannot be rotated.  
*Page 118*

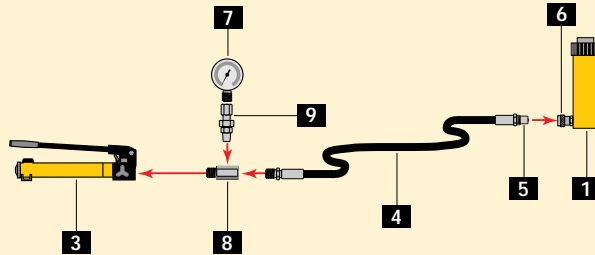
**10 Auto-Damper Valve V-10**  
Used to protect gauge from damage due to sudden pressure pulses in the system. Needs no adjustment and allows correct positioning of gauge, prior to tightening.  
*Page 125*

**11 4-Way Directional Control Valve**  
Controls the direction of hydraulic fluid in a double-acting system.  
*Page 122*

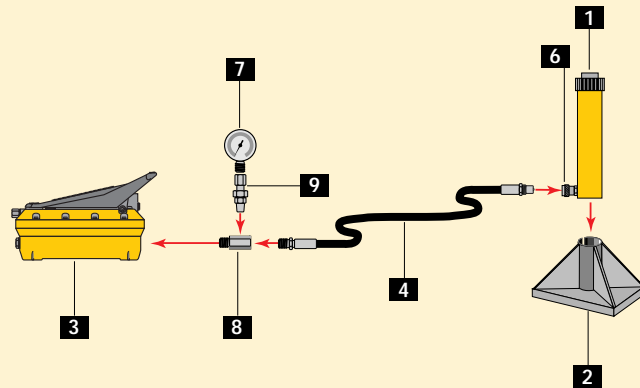
### Single-acting push application, such as in a press.

The handpump offers controlled cylinder advance, but may require many handpump strokes in longer stroke applications when the cylinder capacity is 25 ton or above.

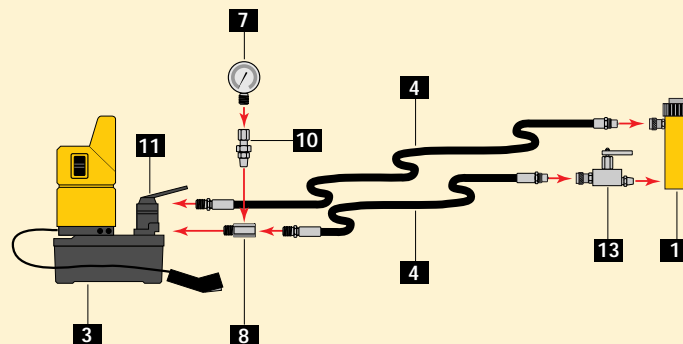
Examples of pump, hose and cylinder sets can be found on page 50.



### Single-acting cylinder with longer stroke used for lifting applications.

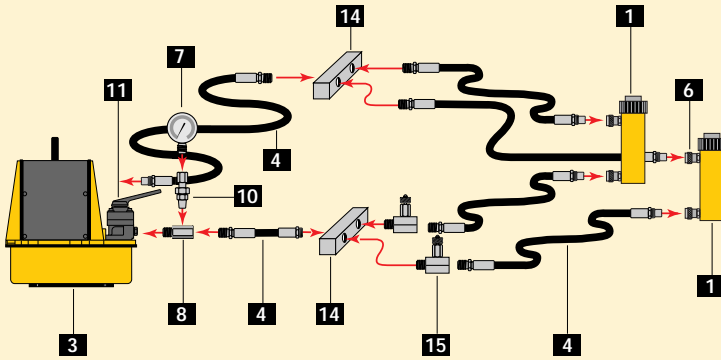


### Double-acting cylinder set-up used for lifting applications where a slow controlled descent of the load must be maintained.





Double-acting cylinder set-up used in a push/pull application.



**12** 3-Way Directional Control Valve

Controls the direction of hydraulic fluid in a single-acting system.  
Page 120

**13** Safety Holding Valve

Controls load descent in lifting applications.  
Page 124-125

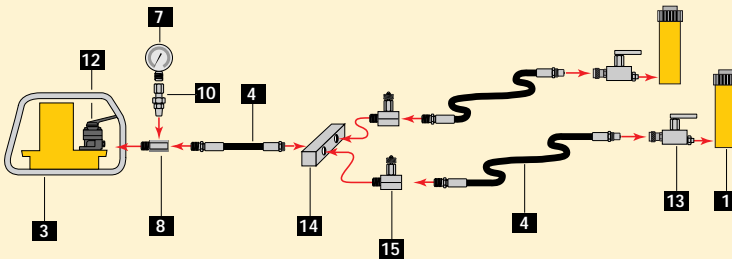
**14** Manifold

Allows distribution of hydraulic fluid from one power source to several cylinders  
Page 110

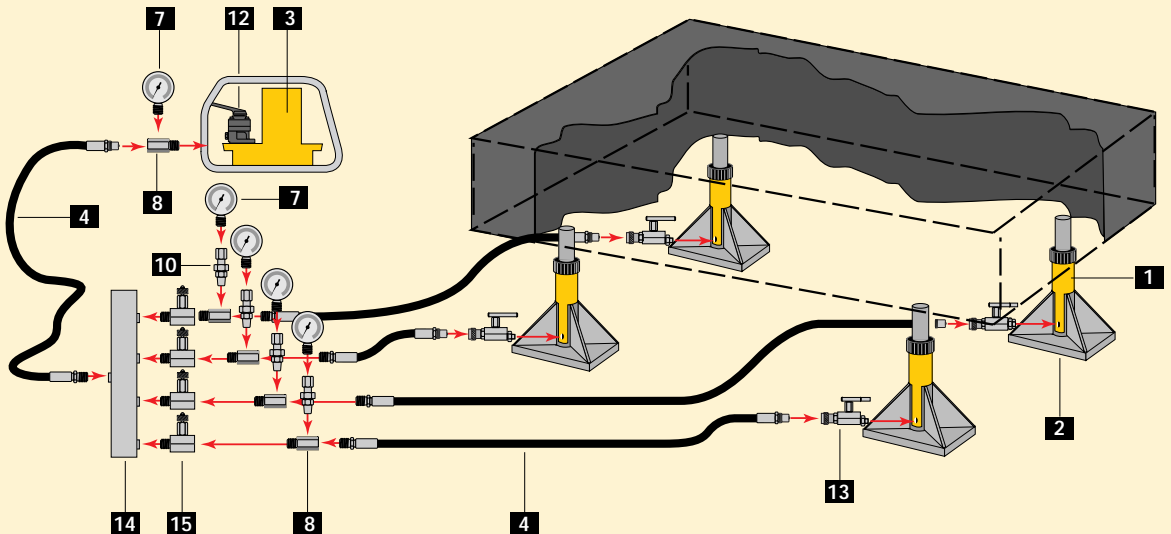
**15** Needle valve

Regulates the flow of hydraulic fluid to or from the cylinders.  
Page 124-125

Two point lifting set-up using single-acting cylinders.



Four point lifting set-up, using single-acting cylinders and directional control valves.

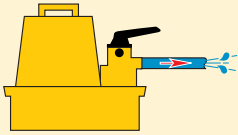






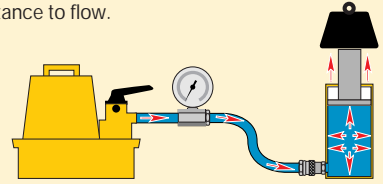
## Flow

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).

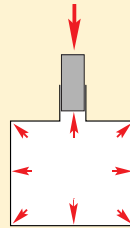


Figure 1

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 Cylinder section) must be added to the system (Load B).

Cylinders with the lightest load will move first, and cylinders with the heaviest load will move last (Load A), be it the cylinders have the same capacity.

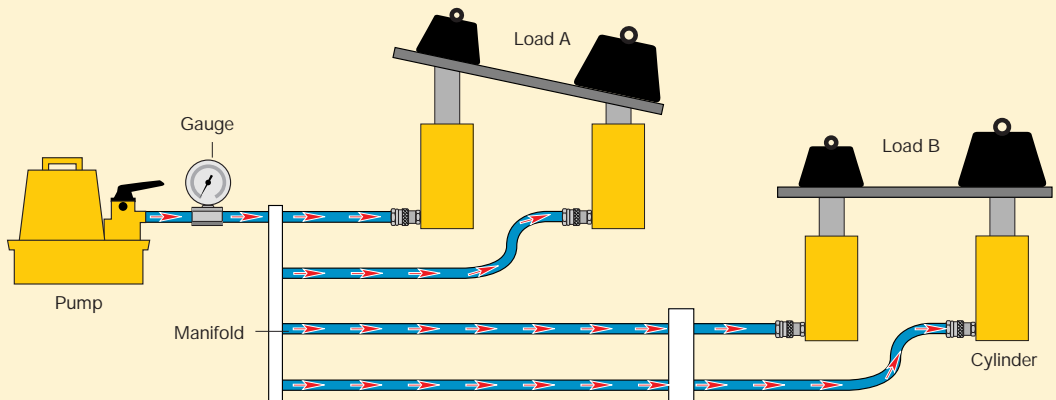


Figure 2

Synchronous Lift or Control Valves to provide uniform lifting of load.



### CAUTION!

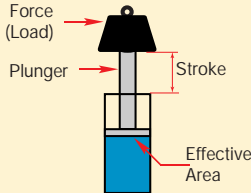
**When lifting or pressing, always use a gauge.**

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.



## 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<sup>2</sup> effective area operating at 700 bar will generate what force?

$$\text{Force} = 7000 \text{ N/cm}^2 \times 14,5 \text{ cm}^2 = 101500 \text{ N} = 101,5 \text{ kN}$$

## Example 2

An RC-106 cylinder lifting 7000 kg will require what pressure?

$$\text{Pressure} = 7000 \times 9,8 \text{ N} \div 14,5 \text{ cm}^2 = 4731,0 \text{ N/cm}^2 = 473 \text{ bar.}$$

## Example 3

An RC-256 cylinder is required to produce a force of 190.000 N. What pressure is required?

$$\text{Pressure} = 190.000 \text{ N} \div 33,2 \text{ cm}^2 = 5722,9 \text{ N/cm}^2 = 572 \text{ bar.}$$

## Example 4

Four RC-308 cylinders are required to produce a force of 800.000 N. What pressure is required?

$$\text{Pressure} = 800.000 \text{ N} \div (4 \times 42,1 \text{ cm}^2) = 4750,6 \text{ N/cm}^2 = 476 \text{ bar.}$$

Remember, since four cylinders are used together, the area for one cylinder must be multiplied by the number of cylinders used.

## Example 5

A CLL-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?

$$\text{Force} = 500 \text{ N/cm}^2 \times 366,4 \text{ cm}^2 = 1.832.000 \text{ N} = 1832 \text{ kN.}$$

## 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
-----------------------	---	-------------------------	---	-----------------

## Example 1:

An RC-158 cylinder with 20,3 cm<sup>2</sup> effective area and 200 mm stroke requires what volume of oil?

$$\text{Oil Capacity} = 20,3 \text{ cm}^2 \times 20 \text{ cm} = 406 \text{ cm}^3$$

## Example 2:

An RC-5013 cylinder has an effective area of 71,2 cm<sup>2</sup> and a stroke of 320 mm. How much oil will be required?

$$\text{Oil Capacity} = 71,2 \text{ cm}^2 \times 32 \text{ cm} = 2278,4 \text{ cm}^3$$

## Example 3:

An RC-10010 cylinder has an effective area of 133,3 cm<sup>2</sup> and a stroke of 260 mm. How much oil will it require?

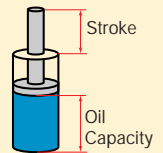
$$\text{Oil Capacity} = 133,3 \text{ cm}^2 \times 26 \text{ cm} = 3466 \text{ cm}^3$$

## Example 4:

Four RC-308 cylinders are being used, each with an effective area of 42,1 cm<sup>2</sup> and a stroke of 210 mm. How much oil will be required?

$$\text{Oil Capacity} = 42,1 \text{ cm}^2 \times 21 \text{ cm} = 884 \text{ cm}^3 \text{ for one cylinder}$$

Multiply by four to obtain the required capacity: 3536 cm<sup>3</sup>



\* Note: these are theoretical examples and do not take into account the compressibility of oil under high pressure.



## CAUTION!

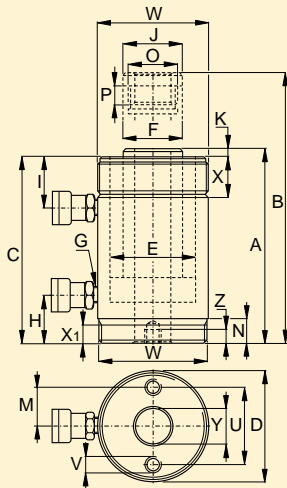
Energac oil will compress  
2.28% at 350 bar and  
4.1% at 700 bar.



# Conversion Tables

## Key to cylinder dimensions

Dimensions shown in the Selection Charts of the cylinder section are identified on the relevant drawings by the capital letter references listed here: A for collapsed height through Z<sub>1</sub> for depth of internal base thread.



- A = Collapsed height
- B = Extended height
- C = Cylinder body length
- D = Cylinder outside diameter
- D<sub>1</sub> = 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 = Bolt circle diameter of mounting holes
- V = Thread of cylinder mounting holes
- W = Collar thread
- X = Collar thread length
- Y = Centre hole diameter
- Z = Internal base thread
- Z<sub>1</sub> = Depth of internal base thread

## Key to measurements

All capacities and measurements in the catalog 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.

### Pressure:

- 1 psi = 0,069 bar
- 1 bar = 14,50 psi = 9,8 N/cm<sup>2</sup>
- 1 kPa = 0,145 psi

### Volume:

- 1 in<sup>3</sup> = 16,387 cm<sup>3</sup>
- 1 cm<sup>3</sup> = 0,061 in<sup>3</sup>
- 1 litre = 0,264 gal = 3785 cm<sup>3</sup>
- 1 USgal = 3,785 l = 231 in<sup>3</sup>

### Weight:

- 1 pound (lb) = 0,4536 kg
- 1 kg = 2,205 lbs
- 1 metric ton = 2205 lbs = 1000 kg
- 1 ton (short) = 2000 lbs = 907,18 kg

### Temperature:

- To Convert °C to °F: T<sup>°F</sup> = (T<sup>°C</sup> x 1,8) + 32
- To Convert °F to °C: T<sup>°C</sup> = (T<sup>°F</sup> - 32) ÷ 1,8

### Other measurements:

- 1 in = 25,4 mm
- 1 mm = 0,039 in
- 1 in<sup>2</sup> = 6,452 cm<sup>2</sup>
- 1 cm<sup>2</sup> = 0,155 in<sup>2</sup>
- 1 hp = 0,735 kW
- 1 kW = 1,359 hp

### 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-308 cylinder (30 ton) is powered by a 2000W Serie Hushh pump. While lifting the load, the cylinder plunger travels at 2,2 mm per second.

30 ton	50 ton		75 ton		100 ton		Pump Type		
	No Load	Load	No Load	Load	No Load	Load			
No Load	1,1	1,1	6,3	0,6	4,4	0,4	3,4	0,3	Economy
Load	11	11	11	11	11	11	11	11	Titan
Not recommended								0,3	Submerged
11	1,1	6,3	0,6	4,4	0,4	3,4	0,3	2000WS Serie	
35	3,2	20	1,9	1,4	1,3	1,1	1,0	2000W Serie	
4	8,1	1,1	4,8	0,6	3,3	0,4	2,6	0,7	3000WS Serie
8	2,2	2,2	1,3	1,3	0,9	0,9	6,4	0,7	3000W Serie
18	2,2	12	1,3	8,3	0,9	1,0	1,0	1,0	5000WS Serie
28	2,2	1,9	1,9	1,3	1,3	1,1	1,0	1,0	5000W Serie
1,1	3,3	1,9	1,9	1,4	1,3	1,1	1,9	1,9	

While extending towards the load, the cylinder plunger travels at 20 mm per second.

To determine:

### Best matching pump

Your 30 ton cylinder needs to move a load at a speed of 2,2 mm per second. Simply go down from the top of the chart, to the value of 2,2 mm per second. Follow the chart to the right to find that the 2000W Serie Hushh pump is most suitable for your application.

30 ton	50 ton		75 ton		100 ton		Pump Type		
	No Load	Load	No Load	Load	No Load	Load			
No Load	1,1	1,1	6,3	0,6	4,4	0,4	3,4	0,3	Economy
Load	11	11	11	11	11	11	11	11	Titan
Not recommended								0,3	Submerged
11	1,1	6,3	0,6	4,4	0,4	3,4	0,3	2000WS Serie	
35	3,2	20	1,9	1,4	1,3	1,1	1,0	2000W Serie	
4	8,1	1,1	4,8	0,6	3,3	0,4	2,6	0,7	3000WS Serie
8	2,2	2,2	1,3	1,3	0,9	0,9	6,4	0,7	3000W Serie
18	2,2	12	1,3	8,3	0,9	1,0	1,0	1,0	5000WS Serie
28	2,2	1,9	1,9	1,3	1,3	1,1	1,0	1,0	5000W Serie
1,1	3,3	1,9	1,9	1,4	1,3	1,1	1,9	1,9	

## Millimetres of 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		Pump Type	Page
	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load		
Manual	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	54
	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	54
	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-80/801/84	56
	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	54
	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	56

## Millimetres per Second of Cylinder Plunger Travel

Cyl. Capacity ▶	5 ton		10 ton		15 ton		25 ton		30 ton		50 ton		75 ton		100 ton		Pump Type	Page
	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load		
Battery	6,8	4,3	3,0	1,9	2,1	1,3	1,3	0,8	Not recommended								WalkPac™	62
Electric (speed based on 50 Hz)	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	Economy	64
	273	26	122	11	86	8,1	53	4,9	42	3,9	25	2,3	17	1,6	13	1,2	Titan	66
	53	7,1	24	3,2	17	2,2	10	1,4	8,1	1,1	4,8	0,6	3,3	0,4	2,6	0,3	Submerged	70
	14	14	6,4	6,4	4,5	4,5	2,8	2,8	2,2	2,2	1,3	1,3	0,9	0,9	0,7	0,7	2000WS Serie	74
	133	14	59	6,4	42	4,5	26	2,8	20	2,2	12	1,3	8,3	0,9	6,4	0,7	2000W Serie	74
	21	21	9,0	9,0	6,7	6,7	4,1	4,1	3,3	3,3	1,9	1,9	1,3	1,3	1,0	1,0	3000WS Serie	74
	221	21	98	9,0	70	6,7	43	4,1	34	3,3	20	1,9	14	1,3	11	1,0	3000W Serie	74
	40	40	18	18	13	13	7,6	7,6	6,0	6,0	3,6	3,6	2,5	2,5	1,9	1,9	5000WS Serie	74
	221	40	98	18	70	13	43	7,6	43	6,0	20	3,6	14	2,5	11	1,9	5000W Serie	74
Use the formula below to calculate cylinder plunger speed																8000/9000 Serie	80	
Air (speed based on 6,9 bar air pressure)	28	3,4	12	1,5	8,8	1,1	5,3	0,7	4,2	0,5	2,5	0,3	1,7	0,2	1,3	0,2	Turbo	84
	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 Serie	86
	277	3,8	123	1,7	88	1,2	53	0,7	42	0,6	25	0,3	17	0,2	13	0,2	10 Serie	87
	31	31	14	14	9,9	9,9	6,0	6,0	4,8	4,8	2,8	2,8	1,9	1,9	1,5	1,5	2000S Serie	88
	281	31	125	14	89	9,9	54	6,0	43	4,8	25	2,8	18	1,9	14	1,5	2000 Serie	88
Petrol	85	17	38	7,6	27	5,4	16	3,3	13	2,6	7,7	1,5	5,3	1,1	4,1	0,8	Atlas 20 Serie	90
	205	23	91	10	65	7,4	39	4,5	31	3,6	18	2,1	13	1,5	9,8	1,1	Atlas 30 Serie	90
	205	43	91	19	65	13	39	8,2	31	6,5	18	3,8	13	2,7	9,8	2,0	Atlas 50 Serie	90
	334	148	148	66	105	47	64	29	51	23	30	14	21	9,2	16	7,1	800 Serie	92

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-308 (30 ton) cylinder move when powered by a 2000W Serie Hushh pump?

RC-308 Cylinder Effective Area = 42,1 cm<sup>2</sup>

2000W Serie pump oil Flow (no load) = 5100 cm<sup>3</sup>/min

$$\text{Speed } V = \frac{5100 \text{ cm}^3/\text{min} \times 10}{42,1 \times 60} = 20,2 \text{ mm}/\text{sec}$$

$$\text{Cylinder Plunger Speed (mm/sec)} = \frac{\text{Pump Oil Flow (cm}^3/\text{min)} \times 10}{\text{Cylinder Effective Area (cm}^2) \times 60}$$



## 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.

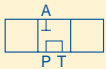
**Double-Acting** cylinders require a 4-way valve, providing control of the flow to each cylinder port.

## 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.

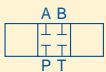
## Centre Configuration

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.



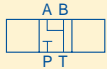
The next most common is the **Closed Centre** configuration, which is used

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

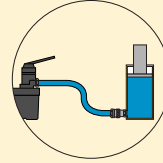


Float Centre

## Directional Control Valves

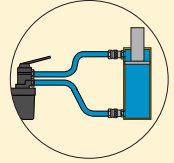
### 3-Way Valves

are used with single-acting cylinders

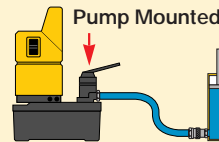


### 4-Way Valves

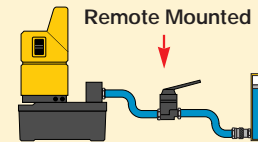
are used with double-acting cylinders



Valves may be either pump mounted or remote mounted.

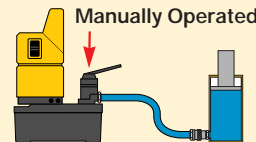


Pump Mounted

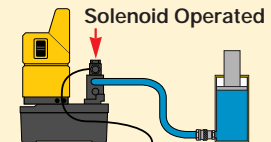


Remote Mounted

Valves may be either manually or solenoid operated.



Manually Operated

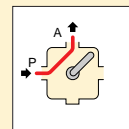


Solenoid Operated

## Advance Hold Retract

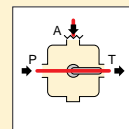
### Single-acting cylinder

Controlled by a 3-way, 3-position valve.



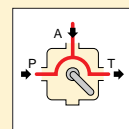
### Advance

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.

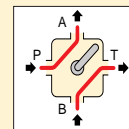


### Retract

The oil flows from the pump and cylinder port A to the tank T: the cylinder plunger will retract.

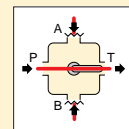
### Double-acting cylinder

Controlled by a 4-way, 3-position valve.



