# POWER TEAM®

**HYDRAULIC PUMPS ▪ CYLINDERS ▪ JACKS ▪ PULLERS ▪ TOOLS**


**Professional Grade High Pressure Hydraulic Products, Systems and Tools**

SPX®
HYDRAULIC TECHNOLOGIES

PT0910-MSL04 (A) Catalog


# ABOUT POWER TEAM

## Tough Products for Tough Applications

**Hydraulic Pumps**
- Predator Portable Electric and Air Powered
- Electric, Air, and Gas Powered
- Hand Pumps
- Valves, hoses and accessories

**Hydraulic Cylinders**
- Rams
- Standard
- Construction
- Industrial
- High Tonnage
- Pancake
- Aluminum
- Pulling

**Jacks**
- Lifting Jacks
- Inflatable Jacks
- Post-Tensioning Jacks

**Tools**
- Predator Torque Wrenches
- Hydraulic Presses
- Flange Spreaders
- Nut Splitters
- Gear Pushers/Pullers
- Bearing Maintenance Pushers/Pullers

**Shop Equipment**
- Shop Presses
- Floor Cranes
- Load Rotors

**Power Team. Over 85 years experience in supplying Professional Grade high-pressure Hydraulic Pumps, Cylinders, Jacks, Pullers & Tools.**

### A Heritage of Innovation

Since 1924, we've been instrumental in the development of innovative high force hydraulic power products, systems and tools. And many of our products are known as the industry standard for rugged construction, reliability, and long service life. Today, we provide a full range of professional grade products and services around the globe.

### Power Team Quality

Power Team Products are built tough with strict ISO 9000 manufacturing processes and are covered by a Lifetime Marathon Warranty*.

### Global Distribution and Service

Wherever your job is in the world, the Power Team network of distributors and service centers assures local product, parts and service availability.

*See Warranty page for coverage details.

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# Selection

## Choosing The Right Cylinder

**Step 1** Select the hydraulic cylinder that best suits the application (See page 9-26).

**Step 2** Select the hydraulic pump, with valve option, that best matches the cylinder and application (See page 27-69).

**Step 3** Select the hydraulic accessories you need (See page 71-80).

### CONSIDERATIONS:

1. What push or pull tonnage is required per cylinder in your application? (Rule of thumb; Always choose a cylinder with a tonnage rating of 20% or more than what is required to lift the load.)
2. What is the push or pull stroke length required?
3. Does the cylinder need to push, pull or both? (Single-acting cylinders extend the piston under hydraulic pressure; double-acting cylinders extend and retract the piston under pressure.)
4. Does the application require multiple cylinders?
5. Is the application stationary, or must the components be light in weight for easy portability?
6. Do you need to extend a rod or cable through the center of the cylinder for the application, as in a tensioning operation?
7. Does the application require that the cylinder fit within limited-clearance work areas?
8. Does the application require that the cylinder be "dead-ended" at the end of it's work stroke?
9. Will the cylinder need to withstand off-center loads? Cylinders with swivel caps are available.
10. Does the application require that the lifted load be supported for extended periods of time? Locking collars are ideal for such jobs, as are cribbing blocks.
11. Is corrosion resistance required? Our unique "Power Tech" surface treatment is standard on many Power Team cylinders, and optional on many of our cylinders which feature steel construction.
12. Will the application involve high cycles (over 2,500 in the cylinders lifetime)? Our "RD", "RH", "RP" and "C" series cylinders are ideal choices.

### ONLY POWER TEAM PROVIDES THE "POWER TECH" SURFACE TREATMENT:

- High corrosion and wear resistance, anti-galling properties.
- Significantly increases the life expectancy of a cylinder.
- Retains lubricants, prevents bronze and other materials from sticking to surface.
- Increases fatigue strength and impact strength.
- Increases surface yield and tensile strength.
- Provides improved abrasion and scratch resistance.
- Causes no appreciable dimensional change.
- 56 Rc minimum surface hardness.
- Passes ASTM B117-85 100 hour salt spray corrosion resistance tests.

The **"Power Tech"** surface treatment is standard on the gland nut, cylinder body and piston/piston rod of the following cylinders: RLS50, RLS100, RLS200, RLS300, RLS500S, RLS750S, RLS1000S, RLS1500S, and RSS1002.
NOTE: Bronze plating may be used in place of the "Power Tech" surface finish for the piston/piston rod of any of the above cylinders.The **"Power Tech"** surface treatment is standard on the standpipe of all "RH" series single and double-acting cylinders. The **"Power Tech"** surface streatment is standard on the piston/piston rod of the RT172, RT302 and RT503 cylinders.

## WHAT TYPE OF CYLINDER DO YOU NEED?

**1. To determine a cylinder's force capacity:**

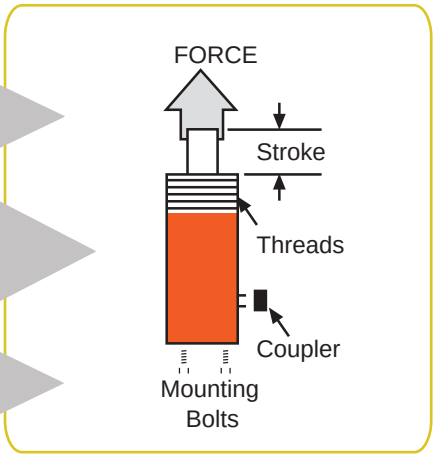
**FORCE** (kg) = Cylinder Effective Area ($cm^2$) **X** Pressure from Pump ($kg/cm^2$)

**2. To determine oil capacity of a cylinder:**

**OIL CAPACITY** ($cm^3$) = Cylinder Effective Area ($cm^2$) **X** Cylinder Stroke (cm)

**3. To determine reservoir capacity needed for a multiple cylinder system:**

**USABLE OIL** = Oil Cap. of Cyl. ($cm^3$) **X** Number of Cyl. in System




**Note: For double-acting cylinders, oil in rod end of cylinder must be subtracted to determine capacity.**

**4. To determine no. of strokes of a handpump:**

$$\frac{\text{Cylinder Effective Area } (cm^2) \times \text{Stroke (cm)}}{\text{Pump Displacement } (cm^3/\text{stroke})}$$

**5. To determine piston travel rate (cm/min) of a power-driven pump:**

$$\frac{\text{Pump Oil Flow } (cm^3/\text{min})}{\text{Cylinder Effective Area } (cm^2)}$$

**6. Time (min) taken to move cylinder piston to full stroke of a power-driven pump:**

$$\frac{\text{Total Cylinder Displacement } (cm^3)}{\text{Pump Displacement } (cm^3/\text{min})}$$

**Conversion**

| | | |
|---|---|---|
| Volume: | 1 litre | = 1000 $cm^3$ |
| | 1 U.S. gallon | = 231 $in^3$ |
| Mass: | 1 short tons | = 2,000 lbs |
| | 1 metric tonne | = 2204.6 lbs |
| | 1 metric tonne | = 1000 kg |
| Pressure: | 10,000 psi | = 689 bar |
| | | = 703 $kg/cm^2$ |

**Metric to Imperial Conversion**

| | | |
|---|---|---|
| Length: | 1 mm | = 0.0394 in |
| Area: | 1 $cm^2$ | = 0.1550 $in^2$ |
| Volume: | 1 $cm^3$ | = 0.06102 $in^3$ |
| Volume: | 1 litre | = 0.2642 U.S. gallon |
| Mass: | 1 kg (10N) | = 2.2046 lb |
| Power: | 1 kW | = 1.341 hp |
| Pressure: | 1 $kg/cm^2$ | = 14.219 psi |
| Pressure: | 1 bar | = 14.5038 psi |
| Torque: | 1 Nm | = 0.7376 ft.lb |

# Torque & Puller — Choosing the Right Tool

| Tool | The Questions you need to ask. |
|---|---|
| **CHOOSING THE RIGHT TORQUE WRENCH** | 1. Are there work area space/access issues or tool size limitations?<br>2. How far from the stationary object will the reaction arm be placed? (Reaction arm must rest against stationary object for support)<br>3. Single acting or double acting tool?<br>4. What size bolts need to be loosened or tightened?<br>5. What is torque requirement for the application?<br>6. Based on torque value, how much pressure required? (pressure setting for pump)<br>7. What type of pump to power the tool – electric, air, hand? |
| **CHOOSING THE RIGHT PULLER** | 1. Mechanical puller or hydraulic puller? (page 127-130 and page 134-147)<br>2. Does the job require a two jaw puller or a three jaw puller?<br>3. How much force is needed to complete the pull?<br>4. How much reach is needed?<br>5. How much spread is needed? |

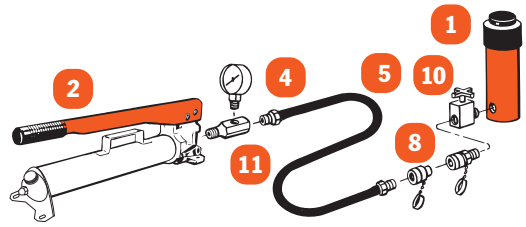
# Hydraulic CIRCUITS

## Pumps, Cylinders, Controls

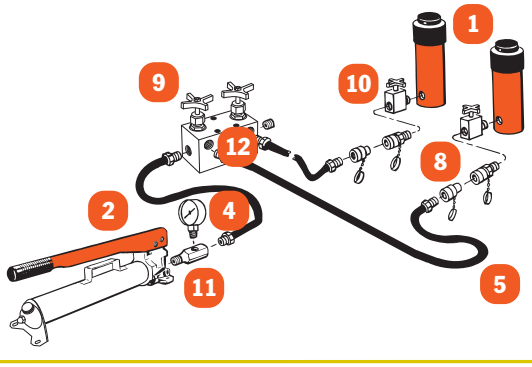
These are just a few basic systems possible with Power Team hydraulic components. Countless applications are possible: In presses, for lifting or jacking applications or in production or maintenance setups. The pump shown is a typical handpump or electric/hydraulic unit. Air or gas driven/hydraulic pumps are available.

1. Cylinder – applies hydraulic force.
2. Pump – a device for converting mechanical energy to fluid energy.
3. Directional valve – controls the direction of hydraulic fluid in the system.
4. Gauge – measures Bar pressure (or Psi-Pounds per Square Inch) and/or force.
5. Hose – transports hydraulic fluid.
6. Manifold – allows distribution of hydraulic fluid from one source to several cylinders. (No. 9617)
7. Swivel Connector – allows proper alignment of valves and/or gauges. Used when units being connected cannot be rotated. (No. 9675)
8. Quick Coupling – “hose half” and “cylinder half” couplings are used for quick connection and fluid flow check when separated. (No. 9797 and 9798)
9. Shut-Off Valve – regulates the flow of hydraulic fluid to or from cylinders. (No. 9642 or 9644)
10. Load-Lowering Valve – allows metered lowering of cylinder and provides safety when prolonged load holding is required. (No. 9596)
11. Tee Gauge Adapter – allows for installation of pressure/tonnage gauge anywhere in the hydraulic system. (No. 9670)
12. Pipe Plug – for blocking unused ports within the system. (No. 9687)

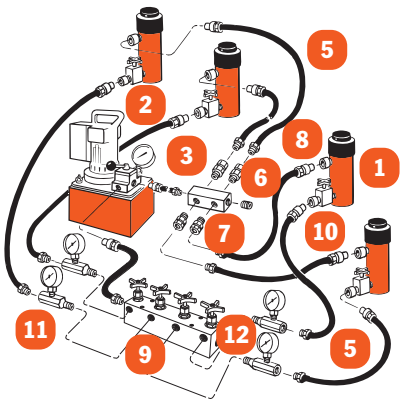
**Basic single-acting system with a hand pump, gauge, hose and single-acting cylinder.**




**Basic single-acting system with a hand pump, gauge, hose, multiple shut-off valves, load-lowering valves and multiple cylinders.**




**Basic double-acting system with an electric/hydraulic pump,shut-off valves, load-lowering valves and multiple double-acting cylinders.**



# CYLINDERS

## FROM 2 TO 1,000 TONS

### SUPERIOR FEATURES OF POWER TEAM HYDRAULIC CYLINDERS:

We build our own cylinders in our ISO 9001 registered manufacturing facility. All Power Team cylinders are date-coded. Maximum pressure rating and capacity are stamped on the cylinder. All cylinders comply to the demanding ASME B30.1 standard and are proof tested to 125% of capacity before leaving our factory.

Cylinder bores are roller burnished to harden the surface and make it smoother, increasing seal life by 30%. Base mounting holes withstand full capacity of the cylinder. Typical cylinder burst pressures range from 1700 to 2400 bar. Cylinders with gland nuts may be "dead-ended" at 700 bar. Cylinders are assembled

and tested by certified assemblers. Eddy current and mag particle inspection detects flaws in the steel. Cylinder bodies are solid steel, not welded like some competitive cylinders. Material is removed from surface, to assure that any flaws are removed.

# General Purpose
## CYLINDERS C SERIES

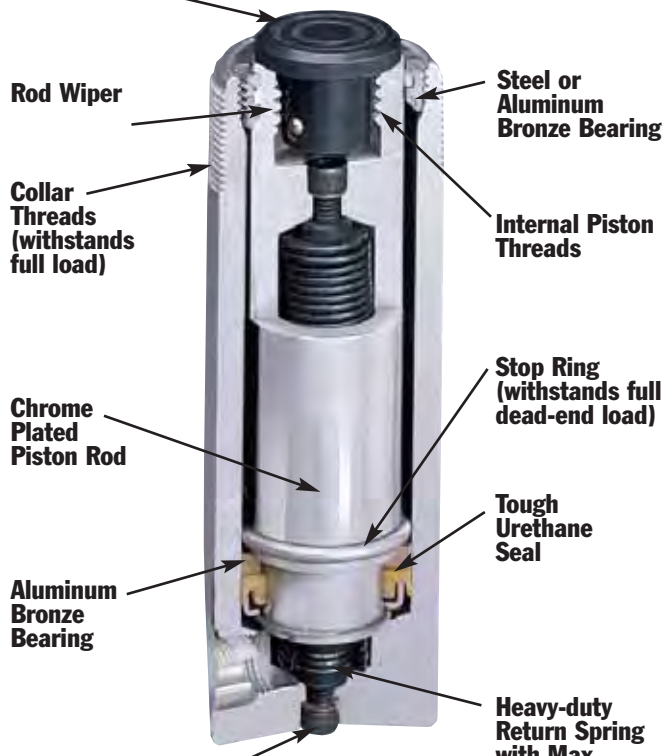
**5-100 TONS**
General Purpose, Single Acting, Spring-Return

Rugged, high quality cylinder used for lifting and pressing

- Aluminum bronze bearing reduces wear caused by off-center loads.
- Maximum sized springs speed piston return and increase spring life.
- Solid steel cylinder body for durability.
- Chrome plated piston rod resists wear and corrosion.
- Wide range of accessories available to thread onto piston rod, collar, or onto cylinder base.
- Base mounting holes standard on 5 through 55 ton cylinders; optional on 75 and 100 ton cylinders.
- A 3/8" NPTF female half coupler is standard.

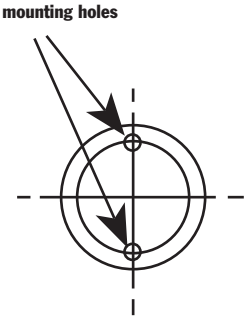
C106C

CYLINDERS



Conforms to ASME B30.1

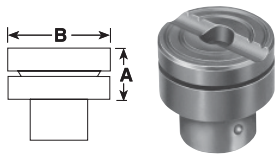
C756C


### BASE MOUNTING HOLES FOR "C"CYLINDERS

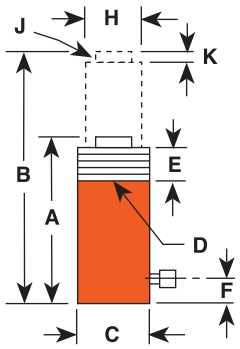
| Cylinder Tonnage | No. Holes | Thread Size | Thread Depth (mm) | Bolt Circle Diameter (mm) |
|---|---|---|---|---|
| 5 | 2† | ¼-20 | 9.5 | 25.4 |
| 10 | | 5/16-18 | 12.7 | 39.7 |
| 15 | | ⅜-16 | | 47.6 |
| 25 | | ½-13 | 19.1 | 58.7 |
| 55 | | | | 95.3 |
| *Optional 75 | 4 | ¾-10 | 25.4 | 114.3 |
| *Optional 100 | | 1-8 | | 120.7 |

** Consult Factory (45° from coupler)*
*† 90° from coupler.*




**Swivel Cap**
(Optional)

| Cylinder Tons | Part No. | A (mm) | B (mm) |
|---|---|---|---|
| 10 or 15 | 350144 | 22,4 | 30,1 |
| 25 | 350145 | 28,7 | 50,8 |
| 55 or 75 | 350376 | 31,8 | 71,4 |
| 100 | 351574 | 48,5 | 88,1 |



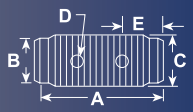

| Cyl Cap Tons | Stroke (mm) | Order No. | Oil Cap. (cm³) | A Retracted Height (mm) | B Extended Height (mm) | C Outside Dia. (mm) | D Collar Thread (in.) | E Piston Collar Thread Length (mm) | F Base to Port (mm) | H Piston Rod Dia. (mm) | J Piston Rod Int. Thread (in.) and Depth (mm) | K Rod Protrusion (mm) | Bore Dia. (mm) | Cylinder Effective Area (cm²) | Metric Tons at 700 (bar) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 25,4 | C51C | 18 | 110,3 | 138,1 | 38,1 | 1 1/2-16 | 28,6 | 19,1 | 25,4 | 3/4-16 x 15,9 | 6,4 | 28,6 | 6,4 | 4,5 | 1,0 |
| | 82,6 | C53C | 52 | 165,1 | 247,7 | 38,1 | 1 1/2-16 | 28,6 | 19,1 | 25,4 | 3/4-16 x 15,9 | 6,4 | 28,6 | 6,4 | 4,5 | 1,5 |
| | 133,4 | C55C | 85 | 215,9 | 349,3 | 38,1 | 1 1/2-16 | 28,6 | 19,1 | 25,4 | 3/4-16 x 15,9 | 6,4 | 28,6 | 6,4 | 4,5 | 1,8 |
| | 184,2 | C57C | 118 | 273,1 | 457,2 | 38,1 | 1 1/2-16 | 28,6 | 19,1 | 25,4 | 3/4-16 x 15,9 | 6,4 | 28,6 | 6,4 | 4,5 | 2,3 |
| | 235,0 | C59C | 151 | 323,9 | 558,8 | 38,1 | 1 1/2-16 | 28,6 | 19,1 | 25,4 | 3/4-16 x 15,9 | 6,4 | 28,6 | 6,4 | 4,5 | 2,6 |
| 10 | 25,4 | C101C | 36 | 92,1 | 117,5 | 57,2 | 2 1/4-14 | 28,6 | 19,1 | 38,1 | 1-8 x 19,1 | 6,4 | 42,8 | 14,4 | 10,2 | 1,8 |
| | 54,0 | C102C | 79 | 120,7 | 174,6 | 57,2 | 2 1/4-14 | 28,6 | 19,1 | 38,1 | 1-8 x 19,1 | 6,4 | 42,8 | 14,4 | 10,2 | 2,3 |
| | 104,8 | C104C | 151 | 171,5 | 276,2 | 57,2 | 2 1/4-14 | 28,6 | 19,1 | 38,1 | 1-8 x 19,1 | 6,4 | 42,8 | 14,4 | 10,2 | 3,0 |
| | 155,6 | C106C | 225 | 247,7 | 403,2 | 57,2 | 2 1/4-14 | 28,6 | 19,1 | 38,1 | 1-8 x 19,1 | 6,4 | 42,8 | 14,4 | 10,2 | 4,3 |
| | 206,4 | C108C | 362 | 298,5 | 504,8 | 57,2 | 2 1/4-14 | 28,6 | 19,1 | 38,1 | 1-8 x 19,1 | 6,4 | 42,8 | 14,4 | 10,2 | 5,0 |
| | 257,2 | C1010C | 370 | 349,3 | 606,4 | 57,2 | 2 1/4-14 | 28,6 | 19,1 | 38,1 | 1-8 x 19,1 | 6,4 | 42,8 | 14,4 | 10,2 | 5,9 |
| | 308,0 | C1012C | 444 | 400,1 | 708 ,0 | 57,2 | 2 1/4-14 | 28,6 | 19,1 | 38,1 | 1-8 x 19,1 | 6,4 | 42,8 | 14,4 | 10,2 | 6,6 |
| | 358,8 | C1014C | 518 | 450,9 | 809,6 | 57,2 | 2 1/4-14 | 28,6 | 19,1 | 38,1 | 1-8 x 19,1 | 6,4 | 42,8 | 14,4 | 10,2 | 7,3 |
| | 406,4 | C1016C | 592 | 520,7 | 927,1 | 57,2 | 2 1/4-14 | 28,6 | 19,1 | 38,1 | 1-8 x 19,1 | 6,4 | 42,8 | 14,4 | 10,2 | 8,4 |
| 15 | 25,4 | C151C | 51 | 123,8 | 149,2 | 69,9 | 2 3/4-16 | 28,6 | 19,1 | 44,5 | 1-8 x 19,1 | 6,4 | 50,8 | 20,3 | 14,2 | 3,4 |
| | 54,0 | C152C | 110 | 149,2 | 203,2 | 69,9 | 2 3/4-16 | 28,6 | 19,1 | 44,5 | 1-8 x 19,1 | 6,4 | 50,8 | 20,3 | 14,2 | 4,0 |
| | 104,8 | C154C | 211 | 200 ,0 | 304,8 | 69,9 | 2 3/4-16 | 28,6 | 19,1 | 44,5 | 1-8 x 19,1 | 6,4 | 50,8 | 20,3 | 14,2 | 5,2 |
| | 155,6 | C156C | 315 | 271,4 | 427,0 | 69,9 | 2 3/4-16 | 28,6 | 19,1 | 44,5 | 1-8 x 19,1 | 6,4 | 50,8 | 20,3 | 14,2 | 6,9 |
| | 206,4 | C158C | 418 | 322,2 | 528,6 | 69,9 | 2 3/4-16 | 28,6 | 19,1 | 44,5 | 1-8 x 19,1 | 6,4 | 50,8 | 20,3 | 14,2 | 8,1 |
| | 257,2 | C1510C | 521 | 373 ,0 | 630,2 | 69,9 | 2 3/4-16 | 28,6 | 19,1 | 44,5 | 1-8 x 19,1 | 6,4 | 50,8 | 20,3 | 14,2 | 9,4 |
| | 308,0 | C1512C | 625 | 423,8 | 731,8 | 69,9 | 2 3/4-16 | 28,6 | 19,1 | 44,5 | 1-8 x 19,1 | 6,4 | 50,8 | 20,3 | 14,2 | 10,5 |
| | 358,8 | C1514C | 728 | 474,6 | 833,4 | 69,9 | 2 3/4-16 | 28,6 | 19,1 | 44,5 | 1-8 x 19,1 | 6,4 | 50,8 | 20,3 | 14,2 | 11,8 |
| | 406,4 | C1516C | 824 | 522,3 | 928,7 | 69,9 | 2 3/4-16 | 28,6 | 19,1 | 44,5 | 1-8 x 19,1 | 6,4 | 50,8 | 20,3 | 14,2 | 12,8 |
| 25 | 25,4 | C251C | 84 | 139,7 | 165,1 | 85,7 | 3 5/16-12 | 49,2 | 25,4 | 57,2 | 1 1/2-16 x 25,4 | 9,5 | 65,1 | 33,2 | 23,4 | 5,4 |
| | 50,8 | C252C | 169 | 165,1 | 215,9 | 85,7 | 3 5/16-12 | 49,2 | 25,4 | 57,2 | 1 1/2-16 x 25,4 | 9,5 | 65,1 | 33,2 | 23,4 | 6,3 |
| | 101,6 | C254C | 338 | 215,9 | 317,5 | 85,7 | 3 5/16-12 | 49,2 | 25,4 | 57,2 | 1 1/2-16 x 25,4 | 9,5 | 65,1 | 33,2 | 23,4 | 8,0 |
| | 158,8 | C256C | 528 | 273,1 | 431,8 | 85,7 | 3 5/16-12 | 49,2 | 25,4 | 57,2 | 1 1/2-16 x 25,4 | 9,5 | 65,1 | 33,2 | 23,4 | 9,8 |
| | 209,6 | C258C | 697 | 323,9 | 533,4 | 85,7 | 3 5/16-12 | 49,2 | 25,4 | 57,2 | 1 1/2-16 x 25,4 | 9,5 | 65,1 | 33,2 | 23,4 | 11,6 |
| | 260,4 | C2510C | 865 | 374,4 | 635,0 | 85,7 | 3 5/16-12 | 49,2 | 25,4 | 57,2 | 1 1/2-16 x 25,4 | 9,5 | 65,1 | 33,2 | 23,4 | 13,3 |
| | 311,2 | C2512C | 1.036 | 425,5 | 736,0 | 85,7 | 3 5/16-12 | 49,2 | 25,4 | 57,2 | 1 1/2-16 x 25,4 | 9,5 | 65,1 | 33,2 | 23,4 | 15,0 |
| | 362,0 | C2514C | 1.205 | 476,3 | 838,2 | 85,7 | 3 5/16-12 | 49,2 | 25,4 | 57,2 | 1 1/2-16 x 25,4 | 9,5 | 65,1 | 33,2 | 23,4 | 16,7 |
| 55 | 50,8 | C552C | 362 | 174,6 | 225,4 | 127,0 | 5-12 | 55,6 | 34,9 | 79,4 | - | 3,2 | 95,3 | 71,2 | 50,1 | 14,7 |
| | 108,0 | C554C | 769 | 231,8 | 339,7 | 127,0 | 5-12 | 55,6 | 34,9 | 79,4 | - | 3,2 | 95,3 | 71,2 | 50,1 | 18,7 |
| | 158,8 | C556C | 1.131 | 282,6 | 441,3 | 127,0 | 5-12 | 55,6 | 34,9 | 79,4 | - | 3,2 | 95,3 | 71,2 | 50,1 | 23,1 |
| | 260,4 | C5510C | 1.853 | 384,2 | 644,5 | 127,0 | 5-12 | 55,6 | 34,9 | 79,4 | - | 3,2 | 95,3 | 71,2 | 50,1 | 30,4 |
| | 336,6 | C5513C | 2.398 | 460,4 | 796,9 | 127,0 | 5-12 | 55,6 | 34,9 | 79,4 | - | 3,2 | 95,3 | 71,2 | 50,1 | 35,3 |
| 75 | 155,6 | C756C | 1.596 | 314,3 | 469,9 | 146,1 | 5 3/4-12 | 44,5 | 31,8 | 95,3 | - | 3,2 | 114,3 | 102,6 | 72,1 | 33,3 |
| | 333,4 | C7513C | 3.421 | 492,1 | 825,5 | 146,1 | 5 3/4-12 | 44,5 | 31,8 | 95,3 | - | 3,2 | 114,3 | 102,6 | 72,1 | 49,6 |
| 100 | 50,8 | C1002C | 675 | 219,1 | 269,9 | 158,8 | 6 1/4-12 | 57,2 | 41,3 | 104,8 | - | 3,2 | 130,2 | 133,0 | 93,6 | 28,5 |
| | 168,3 | C1006C | 2.245 | 336,6 | 504,8 | 158,8 | 6 1/4-12 | 57,2 | 41,3 | 104,8 | - | 3,2 | 130,2 | 133,0 | 93,6 | 41,2 |
| | 260,4 | C10010C | 3.467 | 428,6 | 689,0 | 158,8 | 6 1/4-12 | 57,2 | 41,3 | 104,8 | - | 3,2 | 130,2 | 133,0 | 93,6 | 51,2 |

Base mounting holes: see page 10.

# Accessories

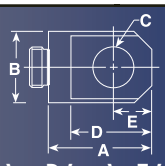
## Mounting accessories
C Series

### Threaded Connector



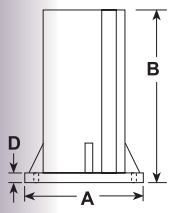

| Cylinder Tons | Part No. | A (mm) | B (mm) | C (in) | D (mm) | E |
|---|---|---|---|---|---|---|
| 5 | 25748 | 44,5 | 22,4 | ³/₄-14 NSPM | 4,8 | 12,7 |
| 10 | 25664 | 41,4 | 36,6 | 1 ¹/₄-11 ¹/₂ NSPM | 7,9 | 14,2 |
| 25 | 25654 | 57,2 | 54,1 | 2-11 ¹/₂ NSPM | 9,7 | 16 |

### Piston Clevis




| Cylinder Tons | Part No. | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (in) |
|---|---|---|---|---|---|---|---|
| 5 | 350095 | 44,5 | 28,7 | 16 | 36,6 | 16 | ³/₄-16 |
| 10 or 15* | 350094 | 65 | 42,9 | 22,4 | 58,7 | 25,4 | 1-8 |
| 25** | 420059 | 74,7 | 57,2 | 31,8 | 68,3 | 31,8 | 1¹/₂-16 |

* Can be used with RD106, RD1010 Cylinder.
** Can be used with RD256, RD2514 Cylinder.

