E324

ENERPAC

Hydraulic Power for all Industrial Applications

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ENERPAC
Hydraulic Technology Worldwide

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Model Number Index

Section Index

ENERPAC

The World

A complete range of Quality High Force Tools for All Industrial Applications, with local availability and after sales service anywhere in the World… this is what has made Enerpac the recognized global market leader in its field.

Across every continent, Enerpac's network of authorized Distributors and Service Centers reach even the most remote locations, supplying and servicing products that are designed to enhance productivity, while offering the benefits of safety and efficiency to tasks such as lifting, pushing, pulling bending, cutting, pressing, punching, and many other applications where high forces are required.

Over 150 trained applications sales engineers, backed by a network of service and engineering staff in 15 countries around the world, make Enerpac the product of choice in industries such as manufacturing, construction, oil & gas, shipbuilding, railroads, mining, and metals transformation.

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

You can be assured that Enerpac will continue to lead the way through a commitment to continued development of Quality High Force Tools for All Industrial Applications.

# 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 composite hand pumps (for total portability) to the PC Controlled Synchronous Lift System (for ultimate precision).

DNV Certification, Inc. USA
DNV MSC The Netherlands Accredited by the RvA
ANSI-RAB QMS ACCREDITED
DNV
ISO 9001
REGISTERED FIRM
ENERPAC, 720 W. James Street, Columbus, WI 53925 USA

ENERPAC®
Hydraulic Technology Worldwide

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

STOP RING
absorbs eccentric loading and prevents plunger over-extension

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.

Cylinder Section Overview

Capacity (tons) Nominal	Stroke Range (in)	Cylinder type and functions	Series		Page
5-100	.63-14.25	General Purpose Cylinders, Single-Acting Cylinder Accessories	RC		8 12
30-50	2.00-6.00	Aluminum Cylinders, Single-Acting	RCA		13
5-500	.25-2.44	Pancake and Low Height Cylinders, Single-Acting	CLP RSM RCS		14 16
2.5-60	5.00-6.10	Pull Cylinders, Single-Acting	BRC BRP		18
12-150	.31-10.13	Hollow Plunger Cylinders Single- and Double-Acting	RCH RRH		20 22
4-25	1.13-10.25	Precision Production Cylinders, Double-Acting	RD		24
10-500	2.25-48.00	Long Stroke Cylinders, Double-Acting	RR		26
50-1000	1.97-11.81	High Tonnage Cylinders, Single-Acting	CLSG		30
50-1000	1.97-11.81	High Tonnage Cylinders, Single-Acting	CLS		34
50-1000	1.97-11.81	High Tonnage Cylinders, Double-Acting	CLRG		38
50-1000	1.97-11.81	High Tonnage Cylinders, Single-Acting with Mechanical Locknut, Corrosion Protected	CLL		42
N/A	N/A	Stage Lifting Synchronous Lift Systems			46 48
1.5-150	3.00-20.00	Aluminum Jacks Premium Steel Jacks Industrial Bottle Jacks	JHA JTA JH EBJ		50 51 52
50-100	13.0-20.0	Mobile Jacks	RJ		53
5-100	1.50-14.25	Cylinder - Pump Sets	SC		54

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

The Industry Standard General Purpose Cylinder

- **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 100 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**

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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▼ *Stage lifting set up in Greece, where assembled pipes, 82 feet in length, were stage lifted with six RC-2514 cylinders.*

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

Golden Ring Design

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

RC Series

Capacity:
5-100 tons

Stroke:
.63-14.25 inch

Maximum Operating Pressure:
10,000 psi

▼ QUICK SELECTION CHART

For complete technical information see next page.

Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height (in)	Weight (lbs)
5 [5]	.63	**RC-50****	.99	.62	1.63	2.2
	1.00	**RC-51**	.99	.99	4.34	2.3
	3.00	**RC-53**	.99	2.98	6.50	3.3
	5.00	**RC-55***	.99	4.97	8.50	4.1
	7.00	**RC-57**	.99	6.96	10.75	5.3
	9.13	**RC-59**	.99	9.07	12.75	6.1
10 [11]	1.00	**RC-101**	2.24	2.24	3.53	4.0
	2.13	**RC-102***	2.24	4.75	4.78	5.1
	4.13	**RC-104**	2.24	9.23	6.75	7.2
	6.13	**RC-106***	2.24	13.70	9.75	9.8
	8.00	**RC-108**	2.24	17.89	11.75	12.0
	10.13	**RC-1010***	2.24	22.65	13.75	14.0
	12.00	**RC-1012**	2.24	26.84	15.75	15.0
	14.00	**RC-1014**	2.24	31.31	17.75	18.0
15 [16]	1.00	**RC-151**	3.14	3.14	4.88	7.2
	2.00	**RC-152**	3.14	6.28	5.88	9.0
	4.00	**RC-154***	3.14	12.57	7.88	11.0
	6.00	**RC-156***	3.14	18.85	10.69	15.0
	8.00	**RC-158**	3.14	25.13	12.69	18.0
	10.00	**RC-1510**	3.14	31.42	14.69	21.0
	12.00	**RC-1512**	3.14	37.70	16.69	24.0
	14.00	**RC-1514**	3.14	43.98	18.69	26.0
25 [26]	1.00	**RC-251**	5.16	5.16	5.50	13.0
	2.00	**RC-252***	5.16	10.31	6.50	14.0
	4.00	**RC-254***	5.16	20.63	8.50	18.0
	6.25	**RC-256***	5.16	32.23	10.75	22.0
	8.25	**RC-258**	5.16	42.55	12.75	27.0
	10.25	**RC-2510**	5.16	52.86	14.75	31.0
	12.25	**RC-2512**	5.16	63.18	16.75	36.0
	14.25	**RC-2514***	5.16	73.49	18.75	39.0
30 [32]	8.25	**RC-308**	6.49	53.56	15.25	40.0
50 [55]	2.00	**RC-502**	11.04	22.09	6.94	33.0
	4.00	**RC-504**	11.04	44.18	8.94	42.0
	6.25	**RC-506***	11.04	69.03	11.13	51.0
	13.25	**RC-5013**	11.04	146.34	18.13	83.0
75 [80]	6.13	**RC-756**	15.90	97.41	11.25	65.0
	13.13	**RC-7513**	15.90	208.74	19.38	130.0
100 [103]	6.63	**RC-1006***	20.63	136.67	14.06	130.0
	10.25	**RC-10010**	20.63	211.45	17.69	160.0

* Available as a set. See note on this page.
** RC-50 cylinder has non-removable grooved saddle and no collar thread.

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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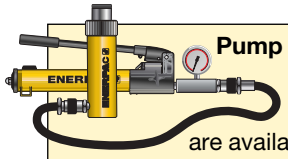

Pump and Cylinder Sets

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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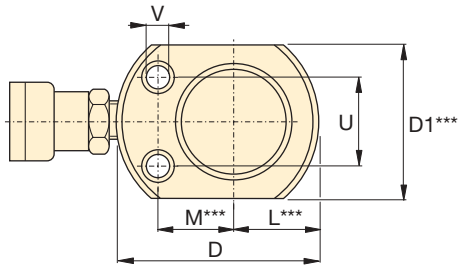
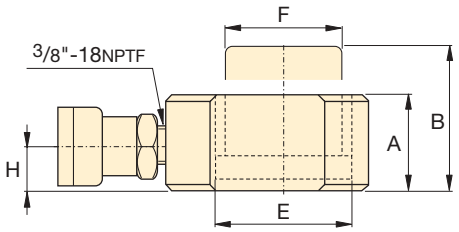
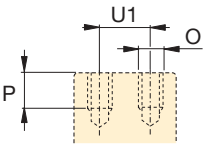
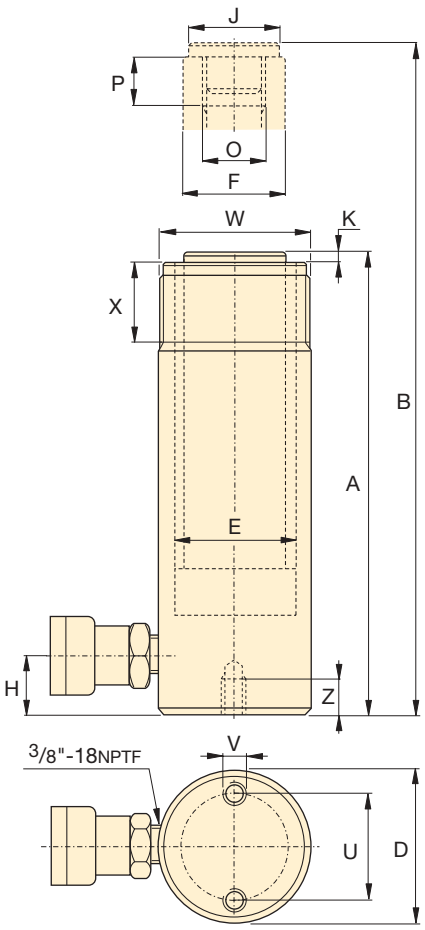




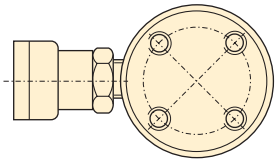
RC-50



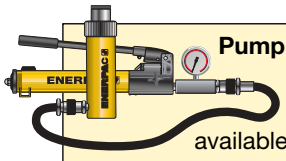
RC-101 only
(U1 = .75 inch)



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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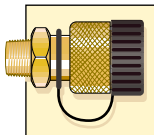
◀ For full features see page 8.

Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height A (in)	Extended Height B (in)	Outside Dia. D (in)
5 [5]	.63	**RC-50****	.99	.62	1.63	2.25	2.31
	1.00	**RC-51**	.99	.99	4.34	5.34	1.50
	3.00	**RC-53**	.99	2.98	6.50	9.50	1.50
	5.00	**RC-55***	.99	4.97	8.50	13.50	1.50
	7.00	**RC-57**	.99	6.96	10.75	17.75	1.50
	9.13	**RC-59**	.99	9.07	12.75	21.88	1.50
10 [11]	1.00	**RC-101**	2.24	2.24	3.53	4.53	2.25
	2.13	**RC-102***	2.24	4.75	4.78	6.91	2.25
	4.13	**RC-104**	2.24	9.23	6.75	10.88	2.25
	6.13	**RC-106***	2.24	13.70	9.75	15.88	2.25
	8.00	**RC-108**	2.24	17.89	11.75	19.75	2.25
	10.13	**RC-1010***	2.24	22.65	13.75	23.88	2.25
	12.00	**RC-1012**	2.24	26.84	15.75	27.75	2.25
	14.00	**RC-1014**	2.24	31.31	17.75	31.75	2.25
15 [16]	1.00	**RC-151**	3.14	3.14	4.88	5.88	2.75
	2.00	**RC-152**	3.14	6.28	5.88	7.88	2.75
	4.00	**RC-154***	3.14	12.57	7.88	11.88	2.75
	6.00	**RC-156***	3.14	18.85	10.69	16.69	2.75
	8.00	**RC-158**	3.14	25.13	12.69	20.69	2.75
	10.00	**RC-1510**	3.14	31.42	14.69	24.69	2.75
	12.00	**RC-1512**	3.14	37.70	16.69	28.69	2.75
	14.00	**RC-1514**	3.14	43.98	18.69	32.69	2.75
25 [26]	1.00	**RC-251**	5.16	5.16	5.50	6.50	3.38
	2.00	**RC-252***	5.16	10.31	6.50	8.50	3.38
	4.00	**RC-254***	5.16	20.63	8.50	12.50	3.38
	6.25	**RC-256***	5.16	32.23	10.75	17.00	3.38
	8.25	**RC-258**	5.16	42.55	12.75	21.00	3.38
	10.25	**RC-2510**	5.16	52.86	14.75	25.00	3.38
	12.25	**RC-2512**	5.16	63.18	16.75	29.00	3.38
	14.25	**RC-2514***	5.16	73.49	18.75	33.00	3.38
30 [32]	8.25	**RC-308**	6.49	53.56	15.25	23.50	4.00
50 [55]	2.00	**RC-502**	11.04	22.09	6.94	8.94	5.00
	4.00	**RC-504**	11.04	44.18	8.94	12.94	5.00
	6.25	**RC-506***	11.04	69.03	11.13	17.38	5.00
	13.25	**RC-5013**	11.04	146.34	18.13	31.38	5.00
75 [80]	6.13	**RC-756**	15.90	97.41	11.25	17.38	5.75
	13.13	**RC-7513**	15.90	208.74	19.38	32.50	5.75
100 [103]	6.63	**RC-1006***	20.63	136.67	14.06	20.69	7.00
	10.25	**RC-10010**	20.63	211.45	17.69	27.94	7.00

* Available as a set. See note on this page.
** RC-50 cylinder has non-removable grooved saddle and no collar thread.
*** D1 = 1.63 inch, L = .81 inch, M = 1.00 inch.

Single-Acting, General Purpose Cylinders



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

Capacity:
5-100 tons

Stroke:
.63-14.25 inch

Maximum Operating Pressure:
10,000 psi

RC Series

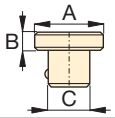
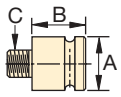
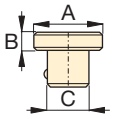
Cylinder Bore Ø E (in)	Plunger Ø F (in)	Base to Adv.Port H (in)	Saddle Ø J (in)	Saddle Protr. from Plgr. K (in)	Plunger Internal Thread O (in)	Plunger Thread Length P (in)	Base Mounting Holes			Collar Thread W (in)	Collar Thread Length X (in)	Weight (lbs)	Model Number
							Bolt Circle U (in)	Thread V (in)	Thd. Depth Z (in)				
1.13	1.00	.75	**	**	**	**	1.13	.22	—	—	—	2.2	**RC-50****
1.13	1.00	.75	1.00	.25	¾"-16	.56	1.00	¼"-20UN	.56	1½"-16	1.13	2.3	**RC-51**
1.13	1.00	.75	1.00	.25	¾"-16	.56	1.00	¼"-20UN	.56	1½"-16	1.13	3.3	**RC-53**
1.13	1.00	.75	1.00	.25	¾"-16	.56	1.00	¼"-20UN	.56	1½"-16	1.13	4.1	**RC-55***
1.13	1.00	.75	1.00	.25	¾"-16	.63	1.00	¼"-20UN	.56	1½"-16	1.13	5.3	**RC-57**
1.13	1.00	.75	1.00	.25	¾"-16	.63	1.00	¼"-20UN	.56	1½"-16	1.13	6.1	**RC-59**
1.69	1.50	.75	–	–	#10-24UN	.25	1.56	5⁄16"-18UN	.50	2¼"-14	1.06	4	**RC-101**
1.69	1.50	.75	1.38	.25	1"- 8	.75	1.56	5⁄16"-18UN	.50	2¼"-14	1.13	5.1	**RC-102***
1.69	1.50	.75	1.38	.25	1"- 8	.75	1.56	5⁄16"-18UN	.50	2¼"-14	1.06	7.2	**RC-104**
1.69	1.50	.75	1.38	.25	1"- 8	.75	1.56	5⁄16"-18UN	.50	2¼"-14	1.13	9.8	**RC-106***
1.69	1.50	.75	1.38	.25	1"- 8	.75	1.56	5⁄16"-18UN	.50	2¼"-14	1.06	12	**RC-108**
1.69	1.50	.75	1.38	.25	1"- 8	.75	1.56	5⁄16"-18UN	.50	2¼"-14	1.13	14	**RC-1010***
1.69	1.50	.75	1.38	.25	1"- 8	.75	1.56	5⁄16"-18UN	.50	2¼"-14	1.06	15	**RC-1012**
1.69	1.50	.75	1.38	.25	1"- 8	.75	1.56	5⁄16"-18UN	.50	2¼"-14	1.06	18	**RC-1014**
2.00	1.63	.75	1.50	.38	1"- 8	1.00	1.88	⅜"-16UN	.50	2¾"-16	1.19	7.2	**RC-151**
2.00	1.63	.75	1.50	.38	1"- 8	1.00	1.88	⅜"-16UN	.50	2¾"-16	1.19	9	**RC-152**
2.00	1.63	.75	1.50	.38	1"- 8	1.00	1.88	⅜"-16UN	.50	2¾"-16	1.19	11	**RC-154***
2.00	1.63	1.00	1.50	.38	1"- 8	1.00	1.88	⅜"-16UN	.50	2¾"-16	1.19	15	**RC-156***
2.00	1.63	1.00	1.50	.38	1"- 8	1.00	1.88	⅜"-16UN	.50	2¾"-16	1.19	18	**RC-158**
2.00	1.63	1.00	1.50	.38	1"- 8	1.00	1.88	⅜"-16UN	.50	2¾"-16	1.19	21	**RC-1510**
2.00	1.63	1.00	1.50	.38	1"- 8	1.00	1.88	⅜"-16UN	.50	2¾"-16	1.19	24	**RC-1512**
2.00	1.63	1.00	1.50	.38	1"- 8	1.00	1.88	⅜"-16UN	.50	2¾"-16	1.19	26	**RC-1514**
2.56	2.25	1.00	2.00	.41	1½"-16	1.00	2.31	½"-13UN	.75	3⅝"-12	1.94	13	**RC-251**
2.56	2.25	1.00	2.00	.41	1½"- 16	1.00	2.31	½"-13UN	.75	3⅝"-12	1.94	14	**RC-252***
2.56	2.25	1.00	2.00	.41	1½"- 16	1.00	2.31	½"-13UN	.75	3⅝"-12	1.94	18	**RC-254***
2.56	2.25	1.00	2.00	.41	1½"- 16	1.00	2.31	½"-13UN	.75	3⅝"-12	1.94	22	**RC-256***
2.56	2.25	1.00	2.00	.41	1½"- 16	1.00	2.31	½"-13UN	.75	3⅝"-12	1.94	27	**RC-258**
2.56	2.25	1.00	2.00	.41	1½"- 16	1.00	2.31	½"-13UN	.75	3⅝"-12	1.94	31	**RC-2510**
2.56	2.25	1.00	2.00	.41	1½"- 16	1.00	2.31	½"-13UN	.75	3⅝"-12	1.94	36	**RC-2512**
2.56	2.25	1.00	2.00	.41	1½"- 16	1.00	2.31	½"-13UN	.75	3⅝"-12	1.94	39	**RC-2514***
2.88	2.25	2.25	2.00	.41	1½"- 16	1.00	—	—	—	3⅝"-12	1.94	40	**RC-308**
3.75	3.13	1.31	2.81	.11	—	—	3.75	½"-13UN	.75	5"-12	2.19	33	**RC-502**
3.75	3.13	1.31	2.81	.11	—	—	3.75	½"-13UN	.75	5"-12	2.19	42	**RC-504**
3.75	3.13	1.38	2.81	.11	—	—	3.75	½"-13UN	.75	5"-12	2.19	51	**RC-506***
3.75	3.13	1.38	2.81	.11	—	—	3.75	½"-13UN	.75	5"-12	2.19	83	**RC-5013**
4.50	3.75	1.19	2.81	.23	—	—	—	—	—	5¾"-12	1.75	65	**RC-756**
4.50	3.75	1.19	2.81	.23	—	—	—	—	—	5¾"-12	1.75	130	**RC-7513**
5.13	4.13	1.63	2.81	.11	—	—	5.50	¾"-10UN	1.00	6⅞"-12	1.75	130	**RC-1006***
5.13	4.13	1.63	2.81	.11	—	—	5.50	¾"-10UN	1.00	6⅞"-12	1.75	160	**RC-10010**

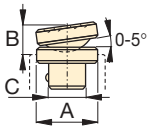
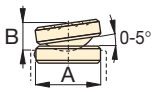
▼ SELECTION CHART

For use with Cylinder Capacity (tons)	Saddles			Base Plate	Mounting Block	Clevis Eyes	
	Flat/Threaded	Grooved[1]	Tilt			Base[4]	Plunger
							
5	A-53F[2]	A-53G[2]	–	–	RB-5[2], AW-51[2], AW-53[2]	REB-5[2]	REP-5[2]
10	A-12[3], A-102F[3]	A-102G[3]	CAT-10[3]	JBI-10	RB-10, AW-102	REB-10	REP-10[3]
15	–	A-152G	CAT-10	–	RB-15	REB-15	REP-10
25	A-29	A-252G	CAT-50	JBI-25	RB-25	REB-25	REP-25
30	A-29	A-252G	CAT-50	–	RB-25	–	REP-25
50	–	–	CAT-100	JBI-50	–	–	–
75	–	–	CAT-100	–	–	–	–
100	–	–	CAT-100	–	–	–	–

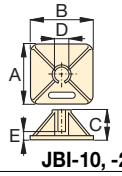
[1] Standard on 5-30 ton RC-cylinders [2] Except RC-50 [3] Except RC-101 [4] Mounting screws are included.

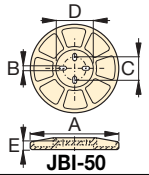
▼ DIMENSION CHARTS

Model Number	Saddle Dimensions (in)			
	A	B	C	
	Flat			
A-53F	1.00	.25	.68	
A-102F	1.38	.24	.88	
A-12	2.00	1.88	1"-8UNC	
A-29	2.00	1.88	1 1/2"-16UN	
	Grooved			
A-53G	1.00	.25	.68	
A-102G	1.38	.24	.88	
A-152G	1.50	.37	.88	
A-252G	1.97	.37	1.40	

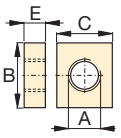
Model Number	Tilt Saddle Dimensions (in)			
	A	B	C	
	Tilt			
CAT-10	1.38	.79	.88	
CAT-50	1.97	.83	1.40	
	Tilt			
CAT-100	2.80	.98	–	

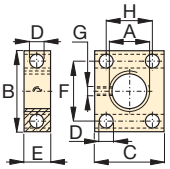
Model Number	Base Plate Dimensions (in)				
	A	B	C	D	E
JBI-10	9.00	9.00	5.34	2.29	.81
JBI-25	11.00	11.00	5.53	3.41	1.03
JBI-50	12.00	.60	3.75	5.19	1.25

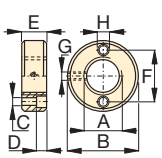

JBI-10, -25

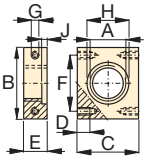

JBI-50

Model Number	Mounting Block Dimensions (in)							
	A	B	C	D	E	F	G	H
RB-5	1 1/2"-16	3.50	3.00	–	1.00	–	–	–
AW-51	1 1/2"-16	2.76	2.36	.43	.98	2.13	1/4"-20	1.62
AW-53	1 1/2"-16	2.87	.28	.31	.75	2.25	1/4"-20	.41
RB-10	2 1/4"-14	4.50	3.50	–	1.00	–	–	–
AW-102	2 1/4"-14	3.94	3.25	.63	1.18	3.00	7/16"-20	2.31
RB-15	2 3/4"-16	4.00	4.50	–	1.50	–	–	–
RB-25	3 5/16"-12	5.00	6.50	–	2.00	–	–	–

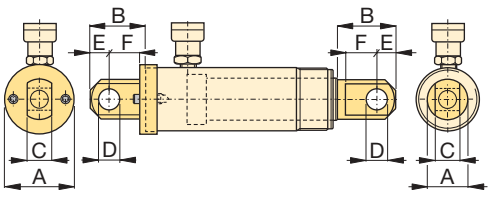

RB-5, -10
RB-15, -25


AW-51


AW-53


AW-102 (J=.19)

Type	Model Number	Clevis Eye Dimensions (in)						Pin to Pin* (in)
		A	B	C	D	E	F	
Base[4]	REB-5	1.75	1.88	.56	.63	.63	1.00	2.37
	REB-10	2.50	2.63	1.00	.88	1.00	1.38	3.07
	REB-15	3.00	2.63	1.00	.88	1.00	1.38	3.07
	REB-25	3.75	3.13	1.50	1.25	1.25	1.63	3.45
Plunger	REP-5	1.13	1.62	.56	.63	.63	.75	—
	REP-10	1.69	2.43	1.00	.88	1.00	1.13	—
	REP-25	2.25	2.93	1.50	1.25	1.25	1.38	—


REB REP

* Pin to Pin– REB and REP Clevises fitted. Add cylinder stroke length.

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

RCA Series

Capacity:
30-50 tons

Stroke:
2.00-6.00 inch

Maximum Operating Pressure:
10,000 psi

Saddles

The RCA cylinders are equipped standard with grooved saddles. For applications requiring a tilt saddle, the CAT-100 is available as an accessory (for 50 ton RCA cylinder models only).

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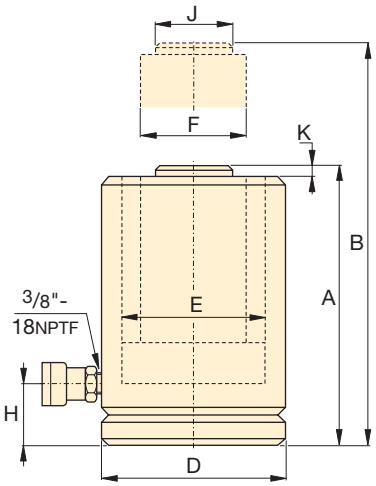
- **Lightweight, aluminum design for maximum portability**
- **ANSI B30.1 design and test specification approvals ensure increased product life and user safety**
- **Designed for use in all positions**
- **Steel base-plate for increased durability**
- **Base and plunger are hard coat anodized**
- **CR-400 coupler and dust cap included on all models**
- **Plunger wiper extends life**
- **Single-acting spring return**

◀ **Lightweight Hand Pump**

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



Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Coll. Height A (in)	Extend. Height B (in)	Outside Dia. D (in)	Cyl. Bore Dia. E (in)	Plunger Dia. F (in)	Base to Adv. Port H (in)	Saddle Dia. J (in)	Saddle Protr. from Plgr. K (in)	Weight (lbs)
30 [32]	2.00	**RCA-302**	6.49	12.98	7.16	9.16	4.75	2.88	2.25	2.25	2.00	.05	12.0
	4.00	**RCA-304**	6.49	25.97	9.25	13.25	4.75	2.88	2.25	2.25	2.00	.05	15.5
50 [55]	2.00	**RCA-502**	11.04	22.09	6.97	8.97	5.88	3.75	3.13	1.77	2.81	.13	21.5
	4.00	**RCA-504**	11.04	44.18	8.97	12.97	5.88	3.75	3.13	1.77	2.81	.13	26.5
	6.00	**RCA-506**	11.04	66.27	10.97	16.97	5.88	3.75	3.13	1.77	2.81	.13	31.5

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

The Lowest Power Lifter

- **Flat design for use in confined areas where standard cylinders will not fit**
- **Lock-nut feature for positive and safe load holding over a long period of time**
- **ANSI B30.1 design qualification and testing approval ensures increased product life and user safety**
- **Single-acting load return**
- **Special bearing design withstands sideload 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**

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

Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)
60 [67]	1.97	**CLP-602**	13.42	26.42
100 [114]	1.97	**CLP-1002**	22.75	44.78
160 [179]	1.77	**CLP-1602**	35.85	63.51
200 [221]	1.77	**CLP-2002**	44.27	78.43
250 [284]	1.77	**CLP-2502**	56.85	100.72
400 [434]	1.77	**CLP-4002**	86.72	153.64
500 [566]	1.77	**CLP-5002**	113.25	200.63

Speed Chart

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

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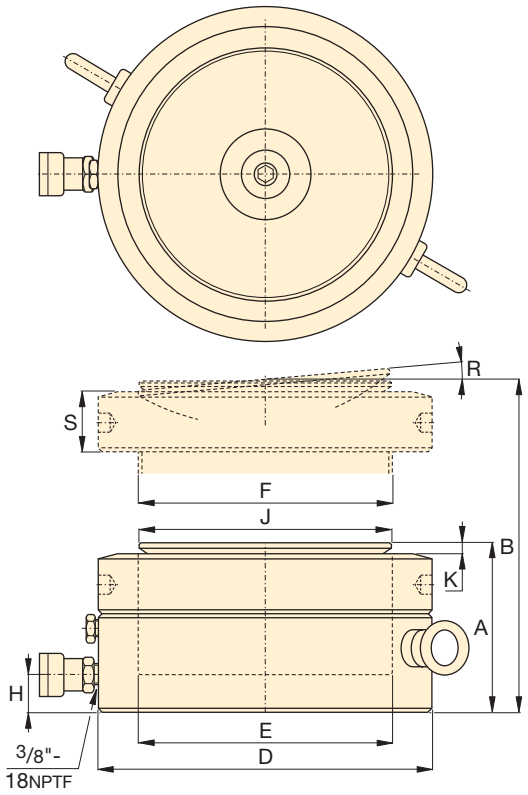
CLP Series

Capacity:
60-500 tons

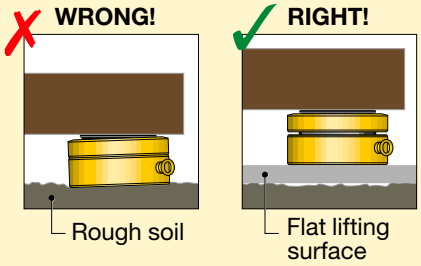
Stroke:
1.77-1.97 inch

Maximum Operating Pressure:
10,000 psi



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!



For more safety instructions see our "Yellow Pages".

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	Coll. Height A (in)	Ext. Height B (in)	Outside Diameter D (in)	Cyl. Bore Diameter E (in)	Plunger Diameter F (mm)	Base to Adv. Port H (in)	Saddle Diameter J (in)	Saddle Protr. from Plgr. K (in)	Saddle Max. Tilt Angle R	Lock Nut Height S (in)	Weight (lbs)	Model Number
	4.92	6.89	5.51	4.13	Tr 104 x 4	.75	3.78	.24	5°	1.10	33	**CLP-602**
	5.39	7.36	6.89	5.38	Tr 136 x 6	.83	4.96	.31	5°	1.22	57	**CLP-1002**
	5.83	7.60	8.66	6.76	Tr 171 x 6	1.06	6.30	.35	5°	1.57	97	**CLP-1602**
	6.10	7.87	9.65	7.51	Tr 190 x 6	1.18	7.09	.39	5°	1.69	125	**CLP-2002**
	6.26	8.03	10.83	8.51	Tr 216 x 6	1.26	7.87	.43	5°	1.73	163	**CLP-2502**
	7.01	8.78	13.78	10.51	Tr 266 x 6	1.54	9.84	.43	4°	2.17	295	**CLP-4002**
	7.56	9.33	15.75	12.01	Tr 305 x 6	1.89	11.42	.39	3°	2.44	416	**CLP-5002**

RSM/RCS-Series, Low Height Cylinders

ENERPAC
Hydraulic Technology Worldwide

▼ 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 inches.

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RSM-series, Flat-Jac® Cylinders

- **Compact, flat design for use where 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***
- **Hard chrome plated high quality steel plungers**
- **Grooved plunger ends require no saddle**
- **Single-acting spring return**

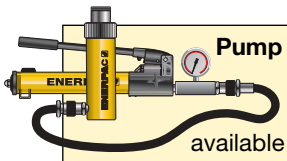
RCS-series, Low Height Cylinders

- **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**
- **Plated steel plungers**
- **Single-acting spring return**

▼ *Only a couple of inches are needed for an RSM-cylinder to lift this large steel construction.*

Cylinder Capacity (tons) Nominal [max.]	Stroke (in)	Model Number	Cyl. Effect. Area (in^2)	Oil Cap. (in^3)
5 [5]	.25	**RSM-50***	.99	.25
10 [11]	.44	**RSM-100**	2.24	.98
20 [22]	.44	**RSM-200**	4.43	1.94
30 [32]	.50	**RSM-300**	6.49	3.25
50 [48]	.63	**RSM-500**	9.62	6.01
75 [80]	.63	**RSM-750**	15.90	9.94
100 [98]	.63	**RSM-1000**	19.63	12.27
150 [153]	.63	**RSM-1500**	30.68	19.17
10 [11]	1.50	**RCS-101****	2.24	3.35
20 [22]	1.75	**RCS-201****	4.43	7.75
30 [32]	2.44	**RCS-302****	6.49	15.82
50 [48]	2.38	**RCS-502****	9.62	22.85
100 [98]	2.25	**RCS-1002****	19.63	44.18

* RSM-50 is fitted with an AR-400 coupler.
** Available as a set. See note on next page.



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

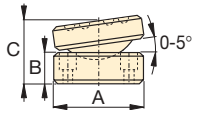
Capacity:
5-150 tons

Stroke:
.25-2.44 inch

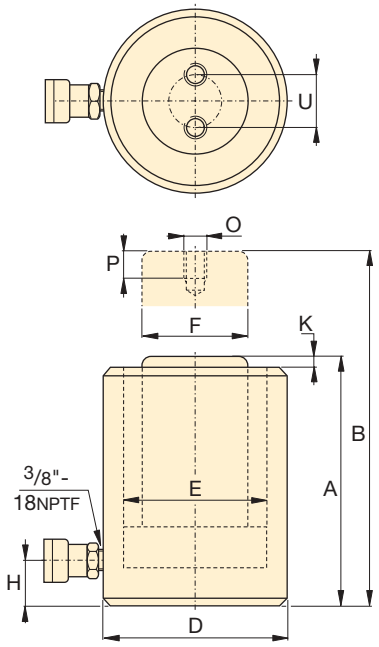
Maximum Operating Pressure:
10,000 psi

Optional Bolt On Tilt Saddle Dimensions (in)

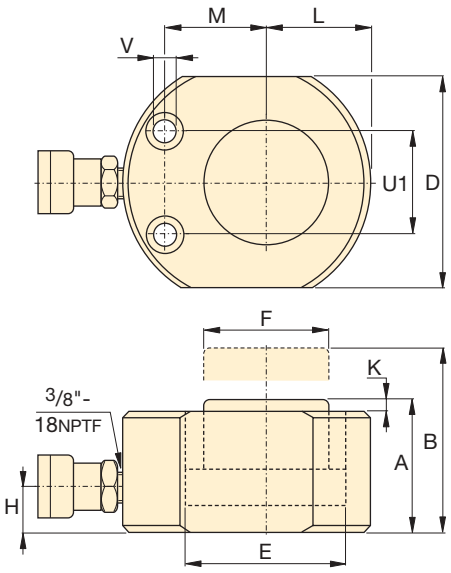
For Cylinder Model:	Model Number	A	B	C***
RCS-201, -302, -502	CAT-51	1.97	.59	1.14
RCS-1002	CAT-101	2.80	.67	1.39



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



RCS-Series



RSM-Series

RSM Cylinder Mounting Hole Dimensions (in)

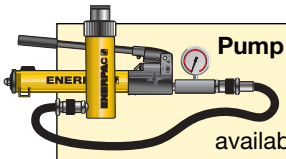
Model Number	Hole Pitch U1	Hole Dia. V	Counter Bore Dia.	Counter Bore Depth
RSM-50	1.12	.20	.312	.17
RSM-100	1.44	.28	.422	.31
RSM-200	1.94	.40	.594	.39
RSM-300	2.06	.40	.625	.44
RSM-500	2.62	.47	.750	.50
RSM-750	3.00	.53	.812	.56
RSM-1000	3.00	.53	.812	.56
RSM-1500	4.62	.53	.812	.56

Collapsed Height A (in)	Ext. Height B (in)	Outside Diameter D (in)	Cylinder Bore Dia. E (in)	Plunger Dia. F (in)	Base to Adv. Port. H (in)	Plunger Protrusion from Base K (in)	Plunger to Base L (in)	Plunger to Mtg. Hole M (in)	Thread O (mm)	Thread Depth P (in)	Bolt Circle U (in)	Weight (lbs)	Model Number
1.28	1.53	2.31 x 1.63	1.13	1.00	.63	.04	.81	.88	–	–	–	2.3	RSM-50*
1.69	2.13	3.25 x 2.19	1.69	1.50	.75	.04	1.09	1.34	–	–	–	3.1	RSM-100
2.03	2.47	4.00 x 3.00	2.38	2.00	.75	.04	1.56	1.56	–	–	–	6.8	RSM-200
2.31	2.81	4.63 x 3.75	2.88	2.50	.75	.08	1.88	1.75	–	–	–	10	RSM-300
2.63	3.25	5.50 x 4.50	3.50	2.75	.75	.08	2.25	2.13	–	–	–	15	RSM-500
3.13	3.75	6.50 x 5.50	4.50	3.25	.75	.08	2.75	2.63	–	–	–	25	RSM-750
3.38	4.00	7.00 x 6.00	5.00	3.63	.75	.08	3.00	2.94	–	–	–	32	RSM-1000
3.94	4.56	8.50 x 7.50	6.25	4.50	.94	.08	3.75	3.25	–	–	–	58	RSM-1500
3.47	4.97	2.75	1.69	1.50	.69	.20	–	–	M4	.32	1.03	9	RCS-101**
3.88	5.63	3.63	2.38	2.00	.69	.13	–	–	M5	.32	1.56	11	RCS-201**
4.63	7.06	4.00	2.88	2.62	.75	.13	–	–	M5	.32	1.56	15	RCS-302**
4.81	7.19	4.88	3.50	2.75	.94	.08	–	–	M5	.32	1.56	24	RCS-502**
5.56	7.81	6.50	5.00	3.63	1.25	.06	–	–	M8	.40	2.19	50	RCS-1002**

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

The Ultimate in Pulling Power

- **High strength alloy steel construction**
- **Plunger blow-out protection to prevent 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**
- **Plunger wiper reduces contamination, extending cylinder life**
- **Single-acting spring-return**



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

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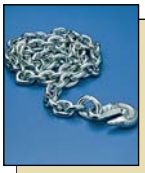

Attachments and Accessories

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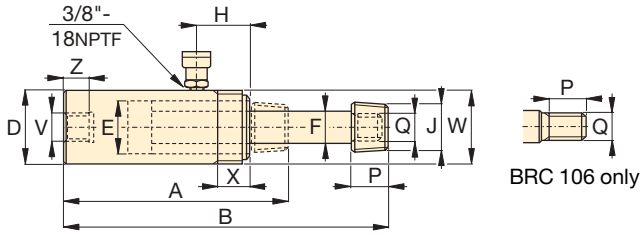
▼ *Ship building, welding and Enerpac pull cylinders go hand in hand.*

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

BRC Cylinder Mounting Dimensions (in)				
Model Number	Base Mounting Hole V	Collar Thread W	Collar Thd. Lgth. X	Mtg. Thd. Lgth. Z
BRC-25	¾" -14 NPTF	1½"-16 UN	.98	.67
BRC-46	1¼"-11½ NPTF	2¼"-14 UN	1.06	.98
BRC-106	M30 x 2	M85 x 2	1.02	.98



BRC-25 to BRC-106

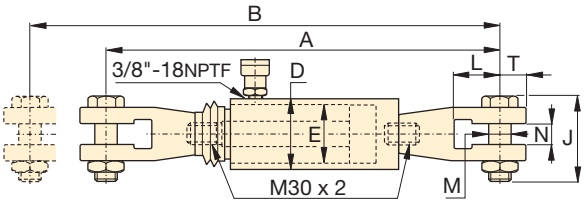
BRC BRP Series

Capacity:
2.5-60 tons

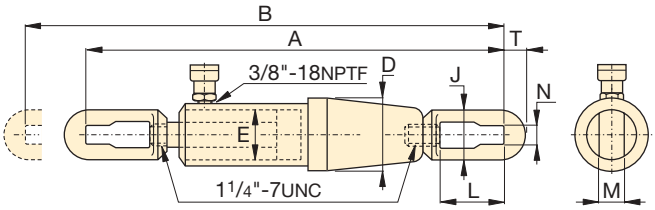
Stroke:
5.00-6.10 inch

Maximum Operating Pressure:
10,000 psi

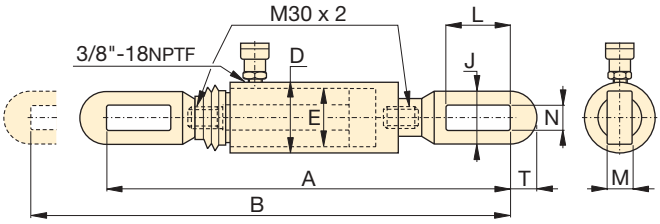
Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Cyl. Effect. Area (in^2)	Oil Cap. (in^3)	Coll. Height A (in)	Ext. Height B (in)	Outs. Dia. D (in)	Cyl. Bore Dia. E (in)	Plgr. Dia. F (in)	Top to Inlet Port H (in)	Saddle Diameter J (in)	Plgr. Thd. Lgth. P (in)	Plunger Outside Thread Q (mm)	Weight (lbs)
2.5 [3]	5.00	**BRC-25**	.55	2.76	10.44	15.44	1.89	1.13	.75	1.77	¾"-14 NPTF	1.13	–	4
5 [6]	5.50	**BRC-46**	1.13	6.21	11.88	17.38	2.25	1.69	1.19	1.69	1¼"-11½ NPTF	1.25	–	10
10 [12]	5.95	**BRC-106**	2.32	13.80	11.38	17.33	3.35	2.13	1.25	1.57	–	1.02	M30x2	21



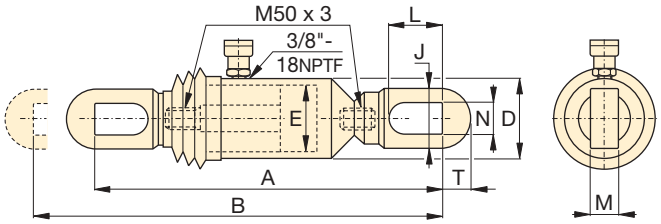
BRP-106C



BRP-306



BRP-106L



BRP-606

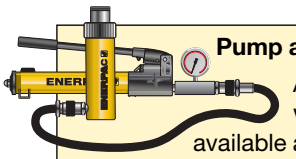
Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Cyl. Effect. Area (in^2)	Oil Cap. (in^3)	Coll. Height A (in)	Ext. Height B (in)	Outside Ø D (in)	Cyl. Bore Ø E (in)	Link Height J (in)	Link Opening L (in)	Link Thickness M (in)	Link Width N (in)	Slot to Link End T (in)	Weight (lbs)
10 [12]	5.95	**BRP-106C***	2.32	13.80	23.11	29.06	3.35	2.13	4.72	2.44	1.19	1.38	1.26	35
	5.95	**BRP-106L***	2.32	13.80	21.33	27.28	3.35	2.13	2.64	4.53	0.88	1.19	1.26	29
30 [36]	6.10	**BRP-306***	7.22	44.02	42.72	48.82	5.39	3.50	4.49	5.71	1.38	1.57	1.97	106
60 [59]	5.98	**BRP-606***	11.78	70.43	28.34	34.32	5.51	4.33	5.13	5.90	1.57	1.97	2.76	118

Note: BRP-106C, BRP-106L and BRP-606 are fitted with rubber bellows for rod protection.
*Available as a set. See note on previous page.

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

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

Versatility in Testing, Maintenance and Tensioning Applications



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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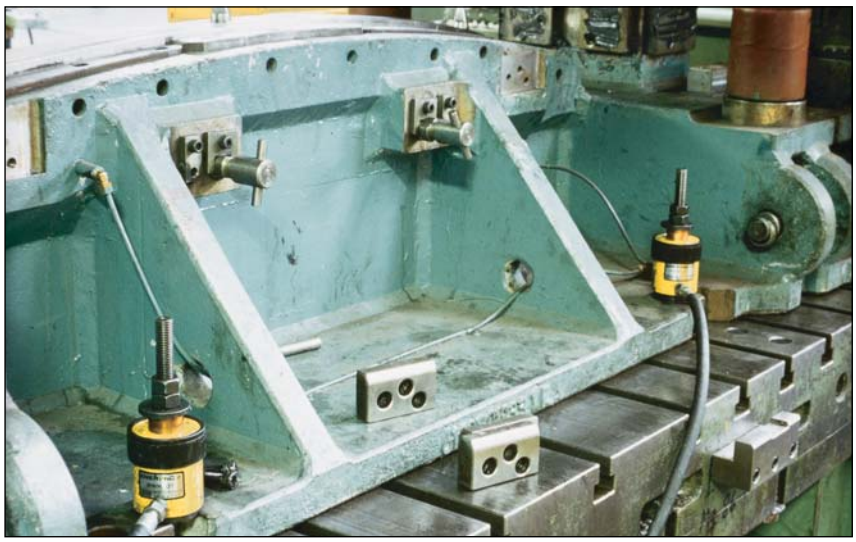
▼ *Four RCH-121 cylinders (12 tons) are used to clamp a large die. The hollow plunger allows fixturing the slot bolt.*

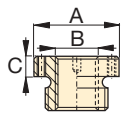


Cylinder Capacity (tons) Nominal [max.]	Stroke (in)	Model Number	Cyl. Effect. Area (in^2)	Oil Cap. (in^3)
12 [14]	.31	RCH-120	2.76	0.86
	1.63	RCH-121*	2.76	4.49
	1.63	RCH-1211	2.76	4.49
	3.00	RCH-123	2.76	8.29
20 [24]	2.00	RCH-202*	4.73	9.46
	6.10	RCH-206	4.73	28.67
30 [36]	2.50	RCH-302*	7.22	18.05
	6.13	RCH-306	7.22	44.23
60 [64]	3.00	RCH-603*	12.73	38.20
	6.00	RCH-606	12.73	76.41
100 [103]	3.00	RCH-1003*	20.63	61.88

* Available as a set. See note on this page.

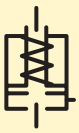
Single-Acting, Hollow Plunger Cylinders

Optional Heat Treated Hollow Saddles					
Saddle Type	**Cylinder Model No.**	**Saddle Model No.**	**Saddle Dimensions** (in) A	B	C
Threaded Hollow	**RCH-202, 206**	**HP-2015**	2.11	1"-8	.38
	RCH-302, 306	**HP-3015**	2.49	1¼"-7	.38
	RCH-603, 606	**HP-5016**	3.61	1⅝"-5½	.50
	RCH-1003	**HP-10016**	4.97	2½"-8	.51



Smooth hollow saddles are standard on all RCH-models (12 ton models are not equipped with saddles).

RCH Series

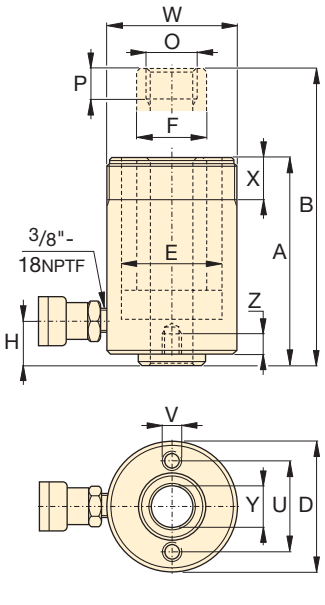


Capacity:
12-100 tons

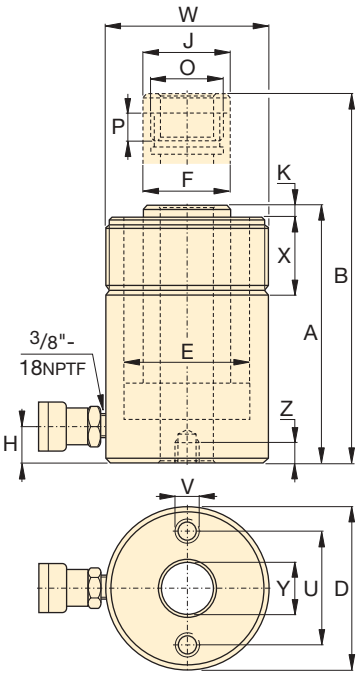
Stroke:
.31-6.13 inch

Maximum Operating Pressure:
10,000 psi

RCH-121 and RCH-1211 have a 1.88" dia. boss that protrudes .25" from base.



RCH-120 to RCH-123 models



RCH-202 to RCH-1003 models

Base Mounting Hole Dimensions (in)			
Model Number	Bolt Circle U	Thread V	Thread Depth Z
RCH-120	2.00	5/16"-18 UNC	.35
RCH-121	–	–	–
RCH-1211	–	–	–
RCH-123	2.00	5/16"-18 UNC	.50
RCH-202	3.25	3/8"-16 UNC	.37
RCH-206	3.25	3/8"-16 UNC	.37
RCH-302	3.63	3/8"-16 UNC	.55
RCH-306	3.63	3/8"-16 UNC	.55
RCH-603	5.13	1/2"-13 UNC	.55
RCH-606	5.13	1/2"-13 UNC	.55
RCH-1003	7.00	5/8"-11 UNC	.75

	Coll. Height A (in)	Ext. Height B (in)	Outside Ø D (in)	Cyl. Bore Ø E (in)	Plgr. Ø F (in)	Cyl. Base to Advance Port H (in)	Saddle Ø J (in)	Saddle Protr. from Plgr. K (in)	Plunger Internal Thread O (in)	Plunger Thread Length P (in)	Collar Thread W (in)	Collar Thread Length X (in)	Center Hole Ø Y (in)	**Weight** (lbs)	**Model Number**
	2.19	2.50	2.75	2.13	1.38	.38	–	–	3/4"-16 UN	.63	2 3/4"-16	1.19	.77	3.2	**RCH-120**
	4.75	6.38	2.75	2.13	1.38	.75	–	–	–	–	2 3/4"-16	1.19	.77	6.2	**RCH-121***
	4.75	6.38	2.75	2.13	1.38	.75	–	–	3/4"-16 UN	.63	2 3/4"-16	1.19	.77	6.2	**RCH-1211**
	7.25	10.25	2.75	2.13	1.38	.75	–	–	–	–	2 3/4"-16	1.19	.75	9.8	**RCH-123**
	6.38	8.38	3.88	2.88	2.13	.75	2.13	.27	1 9/16"-16 UN	.75	3 7/8"-12	1.50	1.06	17	**RCH-202***
	12.05	18.11	3.88	2.88	2.13	.75	2.13	.27	1 9/16"-16 UN	.75	3 7/8"-12	1.50	1.06	31	**RCH-206**
	7.03	9.53	4.50	3.50	2.50	.85	2.50	.38	1 13/16"-16 UN	.88	4 1/2"-12	1.66	1.31	24	**RCH-302***
	13.00	19.13	4.50	3.50	2.50	1.00	2.50	.38	1 13/16"-16 UN	.88	4 1/2"-12	1.66	1.31	48	**RCH-306**
	9.75	12.75	6.25	4.88	3.63	1.25	3.61	.50	2 3/4"-16 UN	.75	6 1/4"-12	1.91	2.12	62	**RCH-603***
	12.75	18.75	6.25	4.88	3.63	1.25	3.61	.50	2 3/4"-16 UN	.75	6 1/4"-12	1.91	2.12	78	**RCH-606**
	10.00	13.00	8.38	6.50	5.00	1.50	4.97	.50	4"-16 UN	1.00	8 3/8"-12	2.38	3.11	132	**RCH-1003***

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

Versatility in Testing, Maintenance and Tensioning Applications

- **Relief valves prevent damage in case of over-pressurization**
- **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 couplers and dust caps included on all models**
- **Plunger wiper reduces contamination, extending cylinder life**

Pump Selection

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

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Gauges

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

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Saddles

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

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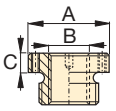
▼ *Double-acting hollow plunger cylinders are applied at this site to level bridge sections.*

Nominal Cylinder Capacity (tons)	Stroke (in)	Model Number	Max. Cylinder Capacity (tons)		Cylinder Effective Area (in^2)		Oil Capacity (in^3)	
			Advance	Retract	Advance	Retract	Advance	Retract
30	7.00	RRH-307	36	24	7.22	4.71	50.55	32.99
	10.13	RRH-3010	36	24	7.22	4.71	73.12	47.71
60	3.50	RRH-603	64	42	12.73	8.37	44.57	29.21
	6.50	RRH-606	64	42	12.73	8.37	82.77	54.24
	10.12	RRH-6010	64	42	12.73	8.37	128.94	84.49
100	1.50	RRH-1001	103	68	20.63	13.54	30.94	20.32
	3.00	RRH-1003	103	68	20.63	13.54	61.88	40.64
	6.00	RRH-1006	103	68	20.63	13.54	123.76	81.29
	10.13	RRH-10010	103	68	20.63	13.54	208.84	137.17
150	8.00	RRH-1508	158	80	31.62	15.91	252.97	127.23

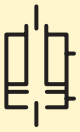
Double-Acting, Hollow Plunger Cylinders

Optional Heat Treated Saddles						
Saddle Type	**Cylinder Model Number**	**Saddle Model No.**	**Saddle Dimensions** (in)			
			A	B	C	
Threaded Hollow	**RRH-307, 3010**	**HP-3015**	2.49	1 1/4"-7	.38	
	RRH-603, 606, 6010	**HP-5016**	3.61	1 5/8"-5 1/2	.50	
	RRH-1001, 1003, RRH-1006, 10010	**HP-10016**	4.97	2 1/2"-8	.51	



Smooth hollow saddles are standard on all RRH-models.

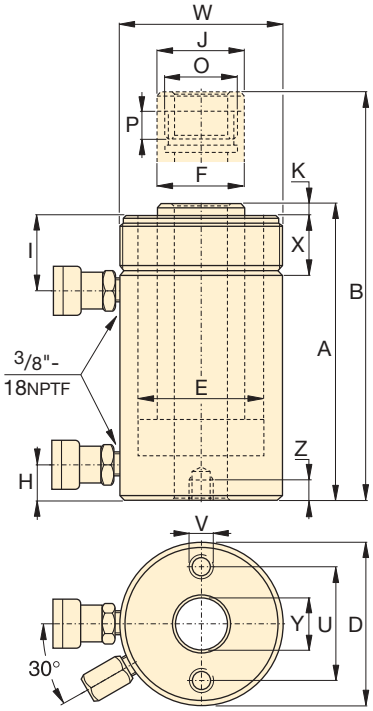
RRH Series



Capacity:
30-150 tons

Stroke:
1.50-10.13 inch

Maximum Operating Pressure:
10,000 psi



Base Mounting Hole Dimensions (in)			
Model Number	Bolt Circle U	Thread V	Thread Depth Z
RRH-307	3.63	3/8"- 16	.62
RRH-3010	3.63	3/8"- 16	.62
RRH-603	5.12	1/2"- 13	.55
RRH-606	5.12	1/2"- 13	.55
RRH-6010	5.12	1/2"- 13	.55
RRH-1001	7.00	5/8"- 11	.75
RRH-1003	7.00	5/8"- 11	.75
RRH-1006	7.00	5/8"- 11	.75
RRH-10010	7.00	5/8"- 11	.75
RRH-1508	–	–	–

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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Coll. Height A (in)	Ext. Height B (in)	Out. Ø D (in)	Cyl. Bore Ø E (in)	Plgr. Ø F (in)	Cyl. Base to Adv. Port H (in)	Cyl. Top to Return Port I (in)	Saddle Ø J (in)	Saddle Protr. fr. Plgr. K (in)	Thread O (in)	Plunger Thread Length P (in)	Collar Thread W (in)	Collar Thread Length X (in)	Center Hole Ø Y (in)	Weight (lbs)	Model Number
13.00	20.00	4.50	3.50	2.50	1.00	2.38	2.50	.38	1 13/16"-16	.88	4 1/2"-12	1.66	1.31	48	**RRH-307**
17.00	27.13	4.50	3.50	2.50	1.00	2.38	2.50	.38	1 13/16"-16	.88	4 1/2"-12	1.66	1.31	60	**RRH-3010**
9.75	13.25	6.25	4.88	3.63	1.25	2.63	3.61	.50	2 3/4"-16	.75	6 1/4"-12	1.91	2.13	62	**RRH-603**
12.75	19.25	6.25	4.88	3.63	1.25	2.63	3.61	.50	2 3/4"-16	.75	6 1/4"-12	1.91	2.13	78	**RRH-606**
17.25	27.38	6.25	4.88	3.63	1.25	2.63	3.61	.50	2 3/4"-16	.75	6 1/4"-12	1.91	2.13	101	**RRH-6010**
6.50	8.00	8.38	6.50	5.00	1.50	1.75	4.97	.50	4"-16	1.00	–	–	3.13	85	**RRH-1001**
10.00	13.00	8.38	6.50	5.00	1.50	3.38	4.97	.50	4"-16	1.00	8 3/8"-12	2.38	3.13	135	**RRH-1003**
13.50	19.50	8.38	6.50	5.00	1.50	3.38	4.97	.50	4"-16	1.00	8 3/8"-12	2.38	3.13	175	**RRH-1006**
18.13	28.25	8.38	6.50	5.00	1.50	3.38	4.97	.50	4"-16	1.00	8 3/8"-12	2.38	3.13	235	**RRH-10010**
13.75	21.75	9.75	7.50	6.00	1.50	2.38	5.00	.19	4 1/4"-16	1.00	–	–	3.13	245	**RRH-1508**

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

High Precision and High Cycle Performance

Golden Ring Design

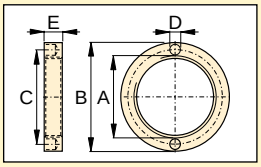
Enerpac RD-Cylinders are provided with the Golden Ring Design, for long, trouble-free performance.

- **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**

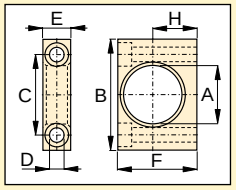
This paper mill uses RD cylinders for precision when trimming. ▶

Nominal Cylinder Capacity (tons)	Stroke (in)	Model Number	Max. Cylinder Capacity (tons)		Cylinder Effective Area (in^2)		Oil Capacity (in^3)		Coll. Height A (in)	Ext. Height B (in)	Body Length C (in)	Out. Dia. D (in)	Cyl. Bore Dia. E (in)	Plgr. Dia. F (in)
			Advance	Retract	Advance	Retract	Advance	Retract						
4	1.13	RD-41	4	2	.79	.34	.88	.39	7.31	8.44	6.38	2.00	1.00	.75
	3.13	RD-43	4	2	.79	.34	2.45	1.07	9.31	12.44	8.38	2.00	1.00	.75
	6.13	RD-46	4	2	.79	.34	4.81	2.10	12.31	18.44	11.38	2.00	1.00	.75
9	1.13	RD-91	9	5	1.77	.98	1.99	1.10	8.75	9.88	7.80	2.50	1.50	1.00
	3.13	RD-93	9	5	1.77	.98	5.52	3.07	10.78	13.91	9.80	2.50	1.50	1.00
	6.13	RD-96	9	5	1.77	.98	10.82	6.01	13.78	19.91	12.80	2.50	1.50	1.00
	10.13	RD-910	9	5	1.77	.98	17.89	9.94	17.78	27.91	16.81	2.50	1.50	1.00
16	6.25	RD-166	16	8	3.14	1.66	19.63	10.35	15.31	21.56	14.13	3.00	2.00	1.38
	10.25	RD-1610	16	8	3.14	1.66	32.20	16.98	19.31	29.56	18.11	3.00	2.00	1.38
25	6.25	RD-256	25	11	4.91	2.15	30.68	13.42	16.69	22.94	15.63	3.63	2.50	1.88
	10.25	RD-2510	25	11	4.91	2.15	50.31	22.01	20.69	30.94	19.61	3.63	2.50	1.88

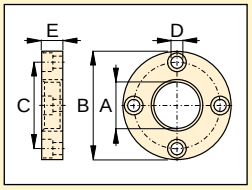
▼ RD CYLINDER ATTACHMENTS



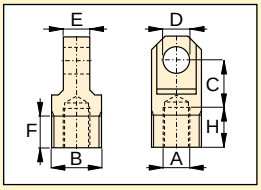
Retainer Nut
For locking foot or flange mountings. Tightens onto cylinder collar threads (included with foot and flange mounting kits)



Foot Mounting
Mounts onto cylinder collar



Flange Mounting
Mounts onto cylinder collar



Clevis Eye
Threads onto plunger or into cylinder base

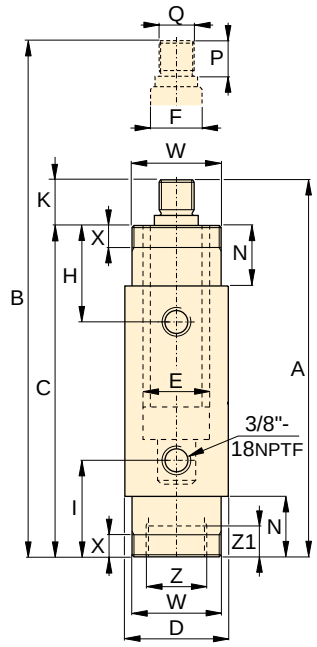
Model Number	RD-Cyl: (tons)	Dimensions (in) A	B	C	D	E	F	H
Foot Mounting with Retainer Nut								
AD-141	**4**	1.38	3.00	2.00	.41	.76	2.25	1.25
AD-171	**9**	2.00	4.00	2.88	.53	1.00	3.25	1.75
AD-181	**16**	2.63	5.00	3.76	.78	1.38	4.00	2.06
AD-191	**25**	3.25	6.26	4.62	1.03	1.76	4.88	2.50
Flange Mounting with Retainer Nut								
AD-142	**4**	1.38	3.88	3.09	.41	.75	–	–
AD-172	**9**	2.00	4.75	3.88	.41	1.00	–	–
AD-182	**16**	2.63	5.63	4.56	.53	1.38	–	–
AD-192	**25**	3.25	6.50	5.34	.66	1.75	–	–
Retainer Nut								
AD-143	**4**	1 3/8"-12 UNF	2.25	1.81	.25	.38	–	–
AD-173	**9**	2"- 12	3.00	2.50	.27	.50	–	–
AD-183	**16**	2 5/8"- 16	3.63	3.12	.27	.75	–	–
AD-193	**25**	3 1/4"- 16	4.25	3.75	.27	1.00	–	–
Clevis Eye*								
AD-150	**4**	1/2"- 20	1 1/8"- 20	1.12	.63	.63	.75	.94
AD-151	**9**	3/4"- 16	1 11/16"- 18	1.31	.75	1.00	1.00	.94
AD-152	**16**	1 1/8"- 12	2 3/16"- 16	1.88	1.00	1.25	1.00	1.19
AD-153	**25**	1 1/2"- 12	2 3/4"- 16	2.00	1.25	1.50	1.00	1.06

RD Series

Capacity:
4-25 tons

Stroke:
1.13-10.25 inch

Maximum Operating Pressure:
10,000 psi



	Top to Ret. Port H (in)	Bottom to Adv. Port I (in)	Plunger Protrusion K (in)	Neck Length N (in)	Plunger Thread Length P (in)	Plunger External Thread Q (in)	Cylinder Mounting Dimensions (in) Collar Thread W	Collar Thread Length X	Int. Base Thread Z	Int. Base Thread Length Z1	Pin to Pin with Clevis Eyes Fitted*	Weight (lbs)	Model Number
	1.84	1.84	.94	1.13	.75	1/2"- 20	1 3/8"- 12	.44	1 1/8"- 20	.35	10.15	4.8	**RD-41**
	1.84	1.84	.94	1.13	.75	1/2"- 20	1 3/8"- 12	.44	1 1/8"- 20	.35	12.15	6.4	**RD-43**
	1.84	1.84	.94	1.13	.75	1/2"- 20	1 3/8"- 12	.44	1 1/8"- 20	.35	15.15	9.0	**RD-46**
	2.25	2.25	.98	1.50	.75	3/4"- 16	2"- 12	.56	1 11/16"- 18	.55	11.76	9.0	**RD-91**
	2.25	2.25	.98	1.50	.75	3/4"- 16	2"- 12	.56	1 11/16"- 18	.55	13.79	11.0	**RD-93**
	2.25	2.25	.98	1.50	.75	3/4"- 16	2"- 12	.56	1 11/16"- 18	.55	16.79	14.0	**RD-96**
	2.25	2.25	.98	1.50	.75	3/4"- 16	2"- 12	.56	1 11/16"- 18	.55	20.79	19.0	**RD-910**
	2.88	2.88	1.19	2.13	1.00	1 1/8"- 12	2 5/8"- 16	.88	2 3/16"- 16	.94	20.31	22.0	**RD-166**
	2.88	2.88	1.19	2.13	1.00	1 1/8"- 12	2 5/8"- 16	.88	2 3/16"- 16	.94	24.31	29.0	**RD-1610**
	3.50	3.50	1.06	2.75	1.00	1 1/2"- 12	3 1/4"- 16	1.13	2 3/4"- 16	1.02	20.73	36.0	**RD-256**
	3.50	3.50	1.08	2.75	1.00	1 1/2"- 12	3 1/4"- 16	1.13	2 3/4"- 16	1.02	24.73	46.0	**RD-2510**

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

Most Versatile Performers

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

- **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**

Cylinder retract capacity for certain RR cylinders may be less than theoretical values, as a result of reduced relief valve pressure settings:
RR-308/3014: 4000 psi
RR-506/5013/5020: 6950 psi
RR-756/7513: 7200 psi

Saddles

RR-Series cylinders up to 75 ton have plunger thread for installation of CAT-Series tilt saddles.

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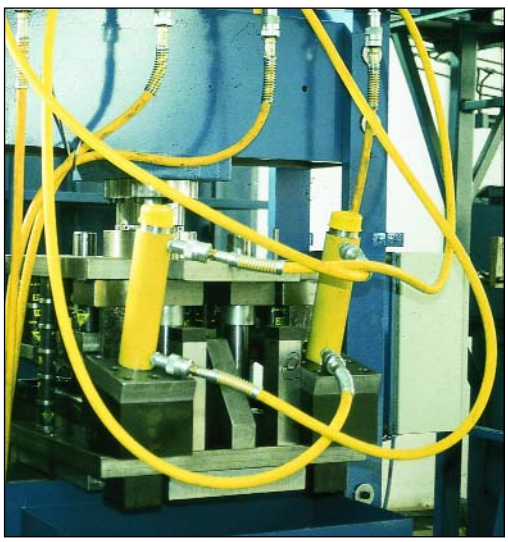
▼ *RR-cylinders provide power and precision in a special hydraulic press.*



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

Pump Selection

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

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▼ QUICK SELECTION CHART

For complete technical information see next page.

Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in²) Push	Cylinder Effective Area (in²) Pull	Oil Capacity (in³) Push	Oil Capacity (in³) Pull	Coll. Height (in)
10 [11]	10.00	**RR-1010***	2.23	.80	22.33	8.00	16.13
	12.00	**RR-1012***	2.23	.80	26.80	9.00	18.00
30 [32]	8.25	**RR-308***	6.51	3.00	53.67	25.00	15.25
	14.50	**RR-3014***	6.51	3.00	92.70	43.00	21.63
50 [55]	6.13	**RR-506**	11.06	3.40	67.77	21.00	13.06
	13.13	**RR-5013**	11.06	3.40	145.17	44.00	20.06
	20.13	**RR-5020**	11.06	3.40	222.56	68.00	28.88
75 [80]	6.13	**RR-756**	15.92	4.90	97.58	29.00	13.69
	13.13	**RR-7513**	15.92	4.90	209.00	64.00	20.69
100 [103]	6.63	**RR-1006**	20.65	9.60	136.93	63.00	14.06
	13.13	**RR-10013**	20.65	9.60	271.17	126.00	20.63
	18.13	**RR-10018**	20.65	9.60	374.44	174.00	27.06
150 [153]	2.25	**RR-1502**	30.71	14.80	69.11	33.00	7.72
	6.13	**RR-1506**	30.71	14.80	188.28	91.00	15.19
	13.13	**RR-15013**	30.71	14.80	403.27	194.00	22.20
	32.13	**RR-15032**	30.71	14.80	986.84	475.00	43.94
200 [221]	6.00	**RR-2006**	44.21	22.50	265.28	135.00	16.94
	13.00	**RR-20013**	44.21	22.50	574.78	293.00	23.94
	18.00	**RR-20018**	44.21	22.50	795.85	396.00	30.13
	24.00	**RR-20024**	44.21	22.50	1061.14	528.00	36.13
	36.00	**RR-20036**	44.21	22.50	1591.70	792.00	48.13
	48.00	**RR-20048**	44.21	22.50	2122.27	1,056	60.13
300 [354]	6.00	**RR-3006**	70.93	38.00	425.56	228.00	19.13
	12.00	**RR-30012**	70.93	38.00	851.12	456.00	25.13
	18.00	**RR-30018**	70.93	38.00	1276.69	684.00	31.13
	24.00	**RR-30024**	70.93	38.00	1702.25	912.00	37.13
	36.00	**RR-30036**	70.93	38.00	2553.37	1,368	49.13
	48.00	**RR-30048**	70.93	38.00	3404.50	1,824	61.13
400 [475]	6.00	**RR-4006**	95.09	51.00	570.51	306.00	21.19
	12.00	**RR-40012**	95.09	51.00	1141.02	612.00	27.19
	18.00	**RR-40018**	95.09	51.00	1711.53	918.00	33.19
	24.00	**RR-40024**	95.09	51.00	2282.04	1,224	39.19
	36.00	**RR-40036**	95.09	51.00	3423.06	1,836	51.19
	48.00	**RR-40048**	95.09	51.00	4564.08	2,448	63.19
500 [565]	6.00	**RR-5006**	113.15	63.00	678.92	378.00	22.75
	12.00	**RR-50012**	113.15	63.00	1357.85	756.00	28.75
	18.00	**RR-50018**	113.15	63.00	2036.77	1,134	34.75
	24.00	**RR-50024**	113.15	63.00	2715.70	1,512	40.75
	36.00	**RR-50036**	113.15	63.00	4073.54	2,264	52.75
	48.00	**RR-50048**	113.15	63.00	5431.39	3,024	64.75

* For RR-1010 and RR-1012: N = 1.26 inch; for RR-308 and RR-3014: N = 2.20 inch.

RR Series

Capacity:
10-500 tons

Stroke:
2.25-48.00 inch

Maximum Operating Pressure:
10,000 psi

Enerpac CLRG-Series

If you do not not have a high cycle application, Enerpac CLRG-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**
Tilt	RR-1010, 1012	**CAT-10**
	RR-308, 3014	**CAT-50**
	RR-506, 5013	**CAT-100**
	RR-5020, 756	
	RR-7513	

Standard Saddles

Grooved	RR-1010, 1012	**A-102G**
	RR-308, 3014	**A-252G**

For additional information on saddles:

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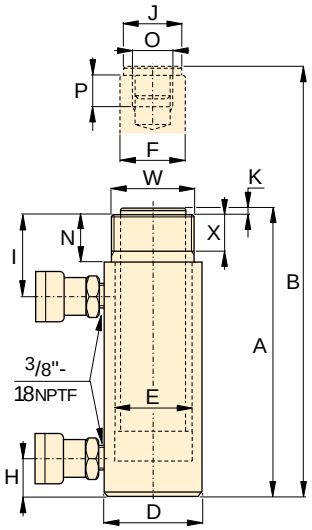
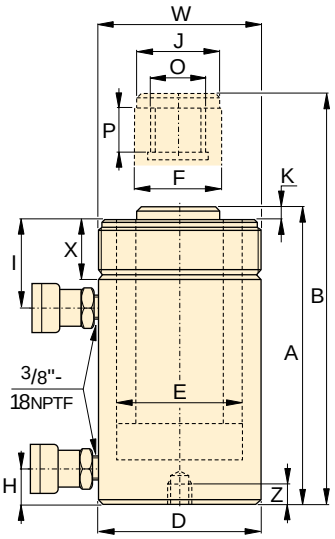
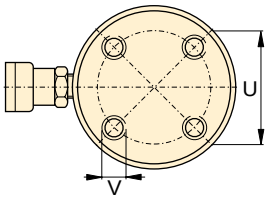


RR-1010 to RR-3014 models

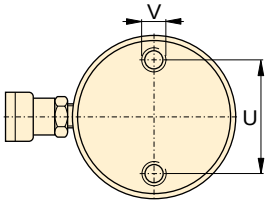


RR-506 to RR-50048 models



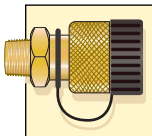
RR-1006 to RR-30048

No mounting holes:
RR-506/5013/5020/756/7513/1502/15032



RR-4006 to RR-50048

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



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

◀ For full features see page 26.

Nominal Cylinder Capacity (tons)	Stroke (in)	Model Number	Max. Cylinder Capacity (tons) Push	Max. Cylinder Capacity (tons) Pull	Cylinder Effective Area (in^2) Push	Cylinder Effective Area (in^2) Pull	Oil Capacity (in^3) Push	Oil Capacity (in^3) Pull	Coll. Height A (in)	Ext. Height B (in)	Outside Dia. D (in)
10	10.00	RR-1010*	11	4	2.23	.80	22.33	8.00	16.13	26.13	2.88
	12.00	RR-1012*	11	4	2.23	.80	26.80	9.00	18.00	30.00	2.88
30	8.25	RR-308*	32	15	6.51	3.00	53.67	25.00	15.25	23.50	4.00
	14.50	RR-3014*	32	15	6.51	3.00	92.70	43.00	21.63	36.13	4.00
50	6.13	RR-506	55	17	11.06	3.40	67.77	21.00	13.06	19.19	5.00
	13.13	RR-5013	55	17	11.06	3.40	145.17	44.00	20.06	33.19	5.00
	20.13	RR-5020	55	17	11.06	3.40	222.56	68.00	28.88	49.00	5.00
75	6.13	RR-756	80	24	15.92	4.90	97.58	29.00	13.69	19.81	5.75
	13.13	RR-7513	80	24	15.92	4.90	209.00	64.00	20.69	33.81	5.75
100	6.63	RR-1006	103	48	20.65	9.60	136.93	63.00	14.06	20.69	7.00
	13.13	RR-10013	103	48	20.65	9.60	271.17	126.00	20.63	33.75	7.00
	18.13	RR-10018	103	48	20.65	9.60	374.44	174.00	27.06	45.19	7.00
150	2.25	RR-1502	153	74	30.71	14.80	69.11	33.00	7.72	9.96	8.00
	6.13	RR-1506	153	74	30.71	14.80	188.28	91.00	15.19	21.31	8.00
	13.13	RR-15013	153	74	30.71	14.80	403.27	194.00	22.20	35.31	8.00
	32.13	RR-15032	153	74	30.71	14.80	986.84	475.00	43.94	76.06	8.00
200	6.00	RR-2006	221	113	44.21	22.50	265.28	135.00	16.94	22.94	9.75
	13.00	RR-20013	221	113	44.21	22.50	574.78	293.00	23.94	36.94	9.75
	18.00	RR-20018	221	113	44.21	22.50	795.85	396.00	30.13	48.13	9.75
	24.00	RR-20024	221	113	44.21	22.50	1061.14	528.00	36.13	60.13	9.75
	36.00	RR-20036	221	113	44.21	22.50	1591.70	792.00	48.13	84.13	9.75
	48.00	RR-20048	221	113	44.21	22.50	2122.27	1,056	60.13	108.13	9.75
300	6.00	RR-3006	354	188	70.93	38.00	425.56	228.00	19.13	25.13	12.25
	12.00	RR-30012	354	188	70.93	38.00	851.12	456.00	25.13	37.13	12.25
	18.00	RR-30018	354	188	70.93	38.00	1276.69	684.00	31.13	49.13	12.25
	24.00	RR-30024	354	188	70.93	38.00	1702.25	912.00	37.13	61.13	12.25
	36.00	RR-30036	354	188	70.93	38.00	2553.37	1368	49.13	85.13	12.25
	48.00	RR-30048	354	188	70.93	38.00	3404.50	1824	61.13	109.13	12.25
400	6.00	RR-4006	475	254	95.09	51.00	570.51	306.00	21.19	27.19	14.13
	12.00	RR-40012	475	254	95.09	51.00	1141.02	612.00	27.19	39.19	14.13
	18.00	RR-40018	475	254	95.09	51.00	1711.53	918.00	33.19	51.19	14.13
	24.00	RR-40024	475	254	95.09	51.00	2282.04	1224	39.19	63.19	14.13
	36.00	RR-40036	475	254	95.09	51.00	3423.06	1836	51.19	87.19	14.13
	48.00	RR-40048	475	254	95.09	51.00	4564.08	2448	63.19	111.19	14.13
500	6.00	RR-5006	565	314	113.15	63.00	678.92	378.00	22.75	28.75	15.63
	12.00	RR-50012	565	314	113.15	63.00	1357.85	756.00	28.75	40.75	15.63
	18.00	RR-50018	565	314	113.15	63.00	2036.77	1134	34.75	52.75	15.63
	24.00	RR-50024	565	314	113.15	63.00	2715.70	1512	40.75	64.75	15.63
	36.00	RR-50036	565	314	113.15	63.00	4073.54	2268	52.75	88.75	15.63
	48.00	RR-50048	565	314	113.15	63.00	5431.39	3024	64.75	112.75	15.63

* For RR-1010 and RR-1012: N = 1.26 inch; for RR-308 and RR-3014: N = 2.20 inch.