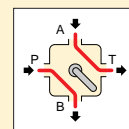
### Advance

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.












# System Components Section Overview

## 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.

Component Type	Series		Page
Hoses	700		106 ▶
Couplers	C, F A		108 ▶
Hydraulic Oil Manifolds	HF A		110 ▶
Fittings	BFZ FZ		111 ▶
Hydraulic Force & Pressure Gauges	GF GP		112 ▶
Hydraulic Pressure Gauges	G, H SGG		114 ▶
Test System Gauges	T		116 ▶
Digital gauges	BD DG		117 ▶
Gauge Accessories	GA, V NV, FM		118 ▶



ISO 9001

# 700-Series, High Pressure Hoses

▼ Shown from top to bottom: HA-7206, HC-7206, H-7206



## Safety and Quality



### WARNING !

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

More safety instructions in our 'Yellow pages'.

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### Thermo-Plastic Safety Hoses (700-Series)

- For demanding applications, featuring a 4:1 design factor
- Maximum working pressure of 700 bar
- Four layer design, including two high strength steel wire braids
- 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 range of hoses with increased internal diameter is the best choice.



### ▼ Hose End Couplings

1/4" NPT	
3/8" NPT	
A-604	
A-630	
AH-604	
AH-630	
C-604	
CH-604	

# High Pressure Hydraulic Hoses

**700 Series**



Inside Diameter:  
**6,4 and 9,7 mm**

Length:  
**0,6 - 15 m**

Maximum Operating Pressure:  
**700 bar**

Internal Diameter (mm)	Hose End Assemblies and Couplers*		Hose Length (m)	700-Series Thermo-Plastic			
	End one	End two		Model Number	Weight (kg)		
6,4	1/4" NPT	1/4" NPT	1,8	-			
		3/8" NPT	1,8	-			
		A-630	1,8	HB-7206QB	1,1		
		AH-630	1,8	-			
		CH-604	1,8	HC-7206Q	1,0		
	3/8" NPT	3/8" NPT		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		0,9	-	
					1,8	HA-7206B	1,1
				3,0	-		
		AH-604		0,6	-		
				0,9	-		
				1,8	HA-7206	1,0	
				3,0	HA-7210	1,5	
		AH-630	1,8	HB-7206			
		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	
				15	HC-7250C	7,0	
		9,7	3/8" NPT	3/8" NPT	1,8	H-7306	1,6
					8,0	H-7308	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	0,4	
				3,0	HC-7310	2,5	
				6,1	HC-7320	5,1	

\* For technical information on couplers see next page.

**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<sup>3</sup>) = 32,1699 x Length (m)

For 9,7 mm inside diameter hoses:  
Capacity (cm<sup>3</sup>) = 73,8981 x Length (m)

▼ Shown: CR-400, FR-400, FH-604, AR-400, AH-604, A-630



## Facilitating Quick Connection of Hydraulic Lines

### 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 coupler halves

### 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
- HTMA\* recognized for safety and performance
- Will not interchange with low pressure couplers


### 3/8" Regular Spee-D-Coupler®

- For medium duty applications with hand pumps as an example
- Includes female aluminium dust cap


### 1/4" Regular Coupler

- For use with small cylinders and hand pumps
- Includes female aluminium dust cap

\* Hydraulic Tool Manufacturers Association



**Thread sealer**  
To seal NPT 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.

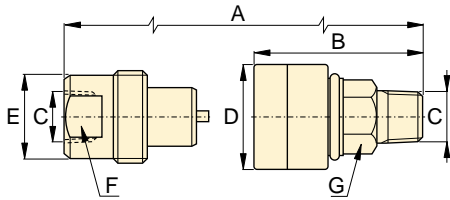


**WARNING!**  
Couplers should be pressurized only when completely connected and should not be coupled or uncoupled when pressurized.

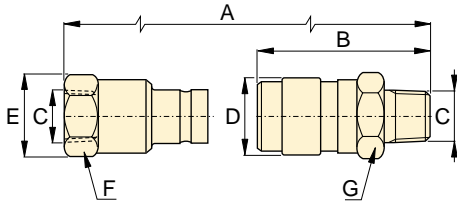
More safety instructions in our 'Yellow Pages'.

Page: 94

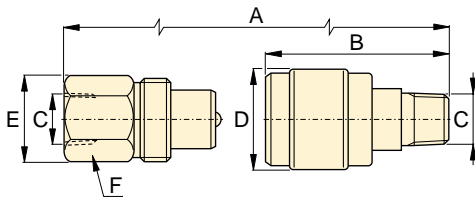
# Hydraulic Couplers



C-604



F-604



A-604 and A-630

**A  
C  
F  
Series**



Maximum Flow Capacity:

**40 l/min**

Thread:

**1/4" and 3/8" NPT**

Maximum Operating Pressure:

**700 bar**







### Metal Dust Caps

Aluminium 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)
		Complete Set	Female Half	Male Half	A*	B	C	D	E	F	G	
40	High-Flow Coupler 	C-604	CR-400	CH-604	69	54	3/8" NPT	35	27	23	22	(2x) CD-411
40	Flush-Face coupler 	F-604	FR-400	FH-604	110	72	3/8" NPT	31	31	26	28	-
7,6	Regular Spee-D-Coupler® 	A-604	AR-400	AH-604	77	42	3/8" NPT	28	26	23	19	Z-410 female only
7,6	Regular Coupler 	A-630	AR-630	AH-630	66	35	1/4" NPT	22	20	19	15	Z-640 female only

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



▼ Shown : A-65, FZ-1625, HF-95Y, FZ-1634, FZ-1607, A-64, AM-2



## The Genuine Range

### Hydraulic Oil

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

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

## Manifolds

Description	Model Number	Dimensions (mm)
178 mm Long Manifold with 7 female ports	A-64	
369 mm Long Manifold that allows direct mounting of control valves to the manifold. Plugs .38 NPTF.	A-65	
6-Port Hexagon Manifold. Plugs furnished for all ports 3/8" -18 NPTF.	A-66	
Premounted Manifold Functions as split-flow valve to control two single-acting cylinders simultaneously.	AM-2	

# Hydraulic Oil, Manifolds and Fittings

## Recommended Tubing

Enerpac does not supply high-pressure pipe or tubing, but recommends the use of cold drawn steel tubing instead of regular pipe in the following dimensions:  
 In place of .25" pipe, use 13 mm O.D. x 11 ga. (3 mm) wall.  
 In place of .38" pipe, use 9 mm Schedule 80 seamless pipe.  
 In place of .50" pipe, use 21 mm O.D. x .4 mm wall.  
 This tubing can be threaded with standard pipe threading dies.

**A  
BFZ  
FZ  
HF  
Series**



Fittings 700 bar		Model Number	Dimensions (mm)				Diagram		
			A	B	C	D			
<b>Street Elbow</b> From: 3/8"-NPT Male To: 3/8"-NPT Female		FZ-1616	23	33	3/8"-18 NPTF	3/8"-18 NPTF			
<b>Reducing Connector</b> From: 3/8"-NPT Female To: 1/4"-NPT Female		FZ-1615	28	25	3/8"-18 NPTF	1/4"-18 NPTF			
		FZ-1625	47	29	1/2"-14 NPTF	3/8"-18 NPTF			
<b>Hexagon Nipple</b> From: 1/4"-NPT To: 1/4"-NPT		FZ-1607 FZ-1619 FZ-1617	38 51 37	16 19 19	1/4"-18 NPTF 3/8"-18 NPTF 3/8"-18 NPTF	1/4"-18 NPTF 3/8"-18 NPTF 3/8"-18 NPTF			
								3/8"-NPT	3/8"-NPT
3/8"-NPT								3/8"-NPT	
<b>Coupling</b> From: 3/8"-NPT To: 3/8"-NPT		FZ-1614 FZ-1605	36 29	23 19	3/8"-18 NPTF 1/4"-18 NPTF	3/8"-18 NPTF 1/4"-18 NPTF			
								1/4"-NPT	1/4"-NPT
<b>Cross</b> From: 3/8"-NPT Female To: 3/8"-NPT Female		FZ-1613	45	25	3/8"-18NPTF	-			
<b>Tee</b> From: 3/8"-NPT To: 3/8"-NPT		FZ-1612 FZ-1637 FZ-16312	45 45 57	25 24 3/8"-18NPTF	3/8"-18 NPTF 1/4"-18 NPTF 3/8"-18 NPTF	- - -			
								1/4"-NPT	1/4"-NPT
3/8"-NPT								3/8"-NPT	
<b>Elbow</b> From: 3/8"-NPT To: 3/8"-NPT		FZ-1610 FZ-1638	33 36	20 24	3/8"-18 NPTF 1/4"-18 NPTF	- -			
								1/4"-NPT	1/4"-NPT
<b>Reducer</b> From: 3/8"-NPT To: 1/4"-NPT		FZ-1630 BFZ-1630 BFZ-16301	19 28 19	19 22 19	1/4"-18 NPTF 1/4"-18 NPTF G 1/4"	3/8"-18 NPTF 1/2"-14 NPTF 3/8"-18 NPTF			
								1/4"-NPT	1/2"-NPT
3/8"-NPT								G 3/8"	
<b>Adaptor</b> From: G 1/4" To: 1/4"-NPT		BFZ-16411 BFZ-16421 BFZ-16323 BFZ-16324	35 31 43 43	19 19 24 24	1/4"-18 NPTF 1/8"-27 NPTF 1/4"-18 NPTF 3/8"-18 NPTF	G 1/4" G 1/4" G 3/8" G 3/8"			
								G 1/4"	1/8"-NPT
G 1/4"								1/8"-NPT	
G 3/8"								1/4"-NPT	
<b>Adaptor</b> From: M14 x 1,5 To: 3/8"-NPT		BFZ-16322 FZ-1055 FZ-1642 FZ-1634	47 44 30 42	24 23 19 28	3/8"-18 NPTF 1/4"-18 NPTF 1/8"-27 NPTF 3/8"-18 NPTF	M14 x 1,5 3/8"-18 NPTF 1/4"-18 NPTF 1/2"-14 NPTF			
								1/4"-NPT	3/8"-NPT
1/4"-NPT								1/8"-NPT	
1/2"-NPT								3/8"-NPT	

▼ Shown from left to right: GF-20S, GF-813S, GP-10S



- Calibrated to read in bar, kN or ton
- Excellent readability: gauge face dimensions 100 mm
- Fast, easy installation

▼ Multiple pressure gauges are used to monitor system performance, maintaining process accuracy.



## Visual Reference of System Pressure





### Auto-Damper Valve

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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		Used With
	All Cylinders	
	All Cylinders	
	All Cylinders	
	All 5 ton Cylinders	
	All 10 ton Cylinders	
	All 25 ton Cylinders	
	All 50 ton Cylinders	
	13 ton RCH-Series	
	RCH-202, 302, 603	
	RCS-201, 302	
RCS-502, 1002		
	10 ton Press	
	25 ton Press	
	50 ton Press	
	25-50 ton H-Frame	
	100 ton H-Frame	
	200 ton H-Frame	

# Hydraulic Force & Pressure Gauges

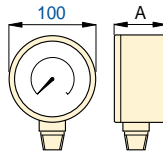


## Maximum Indicator Pointer

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

Order model number: **H-4000M**.

Note: for 100 mm gauges only.



## GF GP Series



Pressure Range:

**0 - 1000 bar**

Face Diameter:

**100 mm**

Accuracy, % of full scale:

**± 2%**






## Pressure Gauges

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

## Load Gauges

To measure external load supported by a cylinder or jack in ton or kN. For pressing parts together under pre-determined loads, weighing, testing, etc.

Model Number	Depth A (mm)
GP-10S	50
GP-15S	66
GP-10L*	50
GF-5S	50
GF-10S	50
GF-20S	50
GF-50S	50
GF-120	57
GF-813S	38
GF-230	57
GF-510	57
GF-835	50
GF-871	50
GF-200S	50

Gauge Type and Calibration			Units per Division	Model Number	Thread	Gauge Adaptor		
						Required		
bar	kN	ton				GA-1	GA-2	GA-3
0 - 700	-	-	10 bar	GP-10S	1/2" NPT	•	•	
0 - 1000	-	-	10 bar	GP-15S	1/2" NPT	•	•	
0 - 700	-	-	10 bar	GP-10L*	1/2" NPT	•	•	
-	0 - 45	-	0,5 kN	GF-5S	1/2" NPT	•	•	
-	0 - 90	-	1 kN	GF-10S	1/2" NPT	•	•	
-	0 - 225	-	2 kN	GF-20S	1/2" NPT	•	•	
-	0 - 450	-	5 kN	GF-50S	1/2" NPT	•	•	
-	0 - 105	-	1 kN	GF-120	1/2" NPT	•	•	
-	-	0 - 20/30/60	1 ton	GF-813S	1/4" NPT			•
-	0 - 175 / 275	0 - 20/30	1 ton + 2 kN	GF-230	1/2" NPT	•	•	
-	0 - 450 / 900	0 - 50/100	1 ton + 5 + 10 kN	GF-510	1/2" NPT	•	•	
-	0 - 90	-	1 kN	GF-10S	1/2" NPT	•	•	
-	0 - 225	-	2 kN	GF-20S	1/2" NPT	•	•	
-	0 - 450	-	5 kN	GF-50S	1/2" NPT	•	•	
-	-	0 - 25/30/50	5 + 10 ton	GF-835	1/4" NPT			•
-	0 - 675 / 900	0 - 75/100	2 ton + 10 kN	GF-871	1/4" NPT			•
-	0 - 1350 / 1800	0 - 150/200	5 + 4 ton + 10 kN	GF-200S	1/4" NPT			•

\* GP-10L is a L-Fitting type, including a V-10 Auto Damper Valve.

▼ Gauges shown: 4048L, 2011R, 2501L, SSG-2512L, SSG-2518L, H-4048L, H-4070L



## Visual Reference of System Pressure



### Maximum Indicating Pointer

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

Order model number: **H-4000M**.

Note: For use on H-Series of gauges only.



### Gauge adaptor

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

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### Glycerine Filled (G-Series)

- All pressure sensing parts sealed and dampened by glycerine for long life
- Includes safety blow-out disk and pressure equaling membrane
- Gauge snubbers or needle valves recommended for high cycle applications

### Standard Dry (2500 and 4000-Series)

- These economical gauges are the best selection for general purpose applications
- Gauge snubbers or needle valves recommended for high cycle applications

### Stainless Steel (SSG-Series)

- Features solid front and safety blow-out in rear
- Corrosion resistant stainless steel construction
- Glycerine filled for dampening hydraulic pulsation and equipment vibration

### High Cycle (H-Series)

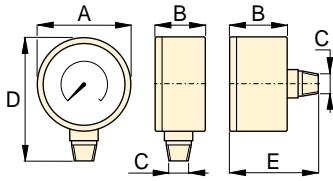
- Ideal for use in many applications, specifically for high-cycle and harsh environments
- Gauge snubbers or needle valves recommended to shut off gauge when not in use

▼ *Lifting the recommended way with shut-off valve and pressure gauge.*





# Hydraulic Pressure Gauges



**G  
H  
SSG  
Series**



Dimensions (mm)						
Size	Connection	A	B	C	D	E
63	Lower Mount	63	37	1/4" NPTF	84	-
63	Center Rear	63	37	1/4" NPTF	-	63
63	Bottom Rear	63	27	1/4" NPTF	-	-
100	Lower Mount	100	29	1/4" NPTF	121	-
100	Lower Mount	100	49	1/2" NPTF	136	-

Note: dimensions for reference only.

Pressure Range:

**0-1000 bar**

Face Diameter:

**63-100 mm**

Accuracy, % of full scale:

**±1% to 3%**

## ▼ SELECTION CHART

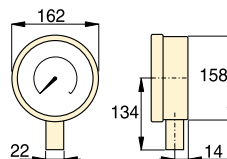
Gauge Series	Pressure Range (bar)	Model Number					Major Graduation		Minor Graduation	
		Size 63 mm			Size 100 mm		ø63 mm	ø100 mm	ø63 mm	ø100 mm
		1/4 NPTF Lower Mount	1/4 NPTF Center Rear	Face 1/4 NPTF Bottom Rear	1/4 NPTF Lower Mount	1/2 NPTF Lower Mount	(bar)	(bar)	(bar)	(bar)
G-Series	0-2	G2507L	-	-	G4007L	-	0,5	0,2	0,05	0,02
	0-4	G2508L	G2525R	-	G4008L	-	1	0,5	0,1	0,05
	0-7	G2509L	G2526R	-	G4009L	-	1	1	0,1	0,1
	0-11	G2510L	G2527R	-	G4010L	-	1	1	0,2	0,1
	0-13	G2511L	-	-	G4011L	-	1	2	0,2	0,2
	0-20	G2512L	G2529R	-	G4012L	-	5	2	0,5	0,2
	0-40	G2513L	G2530R	-	G4013L	-	10	5	1	0,5
	0-70	G2514L	G2531R	-	G4014L	-	10	10	1	1
	0-140	G2515L	G2532R	-	G4015L	-	10	20	2	2
	0-200	G2516L	G2533R	-	G4016L	G4037L	50	20	5	2
	0-400	G2517L	G2534R	-	G4017L	G4038L	100	50	10	5
0-700	G2535L	G2537R	-	G4088L	G4039L	100	100	10	10	
0-1000	G2536L	G2538R	-	G4089L	G4040L	100	100	20	10	
Standard Dry Series	0-1	2507L	-	-	-	-	0,1	-	0,2	-
	0-4	2509L	-	-	-	-	1	-	0,1	-
	0-7	2510L	-	-	-	-	1	-	0,1	-
	0-11	2511L	-	2529R	4011L	-	1	1	0,2	-
	0-14	2512L	-	2530R	-	-	1	-	0,2	-
	0-20	2513L	-	-	-	-	5	-	0,5	-
	0-140	2516L	-	-	-	-	10	-	2	-
	0-200	2517L	-	-	-	-	50	-	5	-
	0-350	2518L	-	-	-	-	50	-	5	-
SSG-Series	0-70	SSG2514L	-	-	-	-	10	-	1	-
	0-200	SSG2516L	-	-	-	-	50	-	5	-
	0-350	SSG2518L	-	-	-	-	50	-	5	-
	0-700	SSG2519L	-	-	-	-	100	-	10	-
H-Series	0-400	-	-	-	H4048L	H4070L	-	50	-	5
	0-700	-	-	-	H4049L	H4071L	-	100	-	10
	0-1000	-	-	-	H4050L	H4072L	-	100	-	10

▼ Gauge shown: T-6011L



- $\pm 1\%$  full scale accuracy on all models
- All gauges have spring-loaded backs with rubber blow-out plugs to protect case assembly in case of over-pressurization
- 2800 and 3500 bar models include flange mounting
- $1/2$ " 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

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



## T Series

Pressure Range:  
**0 - 3500 bar**

Face Diameter:  
**152 mm**

Accuracy, % of full scale:  
 **$\pm 1\%$**



### Cone Mount Gauge Adaptor

Contains fittings to connect 0,25" cone fitting gauge to 0,38" cone system.

Kit includes 43-301 tee and 43-704 gauge adaptor.

Order model number: **83-011**.

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### Lens and Needle Kit

Replacement lens and drag pointer for Test System gauges.

Order model number: **T-6000M**



### Cone Mount Gauge Connector

For connecting gauges with 0,25" cone fitting directly to model number 11-100 or

11-400 pump (page 60). May be used with other 0,25" cone systems

Order model number: **43-704**

Pressure Range (bar)	Model Number		Number Intervals	Graduation Intervals
	Alloy Steel $1/2$ " NPT	Stainless Steel .25" Cone		
0 - 70	T-6001L	T-6005L	10	1
0 - 350	T-6002L	T-6006L	50	5
0 - 700	T-6003L	T-6007L	100	10
0 - 1400	-	T-6008L	200	20
0 - 2100	-	T-6009L	200	20
0 - 2800	-	T-6010L	500	20
0 - 3500	-	T-6011L	500	50

# Digital, Hydraulic Pressure Gauges

▼ Shown from left to right: BDGL-1, BDGP-1, BDGB-1



- Each gauge includes: pressure transducer, power transformer, UL/CSA approved line interconnect cord and screwdriver
- 10 psi/1 bar increments in large, easy-to-read digits
- Angle bracket in BDGB-1, PDGB-1, BDGL-1 and BDGP-1 and DIN case allows easy mounting
- Zero set screw easily adjusts to zero gauge as needed
- Solid state design; no moving parts
- -1°C up to 54°C operating temperature

▼ An Enerpac digital gauge is used on a bench press to provide precise, easy to read pressure readings for testing.



## BDG/PDG Series

Pressure Range:

**0 - 10.000 psi/700 bar**

Voltage:

**230 Volt**

Accuracy, % of full scale:

**± 0,5%**



### Battery Operation

Model BDGB-1 and BDGP-1 may be operated by an 8 to 18 vdc battery power supply when used in remote

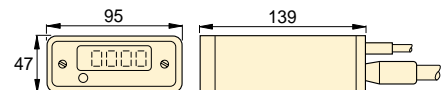
applications. The 1.8 m power cord is standard included, but is also separately available under model number DGC-1.



### Gauge adaptor

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

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Reads Hydraulic Pressure up to 700 bar	Reads Hydraulic Pressure up to 10.000 psi	Retains Peak Value	Adjustable Hydraulic Pressure Limit	Model Number
	•			PDGB-1
	•	•		PDGP-1
	•		•	PDGL-1
•				BDGB-1
•		•		BDGP-1
•			•	BDGL-1

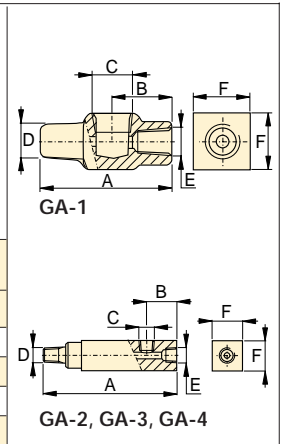
▼ Shown: GA-1, GA-2, GA-3, GA-918, NV-25, V-9, FM-25



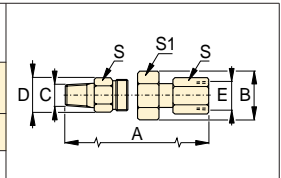
## GA/NV/V/FM Series

Operating Pressure:  
**700 bar**

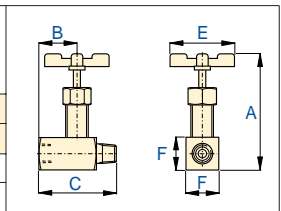
Model Number	Gauge Port (NPTF)	Male End (NPTF)	Female End (NPTF)	Dimensions (mm)					
				A	B	C	D	E	F
				GA-1	1/2"	3/8"	3/8"	71	31
GA-2	1/2"	3/8"	139	35	1/2" NPT	3/8" NPT		3/8" NPT	32
GA-3	1/4"	3/8"	133	25	1/4" NPT	3/8" NPT		3/8" NPT	35
GA-4	1/2"	1/4"	111	35	1/2" NPT	1/4" NPT		3/8" NPT	32



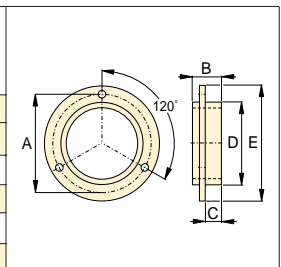
Model Number	Dimensions (mm)						
	A	B	C	D	E	S	S1
GA-918	117	43	1/2" NPT	28,5	1/2" NPT	28	38



Model Number	Orifice (mm)	Thread Size	Dimensions (mm)				
			A	B	C	E	F
NV-25	5	1/4" NPTF	88	26	54	63	22
V-9	7	1/2" NPTF	92	31	63	63	25






Gauge Type	Model Number	Dimensions (mm)				
		A	B	C	D	E
63 mm Standard Dry	FM-25	3 Ø on	21	19	63	85
63 mm Glycerine	FM-25G	74 Ø B.C.	24	21	63	85
100 mm Standard Dry	FM-40	4 Ø on	21	19	100	132
100 mm Glycerine	FM-40G	116 Ø B.C.	47	21	100	132



# Valves Section Overview

**E**NERPAC hydraulic valves are available in a wide variety of models and configurations and are rated for a 700 bar operating pressure. Available for pump mounted operations or remote mounting and manual or solenoid actuation, making your application requirements easy to solve. Whether you require directional control, flow control, or pressure control, there is an Enerpac valve to match your application exactly.

