Enerpac Hydraulic Cylinders

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 ASME 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

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.

*Capacity (tons)	Stroke Range (in)	Cylinder Type and Functions	Series		Page
5-100	.63-14.25	General Purpose Cylinders, Single-acting Cylinder Accessories	RC		6 10
20-150 50-150	1.97-7.87 1.97-5.91	Aluminum Cylinders, Single-acting Solid, and Lock Nut	RAC RACL		12 14
20-100 50-150	1.97-5.91 1.97-7.87	Aluminum Cylinders, Single-acting Hollow Plunger and Double-acting, Solid Plunger	RACH RAR		16 18
5-500	.25-2.44	Pancake and Low Height Cylinders, Single-acting	CLP RSM RCS		20 22 22
2.5-60	5.00-6.10	Pull Cylinders, Single-acting	BRC BRP		24
12-150	.31-10.13	Hollow Plunger Cylinders Single- and Double-acting	RCH RRH		26 28
4-25	1.13-10.25	Precision Production Cylinders, Double-acting	RD		30
10-500	2.25-48.00	Long Stroke Cylinders, Double-acting	RR		32
50-1000	1.97-11.81	High Tonnage Cylinders, Single-acting	CLSG		36
50-1000	1.97-11.81	High Tonnage Cylinders, Double-acting	CLRG		40
50-1000	1.97-11.81	High Tonnage Cylinders, Single-acting with Mechanical Locknut	CLL		44
N/A	N/A	Synchronous Lift Systems Stage Lift Systems SyncHoist Systems	SLS BLS, SL SHS		48 50 52
1.5-150	3.00-20.00	Aluminum and Steel Jacks Industrial Bottle Jacks	JHA/JH EBJ		54 55
10-25	2.0-6.0	Extreme Environment Products (Valves, cylinders, hand pumps)	RC P V		56
5-100	1.50-14.25	Cylinder - Pump Sets (Single-acting)	SC		58

* All cylinder capacities are nominal values, unless otherwise stated. [Maximum] capacities are theoretical and may vary, depending on cylinder condition and application.

▼ 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**
- **Plunger wiper reduces contamination, extending cylinder life**

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).*

Think Safety

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

Good practice encourages using only 80% of these ratings!

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RC Series

Capacity:
5-100 tons

Stroke:
.63-14.25 inches

Maximum Operating Pressure:
10,000 psi

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

Cylinder Capacity tons (maximum)	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height (in)	Weight (lbs)
5 (4.9)	.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 (11.2)	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 (15.7)	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 (25.8)	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 (32.4)	8.25	**RC-308**	6.49	53.56	15.25	40.0
50 (55.2)	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 (79.5)	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 (103.1)	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.

Extreme Environment Products

Designed for use in applications where frequent washdowns, cleaning chemicals, water and fluids cause rust and corrosion of painted steel components.

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RAC-Series, Single-Acting Cylinders

The lightweight general purpose spring return aluminum cylinders.

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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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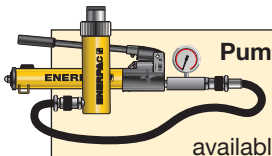

Pump and Cylinder Sets

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

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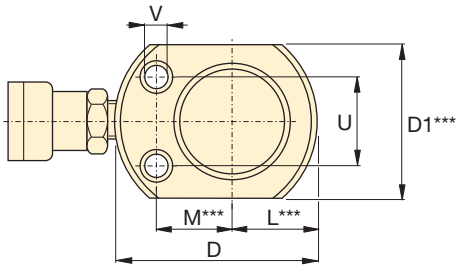
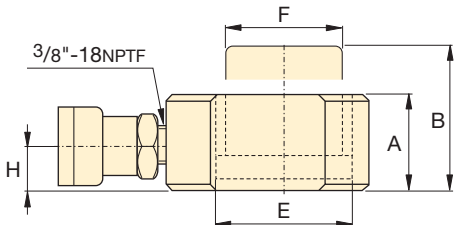
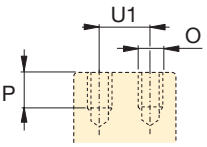
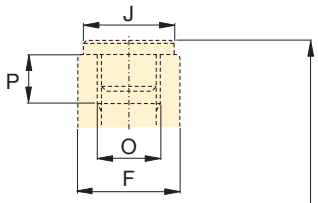


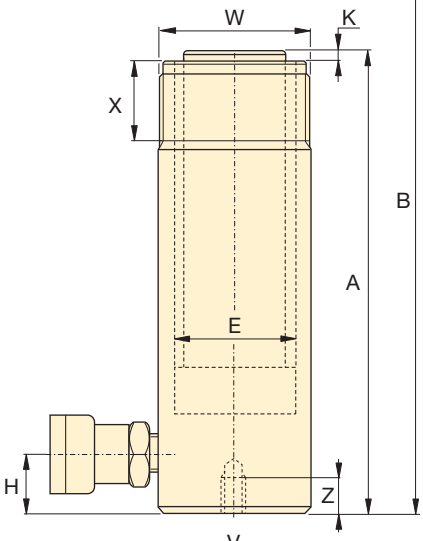


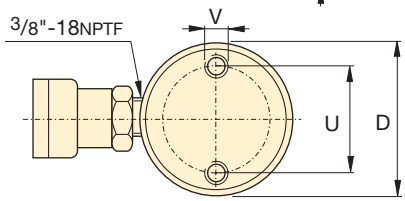
RC-50



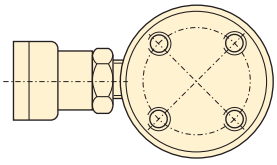
RC-101 only
(U1 = .75 inch)







RC-51 to RC-7513 models



RC-1006 and RC-10010 models

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

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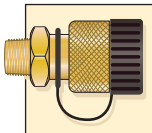
◄ For full features see page 6.

Cylinder Capacity tons (maximum)	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)
5 (4.9)	.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 (11.2)	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 (15.7)	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 (25.8)	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 (32.4)	8.25	**RC-308**	6.49	53.56	15.25	23.50	4.00
50 (55.2)	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 (79.5)	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 (103.1)	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 page 58.
** 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 inches

Maximum Operating Pressure:
10,000 psi

RC Series

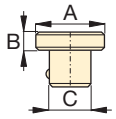
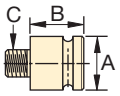
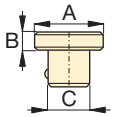
Cylinder Bore Diam. E (in)	Plunger Diam. F (in)	Base to Adv. Port H (in)	Saddle Diam. J (in)	Saddle Protrusion from Plngr. K (in)	Plunger Internal Thread O (in)	Plunger Thread Length P (in)	Base Mounting Holes			Collar Thread W (in)	Collar Thread Length X (in)	Weight (lbs)	Model Number
							Bolt Circle U (in)	Thread V (in)	Thrd. 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	4.0	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

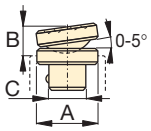
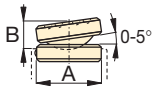
▼ SELECTION CHART

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	–	–	–	–

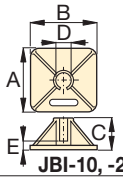
[1] Standard on 5-30 ton RC-cylinders [2] Except RC-50 [3] Except RC-101 [4] Mounting screws are included.

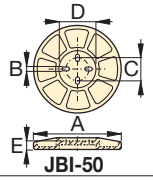
▼ DIMENSION CHARTS

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	

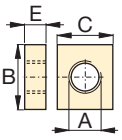
Model Number	Tilt Saddle Dimensions (in)			
	A	B	C	
	Tilt			
CAT-10	1.38	.79	.88	
CAT-50	1.97	.83	1.40	
	Tilt			
CAT-100	2.80	.98	–	

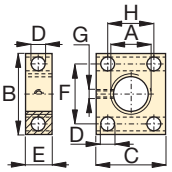
Model Number	Base Plate Dimensions (in)				
	A	B	C	D	E
JBI-10	9.00	9.00	5.34	2.29	.81
JBI-25	11.00	11.00	5.53	3.41	1.03
JBI-50	12.00	.60	3.75	5.19	1.25

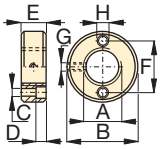

JBI-10, -25

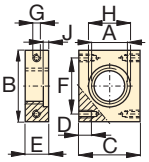

JBI-50

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	–	–	–

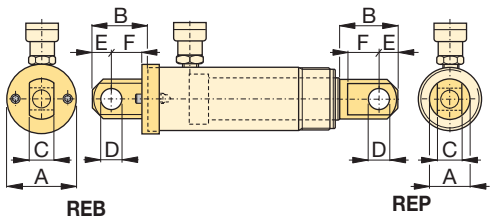

RB-5, -10
RB-15, -25


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.
[4] Mounting screws are included.

▼ Shown: **RAC, RACL, RACH, and RAR**

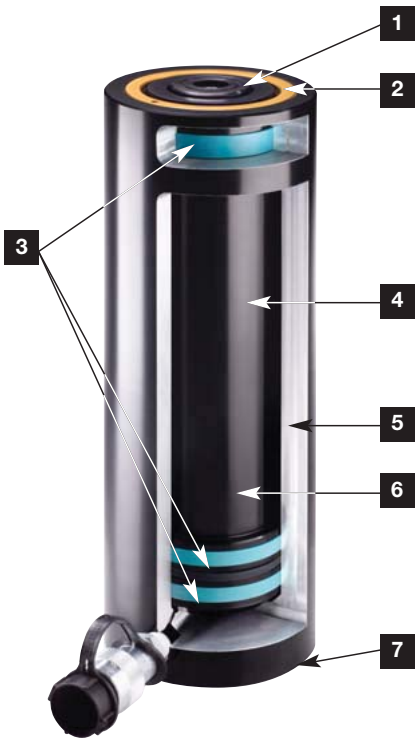
RA Series

Capacity:
20-150 tons

Stroke:
1.97-7.87 inches

Maximum Operating Pressure:
10,000 psi

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



1. **Removable Hardened Saddle** protects plunger from being damaged by abrasive surface contact.
2. **Stop Ring** on all models absorbs eccentric loading and prevents plunger over-extension.
3. **Composite Bearing** material to prevent metal-to-metal contact, reducing side-load issues and increasing life.
4. **Hard-coated Plunger and Base** resist wear and prevent galling.
5. **7075-T6 Aluminum Alloy Components** for maximum strength and minimum weight.
6. **Plunger Return Spring** on all single-acting models for prompt cylinder return.
7. **Standard Steel Baseplate** protects cylinder base from abrasive surfaces.

Think Safety

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

Good practice encourages using only 80% of these ratings!

RAC-Series, Single-Acting Cylinders

The lightweight general purpose spring return aluminum cylinders.

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RACL-Series, Lock Nut Cylinders

The lightweight spring return aluminum cylinders for mechanical load holding.

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RACH-Series, Hollow Plunger Cylinders

For both push and pull forces with a single-acting cylinders.

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RAR-Series, Double-Acting Cylinders

The lightweight aluminum cylinders for lifting and lowering.

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▼ Shown from left to right: **RAC-508, RAC-1506, RAC-304, and RAC-206**

Lightweight for Maximum Portability

- **Composite bearings prevent metal-to-metal contact, increasing cylinder life and resistance to side-loads of up to 10%**
- **Hard coat finish on all surfaces resists damage and extends cylinder life**
- **Handles included on all models**
- **Steel baseplate and saddle for protection against load-induced damage**
- **Integral stop ring prevents plunger over-travel and is capable of withstanding the full cylinder capacity**
- **High-strength return spring for rapid cylinder retraction**
- **CR-400 coupler and dustcap included on all models**
- **All cylinders meet ASME B-30.1 and ISO 10100 standards**

Saddles

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

Lightweight Hand Pumps

Enerpac hand pumps **P-392** or **P-802** make the optimal lightweight set.

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Aluminum Lock Nut Cylinders

When positive mechanical load holding is required, the lightweight RACL-Series Aluminum Lock Nut cylinders are the ideal choice.

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Cylinder Capacity (tons) [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)
20 [24.1]	1.97	**RAC-202**	4.83
	3.94	**RAC-204**	4.83
	5.91	**RAC-206**	4.83
30 [34.2]	1.97	**RAC-302**	6.85
	3.94	**RAC-304**	6.85
	5.91	**RAC-306**	6.85
50 [54.9]	1.97	**RAC-502**	10.99
	3.94	**RAC-504**	10.99
	5.91	**RAC-506**	10.99
100 [110.9]	3.94	**RAC-1004**	22.19
	5.91	**RAC-1006**	22.19
	7.87	**RAC-1008**	22.19
150 [175.9]	5.91	**RAC-1506**	35.18

◀ *Enerpac lightweight aluminum RAC-506 cylinders are ideal for wet environments such as this tunnel under the river (Holland High-Speed Train Line.*

Aluminum vs. Steel

Aluminum cylinders, while offering the most lightweight solution for many lifting, stressing and lowering applications, also have some unique limitations due to material properties.

Aluminum differs from steel in that it has a lower finite fatigue life. This means aluminum cylinders should NOT be used in high-cycle applications such as production.