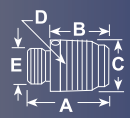


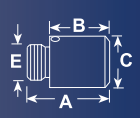

### Support Base

| Cylinder | Order | A (mm) | B (mm) | C (mm) |
|---|---|---|---|---|
| 10 | 420062 | 177,8 | 127 | 11,2 |
| 25 | 420063 | 177,8 | 127 | 11,2 |

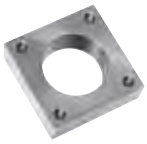
### Threaded Adapter

### Plain Adapter

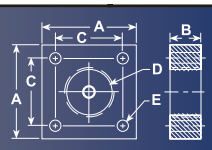



| Cylinder Tons | Part No. | A (mm) | B (mm) | C (mm) | D (in) | E (in) |
|---|---|---|---|---|---|---|
| 5 | 202178 (threaded) | 41,4 | 28,7 | 26,9 | ³/₄-14 NPT | ³/₄-16UNF-2A |
| 10 or 15 | 202179 ( threaded) | 46,0 | 26,9 | 41,4 | 1 ¹/₄-11 ¹/₂ NPT | 1-8UNC-2A |
| 25 | 202180 ( threaded) | 69,9 | 47,8 | 60,5 | 2-11 ¹/₂ NPT | 1¹/₂-16UN-2A |
| 10 or 15 | 350724 (plain) | 50,8 | 31,8 | 37,6 | - | 1-8UNC-2A |
| 25 | 350723 (plain) | 54,1 | 31,8 | 57,2 | - | 1¹/₂-16UN-2A |

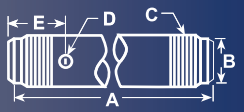


### Cylinder Mounting Plate



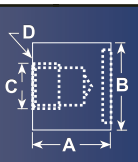

| Cylinder Tons | Part No. | A (mm) | B (mm) | C (mm) | D (in) | E (mm) |
|---|---|---|---|---|---|---|
| 5 | 350099 | 76,2 | 25,4 | 54,1 | 1 ¹/₂-16UN-2B | 8,6 |
| 10 | 350100 | 88,9 | 25,4 | 66,8 | 2 ¹/₄-14UNS-2B | 8,6 |
| 15 | 350184 | 88,9 | 25,4 | 66,8 | 2 ³/₄-16UN-2B | 8,6 |
| 25 | 420064 | 127 | 50,8 | 93 | 3 ⁵/₁₆-12UN-2B | 16,8 |

## Extension Rod

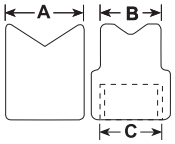



| Cylinder Tons | Part No. | A (mm) | B (mm) | C (in) | D (mm) | E (mm) |
|---|---|---|---|---|---|---|
| 5 | 350895 | 127 | 22,4 | 3/4-14 NPT | 8,4 | 50,8 |
| 5 | 38908 | 254 | 22,4 | 3/4-14 NPT | 8,4 | 50,8 |
| 5 | 350896 | 457,2 | 22,4 | 3/4-14 NPT | 8,4 | 50,8 |
| 10 | 350897 | 127 | 36,6 | 1 1/4-11 1/2-NPT | 8,4 | 50,8 |
| 10 | 38909 | 254 | 36,6 | 1 1/4-11 1/2-NPT | 8,4 | 50,8 |
| 10 | 350898 | 457,2 | 36,6 | 1 1/4-11 1/2-NPT | 8,4 | 50,8 |

## Cylinder Base Attachment



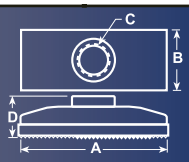

| Cylinder Tons | Part No. | A (mm) | B (mm) | C (in) | D (mm/in) |
|---|---|---|---|---|---|
| 5† | 208380 | 41,4 | 44,5 | 3/4-14NPSM | 7,1 Dia. (No.2) 1/4-20 UNC x 3/4" Lg. Socket Head Cap Screws |
| 10† | 208381 | 47,8 | 63,5 | 1 1/4-11 1/2-NPSM | 8,6 Dia. (No.2) 5/16-18 UNC x 3/4" Lg. Socket Head Cap Screws |
| 25† | 208382 | 60,5 | 98,6 | 2-11 1/2-NPSM | 13,5 Dia. (No.2) 1/2-13 UNC x 1" Lg. Socket Head Cap Screws |




## 90° "V" Base

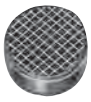
| Cylinder Tons | Part No. | A (mm) | B (mm) | C (in) |
|---|---|---|---|---|
| 5 | 25388* | 35,1 | 26,9 | 3/4-14-NPSM |
| 10 | 25395* | 54,1 | 54,1 | 1 1/4-11 1/2-NPSM |

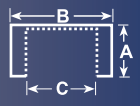
## Cylinder Flat Base



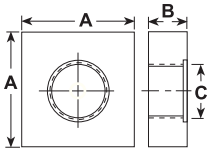

| Cylinder Tons | Part No. | A (mm) | B (mm) | C (in) | D (mm) |
|---|---|---|---|---|---|
| 5 | 25750* | 114,3 | 63,5 | 3/4-14-NPSM | 34 |
| 10 | 32325* | 166,6 | 88,9 | 1 1/4-11 1/2-NPSM | 36,6 |

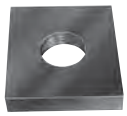
**Smooth Saddle** **Serrated Saddle**






| Cylinder Tons | Part No. | A (mm) | B (mm) | C (in) |
|---|---|---|---|---|
| 5 | 25746* (serrated) | 28,7 | 33,3 | 3/4-14NPSM |
| 10 or 15 | 31772* ( serrated) | 28,7 | 50,8 | 1 1/4-11 1/2-NPSM |
| 25 | 31776* ( serrated) | 33,3 | 76,2 | 2-11 1/2-NPSM |
| 5 | 351575* (plain) | 28,7 | 33,3 | 3/4-14-NPSM |
| 10 | 24016* ( plain) | 28,7 | 50,8 | 1 1/4-11 1/2-NPSM |
| 25 | 351576* ( plain) | 33,3 | 76,2 | 2-11 1/2-NPSM |

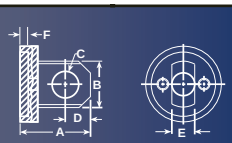


## Plunger Base

| Cylinder Tons | Part No. | A (mm) | B (mm) | C (in) |
|---|---|---|---|---|
| 25 | 25652 | 152,4 | 31,8 | 2-11 1/2-NPSM |

## Body Clevis†




| Cylinder Tons | Part No. | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) |
|---|---|---|---|---|---|---|---|
| 5 | 350096 | 52,3 | 28,7 | 16 | 16 | 14,2 | 6,4 |
| 10 | 350097 | 76,2 | 42,9 | 22,4 | 25,4 | 25,4 | 6,4 |
| 15 | 350098 | 77,7 | 42,9 | 22,4 | 25,4 | 25,4 | 6,4 |
| 25 | 420061 | 90,4 | 57,2 | 31,8 | 31,8 | 38,1 | 6,4 |

* Items require threaded adapter when used with "C" series cylinders. They may be used on threaded "CBT" cylinders without the use of an adapter.

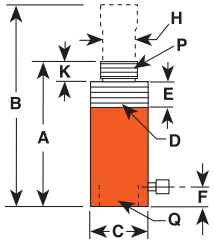
† Mounting screws are included.

# Threaded End
## CYLINDERS CBT

## 5-25 TONS
Single Acting,
Spring-Return

- Threaded cylinder collars, piston rod ends, and internal base threads simplify mounting.
- A 9796 3/8" NPTF female half coupler is standard with each cylinder; oil port threads are 3/8" NPTF.


Threaded piston rod end and base threads accommodate accessories and adapters.




CYLINDERS

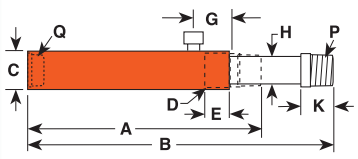
| Cyl. Cap. (tons) | Stroke (mm) | Order No. | Oil Cap. ($cm^3$) | A Retracted Height (mm) | B Extended Height (mm) | C Outside Dia. (mm) | D Collar Thread (in.) | E Collar Thread Length (mm) | F Base to Port (mm) | H Piston Rod Dia. (in.) | K Piston Rod Protrusion (mm) | P Piston Rod Thread (NPT) | Q Internal Base Thread (NPSM) (in.) | Bore Dia. (mm) | Cyl. Eff. Area ($cm^2$) | Metric Tons at 700 bar | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 133,4 | C55CBT | 85 | 266,7 | 400,1 | 38,1 | 1 1/2–16 | 28,6 | 47,6 | 25,4 | 28,6 | 3/4–14 | 3/4–14 | 28,6 | 6,4 | 4,5 | 2,0 |
| 10 | 155,6 | C106CBT | 228 | 292,1 | 447,7 | 57,2 | 2 1/4–14 | 28,6 | 42,9 | 38,1 | 27,0 | 1 1/4–11 1/2 | 1 1/4–11 1/2 | 27,0 | 14,4 | 10,2 | 4,7 |
| | 257,2 | C1010CBT | 375 | 393,7 | 650,9 | 57,2 | 2 1/4–14 | 28,6 | 42,9 | 38,1 | 27,0 | 1 1/4–11 1/2 | 1 1/4–11 1/2 | 27,0 | 14,4 | 10,2 | 6,3 |
| 25 | 158,8 | C256CBT | 528 | 339,7 | 498,5 | 85,7 | 3 5/16–12 | 49,2 | 47,6 | 57,2 | 47,6 | 2–11 1/2 | 2–11 1/2 | 47,6 | 33,3 | 23,4 | 11,1 |
| | 362,0 | C2514CBT | 1205 | 542,9 | 904,9 | 85,7 | 3 5/16–12 | 49,2 | 47,6 | 57,2 | 47,6 | 2–11 1/2 | 2–11 1/2 | 47, 6 | 33,3 | 23,4 | 18,2 |

# Pulling Cylinders
## RP SERIES

## 2-5 TONS (Single Acting, Spring-Return)

- Designed for pulling and tensioning.
- Heavy duty compression spring provides long cycle life and rapid extension of piston.
- Spring automatically extends piston rod when pump pressure is released.


| Cyl. Cap. (Tons) Pull | Stroke (mm) | Order No. | Oil Cap. ($cm^3$) | A Retracted Height (mm) | B Extended Height (mm) | C Outside Dia. (mm) | D Collar Thread (in.) | E Collar Thread Length (mm) | G Cylinder Top to Port (mm) | H Piston Rod Dia. (mm) | K Piston Rod Protrusion (mm) | P Piston Rod Thread (NPTF) | Q Base Thread (NPTF) | Bore Dia. (mm) | Cyl. Eff. Area ($cm^2$) Pull | Metric Tons at 700 bar Pull | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 127,0 | RP25 | 45 | 242,9 | 379,9 | 44,5 | 1 1/2-16 | 25,4 | 42,9 | 19,1 | 25,4 | 3/4-14 | 3/4-14 | 28,6 | 3,5 | 2,5 | 1,8 |
| 5 | 139,7 | RP55 | 102 | 301,6 | 441,3 | 57,2 | 2 1/4-14 | 25,4 | 42,9 | 30,2 | 34,9 | 1 1/4-11 1/2 | 1 1/4-11 1/2 | 42,9 | 7,3 | 5,1 | 5 |

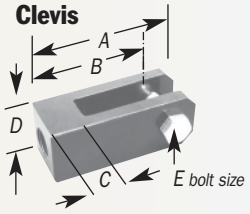



### Clevis ORDERING INFORMATION (optional)

| Use with Cyl No. | Order No. | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) |
|---|---|---|---|---|---|---|
| RP25 | 421057* | 130,3 | 109,5 | 33,3 | 50,8 | 19,1 |
| RP55 | 421056** | 152,4 | 127,0 | 38,1 | 63,5 | 22,4 |

* For base mounting, extension rod 351106 is required.
** For base mounting, extension rod 351075 is required.

Clevis

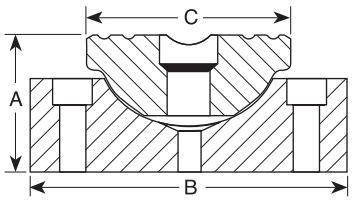


# ALUMINUM
## CYLINDERS RA-SERIES

## 20-100 TONS
Single Acting,
Spring-Return

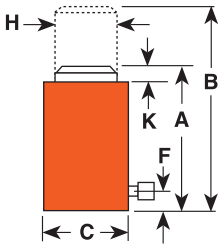
Half the weight of equal capacity steel cylinders.

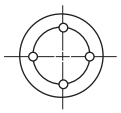
- Half the weight of steel cylinders.
- Aluminum body resists sparking in explosive environments.
- Hard coated aluminum piston rod and cylinder bore resist wear and corrosion.
- Grooved piston top helps keep the load from sliding on top of piston.
- Designed for jacking and other non-production operations.


| Tonnage | Swivel Cap Order No. | "RA" Cylinders Wt. (kg.) | A (mm) | B (mm) | C (mm) |
|---|---|---|---|---|---|
| 55 | 350376 | 0,9 | 31,8 | 71,4 | 71,4 |
| 100 | 350984 | 2,5 | 49,2 | 79,4 | 95,3 |

**SWIVEL CAPS reduce the effects of off center loading. Tilts up to 5°.** (Available as optional)



Base Mtg. Holes (4) at 45° from coupler (RA556, RA5510) 3/8"-16 x 114,3mm Dia. B.C. Depth = 12,7 mm

| Cyl. Cap. (tons) | Stroke (mm) | Order No. | Oil Cap. (cm³) | A Retracted Ht. (mm) | B Extended Ht. (mm) | C Outside Dia. (mm) | F Base to Port (mm) | H Piston Rod Dia. (mm) | K Piston Rod Protrusion (mm) | Bore Dia. (mm) | Cylinder Effective Area (cm²) | Metric Tons at 700 bar | Weight. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 54,0 | RA202 | 154 | 161,9 | 215,9 | 95,3 | 31,8 | 50,8 | 7,9 | 60,3 | 28,6 | 20,1 | 3,5 |
| | 104,8 | RA204 | 300 | 212,7 | 317,5 | 95,3 | 31,8 | 50,8 | 7,9 | 60,3 | 28,6 | 20,1 | 4.2 |
| | 155,6 | RA206 | 445 | 263,5 | 419,1 | 95,3 | 31,8 | 50,8 | 7,9 | 60,3 | 28,6 | 20,1 | 5.1 |
| 30 | 54,0 | RA302 | 226 | 187,3 | 241,3 | 108,0 | 31,8 | 63,5 | 9,5 | 73,0 | 41,9 | 29,4 | 5,0 |
| | 104,8 | RA304 | 439 | 238,1 | 342,9 | 108,0 | 31,8 | 63,5 | 9,5 | 73,0 | 41,9 | 29,4 | 5,9 |
| | 155,6 | RA306 | 652 | 288,9 | 444,5 | 108,0 | 31,8 | 63,5 | 9,5 | 73,0 | 41,9 | 29,4 | 6,8 |
| 55 | 54,0 | RA552 | 386 | 171,5 | 225,4 | 133,4 | 34,9 | 79,4 | 6,4 | 95,3 | 71,2 | 50,1 | 7,3 |
| | 104,8 | RA554 | 746 | 222,3 | 327,0 | 133,4 | 34,9 | 79,4 | 6,4 | 95,3 | 71,2 | 50,1 | 8,9 |
| | 155,6 | RA556* | 1.109 | 273,1 | 428,6 | 133,4 | 34,9 | 79,4 | 6,4 | 95,3 | 71,2 | 50,1 | 10,9 |
| | 254,0 | RA5510* | 1.811 | 384,2 | 638,2 | 133,4 | 34,9 | 79,4 | 6,4 | 95,3 | 71,2 | 50,1 | 14,4 |
| 100 | 54,0 | RA1002 | 718 | 196,9 | 250,8 | 187,3 | 30,2 | 104,8 | 3,2 | 130,2 | 133,0 | 93,5 | 15,1 |
| | 158,8 | RA1006* | 2.116 | 298,5 | 457,2 | 187,3 | 30,2 | 104,8 | 3,2 | 130,2 | 133,0 | 93,5 | 22,6 |

* Equipped with carrying handles.

# Low profile
## CYLINDERS RLS SERIES

**5-150 Ton**
Single-Acting,
Spring-Return

Ideal for confined areas from 41 to 101,6 mm clearance.

- Cylinder body, piston and gland nut "Power Tech" treated for corrosion and abrasion resistance (See page 6).
- Standard domed piston rod (5-30 ton) or swivel cap (50-150 ton) minimize effects of off-center loading.
- Unique heavy duty spring provides fast piston return.
- A 9796 3/8" NPTF female half coupler is standard with each cylinder (the RLS50 has a 3/8" coupler which is not angled). Oil ports are 3/8" NPTF.
- Couplers on all cylinders, except RLS50, are angled upward for extra clearance.

RLS100

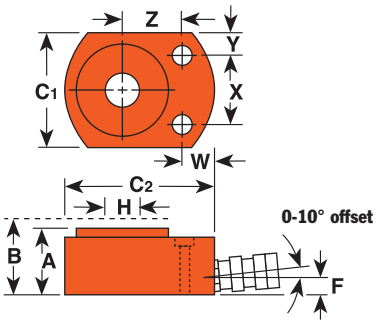
RLS1000S

ASME B30.1
700 bar

CYLINDERS

### MOUNTING HOLES FOR "RLS" CYLINDERS

| | |
|---|---|
| **RLS50** | 8,6mm C'bore x 6,4mm deep, 5,6mm thru hole |
| **RLS100** | 10,7mm C'bore x 8,7mm deep, 7,1mm thru hole |
| **RLS200** | 15,5mm C'bore x 10,4mm deep,10,4mm thru hole |
| **RLS300** | 15,5mm C'bore x 11,2mm deep, 10,4mm thru hole |
| **RLS500S** | 17,8mm C'bore x 12,7mm deep,11,9mm thru hole |
| **RLS750S** | 20,3mm C'bore x14,2mm deep, 13,5mm thru hole |
| **RLS1000S** | 20,3mm C'bore x 14,2mm deep, 13,5 mm thru hole |
| **RLS1500S** | 20,6mm C'bore x 14,2mm deep, 13,5mm thru hole |




| Cyl. Cap. (tons) | Stroke (mm) | Order No. | Oil Cap. (cm³) | A Retracted Height (mm) | B Extended Height (mm) | C1 & C2 Outside Dia. (mm) | F Base to Port (mm) | H Piston Rod Prod. Dia. (mm) | Mounting Hole Location (mm) W | X | Y | Z | Bore Dia. (mm) | Cyl. Eff. Area (cm²) | Metric Tons at 700 bar | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **5** | 14,3 | RLS50 | 10 | 41,3 | 55,6 | 41,3x65,1 | 19,1 | 15,9 | 19,1 | 28,6 | 6,4 | 25,4 | 28,6 | 6,4 | 4,5 | 1,0 |
| **10** | 11,1 | RLS100 | 17 | 44,5 | 55,6 | 55,6x82,6 | 15,9 | 19,1 | 17,5 | 36,5 | 9,5 | 33,3 | 42,9 | 14,4 | 10,1 | 1,5 |
| **20** | 11,1 | RLS200 | 33 | 50,8 | 61,9 | 76,2x101,6 | 16,7 | 28,6 | 18,3 | 49,2 | 13,5 | 39,7 | 60,3 | 28,6 | 20,1 | 2,5 |
| **30** | 12,7 | RLS300 | 53 | 58,7 | 71,4 | 95,3x114,3 | 18,3 | 34,9 | 20,6 | 52,4 | 21,4 | 44,5 | 73,0 | 41,9 | 29,5 | 3,9 |
| **50** | 15,9 | RLS500S | 99 | 66,7 | 82,6 | 114,3x139,7 | 21,4 | 44,5 | 23,8 | 66,7 | 23,8 | 54,0 | 88,9 | 62,1 | 43,6 | 6,3 |
| **75** | 15,9 | RLS750S | 163 | 79,4 | 95,3 | 140,5x165,1 | 25,4 | 54,0 | 23,8 | 76,2 | 32,1 | 65,9 | 114,3 | 102,6 | 72,2 | 10,6 |
| **100** | 15,9 | RLS1000S | 202 | 85,7 | 101,6 | 152,4x177,8 | 25,4 | 63,5 | 20,6 | 76,2 | 38,1 | 71,4 | 127,0 | 126,6 | 89,1 | 13,6 |
| **150** | 14,3 | RLS1500S | 282 | 101,6 | 115,9 | 190,5x215,9 | 33,3 | 76,2 | 33,3 | 117,5 | 36,5 | 79,4 | 158,8 | 197,9 | 139,2 | 23,6 |

# Shorty
## CYLINDERS RSS SERIES

## 10-250 Ton
Single-Acting, Spring-Return & Double-Acting

Ideal for confined areas from 89 to 290,5 mm clearance.

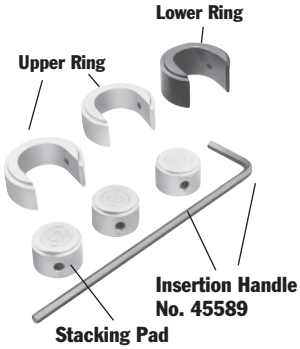
- Bronze plated piston rods and gland nuts resist scoring and corrosion.
- Heavy duty return spring (except for double-acting models) provides fast piston return & low collapsed height.
- Coupler on 10 thru 50 ton models is angled upward 5° for added clearance.
- Grooved piston top keeps load from sliding.
- Cylinders can be "dead-ended" at full capacity.
- Removable carrying handles on 100 ton and 250 ton models.


RSS302

ASME B30.1
700 bar



Cribbing blocks are shown in a 30 ton RSS302 "Shorty" cylinder.

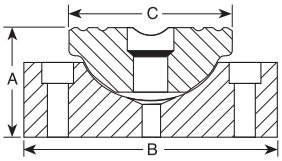


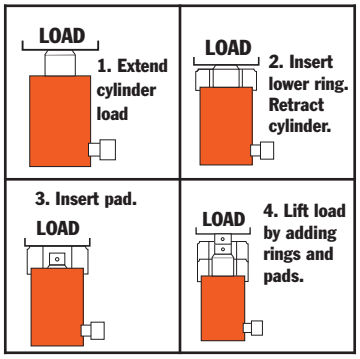

Convert Power Team "Shorty" cylinders to mechanical cribbing devices; more stable than timber or other awkward, makeshift methods. Ideal for lifting applications such as structure moving. Reduce cribbing time dramatically. In effect, increases the stroke of the cylinder; stacking pads act as cylinder extensions:

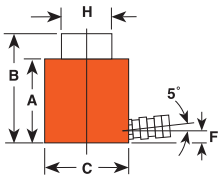
1. Extend cylinder and insert lower supporting ring.
2. Retract cylinder, insert a stacking pad.
3. Extend cylinder again; pad increases cylinder stroke.
4. Repeat process until all rings and pads are used.

**Each cribbing block set includes rings, pads and insertion handle (Optional).**

**No. CB30** — Cribbing block set for use with No. RSS302; 30 ton cylinder.
**No. CB50** — Cribbing block set for use with No. RSS502; 50 ton cylinder.
**No. CB100** — Cribbing block set for use with No. RSS1002; 100 ton cylinder.
**No. 45589** — Insertion handle is used for inserting rings and pads.




| Use with Cyl. No. | Swivel Cap Order No. | Weight (kg) | A (mm) | B (mm) | C (mm) |
|---|---|---|---|---|---|
| RSS101 | 350320 | 0,2 | 25,4 | 36,5 | 36,5 |
| RSS202 | 350321 | 0,6 | 34,9 | 54 | 54 |
| RSS302 | 350322 | 0,7 | 34,9 | 63,5 | 54 |
| RSS502 | 350331 | 1,2 | 36,5 | 82,6 | 54 |
| RSS1002 | 350332 | 3,0 | 46 | 111,1 | 85,7 |

**SWIVEL CAPS FOR "RSS",** Reduce the effects of off center loading. Tilts up to 5°. (Available as optional)

| Cyl Capacity (Tons) | Stroke (mm) | Order No. | Oil Cap. (cm³) Push | Oil Cap. (cm³) Return | A Retracted Height (mm) | B Extended Height (mm) | C Outside Dia. (mm) | F Base to Port (mm) | H Piston Rod Dia. (mm) | Bore Dia. (mm) | Cylinder Effective Area (cm²) | Metric Tons at 700 (bar) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 38,1 | RSS101 | 56 | – | 88,9 | 127,0 | 69,9 | 15,9 | 38,1 | 42,9 | 14,4 | 10,2 | 2,7 |
| 20 | 44,5 | RSS202 | 126 | – | 95,3 | 139,7 | 90,5 | 15,9 | 54,8 | 60,3 | 28,6 | 20,0 | 4,5 |
| 30 | 61,9 | RSS302 | 259 | – | 117,5 | 179,4 | 101,6 | 15,9 | 63,5 | 73,0 | 41,9 | 29,5 | 6,7 |
| 50 | 60,3 | RSS502 | 374 | – | 127,0 | 187,3 | 123,8 | 19,1 | 79,4 | 88,9 | 62,0 | 43,6 | 10,5 |
| 100 | 57,2 | RSS1002 | 725 | – | 139,7 | 196,9 | 168,3 | 23,8 | 111,1 | 127,0 | 126,6 | 89,1 | 21,4 |
| 100 | 38,1 | RSS1002D† | 482 | 212 | 144,5 | 182,6 | 174,6 | 23,8 * | 95,3 | 127,0 | 126,6 | 89,1 | 24,7 |
| 250 | 76,2 | RSS2503 | 2.469 | – | 290,5 | 366,7 | 250,8 | 46,0 | 139,7 | 203,2 | 323,9 | 227,8 | 99,7 |

*Cylinder top to port is 40 mm  †Double-acting

# Center Hole
## CYLINDERS RH SERIES

**10-100 Ton**
Single-Acting,
Spring-Return

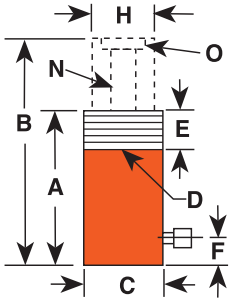
Ideal for pulling and tensioning of cables, anchor bolts, forcing screws, etc.

- Interchangeable piston head inserts provide versatility of application.
- 12, 20*, 30*, 50, 60 Ton Single-Acting Models Feature Threaded Collar
- Withstands full "dead-end" loads.
- Corrosion resistant standpipe has "Power Tech" treatment.
- All cylinders except RH120 are furnished with a 9796 3/8" NPT female half coupler.
- Aluminum cylinder body and piston are featured on the RHA306 cylinder.

* Model RH203 and RHA306 do not feature the collar thread. See the chart below.