Valve Type	Series		Page
3-Way Directional Control Valves	BV, V		120 ▶
4-Way Directional Control Valves	BV, V		122 ▶
Pressure and Flow Control Valves	V		124 ▶



**ISO 9001**



# 3-Way Directional Control Valves

▼ Shown from left to right: BVS-3, VM-2, VM-3, VM-3L, VC-3, VC-3L



## For Reliable Control of Single-Acting Cylinders



### Push-Button Control Station

Solenoid valves are supplied with 2,4 meter power cord and push-button control station IC-300 with 3 m control cord.

- 3-way, 3-position valves provide advance/hold/retract operation for use with single-acting cylinders
- Manual or solenoid operation
- Remote or pump mounting on most Enerpac pumps
- Return line kit VRL-10 included with remote valves
- Available 'locking' option on VC and VM Series valves for load-holding applications
- Standard 'locking' feature on BV Series valves

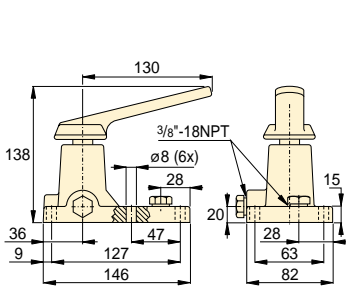
▼ A typical multi-cylinder control set-up using V, VC and VM Series Valves.



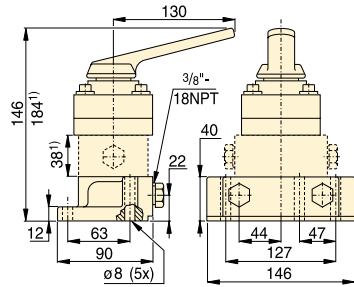
Valve Operation	Valve Location	Valve Type	
Manual	Pump Mounted	2-position	
Manual	Pump Mounted	3-position, Tandem Center	
Manual	Remote Mounted	3-position, Tandem Center	
Manual	Pump Mounted	3-pos., Tandem Center, Locking	
Manual	Remote Mounted	3-pos., Tandem Center, Locking	
Manual	Remote Mounted	3-position, Closed Center	
Manual	Remote Mounted	3-position, Closed Center, Locking	
Solenoid 24 VAC	Remote Mounted	3-position, Tandem Center	
Solenoid 24 VAC	Pump Mounted	3-position, Tandem Center	

# 3-Way Directional Control Valves

Valve dimension in mm

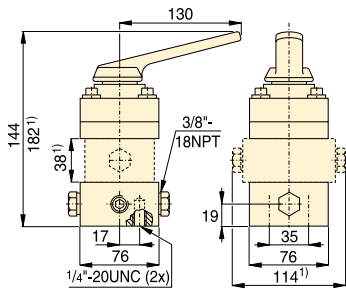


VM-2



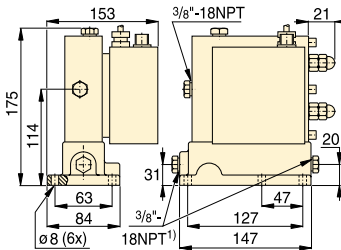
VM-3, VM-3L

<sup>1)</sup> VM-3L only



VC-3, VC-3L,  
VC-15, VC-15L

<sup>1)</sup> VC-3L and  
VC-15L only



BVR-3, BVS-3

<sup>1)</sup> BVR-3 only

**BV  
V  
Series**



Flow Capacity:

**17 l/min**

Maximum Operating Pressure:

**700 bar**

Model Number	Hydraulic Symbol	Schematic Flowpath			Weight (kg)
		Advance	Hold	Retract	
VM-2					2,2
VM-3					2,1
VC-3					2,9
VM-3L					3,9
VC-3L					4,7
VC-15					2,9
VC-15L					4,7
BVR-3					10,3
BVS-3					9,4



## Valving Help

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

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## Additional Fittings

For additional fittings see our 'System Components Section'.

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## Locking Valves

For applications that require positive load holding, most VC and VM 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. To order this feature, place an "L" at the end of the model number.

# 4-Way Directional Control Valves

▼ Valves shown: VC-4L, VC-20, BVS-4, VM-4, BVR-4, VM-4L



## For Double-Acting Cylinder Control



### Push-Button Control Station

Solenoid valves are supplied with 2,4 meter power cord and push-button control station IC-400 with 3 m control cord.

- 4-way, 3-position valves provide advance/hold/retract operation for use with double-acting or two single-acting cylinders
- Manual or solenoid operation
- Remote or pump mounting on most Enerpac electric pumps
- Return line kit VRL-10 included with remote valves
- Available 'locking' option on VC and VM Series valves for load-holding applications
- Standard 'locking' feature on BV Series valves

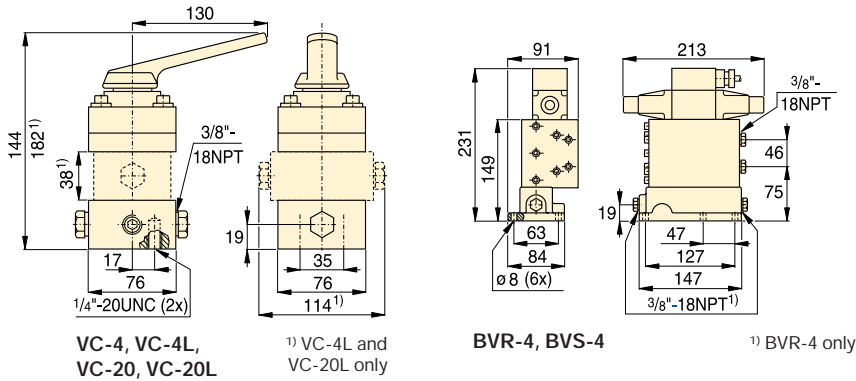
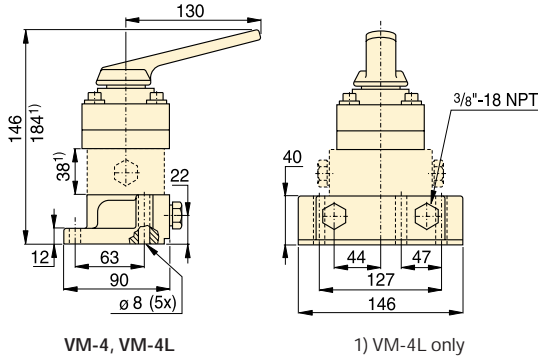
▼ A 4-Way directional control valve together with a pressure relief valve are used here to control a double-acting cylinder.



Valve Operation	Valve Location	Valve Type	
Manual	Pump Mounted	3-position, Tandem Center	
Manual	Remote Mounted	3-position, Tandem Center	
Manual	Pump Mounted	3-pos., Tandem Center, Locking	
Manual	Remote Mounted	3-pos., Tandem Center, Locking	
Manual	Remote Mounted	3-position, Closed Center	
Manual	Remote Mounted	3-position, Closed Center, Locking	
Solenoid 24 VAC	Remote Mounted	3-position, Tandem Center	
Solenoid 24 VAC	Pump Mounted	3-position, Tandem Center	

# 4-Way Directional Control Valves

Valve dimension in millimetres.



## V Series



Flow Capacity:

**17 l/min**

Maximum Operating Pressure:

**700 bar**

Model Number	Hydraulic Symbol	Schematic Flowpath			Weight (kg)
		Advance	Hold	Retract	
VM-4					2,1
VC-4					2,9
VM-4L					3,9
VC-4L					4,7
VC-20					2,9
VC-20L					4,7
BVR-4					12,0
BVS-4					11,1



### Valving Help

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

Page: 98



### Additional Fittings

For additional fittings see our 'System Components Section'.

Page: 111



### Locking Valves

For applications that require positive load holding, most VC and VM 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.

To order this feature, place an "L" at the end of the model number.



▼ Valves shown from left to right: V-66, V-9, V-152, V-17, V-42, V-161, V-10, V-82, V-66F

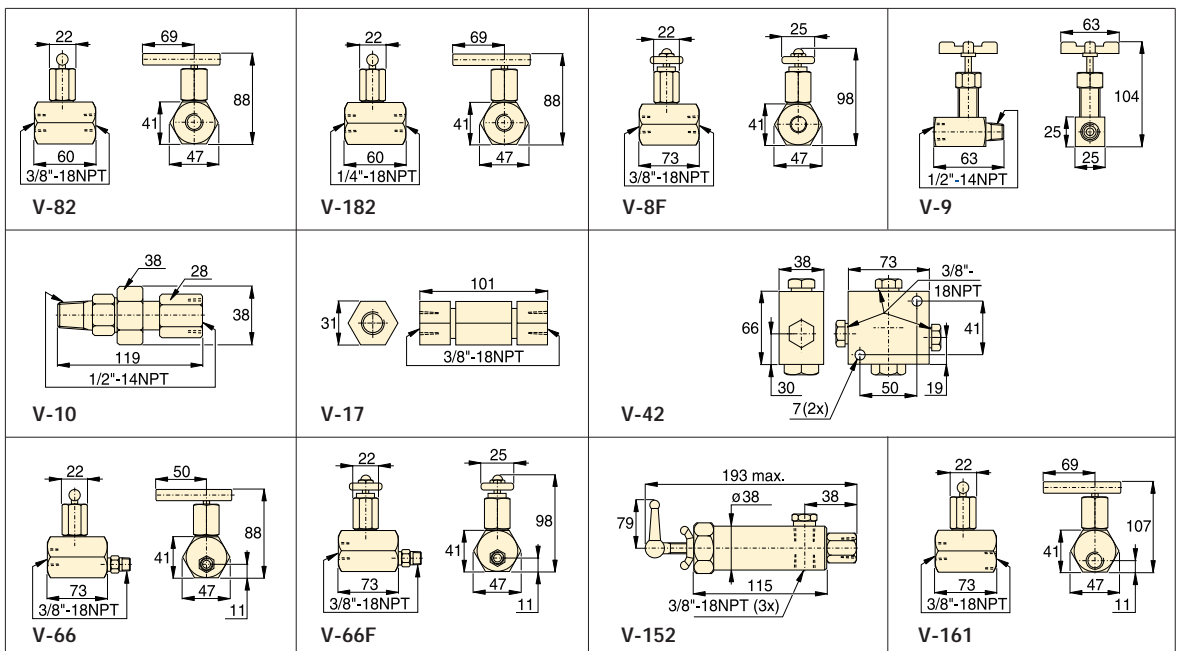


## Your Hydraulic Control Solution

▼ 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



Valve Dimensions in mm



# Pressure and Flow Control Valves



## Valve Applications

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

Page: 98



## Fittings












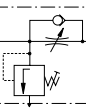

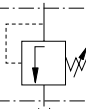

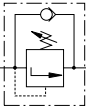
For additional fittings see the fitting page of the System Components section.

Page: 111

## V Series



Maximum Operating Pressure:  
**700 bar**

Valve Type and Model Number	Description	Hydraulic Symbol
<b>Needle Valve</b> <b>V-82</b> <b>V-182</b> <b>V-8F</b>	 <p><b>V-82:</b> To control cylinder speed. Can also be used as shut-off valve for temporary load holding.  <sup>3</sup>/<sub>8</sub>" NPTF female ports.  <b>V-182:</b> Same as V-82, but with</p>	<p><sup>1</sup>/<sub>4</sub>" NPTF female ports. Also suitable for gauge snubbing (also V-82).  <b>V-8F:</b> Like V-82, but with very fine metering for precise flow control.  <b>Not recommended as shut-off valve.</b></p> 
<b>Snubber Valve</b> <b>V-9</b>	 <p><b>V-9:</b> 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</p>	<p>valve to protect the gauge during high cycling applications. <sup>1</sup>/<sub>2</sub>" NPTF male and female threads for use with GA-1, GA-2 or GA-4 gauge adaptors.</p> 
<b>Auto Damper® Valve</b> <b>V-10</b>	 <p><b>V-10:</b> To be used when gauge pressure must be monitored during high cycle applications. Creates a flow resistance when load is released suddenly.</p>	<p>No adjustments are necessary. <sup>1</sup>/<sub>2</sub>" NPTF male and female threads for use with GA-1, GA-2 or GA-4 gauge adaptors.</p> 
<b>Check Valve</b> <b>V-17</b>	 <p><b>V-17:</b> Ruggedly built to resist shock and operate with low pressure drop. Closes smoothly without pounding. <sup>3</sup>/<sub>8</sub>" NPTF female ports.</p>	
<b>Pilot Operated Check Valve</b> <b>V-42</b>	 <p><b>V-42:</b> 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</p>	<p>Tee-fitting in the cylinder retract line. <sup>3</sup>/<sub>8</sub>" NPTF female ports.</p> 
<b>Manually Operated Check Valve</b> <b>V-66</b> <b>V-66F</b>	 <p><b>V-66:</b> Used for load holding applications with single and double acting cylinders. Valve is manually opened to allow oil to flow back to tank when cylinder retracts.</p>	<p><b>V-66F:</b> Similar to V-66, but with very fine metering capability for precise flow control.</p> 
<b>Pressure Relief Valve</b> <b>V-152</b>	 <p><b>V-152:</b> Limits pressure developed by the pump in hydraulic circuit, thus limiting the force imposed on other components. Valve opens whenever preset pressure is reached.</p>	<p>To increase pressure setting, turn handle clockwise. Includes:</p> <ul style="list-style-type: none"> <li>• 0,9 m return line hose kit,</li> <li>• ± 3% repeatability,</li> <li>• 55-700 bar adjustment range.</li> </ul> 
<b>Sequence Valve</b> <b>V-161</b>	 <p><b>V-161:</b> 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</p>	<p>allow flow to the secondary circuit. A pressure differential is always maintained between the primary and secondary circuit.  <b>Min. operating pressure: 140 bar.</b></p> 

**E**NERPAC Hydraulic Presses are available in a variety of capacities and sizes. The press frames are welded 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, H-frame, Workshop and Roll-frame models.

For safety reasons, all Enerpac presses with air and electric-drive pumps can be supplied with hand operated valves. This allows operation only when the valve handle is hand-held in the appropriate position. Once released, the valve automatically returns to the centre (hold) position.

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

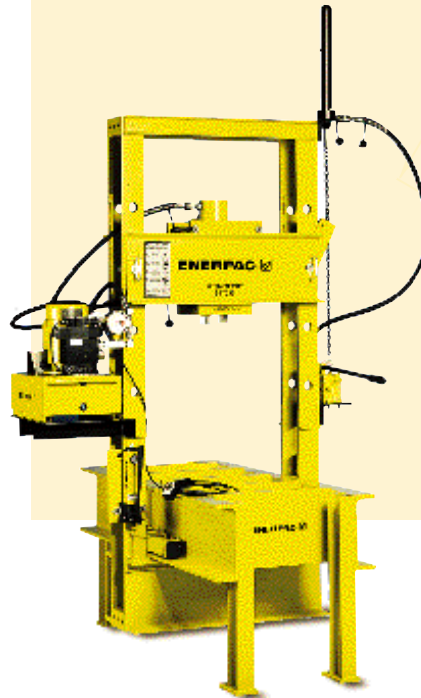
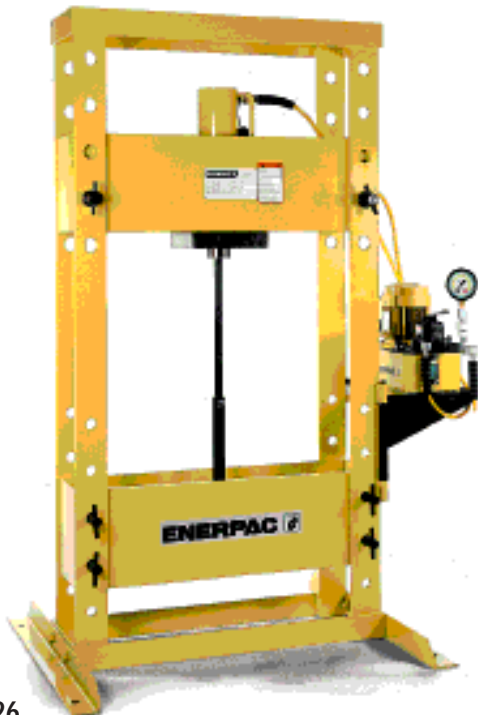
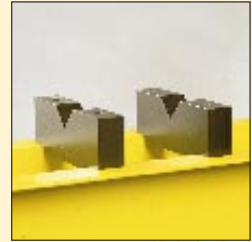
Standard on 50, 100 and 200 ton H-Frame presses with double-acting cylinder, the exclusive "Hydrajust" bed positioning, allowing adjustment of upper and lower bed.








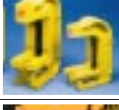


On 50, 100 and 200 ton presses the pump table can be moved sideways allowing side-loading of workpieces.



Optional "V-blocks" for positioning of complex parts, are designed with high-strength steel for long life.



# Press Section Overview

Capacity ton (kN)	Press type and functions	Serie		Page
10-200 (101-1995)	Heavy Duty H-Frame Presses	B		128 ▶
10-100 (101-933)	Workshop Presses	SOP		132 ▶
10 (101)	Bench Presses	SOP		132 ▶
50-200 (498-1995)	Roll Frame Presses	BPR		134 ▶
5-20 (45-178)	C-Clamp Presses	A		136 ▶
10-30 (101-295)	Arbor Presses	A		136 ▶
10-200 (101-1995)	Press Accessories and Speed Chart			138 ▶
900-275.000 kg	Tension Meter Load Cells	TM LH		139 ▶

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.

#### Welded Frame

All presses feature a welded steel frame for optimum strength. The larger models include features like workpiece side-loading and hydraulic height adjustment of 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 H-frame and Workshop presses (except SOP-106 models) feature an easy to monitor pressure/force gauge for increased safety.



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 or others.

▼ Press shown: BEP-5273



- Quality welded H-frame for maximum strength and stability
- Manual, air or electric driven power sources
- Available with single or double-acting cylinder
- Side movement of cylinder (on 10 and 25 ton)
- Unique "Hydrajust" bed positioning device on 50, 100 and 200 ton presses equipped with double-acting cylinders

## Great Possibilities Great Performance



### 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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### "Hydrajust" Bed Positioning

Allows vertical adjustment of upper and lower bed on double-acting 50, 100 and 200 ton presses.



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

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### Swivel Pump Table

All H-Frame presses feature a pump table which can be swivelled to clear the right side of the press, allowing side-loading of work-pieces.

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◀ An Enerpac H-frame press makes quick work of removing the shaft from this assembly.

# Heavy-Duty H-Frame Presses



## Best matching power source

Depending the production requirements of your press, a wide range of power sources are available to best match your application.

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## For increased safety, gauge included

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

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## B Series



Capacity:

**10-200 ton**

Maximum Daylight x Width:

**1339 x 1220 mm**

Maximum Operating Pressure:

**700 bar**

### ▼ QUICK SELECTION CHART

For more technical information see next page.



= Single-Acting



= Double-acting

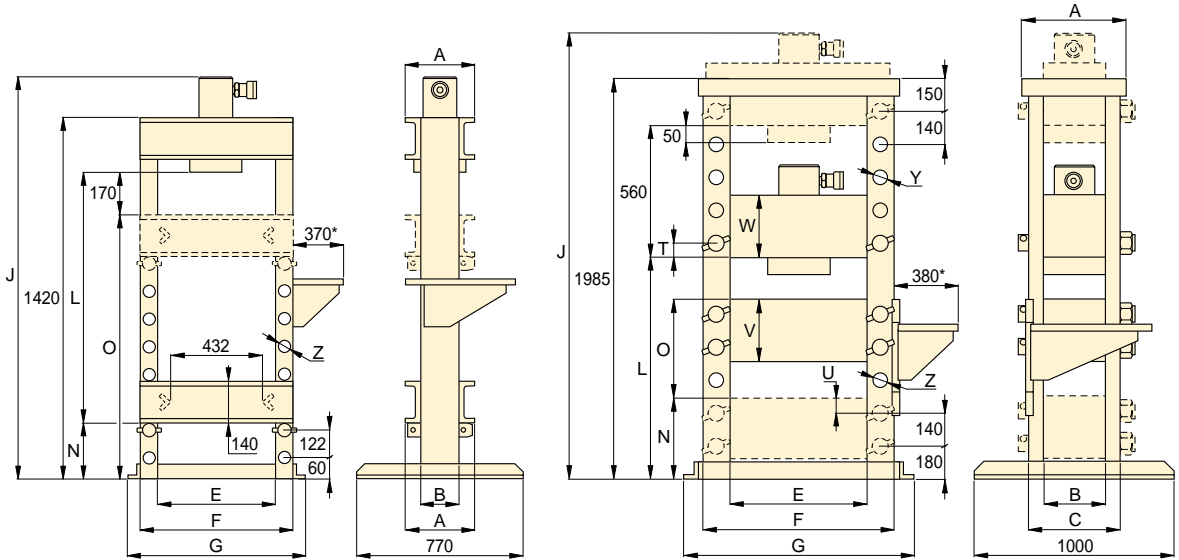
Press Capacity ton (kN)	Maximum Bed Daylight (mm)	Maximum Bed Width (mm)	Power Source**					Press Model Number	Cylinder**			Speed (mm/sec)*	
			Type			Valve			Stroke (mm)	Rapid Advance	Pressing		
			Man.	Elec.	Air	Man.	Elec.						
10 (101)	1025	510	●			●		BMP-1117	●		155	{7,8}	{1,7}
	1025	510	●			●		BMP-1120	●		257	{11,2}	{1,7}
	1025	510			●	●		BAP-1116	●		155	12,0	1,5
	1025	510			●	●		BAP-1120	●		257	123,0	1,7
	1025	510			●	●		BAP-1230		●	254	123,0	1,7
25 (232)	1025	510	●			●		BMP-2126	●		159	{11,8}	{0,7}
	1025	510	●			●		BMP-2130	●		260	{37,9}	{1,4}
	1025	510			●	●		BAP-2120	●		260	53,0	0,7
	1025	510			●	●		BAP-2230		●	260	53,0	0,7
	1025	510		●		●		BEP-2190	●		260	2,8	2,8
	1025	510		●		●		BEP-2270		●	260	26,0	2,8
50 (498)	1335	800	●			●		BMP-5126	●		159	{2,3}	{0,3}
	1335	800	●			●		BMP-5136	●		159	{17,7}	{0,7}
	1335	800			●	●		BAP-5233		●	333	25,0	0,3
	1335	800		●		●		BEP-5273		●	333	12,0	1,3
	1335	800		●		●		BEP-5233		●	333	12,0	1,3
	1335	800		●		●		BEP-5253		●	333	20,0	1,9
100 (933)	1145	1000	●			●		BMP-10246	●		168	{8,8}	{0,3}
	1145	1000			●	●		BAP-10236		●	168	13,0	0,2
	1145	1000		●		●		BEP-10286		●	168	6,4	0,7
	1145	1000		●		●		BEP-10233		●	333	11,0	1,0
	1145	1000		●		●		BEP-10253		●	333	11,0	1,0
200 (1995)	1339	1220		●		●		BEH-20253		●	333	11,5	1,3

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

\*\* See next pages for specific model numbers.