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

RAC Series

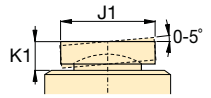
Capacity:
20-150 tons

Stroke:
1.97-7.87 inches

Maximum Operating Pressure:
10,000 psi

Optional Bolt Tilt Saddle Dimensions (in)

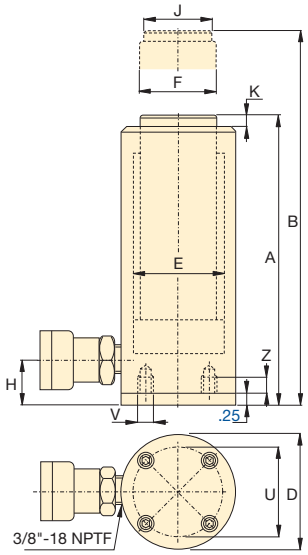
Cylinder Model / Capacity (ton)	Model Number	Saddle Diameter J1	Saddle Protrusion from Base K1
RAC-50	CATG-50	1.97	1.02
RAC-100	CATG-150	3.59	1.30
RAC-150	CATG-200	4.65	1.46



Steel Base Plate Mounting Holes

Cylinder Model / Capacity (ton)	Bolt Circle U (in)	Thread V (mm)	Thread Depth [1] Z (in)
RAC-20	2.76	M6	.47
RAC-30	3.15	M6	.47
RAC-50	4.33	M6	.47
RAC-100	6.30	M6	.47
RAC-150	7.87	M6	.47

[1] Including Base Plate Height of .25 inches.
Four (4) baseplate bolts: M6 X 1.0 X .24



Steel Base Plate

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

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

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

Oil Capacity (in³)	Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	Base to Advance Port H (in)	Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	Weight (lbs)	Model Number
9.51	6.85	8.82	3.35	2.48	1.97	1.07	1.57	.12	7.9	RAC-202
19.02	8.82	12.76	3.35	2.48	1.97	1.07	1.57	.12	9.0	RAC-204
28.52	10.79	16.69	3.35	2.48	1.97	1.07	1.57	.12	10.1	RAC-206
13.48	7.13	9.09	3.94	2.95	2.36	1.31	1.57	.12	9.9	RAC-302
26.97	9.09	13.03	3.94	2.95	2.36	1.31	1.57	.12	11.5	RAC-304
40.45	11.06	16.97	3.94	2.95	2.36	1.31	1.57	.12	13.0	RAC-306
21.63	7.32	9.29	5.12	3.74	3.15	1.19	1.97	.12	18.7	RAC-502
43.27	9.29	13.23	5.12	3.74	3.15	1.19	1.97	.12	21.6	RAC-504
64.90	11.26	17.17	5.12	3.74	3.15	1.19	1.97	.12	24.5	RAC-506
87.36	10.67	14.61	7.09	5.31	4.33	1.82	3.70	.12	43.2	RAC-1004
131.04	12.64	18.54	7.09	5.31	4.33	1.82	3.70	.12	48.3	RAC-1006
174.72	14.61	22.48	7.09	5.31	4.33	1.82	3.70	.12	53.4	RAC-1008
207.76	13.49	19.40	9.06	6.69	5.51	2.02	4.45	.12	73.4	RAC-1506

▼ Shown from left to right: **RACL-1006, RACL-504 and RACL-506**

To Secure Loads Mechanically

- **Aluminum Lock Nut provides mechanical load holding for extended periods**
- **Hardened steel stop ring increases cylinder life and resistance to side-loads of up to 5%**
- **Hard coat finish on all surfaces resists damage and extends cylinder life**
- **Composite bearings increase cylinder life and side load resistance**
- **Handles included on all models**
- **Steel baseplate and saddle for protection against load-induced damage**
- **Integral stop ring prevents plunger over-travel and is capable of withstanding the full cylinder capacity**
- **High-strength return spring for rapid cylinder retraction**
- **CR-400 coupler and dustcap included on all models**
- **All cylinders meet ASME B-30.1 and ISO 10100 standards**

Saddles

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

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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Cylinder Capacity ton (maximum)	Stroke (in)	Model Number	Cylinder Effective Area (in^2)
50 (54.9)	1.97	RACL-502	10.99
	3.94	RACL-504	10.99
	5.91	RACL-506	10.99
100 (110.9)	1.97	RACL-1002	22.19
	3.94	RACL-1004	22.19
	5.91	RACL-1006	22.19
150 (175.9)	1.97	RACL-1502	35.18
	3.94	RACL-1504	35.18
	5.91	RACL-1506	35.18

◀ *The portable Lock Nut cylinder RACL-1506 used for extended load support during epoxy injection for bridge reinforcement.*

Aluminum vs. Steel

Aluminum cylinders, while offering the most lightweight solution for many lifting, stressing and lowering applications, also have some unique limitations due to material properties.

Aluminum differs from steel in that it has a lower finite fatigue life. This means aluminum cylinders should NOT be used in high-cycle applications such as production.

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

RACL Series

Capacity:
50-150 tons

Stroke:
1.97-5.91 inches

Maximum Operating Pressure:
10,000 psi

Steel Base Plate

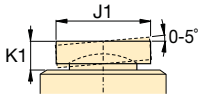
The steel base plate protects the cylinder base from damage, it should not be removed.

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

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

Optional Bolt On Tilt Saddle Dimensions (in)

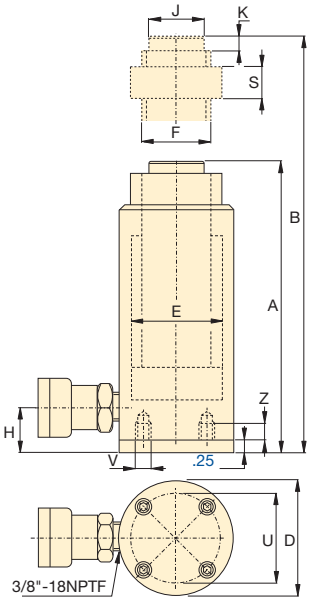
Cylinder Model / Capacity (ton)	Model Number	Saddle Diameter J1	Saddle Protrusion from Base K1
RACL-50	CATG-50	1.97	1.02
RACL-100	CATG-150	3.59	1.30
RACL-150	CATG-200	4.65	1.46



Steel Base Plate Mounting Holes

Cylinder Model / Capacity (ton)	Bolt Circle U (in)	Thread V (mm)	Thread Depth [1] Z (in)
RACL-50	4.33	M6	.47
RACL-100	6.30	M6	.47
RACL-150	7.87	M6	.47

[1] Including Base Plate Height of .25 inches.
Four (4) baseplate bolts: M6 X 1.0 X .24



Lifting an Unbalanced Load

When lifting an unbalanced load Enerpac Synchronous Lift Systems can be the solution with multiple lift point capabilities from 4 to 64 points.

Oil Capacity (in³)	Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter (Threaded) F (in)	Base to Advance Port H (in)	Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	Lock Nut Height S (in)	Weight (lbs)	Model Number
21.63	9.29	11.26	5.12	3.74	3.15	1.19	1.97	.12	1.97	20.5	RACL-502
43.27	11.26	15.20	5.12	3.74	3.15	1.19	1.97	.12	1.97	23.4	RACL-504
64.90	13.23	19.13	5.12	3.74	3.15	1.19	1.97	.12	1.97	26.2	RACL-506
43.68	11.65	13.62	7.09	5.31	4.33	1.82	3.70	.12	2.95	48.2	RACL-1002
87.36	13.62	17.56	7.09	5.31	4.33	1.82	3.70	.12	2.95	53.3	RACL-1004
131.14	15.59	21.50	7.09	5.31	4.33	1.82	3.70	.12	2.95	58.4	RACL-1006
69.25	12.72	14.69	9.06	6.69	5.51	2.02	4.45	.12	3.15	71.0	RACL-1502
138.61	14.69	18.62	9.06	6.69	5.51	2.02	4.45	.12	3.15	79.8	RACL-1504
207.91	16.65	22.56	9.06	6.69	5.51	2.02	4.45	.12	3.15	88.6	RACL-1506

▼ Shown from left to right: **RACH-15010, RACH-304 and RACH-208**

The Lightweight Solution for Tensioning and Testing

Saddles

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

Lightweight Hand Pumps

Enerpac hand pumps **P-392** or **P-802** make the optimal lightweight set.

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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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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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- **Hollow plunger design allows for both pull and push forces**
- **Composite bearings increase cylinder life and side load resistance**
- **Hard coat finish on all surfaces resists damage and extends cylinder life**
- **Handles included on all models**
- **Floating center tube increases seal life**
- **Steel baseplate and saddle for protection against load-induced damage**
- **Integral stop ring prevents plunger over-travel and is capable of withstanding the full cylinder capacity**
- **High-strength return spring for rapid cylinder retraction**

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

Cylinder Capacity ton [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)
20 [25.3]	1.97	**RACH-202**	5.07
	5.91	**RACH-206**	5.07
30 [39.6]	1.97	**RACH-302**	7.92
	5.91	**RACH-306**	7.92
60 [65.6]	3.94	**RACH-604**	13.13
	5.91	**RACH-606**	13.13
100 [127.5]	5.91	**RACH-1006**	25.51

Single-Acting, Spring Return, Hollow Plunger Cylinders

Aluminum vs. Steel

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

These cylinders are designed to provide 5000 cycles at their recommended pressure. **This limit should not be exceeded**. In normal lifting and many maintenance applications, this should provide a lifetime of use.

RACH Series

Capacity:
20-100 tons

Stroke:
1.97-5.91 inches

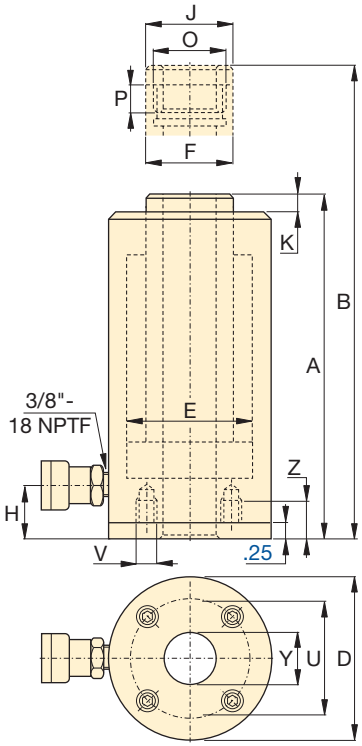
Center Hole Diameter:
1.06-3.11 inches

Maximum Operating Pressure:
10,000 psi

Steel Base Plate Mounting Holes

Cylinder Model / Capacity (ton)	Bolt Circle U (in)	Thread V (mm)	Thread Depth [1] Z (in)
RACH-20	3.15	M6	.47
RACH-30	4.33	M6	.47
RACH-60	6.29	M6	.47
RACH-100	9.05	M6	.47

[1] Including Base Plate Height of .25 inches. Four (4) baseplate bolts: M6 X 1.0 X .24



Steel Base Plate

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

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

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

Standard Features

- CR-400 coupler and dust cap
- All cylinders meet ASME B-30.1 and ISO 10100 standards.

Oil Capacity (in³)	Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	Base to Advance Port H (in)	Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	Center Hole Diameter Y (in)	Weight (lbs)	Model Number
9.98	7.41	9.37	3.94	2.95	2.17	1.14	2.17	.39	1.06	8.4	**RACH-202**
29.94	12.41	18.32	3.94	2.95	2.17	1.14	2.17	.39	1.06	10.1	**RACH-206**
15.59	8.20	10.17	5.12	3.74	2.76	1.14	2.76	.39	1.34	23.3	**RACH-302**
46.77	13.12	19.02	5.12	3.74	2.76	1.14	2.76	.39	1.34	26.2	**RACH-306**
51.69	12.41	16.34	7.09	5.12	3.94	2.41	3.94	.47	2.13	55.4	**RACH-604**
77.53	14.97	20.87	7.09	5.12	3.94	2.41	39.4	.47	2.13	58.3	**RACH-606**
150.64	15.39	21.31	9.84	7.28	5.71	2.41	5.71	.55	3.11	107.1	**RACH-1006**

▼ Shown from left to right: **RAR-1008, RAR-506, RAR-502**

The Lightweight Solution for Double-Acting Applications

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

Saddles

All RAR-cylinders are equipped with bolt-on removable hardened steel saddles.

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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Optimum Performance

Enerpac's range of ZU4 electric pumps, fitted with manual or solenoid operated 4-way valves, offer optimum combinations with RAR cylinders.

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

Cylinder Capacity (tons)	Stroke (in)	Model Number	Maximum Cylinder Capacity (tons)		Cylinder Effective Area (in^2)		Oil Capacity (in^3)	
			Push	Pull	Push	Pull	Push	Pull
50	1.97	RAR-502	55	21	10.99	4.14	21.63	8.15
	3.94	RAR-504	55	21	10.99	4.14	43.25	16.30
	5.91	RAR-506	55	21	10.99	4.14	64.88	24.44
100	3.94	RAR-1004	111	62	22.19	12.33	87.35	48.53
	5.91	RAR-1006	111	62	22.19	12.33	131.02	72.79
	7.87	RAR-1008	111	62	22.19	12.33	174.70	97.05
150	5.91	RAR-1506	176	102	35.18	20.45	207.77	120.78

Aluminum vs. Steel

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

These cylinders are designed to provide 5000 cycles at their recommended pressure. **This limit should not be exceeded**. In normal lifting and many maintenance applications, this should provide a lifetime of use.