Capacity:
10-500 tons

Stroke:
2.25-48.00 inch

Maximum Operating Pressure:
10,000 psi

RR Series

Cyl. Bore Dia. E (in)	Plgr. Dia. F (in)	Base to Adv. Port H (in)	Top to Ret. Port I (in)	Saddle Dia. J (in)	Saddle Protr. fr. Plgr. K (in)	Plunger Internal Thread O (in)	Plunger Thread Length P (in)	Base Mounting Holes			Collar Thread W (in)	Collar Thread Length X (in)	Weight (lbs)	Model Number
								Bolt C. Dia. U (in)	Thread V (in)	Thd. Depth Z (in)				
1.69	1.38	1.44	2.25	1.38	.24	1- 8	1.00	–	–	–	2 1/4- 14	1.06	28	**RR-1010***
1.69	1.38	1.44	2.25	1.38	.24	1- 8	1.00	–	–	–	2 1/4- 14	1.06	31	**RR-1012***
2.88	2.13	1.44	3.19	2.00	.41	1 1/2- 16	1.00	–	–	–	3 5/16- 12	1.94	40	**RR-308***
2.88	2.13	1.56	3.19	2.00	.41	1 1/2- 16	1.00	–	–	–	3 5/16- 12	1.94	64	**RR-3014***
3.75	3.13	1.13	3.00	2.81	.11	1- 12	1.00	–	–	–	5- 12	2.00	67	**RR-506**
3.75	3.13	1.13	3.00	2.81	.11	1- 12	1.00	–	–	–	5- 12	2.00	115	**RR-5013**
3.75	3.13	2.25	3.00	2.81	.11	1- 12	1.00	–	–	–	5- 12	2.00	150	**RR-5020**
4.50	3.75	1.19	3.00	2.81	.25	1- 12	1.50	–	–	–	5 3/4- 12	1.50	92	**RR-756**
4.50	3.75	1.19	3.19	2.81	.25	1- 12	1.50	–	–	–	5 3/4- 12	1.50	150	**RR-7513**
5.13	3.75	1.50	2.81	3.00	.13	1 3/4- 12	1.38	5.50	3/4- 10	1.00	6 7/8- 12	2.00	135	**RR-1006**
5.13	3.75	1.50	2.81	3.00	.13	1 3/4- 12	1.38	5.50	3/4- 10	1.00	6 7/8- 12	2.00	205	**RR-10013**
5.13	3.75	1.63	3.63	3.00	.13	1 3/4- 12	1.38	5.50	3/4- 10	1.00	6 7/8- 12	2.00	260	**RR-10018**
6.25	4.50	.88	2.63	4.49	.75	–	–	–	–	–	–	–	110	**RR-1502**
6.25	4.50	1.94	3.31	4.49	.75	3 3/8- 16	1.38	6.25	3/4- 16	1.00	8- 12	2.36	205	**RR-1506**
6.25	4.50	1.94	3.31	4.49	.75	3 3/8- 16	1.38	6.25	3/4- 16	1.00	8- 12	2.36	275	**RR-15013**
6.25	4.50	3.00	3.50	4.49	.75	3 3/8- 16	1.38	–	–	–	8- 12	2.36	525	**RR-15032**
7.50	5.25	2.25	3.81	5.25	.88	–	–	5.00	1- 8	1.00	–	–	325	**RR-2006**
7.50	5.25	2.25	3.81	5.25	.88	2 1/2- 12	2.50	5.00	1- 8	1.00	9 3/4- 12	2.13	440	**RR-20013**
7.50	5.25	3.38	4.00	5.25	.88	2 1/2 - 12	2.50	5.00	1 - 8	1.00	9 3/4 - 12	2.13	450	**RR-20018**
7.50	5.25	3.38	4.00	5.25	.88	2 1/2 - 12	2.50	5.00	1 - 8	1.00	9 3/4 - 12	2.13	616	**RR-20024**
7.50	5.25	3.38	4.00	5.25	.88	2 1/2 - 12	2.50	5.00	1 - 8	1.00	9 3/4 - 12	2.13	845	**RR-20036**
7.50	5.25	3.38	4.00	5.25	.88	2 1/2 - 12	2.50	5.00	1 - 8	1.00	9 3/4 - 12	2.13	1065	**RR-20048**
9.50	6.50	3.50	4.50	6.50	1.13	2 1/2- 12	3.25	6.25	1 1/4- 7	1.75	12 1/4- 12	2.31	441	**RR-3006**
9.50	6.50	3.50	4.50	6.50	1.13	2 1/2 - 12	3.25	6.25	1 1/4 - 7	1.75	12 1/4 - 12	2.31	608	**RR-30012**
9.50	6.50	3.50	4.50	6.50	1.13	2 1/2 - 12	3.25	6.25	1 1/4 - 7	1.75	12 1/4 - 12	2.31	776	**RR-30018**
9.50	6.50	3.50	4.50	6.50	1.13	2 1/2 - 12	3.25	6.25	1 1/4 - 7	1.75	12 1/4 - 12	2.31	1034	**RR-30024**
9.50	6.50	3.50	4.50	6.50	1.13	2 1/2 - 12	3.25	6.25	1 1/4 - 7	1.75	12 1/4 - 12	2.31	1385	**RR-30036**
9.50	6.50	3.50	4.50	6.50	1.13	2 1/2 - 12	3.25	6.25	1 1/4 - 7	1.75	12 1/4 - 12	2.31	1720	**RR-30048**
11.00	7.50	4.25	5.25	7.50	1.13	3 - 12	3.75	8.00	1 1/2 - 6	2.00	14 1/8 - 8	2.56	670	**RR-4006**
11.00	7.50	4.25	5.25	7.50	1.13	3 - 12	3.75	8.00	1 1/2 - 6	2.00	14 1/8 - 8	2.56	880	**RR-40012**
11.00	7.50	4.25	5.25	7.50	1.13	3 - 12	3.75	8.00	1 1/2 - 6	2.00	14 1/8 - 8	2.56	1000	**RR-40018**
11.00	7.50	4.25	5.25	7.50	1.13	3 - 12	3.75	8.00	1 1/2 - 6	2.00	14 1/8 - 8	2.56	1317	**RR-40024**
11.00	7.50	4.25	5.25	7.50	1.13	3 - 12	3.75	8.00	1 1/2 - 6	2.00	14 1/8 - 8	2.56	1746	**RR-40036**
11.00	7.50	4.25	5.25	7.50	1.13	3 - 12	3.75	8.00	1 1/2 - 6	2.00	14 1/8 - 8	2.56	2162	**RR-40048**
12.00	8.00	4.75	6.00	8.00	1.13	3 1/4 - 12	4.25	8.00	1 3/4 - 5	2.12	15 5/8 - 8	3.13	953	**RR-5006**
12.00	8.00	4.75	6.00	8.00	1.13	3 1/4 - 12	4.25	8.00	1 3/4 - 5	2.12	15 5/8 - 8	3.13	1300	**RR-50012**
12.00	8.00	4.75	6.00	8.00	1.13	3 1/4 - 12	4.25	8.00	1 3/4 - 5	2.12	15 5/8 - 8	3.13	1500	**RR-50018**
12.00	8.00	4.75	6.00	8.00	1.13	3 1/4 - 12	4.25	8.00	1 3/4 - 5	2.12	15 5/8 - 8	3.13	1800	**RR-50024**
12.00	8.00	4.75	6.00	8.00	1.13	3 1/4 - 12	4.25	8.00	1 3/4 - 5	2.12	15 5/8 - 8	3.13	2210	**RR-50036**
12.00	8.00	4.75	6.00	8.00	1.13	3 1/4 - 12	4.25	8.00	1 3/4 - 5	2.12	15 5/8 - 8	3.13	2700	**RR-50048**

▼ Shown from left to right: **CLSG-506, CLSG-4006, CLSG-2506 with optional collar thread**

The Single-Acting Heavy Lifting Solution with Integral Stop Ring

- **Integral stop ring provides piston blow-out protection**
- **Baked enamel outside finish and plated pistons provide superior corrosion protection**
- **Unique bearing design withstands sideload forces up to 10% of rated cylinder capacity without scoring**
- **Base mounting holes standard on all models**
- **Plunger wiper reduces contamination ingress, extending cylinder life**
- **Single-acting load return**

▼ *Eight CLSG-2506 cylinders equipped with tilting saddles lifted the planking of the bridge as the pier heads were being rebuilt.*

Saddles

All CLSG series 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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Optimum Performance

Enerpac's range of Hushh electric pumps, fitted with manual or solenoid operated 3-way valves, offer optimum combinations with CLSG cylinders.

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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 centimeters.

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Standard Features

- Interchangeable, hardened grooved saddles
- CR-400 Coupler and dust cap
- Top and side mounted lifting eyes
- All cylinders meet PREN 1494, ASME B-30.1 and ISO 10100 Standards

CLSG Series

Capacity:
50-1,000 tons

Stroke:
1.97-11.81 inch

Maximum Operating Pressure:
10,000 psi

▼ QUICK SELECTION CHART

For complete technical information see next page.

Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height (in)	Weight (lbs)
50 [59]	1.97	CLSG-502	11.81	23.25	6.38	37
	3.94	CLSG-504	11.81	46.50	8.35	44
	5.91	CLSG-506	11.81	69.75	10.31	51
	7.87	CLSG-508	11.81	93.00	12.28	60
	9.84	CLSG-5010	11.81	116.25	14.25	68
	11.81	CLSG-5012	11.81	139.50	16.22	75
100 [103]	1.97	CLSG-1002	20.57	40.50	7.16	42
	3.94	CLSG-1004	20.57	81.00	9.13	64
	5.91	CLSG-1006	20.57	121.50	11.09	88
	7.87	CLSG-1008	20.57	162.00	13.06	110
	9.84	CLSG-10010	20.57	202.50	15.03	134
	11.81	CLSG-10012	20.57	242.99	17.00	157
150 [154]	1.97	CLSG-1502	30.78	60.58	7.72	86
	3.94	CLSG-1504	30.78	121.17	9.69	115
	5.91	CLSG-1506	30.78	181.75	11.65	143
	7.87	CLSG-1508	30.78	242.33	13.62	172
	9.84	CLSG-15010	30.78	302.92	15.59	203
	11.81	CLSG-15012	30.78	363.50	17.56	231
200 [206]	1.97	CLSG-2002	41.22	81.13	8.50	121
	5.91	CLSG-2006	41.22	243.40	12.44	201
	11.81	CLSG-20012	41.22	486.79	18.35	322
250 [284]	1.97	CLSG-2502	56.80	111.81	9.25	196
	5.91	CLSG-2506	56.80	335.42	13.19	300
	11.81	CLSG-25012	56.80	670.84	19.09	456
300 [354]	1.97	CLSG-3002	70.71	139.19	12.28	406
	5.91	CLSG-3006	70.71	417.56	16.22	511
	11.81	CLSG-30012	70.71	835.11	22.13	668
400 [434]	1.97	CLSG-4002	86.78	170.84	14.74	595
	5.91	CLSG-4006	86.78	512.51	18.68	728
	11.81	CLSG-40012	86.78	1025.02	24.59	928
500 [566]	1.97	CLSG-5002	113.25	222.92	16.50	884
	5.91	CLSG-5006	113.25	668.77	20.43	1058
	11.81	CLSG-50012	113.25	1337.55	26.34	1321
600 [663]	1.97	CLSG-6002	132.57	260.97	16.89	1045
	5.91	CLSG-6006	132.57	782.90	20.83	1246
	11.81	CLSG-60012	132.57	1565.81	26.73	1545
800 [912]	1.97	CLSG-8002	182.32	358.91	18.66	1634
	5.91	CLSG-8006	182.32	10776.72	22.60	1941
	11.81	CLSG-80012	182.32	2153.44	28.50	2332
1000 [1136]	1.97	CLSG-10002	227.19	447.23	22.20	2341
	5.91	CLSG-10006	227.19	1341.68	26.14	2674
	11.81	CLSG-100012	227.19	2683.35	32.05	3172

Additional Stroke Lengths

Models above 150 tons are also available with standard stroke lengths of 4, 8 and 10 inches. Please contact Enerpac for ordering information and dimensional details.

Lifting an Unbalanced Load?

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

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Order your free copy of the Enerpac brochure on hydraulic systems for structural engineering. Call or visit us at **www.enerpac.com.**

Optional feature

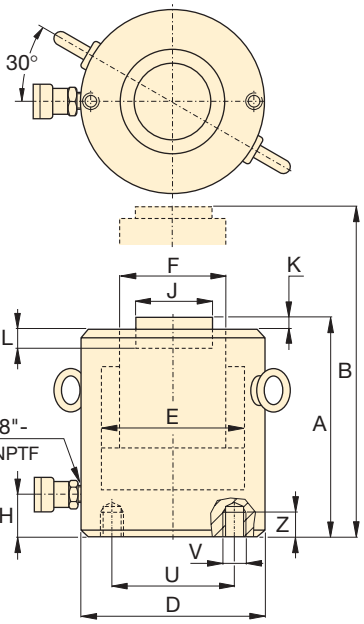
Collar threads are available as an optional feature on your cylinders by adding E002 to the end of the model number.

Collar threads	E002

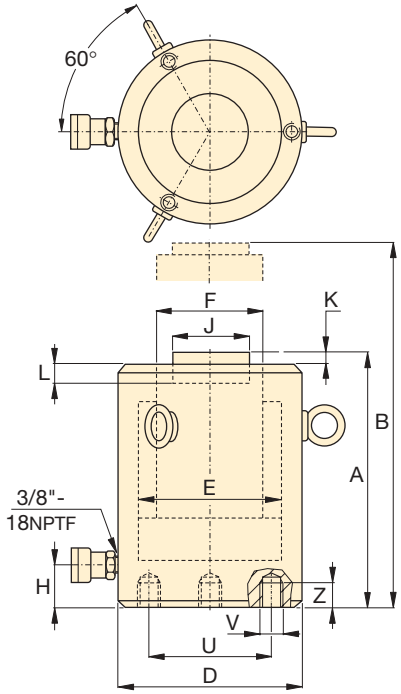
Example:

- For CLSG-5006 cylinder with collar threads, order: **CLSG-5006 E002**

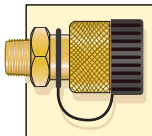
Technical specifications for this feature are available from Enerpac.



CLSG-50 to CLSG-150 models



CLSG-200 to CLSG-1000 models



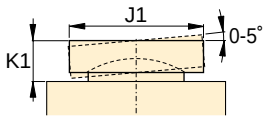
Couplers Included!

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

◀ For full features see page 30.

Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height A (in)	Extended Height B (in)	Outside Dia. D (in)
50 [59]	1.97	**CLSG-502**	11.81	23.25	6.38	8.35	5.12
	3.94	**CLSG-504**	11.81	46.50	8.35	12.28	5.12
	5.91	**CLSG-506**	11.81	69.75	10.31	16.22	5.12
	7.87	**CLSG-508**	11.81	93.00	12.28	20.16	5.12
	9.84	**CLSG-5010**	11.81	116.25	14.25	24.09	5.12
	11.81	**CLSG-5012**	11.81	139.50	16.22	28.03	5.12
100 [103]	1.97	**CLSG-1002**	20.57	40.50	7.16	9.13	6.50
	3.94	**CLSG-1004**	20.57	81.00	9.13	13.06	6.50
	5.91	**CLSG-1006**	20.57	121.50	11.09	17.00	6.50
	7.87	**CLSG-1008**	20.57	162.00	13.06	20.94	6.50
	9.84	**CLSG-10010**	20.57	202.50	15.03	24.87	6.50
	11.81	**CLSG-10012**	20.57	242.99	17.00	28.81	6.50
150 [154]	1.97	**CLSG-1502**	30.78	60.58	7.72	9.69	8.07
	3.94	**CLSG-1504**	30.78	121.17	9.69	13.62	8.07
	5.91	**CLSG-1506**	30.78	181.75	11.65	17.56	8.07
	7.87	**CLSG-1508**	30.78	242.33	13.62	21.50	8.07
	9.84	**CLSG-15010**	30.78	302.92	15.59	25.43	8.07
	11.81	**CLSG-15012**	30.78	363.50	17.56	29.37	8.07
200 [206]	1.97	**CLSG-2002**	41.22	81.13	8.50	10.47	9.25
	5.91	**CLSG-2006**	41.22	243.40	12.44	18.35	9.25
	11.81	**CLSG-20012**	41.22	486.79	18.35	30.16	9.25
250 [284]	1.97	**CLSG-2502**	56.80	111.81	9.25	11.22	10.83
	5.91	**CLSG-2506**	56.80	335.42	13.19	19.09	10.83
	11.81	**CLSG-25012**	56.80	670.84	19.09	30.91	10.83
300 [354]	1.97	**CLSG-3002**	70.71	139.19	12.28	14.25	12.20
	5.91	**CLSG-3006**	70.71	417.56	16.22	22.13	12.20
	11.81	**CLSG-30012**	70.71	835.11	22.13	33.94	12.20
400 [434]	1.97	**CLSG-4002**	86.78	170.84	14.74	16.71	13.78
	5.91	**CLSG-4006**	86.78	512.51	18.68	24.59	13.78
	11.81	**CLSG-40012**	86.78	1025.02	24.59	36.40	13.78
500 [566]	1.97	**CLSG-5002**	113.25	222.92	16.50	18.46	15.75
	5.91	**CLSG-5006**	113.25	668.77	20.43	26.34	15.75
	11.81	**CLSG-50012**	113.25	1337.55	26.34	38.15	15.75
600 [663]	1.97	**CLSG-6002**	132.57	260.97	16.89	18.86	16.93
	5.91	**CLSG-6006**	132.57	782.90	20.83	26.73	16.93
	11.81	**CLSG-60012**	132.57	1565.81	26.73	38.54	16.93
800 [912]	1.97	**CLSG-8002**	182.32	358.91	18.66	20.63	19.88
	5.91	**CLSG-8006**	182.32	1076.72	22.60	28.50	19.88
	11.81	**CLSG-80012**	182.32	2153.44	28.50	40.31	19.88
1000 [1136]	1.97	**CLSG-10002**	227.19	447.23	22.20	24.17	22.05
	5.91	**CLSG-10006**	227.19	1341.68	26.14	32.05	22.05
	11.81	**CLSG-100012**	227.19	2683.35	32.05	43.86	22.05

Optional Tilt Saddle *



Capacity:
50-1,000 tons

Stroke:
1.97-11.81 inch

Maximum Operating Pressure:
10,000 psi

CLSG Series

Cylinder Bore Dia. E (in)	Plunger Dia. F (in)	Base to Adv. Port H (in)	Standard Saddle Dia. J (in)	Saddle Protr. from Plgr. K (in)	Depth of Plunger Hole L (in)	Bolt			Weight (lbs)	Model Number	* Optional Tilt Saddle		
						Bolt C. Dia. U (in)	Thread V (in)	Thd. Depth Z (in)			Dia. J1 (in)	Height K1 (in)	Model Number
3.88	2.76	2.05	1.97	.04	.75	2.56	M12	.87	37	CLSG-502	1.97	1.69	CATG-50
3.88	2.76	2.05	1.97	.04	.75	2.56	M12	.87	44	CLSG-504	1.97	1.69	CATG-50
3.88	2.76	2.05	1.97	.04	.75	2.56	M12	.87	51	CLSG-506	1.97	1.69	CATG-50
3.88	2.76	2.05	1.97	.04	.75	2.56	M12	.87	60	CLSG-508	1.97	1.69	CATG-50
3.88	2.76	2.05	1.97	.04	.75	2.56	M12	.87	68	CLSG-5010	1.97	1.69	CATG-50
3.88	2.76	2.05	1.97	.04	.75	2.56	M12	.87	75	CLSG-5012	1.97	1.69	CATG-50
5.12	3.74	2.13	2.95	.04	.75	3.74	M12	.87	42	CLSG-1002	2.95	1.89	CATG-100
5.12	3.74	2.13	2.95	.04	.75	3.74	M12	.87	64	CLSG-1004	2.95	1.89	CATG-100
5.12	3.74	2.13	2.95	.04	.75	3.74	M12	.87	88	CLSG-1006	2.95	1.89	CATG-100
5.12	3.74	2.13	2.95	.04	.75	3.74	M12	.87	110	CLSG-1008	2.95	1.89	CATG-100
5.12	3.74	2.13	2.95	.04	.75	3.74	M12	.87	134	CLSG-10010	2.95	1.89	CATG-100
5.12	3.74	2.13	2.95	.04	.75	3.74	M12	.87	157	CLSG-10012	2.95	1.89	CATG-100
6.26	4.49	2.40	3.70	.04	.75	5.12	M12	.87	86	CLSG-1502	3.70	1.96	CATG-150
6.26	4.49	2.40	3.70	.04	.75	5.12	M12	.87	115	CLSG-1504	3.70	1.96	CATG-150
6.26	4.49	2.40	3.70	.04	.75	5.12	M12	.87	143	CLSG-1506	3.70	1.96	CATG-150
6.26	4.49	2.40	3.70	.04	.75	5.12	M12	.87	172	CLSG-1508	3.70	1.96	CATG-150
6.26	4.49	2.40	3.70	.04	.75	5.12	M12	.87	203	CLSG-15010	3.70	1.96	CATG-150
6.26	4.49	2.40	3.70	.04	.75	5.12	M12	.87	231	CLSG-15012	3.70	1.96	CATG-150
7.24	5.24	2.62	4.45	.04	.94	6.50	M12	.87	121	CLSG-2002	4.45	2.31	CATG-200
7.24	5.24	2.62	4.45	.04	.94	6.50	M12	.87	201	CLSG-2006	4.45	2.31	CATG-200
7.24	5.24	2.62	4.45	.04	.94	6.50	M12	.87	322	CLSG-20012	4.45	2.31	CATG-200
8.50	6.50	2.87	5.71	.04	.94	7.48	M12	.87	196	CLSG-2502	5.71	2.75	CATG-250
8.50	6.50	2.87	5.71	.04	.94	7.48	M12	.87	300	CLSG-2506	5.71	2.75	CATG-250
8.50	6.50	2.87	5.71	.04	.94	7.48	M12	.87	456	CLSG-25012	5.71	2.75	CATG-250
9.49	7.76	3.98	6.97	.04	.75	7.09	M16	1.42	406	CLSG-3002	6.97	3.17	CATG-300
9.49	7.76	3.98	6.97	.04	.75	7.09	M16	1.42	511	CLSG-3006	6.97	3.17	CATG-300
9.49	7.76	3.98	6.97	.04	.75	7.09	M16	1.42	668	CLSG-30012	6.97	3.17	CATG-300
10.51	8.50	4.49	7.72	.12	1.06	8.07	M16	1.42	595	CLSG-4002	7.72	3.06	CATG-400
10.51	8.50	4.49	7.72	.12	1.06	8.07	M16	1.42	728	CLSG-4006	7.72	3.06	CATG-400
10.51	8.50	4.49	7.72	.12	1.06	8.07	M16	1.42	928	CLSG-40012	7.72	3.06	CATG-400
12.01	9.76	4.49	8.98	.12	1.06	9.84	M24	1.50	884	CLSG-5002	8.98	3.54	CATG-500
12.01	9.76	4.49	8.98	.12	1.06	9.84	M24	1.50	1058	CLSG-5006	8.98	3.54	CATG-500
12.01	9.76	4.49	8.98	.12	1.06	9.84	M24	1.50	1321	CLSG-50012	8.98	3.54	CATG-500
12.99	10.51	4.49	9.72	.12	1.06	10.83	M24	1.50	1045	CLSG-6002	9.72	4.05	CATG-600
12.99	10.51	4.49	9.72	.12	1.06	10.83	M24	1.50	1246	CLSG-6006	9.72	4.05	CATG-600
12.99	10.51	4.49	9.72	.12	1.06	10.83	M24	1.50	1545	CLSG-60012	9.72	4.05	CATG-600
15.24	12.48	5.87	11.69	.12	1.06	12.99	M24	1.50	1634	CLSG-8002	11.69	4.00	CATG-800
15.24	12.48	5.87	11.69	.12	1.06	12.99	M24	1.50	1914	CLSG-8006	11.69	4.00	CATG-800
15.24	12.48	5.87	11.69	.12	1.06	12.99	M24	1.50	2332	CLSG-80012	11.69	4.00	CATG-800
17.01	13.50	6.85	12.72	.12	1.06	14.76	M24	1.50	2341	CLSG-10002	12.72	4.71	CATG-1000
17.01	13.50	6.85	12.72	.12	1.06	14.76	M24	1.50	2674	CLSG-10006	12.72	4.71	CATG-1000
17.01	13.50	6.85	12.72	.12	1.06	14.76	M24	1.50	3172	CLSG-100012	12.72	4.71	CATG-1000

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

The Single-Acting Heavy Lifting Solution with Reduced Collapsed Height

- **Lowest collapsed height for use in confined spaces**
- **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 ingress, extending cylinder life**
- **Baked enamel outside finish and plated pistons provide superior corrosion protection**
- **Single-acting load return**
- **Side mounted lifting eyes are standard**

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

Saddles

All CLS series 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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Low Height - High Tonnage

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

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Optimum Performance

Enerpac's range of Hushh electric pumps, fitted with manual or solenoid operated 3-way valves, offer optimum combinations with CLS cylinders.

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CLS Series

Capacity:
50-1,000 tons

Stroke:
1.97-11.81 inch

Maximum Operating Pressure:
10,000 psi

▼ QUICK SELECTION CHART

For complete technical information see next page.

Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height (in)	Weight (lbs)
50 [55]	1.97	**CLS-502**	10.99	21.63	5.04	31
	3.94	**CLS-504**	10.99	43.25	7.01	40
	5.91	**CLS-506**	10.99	64.88	8.98	51
	7.87	**CLS-508**	10.99	86.51	10.94	62
	9.84	**CLS-5010**	10.99	108.14	12.91	73
	11.81	**CLS-5012**	10.99	129.76	14.88	84
100 [103]	1.97	**CLS-1002**	20.57	40.50	5.63	53
	3.94	**CLS-1004**	20.57	81.00	7.60	70
	5.91	**CLS-1006**	20.57	121.50	9.57	90
	7.87	**CLS-1008**	20.57	162.00	11.54	110
	9.84	**CLS-10010**	20.57	202.50	13.50	128
	11.81	**CLS-10012**	20.57	242.99	15.47	147
150 [154]	1.97	**CLS-1502**	30.78	60.58	6.50	95
	3.94	**CLS-1504**	30.78	121.17	8.46	123
	5.91	**CLS-1506**	30.78	181.75	10.43	154
	7.87	**CLS-1508**	30.78	242.33	12.40	180
	9.84	**CLS-15010**	30.78	302.92	14.37	209
	11.81	**CLS-15012**	30.78	363.50	16.34	238
200 [206]	1.97	**CLS-2002**	41.22	81.13	7.60	145
	5.91	**CLS-2006**	41.22	243.40	11.54	222
	11.81	**CLS-20012**	41.22	486.79	17.44	339
250 [284]	1.97	**CLS-2502**	56.80	111.81	7.60	198
	5.91	**CLS-2506**	56.80	335.42	11.54	301
	11.81	**CLS-25012**	56.80	670.84	17.44	458
300 [354]	1.97	**CLS-3002**	70.71	139.19	9.25	301
	5.91	**CLS-3006**	70.71	417.56	13.19	436
	11.81	**CLS-30012**	70.71	835.11	19.09	636
400 [434]	1.97	**CLS-4002**	86.79	170.84	10.43	440
	5.91	**CLS-4006**	86.79	512.51	14.37	605
	11.81	**CLS-40012**	86.79	1025.02	20.28	860
500 [566]	1.97	**CLS-5002**	113.25	222.92	11.61	636
	5.91	**CLS-5006**	113.25	668.77	15.55	858
	11.81	**CLS-50012**	113.25	1337.55	21.46	1190
600 [663]	1.97	**CLS-6002**	132.57	260.97	12.20	770
	5.91	**CLS-6006**	132.57	782.90	16.14	1023
	11.81	**CLS-60012**	132.57	1565.81	22.05	1410
800 [912]	1.97	**CLS-8002**	182.32	358.91	13.98	1208
	5.91	**CLS-8006**	182.32	1076.72	17.91	1560
	11.81	**CLS-80012**	182.32	2153.44	23.82	2090
1000 [1136]	1.97	**CLS-10002**	227.19	447.23	15.16	1604
	5.91	**CLS-10006**	227.19	1341.68	19.09	2026
	11.81	**CLS-100012**	227.19	2683.35	25.00	2660

Additional Stroke Lengths

Models above 150 tons are also available with standard stroke lengths of 4, 8 and 10 inches. Please contact Enerpac for ordering information and dimensional details.

Lifting an Unbalanced Load?

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

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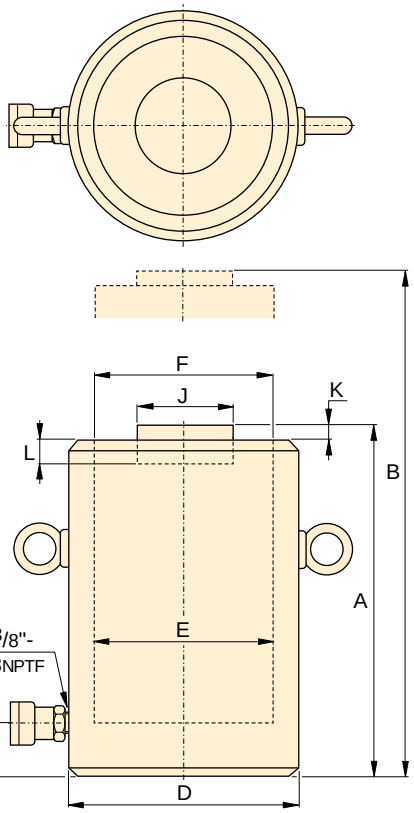
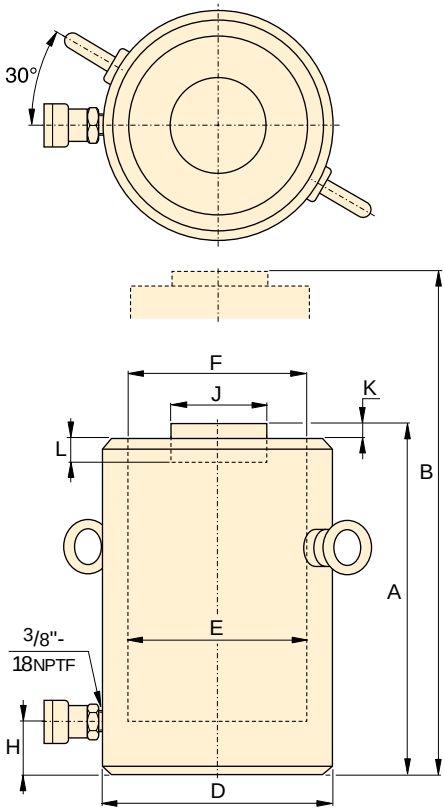
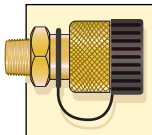
Order your free copy of the Enerpac brochure on hydraulic systems for structural engineering. Call or visit us at **www.enerpac.com.**



CLS-50 to CLS-250 models



CLS-300 to CLS-1000 models



Coupler Included!

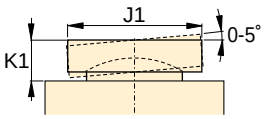
CR-400 coupler included on all models. Fits all HC-Series hoses.

◀ For full features see page 34.

Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)
50 [55]	1.97	**CLS-502**	10.99	21.63
	3.94	**CLS-504**	10.99	43.25
	5.91	**CLS-506**	10.99	64.88
	7.87	**CLS-508**	10.99	86.51
	9.84	**CLS-5010**	10.99	108.14
	11.81	**CLS-5012**	10.99	129.76
100 [103]	1.97	**CLS-1002**	20.57	40.50
	3.94	**CLS-1004**	20.57	81.00
	5.91	**CLS-1006**	20.57	121.50
	7.87	**CLS-1008**	20.57	162.00
	9.84	**CLS-10010**	20.57	202.50
	11.81	**CLS-10012**	20.57	242.99
150 [154]	1.97	**CLS-1502**	30.78	60.58
	3.94	**CLS-1504**	30.78	121.17
	5.91	**CLS-1506**	30.78	181.75
	7.87	**CLS-1508**	30.78	242.33
	9.84	**CLS-15010**	30.78	302.92
	11.81	**CLS-15012**	30.78	363.50
200 [206]	1.97	**CLS-2002**	41.22	81.13
	5.91	**CLS-2006**	41.22	243.40
	11.81	**CLS-20012**	41.22	486.79
250 [284]	1.97	**CLS-2502**	56.80	111.81
	5.91	**CLS-2506**	56.80	335.42
	11.81	**CLS-25012**	56.80	670.84
300 [354]	1.97	**CLS-3002**	70.71	139.19
	5.91	**CLS-3006**	70.71	417.56
	11.81	**CLS-30012**	70.71	835.11
400 [434]	1.97	**CLS-4002**	86.79	170.84
	5.91	**CLS-4006**	86.79	512.51
	11.81	**CLS-40012**	86.79	1025.02
500 [566]	1.97	**CLS-5002**	113.25	222.92
	5.91	**CLS-5006**	113.25	668.77
	11.81	**CLS-50012**	113.25	1337.55
600 [663]	1.97	**CLS-6002**	132.57	260.97
	5.91	**CLS-6006**	132.57	782.90
	11.81	**CLS-60012**	132.57	1565.81
800 [912]	1.97	**CLS-8002**	182.32	358.91
	5.91	**CLS-8006**	182.32	1076.72
	11.81	**CLS-80012**	182.32	2153.44
1000 [1136]	1.97	**CLS-10002**	227.19	447.23
	5.91	**CLS-10006**	227.19	1341.68
	11.81	**CLS-100012**	227.19	2683.35

Single-Acting, High Tonnage Cylinders

Optional Tilt Saddle *



Capacity:
50-1,000 tons

Stroke:
1.97-11.81 inch

Maximum Operating Pressure:
10,000 psi

CLS Series

Collapsed Height A (in)	Extended Height B (in)	Outside Dia. D (in)	Cylinder Bore Dia. E (in)	Plunger Dia. F (in)	Base to Adv. Port H (in)	Standard Saddle Dia. J (in)	Saddle Protr. from Plgr. K (in)	Depth of Plunger Hole L (in)	Weight (lbs)	Model Number	* Optional Tilt Saddle Dia. J1 (in)	* Optional Tilt Saddle Height K1 (in)	* Optional Tilt Saddle Model Number
5.04	7.01	4.92	3.74	3.74	1.18	2.80	.08	.51	31	**CLS-502**	2.80	.94	**CAT-100**
7.01	10.94	4.92	3.74	3.74	1.18	2.80	.08	.51	40	**CLS-504**	2.80	.94	**CAT-100**
8.98	14.88	4.92	3.74	3.74	1.18	2.80	.08	.51	51	**CLS-506**	2.80	.94	**CAT-100**
10.94	18.82	4.92	3.74	3.74	1.18	2.80	.08	.51	62	**CLS-508**	2.80	.94	**CAT-100**
12.91	22.76	4.92	3.74	3.74	1.18	2.80	.08	.51	73	**CLS-5010**	2.80	.94	**CAT-100**
14.88	26.69	4.92	3.74	3.74	1.18	2.80	.08	.51	84	**CLS-5012**	2.80	.94	**CAT-100**
5.63	7.60	6.50	5.12	5.12	1.18	2.80	.08	.51	53	**CLS-1002**	2.80	.94	**CAT-100**
7.60	11.54	6.50	5.12	5.12	1.18	2.80	.08	.51	70	**CLS-1004**	2.80	.94	**CAT-100**
9.57	15.47	6.50	5.12	5.12	1.18	2.80	.08	.51	90	**CLS-1006**	2.80	.94	**CAT-100**
11.54	19.41	6.50	5.12	5.12	1.18	2.80	.08	.51	110	**CLS-1008**	2.80	.94	**CAT-100**
13.50	23.35	6.50	5.12	5.12	1.18	2.80	.08	.51	128	**CLS-10010**	2.80	.94	**CAT-100**
15.47	27.28	6.50	5.12	5.12	1.18	2.80	.08	.51	147	**CLS-10012**	2.80	.94	**CAT-100**
6.50	8.46	8.07	6.26	6.26	1.54	5.12	.08	.98	95	**CLS-1502**	5.12	.79	**CAT-200**
8.46	12.40	8.07	6.26	6.26	1.54	5.12	.08	.98	123	**CLS-1504**	5.12	.79	**CAT-200**
10.43	16.34	8.07	6.26	6.26	1.54	5.12	.08	.98	154	**CLS-1506**	5.12	.79	**CAT-200**
12.40	20.28	8.07	6.26	6.26	1.54	5.12	.08	.98	180	**CLS-1508**	5.12	.79	**CAT-200**
14.37	24.21	8.07	6.26	6.26	1.54	5.12	.08	.98	209	**CLS-15010**	5.12	.79	**CAT-200**
16.34	28.15	8.07	6.26	6.26	1.54	5.12	.08	.98	238	**CLS-15012**	5.12	.79	**CAT-200**
7.60	9.57	9.25	7.24	7.24	1.97	5.12	.08	.98	145	**CLS-2002**	5.12	.79	**CAT-200**
11.54	17.44	9.25	7.24	7.24	1.97	5.12	.08	.98	222	**CLS-2006**	5.12	.79	**CAT-200**
17.44	29.25	9.25	7.24	7.24	1.97	5.12	.08	.98	339	**CLS-20012**	5.12	.79	**CAT-200**
7.60	9.57	10.24	8.50	8.50	1.97	5.91	.08	.98	198	**CLS-2502**	5.91	.83	**CAT-250**
11.54	17.44	10.24	8.50	8.50	1.97	5.91	.08	.98	301	**CLS-2506**	5.91	.83	**CAT-250**
17.44	29.25	10.24	8.50	8.50	1.97	5.91	.08	.98	458	**CLS-25012**	5.91	.83	**CAT-250**
9.25	11.22	12.20	9.49	9.49	2.32	5.47	.20	.98	301	**CLS-3002**	7.68	2.95	**CAT-300**
13.19	19.09	12.20	9.49	9.49	2.32	5.47	.20	.98	436	**CLS-3006**	7.68	2.95	**CAT-300**
19.09	30.91	12.20	9.49	9.49	2.32	5.47	.20	.98	636	**CLS-30012**	7.68	2.95	**CAT-300**
10.43	12.40	13.78	10.51	10.51	2.76	6.26	.20	.98	440	**CLS-4002**	8.86	3.35	**CAT-400**
14.37	20.28	13.78	10.51	10.51	2.76	6.26	.20	.98	605	**CLS-4006**	8.86	3.35	**CAT-400**
20.28	32.09	13.78	10.51	10.51	2.76	6.26	.20	.98	860	**CLS-40012**	8.86	3.35	**CAT-400**
11.61	13.58	15.75	12.01	12.01	3.15	7.05	.20	.98	636	**CLS-5002**	9.84	3.58	**CAT-500**
15.55	21.46	15.75	12.01	12.01	3.15	7.05	.20	.98	858	**CLS-5006**	9.84	3.58	**CAT-500**
21.46	33.27	15.75	12.01	12.01	3.15	7.05	.20	.98	1190	**CLS-50012**	9.84	3.58	**CAT-500**
12.20	14.17	16.93	12.99	12.99	3.35	7.64	.20	.98	770	**CLS-6002**	10.83	3.78	**CAT-600**
16.14	22.05	16.93	12.99	12.99	3.35	7.64	.20	.98	1023	**CLS-6006**	10.83	3.78	**CAT-600**
22.05	33.86	16.93	12.99	12.99	3.35	7.64	.20	.98	1410	**CLS-60012**	10.83	3.78	**CAT-600**
13.98	15.94	19.88	15.24	15.24	3.94	8.82	.20	.98	1208	**CLS-8002**	12.60	4.84	**CAT-800**
17.91	23.82	19.88	15.24	15.24	3.94	8.82	.20	.98	1560	**CLS-8006**	12.60	4.84	**CAT-800**
23.82	35.63	19.88	15.24	15.24	3.94	8.82	.20	.98	2090	**CLS-80012**	12.60	4.84	**CAT-800**
15.16	17.13	22.05	17.01	17.01	4.33	9.80	.20	.98	1604	**CLS-10002**	14.17	5.35	**CAT-1000**
19.09	25.00	22.05	17.01	17.01	4.33	9.80	.20	.98	2026	**CLS-10006**	14.17	5.35	**CAT-1000**
25.00	36.81	22.05	17.01	17.01	4.33	9.80	.20	.98	2660	**CLS-100012**	14.17	5.35	**CAT-1000**

▼ Shown from left to right: **CLRG-506, CLRG-4006, CLRG-2506 shown with optional collar threads**

- **Integral stop ring provides piston blow-out protection**
- **Double-acting for positive retraction**
- **Baked enamel outside finish and plated pistons provide superior corrosion resistance**
- **Special bearing design withstands sideload forces up to 10% of rated cylinder capacity without scoring**
- **Safety valve in retract side of cylinder helps to prevent damage in case of accidental over-pressurization**
- **Interchangeable, hardened grooved saddles are standard**
- **Plunger wiper reduces contamination ingress, extending cylinder life**

▼ *CLRG-cylinders supported and positioned these automobile deck elements.*

Double-Acting Power Lifters

Saddles

All CLRG 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 ports. This valve provides a safety lock on the cylinder under load at any position and remote control for unlocking.

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Optimum Performance

Enerpac's range of Hushh electric pumps, fitted with manual or solenoid operated 4-way valves, offer optimum combinations with CLRG cylinders.

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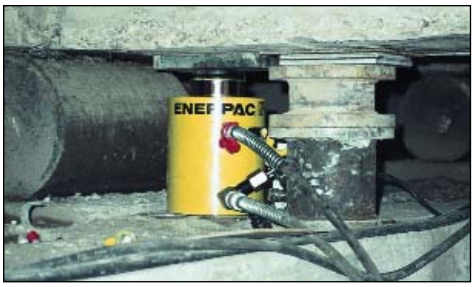
Standard Features

- Interchangeable, hardened grooved saddles
- CR-400 Coupler and dust cap
- Top and side mounted lifting eyes
- All cylinders meet PREN 1494, ASME B-30.1 and ISO 10100 Standards

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



CLRG Series

Capacity:
50-1,000 tons

Stroke:
1.97-11.81 inch

Maximum Operating Pressure:
10,000 psi

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

Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in²)		Oil Capacity (in³)		Collapsed Height (in)
			Push	Pull	Push	Pull	
50 [59]	1.97	CLRG-502	11.81	5.85	23.25	11.51	6.38
	3.94	CLRG-504	11.81	5.85	46.50	23.02	8.35
	5.91	CLRG-506	11.81	5.85	69.75	34.52	10.31
	7.87	CLRG-508	11.81	5.85	93.00	46.03	12.28
	9.84	CLRG-5010	11.81	5.85	116.25	57.54	14.25
	11.81	CLRG-5012	11.81	5.85	139.50	69.05	16.22
100 [103]	1.97	CLRG-1002	20.57	9.59	40.50	18.87	7.16
	3.94	CLRG-1004	20.57	9.59	81.00	37.74	9.13
	5.91	CLRG-1006	20.57	9.59	121.50	56.61	11.09
	7.87	CLRG-1008	20.57	9.59	162.00	75.49	13.06
	9.84	CLRG-10010	20.57	9.59	202.50	94.36	15.03
	11.81	CLRG-10012	20.57	9.59	242.99	113.23	17.00
150 [154]	1.97	CLRG-1502	30.78	14.96	60.58	29.44	7.72
	3.94	CLRG-1504	30.78	14.96	121.17	58.88	9.69
	5.91	CLRG-1506	30.78	14.96	181.75	88.32	11.65
	7.87	CLRG-1508	30.78	14.96	242.33	117.76	13.62
	9.84	CLRG-15010	30.78	14.96	302.92	147.20	15.59
	11.81	CLRG-15012	30.78	14.96	363.50	176.64	17.56
200 [206]	1.97	CLRG-2002	41.22	19.68	81.13	38.74	8.50
	5.91	CLRG-2006	41.22	19.68	243.40	116.23	12.44
	11.81	CLRG-20012	41.22	19.68	486.79	232.46	18.35
250 [284]	1.97	CLRG-2502	56.80	23.65	111.81	46.56	9.25
	5.91	CLRG-2506	56.80	23.65	335.42	139.69	13.19
	11.81	CLRG-25012	56.80	23.65	670.84	279.39	19.09
300 [354]	1.97	CLRG-3002	70.71	23.46	139.19	46.18	12.28
	5.91	CLRG-3006	70.71	23.46	417.56	138.55	16.22
	11.81	CLRG-30012	70.71	23.46	835.11	277.10	22.13
400 [434]	1.97	CLRG-4002	86.79	29.99	170.84	59.03	14.74
	5.91	CLRG-4006	86.79	29.99	512.51	177.09	18.68
	11.81	CLRG-40012	86.79	29.99	1025.02	354.18	24.59
500 [566]	1.97	CLRG-5002	113.25	38.37	222.92	75.54	16.50
	5.91	CLRG-5006	113.25	38.37	668.77	226.61	20.43
	11.81	CLRG-50012	113.25	38.37	1337.55	453.22	26.34
600 [663]	1.97	CLRG-6002	132.57	45.79	260.97	90.13	16.89
	5.91	CLRG-6006	132.57	45.79	782.90	270.39	20.83
	11.81	CLRG-60012	132.57	45.79	1565.81	540.79	26.73
800 [912]	1.97	CLRG-8002	182.32	59.99	358.91	118.09	18.66
	5.91	CLRG-8006	182.32	59.99	1076.72	354.28	22.60
	11.81	CLRG-80012	182.32	59.99	2153.44	708.57	28.50
1000 [1136]	1.97	CLRG-10002	227.19	83.97	447.23	165.29	22.20
	5.91	CLRG-10006	227.19	83.97	1341.68	495.87	26.14
	11.81	CLRG-100012	227.19	83.97	2683.35	991.75	32.05

Pump Selection
A double-acting cylinder must be powered by a pump with a 4-way valve.
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RR-series
For higher cycle applications, Enerpac RR-cylinders are a good alternative.
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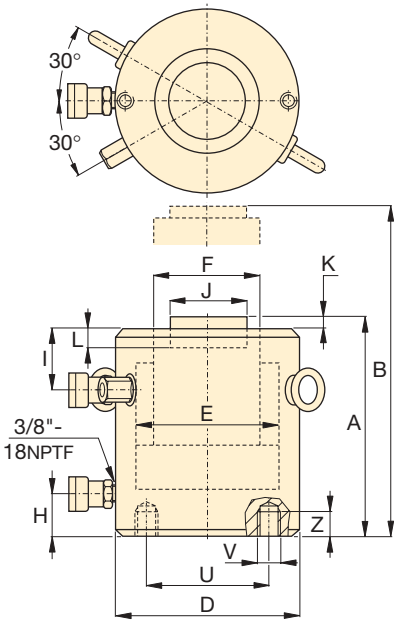
Additional Stroke Lengths
Models above 150 tons are also available with standard stroke lengths of 4, 8 and 10 inches. Please contact Enerpac for ordering information.

Optional feature
Collar threads are available as an optional feature on your cylinders by adding E002 to the end of the model number.

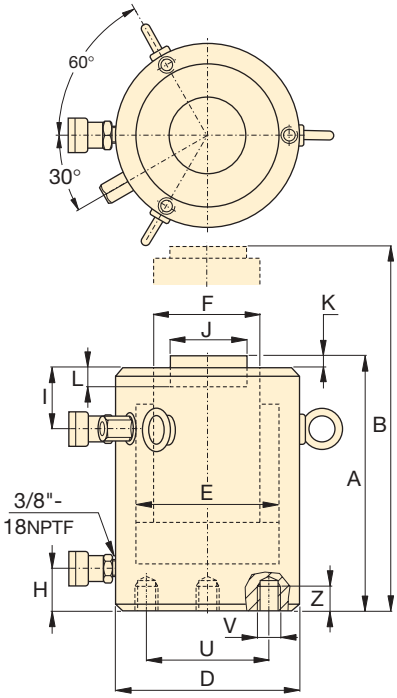
Collar threads	E002

Example:
- For CLRG-5006 cylinder with collar threads, order: **CLRG-5006 E002**

Technical specifications for this feature are available from Enerpac.



CLRG-50 to CLRG-150 models



CLRG-200 to CLRG-1000 models

Base Mounting Hole Dimensions (in)			
Model / Capacity ton	Bolt Circle U	Thread Size V	Min. Thread Depth Z
CLRG-50	2.56	M12	.87
CLRG-100	3.74	M12	.87
CLRG-150	5.12	M12	.87
CLRG-200	6.50	M12	.87
CLRG-250	7.48	M12	.87
CLRG-300	7.09	M16	1.42
CLRG-400	8.07	M16	1.42
CLRG-500	9.84	M24	1.50
CLRG-600	10.83	M24	1.50
CLRG-800	12.99	M24	1.50
CLRG-1000	14.76	M24	1.50

Speed Chart

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

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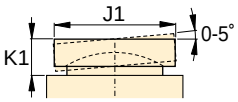
◀ For full features see page 38.

Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Maximum Cylinder Capacity (tons)		Cylinder Effective Area (in^2)		Oil Capacity (in^3)	
			Push	Pull	Push	Pull	Push	Pull
50 [59]	1.97	**CLRG-502**	59	29	11.81	5.85	23.25	11.51
	3.94	**CLRG-504**	59	29	11.81	5.85	46.50	23.02
	5.91	**CLRG-506**	59	29	11.81	5.85	69.75	34.52
	7.87	**CLRG-508**	59	29	11.81	5.85	93.00	46.03
	9.84	**CLRG-5010**	59	29	11.81	5.85	116.25	57.54
	11.81	**CLRG-5012**	59	29	11.81	5.85	139.50	69.05
100 [103]	1.97	**CLRG-1002**	103	48	20.57	9.59	40.50	18.87
	3.94	**CLRG-1004**	103	48	20.57	9.59	81.00	37.74
	5.91	**CLRG-1006**	103	48	20.57	9.59	121.50	56.61
	7.87	**CLRG-1008**	103	48	20.57	9.59	162.00	75.49
	9.84	**CLRG-10010**	103	48	20.57	9.59	202.50	94.36
	11.81	**CLRG-10012**	103	48	20.57	9.59	242.99	113.23
150 [154]	1.97	**CLRG-1502**	154	75	30.78	14.96	60.58	29.44
	3.94	**CLRG-1504**	154	75	30.78	14.96	121.17	58.88
	5.91	**CLRG-1506**	154	75	30.78	14.96	181.75	88.32
	7.87	**CLRG-1508**	154	75	30.78	14.96	242.33	117.76
	9.84	**CLRG-15010**	154	75	30.78	14.96	302.92	147.20
	11.81	**CLRG-15012**	154	75	30.78	14.96	363.50	176.64
200 [206]	1.97	**CLRG-2002**	206	98	41.22	19.68	81.13	38.74
	5.91	**CLRG-2006**	206	98	41.22	19.68	243.40	116.23
	11.81	**CLRG-20012**	206	98	41.22	19.68	486.79	232.46
250 [284]	1.97	**CLRG-2502**	284	118	56.80	23.65	111.81	46.56
	5.91	**CLRG-2506**	284	118	56.80	23.65	335.42	139.69
	11.81	**CLRG-25012**	284	118	56.80	23.65	670.84	279.39
300 [354]	1.97	**CLRG-3002**	354	117	70.71	23.46	139.19	46.18
	5.91	**CLRG-3006**	354	117	70.71	23.46	417.56	138.55
	11.81	**CLRG-30012**	354	117	70.71	23.46	835.11	277.10
400 [434]	1.97	**CLRG-4002**	434	150	86.79	29.99	170.84	59.03
	5.91	**CLRG-4006**	434	150	86.79	29.99	512.51	177.09
	11.81	**CLRG-40012**	434	150	86.79	29.99	1025.02	354.18
500 [566]	1.97	**CLRG-5002**	566	192	113.25	38.37	222.92	75.54
	5.91	**CLRG-5006**	566	192	113.25	38.37	668.77	226.61
	11.81	**CLRG-50012**	566	192	113.25	38.37	1337.55	453.22
600 [663]	1.97	**CLRG-6002**	663	229	132.57	45.79	260.97	90.13
	5.91	**CLRG-6006**	663	229	132.57	45.79	782.90	270.39
	11.81	**CLRG-60012**	663	229	132.57	45.79	1565.81	540.79
800 [912]	1.97	**CLRG-8002**	912	300	182.32	59.99	358.91	118.09
	5.91	**CLRG-8006**	912	300	182.32	59.99	1076.72	354.28
	11.81	**CLRG-80012**	912	300	182.32	59.99	2153.44	708.57
1000 [1136]	1.97	**CLRG-10002**	1136	420	227.19	83.97	447.23	165.29
	5.91	**CLRG-10006**	1136	420	227.19	83.97	1341.68	495.87
	11.81	**CLRG-100012**	1136	420	227.19	83.97	2683.35	991.75

Double-Acting, High Tonnage Cylinders

* **Optional Tilt Saddle**



Capacity:
50-1,000 tons

Stroke:
1.97-11.81 inch

Maximum Operating Pressure:
10,000 psi

CLRG Series

Coll. Height A (in)	Ext. Height B (in)	Outside Dia. D (in)	Cyl. Bore Dia. E (in)	Plunger Dia. F (in)	Base to Advance Port H (in)	Top to Retract Port I (in)	Standard Saddle Dia. J (in)	Saddle Protr. from Plgr. K (in)	Depth of Plunger Hole L (in)	Weight (lbs)	Model Number	*Optional Tilt Saddle Dia. J1 (in)	*Optional Tilt Saddle Height K1 (in)	*Optional Tilt Saddle Model Number
6.38	8.35	5.12	3.88	2.76	1.65	1.29	1.97	.04	.75	37	**CLRG-502**	1.97	1.69	**CATG-50**
8.35	12.28	5.12	3.88	2.76	1.65	1.29	1.97	.04	.75	44	**CLRG-504**	1.97	1.69	**CATG-50**
10.31	16.22	5.12	3.88	2.76	1.65	1.29	1.97	.04	.75	51	**CLRG-506**	1.97	1.69	**CATG-50**
12.28	20.16	5.12	3.88	2.76	1.65	1.29	1.97	.04	.75	60	**CLRG-508**	1.97	1.69	**CATG-50**
14.25	24.09	5.12	3.88	2.76	1.65	1.29	1.97	.04	.75	68	**CLRG-5010**	1.97	1.69	**CATG-50**
16.22	28.03	5.12	3.88	2.76	1.65	1.29	1.97	.04	.75	75	**CLRG-5012**	1.97	1.69	**CATG-50**
7.16	9.13	6.50	5.12	3.74	2.13	1.89	2.95	.04	.75	42	**CLRG-1002**	2.95	1.89	**CATG-100**
9.13	13.06	6.50	5.12	3.74	2.13	1.89	2.95	.04	.75	64	**CLRG-1004**	2.95	1.89	**CATG-100**
11.09	17.00	6.50	5.12	3.74	2.13	1.89	2.95	.04	.75	88	**CLRG-1006**	2.95	1.89	**CATG-100**
13.06	20.94	6.50	5.12	3.74	2.13	1.89	2.95	.04	.75	110	**CLRG-1008**	2.95	1.89	**CATG-100**
15.03	24.87	6.50	5.12	3.74	2.13	1.89	2.95	.04	.75	134	**CLRG-10010**	2.95	1.89	**CATG-100**
17.00	28.81	6.50	5.12	3.74	2.13	1.89	2.95	.04	.75	157	**CLRG-10012**	2.95	1.89	**CATG-100**
7.72	9.69	8.07	6.26	4.49	2.40	2.22	3.70	.04	.75	86	**CLRG-1502**	3.70	1.96	**CATG-150**
9.69	13.62	8.07	6.26	4.49	2.40	2.22	3.70	.04	.75	115	**CLRG-1504**	3.70	1.96	**CATG-150**
11.65	17.56	8.07	6.26	4.49	2.40	2.22	3.70	.04	.75	143	**CLRG-1506**	3.70	1.96	**CATG-150**
13.62	21.50	8.07	6.26	4.49	2.40	2.22	3.70	.04	.75	172	**CLRG-1508**	3.70	1.96	**CATG-150**
15.59	25.43	8.07	6.26	4.49	2.40	2.22	3.70	.04	.75	203	**CLRG-15010**	3.70	1.96	**CATG-150**
17.56	29.37	8.07	6.26	4.49	2.40	2.22	3.70	.04	.75	231	**CLRG-15012**	3.70	1.96	**CATG-150**
8.50	10.47	9.25	7.24	5.24	2.62	2.22	4.45	.04	.94	121	**CLRG-2002**	4.45	2.31	**CATG-200**
12.44	18.35	9.25	7.24	5.24	2.62	2.22	4.45	.04	.94	201	**CLRG-2006**	4.45	2.31	**CATG-200**
18.35	30.16	9.25	7.24	5.24	2.62	2.22	4.45	.04	.94	322	**CLRG-20012**	4.45	2.31	**CATG-200**
9.25	11.22	10.83	8.50	6.50	2.87	3.07	5.71	.04	.94	196	**CLRG-2502**	5.71	2.75	**CATG-250**
13.19	19.09	10.83	8.50	6.50	2.87	3.07	5.71	.04	.94	300	**CLRG-2506**	5.71	2.75	**CATG-250**
19.09	30.91	10.83	8.50	6.50	2.87	3.07	5.71	.04	.94	456	**CLRG-25012**	5.71	2.75	**CATG-250**
12.28	14.25	12.20	9.49	7.76	3.98	2.95	6.97	.04	.75	406	**CLRG-3002**	6.97	3.17	**CATG-300**
16.22	22.13	12.20	9.49	7.76	3.98	2.95	6.97	.04	.75	511	**CLRG-3006**	6.97	3.17	**CATG-300**
22.13	33.94	12.20	9.49	7.76	3.98	2.95	6.97	.04	.75	668	**CLRG-30012**	6.97	3.17	**CATG-300**
14.74	16.71	13.78	10.51	8.50	4.49	4.13	7.72	.12	1.06	595	**CLRG-4002**	7.72	3.06	**CATG-400**
18.68	24.59	13.78	10.51	8.50	4.49	4.13	7.72	.12	1.06	728	**CLRG-4006**	7.72	3.06	**CATG-400**
24.59	36.40	13.78	10.51	8.50	4.49	4.13	7.72	.12	1.06	928	**CLRG-40012**	7.72	3.06	**CATG-400**
16.50	18.46	15.75	12.01	9.76	4.49	5.31	8.98	.12	1.06	884	**CLRG-5002**	8.98	3.54	**CATG-500**
20.43	26.34	15.75	12.01	9.76	4.49	5.31	8.98	.12	1.06	1058	**CLRG-5006**	8.98	3.54	**CATG-500**
26.34	38.15	15.75	12.01	9.76	4.49	5.31	8.98	.12	1.06	1321	**CLRG-50012**	8.98	3.54	**CATG-500**
16.89	18.86	16.93	12.99	10.51	4.49	5.31	9.72	.12	1.06	1045	**CLRG-6002**	9.72	4.05	**CATG-600**
20.83	26.73	16.93	12.99	10.51	4.49	5.31	9.72	.12	1.06	1246	**CLRG-6006**	9.72	4.05	**CATG-600**
26.73	38.54	16.93	12.99	10.51	4.49	5.31	9.72	.12	1.06	1545	**CLRG-60012**	9.72	4.05	**CATG-600**
18.66	20.63	19.88	15.24	12.48	5.87	5.31	11.69	.12	1.06	1634	**CLRG-8002**	11.69	4.00	**CATG-800**
22.60	28.50	19.88	15.24	12.48	5.87	5.31	11.69	.12	1.06	1914	**CLRG-8006**	11.69	4.00	**CATG-800**
28.50	40.31	19.88	15.24	12.48	5.87	5.31	11.69	.12	1.06	2332	**CLRG-80012**	11.69	4.00	**CATG-800**
22.20	24.17	22.05	17.01	13.50	6.85	6.69	12.72	.12	1.06	2341	**CLRG-10002**	12.72	4.71	**CATG-1000**
26.14	32.05	22.05	17.01	13.50	6.85	6.69	12.72	.12	1.06	2674	**CLRG-10006**	12.72	4.71	**CATG-1000**
32.05	43.86	22.05	17.01	13.50	6.85	6.69	12.72	.12	1.06	3172	**CLRG-100012**	12.72	4.71	**CATG-1000**

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

To Secure Loads Mechanically

- **Safety Lock Nut for mechanical load holding**
- **Special synthetic coating for improved corrosion resistance and lower friction for smoother operation**
- **Overflow port functions as a stroke limiter**
- **Interchangeable, hardened grooved saddles are standard**
- **CR-400 coupler and dust cap included on all models**
- **Single-acting load return**

Saddles

All CLL cylinders are equipped with bolt-on removable grooved saddles. For information on optional tilt saddles, see the 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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Low Height - High Tonnage

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

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▼ *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.*

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

CLL Series

Capacity:
50-1,000 tons

Stroke:
1.97-11.81 inch

Maximum Operating Pressure:
10,000 psi

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

Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height (in)	Weight (lbs)
50 [55]	1.97	**CLL-502**	10.99	21.63	6.46	35
	3.94	**CLL-504**	10.99	43.25	8.43	46
	5.91	**CLL-506**	10.99	64.88	10.39	57
	7.87	**CLL-508**	10.99	86.51	12.36	68
	9.84	**CLL-5010**	10.99	108.14	14.33	79
	11.81	**CLL-5012**	10.99	129.76	16.30	90
100 [103]	1.97	**CLL-1002**	20.57	40.50	7.36	68
	3.94	**CLL-1004**	20.57	81.00	9.33	87
	5.91	**CLL-1006**	20.57	121.50	11.30	106
	7.87	**CLL-1008**	20.57	162.00	13.27	125
	9.84	**CLL-10010**	20.57	202.50	15.24	143
	11.81	**CLL-10012**	20.57	242.99	17.20	162
150 [154]	1.97	**CLL-1502**	30.78	60.58	8.23	117
	3.94	**CLL-1504**	30.78	121.17	10.20	146
	5.91	**CLL-1506**	30.78	181.75	12.17	174
	7.87	**CLL-1508**	30.78	242.33	14.13	203
	9.84	**CLL-15010**	30.78	302.92	16.10	231
	11.81	**CLL-15012**	30.78	363.50	18.07	260
200 [206]	1.97	**CLL-2002**	41.17	81.04	9.57	183
	5.91	**CLL-2006**	41.17	243.13	13.50	260
	11.81	**CLL-20012**	41.17	486.27	19.41	376
250 [284]	1.97	**CLL-2502**	56.75	111.70	9.80	256
	5.91	**CLL-2506**	56.75	335.11	13.74	359
	11.81	**CLL-25012**	56.75	670.22	19.65	515
300 [354]	1.97	**CLL-3002**	70.71	139.19	11.61	382
	5.91	**CLL-3006**	70.71	417.56	15.55	514
	11.81	**CLL-30012**	70.71	835.11	21.46	712
400 [434]	1.97	**CLL-4002**	86.79	170.84	13.19	553
	5.91	**CLL-4006**	86.79	512.51	17.13	721
	11.81	**CLL-40012**	86.79	1025.02	23.03	972
500 [566]	1.97	**CLL-5002**	113.25	222.99	14.76	809
	5.91	**CLL-5006**	113.25	668.77	18.70	1029
	11.81	**CLL-50012**	113.25	1337.55	24.61	1360
600 [663]	1.97	**CLL-6002**	132.57	260.97	15.55	985
	5.91	**CLL-6006**	132.57	782.90	19.49	1241
	11.81	**CLL-60012**	132.57	1565.81	25.39	1625
800 [912]	1.97	**CLL-8002**	182.42	359.09	17.91	1565
	5.91	**CLL-8006**	182.42	1077.27	21.85	1918
	11.81	**CLL-80012**	182.42	2154.55	27.76	2446
1000 [1136]	1.97	**CLL-10002**	227.30	447.43	19.49	2094
	5.91	**CLL-10006**	227.30	1342.30	23.43	2517
	11.81	**CLL-100012**	227.30	2684.59	29.33	3151

Additional Stroke Lengths

Models above 150 tons are also available with standard stroke lengths of 4, 8 and 10 inches. Please contact Enerpac for ordering information and dimensional details.

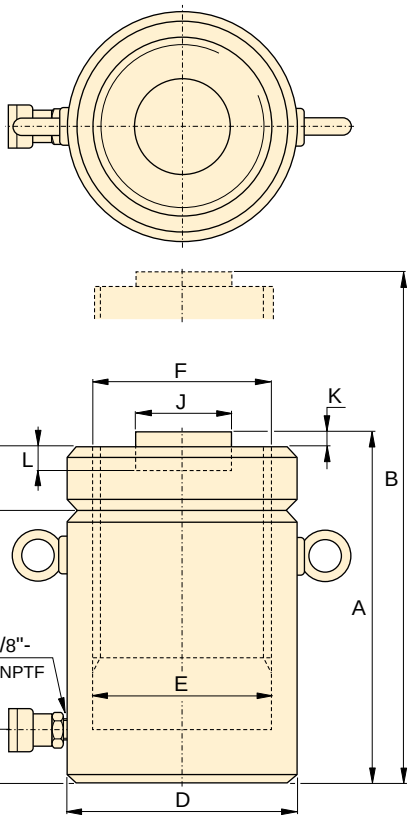
Optional features

To add optional spring return to your cylinders, add the following suffix to the end of the model number.

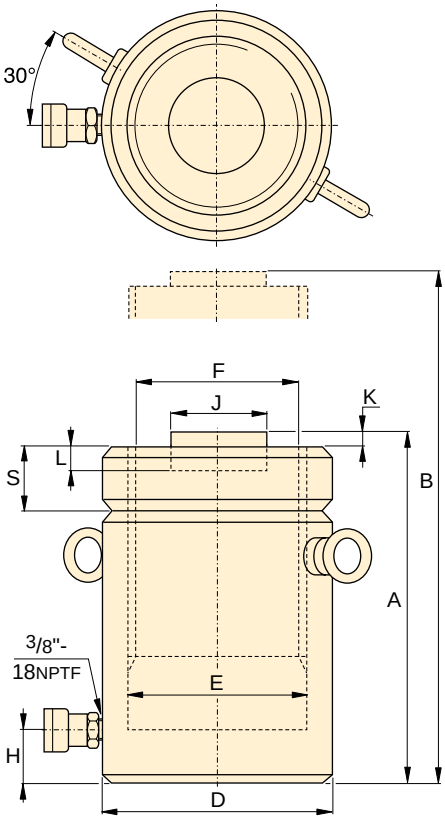
Spring return	**E001**

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

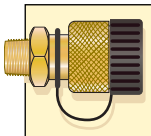
Technical specifications for this feature are available from Enerpac.



CLL-50 to CLL-250 models



CLL-300 to CLL-1000 models



Coupler Included!

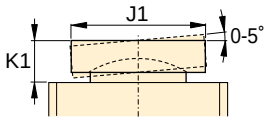
CR-400 coupler included on all models.
Fits all HC-Series hoses.

◀ For full features see page 42.

Cylinder Capacity (tons) Nominal [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)
50 [55]	1.97	**CLL-502**	10.99	21.63
	3.94	**CLL-504**	10.99	43.25
	5.91	**CLL-506**	10.99	64.88
	7.87	**CLL-508**	10.99	86.51
	9.84	**CLL-5010**	10.99	108.14
	11.81	**CLL-5012**	10.99	129.76
100 [103]	1.97	**CLL-1002**	20.57	40.50
	3.94	**CLL-1004**	20.57	81.00
	5.91	**CLL-1006**	20.57	121.50
	7.87	**CLL-1008**	20.57	162.00
	9.84	**CLL-10010**	20.57	202.50
	11.81	**CLL-10012**	20.57	242.99
150 [154]	1.97	**CLL-1502**	30.78	60.58
	3.94	**CLL-1504**	30.78	121.17
	5.91	**CLL-1506**	30.78	181.75
	7.87	**CLL-1508**	30.78	242.33
	9.84	**CLL-15010**	30.78	302.92
	11.81	**CLL-15012**	30.78	363.50
200 [206]	1.97	**CLL-2002**	41.17	81.04
	5.91	**CLL-2006**	41.17	243.13
	11.81	**CLL-20012**	41.17	486.27
250 [284]	1.97	**CLL-2502**	56.75	111.70
	5.91	**CLL-2506**	56.75	335.11
	11.81	**CLL-25012**	56.75	670.22
300 [354]	1.97	**CLL-3002**	70.71	139.19
	5.91	**CLL-3006**	70.71	417.56
	11.81	**CLL-30012**	70.71	835.11
400 [434]	1.97	**CLL-4002**	86.79	170.84
	5.91	**CLL-4006**	86.79	512.51
	11.81	**CLL-40012**	86.79	1025.02
500 [566]	1.97	**CLL-5002**	113.25	222.99
	5.91	**CLL-5006**	113.25	668.77
	11.81	**CLL-50012**	113.25	1337.55
600 [663]	1.97	**CLL-6002**	132.57	260.97
	5.91	**CLL-6006**	132.57	782.90
	11.81	**CLL-60012**	132.57	1565.81
800 [912]	1.97	**CLL-8002**	182.42	359.09
	5.91	**CLL-8006**	182.42	1077.27
	11.81	**CLL-80012**	182.42	2154.55
1000 [1136]	1.97	**CLL-10002**	227.30	447.43
	5.91	**CLL-10006**	227.30	1342.30
	11.81	**CLL-100012**	227.30	2684.59

Single-Acting, Lock Nut Cylinders

***Optional Tilt Saddle**



Capacity:
50-1,000 tons

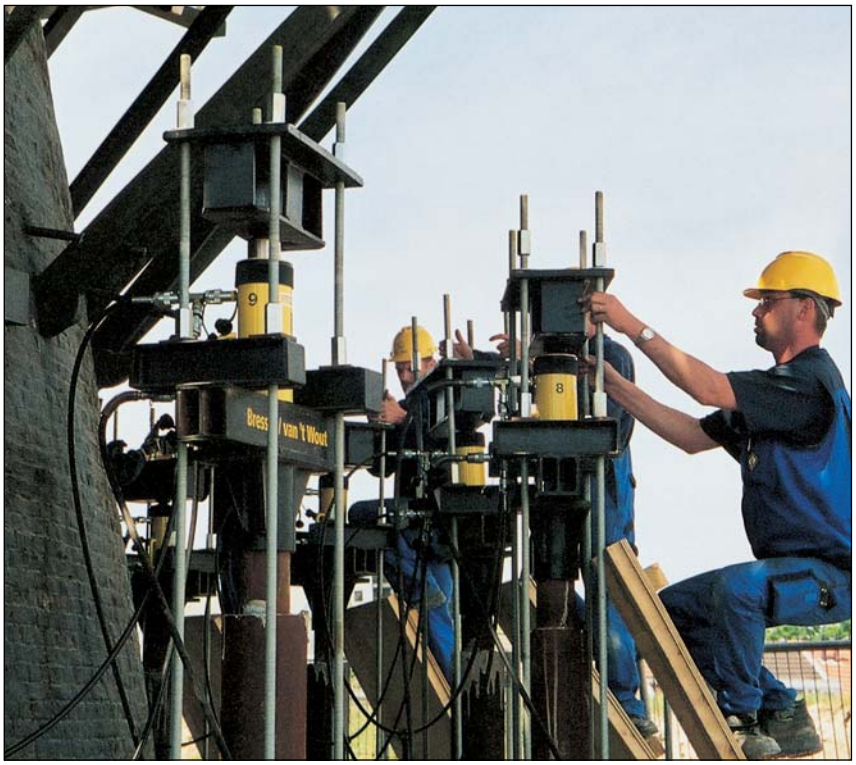
Stroke:
1.97-11.81 inch

Maximum Operating Pressure:
10,000 psi

CLL Series

Coll. Height A (in)	Ext. Height B (in)	Outs. Dia. D (in)	Cyl. Bore Dia. E (in)	Plunger Dia. (threaded) F (mm)	Base to Adv. Port H (in)	Standard Saddle Dia. J (in)	Saddle Protr. from Plgr. K (in)	Depth of Plunger Hole L (in)	Lock-nut Height S (in)	Weight (lbs)	Model Number	* Optional Tilt Saddle		
												Dia. J1 (in)	Height K1 (in)	Model Number
6.46	8.43	4.92	3.74	Tr 95 x 4	1.18	2.80	.08	.51	1.42	35	**CLL-502**	2.80	.94	**CAT-100**
8.43	12.36	4.92	3.74	Tr 95 x 4	1.18	2.80	.08	.51	1.42	46	**CLL-504**	2.80	.94	**CAT-100**
10.39	16.30	4.92	3.74	Tr 95 x 4	1.18	2.80	.08	.51	1.42	57	**CLL-506**	2.80	.94	**CAT-100**
12.36	20.24	4.92	3.74	Tr 95 x 4	1.18	2.80	.08	.51	1.42	68	**CLL-508**	2.80	.94	**CAT-100**
14.33	24.17	4.92	3.74	Tr 95 x 4	1.18	2.80	.08	.51	1.42	79	**CLL-5010**	2.80	.94	**CAT-100**
16.30	28.11	4.92	3.74	Tr 95 x 4	1.18	2.80	.08	.51	1.42	90	**CLL-5012**	2.80	.94	**CAT-100**
7.36	9.33	6.50	5.12	Tr 130 x 6	1.18	2.80	.08	.51	1.73	68	**CLL-1002**	2.80	.94	**CAT-100**
9.33	13.27	6.50	5.12	Tr 130 x 6	1.18	2.80	.08	.51	1.73	87	**CLL-1004**	2.80	.94	**CAT-100**
11.30	17.20	6.50	5.12	Tr 130 x 6	1.18	2.80	.08	.51	1.73	106	**CLL-1006**	2.80	.94	**CAT-100**
13.27	21.14	6.50	5.12	Tr 130 x 6	1.18	2.80	.08	.51	1.73	125	**CLL-1008**	2.80	.94	**CAT-100**
15.24	25.08	6.50	5.12	Tr 130 x 6	1.18	2.80	.08	.51	1.73	143	**CLL-10010**	2.80	.94	**CAT-100**
17.20	29.02	6.50	5.12	Tr 130 x 6	1.18	2.80	.08	.51	1.73	162	**CLL-10012**	2.80	.94	**CAT-100**
8.23	10.20	8.07	6.26	Tr 159 x 6	1.54	5.12	.08	.98	1.73	117	**CLL-1502**	5.12	.79	**CAT-200**
10.20	14.13	8.07	6.26	Tr 159 x 6	1.54	5.12	.08	.98	1.73	146	**CLL-1504**	5.12	.79	**CAT-200**
12.17	18.07	8.07	6.26	Tr 159 x 6	1.54	5.12	.08	.98	1.73	174	**CLL-1506**	5.12	.79	**CAT-200**
14.13	22.01	8.07	6.26	Tr 159 x 6	1.54	5.12	.08	.98	1.73	203	**CLL-1508**	5.12	.79	**CAT-200**
16.10	25.94	8.07	6.26	Tr 159 x 6	1.54	5.12	.08	.98	1.73	231	**CLL-15010**	5.12	.79	**CAT-200**
18.07	29.88	8.07	6.26	Tr 159 x 6	1.54	5.12	.08	.98	1.73	260	**CLL-15012**	5.12	.79	**CAT-200**
9.57	11.54	9.25	7.24	Tr 184 x 6	1.97	5.12	.08	.98	1.97	183	**CLL-2002**	5.12	.79	**CAT-200**
13.50	19.41	9.25	7.24	Tr 184 x 6	1.97	5.12	.08	.98	1.97	260	**CLL-2006**	5.12	.79	**CAT-200**
19.41	31.22	9.25	7.24	Tr 184 x 6	1.97	5.12	.08	.98	1.97	376	**CLL-20012**	5.12	.79	**CAT-200**
9.80	11.77	10.24	8.50	Tr 216 x 6	1.97	5.91	.08	.98	2.20	256	**CLL-2502**	5.91	.83	**CAT-250**
13.74	19.65	10.24	8.50	Tr 216 x 6	1.97	5.91	.08	.98	2.20	359	**CLL-2506**	5.91	.83	**CAT-250**
19.65	31.46	10.24	8.50	Tr 216 x 6	1.97	5.91	.08	.98	2.20	515	**CLL-25012**	5.91	.83	**CAT-250**
11.61	13.58	12.20	9.49	Tr 241 x 6	2.32	5.47	.20	.98	2.36	382	**CLL-3002**	7.68	2.95	**CAT-300**
15.55	21.46	12.20	9.49	Tr 241 x 6	2.32	5.47	.20	.98	2.36	514	**CLL-3006**	7.68	2.95	**CAT-300**
21.46	33.27	12.20	9.49	Tr 241 x 6	2.32	5.47	.20	.98	2.36	712	**CLL-30012**	7.68	2.95	**CAT-300**
13.19	15.16	13.78	10.51	Tr 266 x 6	2.76	6.26	.20	.98	2.76	553	**CLL-4002**	8.86	3.35	**CAT-400**
17.13	23.03	13.78	10.51	Tr 266 x 6	2.76	6.26	.20	.98	2.76	721	**CLL-4006**	8.86	3.35	**CAT-400**
23.03	34.84	13.78	10.51	Tr 266 x 6	2.76	6.26	.20	.98	2.76	972	**CLL-40012**	8.86	3.35	**CAT-400**
14.76	16.73	15.75	12.01	Tr 305 x 6	3.15	7.05	.20	.98	3.15	809	**CLL-5002**	9.84	3.58	**CAT-500**
18.70	24.61	15.75	12.01	Tr 305 x 6	3.15	7.05	.20	.98	3.15	1029	**CLL-5006**	9.84	3.58	**CAT-500**
24.61	36.42	15.75	12.01	Tr 305 x 6	3.15	7.05	.20	.98	3.15	1360	**CLL-50012**	9.84	3.58	**CAT-500**
15.55	17.52	16.93	12.99	Tr 330 x 6	3.35	7.64	.20	.98	3.35	985	**CLL-6002**	10.83	3.78	**CAT-600**
19.49	25.39	16.93	12.99	Tr 330 x 6	3.35	7.64	.20	.98	3.35	1241	**CLL-6006**	10.83	3.78	**CAT-600**
25.39	37.20	16.93	12.99	Tr 330 x 6	3.35	7.64	.20	.98	3.35	1625	**CLL-60012**	10.83	3.78	**CAT-600**
17.91	19.88	19.88	15.24	Tr 387 x 6	3.94	8.82	.20	.98	3.94	1565	**CLL-8002**	12.60	4.84	**CAT-800**
21.85	27.76	19.88	15.24	Tr 387 x 6	3.94	8.82	.20	.98	3.94	1918	**CLL-8006**	12.60	4.84	**CAT-800**
27.76	39.57	19.88	15.24	Tr 387 x 6	3.94	8.82	.20	.98	3.94	2446	**CLL-80012**	12.60	4.84	**CAT-800**
19.49	21.46	22.05	17.01	Tr 432 x 6	4.33	9.80	.20	.98	4.33	2094	**CLL-10002**	14.17	5.35	**CAT-1000**
23.43	29.33	22.05	17.01	Tr 432 x 6	4.33	9.80	.20	.98	4.33	2517	**CLL-10006**	14.17	5.35	**CAT-1000**
29.33	41.14	22.05	17.01	Tr 432 x 6	4.33	9.80	.20	.98	4.33	3151	**CLL-100012**	14.17	5.35	**CAT-1000**

▼ Stage-Lift System used for lifting a windmill



The Most Simple Solution to Higher Lifting Jobs

- **Allows heavy duty lifting over long distances**
- **Computer controlled synchronized stage-lifting**
- **Double-acting jacks with solid plunger design using Enerpac RR and CLRG series**
- **Double-acting jacks with hollow plunger design using Enerpac RRH series**
- **Lifting capacities from 10 to 1000 tons per lift point**

Stage-Lift Systems

Stage-Lift Systems overcome the usual limitation of lift height imposed by the cylinder's plunger stroke length. Large objects can be lifted, held and lowered for maintenance where other lifting methods are impractical.