# B-Series, H-Frame Presses



## 10 and 25 ton models

\* 140 mm for presses with P-80 or P-392 handpump

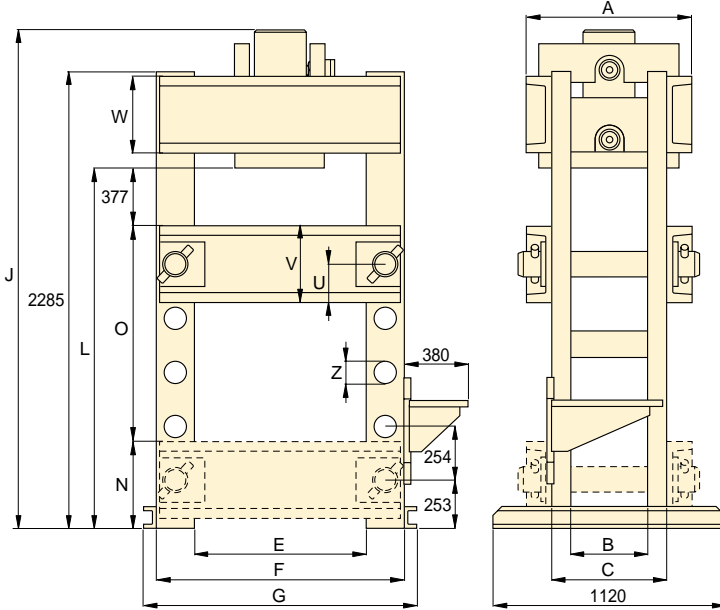
## 50 and 100 ton models

\* 160 mm for BMP-5126

◀ For full features see previous page.

Press Capacity ton (kN)	Press Model Number	Pump Model Number	Page:	Cylinder Model Number	Page:	H-Frame Press Dimensions (mm)							
						A	B	C	E	F	G	J	L
10 (101)	BMP-1117	P-392	54	RC-106	8	260	140	-	510	630	710	1483	1042
	BMP-1120	P-80	56	RC-1010	8	260	140	-	510	630	710	1585	1042
	BAP-1116	PAT-1102N	84	RC-106	8	260	140	-	510	630	710	1483	1042
	BAP-1120	PAM-1021	87	RC-1010	8	260	140	-	510	630	710	1585	1042
	BAP-1230	PAM-1041	87	RR-1010	26	260	140	-	510	630	710	1648	1042
25 (232)	BMP-2126	P-80	56	RC-256	8	260	140	-	510	630	710	1513	1042
	BMP-2130	P-462	56	RC-2510	8	260	140	-	510	630	710	1615	1042
	BAP-2120	PAM-1021	87	RC-2510	8	260	140	-	510	630	710	1615	1042
	BAP-2230	PAM-1041	87	RD-2510	8	260	140	-	510	630	710	1749	1042
	BEP-2190	PEM-2305WS	74	RC-2510	26	260	140	-	510	630	710	1615	1042
	BEP-2270	PEM-2405W	74	RD-2510	24	260	140	-	510	630	710	1749	1042
50 (498)	BEP-2176	PEM-2205W	74	RC-256	8	260	140	-	510	630	710	1513	1042
	BMP-5126	P-80	56	RC-506	8	312	252	292	800	1000	1180	2035	1175
	BMP-5136	P-462	56	RC-506	8	312	252	292	800	1000	1180	2035	1175
	BAP-5233	PAM-1041	87	RR-5013	26	312	252	292	800	1000	1180	2199	1175
	BEP-5273	PEM-2505W	74	RR-5013	26	312	252	292	800	1000	1180	2199	1175
	BEP-5233	PEM-2420W	74	RR-5013	26	312	252	292	800	1000	1180	2199	1175
100 (933)	BEP-5253	PER-3420W	74	RR-5013	26	312	252	292	800	1000	1180	2199	1175
	BMP-10246	P-464	56	RR-1006	26	432	332	392	1000	1240	1440	2065	1105
	BAP-10236	PAM-1041	87	RR-1006	26	432	332	392	1000	1240	1440	2065	1105
	BEP-10286	PEM-2408W	74	RR-1006	26	432	332	392	1000	1240	1440	2065	1105
	BEP-10233	PEM-3420W	74	RR-10013	26	432	332	392	1000	1240	1440	2138	1105
200 (1995)	BEH-20253	PER-3420W	74	RR-20013	26	553	233	333	1220	1620	1740	2370	1792

# Heavy-Duty H-Frame Presses



(200 ton model)

## B Series



Capacity:

**10 - 200 ton**

Maximum Daylight x Width:

**1339 x 1220 mm**

Maximum Operating Pressure:

**700 bar**

H-Frame Press Dimensions (mm)								Weight (kg)	Press Model Number
N	O	T	U	V	W	Y	Z		
198	1070	-	-	-	-	-	32	135	<b>BMP-1117</b>
198	1070	-	-	-	-	-	32	144	<b>BMP-1120</b>
198	1070	-	-	-	-	-	32	137	<b>BAP-1116</b>
198	1070	-	-	-	-	-	32	157	<b>BAP-1120</b>
198	1070	-	-	-	-	-	32	163	<b>BAP-1230</b>
198	1070	-	-	-	-	-	32	150	<b>BMP-2126</b>
198	1070	-	-	-	-	-	32	168	<b>BMP-2130</b>
198	1070	-	-	-	-	-	32	163	<b>BAP-2120</b>
198	1070	-	-	-	-	-	32	170	<b>BAP-2230</b>
198	1070	-	-	-	-	-	32	170	<b>BEP-2190</b>
198	1070	-	-	-	-	-	32	187	<b>BEP-2270</b>
198	1070	-	-	-	-	-	32	177	<b>BEP-2176</b>
400	420	100	80	300	300	42	32	448	<b>BMP-5126</b>
400	420	100	80	300	300	42	32	461	<b>BMP-5136</b>
400	420	100	80	300	300	42	32	485	<b>BAP-5233</b>
400	420	100	80	300	300	42	32	497	<b>BEP-5273</b>
400	420	100	80	300	300	42	32	520	<b>BEP-5233</b>
400	420	100	80	300	300	42	32	528	<b>BEP-5253</b>
520	280	170	60	400	400	52	40	974	<b>BMP-10246</b>
520	280	170	60	400	400	52	40	969	<b>BAP-10236</b>
520	280	170	60	400	400	52	40	986	<b>BEP-10286</b>
520	280	170	60	400	400	52	40	1032	<b>BEP-10233</b>
520	280	170	60	400	400	52	40	1040	<b>BEP-10253</b>
453	962	-	200	400	410	-	76,5	1946	<b>BEH-20253</b>



## H-Frame Press Gauges

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

Press Capacity	Gauge Model Number	Adaptor Model Number
ton		
10	GF-10S	GA-2
25	GF-835	GA-3
50	GF-835	GA-3
100	GF-871	GA-3
200	GF-200S	GA-3

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

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## 'Hydrajust' Bed Positioning


Supplied standard with 50, 100 and 200 ton presses with double-acting cylinders.

▼ Shown from left to right: SOP-236P392, SOP-1006BPM, SOP-106P142.




- Quality welded frame for maximum strength and stability
- Manual, air or electric driven power source
- Single or double-acting GOLDEN RING DESIGN cylinders
- Moveable pump table on presses with electric drive power source allows easy loading of large workpieces
- Side to side movement of cylinder on 10 and 25-ton presses for easy fixturing
- Height adjustment of lower bed with a winch (25-ton press)
- Unique 'Hydrajust' bed positioning device on 50 and 100-ton presses with double-acting cylinders provides quick adjustment of daylight

## No Workshop can do without one




**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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**'Hydrajust' Bed Positioning**  
Allows vertical adjustment of upper and lower bed on double-acting 50 and 100 ton presses.

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

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
### ▼ SELECTION CHART



= Single-Acting



= Double acting

Press Capacity ton (kN)	Maximum Bed Daylight (mm)	Maximum Bed Width (mm)	Press Model Number	Power Source					Cylinder						
				Pump Type			Valve Type		Pump Model Nr.	Page:			Stroke (mm)	Cylinder Model Nr.	Page:
				Man.	Elec.	Air	Man.	Elec.							
10 (101)	390	380	SOP-106P142	•			•		P-142	54	•		155	RC-106	8
	390	380	SOP-106PAT1			•	•		PAT-1102N	84	•		155	RC-106	8
25 (232)	1225	510	SOP-236P392	•			•		P-392	54	•		159	RC-256	8
	1225	510	SOP-236PAT1			•	•		PAT-1102N	84	•		159	RC-256	8
50 (498)	1335	800	SOP-506P802	•			•		P-802	54	•		159	RC-506	8
	1335	800	SOP-506BPM1		•		•		PEM-5405WS	74		•	155	RR-506	26
	1335	800	SOP-506BPE1		•			•	PER-5405WS	74		•	155	RR-506	26
	1335	800	SOP-513BPE1		•			•	PER-5405WS	74		•	333	RR-5013	26
100 (933)	1145	1000	SOP-1006BPM		•		•		PEM-2408W	74		•	168	RR-1006	26
	1145	1000	SOP-1006BPE		•			•	PER-2408W	74		•	168	RR-1006	26
	1145	1000	SOP-1013BPE		•			•	PER-2420W	74		•	333	RR-10013	26

# Bench and Workshop Presses



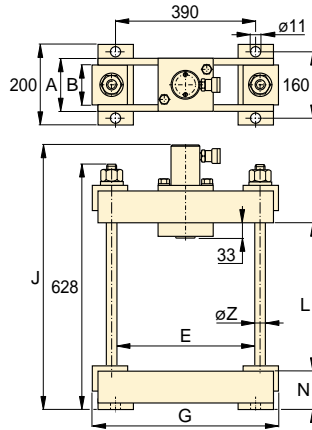
## Press Gauges

All press models (except 10-ton) include a gauge and gauge adaptor, matching the press capacity:

Press Capacity ton	Gauge Model Number	Adaptor Model Number
25	GF-20S	GA-2
50	GF-50S	GA-2
100	GF-871	GA-3

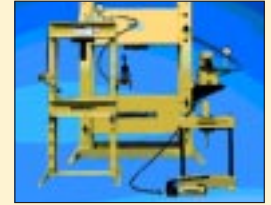
For more information on gauges, please refer to the System Components section.

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10 ton Bench models

## SOP Series



Capacity:

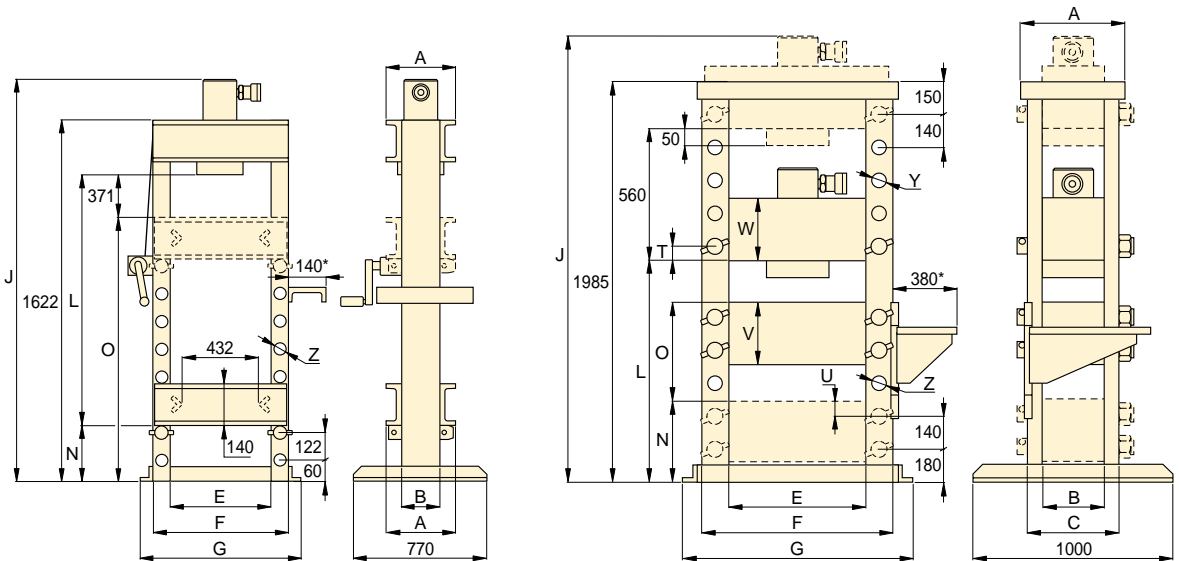
**10 - 100 ton**

Maximum Daylight x Width:

**1335 x 1000 mm**

Maximum Operating Pressure:

**700 bar**



25 ton models

\* No pump table on SOP-236PAT1

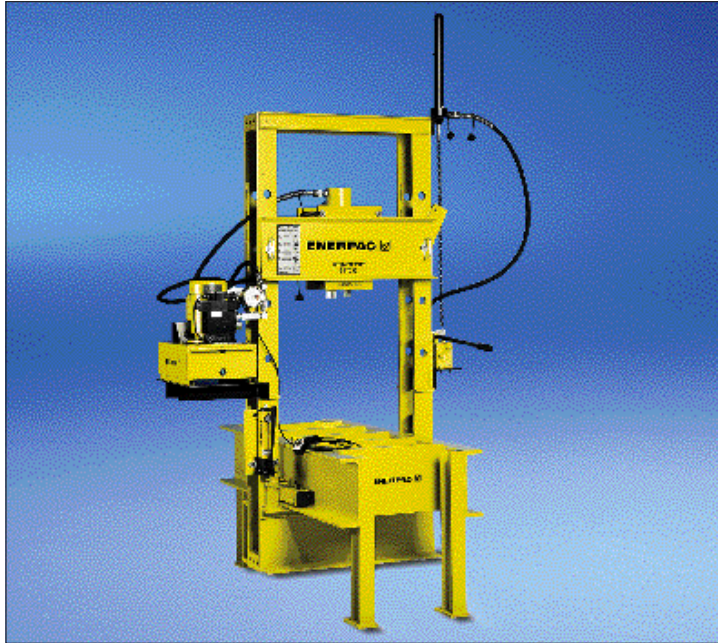
50 and 100 ton models

\* 180 mm for SOP-506P802

Speed (mm/sec)*		Dimensions (mm)															Weight (kg)	Press Model Number	
Rapid Advance	Pressing	A	B	C	E	F	G	J	L	N	O	T	U	V	W	Y			Z
{2,5}	{0,6}	113	83	-	380	-	470	-	420	100	-	-	-	-	-	-	30	49	SOP-106P142
12	1,5	113	83	-	380	-	470	-	420	100	-	-	-	-	-	-	30	52	SOP-106PAT1
{3,4}	{0,7}	260	140	-	510	630	710	1740	1243	198	1070	-	-	-	-	-	32	165	SOP-236P392
5,3	0,7	260	140	-	510	630	710	1740	1243	198	1070	-	-	-	-	-	32	167	SOP-236PAT1
{5,5}	{0,3}	312	252	292	800	1000	1180	1968	1175	400	420	100	80	300	300	42	32	510	SOP-506P802
4,3	4,3	312	252	292	800	1000	1180	2047	1175	400	420	100	80	300	300	42	32	522	SOP-506BPM1
4,3	4,3	312	252	292	800	1000	1180	2047	1175	400	420	100	80	300	300	42	32	539	SOP-506BPE1
4,3	4,3	312	252	292	800	1000	1180	2199	1175	400	420	100	80	300	300	42	32	556	SOP-513BPE1
13	1,5	432	332	392	1000	1240	1440	2065	1105	520	280	170	60	400	400	52	40	1015	SOP-1006BPM
13	1,5	432	332	392	1000	1240	1440	2065	1105	520	280	170	60	400	400	52	40	1025	SOP-1006BPE
13	1,5	432	332	392	1000	1240	1440	2138	1105	520	280	170	60	400	400	52	40	1073	SOP-1013BPE

\* {...} = 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
- Roller head design is standard to allow 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



### Cylinder adjustment

Cylinder adjustment allows horizontal side to side cylinder positioning.



### 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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### Hydra-Lift

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

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Press Capacity ton (kN)	Bed Daylight A (mm)		Maximum Bed Width E (mm)	Electric Pump		Press Model Number	Double-Acting Cylinder			Speed (mm/sec)	
	min.	max.		Model Number	Page		Stroke (mm)	Model Number	Page	Rapid Advance	Pressing
50 (498)	152	942	730	PER-3420W	74	BPR-5075	333	RR-5013	26	22	2,3
100 (933)	159	1048	889	PER-3420W	74	BPR-10075	333	RR-10013	26	12	1,3
200 (1995)	279	1295	1219	PER-3420W	74	BPR-20075	330	RR-20013	26	5,4	0,6



# Roll Frame Presses

▼ An BPR-20075 Roll Frame Press is used to remove a large shaft from this pillow-block assembly. The Roll Frame design allows this heavy part to be safely loaded with an over-head crane.



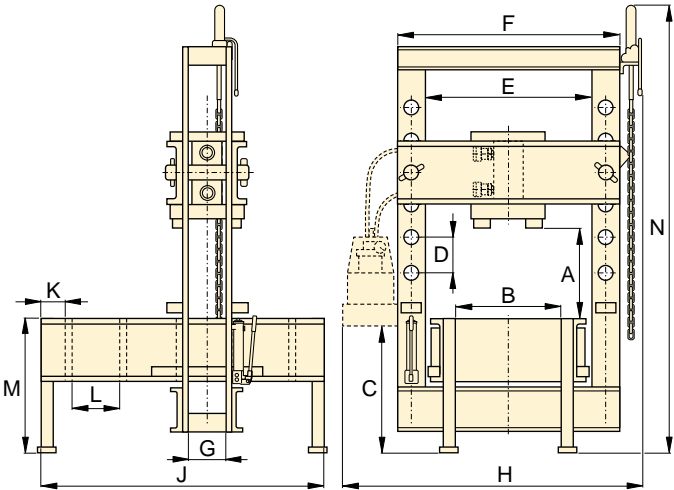
## BPR Series



Capacity:  
**50-200 ton**

Maximum Daylight x Width:  
**1295 x 1219 mm**

Maximum Operating Pressure:  
**700 bar**



### Roll Frame Press Gauges

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

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

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

Page: 112

Roll Frame Press Dimensions (mm)

Roll Frame Press Dimensions (mm)													Weight (kg)	Press Model Number
A (min.-max.)	B	C	D	E	F	G	H	J	K	L	M	N		
152-942	387	971	264	730	933	127	1420	1626	203	270	762	2870	917	BPR-5075
159-1048	438	965	222	889	1143	146	1605	1676	203	270	813	3021	1767	BPR-10075
279-1295	610	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



### 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).



### 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).

### 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



### 10 ton Bench Presses

For 10 ton Bench Press selection see:

Page: 132

Press Type	Press Capacity ton (kN)	Maximum Bed 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*	8
	10 (101)	228	57	A-210	10 ton RC-cylinder*	8
	20 (178)	305	70	A-220	25 ton RC-cylinder**	8
Arbor	10 (101)	227	135	A-310	10 ton RC-cylinder*	8
	30 (295)	260	178	A-330	RC-308*	8

\* Recommended cylinder must be ordered separately.

\*\* Must be limited to 20 ton.

# C-Clamp and Arbor Presses

▼ A perfect example of the force and versatility of the Enerpac A-220 C-Clamp press.



**A**  
Series



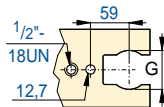
Capacity:  
**5-30 ton**

Maximum Daylight x Width:  
**305 x 178 mm**

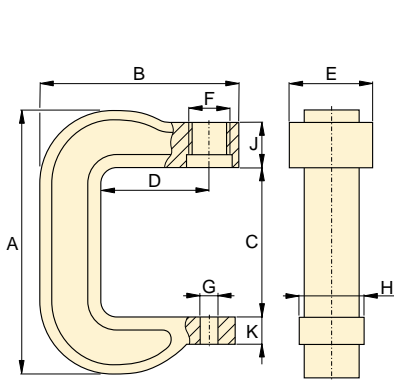
Maximum Operating Pressure:  
**700 bar**



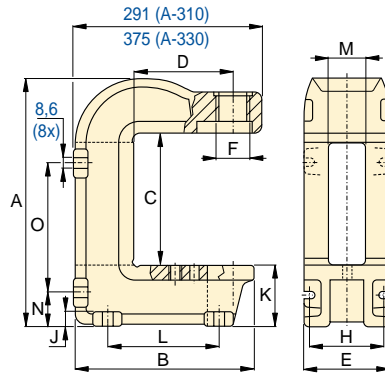
For high-cycle production applications, the C-Clamp and Arbor presses should be limited to 50% of their capacity.