RAR Series

Capacity:
50-150 tons

Stroke:
1.97-7.87 inches

Maximum Operating Pressure:
10,000 psi

Steel Base Plate

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

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

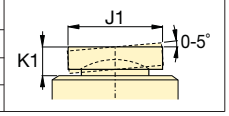
Do not use the base holes in these aluminum cylinders to attach any device to the cylinder.

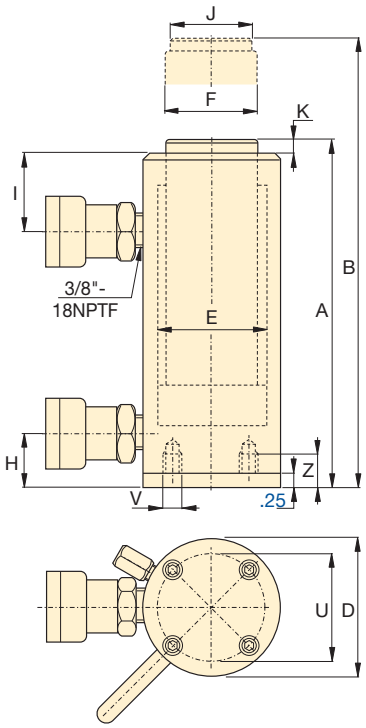
Standard Features

- CR-400 coupler and dust cap
- All cylinders meet ASME B-30.1 and ISO 10100 standards.

Optional Bolt On Tilt Saddle Dimensions (in)

Cylinder Model / Capacity (ton)	Model Number	Saddle Diameter J1	Saddle Protrusion from Base K1
RAR-50	CATG-50	1.97	1.02
RAR-100	CATG-150	3.59	1.30
RAR-150	CATG-200	4.65	1.46





Steel Base Plate Mounting Holes

Cylinder Model / Capacity (ton)	Bolt Circle U (in)	Thread V (mm)	Thread Depth [1] Z (in)
RAR-50	4.33	M6	.47
RAR-100	6.50	M6	.47
RAR-150	7.87	M6	.47

[1] Including Base Plate Height of .25 inch.
Four (4) baseplate bolts: M6 x 1.0 x .24

Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	Base to Advance Port H (in)	Top to Retract Port I (in)	Saddle Diameter J (in)	Saddle Protrusion from Plunger K (in)	Weight (lbs)	Model Number
7.91	9.88	5.71	3.74	2.95	1.19	2.20	1.97	.12	24.5	RAR-502
9.88	13.82	5.71	3.74	2.95	1.19	2.20	1.97	.12	28.0	RAR-504
11.85	17.76	5.71	3.74	2.95	1.19	2.20	1.97	.12	31.5	RAR-506
11.85	15.79	7.28	5.31	3.54	1.70	3.15	2.95	.12	42.6	RAR-1004
13.82	19.72	7.28	5.31	3.54	1.70	3.15	2.95	.12	48.9	RAR-1006
15.79	23.66	7.28	5.31	3.54	1.70	3.15	2.95	.12	55.3	RAR-1008
13.71	19.60	9.06	6.69	4.33	1.50	2.95	3.70	.12	73.2	RAR-1506

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

The Shortest Power Lifter

- **Flat design for use in confined areas**
- **Safety lock nut for mechanical load holding**
- **ASME 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.The V-82 needle valve is used to control cylinder speed during lifting and lowering.*

Cylinder Capacity (tons) [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)
60 [67.1]	1.97	**CLP-602**	13.42	26.42
100 [113.7]	1.97	**CLP-1002**	22.75	44.78
160 [179.2]	1.77	**CLP-1602**	35.85	63.51
200 [221.3]	1.77	**CLP-2002**	44.27	78.43
250 [284.2]	1.77	**CLP-2502**	56.85	100.72
400 [433.6]	1.77	**CLP-4002**	86.72	153.64
500 [566.2]	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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Longer Stroke Lock Nut Cylinders

For lock nut applications that require longer stroke lengths, see **CLL-Series** heavy-duty cylinders.

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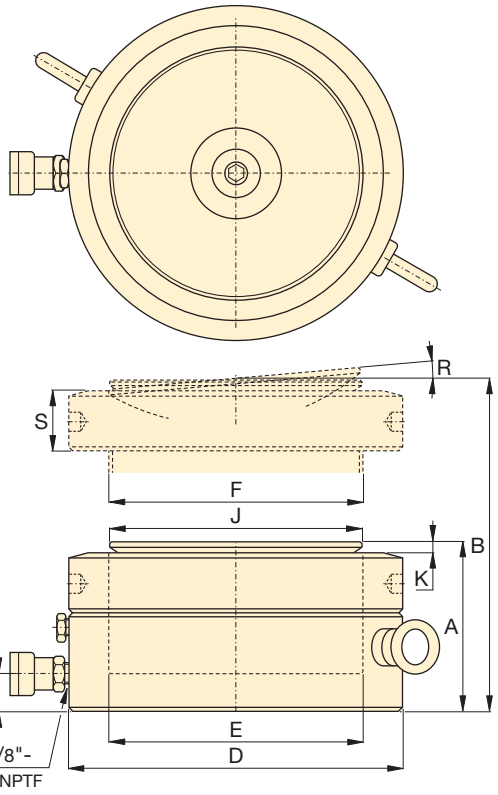
CLP Series

Capacity:
60-500 tons

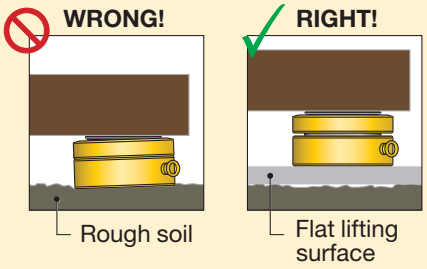
Stroke:
1.77-1.97 inches

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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Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)	Cyl. Bore Diameter E (in)	Plunger Diameter F (mm)	Base to Advance Port H (in)	Saddle Diameter J (in)	Saddle Protrusion from Plngr. 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**

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

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**

Maximum Power to Height Ratio

Saddles

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

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Low Clearance Lifting

The **LW-16** Lifting Wedge and **SOH-Series** Machine Lifts are the perfect choices for lifting loads that have low clearance.

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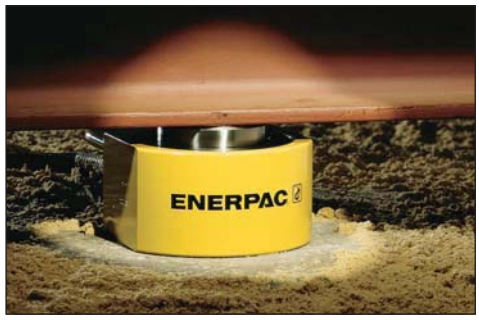
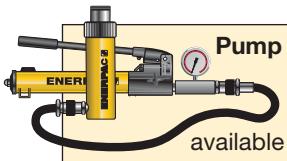
▼ *Only a couple of inches are needed for an RSM-cylinder to lift this large steel construction.*



Cylinder Capacity (tons) [max.]	Stroke (in)	Model Number	Cyl. Effect. Area (in^2)	Oil Cap. (in^3)
5 [4.9]	.25	**RSM-50***	.99	.25
10 [11.2]	.44	**RSM-100**	2.24	.98
20 [22.1]	.44	**RSM-200**	4.43	1.94
30 [32.4]	.50	**RSM-300**	6.49	3.25
50 [48.1]	.63	**RSM-500**	9.62	6.01
75 [79.5]	.63	**RSM-750**	15.90	9.94
100 [98.1]	.63	**RSM-1000**	19.63	12.27
150 [153.4]	.63	**RSM-1500**	30.68	19.17
10 [11.2]	1.50	**RCS-101****	2.24	3.35
20 [22.1]	1.75	**RCS-201****	4.43	7.75
30 [32.4]	2.44	**RCS-302****	6.49	15.82
50 [48.1]	2.38	**RCS-502****	9.62	22.85
100 [98.1]	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

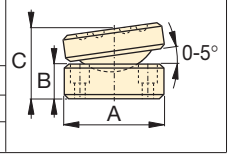
Capacity:
5-150 tons

Stroke:
.25-2.44 inches

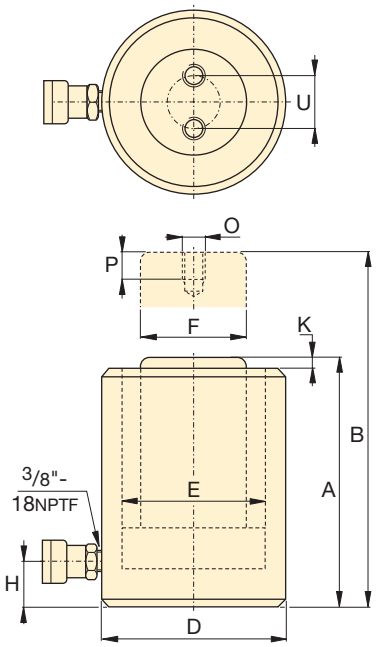
Maximum Operating Pressure:
10,000 psi

Optional Bolt On Tilt Saddle Dimensions (in)

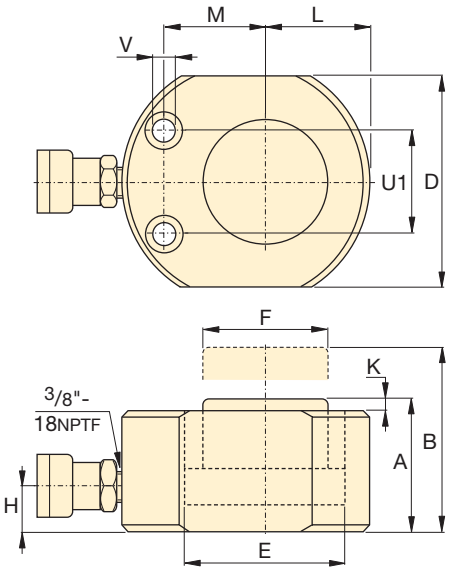
For Cylinder Model:	Model Number	A	B	C*
RCS-101	CAT-11	1.38	.43	.83
RCS-201, -302, -502	CAT-51	1.97	.59	1.14
RCS-1002	CAT-101	2.80	.67	1.39



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



RCS-Series



RSM-Series

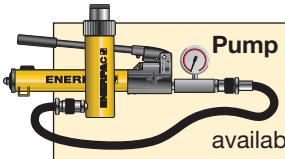
RSM Cylinder Mounting Hole Dimensions (in)

Model Number	Hole Pitch U1	Hole Diam. V	Counter Bore Diam.	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)	Extended Height B (in)	Outside Diameter D (in)	Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	Base to Advance Port H (in)	Plunger Protrusion from Base K (in)	Plunger to Base L (in)	Plunger to Mtg. Hole M (in)	Thread O (mm)	Thread Depth P (in)	Bolt Circle U (in)	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



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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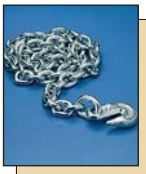

Attachments and Accessories

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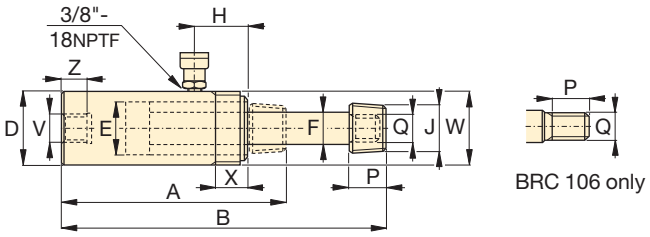
- **High strength alloy steel construction**
- **Plunger blow-out protection to prevent over-extension**
- **Hard chrome-plated plunger for long life**
- **Baked enamel finish for increased corrosion resistance**
- **CR-400 coupler and dust cap included on all models**
- **Plunger wiper reduces contamination,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

▼ *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 Thread Length X	Mtg. Thread Length Z
BRC-25	¾"-14 NPT	1½"-16 UN	.98	.67
BRC-46	1¼"-11½ NPT	2¼"-14 UN	1.06	.98
BRC-106	M30 x 2	M85 x 2	1.02	.98