Typical Stage-Lift Applications

- Tank jacking and lowering
- Lifting of buildings and structures
- Synchronized jacking
- Ship lifts

Synchronous Lift Systems

When lifting an unbalanced load Enerpac Synchronous Lift Systems can be the solution with multiple lift point capabilities from 2 to 24 points.

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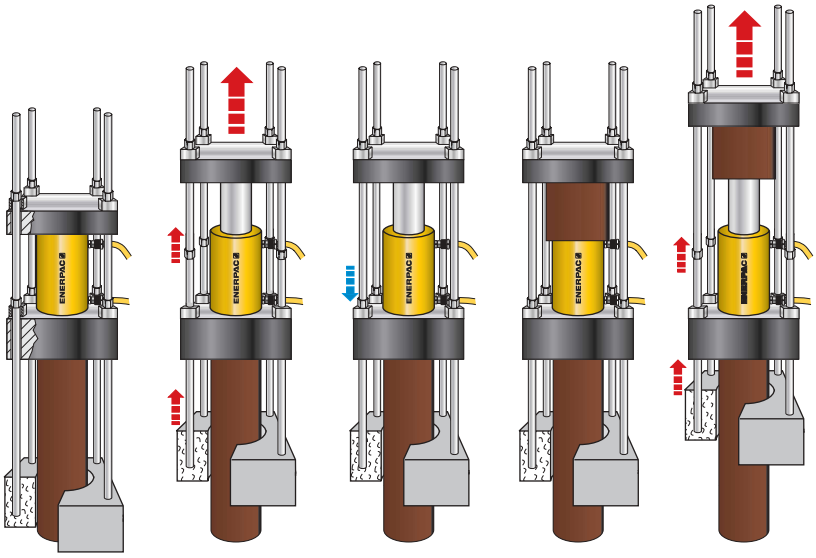
▼ *Part of the Dutch Deltaworks: Step-by-step stage-lifting a windmill over a total height of 6.5 feet using 28 Enerpac RR-506 double-acting cylinders powered by three electric pumps.*

▼ *Each cylinder is attached to threaded rods and a supporting column to lift the load of the windmill.*

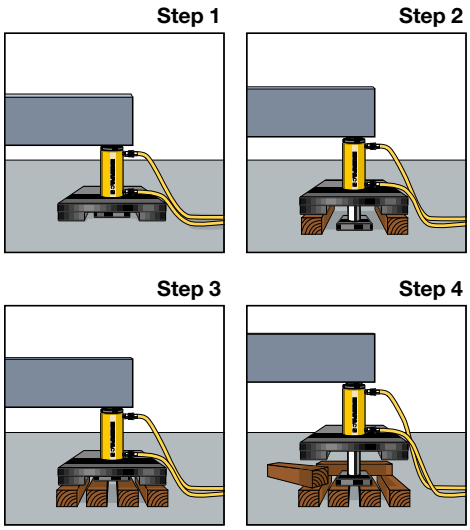
Stage-Lift System with threaded rods

This system is used in the application photos on previous page.



▼ **Stage-Lift System with cribbing blocks**

Six 130 foot long gas vessels are jacked and lowered into their final position with an Enerpac computer controlled stage-lift system. The Stage-Lift System using cribbing blocks is powered by a GPE-series electric Hushh pump.



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

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

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

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

Capacity per lift point:
10 - 1000 ton

Stroke per stage
2.0-48.0 inch

Maximum Operating Pressure:
10,000 psi

Call Enerpac!

Contact your distributor or the Enerpac office nearest to you for advice and technical assistance in the layout of your ideal Stage-Lift System.

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

Optimum Performance

Enerpac's range of Hushh electric pumps, fitted with manual or solenoid operated 3-way valves, offer optimum combinations with the Stage-Lift system.

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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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▼ Typical components in a PC-Synchronous Lift System

Computer controlled lifting and lowering system

- Personal computer based control unit with user-friendly Windows® interface
- Digital control of the lifting process accurate to ± .04" [1mm] between leading and lagging lifting points
- Multiple lift point capability, from 2 to 24 points
- Data recording, graphic presentations, and print-out capability
- Automatic stop at pre-set stroke or load limit
- Accomodates loads of any size and weight distribution

Typical Synchronous Lift Applications

- Bridge lifting and repositioning
- Lifting and lowering of heavy equipment
- Lifting of buildings and structures
- Leveling of existing structures and buildings
- Ship lifts
- Structural testing
- Lifting and measuring of oil platforms
- Synchronized pressing
- Horizontal load shifting
- Heavy weighing
- Tunnel jacking and pushing

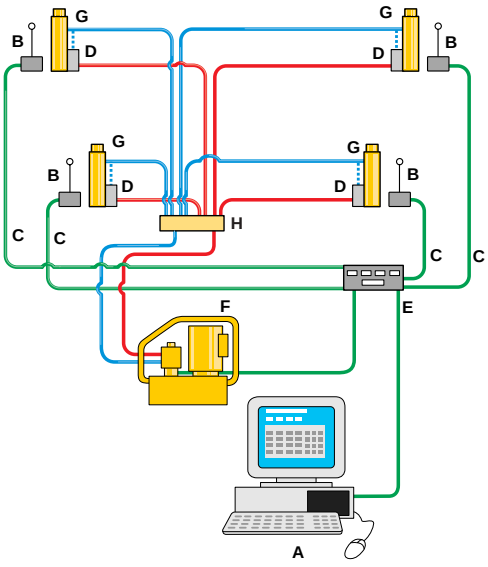
Heavy Lifting Cylinders

For a complete line of double-acting cylinders, see the Enerpac RR- and CLRG-Series.

Call Enerpac!

Contact your distributor or the Enerpac office nearest to you for advice and technical assistance in the layout of your ideal PC Synchronous Lift System.

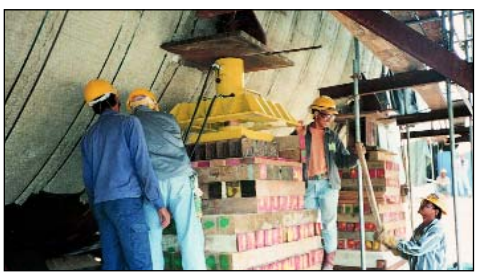
▼ PC-Controlled Synchronous Lift Components-typical 4-point layout



- **A** Controller
- **B** Stroke Sensor
- **C** Sensor Cable
- **D** Check Valve
- **E** Electro Box
- **F** Power Source
- **G** Cylinder
- **H** Control Valve Manifold Assembly

Hydraulic hose (Advance)
Hydraulic hose (Retract)
Electric cable

▼ *Synchronous positioning of 130 ft. long natural gas vessel.*



▼ Shown: **SLCG-8, control valves, sensors and cylinders**

The economical solution for up to 8 point synchronous lifting

- **System will monitor up to eight lift points**
- **Digital control of the lifting process accurate to ± .04" [1 mm] between leading and lagging lifting points**
- **Color flat-panel monitor built into touch key control panel**
- **System operating pressure is 10,000 psi, allowing full cylinder capacities**
- **Incorporates standard hydraulic components**
- **Accommodates loads of any size and weight distribution**
- **Requires use of a solenoid valve for cylinder direction control**
- **For use with standard single- or double-acting cylinders**
- **Housed in NEMA 4 enclosure with carry handle and hinged cover**

Heavy Lifting Cylinders

For a complete line of double-acting cylinders, see the Enerpac RR- and CLRG-series.

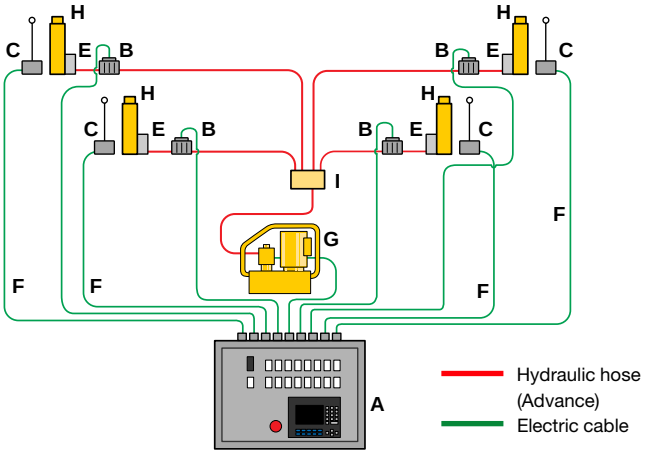
Optional Flow Control

Controls cylinder ascent and descent speed.

Extension Cable

Valve to PLC controller connection, supplied in 50 ft. lengths, can be connected together for greater lengths.

▼ **Digital Controlled Synchronous Lift Components– typical 4-point layout for Single-acting cylinders**



System Components

- **A** Controller
- **B** Cylinder Control Valve
- **C** Stroke Sensor
- **E** Velocity Fuse/Check Valve
- **F** Sensor Cable
- **G** Hydraulic Pump
- **H** Single-acting Hydraulic Cylinder
- **I** Manifold Block

▼ Shown from left to right: **JHA-356, JHA-156, JTA-76**

JHA, JTA Series

Capacity:
7-150 tons

Stroke:
3.00-6.13 inch

Maximum Operating Pressure:
10,000 psi

Toe-Lift and Load Skates

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

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

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

Style	Jack Capacity (tons)	Toe Height (in)	Stroke (in)	Model Number	Jack Effective Area (in^2)	Collapsed Height (in)	Extended Height (in)	Bottom Plate Dimensions (W x L) (in)	Plunger Diameter (in)	Pump Speed	Weight (lbs)
Conventional Jack	**7**	–	3.00	**JHA-73**	1.49	5.25	8.25	2.88 x 6.25	1.19	Single	11
	15	–	6.06	**JHA-156**	3.14	9.75	15.81	3.63 x 9.38	1.63	Single	29
	35	–	6.13	**JHA-356**	7.07	10.13	16.25	4.63 x 10.00	2.13	Single	40
	75	–	6.06	**JHA-756**	15.90	11.25	17.31	6.88 x 12.81	4.50	Single	94
	150	–	6.13	**JHA-1506**	30.68	12.88	19.00	9.50 x 16.06	6.25	2-Speed	210
Toe-Lift Jack	**7**	2.00	6.06	**JTA-76**	3.14	12.56	18.63	3.63 x 11.63	1.63	Single	58
	17	2.00	6.13	**JTA-176**	7.07	14.19	20.31	4.63 x 13.13	2.13	Single	86
	35	2.56	6.06	**JTA-356**	15.90	16.63	22.69	6.88 x 16.63	3.25	Single	210

▼ Shown clockwise from left: **JH-1006, JH-506, JH-306**

JH Series

Capacity:
30-100 tons

Stroke:
6.06-6.13 inch

Maximum Operating Pressure:
10,000 psi

Toe-Lift and Load Skates

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

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- **Chrome plated plungers**
- **Machined flat front and bottom surfaces permit flush alignment in tight corners**
- **Internal relief valve to prevent overloading**
- **All models include pumping handle**
- **Two-directional operation (vertical and horizontal)**

▼ *Creativity is the limit with Enerpac Steel Jacks.*

Jack Capacity (tons)	Stroke (in)	Model Number	Jack Effective Area (in^2)	Collapsed Height (in)	Extended Height (in)	Bottom Plate Dimensions W x L (in)	Plunger Diameter (in)	Pump Speed	Weight (lbs)
30	6.13	**JH-306**	5.94	10.00	16.13	3.75 x 9.56	2.75	Single	59
50	6.09	**JH-506**	9.62	10.25	16.34	5.00 x 10.19	3.50	2-Speed	90
100	6.06	**JH-1006**	20.63	11.31	17.37	7.13 x 12.94	5.12	2-Speed	184

▼ Shown: **EBJ-4GC, EBJ-50GC, EBJL-15GC, EBJ-12GC**

EBJ
Series

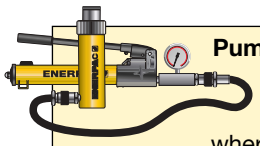
Capacity:
1.5 – 100 tons

Stroke:
3.03 – 20.00 inch

- **Lower handle effort**
- **Fully serviceable**
- **Cast beam and cast pump linkage**
- **Handle included on all models**
- **Safety relief valve to prevent overload**
- **Automatic by-pass port to prevent over-extension**
- **Wiper seal for extended life**
- **Chrome plating on pump and ram plungers**

Screw Feature

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



Pump and Cylinder Sets

As an alternative to Industrial Bottle Jacks where the operator is required to stand remote from the jacking point, see the range of pump and cylinder sets.

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Jack Capacity (tons)	Stroke (in)	Model Number	Screw Extension (in)	Minimum Height (in)	Maximum Height (in)	Plunger Diameter (in)	Saddle Diameter (in)	Base Dimensions L x W (in)	Weight (lbs)
1.5	18.00	♦ **EBJL-15GC**	–	21.72	39.72	.88	.75	3.63 x 5.00	12.8
2	3.74	**EBJ-2GC**	2.76	6.89	13.39	.87	.83	4.02 x 3.78	6.6
3	20.00	♦ **EBJL-3GC**	–	26.31	46.31	1.12	1.12	4.25 x 5.50	22.0
4	4.72	**EBJ-4GC**	2.76	7.68	15.16	1.11	1.03	4.41 x 4.13	9.3
6	5.12	**EBJ-6GC**	3.15	8.27	16.54	1.34	1.19	4.72 x 4.49	12.1
8	5.51	**EBJ-8GC**	3.15	8.66	17.32	1.50	1.34	4.92 x 4.69	13.7
12	6.10	**EBJ-12GC**	3.15	9.45	18.70	1.70	1.58	5.31 x 5.12	17.6
12	3.03	* **EBJS-12GC**	1.69	6.10	10.83	1.70	1.58	5.31 x 5.12	14.6
15	5.91	**EBJ-15GC**	3.15	9.45	18.50	1.89	1.70	5.71 x 5.43	20.7
20	6.10	**EBJ-20GC**	3.15	9.84	19.09	2.09	1.82	6.10 x 5.71	25.1
20	3.11	* **EBJS-20GC**	1.61	6.50	11.22	2.09	1.82	6.10 x 5.71	19.8
30	6.89	♦ **EBJ-30GC**	–	11.22	18.11	2.80	2.72	7.48 x 5.91	56.9
50	4.13	♦ **EBJ-50GC**	–	9.25	13.78	3.35	3.15	10.04 x 7.48	92.6
100	5.91	♦ **EBJ-100GC**	–	12.28	18.38	4.89	3.94	11.81 x 9.45	198.9

* Short bottle jack ♦Without extension screw
All EBJ Jacks meet or exceed: ANSI, PALD, CE, prEN 1494: 1994

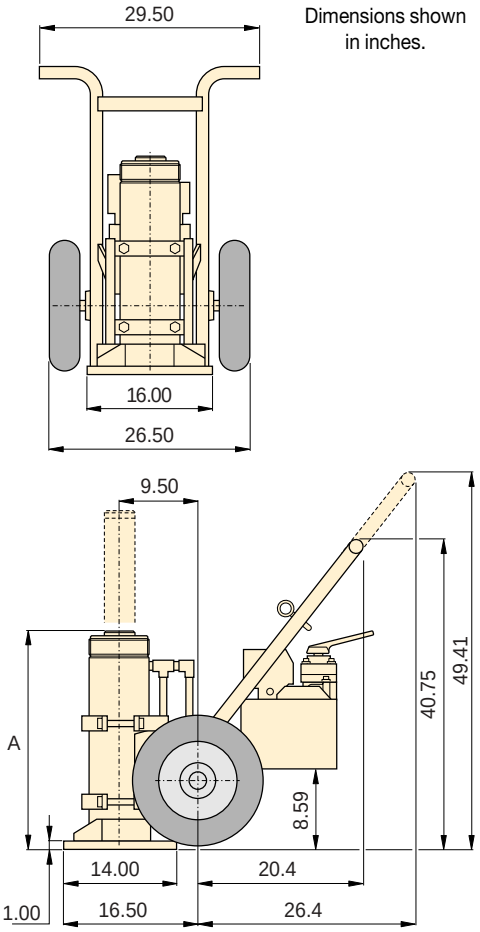
▼ Shown: **RJI-10013**

RJ Series

Capacity:
50-100 tons

Stroke:
13-20 in

Maximum Operating Pressure:
10,000 psi



Dimensions shown in inches.

- **Rugged heavy-duty construction for long-life**
- **Large base pad to support cylinder**
- **Large, all-terrain tires for easy transportation and positioning**
- **Pilot-operated check valve provides hydraulic lock when pump is off or if hose is damaged**
- **Easily removable cylinder and pump for use in other applications or when service is required**

Pump Type	Capacity (tons)	Stroke (in)	Model Number	Collapsed Height A (in)	Speed (sec/in) No Load	Speed (sec/in) Load	Weight (lbs)
Electric Titan Pump	50	13	**RJI-5013**	21.06	1.15	12.94	595
		20	**RJI-5020**	29.88	1.15	12.94	625
	100	13	**RJI-10013**	21.62	2.15	24.24	650
		18	**RJI-10018**	28.06	2.15	24.24	720
Modular Air Pump	50	13	**RJA-5013**	21.06	1.02	31.43	530
		20	**RJA-5020**	29.88	1.02	31.43	560
	100	13	**RJA-10013**	21.62	1.90	58.86	585
		18	**RJA-10018**	28.06	1.90	58.86	655

▼ *The RJI-5020 lifts the railcar in a safe and productive manner.*

▼ Shown cylinder-pump set: **SCR-1010H**

The Quickest and Easiest Way to Start Working Right Away

- **Optimum match of individual components**
- **Sets include 6 ft 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.
Page: 109

1 **Cylinder Selection** (See Cylinder Section of this catalog for full product descriptions)		Nominal Set Capacity (ton)	Cylinder Model Number	Stroke (in)	Collapsed Height (in)
	**Single-Acting, General Purpose Cylinders:** For maximum versatility. **RC-Series** *Page:* 8	5	RC-55	5.00	8.50
		10	RC-102	2.13	4.78
			RC-106	6.13	9.75
			RC-1010	10.13	13.75
		15	RC-154	4.00	7.88
			RC-156	6.00	10.69
		25	RC-252	2.00	6.50
			RC-254	4.00	8.50
			RC-256	6.25	10.75
			RC-2514	14.25	18.75
		50	RC-506	6.25	11.13
		100	RC-1006	6.63	14.06
	**Single-Acting, Low Height Cylinders:** Ideal where space is restricted. **RCS-Series** *Page:* 16	10	RCS-101	1.50	3.47
		20	RCS-201	1.75	3.88
		30	RCS-302	2.44	4.63
		50	RCS-502	2.38	4.81
		100	RCS-1002	2.25	5.56
	**Single-Acting, Hollow Cylinders:** For pushing and pulling applications. **RCH-Series** *Page:* 20	12	RCH-121	1.63	4.75
		20	RCH-202	2.00	6.31
		30	RCH-302	2.50	7.03
		60	RCH-603	3.00	9.75
		100	RCH-1003	3.00	10.00
	**Pull Cylinders:** The ultimate in pulling power. **BRP-Series** *Page:* 18	10	BRP-106C	5.95	23.11
			BRP-106L	5.95	21.33
		30	BRP-306	6.10	42.72
		60	BRP-606	5.98	28.34
			–	–	–

Single-Acting Cylinder-Pump Sets

SET SELECTION:

1. **Select the cylinder**
2. **Select the pump**
3. **Find the set model number in the blue field of the matrix**

SELECTION EXAMPLE

Selected cylinder:
- RC-106, Single-Acting cylinder with 6.13" stroke

Selected pump:
- P-392, Lightweight hand pump

Set model number:
- SCR-106H

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

SC Series

Capacity:
5-100 tons

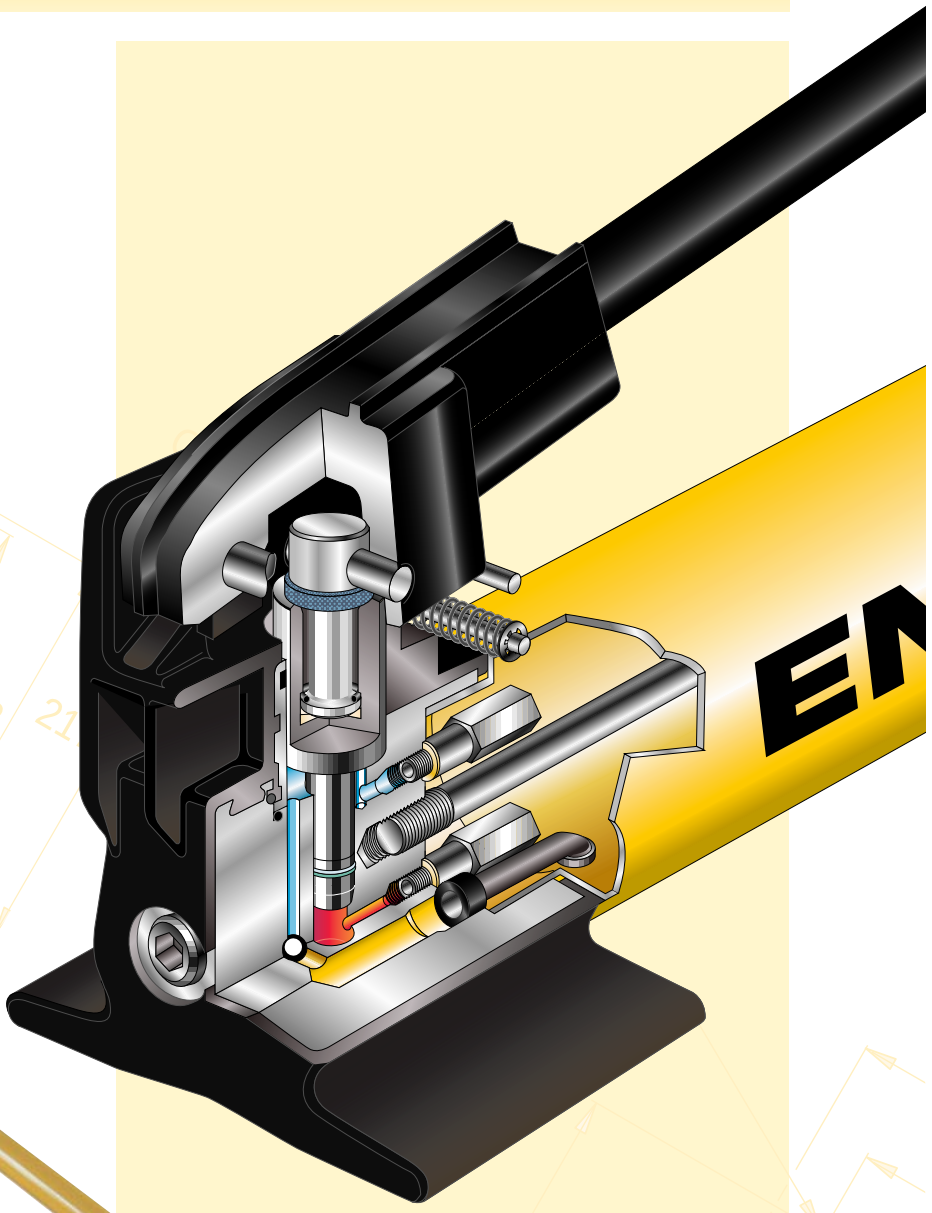
Stroke:
1.50-14.25 inch

Maximum Operating Pressure:
10,000 psi

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	Turbo II Air Pump PATG-1102N	Hose Model Number	Gauge Model Number	Gauge Adaptor Model Nr.
							
SCR-55H	–	–	–	–	HC-7206	GP-10S	GA-4
–	**SCR-102H**	–	–	**SCR-102A**	HC-7206	GF-10P	GA-2
–	**SCR-106H**	–	–	**SCR-106A**	HC-7206	GF-10P	GA-2
–	**SCR-1010H**	–	–	**SCR-1010A**	HC-7206	GF-10P	GA-2
–	**SCR-154H**	–	–	**SCR-154A**	HC-7206	GP-10S	GA-2
–	**SCR-156H**	–	–	**SCR-156A**	HC-7206	GP-10S	GA-2
–	**SCR-252H**	–	–	**SCR-252A**	HC-7206	GF-20P	GA-2
–	**SCR-254H**	–	–	**SCR-254A**	HC-7206	GF-20P	GA-2
–	**SCR-256H**	–	–	**SCR-256A**	HC-7206	GF-20P	GA-2
–	–	**SCR-2514H**	–	**SCR-2514A**	HC-7206	GF-20P	GA-2
–	–	**SCR-506H**	–	**SCR-506A**	HC-7206	GF-50P	GA-2
–	–	–	**SCR-1006H**	–	HC-7206	GF-871P	GA-3
–	**SCL-101H**	–	–	**SCL-101A**	HC-7206	GF-10P	GA-2
–	**SCL-201H**	–	–	**SCL-201A**	HC-7206	GF-230P	GA-2
–	**SCL-302H**	–	–	**SCL-302A**	HC-7206	GF-230P	GA-2
–	**SCL-502H**	–	–	**SCL-502A**	HC-7206	GF-510P	GA-2
–	–	**SCL-1002H**	–	–	HC-7206	GF-510P	GA-2
SCH-121H	–	–	–	–	HB-7206	GF-120P	GA-4
–	**SCH-202H**	–	–	**SCH-202A**	HC-7206	GF-813P	GA-3
–	**SCH-302H**	–	–	**SCH-302A**	HC-7206	GF-813P	GA-3
–	–	**SCH-603H**	–	**SCH-603A**	HC-7206	GF-813P	GA-3
–	–	**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-306H**	–	–	HC-7206	GP-10S	GA-2
–	–	**SCP-606H**	–	–	HC-7206	GP-10S	GA-2
–	–	–	–	–	–	–	–

ENERPAC hydraulic pumps are available in over 1,000 different configurations. Whatever your high pressure pump needs are… speed, control, intermittent or heavy duty cycle… you can be sure that Enerpac has the pump to suit the application.

Featuring Hand, Electric, Air and Gasoline powered models, with multiple reservoir and valve configurations, Enerpac offers the most comprehensive high pressure 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.

Page: 102

Torque Wrench Pumps

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

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Hydraulic Pumps Section Overview

Power Source	Pump Types	Maximum Reservoir Capacity	Max. Flow at Rated Pressure (in^3/min)	Series		Page
Hand	**Lightweight Hand Pumps**	155 in^3	.15 (in^3/stroke)	P		58 ▶
	Hand Pumps	453 in^3	.29 (in^3/stroke)	P		60 ▶
	High Flow Hand Pumps	200 in^3	1.55 (in^3/stroke)	P/PL		62 ▶
	Ultra-High Pressure Hand Pumps	60 in^3	.15 (in^3/stroke)	P 11-		64 ▶
Electric	**Economy Series** Compact and Portable	1 gal	20	PU		66 ▶
	Titan Series High Performance, Intermittent Use	10 gal	60	PU		68 ▶
	Submerged Series Powerful and Low-Noise	1.5 gal	20	PE		74 ▶
	20 Series The Industrial Workhorse	5 gal	42	PE		78 ▶
	Hushh, 3 and 5 Series The Industrial Standard	10 gal	120	GPE		82 ▶
	8000 Series The Maximum Flow Pump	25 gal	462	PE		88 ▶
Air	**Air Pumps** The Premium Air Pumps	305 in^3	10	PA		90 ▶
	Air Hydraulic Pumps Single and Twin-Air	2 gal	9	PA PAM		92 ▶
	Air Pumps - Modular Air Series Modular Design	10 gal	30	PAM		94 ▶
Gasoline	**Atlas Series** Your Gasoline Pump Solution	10 gal	100	PGM		96 ▶
	8000 Series For the Largest Jobs	25 gal	346	EGM		98 ▶

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

Exclusively from Enerpac

- **Lightweight and compact design**
- **Durable glass-filled nylon reservoir and nylon encapsulated aluminum pump base for maximum corrosion resistance**
- **Two-speed operation on most models reduces handle strokes by as much as 78% over single speed pumps**
- **Lower handle effort to minimize operator fatigue**
- **Integral 4-way valve on P-842 for operation of double-acting cylinders**
- **Handle lock and lightweight construction for easy carrying**
- **Large oil capacities to power a wide range of cylinders or tools**
- **Non-conductive fiberglass handle for operator safety**
- **Internal pressure relief valve for overload protection**

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: 102

Speed Chart

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

Page: 109

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.

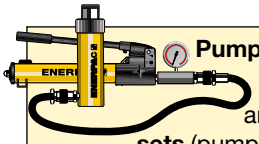
PC-20	Fits P-141, P-142
PC-25	Fits P-202, P-391, P-392

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

Pump Type	Usable Oil Capacity (in^3)	Model Number	Pressure Rating* (psi) 1st stage	Pressure Rating* (psi) 2nd stage	Oil Displacement per Stroke (in^3) 1st stage	Oil Displacement per Stroke (in^3) 2nd stage	Max. Handle Effort (lbs)
Single-Speed	20	**P-141**	N/A	10,000	N/A	.055	72
	55	**P-391**	N/A	10,000	N/A	.151	85
Two-Speed	20	**P-142****	200	10,000	.221	.055	78
	55	**P-202**	200	10,000	.221	.055	63
	55	**P-392****	200	10,000	.687	.151	93
	155	**P-802**	400	10,000	2.40	.151	95
	155	**P-842**	400	10,000	2.40	.151	95

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

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



Pump and Cylinder sets

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

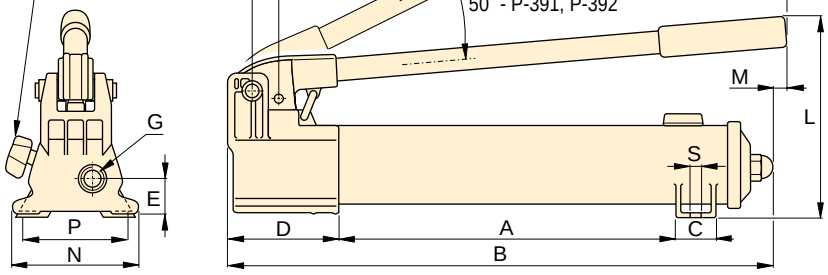
Page: 54

P Series

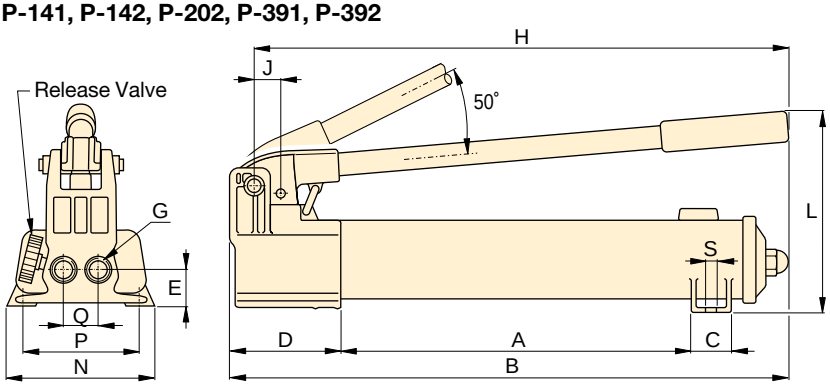
Reservoir Capacity:
20-155 in³

Flow at Rated Pressure:
.055-.15 in³/stroke

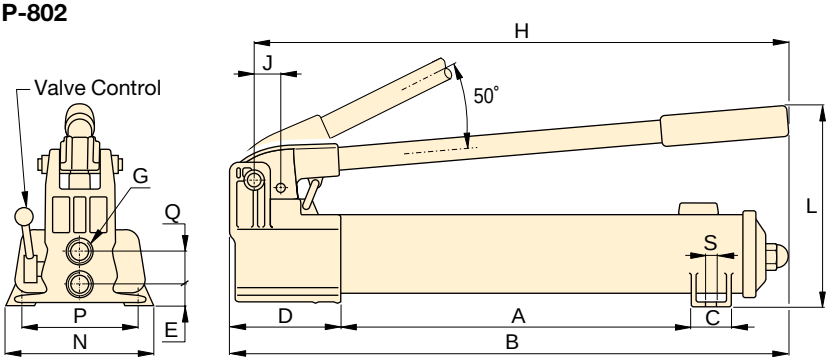
Operating Pressure:
10,000 psi



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.

Page: 112

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: 118

Aluminum Reservoir

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

Piston Stroke	Dimensions (in)														Weight	Model Number
(in)	A	B	C	D	E	G	H	J	L	M	N	P	Q	S	(lbs)	
.50	7.31	13.25	1.13	3.37	1.13	1/4"-18 NPTF	12.56	.75	5.63	–	3.75	3.18	–	.28	4.5	**P-141**
1.00	13.56	21.00	1.44	3.93	1.31	3/8"-18 NPTF	20.56	1.19	7.00	.63	4.75	–	–	–	9.0	**P-391**
.50	7.31	13.25	1.13	3.37	1.13	1/4"-18 NPTF	12.56	.75	5.63	–	3.75	3.18	–	.28	4.5	**P-142****
.50	13.56	20.06	1.44	3.37	1.13	1/4"-18 NPTF	15.75	.75	5.69	.63	3.75	–	–	–	7.5	**P-202**
1.00	13.56	21.00	1.44	3.93	1.31	3/8"-18 NPTF	20.56	1.19	7.00	.63	4.75	–	–	–	9.0	**P-392****
1.00	13.30	21.75	1.78	5.25	1.39	3/8"-18 NPTF	20.75	2.19	9.00	–	7.12	4.75	1.40	.41	18.0	**P-802**
1.00	13.30	21.75	1.78	5.25	.81	3/8"-18 NPTF	20.75	2.19	9.00	–	7.12	4.75	1.44	.41	22.0	**P-842**

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

The Solution for Tough Jobs

- **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 valve for overload protection**
- **Large oil capacity to power a wide range of cylinders or tools**

Two Speed

Recommended for applications where cylinder plunger must advance rapidly to contact load, 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 over-loading and ensure long, dependable service from your equipment. Refer to the System Components section for a full range of gauges.

Page: **118**

4-Way Control Valve

P-84 and P-464 feature a manual 4-way control valve, designed for use with one double-acting or two single-acting cylinders. For system set-up information:

Page: **104**

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

Pump Type	Usable Oil Capacity (in³)	Model Number	Pressure Rating* (psi)		Oil Displacement per Stroke (in³)		Max. Handle Effort (lbs)
			1st stage	2nd stage	1st stage	2nd stage	
Single	40	**P-39**	N/C	10,000	N/C	.16	111
Two-Speed	134	**P-80****	350	10,000	.99	.15	104
	249	**P-801**	350	10,000	.99	.15	104
	134	**P-84*****	350	10,000	.99	.15	104
	453	**P-462****	200	10,000	7.69	.29	110
	453	**P-464*****	200	10,000	7.69	.29	110

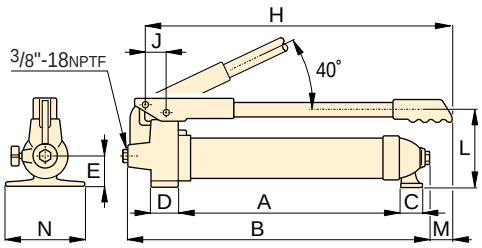
* Contact Enerpac for applications where operating pressure is less than 10% of pressure rating.
** Available as a set, see note on next page.
*** For use with double-acting cylinders.

P Series

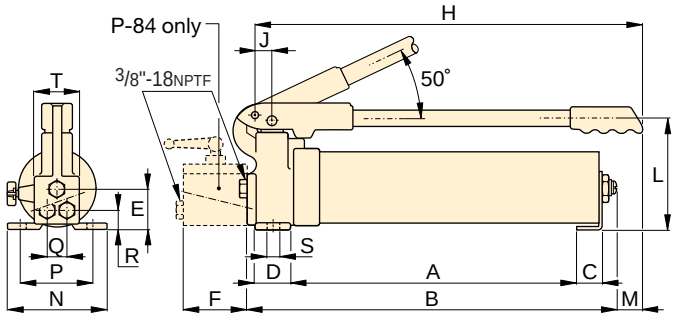
Reservoir Capacity:
40-453 in³

Flow at Rated Pressure:
.15-.29 in³/stroke

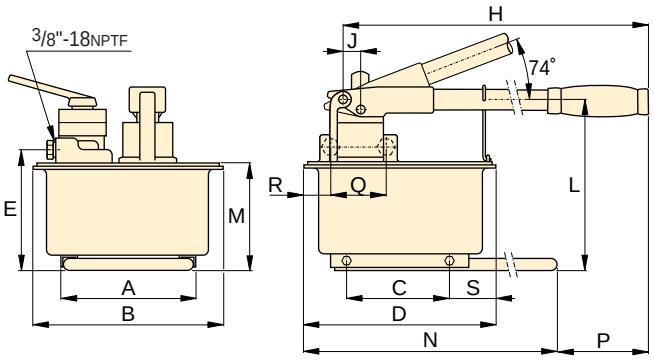
Maximum Operating Pressure:
10,000 psi



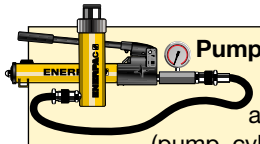
P-39



P-80, P-801, P-84



P-462, P-464



Pump and Cylinder sets
P-80 and P-462 also available as **sets** (pump, cylinder, gauge, couplers and hose) for your ordering convenience.
Page: 54

Speed Chart
To determine how a specific pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the "Yellow Pages".
Page: 109

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: 102

Piston Stroke	Dimensions (in)																Weight	Model Number
(in)	A	B	C	D	E	F	H	J	L	M	N	P	Q	R	S	T	(lbs)	
.81	15.5	20.47	1.28	1.50	1.25	–	18.25	1.18	4.69	2.56	5.25	–	–	–	–	–	13	**P-39**
1.00	16.75	21.22	1.00	1.75	2.13	–	20.75	1.14	6.88	.75	5.75	4.76	–	.83	.31	–	24	**P-80****
1.00	25.94	30.78	1.00	1.75	2.13	–	30.43	1.14	6.88	–	5.75	4.76	–	.83	.31	–	31	**P-801**
1.00	16.75	21.22	1.00	1.75	–	2.52	20.75	1.14	6.88	.75	5.75	4.76	1.50	1.69	.31	2.64	29	**P-84*****
1.50	8.25	12.13	6.42	12.63	7.68	–	26.44	.98	10.63	6.89	25.6	3.63	–	–	3.13	–	61	**P-462****
1.50	8.35	12.13	6.42	12.63	7.68	–	26.44	.98	10.63	6.89	25.6	3.63	3.50	2.68	3.13	–	61	**P-464*****

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

When High Flow Counts

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.

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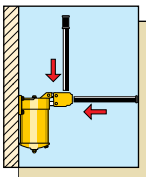
Foot Pump Conversion Kits

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 or horizontal positions.

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**

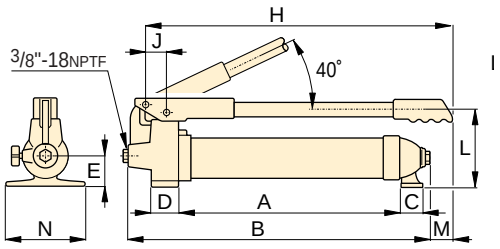
PL-series

- **Pump available with or without reservoir for flange mounting on separate tank**
- **Pump handle can be used horizontally and vertically**
- **Pumps without reservoir include reservoir gasket**
- **Lightweight and compact design**

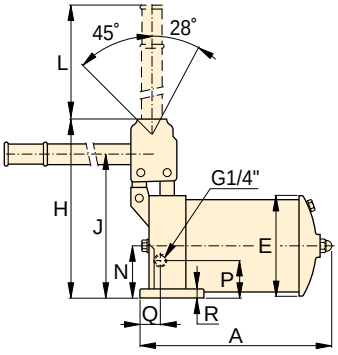
Pump Type	Usable Oil Capacity (in^3)	Model Number	Pressure Rating (psi)	Oil Displacement per Stroke (in^3)	Max. Handle Effort (lbs)
Single-Speed	18	**P-18**	2,850	0.16	57
	200	**P-25**	2,500	0.58	60
	200	**P-50**	5,000	0.29	60
	50	**P-51**	3,000	0.25	61
Single-Speed	110	**PL-3007R**	4,350	0.43	88
	110	**PL-2509R**	3,625	0.56	88
	110	**PL-2011R**	2,900	0.69	88
	110	**PL-1317R**	1,885	1.07	88
	110	**PL-1025R**	1,305	1.55	88
Single-Speed	*	**PL-3007F**	4,350	0.43	88
	*	**PL-2509F**	3,625	0.56	88
	*	**PL-2011F**	2,900	0.69	88
	*	**PL-1317F**	1,885	1.07	88
	*	**PL-1025F**	1,305	1.55	88

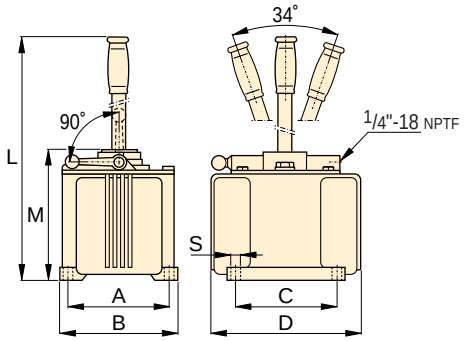
* Requires the use of an external reservoir

▼ *The PL-3007F mounted on a 5 gallon reservoir.*

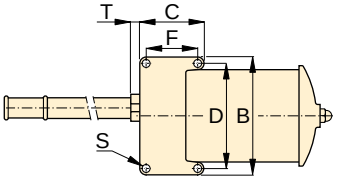


P-18

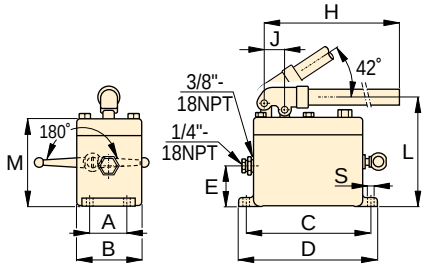




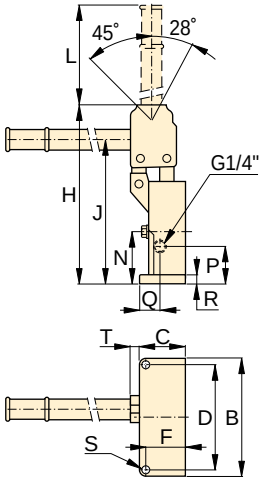
P-25, P-50



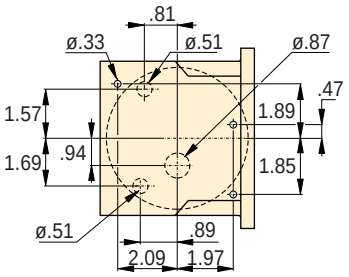
PL-series R



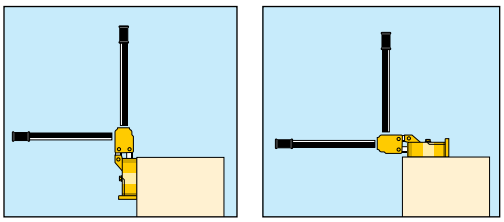
P-51



PL-series F



PL-series F mounting dimensions (in)



P PL Series

Reservoir Capacity:
18-200 in³

Flow at Rated Pressure:
0.16-1.55 in³/stroke

Operating Pressure:
1,305-5,000 psi

Piston Stroke	Dimensions (in)																Weight	Model Number
(in)	A	B	C	D	E	F	H	J	L	M	N	P	Q	R	S	T	(lbs)	
.81	8.25	12.88	1.28	1.50	1.88	–	8.50	1.18	4.38	.51	5.25	–	–	–	–	–	11	P-18
1.50	6.00	6.82	6.00	9.43	–	–	–	–	26.94	7.88	–	–	–	–	.40	–	36	P-25
1.50	6.00	6.82	6.00	9.43	–	–	–	–	26.94	7.88	–	–	–	–	.40	–	37	P-50
1.00	2.06	3.63	7.12	7.88	2.25	–	24.00	1.16	6.31	5.06	–	–	–	–	.34	–	12	P-51
1.40	10.73	6.20	3.35	5.27	5.23	2.50	9.24	7.92	20.75	–	2.73	1.60	1.40	.47	.43	.51	13.9	PL-3007R
1.40	10.73	6.20	3.35	5.27	5.23	2.50	9.24	7.92	20.75	–	2.73	1.60	1.40	.47	.43	.51	13.9	PL-2509R
1.40	10.73	6.20	3.35	5.27	5.23	2.50	9.24	7.92	20.75	–	2.73	1.60	1.40	.47	.43	.51	13.9	PL-2011R
1.40	10.73	6.20	3.35	5.27	5.23	2.50	9.24	7.92	20.75	–	2.73	1.60	1.40	.47	.43	.51	13.9	PL-1317R
1.40	10.73	6.20	3.35	5.27	5.23	2.50	9.24	7.92	20.75	–	2.73	1.60	1.40	.47	.43	.51	13.9	PL-1025R
1.40	–	6.20	2.42	5.27	–	1.93	9.24	7.92	20.75	–	2.73	1.60	1.40	.47	.43	.51	9.5	PL-3007F
1.40	–	6.20	2.42	5.27	–	1.93	9.24	7.92	20.75	–	2.73	1.60	1.40	.47	.43	.51	9.5	PL-2509F
1.40	–	6.20	2.42	5.27	–	1.93	9.24	7.92	20.75	–	2.73	1.60	1.40	.47	.43	.51	9.5	PL-2011F
1.40	–	6.20	2.42	5.27	–	1.93	9.24	7.92	20.75	–	2.73	1.60	1.40	.47	.43	.51	9.5	PL-1317F
1.40	–	6.20	2.42	5.27	–	1.93	9.24	7.92	20.75	–	2.73	1.60	1.40	.47	.43	.51	9.5	PL-1025F

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

Ultra-High Pressure up to 40,000 psi

- **Two-speed operation on the P-2282 allows for faster fill, 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 40,000 psi rating**
- **3/8" NPTF adaptor 41-366 included with P-2282, for applications under 10,000 psi**

2-Way Shut-Off Valve 72-750

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

Test System Gauges

Ideal for monitoring pressure in your hydraulic circuit, Test System Gauges, such as the **T-6010L**, are available with cone threads or NPTF threads and in a variety of pressure ranges.

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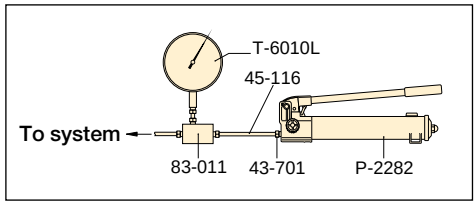
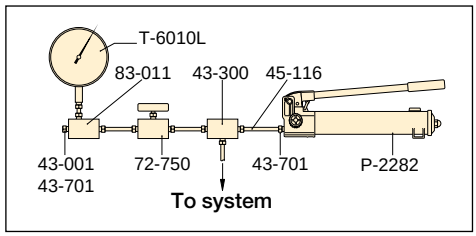


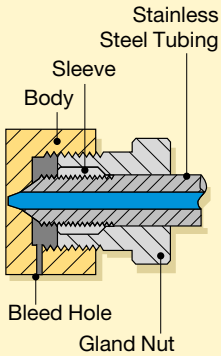
▲ Typical Test System



▲ Test System with Gauge and Snubber

Cone Seal

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



Pump Type	Usable Oil Capacity (in³)	Model Number	Pressure Rating* (psi)		Oil Displacement per Stroke (in³)		Max. Handle Effort (lbs)
			1st stage	2nd stage	1st stage	2nd stage	
Two-Speed	60	**P-2282**	200	40,000	.99	.037	106
Single-Speed	45	**11-100**	N/C	10,000	N/C	.152	120
	45	**11-400**	N/C	40,000	N/C	.038	120

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

▼ Optional Ultra-High Pressure Fittings and Tubing

Description		Connection	Model No.
40,000 psi			
Gland Nut Plug		.38" cone	**43-001**
Elbow		.38" cone	**43-200**
Tee		.38" cone	**43-300**
Gauge Tee		.38" cone side/ .25" cone gauge port	**43-301**
Gauge Adaptor		.38" cone side/ .25" cone gauge port	**83-011**
Coupling		.38" cone	**43-400**
Cross		.38" cone	**43-600**
Gland Nut with Sleeve		.38" cone	**43-701**
Gauge Connector		.25" cone	**43-704**
Tubing		4" tube, O.D. .38" * 8" tube, O.D. .38" * 12" tube, O.D. .38" *	**45-116** **45-126** **45-136**
10,000 psi only			
Adaptor		.38F cone to 1/4" M NPTF .38F cone to 3/8" M NPTF	**41-146** **41-166**
Adaptor		.38F cone to 1/4" F NPTF .38F cone to 3/8" F NPTF	**41-246** **41-266**

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

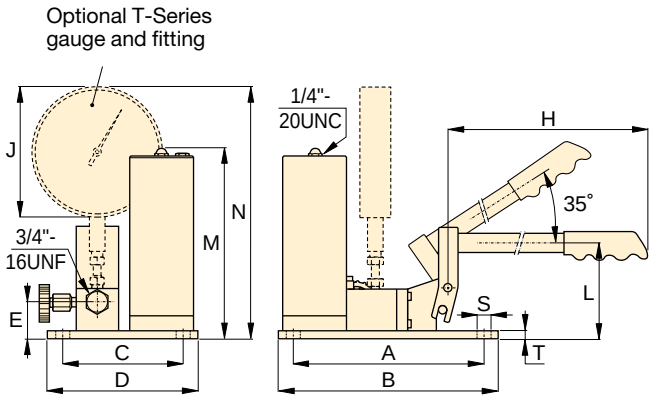
* Actual tubing lengths are .75" less than nominal size shown. These dimensions make distance between centers of valves and fittings multiples of 4" spaces.

P 11- Series

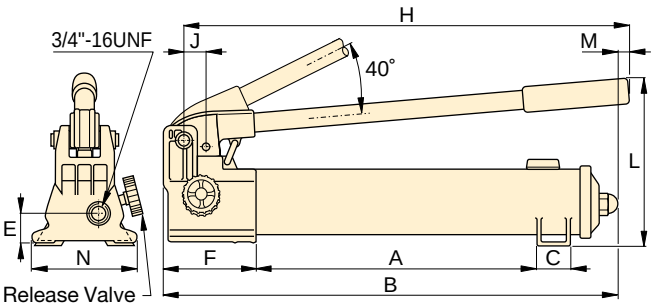
Reservoir Capacity:
45-60 in³

Flow at Rated Pressure:
.037-.152 in³/stroke

Operating Pressure:
10,000-40,000 psi



11-100, 11-400



P-2282

Piston Stroke (in)	Dimensions (in) A	B	C	D	E	F	H	J	L	M	N	S	T	Weight (lbs)	Model Number
1.00	13.56	22.00	1.40	–	1.24	5.25	20.75	1.16	9.00	.28	4.74	–	–	14	**P-2282**
.78	9.45	10.50	5.98	7.00	1.77	–	25.00	6.41	4.50	9.33	12.38	.31	.37	22	**11-100**
.78	9.45	10.50	5.98	7.00	1.77	–	25.00	6.41	4.50	9.33	12.38	.31	.37	22	**11-400**

▼ Shown: **PUJ-1200B**

- **Lightweight and compact design, 22 to 41 lbs**
- **Large easy-carry handle for maximum portability**
- **Two-speed operation reduces cycle times for improved productivity**
- **115 VAC 50/60-cycle universal motor will operate on voltages as low as 60 volts**
- **24 VDC remote motor control, 10-ft length for operator safety**
- **Starts under full load**
- **High strength molded shroud, with integral handle, protects motor from contamination and damage**
- **Designed for intermittent duty cycle**

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 No..
PUD-1100B, 1101B	**G-2535L**	**GA-3**
PUJ-1200B, 1201B	**G-2535L**	**–**
PUJ-1400B, 1401B	**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 the 0.5 hp Economy pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the "Yellow Pages".

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

Used with Cylinder	Usable Oil Capacity (gal)	Model Number*	Pressure Rating (psi) 1st stage	Pressure Rating (psi) 2nd stage
Single-Acting	.50	**PUD-1100B**	200	10,000
	1.00	**PUD-1101B**	200	10,000
	.50	**PUJ-1200B**	200	10,000
	1.00	**PUJ-1201B**	200	10,000
Double-Acting	.50	**PUJ-1400B**	200	10,000
	1.00	**PUJ-1401B**	200	10,000

* For 230 volt applications replace "B" suffix with "E".

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

About the Economy Pump

The Economy pump is best suited to power small to medium size cylinders or hydraulic tools. Its lightweight and compact design makes 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/auto-retract of single-acting cylinders
- Ideal for punching applications
- For applications not requiring load holding
- 10-ft pendant controls motor and valve operation

PUJ Series

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

Page: 99

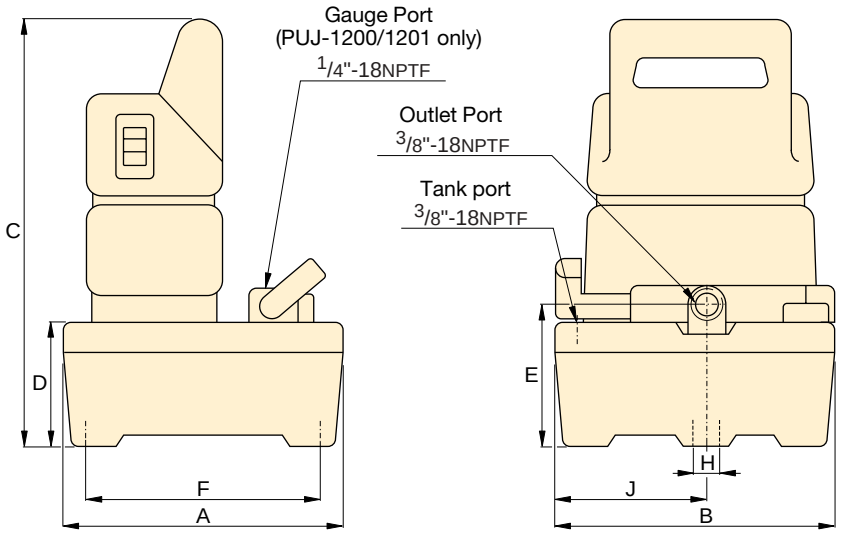
PU Series

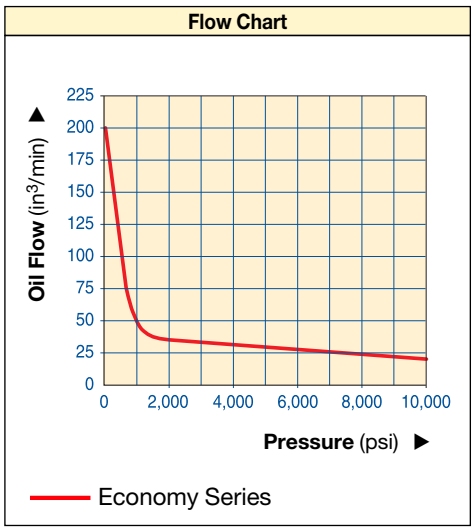
Reservoir Capacity:
0.5-1.0 gal

Flow at Rated Pressure:
20 in³/min

Motor Size:
.5 hp

Maximum Operating Pressure:
10,000 psi





Output Flow Rate (in³/min) 1st stage	Output Flow Rate (in³/min) 2nd stage	Valve Type	Current Draw (Amps)	Motor Voltage (VAC)	Sound Level (dBA)	Dimensions (in) A	B	C	D	E	F	H	J	Weight (lbs)	Model Number*
200	20	Dump**	9.5	115	85	9.62	9.62	14.25	4.00	4.72	8.00	.40	5.25	26	**PUD-1100B**
200	20		9.5	115	85	14.50	12.18	14.72	4.15	5.12	12.74	.40	5.62	38	**PUD-1101B**
200	20	3-way, 2-pos.	9.5	115	85	9.62	9.62	14.25	4.00	4.72	8.00	.40	5.25	22	**PUJ-1200B**
200	20		9.5	115	85	14.50	12.18	14.72	4.15	5.12	12.74	.40	5.62	34	**PUJ-1201B**
200	20	4-way, 3-pos.	9.5	115	85	9.62	9.62	14.25	4.00	4.72	8.00	.40	5.25	29	**PUJ-1400B**
200	20		9.5	115	85	14.50	12.18	14.72	4.15	5.12	12.74	.40	5.62	41	**PUJ-1401B**

▼ Shown from left to right: **PUJ-3409B, PUR-3409B, PUD-3105B**

Featuring Genesis Technology

- **Patented Genesis technology:**
  - **coaxial piston design allows high performance in the most compact and light weight package, starting at 62 lbs**
  - **first-stage piston pump enables higher by-pass pressure for improved productivity**
- **Powerful 1.125 hp 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 and provides protection for the motor**
- **Four reservoir sizes to operate a wide range of cylinders and tools**
- **24-VDC remote pendant control 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 PUJ-3309E is used with a hydraulic cutter to cut wire rope.*

▼ **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 71** or contact your Enerpac office.
PUD Series: with Dump Valve • Ideal for punching, crimping and cutting • For use when load-holding is not required (3100 Series) • Control pendant with 10-ft cord controls valve and motor • Provides Advance/Hold/Retract for single-acting cylinders (3300 Series)
PUM Series: with Manual Valve • Ideal choice for most applications • Manual valve control, for single-acting or double-acting applications • Manual motor control
PUR Series: with Solenoid Valve • Ideal for lifting applications and where remote control is required • All valves are 3 position for Advance/Hold/Retract • Control pendant with 10-ft cord for remote valve operation
PUF Series: with Solenoid Valve • Identical to PUR-series, except pendant is replaced with foot switch for hands-free operation • Best with double-acting cylinders
PUJ Series: with Manual Valve • For light production and lifting applications • Manual valve control for single-acting or double-acting cylinders • Control pendant with 10-ft cord for remote motor operation

* See Valves section for technical information on valve types.
** For Canada replace “B” suffix with “Y”

Titan Pump Application

The Titan pump is best suited to power medium to large size cylinders or hydraulic tools, or wherever high speed, intermittent duty cycle 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 lightweight 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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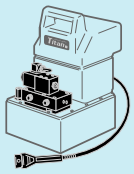
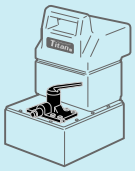
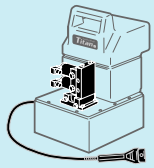
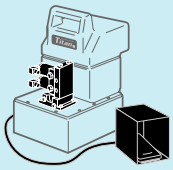
PU Series

Reservoir Capacity:
1.3-10.0 gal

Flow at Rated Pressure:
60 in³/min

Maximum Operating Pressure:
10,000 psi

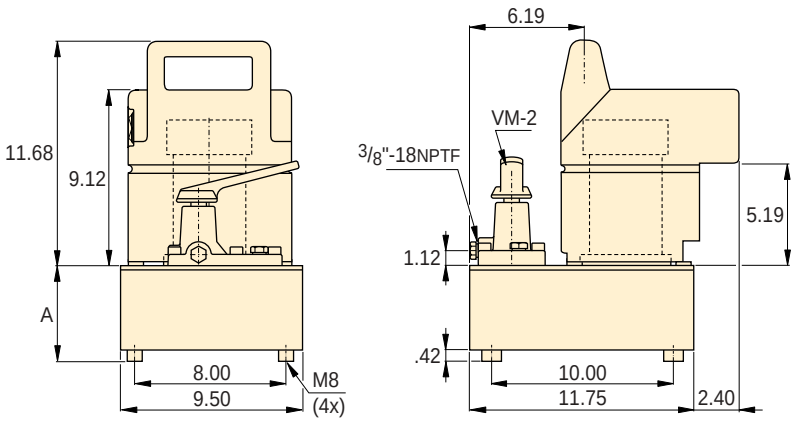
Motor Size:
1.125 hp

Pump Type	Used with Cylinder	Valve Function	Valve Type*	Pump Control	Usable Oil Capacity (gal)	Model Number** 115 VAC 1 Phase	Weight (lbs)
	Single-Acting	Advance/Retract	Dump	Remote	1.3	**PUD-3105B**	63
	Single-Acting	Advance/Retract	Dump	Remote	2.4	**PUD-3109B**	71
	Single-Acting	Advance/Hold/Retract	Dump and Hold	Remote	2.4	**PUD-3309B**	71
	Single-Acting	Advance/Hold/Retract	Dump and Hold	Remote	5.0	**PUD-3320B**	109
	Single-Acting	Advance/Retract	VM-2	Manual	2.4	**PUM-3209B**	62
	Single-Acting	Advance/Retract	VM-2	Manual	10.0	**PUM-3240B**	147
	Single-Acting	Advance/Hold/Retract	VM-3	Manual	2.4	**PUM-3309B**	63
	Single-Acting	Advance/Hold/Retract	VM-3	Manual	5.0	**PUM-3320B**	100
	Double-Acting	Advance/Hold/Retract	VM-4	Manual	2.4	**PUM-3409B**	63
	Double-Acting	Advance/Hold/Retract	VM-4	Manual	5.0	**PUM-3420B**	100
	Double-Acting	Advance/Hold/Retract	VM-4	Manual	10.0	**PUM-3440B**	147
	Single-Acting	Advance/Hold/Retract	–	–	–	See PUD-3309B	–
	Double-Acting	Advance/Hold/Retract	VSP-424	Remote	2.4	**PUR-3409B**	84
	Double-Acting	Advance/Hold/Retract	VSP-424	Remote	5.0	**PUR-3420B**	122
	Double-Acting	Advance/Hold/Retract	VSP-424	Remote (Foot)	2.4	**PUF-3409B**	84
	Single-Acting	Advance/Retract	VM-2	Remote (Man.)	2.4	**PUJ-3209B**	68
	Single-Acting	Advance/Hold/Retract	VM-3	Remote (Man.)	2.4	**PUJ-3309B**	69
	Double-Acting	Advance/Hold/Retract	VM-4	Remote (Man.)	2.4	**PUJ-3409B**	69
	Double-Acting	Advance/Hold/Retract	VM-4	Remote (Man.)	5.0	**PUJ-3420B**	106

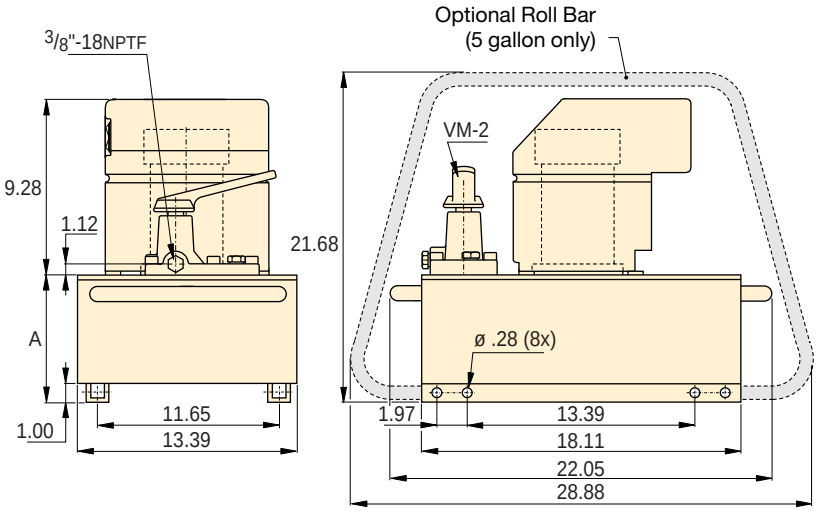
◀ For full features see page 68.

Titan Performance							
Motor Size	Output Flow Rate** (in³/min)				Motor Electrical Specifications*	Sound Level	Relief Valve Adjustment Range
(hp)	100 psi	700 psi	5,000 psi	10,000 psi	(Amps @ Volts-Ph-Hz)	(dBA)	(psi)
1.125	615	490	76	60	25 a 115-1-50/60 12.5 a 230-1-50/60	83-88	2,000-10,000

* At bypass and maximum pressure.
** All flow data at 60 Hz, 50 Hz data will be 5/6 th this number.



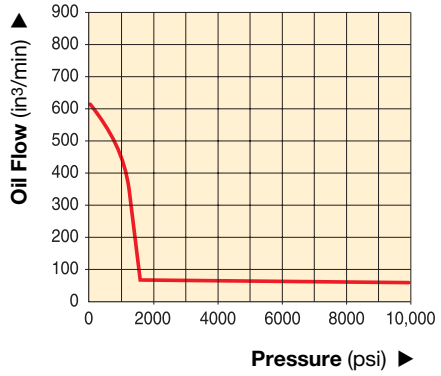
1.3 and 2.4 gallon reservoir



5 and 10 gallon reservoir

Dimensions shown in inches.

Flow Chart



Speed Chart

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

Pagina: 109

Reservoir Dimensions	
Usable Oil Capacity (gal)	Reservoir Height A (in.)
1.3	4.69
2.4	6.69
5.0	7.30
10.0	12.42

◀ *A special bolting version, Titan PMU-30457, 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. ▶

Titan Electric Pumps Ordering Matrix

CUSTOM BUILD YOUR TITAN PUMP
If the Titan that would best fit your application cannot be found in the chart on page 69, you can easily build your custom Titan pump here.

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

P	U	M	-	3	2	09	B	RV
1 Product Type	2 Motor Type	3 Pump Type		4 Pump Series	5 Valve Type	6 Reservoir Size	7 Motor Voltage	8 Options

1 Product Type*2
P = Pump

2 Motor Type
U = Universal Motor

3 Pump Type
D = Dump*
F = Foot Switch*4
J = Jog
M = Manual
R = Remote (Solenoid)*3
N = No Valve

4 Pump Series
3 = 1.125 hp, 10,000 psi

5 Valve Type
0 = No Valve
1 = Dump
2 = 3-way, 2-position, manual valve
3 = 3-way, 3-position, manual or electric
4 = 4-way, 3-position, manual or electric *5
6 = 3-way, 3-position, manual w/ PO check
8 = 4-way, 3-position, manual w/ PO check

6 Reservoir Size
05 = 1.3 gallon
09 = 2.4 gallon
20 = 5.0 gallon
40 = 10.0 gallon

7 Motor Voltage
B = 115 V, 1 Ph, 50/60 Hz
Y = 115 V, 1 Ph, 50/60 Hz (with 20 amp plug, required for Canada)
E = 230 V, 1 Ph, 50/60 Hz

8 Options: (leave blank if not required)
R = Roll Bar (5.0 gallon only)
V = Viton Seals

* Available with valve types 1 and 3 only.
*2 Consult Enerpac for duty cycle
*3 Only available with 4-way valve.
*4 Foot switch available with remote (solenoid) valve type 4 only.
*5 Electric valve includes Pilot Operated check valve.

Ordering Example 1

Model Number: PUR-3420E

PUR-3420E is a 1.125 hp, 10,000 psi, electric pump, with a 4-way, 3-position valve, remote control, a 5.0 gallon reservoir and a 230 V, 1 Phase, 50/60 Hz motor.

Ordering Example 2

Model Number: PUM-3309B

PUM-3309B is a 1.125 hp, 10,000 psi, electric pump, with a 3-way, 3-position valve, a 2.4 gallon reservoir and a 115 V, 1 Phase, 50/60 Hz motor.

PU Series

Reservoir Capacity:
1.3-10.0 gal

Flow at Rated Pressure:
60 in³/min

Motor Size:
1.125 hp

Maximum Operating Pressure:
10,000 psi

Hoses
Enerpac offers a complete line of high quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.
Page: 112

Gauges
Minimize the risk of over-loading 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.
Page: 118

▼ Shown: **PUM-3405DPT**

The Construction Industry Standard

- **Standard heat exchanger allows the oil temperature to stabilize at or below 150° F to provide heavy-duty operation without overheating**
- **1.125 hp universal motor offers high power-to-weight ratio, runs on as little as 50% of rated voltage**
- **Heavy-duty motor shroud and filtered reservoir vent help prevent dirt and grit from contaminating the internal workings**
- **Tough metal roll cage protects the motor and serves as a carrying handle for easier transportation**
- **Oil level indicator/breather/filler plug provides easy monitoring of oil level**
- **Ideal for demanding applications such as post-tensioning, foundation repair, roof lifting and metal cutting**

Patented Genesis Technology

Can reduce cycle times by as much as 20%, depending on the tool being used.

Provides higher flow at full pressure than comparable electric pumps.

Higher first-stage unloading pressure provides faster takeup.

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: 118

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: 112

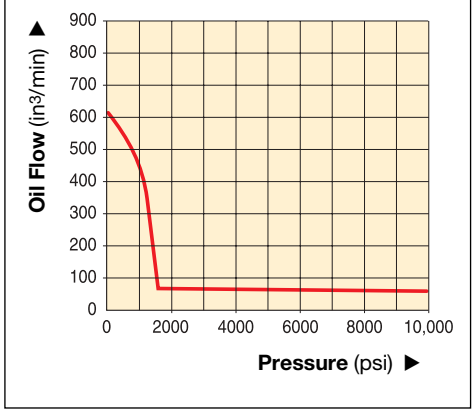
◀ *This Titan HD pump is used to power a double-acting post-tensioning cylinder on a construction site.*

VM-4LPS Valve

For Post-tensioning only, this directional control valve has power seating capability. Sequenced Retract reature requires return pressure to reach 75% of advance pressure before shifting.

Contact Enerpac for details.

Flow Chart



PUM Series

Reservoir Capacity:
1.3 gal

Flow at Rated Pressure:
60 in³/min

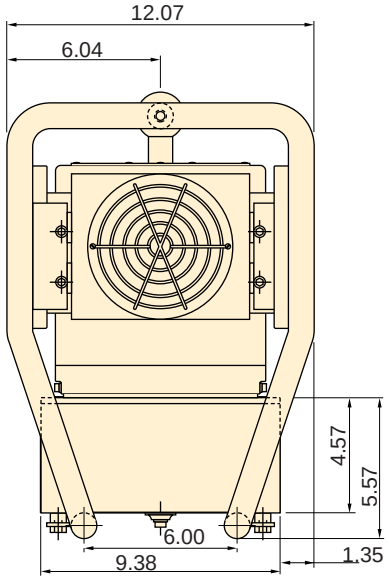
Motor Size:
1.125 hp

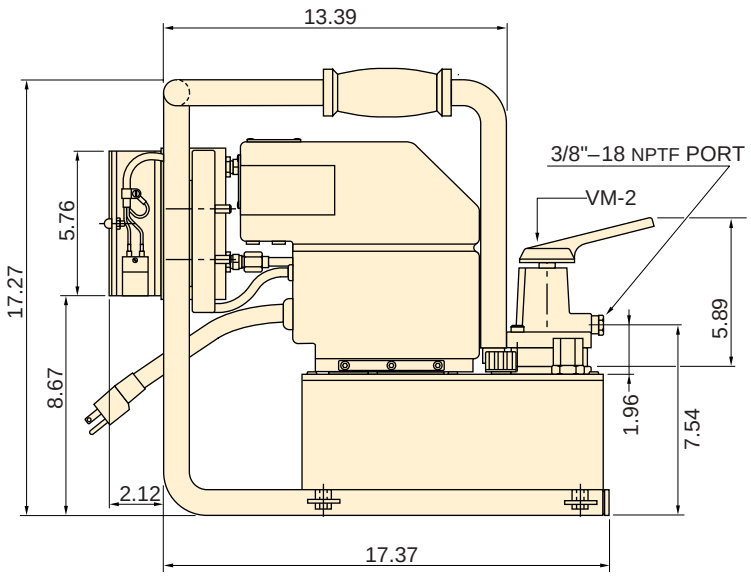
Maximum Operating Pressure:
10,000 psi

Heavy-Duty Titan Performance

Motor Size (hp)	Output Flow Rate** (in³/min) 100 psi	700 psi	5,000 psi	10,000 psi	Motor Electrical Specifications* (Amps @ Volts-Ph-Hz)	Sound Level (dBA)	Relief Valve Adjustment Range (psi)
1.125	615	490	76	60	25 a 115-1-50/60 12.5 a 230-1-50/60	83-88	2,000-10,000

* At bypass and maximum pressure.
** All flow data at 60 Hz, 50 Hz data will be 5/6 th this number.





Dimensions shown in inches.

Used with Cylinder	Valve Function	Valve Type	Pump Control	Useable Oil Capacity (gal)	Model Number	Voltage	Weight (lbs)
Single-Acting	Advance/Retract	VM-2	Manual	1.3	**PUM-3205DPT**	115V	65
Double-Acting	Advance/Hold/Retract	VM-4	Manual	1.3	**PUM-3405DPT**	115V	69
Single-Acting	Advance/Hold/Retract	VM-3L**	Manual	1.3	**PUM-3605DPT**	115V	69
Double-Acting	Advance/Hold/Sequenced Retract	VM-4LPS*	Manual	1.3	**PUM-3805DPT**	115V	69
	Advance/Hold/Retract	VM-4	Manual	1.3	**PUM-3405FPT**	230V	69
	Advance/Hold/Sequenced Retract	VM-4LPS*	Manual	1.3	**PUM-3805FPT**	230V	69

* See information “VM-4LPS Valve” on previous page.
** VM-3L valve includes P/O check.