Top View Working Surface






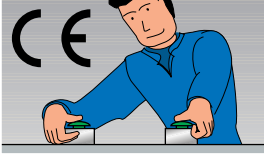
C-Clamp Press A-205, A-210, A-220



Arbor Press A-310, A-330

Press Dimensions (mm)														Weight (kg)	Press Model Number
A	B	C	D	E	F	G	H	J	K	L	M	N	O		
291	203	165	95	73	1 1/2-16 UN	26	51	66	25	-	-	-	-	7	A-205
406	283	228	152	83	2 1/4-14 UN	26	76	64	41	-	-	-	-	17	A-210
540	346	305	152	108	3 5/16-12 UN	26	95	70	44	-	-	-	-	38	A-220
414	281	227	152	135	2 1/4-14 UN	63	122	19	97	175	65	54	219	27	A-310
557	353	260	152	178	3 5/16-12 UN	63	140	25	165	203	67	98	276	86	A-330

# Press Accessories, Press Speed Chart

Description	Press Frame Capacity	Model Number		Features
V-Blocks	10 ton Bench 10-23 ton H-frame 23 ton Workshop 50 ton H-frame and Workshop 100 ton H-frame and Workshop 200 ton H-frame 200 ton Roll frame	A-110 BSA-1021 BSA-1021 BSA-501 BSA-1001 A-200 A-200R		<ul style="list-style-type: none"> <li>Facilitate positioning of pipes and bars, or placed upside-down, to serve as a convenient worktable</li> <li>A-110 includes one V-block</li> <li>All other model numbers include 2 V-blocks</li> </ul>
Hydra-Lift	50-100 ton Roll frame 200 ton Roll frame	IPL-R100 IPL-R200		<ul style="list-style-type: none"> <li>Allows easy, effortless daylight adjustments</li> <li>Includes accessory chain</li> </ul>
'Hydrajust' Bed Positioning	50 ton H-frame and Workshop 100 ton H-frame and Workshop 200 ton H-frame	BSS-2315 BSS-2310 BSS-5380		<ul style="list-style-type: none"> <li>Allowing effortless daylight adjustment by moving the upper- and lower bed on double-acting presses</li> <li>Bolted to the cylinder plunger, both beds can be moved up and down</li> </ul>
Two-Button Control	All press models with electric operated valves	-		<ul style="list-style-type: none"> <li>Two hand operation of the press for maximum operator safety</li> <li>Call Enerpac for detailed information</li> </ul>

## ▼ PRESS SPEED CHART

Press Capacity  ton (kN)	Cylinder load	Hand Pumps					Electric Pumps				Air Pumps		
		mm of plunger travel per handpump stroke					mm of plunger travel per second						
		Two-Speed					Single-Speed		Two-Speed		Two-Speed		
		P-142	P-392	P-80	P-802	P-462 P-464	PEM-2305WS	PEM-5405WS PER-5405WS	PEM-2205W PEM-2405W PEM-2408W PEM-2420W PER-2408W *	PEM-3420W PER-3420W	At 6,9 bar air pressure		
									PAT-1102N	PAM-1021 PAM-1041			
10 (101)	No load	1	7,8	11,2	-	-	-	-	-	-	12	123	
	Load	2	1,7	1,7	-	-	-	-	-	-	1,5	1,7	
25 (232)	No load	-	3,4	4,9	-	37,9	2,8	-	26,0	-	5,3	53	
	Load	-	0,7	0,7	-	1,4	2,8	-	2,8	-	0,7	0,7	
30 (295)	No load	-	2,6	3,7	9,0	29,0	2,2	-	20,0	-	4,3	42	
	Load	-	0,6	0,6	0,6	1,1	2,2	-	2,2	-	0,5	0,6	
50 (498)	No load	-	-	2,3	5,5	17,7	-	3,6	-	20,0	-	25	
	Load	-	-	0,3	0,3	0,7	-	3,6	-	1,9	-	0,3	
100 (933)	No load	-	-	-	-	8,8	-	-	6,4	11,0	-	13	
	Load	-	-	-	-	0,3	-	-	0,7	1,0	-	0,2	
200 (1995)	No load	-	-	-	-	-	-	-	-	5,4	-	-	
	Load	-	-	-	-	-	-	-	-	0,6	-	-	

Note: Values are approximate. Cylinder speed may vary in actual application.

\* The 100 ton Workshop Press SOP-1013BPE includes pump model number PER-2420W.

# Tension Meter and Load Cells

▼ Shown: LH-102 and TM-5 (in middle)



## TM, LH Series

Capacity:

**900 - 275.000 kg**

Accuracy, % of full scale:

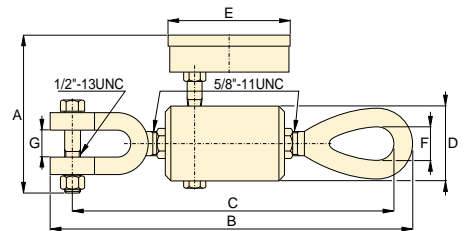
**±2%**

### Tension Meter TM-5

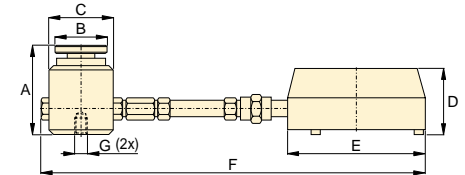
- Accuracy  $\pm 2\%$  of full scale
- Zinc and bronze plated to resist corrosion
- Dual-range readout in kilograms and pounds
- Cushioned metal case provides safe storage and transport

### Load Cells LH Series

- Accuracy  $\pm 2\%$  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



TM-5



LH-Series

Type	Gauge Capacity (kg)	Model Number	Minimum Reading (kg)	Gauge Increments (kg)	Dimensions (mm)						
					A	B	C	D	E	F	G
Direct Mounted	4500	TM-5	500	100	121	248	236	51	94	22	19
Direct Mounted Load Cell	900	LH-10	100	20	78	44	57	60	102	216	1/4"-20, 44,5 BC
	4500	LH-50	500	100	78	44	57	60	102	216	1/4"-20, 44,5 BC
Remote Mounted with 0,6 m Hose	900	LH-102	100	20	78	44	57	60	148	846	1/4"-20, 44,5 BC
	4500	LH-502	500	100	78	44	57	60	148	846	1/4"-20, 44,5 BC
	9000	LH-1002	1000	200	78	44	57	60	148	846	1/4"-20, 44,5 BC
Remote Mounted with 1,8 m Hose	21.000	LH-2506	2000	500	102	70	86	60	148	2094	3/8"-24, 63,5 BC
	45.000	LH-5006	5000	1000	133	102	127	60	148	2135	3/8"-24, 89,0 BC
	90.000	LH-10006	10.000	1000	158	127	159	60	148	2167	3/8"-24, 101,6 BC
	275.000	LH-30006	25.000	2500	170	152	310	60	148	2318	1/2"-13, 283,0 BC



**E**NERPAC offers a complete line of pullers with the widest range of sizes, capacities and styles. Whether your application requires mechanical, hydraulic or the patented Posi Lock® 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.



### Mechanical

An economical design for installing and removing all press fitted or heat fitted parts such as gears, pulleys, wheels, bearings, sleeves, sprockets, pins or other stubborn parts.



### 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.



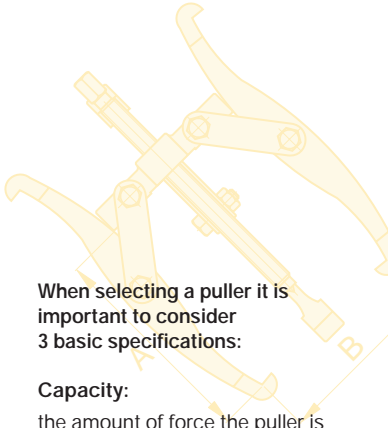
### Posi Lock® Pullers

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, tool life and reducing dangerous situations for the user. The Posi Lock® feature is available in a mechanical or hydraulic version.



Always wear Safety Goggles while using pullers.

# Puller Section Overview



When selecting a puller it is important to consider 3 basic specifications:

**Capacity:**

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:

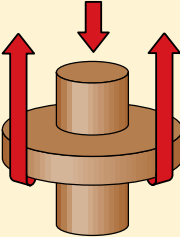



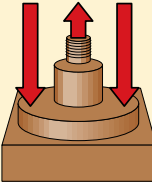


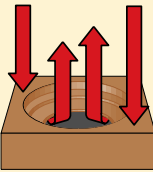


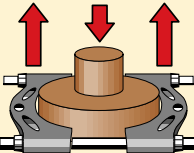

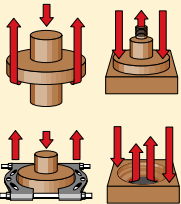

Shaft Diameter	Puller Capacity
0 - 25 mm	10 ton
25 - 50 mm	20 ton
50 - 89 mm	30 ton
89 - 140 mm	50 ton

**Reach:**

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.

**Spread:**

the distance between the jaws. The puller's spread needs to be greater than the width of the part being pulled.

Type and Functions	Capacities		Page		
<b>Grip Pullers</b> 	<b>Mechanical</b> Capacity 1 - 30 ton Maximum Reach 55 - 585 mm Maximum Spread 50 - 580 mm		142 ▶		
	<b>Hydraulic</b> Capacity 8 - 50 ton Maximum Reach 252 - 700 mm Maximum Spread 250 - 1100 mm		144 ▶ 148 ▶		
	<b>Posi Lock®</b> Capacity 2 - 100 ton Maximum Reach 100 - 1219 mm Maximum Spread 76 - 1778 mm		150 ▶ 154 ▶		
<b>Cross-Bearing Puller</b> 	<b>Mechanical</b> Capacity 10 - 30 ton Maximum Reach 205 - 485 mm Maximum Spread 170 - 450 mm		142 ▶ 146 ▶		
	<b>Hydraulic</b> Capacity 8 - 50 ton Maximum Reach 462 - 863 mm Maximum Spread 266 - 570 mm		144 ▶		
<b>Bearing Cup</b> 	<b>Mechanical</b> Capacity - Maximum Reach 110 - 145 mm Maximum Spread 91 - 190 mm		142 ▶		
	<b>Hydraulic</b> Capacity 8 - 50 ton Maximum Reach 110 - 145 mm Maximum Spread 110 - 359 mm		147 ▶		
<b>Bearing Puller</b> 	<b>Mechanical</b> Capacity 2 - 50 ton Maximum Reach 59 - 260 mm Maximum Spread 5 - 252 mm		143 ▶ 147 ▶		
<b>Puller Sets</b> 			<b>Hydraulic</b> Capacity 8 - 50 ton  <b>Posi Lock®</b> Capacity 10 - 100 ton		144 ▶ 148 ▶ 154 ▶

▼ Shown: MPR-23, MP-13, MPL-102, MPR-23, MPR-43



- Full line of Mechanical Pullers
- Two, two/three and three Jaw Grip Puller designs
- Puller jaws are made of forged steel and heat treated for maximum durability and strength

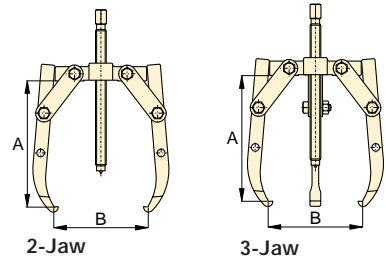
▼ *The toughest job can be done with ease. An Enerpac mechanical puller does not need much physical effort.*



## Lightweight & Flexible

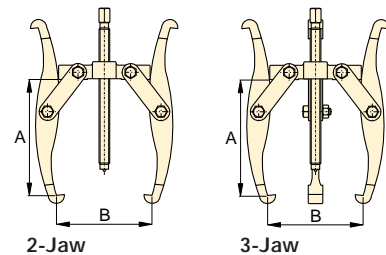
### Grip/Long Grip Pullers

Grip pullers are used when removing a bearing, gear or pulley from a shaft. Grip Pullers are available in two, two/three and three arms designs. All puller jaws have additional mounting holes to adjust to shorter long reach applications. Long arm grip pullers are also available.



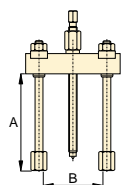
### Reversible Grip Pullers

For flexibility, reversible grip pullers incorporate two tools in one puller. This grip puller uses a reversible jaw that combines a standard grip and a slotted grip. Reversible grip pullers can be used as standard grip pullers or bolt grip pullers.



### Cross Bearing Puller

Cross Bearing Pullers can be used in almost any pulling or pressing application. Depending on the application, bearing cup and bearing puller attachments can be used with the cross bearing puller.



# Mechanical Pullers

## MP Series



Capacity:  
**1 - 30 ton**

Reach:  
**55 - 585 mm**

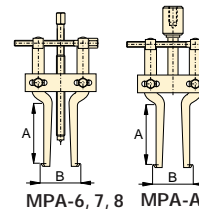
Spread:  
**50 - 580 mm**

	Capacity ton (kN)	Max. Reach A (mm)	Min.-Max. Spread B (mm)	Model Number	Number of Jaws	Weight (kg)
<b>Grip Pullers</b>						
	1 (8,9)	55	70	MP-12	2	0,2
		55	70	MP-13	3	0,3
	13 (115)	300	310	MP-102	2	7,5
		300	310	MP-103	2/3	7,5
	17,5 (155)	365	425	MP-172	2	11,5
		365	425	MP-173	3	16,5
30 (267)	460	520	MP-302	2	25,5	
	460	520	MP-303	3	33,5	
<b>Long Grip Pullers</b>						
	5 (44)	185	175	MPL-42	2	1,4
		185	175	MPL-43	2/3	2,1
	7 (62)	225	240	MPL-72	2	2,5
		225	240	MPL-73	2/3	3,5
	13 (115)	385	360	MPL-102	2	6,0
		385	360	MPL-103	2/3	8,5
	17,5 (155)	480	480	MPL-172	2	13,0
		480	480	MPL-173	3	18,5
	30 (267)	585	580	MPL-302	2	23,5
		585	580	MPL-303	3	39,0
<b>Reversible Grip Pullers</b>						
	2 (17)	65	80	MPR-22	2	0,3
		65	80	MPR-23	2/3	0,6
	5 (44)	85	150	MPR-42	2	1,0
		85	150	MPR-43	2/3	1,5
	7 (62)	125	200	MPR-72	2	2,1
		125	200	MPR-73	2/3	3,0
<b>Cross Bearing Pullers</b>						
	10 (89)	205	50-170	MPP-10	2	3,4
	17,5 (155)	255	86-266	MPP-17	2	9,5
	30 (267)	485	116-450	MPP-30	2	35,0
<b>Bearing Cup Puller Attachment</b>						
	-	110	25-91	MPA-6*	2	2,4
	-	140	25-91	MPA-7*	2	2,6
	-	145	50-190	MPA-8*	2	6,0
<b>Bearing Cup Puller (Central Screw)</b>						
	-	110	25-91	MPA-6A	2	2,4
	-	140	25-91	MPA-7A	2	2,6
	-	145	50-190	MPA-8A	2	6,0
<b>Bearing Puller Attachments</b>						
	2 (17)	59	5-50	MPA-1	-	0,7
	10 (89)	110	10-109	MPA-2	-	2,7
	17,5 (155)	150	10-129	MPA-3	-	5,7
	30 (267)	180	15-203	MPA-4	-	12,5

\* Combinations to make: MPA-6 with MPP-10 or MPP-17, MPA-7 with MPP-10 or MPP-17, MPA-8 with MPP-17 or MPP-30

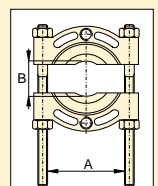
### Bearing Cup Pullers

Bearing cup pullers are used to remove bearing cups, oil seals, bushing and sleeves from blind holes. Bearing cup pullers are used with corresponding cross bearing pullers when there is no point of support. When there is a point of support, a central screw bearing cup puller may be used by itself.



### Bearing Puller Attachments

Bearing puller attachments can be used with grip, bearing and bearing cup pullers to solve many difficult pulling applications where pulling surfaces are limited.







▼ Shown: Master Puller Set BHP-3751G



## Multi Purpose Puller Set



**Separate Ordering of Single Purpose Pullers**  
All single purpose pullers can be ordered separately. See next pages for details.



**Speed Crank and Adjusting Screw**  
Sets include speed crank and adjusting screw for fast contact to work before hydraulics are applied.

- Supplied with a full hydraulic set including pump, hose, cylinder, gauge, gauge adaptor and wooden case
- All Master Puller Sets include a Grip Puller, a Cross Bearing Puller, a Bearing Cup Puller and a Bearing Puller Attachment
- High quality, forged steel components provide superior reliability and service



*Maintenance engineers throughout the industry greatly appreciate the Enerpac Master Puller sets ▶*

### ▼ SELECTION CHART

Master Puller Set Capacity	8 ton	20 ton	30 ton	50 ton	Page:
Model Number ▶	BHP-1752	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	54-57 ▶
• Cylinder	RWH-121*	RCH-202	RCH-302	RCH-603	20 ▶
• Saddle	-	HP-2015	HP-3015	HP-5016	21-22 ▶
• Hose	HB-7206	HC-7206	HC-7206	HC-7206	107 ▶
• Gauge	GF-120	GF-813S	GF-813S	GF-813S	112 ▶
• Gauge Adaptor	GA-4	GA-3	GA-3	GA-3	118 ▶
<b>Included Pullers</b>					
10 Grip Puller	BHP-1762	BHP-252	BHP-352	BHP-552	145 ▶
20 Cross Bearing Puller	BHP-1772	BHP-262	BHP-362	BHP-562	146 ▶
30 Bearing Cup Puller	BHP-180	BHP-280	BHP-380	BHP-580	147 ▶
40 Bearing Puller	BHP-181	BHP-282	BHP-382	BHP-582	147 ▶
• Wooden Case	CW-166	CW-166	CW-550	CW-750	

\* Specifications of RWH-121 cylinder are the same as for RCH-121.



# Grip Puller Sets

▼ 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:

**8, 20, 30 and 50 ton**

Reach:

**252 - 700 mm**

Spread:

**250- 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		8 ton	20 ton	30 ton	50 ton
	Model Number ▶	<b>BHP-152</b>	<b>BHP-251G</b>	<b>BHP-351G</b>	<b>BHP-551G</b>
<b>Included Hydraulics</b>	Set Weight ▶	22 kg	56 kg	91 kg	160 kg
• Hand Pump		P-142	P-392	P-392	P-80
• Cylinder		RWH-121	RCH-202	RCH-302	RCH-603
• Saddle		-	HP-2015	HP-3015	HP-5016
• Hose		HB-7206	HC-7206	HC-7206	HC-7206
• Gauge		GF-120	GF-813S	GF-813S	GF-813S
• Gauge Adaptor		GA-4	GA-3	GA-3	GA-3
<b>10 Grip Puller</b>	Model Number ▶	<b>BHP-1762*</b>	<b>BHP-252*</b>	<b>BHP-352*</b>	<b>BHP-552*</b>
Maximum Spread**	2-jaw	249	400	593	899
	3-jaw	249	499	800	1099
Maximum Reach**	2-jaw	252	300	387	700
	3-jaw	252	300	387	700
Jaw**	Thickness	15	20	24	30
	Width	23	27	38	39
Adjusting Screw**	Diameter	<sup>3</sup> / <sub>4</sub> "- 16 UNF	1"- 8 UNC	1 <sup>1</sup> / <sub>4</sub> "- 7 UNC	1 <sup>5</sup> / <sub>8</sub> "- 5.5 UNC
	Length	400	508	609	762

\* Grip Puller order number without hydraulics.

\*\* Dimensions in mm.

# Cross Bearing Puller Sets

▼ 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:  
**8, 20, 30 and 50 ton**

Reach:  
**462 - 863 mm**

Spread:  
**266 - 570 mm**

Maximum Operating Pressure:  
**700 bar**



### Attachments

Both the Bearing Cup Puller and the Bearing Puller may be ordered separately. (See next page.)

## ▼ SELECTION CHART

Cross Bearing Puller Set Capacity		8 ton	20 ton	30 ton	50 ton
Model Number ►		<b>BHP-162</b>	<b>BHP-261G</b>	<b>BHP-361G</b>	<b>BHP-561G</b>
Included Hydraulics Set Weight ►		26 kg	62 kg	121 kg	185 kg
• Hand Pump		P-142	P-392	P-392	P-80
• Cylinder		RWH-121	RCH-202	RCH-302	RCH-603
• Saddle		-	HP-2015	HP-3015	HP-5016
• Hose		HB-7206	HC-7206	HC-7206	HC-7206
• Gauge		GF-120	GF-813S	GF-813S	GF-813S
• Gauge Adaptor		GA-4	GA-3	GA-3	GA-3
<b>20</b>	<b>Cross Bearing Puller</b> Model Number ►	<b>BHP-1772*</b>	<b>BHP-262*</b>	<b>BHP-362*</b>	<b>BHP-562*</b>
Spread**					
Maximum		266	351	454	570
Minimum		106	139	179	220
Reach**					
Maximum		462	571	711	863
Adjusting Screw**					
Diameter		3/4" - 16 UNF	1" - 8 UNC	1 1/4" - 7 UNC	1 5/8" - 5.5 UNC
Length		400	508	609	762
Leg**					
Length		210	239	203	609
Length		462	419	457	863
Length		-	571	711	-
Length		-	114	-	-
Upper Leg Ends**					
Thread		3/4" - 16, 25	3/4" - 16, 25	1-14, 35	1 1/4" - 12, 38
Lower Leg Ends**					
Thread		5/8" - 18, 25	5/8" - 18, 25	1-14, 27	1 1/4" - 12, 38
<b>30</b>	<b>Bearing Cup Puller</b> Model Number ►	<b>BHP-180</b>	<b>BHP-280</b>	<b>BHP-380</b>	<b>BHP-580</b>
<b>40</b>	<b>Bearing Puller</b> Model Number ►	<b>BHP-181</b>	<b>BHP-282</b>	<b>BHP-382</b>	<b>BHP-582</b>

\* Cross Bearing Puller order number without hydraulics.

\*\* Dimensions in mm.

# Bearing Cup and Bearing Pullers

▼ 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:

**8, 20, 30 and 50 ton**

Reach:

**110 - 145 mm**

Maximum Spread:

**110 - 359 mm**

Maximum Operating Pressure:

**700 bar**

### ▼ SELECTION CHART

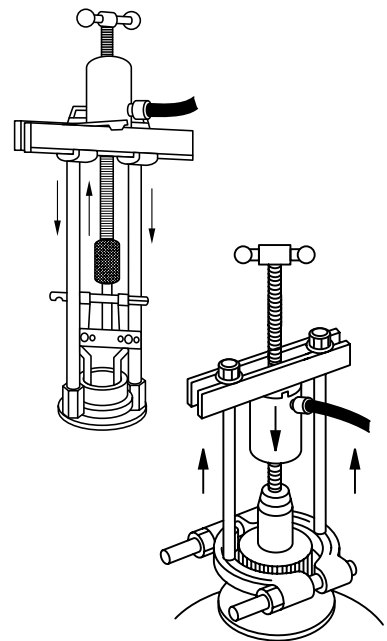
Capacity		8 ton	20 ton	30 ton	50 ton
<b>30</b>	<b>Bearing Cup Puller</b>				
	Model Number	BHP-180	BHP-280	BHP-380	BHP-580
Spread**	Max.	110	220	359	359
	Min.	26	25	50	50
Reach**	Max.	110	140	145	145
	Center Screw Thread	3/4" - 16 UNF	1" - 8 UNC	1 1/4" - 7 UNC	1 5/8" - 5.5

▼ Shown: BHP-382



## Bearing Puller

- 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



### ▼ SELECTION CHART

Capacity		8 ton	20 ton	30 ton	50 ton
<b>40</b>	<b>Bearing Puller</b>				
	Model Number	BHP-181	BHP-282	BHP-382	BHP-582
Spread**	Max.	114	130	245	245
	Min.	35	9	15	15
Width**		110	150	260	260
Thread		5/8" - 18 UNF	5/8" - 18 UNF	1" - 14 UNS	1 1/4" - 12 UNF

\*\* Dimensions are in mm.