BRC 106 only

BRC-25 to BRC-106

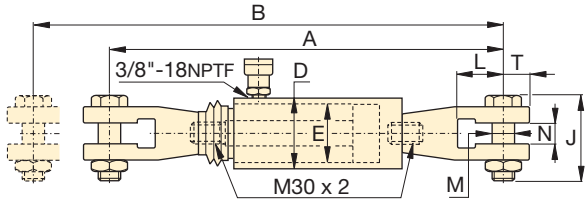
BRC BRP Series

Capacity:
2.5-60 tons

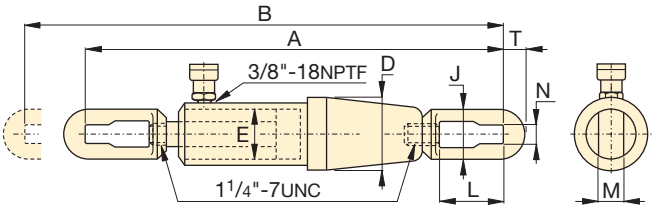
Stroke:
5.00-6.00 inches

Maximum Operating Pressure:
10,000 psi

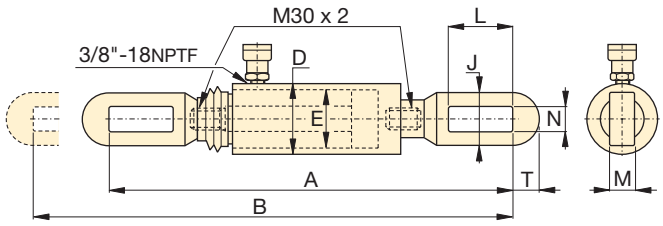
Cylinder Capacity (tons) [maximum]	Stroke (in)	Model Number	Cyl. Effect. Area (in^2)	Oil Cap. (in^3)	Collap. Height A (in)	Ext. Height B (in)	Outside Diam. D (in)	Cyl. Bore Diam. E (in)	Plgr. Diam. F (in)	Top to Inlet Port H (in)	Saddle Diameter J (in)	Plunger Thread Length P (in)	Plunger Outside Thread Q	Weight (lbs)
2.5 [2.7]	5.00	**BRC-25**	.55	2.76	10.44	15.44	1.89	1.13	.75	1.77	¾"-14 NPT	1.13	1 1/16"-24	4
5 [5.6]	5.50	**BRC-46**	1.13	6.21	11.88	17.38	2.25	1.69	1.19	1.69	1¼"-11½ NPT	1.25	1 3/16"-16	10
10 [11.6]	5.95	**BRC-106**	2.32	13.80	11.38	17.33	3.35	2.13	1.25	1.57	–	1.02	M30x2	21



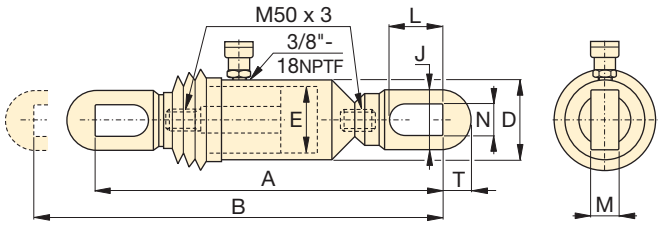
BRP-106C



BRP-306



BRP-106L



BRP-606

Cylinder Capacity (tons) [maximum]	Stroke (in)	Model Number	Cyl. Effect. Area (in^2)	Oil Capacity (in^3)	Collap. Height A (in)	Ext. Height B (in)	Outside Diam. D (in)	Cyl. Bore Diam. 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 [11.6]	6.00	**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
	6.00	**BRP-106L***	2.32	13.80	21.33	27.28	3.35	2.13	2.64	4.53	0.88	1.19	1.26	24
30 [36.1]	6.00	**BRP-306***	7.22	43.27	42.72	48.82	5.39	3.50	4.49	5.71	1.38	1.57	1.97	106
60 [58.9]	6.00	**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

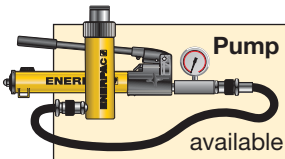
Note: BRP-106C, BRP-106L and BRP-606 are fitted with rubber bellows for rod protection.
*Available as a set. See note on previous page.

▼ 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**

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

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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Lightweight Aluminum Hollow Plunger Cylinders

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

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Saddles

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

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Cylinder Capacity (tons) [maximum]	Stroke (in)	Model Number	Cyl. Effect. Area (in^2)	Oil Cap. (in^3)
12 [13.8]	0.31	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 [23.6]	2.00	RCH-202*	4.73	9.46
	6.10	RCH-206	4.73	28.67
30 [36.1]	2.50	RCH-302*	7.22	18.05
	6.13	RCH-306	7.22	44.23
60 [63.6]	3.00	RCH-603*	12.73	38.20
	6.00	RCH-606	12.73	76.41
100 [103.1]	3.00	RCH-1003*	20.63	61.88

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

Hoses

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

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RCH Series

Capacity:
12-100 tons

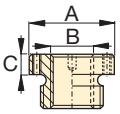
Stroke:
.31-6.13 inches

Center Hole Diameter:
.77-3.11 inches

Maximum Operating Pressure:
10,000 psi

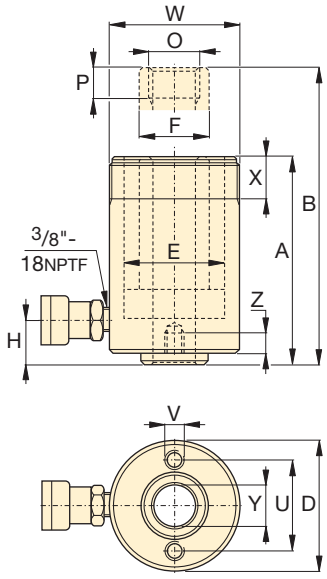
Optional Heat Treated Hollow Saddles

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	1 1/4"-7	.38
	RCH-603, 606	HP-5016	3.61	1 5/8"-5 1/2	.50
	RCH-1003	HP-10016	4.97	2 1/2"-8	.51

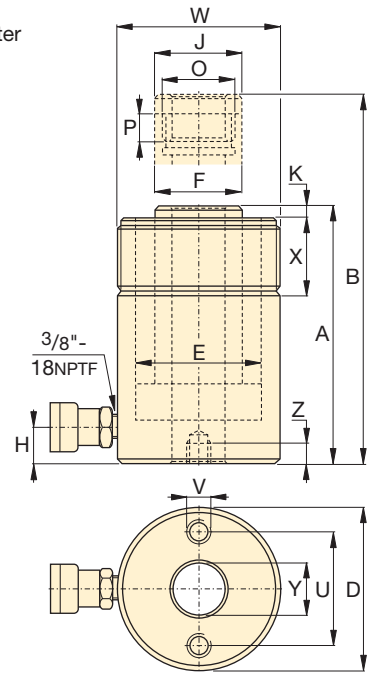


Smooth hollow saddles are standard on all RCH-models (12-ton models are not equipped with saddles).

RCH-121 and RCH-1211 have a 1.88" diameter boss that protrudes 0.25" 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

Collap. Height A (in)	Ext. Height B (in)	Outside Diam. D (in)	Cyl. Bore Diam. E (in)	Plngr. Diam. F (in)	Cyl. Base to Advance Port H (in)	Saddle Diameter J (in)	Saddle Protrusion from Plngr. K (in)	Plunger Internal Thread O (in)	Plunger Thread Length P (in)	Collar Thread W (in)	Collar Thread Length X (in)	Center Hole Diam. 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	.77	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 operation 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**

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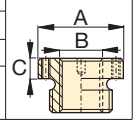
▼ *Double-acting hollow plunger cylinders are applied for bridge launching systems.*

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

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	1¼"-7	.38	
	RRH-603, 606, 6010	HP-5016	3.61	1⅝"-5½	.50	
	RRH-1001, 1003, RRH-1006, 10010	HP-10016	4.97	2½"-8	.51	



Smooth hollow saddles are standard on all RRH-models.

RRH Series

Capacity:
30-150 tons

Stroke:
1.50-10.13 inches

Center Hole Diameter:
1.31-3.13 inches

Maximum Operating Pressure:
10,000 psi

Hoses

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

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Pump Selection

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

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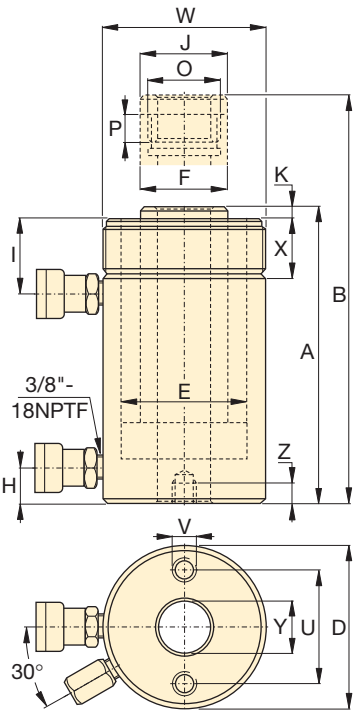

Base Mounting Hole Dimensions (in)			
Model Number	Bolt Circle U	Thread V	Thread Depth Z
RRH-307	3.63	⅜"- 16	.62
RRH-3010	3.63	⅜"- 16	.62
RRH-603	5.12	½"- 13	.55
RRH-606	5.12	½"- 13	.55
RRH-6010	5.12	½"- 13	.55
RRH-1001	7.00	⅝"- 11	.75
RRH-1003	7.00	⅝"- 11	.75
RRH-1006	7.00	⅝"- 11	.75
RRH-10010	7.00	⅝"- 11	.75
RRH-1508	–	–	–

Collap. Height A (in)	Ext. Height B (in)	Out. Diam. D (in)	Cyl. Bore Diam. E (in)	Plngr. Diam. F (in)	Cyl. Base to Adv. Port H (in)	Cyl. Top to Return Port I (in)	Saddle Diam. J (in)	Saddle Protrusion from Plngr. K (in)	Thread O (in)	Plunger Thread Length P (in)	Collar Thread W (in)	Collar Thread Length X (in)	Center Hole Diam. 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	4½"-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	4½"-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	2¾"-16	.75	6¼"-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	2¾"-16	.75	6¼"-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	2¾"-16	.75	6¼"-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	8⅜"-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	8⅜"-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	8⅜"-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	4¼"-12	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

Speed Chart

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

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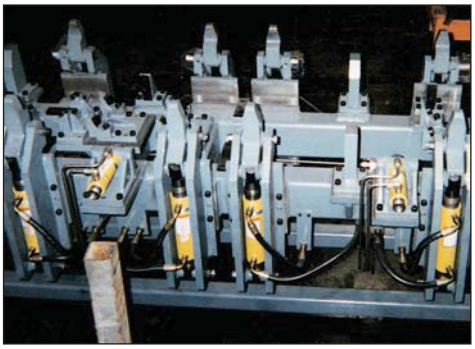
Golden Ring Design

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

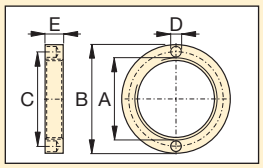
- **Designed for long life, the best choice for production applications**
- **Unique mounting configurations simplify fixturing**
- **Baked enamel finish for increased corrosion resistance**
- **Double-acting operation develops force in both directions, providing maximum versatility**
- **Plunger wiper reduces contamination, extending cylinder life**

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

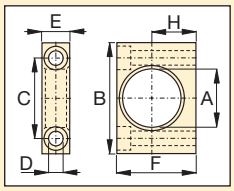


Cylinder Capacity (tons)	Stroke (in)	Model Number	Max. Cylinder Capacity (tons) Advance	Max. Cylinder Capacity (tons) Retract	Cylinder Effective Area (in^2) Advance	Cylinder Effective Area (in^2) Retract	Oil Capacity (in^3) Advance	Oil Capacity (in^3) Retract	Collap. Height A (in)	Ext. Height B (in)	Body Length C (in)	Outside Diam. D (in)	Cylinder Bore Diam. E (in)	Plunger Diam. F (in)
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

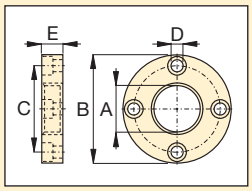
▼ RD CYLINDER ATTACHMENTS



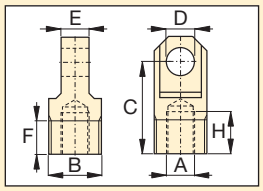
Retainer Nut
For locking foot or flange mountings. Tightens onto cylinder collar threads (included with foot and flange mounting kits)



Foot Mounting
Mounts onto cylinder collar



Flange Mounting
Mounts onto cylinder collar



Clevis Eye
Threads onto plunger or into cylinder base

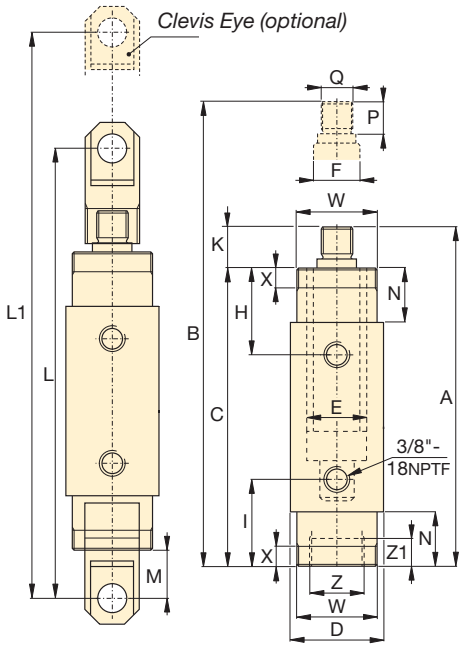
Model Number	RD-Cyl: (tons)	Dimensions (in) A	B	C	D	E	F	H
Foot Mounting with Retainer Nut								
AD-141	**4**	1.38	3.00	2.00	.41	.76	2.25	1.25
AD-171	**9**	2.00	4.00	2.88	.53	1.00	3.25	1.75
AD-181	**16**	2.63	5.00	3.76	.78	1.38	4.00	2.06
AD-191	**25**	3.25	6.26	4.62	1.03	1.76	4.88	2.50
Flange Mounting 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 inches