▼ Shown: **PEJ-1401B**

Best Performance for Mid-Range Cylinders and Tools

- **Two-speed operation reduces cycle times for improved productivity**
- **Powerful .5 hp induction motor is submerged in the oil reservoir to run cooler, protect the motor, simplify the pump interface, save space and reduce noise**
- **Large 1.5 gallon 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.*

▼ **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 77** 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 maintaining pressure applications, such as clamping, workholding and testing • All versions include manual valves for directional control	

* Contact Enerpac for details on VM style valves.

Submerged Pump Application

The Submerged pump is best suited to power small to medium size cylinders or hydraulic tools, or whenever a quiet, intermittent duty cycle is needed. With its low sound level and the addition of the optional oil cooler, the Submerged pump is suited to light production work as well.

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

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

Page: 99

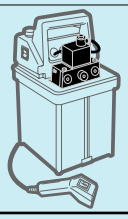
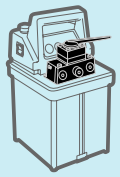
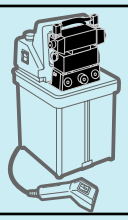
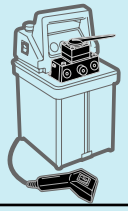
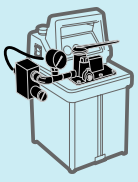
PE Series

Reservoir Capacity:
1.5 gal

Flow at Rated Pressure:
20 in³/min

Motor Size:
.5 hp

Maximum Operating Pressure:
10,000 psi

	Pump Type	Used with Cylinder	Valve Function	Valve Type*	Usable Oil Capacity (gal)	Model Number 115 VAC, 1 ph	Weight (lbs)
		Single-Acting	Advance/Retract	Dump	1.5	**PED-1001B**	55
		Single-Acting	Advance/Retract	Manual VMP 10000D	1.5	**PEM-1201B**	53
		Single-Acting	Advance/Hold/Retract	Manual VMF10000D	1.5	**PEM-1301B**	53
		Double-Acting	Advance/Hold/Retract	Manual VMC 10000D	1.5	**PEM-1401B**	53
		Single-Acting	Advance/Hold/Retract	Solenoid (VEF-15500D)	1.5	**PER-1301B**	65
		Double-Acting	Advance/Hold/Retract	Solenoid (VEC-15600D)	1.5	**PER-1401B**	65
		Single-Acting	Advance/Retract	Manual VMP 10000D	1.5	**PEJ-1201B**	55
		Single-Acting	Advance/Hold/Retract	Manual VMF 10000D	1.5	**PEJ-1301B**	55
		Double-Acting	Advance/Hold/Retract	Manual VMC 10000D	1.5	**PEJ-1401B**	55
		Single-Acting	Advance/Retract	Manual VMP 10000D	1.5	**PES-1201B**	62
		Double-Acting	Advance/Hold/Retract	Manual VMC 10000D	1.5	**PES-1401B**	62

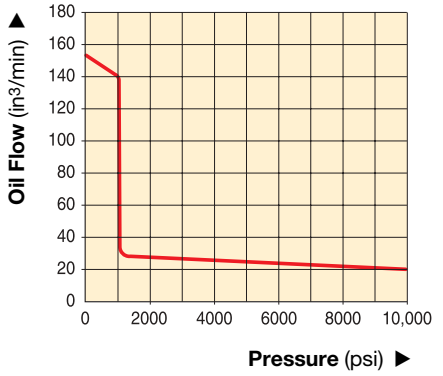
◀ For full features see page 74.

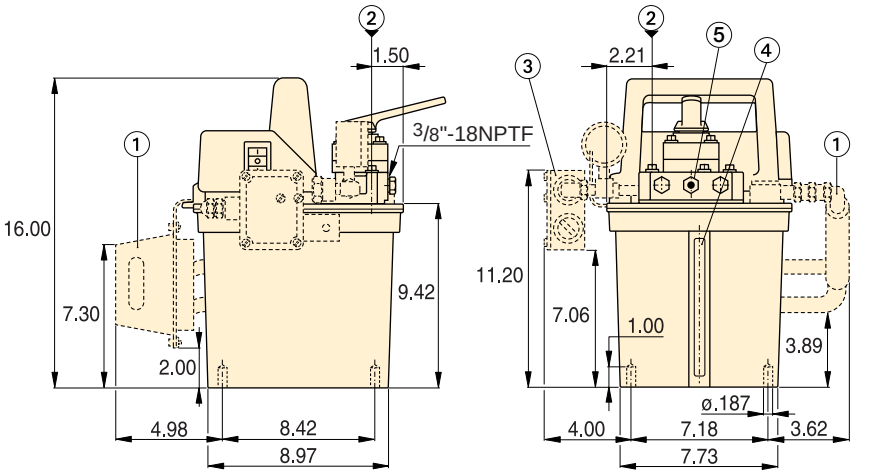
Submerged Pump Performance							
Motor Size	Pressure Rating (psi)		Output Flow Rate** (in³/min)		Motor Electrical Specifications*	Sound Level	Relief Valve Adjustment Range
(hp)	1st stage	2nd stage	1st stage	2nd stage	(Amps @ Volts-Ph-Hz)	(dBA)	(psi)
0.5	1,000	10,000	150	20	13 a 115-1-50/60 6.75 a 230-1-50/60	62-70	1,000-10,000

* At bypass and maximum pressure.

** All flow data at 60 Hz, 50 Hz data will be 5/6 th this number.

Flow Chart





Dimensions shown in inches.

Speed Chart

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

Page: 109

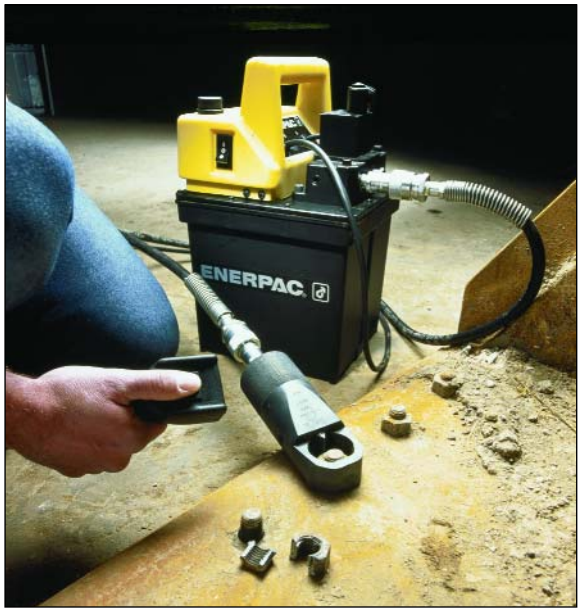
① Heat Exchanger (optional for all models)

② Fill Port

③ Pressure Switch (PES-series, optional for other models)

④ Oil Level Indicator

⑤ Adjustable Relief Valve



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

Submerged Electric Pumps Ordering Matrix

CUSTOM BUILD YOUR SUBMERGED PUMP
If the Submerged Pump that would best fit your application cannot be found in the chart on page 75, you can easily build your custom submerged pump here.

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

P	E	M	-	1	3	01	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 = .5 hp, 10,000 psi

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 Size
01 = 1.5 gallon

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

Ordering Example 1

Model Number: PER-1301B

The PER-1301B is a .5 hp, 10,000 psi, submerged electric pump, with 1.5 gallon usable oil capacity, a 3-way, 3-position modular, remote solenoid valve and a 115 V, 1 Phase, 50/60 Hz motor.

PE Series

Reservoir Capacity:
1.5 gal

Flow at Rated Pressure:
20 in³/min

Motor Size:
.5 hp

Maximum Operating Pressure:
10,000 psi

Hoses
Enerpac offers a complete line of high quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.
Page: 112

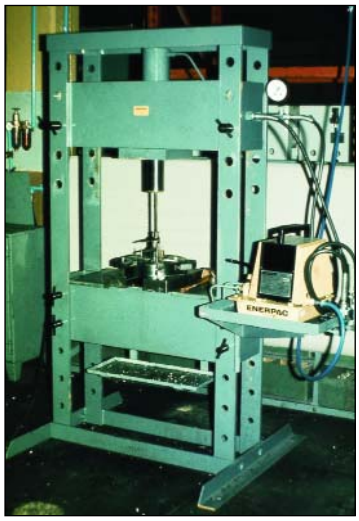
Gauges
Minimize the risk of over-loading and ensure long, dependable service from your equipment. Refer to the System Components section for a full range of gauges.
Page: 118

The **PER-1301B**, **PER-1401B**, **PER-1301D** and **PER-1401D** include a Modular (solenoid) Valve and pilot operating check.
Page: 130

▼ Shown: **PEM-2042**

The Market Leader for Performance and Value

- **Two-speed design, utilizing a first stage gear pump and second stage piston pump, reduces cycle times for improved productivity**
- **Powerful 1 hp induction motor will start at full load**
- **Available with 3 reservoir sizes allowing operation with a wide range of cylinders**
- **Single-phase dual voltage motors (115/230) are wired at the factory for 115 VAC**
- **Two internal relief valves. One is factory set for overload protection while the second is user adjustable for pre-setting maximum system pressure**



◀ *The Two-speed 20-Series Electric Pump reduces the plunger advance time substantially.*

▼ **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 81** 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 10-ft cord controls valve and motor
PEM Series: with Manual Valve • Ideal choice for most applications • Manual valve control, for both single-acting or double-acting applications • Manual motor control
PER 20 Series: with Solenoid Valve • Ideal for production and lifting applications • All valves are 3-position for Advance/Hold/Retract • Control pendant with 10-ft cord for remote valve operation
PER 22 Series: with Dual-Flow Valve • Split flow version with remote Jog • Equal flow to 2 cyl., regardless of load • Twin 3-way manual valves for independent control of single-acting cylinders • Control pendant with 10-ft cord for remote motor control
PER 23 Series: with Remote Jog • Same as PEM versions, but with remote motor Jog control • Manual Valve control for either single- or double-acting cylinders • Control pendant with 10-ft cord for remote motor control

20-Series Electric Pumps

20-Series Application

Due to its wide range of reservoirs, valves and control options, the 20-Series is well suited to light production work as well as many light lifting applications. Best suited to power most small to medium size cylinders, the 20 Series pump is a mainstay of the Enerpac pump line.

When equipped with smaller reservoirs, the 20-series pump is light enough for some portable applications, as long as the available power supply is stable. The 20-Series needs a steady 115 or 230 VAC.

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

Page: 99

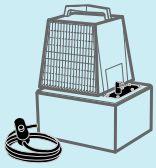
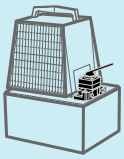
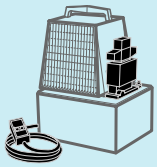
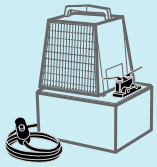
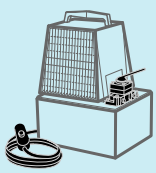
PE Series

Reservoir Capacity:
0.8-5.0 gal

Flow at Rated Pressure:
42 in^3/min

Maximum Operating Pressure:
10,000 psi

Motor Size:
1 hp

Pump Type	Used with Cylinder	Valve Function	Valve Type*	Usable Oil Capacity (gal)	Model Number with Shroud	Weight (lbs)
	Single-Acting	Advance/Retract	Dump**	0.8	**PED-2001**	78
	Single-Acting	Advance/Retract	Manual (VM-2)	0.8	**PEM-2021**	75
	Single-Acting	Advance/Retract	Manual (VM-2)	2.0	**PEM-2022**	87
	Single-Acting	Advance/Retract	Manual (VM-2)	5.0	**PEM-2025**	140
	Single-Acting	Advance/Hold/Retract	Manual (VM-3)	0.8	**PEM-2031**	77
	Single-Acting	Advance/Hold/Retract	Manual (VM-3)	2.0	**PEM-2032**	88
	Single-Acting	Advance/Hold/Retract	Manual (VM-3)	5.0	**PEM-2035**	139
	Double-Acting	Advance/Hold/Retract	Manual (VM-4)	0.8	**PEM-2041**	77
	Double-Acting	Advance/Hold/Retract	Manual (VM-4)	2.0	**PEM-2042**	88
	Double-Acting	Advance/Hold/Retract	Manual (VM-4)	5.0	**PEM-2045**	143
	Single-Acting	Advance/Hold/Retract	Solenoid (VS-3)	0.8	**PER-2031**	93
	Single-Acting	Advance/Hold/Retract	Solenoid (VS-3)	2.0	**PER-2032**	116
	Single-Acting	Advance/Hold/Retract	Solenoid (VS-3)	5.0	**PER-2035**	154
	Double-Acting	Advance/Hold/Retract	Solenoid (VS-4)	0.8	**PER-2041**	98
	Double-Acting	Advance/Hold/Retract	Solenoid (VS-4)	2.0	**PER-2042**	109
	Double-Acting	Advance/Hold/Retract	Solenoid (VS-4)	5.0	**PER-2045**	160
	Single-Acting	Advance/Retract	Manual (Dual-flow)**	2.0	**PER-2222**	114
	Single-Acting	Advance/Retract	Manual (Dual-flow)**	5.0	**PER-2225**	148
	Single-Acting	Advance/Retract	Manual (VM-2)	0.8	**PER-2321**	80
	Double-Acting	Advance/Hold/Retract	Manual (VM-4)	0.8	**PER-2341**	80
	Double-Acting	Advance/Hold/Retract	Manual (VM-4)	2.0	**PER-2342**	91

* See Valves section for technical information on valve types.

** Contact Enerpac for details.

◀ For full features see page 78.

Used with Cylinder	Usable Oil Capacity (gal)	Valve Type	Valve Function	Model Number with Shroud	Weight (lbs.)
Single-Acting	0.8	Dump	Advance/Retract	**PED-2001**	78
	0.8	Manual (VM-2)	Advance/Retract	**PEM-2021**	75
	2.0			**PEM-2022**	87
	5.0			**PEM-2025**	140
	0.8	Manual (VM-3)	Advance/Hold/Retract	**PEM-2031**	77
	2.0			**PEM-2032**	88
	5.0			**PEM-2035**	139
	0.8	Solenoid* (VS-3)	Advance/Hold/Retract	**PER-2031**	93
	2.0			**PER-2032**	116
	5.0			**PER-2035**	154
	2.0	Manual (Dual-flow)	Advance/Retract	**PER-2222**	114
	5.0			**PER-2225**	148
	0.8	Man. (VM-2)		**PER-2321**	80
Double-Acting	0.8	Manual (VM-4)	Advance/Hold/Retract	**PEM-2041**	77
	2.0			**PEM-2042**	88
	5.0			**PEM-2045**	143
	0.8	Solenoid* (VS-4)	Advance/Hold/Retract	**PER-2041**	98
	2.0			**PER-2042**	109
	5.0			**PER-2045**	160
	0.8	Manual (VM-4)	Advance/Hold/Retract	**PER-2341**	80
	2.0			**PER-2342**	91

Note: For Canada add "Y" suffix to model number for 115 VAC with 20 Amp plug.

* For detailed valve information, contact Enerpac.

Speed Chart

To determine how a 20-Series pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the "Yellow Pages."

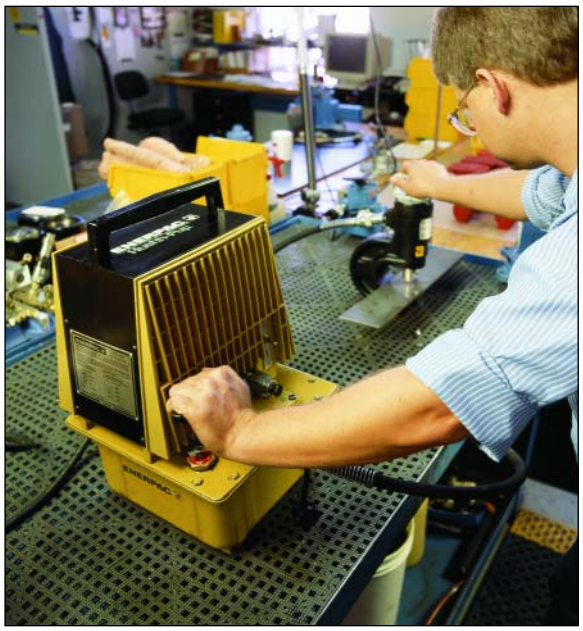
Page: 109

Hoses

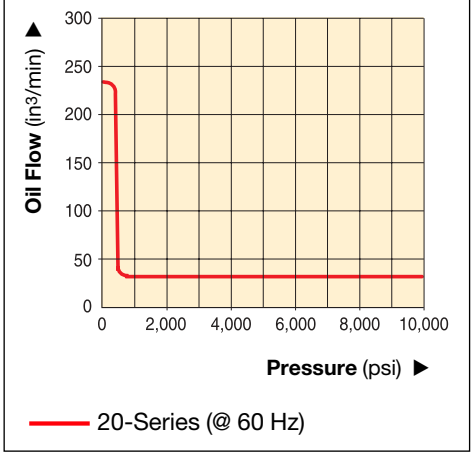
Enerpac offers a complete line of high quality hydraulic hoses. To ensure the integrity of your system, specify only genuine Enerpac hydraulic hoses.

Page: 112

▼ *This PEM-2022 is used to power a 35 ton punch in a production fabrication shop.*



Flow Chart



PE Series

Reservoir Capacity:
0.8-5.0 gal

Flow at Rated Pressure:
42 in³/min

Motor Size:
1 hp

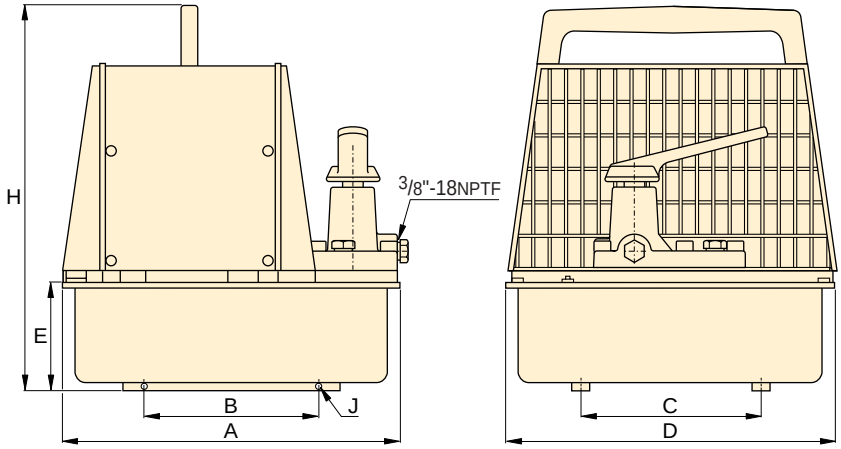
Maximum Operating Pressure:
10,000 psi

20-Series Pump Performance

Motor Size (hp)	Pressure Rating (psi) 1st stage	Pressure Rating (psi) 2nd stage	Output Flow Rate** (in³/min) 1st stage	Output Flow Rate** (in³/min) 2nd stage	Motor Electrical Specifications* (Amps @ Volts-Ph-Hz)	Sound Level (dBA)	Relief Valve Adjustment Range (psi)
1.0	500	10,000	240	42	19.5 a 115-1-60 9.75 a 230-1-60	80	1,000-10,000

* At bypass and maximum pressure.

** All flow data at 60 Hz, 50 Hz data will be 5/6th this number.



PEM-2022

Oil Capacity (gal)	Pump Dimensions (in) A	B	C	D	E	H	J
1.0	12.62	6.38	7.50	12.12	3.88	17.25	.26
2.0	12.62	6.38	7.50	12.12	6.50	20.69	.26
5.0	17.00	12.75	9.25	13.50	9.38	24.88	.26

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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Foot Control Switches

These 3-position switches allow the solenoid valve on the pump to be controlled by the operator's foot.
For pump with VS-3 valve, order **PFS-3**.
For pump with VS-4 valve, order **PFS-4**.

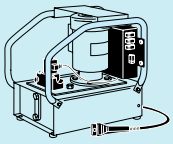
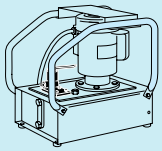
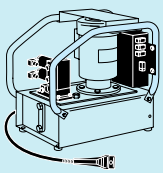
▼ Shown from left to right: **GPER-3420BH, GPEM-3410B**

The Standard for Industrial Applications

All models in the chart below are the industry's most commonly selected pump configurations. See the Hushh Pump ordering matrix for more options.

Page: 85

▼ SELECTION CHART FOR MOST COMMONLY CONFIGURED PUMPS*

BASIC PUMP CONFIGURATIONS Select your Hushh pump model here for most applications. For special requirements see the Hushh pump ordering matrix. *Page:* 81	Pump Type	Used with Cylinder		Valve Function		
GPED-Series with Dump Valve • Ideal for punching, crimping and cutting • For use when load holding is not required • Push-button control pendant with 10 ft cord controls the valve and motor.		●		●		●
		●		●		●
GPEM-Series with Manual Valve, without Electric Box • Ideal choice for most applications • Manual valve control, for both single-acting or double-acting applications • Manual motor control.		●		●		●
		●		●		●
		●		●	●	●
		●		●	●	●
			●	●	●	●
			●	●	●	●
GPER-Series with Solenoid Valve • Ideal for production and lifting applications • All valves are 3-position for Advance/Hold/Retract • Push-button control pendant with 10 ft cord controls the valve.		●		●	●	●
		●		●	●	●
		●		●	●	●
			●	●	●	●
			●	●	●	●
			●	●	●	●

* Please refer to the Hushh Pump Ordering Matrix on page 81 for all available models and options.
** See pages 125-133 for technical information on valves. Contact Enerpac for details on Dump valves.

- **Two stage models for reduced cycle times and improved productivity**
- **Easy to customize with modular accessory kits**
- **24 VDC solenoid valves and remote pendant controls for safer operation**
- **40 micron filtered breather with splash guard**
- **User adjustable external relief valve with a factory set upper limit prevents system overload**
- **Easy to read integrated oil level sight glass**
- **Totally enclosed fan-cooled motors are ideal for outdoor use in many environments**
- **70-79 dBA for quiet in-plant applications**

GPE Series

Reservoir Capacity:
2.7-10.6 gal

Flow at Rated Pressure:
60-120 in³/min

Motor Size:
1.5-3.0 hp

Maximum Operating Pressure:
10,000 psi

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 (approx. 10x higher) at pressures below 800 psi. This allows fast plunger movement toward the load for reduced cycle times and increased productivity.

				3-Series (1.5 hp)*** Output Flow Rate at 10,000 psi: 60 in³/min				5-Series (3.0 hp) Output Flow Rate at 10,000 psi: 120 in³/min			
	Valve** Model Number	Reservoir Capacity		Single Stage		Two Stage		Single Stage		Two Stage	
		Total (gal)	Useable (gal)	Model Number	(lbs)	Model Number	(lbs)	Model Number	(lbs)	Model Number	(lbs)
	Dump	2.7	2.5			**GPED-3110B**	157				
	Dump	5.3	5.0			**GPED-3120B**	188			**GPED-5120G**	203
	VM-2	2.7	2.5			**GPEM-3210B**	145				
	VM-2	5.3	5.0			**GPEM-3220B**	176			**GPEM-5220G**	191
	VM-3	2.7	2.5	**GPEM-3310BS**	142	**GPEM-3310B**	145				
	VM-3	5.3	5.0	**GPEM-3320BS**	173	**GPEM-3320B**	176	**GPEM-5320GS**	188	**GPEM-5320G**	191
	VM-4	2.7	2.5	**GPEM-3410BS**	142	**GPEM-3410B**	145				
	VM-4	5.3	5.0	**GPEM-3420BS**	173	**GPEM-3420B**	176	**GPEM-5420GS**	188	**GPEM-5420G**	191
	VSP-324	2.7	2.5	**GPER-3310BS**	171	**GPER-3310B**	174				
	VSP-324	5.3	5.0	**GPER-3320BS**	202	**GPER-3320B**	205	**GPER-5320GS**	217	**GPER-5320G**	220
	VSP-324	10.6	10.0			**GPER-3340B**	269			**GPER-5340G**	284
	VSP-424	2.7	2.5	**GPER-3410BS**	171	**GPER-3410B**	174				
	VSP-424	5.3	5.0	**GPER-3420BS**	202	**GPER-3420B**	205	**GPER-5420GS**	217	**GPER-5420G**	220
	VSP-424	10.6	10.0			**GPER-3440B**	269			**GPER-5440G**	284

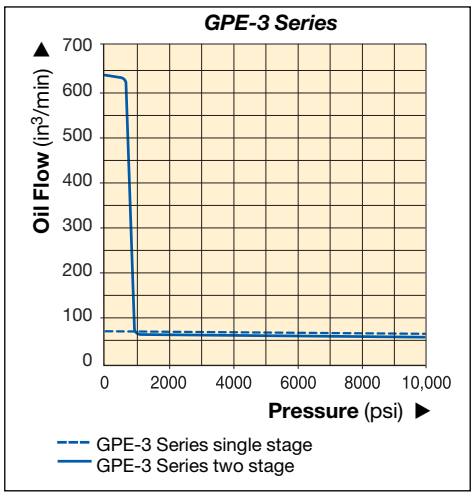
*** The 115V, 1 ph, 60 Hz model shown here requires 20 Amp circuit minimum.

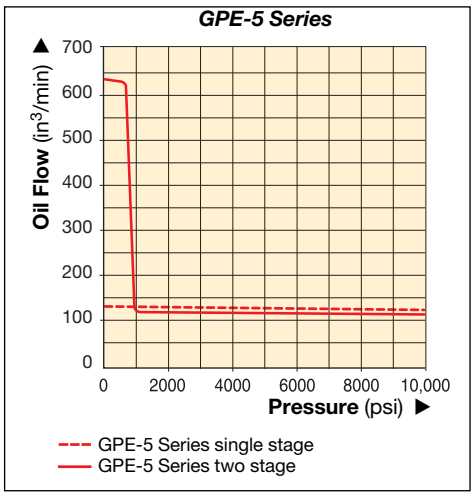
▼ PERFORMANCE CHART

Hushh Pump GPE-Series	Operation	Output Flow Rate (in³/min)		Pressure Rating (psi)		Type of Pump		Motor Size		Relief Valve Adjustment Range (psi)	Sound Level (dBA)
		1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	hp	RPM		
3 (1.5 hp)	**Single-stage**	–	60	–	10,000	–	3x Rad. pist.	1.5	1725	800-10,000	70-79
	Two-stage	640	60	800	10,000	gerotor	3x Rad. pist.	1.5	1725		
5 (3 hp)	**Single-stage**	–	120	–	10,000	–	3x Rad. pist.	3.0	1725	800-10,000	
	Two-stage	640	120	800	10,000	gerotor	3x Rad. pist.	3.0	1725		

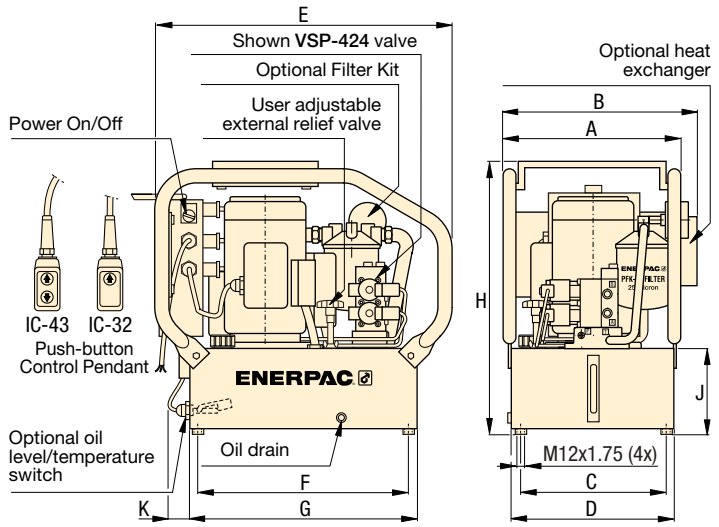
Output flow rate at 60 Hz. 50 Hz data will be 5/6th this rate.

▼ FLOW CHARTS

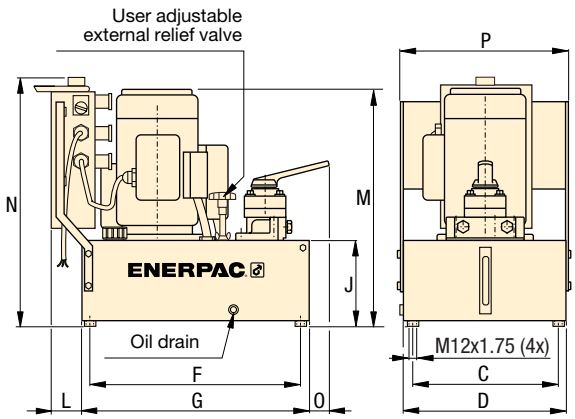




FS-34 Foot Control Switch
This 3-position switch allows hands-free control of the solenoid valve on the pump. Operates 24 and 115 V valves that use the square electrical connector.



GPE-series with Roll Bar



GPE-series without Roll Bar

Useable Reservoir Capacity (gal)	Dimensions GPE series (in)														
	A	B	C	D	E	F	G	H	J	K	L	M*	N	O	P
2.5	10.11	14.60	6.50	8.75	26.60	18.72	19.88	21.68	6.40	2.36	2.76	20.15	21.18	1.18	10.24
5.0	15.10	17.10	12.25	13.75	26.60	18.72	19.88	22.68	7.40	2.36	2.76	21.15	22.18	1.18	15.35
10.0	15.10	17.10	12.25	13.75	26.60	18.72	19.88	27.68	12.90	2.36	2.76	26.65	27.68	1.18	15.35

* Varies by motor voltage. Maximum shown.

CUSTOM BUILD YOUR HUSHH PUMP
If the Hushh Pump that would best fit your application cannot be found in the chart on page 83, you can easily build your custom Hushh Pump here.

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

GP	E	M	-	3	3	20	B	FH
1 Product Type	2 Motor Type	3 Pump Type		4 Pump Series	5 Valve Type	6 Reservoir Capacity	7 Power Supply	8 Options

1 Product Type
GP= Global Pump

2 Motor Type
E = Electric

3 Pump Type
D = Dump
F = Foot Switch
L = Manual w/ Electrical Box
M = Manual w/o Electrical Box
N = No Valve w/ Electrical Box
R = Remote (Solenoid)
V = Electric Valve, w/o Pendant
W = No Valve w/o Electrical Box

4 Pump Series
3 = 1.5 hp, 10,000 psi
5 = 3.0 hp, 10,000 psi *4

5 Valve Type
0 = No valve/coverplate
1 = Dump
2 = 3-way, 2-position, manual valve
3 = 3-way, 3-position, manual or electric
4 = 4-way, 3-position, manual or electric
6 = 3-way, 3-position, manual valve w/ P.O. check
8 = 4-way, 3-position, manual valve w/ P.O. check

6 Reservoir Capacity
10 = 10 liters (2.5 gal useable)
20 = 20 liters (5 gal useable)
40 = 40 liters (10 gal useable)

7 Power Supply
Single Phase
A = 115 V, 1 ph, 50 Hz *5
B = 115 V, 1 ph, 60 Hz *5
Y = 115 V, 1 ph, 60 Hz (with 20 Amp plug, required for Canada)
E = 208-240 V, 1 ph, 50 Hz
I = 208-240 V, 1 ph, 60 Hz
Three Phase
M = 190-200 V, 3 ph, 50/60 Hz
G = 208-240 V, 3 ph, 50/60 Hz
W = 380-415 V, 3 ph, 50/60 Hz
K = 440 V, 3 ph, 50/60 Hz,
J = 460-480 V, 3 ph, 50/60 Hz
R = 575 V, 3 ph, 50/60 Hz

8 Options (Leave blank if not required)
F = Filter Kit
H = Heat Exchanger *1
K = Skid Bar Kit
L = Level/Temperature Switch
N = No Roll Bars *2
P = Pressure Switch *3
S = Single Stage
V = Viton

*1 Requires 115 VAC source for heat exchanger on models without electrical boxes.
*2 Unless using the "N" suffix all pumps are supplied with roll bars.
*3 Pressure switch option only available on manual valve models.
*4 5 series pump only available on 20 liter or larger reservoirs and 3 phase electrical power.
*5 Requires 20 Amp circuit minimum.

Ordering Example 1

Model Number: GPEM-3320BFH
GPEM-3320BFH is a 1.5 hp, 10,000 psi pump, with a 3-way, 3-position manual valve, a 20 liter (5 gal) reservoir, filter kit and heat exchanger, suitable to operate on 115V, 1 ph, 60 Hz electric power.

Ordering Example 2

Model Number: GPER-5420JL
GPER-5420JL is a 3 hp, 10,000 psi pump, with a 4-way, 3-position solenoid valve, a 20 liter (5 gal) reservoir, and oil level/temperature switch, suitable to operate on 3 ph, electric power, ranging between 460-480 volts and 50 or 60 Hz.

GPE Series

Reservoir Capacity:
2.7-10.6 gal

Flow at Rated Pressure:
60-120 in³/min

Motor Size:
1.5-3.0 hp

Maximum Operating Pressure:
10,000 psi

Viton 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 seals as an option 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.

▼ *This GPE-Series Hushh pump is used to power 56 x 60 ton cylinders through a PC Controller, for synchronous lifting of an airport overpass.*

▼ Shown: **PFK-25 mounted on GPE-5420WFHL**

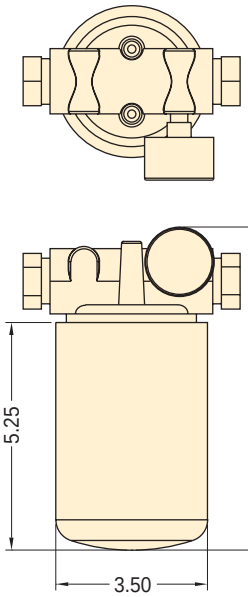
Extends life of hydraulic components and increases system reliability

- 25 micron nominal filter cleans oil to increase system life
- Internal by-pass valve to prevent damage if the filter is dirty
- Kit assembles quickly and easily to Enerpac pumps and manifolds
- Replaceable filter element
- Maintenance indicator included
- A variety of installation hardware included

▼ Shown: **HE-1 mounted on GPE-5420WFHL**

Extends system life

- Kit assembles quickly to Enerpac pump, no special tools required
- Electrical connector factory installed
- All installation components included
- Stabilizes oil temperature at a maximum of 130 °F at 70 °F ambient temperature
- Stabilizes oil viscosity, increasing oil life and reduces wear of pump and other hydraulic components



PFK Series

Filtration:
25 micron

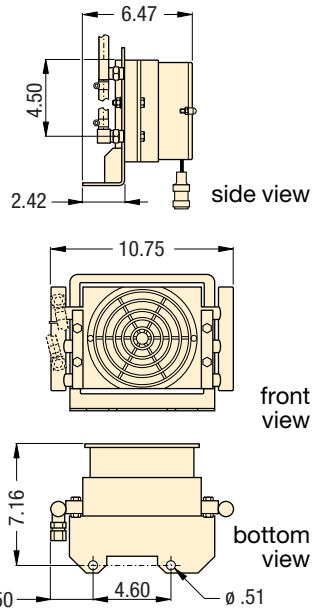
Maximum Operating Pressure:
200 psi

PFK series
The oil filter kit removes contaminants from the return oil flow before allowing it back into the reservoir, reducing component damage created by oil borne contaminants.

PF-25 Replacement Filter Element
For best performance, replace filter element regularly.

Nominal filtration (micron)	Model Number	Maximum pressure (psi)	Maximum oil flow (GPM)	By-pass setting (psi)	Use with valves	Replace-ment filter element	(lbs)
25	**PFK-25***	200	12.0	25	Dump, VM-3, -4	PF-25	2.4
25	**PFK-25N**	200	12.0	25	VM-2, VSP	PF-25	2.4

*Includes adaptor manifold



HE Series

Transfer:
900 Btu/h

Maximum Operating Pressure:
300 psi

HE series
Heat exchanger removes heat from the bypass oil to provide cooler operation. This stabilizes oil viscosity, increases pump life and reduces wear of other hydraulic components.

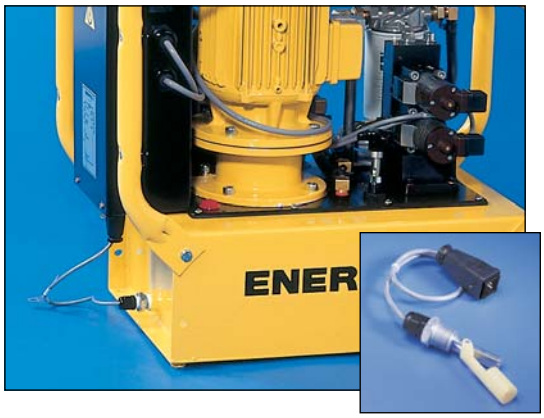
Do not exceed maximum flow and pressure ratings.

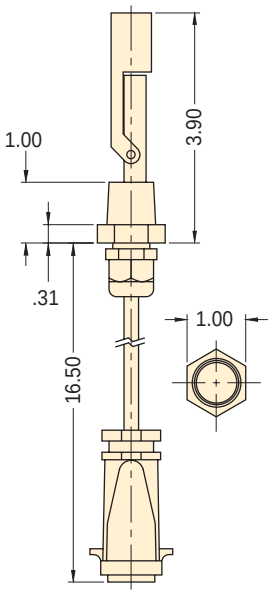
Heat exchanger is not suitable for water-glycol or high water based fluids.

Voltage	Model Number	Thermal transfer** (Btu/h)	Amperage draw (Amps)	Maximum pressure (psi)	Maximum oil flow (GPM)	(lbs)
24 VDC	**HE-1**	900	.26	300	7.0	6.3
115 VAC	**HE-2**	900	.19	300	7.0	6.3

** At 0.5 GPM

▼ Shown: **LS-1 mounted on GPER-5420WFHL**





LS Series

Temperature/Switchpoint:
175 °F

Voltage:
24 VAC / DC

Float/Temperature Switch

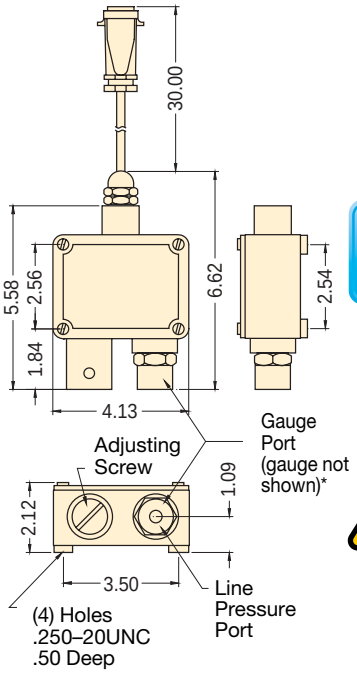
Oil level indicator for pump reservoir. If the pump is mounted in a remote area that does not provide visual access to the external oil level sight, the float switch provides a signal to turn off the pump before internal damage can occur due to cavitation.

Electronic oil level/temperature switch for feedback on pump oil level/temperature

- **Drop-in design allows for easy installation to pump reservoir**
- **Plugs directly into pump electrical enclosure**
- **Built-in thermal sensing shuts off pump when unsafe operating temperature is reached**
- **Oil level switch shuts down pump before oil reaches an unsafe operating level**

Fixed temperature signal (°F)	Voltage	Model Number	Operating temperature (°F)	Thermostat rating (Amps)	Maximum pressure (psi)	(lbs)
175	24 VAC/DC	**LS-1**	40-230	2.6	150	.75

▼ Shown: **Pressure switch IC-7234**



IC Series

Pressure Range:
500 - 10,000 psi

IC series

Pressure switches monitor the hydraulic system to determine any change of pressure. The signal can then be used to control the pump, or other peripheral devices.

The pressure switch and electrical harness are specifically designed to work in conjunction with the Enerpac Hushh electric pump and manifolds. For other uses, please reference individual pressure switches.

Controls your pump, monitors your system

- **Integrated kit mounts easily to your hydraulic system**
- **All installation components included**
- **Accuracy of ± 2% of full scale**
- **High duty cycle**
- **Mechanical adjustment**
- **Includes pressure gauge G-2536L and fittings***

Adjustable pressure range (psi)	Model Number	Voltage	Deadband adjustment (psi)	Switchpoint repeatability	Oil ports	(lbs)
500-10,000	**IC-7234**	24 VCA/CC	115-550	± 2%	⅜" NPTF	2.4

* See page 121 for gauge G-2536L dimensions.

▼ Shown: **PEM-8418**

The Largest Pump for the Largest Jobs

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

Locking Valves

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

Page: **128**

FS-34 Foot Control Switch

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

Hoses

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

Page: **112**

◀ *With similar specifications, a gasoline powered EGM-8000 Series is shown here performing a synchronized lift.*

About the 8000 Series

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

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

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

Page: 99

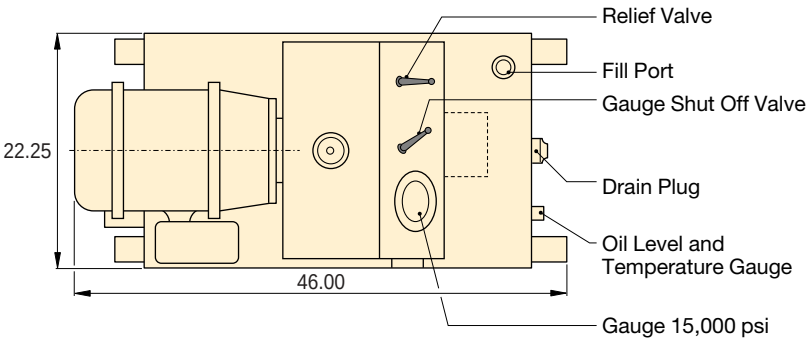
PE Series

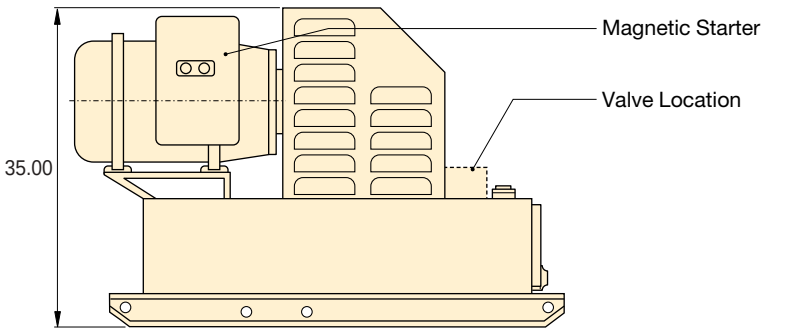
Reservoir Capacity:
25 gal

Flow at Rated Pressure:
2.0 gal/min

Motor Size:
12.5 hp

Maximum Operating Pressure:
10,000 psi





Dimensions shown in inches.

Speed Chart

To determine how an 8000 Series pump will operate your cylinder, see the Pump-Cylinder Speed Chart in the "Yellow Pages".

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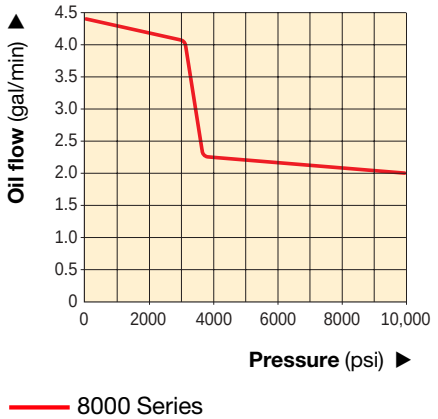
Flow Chart



Used with Cylinder	Usable Oil Capacity (gal)	Model Number	Pressure Rating (psi) 1st stage	Pressure Rating (psi) 2nd stage	Output Flow Rate (gal/min) 1st stage	Output Flow Rate (gal/min) 2nd stage	Valve Type	Valve Function	Current Draw (Amps)	Motor Voltage (VAC)	Sound Level (dBA)	Weight (lbs)
Single-Acting	18	PEM-8218	3,700	10,000	4.4	2.0	Manual (VM-2)	3-way, 2-pos.	33.0	230	78-84	720
	18	PEM-8218C	3,700	10,000	4.4	2.0			16.5	460	78-84	720
Double-Acting	18	PEM-8418	3,700	10,000	4.4	2.0	Manual (VM-4)	4-way, 3-pos.	33.0	230	78-84	720
	18	PEM-8418C	3,700	10,000	4.4	2.0			16.5	460	78-84	720
	18	PER-8418	3,700	10,000	4.4	2.0	Solenoid (VSP-4)	4-way, 3-pos.	33.0	230	78-84	765
	18	PER-8418C	3,700	10,000	4.4	2.0			16.5	460	78-84	765

▼ Shown left to right: **PAMG-1102N, PATG-1102N, PARG-1102N, PATG-1105N**

- **High efficiency cast aluminum air motor for increased productivity**
- **Fully serviceable air motor assembly**
- **Reinforced heavy-duty reservoir for applications in tough environments**
- **New generation air saver piston with rugged one-piece design reduces air consumption and operating costs**
- **Return-to-tank port for use in remote valve applications**
- **Quiet – only 76 dBA with low air consumption of 12 scfm**
- **Operating air pressure: 25-125 psi, enables pump to start at extremely low pressure**
- **Internal pressure relief valve provides overload protection**

Setting New Standards

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 II Air Pump is also available with a larger reservoir: **PATG-1105N, PAMG-1405N,** and **PARG-1105N.**

Hoses

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

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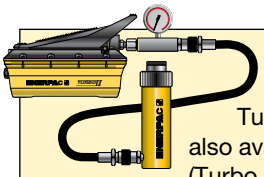

Pump and Cylinder Sets

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

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▼ *Easily operated by hand or by foot*

Used with Cylinder	Usable Oil Capacity (in^3)	Model Number
Single-Acting	127	PATG-1102N*
	230	PATG-1105N
	127	PARG-1102N
	230	PARG-1105N
Double-Acting	127	PAMG-1402N
	230	PAMG-1405N

* Available as set. See note on this page.

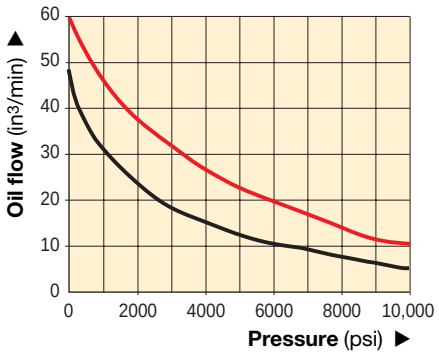
The **PATG**-models use a foot or hand operated treadle to control air and valve functions.

The **PAMG**-models use a treadle with a locking feature and a 4-way manual valve.

The **PARG**-models use a 15 foot pendant hose for convenient one man operation.

FLOW CHART

Turbo II Air Pump (@ 100 psi)



PATG PAMG PARG Series

Reservoir Capacity:
150-305 in³

Flow at Rated Pressure:
10 in³/min

Air Consumption:
12 scfm

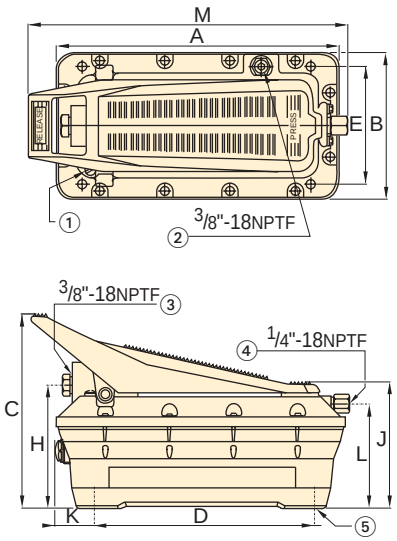
Maximum Operating Pressure:
10,000 psi

Pressure Rating (psi)	Output Flow Rate (in³/min) No load	Output Flow Rate (in³/min) Load	Model Number	Valve Function	Air Pressure Range (psi)	Air Consumption (scfm)	Sound Level (dBA)
10,000	60	10	**PATG & PAMG**	Advance/	25-125	12	76
10,000	51[1)]	6[1)]	**PARG**	Hold/	25-125	12	76
10,000	48[2)]	5[2)]		Retract	25-125	8	76

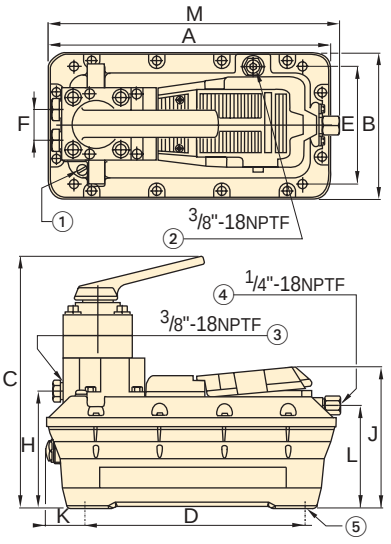
[1)] Air supply connected at pendant.

[2)] Air supply connected at pump.

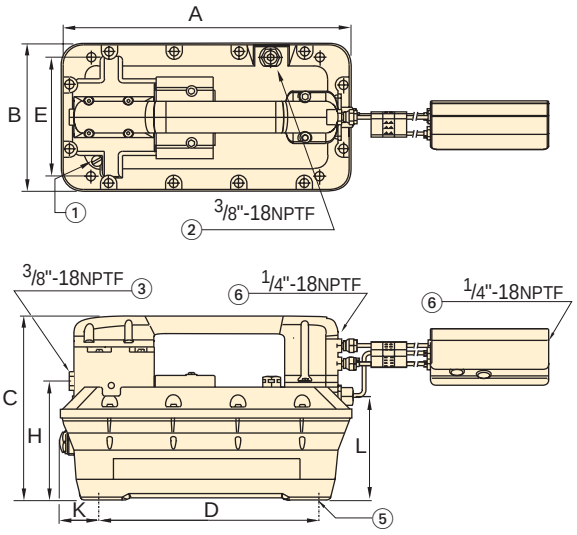
PATG-1102N and PATG-1105N



PAMG-1402N and PAMG-1405N



PARG-1102N and PARG-1105N



① Filtered "Permanent" Tank Vent

② Return-to-Tank/Auxiliary Vent/Fill Tank Port

③ Hydraulic Output

④ Swivel Air Input with Filter

⑤ 4 Mounting Holes for #10 thread forming screw. Max.depth into reservoir = .75"

⑥ Air Input Options

Dimensions (in) A	B	C	D	E	F	H	J	K	L	M	Weight (lbs)	Model Number
12.33	6.49	8.29	9.04	4.00	–	5.15	5.75	1.65	4.43	13.62	18	**PATG-1102N***
15.60	7.92	8.22	9.04	4.00	–	5.08	5.75	3.28	4.41	17.20	22	**PATG-1105N**
12.33	6.49	7.88	9.04	4.00	–	5.15	–	1.65	4.43	–	22	**PARG-1102N**
15.60	7.92	7.88	9.04	4.00	–	5.08	–	3.28	4.41	–	26	**PARG-1105N**
12.33	6.49	10.50	9.04	4.00	1.42	5.23	6.00	1.65	4.43	12.60	24	**PAMG-1402N**
15.60	7.92	10.50	9.04	4.00	1.42	5.19	6.00	3.28	4.41	15.94	28	**PAMG-1405N**

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

PA
Series

Reservoir Capacity:
36-80 in³

Flow at Rated Pressure:
8 in³/min

Air Consumption:
9 scfm

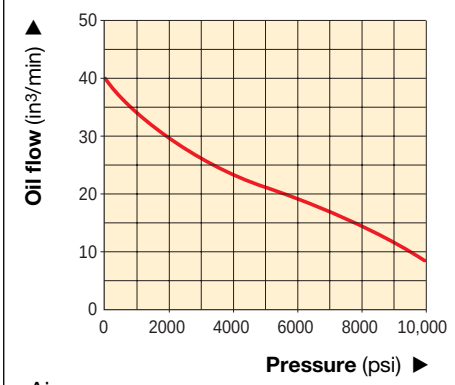
Maximum Operating Pressure:
10,000 psi

PC-66 Reservoir Conversion Kit

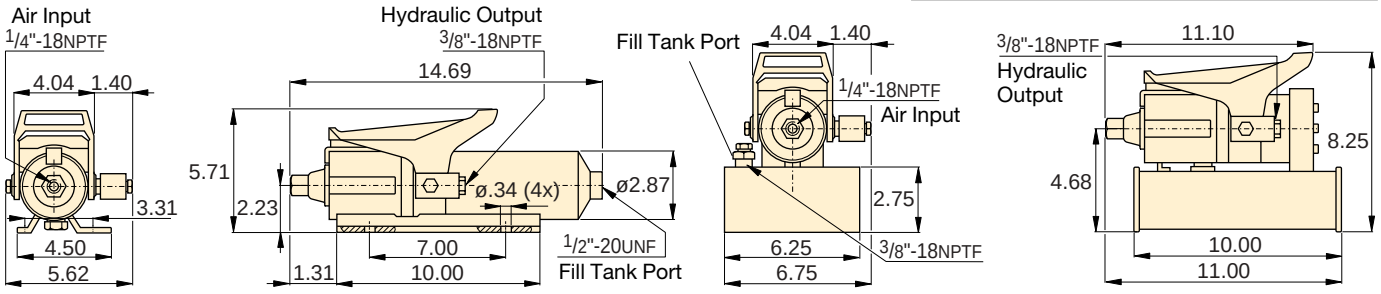
Double the reservoir capacity of your existing PA-133 with this easy to install conversion kit.

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

FLOW CHART



Air pressure:
PA Series (@ 100 psi)



PA-133 **PA-1150**

Dimensions shown in inches

Used with Cylinder	Usable Oil Capacity (in³)	Model Number	Pressure Rating (psi)	Output Flow Rate (in³/min) No load	Output Flow Rate (in³/min) Load	Valve Function	Air Pressure Range* (psi)	Air Consumption (scfm)	Sound Level (dBA)	Weight (lbs)
Single-Acting	36	PA-133	10,000	40	8	Advance/Hold/Retract	60-120	9	85	12
	80	PA-1150	10,000	40	8	Advance/Hold/Retract	60-120	9	85	18

* Recommended Regulator-Filter-Lubricator: RFL-102

▼ Shown: **PAM-1041**

PAM
Series

Reservoir Capacity:
1.0-2.0 gal

Flow at Rated Pressure:
9 in^3/min

Air Consumption:
18 scfm

Maximum Operating Pressure:
10,000 psi

Locking Valves

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

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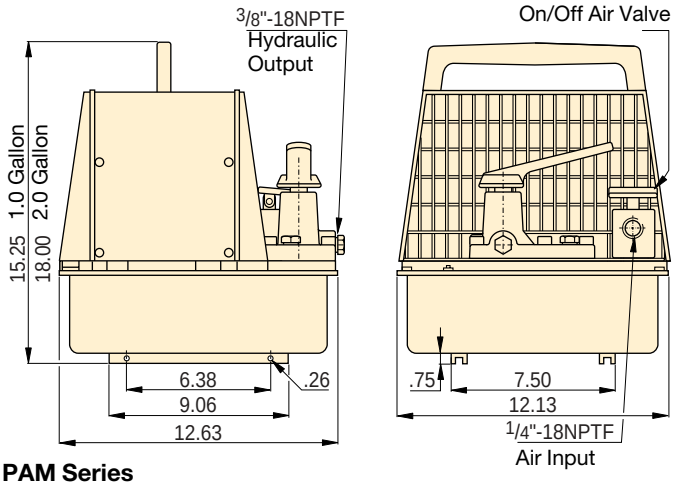
VA-2 Remote Valve

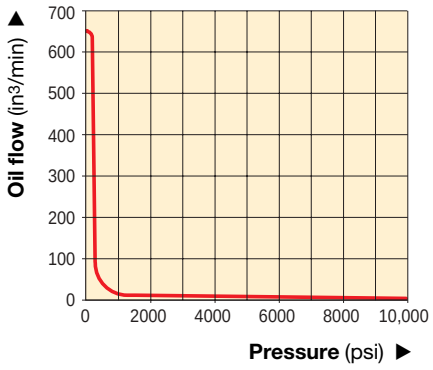
For remote operation of PAM-10 series air pumps. Permits either hand or foot operation.

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



PAM Series

FLOW CHART



Used with Cylinder	Usable Oil Cap. (gal)	Model Number with Shroud	Pressure Rating (psi)	Output Flow Rate (in^3/min) 1st stage	Output Flow Rate (in^3/min) 2nd stage	Valve Function	Valve Model	Air Pressure Range* (psi)	Air Consumption (scfm)	Sound Level (dBA)	Weight (lbs)
Single-Acting	1.0	**PAM-1021**	10,000	650	9	Adv/Ret	VM-2	60-120	18	87	50
	2.0	**PAM-1022**	10,000	650	9	Adv/Ret	VM-2	60-120	18	87	60
Double-Acting	1.0	**PAM-1041**	10,000	650	9	Adv/Hold/Ret	VM-4	60-120	18	87	50
	2.0	**PAM-1042**	10,000	650	9	Adv/Hold/Ret	VM-4	60-120	18	87	60

* Recommended Regulator-Filter-Lubricator: RFL-102

▼ Shown: **PAM-9208N**

Power Most Large Hydraulic Jobs with Compressed Air

Roll Bar

To protect your 2 or 5 gallon Modular Air Hydraulic Pump when used in harsh environments, Roll Bars are available. To order your Modular Air Pump with Roll Bars, see the model numbers in the chart below.

PFC-25 Oil Filter Kit

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

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.

- **Two-speed operation reduces cycle time for improved productivity**
- **Internal relief valves. One is factory set for overload protection while the second is user adjustable for pre-setting maximum system pressure**
- **Analog level gauge allows quick and easy oil level monitoring**
- **Two return-to-tank ports allow easy use of remote valves**
- **800 psi by-pass pressure for longer high flow stage**

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

Used with Cylinder	Usable Oil Capacity (gal)	Model Number	Model Number with Roll Bars	Pressure Rating (psi)	Output Flow Rate (in^3/min) 1st stage	Output Flow Rate (in^3/min) 2nd stage	Valve Type	Valve Function	Air Pressure Range (psi)
Single-Acting	2.0	PAM-9208N	PAM-9208NR	10,000	850	30	Manual VM-2	Advance/ Retract	60-100
	5.0	PAM-9220N	PAM-9220NR	10,000	850	30			60-100
	10.0	PAM-9240N	-	10,000	850	30			60-100
Double-Acting	2.0	PAM-9408N	PAM-9408NR	10,000	850	30	Manual VM-4	Advance/ Hold/ Retract	60-100
	5.0	PAM-9420N	PAM-9420NR	10,000	850	30			60-100
	10.0	PAM-9440N	-	10,000	850	30			60-100

Modular Air Hydraulic Pump Ordering Matrix

CUSTOM BUILD YOUR MODULAR AIR PUMP

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

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

Ordering Example

Example: PAM-9208NR.

PAM-9208NR is an air operated pump with a 3-way, 2-position manual valve, a 2.0 gallon reservoir, and roll bars.

P	A	M	-	9	2	08	N	R
1 Product Type	2 Motor Type	3 Valve Operation		4 Pump Series	5 Valve Type	6 Reservoir Capacity	7 Port Type	8 Options

1 Product Type
P = Pump

2 Motor Type
A = Air Motor

3 Valve Operation
M = Manual
N = No Valve

4 Pump Series
9 = 10,000 psi

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
08 = 2 gallon
20 = 5 gallon
40 = 10 gallon

7 Port Type
N = NPTF

8 Options
(Leave blank if not used)
R = Roll Bars (2 and 5 gallon models only)

PAM Series

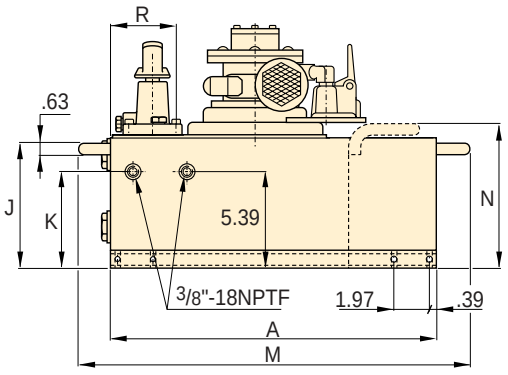
Reservoir Capacity:
2.0-10.0 gal

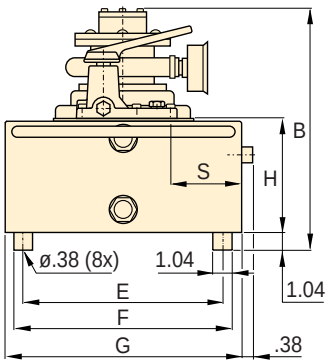
Flow at Rated Pressure:
30 in³/min

Air Consumption:
40 scfm

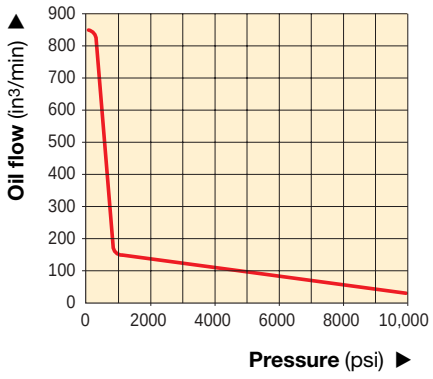
Motor Size:
4 hp

Maximum Operating Pressure:
10,000 psi





FLOW CHART



Air Consumption (scfm)	Sound Level (dBA)	Dimensions (in) A	B	E	F	G	H	J	K	M	N	R	S	Weight (lbs)
40	80-90	11.97	13.23	6.48	7.52	8.07	6.42	7.02	5.39	17.93	8.02	1.34	3.37	100
40	80-90	18.11	13.23	11.64	12.68	13.39	6.42	7.02	5.39	22.03	7.02	4.00	3.42	145
40	80-90	18.11	18.35	11.64	12.68	13.39	11.26	12.14	10.51	22.03	12.14	4.00	3.42	185
40	80-90	11.97	13.23	6.48	7.52	8.07	6.42	7.02	5.39	17.93	8.02	1.34	3.37	100
40	80-90	18.11	13.23	11.64	12.68	13.39	6.42	7.02	5.39	22.03	7.02	4.00	3.42	145
40	80-90	18.11	18.35	11.64	12.68	13.39	11.26	12.14	10.51	22.03	12.14	4.00	3.42	185

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

Featuring Portable Genesis Technology

- **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**
- **1, 2, 5 and 10 gallon reservoirs for use with a wide range of cylinders**
- **Available in three four-cycle motor sizes: 2.5, 5.0 and 5.5 hp**

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

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▼ *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 (gal)	Model Number	Pressure Rating (psi)	Output Flow Rate (in³/min) 1st stage	Output Flow Rate (in³/min) 2nd stage
Single-Acting	1.0	PGM-2304R*	10,000	200	40
	2.0	PGM-2308R*	10,000	200	40
Double-Acting	1.0	PGM-2404R*	10,000	200	40
	2.0	PGM-2408R*	10,000	200	40
Single-Acting	2.5	PGM-3310R	10,000	480	55
	5.0	PGM-3320R	10,000	480	55
Double-Acting	2.5	PGM-3410R	10,000	480	55
	5.0	PGM-3420R	10,000	480	55
Single-Acting	2.5	PGM-5310R	10,000	480	100
	5.0	PGM-5320R	10,000	480	100
Double-Acting	2.5	PGM-5410R	10,000	480	100
	5.0	PGM-5420R	10,000	480	100
	10.0	PGM-5440R	10,000	480	100

* 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 Gasoline Pump Performance

Elevation can affect the performance of any gasoline engine. Atlas pumps are designed to develop rated performance at elevations up to 5,000 ft.

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

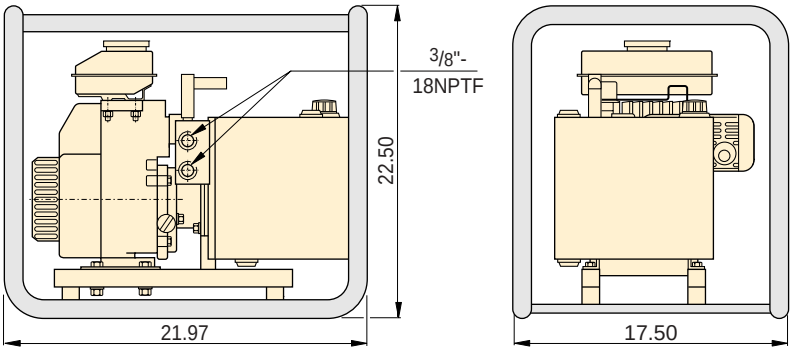
PGM Series

Reservoir Capacity:
1.0-10.0 gal

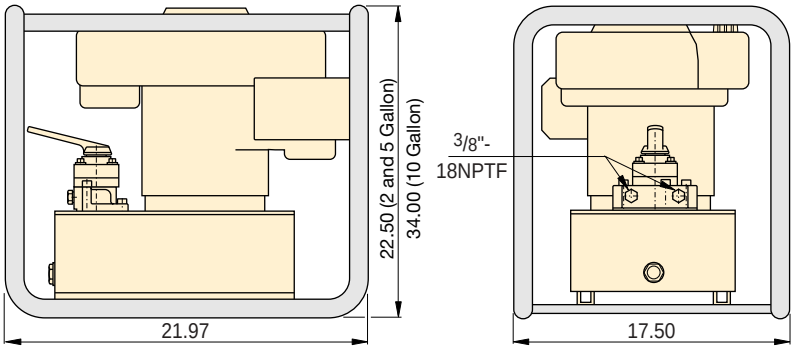
Flow at Rated Pressure:
40-100 in^3/min

Motor Size:
2.5-5.5 hp

Maximum Operating Pressure:
10,000 psi



PGM-20 series



PGM-30 and PGM-50 series

Speed Chart

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

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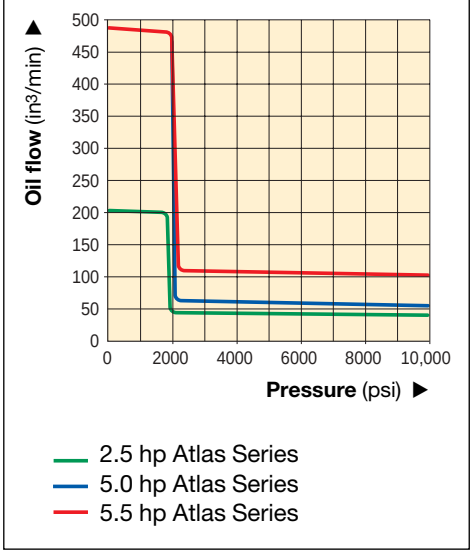
By-Pass Pressure (psi)	Valve Type	Valve Function	Motor Manu-facturer	Motor Size (hp)	Sound Level (dBA)	Weight (lbs)
2,000	3-way, 3-position	Advance/ Hold/Retract	Honda	2.5	89	55
2,000	3-way, 3-position				89	72
2,000	4-way, 3-position				89	55
2,000	4-way, 3-position				89	72
2,000	3-way, 3-position	Advance/ Hold/Retract	Briggs	5.0	93	120
2,000	3-way, 3-position				93	150
2,000	4-way, 3-position				93	120
2,000	4-way, 3-position				93	150
2,000	3-way, 3-position	Advance/ Hold/Retract	Honda	5.5	93	130
2,000	3-way, 3-position				93	160
2,000	4-way, 3-position				93	130
2,000	4-way, 3-position				93	160
2,000	4-way, 3-position				93	205

FLOW CHART



▼ Shown: **EGM-8418**

EGM
Series

Reservoir Capacity:
25 gal

Flow at Rated Pressure:
1.5 gal/min

Motor Size:
18 hp

Maximum Operating Pressure:
10,000 psi

Locking Valves
Pumps with VM-4 manual valves are available with VM-4L manual valves for positive load holding.
Add suffix "L" to pump model number.

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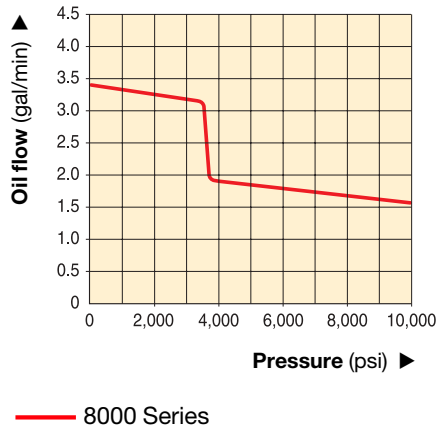
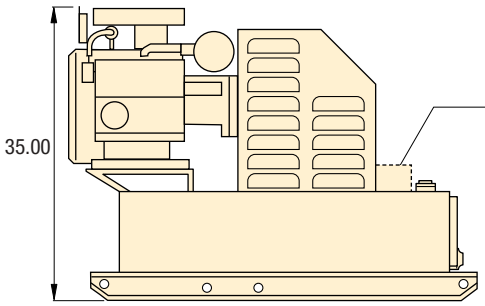
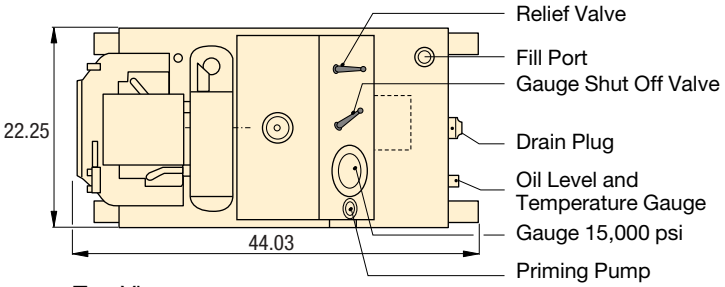
- **Industrial grade 18 hp twin-cylinder motor**
- **Panel mounted pressure gauge and adjustable relief valve for system pressure control**
- **Two-speed pump design with high by-pass pressure for rapid cylinder advance**
- **Built in oil temperature and oil level gauge**
- **External adjustable relief valve (1,200-10,000 psi) allows control of operating pressure without opening the pump**
- **Integral priming circuit guarantees quick starts after transport**

FLOW CHART





Side View



Top View

Used with Cylinder	Usable Oil Capacity (gal)	Model Number	Pressure Rating (psi)		Output Flow Rate (gal/min)		Valve Type	Valve Function	Sound Level (dBA)	Weight (lbs)
			1st stage	2nd stage	1st stage	2nd stage				
Single-Acting	18	**EGM-8218**	3,700	10,000	3.4	1.5	3-way, 2-pos.	Adv./Retr.	94	890
Double-Acting	18	**EGM-8418**	3,700	10,000	3.4	1.5	4-way, 3-pos.	Adv./Hold/Retr.	94	890

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.

GLOBAL LIFETIME WARRANTY STATEMENT

www.enerpac.com
Visit our web site for the complete Global Lifetime Warranty or call your Authorized Service Center.

Enerpac products are warranted to be free of defects in materials and workmanship. Any product that does not conform to specification will be repaired or replaced at Enerpac's expense, anywhere in the world; simple as that!

This warranty does not cover ordinary wear and tear, abuse, misuse, alterations, or the use of improper fluids. Determination of the authenticity of a warranty claim will be made only by Enerpac or its Authorized Service Centers.

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

DNV Certification, Inc. USA — ANSI-RAB QMS ACCREDITED — DNV — DNV MSC The Netherlands Accredited by the RvA — ISO 9001 REGISTERED FIRM

ENERPAC, 720 W. James Street, Columbus, WI 53925 USA

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 **RD**, **CLL** and **CLS** series).

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

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 10,000 psi unless otherwise specifically noted.

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

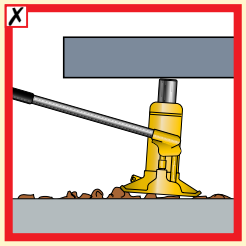
CE Marking & Conformity
Enerpac provides a Declaration of Conformity and CE marking for products that conform with the European Community Directives.

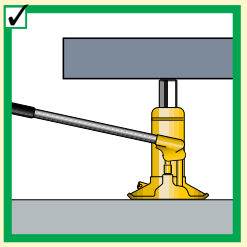
When used correctly, hydraulic power is one of the safest methods of applying force to your work. To that end we offer some DO's and DON'Ts, simple common sense points which apply to practically all Enerpac hydraulic products.

The illustrations and application photos of Enerpac products throughout this catalog are used to portray how some of our customers have used hydraulics in industry. In designing similar systems, care must be taken to select the proper components that provide safe operation and fit your needs. Check to see if all safety measures have been taken to avoid the risk of injury and property damage from your application or system. Enerpac cannot be held responsible for damage or injury caused by unsafe use, maintenance or application of its products. Please contact the Enerpac office or a representative for guidance when you are in doubt as to the proper safety precautions to be taken in designing and setting up your particular system.

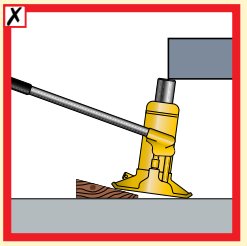
In addition to these tips, every Enerpac product comes with specific safety information and instructions. Please read them carefully.

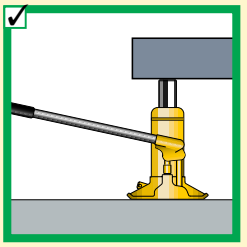
Jacks



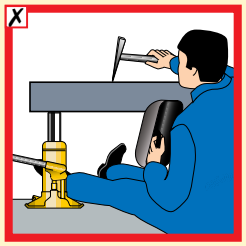


◄ **Provide a level and solid support for the entire jack base area.**

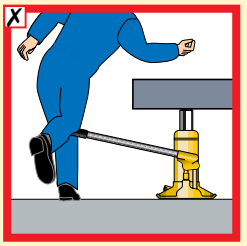


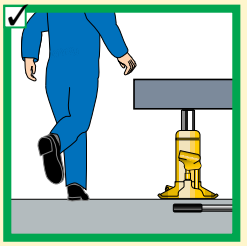


◄ **The entire jack saddle must be in contact with the load. Movement of the load must be in the same direction as jack plunger.**



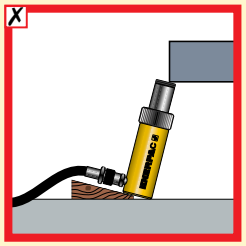
◄ **Never place any part of your body under the load. Ensure the load is on a solid support before venturing under.**

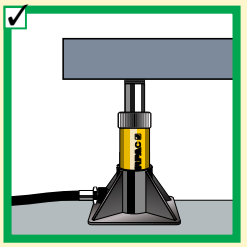




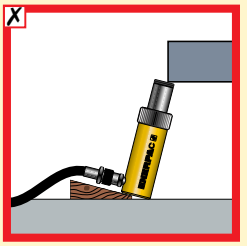
◄ **Remove the jack handle when it is not being used.**

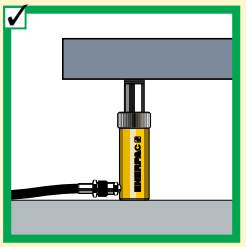
Cylinders



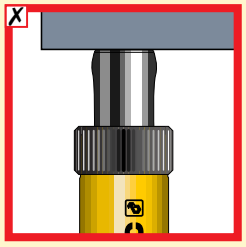


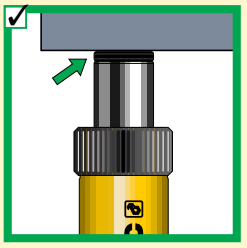
◄ **Provide a solid support for the entire cylinder base area. Use cylinder base attachment for more stability.**



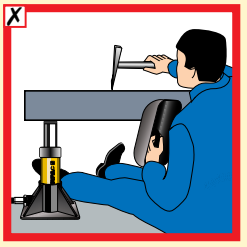


◄ **The entire cylinder saddle must be in contact with the load. Movement of the cylinder must be parallel with the movement of the load.**



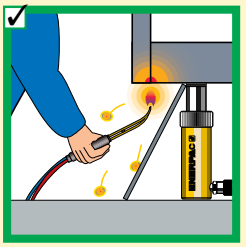


◄ **Do not use cylinder without saddle. This will cause plunger to "mushroom". Saddles distribute load evenly on the plunger.**



◄ **As with jacks, never place any part of your body under the load. Load must be on cribbing before venturing under.**

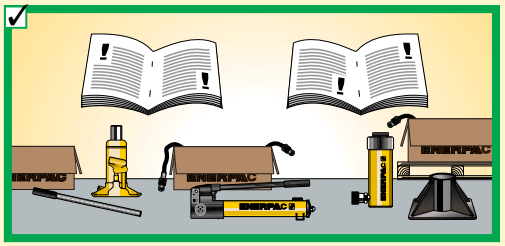
◄ **Always protect cylinder threads for use with attachments.**



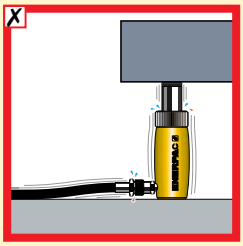
◄ **Keep hydraulic equipment away from open fire and temperatures above 150 °F (65 °C).**

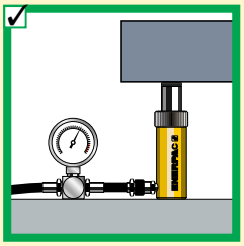
General

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



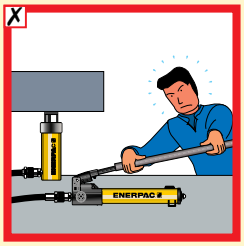
Always read instructions and safety warnings that come with your Enerpac hydraulic equipment.