### Bearing Puller

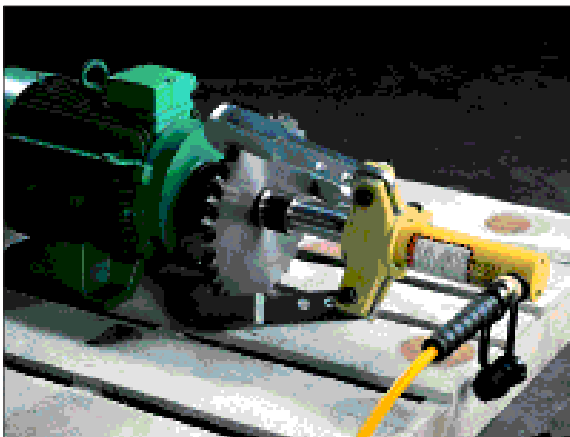
Bearing Puller has wedge shaped edges for placing puller behind hard to reach bearings, gears, etc., where clearance prevents direct application of grip puller arms. The Bearing Puller can be used with the Cross Bearing Puller or the Grip Puller.

▼ Shown from left to right: BMZ-325, BMZ-324



- Precise hydraulic control allows fast, efficient and safe pulling
- High quality, drop-forged steel grip arms provide superior reliability and service
- Heat treated malleable iron crosshead
- Sets include light weight two-speed hand pump, RC-Series cylinder, saddle and 4:1 safety hose

▼ BMZ-324 with short grip arms used to remove a chain wheel.



## Time-saving and Easy in Use



### Chain Attachments

Workpieces larger than the standard grip arms allow, can easily be handled using optional chain attachments.

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### Gauges

Minimize the risk of overloading and ensure long, dependable service from your equipment. Refer to the

System Components section for a full range of gauges.

Page: 105



### Storage Cases

Sturdy steel storage cases protect your equipment from dust, water, grease and dirt.

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# Master Puller Sets

## BMZ Series



Capacity:

**10 and 25 ton**

Maximum Reach:

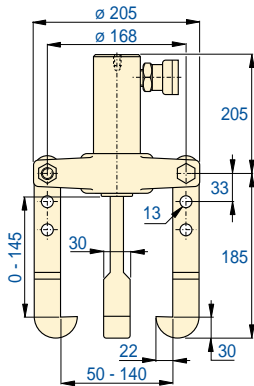
**310 mm**

Maximum Spread:

**360-508 mm**

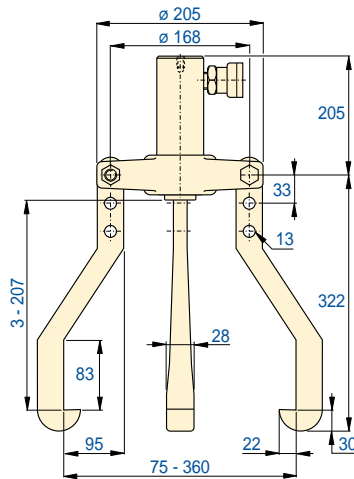
Maximum Operating Pressure:

**700 bar**



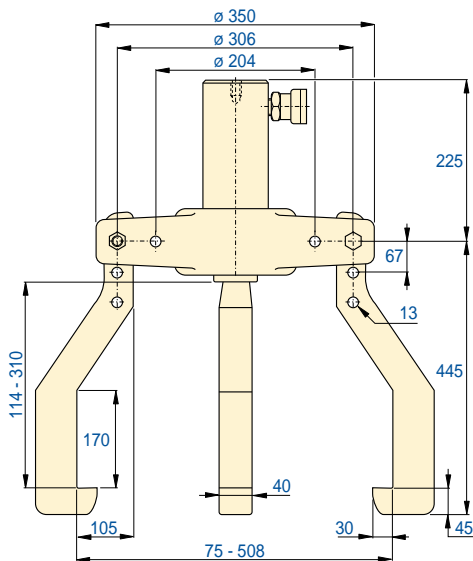
**BMZ-324**

With short grip arms



**BMZ-324**

With long grip arms







**BMZ-325**



### CAUTION!

When used in combination with chains or attachments, the maximum system pressure must be limited to half the rated pressure (350 bar).

Capacity ton	Reach (mm) min. - max.	Spread (mm) min. - max.	Hand Pump	Cylinder	Saddle	Hose	Set Model Number	Set Weight (kg)
								
10	0 - 207	50 - 360	–	–	–	–	BMZ-302	11
	0 - 207	50 - 360	P-392	RC-106	A-12	HC-7206	BMZ-324	23
25	114 - 310	75 - 508	–	–	–	–	BMZ-303	27
	114 - 310	75 - 508	P-392	RC-256	A-29	HC-7206	BMZ-325	46



▼ Shown from left to right: EP-206, EP-108



- Patented 'Safety Cage' jaw retention system
- Roll threaded shafts for less effort when applying high torque
- Slim tapered jaws for improved gripping in tight spots
- Available in 2 and 3 jaw design and inside and outside pulling configuration
- More efficient pulling, as one man can do the job where manual pullers often require two operators

## For Safer and Faster Pulling



### Long Jaws

Long Jaws are used to increase the reach and spread of pullers. They maintain the same pulling capacity as the standard jaws, but reduce clamping force to 25% of rating.

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### Shaft Attachments

Shaft protectors and extenders are live centers that fit over the standard puller shaft for tip protection and additional reach.

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◀ Positioning an EP-104 3-jaw puller on the accessory drive of a diesel engine.



### Application Tip

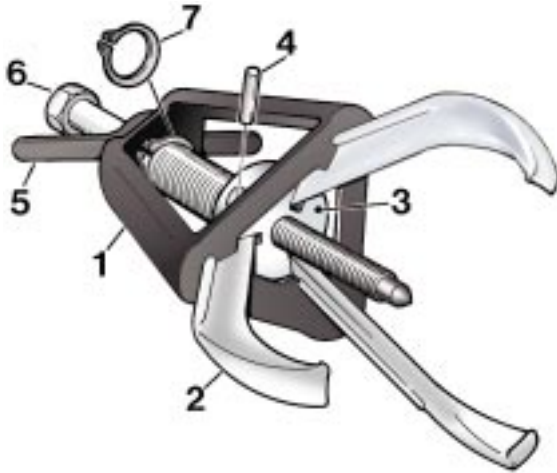
In determining the correct manual puller capacity for your application, use the following rule:

The center bolt diameter of the puller should be at least  $\frac{1}{2}$  the diameter of the shaft being pulled on.

### Example:

A part being pulled from a shaft with a diameter of 38 mm would require a puller with a center bolt diameter of at least 19 mm.

# Posi Lock® Mechanical Grip Pullers



- 1 Patented 'Safety Cage' guides jaws, holding them securely onto the part.
- 2 Durable forged jaws provide positive grip.
- 3 Jaw head provides pivot and reaction point for jaws.
- 4 Pin, for easy jaw removal and replacement.
- 5 T-handle provides control of the puller jaws.
- 6 Drive bolt with rolled threads for increased force with reduced input torque.
- 7 Snap-ring retains cage to drive bolt and provides quick removal for easy service.

**EP  
EPP  
Series**



Capacity:  
**2 - 40 ton**

Maximum Reach:  
**101 - 355 mm**

Spread Range:  
**12 - 635 mm**

## ▼ QUICK SELECTION CHART EXTERNAL PULLERS

For quick technical information see next page.

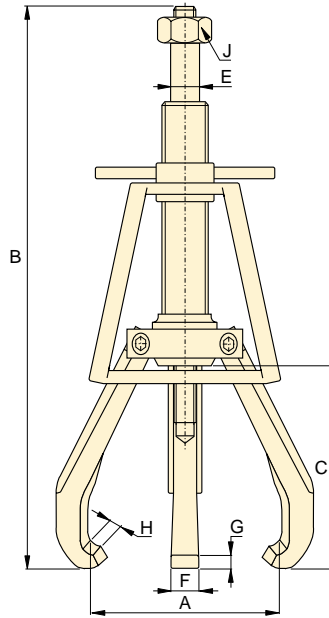
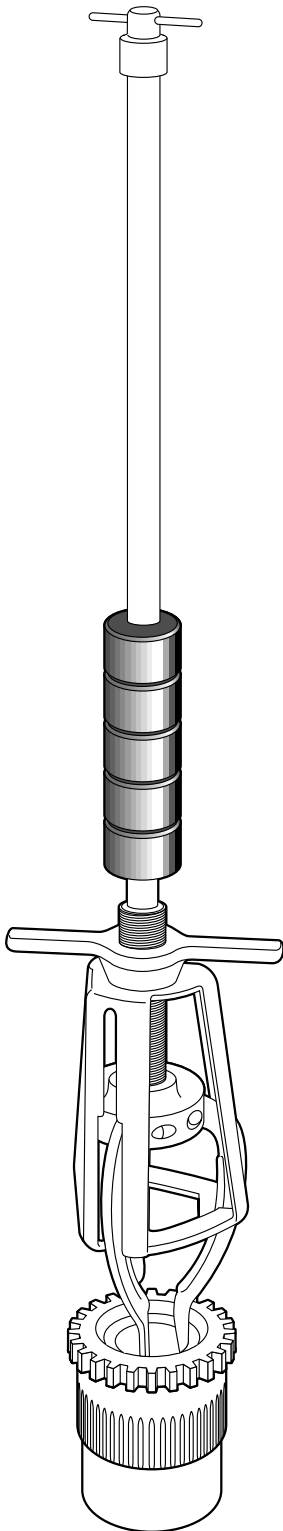
Number of Jaws	Maximum Reach (mm)	Spread Range (mm) min. - max.	Capacity ton (kN)	Model Number	Center Bolt Diameter (mm)	Weight (kg)
2	101	12 - 127	2 (17)	EP-204	14	1,4
3	101	12 - 127	5 (45)	EP-104	14	1,8
2	152	12 - 127	6 (53)	EP-206	16	3,2
3	152	12 - 127	10 (89)	EP-106	16	3,6
2	203	19 - 304	12 (106)	EP-208	20	5,4
3	203	19 - 304	17 (151)	EP-108	20	6,4
2	245	25 - 381	14 (124)	EP-210	20	5,9
3	245	25 - 381	20 (178)	EP-110	20	7,3
2	304	63 - 457	25 (222)	EP-213	29	17,2
3	304	63 - 457	30 (267)	EP-113	29	20,0
2	355	76 - 635	35 (311)	EP-216	31	25,8
3	355	76 - 635	40 (356)	EP-116	31	30,8

## ▼ QUICK SELECTION CHART INTERNAL PULLERS

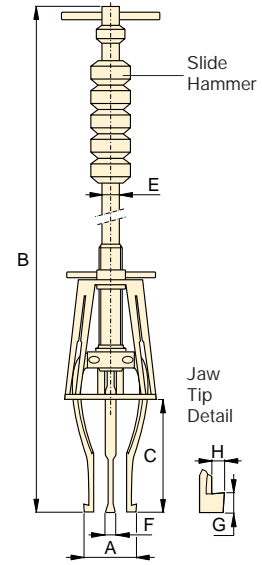
Number of Jaws	Maximum Reach (mm)	Spread Range (mm)	Jaw Style	Model Number	Jaw Length (mm)	Weight (kg)
3	168	14 - 101	Standard	EPPMI-6	168	3,9
	218	25 - 133	Long		218	3,9

▼ EP-204 2 jaw puller positioned to pull a water pump.





**2 and 3 Jaw External Puller**  
EP-Series



**Internal Puller**  
EPPMI-6

▼ QUICK SELECTION CHART EXTERNAL PULLERS

Number of Jaws	Maximum Reach (mm)	Spread Range (mm)	Capacity ton (kN)	Model Number	Center Bolt Diameter (mm)	Maximum Torque (Nm)
2	101	12 - 127	2 (17)	EP-204	14	27
3	101	12 - 127	5 (45)	EP-104	14	54
2	152	12 - 127	6 (53)	EP-206	16	102
3	152	12 - 127	10 (89)	EP-106	16	176
2	203	19 - 304	12 (106)	EP-208	20	203
3	203	19 - 304	17 (151)	EP-108	20	298
2	245	25 - 381	14 (124)	EP-210	20	237
3	245	25 - 381	20 (178)	EP-110	20	373
2	304	63 - 457	25 (222)	EP-213	29	644
3	304	63 - 457	30 (267)	EP-113	29	814
2	355	76 - 635	35 (311)	EP-216	31	1085
3	355	76 - 635	40 (356)	EP-116	31	1153

▼ QUICK SELECTION CHART INTERNAL PULLERS

Number of Jaws	Maximum Reach (mm)	Spread Range (mm)	Jaw Style	Model Number	Jaw Length (mm)	Maximum Torque (Nm)
3	168	14 - 101	Standard	EPPMI-6	168	-
	218	25 - 133	Long		218	-

# Posi Lock® Mechanical Grip Pullers



## Shaft Attachments

Shaft protectors and extenders are live centers that fit over the standard puller shaft for tip protection and additional reach.



## Long Jaws

Long Jaws are used to increase the reach and spread of pullers. They maintain the same pulling capacity as the standard jaws, but reduce clamping force to 25% of rating.

## EP EPP EPX Series



Capacity:

**2 - 40 ton**

Maximum Reach:

**101 - 355 mm**

Spread Range:

**12 - 635 mm**

Length (mm)	Diameter (mm)	Increases Center Bolt Length (mm)	Order: Model Number
25	19	9	<b>EPP-4</b>
50	19	38	<b>EPX-4</b>
31	22	12	<b>EPP-6</b>
50	22	38	<b>EPX-6</b>
31	25	12	<b>EPP-10</b>
50	25	38	<b>EPX-10</b>
50	35	21	<b>EPP-1316</b>

Spread Range (mm)	Reach (mm)	Order: Model Number
57 - 381	245	<b>EP-11054</b>
38 - 558	400	<b>EP-11054L</b>
38 - 762	508	<b>EP-11354L</b>
50 - 965	635	<b>EP-11654L</b>
25 - 133	218	<b>EP-10554L*</b>

\* EPPMI-6 only

Dimensions (mm)									Model Number	Optional accessories		
Spread	Overall Length	Reach	Center Bolt Diam.	Jaw Width	Tip Clearance	Tip Depth	Hex Socket Size (inch)					
A	B	C	E	F	G	H	J	Shaft Protectors		Shaft Extenders	Long Jaws	
12 - 127	245 - 323	100	14	15	4,1	4,6	7/8"	<b>EP-204</b>	EPP-4	EPX-4	-	
12 - 127	245 - 323	100	14	15	4,1	4,6	7/8"	<b>EP-104</b>	EPP-4	EPX-4	-	
12 - 127	323 - 476	152	16	19	8,1	6,1	1 1/16"	<b>EP-206</b>	EPP-6	EPX-6	-	
12 - 127	323 - 476	152	16	19	8,1	6,1	1 1/16"	<b>EP-106</b>	EPP-6	EPX-6	-	
19 - 304	412 - 615	203	20	22	6,4	9,1	1 1/8"	<b>EP-208</b>	EPP-10	EPX-10	EP-11054	
19 - 304	412 - 615	203	20	22	6,4	9,1	1 1/8"	<b>EP-108</b>	EPP-10	EPX-10	EP-11054	
25 - 381	489 - 736	245	20	25	6,4	9,1	1 1/8"	<b>EP-210</b>	EPP-10	EPX-10	EP-11054L	
25 - 381	489 - 736	245	20	25	6,4	9,1	1 1/8"	<b>EP-110</b>	EPP-10	EPX-10	EP-11054L	
63 - 457	660 - 965	304	29	31	12,7	9,7	1 1/16"	<b>EP-213</b>	EPP-1316	EPX-1316	EP-11354L	
63 - 457	660 - 965	304	29	31	12,7	9,7	1 1/16"	<b>EP-113</b>	EPP-1316	EPX-1316	EP-11354L	
76 - 635	800 - 1155	355	31	36	13,5	11,7	1 3/16"	<b>EP-216</b>	EPP-1316	-	EP-11654L	
76 - 635	800 - 1155	355	31	36	13,5	11,7	1 3/16"	<b>EP-116</b>	EPP-1316	-	EP-11654L	

Note: Overall length (B) is dependent on position of center bolt.

Dimensions (mm)							Model Number
Spread Range	Overall Length	Reach	Slide Rod Dia.	Jaw Width	Tip Clearance	Tip Depth	
A	B	C	E	F	G	H	
14 - 101	736	168	14,2	8	3,0	1,5	<b>EPPMI-6</b>
25 - 133	787	218	14,2	8	7,6	4,6	

▼ Shown: EPHR-110



## High-Tech Pulling



### Transport and Store

Conveniently stores and transports hydraulic pullers and accessories.

Order the **EPT-2550** Storage Cart and make your job easier to do!



### 100 ton Puller

The 100 ton puller is sold as an entire system. Its electrically powered lift cart enables the puller to be raised up to 1,5 meter above the ground. Lifting brackets allow the puller to be removed from the cart and lifted into work places above 1,5 meter. When not in use, the lift cart may be used as a means to manually transport the puller. Hydraulic power is provided by a 700 bar electric pump. A remote jog switch is included for fingertip control of the removal process.

### All Models:

- Patented 'Safety Cage' jaw retention system
- High force hydraulic system for effortless pulling of large components
- Slim tapered jaws for better gripping in tight spots
- Available in 2 and 3 jaw design
- More efficient pulling, as one man can do the job where manual pullers often require two operators

### 100 Ton Models:

- 700 bar electric pump with remote jog feature
- Roller cart with power lift
- Multiple pushing adaptors



◀ The EPH-1002 quickly and easily removes this drive sheave from its shaft.

Number of Jaws	Maximum Spread (mm)	Capacity ton (kN)	Model Number
2	304	10 (101)	EPH-208
3	304		EPH-108
2	381	15 (142)	EPH-210
3	381		EPH-110
2	457	25 (232)	EPH-213
3	457		EPH-113
2	635	50 (498)	EPH-216
3	635		EPH-116
2	1778	100 (933)	EPH-1002
3	1778		EPH-1003



# Posi Lock® Hydraulic Grip Pullers

## ▼ SETS SELECTION CHART

Style	Capacity (ton)	Basic Puller	Cylinder	Stroke (mm)	Pump Set	Set Model Number*	Weight (kg)
2 Jaw Puller	10	EPH-208	RC-106	152	-	EPHR208	10
	10	EPH-208	RC-106	152	EP-1E	EPHS208E	27
	15	EPH-210	RC-1510	254	-	EPHR210	22
	15	EPH-210	RC-1510	254	EP-1E	EPHS210E	38
	25	EPH-213	RC-2514	362	-	EPHR213	44
	25	EPH-213	RC-2514	362	EP-1E	EPHS213E	53
	50	EPH-216	RC-5013	336	-	EPHR216	87
3 Jaw Puller	10	EPH-108	RC-106	152	-	EPHR108	11
	10	EPH-108	RC-106	152	EP-1E	EPHS108E	28
	15	EPH-110	RC-1510	254	-	EPHR110	23
	15	EPH-110	RC-1510	254	EP-1E	EPHS110E	39
	25	EPH-113	RC-2514	362	-	EPHR113	48
	25	EPH-113	RC-2514	362	EP-1E	EPHS113E	57
	50	EPH-116	RC-5013	336	-	EPHR116	91
50	EPH-116	RC-5013	336	EP-2E	EPHS116E	127	

\* Standard set shipped with 230 VAC pump.

## EPH Series



Capacity:

**10-100 ton**

Maximum Reach:

**203-1219 mm**

Spread Range:

**304-1778 mm**

Maximum Operating Pressure:

**700 bar**

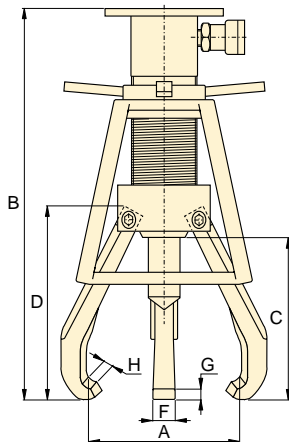


### Pump Sets

All Posi Lock Hydraulic Puller Sets that include 230 VAC pumps, will feature the following components:

	EP-1E Pump Set	EP-2E Pump Set
Pump	PUJ-1200E	PEM-3208E
Hose	HC-7210	HC-7210
Gauge	G-2535L	G-2535L
Adaptor	-	GA-3

Components for 115 VAC pumps are available on request.



### Specifications: Long Jaws

Spread Range (mm)	Reach (mm)	Order: Model Number
38 to 558	401	EPH-11054L
38 to 762	508	EPH-11354L
50 to 965	660	EPH-11654L
-	-	-

### Optional Accessories



Ram Point Sets

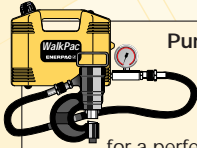
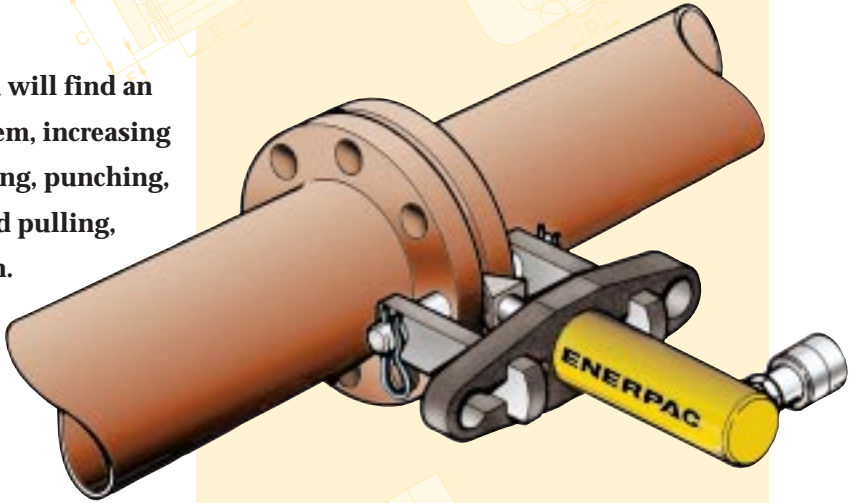
Long Jaws

Lift Plates

Dimensions (mm)							Weight (kg)			
Spread Range	Overall Length	Maximum Reach	Jaw Length	Jaw Width	Tip Clearance	Tip Depth				
A	B	C	D	F	G	H	(kg)			
19 - 304	498	203	237	22	7,4	6,9	6,4	EPH-155	EPH-11054	EPH-11052
19 - 304	498	203	237	22	7,4	6,9	7,3	EPH-155	EPH-11054	EPH-11052
25 - 381	665	245	270	25	11,2	9,1	10,0	EPH-155	EPH-11054L	EPH-11052
25 - 381	665	245	270	25	11,2	9,1	11,3	EPH-155	EPH-11054L	EPH-11052
63 - 457	846	304	348	31	12,9	9,7	21,3	EPH-257	EPH-11354L	EPH-11352
63 - 457	846	304	348	31	12,9	9,7	25,0	EPH-257	EPH-11354L	EPH-11352
76 - 635	919	355	413	36	15,0	11,7	40,8	EPH-508	EPH-11654L	EPH-11652
76 - 635	919	355	413	36	15,0	11,7	45,4	EPH-508	EPH-11654L	EPH-11652
190 - 1778	1955	1219	1219	76	88,9	88,9	771	-	-	-
190 - 1778	1955	1219	1219	76	88,9	88,9	907	-	-	-

**E**NERPAC Hydraulic Tools are designed to survive your toughest applications. Backed by the World Standard Guarantee, you can depend on your Enerpac tool to get the job done, again and again.