Maximum Operating Pressure:
10,000 psi



Top to Ret. Port H (in)	Bottom to Adv. Port I (in)	Plunger Protrusion K (in)	Clevis Eye Mounting Dimensions L (in)	L1 (in)	M (in)	Neck Length N (in)	Plunger Thread Length P (in)	Plunger External Thread Q (in)	Cylinder Mounting Dimensions (in) Collar Thread W	Collar Thread Length X	Int. Base Thread Z	Int. Base Thread Length Z1	Wt. (lbs)	Model Number
1.88	1.88	.94	10.12	11.25	1.61	1.13	.75	1/2"-20	1 3/8"-12	.44	1 1/8"-20	.35	4.8	**RD-41**
1.88	1.88	.94	12.12	15.25	1.61	1.13	.75	1/2"-20	1 3/8"-12	.44	1 1/8"-20	.35	6.4	**RD-43**
1.88	1.88	.94	15.12	21.25	1.61	1.13	.75	1/2"-20	1 3/8"-12	.44	1 1/8"-20	.35	9.0	**RD-46**
2.27	2.27	.98	11.61	12.76	1.50	1.50	.75	3/4"-16	2"-12	.56	1 11/16"-18	.55	9.0	**RD-91**
2.27	2.27	.98	13.66	16.79	1.50	1.50	.75	3/4"-16	2"-12	.56	1 11/16"-18	.55	11.0	**RD-93**
2.27	2.27	.98	16.66	22.79	1.50	1.50	.75	3/4"-16	2"-12	.56	1 11/16"-18	.55	14.0	**RD-96**
2.27	2.27	.98	20.66	30.79	1.50	1.50	.75	3/4"-16	2"-12	.56	1 11/16"-18	.55	19.0	**RD-910**
2.90	2.90	1.19	19.32	25.57	2.05	2.13	1.00	1 1/8"-12	2 5/8"-16	.88	2 3/16"-16	.94	22.0	**RD-166**
2.90	2.90	1.19	23.32	33.57	2.05	2.13	1.00	1 1/8"-12	2 5/8"-16	.88	2 3/16"-16	.94	29.0	**RD-1610**
3.50	3.50	1.06	20.86	27.11	2.09	2.75	1.00	1 1/2"-12	3 1/4"-16	1.13	2 3/4"-16	1.02	36.0	**RD-256**
3.50	3.50	1.08	24.86	35.11	2.09	2.75	1.00	1 1/2"-12	3 1/4"-16	1.13	2 3/4"-16	1.02	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**

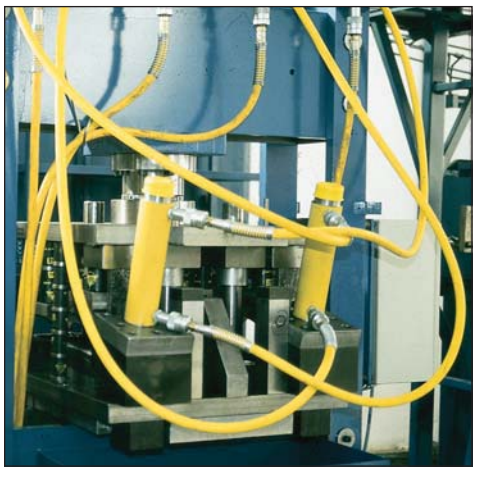
Pump Selection
A double-acting cylinder must be powered by a pump with a 4-way valve.
Page: 109

Saddles
RR-Series cylinders up to 75-ton have plunger thread for installation of CAT-Series tilt saddles.
Page: 33

Optimum Performance
Enerpac's range of ZU4 electric pumps, fitted with manual or solenoid operated 4-way valves, offer optimum combinations with RR cylinders.
Page: 80

▼ *These long stroke RR-cylinders are attached to a sliding and guiding system pulling the arched roof assembly of Athen's Olympic Stadium step by step into the final position.*

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



RR Series

Capacity:
10-500 tons

Stroke:
2.25-48.00 inches

Maximum Operating Pressure:
10,000 psi

▼ QUICK SELECTION CHART

For complete technical information see next page.

Cylinder Capacity (tons)	Stroke (in)	Model Number	Cylinder Effective Area (in^2) Push	Cylinder Effective Area (in^2) Pull	Oil Capacity (in^3) Push	Oil Capacity (in^3) Pull	Collap. Height (in)
10	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	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	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	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	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	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	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	1,061	528.00	36.13
	36.00	RR-20036	44.21	22.50	1,592	792.00	48.13
	48.00	RR-20048	44.21	22.50	2,122	1,056	60.13
300	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	1,277	684.00	31.13
	24.00	RR-30024	70.93	38.00	1,702	912.00	37.13
	36.00	RR-30036	70.93	38.00	2,553	1,368	49.13
	48.00	RR-30048	70.93	38.00	3,405	1,824	61.13
400	6.00	RR-4006	95.09	51.00	570.51	306.00	21.19
	12.00	RR-40012	95.09	51.00	1,141	612.00	27.19
	18.00	RR-40018	95.09	51.00	1,712	918.00	33.19
	24.00	RR-40024	95.09	51.00	2,282	1,224	39.19
	36.00	RR-40036	95.09	51.00	3,423	1,836	51.19
	48.00	RR-40048	95.09	51.00	4,564	2,448	63.19
500	6.00	RR-5006	113.15	63.00	678	378.00	22.75
	12.00	RR-50012	113.15	63.00	1,358	756.00	28.75
	18.00	RR-50018	113.15	63.00	2,037	1,134	34.75
	24.00	RR-50024	113.15	63.00	2,716	1,512	40.75
	36.00	RR-50036	113.15	63.00	4,074	2,264	52.75
	48.00	RR-50048	113.15	63.00	5,431	3,024	64.75

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

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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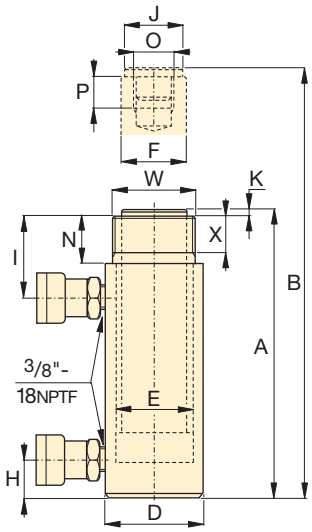
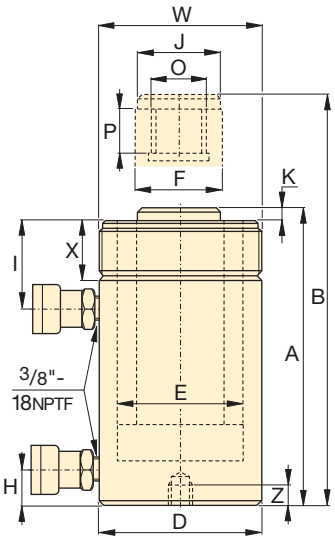
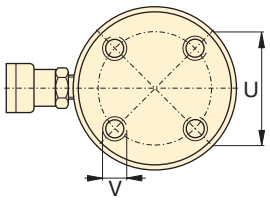


RR-1010 to RR-3014 models

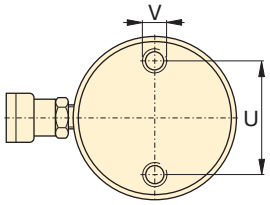


RR-506 to RR-50048 models



RR-1006 to RR-30048

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



RR-4006 to RR-50048

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

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

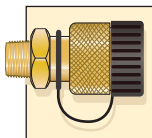
RR-308/3014: 4000 psi
RR-506/5013/5020: 6950 psi
RR-756/7513: 7200 psi

◀ For full features see page 32.

Cylinder Capacity (ton)	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	Collap. Height A (in)	Ext. Height B (in)	Outside Diam. D (in)
10	10.00	RR-1010*	11.1	4.0	2.23	.80	22.33	8.00	16.13	26.13	2.88
	12.00	RR-1012*	11.1	4.0	2.23	.80	26.80	9.00	18.00	30.00	2.88
30	8.25	RR-308*	32.5	6.0	6.51	3.00	53.67	25.00	15.25	23.50	4.00
	14.50	RR-3014*	32.5	6.0	6.51	3.00	92.70	43.00	21.63	36.13	4.00
50	6.13	RR-506	55.3	11.8	11.06	3.40	67.77	21.00	13.06	19.19	5.00
	13.13	RR-5013	55.3	11.8	11.06	3.40	145.17	44.00	20.06	33.19	5.00
	20.13	RR-5020	55.3	11.8	11.06	3.40	222.56	68.00	28.88	49.00	5.00
75	6.13	RR-756	79.6	17.6	15.92	4.90	97.58	29.00	13.69	19.81	5.75
	13.13	RR-7513	79.6	17.6	15.92	4.90	209.00	64.00	20.69	33.81	5.75
100	6.63	RR-1006	103.2	48.0	20.65	9.60	136.93	63.00	14.06	20.69	7.00
	13.13	RR-10013	103.2	48.0	20.65	9.60	271.17	126.00	20.63	33.75	7.00
	18.13	RR-10018	103.2	48.0	20.65	9.60	374.44	174.00	27.06	45.19	7.00
150	2.25	RR-1502	153.5	30.0	30.71	14.80	69.11	33.00	7.72	9.96	8.00
	6.13	RR-1506	153.5	30.0	30.71	14.80	188.28	91.00	15.19	21.31	8.00
	13.13	RR-15013	153.5	30.0	30.71	14.80	403.27	194.00	22.20	35.31	8.00
	32.13	RR-15032	153.5	30.0	30.71	14.80	986.84	475.00	43.94	76.06	8.00
200	6.00	RR-2006	221.0	112.5	44.21	22.50	265.28	135.00	16.94	22.94	9.75
	13.00	RR-20013	221.0	112.5	44.21	22.50	574.78	293.00	23.94	36.94	9.75
	18.00	RR-20018	221.0	112.5	44.21	22.50	795.85	396.00	30.13	48.13	9.75
	24.00	RR-20024	221.0	112.5	44.21	22.50	1,061	528.00	36.13	60.13	9.75
	36.00	RR-20036	221.0	112.5	44.21	22.50	1,592	792.00	48.13	84.13	9.75
	48.00	RR-20048	221.0	112.5	44.21	22.50	2,122	1,056	60.13	108.13	9.75
300	6.00	RR-3006	354.6	190.0	70.93	38.00	425.56	228.00	19.13	25.13	12.25
	12.00	RR-30012	354.6	190.0	70.93	38.00	851.12	456.00	25.13	37.13	12.25
	18.00	RR-30018	354.6	190.0	70.93	38.00	1,277	684.00	31.13	49.13	12.25
	24.00	RR-30024	354.6	190.0	70.93	38.00	1,702	912.00	37.13	61.13	12.25
	36.00	RR-30036	354.6	190.0	70.93	38.00	2,553	1368	49.13	85.13	12.25
	48.00	RR-30048	354.6	190.0	70.93	38.00	3,405	1824	61.13	109.13	12.25
400	6.00	RR-4006	475.4	255.0	95.09	51.00	570.51	306.00	21.19	27.19	14.13
	12.00	RR-40012	475.4	255.0	95.09	51.00	1,141	612.00	27.19	39.19	14.13
	18.00	RR-40018	475.4	255.0	95.09	51.00	1,712	918.00	33.19	51.19	14.13
	24.00	RR-40024	475.4	255.0	95.09	51.00	2,282	1224	39.19	63.19	14.13
	36.00	RR-40036	475.4	255.0	95.09	51.00	3,423	1836	51.19	87.19	14.13
	48.00	RR-40048	475.4	255.0	95.09	51.00	4,564	2448	63.19	111.19	14.13
500	6.00	RR-5006	565.7	315.0	113.15	63.00	678.92	378.00	22.75	28.75	15.63
	12.00	RR-50012	565.7	315.0	113.15	63.00	1,358	756.00	28.75	40.75	15.63
	18.00	RR-50018	565.7	315.0	113.15	63.00	2,037	1134	34.75	52.75	15.63
	24.00	RR-50024	565.7	315.0	113.15	63.00	2,716	1512	40.75	64.75	15.63
	36.00	RR-50036	565.7	315.0	113.15	63.00	4,074	2268	52.75	88.75	15.63
	48.00	RR-50048	565.7	315.0	113.15	63.00	5,431	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.