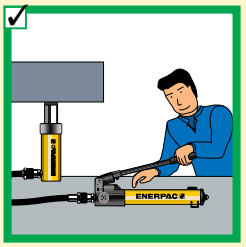




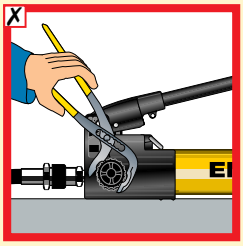
Don't override the factory setting of relief valves. Always use a gauge to check system pressure.

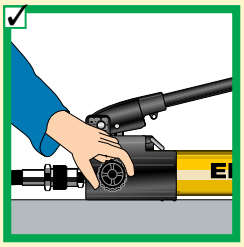
Pumps



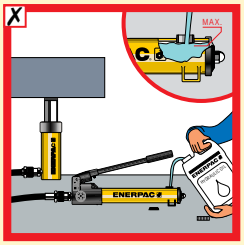


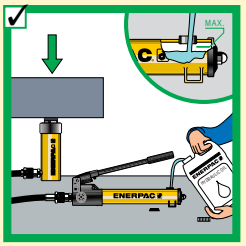
Don't use handle extenders. Hand pumps should be easy to operate when used correctly.



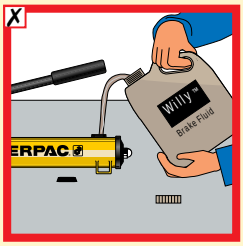


Close release valve finger tight. Using force will ruin the valve.



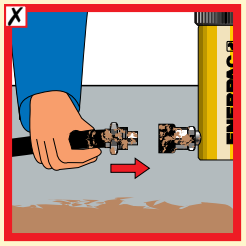


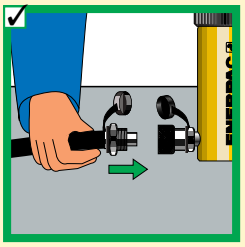
Fill pump only to recommended level. Fill only when connected cylinder is fully retracted.



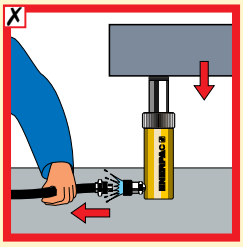
Use only genuine Enerpac hydraulic oil. The wrong fluid can destroy your seals and pump and will render your warranty null and void.

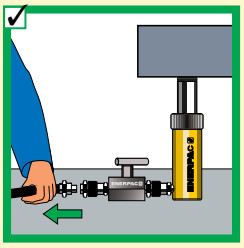
Hoses and couplers



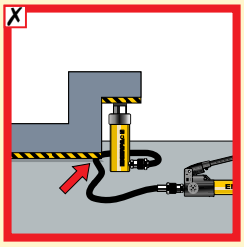


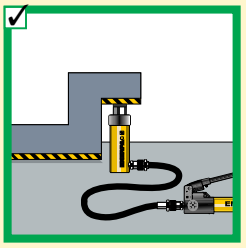
Clean both coupler parts before connecting. Use dust caps when coupler parts are not connected.



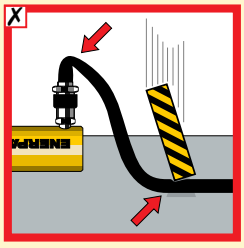


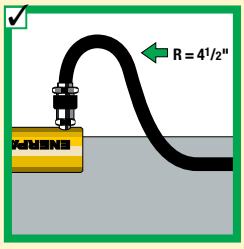
Detach cylinder only when fully retracted or use shut-off valves or safety valves to lock-in cylinder pressure



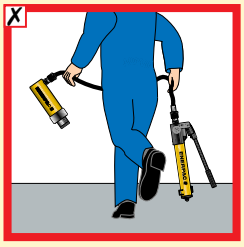


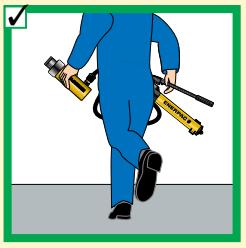
Keep hoses away from the area beneath loads.





Don't kink hoses. Bending radius should be at least 4 1/2 inch. 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

▼ HAND PUMP AND SINGLE-ACTING CYLINDER MATCHING CHART

Capacity (tons) ▸ / ▼ Stroke (inches)	5	10	15	25	30	50	60	75	100	150
< 1.00										
1.00										
2.00										
3.00										
4.00										
5.00										
6.00										
7.00										
8.00										
9.00										
10.00										
12.00										
13.00										
14.00										

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Page: 58

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Page: 60

Note: Selection based on oil capacity requirements of cylinders.

▼ POWER PUMP SELECTION CHART

Flow*	Low (20 in³/min)		Medium (40 to 120 in³/min)		High (463 in³/min)
Reservoir Oil Capacity	0.5-1 gal.	1.5 gal.	1.2-10 gal.	2.5-10 gal.	25 gal.
Duty Cycle**	Intermittent	Extended	Intermittent	Extended	Extended
Portable/Stationary***	Portable	Stationary	Portable	Stationary	Stationary
Recommended Series	**Economy**	**Submerged**	**Titan**	**Hushh**	**8000 Series**
					
	Page: 66	Page: 74	Page: 68	Page: 82	Page: 88

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

** Duty Cycle
- Extended applications require more than one hour of uninterrupted pump use
- Intermittent use – from 20 minutes to one hour, depending on reservoir capacity (contact Enerpac for details)

*** Portability

Portable
- Ergonomic handles
- Flexible power requirements

Stationary
- Mounting options
- Normally requires stable power

Selection Worksheet

▼ **Complete the following information to select the right products:**

Cylinder Selection

Question:	*Tips/help*	*Data*	*Model Number*
Total force required in tons:	Total load		
Number of cylinders required:	Number of lifting points		
Force per cylinder in tons:	Should be 80% of total cylinder cap.		
Stroke required:	Plunger travel		
Single or double acting (D/A):	D/A used when pull force is required, or retract speed is critical		
Type of plunger required:	Hollow or solid		
Collapsed height required:	Height with plunger fully retracted		
Optional saddle required:	Tilt, Grooved, Flat		
Cylinder base:	Improves stability		
Cylinder attachments: (RC-series)	Expanded functions		
Selected cylinder model:		▶	
Including coupler model:			

Pump Selection

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

Available power source: ☐ **Manual** ☐ **Electric** ☐ **Compressed Air** ☐ **Gasoline**

Hand pump	Not for high cycle applications		
Single- or double-acting operation	Use 4-way valve for D/A applications		
	Check speed chart on page 109 for number of strokes per inch)		
Selected hand pump:		▶	
Electric or Compressed Air pump			
Need for portability:	Weight and power requirements		
Duty cycle:	Intermittent or high		
Required usable oil capacity:	Intermittent =1.2 x cylinder oil capacity		
	high cycle = 2 x cylinder oil capacity		
Available Voltage:	Single phase or Three phase		
Lifting speed (Important/not important):	Use speed chart on page 109		
Type of control:	Manual/remote pendant		
Type of actuation/function:	Advance/hold/retract		
Accessories:	Roll bar, Oil Filter kit, ...		
Selected pump:		▶	
To suit hose:	Oil connection		

System Components

Number of hoses and length required:			
Selected Hoses:		▶	
Manifold or tee:		▶	
Extra hose per manifold (2):		▶	
Gauge (psi, lbs or tons scale):	Glycerine for high cycle	▶	
Gauge adaptor:		▶	
Fittings:		▶	
Pressure Relief Safety Valve:		▶	
Load-holding Valve(s):		▶	
Hydraulic oil:		▶	

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

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

3 Pump
Provides hydraulic flow.
Page **57**

4 Hose
Transports hydraulic fluid.
Page **112-113**

5 Male Coupler
For quick connection of the hose to system components.
Page **114-115**

6 Female Coupler
For quick connection of the hose end to the system components.
Page **114-115**

7 Gauge
To monitor pressure of the hydraulic circuit.
Page **118-124**

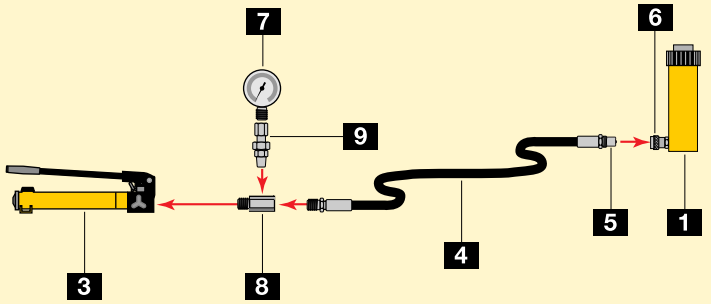
8 Gauge adaptor
For quick and easy gauge installation. *Page* **124**

9 Swivel connector
Allows proper allignment of valves and/or gauges. Used when units being connected cannot be rotated.
Page **124**

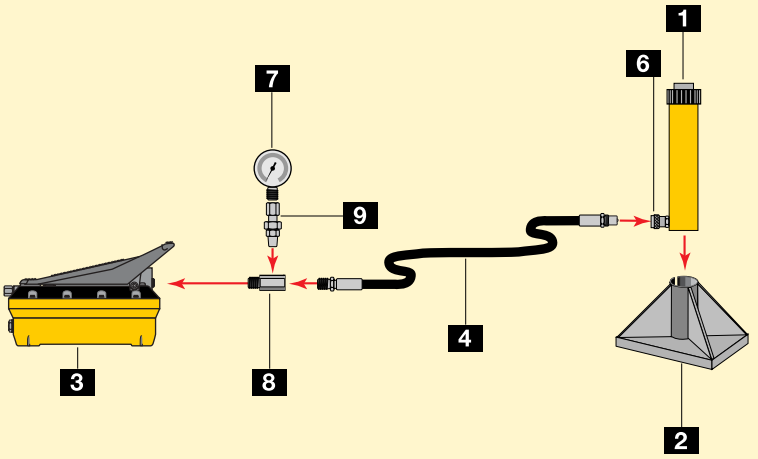
10 Auto-Damper Valve V-10
Used to protect gauge from damage due to sudden pressure variances in the system. Needs no adjustment and allows correct positioning of gauge prior to tightening. Only required in place of Swivel Connector (**9**) in applications where rapid decompression is likely, such as hole punching.
Page **133**

Single-acting push application, such as in a press. The hand pump offers controlled cylinder advance, but may require many hand pump strokes in longer stroke applications when the cylinder capacity is 25 ton or above.

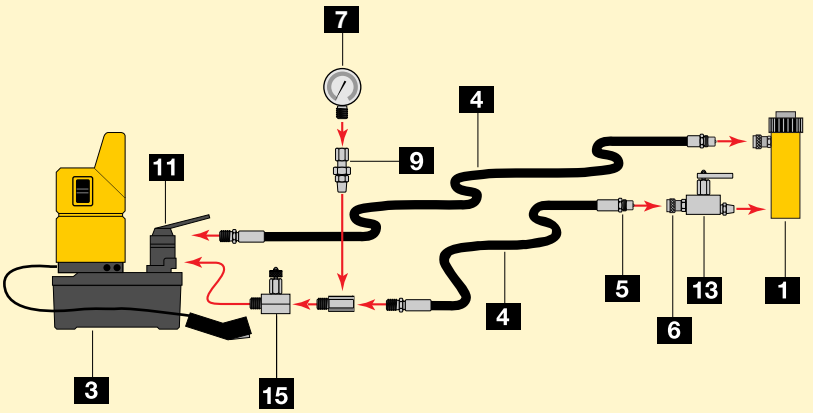
Examples of pump, hose and cylinder sets can be found on page 54.



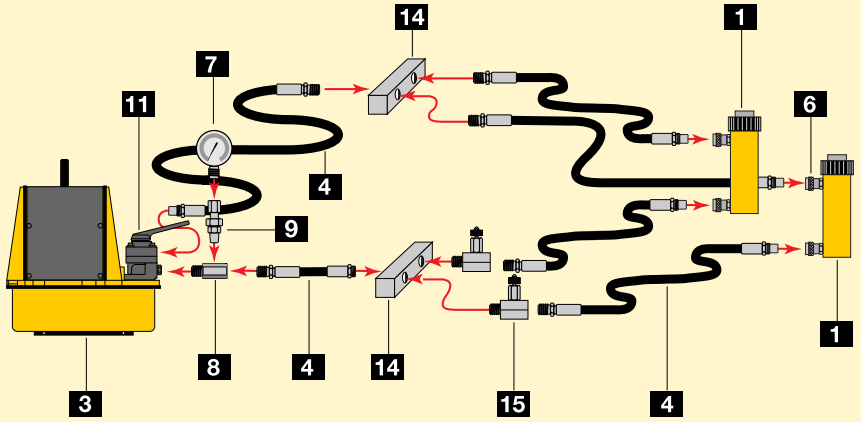
Single-acting cylinder with longer stroke used for lifting applications.



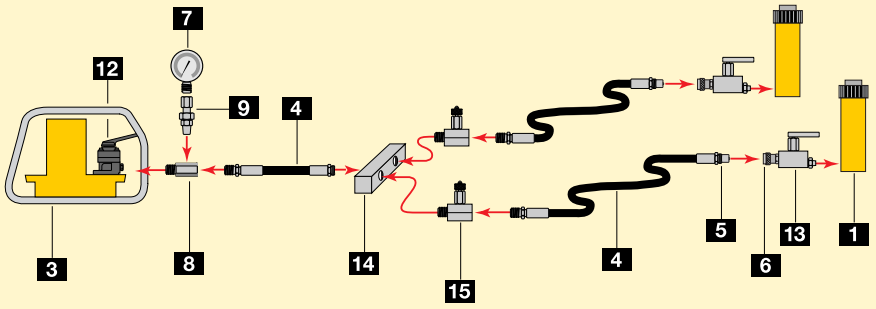
Double-acting cylinder set-up used for lifting applications where a slow controlled descent of the load must be maintained.



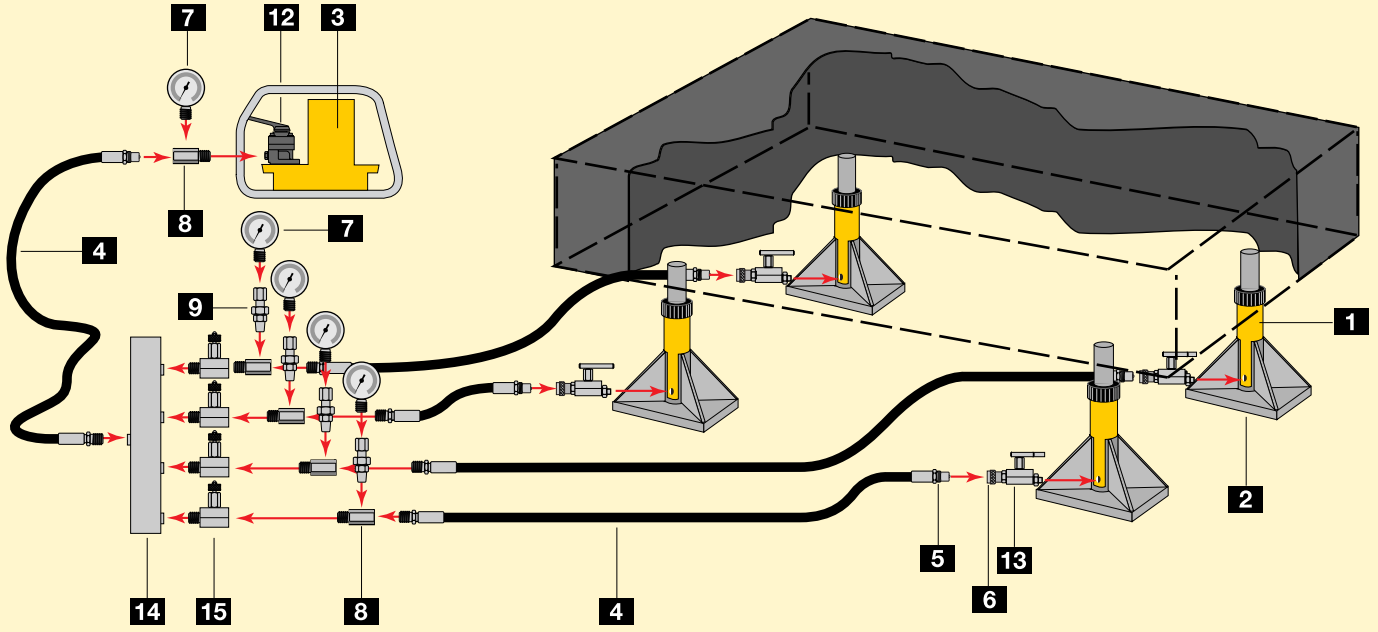
Double-acting cylinder set-up used in a push/pull application.



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



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



11 4-Way Directional Control Valve
Controls the direction of hydraulic fluid in a double-acting system.
Page **128**

12 3-Way Directional Control Valve
Controls the direction of hydraulic fluid in a single-acting system.
Page **126**

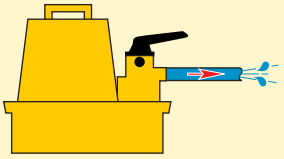
13 Safety Holding Valve
Controls load descent in lifting applications.
Page **132-133**

14 Manifold
Allows distribution of hydraulic fluid from one power source to several cylinders
Page **116**

15 Needle valve
Regulates the flow of hydraulic fluid to or from the cylinders.
Page **132-133**

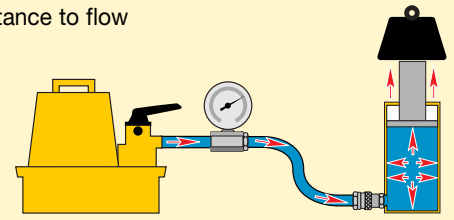
Flow

A hydraulic pump produces flow



Pressure

Pressure occurs when there is resistance to flow



Pascal's Law

Pressure applied at any point upon a confined liquid is transmitted undiminished in all directions (Fig.1).
This means that when more than one hydraulic cylinder is being used, each cylinder will lift at its own rate, depending on the force required to move the load at that point (Fig. 2). Cylinders with the lightest load will move first, and cylinders with the heaviest load will move last (Load A), as long as the cylinders have the same capacity.

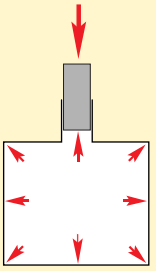


Figure 1

To have all cylinders operate uniformly so that the load is being lifted at the same rate at each point, either control valves (see Valve section) or Synchronous Lift System components (see Cylinder section) must be added to the system (Load B).

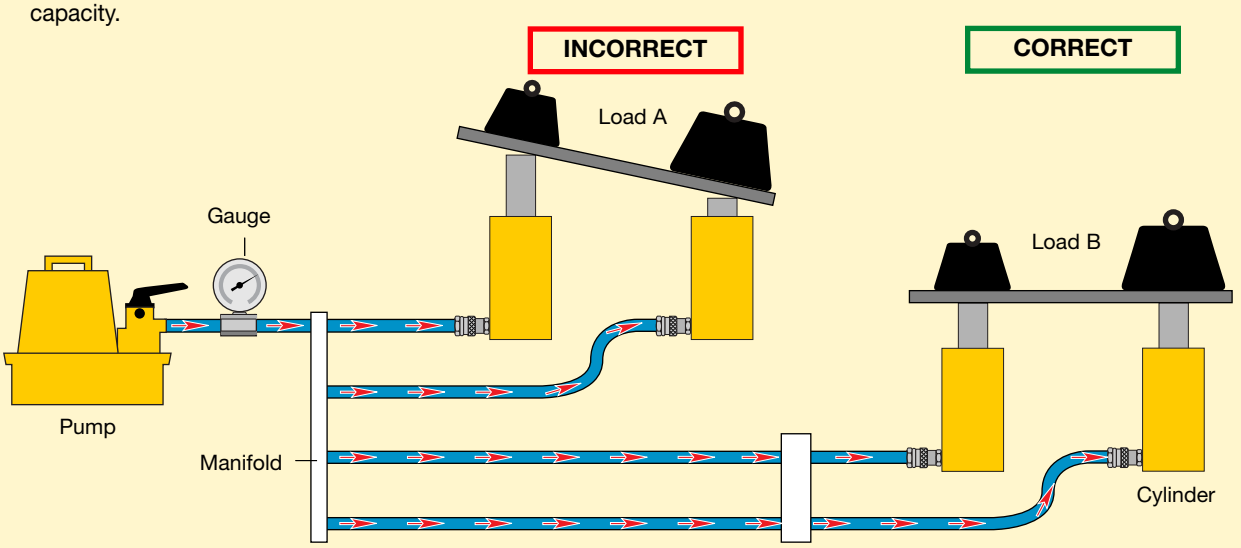


Figure 2

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

CAUTION!

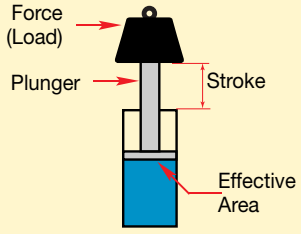
When lifting or pressing, always use a gauge.

A gauge is your "window" to the system. It lets you see what's going on. You will find the gauges in the System Components section.

Page: 118

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 2.24 in^2 effective area operating at 8,000 psi will generate what force?
Force = 8,000 psi x 2.24 in^2 = 17,920 lbs.

Example 2
An RC-106 cylinder lifting 14,000 lbs will require what pressure?
Pressure = 14,000 lbs ÷ 2.24 in^2 = 6,250 psi.

Example 3
An RC-256 cylinder with 5.15 in^2 effective area is required to produce a force of 41,000 lbs. What pressure is required?
Pressure = 41,000 lbs. ÷ 5.15 in^2 = 7961 psi.

Example 4
Four RC-308 cylinders each with 6.49 in^2 effective area are required to produce a force of 180,000 lbs. What pressure is required?
Pressure = 180,000 lbs ÷ (4 x 6.49 in^2) = 6933 psi.
Remember, since four cylinders are used together, the area for one cylinder must be multiplied by the number of cylinders used.

Example 5
A CLL-2506 cylinder with 56.79 in^2 effective area is going to be used with a power source that is capable of 7,500 psi. What is the theoretical force available from that cylinder?
Force = 7,500 psi x 56.79 in^2 = 425,925 lbs.

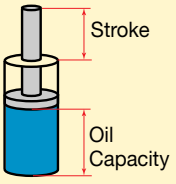
Cylinder Oil Capacity

The volume of oil required for a cylinder (cylinder oil capacity) is equal to the effective area of the cylinder times the stroke*.

Cylinder Oil Capacity	=	Cylinder Effective Area	x	Cylinder Stroke

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

Example 1:
An RC-158 cylinder with 3.14 in^2 effective area and an 8 in stroke will require what volume of oil?
Oil Capacity = 3.14 in^2 x 8 in = 25.12 in^3



Example 2:
An RC-5013 cylinder has an effective area of 11.05 in^2 and a stroke of 13.25 in. How much oil will be required?
Oil Capacity = 11.05 in^2 x 13.25 in = 146.41 in^3

Example 3:
An RC-10010 cylinder has an effective area of 20.63 in^2 and a stroke of 10.25 in. How much oil will it require?
Oil Capacity = 20.63 in^2 x 10.25 in = 211.46 in^3

Example 4:
Four RC-308 cylinders are being used, each with an effective area of 6.49 in^2 and stroke of 8.25 in. How much oil will be required?
Oil Capacity = 6.49 in^2 x 8.25 in = 53.54 in^3 for one cylinder
Multiply by four to obtain the required capacity: 214.17 in^3

CAUTION!

Enerpac oil will compress 2.28% at 5,000 psi and 4.1% at 10,000 psi.

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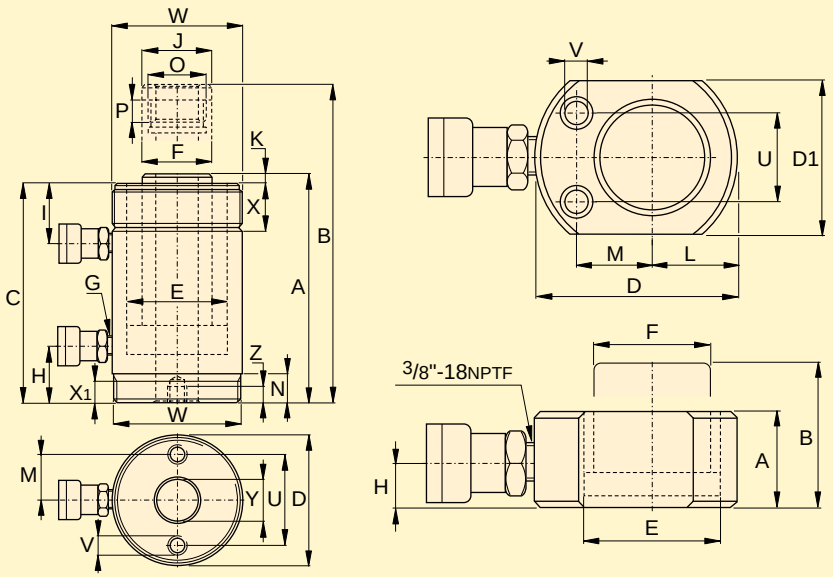
Key to cylinder dimensions

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

A = Collapsed height
B = Extended height
C = Cylinder body length
D = Cylinder outside diameter
D_1 = Cylinder width
E = Cylinder inside diameter (bore)
F = Plunger rod diameter
G = Oil inlet thread
H = Cylinder bottom to advance port
I = Cylinder top to retract port
J = Saddle outside diameter
K = Cylinder rod protrusion at collapsed height
L = Plunger center to side of base
M = Mounting holes to plunger center
N = Length of smaller cylinder part
O = Plunger hole or thread of saddle
P = Plunger thread length
Q = Plunger outside thread (pull cylinders only)
U = Bolt circle diameter of mounting holes
V = Thread of cylinder mounting holes
W = Collar thread
X = Collar thread length
Y = Center hole diameter (hollow cylinders only
Z = 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.

You can also visit our website at **www.enerpac.com** to download **Conpaq**, a FREE conversion calculator.

Pressure:

1 psi	= .069 bar
1 bar	= 14.50 psi
1 kPa	= .145 psi

Volume:

1 in^3	= 16.387 cm^3
1 cm^3	= .061 in^3
1 liter	= 61.02 in^3
1 liter	= .264 gal
1 US gal	= 3,785 cm^3
	= 3.785 l
	= 231 in^3

Weight:

1 pound (lb)	= .4536 kg
1 kg	= 2.205 lbs
1 metric ton	= 2,205 lbs
1 ton (short)	= 2,000 lbs
1 ton (short)	= 907.18 kg

Temperature:

To Convert °F to °C:
$T^{\circ}C = (T^{\circ}F - 32) \div 1.8$
To Convert °C to °F:
$T^{\circ}F = (T^{\circ}C \times 1.8) + 32$

Other measurements:

1 in	= 25.4 mm
1 mm	= .039 in
1 in^2	= 6.452 cm^2
1 cm^2	= .155 in^2
1 hp	= .735 kW
1 kW	= 1.359 hp
1 Nm	= .73756 Ft.lbs
1 Ft.lbs	= 1.355818 Nm

Imperial to metric

Inches	Decimal	mm
1/16	.06	1.59
1/8	.13	3.18
3/16	.19	4.76
1/4	.25	6.35
5/16	.31	7.94
3/8	.38	9.53
7/16	.44	11.11
1/2	.50	12.70
9/16	.56	14.29
5/8	.63	15.88
11/16	.69	17.46
3/4	.75	19.05
13/16	.81	20.64
7/8	.88	22.23
15/16	.94	23.81
1	1.00	25.40

Cylinder Speed Charts

Cylinder Speed

This chart will help you calculate the time required for an Enerpac cylinder to lift a load when powered by a 10,000 psi Enerpac hydraulic pump.
The Cylinder Speed Chart can also be used to determine the pump type and model best suited for an application when you know the plunger speed required.

To determine:

Cylinder plunger speed

An RC-308 cylinder (30 ton) is powered by a 5-Series Hushh pump. While lifting the load, the cylinder plunger will require 3.2 seconds to travel 1 inch. While extending towards the load, the cylinder plunger travels at .61 sec/in.

30 ton		50 ton		75 ton		100 ton		
No Load	Load	No Load	Load	No Load	Load	No Load	Load	Pump Type
1.9	19.5	3.3	33.2	4.8	47.7	6.2	61.9	1/2 hp Economy
.63	6.5	1.1	11.1	1.6	15.9	2.0	20.6	Titan
2.6	19.5	4.4	33.2	6.4	47.7	8.3	61.9	1/2 hp Submerged
1.6	9.8	2.8	15.8	4.0	22.7	5.2	29.5	20 Series
.61	6.5	1.0	11.1	1.5	15.9	1.9	20.6	3 Series Hushh
.61	3.2	~~4.0~~	~~6.5~~	~~1.5~~	~~8.0~~	~~1.9~~	~~10.3~~	5 Series Hushh
.38	.84	.65	1.4	.94	2.1	1.2	2.7	8000 Series
6.5	39.0	11.0	66.3	15.9	95.5	20.6	123.9	Turbo II Pump
7.8	48.7	13.3	82.9	19.1	119.3	24.8	154.7	PA-133
.60	43.3	1.0	73.7	1.5	106.0	1.9	137.5	10 Series
.46	13.0	.80	22.1	1.1	31.8	1.5	41.3	Modular Air
1.9	9.7	3.3	16.6	4.8	23.9	6.2	30.9	Atlas Pump 2.5 hp
.81	7.1	1.4	12.1	2.0	17.3	2.6	22.5	Atlas Pump 5.0 hp

To determine:

Best matching pump

Your 30 ton cylinder needs to move a load at a speed of 6.50 sec/in. Simply go down from the top of the chart, to the value of 6.50 sec/in. Then follow the chart to the right to find that the 3-Series Hushh pump or Titan is most suitable for your application.

30 ton		50 ton		75 ton		100 ton		
No Load	Load	No Load	Load	No Load	Load	No Load	Load	Pump Type
1.9	19.5	3.3	33.2	4.8	47.7	6.2	61.9	1/2 hp Economy
.63	6.5	~~1.1~~	~~11.1~~	~~1.6~~	~~15.9~~	~~2.0~~	~~20.6~~	Titan
2.6	19.5	4.4	33.2	6.4	47.7	8.3	61.9	1/2 hp Submerged
1.6	9.8	2.8	15.8	4.0	22.7	5.2	29.5	20 Series
.61	6.5	~~1.0~~	~~11.1~~	~~1.5~~	~~15.9~~	~~1.9~~	~~20.6~~	3 Series Hushh
.61	3.2	1.0	5.5	1.5	8.0	1.9	10.3	5 Series Hushh
.38	.84	.65	1.4	.94	2.1	1.2	2.7	8000 Series
6.5	39.0	11.0	66.3	15.9	95.5	20.6	123.9	Turbo II Pump
7.8	48.7	13.3	82.9	19.1	119.3	24.8	154.7	PA-133
.60	43.3	1.0	73.7	1.5	106.0	1.9	137.5	10 Series
.46	13.0	.80	22.1	1.1	31.8	1.5	41.3	Modular Air

Number of Pump Handle Strokes per Inch of Cylinder Plunger Travel

Cyl. Capacity ▶	5 ton		10 ton		15 ton		25 ton		30 ton		50 ton		75 ton		100 ton			
▼ Power Source	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	Pump Type	Page
Manual	7	7	15	15	21	21	34	34	43	43	73	73	105	105	137	137	**P-391**	**58**
	2	7	4	15	5	21	8	34	10	43	16	73	24	105	30	137	**P-392**	**58**
	1	7	2	15	3	21	5	34	7	43	11	73	16	105	21	137	**P-80/84/801**	**60**
	1	7	1	15	1	21	2	34	3	43	5	73	7	105	9	137	**P-802/842**	**58**
	1	3	1	8	1	11	1	18	1	23	2	38	2	55	3	71	**P-462/464**	**60**

Seconds per Inch of Cylinder Plunger Travel

Cyl. Capacity ▶	5 ton		10 ton		15 ton		25 ton		30 ton		50 ton		75 ton		100 ton			
▼ Power Source	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	No Load	Load	Pump Type	Page
Electric	.30	3.0	.67	6.7	.94	9.4	1.5	15.5	1.9	19.5	3.3	33.2	4.8	47.7	6.2	61.9	**0.5 hp Economy**	**66**
(speed based on 60 Hz)	.09	1.0	.22	2.2	.31	3.1	.50	5.2	.63	6.5	1.1	11.1	1.6	15.9	2.0	20.6	**Titan**	**68**
	.40	3.0	.90	6.7	1.3	9.4	2.1	15.5	2.6	19.5	4.4	33.2	6.4	47.7	8.3	61.9	**0.5 hp Submerged**	**74**
	.25	1.4	.56	3.2	.79	4.5	1.3	7.4	1.6	9.3	2.8	15.8	4.0	22.7	5.2	29.5	**20-Series**	**78**
	.09	1.0	.21	2.2	.29	3.1	.48	5.2	.61	6.5	1.0	11.1	1.5	15.9	1.9	20.6	**3-Series Hushh**	**82**
	.09	.50	.21	1.1	.29	1.6	.58	2.6	.61	3.2	1.0	5.5	1.5	8.0	1.9	10.3	**5-Series Hushh**	**82**
	.06	.13	.13	.29	.19	.41	.30	.67	.38	.84	.65	1.4	.94	2.1	1.2	2.7	**8000-Series**	**88**
Air	1.0	5.9	2.2	13.4	3.1	18.8	5.2	30.9	6.5	39.0	11.0	66.3	15.9	95.5	20.6	123.9	**Turbo II Pump**	**90**
(speed based on 100 psi air pressure)	1.2	7.4	2.7	16.8	3.8	23.6	6.2	38.6	7.8	48.7	13.3	82.9	19.1	119.3	24.8	154.7	**PA-133**	**92**
	.09	6.6	.21	14.9	.29	20.9	.48	34.3	.60	43.3	1.0	73.7	1.5	106.0	1.9	137.5	**10-Series**	**93**
	.07	2.0	.16	4.5	.22	6.3	.36	10.3	.46	13.0	.80	22.1	1.1	31.8	1.5	41.3	**Modular Air**	**94**
Gasoline	.30	1.5	.67	3.4	.94	4.7	1.5	7.7	1.9	9.7	3.3	16.6	4.8	23.9	6.2	30.9	**Atlas Pump 2.5 hp**	**96**
	.12	1.1	.28	2.4	.39	3.4	.64	5.6	.81	7.1	1.4	12.1	2.0	17.3	2.6	22.5	**Atlas Pump 5.0 hp**	**96**
	.12	.59	.28	1.3	.39	1.9	.64	3.1	.81	3.9	1.4	6.6	2.0	9.5	2.6	12.4	**Atlas Pump 5.5 hp**	**96**
	.07	.17	.16	.39	.22	.54	.36	.89	.46	1.1	.77	1.9	1.1	2.8	1.5	3.6	**8000 Series**	**98**

No Load indicates the plunger speed as the plunger extends toward the load (1st stage).
Load indicates the plunger speed as the load is lifted at a system pressure of 10,000 psi (2nd stage).

Formula V = A ÷ Q

V (sec/in) = **A** (in^2) ÷ **Q** (in^3/min)
V = Cylinder plunger speed in seconds per inch
A = Cylinder effective area in square inches
Q = Pump oil flow in cubic inches

$$\text{Cylinder Plunger Speed (sec/in)} = \frac{\text{Cylinder Effective Area } (in^2)}{\text{Pump Flow Rate } (in^3/min)} \times \frac{60 \text{ sec}}{1}$$

Example

At what speed (V) will the RC-308 (30 ton) cylinder move when powered by a 20-Series electric driven pump?

20-Series pump:
Oil flow Q, (no load) is 240 in^3/min

RC-308 cylinder:
Effective area A is 6.50 in^2

V = 6.50 in^2 ÷ 240 in^3/min x 60 = **1.60 sec/in**

Ways

The (oil) ports on a valve.
A 3-way valve has 3 ports:
pressure (P), tank (T), and cylinder (A).
A 4-way valve has 4 ports:
pressure (P), tank (T), advance (A) and retract (B).

Single-Acting cylinders require at least a 3-way valve, and can, under certain instances, be operated with a 4-way valve.

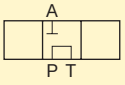
Double-Acting cylinders require a 4-way valve, providing control of the flow to each cylinder port.

Positions

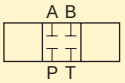
The number of control points a valve can provide. A 2-position valve has the ability to control only the advance or retraction of the cylinder. To be able to control the cylinder with a hold position, the valve requires a 3rd position.

Center Configuration

The center position of a valve is the position at which there is no movement required of the hydraulic component, whether a tool or cylinder.

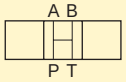


The most common is the **Tandem Center**. This configuration provides for little to no movement of the cylinder and the unloading of the pump. This provides for minimum heat build-up.

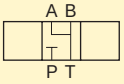


The next most common is the **Closed Center** configuration, which is used mostly for independent control of multi-cylinder applications. This configuration again provides for little to no movement of the cylinder, but also dead-heads the pump, isolating it from the circuit.
Use of this type of valve may require some means of unloading the pump to prevent heat build-up.

There are many more types of valves, such as Open Center and Float Center.
These valves are used mostly in complex hydraulic circuits and require other special considerations.



Open Center

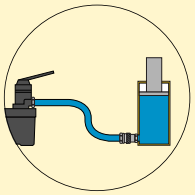


Float Center

Directional Control Valves

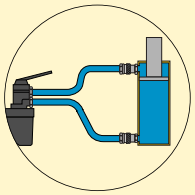
3-Way Valves

are used with single-acting cylinders

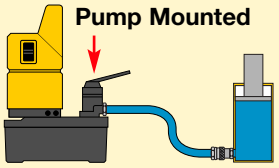


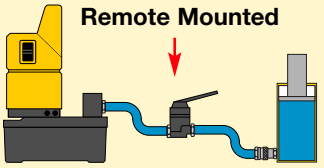
4-Way Valves

are used with double-acting cylinders

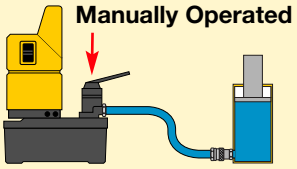


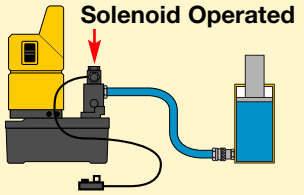
Valves may be either pump mounted or remote mounted.





Valves may be either manually or solenoid operated.

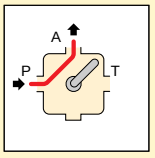




Advance Hold Retract

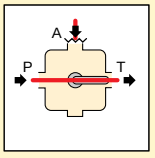
Single-acting cylinder

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



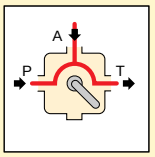
Advance

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.

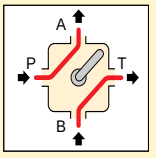


Retract

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

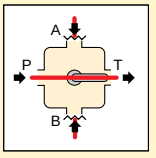
Double-acting cylinder

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



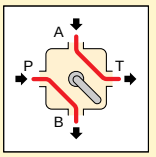
Advance

The oil flows from the pump pressure port P to the cylinder port A, and from cylinder port B to tank T: the cylinder plunger will extend.



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.

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System Components Section Overview

ENERPAC System Components — All the additional components you need to complete your high pressure hydraulic system. Engineered to work with your Enerpac cylinders, pumps and tools, all Enerpac components are designed and manufactured to the most exacting standards.

With this complete line of hydraulic hoses, couplers, fittings, manifolds, oil and gauges, Enerpac has the accessories to compliment your system, and ensure the efficient operation, long life, and safety of your hydraulic equipment.

Component Type	Series		Page
Hoses	700 800 900		112 ▶
Couplers	A, C, F, Z		114 ▶
Hydraulic Oil	HF		116 ▶
Manifolds	A AM		116 ▶
Fittings	FZ		117 ▶
Hydraulic Force & Pressure Gauges	GF GP		118 ▶
Hydraulic Pressure Gauges	G, H		120 ▶
Test System Gauges	T		122 ▶
Digital gauges	DG		123 ▶
Gauge Accessories	GA, NV, V		124 ▶

▼ Shown from top to bottom: **HC-7206, HC-8206, HC-9206**

Emphasize Safety and Quality

WARNING !

- **Do not exceed 10,000 psi maximum pressure.**
- **Do not handle hoses while under pressure.**

More safety instructions in our "Yellow pages".

Page: 100

Crimped-on rubber strain relief for improved life and durability on all models.

Thermo-plastic Hoses (700-Series)

- **For demanding applications, featuring a 4:1 design factor**
- **Maximum working pressure of 10,000 psi**
- **Two layers of steel wire braids**
- **Outside jacket is polyurethane, to provide maximum abrasion resistance**
- **Exhibits low volumetric expansion under pressure to enhance overall system efficiency**

Plastic-coated Nylon Hose (800-Series)

- **Ideal for applications requiring non-conductive accessories**
- **Lightweight and long lasting plastic coating**
- **Designed to comply with Material Handling Institute IJ-100 hose specification**
- **2:1 design factor**

Heavy-duty Rubber Hoses (900-Series)

- **The most complete offering: 35 models up to 50 feet in length**
- **Rubber coated with 2 layers of steel wire braids**
- **Designed to comply with Material Handling Institute IJ-100 hose specification**
- **Flexible, with little "memory", is the best choice for long hose runs**
- **2:1 design factor**

▼ **Hose End Couplings**

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

High Pressure Hydraulic Hoses

Hose Oil Capacity

When using long 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 .25" internal diameter hoses: Capacity (in^3) = .5892 x Length (ft)

For .38" internal diameter hoses: Capacity (in^3) = 1.3608 x Length (ft)

Inside Diameter:
.25 and .38 inch

Length:
2-50 feet

Maximum Operating Pressure:
10,000 psi

700
800
900
Series

Internal Diameter	Hose End Assemblies and Couplers*		Hose Length	700-Series Thermo-plastic		800-Series Plastic-coated Nylon		900-Series Heavy-duty Rubber	
(in)	End one	End two	(ft)	Model Number	Weight (lbs)	Model Number	Weight (lbs)	Model Number	Weight (lbs)
.25	1/4" NPTF	1/4" NPTF	6	–		–		H-9206Q	2.6
		3/8" NPTF	6	–		–		H-9206S	2.6
		A-630	6	HB-7206QB	2.4	–		HB-9206QB	3.1
		AH-630	6	–		–		HB-9206Q	2.9
		CH-604	6	HC-7206Q	2.3	–		HC-9206Q	3.0
	3/8" NPTF	3/8" NPTF	2	H-7202	1.2	–		H-9202	1.6
			3	H-7203	1.5	–		H-9203	1.9
			6	H-7206	2.0	H-8206	1.7	H-9206	2.6
			10	H-7210	3.0	H-8210	2.6	H-9210	3.9
			20	H-7220	6.2	H-8220	5.3	H-9220	8.0
			30	H-7230	10.0	H-8230	8.6	H-9230	13.0
			50	H-7250	15.4	–		H-9250	22.0
		A-604		–		–		–	
			6	HA-7206B	2.5	–		HA-9206B	3.2
			10	–		–		HA-9210B	4.5
		AH-604		–		–		–	
			3	–		–		HA-9203	2.1
			6	HA-7206	2.2	–		HA-9206	2.9
			10	HA-7210	3.2	–		HA-9210	4.2
		AH-630	6	HB-7206	2.2	–		HB-9206	2.9
		C-604	3	HC-7203B	2.2	–		HC-9203B	2.9
			6	HC-7206B	2.8	HC-8206B	2.4	HC-9206B	3.7
			10	HC-7210B	3.9	HC-8210B	3.3	HC-9210B	5.0
		CH-604	3	HC-7203	1.7	HC-8203	1.5	HC-9203	2.2
			6	HC-7206	2.3	HC-8206	2.0	HC-9206	3.0
			10	HC-7210	3.3	HC-8210	2.8	HC-9210	4.3
			20	HC-7220	6.4	HC-8220	5.5	HC-9220	8.3
	CH-604	CH-604	6	HC-7206C	2.4	–		HC-9206C	3.1
			50	HC-7250C	15.4	–		HC-9250C	20.0
.38	3/8" NPTF	3/8" NPTF	6	H-7306	3.5	H-8306	3.0	H-9306	4.6
			10	H-7310	5.4	H-8310	4.6	H-9310	7.0
			20	H-7320	10.0	H-8320	8.6	H-9320	13.0
			30	H-7330	16.2	H-8330	13.9	H-9330	21.0
			50	–		H-8350	21.8	H-9350	33.0
		CH-604	6	HC-7306	3.4	–		HC-9306	4.9
			10	HC-7310	5.6	–		HC-9310	7.3
			20	HC-7320	11.2	–		HC-9320	14.6

* For technical information on couplers see next page.

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

Facilitate 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**
- **Include "2-in-1" dust cap for use on male and female coupler halves**

3/8" High Flow "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**

3/8" Regular Spee-D-Coupler®

- **For medium duty applications; for use with hand pumps**
- **Includes female steel dust cap**

1/4" Regular Coupler

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

* Hydraulic Tool Manufacturers Association

Thread sealer

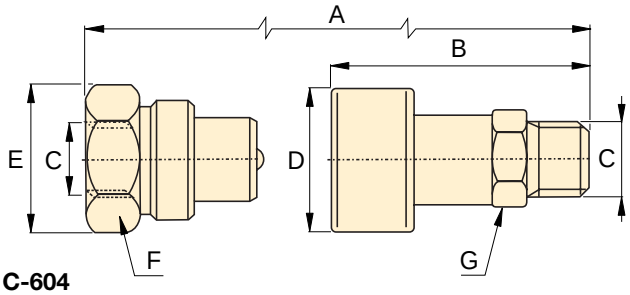
To seal NPTF threads use one of the new anaerobic thread sealers or Teflon paste. When using Teflon Tape, apply the tape one thread back from the end of a fitting to prevent it from entering the hydraulic system.

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

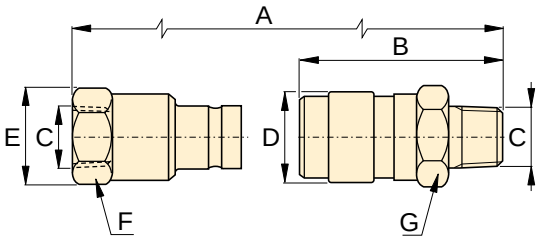
More safety instructions in our "Yellow pages".

Page: 100

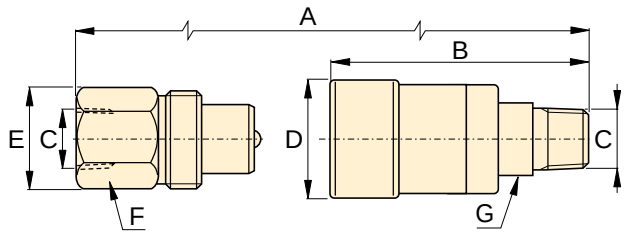
Male Half **Female Half**



C-604



F-604



A-604 and A-630

A, C, F, Z Series

Maximum Flow Capacity:
2,500 in³/min

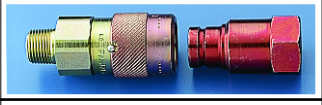
Thread:
1/4" and 3/8" NPTF

Maximum Operating Pressure:
10,000 psi

Metal Dust Caps

Steel dust caps are available for the C-604 series couplers. Order model number:

CD-411M for female half
CD-415M for male half

Maximum Flow Capacity (in³/min)	Coupler Type	Model Numbers			Dimensions (in)							Dust Cap(s)
		Complete Set	Female Half	Male Half	A*	B	C	D	E	F	G	
2,500	**High-Flow Coupler** 	**C-604**	**CR-400**	**CH-604**	3.26	2.87	3/8" NPTF	1.38	1.38	1.25	1.00	**(2x) CD-411** Included
2,500	**Flush-Face coupler** 	**F-604**	**FR-400**	**FH-604**	4.36	2.85	3/8" NPTF	1.23	1.23	1.06	1.12	–
462	**Regular Spee-D-Coupler®** 	**A-604**	**AR-400**	**AH-604**	3.09	2.53	3/8" NPTF	1.12	.94	.94	.73	**Z-410** female only Included
462	**Regular Coupler** 	**A-630**	**AR-630**	**AH-630**	2.61	1.72	1/4" NPTF	.87	.81	.75	.57	**Z-640** female only Included

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

▼ Shown top to bottom: **HF-101, A-65, A-64, FZ-1055, A-66, FZ-1634, FZ-1625, FZ-1608**

Genuine Enerpac System Components

WARNING !

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

More safety instructions in our "Yellow pages".

Page: 100

Hydraulic Oil

Contents	Model Number
One Quart	**HF-100**
One Gallon	**HF-101**
Five Gallons*	**HF-102**
Fifty-Five Gallons	**HF-104**

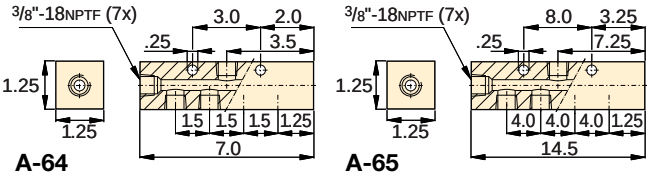
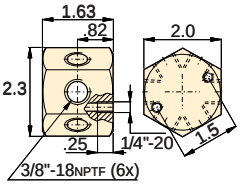
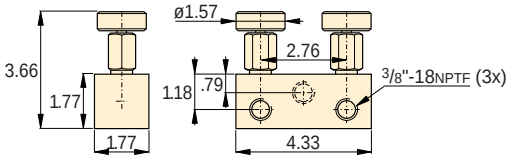
* Packed in two 2 1/2 gallon cans.

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

▼ **Oil Specifications chart**

Viscosity Index	100 min
Viscosity at 210°F	42/45 S.U.S.
Viscosity at 100°F	150/165 S.U.S.
Viscosity at 0°F	<12,000 S.U.S.
API Gravity	31.0/33.0
Flash, C.O.C.°F	400
Pour Point, °F	-25
Aniline Point, °F	210/220
Paraffinic Base Color	Blue

Manifolds

Description		Model Number	Dimensions (in)
7" Long Manifold with 7 female ports.		**A-64**	
14" Long Manifold that allows direct mounting of control valves to the manifold. 7 female ports.		**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. All ports 3/8"-18 NPTF.		**AM-2**	

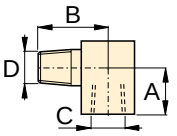
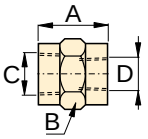
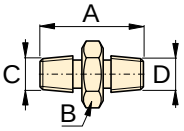
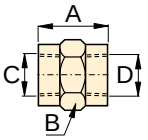
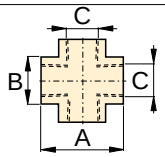
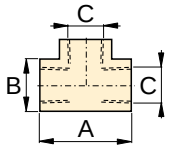
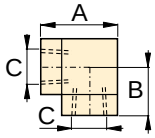
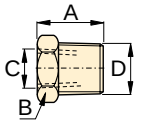
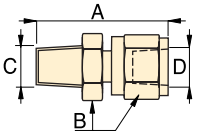
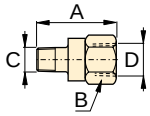
Recommended Tubing for Hand Plumbing Applications

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 .53" O.D. x 11 ga. (0.12") wall.
In place of .38" pipe, use .38" Schedule 80 seamless pipe.
In place of .50" pipe, use .84" O.D. x 0.16" wall.
This tubing can be threaded with standard pipe threading dies.

A,AM FZ,HF Series

Maximum Operating Pressure:
10,000 psi

Fittings

Description		Model Number	Dimensions (in) A	B	C	D	
Street Elbow From: 3/8"-NPTF Male To: 3/8"-NPTF Female		**FZ-1616**	.94	1.30	3/8"-18 NPTF	3/8"-18 NPTF	
Reducing Connector From: 3/8"-NPTF Female To: 1/4"-NPTF Female		**FZ-1615**	1.13	1.00	3/8"-18 NPTF	1/4"-18 NPTF	
From: 1/2"-NPTF Female To: 3/8"-NPTF Female		**FZ-1625**	1.88	1.14	1/2"-18 NPTF	3/8"-18 NPTF	
Hex Nipple From: 1/4"-NPTF Male To: 1/4"-NPTF Male		**FZ-1608**	1.50	.63	1/4"-18 NPTF	1/4"-18 NPTF	
From: 3/8"-NPTF Male To: 3/8"-NPTF Male		**FZ-1617**	1.47	.75	3/8"-18 NPTF	3/8"-18 NPTF	
Coupling From: 3/8"-NPTF Female To: 3/8"-NPTF Female		**FZ-1614**	1.13	1.00	3/8"-18 NPTF	3/8"-18 NPTF	
Cross From: 3/8"-NPTF Female To: 3/8"-NPTF Female		**FZ-1613**	1.77	1.00	3/8"-18 NPTF	–	
Tee From: 3/8"-NPTF Female To: 3/8"-NPTF Female		**FZ-1612**	1.77	1.00	3/8"-18 NPTF	–	
Elbow From: 3/8"-NPTF Female To: 3/8"-NPTF Female		**FZ-1610**	1.38	.88	3/8"-18 NPTF	–	
Bushing From: 3/8"-NPTF Male To: 1/4"-NPTF Female		**FZ-1630**	.75	.75	1/4"-18 NPTF	3/8"-18 NPTF	
Swivel Fitting From: 3/8"-NPTF Male To: 3/8"-NPTF Female		**FZ-1660**	1.56	.88	3/8"-18 NPTF	3/8"-18 NPTF	
Adaptor Female / Male							
3/8"-18 NPTF / 1/4"-18 NPTF		**FZ-1055**	1.75	.94	1/4"-18 NPTF	3/8"-18 NPTF	
1/2"-14 NPTF / 1/4"-18 NPTF		**FZ-1633**	1.69	1.13	1/4"-18 NPTF	1/2"-14 NPTF	
1/2"-14 NPTF / 3/8"-18 NPTF		**FZ-1634**	1.69	1.13	3/8"-18 NPTF	1/2"-14 NPTF	

▼ Shown: **GF-871P, GF-10P, GP-10S**

- **GF-Series gauges are calibrated with dual scale reading for pressure and force**
- **Excellent readability; gauge face diameter 4 inches**
- **Fast, easy installation**
- **GF-Series gauges are glycerine filled**
- **Stainless steel gauge cases for corrosion resistance**
- **GP-Series gauges are calibrated with dual scale reading for psi and bar**

▼ *A GP-10S gauge is used on this press to check the hydraulic pressure required to bend flat steel bar.*

Visual References for System Pressure and Force

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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Snubber Valve

Infinitely adjustable for metering oil out of a gauge. The V-9 Snubber Valve is also suitable as a shut-off valve to protect the gauge during high cycle applications

Page: **133**

	Used With
	All Cylinders
	All Cylinders
	—
	All 5 ton RC Cylinders
	All 10 ton RC Cylinders
	All 25 ton RC Cylinders
	RC and RR 50 ton Cylinders
	12 ton RCH-Series
	RCH/RRH-20, 30 and 60 ton
	RCS-201, 302
	RCS-502, 1002
	25 ton Presses
	50 ton Presses
	25-50 ton Presses
	100 ton Presses
	150-200 ton Presses

Maximum Indicator Pointer

Indicator retains peak readings of pressure or force generated by the system.
Order model number: **H-4000G**.

Can easily be installed on GP-Series dry gauges. For installation on GF-Series glycerine filled gauges, it is recommended to be performed by an Authorized Enerpac Service Center.

Load Gauges

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

Pressure Gauges

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

GP Series gauges are dry gauges.
GF Series gauges are glycerine filled.

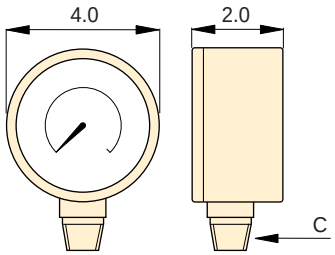
GF GP Series

Pressure Range:
0-15,000 psi

Face Diameter:
4 inch

Accuracy, % of full scale:
± 1%

All Models



Gauge Type and Calibration					Units per Division	Model Number*	Thread C	Gauge Adaptor Required		
psi	bar	psi	lbs	tons			(in)	GA-1	GA-2	GA-3
0-10,000	0-700	–	–	–	100 psi, 10 bar	**GP-10S**	1/2 NPTF	●	●	
0-15,000	0-1000	–	–	–	200 psi, 10 bar	**GP-15S**	1/2 NPTF	●	●	
–	–	–	–	–	–		–			
–	–	0-10,000	0-10,000	0-5	100 psi, 100 lbs, .1 ton	**GF-5P**	1/2 NPTF	●	●	
–	–	0-10,000	0-22,200	0-11	100 psi, 200 lbs, .2 ton	**GF-10P**	1/2 NPTF	●	●	
–	–	0-10,000	0-51,500	0-25.5	100 psi, 500 lbs, .5 ton	**GF-20P**	1/2 NPTF	●	●	
–	–	0-10,000	0-110,000	0-55	100 psi, 1000 lbs, 1 ton	**GF-50P**	1/2 NPTF	●	●	
–	–	0-10,000	0-27,000	0-13.5	100 psi, 200 lbs, .25 ton	**GF-120P**	1/2 NPTF	●	●	
–	–	0-10,000	–	0-23.5/36/65	100 psi, .5/.5/1 ton	**GF-813P**	1/4 NPTF			●
–	–	0-10,000	–	0-22/32	100 psi, .5/.5 ton	**GF-230P**	1/2 NPTF	●	●	
–	–	0-10,000	–	0-50/100	100 psi, 1/1 ton	**GF-510P**	1/2 NPTF	●	●	
–	–	0-10,000	0-51,500	0-25.5	100 psi, 500 lbs, .5 ton	**GF-20P**	1/2 NPTF	●	●	
–	–	0-10,000	0-11,000	0-55	100 psi, 1000 lbs, 1 ton	**GF-50P**	1/2 NPTF	●	●	
–	–	0-10,000	–	0-25.5/32.5/55	100 psi, .5/.5/.5 ton	**GF-835P**	1/4 NPTF			●
–	–	0-10,000	–	0-79/103	100 psi, 1/1 ton	**GF-871P**	1/4 NPTF			●
–	–	0-10,000	–	0-150/200	100 psi, 5/5 ton	**GF-200P**	1/4 NPTF			●

* Metric scale Force Gauges are available by changing the “P” suffix to “B”.

▼ Shown: **H-4049L, G-2534R, G-4089L, G-2535L, G-4040L**

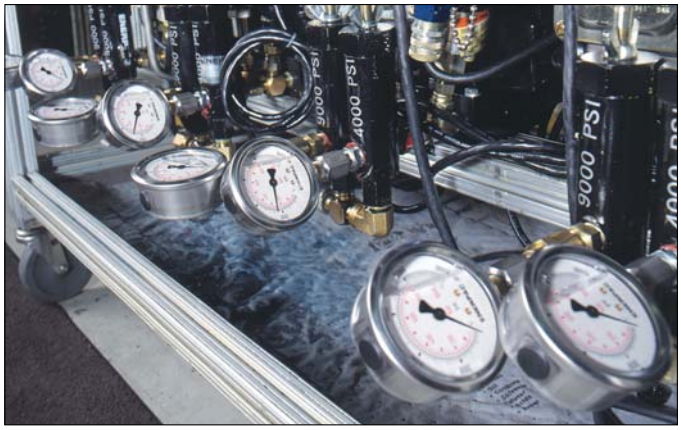
Visual References for System Pressure

Glycerine Filled (G-Series)

- **Calibrated in dual scale reading in psi and bar**
- **All pressure sensing parts sealed and dampened by glycerine for long life**
- **Includes safety blow-out disk and pressure equalling membrane**
- **Gauge snubbers or needle valves recommended for high cycle applications**

High Cycle (H-Series)

- **Calibrated in dual scale reading in psi and bar**
- **Ideal for use in many applications, specifically for high cycle and harsh environments**
- **Gauge snubbers or needle valves recommended to shut off gauge when not in use**



◀ *Enerpac glycerine filled gauges, used to cycle test hydraulic pumps in a test lab environment.*

Gauge adaptor

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

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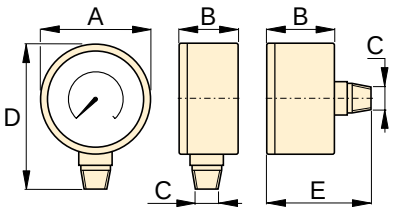
Snubber Valve

Infinitely adjustable for metering oil out of a gauge. The V-9 Snubber Valve is also suitable as a shut-off valve to protect the gauge during high cycle applications.

Page: **133**



Dimensions (in)						
Face ø	Connection	A	B	C	D	E
2.5	Lower Mount	2.50	1.46	1/4 NPTF	3.31	–
2.5	Center Rear	2.50	1.46	1/4 NPTF	–	2.48
4.0	Lower Mount	4.0	1.15	1/4 NPTF	4.80	–
4.0	Lower Mount	4.0	1.93	1/2 NPTF	5.38	–

Note: dimensions for reference only.

G H Series

Pressure Range:
0-15,000 psi

Face Diameter:
2.5 - 4 inch

Accuracy, % of full scale:
±1% and 1½%

Maximum Indicating Pointer

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

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

Note: For use on H-Series gauges only.

▼ SELECTION CHART

Gauge Series	Pressure Range		Model Number				Major Grad.		Minor Grad.		Major Grad.		Minor Grad.	
			Face ø 2.5" 1/4 NPTF Lower Mount	Face ø 2.5" 1/4 NPTF Center Rear	Face ø 4" 1/4 NPTF Lower Mount	Face ø 4" 1/2 NPTF Lower Mount	psi				bar			
	(psi)	(bar)	Accuracy ±1½%	Accuracy ±1½%	Accuracy ±1%	Accuracy ±1%	(2.5")	(4")	(2.5")	(4")	(2.5")	(4")	(2.5")	(4")
G-Series	0-100	0-7	**G2509L**	–	–	–	10	–	2	–	1	–	.01	–
	0-160	0-11	**G2510L**	–	–	–	10	–	2	–	1	–	.02	–
	0-200	0-14	**G2511L**	–	–	–	50	–	5	–	1	–	.02	–
	0-300	0-20	**G2512L**	–	–	–	50	–	5	–	5	–	.50	–
	0-600	0-40	**G2513L**	–	–	–	100	–	10	–	10	–	1	–
	0-1,000	0-70	**G2514L**	**G2531R**	–	–	100	–	20	–	10	–	1	–
	0-2,000	0-140	**G2515L**	–	–	–	500	–	50	–	10	–	2	–
	0-3,000	0-200	**G2516L**	–	–	–	500	–	50	–	50	–	5	–
	0-6,000	0-400	**G2517L**	**G2534R**	–	–	1000	–	100	–	100	–	10	–
	0-10,000	0-700	**G2535L**	**G2537R**	**G4088L**	**G4039L**	2000	1000	200	100	100	100	10	10
	0-15,000	0-1000	**G2536L**	**G2538R**	**G4089L**	**G4040L**	3000	3000	200	200	100	100	20	20
H-Series	0-10,000	0-700	–	–	**H4049L**	**H4071L**	–	1000	–	100	–	100	–	10

▼ Gauge shown: **T-6003L**

T
Series

Pressure Range:
0-50,000 psi

Face Diameter:
6.4 inch

Accuracy, % of full scale:
±1/2% and ±1 1/2%

Cone Mount Gauge Adaptor

Contains fittings to connect .25" cone fitting gauge to .38" cone system.
Kit includes **43-301** tee and **43-704** gauge adaptor.
Order model number: **83-011**.

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Cone Mount Gauge Connector

For connecting gauges with .25" cone fitting directly to model number 11-100 or 11-400 pump. May be used with other .25" cone systems
Order model number: **43-704**

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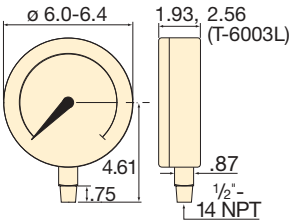
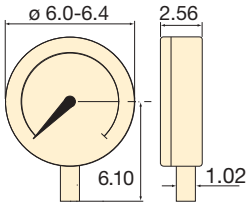
- **Calibrated for dual scale reading in psi and bar**
- **All gauges have spring-loaded backs with rubber blow-out plugs to protect case assembly in case of over-pressurization**
- **40,000 and 50,000 psi models include flange mounting**
- **1/2" NPT versions are made of high strength alloy steel**
- **.25" cone models are made of 316 stainless steel, with 403 stainless steel on 40,000 and 50,000 psi models**
- **Integral maximum indicator pointer standard on all gauges**

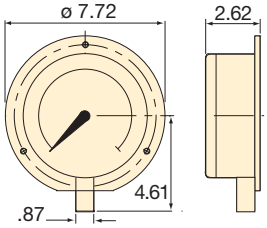
▼ *An Enerpac P-2282 hand pump equipped with a T-6011L test system gauge is used for proof pressure testing of hydraulic valves.*



T-6001L, -6002L, 6003L



T-6007L, -6008L



T-6010L, -6011L

Pressure Range (psi)	Pressure Range (bar)	Model Number: Alloy Steel 1/2" NPTF	Model Number: Stainless Steel .25" Cone	Number Intervals (psi)	Graduation Intervals (psi)	Number Intervals (bar)	Graduation Intervals (bar)
0-1,000*	**0-70**	**T-6001L**	**–**	100	10	10	1
0-5,000*	**0-350**	**T-6002L**	**–**	500	50	50	5
0-10,000*	**0-700**	**T-6003L**	**T-6007L**	1,000	100	100	10
0-20,000*	**0-1400**	**–**	**T-6008L**	1,000	100	200	20
0-40,000**	**0-2800**	**–**	**T-6010L**	5,000	200	500	20
0-50,000**	**0-3500**	**–**	**T-6011L**	5,000	500	500	50

* Accuracy: ±1/2%
** Accuracy: ±1 1/2%

Digital, Hydraulic Pressure Gauges

▼ Shown: **DGP-1**

DG Series

Pressure Range:
0-10,000 psi

Voltage:
115 volt

Accuracy, % of full scale:
± 1/2%

Gauge adaptor

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

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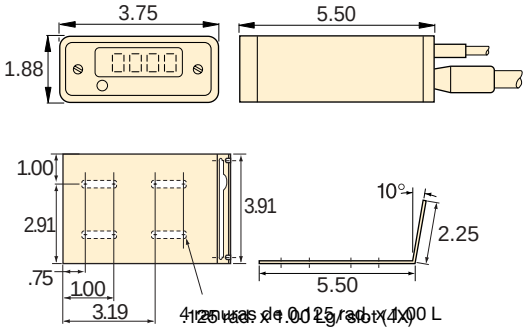
- **Each gauge includes: pressure transducer (1/4" NPTF) power transformer, UL/CSA approved line interconnect cord and screwdriver**
- **10 psi increments in large, easy-to-read digits**
- **Angle mounting bracket standard with DGB-1 and DGP-1**
- **Standard DIN size case allows for easy mounting**
- **Zero set screw easily adjusts to zero gauge as needed**
- **Solid state design; no moving parts**
- **30°F – 130°F operating temperature**



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

Reads Hydraulic Pressure up to 10,000 psi	Retains Peak Value	Adjustable Hydraulic Pressure Limit	Model Number
●			DGB-1
●	●		DGP-1
●		●	DGL-1

▼ Shown left to right: **GA-3, V-9, GA-1, GA-2, GA-4, NV-25, GA-918**

GA, NV, V
Series

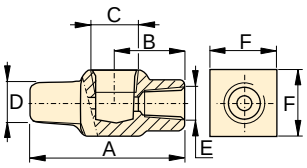
Operating Pressure:
10,000 psi



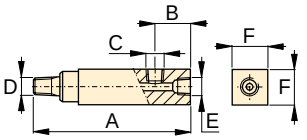

Gauge Adaptors (GA-Series)

- For easy mounting of a pressure gauge into your system
- Male end screws into pump or cylinder port, female end accepts hose or coupler, 3rd port is for gauge connection
- GA-918 provides for swivel connection

Model Number	Gauge Port (NPTF)	Male End (NPTF)	Female End (NPTF)	Dimensions (in)					
				A	B	C	D	E	F
GA-1	1/2	3/8	3/8	2.81	1.24	1/2 NPTF	3/8 NPTF	3/8 NPTF	1.25
GA-2	1/2	3/8		6.10	1.38	1/2 NPTF	3/8 NPTF	3/8 NPTF	1.25
GA-3	1/4	3/8		5.25	1.38	1/4 NPTF	3/8 NPTF	3/8 NPTF	1.25
GA-4	1/2	1/4		4.38	1.38	1/2 NPTF	1/4 NPTF	3/8 NPTF	1.25



GA-1

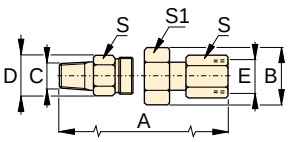


GA-2, GA-3, GA-4

Swivel Adaptor (GA-918)

- Simplifies gauge installation and reading

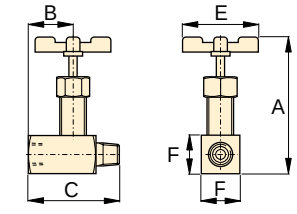
Model Number	Dimensions (in)						
	A	B	C	D	E	S	S1
GA-918	4.62	1.72	1/2 NPTF	1.30	1/2 NPTF	1.13	1.50



Needle Valves (V- and NV-Series)

- Both NV-25 and V-9 provide positive shut-off
- 303 stainless steel stem, 16 threads/in (NV-25)

Model Number	Orifice	Thread Size	Dimensions (in)				
			A	B	C	E	F
NV-25	.22	1/4 NPTF	3.50	1.06	2.34	2.50	.88
V-9	.28	1/2 NPTF	3.63	1.25	2.50	2.50	1.00



ENERPAC hydraulic valves are available in a wide variety of models and configurations.

Whatever your requirements... directional control, flow control, or pressure control... you can be sure that Enerpac has the correct valve to match your application exactly.

Designed and manufactured for safe operation up to 10,000 psi, the range of Enerpac valves allows for direct pump mounting, remote mounting, manual or solenoid actuation, and in-line installation, giving you flexible solutions to control your hydraulic system.

▼ Shown from left to right: **VM-3, VSP-324, VM-3L, VSP-3, VM-2, VC-15**

For Reliable Control of Single-Acting Cylinders

Push-Button Control Station

VSP 115 VAC solenoid valves are supplied with 8 ft. power cord and push-button **IC** control station with 10 ft. control cord.

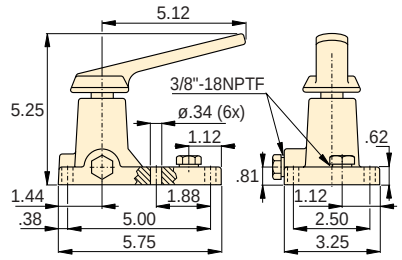
Solenoid Valve Type	Control station included
3-way, 3-position	**IC-43**
Auto-retract	**IC-32**

- **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 included with remote valves**
- **Available "locking" option on VC and VM Series valves for load-holding applications**
- **Standard "locking" feature on VSP Series 3-position valves**
- **VSP solenoid valves can be converted to an "auto-retract" style valve by simply changing the IC Pendant (see page 128)**

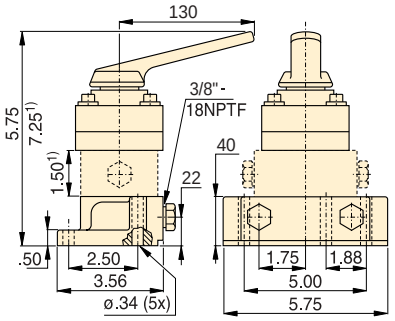
▼ *A typical multi-cylinder control set-up using V and VC Series valves.*

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 115 VAC	Remote Mounted	3-position, Tandem Center	
Solenoid 115 VAC	Pump Mounted	3-position, Tandem Center	
Solenoid 24 VDC	Pump Mounted	3-position, Tandem Center	

Valve dimension in inches

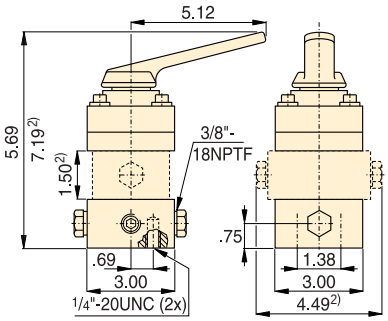


VM-2



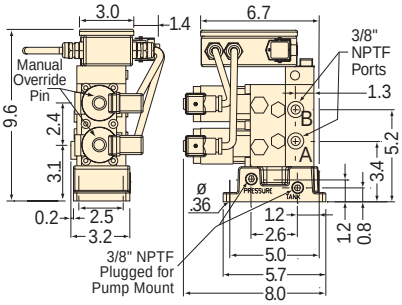
VM-3, VM-3L

[1] VM-3L only



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

[2] VC-3L and VC-15L only

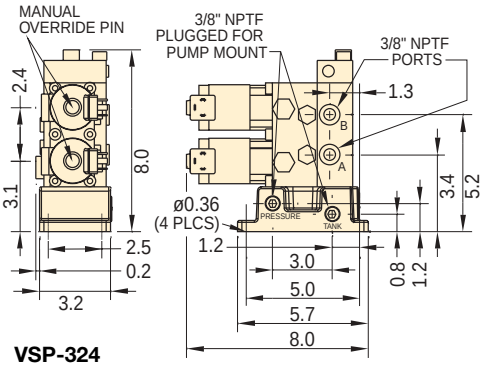


VSP-3, VSPR-3

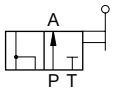
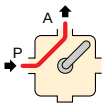
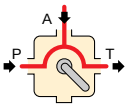
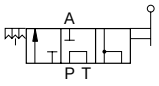
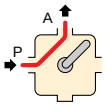
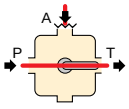
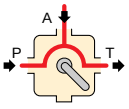
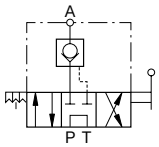
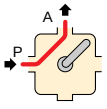
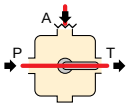
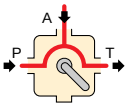
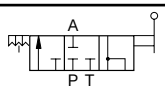
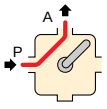
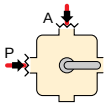
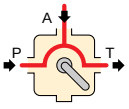
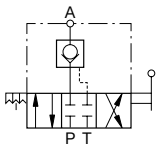
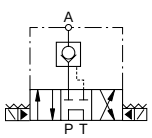
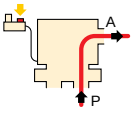
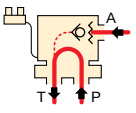
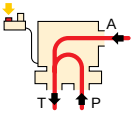
VC, VM, VSP Series

Flow Capacity:
4.5 gal/min

Maximum Operating Pressure:
10,000 psi



VSP-324

Model Number	Hydraulic Symbol	Schematic Flowpath			Weight
		Advance	Hold	Retract	(lbs)
VM-2					4.8
VM-3					4.6
VC-3					6.4
VM-3L					8.6
VC-3L					10.3
VC-15					6.4
VC-15L					10.3
VSPR-3					24.0
VSP-3					24.0
VSP-324					23.5

VSPCK24 Conversion Kit

For use when replacing a VS-324 with a VSP-324.

Locking Valves

For applications that require positive load holding, VC and VM Series valves (except the VM-2 valve) 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.

▼ Shown left to right: **VM-4L, VSP-424, VM-4, VSPR-4, VC-20, VC-4L**

For Double-Acting Cylinder Control

Adaptor Cables

Adaptor cables are available to allow the VSP Series valves to be used with existing Enerpac equipment. Please contact Enerpac's Technical Service Department for specific applications.

- **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 included with remote valves**
- **Available "locking" option on VC and VM Series valves for load-holding applications**
- **Standard "locking" feature on VSP Series valves**

Push-Button Control Station

VSP 115 VAC solenoid valves are supplied with 8 ft. power cord and push-button **IC** control station with 10 ft. control cord. Control station available separately.