Whatever your requirement, you will find an Enerpac tool to solve your problem, increasing productivity and safety. For cutting, punching, bending, pressing, spreading and pulling, make Enerpac your tool selection.



### Pump and Tool Sets

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

Page: 158



### Hydraulic System Set-up

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

Page: 93



## Tool Section Overview

Capacity ton (kN)	Tool type and functions	Series	Page
	Tool and Pump Sets	ST	 158 ▶
2,5- 12,5 (22 -116)	Maintenance Sets	MS	 160 ▶
35 - 50 (311 - 445)	Punches	SP	 164 ▶
0,75 - 1,00 (6 - 8,9)	Spread Cylinders	WR	 168 ▶
8,5 - 20 (75 - 178)	Machine Lifts	SOH	 169 ▶
1 - 80 (8,9 - 712)	Load Skates	ER	 170 ▶
3 - 20 (26 - 178)	Hydraulic Cutters	WHC WMC	 172 ▶
5 - 90 (45 - 801)	Nut Splitters	NC	 174 ▶
5 - 10 (45 - 101)	Flange Spreaders	FS	 175 ▶
Nominal Bore 15-100 mm	Pipe Benders	STB	 176 ▶
	Industrial Storage Cases	CM	 178 ▶

▼ Shown: STN-1924E



## Performance Matched Tool and Pump Sets



### Punch-Electric Pump Set

The SP-35S light weight punch is also available in a set with the PUD-1100E electric pump.





See the light weight hydraulic punch page for more detailed information.

Page: 165

- Optimum match of individual set components
- Pre-selected combinations, ready-for-use
- Including pump, hose, gauge and gauge adaptor and tool

▼ Here a hand pump-nut splitter set STN-1924H is used for a railroad maintenance job.



1 Tool Selection		Refer to the pages indicated for more technical information.
	<b>Flange Spreader</b> Separates pipe flanges with ease, enabling efficient maintenance tasks.	Page: 175
	<b>Nut Splitter</b> Splits nuts quickly and safely in seconds.	Page: 174
	<b>Punch</b> Designed for punching round, square or oblong holes through mild steel up to 12,7 mm thick.	Page: 164
	<b>Cutter</b> Cuts a wide range of steel wire, rope, bar, cable, strand and bolts.	Page: 172



# Tool and Pump Sets

## TOOL AND PUMP SET SELECTION:

- 1 Select the tool type and capacity
- 2 Select the pump to use with it
- 3 Find the set model number in the blue matrix

## Ordering example:

**STF-109B**

This set consists of:

1. the 10 ton flange spreader FS-109,
2. the PBM-12001E WalkPac, battery powered light weight and portable electric pump
3. an HC-7206C hose including male couplers on both ends
4. a GP-10S gauge with gauge adaptor GA-2

## ST Series



Maximum Operating Pressure:  
**700 bar**

## Flange Spreaders

## Nut Splitters

## Punches

## Cutters

		2 Pump Selection (refer to the pump section for technical information)					Accessories included			
		Hand Pump P-142	Hand Pump P-392	Hand Pump P-80	WalkPac** Battery Pump PBM-12001E	Turbo Air Pump PAT-1102N	Hose Model Number	Gauge Model Number	Gauge Adaptor Model Number	
	Tool Capacity ton (kN)									
	Tool Model Number	STF-56H	-	-	-	-	HC-7206	GP-10S	GA-4	
	5 (45)	FS-56	-	-	-	-	HC-7206	GP-10S	GA-4	
	10 (101)	FS-109	STF-109H	-	STF-109B	STF-109A	HC-7206	GP-10S	GA-2	
	5 (45)	NC-1319	STN-1319H*	-	STN-1319B	STN-1319A	HC-7206	GP-10S	GA-2	
	10 (89)	NC-1924	-	STN-1924H	-	STN-1924B	STN-1924A	HC-7206	GP-10S	GA-2
	15 (134)	NC-2432	-	STN-2432H	-	STN-2432B	STN-2432A	HC-7206	GP-10S	GA-2
	20 (178)	NC-3241	-	STN-3241H	-	STN-3241B	STN-3241A	HC-7206	GP-10S	GA-2
	35 (311)	NC-4150	-	STN-4150H	-	STN-4150B	STN-4150A	HC-7206	GP-10S	GA-2
	50 (445)	NC-5060	-	-	STN-5060H	-	-	HC-7206	GP-10S	GA-2
	90 (801)	NC-6075	-	-	STN-6075H	-	-	HC-7206	GP-10S	GA-2
	35 (311)	SP-35S	-	STP-35H	-	STP-35B	STP-35A	HC-7206	GP-10S	GA-2
	4 (25)	WHC-750	-	STC-750H	-	STC-750B	STC-750A	HC-7206	GP-10S	GA-2
	20 (178)	WHC-1250	-	STC-1250H	-	STC-1250B	STC-1250A	HC-7206	GP-10S	GA-2
	3 (27)	WHC-3380	-	STC-3380H	-	STC-3380B	STC-3380A	HC-7206	GP-10S	GA-2

Note: See the relevant tool or pump sections in this catalog for full product descriptions.

\* Includes GA-2 gauge adaptor.

\*\* WalkPac™ sets feature HC-7206C hose.



▼ 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 light weight 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: 162



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

### ▼ QUICK SELECTION CHART

Capacity using attachments*	Set Model Number						Number of Attachment Components	Weight (kg)
2,5 (22) ton (kN)	MS2-4	P-142	HC-7206	RC-55	GP-10S	GA-2	35	26
5 (50) ton (kN)	MS2-10	P-392	HC-7206	RC-106	GP-10S	GA-2	40	63
12,5 (116) ton (kN)	MS2-20	P-392	HC-7206	RC-256	GP-10S	GA-2	19	95
5-12,5 (50-116) ton (kN)	MS2-1020	P-392	HC-7206	RC-102, -106 and -256	GP-10S	GA-2	59	158

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

# Universal Maintenance Sets



## CAUTION!

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

## MS Series



Capacity (using attachments):

**2,5 - 12,5 ton**

Maximum Operating Pressure:

**350 bar**

### ▼ APPLICATION EXAMPLES



# MS2-Series, Maintenance Sets



**CAUTION!**

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

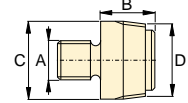
Note: All dimensions in millimetres.

Set Model Number	MS2-4	MS2-10	MS2-20	MS2-1020
Base/Collar/Plunger Attachments	2,5 ton	5,0 ton	12,5 ton	5,0-12,5 ton
<b>1</b> Threaded Adaptor	A-23	A-13	A-28	A-13 and A-28
<b>2</b> Base Attachment	A-25	A-21	A-27	A-21 and A-27
<b>3</b> Collar Toe	A-1034	A-20	A-595	A-20 and A-595
<b>4</b> Flat Base	MZ-4010	A-14	A-243	A-14 and A-243
<b>5</b> Threaded Connector	A-545	A-10	—	A-10 (2x)
<b>6</b> Lock-On Clamp Toe	—	A-8	—	A-8
<b>7</b> Threaded Plunger Toe	A-530	A-6	—	A-6
<b>8</b> Collar Clamp Head	MZ-4011	A-192	—	A-192
<b>9</b> Spreader Toe	—	A-305	—	A-305
<b>10</b> Serrated Saddle	A-531	A-18	—	A-18
<b>11</b> Smooth Saddle	—	A-185	—	A-185
<b>12</b> 90° V-Base	A-532	A-15	—	A-15
<b>13</b> Plunger Base	—	—	A-607	A-607
<b>14</b> Wedge Head	A-629	A-129	—	A-129
<b>15</b> Rubber Flex-Head	A-539	A-128	—	A-128
Chains and Attachments for Pulling	2,5 ton	5,0 ton	12,5 ton	5,0-12,5 ton
<b>16</b> Single Chain Plate	A-558	A-132	A-238	A-132, -238
<b>17</b> Double Chain Plate	—	A-5 (2x)	—	A-5 (2x)
<b>18</b> Chain with Hook	A-557 (2x)	A-141 (2x)	A-218 (2x)	A-141 (2x) and A-218 (2x)
Tubes, Connectors and Adaptors	2,5 ton	5,0 ton	12,5 ton	5,0-12,5 ton
<b>19</b> Pipe Coupling	A-544	A-19 (2x)	A-242 (2x)	A-19 (2x) and A-242 (2x)
<b>20</b> Spreader	WR-5	A-92	—	A-92
<b>21</b> Lock Pin	MZ-4013 (4x)	A-16 (4x)	—	A-16 (4x)
<b>22</b> Lock-On Connector	MZ-4007 (3x)	MZ-1050 (2x)	—	MZ-1050 (3x)
<b>23</b> Male Lock-On Adaptor	MZ-4008 (2x)	MZ-1051	—	MZ-1051 (2x)
<b>24</b> Female Lock-On Adaptor	MZ-4009	MZ-1052	—	MZ-1052
<b>25</b> Adjustable Extension	—	A-285	—	A-285
<b>26</b> Slip-Lock Extension	A-650	—	—	—
<b>27</b> Extension Tubes	76 mm long	MZ-4002	—	—
	127 mm long	MZ-4003	MZ-1002	MZ-1002
	254 mm long	MZ-4004	MZ-1003	A-239 and MZ-1003
	457 mm long	MZ-4005 (2x)	MZ-1004	A-240 and MZ-1004 (2x)
	584 mm long	MZ-4006 (2x)	—	—
	762 mm long	—	MZ-1005	A-241 and MZ-1005 (2x)
<b>28</b> Case	CM-6	CW-166	CW-166	CW-350
Weight (complete set in case)	26 kg	63 kg	95 kg	158 kg



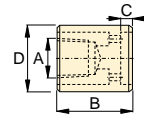
Base/Collar/Plunger Attachments

**1** Threaded Adaptor



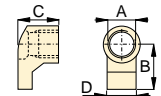
ton	Model No.	A	B	C	D
2,5	A-23	3/4" - 16 UN	28	26	3/4" - 14 NPT
5,0	A-13	1" - 8 UN	31	55	1 1/4" - 11 1/2 NPT
12,5	A-28	1 1/2" - 16 UN	47	69	2" - 11 1/2 NPT

**2** Base Attachment



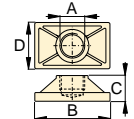
ton	Model No.	A	B	C	D
2,5	A-25	3/4" - 14 NPT	50	12	44
5,0	A-21	1 1/4" - 11 1/2 NPT	57	12	65
12,5	A-27	2" - 11 1/2 NPT	63	12	98

**3** Collar Toe



ton	Model No.	A	B	C	D
2,5	A-1034	1 1/2" - 16 UN	54	50	31
5,0	A-20	2 1/4" - 14 UN	80	57	57
12,5	A-595	3 5/16" - 12 UN	103	51	80

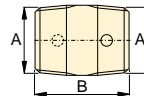
**4** Flat Base



ton	Model No.	A	B	C	D
2,5	MZ-4010	3/4" - 14 NPT	114	31	63
5,0	A-14	1 1/4" - 11 1/2 NPT	165	35	88
12,5	A-243*	2" - 11 1/2 NPT	165	58	165

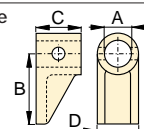
\* A-243 is a round base model

**5** Threaded Connector



ton	Model No.	A	B
2,5	A-545	3/4" - 14 NPT	35
5,0	A-10	1 1/4" - 14 NPT	41

**6** Lock-on Clamp Toe



ton	Model No.	A	B	C	D
5,0	A-8	17	28	50	57

# Universal, Maintenance Sets

**7 Threaded Plunger Toe**

ton	Model No.	A	B	C	D
2,5	A-530	3/4" - 14 NPT	57	25	33
5,0	A-6	1 1/4" - 11 1/2 NPT	28	31	57

**14 Wedge Head**

ton	Model No.	A	B	C	D
2,5	A-629	3/4" - 14 NPT	69	33	28
5,0	A-129	1 1/4" - 11 1/2 NPT	101	50	44

**20 Spreader**

ton	Model No.	A	B	C	D
2,5	WR-5	—	223	9	94
5,0	A-92	2 1/4" - 14 UN	244	35	158

**8 Collar Clamp Head**

ton	Model No.	A	B	C	D
2,5	MZ-4011	3/4" - 14 NPT	49	76	1 1/2" - 16 UN
5,0	A-192	42	63	50	2 1/4" - 14 UN

**15 Rubber Flex-Head**

ton	Model No.	A	B	C
2,5	A-539	3/4" - 14 NPT	44	69
5,0	A-128	1 1/4" - 11 1/2 NPT	86	86

**21 Lock Pin**

ton	Model No.	A	B
2,5	MZ-4013	6,4	60
5,0	A-16	11,2	82

**9 Spreader Toe**

ton	Model No.	A	B	C	D
5,0	A-305	1 1/4" - 11 1/2 NPT	114	25	50

## Chains and Attachments for Pulling

**16 Single Chain Plate**

ton	Model No.	A	B	C	D
2,5	A-558	1 1/2" - 16 UN	196	39	44
5,0	A-132	2 1/4" - 14 UN	307	63	79
12,5	A-238	3 5/16" - 12 UN	450	102	125

**22 Lock-on Connector**

ton	Model No.	A	B
2,5	MZ-4007	19	79
5,0	MZ-1050	33	127

**10 Serrated Saddle**

ton	Model No.	A	C	D
2,5	A-531	3/4" - 14 NPT	27	31
5,0	A-18	1 1/4" - 11 1/2 NPT	38	50

**17 Double Chain Plate**

ton	Model No.	A	B	C	D
5,0	A-5	1 1/4" - 11 1/2 NPT	130	50	126

**23 Male Lock-on Adaptor**

ton	Model No.	A	B	C
2,5	MZ-4008	3/4" - 14 NPT	60	19
5,0	MZ-1051	1 1/4" - 11 1/2 NPT	90	33

**11 Smooth Saddle**

ton	Model No.	A	B	C
5,0	A-185	1 1/4" - 11 1/2 NPT	38	50

**18 Chain with Hook**

ton	Model No.	Chain Length
2,5	A-557	1,5 meters
5,0	A-141	1,8 meters
12,5	A-218	2,4 meters

**24 Female Lock-on Adaptor**

ton	Model No.	A	B	C
2,5	MZ-4009	3/4" - 14 NPT	65	19
5,0	MZ-1052	1 1/4" - 11 1/2 NPT	96	33

**12 90° V-Base**

ton	Model No.	A	B	C	D
2,5	A-532	3/4" - 14 NPT	38	47	25
5,0	A-15	1 1/4" - 11 1/2 NPT	54	57	54

## Tubes, Connectors and Adaptors

**19 Pipe Coupling**

ton	Model No.	A	B	C
2,5	A-544	3/4" - 14 NPT	42	33
5,0	A-19	1 1/4" - 11 1/2 NPT	49	54
12,5	A-242	2" - 11 1/2 NPT	88	82

**25 Adjustable Extension**

ton	Model No.	A	B	C	D
5,0	A-285	1 1/4" - 11 1/2 NPT	335	441	33

**13 Plunger Base**

ton	Model No.	A	B	C
12,5	A-607	2" - 11 1/2 NPT	166	38

**26 Slip-Lock Extension**

ton	Model No.	A	B	C
2,5	A-650	3/4" - 14 NPT	200	365



# SP-Series, Light weight Hydraulic Punch

▼ 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
- Optional bevel dies allow punching through I-Beams and channel iron
- 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



◀ This PUD-1100E is available as a matched set with the 35 ton punch.

## 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 an electric 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 next page.

### ▼ STANDARD PUNCHES AND DIES SELECTION CHART





Hole Shape	Imperial**		Metric**	
	Hole Size (inch)	Bolt Size (inch)	Hole Size (mm)	Bolt Size (mm)
●	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
■	0,31x0,75	1/4	7,9x19	–
■	0,38x0,75	5/16	9,5x19	M8
■	0,44x0,75	3/8	11,1x19	M10
■	0,50x0,75	7/16	12,7x19	M12

\*\* Material thickness should **not** exceed hole diameter



# Single-Acting, Spring Return Hydraulic Punch

## ▼ QUICK SELECTION CHART

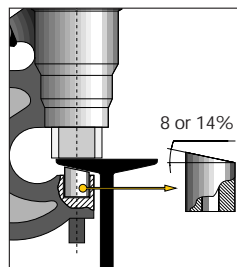
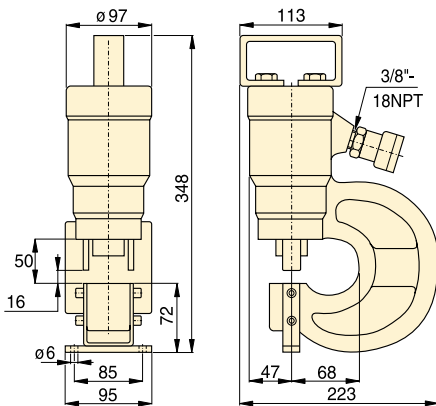
Included				Model Number	Weight  (kg)
 *	 Punch & Die Set	 Pump	 Hose		
SP-35	-	-	-	SP-35	16
SP-35	Standard**	-	-	SP-35S	18
SP-35	Standard**	PUD-1100E	HC-7206	SP-35SPE	29
SP-35	Metric***	-	-	MSP-351	21
SP-35	Metric***	PUD-1100E	HC-7206	MSP-351PE	32

\* Punch oil capacity: 76 cm<sup>3</sup>

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



### 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

## SP Series



Capacity:

**35 ton**

Hole Sizes:

**7,9 - 20,6 mm**






Maximum Operating Pressure:

**700 bar**



### CAUTION!

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

Standard Punch & Die Set 	Standard Punch 	Standard Die 	Bevel Punch & Die Set for INP-Beams (14%) 	Bevel Punch & Die Set for UNP-Beams (8%) 	Maximum allowable material thickness to be punched (mm)										
					1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)
Model Numbers					1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)
SPD-313	SP-313	SD-313	SBD-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	SP-375	SD-375	SBD-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	SP-438	SD-438	SBD-438	SBDU-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	SP-531	SD-531	SBD-531	SBDU-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	SP-563	SD-563	SBD-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	SP-688	SD-688	SBD-688	SBDU-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	SP-781	SD-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	SP-813	SD-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	SP-458	SD-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	SP-549	SD-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	SP-639	SD-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	SP-728	SD-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	SP-106	SD-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	SP-125	SD-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	SP-188	SD-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	SP-250	SD-250	-	-	12,7	12,7	11,2	11,2	11,2	9,7	6,4	7,9	9,7	9,7	9,7

# SP-Series, 50 ton Hydraulic Punch

▼ Shown: SP-50100



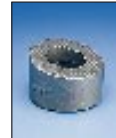
- Available as a complete set including electric pump and hoses
- Double-Acting cylinder design for fast cycle times
- Punch and die changeover tools included
- Lifting handle for easy carrying
- Adjustable power stripper prevents movement of the metal during stripping
- CR-400 couplers included

Save time using this 50 ton Enerpac Punch. ►

▼ Shown below is the 50 ton punch with SP-120 and SP-110 assembled.



## Cuts the Time Spent Forming Holes



### Bevel Dies

For punching applications through I-beams and channel iron, 8° Bevel Dies are available as accessories.

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### 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

Please order: SP-120



### Ordering Information

The 50 ton hydraulic Punch may be ordered by itself or as a set with an electric pump.

A punch or die may be ordered separately or as a matched set. Please refer to the selection chart information.

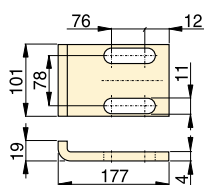
# Double-Acting, 50 ton Hydraulic Punch

## ▼ QUICK SELECTION CHART PUNCH SETS

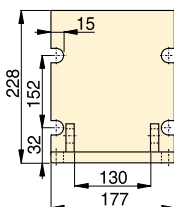
Model Number Punch*	Included			Set Model Number	Weight (kg)
	Punch & Die Sets	Pump	Hose (2x)		
SP-50	All**	-	-	SP-50100	115
SP-50	All**	PER-3408E	HC-7206	SP-5000E	174

\* Punch Oil Capacity:  
Advance: 278 cm<sup>3</sup>  
Retract: 229 cm<sup>3</sup>

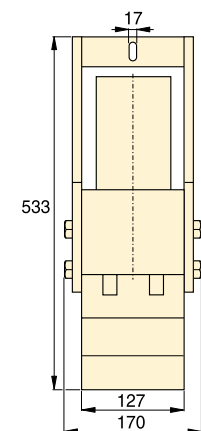
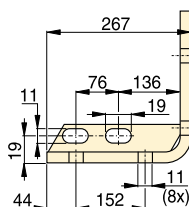
\*\* All standard sets from chart below.



