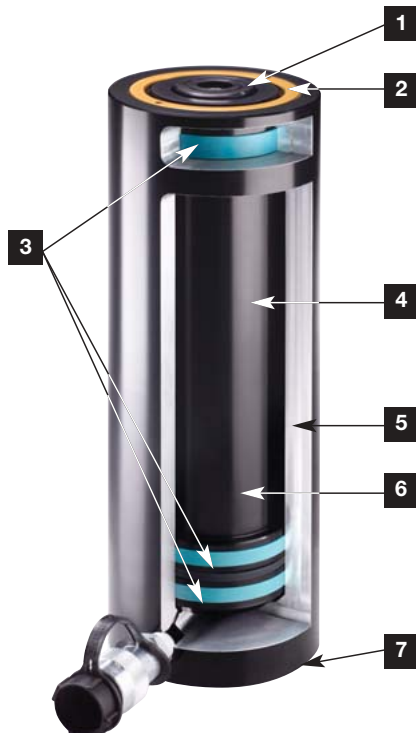


# The Enerpac Lightweight Aluminum Cylinders

▼ Shown: RAC, RACL, RACH, and RAR



- 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.

## RA Series

Capacity:  
**20-150 tons**

Stroke:  
**1.97-7.87 inches**

Maximum Operating Pressure:  
**10,000 psi**



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

Good practice encourages using only 80% of these ratings!



### 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



### 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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- 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



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

Cylinder Capacity (tons) [maximum]	Stroke (in)	Model Number	Cylinder Effective Area (in <sup>2</sup> )
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

# Single-Acting, Spring Return Cylinders



## Aluminum vs. Steel

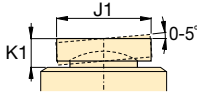
Aluminum cylinders, while offering the most lightweight solution for many lifting, stressing and lowering applications, also have some unique limitations due to material properties.

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.

### Optional Bolt Tilt Saddle Dimensions (in)

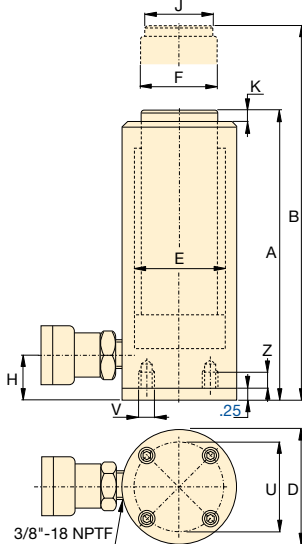
Cylinder Model / Capacity (ton)	Model Number	Saddle Diameter J1	Saddle Protrusion from Base K1
RAC-50	CATG-50	1.97	1.02
RAC-100	CATG-150	3.59	1.30
RAC-150	CATG-200	4.65	1.46



### Steel Base Plate Mounting Holes

Cylinder Model / Capacity (ton)	Bolt Circle U (in)	Thread V (mm)	Thread Depth 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

<sup>1)</sup> Including Base Plate Height of .25 inches.  
Four (4) baseplate bolts: M6 X 1.0 X .24



## RAC Series



Capacity:  
**20-150 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.

Oil Capacity (in <sup>3</sup> )	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



- 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



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

## To Secure Loads Mechanically



### 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	Stroke	Model Number	Cylinder Effective Area
ton (maximum)	(in)		(in <sup>2</sup> )
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

# Single-Acting, Spring Return, Lock Nut Cylinders



## 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.

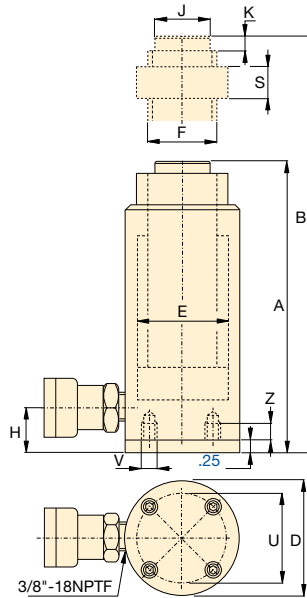
Aluminum differs from steel in that it has a lower finite fatigue life. This means aluminum cylinders should NOT be used in high-cycle applications such as production.