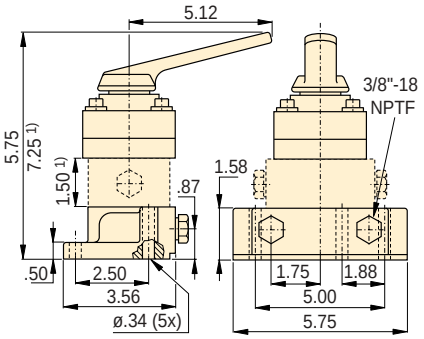
Applications: **IC-32:** Auto-retract versions
IC-43: 3-way and 4-way versions

IC Series

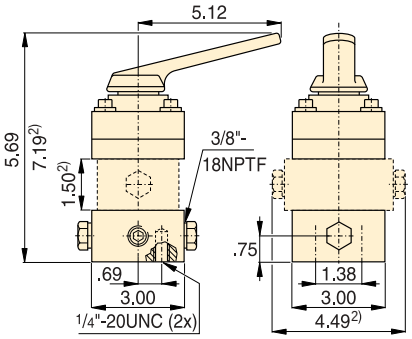
- Molded from high strength engineered resins
- Industrial strength strain relief protects cord from abuse
- Two button unit works with 3-way and 4-way valves, momentary push button with mechanical interlock
- Single button works with 3-way where automatic retract is required
- UL, CSA and CE approved

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 115 VAC	Remote Mounted	3-position, Tandem Center	
Solenoid 115 VAC	Pump Mounted	3-position, Tandem Center	
Solenoid 24 VDC	Pump Mounted	3-position, Tandem Center	

Valve dimensions in inches



VM-4, VM-4L 1) VM-4L only

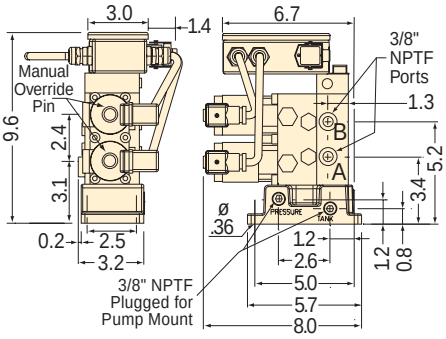


VC-4, VC-4L, VC-20, VC-20L
2) VC-4L and VC-20L only

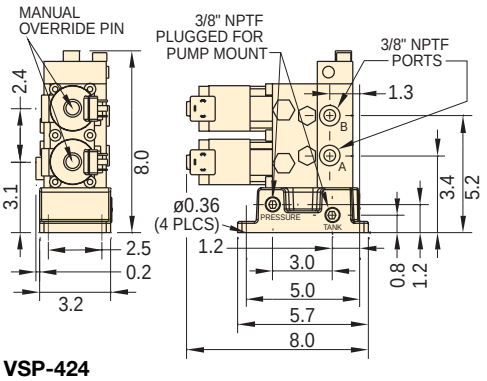
VC, VM, VSP Series

Flow Capacity:
4.5 gal/min

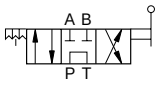
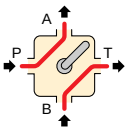
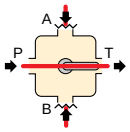
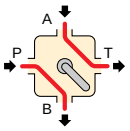
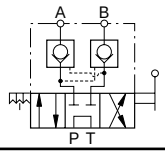
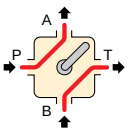
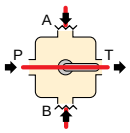
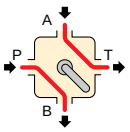
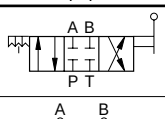
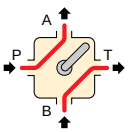
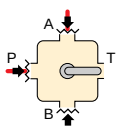
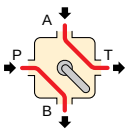
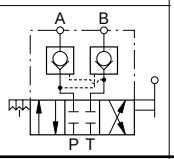
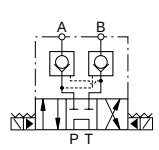
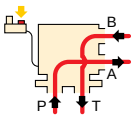
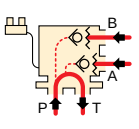
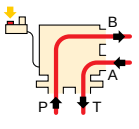
Maximum Operating Pressure:
10,000 psi



VSP-4, VSPR-4



VSP-424

Model Number	Hydraulic Symbol	Schematic Flowpath			Weight
		Advance	Hold	Retract	(lbs)
VM-4					4.6
VC-4					6.4
VM-4L					8.6
VC-4L					10.3
VC-20					6.4
VC-20L					10.3
VSPR-4					24.0
VSP-4					24.0
VSP-424					23.5

VSPCK24 Conversion Kit

For use when replacing a VS-424 with a VSP-424.

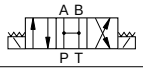
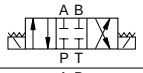
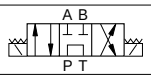
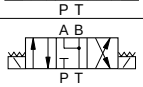
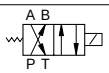
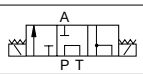
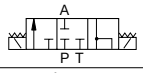
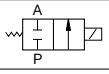
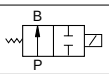
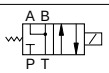
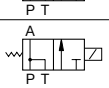
Locking Valves

For applications that require positive load holding, VC and VM Series valves (except the VM-2 valve) 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.

▼ Shown top to bottom: **VEC-15600D, VEK-15000B, VEC-15000B**

- **Shear seal design minimizes internal leakage**
- **Ideal for independent control of multiple cylinders or functions**
- **Relief valve and pilot-operated check accessory valves are stackable between manifold and valve body**
- **Remote and pump mounting**

Valve Flow Path	Used with cylinder	Valve Code	Hydraulic Symbol
4-Way, 3-Position (4/3) Open Center	Double-acting	**A**	
4-Way, 3-Position (4/3) Closed Center	Double-acting	**B**	
4-Way, 3-Position (4/3) Tandem Center	Double-acting	**C**	
4-Way, 3-Position (4/3) Float Center	Double-acting	**D**	
4-Way, 2-Position (4/2) Crossover Offset	Double-acting	**E**	
3-Way, 3-Position (3/3) Tandem center	Single-acting	**F**	
3-Way, 3-Position (3/3) Closed Center	Single-acting	**G**	
2-Way, 2-Position (2/2) Normally Closed	System Un-loading	**H***	
2-Way, 2-Position (2/2) Normally Open		**K***	
4-Way, 2-Position (4/2) Float Offset	Double-acting	**M**	
3-Way, 2-Position (3/2) Normally Open	Single-acting	**P**	

* Requires use of tank port for dump or unloading

Unmatched Combinations and Possibilities

3-Way Check Valve

Use a **VS-51** 3-way pilot operated check valve assembly to convert your 3-way modular valve into a load-holding valve.

4-Way Check Valve

Use a **VS-61** 4-way pilot operated check valve assembly to convert your 4-way modular valve into a load-holding valve.

System Pressure Control

To add system pressure control to your modular valve, order **VS-11 Relief Valve** assembly.

Bolt Kits for Accessory Valves

Order Bolt Kit **BK-2** when adding one of the accessory valves. Order Bolt Kit **BK-3** when adding any combination of two accessory valves.

How to order one of the 1,300 possible model numbers?

With over 1,300 possible model numbers, Enerpac has the perfect valve for you. Use the "chart" to build your own valve for the specific application you require. This is the complete guide to all the Modular valves that are available.

CUSTOM BUILD YOUR MODULAR VALVES

▼ This is how a Modular Valve Model Number is built up:

VE	A	-	1	5	600	-	D
1 Solenoid Operated Valve	2 Valve Flow Path		3 Flow Capacity	4 Voltage	5 Accessory Valves		6 Manifold

1 Product Type
VE = Solenoid Operated Valve

2 Valve Code
A = 4/3 Open Center
B = 4/3 Closed Center
C = 4/3 Tandem Center
D = 4/3 Float Center
E = 4/2 Crossover Offset
F = 3/3 Tandem Center
G = 3/3 Closed Center
H = 2/2 Normally Closed
K = 2/2 Normally Open
M = 4/2 Float Offset
P = 3/2 Normally Open

3 Flow Capacity
1 = 4 gallons per minute

4 Voltage
1 = 24 VDC
2 = 220/240 V, 1 ph, 50 Hz
5 = 115 V, 1 ph, 60 Hz
6 = 230 V, 1 ph, 60 Hz

5 Accessory Valves
000 = No accessory valves
100 = Relief Valve only
150 = Relief Valve and 3-way pilot operated check valve
Only for VEF/VEG
160 = Relief Valve and 4-way pilot operated check valve
Only for VEA/VEB/VEC/VED
500 = 3-way pilot operated check valve
Only for VEF/VEG
600 = 4-way pilot operated check valve
Only for VEA/VEB/VEC/VED

6 Manifold
A = No manifold
B = Remote Mounted
D = Pump Mounted*

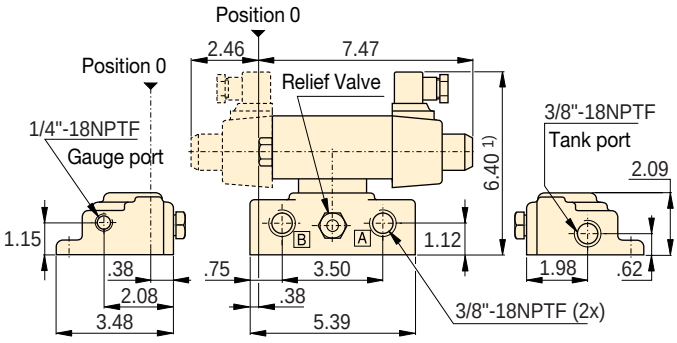
* Only for valve code: **VEA/VEC/VEF**

VE Series

Flow Capacity:
4 gal/min

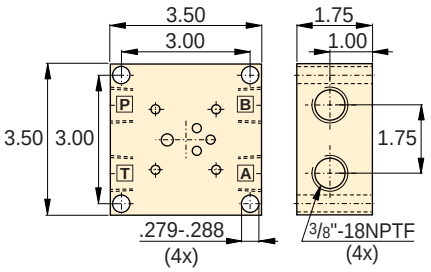
Maximum Operating Pressure:
10,000 psi

Example: VEA-15600-D
VEA-15600-D is a Modular Valve with a 4-way, 3-position open center flowpath, 115 VAC, and an integral pilot-operated check valve, for mounting on an Enerpac pump.



1) add 1.85 inch for each Accessory Valve

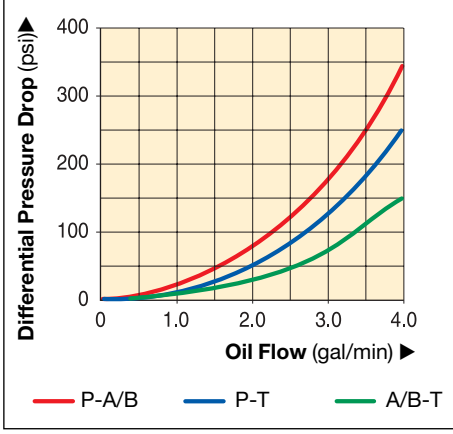
Modular Valve Pump Mounted Valve dimensions in inches



Modular Valve Remote Mount Manifold

Maximum Operating Pressure (psi)	Amperage Draw			Seal Material	Valve Plug
	24 VDC	115 VAC 60 Hz	230 V 60 Hz		
0 - 10,000	N/A inrush	3.6 A inrush	1.8 A inrush	Buna-N, Polyure-thane	DIN 43650
	2.5 A Holding	1.0 A Holding	.5 A Holding		

Pressure Drop versus Oil Flow



▼ 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 10,000 psi 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 Applications

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

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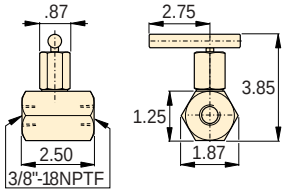
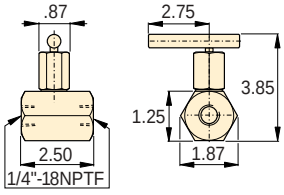
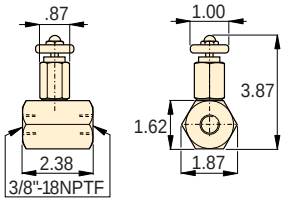


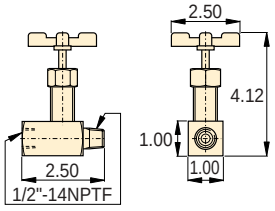
V-82



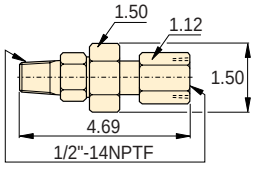
V-182



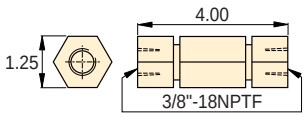
V-8F



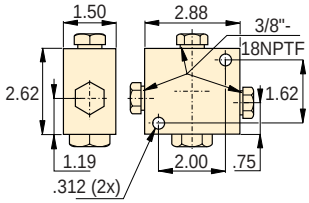
V-9



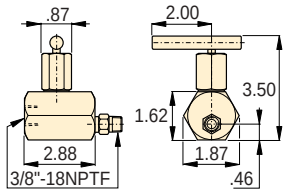
V-10



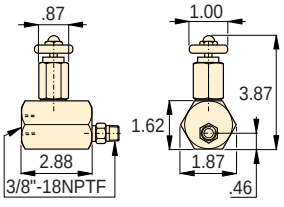
V-17



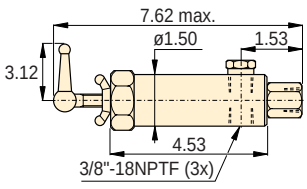
V-42



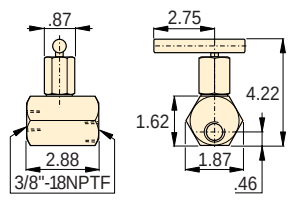
V-66



V-66F



V-152



V-161

Valve Dimensions in inches

Premounted Manifold

For two-port manifold with integral flow control valves, see the manifold page of the System Components section.

Page: 116

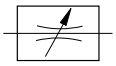
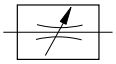
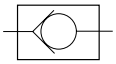
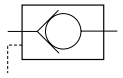
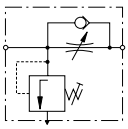
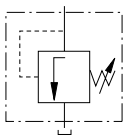
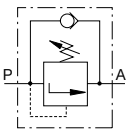
Fittings

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

Page: 117

V Series

Maximum Operating Pressure:
10,000 psi

Valve Type and Model Number		Description		Hydraulic Symbol
Needle Valve **V-82** **V-182F** **V-8F**		**V-82:** To control cylinder speed. Can also be used as shut-off valve for temporary load holding. 3/8 NPTF female ports. **V-182**: Same as V-82, but with	1/4" NPTF female ports. Also suitable for gauge snubbing. **V-8F:** Similar to V-82, but with very fine metering for precise flow control. **Not recommended as shut-off valve.**	
Snubber Valve **V-9**		**V-9:** Adjustable for metering oil out of a gauge to prevent snapping of gauge pointer when load or pressure is suddenly released. Also suitable as shut-off valve to protect the	gauge during high cycling applications. 1/2" NPTF male and female threads for use with GA-1, GA-2 or GA-4 gauge adaptors.	
Auto Damper® Valve **V-10**		**V-10:** To be used when gauge pressure must be monitored during high cycle applications. Creates a flow resistance when load is released suddenly.	No adjustments are necessary. 1/2" NPTF male and female threads for use with GA-1, GA-2 or GA-4 gauge adaptors.	
Check Valve **V-17**		**V-17:** Ruggedly built to resist shock and operate with low pressure drop. Closes smoothly without pounding. 3/8 NPTF female ports.		
Pilot Operated Check Valve **V-42**		**V-42:** Can be mounted at the cylinder to hold the load in case of system pressure loss. Normally used with double-acting cylinders where pilot port receives pressure from a	Tee-fitting in the cylinder retract line. 3/8" NPTF female ports. Pilot pressure ratio 14% (6.5:1).	
Manually Operated Check Valve **V-66** **V-66F**		**V-66:** 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.	**V-66F:** Similar to V-66, but with very fine metering capability for precise flow control.	
Pressure Relief Valve **V-152**		**V-152:** Limits pressure developed by the pump in hydraulic circuit, thus limiting the force created by other components. Valve opens whenever preset pressure is reached.	To increase pressure setting, turn handle clockwise. Includes: • 3 ft return line hose kit, • ±3% repeatability, • 800-10,000 psi adjustment range.	
Sequence Valve **V-161**		**V-161:** To control oil flow to a secondary circuit. Flow is blocked until system pressure rises to the V-161 setting. When this pressure level is reached, the V-161 opens to	allow flow to the secondary circuit. A pressure differential is always maintained between the primary and secondary circuit. **Min. operating pressure: 2000 psi.**	

ENERPAC Hydraulic Presses are available in a wide variety of standard capacities and configurations, or you can "build your own" with the easy-to-use matrix.

The press frames are a welded construction for maximum strength and durability, and when combined with the power of high pressure hydraulics, will provide years of safe and dependable service in your workshop.

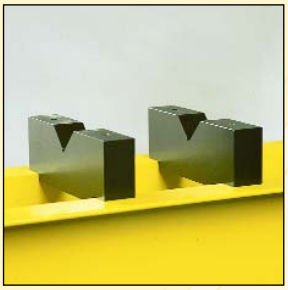
Enerpac press capacities range from 10 ton to 200 ton, and are available in Bench, C-Frame, Arbor, H-Frame and Roll-Frame models.

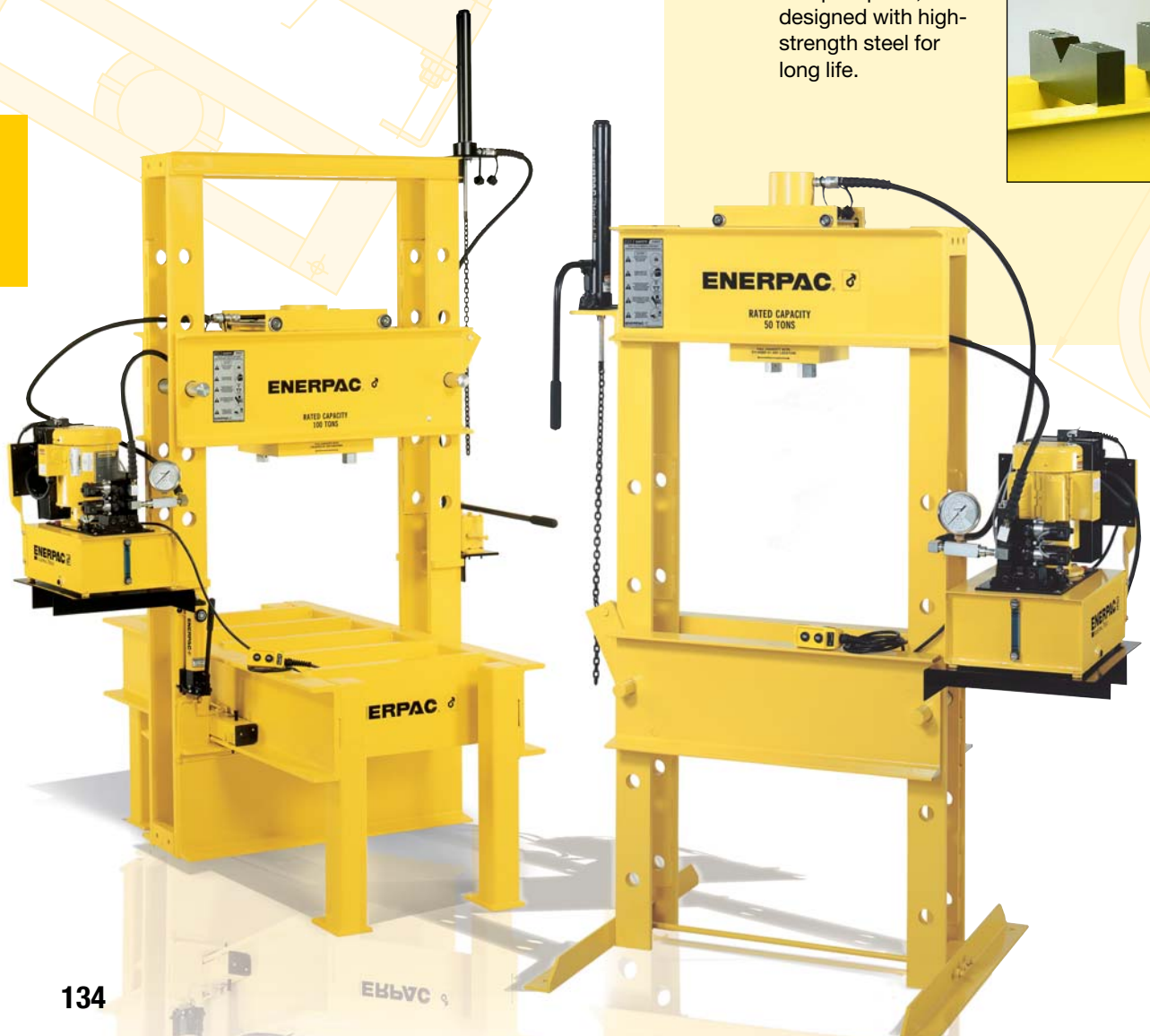
These Press features increase productivity and will broaden the range of applications:

Standard on many Enerpac IP Presses, the exclusive Hydra-Lift™ offers effortless adjustment to the press daylight by use of a hydraulic lift.

Easy horizontal cylinder position is achieved with the unique "roller-head" cylinder mounting block, standard on most Enerpac IP Presses.

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





Capacity (tons)	Press type and functions	Series		Page
10-200	H-Frame Presses	IP		136 ▶
50-200	Roll Frame Presses	IPR		140 ▶
5-20	C-Clamp Presses	A		142 ▶
10-30	Arbor Presses	A		142 ▶
10	Bench Frame Press	A IP		142 ▶
10-200	Press Accessories Press Speed Chart			144 ▶
10-200	Custom Built Presses	IP		145 ▶
10-100	Value Line Presses	VLP		146 ▶
5 1-100	Tension Meter Load Cells	TM LH		148 ▶
–	Control Components	IC		149 ▶

▼ Press shown: **IPE-5060**

- **Quality welded frame for maximum strength and long life**
- **Exclusive "Hydra-Lift" bed for effortless adjustment of the vertical daylight (10 ton models are manual)**
- **Roller head design is standard to allow movement and locking of the cylinder from side to side (10 ton, 25 ton and 30 ton are manual)**
- **All models in the Quick Selection Chart have been matched to a pump, cylinder, hoses and gauge, offering the complete package**

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

Setting the Industry Standard

Cylinder Mounting Block*

Allows cylinder mounting into a press frame, while also allowing side to side adjustment of cylinder position.

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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 most H-Frame presses.

Page: 144

Pump Mounting Bracket*

Heavy duty steel brackets allow mounting of one of the Enerpac Power Sources to power your press.

Page: 144

Gauge included*

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

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* Standard on most H-Frame presses

IP Series

Capacity:
10-200 tons

Maximum Daylight & Width:
54.50 & 48.00 inch

Maximum Operating Pressure:
10,000 psi

****Cylinder Types**

= Single-Acting, Spring Return

= Double-Acting, Hydraulic Return

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

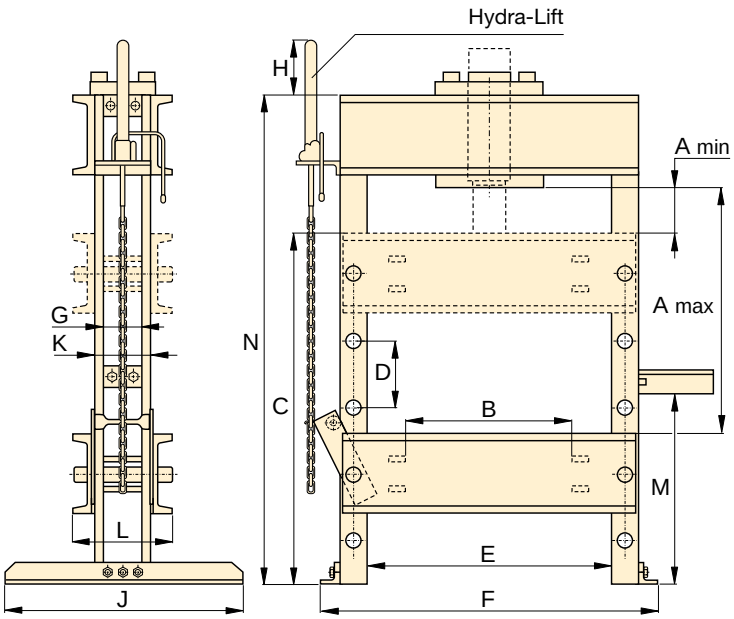
Press Capacity (tons)	Maximum Vertical Daylight (in)	Maximum Bed Width (in)	Power Source: Type: Man.	Type: Elec.	Type: Air	Valve: Man.	Valve: Elec.	Press Model Number	Cylinder**: Single-Acting, Spring Return	Cylinder**: Double-Acting, Hydraulic Return	Cylinder**: Stroke (in)	Speed (sec/in)*: Rapid Advance	Speed (sec/in)*: Pressing
10	40.00	18.63		●		●		IPE-1215	●		10	0.90	6.70
	40.00	18.63			●	●		IPA-1220	●		10	2.20	13.40
	40.00	18.63	●			●		IPH-1240	●		10	{4}	{15}
	40.00	18.63	●			●		IPH-1234		●	10	{2}	{15}
	40.00	18.63			●	●		IPA-1244		●	10	2.20	13.40
25	54.50	29.00		●		●		IPE-2505	●		6	1.50	15.40
	54.50	29.00		●			●	IPE-2510	●		14	1.10	7.00
	54.50	29.00			●	●		IPA-2520	●		14	5.20	30.90
	54.50	29.00	●			●		IPH-2531	●		14	{5}	{34}
30	54.50	29.00			●	●		IPA-3071		●	14	0.60	43.00
	54.50	29.00		●			●	IPE-3060		●	14	1.40	9.00
	54.50	29.00	●			●		IPH-3080		●	14	{7}	{34}
50	48.56	28.75		●			●	IPE-5010	●		13	1.00	11.10
	48.56	28.75			●	●		IPA-5021	●		6	1.00	74.00
	48.56	28.75	●			●		IPH-5030	●		6	{2}	{38}
	48.56	28.75	●			●		IPH-5031	●		6	{11}	{73}
	48.56	28.75		●		●		IPE-5005	●		6	2.90	28.90
	48.56	28.75			●	●		IPA-5073		●	13	1.00	22.20
	48.56	28.75		●			●	IPE-5060		●	13	1.00	11.10
	48.56	28.75	●			●		IPH-5080		●	13	{2}	{38}
100	42.50	35.00			●	●		IPA-10023	●		10	1.90	41.20
	42.50	35.00		●			●	IPE-10010	●		10	1.90	20.60
	42.50	35.00	●			●		IPH-10030	●		10	{3}	{70}
	42.50	35.00		●			●	IPE-10060		●	13	1.90	20.60
	42.50	35.00	●			●		IPH-10080		●	6	{3}	{70}
150	48.50	48.00		●			●	IPE-15065		●	13	2.85	15.40
200	48.50	48.00		●			●	IPE-20065		●	13	3.80	20.60

* {--} Speed in strokes per inch plunger travel

The moveable "cylinder mounting block" allows the user to quickly adapt the press to a specific job.▶

◀ For full features see page 136.

Press Capacity (tons)	Press Model Number	Pump Model Number	Page:	Cylinder Model Number	Page:	H-Frame Press Dimensions (in) A (max)	A (min)	B	C	D	E
10	**IPE-1215**	PEM-1201B	75	RC-1010	9	40.00	2.44	–	46.75	5.00	18.63
	IPA-1220	PATG-1102N	90	RC-1010	9	40.00	2.44	–	46.75	5.00	18.63
	IPH-1240	P-392	58	RC-1010	9	40.00	2.44	–	46.75	5.00	18.63
	IPH-1234	P-84	60	RR-1010	27	40.00	2.44	–	46.75	5.00	18.63
	IPA-1244	PAMG-1402N	90	RR-1010	27	40.00	2.44	–	46.75	5.00	18.63
25	**IPE-2505**	PUJ-1200B	66	RC-256	9	54.75	7.00	–	57.00	11.88	29.00
	IPE-2510	PER-2032	79	RC-2514	9	54.75	7.00	–	57.00	11.88	29.00
	IPA-2520	PATG-1102N	90	RC-2514	9	54.75	7.00	–	57.00	11.88	29.00
	IPH-2531	P-80	60	RC-2514	9	54.75	7.00	–	57.00	11.88	29.00
30	**IPA-3071**	PAM-1042	93	RR-3014	27	54.75	7.00	–	57.00	11.88	29.00
	IPE-3060	PER-2042	79	RR-3014	27	54.75	7.00	–	57.00	11.88	29.00
	IPH-3080	P-84	60	RR-3014	27	54.75	7.00	–	57.00	11.88	29.00
50	**IPE-5010**	GPER-3320BN	85	RC-5013	9	47.75	7.06	18.76	54.00	10.38	28.75
	IPA-5021	PAM-1022	93	RC-506	9	47.75	7.06	18.76	54.00	10.38	28.75
	IPH-5030	P-462	60	RC-506	9	47.75	7.06	18.76	54.00	10.38	28.75
	IPH-5031	P-80	60	RC-506	9	47.75	7.06	18.76	54.00	10.38	28.75
	IPE-5005	PUJ-1200B	66	RC-506	9	47.75	7.06	18.76	54.00	10.38	28.75
	IPA-5073	PAM-9408N	95	RR-5013	27	47.75	7.06	18.76	54.00	10.38	28.75
	IPE-5060	GPER-3420BN	85	RR-5013	27	47.75	7.06	18.76	54.00	10.38	28.75
	IPH-5080	P-464	60	RR-5013	27	47.75	7.06	18.76	54.00	10.38	28.75
100	**IPA-10023**	PAM-9208N	95	RC-10010	9	41.50	7.00	20.00	51.00	11.69	35.00
	IPE-10010	GPER-3320BN	85	RC-10010	9	41.50	7.00	20.00	51.00	11.69	35.00
	IPH-10030	P-462	60	RC-10010	9	41.50	7.00	20.00	51.00	11.69	35.00
	IPE-10060	GPER-3420BN	85	RR-10013	27	41.50	7.00	20.00	51.00	11.69	35.00
	IPH-10080	P-464	60	RR-1006	27	41.50	7.00	20.00	51.00	11.69	35.00
150	**IPE-15065**	GPER-5420GN	85	RR-15013	27	49.50	12.50	28.00	54.50	10.00	48.00
200	**IPE-20065**	GPER-5420GN	85	RR-20013	27	48.00	12.50	28.00	54.50	10.00	48.00



IP Series

Capacity:
10 - 200 tons

Maximum Daylight & Width:
54.50 & 48.00 inch

Maximum Operating Pressure:
10,000 psi

	H-Frame Press Dimensions (in)								Weight	Press Model Number
	F	G	H	J	K	L	M	N	(lbs)	
	24.88	–	–	29.75	4.25	7.44	35.00	52.00	298	**IPE-1215**
	24.88	–	–	29.75	4.25	7.44	35.00	52.00	160	**IPA-1220**
	24.88	–	–	29.75	4.25	7.44	35.00	52.00	158	**IPH-1240**
	24.88	–	–	29.75	4.25	7.44	35.00	52.00	189	**IPH-1234**
	24.88	–	–	29.75	4.25	7.44	35.00	52.00	163	**IPA-1244**
	40.50	4.00	13.25	30.00	5.25	10.69	26.50	76.00	605	**IPE-2505**
	40.50	4.00	13.25	30.00	5.25	10.69	26.50	76.00	690	**IPE-2510**
	40.50	4.00	13.25	30.00	5.25	10.69	26.50	76.00	610	**IPA-2520**
	40.50	4.00	13.25	30.00	5.25	10.69	26.50	76.00	620	**IPH-2531**
	40.50	4.00	13.25	30.00	5.25	10.69	26.50	76.00	684	**IPA-3071**
	40.50	4.00	13.25	30.00	5.25	10.69	26.50	76.00	717	**IPE-3060**
	40.50	4.00	13.25	30.00	5.25	10.69	26.50	76.00	664	**IPH-3080**
	42.75	5.00	8.75	36.00	7.25	13.13	30.75	76.00	1,093	**IPE-5010**
	42.75	5.00	8.75	36.00	7.25	13.13	30.75	76.00	968	**IPA-5021**
	42.75	5.00	8.75	36.00	7.25	13.13	30.75	76.00	968	**IPH-5030**
	42.75	5.00	8.75	36.00	7.25	13.13	30.75	76.00	926	**IPH-5031**
	42.75	5.00	8.75	36.00	7.25	13.13	30.75	76.00	930	**IPE-5005**
	42.75	5.00	8.75	36.00	7.25	13.13	30.75	76.00	1,057	**IPA-5073**
	42.75	5.00	8.75	36.00	7.25	13.13	30.75	76.00	1,100	**IPE-5060**
	42.75	5.00	8.75	36.00	7.25	13.13	30.75	76.00	1,003	**IPH-5080**
	51.00	6.75	8.75	36.00	8.75	15.56	33.13	76.00	1,650	**IPA-10023**
	51.00	6.75	8.75	36.00	8.75	15.56	33.13	76.00	1,775	**IPE-10010**
	51.00	6.75	8.75	36.00	8.75	15.56	33.13	76.00	1,656	**IPH-10030**
	51.00	6.75	8.75	36.00	8.75	15.56	33.13	76.00	1,801	**IPE-10060**
	51.00	6.75	8.75	36.00	8.75	15.56	33.13	76.00	1,665	**IPH-10080**
	67.17	9.12	3.09	44.00	13.12	21.85	47.75	90.00	3,957	**IPE-15065**
	67.17	9.12	3.09	44.00	13.12	21.85	47.75	90.00	3,957	**IPE-20065**

H-Frame Press Gauges

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

Press Capacity (tons)	Gauge Model Number	Adaptor Model Number
10	**GF-10P**	**GA-2**
25	**GF-20P**	**GA-2**
30	**GF-835P**	**GA-3**
50	**GF-50P**	**GA-2**
100	**GF-871P**	**GA-3**
150	**GF-200P**	**GA-3**
200	**GF-200P**	**GA-3**

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

Page: **118**

▼ Shown: **IPR-10075**

- **Quality welded frame for maximum strength and long life**
- **Frame rolls easily on 4 steel roller bearings**
- **Hydraulic clamp cylinders lock frame into position**
- **Exclusive "Hydra-Lift" bolster for effortless adjustment of the vertical daylight**
- **Standard roller head design allows movement of the cylinder from side to side**
- **All models in the Quick Selection Chart have been matched to a pump, cylinder, hoses and gauge, offering the complete package**
- **Roll Frame design features a stationary bed with the ability to support heavy loads**

The One and Only

Cylinder Mounting Block*
Allows cylinder mounting into a press frame, while also allowing side to side adjustment of cylinder position.
Page: 144

V-Blocks
These V-Blocks, 200 ton only, are designed for easy fixturing of round stock and other non-uniform materials. Featuring precise fit into the press bolster.
Page: 144

Hydra-Lift
Allows easy, effortless daylight adjustment.
Page: 144

Pump Mounting Bracket*
Heavy duty steel brackets to allow conversion to one of the Enerpac Power Sources to power your press.
Page: 144

* Standard on all Roll Frame presses

****Cylinder Type**

= Double-Acting, Hydraulic Return

Press Capacity (tons)	Vertical Daylight A (in) min	Vertical Daylight A (in) max	Horizontal Daylight E (in)	Pump Model Number	Page:	Press Model Number	Cylinder **	Stroke (in)	Model Number	Page:	Speed (sec/in) Rapid Advance	Speed (sec/in) Pressing
50	6.00	37.12	28.75	GPER-3420BN	83	**IPR-5075**	●	13.13	RR-5013	27	1.0	11.1
100	6.28	41.28	35.00	GPER-5420GN	83	**IPR-10075**	●	13.13	RR-10013	27	1.9	10.3
200	11.00	51.00	48.00	GPER-5420GN	83	**IPR-20075**	●	13.00	RR-20013	27	4.0	21.0

▼ *An IPR-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 overhead crane.*

IPR Series

Capacity:
50-200 tons

Maximum Daylight & Width:
51.00 & 48.00 inch

Maximum Operating Pressure:
10,000 psi

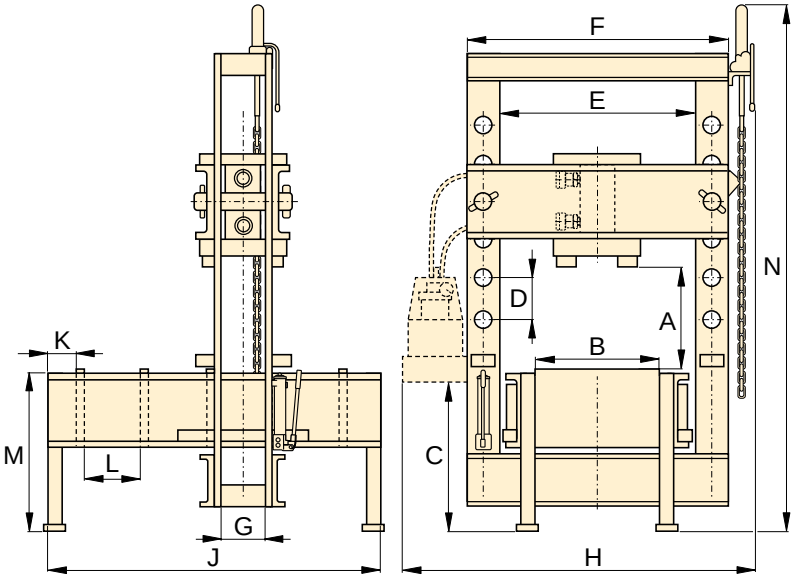
Roll Frame Press Gauges

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

Press Capacity (tons)	Gauge Model Number	Adaptor Model Number
50	**GF-50P**	**GA-2**
100	**GF-871P**	**GA-3**
200	**GF-200P**	**GA-3**

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

Page: **118**



Roll Frame Press Dimensions (in)											Weight	Press Model Number
B	C	D	F	G	H	J	K	L	M	N	(lbs)	
20.71	38.25	10.38	36.75	5.00	55.92	64.00	8.00	10.63	30.00	112.96	2,024	**IPR-5075**
26.50	38.00	8.75	45.00	5.75	63.19	66.00	8.00	10.63	32.00	118.94	3,900	**IPR-10075**
38.75	36.75	10.00	64.00	9.12	84.63	86.50	8.00	15.00	36.00	125.96	9,240	**IPR-20075**

▼ Shown from left to right: **A-220, A-330 and A-258**

The Standard In 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 aluminum castings, this saddle decreases surface marks during the pressing application. Requires 10 ton cylinder and threaded adaptor saddle (A-13).

Arbor Press

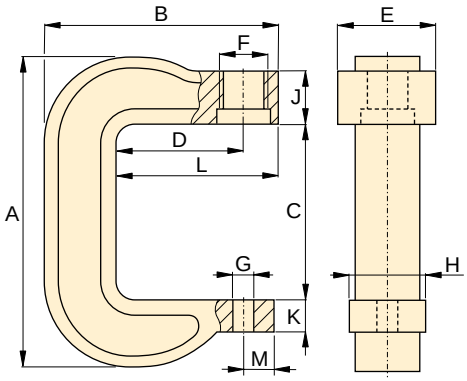
- **Foot mounting holes for horizontal or vertical positioning**
- **Machined work surfaces for easier fixturing**
- **Slotted back to simplify loading and unloading of longer parts**

C-Clamp Press

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

Bench Frame Press

- **Cylinder mounting adaptor allows lateral positioning along rails**
- **Mounting holes for easy mounting to fixed surface**



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

Press Type	Press Capacity (tons)	Maximum Vertical Daylight (in)	Maximum Bed Width (in)	Cylinder Model Number*	Press Model Number	Weight (lbs)	Pump Model Number (– must be ordered separately) Manual	Electric	Air	Page:
Arbor	**10**	8.94	5.31	–	**A-310**	62	–	–	–	–
	30	10.25	7.00	–	**A-330**	220	–	–	–	–
C-Clamp	**5**	6.50	2.00	–	**A-205**	14	–	–	–	–
	10	9.00	3.25	–	**A-210**	37	–	–	–	–
	20	11.88	3.75	**	**A-220**	79	–	–	–	–
Bench	**10**	15.38	15.00	–	**A-258**	107	–	–	–	–
		15.38	15.00	RC-1010	**IPA-1022**	140	–	–	PA-133	**92**
		15.38	15.00	RC-1010	**IPH-1040**	135	P-392	–	–	**58**

* For cylinder specifications see the cylinder section on page 7.

** Requires RC-25 ton cylinder, limited to 20 tons.

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

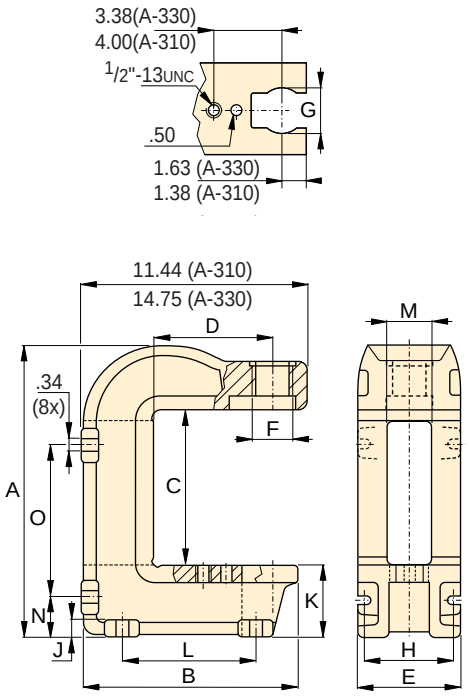
A IP Series

Capacity:
5-30 tons

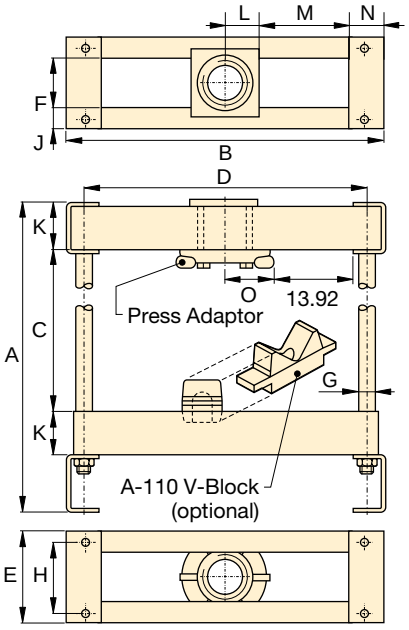
Maximum Daylight & Width:
15.38 & 15.00 inch

Mounting Capabilities:
Fixed or Portable

Maximum Operating Pressure:
10,000 psi



Arbor Press A-310, A-330



Bench Press Frame A-258

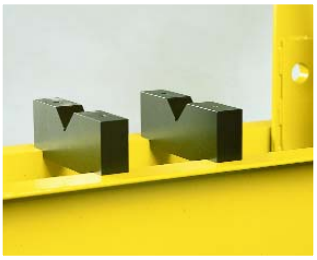
For high-cycle production applications, C-Clamp and Arbor presses should be limited in their capacity. Consult Enerpac Technical Services for specific application details.

Enerpac cylinders and power sources for C-Clamp and Arbor presses must be ordered separately.

Press Dimensions (in)														Press Model Number
A	B	C	D	E	F	G	H	J	K	L	M	N	O	
16.31	11.06	8.94	6.00	5.31	2 1/4-14 UN	2.50	4.81	.75	3.81	6.88	2.56	2.13	8.63	**A-310**
21.94	13.88	10.25	6.00	7.00	3 5/16-12 UN	2.50	5.50	1.00	6.50	8.00	2.63	3.88	10.88	**A-330**
11.44	8.00	6.50	3.75	2.88	1 1/2-16 UN	1.02	2.00	2.50	1.06	5.19	1.00	–	–	**A-205**
16.00	11.13	9.00	6.00	3.25	2 1/4-14 UN	1.02	2.25	2.50	1.69	7.625	1.13	–	–	**A-210**
21.25	13.63	11.88	6.00	4.76	3 5/16-12 UN	1.02	2.75	2.75	1.88	8.38	1.13	–	–	**A-220**
25.63	18.75	16.50	16.00	5.75	3.25	1.00	4.50	1.25	2.75	1.88	5.30	2.20	2.63	**A-258**
25.63	18.75	16.50	16.00	5.75	3.25	1.00	4.50	1.25	2.75	1.88	5.30	2.20	2.63	**IPA-1022**
25.63	18.75	16.50	16.00	5.75	3.25	1.00	4.50	1.25	2.75	1.88	5.30	2.20	2.63	**IPH-1040**

Press Accessories and Press Speed Chart

ENERPAC Hydraulic Technology Worldwide

Description	Frame Capacity	Model Number		Features
Cylinder Mounting Block	10 ton Bench 10 ton H-Frame 25 & 30 ton H-Frame 50 ton H-Frame 100 ton H-Frame	**AD-175** **IPK-1012** **IPK-3012** **PK-501** **PK-1002**		• AD-175 is to convert the Bench press to use an RD-9 ton cylinder • All mounting blocks allow horizontal movement of cylinder
V- Blocks	10 ton Bench Press 10 ton H-Frame 25 & 30 ton H-Frame 50 ton H-Frame 100 ton H-Frame 150 & 200 ton H-Frame 200 ton Roll Frame	**A-110*** **A-136** **A-130** **A-150** **A-175** **A-200** **A-200R**		• Machined from high strength steel for long life • *A-110 includes one V-block • All other model numbers include two V-blocks
Hydra-Lift™	25-100 ton H-Frame 150-200 ton H-Frame 50 & 100 ton Roll Frame 200 ton Roll Frame	**IPL-100** **IPL-200** **IPLR-100** **IPLR-200**		• Allows easy, effortless daylight adjustments • Includes accessory chain
Pump Mounting Bracket	Hand operated and small air pumps; P-80, P-84, P-142, P-392, PA-133, Turbo II pumps Electric, Large Hand pumps, and Modular Air pumps; 20 Series, 3 and 5 Series, P-462, P-464, 10/90 Series Air pumps	**PMB-1** **PMB-2**		• Both mounting brackets are pre-drilled to accept a number of different pump models

Cylinder Speed

This chart will help you calculate the time required for an Enerpac cylinder to extend when powered by a 10,000 psi Enerpac hydraulic pump. The Cylinder Speed Chart can also be used to determine the pump type and model best suited for an application when you know the plunger speed required.

Cylinder and Pump Selection Chart

Cylinder Capacity		Hand Operated Pumps				Electric Pumps					Air Pumps			
		Strokes per inch of plunger travel				Seconds per inch of plunger travel								
		Single Speed	Two-Speed								@100 psi air			
(tons)	Cylinder load	P-391	P-392	P-80 P-84	P-462 P-464	1/2 HP Port.	1/2 HP Subm.	20 Series	3 Series	5 Series	Turbo II	PA-133	PAM 10 Series	Modular
10	No load	15	4	2	1	.67	.90	.56	.21	.21	2.20	2.70	.21	.16
	Load	15	15	15	8	6.70	6.70	3.20	2.20	1.10	13.40	16.80	14.90	4.50
25	No load	34	8	5	1	1.50	2.10	1.30	.58	.58	5.20	6.20	.48	.36
	Load	34	34	34	18	15.50	15.50	7.40	5.20	2.60	30.90	38.60	34.30	10.30
30	No load	43	10	7	1	1.90	2.60	1.60	.61	.61	6.50	7.50	.60	.46
	Load	43	43	43	23	19.50	19.50	9.30	6.50	3.20	39.00	48.70	43.30	13.00
50	No load	73	16	11	2	3.30	4.40	2.80	1.00	1.00	11.00	13.30	1.00	.80
	Load	73	73	73	38	33.20	33.20	15.80	11.10	5.50	66.30	82.92	73.70	22.10
100	No load	137	30	21	3	6.20	8.30	5.20	1.90	1.90	20.60	24.80	1.90	1.50
	Load	137	137	137	71	61.90	61.90	29.50	20.60	10.30	123.90	154.70	137.50	41.30

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

CUSTOM BUILD YOUR OWN PRESS

If the press that would best fit your application cannot be found in the charts, you can easily build your custom press here. **The pump is ordered separately.**

▼ This is how a press model number is built up

IP	H	-	050	S	06	-	1
1 Product Type	2 Frame Type		3 Press Capacity	4 Cylinder Type	5 Cylinder Stroke		6 Pump Mounting Kit

1 Product Type
IP = Industrial Press

2 Frame Type
B = Bench**
H = H-Frame
R = Roll Frame*

3 Press Capacity
010 = 10 ton
025 = 25 ton
030 = 30 ton
050 = 50 ton
075 = 75 ton
100 = 100 ton
150 = 150 ton
200 = 200 ton

4 Cylinder Type
S = Single-Acting (RC-Series)
D = Double-Acting (RR-Series)
F = Frame only

5 Cylinder Stroke (in)
- 10 ton S/A: **06, 08, 10, 12, 14**
  10 ton D/A: **10, 12**
- 25 ton S/A: **06, 08, 10, 12, 14**
- 30 ton S/A: **08**
  30 ton D/A: **08, 14**
- 50 ton S/A: **06, 13**
  50 ton D/A: **06, 13, 20**
- 75 ton S/A: **06, 13**
  75 ton D/A: **06, 13**
- 100 ton S/A: **06, 13**
  100 ton D/A: **06, 13, 18**
- 150 ton D/A: **06, 13, 32**
- 200 ton D/A: **13, 18, 24**

6 Pump Mounting Kit***
0 = Frame only, no mounting kit
1 = Hand operated and small air pumps:
P-80, P-84, P-141, P-142, P-202, P-391, P-392, PA-133 and all Turbo II Air pumps
2 = Electric, large Hand operated and Modular Air Pumps:
20-, 22-, 23-, 3-, and 5-Series
P-462, P-464
PAM-10 and -90 Series
3 = 80-Series (No mounting brackets; includes hoses)

* Roll Frame Press: 50, 100 and 200 ton press capacity only. (Assembly required)
** Bench Press: 10 ton press capacity only
*** Includes hoses for press, except for option **0**.

Ordering Example

Model number: IPH-050S06-2

IPH-050S06-2 is a 50 ton H-Frame press with a single-acting, 6 inch stroke cylinder (RC-506). It has a pump mounting kit (for an electric Pump or a Modular Air Pump).

See the cylinder and pump selection chart on previous page for selecting the proper pump.

IP Series

Capacity:
10-200 tons

Maximum Daylight & Width:
54.50 & 48.00 inch

Maximum Operating Pressure:
10,000 psi

"No Load" indicates the plunger speed as it extends toward the load (1st stage).
"Load" indicates the plunger speed as the load is applied at a system pressure of 10,000 psi (2nd stage).

Formula V = A ÷ Q

V (sec/in) = **A** (in^2) ÷ **Q** (in^3/min)
V = Cylinder plunger speed in seconds per inch
A = Cylinder effective area in square inches
Q = Pump oil flow in cubic inches

$$\text{Cylinder Plunger Speed (sec/in)} = \frac{\text{Cylinder Effective Area (in}^2\text{)}}{\text{Pump Flow Rate (in}^3\text{/min)}} \times \frac{60 \text{ sec}}{1}$$

▼ *Shown:* **VLP-1006UPUJB 100 Ton Press**

- **Heavy-duty welded frame for increased strength and durability**
- **Standard Enerpac power sources and cylinders provide high performance and trouble-free operation**
- **All presses include 900 Series heavy-duty rubber hoses for long life**
- **25, 50 and 100 ton models feature the "AccuWinch" for safe and easy daylight adjustment**

◀ *VLP-Series 10 ton bench press, used in this maintenance workshop to bend steel flat bar.*

The Value Line

IP Series

For the ultimate in precision, speed, long strokes and versatility, choose from our Heavy-duty IP Series.

AccuWinch

Heavy-duty AccuWinch features an extra low handle effort. Self locking, precision positioning, and smooth, quiet operation.

Gauges and Gauge Adaptors

Gauges and adaptors are standard on all presses, matching the press capacity.

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V-Blocks

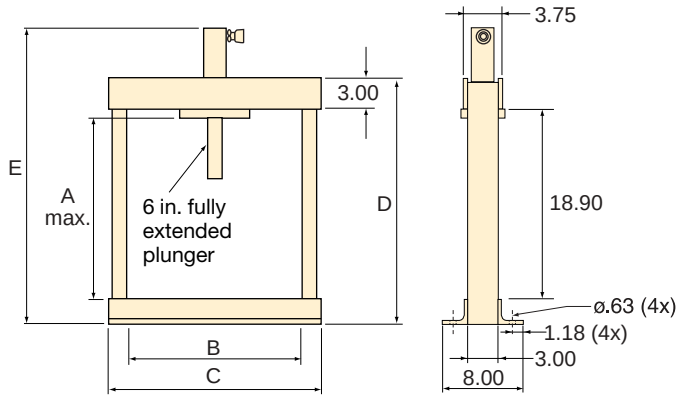
These optional V-Blocks are designed for easy fixturing of round stock and other non-uniform materials, featuring a precise fit into the press bolster.

10 Ton VLP Model: **A-110**
25 Ton VLP Models: **A-130**
50 Ton VLP Models: **A-175**
100 Ton VLP Model: **A-200**

Press Capacity (tons)	Max. Vertical Daylight A (max) (in)	Min. Vertical Daylight A (min) (in)	Bed Width B (in)	Pump Model Number	Press Model Number	Cylinder Model Number	Speed		Stroke (in)
							Approach sec/in	Pressing sec/in	
10	17.9	–	17.0	P-142	**VLP-106UP142**	RC-106	10*	41*	6.13
25	28.7	3.7	20.1	P-392	**VLP-256UP392**	RC-256	8*	34*	6.25
25	28.7	3.7	20.1	PA-133	**VLP-256UPA133**	RC-256	6	39	6.25
50	42.0	6.0	33.4	P-80	**VLP-506UP80**	RC-506	11*	73*	6.25
50	42.0	6.0	33.4	PUJ-1200B	**VLP-506UPUJB**†	RC-506	3.3	33.2	6.25
100	41.5	5.5	41.5	PUJ-1201B	**VLP-1006UPUJB**†	RC-1006	6.2	61.9	6.63

† "B" indica bomba de 115VCA. Para bomba de 230 VCA, mude "B" para "E".

10 Ton Bench Press Model
Dimensions shown in inches.



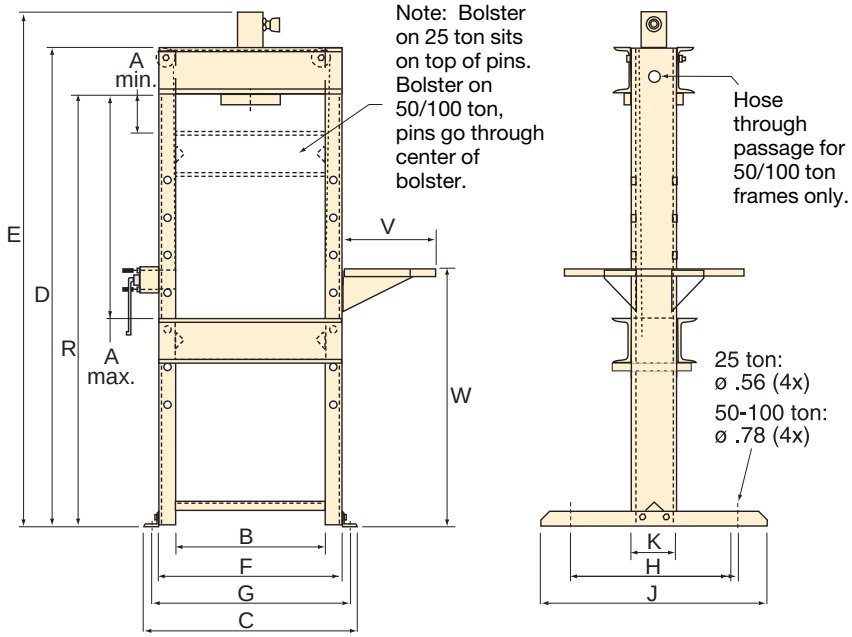
VLP Series

Capacity:
10-100 tons

Maximum Daylight & Width:
42.0 & 41.5 in

Maximum Operating Pressure:
10,000 psi

25, 50 and 100 Ton H-Frame Press Models



Frame Only Orders

For hydraulic component substitutions, "Frame Only" presses are available, allowing you to order your hydraulics separately.

Press Capacity (tons)	Frame Model Number
10	**VLP-10UF**
25	**VLP-25UF**
50	**VLP-50UF**
100	**VLP-100UF**

* Hand Pump data in strokes/in.
** Additional 10 ton bench press dimensions shown above.
† "B" designates 115VAC pump. For 230VAC pump, change "B" to "E".

Press Width C (in)	Press Height D (in)	Overall Height E (in)	Additional H-Frame Press Dimensions (in)								Weight (lbs.)	Press Model Number
			F	G	H	J	K	R	V	W		
21.0	24.4	29.4	**	**	**	**	**	**	**	**	120	**VLP-106UP142**
25.3	64.0	68.8	24.4	25.3	22.4	30.3	6.0	58.0	12.7	35.0	353	**VLP-256UP392**
25.3	64.0	68.8	24.4	25.3	22.4	30.3	6.0	58.0	12.7	35.0	353	**VLP-256UPA133**
42.3	78.0	78.0	39.3	42.3	34.0	40.0	12.0	66.0	12.7	35.0	811	**VLP-506UP80**
42.3	78.0	78.0	39.3	42.3	34.0	40.0	12.0	66.0	12.7	35.0	831	**VLP-506UPUJB†**
51.3	78.0	78.0	48.3	51.3	34.0	40.0	15.0	63.0	12.7	35.0	1325	**VLP-1006UPUJB†**

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

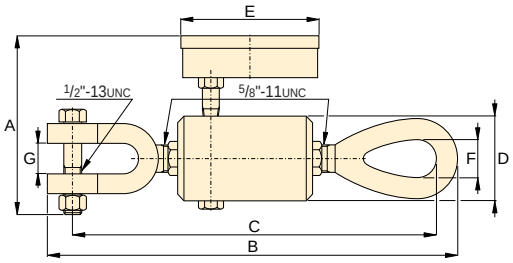
TM, LH
Series

Capacity:
2,000 to 200,000 lbs

Accuracy, % of full scale:
±2%

Tension Meter TM-5

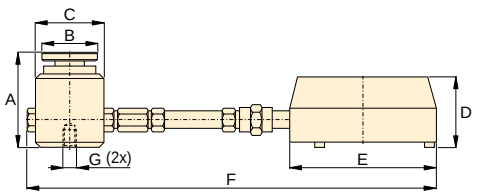
- **Accuracy, ±2% of full scale**
- **Zinc and bronze plated to resist rust and corrosion**
- **Dual-range readout in kilograms and pounds**
- **Cushioned metal case provides safe storage and transport**
- **Maximum indicating pointer reading for pre-selected forces or to maintain maximum force readings**



TM-5

Load Cells LH Series

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



LH-Series

Type	Gauge Capacity		Model Number	Minimum Reading		Gauge Increments		Dimensions (in)						
	(lbs)	(kg)		(lbs)	(kg)	(lbs)	(kg)	A	B	C	D	E	F	G
Direct Mounted	10,000	4500	**TM-5**	1,000	500	100	100	4.75	9.75	9.29	2.00	4.00	.88	.75
Direct Load Cell Mounted	2,000	900	**LH-10**	200	100	20	20	3.06	1.75	2.25	2.38	4.00	10.00	1/4"-20, 1.75" BC
	10,000	4500	**LH-50**	1,000	500	100	100	3.06	1.75	2.25	2.38	4.00	10.00	1/4"-20, 1.75" BC
Remote Mounted with 2 ft Hose	2,000	900	**LH-102**	200	100	20	20	3.06	1.75	2.25	2.38	5.81	33.31	1/4"-20, 1.75" BC
	10,000	4500	**LH-502**	1,000	500	100	100	3.06	1.75	2.25	2.38	5.81	33.10	1/4"-20, 1.75" BC
	20,000	9000	**LH-1002**	2,000	1000	200	200	3.06	1.75	2.25	2.38	5.81	33.10	1/4"-20, 1.75" BC
Remote Mounted with 6 ft Hose	50,000	21000	**LH-2506**	5,000	2000	500	500	4.00	2.75	3.38	2.38	5.81	82.44	3/8"-24, 2.5" BC
	100,000	45000	**LH-5006**	5,000	5000	1,000	1000	5.22	4.00	5.00	2.38	5.81	84.06	3/8"-24, 3.5" BC
	200,000	90000	**LH-10006**	20,000	10000	2,500	1000	6.22	5.00	6.25	2.38	5.81	85.31	3/8"-24, 4.0" BC

▼ Shown: **IC-624 and IC-124**

IC Series

Program Capability:
1-9 (min-max)

Control Voltage, supplied by valve:
24 VDC

Interface:
VSP-424

IC-124 Single Program Control Center

- **24 VDC for improved operator safety**
- **Two-mode control, manual and automatic, for simple and safe set-up**
- **Offers automatic "One-Shot" cycle of double-acting cylinders through a VSP-424 solenoid valve**
- **Two external sensors control the cycle**

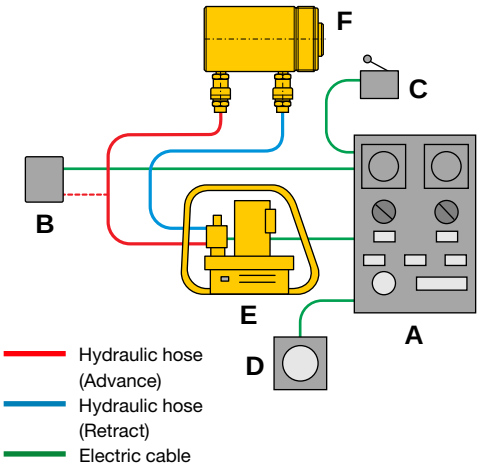
IC-624 Multiple Program Control Center

- **24 VDC for improved operator safety**
- **Nine different programs for controlling double-acting cylinders through a VSP-424 solenoid valve**
- **Two external sensors allow monitored cycling for production and testing applications**
- **Easy programming by selecting the function at each end of cylinder stroke**
- **Integral features include:**
  - **Built-in timers, adjustable from .05 to 100 hours each**
  - **Cycle counter, six digit with manual reset**
  - **Remote start plug for easy circuit interface**
  - **Cycle control selector for "manual hold", "timed hold" and "no hold" for each end of the cylinder stroke**

IC-7224
Pressure Switch
Adjustable pressure activated switch for controlling system pressure or force. The **IC-7224** has an adjustable range of 500 to 10,000 psi.

IC-8024
Limit Switch
For use where plunger positioning must be controlled. Plugs directly into **IC-124** or **IC-624**.

▼ **TYPICAL SET-UP**



A = IC-624 Control Center
B = IC-7224 Pressure Switch to provide force control
C = IC-8024 Limit Switch to provide retract position control
D = Remote Start (Not included)
E = Pump, equipped with VSP-424
F = Double-acting cylinder

ENERPAC offers a complete line of pullers with the widest range of sizes, capacities and styles. Whether your application requires mechanical, hydraulic or the patented 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.

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

CAUTION
Not all components and configurations are rated at the set capacity. Please contact Enerpac for specific details.

Always wear Safety Goggles while using pullers.

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

1. 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 7 to 10 times the shaft diameter. Use the following chart:

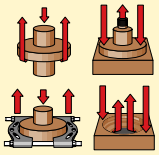
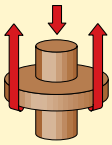
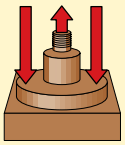
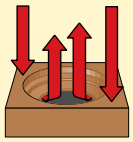
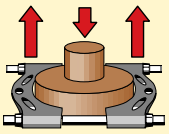
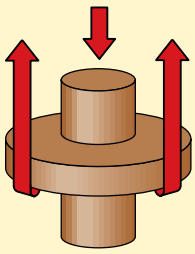
Shaft Diameter	Puller Capacity
0" to 1"	10 ton
1" to 2"	20 ton
2" to 3.5"	30 ton
3.5" to 5.5"	50 ton

2. 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.

3. Spread:

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

Puller Function	Capacity (tons)	Puller Type	Series		Page
	8-50	**Master Puller Sets**	BHP		152 ▶
	8-50	**Grip Puller Sets** Max. Reach: 27.56 in. Max. Spread: 43.30 in.	BHP		153 ▶
	8-50	**Cross-Bearing Puller Sets** Max. Reach: 34.00 in. Max. Spread: 22.46 in.	BHP		154 ▶
	8-50	**Bearing Cup Pullers** Max. Reach: 5.71 in. Max. Spread 14.17 in.	BHP		155 ▶
	8-50	**Bearing Pullers** Max. Spread: 9.65 in. Max. Width 11.50 in.	BHP		155 ▶
	2-40	**Posi Lock® Mechanical Pullers** Max. Reach: 14.00 in. Max. Spread: 25.00 in.	EP, EPP, EPPMI, EPX		156 ▶
	10-50	**Posi Lock® Hydraulic Pullers** Max. Reach: 14.00 in. Max. Spread: 25.00 in.	EPH, EPHR, EPHS		160 ▶
	100	**Posi Lock® Hydraulic Pullers** Max. Reach: 48.0 in. Max. Spread: 70.0 in.	EPH		163 ▶

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

BHP Series

Capacity:
8-50 tons

CAUTION
Not all components and configurations are rated at the set capacity. Please contact Enerpac for specific details.

Visit the **Products** section of our web site for more information and product selection charts regarding puller sets and individual puller component parts.
www.enerpac.com

- **Supplied with a full hydraulic set including pump, hose, cylinder, gauge and gauge adaptor in a wooden case**
- **All Master Puller Sets include a Grip Puller, a Cross Bearing Puller, a Bearing Cup Puller and a Bearing Puller which can be ordered separately. See items 10, 20, 30 and 40**
- **High quality, forged steel components provide superior reliability and service**
- **Sets include speed crank and adjusting screw for fast contact to work before hydraulics are applied.**

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

▼ SELECTION CHART

	Master Puller Set Capacity	8 ton	20 ton	30 ton	50 ton	Page Number
	Model Number	BHP-1752*	BHP-2751G	BHP-3751G	BHP-5751G	
	Included Hydraulics: **set weight**	82 lbs	198 lbs	380 lbs	657 lbs	
	Hand Pump	P-142	P-392	P-392	P-80	**58, 60** ▶
	Cylinder	RWH-121	RCH-202	RCH-302	RCH-603	**20** ▶
	Saddle	–	HP-2015	HP-3015	HP-5016	**21** ▶
	Hose	HB-7206QB	HC-7206	HC-7206	HC-7206	**113** ▶
	Gauge	GF-120P	GF-813P	GF-813P	GF-813P	**119** ▶
	Gauge Adaptor	GA-4	GA-3	GA-3	GA-3	**124** ▶
	Included Pullers:					
10	Grip Puller	BHP-1762	BHP-252	BHP-352	BHP-552	**153** ▶
20	Cross Bearing Puller	BHP-1772	BHP-262	BHP-362	BHP-562	**154** ▶
30	Bearing Cup Puller	BHP-180	BHP-280	BHP-380	BHP-580	**154** ▶
40	Bearing Puller	BHP-181	BHP-282	BHP-382	BHP-582	**154** ▶
	Wooden Case	CW-166	CW-166	CW-550	CW-750	

* Includes FZ-1630 Adaptor.

▼ Shown: **Grip Puller Set BHP-351G**

BHP Series

Capacity:
8-50 tons

CAUTION
Not all components and configurations are rated at the set capacity. Please contact Enerpac for specific details.

Visit the **Products** section of our web site for more information and product selection charts regarding puller sets and individual puller component parts.
www.enerpac.com

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.

- **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**
- **Wooden case supplied standard**

▼ SELECTION CHART

Grip Puller Set Capacity		**8 ton**	**20 ton**	**30 ton**	**50 ton**
	Model Number	**BHP-152*** **	**BHP-251G**	**BHP-351G**	**BHP-551G**
Included Hydraulics:	**set weight**	48 lbs	123 lbs	200 lbs	353 lbs
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-7206QB	HC-7206	HC-7206	HC-7206
Gauge		GF-120P	GF-813P	GF-813P	GF-813P
Gauge Adaptor		GA-4	GA-3	GA-3	GA-3
10 Grip Puller	**Model Number**	**BHP-1762***	**BHP-252***	**BHP-352***	**BHP-552***
Maximum Spread**	2-jaw	9.84	15.75	23.38	35.43
	3-jaw	9.84	19.68	31.50	43.30
Maximum Reach**	2-jaw	9.92	11.81	15.25	27.56
	3-jaw	9.92	11.81	15.25	27.56
Jaw**	Thickness	.59	.79	.98	1.18
	Width	.94	1.10	1.50	1.57
Adjusting Screw**	Thread	3/4"-16 UNF	1"-8 UNC	1 1/4"-7 UNC	1 5/8"-5.5 NS
	Length	15.75	20.00	24.00	30.00
Wooden Case		CW-166	CW-166	CW-350	CW-750

* Grip Puller model number without hydraulics.
** Dimensions in inches.
*** Includes FZ-1630 Adaptor.

Cross Bearing Puller Sets

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

BHP Series

Puller Set Capacity:
8-50 tons

CAUTION
Not all components and configurations are rated at the set capacity. Please contact Enerpac for specific details.

- **Precise hydraulic control allows fast, efficient and safe pulling**
- **High quality, forged steel components provide superior reliability and service**
- **The Cross Bearing Puller without hydraulics, Bearing Cup Puller and Bearing Puller may be ordered separately. See items 20, 30 and 40.**

Visit the **Products** section of our web site for more information and product selection charts regarding puller sets and individual puller component parts.
www.enerpac.com

▼ SELECTION CHART

	Cross Bearing Puller Set Capacity		8 ton	20 ton	30 ton	50 ton
		Model Number	**BHP-162****	**BHP-261G**	**BHP-361G**	**BHP-561G**
	Included Hydraulics:	**set weight**	57 lbs	137 lbs	267 lbs	408 lbs
	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-7206QB	HC-7206	HC-7206	HC-7206
	Gauge		GF-120P	GF-813P	GF-813P	GF-813P
	Gauge Adaptor		GA-4	GA-3	GA-3	GA-3
20	**Cross Bearing Puller**	Model Number	**BHP-1772**	**BHP-262**	**BHP-362**	**BHP-562**
	Spread*	Maximum	10.5	13.83	17.9	22.46
		Minimum	4.2	5.5	7.08	8.66
	Reach*	Maximum	14.0	22.5	28	34
	Adjusting Screw*	Diameter	3/4"-16 UNF	1"-8 UNC	1 1/4"-7 UNC	1 5/8"-5.50 NS
		Length	15.75	20	24	30
	Leg*	Length	4.13	9.43	8	24
		Length	14.2	16.52	18	34
		Length	–	22.5	28	–
		Length	–	4.5	–	–
	Upper Leg Ends*	Thread	3/4"-16x1.0	3/4"-16x1.0	1"-14x1.38	1 1/4"-12x1.50
	Lower Leg Ends*	Thread	5/8"-18x1.0	5/8"-18x1.0	1"-14x1.06	1 1/4"-12x1.50
30	**Bearing Cup Puller**	Model Number	**BHP-180**	**BHP-280**	**BHP-380**	**BHP-580**
40	**Bearing Puller**	Model Number	**BHP-181**	**BHP-282**	**BHP-382**	**BHP-582**
	Wooden Case	Model Number	**CW-166**	**CW-166**	**CW-550**	**CW-750**

* Dimensions in inches.
** Includes FZ-1630 Adaptor.

▼ 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

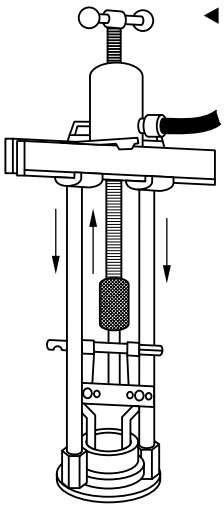
Puller Set Capacity:
8-50 tons

CAUTION
Not all components and configurations are rated at the set capacity. Please contact Enerpac for specific details.

▼ **SELECTION CHART**

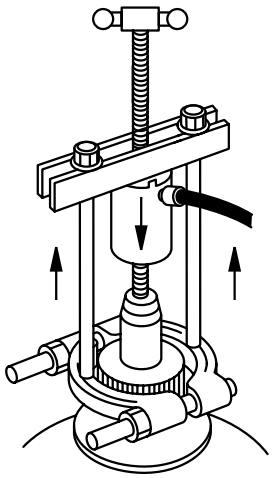
Puller Set Capacity		8 ton	20 ton	30 ton	50 ton
30 Bearing Cup Puller					
Model Number		**BHP-180**	**BHP-280**	**BHP-380**	**BHP-580**
Spread*	Max.	4.33	8.66	14.17	14.17
	Min.	1.06	.98	1.97	1.97
Reach*	Max.	4.33	5.51	5.71	5.71
Center Screw	Thread	3/4"-16 UNF	1"-8 UNC	1 1/4"-7 UNC	1 5/8"-5.50 NS

* Dimensions in inches.



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

▼ *Bearing Puller shown with Crosshead Puller attachment.*



▼ 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**

Puller Set Capacity		8 ton	20 ton	30 ton	50 ton
40 Bearing Puller					
Model Number		**BHP-181**	**BHP-282**	**BHP-382**	**BHP-582**
Spread*	Max.	4.09	5.12	9.65	9.65
	Min.	.98	.39	.67	.67
Width*		4.96	5.91	11.50	11.50
Thread		5/8"-18 UNF	5/8"-18 UNF	1"-14 UNS	1 1/4"-12 UNF

* Dimensions in inches

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: **EP-206, EP-108**

For Safer and Faster Pulling

- **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**

Long Jaws

Long Jaws are used to increase the reach and spread of manual pullers. They maintain the same pulling capacity as the standard jaws, but reduce clamping force to 25%.

Page: 162

Shaft Attachments

Shaft protectors and extenders are live centers that fit over the standard puller shaft for tip protection and additional reach.

Page: 159

Visit the **Products** section of our web site for more information and product selection charts regarding puller sets and individual puller component parts.

www.enerpac.com

▼ *Positioning an EP-104 3-jaw puller on the accessory drive of a diesel engine.*

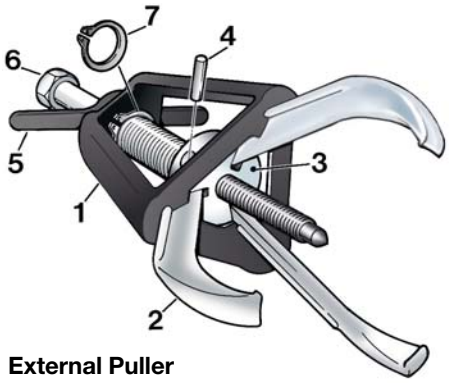
Application Tip

In determining the correct manual puller capacity for your application, use the folllowing rule:

The center bolt diameter of the puller should be at least 1/2 the diameter of the shaft being pulled on.

Example:

A part being pulled from a shaft with a diameter of 1.5" would require a puller with a center bolt diameter of at least .75".



External Puller

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 EPPMI Series

Capacity:
2-40 tons

Maximum Reach:
4.00-14.00 inch

Maximum Spread:
0.50-25.00 inch

▼ QUICK SELECTION CHART EXTERNAL PULLERS

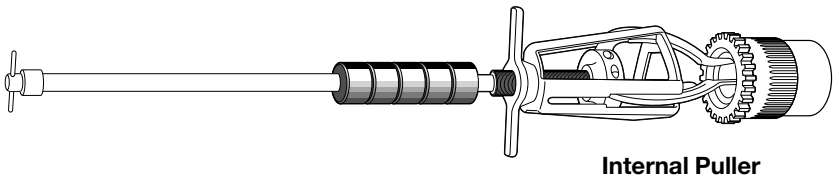
For full technical information see next page

Number of Jaws	Maximum Reach (in)	Spread Range (in)	Capacity (tons)	Model Number	Center Bolt Diameter (in)	Weight (lbs)
2	4.00	.5-5	2	**EP-204**	.56	3
3	4.00	.5-5	5	**EP-104**	.56	4
2	6.00	.5-7.0	6	**EP-206**	.66	7
3	6.00	.5-7.0	10	**EP-106**	.66	8
2	8.00	.75-12	12	**EP-208**	.79	12
3	8.00	.75-12	17	**EP-108**	.79	14
2	9.67	1.0-15	14	**EP-210**	.79	13
3	9.67	1.0-15	20	**EP-110**	.79	16
2	12.00	2.5-18	25	**EP-213**	1.17	38
3	12.00	2.5-18	30	**EP-113**	1.17	44
2	14.00	3.0-25	35	**EP-216**	1.23	57
3	14.00	3.0-25	40	**EP-116**	1.23	68

Always wear Safety Goggles while using pullers.