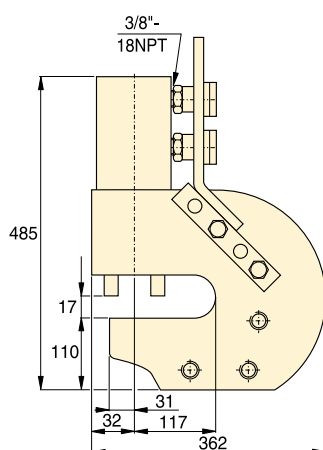
SP-110



SP-120



SP-50



SP Series



Capacity:

**50 ton**

Hole Sizes:

**13-26 mm**

Maximum Operating Pressure:

**700 bar**



### CAUTION!

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

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)	Standard Punch & Die Set	Standard Punch	Standard Die	8% Bevel Die	Maximum allowable material thickness to be punched (mm)*										
							1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)
●	13,5	M12	SP-150	SP-530	SD-530	SDB-530	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	SP-630	SD-630	SDB-630	-	-	-	-	-	13,0	8,1	10,2	13,0	13,0	13,0
●	19,8	M18	SP-190	SP-730	SD-730	SDB-730	-	-	-	-	-	12,4	8,1	10,2	12,4	12,7	12,4
●	23,1	M22	SP-121	SP-830	SD-830	SDB-830	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	SP-930	SD-930	SDB-930	14,2	14,2	14,2	11,2	14,2	7,9	4,8	7,9	7,9	7,9	7,9

\* Material thickness should not exceed hole diameter

# Hydraulic Wedgie and Spread Cylinders

▼ Shown from top to bottom: WR-15, A-92, WR-5



## A / WR Series

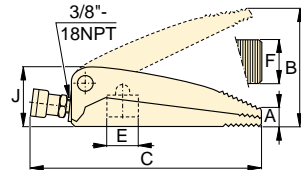


Capacity:  
**0,75 - 1 ton**

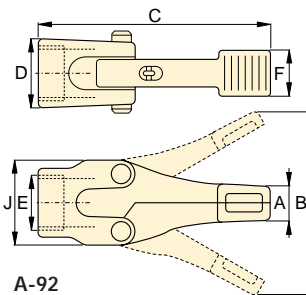
Tip Clearance:  
**9 mm**

Maximum Spread:  
**292 mm**

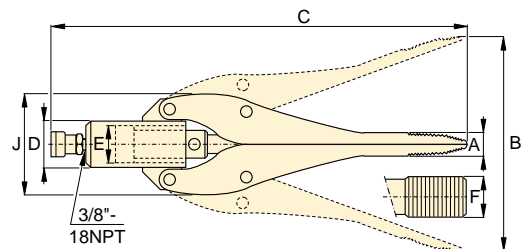
Maximum Operating Pressure:  
**700 bar**



WR-5



A-92



WR-15

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

▼ A WR-5 wedgie cylinder is used to position a concrete block on a construction site.



Cylinder Capacity ton (kN)	Tip Clearance (mm)	Model Number	Cylinder Effective Area (cm <sup>2</sup> )	Oil Capacity (cm <sup>3</sup> )	Dimensions (mm)							Weight (kg)
					A	B	C	D	E	F	J	
1 (8,9)	9	WR-5	6,5	10,0	9	94	223	–	28	51	51	2,3
0,75 (6)	32	WR-15	14,5	64,1	32	292	549	56	42	51	157	11,3
1 (8,9)	35	A-92	–	–	35	158	244	69	2 1/4" - 14 UNS	50	91	3,6

# Hydraulic Machine Lifts

▼ Shown: SOH-10-6



## SOH Series



Lifting Capacity:  
**8,5 - 20 ton**

Stroke:  
**136-157 mm**

Toe Clearance:  
**20 mm**

Maximum Operating Pressure:  
**700 bar**



### Load Skates

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

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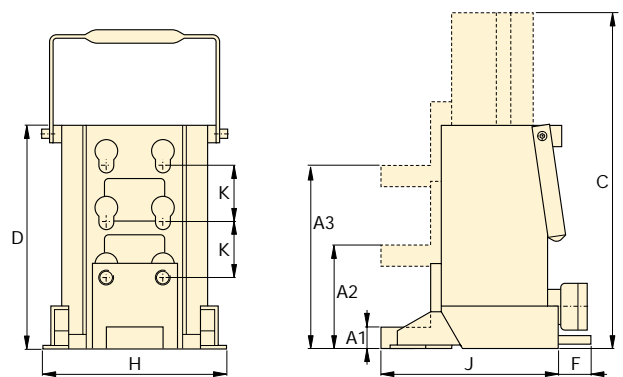


### Best Match Hand Pump

To power your Enerpac Machine Lift, the Enerpac P-392 hand pump is an ideal choice.

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- For lifting heavy equipment with minimum available access
- Separate hydraulic pump enhances safety
- Low height lifting toe
- Precision guided to reduce friction and isolate cylinder from side-loads
- Two extendible support feet provide extra stability
- Includes RC-Series Cylinder with CR-400 coupler



Capacity	Toe Clearance (mm)			Stroke	Model Number	Dimensions (mm)					Weight	
	Minimum A1	Central A2	Maximum A3			Total Ext. Height C	Total Body Height D	F	H	J		K
8,5 (75) ton (kN)	20	95	169	136	SOH-10-6	430	294	–	190	214	74	26
20 (178) ton (kN)	30	110	190	157	SOH-23-6	472	315	65	260	249	80	45



# ER-Series, Heavy Duty Load Skates

▼ Shown: Set ER-20



## Move Heavy Loads Easily and Safely



Sets (see table) includes all components necessary to handle a variety of applications.  
Link-up Bars (2), Handles (2)  
**ERH-1** and Metal Box (1) **EMB-1** are included.  
Designed to handle rugged moves yet are light weight for portability.

- 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



### Machine Lifts

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

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

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

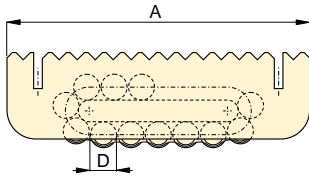
◀ Heavy transport using Load Skates.  
The machine is first lifted, using Enerpac Machine Lifts.

# Heavy Duty Load Skates

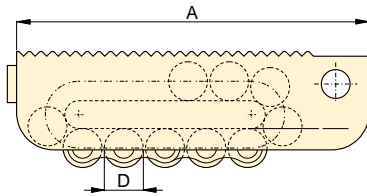
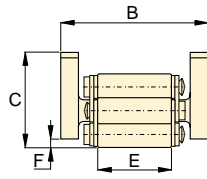
## ER Series



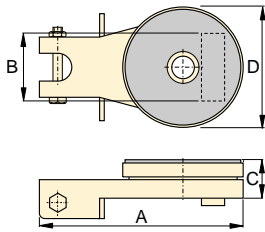
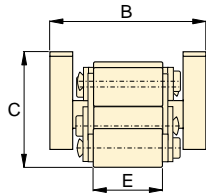
Maximum Carrying Capacity:  
**80 ton**



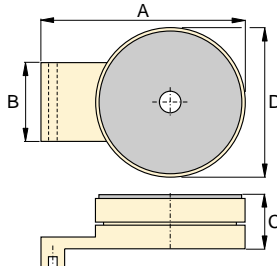
ER-1, ER-10, ER-15, ER-30



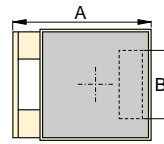
ER-60, ER-80



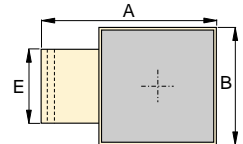
Turntable Swivel  
ES-1, ES-10, ES-15, ES-30



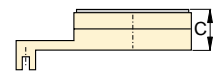
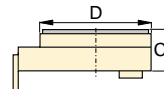
Turntable Swivel  
ES-60, ES-80






Leveling Plate  
ELP-10  
ELP-15  
ELP-30



Leveling Plate  
ELP-60  
ELP-80



	Capacity* ton (kN)	Model Number	Dimensions (mm)					Contact Rolls per Skate	Rollers per Skate	Weight (kg)
			A	B	C	D	E			
 Load Skates	1 (8,9)	ER-1	138	84	66	-	-	5	12	3,4
	10 (89)	ER-10	209	101	66	17	50	5	15	5,2
	15 (133)	ER-15	220	114	74	23	60	4	13	7,3
	30 (267)	ER-30	270	130	92	30	68	4	13	13,0
	60 (533)	ER-60	381	168	125	41	76	4	13	31,9
	80 (711)	ER-80	530	182	146	50	85	6	17	60,9
 Turntable Swivel	1 (8,9)	ES-1	207	86	71	94	-	-	-	3,1
	10 (89)	ES-10	219	72	41	130	-	-	-	4,5
	15 (133)	ES-15	219	85	41	130	-	-	-	4,5
	30 (267)	ES-30	250	96	48	150	-	-	-	6,7
	60 (533)	ES-60	275	114	61	190	-	-	-	13,7
	80 (711)	ES-80	360	128	61	220	-	-	-	18,9
 Leveling Plate	10 (89)	ELP-10	149	72	41	119	-	-	-	3,7
	15 (133)	ELP-15	149	85	41	119	-	-	-	3,7
	30 (267)	ELP-30	177	96	48	134	-	-	-	5,3
	60 (533)	ELP-60	270	114	61	180	-	-	-	13,8
	80 (711)	ELP-80	350	128	61	199	-	-	-	18,8

# Hydraulic Cutterheads

▼ Shown from left to right: WHC-3380, WHC-750



## WHC/WHR Series

Capacity:  
**3 - 20 ton**

Cutting Capacity:  
**12 - 101 mm**

Maximum Operating Pressure:  
**700 bar**



### Replacement Blades

To order 60-62HRC hardened replacement blades use one of the model number shown below.

For Cutter Model Number	Order Blades Model Number
WHC-750	WCB-750
WHC-1250	WCB-1250
WHC-2000	WCB-2000
WHC-3380	WCB-3380
WHC-4000	WCB-4000
WHR-1250	WCB-1250

- Single-acting, spring return on all models, except WHR-1250
- Guillotine action for easy 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



### Tool Sets

All Hydraulic Cutterheads marked with an \* are available as sets (pump, tool, gauge, couplers and hose) for your ordering convenience.

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### ▼ Selection Chart Maximum Cutting Capacities (ø in mm)

Cutter Head Operation	Capacity	Model Number	Oil Capacity	Length	Steel Wire Rope, Hemp-core or IWRC 6x7 6x12 6x19	Round Bar				Wire Strand				Cable		Weight
						Copper Wire or Bar	Aluminum Wire or Bar	Soft Steel Bolts	Reinforcing Bar	Bare Copper Wire Strands	Bare Aluminum Wire Strands	ACSR	Guy Steel Wire Strands	Telephone Cable CPP	Underground Cable (Power)	
Single-Acting	4	WHC-750*	19,7	127	19	19	19	12	19	19	19	16	☆	☆	3,2	
	20	WHC-1250*	134,4	279	31	28	31	28	25	31	31	22	☆	☆	11,3	
	13	WHC-2000	119,6	381	25	31	31	22	☆	50	50	50	19	☆	50	10,4
	3	WHC-3380*	65,5	482	☆	☆	☆	☆	☆	41	42	☆	☆	85	85	9,1
	8	WHC-4000	137,7	609	☆	☆	☆	☆	☆	☆	☆	☆	☆	101	101	14,5
Dbl.-Act.	20	WHR-1250	122,9	419	31	31	31	28	25	31	31	31	22	☆	☆	11,8

\* Available in sets.

☆ Will not cut designated material

# Self-Contained Hydraulic Cutters

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



- Rotating heads for operator convenience
- Guillotine action for easy 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

## WMC Series

Capacity:

**3 - 20 ton**

Cutting Capacity:

**14 - 85 mm**

Maximum Operating Pressure:

**700 bar**



### Replacement Blades

To order 60-62HRC hardened replacement blades use one of the model number shown below.

For Cutter Model Number	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 ton	Model Number	Length (mm)	Steel Wire Rope, Hemp-core or IWRC 6x7 6x12 6x19	Round Bar				Wire Strand					Cable		Weight (kg)
				Copper Wire or Bar	Aluminum Wire or Bar	Soft Steel Bolts	Reinforcing Bar	Bare Copper Wire Strands	Bare Aluminum Wire Strands	ACSR Wire Strands	Guy Steel Wire Strands	Guy Steel Wire Strands	Telephone Cable CPP	Underground Cable (Power)	
4	WMC-580	381	16	16	16	16	☆	16	16	16	14	14	☆	16	3,6
4	WMC-750	381	19	17	17	17	☆	19	19	19	14	14	☆	17	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	25	☆	☆	10,4
6	WMC-1580	558	19	19	19	19	☆	38	41	41	16	16	☆	41	6,8
13	WMC-2000	628	25	31	31	22	☆	50	50	50	19	19	☆	50	10,9
3	WMC-3380	660	☆	☆	☆	☆	☆	46	42	☆	☆	☆	85	85	10,0

\* Cuts 12 mm alloy chain grade 70 (type G7 transport or tie-down) or grade 80 (for overhead lifting applications)

☆ Will not cut designated material



# Hydraulic Nut Splitter

▼ Shown from left to right: NC-3241, NC-1319, NC-1924



## NC Series

Capacity:  
**5 - 90 ton**

Bolt Range:  
**M6- M48**

Maximum Operating Pressure:  
**700 bar**



### Tool Sets

All Hydraulic Nut Splitters are available as sets (pump, tool, gauge, couplers and hose) for your ordering convenience.

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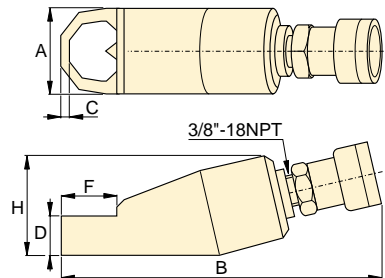
### For Jobs 'On-the-Road' Nut Splitter Set NC-2450Q

Set in metal case with NC-2432, NC-3241, NC-4150, couplers and spare chisels.

- Compact and ergonomic design, easy to use
- Unique angled head design
- Single-acting, spring return cylinder
- Heavy duty chisels can be reground
- Applications include service trucks, piping industry, tank cleaning, petrochemical, steel construction, mining, etc.



◀ Easily removing rusty nuts during railroad construction is just one of many application examples for the Enerpac Nut Splitter.



**Enerpac Nut Splitters**

Nut Splitters include a spare chisel, a spare set screw and the wrench used to secure the chisel. A CR-400 coupler is standard.

Bolt Range	Hexagon Nut Range (mm)	Capacity ton	Oil Capacity (cm <sup>3</sup> )	Model Number	Dimensions (mm)						Weight (kg)
					A	B	C	D	F	H	
M6-M12	10 - 19	5	15	NC-1319	40	170	7	19	28	48	1,2
M12-M16	19 - 24	10	20	NC-1924	54	191	10	26	40	62	2,0
M16-M22	24 - 32	15	60	NC-2432	64	222	13	29	51	72	3,0
M22-M27	32 - 41	20	80	NC-3241	75	244	17	36	66	88	4,4
M27-M33	41 - 50	35	155	NC-4150	94	288	21	45	74	105	8,2
M33-M39	50 - 60	50	240	NC-5060	106	318	23	54	90	128	11,8
M39-M48	60 - 75	90	492	NC-6075	156	393	26	72	110	181	34,1

Ordering Notes: Maximum allowable hardness to split is HRC-44.  
Not to be used on square nuts.



# Hydraulic Flange Spreader

▼ Shown: FS-56



- Light weight, ergonomic design for ease of use
- Adjustable jaw widths from 59 mm to 224 mm for a wide range of applications
- Single-acting, spring return RC-Series cylinders for fast trouble-free operation



**FS Series**



Capacity:  
**5 and 10 ton**

Spread:  
**59 - 224 mm**

Maximum Operating Pressure:  
**700 bar**

For flanges that require larger spreading distance and have a larger joint, an optional larger wedge is available .

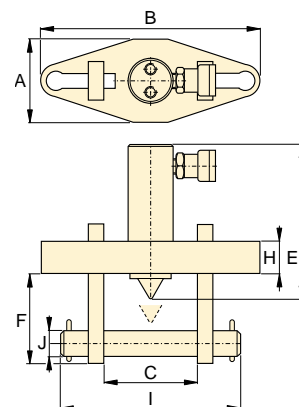
For Model	Order Model Number
FS-56 and FS-109	<b>F-109-7</b>

## Flange Spreader Matching Chart

ASA Rating (bar)	Pipe Size (mm)	
	FS-56	FS-109
10	127 - 508	558 - 1066
20	63 - 355	406 - 711
27	63 - 304	355 - 609
35	63 - 254	304 - 508
62	12 - 152	203 - 406
103	12 - 88	101 - 203
172	12 - 63	76 - 101

**Tool Sets**  
Both Hydraulic Flange Spreaders are available as sets (pump, tool, gauge, couplers and hose) for your ordering convenience.

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Maximum Flange Thickness (mm)	Stud Size (mm)	Standard Wedge (mm)	Capacity (ton)	Stroke (mm)	Oil Capacity (cm <sup>3</sup> )	Model Number	Dimensions (mm)								Weight (kg)	
							A	B	C		E	F	H	I		J
									Min.	Max.						
2 x 57	19 - 28	3 - 28	5	38	24,6	<b>FS-56</b>	76	209	59	163	201	69	25	206	19	2,3
2 x 92	31 - 41	3 - 28	10	54	78,7	<b>FS-109</b>	108	279	61	224	158	88	38	273	31	5,4

# STB-Series, Pipe Bender Sets

▼ Shown: STB-101H



## Quick, Safe and Wrinkle-free Bending

**i** **'One Shot' and 'Sweep'**  
One shot shoes give a 90° bend without resetting.  
Sweep shoes are used where increasing radii are required for multiple parallel pipe installations.

- Bends with smooth, wrinkle-free bends
- Light weight heat treated aluminium bender frame
- All sets contain angle indicator Z-12091 for accurate bending
- Powered by hand, air or electric pump
- Genuine Enerpac cylinders, including HC-7206 hose (Eject-O-Matic bender sets include 2 hoses)
- Set includes sturdy steel storage gauge



*Steel pipe is quickly and safely bend up to 90° using the STB-101H Pipe Bender Set*

### ▼ SELECTION CHART

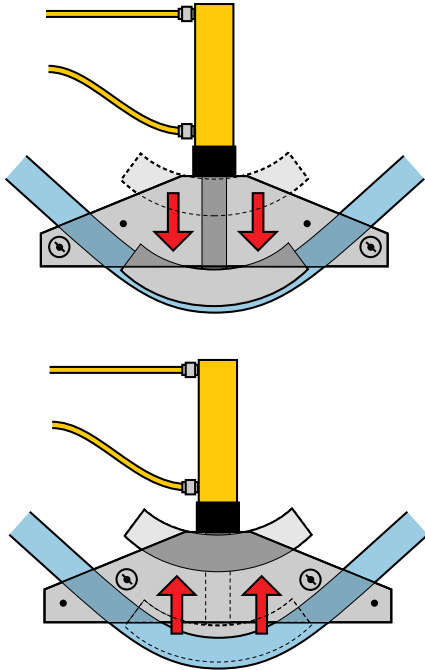
Pipe Range		Eject -O- Matic	Set Model Number	Hand Pump*	Air Pump*	Electric Pump*	Cylinder*	Steel Case	Weight incl. case
One Shot	Sweep								(kg)
15-50	-		STB-101H	P-392	-	-	RC-1010	CM-4	65
	-		STB-101A	-	PAT-1102N	-	RC-1010	CM-4	47
	-		STB-101E	-	-	PUJ-1200E	RC-1010	CM-4	73
25-50	-	•	STB-102H	P-84	-	-	RR-1010	CM-4	68
	65-100		STB-221H	P-80	-	-	RC-2510	CM-7	115
32-100	-	•	STB-202E	-	-	PUR-3409E	RR-3014	CM-7	196

\* See corresponding sections of this catalog for more detailed specifications.

# Pipe Bender Sets

## Eject-O-Matic™

Eject-O-Matic benders have double-acting cylinders to hydraulically eject the pipe from the bending shoe.



### Custom Ordering

If you already own an Enerpac pump and cylinder set, bender sets can be ordered without hydraulics. Just change the bender set model number suffix to "X". Check the chart to be sure you have the correct cylinder.

If you prefer a different pump to go with your bender set, just change the bender set model number suffix to "N", followed by the pump model number of your choice. See Pump Section.

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## STB Series



Max. Pipe Capacity:

**100 mm nominal bore**

Stroke:

**257 mm**

Maximum Operating Pressure:

**700 bar**

### ▼ Bending Shoe Capacities

Bending Shoe Model Nr.	Mild Steel Pipe		Electrical Conduit		Bend Centreline Radius (mm)	
	Max. Outside Dia. (mm)	Max. Pipe Schedule	Nominal Inside Diameter (mm)	Max. Wall Thickness (mm)		
One Shot	Z-12011	21,3	80	15	3,7	83
	Z-12021	26,6	80	20	4,0	115
	Z-12031	33,4	80	25	4,5	146
	Z-12041	42,2	80	32	5,0	184
	Z-12051	48,3	80	40	5,0	210
	Z-12061	60,3	80	50	5,5	235
	Z-12341	73,0	80	65	7,0	267
	Z-12351	88,9	80	80	7,6	330
	Z-12391	101,6	80	90	8,0	445
Sweep	Z-12392	114,3	40	100	6,0	508
	Z-12382	73,0	80	65	7,0	267
	Z-12383	88,9	80	80	7,6	330
	Z-12384	101,6	80	90	8,0	445
	Z-12385	114,3	40	100	6,0	508

Included One-Shot Bending Shoes (NB = Nominal Bore)										Included Sweep Bending Shoes				Set Model Number
Z-12011 (15 NB)	Z-12021 (20 NB)	Z-12031 (25 NB)	Z-12041 (32 NB)	Z-12051 (40 NB)	Z-12061 (50 NB)	Z-12341 (65NB)	Z-12351 (80 NB)	Z-12391 (90 NB)	Z-12392 (100 NB)	Z-12382 (65 NB)	Z-12383 (80 NB)	Z-12384 (90 NB)	Z-12385 (100 NB)	
•	•	•	•	•	•									STB-101H
•	•	•	•	•	•									STB-101A
•	•	•	•	•	•									STB-101E
		•	•	•	•									STB-102H
		•	•	•	•					•	•	•	•	STB-221H
		•	•	•	•	•	•	•	•					STB-202E

▼ Shown: CM-34



## Protect your Equipment



### For Your Convenience

You can order a set of four casters with mounting hardware for cases CM-16, CM-34 or CM-36.

The diameter is 101 mm and the tread width is 38 mm. Order model number: **CM-44**.

### CM-16, CM-34, CM-36

- Protect your equipment from dust, water, grease and dirt
- Constructed of durable 16 gauge steel
- Reduce losses on the jobsite, maintenance area or shop
- Heavy duty hinges and lifting handles
- Painted with rust-resistant primer and finished in durable enamel

### CM-1, CM-4, CM-5, CM-6, CM-7

- Constructed of 16 gauge steel (CM-4), 14 gauge steel (CM-7) or 20 gauge steel (CM-1, CM-5, CM-6)
- Heavy duty hinges and lifting handles

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



Case Size (litres)	Model Number	Case Dimensions				Shelf Dimensions	
		Length (mm)	Width (mm)	Height (mm)		Length (mm)	Width (mm)
				Rear	Front		
14	CM-5	482	292	117	117	-	-
19	CM-6	596	177	177	177	-	-
32	CM-1	635	292	168	168	-	-
127	CM-4	787	457	355	355	-	-
212	CM-7	1206	381	457	457	-	-
453	CM-16	1219	609	609	609	-	-
926	CM-34	1524	762	863	558	-	-
1076	CM-36	1219	762	1168	1168	1219	304

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While every care has been taken in the preparation of this catalog and all data contained within is deemed accurate at the time of printing, Enerpac does reserve the right to make changes to the specifications of any product, or discontinue any product, contained within this catalog without prior notice. All illustrations, performance specifications, weights and dimensions reflect the nominal values and slight variations may occur due to manufacturing tolerances. Please consult Enerpac if final dimensions are critical.





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