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.

Optional Bolt On Tilt Saddle Dimensions (in)				
Cylinder Model / Capacity (ton)	Model Number	Saddle Diameter	Saddle Protrusion from Base	
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 <sup>1)</sup> Z (in)
RACL-50	4.33	M6	.47
RACL-100	6.30	M6	.47
RACL-150	7.87	M6	.47

<sup>1)</sup> Including Base Plate Height of .25 inches.  
Four (4) baseplate bolts: M6 X 1.0 X .24



## 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.



### 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 (in <sup>3</sup> )	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



- 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.

## 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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Cylinder Capacity	Stroke	Model Number	Cylinder Effective Area
ton [maximum]	(in)		(in <sup>2</sup> )
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**

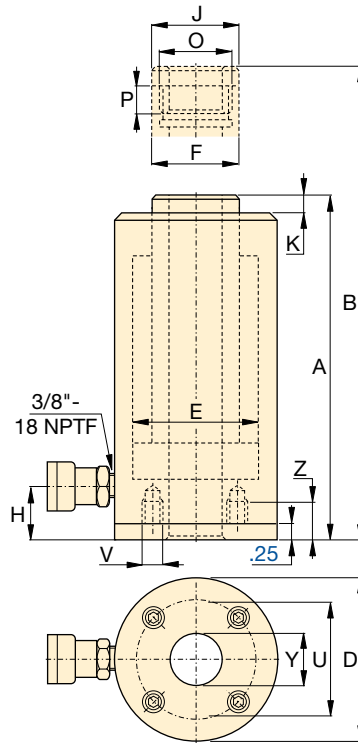
Stroke:  
**1.97-5.91 inches**

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 <sup>1)</sup> 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

<sup>1)</sup> Including Base Plate Height of .25 inches. Four (4) base plate 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 (in <sup>3</sup> )	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



### 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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- 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

▼ 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 <sup>2</sup> )		Oil Capacity (in <sup>3</sup> )	
			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

# Double-Acting, Aluminum Cylinders



## Aluminum vs. Steel

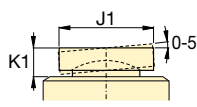
Aluminum cylinders, while offering the most lightweight solution also have some unique limitations due to material properties.

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.

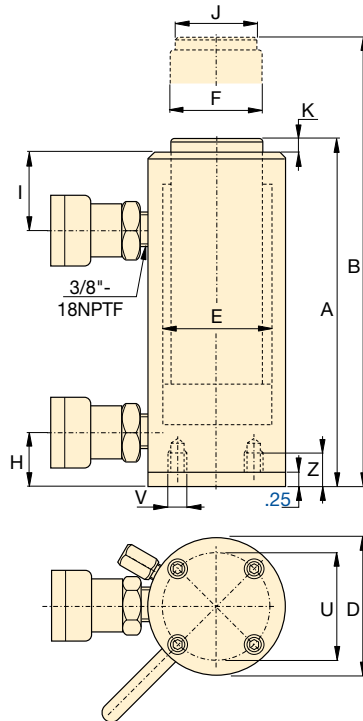
Optional Bolt On Tilt Saddle Dimensions (in)

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 <sup>1)</sup> Z (in)
RAR-50	4.33	M6	.47
RAR-100	6.50	M6	.47
RAR-150	7.87	M6	.47

<sup>1)</sup> Including Base Plate Height of .25 inch.  
Four (4) baseplate bolts: M6 x 1.0 x .24



## 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.

Collapsed Height	Extended Height	Outside Diameter	Cylinder Bore Diameter	Plunger Diameter	Base to Advance Port	Top to Retract Port	Saddle Diameter	Saddle Protrusion from Plunger	Weight (lbs)	Model Number
A (in)	B (in)	D (in)	E (in)	F (in)	H (in)	I (in)	J (in)	K (in)		
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