Double-Acting Long Stroke Cylinders



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

Capacity:
10-500 tons

Stroke:
2.25-48.00 inches

Maximum Operating Pressure:
10,000 psi

RR Series

Cylinder Bore Diameter E (in)	Plunger Diameter F (in)	Base to Adv. Port H (in)	Top to Return Port I (in)	Saddle Diameter J (in)	Saddle Protrusion from Plngr. K (in)	Plunger Internal Thread O (in)	Plunger Thread Length P (in)	Base Mounting Holes: Bolt Cir. Diam. U (in)	Base Mounting Holes: Thread V (in)	Base Mounting Holes: Thread Depth Z (in)	Collar Thread W (in)	Collar Thread Length X (in)	Weight (lbs)	Model Number
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-1506, CLSG-2006, CLSG-506**

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**
- **Base mounting holes standard on all models**
- **Plunger wiper reduces contamination, 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 fullrange of gauges.

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Optimum Performance

Enerpac's range of *Z-Class* 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 lock nut offer the solution to lift the first few inches.

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CLSG Series

Capacity:
50-1,000 tons

Stroke:
1.97-11.81 inches

Maximum Operating Pressure:
10,000 psi

▼ QUICK SELECTION CHART

For complete technical information see next page.

Cylinder Capacity (tons) [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height (in)	Weight (lbs)
50 [59.1]	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 [102.9]	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 [153.9]	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]	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 [284.0]	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 [353.6]	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 [433.9]	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 [566.3]	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 [662.9]	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 [911.6]	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

Standard Features

- Interchangeable, hardened grooved saddles
- CR-400 Coupler and dust cap
- Top and side mount lifting eye capability
- All cylinders meet ASME B-30.1 and ISO 10100 Standards

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

When lifting an unbalanced load **Enerpac Synchronous Lift Systems** can be the solution with multiple lift point capabilities from 4 to 64 points. See our "Yellow Pages" for multi-cylinder set-ups.

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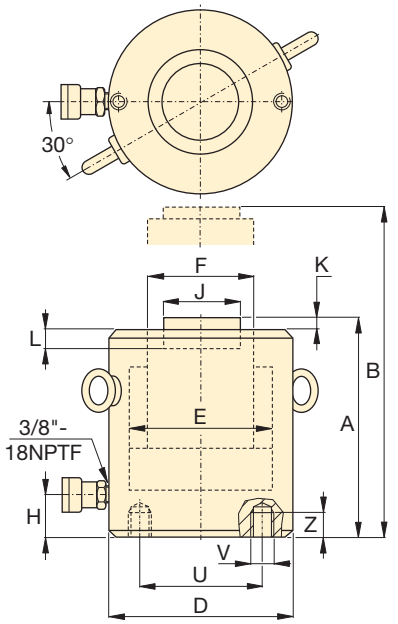
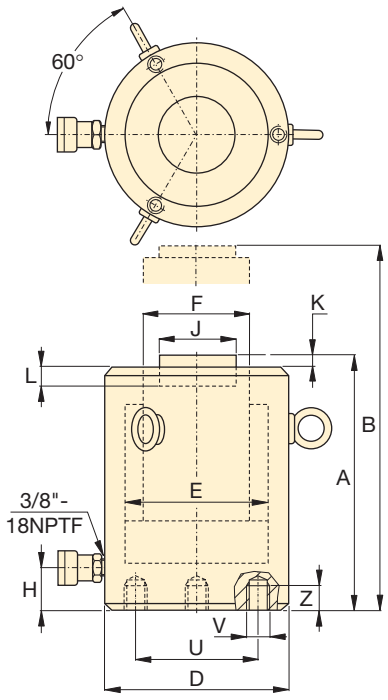
Mounting Hole Orientation

Top mounting hole orientation is maintained to port location. Base mounting hole orientation is not maintained to port location.



CLSG-50 to CLSG-150 models

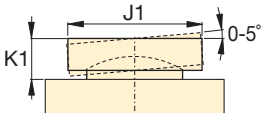


CLSG-200 to CLSG-1000 models

◀ For full features see page 36.

Cylinder Capacity (tons) [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height A (in)	Extended Height B (in)	Outside Diam. D (in)
50 [59.1]	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 [102.9]	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 [153.9]	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]	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 [284.0]	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 [353.6]	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 [433.9]	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 [566.3]	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 [662.9]	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 [911.6]	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 inches

Maximum Operating Pressure:
10,000 psi

CLSG Series

Cylinder Bore Diam. E (in)	Plunger Diam. F (in)	Base to Advance Port H (in)	Standard Saddle Diam. J (in)	Saddle Protrusion from Plngr. K (in)	Depth of Plunger Hole L (in)	Base Mounting Holes			Weight (lbs)	Model Number	* Optional Tilt Saddle		
						Bolt Cir. Diam. U (in)	Thread V (mm)	Thread Depth Z (in)			Diam. 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: **CLRG-506, CLRG-2006, CLRG-1506**

Double-Acting Power Lifters

- **Integral stop ring provides piston blow-out protection**
- **Double-acting for positive retraction**
- **Baked enamel outside finish and plated pistons provide superior corrosion resistance**
- **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, extending cylinder life**

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 Z-Class electric pumps, fitted with manual or solenoid operated 4-way valves, offer optimum combinations with CLRG cylinders.

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

▼ *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 inches

Maximum Operating Pressure:
10,000 psi

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

Cylinder Capacity (tons)	Stroke (in)	Model Number	Cylinder Effective Area (in²) Push	Cylinder Effective Area (in²) Pull	Oil Capacity (in³) Push	Oil Capacity (in³) Pull	Collapsed Height (in)
50	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	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	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	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	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	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	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	1,025	354.18	24.59
500	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	1,338	453.22	26.34
600	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	1,566	540.79	26.73
800	1.97	CLRG-8002	182.32	59.99	358.91	118.09	18.66
	5.91	CLRG-8006	182.32	59.99	1,077	354.28	22.60
	11.81	CLRG-80012	182.32	59.99	2,153	708.57	28.50
1000	1.97	CLRG-10002	227.19	83.97	447.23	165.29	22.20
	5.91	CLRG-10006	227.19	83.97	1,342	495.87	26.14
	11.81	CLRG-100012	227.19	83.97	2,683	991.75	32.05

Standard Features
- Interchangeable, hardened grooved saddles
- CR-400 Coupler and dust cap
- Top and side mount lifting eye capability
- All cylinders meet ASME B-30.1 and ISO 10100 Standards

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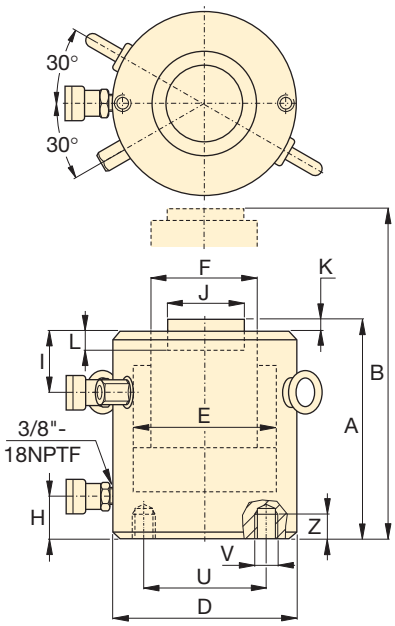
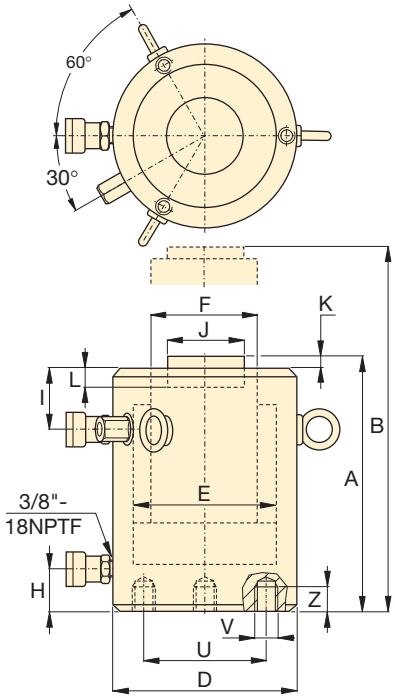
Additional Stroke Lengths
Models above 150 tons are also available with standard stroke lengths of 4, 8 and 10 inches. Please contact Enerpac for ordering information.



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 (mm)	Minimum 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

Mounting Hole Orientation

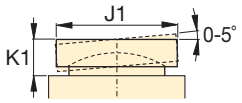
Top mounting hole orientation is maintained to port location. Base mounting hole orientation is not maintained to port location.

◀ For full features see page 40.

Cylinder Capacity (tons)	Stroke (in)	Model Number	Maximum Cylinder Capacity (tons) Push	Maximum 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
50	1.97	CLRG-502	59.1	29	11.81	5.85	23.25	11.51
	3.94	CLRG-504	59.1	29	11.81	5.85	46.50	23.02
	5.91	CLRG-506	59.1	29	11.81	5.85	69.75	34.52
	7.87	CLRG-508	59.1	29	11.81	5.85	93.00	46.03
	9.84	CLRG-5010	59.1	29	11.81	5.85	116.25	57.54
	11.81	CLRG-5012	59.1	29	11.81	5.85	139.50	69.05
100	1.97	CLRG-1002	102.9	48	20.57	9.59	40.50	18.87
	3.94	CLRG-1004	102.9	48	20.57	9.59	81.00	37.74
	5.91	CLRG-1006	102.9	48	20.57	9.59	121.50	56.61
	7.87	CLRG-1008	102.9	48	20.57	9.59	162.00	75.49
	9.84	CLRG-10010	102.9	48	20.57	9.59	202.50	94.36
	11.81	CLRG-10012	102.9	48	20.57	9.59	242.99	113.23
150	1.97	CLRG-1502	153.9	75	30.78	14.96	60.58	29.44
	3.94	CLRG-1504	153.9	75	30.78	14.96	121.17	58.88
	5.91	CLRG-1506	153.9	75	30.78	14.96	181.75	88.32
	7.87	CLRG-1508	153.9	75	30.78	14.96	242.33	117.76
	9.84	CLRG-15010	153.9	75	30.78	14.96	302.92	147.20
	11.81	CLRG-15012	153.9	75	30.78	14.96	363.50	176.64
200	1.97	CLRG-2002	206.1	98	41.22	19.68	81.13	38.74
	5.91	CLRG-2006	206.1	98	41.22	19.68	243.40	116.23
	11.81	CLRG-20012	206.1	98	41.22	19.68	486.79	232.46
250	1.97	CLRG-2502	284.0	118	56.80	23.65	111.81	46.56
	5.91	CLRG-2506	284.0	118	56.80	23.65	335.42	139.69
	11.81	CLRG-25012	284.0	118	56.80	23.65	670.84	279.39
300	1.97	CLRG-3002	353.6	117	70.71	23.46	139.19	46.18
	5.91	CLRG-3006	353.6	117	70.71	23.46	417.56	138.55
	11.81	CLRG-30012	353.6	117	70.71	23.46	835.11	277.10
400	1.97	CLRG-4002	433.9	150	86.79	29.99	170.84	59.03
	5.91	CLRG-4006	433.9	150	86.79	29.99	512.51	177.09
	11.81	CLRG-40012	433.9	150	86.79	29.99	1,025	354.18
500	1.97	CLRG-5002	566.3	192	113.25	38.37	222.92	75.54
	5.91	CLRG-5006	566.3	192	113.25	38.37	668.77	226.61
	11.81	CLRG-50012	566.3	192	113.25	38.37	1,338	453.22
600	1.97	CLRG-6002	662.9	229	132.57	45.79	260.97	90.13
	5.91	CLRG-6006	662.9	229	132.57	45.79	782.90	270.39
	11.81	CLRG-60012	662.9	229	132.57	45.79	1,566	540.79
800	1.97	CLRG-8002	911.6	300	182.32	59.99	358.91	118.09
	5.91	CLRG-8006	911.6	300	182.32	59.99	1,077	354.28
	11.81	CLRG-80012	911.6	300	182.32	59.99	2,153	708.57
1000	1.97	CLRG-10002	1136	420	227.19	83.97	447.23	165.29
	5.91	CLRG-10006	1136	420	227.19	83.97	1,342	495.87
	11.81	CLRG-100012	1136	420	227.19	83.97	2,683	991.75

Double-Acting, High Tonnage Cylinders

*** Optional Tilt Saddle**



Capacity:
50-1,000 tons

Stroke:
1.97-11.81 inches

Maximum Operating Pressure:
10,000 psi

CLRG Series

Collap. Height A (in)	Ext. Height B (in)	Outside Diam. D (in)	Cyl. Bore Diam. E (in)	Plunger Diam. F (in)	Base to Advance Port H (in)	Top to Retract Port I (in)	Standard Saddle Diam. J (in)	Saddle Protrusion from Plngr. K (in)	Depth of Plunger Hole L (in)	Weight (lbs)	Model Number	*Optional Tilt Saddle Diam. 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-1006, CLL-2506, CLL-1506, CLL-506**

To Secure Loads Mechanically

- **Safety Lock Nut for mechanical load holding**
- **Baked enamel outside finish and plated pistons provide superior corrosion resistance**
- **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 lock nut offer the solution to lift the first few inches.