Application Tip

Because of the unique safety cage design, Posi Lock® pullers will grip on surfaces where normal pullers would slip off; e.g. tapered bearings.



Internal Puller

▼ QUICK SELECTION CHART INTERNAL PULLERS

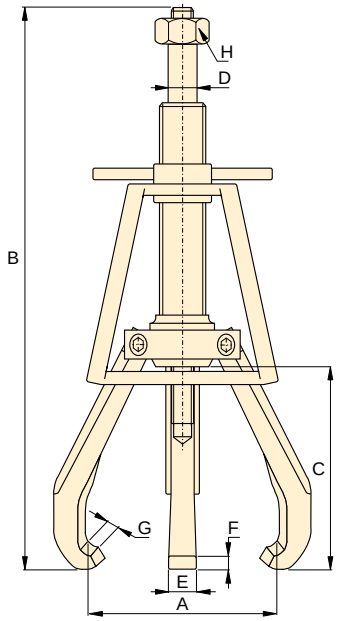
For full technical information see next page

Number of Jaws	Maximum Reach (in)	Spread Range (in)	Jaw Style	Model Number	Jaw Length (in)	Weight (lbs)
3	5.87	.56-4.00	Standard	**EPPMI-6**	6.62	8.6
	7.70	1.0-5.25	Long		8.62	8.6

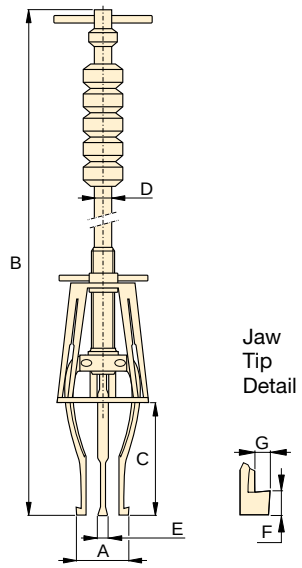
Visit the **Products** section of our web site for selection information regarding internal and external puller component parts. **www.enerpac.com**

▼ *EP-204 2 jaw puller positioned to pull a water pump drive pulley.*

2 and 3 Jaw External Puller EP-Series



Internal Puller EPPMI-Series



▼ SELECTION CHART EXTERNAL PULLERS

Number of Jaws	Maximum Reach C (in)	Spread Range A (in)	Capacity (tons)	Model Number	Center Bolt Diameter D (in)	Maximum Torque (ft.lb)
2	4.00	.5-5.0	2	**EP-204**	.56	20
3	4.00	.5-5.0	5	**EP-104**	.56	40
2	6.00	.5-7.0	6	**EP-206**	.66	75
3	6.00	.5-7.0	10	**EP-106**	.66	130
2	8.00	.75-12.0	12	**EP-208**	.79	150
3	8.00	.75-12.0	17	**EP-108**	.79	220
2	9.67	1.0-15.0	14	**EP-210**	.79	175
3	9.67	1.0-15.0	20	**EP-110**	.79	275
2	12.00	2.5-18.0	25	**EP-213**	1.17	475
3	12.00	2.5-18.0	30	**EP-113**	1.17	600
2	14.00	3.0-25.0	35	**EP-216**	1.23	800
3	14.00	3.0-25.0	40	**EP-116**	1.23	850

▼ SELECTION CHART INTERNAL PULLERS

Number of Jaws	Maximum Reach C (in)	Spread Range A (in)	Jaw Style	Model Number	Jaw Length (in)	Slide-hammer weight (lbs)
3	5.87	.56-4.00	Standard	**EPPMI-6**	6.62	2.5
	7.70	1.00-5.25	Long		8.62	2.5

Shaft Protectors and Extenders

Shaft Protectors and Extenders are live centers that fit over the puller end for tip protection and added reach.

Length (in)	Diameter (in)	Increases Center Bolt Length (in)	Order: Model Number
1.00	0.75	0.38	**EPP-4**
1.97	0.75	1.50	**EPX-4**
1.22	0.87	0.50	**EPP-6**
1.97	0.87	1.50	**EPX-6**
1.22	1.0	0.50	**EPP-10**
1.97	1.0	1.50	**EPX-10**
2.00	1.38	0.83	**EPP-1316**

Note: See the chart below to reference matching pullers for these accessories.

Long Jaws

Long jaws are used for added reach and spread. They have the same capacity as standard jaws, but reduce the clamping force to 25%.

Spread (in)	Reach (in)	Order: Model Number
1.5-15	9.67	**EP-11054**
1.5-22	15.78	**EP-11054L**
1.5-30	20	**EP-11354L**
2-38	25	**EP-11654L**
1.0-5.26	8.62	**EP-10554L***

* EPPMI-6 only

EP EPPMI Series

Capacity:
2-40 tons

Maximum Reach:
4.00-14.00 inch

Maximum Spread:
0.50-25.00 inch

Dimensions (in)					Model Number	▼ Optional accessories		
Overall Length B	Jaw Width E	Tip Clearance F	Tip Depth G	Hex Socket Size H		Shaft Protectors	Extenders	Long Jaws
9.68-12.75	.54	.16	.18	3/4"	**EP-204**	EPP-4	EPX-4	–
9.68-12.75	.54	.16	.18	3/4"	**EP-104**	EPP-4	EPX-4	–
12.75-18.75	.75	.32	.24	3/4"	**EP-206**	EPP-6	EPX-6	–
12.75-18.75	.75	.32	.24	3/4"	**EP-106**	EPP-6	EPX-6	–
16.25-24.25	.77	.25	.36	1"	**EP-208**	EPP-10	EPX-10	EP-11054
16.25-24.25	.77	.25	.36	1"	**EP-108**	EPP-10	EPX-10	EP-11054
19.25-29.00	.77	.25	.36	1"	**EP-210**	EPP-10	EPX-10	EP-11054L
19.25-29.00	.77	.25	.36	1"	**EP-110**	EPP-10	EPX-10	EP-11054L
26.00-38.00	1.25	.50	.38	1 1/4"	**EP-213**	EPP-1316	–	EP-11354L
26.00-38.00	1.25	.50	.38	1 1/4"	**EP-113**	EPP-1316	–	EP-11354L
31.50-45.50	1.44	.53	.46	1 1/4"	**EP-216**	EPP-1316	–	EP-11654L
31.50-45.50	1.44	.53	.46	1 1/4"	**EP-116**	EPP-1316	–	EP-11654L

Note: Overall length (B) is dependent on position of center bolt.

Dimensions (in)					Model Number
Overall Length B	Slide Rod Diameter D	Jaw Width E	Tip Clearance F	Tip Depth G	
29.00	.52	.33	.12	.06	**EPPMI-6**
31.00	.52	.33	.30	.18	

Visit the **Products** section of our web site for more information and product selection charts regarding puller sets and individual puller component parts.
www.enerpac.com

▼ Shown: **EPHR-110**

High-Tech Pulling

- **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 normal pullers often require two operators**

Transport and Store

Conveniently store and transport hydraulic pulers and accessories. Order the **EPT-2550** Storage Cart and make your job easier to do!

Visit the **Products** section of our web site for more information and product selection charts regarding puller sets and individual puller component parts. **www.enerpac.com**

Application Tip

Because of the unique safety cage design, Posi Lock® pullers will grip on surfaces where normal pullers would slip off; e.g. tapered bearings.

◀ *An EPHR-116, 50 ton hydraulic Posi Lock® puller easily removes the main drive gear from this metal forming brake press.*

Number of Jaws	Max. Spread (in)	Capacity (tons)	Model Number*
2	12.00	10	EPH-208
3	12.00		EPH-108
2	15.00	15	EPH-210
3	15.00		EPH-110
2	18.00	25	EPH-213
3	18.00		EPH-113
2	25.00	50	EPH-216
3	25.00		EPH-116

* Basic Pullers only, cylinder not included

▼ SETS SELECTION CHART

Style	Capacity (ton)	Basic Puller	Cylinder	Stroke (in)	Pump Set	Set Model Number	Weight (lbs)
2 Jaw Puller	**10**	EPH-208	RC-106	6	–	**EPHR208**	24
	10	EPH-208	RC-106	6	EP-1	**EPHS208**	60
	15	EPH-210	RC-1510	10	–	**EPHR210**	49
	15	EPH-210	RC-1510	10	EP-1	**EPHS210**	85
	25	EPH-213	RC-2514	14.25	–	**EPHR213**	98
	25	EPH-213	RC-2514	14.25	EP-1	**EPHS213**	118
	50	EPH-216	RC-5013	13.25	–	**EPHR216**	192
3 Jaw Puller	**10**	EPH-108	RC-106	6	–	**EPHR108**	26
	10	EPH-108	RC-106	6	EP-1	**EPHS108**	62
	15	EPH-110	RC-1510	10	–	**EPHR110**	52
	15	EPH-110	RC-1510	10	EP-1	**EPHS110**	88
	25	EPH-113	RC-2514	14.25	–	**EPHR113**	106
	25	EPH-113	RC-2514	14.25	EP-1	**EPHS113**	126
	50	EPH-116	RC-5013	13.25	–	**EPHR116**	202

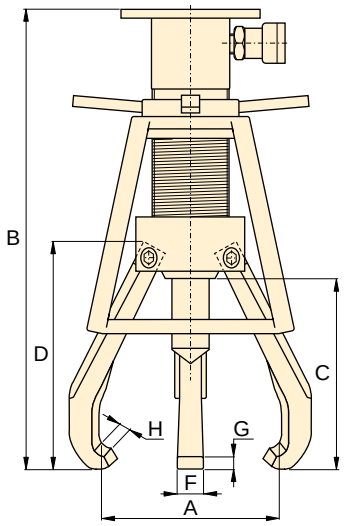
EPH Series

Capacity:
10-50 ton

Maximum Reach:
8.0-14.0 inch

Maximum Spread:
0.75-25.0 inch

Maximum Operating Pressure:
10,000 psi



Pump Sets

All Posi Lock Hydraulic Puller Sets that include 115 VAC pumps, will feature the following components:

	EP-1 Pump Set
Pump	PUJ-1200B
Hose	HC-9210
Gauge	G-2535L

Components for 230 VAC pumps are available on request.

▼ Optional Accessories**

Dimensions (in)							Weight	Model Number*			
Spread Range A	Overall Length B	Reach (max.) C	Jaw Length D	Jaw Width F	Tip Clearance G	Tip Depth H	(lbs)		 Ram Point Sets	 Long Jaws	 Lift Plates
.75-12.0	19.61	8.00	9.34	.88	.29	.27	14	**EPH-208**	EPH-155	EPH-11054	EPH-11052
.75-12.0	19.61	8.00	9.34	.88	.29	.27	16	**EPH-108**	EPH-155	EPH-11054	EPH-11052
1.0-15.0	26.19	10.00	10.64	1.00	.441	.36	22	**EPH-210**	EPH-155	EPH-11054L	EPH-11052
1.0-15.0	26.19	10.00	10.64	1.00	.441	.36	25	**EPH-110**	EPH-155	EPH-11054L	EPH-11052
2.5-18.0	33.31	12.00	13.72	1.25	.508	.38	47	**EPH-213**	EPH-257	EPH-11354L	EPH-11352
2.5-18.0	33.31	12.00	13.72	1.25	.508	.38	55	**EPH-113**	EPH-257	EPH-11354L	EPH-11352
3.0-25.0	36.19	14.00	16.29	1.44	.598	.46	90	**EPH-216**	EPH-508	EPH-21654L	EPH-11652
3.0-25.0	36.19	14.00	16.29	1.44	.598	.46	100	**EPH-116**	EPH-508	EPH-11654L	EPH-11652

** For full details on puller accessories see page 162.

▼ RAM POINT SETS SELECTION CHART

Fits Model Number	EPH-210 EPH-110	EPH-213 EPH-113	EPH-216 EPH-116
			
Set Number	EPH-155	EPH-257	EPH-508
Set Includes	Dia. x Length (in)	Dia. x Length (in)	Dia. x Length (in)
Flat Ram Point	1 x 1	1.5 x 2.25	2 x 3
	1 x 3	2 x 2.25	2.75 x 3
	–	2 x 4	2.75 x 5
Tapered Ram Point	1 x 1.5	1.5 x 2.5	2 x 3.75
	1 x 3.5	2 x 2.5	2 x 3.75
	–	2 x 4.5	2.75 x 5.5
Ram Point Adaptor	–	–	2.75 x 2.25

Always wear Safety Goggles while using pullers.

Visit the **Products** section of our web site for more information and product selection charts regarding puller sets and individual puller component parts. **www.enerpac.com**

◀ *EPHR-116 used to remove electric motor pullies. Puller is positioned using the Lift Plate.*

▼ LIFT PLATE SELECTION CHART

Model Number (includes mounting screws)	Fits Models	Dimensions (in)	
		Thickness	Diameter
EPH-11052	EPH-210	.25	6
	EPH-110		
EPH-11352	EPH-213	.38	8
	EPH-113		
EPH-11652	EPH-216	.38	10
	EPH-116		

▼ LONG JAW SELECTION CHART

Model Number	Fits Models	No. Req.	Spread Dimensions	Reach (in)	Weight (each) (lbs)
EPH-11054L	EPH-210	2	1.5 - 22.0	15.8	5.5
	EPH-110	3			
EPH-11354L	EPH-213	2	1.5 - 30.0	20.0	10.5
	EPH-113	3			
EPH-21654L	EPH-216	2	2.0 - 38.0	25.0	16.5
EPH-11654L	EPH-116	3			

◀ ***EPH-11054L***
Long Jaws are used for added reach and spread. They have the same load capacity as standard jaws with 25% of the clamping force.

Posi Lock® 100 Ton Hydraulic Grip Pullers

EPH Series

Capacity:
100 tons

Maximum Reach:
48 in

Maximum Spread:
70 in

Maximum Operating Pressure:
10,000 psi

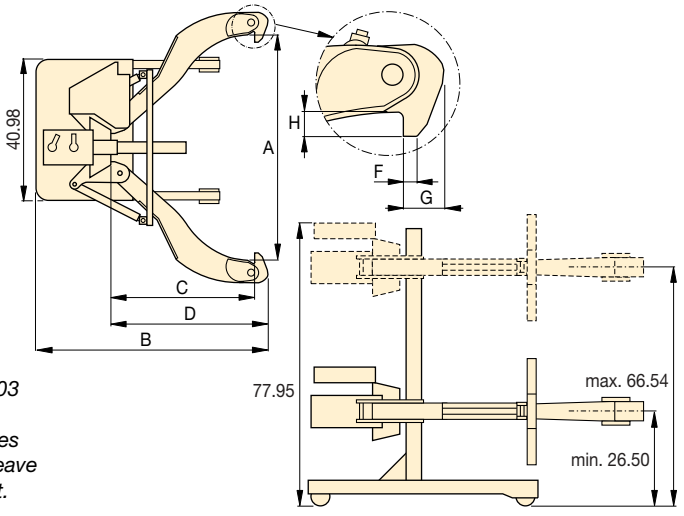
Pushing Adaptors

All Posi Lock 100 Ton Hydraulic Pullers include (3) pushing adaptors.

Diameter	Overall Length	Model Number
3.5"	29"	**EPHT-1162**
3.5"	19"	**EPHT-1163**
3.5"	9"	**EPHT-1164**

- **Roller cart with power lift**
- **Adjustable jaw tips**
- **Puller easily detaches from cart**
- **Self-contained unit**
- **Puller height range 26.5" to 66.5"**

◀ *The EPH-1003 quickly and easily removes this drive sheave from its shaft.*

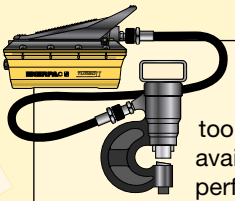


Number of Jaws	Max. Spread (in)	Capacity (tons)	Model Number*	Dimensions (in)							Weight (lbs)
				Spread Range A	Overall Length B	Reach (max.) C	Jaw Length D	Jaw Width F	Tip Clearance G	Tip Depth H	
2	70.00	**100**	**EPH-1002**	7.5-70.0	77.00	48.00	53.00	1.25	3.5	3.5	1700
3	70.00		**EPH-1003**	7.5-70.0	77.00	48.00	53.00	1.25	3.5	3.5	2000

ENERPAC offers an extensive range of dedicated tools for a variety of specific and flexible applications.

Whatever your requirement... cutting, punching, spreading or bending... you can be sure that Enerpac has the correct tool to do your job safely and efficiently.

Featuring maintenance sets, machine lifts and load skates, as well as hole punches, pipe benders and cable cutters, Enerpac has the tools to ensure that even your most demanding applications can be undertaken with the highest degree of safety and accuracy.



Pump and Tool Sets

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

Hydraulic System Set-up

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

Page: 93

Bolting Tools

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

Page: 166

Capacity (tons)	Tool type and functions	Series	Page
2.5-12.5	Maintenance Sets	MS	 166 ▶
35-50	Punches	SP	 170 ▶
.75-1.00	Spread Cylinders	A, WR	 174 ▶
8.5-20	Machine Lifts	SOH	 175 ▶
1-80	Caterroller™ Load Skates	ER	 176 ▶
3-20	Hydraulic Cutterheads	WHC/ WHR	 178 ▶
3-20	Self-Contained Hydraulic Cutters	WMC	 179 ▶
Nominal Bore .5-4 inch	Pipe Benders	STB	 180 ▶
.75-2.00	Floor Cranes	MIC	 182 ▶
.67-16 ft^3	Industrial Storage Cases	CM	 183 ▶

▼ Shown: **MS2-10**

The Universal Hydraulic Tool Box

Maintenance Sets

Enerpac Maintenance sets are a complete assortment of accessories matched to hydraulic powered tools. Using these sets allows you to quickly configure a unique tool to meet your most difficult jobs.
Built around the Enerpac lightweight hand pump, hose and cylinder, these sets enable you to push, pull, lift, press, straighten, spread and clamp with forces up to 12.5 tons.

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

More Information

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

Page: 168

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

▼ **QUICK SELECTION CHART**

Capacity using attachments* (tons)	Set Model Number						Number of Attachment Components	Weight (lbs)
2.5	**MS2-4**	**P-142**	**HC-7206**	**RC-55**	**GP-10S**	**GA-4**	34	59
2.5	**MSFP-5****	**P-142**	**HC-7206**	**RC-55**	**G2535L**	**GA-3**	24	44
5	**MSFP-10**	**P-392**	**HC-7206**	**RC-106**	**G2535L**	**GA-3**	22	105
5	**MS2-10**	**P-392**	**HC-7206**	**RC-106**	**GP-10S**	**GA-2**	35	140
12.5	**MS2-20**	**P-392**	**HC-7206**	**RC-256**	**GP-10S**	**GA-2**	13	210
5-12.5	**MS2-1020**	**P-392**	**HC-7206**	**RC-102, -106 and -256**	**GP-10S**	**GA-2**	53	350

* If no attachments are being used, capacity is double these values. Maximum operating pressure is then 10,000 psi.
** This set also includes the FZ-1055 Adaptor.

CAUTION!

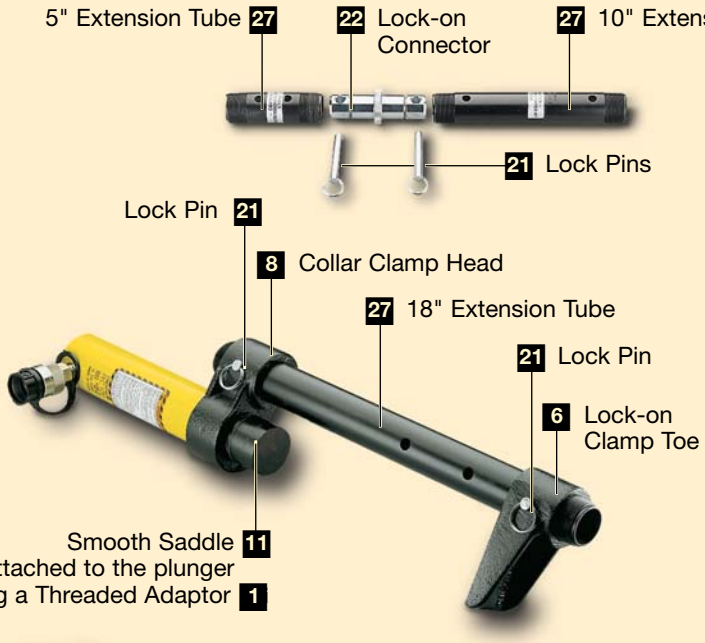
When cylinders are used with maintenance set attachments or components, the maximum system pressure must be limited to half the rated pressure (5,000 psi).

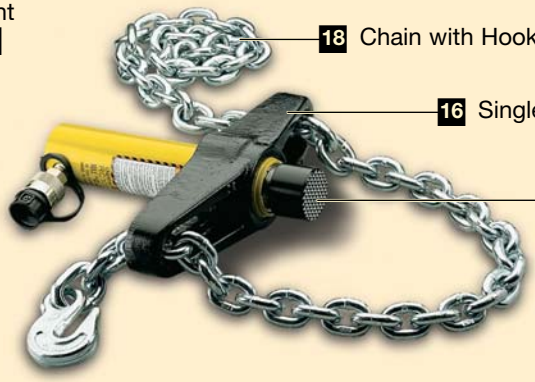
MS Series

Capacity (using attachments):
2.5-12.5 tons

Max. Operating Pressure (using attachments):
5,000 psi

▼ APPLICATION EXAMPLES





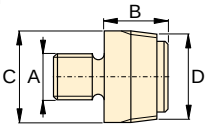
CAUTION! When cylinders are used with maintenance set attachments or components, the maximum system pressure must be limited to half the rated pressure (5,000 psi).

Note: All dimensions in inches.

Set Model Number	MS2-4	MSFP-5	MSFP-10	MS2-10	MS2-20	MS2-1020
Base/Collar/Plunger Attachments	Capacity Using Attachments					
	2.5 tons	2.5 tons	5.0 tons	5.0 tons	12.5 tons	5-12.5 tons
Cylinder Series	RC-5	RC-5	RC-10	RC-10	RC-25	RC-10, RC-25
1	A-23	A-23	A-13	A-13	A-28	A-13 / A-28
2	A-25	A-25	A-21	A-21	A-27	A-21 / A-27
3	A-1034	A-1034	A-20	A-20	A-595	A-20 / A-595
4	MZ-4010	MZ-4010	A-14	A-14	A-243	A-14 / A-243
5	A-545	A-545	A-10	A-10	—	A-10(2x)
6	—	—	—	A-8	—	A-8
7	A-530	A-530	A-6	A-6	—	A-6
8	MZ-4011	—	—	A-192	—	A-192
9	—	—	—	A-305	—	A-305
10	A-531	A-531	A-18	A-18	—	A-18
11	—	—	—	A-185	—	A185
12	A-532	A-532	A-15	A-15	—	A-15
13	—	—	—	—	A-607	A-607
14	A-629	A-629	A-129	A-129	—	A-129
15	A-539	A-539	A-128	A-128	—	A-128
Chains and Attachments for Pulling	2.5 tons	2.5 tons	5.0 tons	5.0 tons	12.5 tons	5-12.5 tons
Cylinder Series	RC-5	RC-5	RC-10	RC-10	RC-25	RC-10, RC-25
16	A-558	—	—	A-132	A-238	A-132, -238
17	—	—	—	A-5 (2x)	—	A-5(2x)
18	A-557(2x)	—	—	A-141(2x)	A-218(2x)	A-141(2x) / A-218(2x)
Tubes, Connectors and Adaptors	2.5 tons	2.5 tons	5.0 tons	5.0 tons	12.5 tons	5-12.5 tons
Cylinder Series	RC-5	RC-5	RC-10	RC-10	RC-25	RC-10, RC-25
19	A-544	—	—	A-19(2x)	A-242(2x)	A-19(2x) / A242(2x)
20	WR-5	WR-5	WR-5	A-92	—	A-92
21	MZ-4013(4x)	MZ-4013 (4x)	A-16(4x)	A-16(4x)	—	A-16(4x)
22	MZ-4007(3x)	MZ-4007(3x)	MZ-1050(3x)	MZ-1050 (2x)	—	MZ-1050(3x)
23	MZ-4008(2x)	—	—	MZ-1051	—	MZ-1051(2x)
24	MZ-4009	MZ-4009	MZ-1052	MZ-1052	—	MZ-1052
25	—	—	—	A-285	—	A-285
26	A-650	—	—	—	—	—
27 Length: 3"	MZ-4002	MZ-4002	—	—	—	
5"	MZ-4003	MZ-4003	MZ-1002	MZ-1002	—	MZ-1002
10"	MZ-4004	MZ-4004	MZ-1003	MZ-1003	A-239	MZ-1003 and A-239
18"	MZ-4005(2x)	MZ-4005	MZ-1004	MZ-1004	A-240	MZ-1004(2x) and A-240
23"	MZ-4006(2x)	MZ-4006	—	—	—	—
30"	—	—	MZ-1005	MZ-1005	A-241	MZ-1005(2x) and A-241
28 Case	CM-6	CM-6	CW-166	CW-166	CW-166	CW-350
Weight	59 lbs	44 lbs	105 lbs	140 lbs	210 lbs	350 lbs

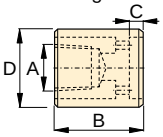
Base/Collar/Plunger Attachments

1 Threaded Adaptor



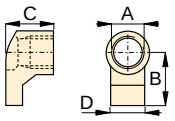
tons	Model No.	A	B	C	D
2.5	A-23	3/4"-16 UN	1.13	1.05	3/4"-14 NPTF
5.0	A-13	1"-8 UN	1.25	2.19	1 1/4"-11 1/2 NPTF
12.5	A-28	1 1/2"-16 UN	1.87	2.75	2"-11 1/2 NPTF

2 Base Attachment (incl. mounting screws)



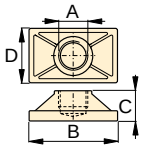
tons	Model No.	A	B	C	D
2.5	A-25	3/4"-14 NPTF	2.00	.50	1.75
5.0	A-21	1 1/4"-11 1/2 NPTF	2.25	.50	2.56
12.5	A-27	2"-11 1/2 NPTF	2.50	.50	3.88

3 Collar Toe



tons	Model No.	A	B	C	D
2.5	A-1034	1 1/2"-16 UN	2.13	1.97	1.25
5.0	A-20	2 1/4"-14 UN	3.16	2.25	2.25
12.5	A-595	3 5/16"-12 UN	4.06	2.03	3.18

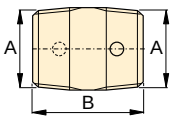
4 Flat Base



tons	Model No.	A	B	C	D
2.5	MZ-4010	3/4"-14 NPTF	4.50	1.25	2.50
5.0	A-14	1 1/4"-11 1/2 NPTF	6.50	1.38	3.50
12.5	A-243*	2"-11 1/2 NPTF	6.50	2.31	6.50

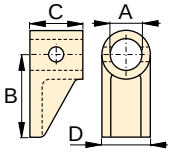
* A-243 is a round base model

5 Threaded Connector



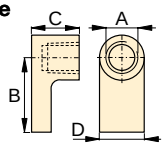
tons	Model No.	A	B
2.5	A-545	3/4"-14 NPTF	1.38
5.0	A-10	1 1/4"-11 1/2 NPTF	1.63

6 Lock-on Clamp Toe



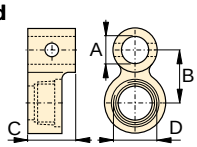
tons	Model No.	A	B	C	D
5.0	A-8	1.69	4.13	2.00	2.25

7 Threaded Plunger Toe

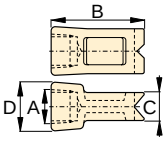
tons	Model No.	A	B	C	D
2.5	A-530	3/4"-14 NPTF	2.25	1.00	1.33
5.0	A-6	1 1/4"-11 1/2 NPTF	1.13	1.25	2.25

8 Collar Clamp Head

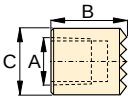
tons	Model No.	A	B	C	D
2.5	MZ-4011	3/4"-14 NPTF	1.95	3.00	1 1/2-16 UN
5.0	A-192	1.69	2.50	2.00	2 1/4-14 UN

9 Spreader Toe

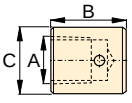
tons	Model No.	A	B	C	D
5.0	A-305	1 1/4"-11 1/2 NPTF	4.50	1.00	2.00

10 Serrated Saddle

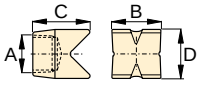
tons	Model No.	A	B	C
2.5	A-531	3/4"-14 NPTF	1.25	1.09
5.0	A-18	1 1/4"-11 1/2 NPTF	2.00	1.50

11 Smooth Saddle

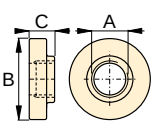
tons	Model No.	A	B	C
5.0	A-185	1 1/4"-11 1/2 NPTF	1.50	2.00

12 90° V-Base

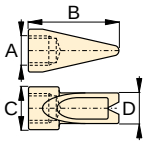
tons	Model No.	A	B	C	D
2.5	A-532	3/4"-14 NPTF	1.50	1.88	1.00
5.0	A-15	1 1/4"-11 1/2 NPTF	2.13	2.25	2.13

13 Plunger Base

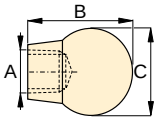
tons	Model No.	A	B	C
12.5	A-607	2"-11 1/2 NPTF	6.56	1.53

14 Wedge Head

t	Model No.	A	B	C	D
2.5	A-629	3/4"-14 NPTF	2.75	1.31	1.13
5.0	A-129	1 1/4"-11 1/2 NPTF	4.00	2.00	1.75

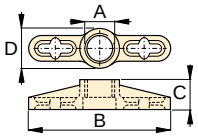
15 Rubber Flex-Head

tons	Model No.	A	B	C
2.5	A-539	3/4"-14 NPTF	1.75	2.75
5.0	A-128	1 1/4"-11 1/2 NPTF	3.40	3.40

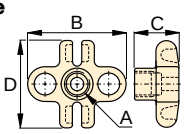
Chains and Attachments for Pulling

16 Single Chain Plate

tons	Model No.	A	B	C	D
2.5	A-558	1 1/2"-16 UN	7.75	1.56	1.75
5.0	A-132	2 1/4"-14 UN	12.12	2.50	3.12
12.5	A-238	3 5/16"-12 UN	17.75	4.03	4.93

17 Double Chain Plate

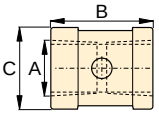
tons	Model No.	A	B	C	D
5.0	A-5	1 1/4"-11 1/2 NPTF	5.12	2.00	4.96

18 Chain with Hook

tons	Model No.	Chain Length
2.5	A-557	5 feet
5.0	A-141	6 feet
12.5	A-218	8 feet

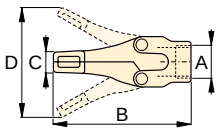
Tubes, Connectors and Adaptors

19 Pipe Coupling

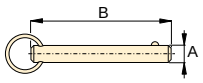
tons	Model No.	A	B	C
2.5	A-544	3/4"-14 NPTF	1.69	1.31
5.0	A-19	1 1/4"-11 1/2 NPTF	1.94	2.15
12.5	A-242	2"-11 1/2 NPTF	3.50	3.25

20 Spreader

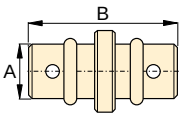
tons	Model No.	A	B	C	D
1.0	WR-5	—	8.78	.38	3.70
1.0	A-92	2 1/4"-14 UN	9.63	1.38	6.25

21 Lock Pin

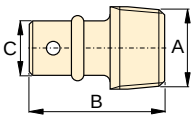
tons	Model No.	A	B
2.5	MZ-4013	.25	2.38
5.0	A-16	.44	3.25

22 Lock-on Connector

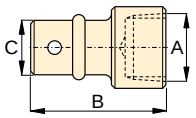
tons	Model No.	A	B
2.5	MZ-4007	.75	3.12
5.0	MZ-1050	1.31	5.00

23 Male Lock-on Adaptor

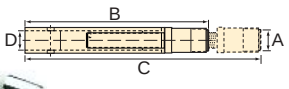
tons	Model No.	A	B	C
2.5	MZ-4008	3/4"-14 NPTF	2.38	.75
5.0	MZ-1051	1 1/4"-11 1/2 NPTF	3.56	1.31

24 Female Lock-on Adaptor

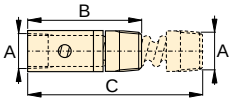
tons	Model No.	A	B	C
2.5	MZ-4009	3/4"-14 NPTF	2.56	.75
5.0	MZ-1052	1 1/4"-11 1/2 NPTF	3.81	1.31

25 Adjustable Extension

tons	Model No.	A	B	C	D
5.0	A-285	1 1/4"-11 1/2 NPTF	13.20	17.37	1.30

26 Slip-Lock Extension

tons	Model No.	A	B	C
2.5	A-650	3/4"-14 NPTF	7.88	14.37

▼ Shown: **SP-35S**

Much Faster than Drilling...

- **.50" thick mild steel maximum capacity**
- **Round, oblong and square punches and dies are available to solve your punching applications**
- **Long life Enerpac single-acting, spring return design**
- **Durable steel case keeps tools and dies together and provides for easy carrying and storage**
- **CR-400 female coupler included**

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, air or hand pump. Please refer to the Quick Selection Chart information on next page. A punch and die may also be ordered as a matched set.

◀ *This PUD-1100B is shown with the 35 ton punch and optional gauge.*

▼ **STANDARD PUNCH AND DIE SETS SELECTION CHART**

Hole Shape	Imperial*		Metric*	
	Hole Size (in)	Bolt Size (in)	Hole Size (mm)	Bolt Size (mm)
●	.31	1/4	7.9	–
●	.38	5/16	9.5	M8
●	.44	3/8	11.1	M10
●	.53	7/16	13.5	M12
●	.56	1/2	14.3	–
●	.69	5/8	17.5	M16
●	.78	–	19.8	M18
●	.81	3/4	20.6	–
■	.31	1/4	7.9	–
■	.38	5/16	9.5	M8
■	.44	3/8	11.1	M10
■	.50	7/16	12.7	M12
▬	.31 x .75	1/4	7.9 x 19	–
▬	.38 x .75	5/16	9.5 x 19	M8
▬	.44 x .75	3/8	11.1 x 19	M10
▬	.50 x .75	7/16	12.7 x 19	M12

* Material thickness should **not** exceed hole diameter

Single-Acting, Spring Return Hydraulic Punch

▼ QUICK SELECTION CHART

Included					Model Number	Weight (lbs)
*	Punch & Die Set	Pump	Pump Type	Hose		
SP-35	–	–	–	–	**SP-35**	35
SP-35	Standard**	–	–	–	**SP-35S**	40
SP-35	Standard**	PUD-1100B	E	HC-7206	**SP-35SP**	70
SP-35	Metric***	–	–	–	**MSP-351**	40
SP-35	Standard**	P-392	H	HC-7206	**STP-35H**	55
SP-35	Standard**	PATG-1102N	A	HC-7206	**STP-35A**	63

* Punch oil capacity: 4.58 in^3
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

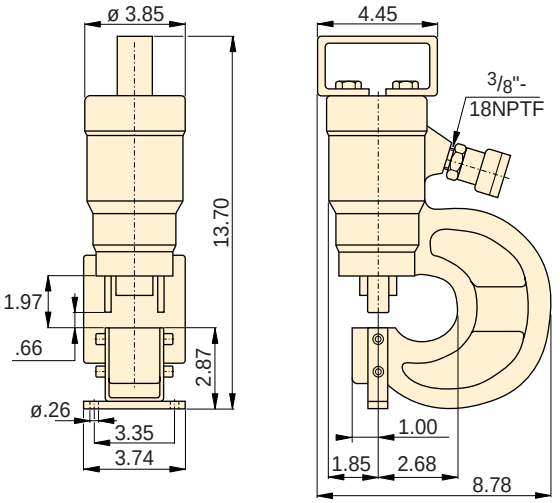
E = Electric
H = Hand
A = Air operated

SP Series

Capacity:
35 tons

Hole Sizes:
0.31-0.81 inch

Maximum Operating Pressure:
10,000 psi



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

CAUTION!
Material thickness should not exceed hole diameter.

	Standard Punch & Die Set	Maximum allowable material thickness to be punched (in)										
	Model Number	1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)
	SPD-313	.31	.31	.25	.25	.25	.25	.13	.19	.25	.25	.25
	SPD-375	.38	.38	.31	.31	.31	.31	.19	.25	.31	.31	.31
	SPD-438	.44	.44	.38	.38	.38	.31	.19	.31	.31	.31	.31
	SPD-531	.50	.50	.44	.44	.44	.38	.25	.31	.38	.38	.38
	SPD-563	.50	.50	.50	.44	.50	.44	.25	.38	.44	.44	.44
	SPD-688	.50	.50	.50	.44	.50	.40	.25	.31	.40	.40	.40
	SPD-781	.50	.50	.50	.44	.50	.38	.25	.31	.38	.39	.38
	SPD-813	.50	.50	.50	.44	.50	.31	.19	.31	.31	.31	.31
	SPD-458	.31	.31	.25	.25	.25	.25	.13	.19	.25	.25	.25
	SPD-549	.38	.38	.31	.31	.31	.31	.19	.25	.31	.31	.31
	SPD-639	.44	.44	.38	.38	.38	.31	.19	.31	.31	.31	.31
	SPD-728	.50	.50	.44	.44	.44	.38	.25	.31	.38	.38	.34
	SPD-106	.31	.31	.25	.25	.25	.25	.13	.19	.25	.25	.25
	SPD-125	.38	.38	.31	.31	.31	.31	.19	.25	.31	.31	.31
	SPD-188	.44	.44	.38	.38	.38	.31	.19	.31	.31	.31	.31
	SPD-250	.50	.50	.44	.44	.44	.38	.25	.31	.38	.38	.38

Steel Qualities (see table):

1) Mild A-7
2) Boiler Plate
3) Structural A-36
4) Struct Corten (ASTM A242)
5) Cold Rolled C-1018
6) Hot Rolled C-1050
7) Hot Rolled C-1095
8) Hot Rolled C-1095 Annealed
9) Stainless Annealed
10) Stainless 304 Hot Rolled
11) Stainless 316 Cold Rolled

50 Ton Hydraulic Punch

ENERPAC
Hydraulic Technology Worldwide

▼Shown: **SP-50100**

Cuts the Time Spent Forming Holes

- **Available as a complete set including electric pump and hoses**
- **Double-acting cylinder design for fast cycle times**
- **Punch and die changeover tools included**
- **Lifting handle for easy carrying**
- **Adjustable power stripper prevents movement of the metal during stripping**
- **CR-400 female couplers included**

Depth Stop

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

Foot Mounting Kit

A foot mounting kit for easy mounting of the 50 ton punch to workbench or fixture is available.
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 and die may be ordered as a matched set. Please refer to the selection chart information.

◀ *Save time using this 50 ton Enerpac Punch.*

▼ *Shown below is the 50 ton punch with SP-120 and SP-110 assembled.*

50 Ton Hydraulic Punch

▼ QUICK SELECTION CHART PUNCH SETS

Included				Set Model Number	Weight
Model Number Punch*	Punch & Die Sets	Pump	Hose (2x)		(lbs)
SP-50	All**	–	–	**SP-50100**	255
SP-50	All**	GPER-3410BN	HC-7206	**SP-5000**	384

* Punch Oil Capacity:
Advance: 17 in^3
Retract: 14 in^3

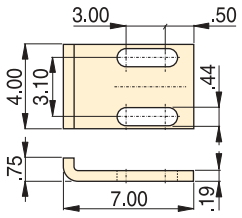
** All standard sets from chart below.

SP Series

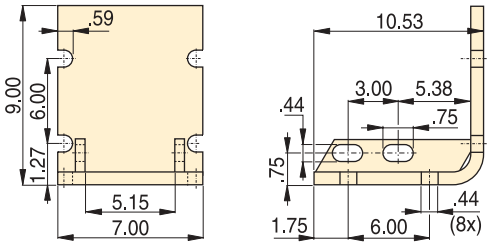
Capacity:
50 tons

Hole Sizes:
0.53-1.03 inch

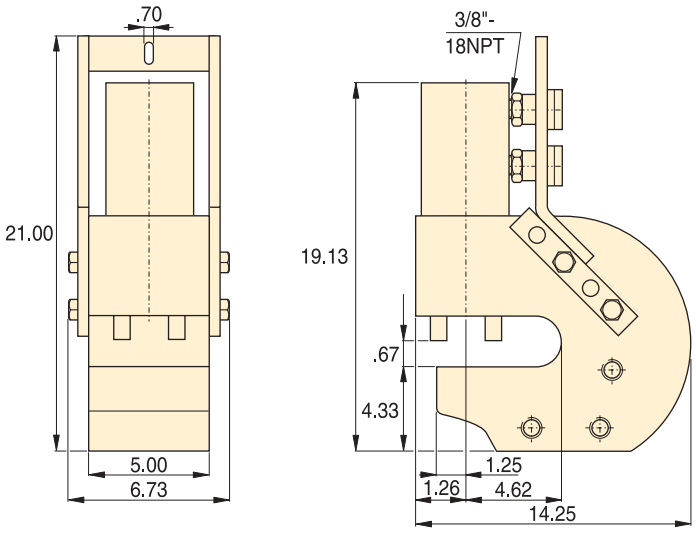
Maximum Operating Pressure:
10,000 psi



SP-110



SP-120



SP-50

CAUTION!
Material thickness should not exceed hole diameter.

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

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	Bolt Size	Standard Punch & Die Set	Maximum allowable material thickness to be punched (in)										
	(in)	(in)	Model Numbers	1	2	3	4	5	6	7	8	9	10	11
●	.53	1/2	**SP-150**	.53	.53	.53	.53	.53	.49	.32	.40	.49	.49	.49
●	.66	5/8	**SP-170**	.56	.56	.56	.50	.56	.51	.32	.40	.51	.51	.51
●	.78	3/4	**SP-190**	.56	.56	.56	.50	.56	.49	.32	.40	.49	.50	.49
●	.91	7/8	**SP-121**	.56	.56	.56	.50	.56	.35	.22	.35	.35	.35	.35
●	1.03	1	**SP-123**	.56	.56	.56	.44	.56	.31	.19	.31	.31	.31	.31

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

A , WR
Series

Capacity:
0.75-1 ton

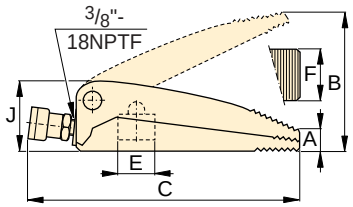
Tip Clearance:
0.38-1.38 inch

Maximum Spread Range:
3.70-11.50 inch

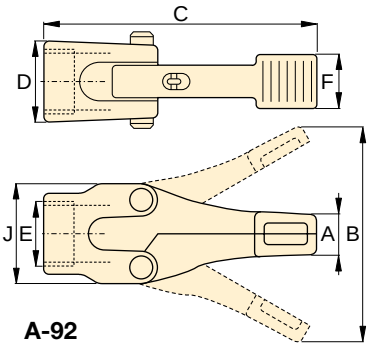
Maximum Operating Pressure:
10,000 psi

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

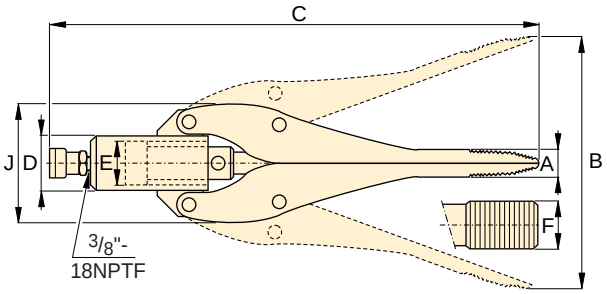
▼ *A WR-5 wedgie cylinder is used to position a concrete block on a construction site.*



WR-5



A-92



WR-15

Spreader Capacity (tons)	Tip Clearance (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Dimensions (in)							Weight (lbs)
					A	B	C	D	E	F	J	
1.00	**.38**	**WR-5**	1.00	.61	.38	3.70	8.78	–	1.13	2.01	2.01	5.0
.75	**1.26**	**WR-15**	2.25	3.91	1.26	11.50	21.65	2.24	1.69	2.01	6.18	25.0
1.00	**1.38**	**A-92**	–	–	1.38	6.25	9.63	2.75	2 1/4"-14 UNS	2.00	3.62	8.0

▼ Shown from left to right: **SOH-10-6, SOH-23-6**

SOH
Series

Lifting Capacity:
8.5 - 20 tons

Stroke:
5.39 - 6.18 inch

Toe Clearance:
0.79-1.18 inch

Maximum Operating Pressure:
10,000 psi

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

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Best Match Hand Pump
The Enerpac P-392 hand pump is an ideal choice to power your Enerpac Machine Lift.

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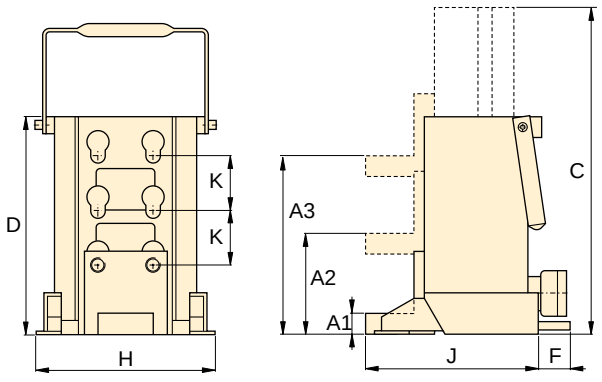
- **For lifting heavy equipment with minimum available access**
- **Remote operation of hydraulic pump enhances safety**
- **Low-height lifting toe**
- **Precision guided to reduce friction and isolate cylinder from side-loads**
- **Two extendable support feet provide extra stability**
- **Includes RC Series cylinder with CR-400 coupler**



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

Capacity (ton)	Toe Clearance with cylinder retracted (in) Minimum A1	Central A2	Maximum A3	Stroke (in)	Model Number	Dimensions (in) Total Ext. Height C	Total Body Height D	F	H	J	K	Weight (lbs)
8.5	.79	3.74	6.69	5.39	**SOH-10-6**	17.00	11.61	–	7.48	8.46	2.95	59.2
20	1.18	4.33	7.48	6.18	**SOH-23-6**	18.58	12.40	2.56	10.24	9.84	3.15	99.2

Heavy Duty Caterroller™ Load Skates

▼Shown: **Set ERS-20**

Move Heavy Loads Easily and Safely

Sets (see table) include all components necessary to handle a variety of applications.
Two link-up bars, two **ERH-1** handles (34.6" long) and one **EMB-1** metal box are included.

Optional long handle **ERH-2** (46") also available.

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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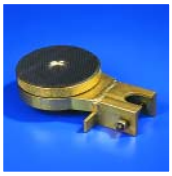
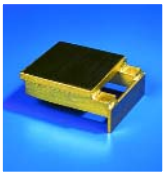
- **Rugged and sturdy construction for long life**
- **Low profile construction for increased stability**
- **Low rolling-resistance allows for easy load movement**
- **Attachable load leveling plates and swivel turntables for turning corners**

◀ *Heavy transport of a machine tool using Caterroller Load Skates.*

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

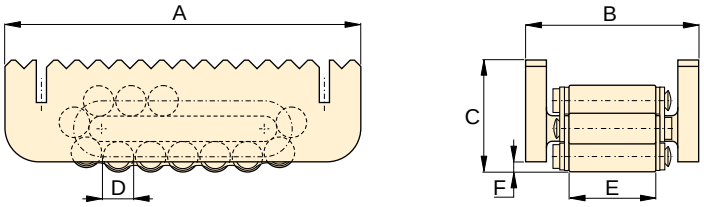
Set Capacity* (tons)	Set Model Number	Load Skates (4)	Turntable Swivels (2)	Leveling Plates (2)	Weight Including handles and metal box (lbs)
					
20	**ERS-20**	ER-10	ES-10	ELP-10	110
30	**ERS-30**	ER-15	ES-15	ELP-15	123
60	**ERS-60**	ER-30	ES-30	ELP-30	167

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

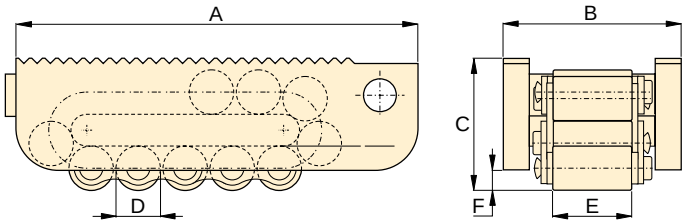
Heavy Duty Caterroller™ Load Skates

ER Series

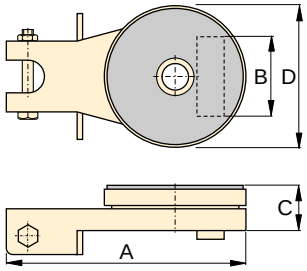
Maximum Carrying Capacity Per Skate:
1-80 tons



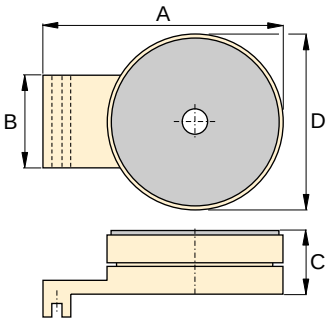
ER-1, ER-10, ER-15, ER-30



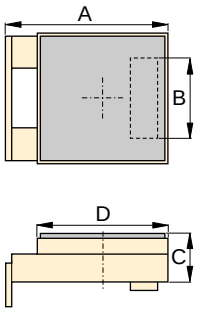
ER-60, ER-80



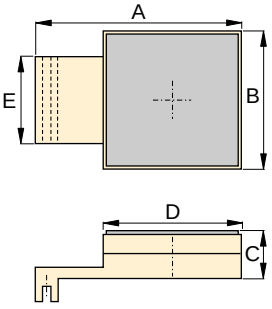
Turntable Swivel
ES-1, ES-10, ES-15, ES-30



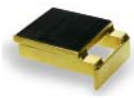
Turntable Swivel
ES-60, ES-80



Leveling Plate
ELP-10
ELP-15
ELP-30



Leveling Plate
ELP-60
ELP-80

	Capacity (tons)	Model Number	Dimensions (inch)						Contact Rolls per Skate	Rollers per Skate	Weight (lbs)
			A	B	C	D	E	F			
Load Skates 	1	**ER-1**	6.30	3.94	2.56	.71	2.00	.16	4	11	8.4
	10	**ER-10**	8.27	3.94	2.63	.71	2.00	.24	5	15	11.5
	15	**ER-15**	8.69	4.45	2.95	.94	2.38	.39	4	13	16.0
	30	**ER-30**	10.63	5.13	3.63	1.18	2.69	.39	4	13	28.6
	60	**ER-60**	15.00	6.63	4.94	1.65	3.00	.63	4	13	70.4
	80	**ER-80**	20.88	7.19	5.75	1.97	3.38	.75	6	17	134.2
Turntable Swivel 	1	**ES-1**	8.15	3.42	1.02	3.54	–	–	–	–	2.4
	10	**ES-10**	8.66	2.87	1.65	5.12	–	–	–	–	8.1
	15	**ES-15**	8.66	3.38	1.65	5.12	–	–	–	–	8.1
	30	**ES-30**	9.87	3.78	1.89	5.91	–	–	–	–	11.7
	60	**ES-60**	10.83	4.50	2.40	7.48	–	–	–	–	30.1
	80	**ES-80**	14.19	5.06	2.40	8.66	–	–	–	–	41.6
Leveling Plate 	10	**ELP-10**	5.87	2.87	1.65	4.72	–	–	–	–	8.1
	15	**ELP-15**	5.87	3.38	1.65	4.72	–	–	–	–	8.1
	30	**ELP-30**	7.00	3.78	1.89	5.31	–	–	–	–	11.6
	60	**ELP-60**	10.63	4.50	2.40	7.09	4.49	–	–	–	30.4
	80	**ELP-80**	13.78	5.06	2.40	7.87	5.04	–	–	–	41.4

▼Shown from left to right: **WHC-3380, WHC-750**

WHC, WHR
Series

Capacity:
3-20 tons

Maximum Material Diameter:
0.75-4 inch

Maximum Operating Pressure:
10,000 psi

- **Single-acting, spring return on all models, except WHR-1250**
- **Guillotine action for efficient operation**
- **Lifting handles on larger models**
- **Carrying bag included for easy carrying and tool protection**
- **Ideal for use with most Enerpac pumps featuring 3-way valve or dump valve and 10,000 psi pressure rating (except WHR-1250, which requires 4-way valve)**

Replacement Blades

To order 60-62HRc hardened replacement blades use one of the model numbers shown below.

For Cutter Model Number	Order Blade 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**

Cutterhead Sets

Hydraulic Cutterheads are available as sets (pump, tool and hose).

Set Model Number	Cutter Model Number	Pump Model Number
STC-750H†	WHC-750	P-392
STC-750A†	WHC-750	PATG-1102N
STC1250H†	WHC-1250	P-392
STC-1250A†	WHC-1250	PATG-1102N

† H = Hand Pump, A = Air Operated Pump

▼ **Selection Chart Maximum Cutting Capacities** (ø in inches)

Cutter Head Operation	Capacity (tons)	Model Number	Oil Capacity (in^3)	Length (in)	Steel Wire Rope, Hemp-core or IWRC 6x7 6x12 6x19	Round Bar: Copper Wire or Bar	Round Bar: Aluminum Wire or Bar	Round Bar: Soft Steel Bolts	Round Bar: Reinforcing Bar	Wire Strand: Bare Copper Wire Strands	Wire Strand: Bare Aluminum Wire Strands 6x7	Wire Strand: ACSR	Wire Strand: Guy Steel Wire Strands 1x7 1x19	Cable: Telephone Cable CPP	Cable: Underground Cable (Power)	Weight (lbs)
Single-acting	**4**	**WHC-750***	1.2	5.0	.75	.75	.75	.75	.50	.75	.75	.75	.63	☆	☆	7
	20	**WHC-1250***	8.2	11.00	1.25	1.13	1.25	1.13	1.00	1.25	1.25	1.25	.88	☆	☆	25
	13	**WHC-2000**	7.3	15.00	1.00	1.25	1.25	.88	☆	2.00	2.00	2.00	.75	☆	2.00	23
	3	**WHC-3380**	4.0	19.00	☆	☆	☆	☆	☆	1.63	1.69	☆	☆	3.38	3.38	20
	8	**WHC-4000**	8.4	24.00	☆	☆	☆	☆	☆	☆	☆	☆	☆	4.00	4.00	32
D-A**	**20**	**WHR-1250**	7.5	16.50	1.25	1.25	1.25	1.13	1.00	1.25	1.25	1.25	.88	☆	☆	26

* Available in sets. ** D-A = Double-acting

☆ Will not cut designated material

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

WMC Series

Capacity:
3-20 tons

Maximum Material Diameter:
0.63-3.38 inch

Maximum Operating Pressure:
10,000 psi

- **Rotating heads for operator convenience**
- **Guillotine action (except WMC-1000) for efficient operation**
- **Carrying bag included for easy carrying and tool protection**
- **Velcro straps to secure handles on larger models for easy transportation**
- **Spring return on all models**
- **Lightweight, self-contained tool, can be used anywhere**

Replacement Blades

To order 60-62HRc hardened replacement blades use one of the model numbers shown below.

For Cutter Model Number	Order Blade Model Number
WMC-580	**WCB-580**
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 inches)

Capacity (tons)	Model Number	Length (in)	Steel Wire Rope, Hemp-core or IWRC 6x7 6x12 6x19	Round Bar				Wire Strand					Cable		Weight (lbs)
				Copper Wire or Bar	Alumi-num Wire or Bar	Soft Steel Bolts	Rein-forcing Bar	Bare Copper Wire Strands	Bare Alumi-num Wire Strands 6x7	ACSR Wire Strands	Guy Steel Wire Strands 1x7	Guy Steel Wire Strands 1x19	Tele-phone Cable CPP	Under-ground Cable (Power)	
4	**WMC-580**	15.00	.63	.63	.63	.63	.38	.63	.63	.63	.56	.56	☆	.63	8
4	**WMC-750**	15.00	.75	.69	.69	.69	.50	.75	.75	.75	.56	.56	☆	.68	8
20	**WMC-1000***	26.75	☆	.75	.75	.75	.75	☆	☆	☆	☆	☆	☆	☆	25
20	**WMC-1250**	26.75	1.25	1.13	1.25	1.25	.88	1.25	1.25	1.25	.88	1.00	☆	☆	23
6	**WMC-1580**	22.00	.75	.75	.75	.75	☆	1.50	1.63	1.63	.63	.63	☆	1.63	15
13	**WMC-2000**	24.75	1.00	1.25	1.25	.88	☆	2.00	2.00	2.00	.75	.75	☆	2.00	24
3	**WMC-3380**	26.00	☆	☆	☆	☆	☆	1.83	1.69	☆	☆	☆	3.37	3.38	22

* Cuts .50" alloy chain grade 70 (type G7 transport or tie-down) or grade 80 (for overhead lifting applications)

☆ Will not cut designated material

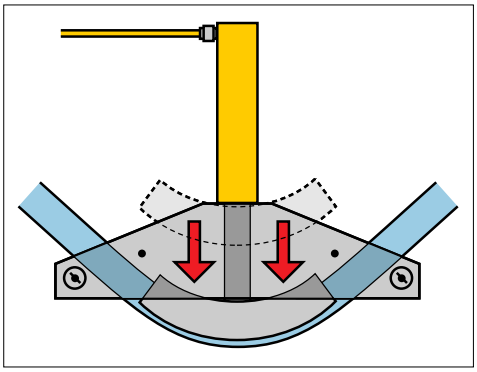
▼Shown: **STB-101H**

Quick, Safe and Wrinkle-free Bending

'One Shot' and 'Sweep'

One shot shoes give up to a 90° bend without resetting.
Sweep shoes are used where increased radii are required for multiple parallel pipe installations.

- **Makes smooth, wrinkle-free bends**
- **Sets include cylinder, hose and manual, air or electric pump**
- **Sets are also available without hydraulics**
- **Bending shoes and bending frame are lightweight, heat-treated aluminum**
- **All sets include sturdy steel storage case**
- **All sets include BZ-12091 angle indicator for accurate bending**
- **BZ-12377 Shoe Lock Pin included in every set**
- **Eject-O-Matic™ benders (STB-202 models) use a double-acting cylinder to eject pipe from the bending shoe**



▲ *Typical one shot bending operation.*

▼ SELECTION CHART

Pipe Range Nominal Size (in) One Shot	Pipe Range Nominal Size (in) Sweep	Set Model Number	Hand Pump*	Air Pump*	Electric Pump*	Cylinder*	Hose*	Steel Case*	Saddle	Weight (incl. steel case) (lbs)
										
1/2 - 2	–	STB-101X	–	–	–	–	-	CM-4	A-12	88
		STB-101N	–	–		RC-1010	HC-7206	CM-4	A-12	105
		STB-101H	P-392	–	–	RC-1010	HC-7206	CM-4	A-12	114
		STB-101A	–	PATG-1102N	–	RC-1010	HC-7206	CM-4	A-12	119
		STB-101B	–	–	PUJ-1200B[2]	RC-1010	HC-7206	CM-4	A-12	127
1 - 2	2 1/2-4	STB-221X	–	–	–	–	-	CM-7	A-29	229
		STB-221N	–	–	–	RC-2510	HC-7206	CM-7	A-29	263
		STB-221H	P-80	–	–	RC-2510	HC-7206	CM-7	A-29	286
1 1/4 - 4	–	STB-202X[1]	–	–	–	–	-	CM-7	A-29	316
		STB-202N[1]	–	–	–	RR-3014	HC-7206 (2x)	CM-7	A-29	383
		STB-202B[1]	–	–	PUR-3409B[2]	RR-3014	HC-7206 (2x)	CM-7	A-29	467

* See corresponding sections of this catalog for more detailed specifications.
[1] Eject-O-Matic™ [2] For 230 volt applications change the last digit of Set Model Number from "B" to "E".

Nominal pipe size (outside dia.) (in)	Wall Thick-ness (in)	Sche-dule Pipe *	Pipe Bend Inside Radius (in)	STB-101 $1/2$-2 One Shot	STB-221 1-2 One Shot $2\,1/2$-4 Sweep	STB-202 $1\,1/4$-4 One Shot	One Shot Bending Shoe Model Number	Sweep Bending Shoe Model Number
$1/2$ (.840)	.109	40	$2\,7/8$	Yes	–	–	BZ-12011	–
	.147	80		Yes	–	–		
	.187	160		WS	–	–		
	.294	DEH		WS	–	–		
$3/4$ (1.050)	.113	40	4	Yes	–	–	BZ-12021	–
	.154	80		Yes	–	–		
	.218	160		WS	–	–		
	.308	DEH		WS	–	–		
1 (1.315)	.133	40	$5\,1/8$	Yes	Yes	–	BZ-12031	–
	.179	80		Yes	Yes	–		
	.250	160		WS	WS	–		
	.358	DEH		–	WS	–		
$1\,1/4$ (1.660)	.140	40	$6\,7/16$	Yes	Yes	Yes	BZ-12041	–
	.191	80		Yes	Yes	Yes		
	.250	160		WS	WS	Yes		
	.342	DEH		–	WS	WS		
$1\,1/2$ (1.900)	.145	40	$7\,5/16$	Yes	Yes	Yes	BZ-12051	–
	.200	80		Yes	Yes	Yes		
	.281	160		WS	WS	Yes		
	.400	DEH		–	WS	WS		
2 (2.375)	.154	40	$8\,5/16$	Yes	Yes	Yes	BZ-12061	–
	.218	80		Yes	Yes	Yes		
	.343	160		–	WS	Yes		
$2\,1/2$ (2.875)	.203	40	$9\,1/2$	–	Yes	Yes	BZ-12341	BZ-12382
	.276	80		–	WS	Yes		
	.375	160		–	WS	Yes		
3 (3.500)	.216	40	$11\,1/4$	–	Yes	Yes	BZ-12351	BZ-12383
	.300	80		–	WS	Yes		
$3\,1/2$ (4.000)	.226	40	$15\,1/2$	–	Yes	Yes	BZ-12391	BZ-12384
	.318	80		–	WS	Yes		
4 (4.500)	.237	40	$17\,3/4$	–	Yes	Yes	BZ-12392	BZ-12385
	.337	80		–	–	Yes		

***Schedule Pipe: 40** = Standard; **80** = Extra Heavy; **160** = Double Extra Heavy;
DEH = Double Extra Heavy (slightly thicker than 160);
WS = Can be bent by using wider spacing for swivel shoes.

STB Series

Nominal Pipe Size:
0.5 - 4 inch

Maximum Bending:
90°

Maximum Operating Pressure:
10,000 psi

▲ *Steel pipe is quickly and safely bent up to 90° using the STB-101H Pipe Bender Set.*

Frame Assembly	Pivot Pin (2x incl)	Pivot Shoes (2x incl)	One Shot or Sweep[3] Bending Shoes included								Set Model Number
BZ-12371	BZ-12375	BZ-12071	BZ-12011	BZ-12021	BZ-12031	BZ-12041	BZ-12051	BZ-12061	–	–	STB-101X STB-101N STB-101H STB-101A STB-101B
BZ-12372	BZ-12376	BZ-13401	BZ-12031	BZ-12041	BZ-12051	BZ-12061	BZ-12382[3]	BZ-12383[3]	BZ-12384[3]	BZ-12385[3]	STB-221X STB-221N STB-221H
BZ-12374	BZ-12376	BZ-13401	–	BZ-12041	BZ-12051	BZ-12061	BZ-12341	BZ-12351	BZ-12391	BZ-12392	STB-202X[1] STB202N[1] STB-202B[1]

[3] Shoes are Sweep, all other shoes are One Shot.

▼Shown: **MIC-100**

MIC Series

Capacity:
0.75-2 ton

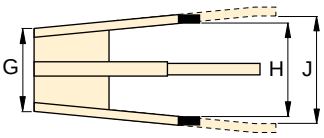
Maximum Operating Pressure:
10,000 psi

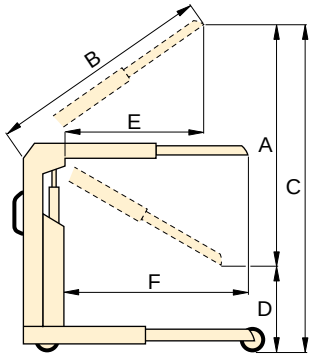
.75 Ton Boom Crane

The .75 ton crane with folding boom is compact in size. Ideal for mounting on trucks or loading docks. Boom fits into metal mounting well which is included with the crane.
Order: MIC-77

Mounting Well Dimensions:
Plate : 15" x 15"
Well : 14.25" deep
Well Ø : 3.50" O.D.

- **Rugged heavy-duty construction for long life**
- **Precise hydraulic positioning of crane boom**
- **Front wheels and 360° rear casters allow easy positioning of crane**
- **Adjustable boom and legs on MIC-100 and MIC-200 lock into position for variable reach**
- **Adjustable boom on MIC-75 and MIC-77**





Max. Capacity (ton)	Model Number	Boom Position	Capacity (lbs)	A	B	Dimensions (in)							Weight (lbs)
						Boom Height		Clearance			Leg Clearance		
						Max. C	Min. D	E	F	G	Retracted H	Extended J	
.75	MIC-75	1	1500	48.88	39.50	88.38	39.50	19.75	32.00	28.00	31.88	31.88	219
		2	900	78.6	63.50	104.16	25.50	37.50	56.25	28.00	31.88	31.88	
		3	800	91.00	73.50	110.63	19.63	44.75	66.25	28.00	31.88	31.88	
	MIC-77*	1	1500	77.50	39.50	60.65	16.63	28.16	34.19	–	–	–	195
		2	900	87.63	63.50	94.75	-7.16	49.81	58.19	–	–	–	
		3	800	92.83	73.50	109.38	-17.00	58.56	68.16	–	–	–	
1.0	MIC-100	1	2000	64.00	51.50	101.75	37.75	24.75	41.50	28.00	31.50	38.13	395
		2	1600	80.13	64.50	110.38	30.25	34.25	54.50	28.00	31.50	38.13	
		3	1300	92.63	74.50	117.16	24.38	41.50	64.50	28.00	31.50	38.13	
		4	1200	105.13	84.50	123.75	18.63	48.75	74.50	28.00	31.50	38.13	
2.0	MIC-200	1	4000	51.88	51.75	102.75	50.88	20.50	40.38	30.50	32.50	38.13	505
		2	3300	61.88	61.75	108.16	46.25	30.00	50.38	30.50	32.50	38.13	
		3	2800	72.00	71.75	113.63	41.75	38.25	60.38	30.50	32.50	38.13	
		4	2500	82.00	81.75	119.16	37.16	46.50	70.38	30.50	32.50	38.13	

* Boom only

▼ Shown: **CM-16**

CM Series

Capacity:
0.67-16 ft³

Protect Your Equipment

CM-16

- **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-6, CM-7

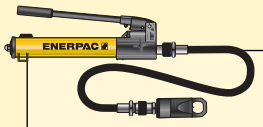
- **Constructed of 16 gauge steel (CM-4), 14 gauge steel (CM-7) or 20 gauge steel (CM-1, CM-6)**
- **Heavy-duty hinges and lifting handles**

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

Case Size (cu.ft)	Model Number	Case Dimensions		
		Length (in)	Width (in)	Height (in)
1.13	**CM-1**	25.0	11.50	6.63
4.50	**CM-4**	31.0	18.00	14.00
.67	**CM-6**	23.5	7.00	7.00
7.50	**CM-7**	47.5	15.00	18.00
16	**CM-16**	48.0	24.00	24.00

ENERPAC offers a comprehensive range of hydraulic and mechanical bolting tools suited to a wide variety of industries and applications.

Hydraulic torque wrenches, nut splitters, flange spreaders and alignment tools… Enerpac has the tools to complete your most difficult bolting jobs with the degree of safety and accuracy demanded in today's work environment.



Pump and Tool Sets

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

Hydraulic System Set-up

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

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Bolting Tools

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

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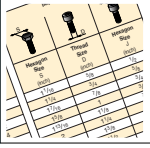
Bolting Tool Section Overview

Capacity	Tool type and functions	Series	Page
5-90 tons	Hydraulic Nut Splitters	NC	 186 ▶
5-10 tons	Pin-Type Hydraulic Flange Spreaders	FS	 187 ▶
8-14 tons	Step-Type Industrial Spreaders	FSM FSH	 188 ▶
0.3-3 tons	Flange Alignment Tools	ATM	 189 ▶
1,735-19,875 Ft.lbs	Square Drive Torque Wrenches	SQD	 190 ▶
2,425-17,860 Ft.lbs	Hexagon Cassette Torque Wrenches	HXD	 194 ▶
Flow 20 in^3/min	Portable Electric Torque Wrench Pumps	PMU	 198 ▶
Flow 60 in^3/min	High Flow Electric Torque Wrench Pumps	PMU	 199 ▶
Flow 55 in^3/min	Electric Torque Wrench Pumps	PTE	 200 ▶
Flow 30 in^3/min	Pneumatic Torque Wrench Pump	PTA	 202 ▶
Flow 20 in^3/min	Compact Pneumatic Torque Wrench Pump	PTA	 204 ▶
	Pressure vs. Torque Charts Hex Bolt Sizes		 206 ▶ 208 ▶

▼Shown from left to right: **NC-3241, NC-1319, NC-1924**

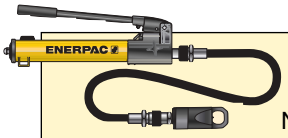
NC Series

Capacity:
5 - 90 tons

Hexagon Nut Range:
0.5-2.88 inch

Maximum Operating Pressure:
10,000 psi

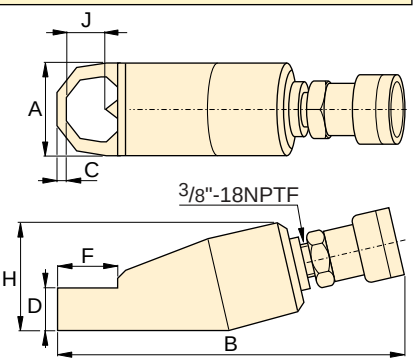
Enerpac Nut Splitters
Nut Splitters include a spare chisel, a spare set screw and the wrench used to secure the chisel. A CR-400 coupler is standard.



Nutsplitter Sets
Hydraulic Nutsplitters are available as sets (pump, tool and hose).

Set Model Number	Splitter Model Number	Pump Model Number
STN-1924H	NC-1924	P-392
STN-2432H	NC-2432	P-392
STN-3241H	NC-3241	P-392

- **Compact and ergonomic design, easy to use**
- **Unique angled head allows flush access**
- **Single-acting, spring return cylinder**
- **Heavy-duty chisels can be reground**
- **Applications include servicing trucks, piping industry, tank cleaning, petrochemical, steel construction and mining**



Hexagon Nut Range (in)	Bolt Range (in)	Capacity (tons)	Oil Capacity (in^3)	Model Number	Dimensions (in) A	B	C	D	F	H	J	Weight (lbs)	Replacement Chisel Model Number
.50-.75	.31-.50	5	.92	**NC-1319**	1.57	7.87	.24	.75	1.10	1.89	.83	1.8	**NCB-1319**
.75-.94	.50-.63	10	1.22	**NC-1924**	2.17	8.94	.32	.98	1.50	2.80	1.00	4.4	**NCB-1924**
.94-1.13	.63-.88	15	3.66	**NC-2432**	2.60	10.24	.39	1.22	1.93	2.99	1.30	6.6	**NCB-2432**
1.13-1.56	.88-1.13	20	4.88	**NC-3241**	2.95	11.26	.59	1.38	2.60	3.50	1.69	9.7	**NCB-3241**
1.56-2.00	1.13-1.38	35	9.46	**NC-4150**	3.78	12.80	.83	1.77	2.87	4.29	2.13	18.0	**NCB-4150**
2.00-2.25	1.38-1.50	50	14.64	**NC-5060**	4.17	14.41	1.06	2.13	3.63	4.96	2.38	26.0	**NCB-5060**
2.38-2.88	1.50-1.88	90	30.00	**NC-6075**	6.14	14.43	1.06	2.95	4.33	7.09	3.07	75.1	**NCB-6075**

Ordering Notes: Maximum allowable hardness to split is HRc-44.
Not to be used on square nuts.

Hydraulic Flange Spreaders

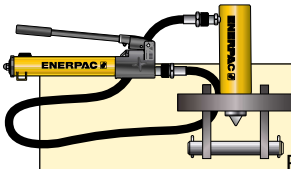
▼ Shown: **FS-56**

FS Series

Capacity:
5-10 ton

Maximum Operating Pressure:
10,000 psi

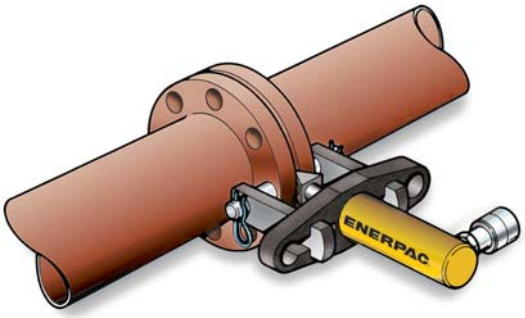
- **Lightweight, ergonomic design for ease of use**
- **Adjustable jaw widths from 2.75" to 8.50" for a wide range of applications**
- **Single-acting, spring return RC Series cylinders for fast trouble-free operation**

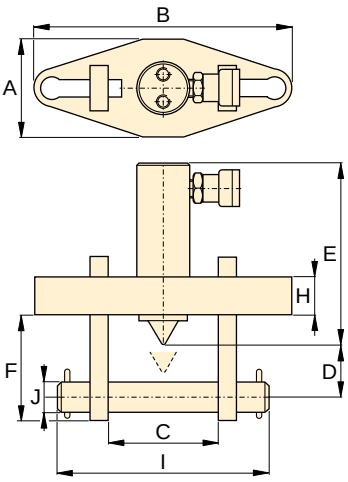


Flange Spreader Sets

Both Hydraulic Flange Spreaders are available as sets (includes gauge, adaptor and hose).

Set Model Number	Spreader Model Number	Pump Model Number
STF-56H	FS-56	P-142
STF-109H	FS-109	P-392
STF-109A	FS-109	PATG-1102N





Flange Spreader Matching Chart

ASA Rating (psi)	Pipe Size (in)	
	FS-56	FS-109
150	5-20	22-42
300	2.50-14	16-28
400	2.50-12	14-24
500	2.50-10	12-20
900	.50-6	8-16
1500	.50-3.50	4-8
2500	.50-2.50	3-4

Maximum Flange Thickness (in)	Stud Size (in)	Standard Wedge (in)	Capacity (tons)	Stroke (in)	Oil Capacity (in^3)	Model Number	Dimensions (in)										Weight (lbs)
							A	B	C Min.	C Max.	D	E	F	H	I	J	
2 x 2.25	.75-1.13	.13-1.13	5	1.50	1.50	**FS-56**	3.00	8.25	2.75	6.10	1.28	7.71	3.45	1.00	8.10	.75	26
2 x 3.63	1.25-1.63	.13-1.13	10	2.13	4.80	**FS-109**	4.25	11.00	4.10	8.50	1.98	6.00	4.50	1.50	10.75	1.25	40

▼ Shown: **FSH-14 and FSM-8 with safety blocks**

FSM/FSH
Series

Tip Clearance / Maximum Spread*:
0.24/3.16 in

Maximum Spread Force
8-14 ton

Maximum Operating Pressure:
10,000 psi (FSH-14)

- **Integrated wedge concept: friction-free, smooth, parallel wedge movement eliminates flange damage and spreading arm failure**
- **Unique interlocking wedge design: no first step bending and risk of slipping out of joint**
- **Requires very small access gap of only .24 in (6 mm)**
- **Stepped spreader arm design: each step can spread under full load**
- **Few moving parts means durability and low maintenance**
- **Safety block SB-1 and ratchet spanner SW-22 included with FSM-8**
- **Safety block and Enerpac RC-102 cylinder included with FSH-14**

Stepped Blocks FSB-1

Use this pair of stepped blocks to increase wedge opening up to 3.16 in (81 mm). Fits both FSH-14 and FSM-8.