**ASME B30.1**
**700 bar**

CYLINDERS




**HEAD INSERTS FOR RH SERIES CYLINDERS (OPTIONAL)**

| For Use With: | Threaded Insert Order No. |
|---|---|
| RH102, RH108 | 28632 3/4"–16 |
| RH203 | 28612 1"–8 |
| RH302, RH306 | 38904 1 1/4"–7 |
| RH303 | 28644 1 1/4"–7 |
| RH503 | 38855 1 5/8"–5 1/2 |
| RH603, RH605 RH606 | 34251 1 5/8"–5 1/2 |

| Cyl. Cap. (tons) | Stroke (mm) | Order No. | Oil Cap. (cm³) | A Retracted Height (mm) | B Extended Height (mm) | C Outside Dia. (mm) | D Collar Thread (in.) | E Collar Thread Length (mm) | F Base to Port (mm) | H Piston Rod Dia. (mm) | N Center Hole Dia. (mm) | O Insert Thread and Size (in.) | Mounting Holes (in.) & Bolt Circle (mm) | Cylinder Effective Area (cm²) | Metric Tons at 700 bar | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 63,5 | RH102† | 91 | 134,9 | 198,4 | 76,2 | - | - | 25,4 | 52,4 | 19,4 | 1 3/4-12 | 1/4 - 20 x 60.3 | 14,3 | 10,0 | 4,1 |
| 10 | 203,2 | RH108† | 290 | 287,3 | 490,5 | 76,2 | - | - | 25,4 | 52,4 | 19,4 | 1 3/4-12 | 1/4 - 20 x 60.3 | 14,3 | 10,0 | 8,5 |
| 12 | 7,9 | RH120** | 14 | 55,6 | 63,5 | 69,9 | 2 3/4-16 | 31,8 | 9,5 | 34,9 | 17,5 | 3/4-16 | 5/16 - 18 x 50.8 | 17,8 | 12,5 | 1,4 |
| 12 | 41,3 | RH121 | 74 | 122,2 | 163,5 | 69,9 | 2 3/4-16 | 31,8 | 25,4 | 34,9 | 20,2 | - | - | 17,8 | 12,5 | 3,0 |
| 12 | 41,3 | RH121T** | 74 | 122,2 | 163,5 | 69,9 | 2 3/4-16 | 31,8 | 25,4 | 34,9 | 17,5 | 3/4-16 | - | 17,8 | 12,5 | 3,0 |
| 12 | 76,2 | RH123 | 136 | 184,2 | 260,4 | 69,9 | 2 3/4-16 | 20,6 | 25,4 | 34,9 | 20,6 | - | - | 17,8 | 12,5 | 4,0 |
| 20 | 50,8 | RH202 | 155 | 155,6 | 206,4 | 98,4 | 3 7/8-12 | 38,1 | 25,4 | 54,0 | 27,4 | 1 9/16-16 | 3/8 - 16 x 82.5 | 30,4 | 21,4 | 7,3 |
| 20 | 76,2 | RH203† | 193 | 154,0 | 230,2 | 101,6 | - | - | 25,4 | 69,9 | 26,6 | 2 1/4-12 | 3/8 - 16 x 82.5 | 25,3 | 17,8 | 9,1 |
| 20 | 152,4 | RH206 | 465 | 308,0 | 460,4 | 98,4 | 3 7/8-12 | 38,1 | 25,4 | 54,0 | 27,4 | 1 9/16-16 | 3/8 - 16 x 82.5 | 30,4 | 21,4 | 13,7 |
| 30 | 63,5 | RH302 | 260 | 158,8 | 222,3 | 120,7 | 4 3/4-12 | 38,1 | 29,4 | 82,6 | 32,9 | 2 3/4-12 | 7/16 - 20 x 92.1 | 40,9 | 28,8 | 11,6 |
| 30 | 149,2 | RHA306† | 625 | 283,4 | 432,6 | 130,2 | - | - | 31,8 | 82,6 | 32,5 | 2 5/8-8 | - | 40,9 | 28,8 | 9,9 |
| 30 | 152,4 | RH306 | 625 | 247,7 | 400,1 | 120,7 | 4 3/4-12 | 38,1 | 29,4 | 82,6 | 32,5 | 2 3/4-12 | 7/16 - 20 x 92.1 | 40,9 | 28,8 | 17,7 |
| 50 | 76,2 | RH503 | 534 | 181,0 | 257,2 | 152,4 | 6-12 | 50,8 | 31,8 | 104,8 | 42,5 | 3 1/4-12 | 5/8 - 18 x 120.6 | 70,0 | 49,3 | 21,2 |
| 60 | 76,2 | RH603* | 607 | 235,0 | 311,2 | 158,8 | 6 1/4-12 | 63,5 | 25,4 | 91,3 | 54,0 | 3-12 | 1/2 - 13 x 130.2 | 79,4 | 55,9 | 27,2 |
| 60 | 152,4 | RH606* | 1.211 | 311,2 | 463,6 | 158,8 | 6 1/4-12 | 63,5 | 25,4 | 91,3 | 54,0 | 3-12 | 1/2 - 13 x 130.2 | 79,4 | 55,9 | 35,4 |
| 100 | 76,2 | RH1003*† | 1.014 | 254,0 | 330,2 | 212,7 | - | - | 31,8 | 127,0 | 79,4 | 4 1/8-12 | - | 133,0 | 93,5 | 52,2 |

*** Supplied with carrying handles.**

**Aluminum**

**** RH120 and RH121T do not have an internal threaded insert, but do have a 3/4-16 internal thread. The RH120 inlet port is 1/4" NPTF.**

**†RH102, RH108, RH203, RHA306 & RH1003 with plain collar.**

# Center Hole
## CYLINDERS RH SERIES

## 30-200 Ton
Double-Acting

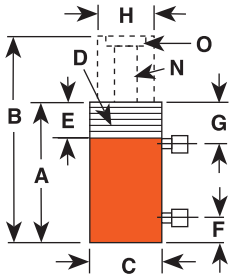
Ideal for pulling and tensioning.

- Interchangeable piston head inserts provide versatility of application (See page 18).
- Built-in safety feature prevents over-pressurization of the retract circuit.
- Plated piston rod resists wear; superior packings provide high cycle life without leakage.
- Corrosion-resistant standpipe has "Power Tech" treatment (See page 6).
- Each cylinder has 9796 $^{3}/_{8}$" NPTF female half couplers. The 60 ton thru 200 ton models are equipped with removable carrying handles.


**30, 60, 100, 150, 200 Ton Double-Acting Models Feature Plain Collar**

**ASME B30.1 700 bar**

**30, 60, 100 Ton Double-Acting Models Feature Threaded Collar**




| Cyl. Cap. (tons) Push | Pull | Stroke (mm) | Order No. | Oil Cap. (cm³) Push | Pull | A Retracted Height (mm) | B Extended Height (mm) | C Outside Dia. (mm) | D Collar Thread (in.) | E Collar Thread Length (mm) | F Base to Port (mm) | G Cylinder Top to Port (mm) | H Piston Rod Dia. (mm) | N Center Hole Dia. (mm) | O Insert Thread Size (in.) | Mounting Holes (in.) and Bolt Circle (mm) | Cylinder Effective Area (cm²) Push | Pull | Metric Tons at 700 bar Push | Pull | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | 15 | 76,2 | RH303 | 289 | 167 | 179,4 | 255,6 | 120,7 | - | - | 25,4 | 41,3 | 63,5 | 32,5 | 2-12 | $^{3}/_{8}$-16 x 92,1 | 38,0 | 21,8 | 26,8 | 15,3 | 13,5 |
| 30 | 15 | 152,4 | RH306D | 580 | 333 | 281,0 | 433,4 | 120,7 | - | - | 25,4 | 41,3 | 63,5 | 32,5 | 2-12 | $^{7}/_{16}$-20 x 92,1 | 38,0 | 21,8 | 26,8 | 15,3 | 20,4 |
| 30 | 20 | 257,2 | RH3010 | 1.082 | 672 | 438,2 | 695,3 | 114,3 | 4 $^{1}/_{2}$-12 | 41 | 44,5 | 81,0 | 60,3 | 33,3 | 1 $^{7}/_{8}$-16 | - | 42,2 | 26,1 | 29,7 | 18,3 | 27,7 |
| 60 | 25 | 101,6 | RHA604D | 807 | 338 | 241,3 | 342,9 | 177,8 | - | - | 39,7 | 57,2 | 101,6 | 54,0 | 3-12 | $^{1}/_{2}$-13 x 130,2 | 79,4 | 33,2 | 55,8 | 25,1 | 16,2 |
| 60 | 25 | 127,0 | RH605* | 1.009 | 423 | 241,3 | 368,3 | 165,9 | - | - | 25,4 | 44,5 | 101,6 | 54,0 | 3-12 | $^{1}/_{2}$-13 x 130,2 | 79,4 | 33,2 | 55,8 | 25,1 | 33,1 |
| 60 | 40 | 257,2 | RH6010* | 2.181 | 1.427 | 458,8 | 716,0 | 158,8 | 6 $^{1}/_{4}$-12 | 47,6 | 54,0 | 81,8 | 92,1 | 54,4 | 3-16 | - | 84,8 | 55,4 | 59,6 | 38,9 | 54,5 |
| 100 | 45 | 38,1 | RH1001* | 526 | 233 | 165,1 | 203,2 | 212,7 | - | - | 31,8 | 58,7 | 127,0 | 79,8 | 4-16 | $^{5}/_{8}$-11 x 177,8 | 138,0 | 60,8 | 97,0 | 42,7 | 38,6 |
| 100 | 50 | 152,4 | RH1006* | 1.971 | 1.076 | 314,3 | 466,7 | 184,2 | - | - | 37,3 | 59,1 | 111,1 | 52,4 | - | $^{1}/_{2}$-13 x 139,7 | 129,2 | 70,5 | 90,8 | 49,6 | 43,1 |
| 100 | 45 | 257,2 | RH10010* | 3.552 | 1.556 | 495,3 | 752,5 | 215,9 | 8 $^{1}/_{2}$-12 | 57 | 63,5 | 91,7 | 139,7 | 79,8 | 4 $^{1}/_{2}$-12 | - | 138,0 | 60,8 | 97,0 | 42,7 | 109,0 |
| 150 | 70 | 127,0 | RH1505* | 2.475 | 1.207 | 311,2** | 438,2 | 215,9 | - | - | 37,3 | 68,3 | 139,7 | 65,1 | - | - | 194,1 | 94,8 | 136,9 | 66,8 | 67,2 |
| 150 | 75 | 203,2 | RH1508* | 3.929 | 2.086 | 349,3 | 552,5 | 247,7 | - | - | 39,3 | 61,1 | 152,4 | 80,2 | 5-12 | - | 193,2 | 102,6 | 135,9 | 72,1 | 103,1 |
| 200 | 75 | 203,2 | RH2008* | 5.307 | 2.093 | 408,0 | 611,2 | 273,1 | - | - | 57,2 | 81,8 | 190,5 | 103,2 | 6-12 | $^{1}/_{4}$-12 x 198,1 | 260,9 | 102,9 | 183,5 | 72,4 | 142,0 |

* Supplied with carrying handles.

** Measured with 19 mm high serrated insert installed.

Aluminum

CYLINDERS

# Center Hole
## CYLINDERS RT SERIES

**17½-100 Ton**
Single- Acting, Spring-Return & Double-Acting

Ideal for pulling and pressing.


RT 302

- A proven design; used throughout industry for over 40 years.
- Cylinders withstand full "dead-end" loads.
- Compact design; ideal for applications in which space is limited.
- Basic head can be changed from a tapped hole to plain hole by simply changing insert.
- Pistons have "Power Tech" treatment for corrosion and abrasion resistance.


Quick-Change Inserts

### "QUICK CHANGE" HEAD INSERTS FOR RT SERIES CYLINDERS

| For Use With: | Threaded Order No.* | Plain Order No. |
|---|---|---|
| RT172 | 21669 | 21714 |
| RT302 | 21873 | 21872 |
| RT503 | 22274 | 22275 |
| RT1004 | 24197 | 24196 |

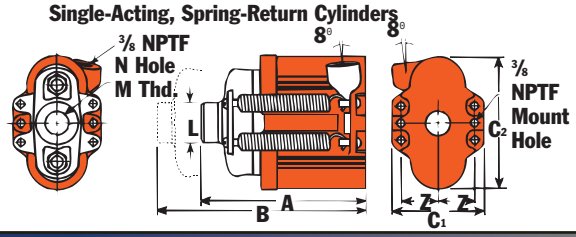
*** Provided with cylinder**

Switch from a tapped hole to a plain hole quickly with these cylinder head inserts. They are held in place with a socket screw. Plain hole permits use of a speed nut for readjusting cylinder after extension.

CYLINDERS

**Dimensions for reference only.**

**Single-Acting, Spring-Return Cylinders**

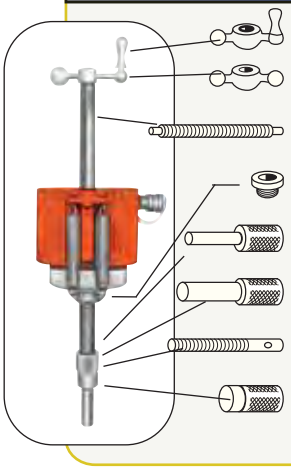



| Cyl. Capacity (Tons) Push | Stroke (mm) | Order No. | Oil Cap. (cm³) Push | Oil Cap. (cm³) Return | A Retracted Height (mm) | B Extended Height (mm) | C1 Outside Dia. (mm) | C2 Outside Dia. (mm) | L Load Cap Dia. (mm) | M Load Cap Thread (in.) | N Center Hole Dia. (mm) | Z Mounting Hole Location (mm) | Mounting Hole (mm) | Cyl. Eff. Area (cm²) | Metric Tons at 700 bar | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17,5 | 50,8 | RT172 | 116 | - | 174,6 | 225,4 | 95,3 | 146,1 | 44,5 | 1-8 | 27,0 | 38,1 | 8,7 | 22,8 | 16,1 | 6,6 |
| 30 | 63,5 | RT302 | 258 | - | 214,3 | 277,8 | 108,0 | 190,5 | 57,2 | 1 ¼-7 | 32,9 | 46,0 | 11,9 | 40,5 | 28,5 | 12,8 |
| 50 | 76,2 | RT503 | 482 | - | 268,3 | 344,5 | 149,2 | 238,1 | 73,0 | 1 ⅝-5 ½ | 42,5 | 60,3 | 16,7 | 63,3 | 44,5 | 25,4 |
| 100 | 123,8 | RT1004** | 1.583 | 1.037 | 384,2 | 508,0 | 266,7 | 336,6 | 120,7 | 2 ½-8 | 65,1 | 73,0 | 19,8 | 124,1* | 87,3 | 72,6 |

*** Push side only for RT1004 double-acting cylinder.**
**** The RT1004 has a bypass when full stroke is reached, preventing over-pressurization of the cylinder.**

**NOTE: Each cylinder complete with threaded cylinder head insert, cylinder half coupler and cylinder attaching screws.**

### "CENTER-HOLE" CYLINDER ACCESSORIES (OPTIONAL)



| | To use with Cyl. No | RT172, RH203 | RT302, RH302 RH303, RH306 | RT503, RH503, RH603 RH605, RH606 | RT1004 |
|---|---|---|---|---|---|
| | Order Set No. | RHA20 | RHA30 | RHA50 | RHA100 |
| 1 Speed Crank | 1 | 24814 | 27198 | 29595 | 303785 |
| 2 Speed Nut | 2 | 302482 1"-8 | 302483 1 ¼"-7 | 33439 1 ⅝"-5 _" | 34136 2 ½"-8 |
| 3 Adjusting Screw | 3 | 32118 1"–8 508 mm Lg. | 34758 1 ¼"-7 x 609,6 mm Lg. | 32698 1⅝"-5 ½"x 762 mm Lg. | 32699 2 ½ "-8 x 869,9 mm Lg. |
| 4 Threaded Insert | 4 | Order threaded insert for RH series cylinders with the accessory set.(See above) Threaded insert supplied with RT series cylinders. | | | |
| 5 Pushing Adapter | 5 | 201923 1"-8, 12,7 mm dia. shank | 34510 1 ¼"-7 x 19,1mm dia. shank | 34755 1 ⅝"-5 ½" x 25,4 mm dia. shank | - |
| 6 Pushing Adapter | 6 | 201454 1"-8, 19,5 mm dia. shank | 34511 1 ¼"-7 x 25,4 mm dia. shank | 34756 1 ⅝"-5 ½" x 31,7 mm dia. shank | - |
| 7 Jack Screw | 7 | 24813 1"-8 x 177,8 mm Lg. | 25931 1¼"-7 x 228,6 mm Lg. | 32701 1⅝"-5 ½" x 279,4 mm Lg. | 32702 2½"-8 x 406,4 mm lg. |
| 8 Screw Cap | 8 | 28228 1"-8 x 38,1 mm dia. | 28229 1¼"-7 x 44,4 mm dia | 28230 1⅝"-5 ½" x 571,5 mm Lg. | - |



POWER TEAM®

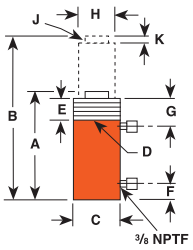
# Double Acting
## CYLINDERS RD SERIES

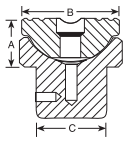
## 10-500 Ton
Double Acting,
Hydraulic-Return

- High tonnage premium design for high cycle life.
- Perfect for bridge lifting, building reconstruction, shipyard, utility and mining equipment maintenance.
- Aluminum bronze overlay bearings provide long life, chrome plated piston rod resist corrosion.
- Load cap snaps out to expose internal piston rod threads for pulling applications; threads withstand full tonnage.
- Grooved ring pattern in load cap helps guard against load slippage.
- Each cylinder has two 9796 3/8" NPTF female half couplers.
- Built-in safety relief valve prevents over-pressurization of the retract circuit.
- Feature mounting holes and collar threads.

**RD10013** ASME B30.1 700 bar

### Features of RD Series Cylinders

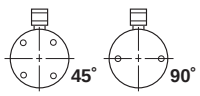

**SWIVEL CAPS (OPTIONAL)**
Reduce the effects of off center loading. Tilts up to 5 degrees.

**SWIVEL CAPS FOR "RD" CYLINDERS**

| Cylinder Tonnage | Swivel Cap Order No. | Weight (kg) | A (mm) | B (mm) | C (mm) |
|---|---|---|---|---|---|
| 10 | 350144 | 0,4 | 22,2 | 36,5 | 21,8 |
| 25 | 350145 | 0,6 | 28,6 | 54 | 36,5 |
| 55 | 351325 | 1,9 | 61,9 | 63,5 | 39,3 |
| 100 | 351324 | 5,1 | 75,0 | 95,3 | 67,5 |
| 150 | 351334 | 5,8 | 66,7 | 111,1 | 77,8 |

| Cyl. Cap. (tons) Push | Cyl. Cap. (tons) Pull | Stroke (mm) | Order No. | Oil Capacity (cm³) Push | Oil Capacity (cm³) Pull | A Retracted Height (mm) | B Extended Height (mm) | C Outside Dia. (mm) | D Collar Thread Size (in.) | E Thread Length (mm) | F Base to Port trusion (mm) | G Cylinder Piston Top to Port (mm) | H Piston Rod Dia. (mm) | J Rod Int. (in) and Depth (mm) | K Piston Rod Protrusion (mm) | Load Cap Dia. (mm) | Bore Dia. (mm) | Cyl. Eff. Area (cm²) Push | Cyl. Eff. Area (cm²) Pull | Metric Tons at 700 bar Push | Metric Tons at 700 bar Pull | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 4 | 158,8 | RD106 | 228 | 90 | 296,9 | 455,6 | 76,2 | 2 3/4-12 | 41,3 | 25,4 | 63,5 | 33,3 | 1-8 x 25,4 | 6,4 | 34,9 | 42,9 | 14,4 | 5,7 | 10,2 | 4,0 | 10,0 |
| 10 | 4 | 254,0 | RD1010 | 366 | 144 | 398,5 | 652,5 | 76,2 | 2 3/4-12 | 41,3 | 25,4 | 63,5 | 33,3 | 1-8 x 25,4 | 6,4 | 34,9 | 42,9 | 14,4 | 5,7 | 10,2 | 4,0 | 12,7 |
| 25 | 8 | 158,8 | RD256 | 528 | 166 | 314,3 | 473,1 | 101,6 | 4-12 | 41,3 | 25,4 | 63,5 | 54,0 | 1 1/2-16 x 25,4 | 9,5 | 54,0 | 65,1 | 33,2 | 10,4 | 23,4 | 7,3 | 18,1 |
| 25 | 8 | 362,0 | RD2514 | 1.205 | 376 | 517,5 | 879,5 | 101,6 | 4-12 | 41,3 | 25,4 | 63,5 | 54,0 | 1 1/2-16 x 25,4 | 9,5 | 54,0 | 65,1 | 33,2 | 10,4 | 23,4 | 7,3 | 29,5 |
| 55 | 28 | 158,8 | RD556 | 1.132 | 577 | 329,4 | 488,2 | 127,0 | 5-12 | 41,3 | 33,3 | 63,5 | 66,7 | 1 11/16-8 x 30,2 | 15,9 | 66,7 | 95,3 | 71,2 | 36,3 | 50,1 | 25,6 | 27,9 |
| 55 | 28 | 333,4 | RD5513 | 2.376 | 1.212 | 504,0 | 837,4 | 127,0 | 5-12 | 41,3 | 33,3 | 63,5 | 66,7 | 1 11/16-8 x 30,2 | 15,9 | 66,7 | 95,3 | 71,2 | 36,3 | 50,1 | 25,6 | 40,9 |
| 55 | 28 | 460,4 | RD5518 | 3280 | 1.673 | 657,2 | 1.117,6 | 127,0 | 5-12 | 41,3 | 33,3 | 63,5 | 66,7 | 1 11/16-8 x 30,2 | 15,9 | 66,7 | 95,3 | 71,2 | 36,3 | 50,1 | 25,6 | 64,5 |
| 80 | 44 | 333,4 | RD8013 | 3421 | 1.901 | 517,5 | 850,9 | 146,1 | 5 3/4-12 | 41,3 | 38,1 | 63,5 | 76,2 | 2-4 1/2 x 38,1 | 14,3 | 73,0 | 114,3 | 102,6 | 57,0 | 72,1 | 40,1 | 53,6 |
| 100 | 44 | 168,3 | RD1006 | 2.242 | 959 | 350,0 | 518,3 | 174,6 | 6 7/8-12 | 41,3 | 38,1 | 63,5 | 98,4 | 2 3/4-12 x 29,4 | 15,9 | 98,4 | 130,2 | 133,1 | 57,0 | 93,5 | 40,1 | 57,2 |
| 100 | 44 | 333,4 | RD10013 | 4.440 | 1.902 | 515,1 | 848,5 | 174,6 | 6 7/8-12 | 41,3 | 38,1 | 63,5 | 98,4 | 2 3/4-12 x 29,4 | 15,9 | 98,4 | 130,2 | 133,1 | 57,0 | 93,5 | 40,1 | 82,2 |
| 100 | 44 | 511,2 | RD10020 | 6.809 | 2.919 | 718,3 | 1.229,5 | 174,6 | 6 7/8-12 | 41,3 | 38,1 | 63,5 | 98,4 | 2 3/4-12 x 29,4 | 15,9 | 98,4 | 130,2 | 133,1 | 57,0 | 93,5 | 40,1 | 118,0 |
| 150 | 73 | 168,3 | RD1506 | 3.334 | 1.606 | 377,8 | 546,1 | 209,6 | 8 1/4-12 | 41,3 | 50,8 | 63,5 | 114,3 | 3 1/4-8 x 38,1 | 20,6 | 114,3 | 158,8 | 197,9 | 95,3 | 139,1 | 66,9 | 85,4 |
| 150 | 73 | 333,4 | RD15013 | 6.604 | 3.180 | 542,9 | 876,3 | 209,6 | 8 1/4-12 | 41,3 | 50,8 | 63,5 | 114,3 | 3 1/4-8 x 38,1 | 20,6 | 114,3 | 158,8 | 197,9 | 95,3 | 139,1 | 66,9 | 123,5 |
| 150 | 73 | 460,4 | RD15018 | 9.132 | 4.392 | 673,9 | 1.134,3 | 209,6 | 8 1/4-12 | 41,3 | 50,8 | 63,5 | 114,3 | 3 1/4-8 x 38,1 | 19,1 | 114,3 | 158,8 | 197,9 | 95,3 | 139,1 | 66,9 | 170,7 |
| 200 | 113 | 168,3 | RD2006 | 4.485 | 2.457 | 406,4 | 574,7 | 241,3 | 9 1/2-12 | 41,3 | 63,5 | 68,3 | 123,8 | 3 1/4-8 x 57,1 | 27,0 | 114,3 | 184,2 | 266,3 | 145,9 | 187,2 | 102,6 | 118,9 |
| 200 | 113 | 333,4 | RD20013 | 8.886 | 4.869 | 571,5 | 904,9 | 241,3 | 9 1/2-12 | 41,3 | 63,5 | 68,3 | 123,8 | 3 1/4-8 x 57,1 | 27,0 | 114,3 | 184,2 | 266,3 | 145,9 | 187,2 | 102,6 | 161,6 |
| 200 | 113 | 460,4 | RD20018 | 12.270 | 6.722 | 723,9 | 1.184,3 | 241,3 | 9 1/2-12 | 41,3 | 63,5 | 68,3 | 123,8 | 3 1/4-8 x 57,1 | 27,0 | 114,3 | 184,2 | 266,3 | 145,9 | 187,2 | 102,6 | 200,7 |
| 300 | 147 | 152,4 | RD3006 | 5.920 | 2.903 | 488,9 | 591,3 | 273,1 | 10 1/2-12 | 60,3 | 85,7 | 85,7 | 158,8 | 2 1/2-12 x 82,5 | 28,6 | 174,6 | 222,3 | 387,8 | 190,0 | 272,7 | 133,6 | 172,5 |
| 300 | 147 | 330,2 | RD30013 | 12.825 | 6.281 | 630,2 | 960,4 | 273,1 | 10 1/2-12 | 60,3 | 85,7 | 85,7 | 158,8 | 2 1/2-12 x 82,5 | 28,6 | 174,6 | 222,3 | 387,8 | 190,0 | 272,7 | 133,6 | 296,9 |
| 400 | 186 | 152,4 | RD4006 | 7.724 | 4.051 | 489,7 | 642,1 | 320,7 | 12 1/2-8 | 69,9 | 97,6 | 97,6 | 184,2 | 3-12 x 92,2 | 31,8 | 198,4 | 254,0 | 506,6 | 240,3 | 356,2 | 169,0 | 265,6 |
| 400 | 186 | 330,2 | RD40013 | 16.744 | 8.790 | 667,5 | 997,7 | 320,7 | 12 1/2-8 | 69,9 | 97,6 | 97,6 | 184,2 | 3-12 x 92,2 | 31,8 | 198,4 | 254,0 | 506,6 | 240,3 | 356,2 | 169,0 | 349,6 |
| 500 | 245 | 152,4 | RD5006 | 9.774 | 4.838 | 522,3 | 674,7 | 374,7 | 14 3/4-8 | 79,4 | 105,6 | 105,6 | 203,2 | 3 1/4-12 x 107,9 | 38,1 | 215,9 | 285,8 | 641,1 | 317,0 | 450,8 | 222,8 | 371,8 |
| 500 | 245 | 330,2 | RD50013 | 21.189 | 10.480 | 700,1 | 1.030,3 | 374,7 | 14 3/4-8 | 79,4 | 105,6 | 105,6 | 203,2 | 3 1/4-12 x 107,9 | 38,1 | 215,9 | 285,8 | 641,1 | 317,0 | 450,8 | 222,8 | 495,8 |

NOTE: Base mounting holes are standard on all RD cylinders. Orientation of base mounting holes to coupler. Orientation on RD300, RD400 & RD500 series is random.




**BASE MOUNTING HOLES FOR "RD" CYLINDERS**

| Tonnage | 10 | 25 | 55 | 80 | 100 | 150 | 200 | 300 | 400 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|
| No. of Holes | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 6 |
| Thread Size | 3/8"-16 | 1/2"-13 | 5/8"-11 | 5/8"-11 | 3/4"-10 | 1"-8 | 1 1/4"-7 | 1 1/4"-7 | 1 1/2"-12 | 1 3/8"-12 |
| Depth (mm) | 16 | 19 | 22 | 22 | 25 | 25 | 32 | 44 | 48 | 51 |
| B.C. Dia. | 51 | 70 | 89 | 114 | 140 | 152 | 165 | 159 | 184 | 203 |
| Orientation | 90° | 45° | 45° | 45° | 45° | 45° | 45° | Random | Random | Random |

CYLINDERS

# High Tonnage
## CYLINDERS R SERIES

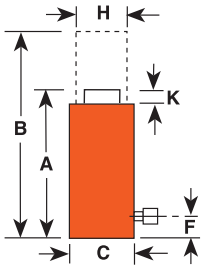
## 55-565 Ton
Single-Acting
Load-Return

High-tonnage

- Visible indicator band alerts when stroke limit is reached; overflow port ("weep hole") stroke limiter prevents piston from being overextended.
- Alloy heat treated piston and body for reliability and strength.
- Plated piston rod increase corrosion resistance and give superior bearing qualities.