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▼ *For this curved bridge, CLL-Series 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 inches

Maximum Operating Pressure:
10,000 psi

▼ QUICK SELECTION CHART

For complete technical information see next page.

Cylinder Capacity (tons) [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)	Collapsed Height (in)	Weight (lbs)
50 [59.1]	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 [102.9]	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 [153.9]	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]	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 [284.0]	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 [353.6]	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 [433.9]	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 [566.3]	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 [662.9]	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 [911.6]	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.

Lifting an Unbalanced Load?

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

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Speed Chart

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

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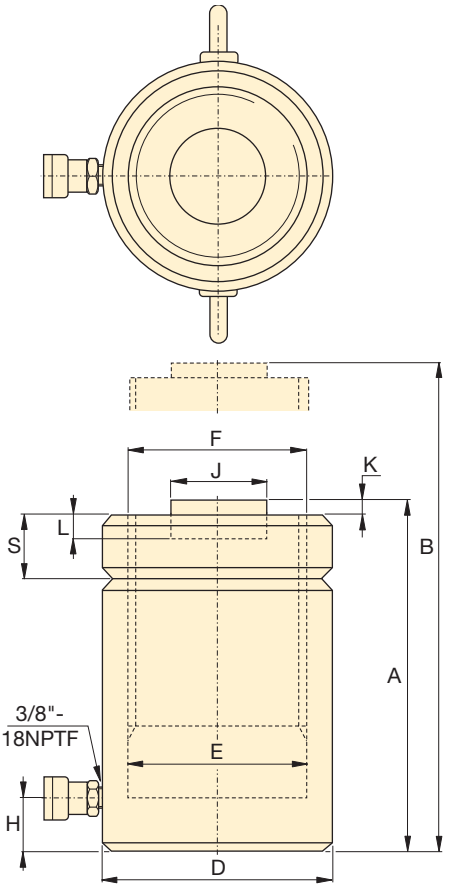
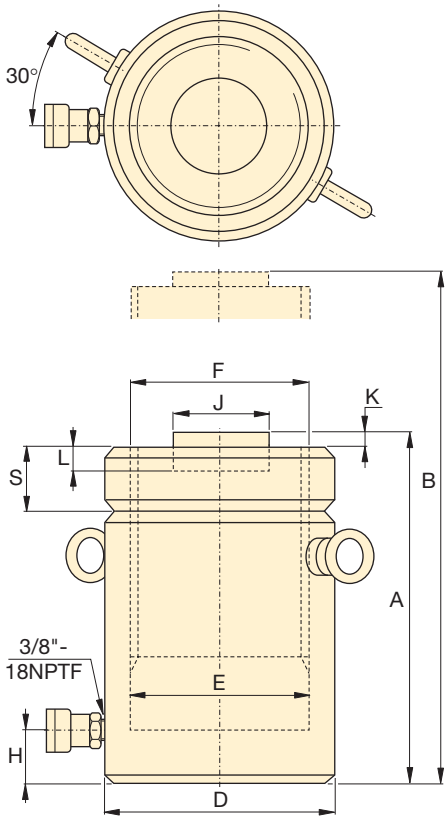
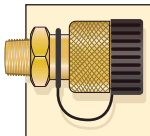


CLL-50 to CLL-250 models



CLL-300 to CLL-1000 models



Coupler Included!

CR-400 coupler included on all models.

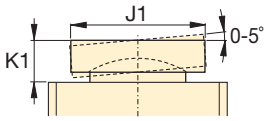
Fits all HC-Series hoses.

◀ For full features see page 44.

Cylinder Capacity (tons) [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in^2)	Oil Capacity (in^3)
50 [59.1]	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 [102.9]	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 [153.9]	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]	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 [284.0]	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 [353.6]	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 [433.9]	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 [566.3]	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 [662.9]	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 [911.6]	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 inches

Maximum Operating Pressure:
10,000 psi

CLL Series

Collap. Height A (in)	Ext. Height B (in)	Outside Diam. D (in)	Cyl. Bore Diam. E (in)	Plunger Diameter (threaded) F (mm)	Base to Advance Port H (in)	Stand. Saddle Diam. J (in)	Saddle Protrusion from Plgr. K (in)	Depth of Plunger Hole L (in)	Lock Nut Height S (in)	Weight (lbs)	Model Number	* Optional Tilt Saddle Diam. J1 (in)	* Optional Tilt Saddle Height K1 (in)	* Optional Tilt Saddle 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	10.83	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	10.83	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	10.83	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**

▼ Typical lay-out for a 4 point synchronous lifting system

Solutions for multiple lifting points

- **Multiple lifting points, 10 to 1000 ton per lifting point**
- **High accuracy (+/- .040 in.)**
- **PLC-control, user friendly touch screen**
- **Automatic data storage, reporting and graphical presentation**
- **Secure system with warning and stop features**

System Options:

- **Precise load and force measurement up to 1% of full scale**
- **Digital sensors provide:**
  - **load read-out by lifting point and system total**
  - **two axis differential control to level structures**
- **Oil heater or heat exchanger for extreme conditions**

Typical Synchronous Lifting Applications

- Bridge lifting, repositioning, and launching
- Heavy equipment lifting and lowering
- Structure leveling
- Oil platforms lifting and weighing
- Structural testing
- Tunnel jacking and pushing

See **www.enerpac.com** and Enerpac in Action for more application information.

Heavy Lifting Cylinders

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

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◀ *Lifting a 3500 ton dragline was successfully done with an Enerpac synchronous lifting system. This operation provided for exact alignment of the bearing on the rail.*

Synchronous Lifting Applications

The Synchronous Lift system uses feedback from multiple sensors to control the lifting, lowering and positioning of any large, heavy or complex structure, regardless of weight distribution. Synchronous lifting reduces the risk of bending, twisting or tilting, due to uneven weight distribution or load-shifts between the lift points.

A PLC controller monitors each lift position stroke and optional load transducers located at each lift point. By varying the oil flow to each lift point, the system maintains very accurate positional control. This control maintains structural integrity and can increase the productivity and safety of the lift, by eliminating manual intervention in the event of a load-shift or other problem.

Programmable and failsafe monitoring and safety alarms include operating parameters and hydraulic conditions, such as oil-level and over-temperature. Programmable data recording and "differential-lift" options allow a load to be manipulated into a pre-set position.

SLS Series

Capacity per lifting point:
10-1000 tons

Maximum Stroke:
19.6 inches

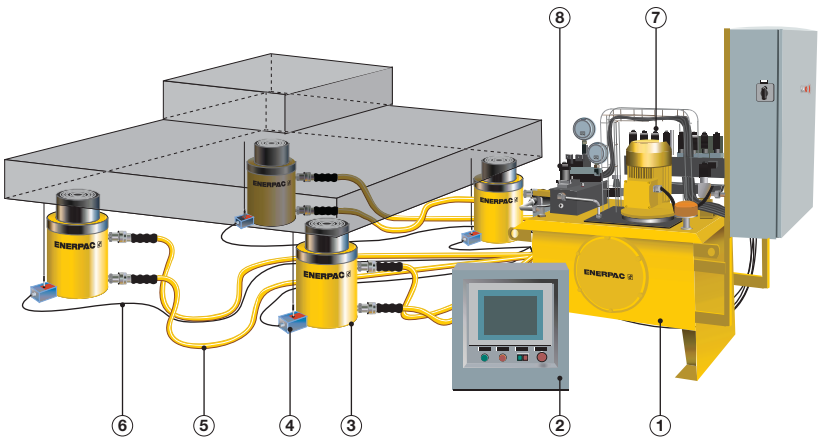
Accuracy:
± .040 inch

Maximum Operating Pressure:
10,000 psi

Contact Enerpac!

Contact your distributor or the Enerpac office nearest to you for advice and technical assistance in the layout of your ideal Lift System. You can also ask Enerpac for assistance by e-mail at **info@enerpac.com**.

Typical lay-out for a 4 point synchronous lifting system.



① Hydraulic pump
② PLC-control with touch screen
③ Hydraulic cylinders
④ Stroke sensors
⑤ Hydraulic hoses
⑥ Sensor cables
⑦ Solenoid control valves
⑧ Pressure transducer

▼ *Enerpac synchronous lifting system with PLC-control unit used to lift temporary support towers during bridge construction.*

▼ 250 Ton Double-Acting Aluminium Stage-Lift Cylinder (with optional stroke sensor)

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

Solutions for Longer Distances

Staged-Movement Systems

Staged-Movement Systems overcome the usual limitation of distance imposed by the cylinder's plunger stroke length. Large objects can be moved and held for maintenance where other movement methods are impractical. Staged-movement systems require double-acting cylinders.

Typical Staged-Movement Applications

- Vessel jacking and lowering
- Structure lifting and leveling
- Multi-point lifts
- Distance movements longer than cylinder strokes

See **www.enerpac.com** and Enerpac in Action for more application information.

3 Examples of Staged-Movement System

1 Move and Pin
2 Lift and Crib
3 Threaded Bar

1 Move and Pin

▼ *PLC-controlled hydraulic movement: Enerpac stage lift systems lift and lower the umbrella deck on the world's largest concrete block builder with .25 inch accuracy, provided by 30 hydraulic climbing units in an integrated hydraulic system.*

Staged-Movement Systems

Staged-movement systems are used in applications requiring movement of large and heavy loads over long distances in vertical or horizontal planes. Very high accuracy is achieved by using PLC computers to synchronize control of lift points. Digital sensors provide for accurate control of lift points up to 1 km (.6 miles) from controller.

Three basic types of Staged-movement systems are: the *Move and Pin* method, *Lift and Crib* method, and *Threaded Bar* method. The *Move and Pin* method can be used in either the vertical or horizontal planes. *Lift and Crib* and *Threaded Bar* methods are typically limited to lifting and lowering in the vertical planes.

A basic *Lift and Crib* system such as the Enerpac BLS, consists of special double acting cylinders with integral tilt-saddles and load platens allowing easy cribbing placement.

BLS, SL Series

Capacity per lift point:
10-1000 tons

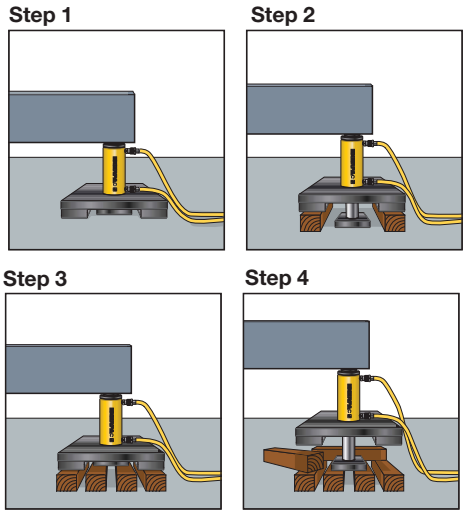
Stroke per stage:
2-48 inches

Maximum Operating Pressure:
10,000 psi

2 Lift and Crib

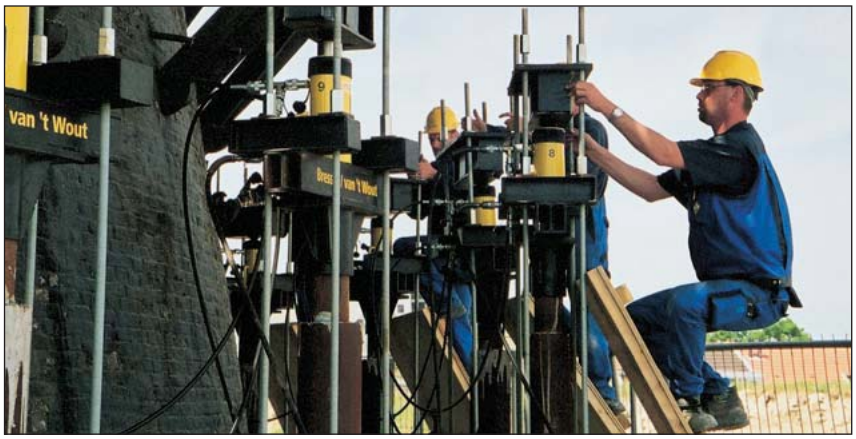
▼ *This 180 foot long absorber was hydraulically lifted and lowered prior to transportation by ship. The Enerpac PLC-controlled stage-lift system was the ideal solution because the use of cranes was not possible.*

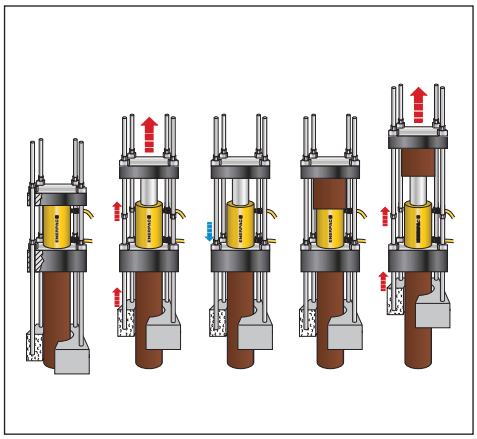
Lift and Crib Lifting Sequence



3 Threaded Bar

▼ *Stage-Lift System used for lifting a windmill.*





▼ 4 Point SyncHoist System featuring premium control package

Accurate Hoisting and Load Positioning with a Crane

- **High precision load maneuvering, vertically and rotationally – using one crane**
- **Reduces the risk of damage from oscillations due to sudden crane starts/stops**
- **Improves operating speed and worker safety**
- **Optional intelligent hydraulics turn lifting into high accuracy hoisting and load positioning system**
- **High accuracy (+/- .040 in.)**
- **10,000 psi double-acting push/pull cylinders with parachute valves for added safety in case of hose rupture or coupler damage**
- **May reduce cost when compared to conventional load positioning methods**

Typical SyncHoist Functions and Applications

Functions

- High precision load positioning
- Pre-programmed positioning, tilting and aligning
- Counterweighing – determining center of gravity

Applications

- Positioning of roof sections, concrete elements, steel structures
- Positioning of turbines, transformers, fuel rods
- Precise machinery loading, mill rod changes, bearing changes
- Precise positioning of pipe lines, blow out valves
- Positioning and aligning of ship segments prior to assembly

See **www.enerpac.com** and Enerpac in Action for more application information.