For Even Spreading of Flange Joints

Use two Spreaders simultaneously, 180° apart, with AM-2 manifold.

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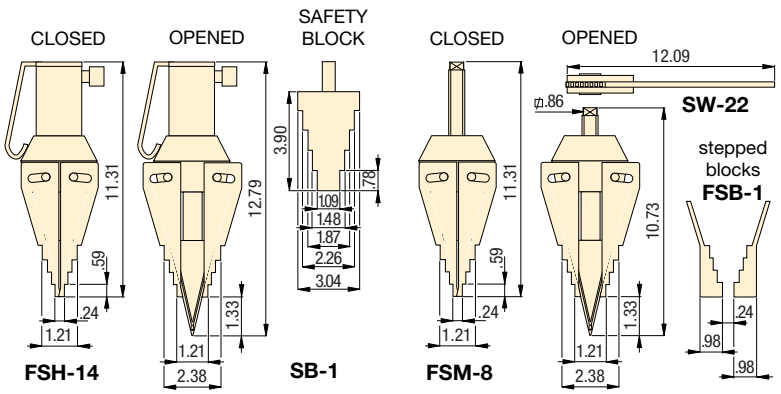
Flange Spreader Sets

Hydraulic FSH-14 is available as a set (pump, tool, gauge, adaptor and hose).

Set Model Number	Set Includes:	
STF-14H	FSH-14	GA-2
	P-392	GP-10S
	HC-7206	–

▼ *Two FSH-14 spreaders used simultaneously with Enerpac hand pump and hoses.*

All dimensions shown in inches.



Max. Spreading Force (ton)	Model Number	Tip Clearance (in)	Max Spread* (in)	Type	Weight (lbs)
8	**FSM-8**	.24	3.16	Mechanical	14.3
14	**FSH-14**	.24	3.16	Hydraulic	15.7

*Using stepped blocks FSB-1

▼ Shown: **ATM-3 and ATM-1**

ATM Series

Bolt Hole Range:
0.69-2.13 in

Flange Wall Thickness:
0.69-4.50 in

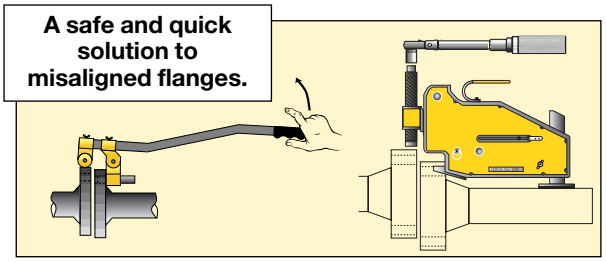
Maximum Force:
0.3-3 ton

Adjustable reach on ATM-3
An adjustable lift hook and manual torque wrench **TW-22** allow precise alignment.

Standard Features
ATM-1 features three bushings for a variety of bolt hole sizes and can also be used in the reverse position.

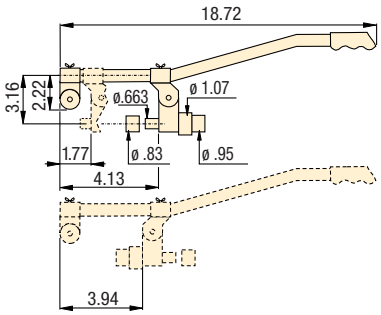
- **Corrects twist and rotational misalignment without additional stress in pipelines**
- **For most commonly used ANSI, API, BS and DIN flanges**
- **No slings, hooks, or lifting gear. Extremely safe, high precision**
- **ATM-3 fits on the following flanges:**
  - **Ring Type Joints: flange wall thickness min 1.17" and max 3.90"**
  - **Gasket Type Joints: flange wall thickness min .48" and max 4.49"**
- **Can be installed and used in any position and any location**
- **Stays stable in position under full load**

A safe and quick solution to misaligned flanges.

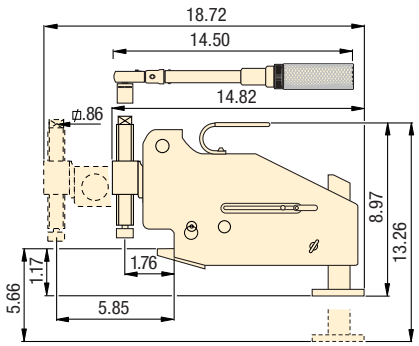


All dimensions shown in inches

▼ *The Enerpac ATM-3 used to align a large ANSI flange.*



ATM-1



ATM-3

Max. Lifting Force (ton)	Model Number	Bolt Hole Range (in)	Flange Wall Thickness (in)	Weight (lbs)
0.3	**ATM-1**	.69 - 1.13	.69 - 2.00	4.4
3	**ATM-3**	1.0 - 2.13	1.19 - 4.50	20.1

▼ Shown: **SQD-50-I**

- **Very high torque-to-weight ratio**
- **High speed, double-acting operation**
- **High degree of rotation angle for increased productivity**
- **Never-jam mechanism**
- **High repeatability, with accuracy ± 3%**
- **Slim nose radius and 360° swivel hose connection allow easier positioning in confined areas**
- **Few moving parts means durability and low maintenance**
- **Push-button drive release; no tools needed to reverse square or Allen-key drives for tightening or loosening**
- **Storage case (included) protects from damage, water and dirt**
- **Lock-ring couplers come standard on all torque wrenches, pumps and hoses**

◀ *An SQD-50 powered by a PTA-1404 pump makes light work of this flange gasket change-out on a large pipeline aboard an oil tanker.*

Lightweight High Power Wrench for Sockets or Allen-keys

Swivel Hose Connection

All Enerpac torque wrenches feature a 360° swivel connection to allow easy access in all positions.

Twin 3.5:1 Safety Hoses

Use only Enerpac THC-700 series twin 3.5:1 safety hoses with SQD double-acting wrenches to ensure the integrity of your system.

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Optional Allen-Key Drives

Expanded versatility with a wide range of metric and imperial Allen-key drives.

Page: **192**

Torque Wrench Pumps

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

Page: **198**

Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.

See the **Pressure vs. Torque** charts.

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Double-acting Square Drive Wrenches

▲ *All wrenches come standard with swivel coupler, square drive and reaction arm.*

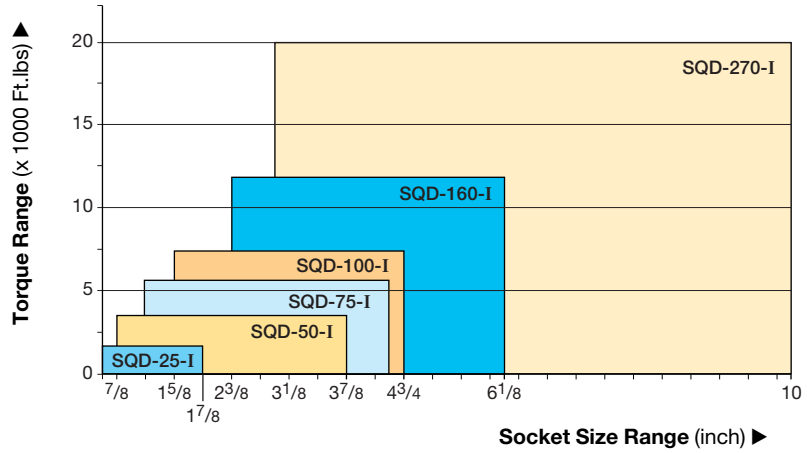
SQD Series

Maximum Torque:
19,875 Ft.lbs

Square Drive Range:
3/4-2 1/2 inch

Maximum Operating Pressure:
11,600 psi

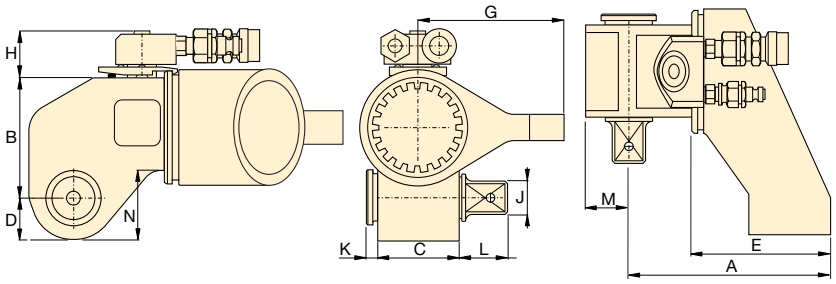
TORQUE WRENCH SELECTION (based on socket size range)



Use only Heavy Duty Impact Sockets for power driven torquing equipment, according to ISO 2725 and ISO 1174; DIN 3129 and DIN 3121 or ASME-B107.2/1995.

Carrying Handle CH-100

This carrying handle optional for use with SQD-100-I, SQD-160-I and SQD-270-I models



Hexagon Bolt and Nut Sizes

See the table for hexagon sizes of bolts, nuts and related thread diameters.

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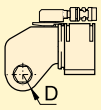
Typical Socket Size Range*		Square Drive (in)	Maximum Torque**	Torque Wrench Model No.	Dimensions (in)												Weight (incl. reaction arm and square drive)
					A	B	C	D	E	G	H	J	K	L	M	N	
(mm)	(in)		(Ft.lbs)														(lbs)
15 - 50	11/16 - 1 7/8	3/4	1735	**SQD-25-I**	6.57	2.83	2.09	.94	4.25	3.74	1.38	3/4	.24	1.08	1.04	1.44	5.52
20 - 100	7/8 - 3 7/8	1	3550	**SQD-50-I**	8.05	3.62	2.67	1.22	5.31	4.53	1.38	1	.59	1.30	1.34	2.07	9.35
30 - 110	1 1/8 - 4 3/8	1 1/2	5570	**SQD-75-I**	8.89	4.21	2.95	1.41	6.02	4.80	1.38	1 1/2	.47	1.69	1.54	2.52	11.90
40 - 120	1 5/8 - 4 3/4	1 1/2	7360	**SQD-100-I**	9.96	4.53	3.31	1.54	6.46	5.12	1.38	1 1/2	.50	1.55	1.69	2.68	17.64
60 - 155	2 3/8 - 6 1/8	1 1/2	11,835	**SQD-160-I**	10.71	5.28	3.94	1.89	7.00	5.91	1.97	1 1/2	.44	1.76	2.13	3.21	26.55
80 - 255	3 1/8 - 10	2 1/2	19,875	**SQD-270-I**	13.45	6.46	4.69	2.32	8.58	7.87	1.97	2 1/2	.69	2.97	2.48	3.90	54.00

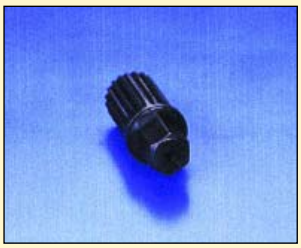
* Contact ENERPAC for socket specifications.
** Determine maximum torque according to the bolt (nut) size and grade.

▼ SELECTION CHART

TORQUE WRENCH		OPTIONAL ALLEN-KEY DRIVES, METRIC			REACTION ARM FOR ALLEN DRIVE
					
Model Number (max. capacity)	**Nose Radius D** (in)	**Maximum Torque** [1] (Ft.lbs)	**Hexagon Size** (mm)	**Model Number**	**Model Number**
SQD-25-I (1735 Ft.lbs)	0.94	**550**	14	**25A-14**	**RAH-25**
		955	17	**25A-17**	
		1325	19	**25A-19**	
		1735	22	**25A-22**	
		1735	24	**25A-24**	
SQD-50-I (3550 Ft.lbs)	1.22	**955**	17	**50A-17**	**RAH-50**
		1325	19	**50A-19**	
		2065	22	**50A-22**	
		2580	24	**50A-24**	
		3550	27	**50A-27**	
		3550	30	**50A-30**	
		3550	32	**50A-32**	
SQD-75-I (5570 Ft.lbs)	1.41	**955**	17	**75A-17**	**RAH-75**
		1325	19	**75A-19**	
		2065	22	**75A-22**	
		2580	24	**75A-24**	
		3685	27	**75A-27**	
		5160	30	**75A-30**	
		5570	32	**75A-32**	
SQD-100-I (7360 Ft.lbs)	1.54	**2065**	22	**100A-22**	**RAH-100**
		2580	24	**100A-24**	
		3685	27	**100A-27**	
		5160	30	**100A-30**	
		6270	32	**100A-32**	
		7360	36	**100A-36**	
SQD-160-I (11,835 Ft.lbs)	1.89	**5160**	30	**160A-30**	**RAH-160**
		6270	32	**160A-32**	
		8850	36	**160A-36**	
		11,835	41	**160A-41**	
		11,835	46	**160A-46**	
SQD-270-I (19,875 Ft.lbs)	2.32	**8850**	36	**270A-36**	**RAH-270**
		13,275	41	**270A-41**	
		18,440	46	**270A-46**	
		19,875	50	**270A-50**	
		19,875	55	**270A-55**	
		19,875	60	**270A-60**	
		19,875	65	**270A-65**	
		19,875	70	**270A-70**	

[1] Determine maximum torque according to the bolt size and grade.

For SQD Series



Maximum Torque at 11,600 psi:
19,875 Ft.lbs

Allen-Key Drive Range:
14-70 mm

Nose Radius:
0.94-2.32 inch

Optional Allen-key Drives and Reaction Arm

The RAH-Reaction Arm for allen-key drives must be used instead of reaction arm for square drives.

Flange Spreaders

Separates pipe flanges with ease, enabling efficient maintenance tasks.

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Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.

See the **Pressure vs. Torque** charts.

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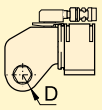
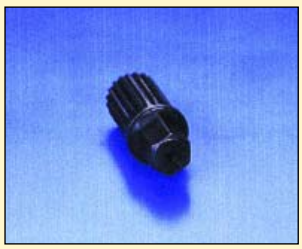
◀ *SQD-50-I with 50A-22 Allen-key drive with RAH-50 Reaction Arm for Allen-key drives.*

▼ SELECTION CHART

TORQUE WRENCH		OPTIONAL ALLEN-KEY DRIVES, IMPERIAL			REACTION ARM FOR ALLEN DRIVE
					
Model Number (max. capacity)	**Nose Radius D** (in)	**Maximum Torque** [1] (Ft.lbs)	**Hexagon Size** (in)	**Model Number**	**Model Number**
SQD-25-I (1735 Ft.lbs)	0.94	**390**	1/2	**25A-050**	**RAH-25**
		735	5/8	**25A-063**	
		1325	3/4	**25A-075**	
		1735	7/8	**25A-088**	
		1735	1	**25A-100**	
SQD-50-I (3550 Ft.lbs)	1.22	**735**	5/8	**50A-063**	**RAH-50**
		1325	3/4	**50A-075**	
		2065	7/8	**50A-088**	
		3095	1	**50A-100**	
		3550	1 1/8	**50A-113**	
		3550	1 1/4	**50A-125**	
		–	–	**–**	
SQD-75-I (5570 Ft.lbs)	1.41	**735**	5/8	**75A-063**	**RAH-75**
		1325	3/4	**75A-075**	
		2065	7/8	**75A-088**	
		3095	1	**75A-100**	
		4350	1 1/8	**75A-113**	
		5570	1 1/4	**75A-125**	
		–	–	**–**	
SQD-100-I (7360 Ft.lbs)	1.54	**2065**	7/8	**100A-088**	**RAH-100**
		3095	1	**100A-100**	
		4350	1 1/8	**100A-113**	
		6270	1 1/4	**100A-125**	
		7360	1 3/8	**100A-138**	
		7360	1 1/2	**100A-150**	
SQD-160-I (11,835 Ft.lbs)	1.89	**6270**	1 1/4	**160A-125**	**RAH-160**
		7745	1 3/8	**160A-138**	
		10325	1 1/2	**160A-150**	
		11,835	1 5/8	**160A-163**	
		11,835	1 3/4	**160A-175**	
SQD-270-I (19,875 Ft.lbs)	2.32	**10,325**	1 1/2	**270A-150**	**RAH-270**
		13,275	1 5/8	**270A-163**	
		16,225	1 3/4	**270A-175**	
		19,875	1 7/8	**270A-188**	
		19,875	2	**270A-200**	
		19,875	2 1/4	**270A-225**	
		–	–	**–**	
		–	–	**–**	

[1] Determine maximum torque according to the bolt size and grade.

For SQD Series



Maximum Torque at 11,600 psi:
19,875 Ft.lbs

Allen-Key Drive Range:
1/2-21/4 inch

Nose Radius:
0.94-2.32 inch

Optional Allen-key Drives and Reaction Arm

The RAH-Reaction Arm for allen-key drives must be used instead of reaction arm for square drives.

Nut Splitters

Remove rusted or corroded nuts easily with Enerpac Nut Splitters. Capacities up to 2.88 inch hexagon nut.

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Hexagon Bolt and Nut Sizes

See the table for hexagon sizes of bolts, nuts and related thread diameters.

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◀ *SQD-50-I with 50A-088 Allen-key drive with RAH-50 Reaction Arm for Allen-key drives.*

▼ Shown from left to right: **HXD-60 with CC-6313, HXD-30 with CC-3238**

- **High torque-to-weight ratio, slim nose radius and flat design**
- **High speed, high degree of rotation angle**
- **Snap in, interchangeable cassettes, no tools required**
- **360° swivel hose connection allows easier positioning in confined areas**
- **High repeatability, with accuracy ± 3%**
- **Strong unibody design, integrated reaction arm and few moving parts make wrenches durable and reliable**
- **Extensive range of metric and imperial hexagon cassettes and reducers**
- **Drive unit and cassette come in storage case to protect from damage, water and dirt**
- **Lock-ring couplers come standard on all torque wrenches, pumps and hoses**

Lightweight, Low Profile and Slim Nose Radius

Twin 3.5:1 Safety Hoses

Use only Enerpac THC-700 series twin 3.5:1 safety hoses with HXD double-acting wrenches to ensure the integrity of your system.

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Nut Splitters

Remove rusted or corroded nuts easily with Enerpac Nut Splitters. Capacities up to 2.88 inch hexagon nut.

Page: 186

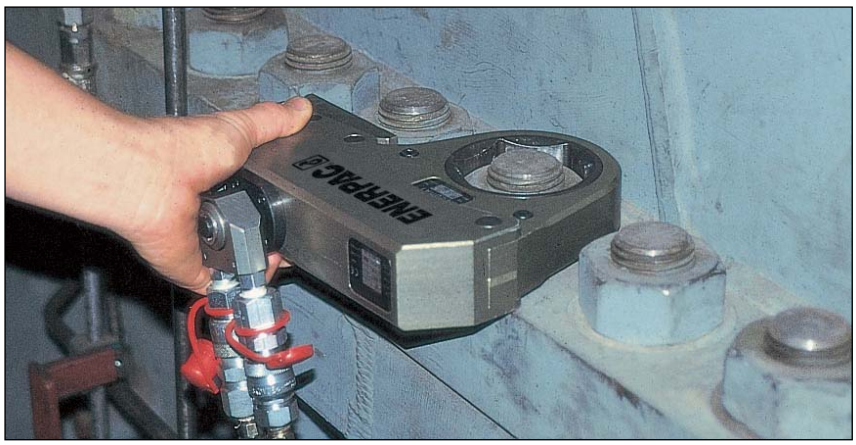
Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.

See the **Pressure vs. Torque** charts.

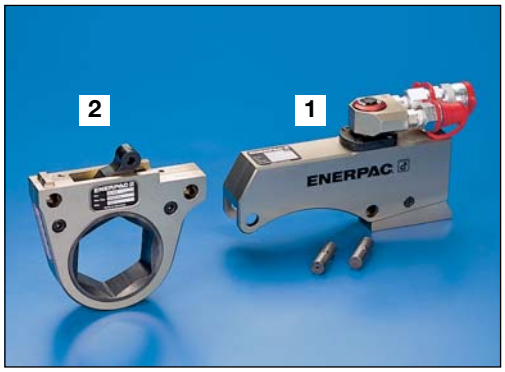
Page: 206

▼ *The HXD-30 drive unit combined with cassette CC-3238 is the best solution for this turbine application. The slim nose radius and swivel couplers allow easy access in all positions.*



▼ *An Enerpac HXD hydraulic wrench brings safety and efficiency to this flange maintenance job at a refinery.*

▼ Shown from left to right: **CC-3238, HXD-30**



TORQUE WRENCH SELECTION IN 2 STEPS:

1 **DRIVE UNIT**
Select the HXD-Drive Unit using the quick selection chart below.

2 **CASSETTE**
Select the appropriate CC-Cassette from pages 196 and 197.

HXD Series

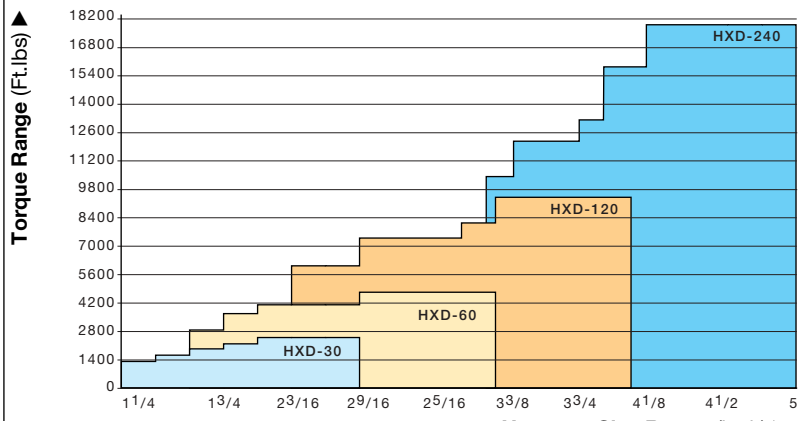
Maximum Torque:
17,860 Ft.lbs

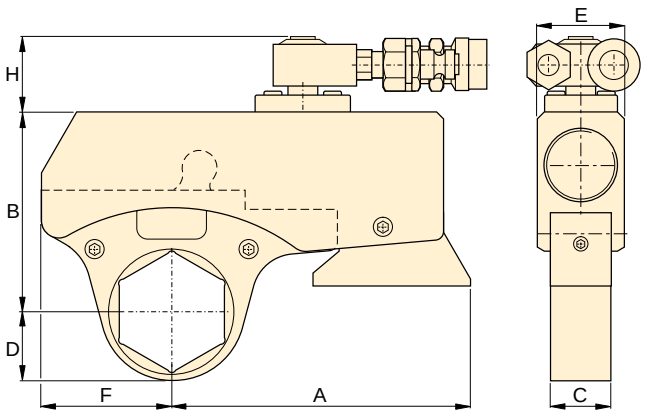
Hexagon Range:
1.25-5 inch

Nose Radius:
1.12-3.78 inch

Maximum Operating Pressure:
11,600 psi

DRIVE UNIT AND INTERCHANGEABLE CASSETTE SELECTION





Drive Unit with Cassette

Metric and Imperial Sizes
Expanded versatility with the full range of metric and imperial Reducer Inserts and Holding Rings.
Page: 196

Hexagon Bolt and Nut Sizes
See the table for hexagon sizes of bolts, nuts and related thread diameters.
Page: 208

Torque Wrench Pumps
System matched air and electric pumps provide control to operate Enerpac HXD Torque Wrenches.
Page: 198

▼ QUICK SELECTION CHART

Cassette Range (mm)	Cassette Range (in) *Page:* 196	Maximum Torque at 11,600 psi (Ft.lbs)	Drive Unit * Model Number	Drive Unit and Cassette Dimensions (in) A	B	C	D	E	F	H	Weight (including smallest cassette) (lbs)
32 - 60	1 1/4 - 2 3/8	2425	**HXD-30**	5.31	3.58 - 4.06	1.10	1.12 - 1.87	1.57	2.36	1.50	4.6
41 - 80	1 5/8 - 3 1/8	4565	**HXD-60**	6.14	4.53 - 5.12	1.38	1.36 - 2.38	1.97	2.95	1.50	8.1
55 - 100	2 3/16 - 3 7/8	9220	**HXD-120**	7.87	5.55 - 6.14	1.85	1.83 - 2.89	2.56	3.78	1.50	16.3
80 - 130	3 1/8 - 5	17860	**HXD-240**	10.20	6.80 - 7.95	2.20	2.44 - 3.78	3.22	4.92	2.00	28.9

* With integrated reaction arm.

HXD-Series, Metric Cassettes and Inserts

ENERPAC
Hydraulic Technology Worldwide

Maximum Torque at 11,600 psi :
17,860 Ft.lbs

Hexagon Range:
30-130 mm

◀ *The optional Reducer Insert must be secured in the Cassette with a Holding Ring.*

CC IN HR Series

▼ **SELECTION CHART**

DRIVE UNIT	INTERCHANGEABLE CASSETTES, METRIC					OPTIONAL ADD-ON REDUCER INSERTS, METRIC						HOLDING RINGS
			D									
Model Number (max. capacity)	Max. Torque[1] (Ft.lbs)	Hex. Size [2] (mm)	Nose Radius D (in)	Model Number	Weight (lbs)	Hexagon Size (mm)	Model Number	Hexagon Size (mm)	Model Number	Hexagon Size (mm)	Model Number	Model Number
HXD-30 (2425 Ft.lbs)	1250	32	1.12	CC-332	1.2	–	–	–	–	–	–	–
	1545	36	1.24	CC-336	1.4	–	–	–	–	–	–	–
	1840	41	1.36	CC-341	1.5	41/36	IN3-4136	41/32	IN3-4132	41/30	IN3-4130	HR-41
	2130	46	1.52	CC-346	1.8	46/41	IN3-4641	46/36	IN3-4636	46/32	IN3-4632	HR-46
	2425	50	1.65	CC-350	2.1	50/46	IN3-5046	50/41	IN3-5041	50/36	IN3-5036	HR-50
		55	1.77	CC-355	2.2	55/50	IN3-5550	55/46	IN3-5546	55/41	IN3-5541	HR-55
		60	1.87	CC-360	2.3	60/55	IN3-6055	60/50	IN3-6050	60/46	IN3-6046	HR-60
HXD-60 (4565 Ft.lbs)	2830	41	1.36	CC-641	2.6	41/36	IN6-4136	–	–	–	–	HR-41
	3540	46	1.56	CC-646	2.9	–	–	–	–	–	–	–
	3990	50	1.71	CC-650	3.2	50/46	IN6-5046	50/41	IN6-5041	50/36	IN6-5036	HR-50
		55	1.83	CC-655	3.3	55/50	IN6-5550	55/46	IN6-5546	55/41	IN6-5541	HR-55
		60	1.91	CC-660	3.4	60/55	IN6-6055	60/50	IN6-6050	60/46	IN6-6046	HR-60
	4565	65	2.07	CC-665	4.1	65/60	IN6-6560	65/55	IN6-6555	65/50	IN6-6550	HR-65
		70	2.19	CC-670	4.2	70/65	IN6-7065	70/60	IN6-7060	70/55	IN6-7055	HR-70
		75	2.26	CC-675	4.3	75/70	IN6-7570	75/65	IN6-7565	75/60	IN6-7560	HR-75
		80	2.38	CC-680	4.4	80/75	IN6-8075	80/70	IN6-8070	80/65	IN6-8065	HR-80
HXD-120 (9220 Ft.lbs)	5900	55	1.83	CC-1255	5.8	55/50	IN12-5550	55/46	IN12-5546	55/41	IN12-5541	HR-55
		60	1.91	CC-1260	5.8	60/55	IN12-6055	60/50	IN12-6050	60/46	IN12-6046	HR-60
	7225	65	2.07	CC-1265	6.1	65/60	IN12-6560	65/55	IN12-6555	65/50	IN12-6550	HR-65
		70	2.19	CC-1270	6.2	70/65	IN12-7065	70/60	IN12-7060	70/55	IN12-7055	HR-70
		75	2.26	CC-1275	6.3	75/70	IN12-7570	75/65	IN12-7565	75/60	IN12-7560	HR-75
	–	–	–	–	–	–	–	–	–	–	–	–
	8010	80	2.38	CC-1280	6.5	80/75	IN12-8075	80/70	IN12-8070	80/65	IN12-8065	HR-80
	9220	85	2.54	CC-1285	7.8	85/80	IN12-8580	85/75	IN12-8575	85/70	IN12-8570	HR-85
		90	2.66	CC-1290	8.0	90/85	IN12-9085	90/80	IN12-9080	90/75	IN12-9075	HR-90
		95	2.78	CC-1295	8.2	95/90	IN12-9590	95/85	IN12-9585	95/80	IN12-9580	HR-95
		100	2.89	CC-12100	8.3	100/95	IN12-10095	100/90	IN12-10090	100/85	IN12-10085	HR-100
HXD-240 (17860 Ft.lbs)	10245	80	2.44	CC-2480	11.2	80/75	IN24-8075	80/70	IN24-8070	80/65	IN24-8065	HR-80
	11820	85	2.60	CC-2485	11.4	85/80	IN24-8580	85/75	IN24-8575	85/70	IN24-8570	HR-85
	12215	90	2.72	CC-2490	11.4	90/85	IN24-9085	90/80	IN24-9080	90/75	IN24-9075	HR-90
	12610	95	2.83	CC-2495	11.9	95/90	IN24-9590	95/85	IN24-9585	95/80	IN24-9580	HR-95
	13400	100	2.99	CC-24100	12.3	100/95	IN24-10095	100/90	IN24-10090	100/85	IN24-10085	HR-100
	15370	105	3.15	CC-24105	12.5	105/100	IN24-105100	105/95	IN24-10595	105/90	IN24-10590	HR-105
	17860	110	3.31	CC-24110	12.8	110/105	IN24-110105	110/100	IN24-110100	110/95	IN24-11095	HR-110
		115	3.43	CC-24115	15.6	115/110	IN24-115110	115/105	IN24-115105	115/100	IN24-115100	HR-115
		120	3.54	CC-24120	16.1	120/115	IN24-120115	120/110	IN24-120110	120/105	IN24-120105	HR-120
		125	3.66	CC-24125	16.1	125/120	IN24-125120	125/115	IN24-125115	125/110	IN24-125110	HR-125
		130	3.78	CC-24130	16.3	130/125	IN24-130125	130/120	IN24-130120	130/115	IN24-130115	HR-130

[1] Determine maximum torque according to the bolt (nut) size and grade.
Other Reducer Insert dimensions available upon request.

[2] See the table of hexagon bolt and nut sizes and related thread diameters on page 208.

HXD-Series, Imperial Cassettes and Inserts

Maximum Torque at 11,600 psi
17,860 Ft.lbs

Hexagon Range:
1.25-5 inch

◀ *The optional Reducer Insert must be secured in the Cassette with a Holding Ring.*

CC IN HR Series

▼ **SELECTION CHART**

DRIVE UNIT	INTERCHANGEABLE CASSETTE, IMPERIAL					OPTIONAL ADD ON REDUCER INSERTS, IMPERIAL				HOLDING RINGS
			D							
Model Number (max. capacity)	Max. Torque [1] (Ft.lbs)	Hex. Size [2] (in)	Nose Radius D (in)	Model Number	Weight (lbs)	Hexagon Size (in)	Model Number	Hexagon Size (in)	Model Number	Model Number
HXD-30 (2425 Ft.lbs)	1250	1 1/4	1.12	CC-3125	1.2	–	–	–	–	–
	1545	1 7/16	1.24	CC-3144	1.4	1 7/16 - 1 1/4	IN3144-125	–	–	HR-36
	1840	1 5/8	1.36	CC-3163	1.5	1 5/8 - 1 7/16	IN3163-144	1 5/8 - 1 1/4	IN3163-125	HR-41
	2130	1 13/16	1.52	CC-3181	1.8	1 13/16 - 1 5/8	IN3181-163	1 13/16 - 1 7/16	IN3181-144	HR-46
	2425	2	1.65	CC-3200	2.1	2 - 1 13/16	IN3200-181	2 - 1 5/8	IN3200-163	HR-50
		2 3/16	1.77	CC-3219	2.2	2 3/16 - 2	IN3219-200	2 3/16 - 1 13/16	IN3219-181	HR-55
		2 3/8	1.87	CC-3238	2.3	2 3/8 - 2 3/16	IN3238-219	2 3/8 - 2	IN3238-200	HR-60
HXD-60 (4565 Ft.lbs)	2830	1 5/8	1.36	CC-6163	2.6	–	–	–	–	–
	3540	1 13/16	1.56	CC-6181	2.9	1 13/16 - 1 5/8	IN6181-163	–	–	HR-46
	3990	2	1.71	CC-6200	3.2	2 - 1 13/16	IN6200-181	2 - 1 5/8	IN6200-163	HR-50
		2 3/16	1.83	CC-6219	3.3	2 3/16 - 2	IN6219-200	2 3/16 - 1 13/16	IN6219-181	HR-55
		2 3/8	1.91	CC-6238	3.4	2 3/8 - 2 3/16	IN6238-219	2 3/8 - 2	IN6238-200	HR-60
	4565	2 9/16	2.07	CC-6256	4.1	2 9/16 - 2 3/8	IN6256-238	2 9/16 - 2 3/16	IN6256-219	HR-65
		2 3/4	2.19	CC-6275	4.2	2 3/4 - 2 9/16	IN6275-256	2 3/4 - 2 3/8	IN6275-238	HR-70
		2 15/16	2.26	CC-6293	4.3	2 15/16 - 2 3/4	IN6293-275	2 15/16 - 2 9/16	IN6293-256	HR-75
		3 1/8	2.38	CC-6313	4.4	3 1/8 - 2 15/16	IN6313-293	3 1/8 - 2 3/4	IN6313-275	HR-80
HXD-120 (9220 Ft.lbs)	5900	2 3/16	1.83	CC-12219	5.8	2 3/16 - 2	IN12219-200	2 3/16 - 1 13/16	IN12219-181	HR-55
		2 3/8	1.91	CC-12238	5.8	2 3/8 - 2 3/16	IN12238-219	2 3/8 - 2	IN12238-200	HR-60
	7225	2 9/16	2.07	CC-12256	6.1	2 9/16 - 2 3/8	IN12256-238	2 9/16 - 2 3/16	IN12256-219	HR-65
		2 3/4	2.19	CC-12275	6.2	2 3/4 - 2 9/16	IN12275-256	2 3/4 - 2 3/8	IN12275-238	HR-70
		2 15/16	2.26	CC-12293	6.3	2 15/16 - 2 3/4	IN12293-275	2 15/16 - 2 9/16	IN12293-256	HR-75
		3	2.26	CC-12300	6.3	3 - 2 3/4	IN12300-275	3 - 2 9/16	IN12300-256	HR-75
	8010	3 1/8	2.38	CC-12313	6.5	3 1/8 - 2 15/16	IN12313-293	3 1/8 - 2 3/4	IN12313-275	HR-80
	9220	3 3/8	2.54	CC-12338	7.8	3 3/8 - 3	IN12338-300	3 3/8 - 2 15/16	IN12338-293	HR-85
		3 1/2	2.66	CC-12350	8.0	3 1/2 - 3 1/8	IN12350-313	3 1/2 - 3	IN12350-300	HR-90
		3 3/4	2.78	CC-12375	8.2	3 3/4 - 3 1/2	IN12375-350	3 3/4 - 3 3/8	IN12375-338	HR-95
		3 7/8	2.89	CC-12388	8.3	3 7/8 - 3 1/2	IN12388-350	3 7/8 - 3 3/8	IN12388-338	HR-100
HXD-240 (17860 Ft.lbs)	10325	3 1/8	2.44	CC-24313 [3]	11.2	3 1/8 - 2 15/16	IN24313-293	3 1/8 - 2 3/4	IN24313-275	HR-80
	11685	3 3/8	2.60	CC-24338	11.4	3 3/8 - 3 1/8	IN24338-313	3 3/8 - 3	IN24338-300	HR-85
	12225	3 1/2	2.71	CC-24350	11.4	3 1/2 - 3 1/8	IN24350-313	3 1/2 - 3	IN24350-300	HR-90
	12775	3 3/4	2.83	CC-24375	11.9	3 3/4 - 3 1/2	IN24375-350	3 3/4 - 3 3/8	IN24375-338	HR-95
	13315	3 7/8	2.99	CC-24388 [4]	12.3	3 7/8 - 3 1/2	IN24338-350	3 7/8 - 3 3/8	IN24388-338	HR-100
	15490	4 1/8	3.15	CC-24413	12.5	4 1/8 - 3 7/8	IN24413-388	4 1/8 - 3 3/4	IN24413-375	HR-105
	17860	4 1/4	3.30	CC-24425	14.9	4 1/4 - 3 7/8	IN24425-388	4 1/4 - 3 3/4	IN24425-375	HR-110
		4 5/8	3.54	CC-24463	16.0	4 5/8 - 4 1/4	IN24463-425	4 5/8 - 4 1/8	IN24463-413	HR-120
		5	3.78	CC-24500	16.3	5 - 4 5/8	IN24500-463	5 - 4 1/4	IN24500-425	HR-130

1) Determine maximum torque according to the bolt (nut) size and grade. Other Reducer Insert dimensions available upon request.
2) See the table of hexagon bolt and nut sizes and related thread diameters on page 208.
3) Additional imperial Reducer Insert: 3 1/8"–2 9/16" **IN24313-256** fits **CC-24313** Cassette. Use **HR-80** Holding Ring.
4) Additional imperial Reducer Insert: 3 3/4"–2 9/16" **IN24375-313** fits **CC-24388** Cassette. Use **HR-100** Holding Ring.

▼ Shown: **PMU-10427**

PMU Series

Reservoir Capacity:
0.5 gallon

Flow at 10,000 psi:
20 in^3/min

Maximum Operating Pressure:
11,600 psi

Motor Size:
0.5 hp

- **Powerful two-speed pump is lightweight and easy to carry**
- **Standard heat exchanger package keeps pump cool under extreme use**
- **Glycerine filled gauge with scales reading in psi and bar**
- **Transparent overlays in Ft.lbs and Nm for all Enerpac torque wrenches provide a quick torque reference**
- **Universal motor for a high power-to-weight ratio; generates full pressure on as little as 50% of the rated line voltage**
- **Adjustable pressure relief valve for accurate torque adjustments and precise repeatability**
- **Fitted with polarized safety lock-ring couplers**

Twin 3.5:1 Safety Hoses

Use Enerpac THC-700 series twin 3.5:1 safety hoses with double-acting wrenches to ensure the integrity of your hydraulic system.

19.5 feet long, 2 hoses	**THC-7062**
39 feet long, 2 hoses	**THC-7122**

Glycerine Filled Gauges

All Enerpac torque wrench pumps feature a glycerine filled gauge. The pressure sensing parts are sealed and dampened by glycerine for prolonged life.

Gauge Overlay Kit GT-4015

Gauge overlay kits are available separately. Includes overlays for all SQD and HXD torque wrenches.

▼ **PERFORMANCE CHART**

Maximum Pressure Rating (psi)		Oil Flow Rate (in^3/min)		Model Number	Useable Oil Capacity (gal)	Electric Motor	Dimensions L x W x H (in)	Weight (lbs)
1st stage	2nd stage	1st stage	2nd stage					
700	11,600	200	20	**PMU-10427**	.50	115V- 1 ph -50/60Hz	17 x 11 x 15	53
700	11,600	200	20	**PMU-10422**	.50	230V- 1 ph -50/60Hz	17 x 11 x 15	53

High Flow Electric Torque Wrench Pumps

▼ Shown: **PMU-30457**

PMU Series

Reservoir Capacity:
1.3 gallon

Flow at 10,000 psi:
60 in^3/min

Maximum Operating Pressure:
11,600 psi

Motor Size:
1.125 hp

- **Patented Genesis Technology:**
  - **coaxial piston design allows high performance in the most compact and lightweight package**
  - **first stage piston pump enables higher by-pass pressure for improved productivity**
- **Universal motor for a high power-to-weight ratio; generates full pressure on as little as 50% of the rated line voltage**
- **Standard heat exchanger package, keeps pump cool under extreme use**
- **Glycerine filled gauge with scales reading in psi and bar**
- **Transparent overlays in Ft.lbs and Nm for all Enerpac torque wrenches provide a quick torque reference**
- **Adjustable pressure relief valve for accurate torque adjustments and precise repeatability**
- **Fitted with polarized safety lock-ring couplers**

Twin 3.5:1 Safety Hoses

Use Enerpac THC-700 series twin 3.5:1 safety hoses with double-acting wrenches to ensure the integrity of your hydraulic system.

19.5 feet long, 2 hoses	**THC-7062**
39 feet long, 2 hoses	**THC-7122**

Glycerine Filled Gauges

All Enerpac torque wrench pumps feature a glycerine filled gauge. The pressure sensing parts are sealed and dampened by glycerine for prolonged life.

Gauge Overlay Kit GT-4015

Gauge overlay kits are available separately. Includes overlays for all SQD and HXD torque wrenches.

▼ **PERFORMANCE CHART**

Maximum Pressure Rating (psi)		Oil Flow Rate (in^3/min)		Model Number	Useable Oil Capacity (gal)	Electric Motor	Dimensions L x W x H (in)	Weight (lbs)
1st stage	2nd stage	1st stage	2nd stage					
1600	11,600	615	60	**PMU-30457**	1.3	115V- 1 ph -50/60Hz	19 x 11 x 17	77
1600	11,600	615	60	**PMU-30452**	1.3	230V- 1 ph -50/60Hz	19 x 11 x 17	77

▼ Shown: **PTE-3404B**

Power and portability in an electric pump

- **Two stage pump with high bypass (2200 psi) for faster torque cycles**
- **Submerged motor for low noise and reduced heat build up**
- **Remote pendant with safety button for one-man operation**
- **Glycerine filled pressure gauge with scales reading in psi/bar**
- **Transparent overlays in Ft.lbs and Nm for all Enerpac torque wrenches provide a quick torque reference**
- **Protected oil level sight gauge**
- **Customer adjustable pressure relief valve to set hydraulic working pressures**
- **Integrated motor disconnect switch and compact ergonomic design**
- **Fitted with polarized safety lock-ring couplers**

Hexagon Cassette Torque Wrenches, HXD-Series

- Compact, low profile
- High speed, double-acting operation
- Snap-in interchangeable cassettes and hexagon inserts
- 360° Swivel hose connection.

Page: **194**

Square Drive Torque Wrenches, SQD-Series

- Slim nose radius
- High speed, double-acting operation
- Highest torque to weight ratio
- 360° Swivel hose connection.

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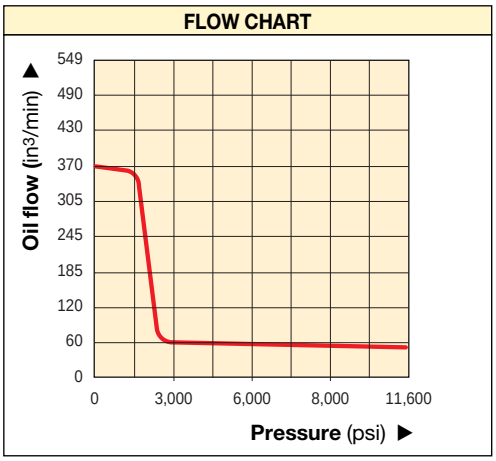
Twin 3.5:1 Safety Hoses

Use Enerpac THC-700 series twin 3.5:1 safety hoses with double-acting wrenches to ensure the integrity of your hydraulic system.

19.5 ft., 2 hoses	**THC-7062**
39.0 ft., 2 hoses	**THC-7122**

▼ *Transparent torque overlays for all Enerpac Torque Wrenches are included.*

▼ *PTE-3404B Electric Torque Wrench Pump and SQD-25 Torque Wrench are being used to remove nuts from a paper pulp vent.*



PTE Series

Reservoir Capacity:
1.0 gallon

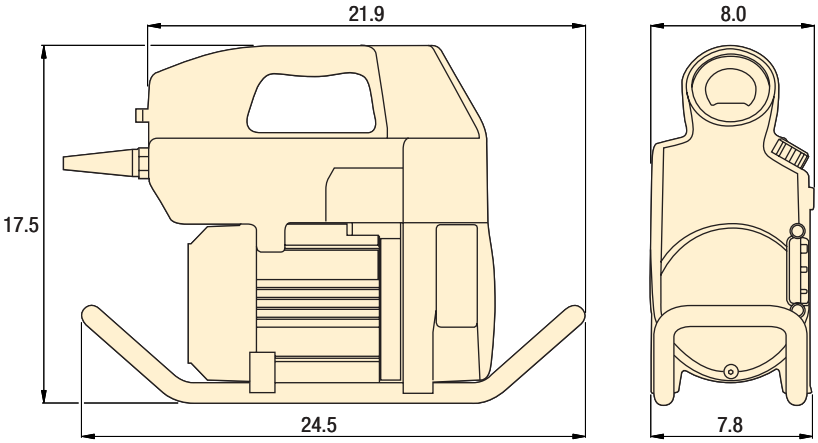
Flow at 11,600 psi:
55 in³/min

Motor Size:
2.4 hp

Maximum Operating Pressure:
11,600 psi

Always check that the gauge template matches the wrench for accurate torque settings.

Dimensions shown in inches



Nut Splitters
Remove rusted or frozen nuts easily with Enerpac Nut Splitters. Capacities up to 2.88 in. hexagon nut size.

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Optimum Torque Wrench and Pump combinations
For optimum speed and performance Enerpac recommends the following pump and torque wrench combination:

Model Number	SQD	HXD
PTE-3404B PTE-3404T	75-I – 270-I	60 – 240

▼ PERFORMANCE CHART

Pump Flow Rates (in³)		Maximum Pressure Rating (psi)		Model Number	Usable Oil Capacity	Motor Electrical Specifications	Operating Temperature Range (min. - max.)	Weight (with oil)
1st stage	2nd stage	1st stage	2nd stage		(gal)	(Amps @ Volts - Ph - Hz)	(°F)	(lbs)
366	55	2,200	11,600	**PTE-3404B**	0.45	24 max. @ 115 - 1 - 60**	41-150	70
366*	55*	2,200	11,600	**PTE-3404T**	0.45	7 max @ 220/240 - 3 - 50/60*	41-150	70

* Flow rate shown at 60 Hz. Flow rate at 50 Hz will be 5/6 of flow rate shown.
** Requires 20 amp circuit minimum.

▼ Shown: **PTA-3408**

- **Protective rollcage and heavy-duty skid**
- **Reservoir oil level gauge for easy viewing**
- **High bypass for faster torque cycles**
- **High power-to-weight ratio suits all Enerpac torque wrenches**
- **15 ft. air pendant assembly enables easy maneuvering at the job site**
- **Glycerine filled pressure gauge with scales reading in psi/bar**
- **Transparent overlays in Ft.lbs and Nm for all Enerpac torque wrenches provide a quick torque reference**
- **Internal safety relief valve, factory preset**
- **Fitted with polarized safety lock-ring couplers**

▼ *Enerpac PTA-3408 Torque Wrench Pump and HXD-120 are used to perform maintenance on an injection molding press.*

Maximum power for your most demanding applications

Hexagon Cassette Torque Wrenches, HXD-Series

- Compact, low profile
- High speed, double-acting operation
- Snap-in interchangeable cassettes and hexagon inserts
- 360° Swivel hose connection.

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Square Drive Torque Wrenches, SQD-Series

- Slim nose radius
- High speed, double-acting operation
- Highest torque-to-weight ratio
- 360° Swivel hose connection.

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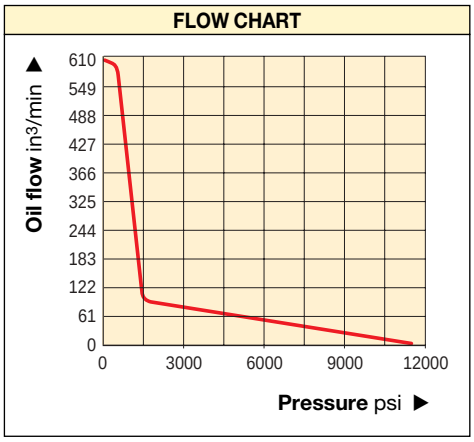
Twin 3.5:1 Safety Hoses

Use Enerpac THC-700 series twin 3.5:1 safety hoses with double-acting wrenches to ensure the integrity of your hydraulic system.

19.5 ft., 2 hoses	**THC-7062**
39.0 ft., 2 hoses	**THC-7122**

Gauge Overlay Kit GT-4015

Gauge overlay kits are available separately. Includes overlays for all SQD and HXD torque wrenches.



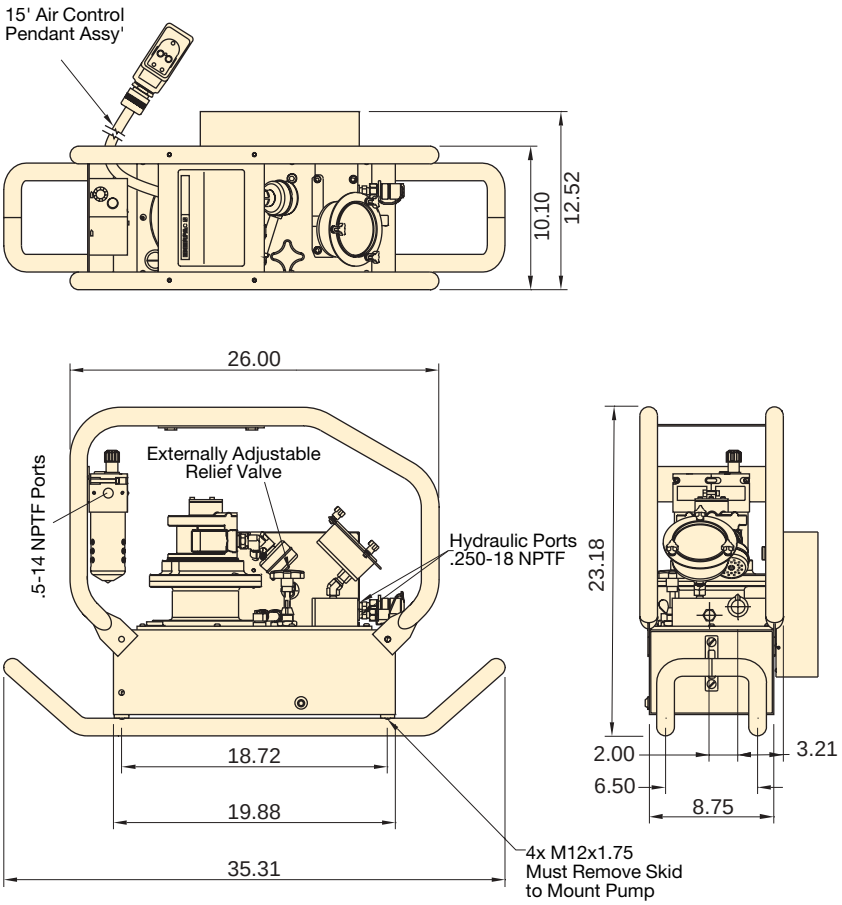
PTA Series

Reservoir Capacity:
2.5 gallon

Flow at 10,000 psi:
30 in³/min

Maximum Operating Pressure:
11,600 psi

Dimensions shown in inches



Use only Heavy Duty Impact Sockets for power driven torquing equipment, according to ISO 2725 and ISO 1174; DIN 3129 and DIN 3121 or ASME-B107.2/1995.

Enerpac's ATM-3
Flange Alignment tool has an adjustable lift hook and manual ratchet spanner which allows precise alignment.

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Optimum Torque Wrench and Pump combinations
For optimum speed and performance Enerpac recommends the following pump and torque wrench combination:

Model Number	SQD	HXD
PTA-3408	-100-I -160-I -270-I	-120 -240

▼ **PERFORMANCE CHART**

Reservoir Capacity (gal)	Useable Oil Capacity (gal)	Model Number	Pump Flow Rates 1st stage (in³)	Pump Flow Rates 2nd stage (in³)	Bypass Pressure (psi)	Air Consumption @100 psi (scfm)	Temperature Range (°F)	Viscosity Range (S.U.S.)	Weight w/oil (lbs)
2.7	2.5	**PTA-3408**	600	30	800	40	41-140	150-165	125

▼ Shown: **PTA-1404**

Two stage power in a portable design

- **Compact and portable**
- **Handle located directly over pump's center of gravity for greater ease in carrying**
- **High bypass (1800 psi) for faster torque cycles**
- **High power-to-weight ratio suits all Enerpac torque wrenches**
- **Glycerine filled pressure gauge with scales reading in psi/bar**
- **Transparent overlays in Ft.lbs and Nm for all Enerpac torque wrenches provide a quick torque reference**
- **Internal safety relief valve, factory preset**
- **15 ft. air pendant assembly enables easy maneuvering at the job site**
- **Fitted with polarized safety lock-ring couplers**

▼ *PTA-1404 Enerpac Pneumatic Torque Wrench pump and SQD-25 torque wrench used to perform maintenance on an excavator.*

Hexagon Cassette Torque Wrenches, HXD-Series

- Compact, low profile
- High speed, double-acting operation
- Snap-in interchangeable cassettes and hexagon inserts
- 360° Swivel hose connection.

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Square Drive Torque Wrenches, SQD-Series

- Slim nose radius
- High speed, double-acting operation
- Highest torque to weight ratio
- 360° Swivel hose connection.

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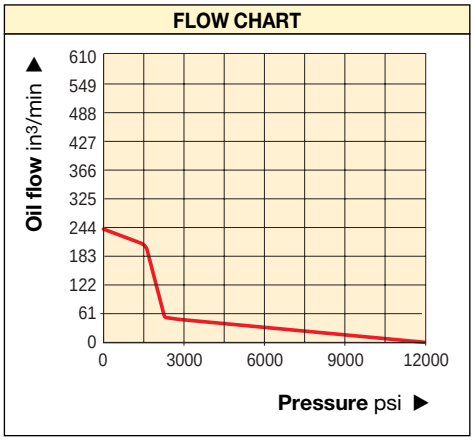
Twin 3.5:1 Safety Hoses

Use Enerpac THC-700 series twin 3.5:1 safety hoses with double-acting wrenches to ensure the integrity of your hydraulic system.

19.5 ft., 2 hoses	**THC-7062**
39.0 ft., 2 hoses	**THC-7122**

Gauge Overlay Kit GT-4015

Gauge overlay kits are available separately. Includes overlays for all SQD and HXD torque wrenches.



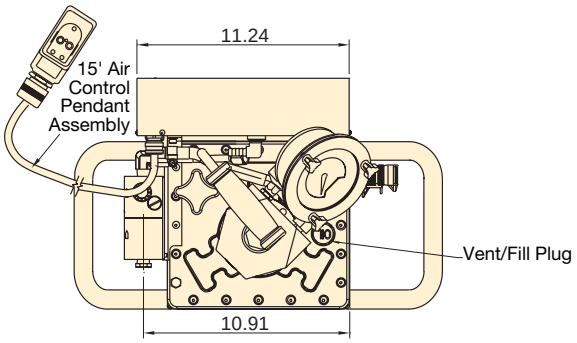
PTA Series

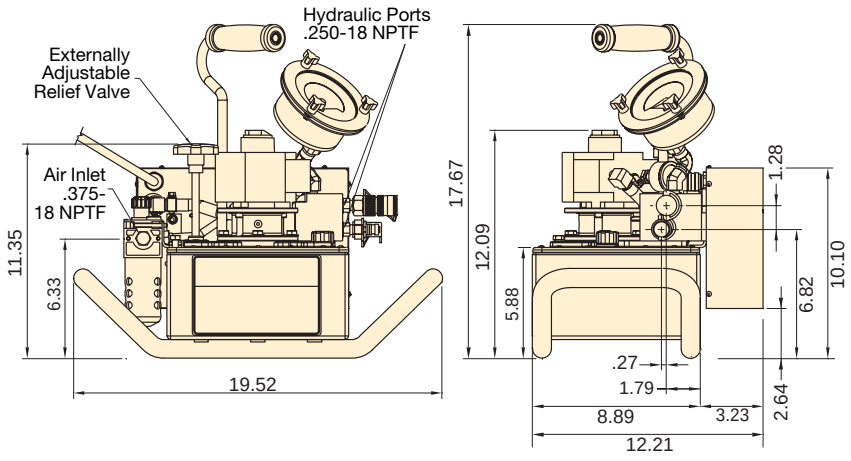
Reservoir Capacity:
1.0 gallon

Flow at 10,000 psi
20 in³/min

Maximum Operating Pressure:
11,600 psi

Dimensions shown in inches





Select the Right Torque

Choose your Enerpac Torque Wrench using the untightening rule of thumb: Loosening torque equals about 250% of tightening torque.

Hydraulic Flange Spreaders

FSH Integrated wedge concept; friction free, smooth parallel wedge movement eliminates flange damage and spreading arm failure.

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Optimum Torque Wrench and Pump combinations

For optimum speed and performance Enerpac recommends the following pump and torque wrench combination:

Model Number	SQD	HXD
PTA-1404	-25-I -75-I -50-I -100-I	-30 -60

▼ **PERFORMANCE CHART**

Reservoir Capacity (gal)	Useable Oil Capacity (gal)	Model Number	Pump Flow Rates (in³) 1st stage	Pump Flow Rates (in³) 2nd stage	Bypass Pressure (psi)	Air Consumption @ 100 psi (scfm)	Operating Temperature Range (°F)	Viscosity Range (S.U.S.)	Weight w/oil (lbs)
1.0	0.5	**PTA-1404**	240	20	1800	40	41-140	150-165	54

Pressure vs. Torque SQD-Series

▼ SQD-Series

HXD-Series ▶

PRESSURE VS. TORQUE – SQD SERIES TORQUE WRENCH
IMPERIAL TABLE

Pressure (psi)	SQD-25-I (Ft.lbs)	SQD-50-I (Ft.lbs)	SQD-75-I (Ft.lbs)	SQD-100-I (Ft.lbs)	SQD-160-I (Ft.lbs)	SQD-270-I (Ft.lbs)
600	92	174	298	385	610	999
800	122	232	399	515	814	1332
1000	153	290	497	644	1010	1665
1200	177	359	585	756	1213	2040
1400	206	418	683	883	1413	2381
1600	236	478	781	1009	1615	2722
1800	265	537	878	1137	1815	3059
2000	298	597	970	1260	2034	3418
2200	328	657	1067	1386	2238	3760
2400	358	712	1164	1529	2441	4100
2600	390	771	1257	1656	2652	4444
2800	420	831	1354	1783	2855	4788
3000	450	890	1451	1911	3059	5130
3200	480	950	1547	2038	3262	5470
3400	508	1009	1642	2183	3508	5781
3600	538	1068	1738	2311	3715	6121
3800	568	1119	1835	2438	3920	6462
4000	596	1178	1931	2557	4075	6829
4200	626	1237	2025	2685	4279	7170
4400	656	1296	2121	2812	4483	7514
4600	686	1355	2218	2939	4686	7855
4800	716	1414	2312	3066	4900	8196
5000	755	1473	2409	3193	5104	8544
5200	786	1518	2505	3320	5307	8888
5400	816	1576	2601	3448	5510	9230
5600	833	1634	2696	3578	5714	9574
5800	863	1692	2792	3705	5925	9918
6000	892	1751	2888	3832	6128	10258

Pressure (psi)	SQD-25-I (Ft.lbs)	SQD-50-I (Ft.lbs)	SQD-75-I (Ft.lbs)	SQD-100-I (Ft.lbs)	SQD-160-I (Ft.lbs)	SQD-270-I (Ft.lbs)
6200	922	1809	2895	3960	6332	10600
6400	951	1868	3080	4087	6531	10947
6600	981	1928	3176	4214	6738	11291
6800	1010	1987	3272	4341	6941	11633
7000	1043	2045	3366	4472	7145	11977
7200	1073	2104	3462	4599	7348	12321
7400	1103	2162	3559	4726	7552	12663
7600	1133	2221	3655	4853	7755	13003
7800	1161	2279	3750	4991	7959	13350
8000	1191	2338	3846	5119	8166	13693
8200	1220	2483	3943	5250	8370	14036
8400	1246	2544	4037	5358	8573	14380
8600	1276	2604	4133	5486	8780	14722
8800	1305	2665	4229	5612	8984	15158
9000	1335	2725	4325	5739	9187	15410
9200	1371	2786	4422	5863	9390	15753
9400	1401	2846	4518	5990	9594	16096
9600	1431	2927	4614	6117	9797	16439
9800	1456	2988	4708	6259	10000	16783
10000	1486	3049	4804	6387	10203	17126
10200	1515	3110	4900	6513	10407	17469
10400	1545	3171	4996	6640	10614	17813
10600	1574	3232	5092	6768	10818	18155
10800	1604	3293	5188	6858	11021	18499
11000	1633	3364	5284	6985	11225	18842
11200	1663	3425	5380	7112	11428	19185
11400	1703	3486	5475	7232	11632	19529
11600	1733	3548	5571	7361	11838	19877

Pressure vs. Torque HXD-Series

PRESSURE VS. TORQUE – HXD SERIES TORQUE WRENCH WITH CC-CASSETTES
IMPERIAL TABLE

Pressure (psi)	HXD-30 (Ft.lbs)	HXD-30 (Ft.lbs)	HXD-60 (Ft.lbs)	HXD-60 (Ft.lbs)	HXD-120 (Ft.lbs)	HXD-120 (Ft.lbs)	HXD-240 (Ft.lbs)	HXD-240 (Ft.lbs)
	CC-3125 [1] CC-3144 [2] CC-3163 [3] CC-3181 [4]	CC-3200 [1] CC-3219 [1] CC-3238 [1]	CC-6163 [1] CC-6181 [2] CC-6200 [3] CC-6219 [3] CC-6238 [3]	CC-6256 [1] CC-6275 [1] CC-6293 [1] CC-6313 [1]	CC-12219 [1] CC-12238 [1] CC-12256 [2] CC-12275 [2] CC-12293 [2] CC-12300 [2] CC-12313 [3]	CC-12338 [1] CC-12350 [1] CC-12375 [1] CC-12388 [1]	CC-24313 [1] CC-24338 [2] CC-24350 [3] CC-24375 [4] CC-24388 [5] CC-24413 [6]	CC-24425 [1] CC-24463 [1] CC-24500 [1]
600	107	122	225	271	423	488	848	915
800	142	163	298	359	565	651	1132	1226
1000	178	203	373	449	706	814	1415	1532
1200	221	248	431	515	831	969	1697	1850
1400	256	292	506	602	968	1132	1963	2173
1600	293	333	578	688	1107	1294	2244	2487
1800	332	373	648	774	1243	1449	2525	2798
2000	367	418	719	846	1380	1606	2805	3113
2200	404	460	791	931	1518	1766	3067	3424
2400	442	499	862	1015	1648	1922	3346	3738
2600	477	544	929	1087	1792	2086	3625	4052
2800	513	584	1001	1171	1930	2247	3903	4370
3000	549	626	1072	1255	2067	2403	4181	4682
3200	584	670	1143	1339	2204	2567	4460	4980
3400	623	702	1221	1419	2341	2716	4740	5277
3600	660	744	1293	1503	2479	2876	5018	5587
3800	699	792	1364	1587	2616	3040	5246	5894
4000	734	835	1417	1646	2753	3211	5525	6201
4200	770	877	1487	1728	2891	3372	5802	6511
4400	806	917	1559	1812	3021	3535	6073	6820
4600	844	957	1627	1893	3158	3692	6350	7130
4800	881	999	1697	1976	3295	3852	6626	7440
5000	920	1047	1757	2068	3440	3993	6902	7750
5200	955	1088	1829	2149	3576	4158	7066	8060
5400	992	1129	1899	2231	3713	4317	7338	8370
5600	1031	1173	1971	2293	3874	4467	7609	8680
5800	1069	1217	2039	2378	4019	4631	7881	8990
6000	1104	1257	2110	2459	4155	4787	8153	9300
6200	1141	1299	2181	2541	4294	4947	8424	9610
6400	1180	1346	2245	2611	4438	5104	8696	9920
6600	1219	1394	2313	2692	4575	5268	8968	10230
6800	1255 [1]	1436	2383	2774	4713	5428	9239	10540
7000	1290	1472	2447	2863	4835	5592	9512	10849
7200	1325	1516	2519	2944	4972	5756	9783	11160
7400	1362	1556	2589	3026	5110	5916	10054	11470
7600	1401	1598	2661	3110	5247	6072	10326 [1]	11780
7800	1436	1649	2718	3181	5384	6222	10598	12090
8000	1473	1692	2788 [1]	3262	5522	6381	10870	12400
8200	1508	1747	2859	3343	5659	6538	11142	12710
8400	1546 [2]	1767	2917	3443	5804	6695	11413	13019
8600	1584	1810	2986	3525	5942 [1]	6854	11686 [2]	13330
8800	1619	1850	3058	3610	6079	7011	11958	13640
9000	1654	1894	3123	3691	6216	7168	12226 [3]	13950
9200	1689	1938	3184	3743	6353	7339	12501	14260
9400	1725	1980	3253	3824	6491	7499	12773 [4]	14570
9600	1764	2020	3321	3906	6613	7663	13044	14880
9800	1799	2060	3419	3932	6735	7798	13316 [5]	15189
10000	1836 [3]	2102	3489 [2]	4012	6873	7957	13588	15500
10200	1871	2142	3561	4094	6995	8114	13859	15810
10400	1910	2182	3629	4172	7132	8271	14131	16120
10600	1947	2224	3698	4254	7270 [2]	8430	14404	16430
10800	1982	2264	3707	4294	7414	8580	14675	16739
11000	2020	2304	3778	4372	7566	8744	14947	17050
11200	2057	2346	3845	4452	7704	8903	15219	17359
11400	2092	2386	3921	4482	7849	9060	15490 [6]	17670
11600	2132 [4]	2425 [1]	3990 [3]	4566 [1]	8010 [3]	9220 [1]	15765	17860 [1]

Notes [1] [2] [3] [4] [5] [6]: See page 197 for maximum torque of cassettes and reducer inserts.

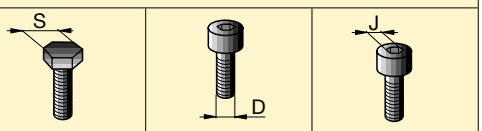
Hexagon Bolt and Nut Sizes

Determine the maximum torque according to the bolt (nut) size and grade. Always consult the manufacturers instructions or engineering recommendations when making bolted connections.

IMPORTANT

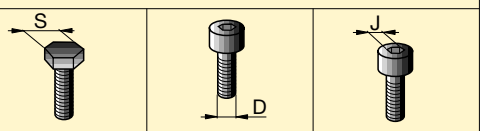
The hexagon sizes shown in the tables below should be used as a guide only. Individual sizes should be checked before specifying any equipment.

METRIC SIZES



Hexagon Size S (mm)	Thread Size D (mm)	Hexagon Size J (mm)
17	M 10	8
19	M 12	10
22	M 14	12
24	M 16	14
27	M 18	14
30	M 20	17
32	M 22	17
36	M 24	19
41	M 27	19
46	M 30	22
50	M 33	24
55	M 36	27
60	M 39	27 (30)
65	M 42	32
70	M 45	-
75	M 48	36
80	M 52	36
85	M 56	41
90	M 60	46
95	M 64	46
100	M 68	50
105	M 72	55
110	M 76	60
115	M 80	65
120	M 85	70
130	M 90	70 (75)
135	M 95	-
145	M 100	85
150	M 105	-
155	M 110	-
165	M 115	-
170	M 120	-
180	M 125	-
185	M 130	-
200	M 140	-
210	M 150	-

IMPERIAL SIZES



Hexagon Size S (inch)	Thread Size D (inch)	Hexagon Size J (inch)
$1\frac{1}{16}$	$\frac{5}{8}$	$\frac{1}{2}$
$1\frac{1}{4}$	$\frac{3}{4}$	$\frac{5}{8}$
$1\frac{7}{16}$	$\frac{7}{8}$	$\frac{3}{4}$
$1\frac{5}{8}$	1	$\frac{3}{4}$
$1\frac{13}{16}$	$1\frac{1}{8}$	$\frac{7}{8}$
2	$1\frac{1}{4}$	$\frac{7}{8}$
$2\frac{3}{16}$	$1\frac{3}{8}$	1
$2\frac{3}{8}$	$1\frac{1}{2}$	1
$2\frac{9}{16}$	$1\frac{5}{8}$	-
$2\frac{3}{4}$	$1\frac{3}{4}$	$1\frac{1}{4}$
$2\frac{15}{16}$	$1\frac{7}{8}$	$1\frac{3}{8}$
3	2	$1\frac{1}{2}$
$3\frac{1}{8}$	2	$1\frac{5}{8}$
$3\frac{3}{8}$	$2\frac{1}{4}$	$1\frac{3}{4}$
$3\frac{1}{2}$	$2\frac{1}{4}$	$1\frac{3}{4}$
$3\frac{3}{4}$	$2\frac{1}{2}$	$1\frac{3}{4}$
$3\frac{7}{8}$	$2\frac{1}{2}$	$1\frac{7}{8}$
$4\frac{1}{8}$	$2\frac{3}{4}$	2
$4\frac{1}{4}$	$2\frac{3}{4}$	2
$4\frac{5}{8}$	3	$2\frac{1}{4}$
5	$3\frac{1}{4}$	$2\frac{1}{4}$

Use only Heavy Duty Impact Sockets for power driven torquing equipment, according to ISO 2725 and ISO 1174; DIN 3129 and DIN 3121 or ASME-B107.2/1995.

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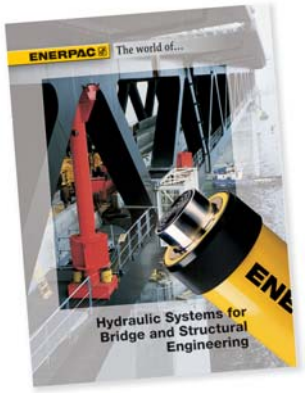

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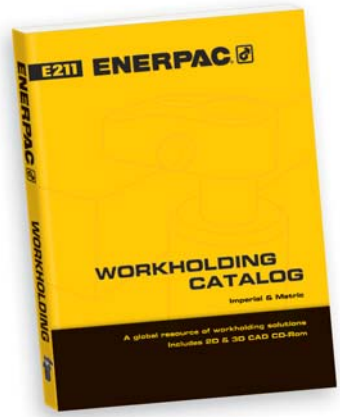

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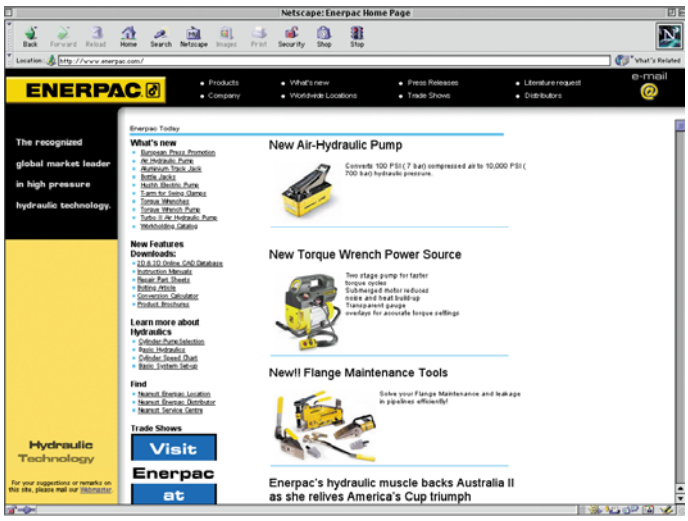

Enerpac Worlwide Locations

ENERPAC
Hydraulic Technology Worldwide

Australia
ENERPAC, Applied Power Australia Ltd.
Block V Unit 3
Regents Park Estate
391 Park Road
Regents Park NSW 2143
(P.O. Box 261) Australia
Tel: +61 297 438 988
Fax: +61 297 438 648

Brazil
Power Packer do Brasil Ltda.
Rua dos Inocentes, 587
04764-050 - Sao Paulo (SP)
Tel: +55 11 5687 2211
Fax: +55 11 5686 5583
Toll Free in Brazil:
Tel: 000 817 200 6718
vendasbrasil@enerpac.com

Canada
Actuant Canada Corporation
6615 Ordan Drive, Unit 14-15
Mississauga, Ontario L5T 1X2
Tel: +1 905 564 5749
Fax: +1 905 564 0305
Toll Free:
Tel: +1 800 268 4987
Fax: +1 800 461 2456
Technical Inquiries:
techservices@enerpac.com

China
Actuant China Ltd.
1F, 269 Fute N. Road
Waigaoqiao Free Trade Zone
Pudong New District
Shanghai, 200 131 China
Tel: +86 21 5866 9099
Fax: +86 21 5866 7156

Actuant China Ltd. (Beijing)
709A Xin No. 2
Diyang Building
Dong San Huan North Rd.
Beijing City, 100028 China
Tel: +86 10 845 36166
Fax: +86 10 845 36220

Eastern Europe
Applied Power International S.A.
Case postale 130
CH-1213 Onex-Genéva
Switzerland
Tel: +49 (211) 47149 44
Fax: +49 (211) 47149 40

France, Greece, Africa
ENERPAC S.A.
B.P. 200
Parc d'Activités
du Moulin de Massy
F-91882 Massy CEDEX
(Paris) France
Tel: +33 1 601 368 68
Fax: +33 1 692 037 50

Germany, Austria, Switzerland
ENERPAC
Applied Power GmbH
P.O. Box 300113
D-40401 Düsseldorf
Germany
Tel: +49 211 471 490
Fax: +49 211 471 49 28

India
ENERPAC Hydraulics
(India) Pvt. Ltd.
Plot No. A/571
MIDC, TTC Industrial Area
Mahape-400 701
Navi Mumbai, India
Tel: +91 22 27781472
Fax: +91 22 27781473

Italy
ENERPAC
Applied Power Italiana S.p.A.
Via Canova 4
20094 Corsico (Milano)
Tel: +39 02 4861 111
Fax: +39 02 4860 1288

Japan
Applied Power Japan Ltd.
1-1-11, Shimomae
Toda-shi
Saitama Pref.
Japan 335-0016
Tel: +81 48 430 2311
Fax: +81 48 430 1117

Mexico
ENERPAC Applied Power
Mexico S. de R.L. de C.V.
Avenida Principal
La Paz #100
Fracc. Industrial La Paz
42092 Pachuca, Hidalgo
Tel: +52 771 71851 60
+52 771 71870 22
Fax: +52 771 71352 32
Toll Free in Mexico:
Tel: 001 800 590 0130

The Netherlands, Belgium, Luxembourg, Sweden, Denmark, Norway, Finland
ENERPAC B.V.
Storkstraat 25
P.O. Box 269, 3900 AG Veenendaal
The Netherlands
Tel: +31 318 535 911
Fax: +31 318 525 613
+31 318 535 848

Russia and CIS (excl. Caspian Sea Countries)
ENERPAC
Leninsky Prospect 95A
117313, Moscow, Russia.
Tel/Fax: +7(095) 936-2005
Tel/Fax: +7(095) 198-3094
Tel/Fax: +7(095) 938-4655
Mobil: +7(903) 731-9558

Singapore
Actuant Asia Pte. Ltd.
25 Serangoon North Ave. 5
#03-01 Keppel Digihub
Singapore 554914
Thomson Road
P.O. Box 114
Singapore 915704
Tel: +65 64 84 5108
+65 64 84 3737
Fax: +65 64 84 5669

South Korea
ENERPAC
Applied Power Korea Ltd.
163-12 Dodang-Dong
Wonmi-Ku, Buchun-shi
Kyunggi-Do
Republic of Korea
Tel: +82 32 675 08 36
Fax: +82 32 675 30 02/73

Spain, Portugal
ENERPAC
C/San José Artesano 8
Pol. Ind.
28108 Alcobendas
(Madrid) Spain
Tel: +34 91 661 11 25
Fax: +34 91 661 47 89

Middle East, Turkey and Caspian Sea
ENERPAC Middle East FZE
P.O. Box 18004
Jebel Ali, Dubai
United Arab Emirates
Tel: +971 (0)4 8872686
Fax: +971 (0)4 8872687

United Kingdom, Ireland
ENERPAC Ltd., P.O. Box 33
New Romney, TN28 8QF
United Kingdom
Tel: +44 01527 598 900
Fax: +44 01527 585 900

USA, Latin America and Caribbean
ENERPAC
P.O. Box 3241
6100 N. Baker Road
Milwaukee, WI 53209 USA
Tel: +1 262 781 6600
Fax: +1 262 783 9562

User inquiries:
+1 800 433 2766
Distributor inquiries/orders:
+1 800 558 0530
Technical Inquiries:
techservices@enerpac.com

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Model Number Index

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