**R1502C**

**ASME B30.1**
**700 bar**



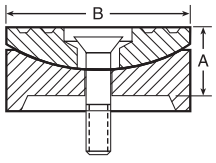

| Cyl. Cap. (tons) | Stroke (mm) | Order No. | Oil Cap. (cm³) | A Retracted Ht. (mm) | B Extended Ht. (mm) | C Outside Dia. (mm) | F Base to Port (mm) | H Piston Rod Dia. (mm) | K Rod Protrusion (mm) | Piston Bore Dia. (mm) | Effective Area (cm²) | Metric Tons at 700 bar | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 55 | 50,8 | R552C | 362 | 125,4 | 176,2 | 127,0 | 25,4 | 95,3 | 3,2 | 95,3 | 71,2 | 50,1 | 12,3 |
| 55 | 152,4 | R556C | 1.087 | 227,0 | 379,4 | 127,0 | 25,4 | 95,3 | 3,2 | 95,3 | 71,2 | 50,1 | 22,7 |
| 55 | 254,0 | R5510C | 1.811 | 328,6 | 582,6 | 127,0 | 25,4 | 95,3 | 3,2 | 95,3 | 71,2 | 50,1 | 32,7 |
| 100 | 50,8 | R1002C | 677 | 139,7 | 190,5 | 165,1 | 25,4 | 130,2 | 3,2 | 130,2 | 133,1 | 93,6 | 23,6 |
| 100 | 152,4 | R1006C | 2.030 | 241,3 | 393,7 | 165,1 | 25,4 | 130,2 | 3,2 | 130,2 | 133,1 | 93,6 | 40,4 |
| 150 | 50,8 | R1502C | 1.007 | 161,9 | 212,7 | 204,8 | 31,8 | 158,8 | 3,2 | 158,8 | 197,9 | 139,1 | 41,8 |
| 150 | 152,4 | R1506C | 3.019 | 263,5 | 415,9 | 204,8 | 31,8 | 158,8 | 3,2 | 158,8 | 197,9 | 139,1 | 68,6 |
| 150 | 254,0 | R15010C | 5.032 | 365,1 | 619,1 | 204,8 | 31,8 | 158,8 | 3,2 | 158,8 | 197,9 | 139,1 | 95,3 |
| 200 | 50,8 | R2002C | 1.355 | 190,5 | 241,3 | 235,0 | 41,3 | 184,2 | 3,2 | 184,2 | 266,3 | 187,2 | 65,8 |
| 200 | 152,4 | R2006C | 4.062 | 292,1 | 444,5 | 235,0 | 41,3 | 184,2 | 3,2 | 184,2 | 266,3 | 187,2 | 100,3 |
| 355 | 50,8 | R3552C | 2.326 | 231,8 | 282,6 | 298,5 | 54,0 | 241,3 | 3,2 | 241,3 | 457,2 | 321,4 | 137,1 |
| 355 | 152,4 | R3556C | 6.975 | 333,4 | 485,8 | 298,5 | 54,0 | 241,3 | 3,2 | 241,3 | 457,2 | 321,4 | 197,0 |
| 355 | 254,0 | R35510C | 11.624 | 435,0 | 689,0 | 298,5 | 54,0 | 241,3 | 3,2 | 241,3 | 457,2 | 321,4 | 256,5 |
| 430 | 50,8 | R4302C | 2.841 | 263,5 | 314,3 | 330,2 | 63,5 | 266,7 | 3,2 | 266,7 | 558,5 | 392,7 | 199,8 |
| 430 | 152,4 | R4306C | 8.520 | 365,1 | 517,5 | 330,2 | 63,5 | 266,7 | 3,2 | 266,7 | 558,5 | 392,7 | 276,5 |
| 565 | 50,8 | R5652C | 3.710 | 292,1 | 342,9 | 377,8 | 69,9 | 304,8 | 3,2 | 304,8 | 729,5 | 512,9 | 289,7 |
| 565 | 152,4 | R5656C | 11.129 | 393,7 | 546,1 | 377,8 | 69,9 | 304,8 | 3,2 | 304,8 | 729,5 | 512,9 | 389,5 |
| 565 | 254,0 | R56510C | 18.548 | 495,3 | 749,3 | 377,8 | 69,9 | 304,8 | 3,2 | 304,8 | 729,5 | 512,9 | 489,4 |

**Base Mounting Holes (Optional)**
**Available on request: Up to 1140 tons capacity and Strokes: 101.6 mm, 203.2 mm & 304.8 mm**

### SWIVEL CAPS (Optional)

**For use with "R _ _ _ _ C" cylinders**

| Use with Cyl. No. | Swivel Cap Order No. | Weight (kg) | A (mm) | B (mm) |
|---|---|---|---|---|
| 55-100 ton | 420866 | 0.8 | 25,4 | 71,4 |
| 150-200 ton | 420867 | 4,0 | 38,1 | 130,2 |
| 280 ton | 420868 | 6,1 | 44,5 | 149,2 |
| 355 ton | 420869 | 16,8 | 69,9 | 195,3 |
| 430 ton | 420870 | 23,6 | 79,4 | 225,4 |
| 565 ton | 420871 | 35,4 | 92,1 | 250,8 |




**Recommended to use with swivel caps (optional) to reduce the effects of off center loading. Tilts up to 5 degrees. Radial grooves on top of cap reduce load slippage. Notch across face of each cap helps keep loads having a protruding or round shaped centered.**

CYLINDERS

# High Tonnage
## CYLINDERS R SERIES

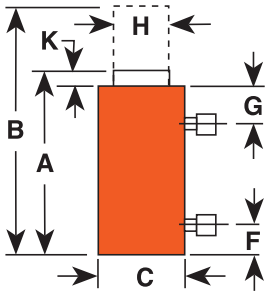
## 100-565 Ton
Double-Acting,
Hydraulic-Return

High-tonnage,
hydraulic return.

R1502D

- Cylinders come standard with swivel caps to reduce the effects of off-center loading.
- Cylinders may be “dead-ended” without damage.
- Hard chrome plated, heat treated piston rod reduces wear on piston and gland nut.
- Built-in safety relief valve prevents over-pressurization of the retract circuit.
- Each cylinder has two 9796 ⅜" NPTF female half couplers.

R2806D




| Cyl. Cap. (tons) | Stroke (mm) | Order No. | Oil Capacity (cm³) Push | Oil Capacity (cm³) Return | A Retracted Height (mm) | B Extended Height (mm) | C Outside Dia. (mm) | F Base to Port (mm) | G Cylinder Top to Port (mm) | H Piston Rod Dia. (mm) | K Piston Rod Protrusion (mm) | Bore Dia. (mm) | Cylinder Effective Area (cm²) Push | Metric Tons at 700 bar Push | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100 | 50,8 | R1002D | 676 | 315 | 168,7 | 219,5 | 165,1 | 25,4 | 56,0 | 95,3 | 7,1 | 130,2 | 132,9 | 93,4 | 24,5 |
| 100 | 152,4 | R1006D | 2.027 | 945 | 270,3 | 422,7 | 165,1 | 25,4 | 56,0 | 95,3 | 7,1 | 130,2 | 132,9 | 93,4 | 36,8 |
| 100 | 254,0 | R10010D | 3.378 | 1.574 | 371,9 | 625,9 | 165,1 | 25,4 | 56,0 | 95,3 | 7,1 | 130,2 | 132,9 | 93,4 | 49,0 |
| 150 | 50,8 | R1502D | 1.007 | 485 | 188,9 | 239,7 | 204,8 | 31,8 | 57,2 | 114,3 | 7,5 | 158,8 | 198,0 | 139,1 | 43,1 |
| 150 | 152,4 | R1506D | 3.021 | 1.456 | 290,5 | 442,9 | 204,8 | 31,8 | 57,2 | 114,3 | 7,5 | 158,8 | 198,0 | 139,1 | 61,7 |
| 200 | 50,8 | R2002D | 1.355 | 643 | 206,8 | 257,6 | 235,0 | 41,3 | 58,7 | 133,4 | 8,7 | 184,2 | 266,4 | 187,2 | 61,7 |
| 200 | 152,4 | R2006D | 4.064 | 1.929 | 308,4 | 460,8 | 235,0 | 41,3 | 58,7 | 133,4 | 8,7 | 184,2 | 266,4 | 187,2 | 84,9 |
| 200 | 254,0 | R20010D | 6.773 | 3.214 | 410,0 | 664,0 | 235,0 | 41,3 | 58,7 | 133,4 | 8,7 | 184,2 | 266,4 | 187,2 | 108,5 |
| 280 | 152,4 | R2806D | 5.579 | 2.322 | 335,4 | 447,8 | 276,2 | 47,6 | 65,5 | 165,1 | 10,3 | 215,9 | 365,7 | 257,3 | 134,8 |
| 280 | 254,0 | R28010D | 9.299 | 3.870 | 437,0 | 691,0 | 276,2 | 47,6 | 65,5 | 165,1 | 10,3 | 215,9 | 365,7 | 257,3 | 170,7 |
| 355 | 50,8 | R3552D | 2.326 | 777 | 288,9 | 339,7 | 298,5 | 54,0 | 69,9 | 196,9 | 11,1 | 241,3 | 457,3 | 321,4 | 147,0 |
| 355 | 152,4 | R3556D | 6.977 | 2.332 | 390,5 | 542,9 | 298,5 | 54,0 | 69,9 | 196,9 | 11,1 | 241,3 | 457,3 | 321,4 | 191,1 |
| 430 | 50,8 | R4302D | 2.840 | 977 | 312,7 | 363,5 | 330,2 | 63,5 | 75,0 | 215,9 | 11,9 | 266,7 | 558,6 | 392,7 | 199,3 |
| 430 | 152,4 | R4306D | 8.521 | 2.932 | 414,3 | 566,7 | 330,2 | 63,5 | 75,0 | 215,9 | 11,9 | 266,7 | 558,6 | 392,7 | 253,3 |
| 430 | 254,0 | R43010D | 14.202 | 4.887 | 515,9 | 769,9 | 330,2 | 63,5 | 75,0 | 215,9 | 11,9 | 266,7 | 558,6 | 392,7 | 305,5 |
| 565 | 50,8 | R5652D | 3.710 | 1.260 | 345,3 | 396,1 | 377,8 | 69,9 | 81,4 | 247,7 | 13,9 | 304,8 | 729,5 | 512,9 | 281,0 |
| 565 | 152,4 | R5656D | 11.129 | 3.779 | 446,9 | 599,3 | 377,8 | 69,9 | 81,4 | 247,7 | 13,9 | 304,8 | 729,5 | 512,9 | 350,4 |
| 565 | 254,0 | R56510D | 18.548 | 6.298 | 548,5 | 802,5 | 377,8 | 69,9 | 81,4 | 247,7 | 13,9 | 304,8 | 729,5 | 512,9 | 420,4 |

**Base Mounting Holes (Optional)**
**Available on request: Up to 1140 tons capacity and Strokes: 101.6 mm, 203.2 mm & 304.8 mm**

# Locking Collar
## CYLINDER RL SERIES– ALUMINUM

**55 & 100 Ton**
Single-Acting,
Spring-Return

Positive mechanical lock to support load.

- Support lifted load for extended periods of time with hydraulic pressure released.
- At half the weight of steel cylinders of comparable capacity, aluminum cylinders are ideal when portability is a key factor.
- Feature carrying handle.

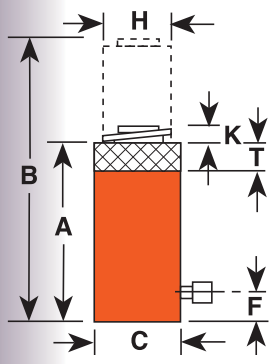

**RA1006L**

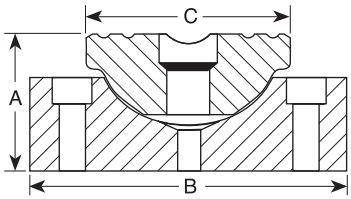
**ASME B30.1**
**700 bar**

CYLINDERS


**Locking collar feature permits non-hydraulic support of load.**


**RA556L**




| Tonnage | Swivel Cap Order No. | SWIVEL CAPS reduce the effects of off center loading. Tilts up to 5°. (Available as optional) Wt. (kg.) | A (mm) | B (mm) | C (mm) |
|---|---|---|---|---|---|
| 55 | Q99-1000 | 0,9 | 31,8 | 63,2 | 71,4 |

| Cyl. Cap. (tons) | Stroke (mm) | Order No. | Oil Cap. ($cm^3$) | A Retracted Ht. (mm) | B Extended Ht. (mm) | C Outside Dia. (mm) | F Base to Port (mm) | H Piston Rod Dia. (mm) | K Piston Rod Protrusion (mm) | T Nut Thickness (mm) | Bore Dia. (mm) | Cylinder Effective Area ($cm^2$) | Metric Tons at 700 bar | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 55 | 155,5 | RA556L | 1.109 | 317,5 | 473,1 | 133,4 | 34,9 | 82,6 | 12,7 | 38,1 | 95,3 | 71,2 | 50,1 | 13,4 |
| 100 | 158,8 | RA1006L | 2.116 | 339,7 | 498,5 | 187,3 | 30,2 | 114,3 | 6,4 | 38,1 | 130,2 | 133,0 | 93,5 | 29,1 |

**Note: Supported loads not to exceed the rated capacity of the cylinders. Not intended to support additional dynamic loads, such as those applied by moving vehicles.**

# Locking Collar
## CYLINDER RL SERIES– STEEL

## 55-565 Ton
## Single-Acting Load-Return


R15010L

ASME B30.1
700 bar

- Support lifted load for extended periods of time with hydraulic pressure released.
- Visible indicator band alerts when stroke limit is reached; overflow port ("weep hole") stroke limiter prevents piston from being overextended.
- All cylinders feature coated pistons to resist corrosion and abrasion.

Positive mechanical lock to support load.

**Locking collar feature permits non-hydraulic support of load.**

| Cyl. Cap. (tons) | Stroke (mm) | Order No. | Oil Cap. ($cm^3$) | A Retracted Ht. (mm) | B Extended Ht. (mm) | C Outside Dia. (mm) | F Base to Port (mm) | H Piston Rod Dia. (mm) | K Piston Rod Protrusion (mm) | T Nut Thickness (mm) | Bore Dia. (mm) | Cylinder Effective Area ($cm^2$) | Metric Tons at 700 bar | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 55 | 50,8 | R552L | 362 | 161,9 | 212,7 | 125,4 | 25,4 | 95,3 | 3,2 | 36,5 | 95,3 | 71,2 | 50,1 | 15,3 |
| 55 | 152,4 | R556L | 1.087 | 263,5 | 415,9 | 125,4 | 25,4 | 95,3 | 3,2 | 36,5 | 95,3 | 71,2 | 50,1 | 26,3 |
| 55 | 254,0 | R5510L | 1.811 | 365,1 | 619,1 | 125,4 | 25,4 | 95,3 | 3,2 | 36,5 | 95,3 | 71,2 | 50,1 | 36,3 |
| 100 | 50,8 | R1002L | 677 | 184,2 | 235,0 | 165,1 | 25,4 | 130,2 | 3,2 | 44,5 | 130,2 | 133,1 | 93,4 | 30,0 |
| 100 | 152,4 | R1006L | 2.030 | 285,8 | 438,2 | 165,1 | 25,4 | 130,2 | 3,2 | 44,5 | 130,2 | 133,1 | 93,4 | 46,8 |
| 100 | 254,0 | R10010L | 3.383 | 387,4 | 641,4 | 165,1 | 25,4 | 130,2 | 3,2 | 44,5 | 130,2 | 133,1 | 93,4 | 64,5 |
| 150 | 50,8 | R1502L | 1.007 | 206,4 | 257,2 | 204,8 | 31,8 | 158,8 | 3,2 | 44,5 | 158,8 | 197,9 | 139,1 | 53,0 |
| 150 | 152,4 | R1506L | 3.019 | 308,0 | 460,4 | 204,8 | 31,8 | 158,8 | 3,2 | 44,5 | 158,8 | 197,9 | 139,1 | 80,4 |
| 200 | 50,8 | R2002L | 1.355 | 241,3 | 292,1 | 235,0 | 41,3 | 184,2 | 3,2 | 50,8 | 184,2 | 266,3 | 187,2 | 83,1 |
| 200 | 152,4 | R2006L | 4.062 | 342,9 | 495,3 | 235,0 | 41,3 | 184,2 | 3,2 | 50,8 | 184,2 | 266,3 | 187,2 | 117,6 |
| 280 | 50,8 | R2802L | 1.861 | 247,7 | 298,5 | 276,2 | 41,3 | 215,9 | 3,2 | 57,2 | 215,9 | 366,0 | 257,3 | 118,5 |
| 280 | 152,4 | R2806L | 5.583 | 349,3 | 501,7 | 276,2 | 41,3 | 215,9 | 3,2 | 57,2 | 215,9 | 366,0 | 257,3 | 163,0 |
| 280 | 254,0 | R28010L | 9.305 | 450,9 | 704,9 | 276,2 | 41,3 | 215,9 | 3,2 | 57,2 | 215,9 | 366,0 | 257,3 | 208,1 |
| 355 | 50,8 | R3552L | 2.326 | 292,1 | 342,9 | 298,5 | 54,0 | 241,3 | 3,2 | 60,3 | 214,3 | 457,2 | 321,4 | 173,0 |
| 355 | 152,4 | R3556L | 6.975 | 393,7 | 546,1 | 298,5 | 54,0 | 241,3 | 3,2 | 60,3 | 241,3 | 457,2 | 321,4 | 232,5 |
| 430 | 50,8 | R4302L | 2.841 | 333,4 | 384,2 | 330,2 | 63,5 | 266,7 | 3,2 | 69,9 | 266,7 | 558,5 | 392,7 | 252,4 |
| 430 | 152,4 | R4306L | 8.520 | 435,0 | 587,4 | 330,2 | 63,5 | 266,7 | 3,2 | 69,9 | 266,7 | 558,5 | 392,7 | 329,2 |
| 430 | 254,0 | R43010L | 14.201 | 536,6 | 790,6 | 330,2 | 63,5 | 266,7 | 3,2 | 69,9 | 266,7 | 558,5 | 392,7 | 405,9 |
| 565 | 50,8 | R5652L | 3.710 | 371,2 | 422,3 | 377,8 | 69,9 | 304,8 | 3,2 | 79,4 | 304,8 | 729,5 | 512,9 | 368,2 |
| 565 | 152,4 | R5656L | 11.129 | 473,1 | 625,5 | 377,8 | 69,9 | 304,8 | 3,2 | 79,4 | 304,8 | 729,5 | 512,9 | 468,0 |
| 565 | 254,0 | R56510L | 18.548 | 574,7 | 828,7 | 377,8 | 69,9 | 304,8 | 3,2 | 79,4 | 304,8 | 729,5 | 512,9 | 568,0 |

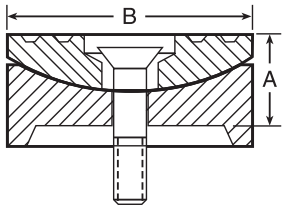
**•NOTE: Supported loads not to exceed the rated capacity of the cylinders. Not intended to support additional dynamic loads, as those applied by moving vehicles.**

**Base Mounting Holes (Optional)**

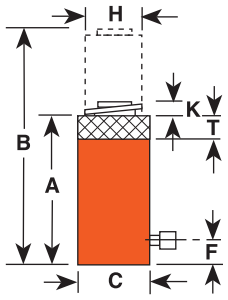
**Available on request: Up to 1140 tons capacity and Strokes: 101.6 mm, 203.2 mm & 304.8 mm**

**SWIVEL CAPS (Optional)**
**For use with "R _ _ _ _ L" cylinders**

| Use with Cyl. No. | Swivel Cap Order No. | Weight (kg) | A (mm) | B (mm) |
|---|---|---|---|---|
| 55-100 ton | 420866 | 0.8 | 25,4 | 71,4 |
| 150-200 ton | 420867 | 4,0 | 38,1 | 130,2 |
| 280 ton | 420868 | 6,1 | 44,5 | 149,2 |
| 355 ton | 420869 | 16,8 | 69,9 | 195,3 |
| 430 ton | 420870 | 23,6 | 79,4 | 225,4 |
| 565 ton | 420871 | 35,4 | 92,1 | 250,8 |




**Reduce the effects of off center loading. Tilts up to 5 degrees. Radial grooves on top of cap reduce load slippage.**




CYLINDERS

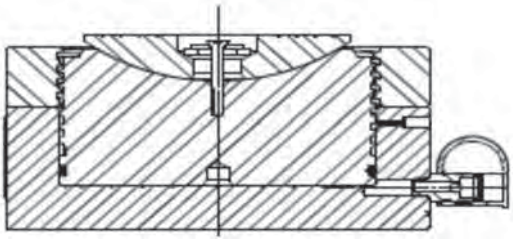
# Pancake Locking Collar
## CYLINDER PLC SERIES

**67-565 Ton "Single-Acting," Load-Return**

Positive mechanical lock to support load. Ideal for confined area applications.

- Compact design - for use where space is limited
- Locking collar designed to support lifted load for extended periods of time with hydraulic pressure released
- Overflow port ("weep hole") prevents piston from being overextended under load.
- Special coating improves corrosion and abrasion resistance
- Cylinders come standard with hardened caps. Swivel caps reduce the effects of off-center loading and improves performance under side load.
- Equipped with 3/8" NPTF female half couplers

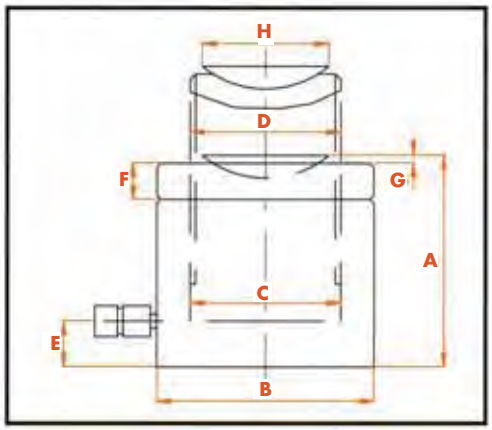


Integral Swivel Cap reduces the effects of off center loading.

Tilts up to 5 degrees.

Radial grooves on top of cap reduce load slippage.




| Cyl. Cap. (tons) | Stroke (mm) | Order No. | Oil Cap. ($cm^3$) | A Retracted Ht. (mm) | A Extended Ht. (mm) | B Outside Dia. (mm) | D Piston Rod Dia (mm) | F Nut Thickness (mm) | C Bore Dia. (mm) | Cylinder Effective Area ($cm^2$) | Metric Tons at 700 bar | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 67 | 50.8 | PLC672 | 435 | 125.7 | 176.5 | 140.0 | 104.4 | 26.7 | 104.4 | 85.6 | 60 | 15.0 |
| 110 | 50.8 | PLC1102 | 745 | 137.7 | 188.5 | 174.6 | 136.7 | 31.1 | 136.7 | 146.6 | 103 | 26.0 |
| 180 | 50.8 | PLC1802 | 1,176 | 153.9 | 204.7 | 219.6 | 171.7 | 41.0 | 171.7 | 231.4 | 163 | 44.0 |
| 220 | 50.8 | PLC2202 | 1,447 | 160.6 | 211.4 | 244.7 | 190.5 | 43.0 | 190.5 | 284.9 | 200 | 57.0 |
| 280 | 50.8 | PLC2802 | 1,856 | 164.8 | 215.6 | 274.7 | 215.7 | 44.5 | 215.7 | 365.4 | 257 | 75.0 |
| 430 | 45 | PLC4302 | 2,513 | 183.9 | 228.9 | 355.6 | 266.7 | 57.4 | 266.7 | 558.4 | 393 | 134.0 |
| 565 | 45 | PLC5652 | 3,282 | 197.9 | 242.9 | 399.7 | 304.8 | 62.2 | 304.8 | 729.3 | 513 | 189.0 |

# PUMPS

## HIGH PERFORMANCE PUMPS

# Pump Selection
## HIGH PERFORMANCE

## Choosing the Right Pump


Manually-operated Hydraulic Pumps (Hand Pumps)

Air/Hydraulic Pumps



Electric/Hydraulic Pumps

Gasoline-driven Hydraulic Pumps

**Step 1** – Select the hydraulic cylinder that best suits the application (See page 9-24).

**Step 2** – Select the series of hydraulic pump with adequate oil output and reservoir capacity to power cylinder(See page 29, 36-45, 52-65).
Check speed/selection chart, consult factory.

**Step 3** – Select pump within series with the valve option that is best suited to the cylinder and application (See page 30-35, 70).

### CONSIDERATIONS:

What maximum system operating pressure (bar) is required? What volume of oil delivery is required? (For manual pumps, $cm^3$ of oil per handle stroke; for powered pumps, l/min. of oil).
Is a single- or 2-speed pump required? (2-speed pumps deliver high oil volume at low pressure for rapid cylinder piston advance, then shift to to the high pressure, low volume stage under load).
What is the preferred source of power?

a) Manual (hand or foot operated). Provides portability, can be used where electricity or shop air are not available.

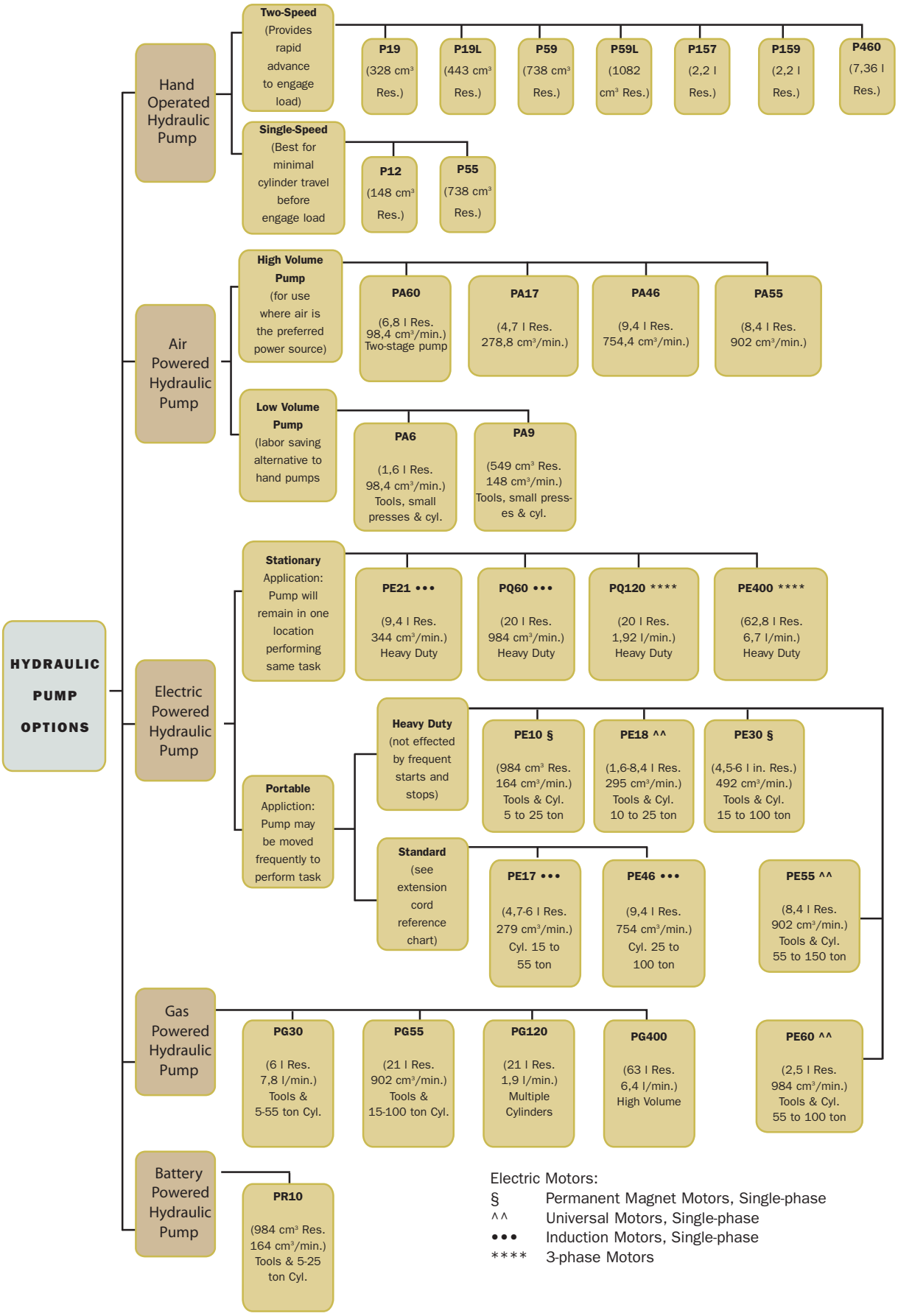
b) Air/Hydraulic. Uses shop air or a portable air compressor. Ideal for use in petrochemical, mines or other inflammable or explosive environments.

c) Electric /Hydraulic. What voltage is available? Is a battery operated pump preferred?

d) Gasoline Engine/Hydraulic. Powers high-output pumps at remote job sites where air or electricity are unavailable.

Is portability of the pump a factor to consider? Will the pump be used intermittently, or will it need to provide high-cycle operation? Does the application require that the pump be capable of starting under load? Is fluid heat build-up a factor in your application? High cycle applications may require a larger capacity oil reservoir for cooling. Also, if you are using large displacement cylinders, the reservoir capacity must be sufficient to fully extend the piston of the cylinder. Will the application require large displacement or multiple cylinders? Reservoir size and pump output levels will be factors to consider. Does the working environment require a pump having a low operating noise (dBA) level? Must the pump operate in a spark-free environment?