Contact Enerpac!

Contact your distributor or the Enerpac office nearest to you for advice and technical assistance in the layout of your ideal SyncHoist System. You can also ask Enerpac for assistance by e-mail at **info@enerpac.com**.

◀ *An Enerpac SyncHoist system is used to place a 660 ton ship module, allowing the positioning to be done with only one crane.*

Synchronous Hoist Systems

Synchronous Hoisting takes the advantages of Synchronous Lifting and applies them to crane applications that use mobile, crawler, over-head, boom or gantry cranes. By placing special, long-stroke, hydraulic cylinders directly in the lifting slings, controlling the position of the load becomes easier and safer. Any crane application that requires the precise movement of heavy loads may benefit by this system.

The concept of this patented system is to allow the precise positioning of a load suspended from a crane, eliminating the need for additional cranes, block-and-tackles, hoists and other peripheral devices. By eliminating these other devices, the lift can be performed safely and more cost effectively.

Available in three levels of control, a premium system with computer control allows pre-programmed pick and placement points, "real-time" load monitoring for each sling and pre-programmed alarms. Two levels of manual control provide stroke control and information monitoring and display.

SHS Series

Capacity per lifting point:
60-110 tons

Maximum Stroke:
59 inches

Maximum Operating Pressure:
10,000 psi

Lifting an Unbalanced Load

Visit **www.enerpac.com** to learn more about SyncHoist. Download the animation to see how it works step-by-step.

Enerpac SyncHoist Systems

System Load Capacity	**240 ton**	**320 ton**	**440 ton**
Max. cylinder load [1]	4x60 ton	4x80 ton	4x110 ton
Number of lifting points [2]	4	4	4
System reach	59 inches	59 inches	59 inches
Cylinder Configuration			
Push force @ 1300 psi	10.5 ton	14.0 ton	22.0 ton
Pull force @ 10,000 psi	60.0 ton	80.0 ton	110.0 ton
Plunger stroke [2]	59 inches	59 inches	59 inches
Pump Single-Stage			
Oil flow at 10,000 psi	240 in^3/min	240 in^3/min	240 in^3/min

1) Subject to angle and position of lifting cylinders.
2) Each cylinder equiped with parachute valve for added safety in event of hose/coupler damage.
Note: Enerpac SyncHoist comes standard with 4 lifting points. In the event more or less lifting points are required, contact your local Enerpac representative.

▼ *Roof lifting using a 4-point Enerpac hydraulic SyncHoist System.*

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

JH, JHA
Series

Capacity:
7-150 tons

Stroke:
3.00-6.13 inches

Maximum Operating Pressure:
10,000 psi

- **All-directional operation on 7, 15 and 35 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**

Lifting Wedge and Machine Lifts

Ideal to lift the load the first few inches. The **LW-16** Lifting Wedge requires a very small access gap of only .39 in.

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Load Skates

For moving heavy loads easily and safely.

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Style	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)
Aluminum 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
Steel Jack	**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**

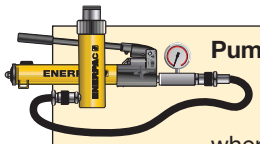
EBJ Series

Capacity:
1.5-100 tons

Stroke:
3.03-20.00 inches

- **Lower handle effort reduces operator fatigue**
- **Fully serviceable**
- **Cast beam and cast pump linkage**
- **Pumping handle included on all models**
- **Safety relief valve to prevent overload**
- **Automatic by-pass port to prevent over-extension**
- **Wiper seal for extended life**
- **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

▼ Shown from left to right: **P-142ALSS, P-392ALSS, V-152NV, V-66NV, RC256NV, RC-106NV, RC-53NV**

Maximum Corrosion Resistance

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

Use Enerpac **Extreme Environment Products** in wet environments such as food processing, pulp and paper, mining, construction and applications in high temperature or in welding areas.

700, 900 Series 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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▼ CYLINDER CHART

Cylinder Capacity (tons)	Stroke (in)	Model Number	Oil Capacity (in^3)	Pressure Rating (psi)	Port Dimension (in)	Collapsed Height A (in)	Extended Height B (in)	Outside Diameter D (in)
5	3.0	**RC-53NV**	2.98	10,000	3/8"-18 NPTF	6.50	9.50	1.50
10	2.0	**RC-102NV**	4.75	10,000	3/8"-18 NPTF	4.78	6.91	2.25
10	2.0	**RC-106NV**	13.70	10,000	3/8"-18 NPTF	9.75	15.88	2.25
25	6.0	**RC-256NV**	32.23	10,000	3/8"-18 NPTF	10.75	17.00	3.38

▼ HAND PUMP CHART

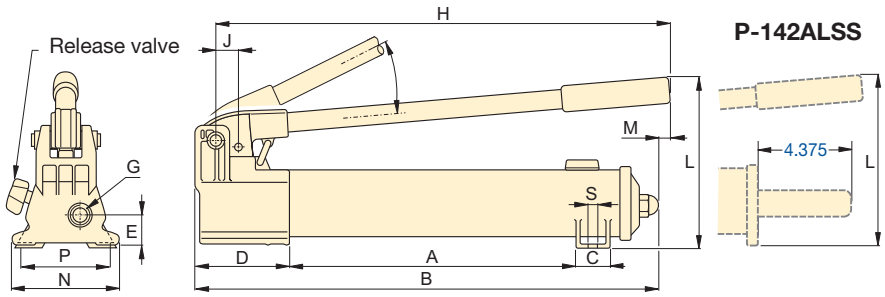
Pump Type	Oil Capacity (in^3)	Model Number	Pressure Rating (psi)	Oil Displacement per Stroke (in^3)	Port Dimension (in)	Piston Stroke (in)
Two Speed	20	**P-142ALSS**	200/10,000	0.221/0.055	1/4"-18NPTF	.50
	55	**P-392ALSS**	200/10,000	0.687/0.151	3/8"-18NPTF	1.00

▼ VALVE CHART*

Valve Type	Model Number	Pressure Function	Pressure Rating (psi)
Manual Check Valve	**V-66NV**	Check	10,000
Pressure Relief Valve	**V-152NV**	±3% Repeatability	800/10,000

* See page 136 for valve function information of standard model products.

P-392ALSS



P-142ALSS

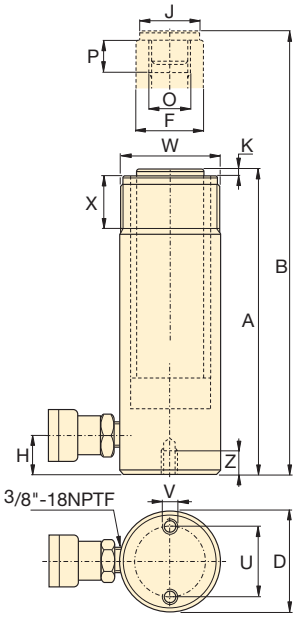
RC P V Series

Cylinder Capacity:
5-25 tons

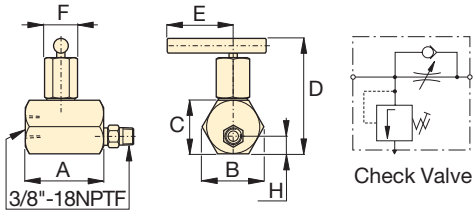
Stroke:
2-6 inches

Maximum Operating Pressure:
10,000 psi

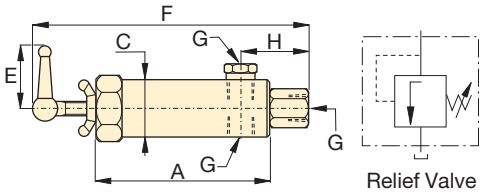
RC-102NV, RC-106NV, RC-256NV



V-66NV



V-152NV



Multifluid Hand Pumps

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

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Plunger Diam. F (in)	Base to Adv. Port H (in)	Saddle Diam. J (in)	Saddle Protrusion from Plngr. K (in)	Plunger Internal Thread O (in)	Plunger Thread Length P (in)	Base Mounting Holes: Bolt Circle U (in)	Base Mounting Holes: Thread V (in)	Base Mounting Holes: Thrd. Depth Z (in)	Collar Thread W (in)	Collar Thread Length X (in)	Weight (lbs)	Model Number
1.00	.75	1.00	.25	¾"-16	.56	1.00	¼"-20UN	.56	1½"-16	1.13	3.3	**RC-53NV**
1.50	.75	1.38	.25	1"- 8	.75	1.56	5⁄16"-18UN	.50	2¼"-14	1.13	5.1	**RC-102NV**
1.50	.75	1.38	.25	1"- 8	.75	1.56	5⁄16"-18UN	.50	2¼"-14	1.13	9.8	**RC-106NV**
2.25	1.00	2.00	.41	1½"-16	1.00	2.31	½"-13UN	.75	3 5⁄16"-12	1.94	22.0	**RC-256NV**

Pump Dimensions (in) A	B	C	D	E	G	H	J	L	M	N	P	S	Weight (lbs)	Model Number
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-142ALSS**
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-392ALSS**

Valve Dimensions (in) A	B	C	D	E	F	G	H	Weight (lbs)	Model Number
3.50	2.25	2.00	4.00	2.00	0.87	3/8"-18 NPTF	1.00	3.9	**V-66NV**
4.53	–	1.50	–	3.12	7.62	3/8"-18 NPTF	1.53	3.5	**V-152NV**

▼ 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.
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1 **Cylinder Selection** (See Cylinder Section of this catalog for full product descriptions)		Nominal Set Capacity (ton)	Cylinder Model No.	Stroke (in)	Collapsed Height (in)
	**Single-acting, General Purpose Cylinders:** For maximum versatility. **RC-Series** *Page:* 6	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
	**Single-acting, Low Height Cylinders:** Ideal where space is restricted. **RCS-Series** *Page:* 22	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:* 26	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:* 24	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
		–	–	–	–

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 inches

Maximum Operating Pressure:
10,000 psi

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

Hand Pump P-142	Hand Pump P-392	Hand Pump P-80	Foot Pump P-392FP	Turbo II Air Pump PATG-1102N	Accessories Included: Hose Model No.	Gauge Model No.	Gauge Adaptor Model No.
							
SCR-55H	–	–	–	–	HC-7206	GP-10S	GA-4
–	SCR-102H	–	SCR-102FP	SCR-102A	HC-7206	GF-10P	GA-2
–	SCR-106H	–	SCR-106FP	SCR-106A	HC-7206	GF-10P	GA-2
–	SCR-1010H	–	SCR-1010FP	SCR-1010A	HC-7206	GF-10P	GA-2
–	SCR-154H	–	SCR-154FP	SCR-154A	HC-7206	GP-10S	GA-2
–	SCR-156H	–	SCR-156FP	SCR-156A	HC-7206	GP-10S	GA-2
–	SCR-252H	–	SCR-252FP	SCR-252A	HC-7206	GF-20P	GA-2
–	SCR-254H	–	SCR-254FP	SCR-254A	HC-7206	GF-20P	GA-2
–	SCR-256H	–	SCR-256FP	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
–	SCL-101H	–	SCL-101FP	SCL-101A	HC-7206	GF-10P	GA-2
–	SCL-201H	–	SCL-201FP	SCL-201A	HC-7206	GF-230P	GA-2
–	SCL-302H	–	SCL-302FP	SCL-302A	HC-7206	GF-230P	GA-2
–	SCL-502H	–	SCL-502FP	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-202FP	SCH-202A	HC-7206	GF-813P	GA-3
–	SCH-302H	–	SCH-302FP	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	–	SCP-106CFP	–	HC-7206	GP-10S	GA-2
–	SCP-106LH	–	SCP-106LFP	–	HC-7206	GP-10S	GA-2
–	–	SCP-306H	–	–	HC-7206	GP-10S	GA-2
–	–	SCP-606H	–	–	HC-7206	GP-10S	GA-2
–	–	–	–	–	–	–	–