## PUMP SELECTION



# Valve Selection

## Choosing the Right Valve

**Step 1 -** Select the hydraulic cylinder that best suits the application (See page 9-24).

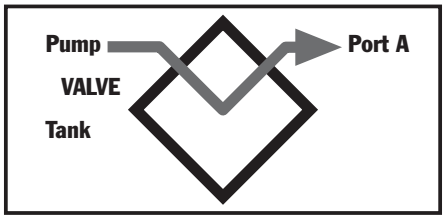
**Step 2 -** Select the series of hydraulic pump with adequate oil output and reservoir capacity to power cylinder (See page 29, 36-45, 52-65). Check speed chart, consult factory.

**Step 3 -** Select pump within series with the valve option that is best matches cylinder, pump and application (See page 30-35, 70).

**CONSIDERATIONS:**

Will the valve be used with single- or double-acting cylinders?
Will the valve be mounted on the pump, away from the pump or directly into the hydraulic lines?
Will the valve be manually-operated or is remote control preferred?
Is independent control of multiple cylinders, or hydraulics tools preferred?
What directional control and pressure control valve functions are needed for the application?

**Remote Mounted Valves Available: Consult Factory**




**Basic types include manually operated, air or solenoid operated and pilot operated. Special application valves for pre-stressing and post-tensioning are also offered. Consult selection chart (see page 70) for listings of all Power Team valves.**

### DIRECTIONAL CONTROL VALVES

| Description | Position 1 | Position 2 | Center Position |
|---|---|---|---|
| **2-way, 2-position** (For control of single-acting cylinders) |  Oil goes from pump to cylinder; pressure is held from valve to cylinder when pump is shut off. |  Oil returns to reservoir, cylinder retracts. | |
| **3-way, 2-position** (For control of single-acting cylinders) |  Oil goes from pump to cylinder and holds when pump is shut off. Return line to reservoir is blocked. |  Cylinder retracts, oil returns to reservoir. | |
| **3-way, 3-position** (For control of single-acting cylinders) |  Oil goes from pump to cylinder and holds when pump is shut off. Return line to blocked. |  All oil is open to reservoir through return line. |  Cylinder pressure is held; pump can remain running and oil reservoir is returns to reservoir. |

## IN-LINE HYDRAULIC VALVES (see page 78-79)

**Load Lowering Valve –**
Provides precision metering for controlled return of the cylinder piston.

**Sequence Valve –**
Used when a cylinder in a multiple cylinder application must advance before any other.

**Pressure Reducing Valve –**
Permits independent pressure control to two or more clamping systems operated by a single power source.

**Shut-off Valve –**
For fine metering of hydraulic oil. Several may be used to control multiple single-acting cylinders.

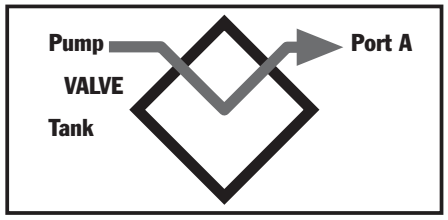
**Check Valve –**
Permits flow of hydraulic oil in one direction only.

**Pressure Relief Valve –**
Used at remote locations in a hydraulic circuit where maximum pressure requirements are less than the setting of the basic overload valve in the pump.

**Metering Valve –**
Restricts surges by restricting flow to a certain level; when flow subsides, valve reopens automatically. For systems using large cylinders or extended lengths of hose.

**Pressure Regulator Valve –**
Permits adjustment of operating pressures at various values below the relief valve setting of the pump.

**Relief Valve –**
Protects a hydraulic system against over pressurization.




**Basic types include manually operated, air or solenoid operated and pilot operated. Special application valves for pre-stressing and post-tensioning are also offered. Consult selection chart (see page 70) for listings of all Power Team valves.**

## DIRECTIONAL CONTROL VALVES

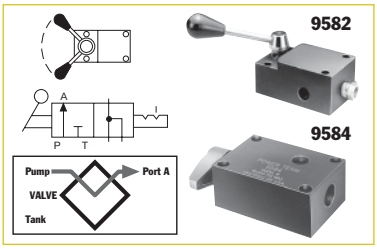
| | | | |
|---|---|---|---|
| **3/4-way, 2 position** (For control of single- or double-acting cylinders) |  Oil goes to the "extend" side of the cylinder. The oil from the "retract" side returns to reservoir. Cylinder holds with pump shut off. |  Oil goes to the "retract" side of the cylinder, oil from the "extend" side returns to reservoir. | |
| **3/4-way, 3 position** (For control of double-acting cylinders) |  Oil goes to the "extend" side of the cylinder, oil from the "retract" side returns to reservoir. Cylinder holds with pump shut off. |  Oil goes to the "retract" side of the cylinder, oil from the "extend" side returns to reservoir. |  Holds pressure even if pump is running. Oil from pump goes through valve, back to reservoir. |
| **Other Valve Characteristics** | | | |
| |  **Tandem Center –** Cylinder ports are blocked, oil from pump goes to reservoir. Used when pump remains running Example: gasoline-driven pumps. |  **Closed Center –** Generally used when running multiple valves in series from one pump. |  **Open Center –** Used when holding is not a requirement, as when running two separate hydraulic tools such as cutters and crimpers. |

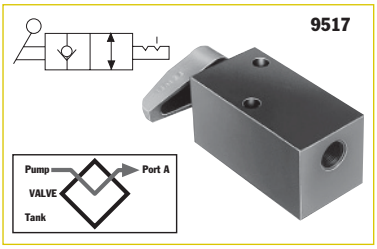
# Valves
## HYDRAULIC PUMP MOUNTED

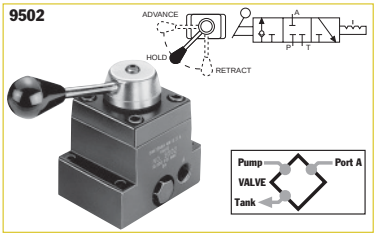
Manual

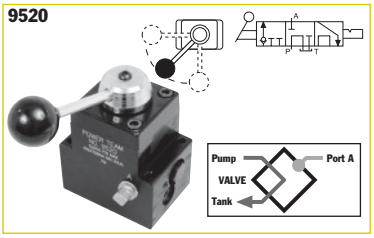
3 Way/2-3 Position Manual

700 bar, 3/8" ports, 19 l/min max flow rate.




PUMPS/VALVES

### 3-WAY/2-POSITION MANUAL VALVES

**Applications –** Single-acting cylinders. **Actuation –** Lever operated.
**Functions –** Cylinder piston "advance", "hold" and "return".
**Used on these pumps –** P460, PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PQ60 and PQ120 series.
**No. 9582 –** 3-way/2-position manual valve. Wt. 1,13 kg.
**No. 9584 –** Same as 9582, but has "flipper" control. Wt.,0,8 kg.

### 2-WAY/2-POSITION MANUAL VALVE

**Application –** Single-acting cylinders. **Actuation –** Flipper lever operated.
**Functions –** Cylinder piston "advance", "hold" and "retract".
**Used on these pumps –** PE172, PA172 and PE84 series.
**No. 9517 –** 2-way/2-position manual valve. Wt.,1,45 kg.

### 3-WAY/3-POSITION (CLOSED CENTER) NON-INTERFLOW MANUAL VALVE WITH "POSI-CHECK®"

**Application** – Single-acting cylinders. **Actuation** – Lever operated, detent positioned.
**Functions –** Pos. 1 – Oil is directed from pump to cylinder and "holds" with pump shut off; line to reservoir is blocked. Pos. 2 – All oil is open to reservoir through tank line.
**Center pos.** – Cylinder pressure is held; pump should be shut off.
**Used on these pumps** – P460, PA17, PA46, PA55, PA60, PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120,PE200, PE400, PQ60 and PQ120 series.
**NOTE:** The 9502 can be remote mounted if a 9510 subplate is used (see page 67).
**No. 9502** – 3-way/3-position (closed center) manual valve. Wt.,1,9 kg.

### 3-WAY/3-POSITION (TANDEM CENTER) MANUAL VALVE WITH "POSI-CHECK®"

**Application –** Single-acting cylinders.
**Actuation –** Lever operated, detent positioned.
**Functions –** "Advance" "hold" and "return". When shifted to "return" position, pump and cylinder return oil through their own separate return lines, allowing faster retraction of piston. The "Posi-Check®" feature guards against pressure loss when shifting from "advance" to "hold" position.
**Used on these pumps –** P460, PA17, PA46, PA55, PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PQ60, PQ120, PE200, PE400, PG30, PG55, PG120 and PG400 series.
**No. 9520 –** 3-way/3-position (tandem center) manual valve. Wt., 2,3 kg.

**NOTE:** A pressure switch and/or gauge may be attached to any valve on this page. (refer to page 67, 74-75)
Gauge ports monitor pump pressure only, not pressure to the hydraulic cylinder(s).

**⚠ CAUTION:** To prevent sudden, uncontrolled descent of a load as it is being lowered, use a No. 9596 Load Lowering Valve or No. 9720 Counter Balance Valve (see page 78) in conjunction with the directional valve used in your application.

**IMPORTANT:** Conversion kit 251528 must be used when mounting any of the valves on this page on PA17 or PE17 pumps.

**IMPORTANT:** When ordering any valve for a PE30 or PG30 series pump, $^{1}/_{2}$" longer mounting screws are required. For valves 9584, 9502 and 9520, order four 12001 cap screws. For valve 9582, order two 12001 and two 10856 cap screws.

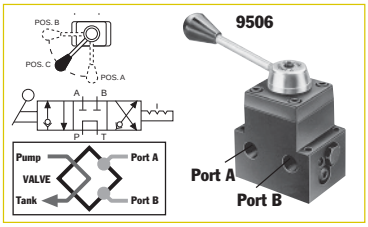
## 4 Way/ 3 Position Manual

700 bar, 3/8" ports, 19 l/min max flow rate.



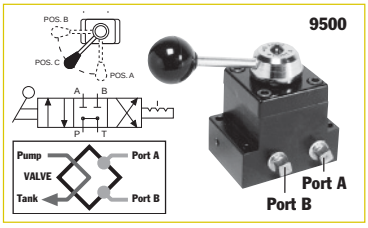
### 4-WAY/3-POSITION (TANDEM CENTER) VALVE WITH "POSI-CHECK®"

**Application –** Single or double-acting cylinders.
**Actuation –** Lever operated, detent positioned.
**Functions –** "Advance", "hold" and "return". The "Posi-Check®" feature guards against pressure loss when shifting from "advance" to "hold" position.
**Used on these pumps –** P460, PA6D, PA17, PA46, PA55, PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PE200, PE400, PED, PG30, PG55, PG120, PG400, PQ60 and PQ120 series
**No. 9506 –** 4-way/3-position (tandem center) manual valve. Wt., 2,3 kg.



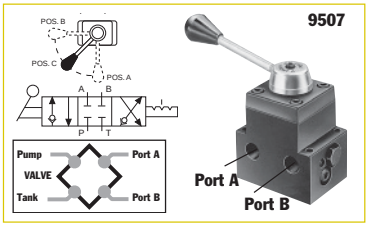

### 4-WAY/3-POSITION (TANDEM CENTER) MANUAL VALVE

**Application –** Single- or double-acting cylinders.
**Actuation –** Lever operated, detent positioned.
**Functions –** The 9500 provides "advance", "hold" and "return".
**Used on these pumps –** P460, PA17, PA46, PA55, PE17*, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PE200, PE400, PG30, PG55, PG120, PG400, PQ60 and PQ120 series. *Does not mount without 251528
**No. 9500 –** 4-way/3-position (tandem center) manual valve. Wt., 1,9 kg.



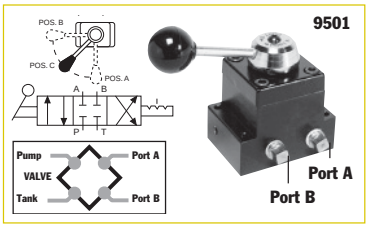

### 4-WAY/3-POSITION (CLOSED CENTER) MANUAL VALVE WITH "POSI-CHECK®"

**Application –** Single- or double-acting cylinders.
**Actuation –** Lever operated, detent positioned.
**Functions –** Similar to 9506, but is a closed center valve with "Posi-Check®". Generally used to operate multiple cylinders with a single pump. Provides "advance", "hold" and "return". The "Posi-Check®" feature guards against pressure loss when shifting from the "advance" to "hold" position. See note below regarding plugging of ports and resulting heat build-up.
**Used on these pumps –** P460, PA17, PA46, PA55, PA60, PA6D, PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PE200, PE400, PQ60 and PQ120 series.
**No. 9507 –** 4-way/3-position (closed center) manual valve. Wt., 2,3 kg.




### 4-WAY/3-POSITION (CLOSED CENTER) MANUAL VALVE

**Application –** Single- or double-acting cylinders.
**Actuation** – Lever operated, detent positioned.
**Functions –** "Advance", "hold" and "return". Closed center design makes valve suitable for operating multiple cylinders from a single pump. See note below regarding plugging of ports and resulting heat build-up.
**Used on these pumps –** P460, PA17, PA46, PA55, PA60, PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PE200, PE400, PQ60 and P120 series.
**No. 9501 –** 4-way/3-position (closed center) valve. Wt., 1,9 kg.



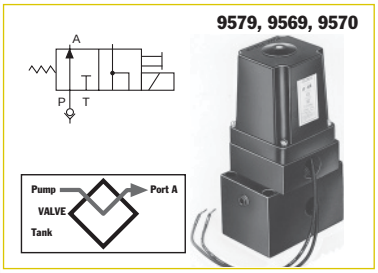

**NOTE:** A pressure switch and/or gauge may be attached to valves 9500, 9501, 9506, 9507, 9511 if desired (see page 67, 74-75). Gauge ports monitor pump only, not pressure to the hydraulic cylinder(s).
Also, all valves on this page may be remote mounted with a 9510 subplate (see page 67).
**NOTE:** Valves 9500, 9501, 9506 and 9507 can have a port blocked or have a closed center position for use with single-acting cylinder or tool. When a port is blocked and the valve is shifted to the blocked port, the pump will generate excessive heat. An electric or rotary air pump can either be turned off manually or with a pressure switch. Reciprocating air pumps may be adjusted to stall out and stop.

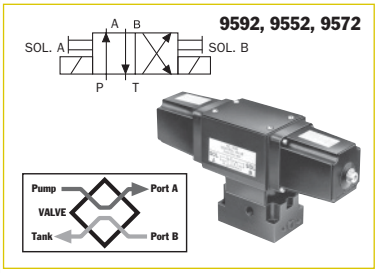
# Valves
## HYDRAULIC PUMP MOUNTED

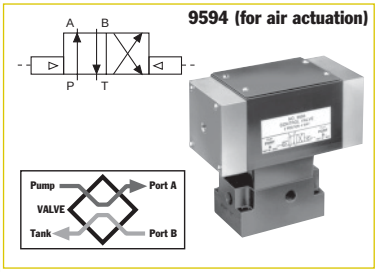
Solenoid or
Air Operated

700 bar., 3/8" ports, 19 l/min
max flow rate.

PUMPS/VALVES




### 3-WAY/2-POSITION SOLENOID VALVE

**Application –** Single-acting cylinders.
**Actuation –** Solenoid operated, 115 volt, 50/60 Hz.
**Functions –** Cylinder piston advances when solenoid is de-energized and pump is running. When solenoid is energized, oil is directed to reservoir, and piston returns. For "hold" position, pump is stopped with solenoid de-energized.
**Used on these pumps –** PE17, PE21, PE30, PE46, PE55, PE84, PE90, PE120, PE200, PE400, PQ60 and PQ120 series.
**No. 9579 –** 3-way/2-position solenoid valve, 115 volt, 50/60 Hz. Wt., 4,4 kg.
**No. 9569 –** Same as 9579, except with 24 volt, 50/60 Hz solenoid.
**No. 9570 –** Same as 9579 except with 230 volt, 50/60 Hz solenoid.
**NOTES:** Valves above are shipped without control switch. Use 202777 remote hand switch (see page 66). When this valve is mounted, the pump must be equipped with an outlet check valve.

### 3/4-WAY/2-POSITION SOLENOID VALVES

**Application –** Single- or double-acting cylinders. When used with single-acting cylinders, one port should be plugged.
**Actuation –** Solenoid operated.
**Functions –** Oil is directed to "extend" side of cylinder, oil from "retract" side goes to reservoir; cylinder "holds" with pump shut off. Oil is directed to "retract" side of cylinder; oil from "extend" side goes to reservoir.
**NOTE:** Cylinder will not "hold" in the "return" position with motor running or shut off.
**Used on these pumps –** 9552, 9572 and 9592 are used with PE17, PE30 (with carrying handles removed), PE46, PE55, PE84, PE90, PE200, PE400, PQ60 and PQ120 series.
**No. 9592 –** 3/4-way/2-position solenoid valve, 115 volt, 50/60 Hz. Wt., 6,6 kg.
**No. 9552 –** Same as 9592, except with 230 volt, 50/60 Hz solenoid.
**No. 9572 –** Same as 9592, except with 24 volt, 50/60 Hz solenoid.
**NOTE:** Valves above are shipped without controls. The 9552, 9572 and 9592 can be used with the 304718 remote hand control. (see page 66)
**Note:** Ports are $^{1}/_{4}$" NPTF.

### AIR ACTUATED VALVE

**Application –** Single- or double-acting cylinders. When used with single-acting cylinders, one port should be plugged.
**Actuation –** Air operated.
**Functions –** Oil is directed to "extend" side of cylinder, oil from "retract" side goes to reservoir; cylinder "holds" with pump shut off. Oil is directed to "retract" side of cylinder; oil from "extend" side goes to reservoir.
**NOTE:** Cylinder will not "hold" in the "return" position with motor running or shut off.
**Used on these pumps –** PA17, PA46 and PA55 series.
**No. 9594 –** 3/4-way/2-position solenoid valve, air operated (minimum of 3.5 bar air pressure required). Wt., 5 kg.
**NOTES:** Valve above is shipped without controls. 9594 can be used with the 209593 remote hand control (see page 66).

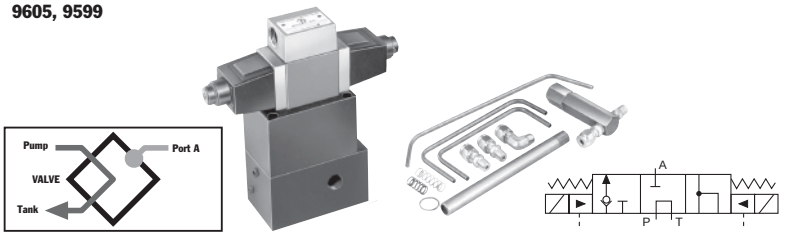
⚠ **CAUTION:** To prevent sudden, uncontrolled descent of a load as it is being lowered, use a No. 9596 Load Lowering Valve or No. 9720 Counter Balance Valve (see page 78) in conjunction with the directional valve used in your application.
**IMPORTANT:** Conversion kit 251528 must be used when mounting any of the valves on this page on PE17 pumps.
**IMPORTANT:** When ordering any valve for a PE30 series pump, $^{1}/_{2}$" longer mounting screws are required. For valves 9569, 9570 and 9579, order four 10856 cap screws. For valves 9552, 9572 and 9592, order four 12001 cap screws.

Solenoid Operated

700 bar, 3/8" ports, 19 1/min max flow rate.



9605, 9599

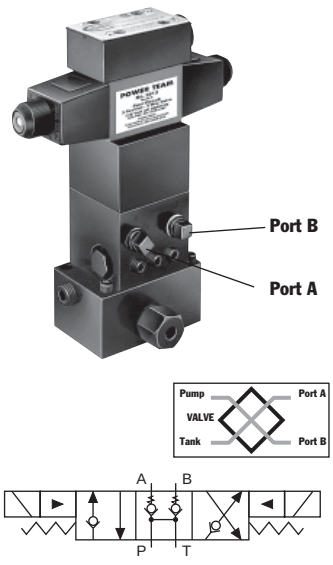



## 3-WAY/3-POSITION (TANDEM CENTER) SOLENOID VALVES WITH "POSI-CHECK®"

**Application –** Single-acting cylinders.
**Actuation –** Solenoid operated: 9605 is 115 volt, 50/60 Hz; 9599 is 24 volt, 50/60 Hz.
**Functions –** "Advance", "hold" and "return" positions. When in "advance", solenoid "B" is energized and oil goes from pump to cylinder through pressure port. In "return" position, solenoid "A" is energized and oil is directed from cylinder and pump to reservoir. With both solenoids de-energized, in "hold" position, oil from pump is directed back to reservoir while oil is checked in cylinder. The "Posi-Check®" feature holds load when shifting from "advance" to "hold" position.
**Used on these pumps –** Furnished with pilot lines and adapters for PE55, PE30 (carrying handles must be removed) and PE120 series. For application on other models, consult factory.
**No. 9605 –** 3-way/3-position (tandem center) solenoid valve, 115 volt, 50/60 Hz. Wt., 6,4 kg.
**No. 9599 –** Same as 9605 except for 24 volt, 50/60 Hz circuits.

**NOTE:** Valves above are shipped without controls. Use 202777 remote hand control (see page 66). Consult factory for field installation.

9513, 9512, 9516, 9519




## 4-WAY/3-POSITION (TANDEM CENTER) PILOT OPERATED SOLENOID VALVE

**Application –** Double-acting cylinders.
**Actuation –** Solenoid operated, 115 volt, 50/60 Hz.
**Functions –** "Advance", "hold" and "return". The "Posi-Check®" feature holds the load when shifting from the "advance" to the "hold" position.
**Used on these pumps –** PE17, PE21, PE30 (with carrying handles removed), PE46, PE55, PE84, PE90, PE120, PE200, PE400, PQ60 and PQ120 series.

**NOTE:** A gauge may be attached if desired (see page 74-75).

**No. 9513 –** 4-way/3-position (tandem center) solenoid valve, 115 volt, 50/60 Hz. Wt., 8,2 kg.
**No. 9512 –** Same as 9513 except for 24 volt, 50/60 Hz circuits.
**No. 9516 –** Same as 9513 except for 12 volt DC. For use on the PG1204S and PG400 series pumps only.
**No. 9519 –** Same as 9513 except for 230 volt, 50/60 Hz circuits. Consult factory for field installation.

**NOTE:** Valves above are shipped without control switch. Use 202778 remote hand switch (see page 66).

⚠ **CAUTION:** To prevent sudden, uncontrolled descent of a load as it is being lowered, use a No. 9596 Load Lowering Valve or No. 9720 Counter Balance Valve (see page 78) in conjunction with the directional valve used in your application.
**IMPORTANT:** When ordering any valve for a PE30 series pump, $^{1}/_{2}$" longer mounting screws are required. For valves 9512, 9513, 9516 and 9519, order four 11956 cap screws.

# Hand Pump
## HYDRAULIC P SERIES

### 197 to 902 cm ³ Reservoir
Single-Speed
Single-Acting

Best suited for applications where there is little or no free travel.

PUMPS

- All metal construction, won't burn through in welding environments.
- Formed metal handle provides less flex, and reduces operator fatigue.
- Convenient fill port on P23 and P55 allows pumps to be filled in a horizontal or vertical position.
- Fill cap seal acts as safety valve preventing over-pressurizing of reservoir.
- Relief valve inboard of check valve prevents loads from drifting down.
- Large valve knob gives added control for slowly metering loads down.
- Carrying handle (P55).

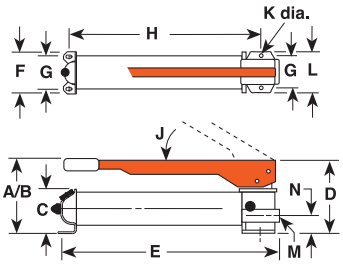
P12

P23

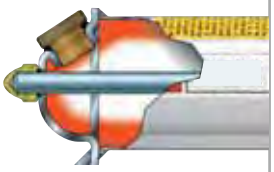

P55 Hand Pump on an air-craft towbar

P55

700 bar




| Pump No. | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) | J (deg.) | K (mm) | L (mm) | M (in) | N (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **P12** | 101,6 | — | — | 101,6 | 342,9 | 85,7 | 55,6 | — | 45° | 4,8 | 85,7 | 3/8-NPTF | 28,6 |
| * **P23** | 158,8 | 330,2 | 88,9 | 141,3 | 346,1 | 108,0 | 82,6 | 261,6 | 38° | 7,9 | 120,7 | 3/8-NPTF | 41,3 |
| * The P23 pump maximum pressure is 210 bar only. | | | | | | | | | | | | | |
| **P55** | 165,1 | 533,4 | 88,9 | 141,3 | 584,2 | 108,0 | 82,6 | 501,7 | 38° | 7,9 | 120,7 | 3/8-NPTF | 41,3 |



Power Team hand pumps, with the angled fill port, have a built in "relief valve" protection system. This system is designed to protect over-pressurization of the reservoir from sudden back pressure. This system also works as a seal to prevent oil leaks.

| For Use With | Order No. | Volume & Pressure: Volume per Stroke (cm³) Speed | LP | HP | Maximum Pressure (bar) LP | HP | Handle Effort (kg) | Reservoir: Oil Capacity (cm³) | Usable Oil Capacity (cm³) | Oil Port (in) | Product Weight (kg)) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Single Acting Cylinders* | **P12** | 1 | — | 1,1 | — | 700 | 34 | 197 | 148 | 3/8-NPTF | 2,6 |
| | **P23** | 1 | — | 2,6 | — | 210 | 32 | 390 | 333 | 3/8-NPTF | 5,5 |
| | **P55** | 1 | — | 2,6 | — | 700 | 66 | 902 | 738 | 3/8-NPTF | 7,2 |

LP = Low Pressure
HP = High Pressure

* Pump includes 2-Way Valve

# Hand Pump
## HYDRAULIC P SERIES

## 400 to 1131 cm ³ Reservoir
Two-Speed
Single-Acting

P59

P59F

700 bar

- All metal construction won't burn through in welding environments.
- Two-speed reduces handle strokes so you work faster and easier.
- Formed metal handle provides less flex, and reduces operator fatigue.
- Convenient fill port allow pumps to be filled in a horizontal or vertical position.
- Relief valve inboard of check valve prevents loads from drifting down.
- Large valve knob gives added control for slowly metering loads down.
- Carrying handle (except P19).

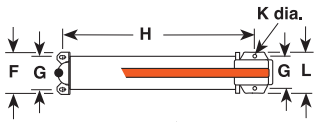
Pump automatically shifts into the high pressure lift stage upon contact with the load.

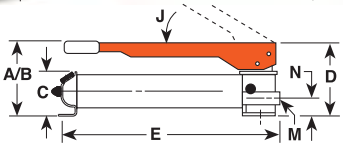
PUMPS

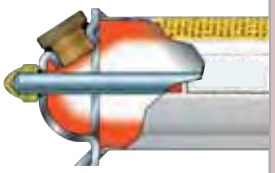
**Lightweight Aluminium Design**

Link design reduces handle effort by 40%

P59L
10,000 psi



Power Team hand pumps, with the angled fill port, have a built in "relief valve" protection system. This system is designed to protect over-pressurization of the reservoir from sudden back pressure. This system also works as a seal to prevent oil leaks.

| Pump No.. | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) | J (deg.) | K (mm) | L (mm) | M (in) | N (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **P19** | 139,7 | 371,5 | 73,0 | 115,9 | 347,7 | 101,6 | 82,6 | 281,0 | 53° | 7,9 | 101,6 | 3/8-NPTF | 35,7 |
| **P19L** | 141,5 | — | — | — | 347 | 104,1 | 82,6 | 281,0 | 40° | 7,9 | 104,1 | 3/8-NPTF | — |
| **P59** | 177,8 | 533,4 | 88,9 | 127,0 | 584,2 | 108,0 | 82,6 | 501,7 | 38° | 7,9 | 120,7 | 3/8-NPTF | 41,3 |
| **P59L** | 177,6 | — | — | — | 533,4 | 120,7 | 82,6 | 501,7 | 50° | 7,9 | 120,7 | 3/8-NPTF | — |
| **P59F** | 88,9 | 425,5 | 88,9 | 152,4 | 590,6 | 108,0 | 82,6 | 514,4 | — | 7,9 | 114,3 | 3/8-NPTF | 42,9 |

| For Use With | Order No. | Volume & Pressure: Volume per Stroke (cm³) Speed | LP | HP | Maximum Pressure (bar) LP | HP | Handle Effort (kg) | Reservoir: Oil Capacity (cm³) | Usable Oil Capacity (cm³) | Oil Port (in) | Product Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Single Acting Cylinders | **P19** | 2 | 5,0 | 1,2 | 22 | 700 | 45 | 400 | 328 | 3/8-NPTF | 3,0 |
| | **P19L** | 2 | 4,1 | 0,9 | 70 | 700 | 37 | 475 | 443 | 3/8-NPTF | 2,3 |
| | **P59** | 2 | 10,9 | 2,6 | 22 | 700 | 66 | 902 | 738 | 3/8-NPTF | 7,8 |
| | ** **P59L** | 2 | 12 | 2,6 | 59 | 700 | 44 | 1131 | 1082 | 3/8-NPTF | 4,1 |
| | ^^ **P59F** | 2 | 9,0 | 2,1 | 22 | 700 | 55 | 902 | 738 | 3/8-NPTF | 6,4 |

LP = Low Pressure
HP = High Pressure

* Pump includes 2-Way Valve
^^ Foot-operated
** Lightweight Aluminium Hand Pumps

# Hand Pump
## HYDRAULIC P SERIES

## 2,5 l to 9,5 l Reservoir
Two-Speed Single- and Double-Acting

Pump automatically shifts into the high pressure lift stage upon contact with the load.

PUMPS

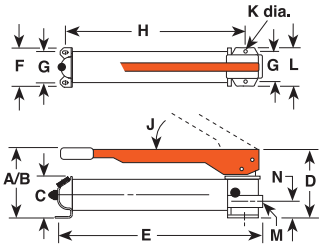
- Rugged all metal construction for strength and durability that won't burn through in welding environments.
- Heavy-duty, formed metal handle provides less flex, and less operator fatigue than round or composite handles.
- Convenient fill port allows pumps on P157 and P159 to be filled in a horizontal or vertical position.
- Fill cap seal acts as safety valve to prevent over-pressurizing of reservoir.
- Relief valve inboard of check valve prevents loads from drifting down.
- Large valve knob gives added control for slowly metering loads down.
- Carrying handle.

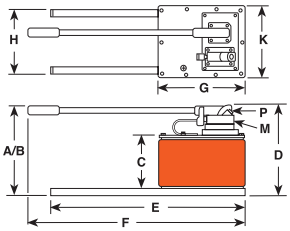
P157/P159

P300

P460


**P300 hand pump and 10 ton cylinders used for a vehicle lift.**




| Pump No. | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) | J (deg.) | K (mm) | L (mm) | M (in) | N (mm) | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P157/ P159 | 197 | 521 | 123,8 | 175 | 578 | 98,4 | 76,2 | 502 | 39° | 7,9 | 95,3 | 3/8-NPTF | 57,2 | — |
| P300 | 210 | 533 | 114,3 | 175 | 575 | 215,9 | 190,5 | 526 | 39° | 7,9 | 95,3 | 3/8-NPTF | 57,2 | — |
| P460 | 283 | 787 | 171,5 | 289 | 610 | 743 | 279,4 | 229 | 80° | 241,3 | — | 3/8-NPTF | — | 1/4 NPTF |

FK59
FK159B

**Foot pump conversion kit**

**No. FK59** - Foot pump conversion kit for use on P55/P59 pumps. Wt., 2,7 kg

**No. FK159B** - Foot pump conversion kit for use on P157/P159 and P300/P300D pumps. Wt., 2,7kg.

| For Use With | Order No. | Volume & Pressure Volume per Stroke (cm³) Speed | LP | HP | Maximum Pressure (bar) LP | HP | Reservoir Handle Effort (kg) | Oil Capacity (cm³) | Usable Oil Capacity (cm³) | Oil Port (in) | Product Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| * Single-Acting Cylinders | P157 | 2 | 10,7 | 2,6 | 97 | 700 | 64 | 2491 | 2245 | 3/8-NPTF | 11,8 |
| | P159 | 2 | 42,6 | 2,6 | 22 | 700 | 64 | 2491 | 2245 | 3/8-NPTF | 11,8 |
| | P300 | 2 | 42,6 | 2,6 | 22 | 700 | 64 | 5.700 | 5081 | 3/8-NPTF | 25,1 |
| | P460 | 2 | 120,5 | 4,8 | 22 | 700 | 41 | 9.500 | 7539 | 3/8-NPTF | 24,9 |
| ** Double-Acting Cylinders | P157D | 2 | 10,7 | 2,6 | 97 | 700 | 64 | 2491 | 2245 | 3/8-NPTF | 13,1 |
| | P159D | 2 | 42,6 | 2,6 | 22 | 700 | 64 | 2491 | 2245 | 3/8-NPTF | 12,7 |
| | P300D | 2 | 42,6 | 2,6 | 22 | 700 | 64 | 5.700 | 5081 | 3/8-NPTF | 25,9 |
| | P460D | 2 | 120,5 | 4,8 | 22 | 700 | 41 | 9.500 | 7539 | 3/8-NPTF | 26,3 |

LP = Low Pressure
HP = High Pressure

* Pump includes 2-Way Valve
** Pump includes 4-Way Valve

# Air Pump
## HYDRAULIC PA9 SERIES

**148 cm³/min.**
Single-Acting

Ideal for powering single acting cylinders and portable hydraulic tools.

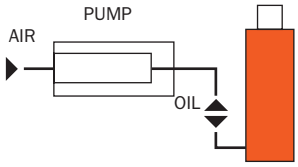

**PA9**
**Foot Control**

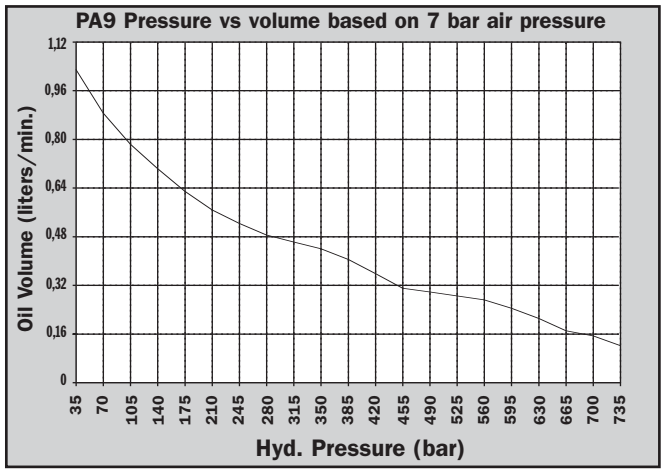

**PA9H**
**Hand Control** **700 bar**

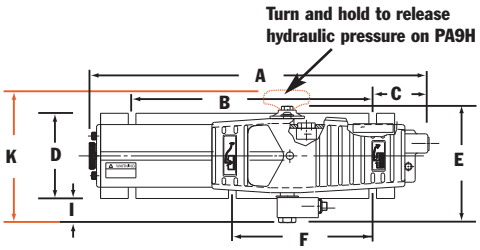
- Easier to operate than a hand pump, giving you the speed you need at an affordable price.
- Easy and economical to service; not a "throw away" unit.
- Unique bladder design for all-position operation and storage.
- Operates on 3 - 8 bar shop air, at 570 l/min.
- Hard-coat anodized aluminum housing.
- Oil filler with integral safety relief minimizes chance of damage to reservoir bladder if overfilling occurs.
- dBA 80 at 700 bar for all PA9 pumps.

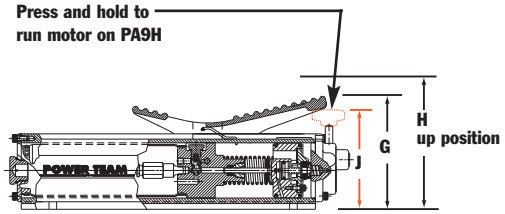
**PA9 Foot Control**


**Typical Set-up**
**Hook-up for single-acting cylinders**




Relief valve settings: up to 700 bar
Mounting holes (standard): ⅜" slots

| Pump No. | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) | I (mm) | J (mm) | K (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **PA9** | 432 | 305 | 71,4 | 108 | 149 | 178 | 142 | 178 | 28,2 | — | — |
| **PA9H** | 432 | 305 | 71,4 | 108 | — | 178 | — | 178 | 28,2 | 122 | 170 |

| For Use with Cyl. Type | Order No. | Air Supply Req'd (bar) | Reservoir Cap. (cm³) | Reservoir Usable (cm³) | Oil Port (in) | Max. Pressure Output (bar) | Prod. Wt. (kg) |
|---|---|---|---|---|---|---|---|
| Single-Acting | **PA9** | 3 – 8 | 574 | 549 | ³/₈-NPTF | 700 | 6,8 |
| Single-Acting | **PA9H** | 3 – 8 | 574 | 549 | ³/₈-NPTF | 700 | 6,8 |

PUMPS

# Air Pump
## HYDRAULIC PA6 SERIES

**98 cm³/min.**
Single-Acting

Compact, lightweight and portable. Single-Speed pumps designed to drive single-acting cylinders.

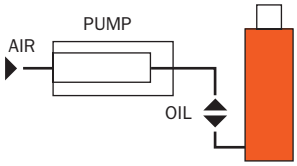
- The power unit of choice for major manufacturers of auto body, frame straighteners and other equipment.
- Operate at 3-8 bar shop air pressure 570 l/min at 7 bar.
- Internal relief valve protects circuit components, air inlet filter protects motor.
- Serviceable pump motor is not a "throw away", providing economical repair.
- Permanently vented reservoir cap.
- dBA 85 at 700 bar.

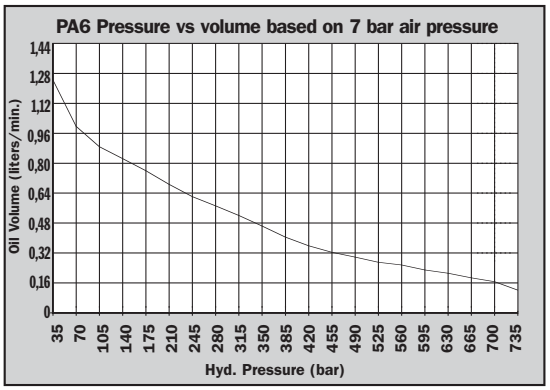
PA6

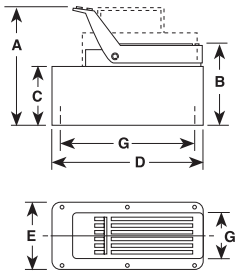
PA6M-1 700 bar

PUMPS

**Typical Set-up**
**Hook-up for single-acting cylinders**




| Pump No. | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | G (mm) |
|---|---|---|---|---|---|---|
| **PA6** | 197 | 149 | 111 | 241 | 127 | 102 x 229 |
| **PA6A** | 197 | 149 | 111 | 241 | 127 | 102 x 229 |
| **PA6AM** | 197 | 149 | 111 | 241 | 127 | 102 x 229 |
| **PA6M** | 197 | 149 | 111 | 241 | 127 | 102 x 229 |
| **PA6R** | 197 | 149 | 111 | 241 | 127 | 102 x 229 |
| **PA6RM** | 197 | 149 | 111 | 241 | 127 | 102 x 229 |
| **PA6M-1** | 200 | 152 | 111 | 321 | 187 | — |
| **PA6AM-2** | 254 | 197 | 171 | 292 | 241 | 203 x 254 |
| **PA6-2** | 260 | 203 | 178 | 292 | 241 | 130 x 181 |

| Description | Order No. | Air Supply Req'd (bar) | Reservoir Cap. (l) | Reservoir Usable (l) | Oil Port (in) | Prod. Wt. (kg) |
|---|---|---|---|---|---|---|
| Base model pump with high density polyethylene reservoir. | **PA6** | 3-8 | 1,7 | 1,6 | 3/8-NPTF | 6,3 |
| PA6 with externally adjustable relief valve. | **PA6A** | 3-8 | 1,7 | 1,6 | 3/8-NPTF | 6,8 |
| PA6A with metal reservoir. | **PA6AM** | 3-8 | 1,7 | 1,6 | 3/8-NPTF | 7,7 |
| PA6, except has metal reservoir. | **PA6M** | 3-8 | 1,7 | 1,6 | 3/8-NPTF | 8,2 |
| PA6 with 3,7m remote control. | **PA6R** | 3-8 | 1,7 | 1,6 | 3/8-NPTF | 9,3 |
| PA6R, except has metal reservoir. | **PA6RM** | 3-8 | 1,7 | 1,6 | 3/8-NPTF | 9,8 |
| PA6, except has 3,8 l metal reservoir. | **PA6M-1** | 3-8 | 3,8 | 3,0 | 3/8-NPTF | 10,7 |
| PA6, except has 7,6 l, high density polyethylene reservoir. | **PA6-2** | 3-8 | 7,6 | 7,3 | 3/8-NPTF | 11,1 |
| PA6, except has 9,5 l metal reservoir. | **PA6M-2** | 3-8 | 9,5 | 9,1 | 3/8-NPTF | 14,5 |

# Air Pump
## HYDRAULIC PA6D SERIES

**98cm ³/min**
Double-Acting

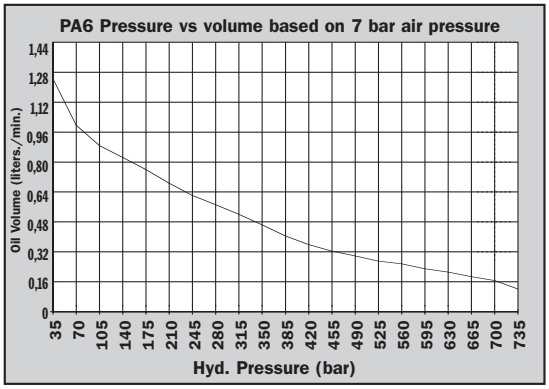
Compact, lightweight and portable single-speed pump for driving double-acting cylinders.

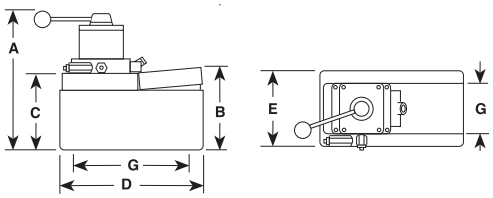
PUMPS

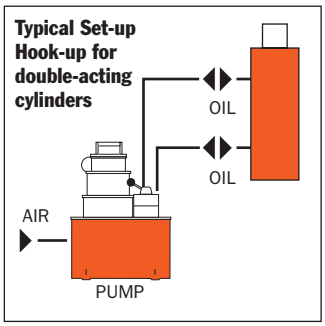

PA6D
700 bar


PA6DM-1

- Operate at 3 - 8 bar shop air pressure 570 l/min at 7 bar.
- Internal relief valve protects circuit components, air inlet filter protects motor.
- Serviceable pump motor is not a "throw away", providing economical repair.
- Permanently vented reservoir cap.
- dBA 85 at 700 bar for all PA6 pumps.




| Pump No. | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | G (mm) |
|---|---|---|---|---|---|---|
| **PA6D** | 264 | 149 | 111 | 241 | 127 | 102 x 229 |
| **PA6DM** | 264 | 149 | 111 | 241 | 127 | 102 x 229 |
| **PA6DM-1** | 279 | 146 | 111 | 321 | 187 | — |
| **PA6D2** | 324 | 203 | 178 | 287 | 235 | 130 x 181 |
| **PA6DM-2** | 318 | 197 | 171 | 292 | 241 | 203 x 254 |

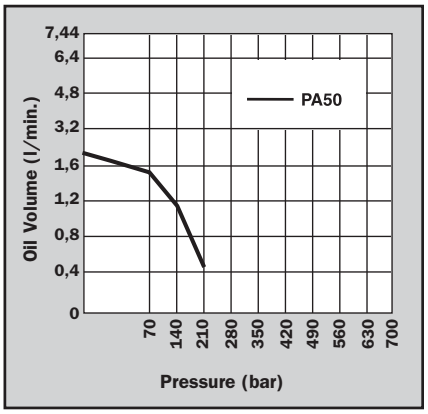
| Description | Order No. | Valve No. | Air Supply Req'd (bar) | Reservoir Cap. (l) | Reservoir Usable (l) | Oil Port (in) | Prod. Wt (kg) |
|---|---|---|---|---|---|---|---|
| Base model pump with high density polyethylene reservoir. | **PA6D** | 9504, 3-way/ 4-way | 3 - 8 | 1,7 | 1,6 | ³/₈-NPTF | 8,3 |
| PA6D, except has metal reservoir. | **PA6DM** | 9504, 3-way/ 4-way | 3 – 8 | 1,7 | 1,6 | ³/₈-NPTF | 9,2 |
| PA6D, except has 3,8 l metal reservoir. | **PA6DM-1** | 9504, 3-way/ 4-way | 3 – 8 | 3,8 | 3,0 | ³/₈-NPTF | 12,7 |
| PA6D, except has 7,6 l, high density polyethylene reservoir. | **PA6D2** | 9504, 3-way/ 4-way | 3 – 8 | 7,6 | 7,3 | ³/₈-NPTF | 13,0 |
| PA6D, except has 9,5 l metal reservoir. | **PA6DM-2** | 9504, 3-way/ 4-way | 3 – 8 | 9,5 | 9,1 | ³/₈-NPTF | 16,4 |

# Air Pump
## HYDRAULIC PA50 SERIES

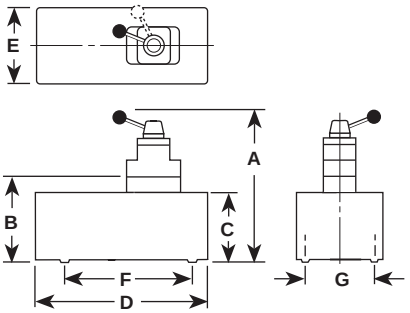
**460 cm³/min.**
Low Pressure
220 bar (max.)

Single-speed, low pressure (220 bar) output pumps.

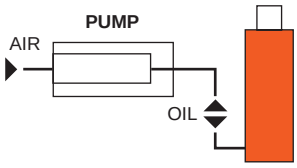
- Serviceable air motor for economical repair.
- Air inlet filter protects motor. Filter in outlet port protects against contaminated systems.
- Assorted reservoirs to suit your application's requirements.






**Typical Set-up**
**Hook-up for single-acting cylinders**




| Pump No. | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | Max. Pressure Output bar | Oil Del. * (l/min) 0 bar | 7 bar | 70 bar | 220 bar |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PA50, PS50R PA50M, PA50RM** | 197 | 149 | 111 | 241 | 127 | — | 102 x 229 | 220 | 2,05 | 1,76 | 1,41 | 0,45 † |
| **PA50R2** | 260 | 203 | 178 | 292 | 241 | — | 130 x 181 | 220 | 2,05 | 1,76 | 1,41 | 0,45 † |
| **PA50D** | 264 | 149 | 111 | 241 | 127 | 229 | 102 | 220 | 2,05 | 1,76 | 1,41 | 0,45 † |

* Typical delivery. Actual flow will vary with field conditions.
† PA50 Series measured at 220 bar.

| For use with Cyl. Type | Description | Order No. | Valve No. | Air Supply Req'd bar | Reservoir Cap. (l) | Reservoir Usable (l) | Oil Port (in) | Prod. Wt (kg) |
|---|---|---|---|---|---|---|---|---|
| Single-Acting | Base model pump with high density polyethlene reservoir. | **PA50** | — | 3 - 8 | 1,7 | 1,6 | 3/8-NPTF | 6,4 |
| Single-Acting | PA50, except has metal reservoir. | **PA50M** | — | 3 – 8 | 1,7 | 1,6 | 3/8-NPTF | 7,3 |
| Single-Acting | PA50, except has 3.7 meter 12 foot remote control. | **PA50R** | — | 3 - 8 | 1,7 | 1,6 | 3/8-NPTF | 8,4 |
| Single-Acting | PA50R, except has metal reservoir. | **PA50RM** | — | 3 - 8 | 1,7 | 1,6 | 3/8-NPTF | 9,3 |
| Single-Acting | PA50R, except has 7.6 liter reservoir 2 gallon reservoir. | **PA50R2** | — | 3 - 8 | 7,6 | 7,3 | 3/8-NPTF | 12,9 |
| Single- and Double Acting | PA50, except designed to operate either single- or double-acting systems. Valve function: Advance/Return. | **PA50D** | 9504, 3-way/ 4-way | 3 - 8 | 1,7 | 1,6 | 3/8-NPTF | 8,3 |

**Notes:** Air inlet port 1/4" NPTF. Requires 570 l at 7 bar shop air pressure at the pump.

# Air Pump

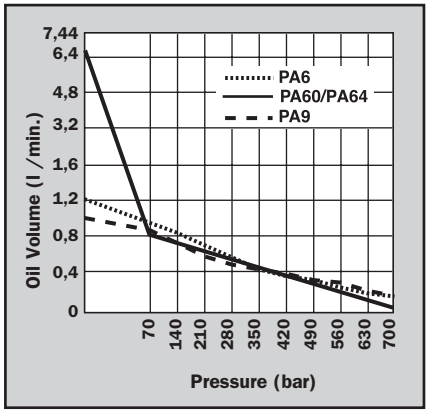
## HYDRAULIC PA60 SERIES

**98 cm³/min**
Two-Speed
700 bar (max.)

Two-speed pump for rapid oil delivery at low pressure quickly advances cylinder or tool.

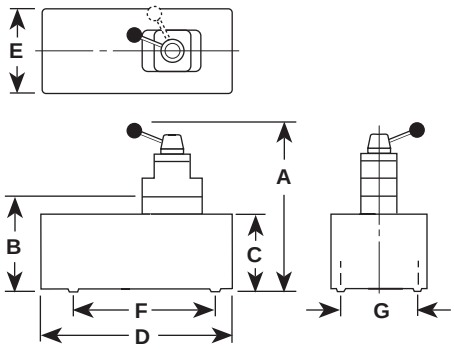
- Equipped with air pressure regulator, air filter and lubricator.
- Serviceable air motor for economical repair.
- Internal relief valve protects circuit components.
- Permanently vented reservoir cap.

PA60

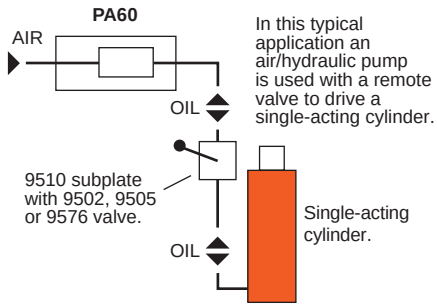



PA64

PUMPS




**Typical Set-up**




| Pump No. | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | Max. Pressure Output bar | Oil Del. * (l/min) 0 bar | 7 bar | 70 bar | 350 bar | 700 bar |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PA60** | — | 240 | 206 | 362 | 244 | 181 | 130 | 700 | 6,24 | 5,6 | 0,8 | 0,19 | 0,1 |
| **PA64** | 362 | — | 206 | 362 | 244 | 181 | 130 | 700 | 6,24 | 5,6 | 0,8 | 0,19 | 0,1 |

* Typical delivery. Actual flow will vary with field conditions.

| Description | Order No. | Valve No. | Valve Function | Air Supply Req'd bar | Reservoir Cap. (l) | Reservoir Usable (l) | Oil Port (in) | Prod. Wt (kg) |
|---|---|---|---|---|---|---|---|---|
| For use with remote valves. | **PA60** | Manifold | — | 3 - 8 | 7,6 | 6,8 | 3/8-NPTF | 24,5 |
| For use with single- or double-acting cylinders. | **PA64** | 9507, 3-way/ 4-way | Advance Hold Return | 3 –8 | 7,6 | 6,8 | 3/8-NPTF | 24,5 |

**Notes:** Air inlet port 1/4" NPTF. Requires 570 l at 7 bar shop air pressure at the pump.

# Air Pump
## HYDRAULIC PA17 SERIES

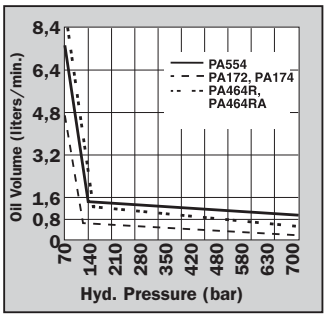
**279 cm³/min.**
Two Speed

Rotary-style air motor. Use where air is preferred source of energy, where electricity is unavailable or sparks are a concern.

- Two-speed operation for high speed cylinder advance.
- Durable 7.6 liter two gallon thermoplastic reservoir. (Metal reservoir conversion kits are available.)
- Features air motor capable of starting under full load.

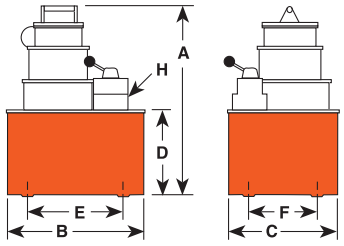
PA172

PUMPS

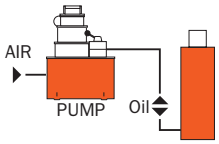




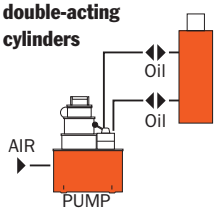
The PA17 used with a flange spreader




**Typical Set-up Hook-up for single-acting cylinders**




**Typical Set-up Hook-up for double-acting cylinders**




| Pump No. | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | H (mm) | Max. Pressure Output bar | Oil Del. * (l/min) 0 bar | 7 bar | 70 bar | 350 bar | 700 bar |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PA172** | 359 | 289 | 235 | 178 | 181 | 130 | 3/8-NPTF | 700 | 4,6 | 3,8 | 0,4 | 0,4 | 0,3 |
| **PA174** | 359 | 289 | 235 | 178 | 181 | 130 | 3/8-NPTF | 700 | 4,6 | 3,8 | 0,4 | 0,4 | 0,3 |

* Typical delivery. Actual flow will vary with field conditions.

| For use with Cyl. Type | Description | Order No. | Valve No. | Valve Function | Air Supply Req'd bar | Reservoir Cap. (l) | Reservoir Usable (l) | Prod. Wt (kg) |
|---|---|---|---|---|---|---|---|---|
| Single-Acting | Base model pump with 7.6 liter 2 gallon thermoplastic reservoir. | **PA172** | 9517, 2-way | Advance/Return* | 3 - 8 | 7,6 | 4,7 | 18,1 |
| Single- and Double Acting | PA172, except has 9500 valve for use with single- or double-acting cylinders. | **PA174** | 9500, 4-way | Advance Hold Return* | 3 - 8 | 7,6 | 4,7 | 18,6 |

**Note:** Requires 570 l/min at 6 bar shop air pressure at the pump. dBA 85/90 at 700 bar.

* Holds pressure in advance position when valve motor is shut off, in return position with motor running. Pump will build pressure when motor is shut off, oil returns to reservoir.

# Air Pump

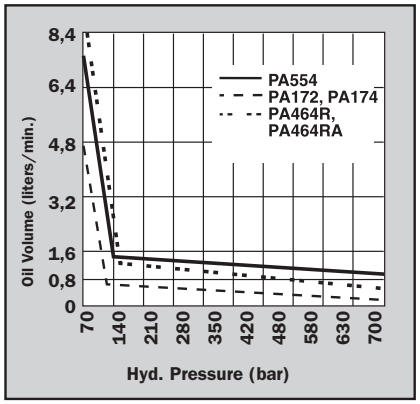
## HYDRAULIC PA46/55 SERIES

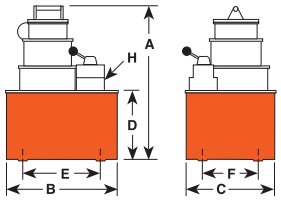
**754-902 cm ³/min.**
Two Speed

Rotary-style air motor.
Use where air is the preferred source of energy.

PA462


- 3 hp motor starting under full load.
- Two-speed operation for rapid cylinder advance.
- Models available with full remote control over advance and return (except PA554).
- Tandem center valve holds the load when pump is shut off.




PUMPS

| Pump No. | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | H (mm) | Max. Pressure Output bar | Oil Del. * (l/min) 0 bar | 7 bar | 70 bar | 350 bar | 700 bar |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PA462** | 381 | 292 | 241 | 178 | 254 | 203 | ³/₈ NPTF | 700 | 7,4 | 7,2 | 0,8 | 0,8 | 0.7 |
| **PA464** | 381 | 292 | 241 | 178 | 254 | 203 | ³/₈ NPTF | 700 | 7,4 | 7,2 | 0,8 | 0,8 | 0,7 |
| **PA464R** | 381 | 292 | 241 | 178 | 254 | 203 | ³/₈ NPTF | 700 | 7,4 | 7,2 | 0,8 | 0,8 | 0,7 |
| **PA464RA** | 381 | 292 | 241 | 178 | 254 | 203 | ³/₈ NPTF | 700 | 7,4 | 7,2 | 0,8 | 0.8 | 0,7 |
| **PA554** | 483 | 292 | 241 | 178 | 254 | 203 | ³/₈ NPTF | 700 | 7,4 | 7,2 | 1,3 | 1,1 | 0,9 |

* Typical delivery. Actual flow will vary with field conditions.
**Note:** Four mounting holes ¹/₂" – 20

| For use with Cyl. Type | Description | Order No. | Valve No. | Valve Function | Air Supply Req'd bar | Reservoir Cap. (l) | Reservoir Usable (l) | Prod. Wt (kg) |
|---|---|---|---|---|---|---|---|---|
| Single-Acting | Base model pump with 9,5 l steel reservoir. | **PA462** | 9584, 2-way | Advance/Hold/ Return | 3 – 8 | 9,5 | 9,4 | 27,2 |
| Single- and Double Acting | PA462, except has 9500 valve capable of running 2 single-acting cylinders or one double-acting cylinder. | **PA464** | 9500, 4-way | Advance/Hold/ Return* | 3 – 8 | 9,5 | 9,4 | 27,6 |
| Single- and Double Acting | PA462 with air actuated valve for full remote control over advance and return. Includes 3,7m remote control. | **PA464R**† | 9594, 4-way | Advance/Hold/ Return | 3 – 8 | 9,5 | 9,4 | 35,3 |
| Single- and Double Acting | PA464R except, has automatic dump feature. 7,6 m remote control. | **PA464RA****† | 9594, | Advance/Hold/ 4-way | 3 – 8 Return* | 9,5 | 9,4 | 35,8 |
| Single- and Double Acting | High performance pump with 9,5 l steel reservoir. | **PA554** | 9500, 4-way | Advance/Hold/ Return* | 3 - 8 | 9,5 | 8,4 | 22,2 |

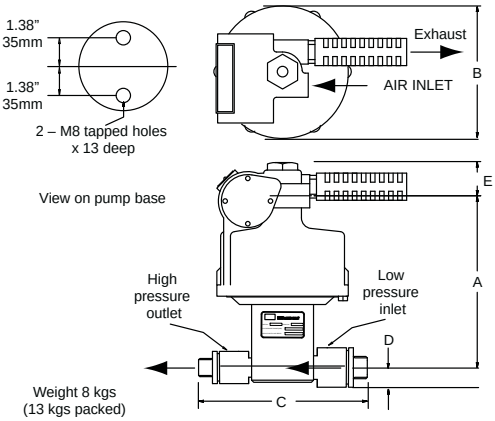
**Note:** Requires 570 l/min at 6 bar shop air pressure at the pump. dBA 85/90 at 700 bar.
* Holds when motor is shut-off and valve is in "advance" position.
† The PA464RA has an "automatic dump" feature. Pressure is not held when operator releases "advance" or "return" button. PA464R will "hold" only in the "advance" position with the motor shut off.
** Not to be used for lifting.

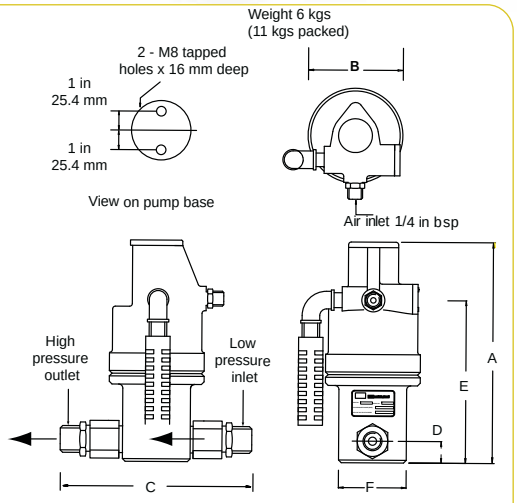
# Air Operated
## PUA & PMA SERIES

## 2410 bar

Suitable for pumping a wide range of fluids at pressures up to 35,000 psi (2,410 bar).






| CAT # | RAM/DIAMETER (mm) | (in) | | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|
| PUA26(B/U) | 31.75 | 1 1/4 | in | 9.17 | 4.02 | 6.61 | .87 | 6.69 | 2.87 |
| | | | mm | 233 | 102 | 168 | 22.2 | 170 | 73 |
| PUA70(B/U) | 19 | 3/4 | in | 8.74 | 4.02 | 6.61 | .87 | 6.22 | 2.87 |
| | | | mm | 222 | 102 | 168 | 22.2 | 158 | 73 |
| PUA157(B/U) | 12.7 | 1/2 | in | 8.74 | 4.02 | 6.61 | .87 | 6.22 | 2.87 |
| | | | mm | 222 | 102 | 168 | 22.2 | 158 | 73 |
| PUA275(B/U) | 9.53 | 3/8 | in | 8.74 | 4.02 | 6.61 | .87 | 6.22 | 2.87 |
| | | | mm | 222 | 102 | 168 | 22.2 | 158 | 73 |
| PUA430(B/U) | 7.94 | 5/16 | in | 8.74 | 4.02 | 6.61 | .87 | 6.22 | 2.87 |
| | | | mm | 222 | 102 | 168 | 22.2 | 158 | 73 |
| PUA655(B/U) | 6.35 | 1/4 | in | 8.74 | 4.02 | 6.61 | .87 | 6.22 | 2.87 |
| | | | mm | 222 | 102 | 168 | 22.2 | 158 | 73 |
| PUA982(B/U) | 5.13 | .202 | in | 8.74 | 4.02 | 6.61 | .87 | 6.22 | 2.87 |
| | | | mm | 222 | 102 | 168 | 22.2 | 158 | 73 |
| PMA27(B/U) | 76.2 | 3 | in | 8.66 | 7.01 | 9.06 | 1.5 | 1.89 | |
| | | | mm | 220 | 178 | 230 | 38 | 48 | |
| PMA60(B/U) | 50.8 | 2 | in | 8.27 | 7.01 | 9.06 | 1.5 | 1.89 | |
| | | | mm | 210 | 178 | 230 | 38 | 48 | |
| PMA90(B/U) | 41.3 | 1 5/8 | in | 8.27 | 7.01 | 9.06 | 1.5 | 1.89 | |
| | | | mm | 210 | 178 | 230 | 38 | 48 | |

| CAT # | RAM/DIAMETER (mm) | (in) | | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|
| PMA130(B/U) | 35 | 1 3/8 | in | 7.99 | 7.01 | 7.68 | .87 | 1.89 | |
| | | | mm | 203 | 178 | 195 | 22 | 48 | |
| PMA190(B/U) | 28.5 | 1 1/8 | in | 7.99 | 7.01 | 7.68 | .87 | 1.89 | |
| | | | mm | 203 | 178 | 195 | 22 | 48 | |
| PMA240(B/U) | 25.4 | 1 | in | 7.99 | 7.01 | 7.68 | .87 | 1.89 | |
| | | | mm | 203 | 178 | 195 | 22 | 48 | |
| PMA370(B/U) | 20.6 | 13/16 | in | 7.99 | 7.01 | 7.01 | .87 | 1.89 | |
| | | | mm | 203 | 178 | 178 | 22 | 48 | |
| PMA520(B/U) | 17.5 | 11/16 | in | 7.99 | 7.01 | 7.01 | .87 | 1.89 | |
| | | | mm | 203 | 178 | 178 | 22 | 48 | |
| PMA770(B/U) | 14.3 | 9/16 | in | 7.99 | 7.01 | 7.01 | .87 | 1.89 | |
| | | | mm | 203 | 178 | 178 | 22 | 48 | |
| PMA980(B/U) | 12.7 | 1/2 | in | 7.99 | 7.01 | 7.01 | .87 | 1.89 | |
| | | | mm | 203 | 178 | 178 | 22 | 48 | |
| PMA1740(B/U) | 9.5 | 3/8 | in | 7.99 | 7.01 | 10.08 | .87 | 1.89 | |
| | | | mm | 203 | 178 | 256 | 22 | 48 | |
| PMA2410(B/U) | 8 | 5/16 | in | 7.99 | 7.01 | 10.08 | .87 | 1.89 | |
| | | | mm | 203 | 178 | 256 | 22 | 48 | |

- Provides infinitely variable capacity and discharge pressure
- Suitable for continuous start/stop applications
- Pumps oil, water, and other fluids
- Stainless steel pump and check valves standard
- Maintains pressure with minimal power consumption (Non-load holding)
- Usable in hazardous areas: per ATEX II, CAT. 2 GDcT5
- Quiet operation
- Can operate on gases other than air
- Simple to install and maintain
- Compact, rugged design
- Only 15psi (1bar) air pressure required to start pump
- Requires flooded inlet
- Vertical mount

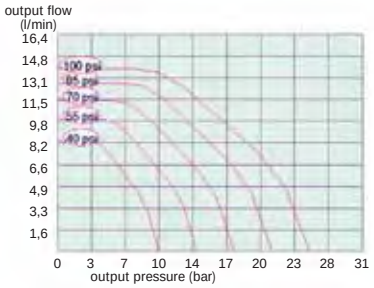

| BSP FITTINGS | NPT FITTINGS | RATIO 1: | OUTLET PRESSURE (BAR) | OUTLET PRESSURE (PSI) | OUTPUT PER CYCLE (LITRES) | OUTPUT PER CYCLE ($IN^3$) | MAXIMUM FLOW AT ZERO PRESSURE (LITRES/MIN) | MAXIMUM FLOW AT ZERO PRESSURE ($IN^3$/MIN) | INLET | OUTLET |
|---|---|---|---|---|---|---|---|---|---|---|
| PUA26B | PUA26U | 4.3 | 26 | 380 | 0.028 | 1.68 | 14 | 850 | 1/2" BSP/NPT | 1/2" BSP/NPT |
| PUA70B | PUA70U | 11.9 | 70 | 1,010 | 0.01 | 0.607 | 5 | 305 | 1/2" BSP/NPT | 1/2" BSP/NPT |
| PUA157B | PUA157U | 26.7 | 157 | 2,280 | 0.004 | 5.269 | 2.4 | 146 | 1/2" BSP/NPT | 1/2" BSP/NPT |
| PUA275B | PUA275U | 47.5 | 275 | 3,990 | 0.0025 | 0.151 | 1.4 | 85 | 1/2" BSP/NPT | 1/2" BSP/NPT |
| PUA430B | PUA430U | 68.4 | 430 | 6,230 | 0.0017 | 0.105 | 0.9 | 55 | 1/2" BSP/NPT | 1/2" BSP/NPT |
| PUA655B | PUA655U | 107 | 655 | 9,500 | 0.0011 | 0.67 | 0.6 | 36 | 1/2" BSP/NPT | 1/2" BSP/NPT |
| PUA982B | PUA982U | 163.8 | 982 | 14,250 | 0.0007 | 0.044 | 0.4 | 24 | 1/2" BSP/NPT | 1/2" BSP/NPT |
| PMA27B | PMA27U | 4 | 27 | 390 | 0.16 | 9.72 | 37 | 2260 | 1" BSP/NPT | 3/4" BSP/NPT |
| PMA60B | PMA60U | 9 | 60 | 870 | 0.07 | 4.32 | 23 | 1400 | 1" BSP/NPT | 3/4" BSP/NPT |
| PMA90B | PMA90U | 13.6 | 90 | 1,300 | 0.05 | 2.85 | 15 | 915 | 1" BSP/NPT | 3/4" BSP/NPT |
| PMA130B | PMA130U | 19 | 130 | 1,880 | 0.034 | 2.04 | 11 | 670 | 3/4" BSP/NPT | 1/2" BSP/NPT |
| PMA190B | PMA190U | 28.4 | 190 | 2,750 | 0.023 | 1.37 | 7.3 | 455 | 3/4" BSP/NPT | 1/2" BSP/NPT |
| PMA240B | PMA240U | 36 | 240 | 3,480 | 0.018 | 1.08 | 5.8 | 354 | 3/4" BSP/NPT | 1/2" BSP/NPT |
| PMA370B | PMA370U | 54.5 | 370 | 5,360 | 0.012 | 0.71 | 3.8 | 230 | 1/2" BSP/NPT | 1/2" BSP/NPT |
| PMA520B | PMA520U | 76.5 | 520 | 7,540 | 0.008 | .51 | 2.8 | 170 | 1/2" BSP/NPT | 1/2" BSP/NPT |
| PMA770B | PMA770U | 113 | 770 | 11,160 | 0.006 | 0.34 | 1.8 | 110 | 1/2" BSP/NPT | 1/2" BSP/NPT |
| PMA980B | PMA980U | 145 | 980 | 14,210 | 0.004 | 0.27 | 1.5 | 91 | 1/2" BSP/NPT | 1/2" BSP/NPT |
| PMA1740B | PMA1740U | 256 | 1,740 | 25,230 | 0.0025 | 0.15 | 0.84 | 51 | 1/2" BSP/NPT | 1/2" HP |
| PMA2410B | PMA2410U | 368 | 2,410 | 35,000 | 0.0017 | 0.104 | 0.58 | 35 | 1/2" BSP/NPT | 1/2" HP |

# Air Operated
## PUA & PMA SERIES

# Performance Charts

Suitable for pumping a wide range of fluids at pressures up to 35,000 psi (2,410 bar).


PUMPS

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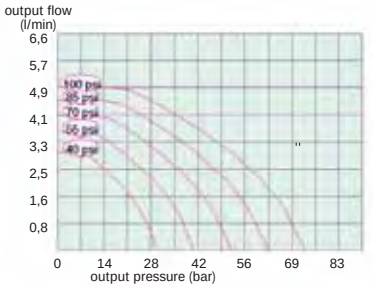


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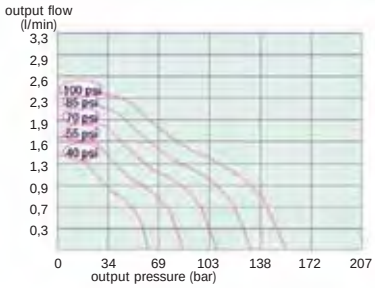


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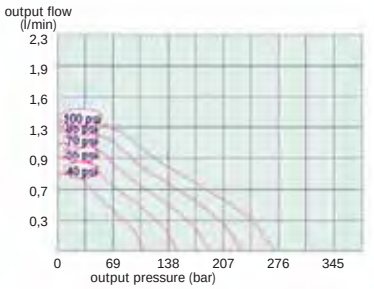


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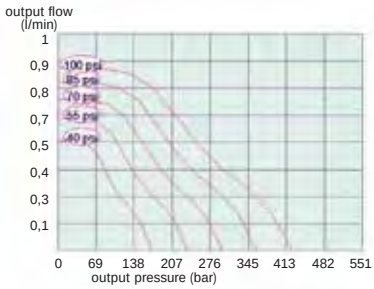


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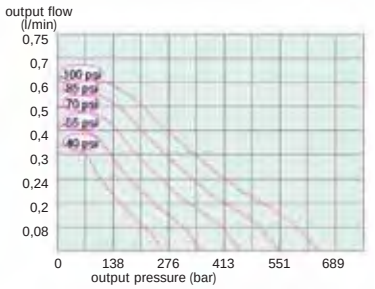
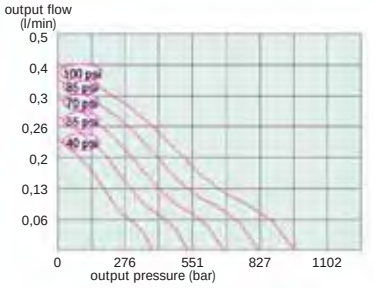
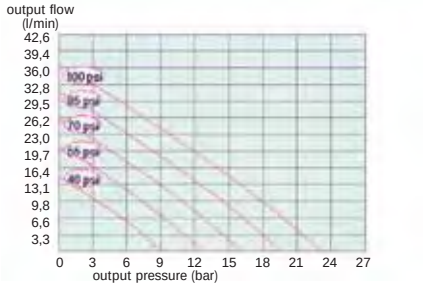



**PUA-107:1**

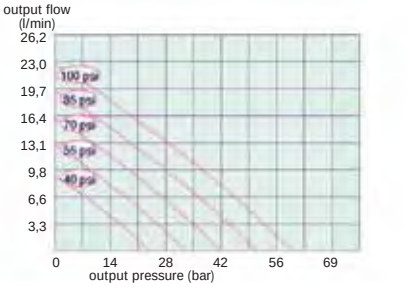



**PUA-163.8:1**

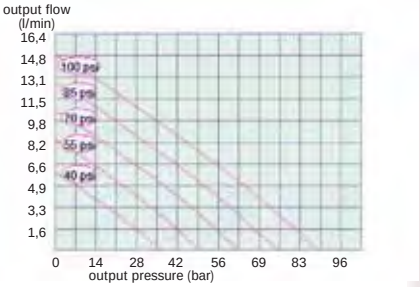
| | | |
|---|---|---|
| 100 psi | = | 6,89 bar |
| 85 psi | = | 5,85 bar |
| 70 psi | = | 4,82 bar |
| 55 psi | = | 3,79 bar |
| 40 psi | = | 2,76 bar |



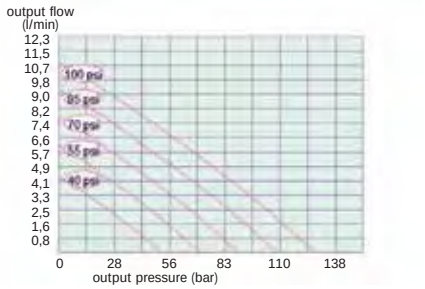

**PMA-4:1**



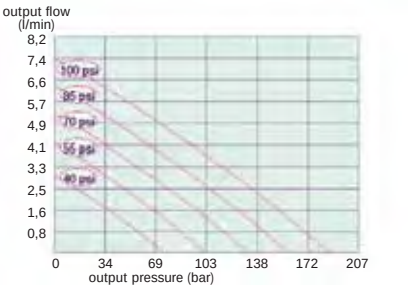

**PMA-9:1**




**PMA-13.6:1**




**PMA-19:1**

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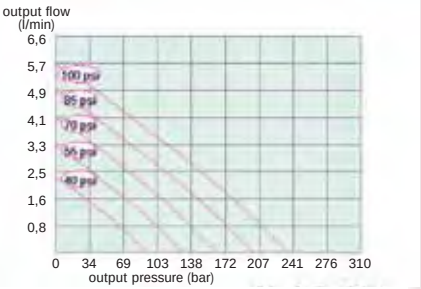
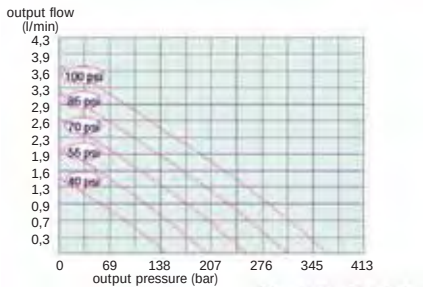
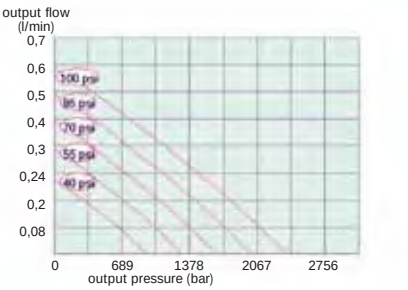



**PMA-36:1**




**PMA-54.5:1**

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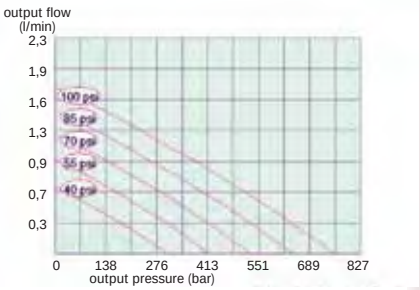
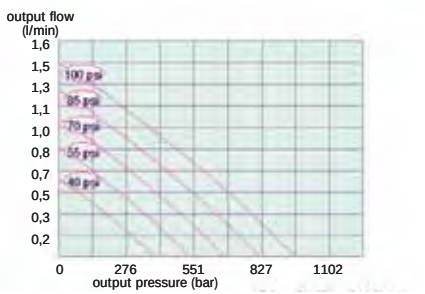
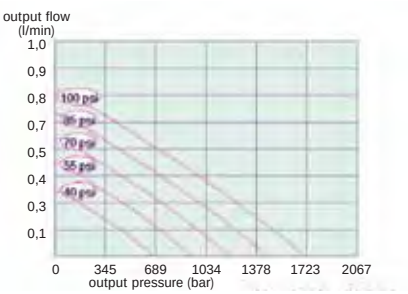



**PMA-113:1**




**PMA-145:1**

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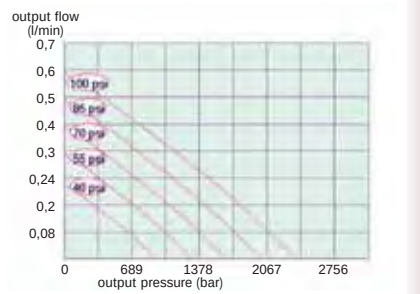



**PMA-368:1**

# Electric/Battery Pump

## HYDRAULIC PE10 SERIES

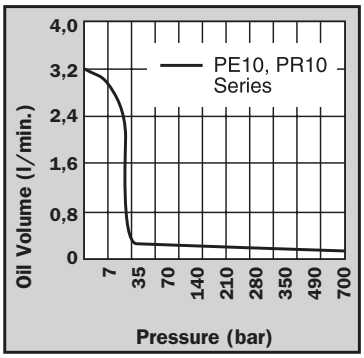
## Up to 25 Ton Quarter Horse®
Two Speed

High performance in compact package, Electric and battery powered models for powering tools and cylinders up to 25 ton.

700 bar

LR19814


PUMPS




- Portable power source for hydraulic cylinders, and tools.
- Permanent magnet motor starts easily under load, even with reduced voltage conditions.
- Battery-operated models have 2,4 m power cord with alligator clips to connect to any 12 volt battery.
- Optional rechargeable battery pack with shoulder strap for maximum portability.
- Pump typically delivers 15 minutes of continuous operation at 700 bar on a single battery.
- Pump can be operated in any position.
- 24 volt hand and foot switches available for all AC powered models.
- High-impact housing with flame-retardant construction.
- Base mounting holes for fixed installations.

| For use with Cyl. Type | Description | Order No. | Valve Type | Valve No. | Valve Function | Control Switch | Motor | Reservoir Usable Cap. (l) |
|---|---|---|---|---|---|---|---|---|
| Single-Acting | Base model pump with 0,19 KW motor. Bladder type reservoir. | PE102-220 | 2-Way/ Auto. Dump | 9561 | Advance Return (Auto.)* | Rocker Type off, Momentary on | 0,19 KW, 220/230V 50/60 Hz, Single Phase | 1 |
| Single-Acting | Base model pump with 0,19 KW motor. Bladder type reservoir with automatic dump valve | PE102A-220 | Auto. Dump | 9562 | Advance Return | Rocker Type off, Momentary on | 0,19 KW, 220/230V 50/60 Hz, Single Phase | 1 |
| Single-Acting | PE102-220, except requires 12 volt DC. | PR102 | 2-Way/ Auto. Dump | 9561 | Advance Return (Auto.)* | Rocker Type off, Momentary on | 0,19 KW, 12V† | 1 |
| Single-Acting | PE102A-220, except requires 12 volt DC. | PR102A | Auto. Dump | 9562 | Advance Return** | Rocker Type off, Momentary on | 0,19 KW, 12V† | 1 |
| Single-Acting/ Double-Acting | Base model pump has 4-way valve for operating double-acting systems. | PE104-220 | 4-Way | 9563 | Advance Hold Return | Rocker Type off, Momentary on | 0,19 KW, 220/230V 50/60 Hz, Single Phase | 1 |
| Single-Acting/ Double-Acting | PE104-220, except requires 12 volt DC. | PR104 | 4-Way | 9563 | Advance Hold Return | Rocker Type off, Momentary on | 0,19 KW, 12V† | 1 |

* "Advance" position holds pressure with motor shut off. "Return" position advances cylinder with motor running and returns cylinder with motor shut off.

** Cylinder advances with motor running and automatically returns with motor shut off.

† Comes with an 2,4 m. alligator clip cord for 12 volt DC use.

Available with 115V, 60 Hz motor (to order, remove suffix "-220" behind pump order number).


**PR104**

700 bar

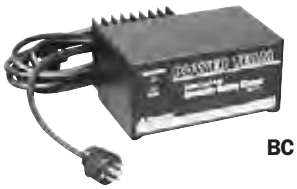
**The Quarter Horse pump has a maximum operating pressure of 700 bar, which handles a wide variety of hand held hydraulic tools.**

## Accessories

**BP212VQ**

**BP212VQ** – Optional 12 volt battery pack. Includes sealed lead acid battery, 115V charger, 1,2 m cord, carrying case and shoulder strap. Wt., 8 kg.

**RB12V** – Battery only.
**BP12INT** – Battery with cord and carrying case. Wt., 5 kg.
**RC12V** – Replacement 1,2 m battery cord only. Wt., 0,2 kg.



**BC 212**

**BC212** – Battery charger for U.S.A. Wt., 3 kg.
**BC212EUR** – Battery charger for Europe. Wt., 3 kg.
**25017** – Remote hand control with 3 m cord. Wt., 0,4 kg.

| Max. Pump No. | Pressure Output (bar) | dBa @ Idle and 700 (bar) | Oil Del. (l/min at..) 0 (bar) | 700 (bar) | Overall Dimensions (mm) | Prod. Wt. with Oil (kg) |
|---|---|---|---|---|---|---|
| **PE10 Series PR10 Series** | 700 | 68-74* | 1,9 | 0,16 | 330 L x 197 W x 203 H | 9,1 |

* Measured at 0,9 m distance, all sides.

**NOTE:** PR10 rechargeable model is equipped with 2,4 m cord with alligator clips. Order optional battery pack (No. BP212VQ) or use with any 12 volt battery.

**NOTE:** Amp draw at 700 bar; 3 amp at 230 volt and 35 amp at 12 volt. 6 amp at 115 volt.

**9560** – Pressure regulator. Adjustable from 70 to 700 bar. All mounting hardware included. Wt., 1,4 kg.

**251660** – Foot switch with 3 m cord. Single pole, double throw, 15 amp @ 125-250 VAC. Wt., 0,45 kg.

# Electric Pump
## HYDRAULIC PE17 SERIES

## 262 cm³/min 0,37 kW
2 Speed

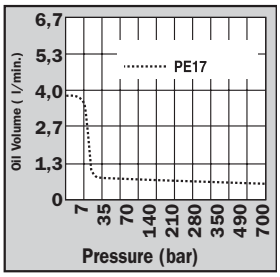
For maintenance
and construction applications.

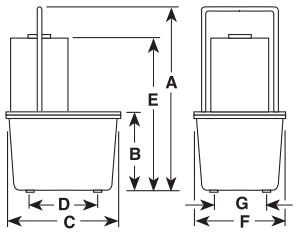
PUMPS

- For use with single-acting or double-acting cylinders at operating pressures to 700 bar.
- For intermittent duty; starts under full load.
- Equipped with 0,37 KW, 3,450 rpm, single-phase, thermal protected induction motor; 3 m remote control cord (PE172S has 7,6 m cord)
- Low amperage draw; small generators and low amperage circuits can be used as power source.
- Extremely quiet noise level (67-81 dBA).

PE172SM

PE174




| Pump No. | Max. Pressure Output bar | rpm | dBA at Idle and 700 bar | Amp Draw 220 V – at 700 bar | Oil Del. (liters./min. @) † 0 bar | 7 bar | 350 bar | 700 bar | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | Prod. Wt. with Oil (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PE17 Series** | 700 | 2850 | 67/81* | 5.3 | 4,8 | 3,1 | 0,33 | 0,26 | 470 | 178 | 289 | 181 | 378 | 235 | 130 | 20,4 |
| **PE17M Series** | 700 | 2850 | 67/81* | 5.3 | 4,8 | 3,1 | 0,33 | 0,26 | 460 | 168 | 292 | — | 368 | 241 | — | 24,0 |

* Measured at 0,9 m distance, all sides. † Typical delivery. Actual flow will vary with field conditions. Amp Draw 115V - at 700 bar: 9.5 Amps.

| For use with Cyl. Type | Description | Order No. | Valve Type | Valve No. | Valve Function | Control Switch †† | Motor | Reservoir Usable (l) |
|---|---|---|---|---|---|---|---|---|
| Single-Acting | Base model pump with 0,37 KW pump with 7,6 l thermoplastic reservoir. | **PE172-50-220** | 2-Way | 9517 | Advance Return (Auto†) | Remote Motor Control (3,1m) on/off | 0,37 kW, 220 V* 50/60 Hz, Single Phase | 4,8 |
| Single-Acting | PE172-50-220, except has 9,5 l aluminum reservoir. | **PE172M-50-220** | 2-Way | 9517 | Advance Return (Auto†) | Remote Motor Control (3,1m) on/off | 0,37 kW, 220 V* 50/60 Hz, Single Phase | 6 |
| Single-Acting | PE172-50-220, except has solenoid operated valve. | **PE172S-50-220** | 3-Way | 9570 | Advance Hold Return | Remote Motor & Valve (7,6 m) | 0,37 kW, 220 V* 50/60 Hz, Single Phase | 4,8 |
| Single-Acting | PE172S-50-220, except has aluminum reservoir. | **PE172SM-50-220** | 3-Way | 9570 | Advance Hold Return | Remote Motor & Valve (7,6 m) | 0,37 kW, 220 V* 50/60 Hz, Single Phase | 6 |
| Single-Acting | Best suited for crimping, punching, pressing. Not for lifting.Thermoplastic reservoir. | **PE172A-50-220** ∞ | Auto./Dump Manifold | 45554 | Advance Return | Remote Motor Control (3,1 m) on/off | 0,37 kW, 220 V* 50/60 Hz, Single Phase | 4,8 |
| Single-Acting | PE172A, except has aluminum reservoir. | **PE172AM-50-220** ∞ | Auto./Dump Manifold | 45554 | Advance Return | Remote Motor Control (3,1 m) on/off | 0,37 kW, 220 V* 50/60 Hz, Single Phase | 6 |
| Single-Acting / Double-Acting | PE172-50-220, except has 9500 double-acting valve. | **PE174-50-220** | 4-Way | 9500 | Advance Hold Return** | Remote Motor Control (3,1 m) on/off | 0,37 kW, 220 V* 50/60 Hz, Single Phase | 4,8 |
| Single-Acting / Double-Acting | Same as PE174-50-220, except has aluminum reservoir. | **PE174M-50-220** | 4-Way | 9500 | Advance Hold Return** | Remote Motor Control (3,1 m) on/off | 0,37 kW, 220 V* 50/60 Hz, Single Phase | 6 |

* Available with 115V., 60 Hz motor (to order , remove suffix "50-220" behind pump order number).
** "Advance" position holds pressure with motor shut off.
† "Advance" position holds pressure with motor shut off. "Return" position advances cylinder with motor running and returns cylinder with motor shut off.

†† Control switch on PE17 series wired with line voltage.
∞ Not to be used for lifting.
**NOTE:** The remote motor control switch on 220V., 50 cycle PE17 series pumps is 24 volt.
**NOTE:** Usable oil is calculated with the oil fill at the recommended level of 38 mm below reservoir cover plate.


POWER TEAM®

# Electric Pump

## HYDRAULIC PE18 SERIES

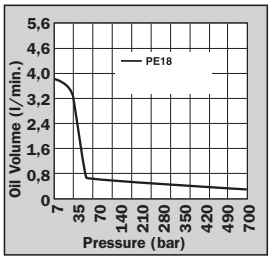
## 295 cm³/min 0,37 KW

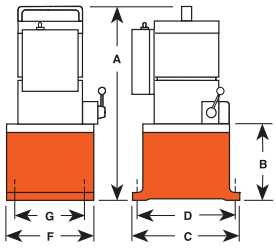
## Vanguard Jr. Series®

Ideal for use with small hydraulically powered tools.

PE182

- Vanguard Jr.®pumps provide two-speed high performance in a light-weight, compact package.
- Gauge port provided on pump. Metal reservoir on all models.
- Equipped with a 0,37 KW, 12,000 rpm, 220 volt, 50 Hz single phase universal motor that starts under load, even at reduced voltage.
- Low amperage draw permits use with smaller generators and low amperage circuits.
- All pumps have a 3 m remote control (PE183C has 7,6 m remote control).
- CSA rated for intermittent duty. Noise level of 85-90 dBA.




700 bar

LR19814

PUMPS

| Pump No. | Max. Pressure Output bar | rpm | dBA at Idle and 700 bar | Amp Draw 220 V at 700 bar | Oil Del. (liters./min. @) † 0 bar | 7 bar | 350 bar | 700 bar | A (mm) | B (mm) | C (mm) | D (mm) | F (mm) | G (mm) | Prod. Wt. with Oil (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PE182** | 700 | 12.000 | 85/90** | 6.5 Amp. | 3,7 | 3,0 | 0,4 | 0,3 | 406 | 121 | 203 | 181 | 152 | 130 | 13,6 |
| **PE183** | 700 | 12.000 | 85/90** | 6.5 Amp. | 3,7 | 3,0 | 0,4 | 0,3 | 406 | 121 | 203 | 181 | 152 | 130 | 13,6 |
| **PE183A** | 700 | 12.000 | 85/90** | 6.5 Amp. | 3,7 | 3,0 | 0,4 | 0,3 | 406 | 121 | 203 | 181 | 152 | 130 | 13,6 |
| **PE184** | 700 | 12.000 | 85/90** | 6.5 Amp. | 3,7 | 3,0 | 0,4 | 0,3 | 406 | 121 | 203 | 181 | 152 | 130 | 13,6 |
| **PE183-2*** | 700 | 12.000 | 85/90** | 6.5 Amp. | 3,7 | 3,0 | 0,4 | 0,3 | 470 | 184 | 292 | 254 | 241 | 203 | 19,0 |
| **PE184-2*** | 700 | 12.000 | 85/90** | 6.5 Amp. | 3,7 | 3,0 | 0,4 | 0,3 | 470 | 184 | 292 | 254 | 241 | 203 | 19,0 |
| **PE183C** †† | 700 | 12.000 | 85/90** | 6.5 Amp. | 3,7 | 3,0 | 0,4 | 0,3 | 406 | 121 | 203 | 181 | 152 | 130 | 13,6 |
| **PE184C** †† | 700 | 12.000 | 85/90** | 6.5 Amp. | 3,7 | 3,0 | 0,4 | 0,3 | 406 | 121 | 203 | 181 | 152 | 130 | 13,6 |

* 9,5 l reservoir.
** Measured at 0,9 m distance, all sides. Amp Draw 115V at 700 bar: 10.2 Amps.
† Typical delivery. Actual flow will vary with field conditions.
†† Special application pumps for cutting, crimping or pressing.

| For use with Cyl. Type | Description | Order No. | Valve Type | Valve Function | Control Switch | Motor | Reservoir Usable (l) |
|---|---|---|---|---|---|---|---|
| Single-Acting | Base model pump has 0,37 KW pump with 2-Way valve and 1,9 l reservoir. | **PE182-50-220** | 2-Way | Advance Return† | Remote Motor Control (3,1 m) on/off | 0,37 kW, 220 V** 50/60 Hz, A.C., Single Phase | 1,7 |
| Single-Acting | PE182-50-220, except has 3-way valve. | **PE183-50-220** | 3-Way | Advance Hold Return | Remote Motor Control (3,1 m) on/off | 0,37 kW, 220 V** 50/60 Hz, A.C., Single Phase | 1,7 |
| Single-Acting | PE183-50-220, except has 9,5 l reservoir. | **PE183-2-50-220** | 3-Way | Advance Hold Return | Remote Control (3,1 m) | 0,37 kW, 220 V** 50/60 Hz, A.C., Single Phase | 8,4†† |
| Single-Acting | PE183-50-220, except has "dump valve". | **PE183A-50-220**∞ | Auto./Dump Pump | Advance Return | Remote (3,1 m) | 0,37 kW, 220 V** 50/60 Hz, A.C., Single Phase | 1,7 |
| Single-Acting | Special crimping pump. | **PE183C-50-220**∞ | Special, for crimping only | Advance Hold Return | Remote Motor Control (7,6 m) on/off | 0,37 kW, 220 V** 50/60 Hz, A.C., Single Phase | 1,7 |
| Single-Acting / Double-Acting | Base model pump has 0,37 KW pump for double-acting systems with 1,9 l reservoir. | **PE184-50-220** | 4-Way | Advance Hold Return† | Remote Motor Control (3,1 m) on/off | 0,37 kW, 220 V** 50/60 Hz, A.C., Single Phase | 1,7 |
| Single-Acting / Double-Acting | PE184, except with 9,5 l reservoir. | **PE184-2-50-220** | 4-Way | Advance Hold Return† | Remote Motor Control (3,1 m) on/off | 0,37 kW, 220 V** 50/60 Hz, A.C., Single Phase | 8,4†† |
| Single-Acting / Double-Acting | Special crimping pump. | **PE184C-50-220*** | 4-Way | Advance Return | Remote Control (3,1 m) on/off | 0,37 kW, 220 V** 50/60 Hz, A.C., Single Phase | 1,7 |

* Also for use with special single-acting cylinder applications.
** Available with 115 Volt, 60 Hz motor (to order, remove suffix "50-220" behind pump order number). Specify voltage when ordering. Universal motor run on 220V/50Hz or 60Hz/Single phase.
† Holds when motor is shut off and valve is in "advance" position.
†† Pumps supplied with 7,6 l oil (usable oil is 5,7 l), will hold 9,5 l when filled to within 13 mm below reservoir cover plate.
∞ Not to be used for lifting.

# Electric Pump

## HYDRAULIC PE21 SERIES

## 361 cm³/min, 0.75 kW
Two-speed

Low-speed, high-torque
for heavy-duty,
extended-cycle operations.

PUMPS

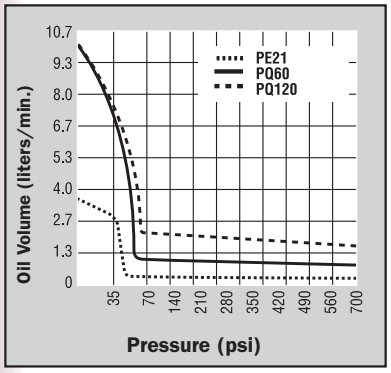
- Totally enclosed, fan cooled induction motor: 0,75 KW, 1,725 rpm, 50 Hz, single phase. Thermal overload protection.
- Remote control, with 3,1 m cord is standard on pumps with solenoid valves. Manual valve pumps have "Stop", "Start" and "Run/Off/Pulse" switches. Pump controls are moisture and dust resistant.
- Motor drip cover with carrying handles and lifting lug.
- Low noise level of 70 dBA@ 700 bar.
- In the event of electrical interruption, pump shuts off and will not start up until operator presses the pump start button.
- 24 volt control circuits on units with remote controls provide additional user/ operator safety.

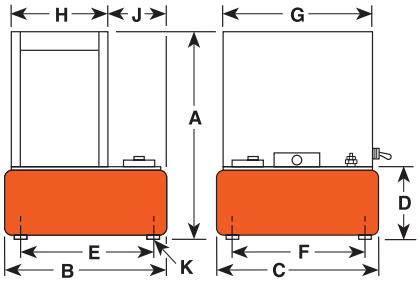
PE214

700 bar

LR19814

PE214S




| Pump No. | Max. Pressure Output bar | rpm | dBA at Idle and 700 bar | Oil Del. (l/min. at.) 7 bar | 70 bar | 350 bar | 700 bar | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) | J (mm) | K*** (in) | Prod. Wt. w/Oil (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PE21 Series** | 700 | 1.437 | 70* | 4,4 | 0,5 | 0,4 | 0,36 | 543 | 292 | 241 | 165 | 254 | 203 | 359 | 241 | 82,6 | 1/2-20 UNF | 44,4† |

* Measured at a 0,9 m distance, all sides.
*** For 50,8 mm dia. swivel casters, order (4) No. 10494.
† Shipping weight with manual valve; add 6,4 kg for pump with solenoid valve.

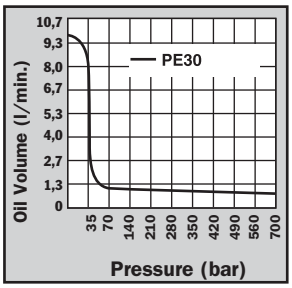
| For use with Cyl. Type | Description | Order No. | Valve Type | Valve No. | Valve Function | Max. Amp Draw at 700 bar | Motor | Reservoir Usable (l) |
|---|---|---|---|---|---|---|---|---|
| Single-Acting | 0,75 KW pump with 9,5 l Reservoir and manual valve. | **PE213-50-220** | 3-Way | 9520* | Advance Hold Return | 230 V - 9.5 amps | 0,75 KW, 220 Volt 50 Hz, Single Phase | 9.7 |
| Single-Acting | PE213, except has solenoid operated remote valve. | **PE213S-50-220** | 3-Way | 9599† | Advance Hold Return | 230 V - 9.5 amps | 0,75 KW, 220 Volt 50 Hz, Single Phase | 9.7 |
| ††Single-Acting/ Double-Acting | 0,75 KW pump with 9,5 l Reservoir and manual valve. | **PE214-50-220** | 4-Way | 9506* | Advance Hold Return | 230 V - 9.5 amps | 0,75 KW, 220 Volt 50 Hz, Single Phase | 9.7 |
| Double-Acting | PE214, except has solenoid operated remote valve. | **PE214S-50-220** | 4-Way | 9512† | Advance Hold Return | 230 V - 9.5 amps | 0,75 KW, 220 Volt 50 Hz, Single Phase | 9.7 |

* Manual valve. Pump is equipped with RUN/OFF/PULSE switch for control of motor.
† 24V Solenoid valve. Pump is equipped with a remote control switch with 3,1 m cord.
††For single-acting operation, off the electric motor when manual valve in "Retract" position.

Available with 115 volt, 60Hz motor
(to order, remove suffix "50-220" behind pump order number)
For 230V, 60Hz motor (change suffix to "-230")
Amp Draw 115V at 700 bar: 19 Amps.

## Ideas for maintenance and construction applications

- Deliver a powerful punch to operate single-acting or double-acting cylinders.
- Integral roll cage protects pump from abuse.
- 0,75Kw (1 hp), single phase, permanent magnet motor.
- High performance to weight ratio.
- Starts under full load even when voltage is reduced to 50% of nominal rating.
- Quiet operation: 87 dBA @ 700 bar and 82 dBA @ 0 bar. CSA rated for intermittent duty.
- Remote controls and/or solenoid valves feature 24 volt controls.




# Electric Pump
## HYDRAULIC PE30 SERIES

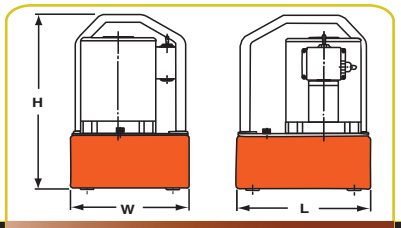
**0,48 l/min.**
Two-Speed
Vanguard® Series

PE302

700 bar

LR19814

PE302S




| Pump No. | Max Pressure Output bar | Noise level at 700 bar (dBA) | Amp.Draw 220V at 700 bar (A) | Oil Del. ( l/min at..) 7 bar | 35 bar | 70 bar | 350 bar | 700 bar | Overall Dimensions (mm) | Prod. Wt. With Oil (kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| **PE30 Series** with 4,7 l res. | 700 | 87/82 | 7 | 4,8 | 3,2 | 0,7 | 0,6 | 0,5 | 254L x 229W x 406H | 18,6 |
| **PE30 Series** with 7,6 l res. | 700 | 87/82 | 7 | 4,8 | 3,2 | 0,7 | 0,6 | 0,5 | 343L x 241W x 419H | 22,2 |

| For use with Cyl.-type | Description | Order No. | Valve Type | Valve No. | Valve Function | Control Switch | Motor (4.000 rpm) | Usable (l) |
|---|---|---|---|---|---|---|---|---|
| Single-act. | Base model 0,75 KW pump with 4,7 l Reservoir & 2 position valve. | PE302-220 | 3-Way, 2 Pos. | 9584 | Hold Advance Return | On/Off/ Pulse Switch | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 4,5** |
| Single-act. | PE302-220, except has 6,6 l reservoir. | PE302-2-220 | 3-Way, 2 Pos. | 9584 | Hold Advance Return | On/Off/ Pulse Switch | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 6,1*** |
| Single-act. | PE302-220, except has remote motor control. | PE302R-220 | 3-Way, 2 Pos. | 9584 | Hold Advance Return | Remote Motor Control (3,1 m) | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 4,5** |
| Single-act. | PE302R-220, except has 6,6 l reservoir. | PE302R-2-220 | 3-Way, 2 Pos. | 9584 | Hold Advance Return | Remote Motor Control (3,1 m) | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 6,1*** |
| Single-act. | PE302R-220, except also has solenoid operated remote valve. | PE302S-220 | 3-Way, 2 Pos. | 9570 | Hold Advance Return | Remote Motor & Valve (3,1 m) | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 4,5** |
| Single-act. | PE302S-220, except has 6,6 l reservoir. | PE302S-2-220 | 3-Way, 2 Pos. | 9570 | Hold Advance Return | Remote Motor & Valve (3,1 m) | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 6,1*** |
| Single-act. | PE302-220, except has "Auto Dump" valve | PE302A-220∞ | Auto Dump | 9610 | Automatic Pilot Operation | Remote Motor Control (3,1 m) | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 4,5** |
| Single-act. | Base model 0,75 KW pump with 4,7 l Reservoir & 3 position valve. | PE303-220 | 3-Way, 3 Pos. | 9520* | Advance Hold Return | On/Off/ Pulse Switch | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 4,5** |
| Single-act. | PE303-220, except has 6,6 l reservoir. | PE303-2-220 | 3-Way, 3 Pos. | 9520* | Advance Hold Return | On/Off/ Pulse Switch | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 6,1*** |
| Single-act. | PE303-220, except has remote motor control. | PE303R-220 | 3-Way, 3 Pos. | 9520* | Advance Hold Return | Remote Motor Control (3,1 m) | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 4,5** |
| Single-act. | PE303R, except has 6,6 l reservoir. | PE303R-2-220 | 3-Way, 3 Pos. | 9520* | Advance Hold Return | Remote Motor Control (3,1 m) | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 6,1*** |
| Double-act. | Base model 0,75 KW pump with 4,7 l Reservoir & 4-way valve for double-acting systems | PE304-220 | 4-Way, 3 Pos. Tandem Ctr. | 9506* | Advance Hold Return | On/Off/ Pulse Switch | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 4,5** |
| Double-act. | PE304-220, except has 6,6 l reservoir. | PE304-2-220 | 4-Way, 3 Pos. Tandem Ctr. | 9506* | Advance Hold Return | On/Off/ Pulse Switch | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 6,1*** |
| Double-act. | PE304-220, except has remote motor control. | PE304R-220 | 4-Way, 3 Pos. Tandem Ctr. | 9506* | Advance Hold Return | Remote Motor Control (3,1 m) | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 4,5** |
| Double-act. | PE304R-220, except has 6,6 l reservoir. | PE304R-2-220 | 4-Way, 3 Pos. Tandem Ctr. | 9506* | Advance Hold Return | Remote Motor Control (3,1 m) | 0,75 KW 220/230 VAC, 50 Hz, Single Phase | 6,1*** |

* "Posi-Check®" valve design, "Posi-Check®" guards against pressure loss when valve is shifted from "advance" to "hold" position.

** Shipped with 3,8 l of oil (3,4 l usable).

*** Shipped with 7,6 l of oil.

∞ Not to be used for lifting. Best suited for crimping, pressing & punching applications.

# Intensifier
## HYDRAULIC

Pressure ratio 5:1

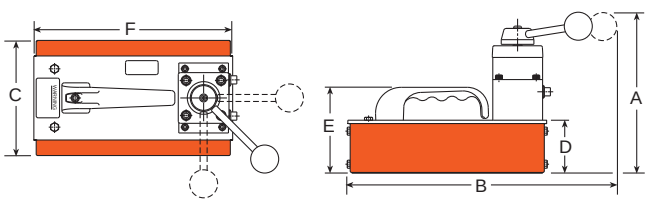
Converts low-pressure portable hydraulic pumps or on-board hydraulic systems, into high pressure power sources.

PUMPS


HB443

700 bar

- Applications include utilities, railroads, construction, riggers and others.
- Operates single- or double-acting cylinders, jacks, and tools such as crimpers, spreaders, cable cutters, or tire tools.
- May be used to operate two separate, single-acting tools (with integral valves) independently, without need for additional manifold.
- Compact and rugged for use inside a utility vehicle aerial bucket or stowing in a vehicle.
- Control valve included. Other Power Team valves available as an option to suit your specific application, if needed; consult factory.
- No reservoir level to maintain; uses low pressure system as oil supply.
- Has 3⁄8" NPTF ports; compatible with standard fittings for low and high pressure systems.




| Pump No. | Output Flow at 700 bar | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | Prod. Wt. (kg) |
|---|---|---|---|---|---|---|---|---|
| HB44-Series | 0,7 l/min. | 210 | 368 | 156 | 70 | 114 | 267 | 7,2 |

| For use with Cyl. Type | Description | Order No. | Valve Type | Valve No. | Output Flow Valve Function | Input Flow Range (l/min) | Input Flow Pressure (bar) | Output Flow Range (l/min) |
|---|---|---|---|---|---|---|---|---|
| Single-Acting | Hydraulic intensifier for single-acting systems | HB443 | 3-Way 3-Position | 9520* | Advance Hold Return | 0 -38 | 20 - 138 | 0 - 9,5 |
| Single-Acting/ Double-Acting | Hydraulic intensifier for double-acting systems | HB444 | 4-Way 3-Position | 9506* | Advance Hold Return | 0 -38 | 20 - 138 | 0 - 9,5 |
| Double-Acting | Hydraulic intensifier for double-acting torque wrench tools | HB445-RR | 4-Way 3-Position | – | Advance Hold Return | 0 -38 | 20 - 138 | 0 - 9,5 |

† For maximum efficiency, recommended input flow is 19 l/min at a maximum pressure of 140 bar. Higher flows and/or pressures must be compensated for at the system pump (e.g., relief valve, variable flow devices, etc.).

* Posi-Check®" valve design, "Posi-Check®" guards against pressure loss when valve is shifted from "advance" position to "hold" position.

# Electric Pump

## HYDRAULIC PE46 SERIES

## 0,75/min - 1,12 kW
Two-speed

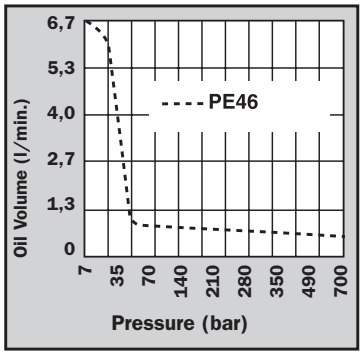
Best suited for under the roof maintenance and production applications.

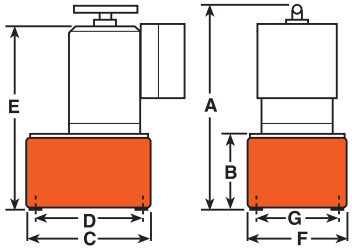


PE462S

PE464

- Two-speed high performance pump.
- For use with single- or double-acting cylinders at operating pressures to 700 bar.
- Equipped with a 1.12 KW, 3,450 rpm single-phase, 50 Hz thermal protected induction motor that starts under full load. Noise level of 77-81 dBA.
- All equipped with a 3,1 m remote control except PE462S which has a 7,6 m remote control.
- 24 volt control circuit on all units with remote control.
- CSA rated for intermittent duty.




| Pump No. | Max. Pressure Output bar | rpm | Noise level at Idle and 700 bar (dBA) | Amp Draw 220 V - at 700 bar (A) | Oil Del. (l/min. at..)† 0 bar | 7 bar | 350 bar | 700 bar | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | Prod. Wt. w/Oil (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PE46-Series** | 700 | 2.875 | 77/81 | 11.6 | 8,2 | 7,4 | 0,8 | 0,75 | 499 | 173 | 292 | 254 | 378 | 241 | 203 | 35,8 |
| **PE46-220** | 700 | 2.875 | 77/81* | 11.6 | 8,2 | 7,4 | 0,8 | 0,75 | 499 | 173 | 292 | 254 | 378 | 241 | 203 | 41,3 |

* Measured at 0,9 m distance, all sides.
† Typical delivery. Actual flow will vary with field conditions.

Amp Draw 115V at 700 bar: 25 Amps.

| For use with Cyl. Type | Description | Order No. | Valve Type | Valve No. | Valve Function | Control Switch††† | Motor | Reservoir Usable*** (l) |
|---|---|---|---|---|---|---|---|---|
| Single-Acting | Base model 1,12 KW pump with 9,5 l metal reservoir. | **PE462-50-220** | 3-Way | 9584 | Advance Return† | Remote Motor Control (3,1 m) on/off | 1,12 KW, 220 VAC* 50 Hz, Single Phase | 9,7 |
| Single-Acting | PE462-50- 220, except has solenoid valve. | **PE462S-50-220** | 3-Way | 9570 | Advance Return** | Remote Motor/ Valve (7,6 m) | 1,12 KW, 220 VAC* 50 Hz, Single Phase | 9,7 |
| Single-Acting | PE462-50-220, except has "dump valve" | **PE462A-50-220**∞ | Auto/Dump 3-Way | 9610 | Advance Return | Remote Motor Control (3,1 m) on/off | 1,12 KW, 220 VAC* 50 Hz, Single Phase | 9,7 |
| †† Single-Acting/ Double-Acting | PE462-50-220, except has 9500 double-acting valve. | **PE464-50-220** | 4-Way | 9500 | Advance Hold Return† | Remote Motor Control (3,1 m) on/off | 1,12 KW, 220 VAC* 50 Hz, Single Phase | 9,7 |
| Double-Acting | PE462S-50-220, except has 9592 double-acting valve. | **PE464S-50-220** | 3/4-Way | 9552 | Advance Return** | Remote Motor/ Valve (3,1m) | 1,12 KW, 220 VAC* 50 Hz, Single Phase | 9,7 |

* Available with 115 V., 60 Hz motor (to order, remove suffix "50-220" behind pump order number). Specify voltage when ordering. For 230V, 60 Hz motor (to order, change suffix to "-230" behind pump order number).
** "Advance" position holds pressure with motor shut off.
*** Usable oil is calculated with the oil fill at the recommended level of 13 mm below reservoir cover plate.
† "Advance" position holds pressure with motor shut off. "Return" position returns cylinder.
†† For single-acting operation, off the electric motor when manual valve in "Retract" position.
††† The remote motor control switch on PE46 series pumps is 24 volt.
∞ Not to be used for lifting. When pump is shut off, oil returns to reservoir.

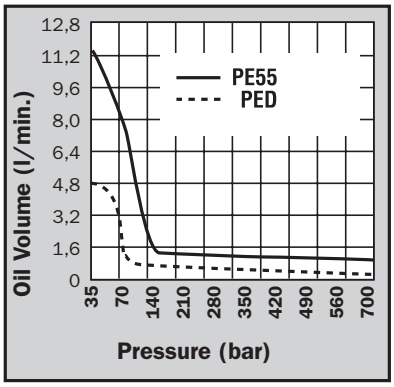
# Electric Pump
## HYDRAULIC PE55 VANGUARD®

## 0,92 l/min - 0,84 kW

Heavy duty multiple-applications pump. Heavy construction and concrete stressing. Low voltage starting possible.

- 0,84 KW, 12,000 rpm, 220 volt, 50 Hz universal motor; draws 15 amps at full load, starts at reduced voltage. CSA rated for intermittent duty.
- 3,1 m remote motor control (except PE552S which has a 7,6 m remote motor and valve control).
- True unloading valve achieves greater pump efficiency, allowing higher flows at maximum pressure.
- Reservoirs available in sizes up to 38 liters. Consult factory.
- Light weight and portable. Best weight to performance ratio of all Power Team pumps.
- "Assemble to Order" System: There are times when a custom pump is required. Power Team's "Assemble to Order" system allows you to choose from a wide range of pre-engineered, off-the-shelf components to build a customized pump to fit specific requirements. By selecting standard components you get a "customized" pump without "customized" prices. All pumps come fully assembled, less oil and ready for work.

PUMPS

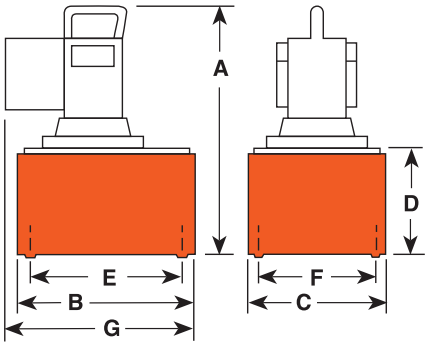




**PE554W**
**Weather-resistant pump**


**PE55TWP**
**Torque Wrench Applications**

**4 mounting holes ½"–20**





**700 bar**

**PE554**
**Heavy duty pump**

| Pump No. | Max. Pressure Output bar | rpm | Noise level Idle and at 700 bar (dBA) | Amp Draw at 700 bar (220 V.) (A) | Oil Del. (l/min at..) 0 bar | 50 bar | 350 bar | 700 bar | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | Prod. Wt. w/Oil (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PE55-Series<br>PE55-220 | 700 | 12,000 | 90/89* | 15 | 11,5 | 7,2 | 1,2 | 0,92 | 464<br>520 | 292 | 241 | 178 | 254 | 203 | 356<br>391 | 29,4 |

*Noise level reading (dBA) measured at a 0,9 m distance, all sides.

Amp draw at 700 bar, 115 volts 60 Hz is 25 Amps.

# Electric Pump

## HYDRAULIC PE55 VANGUARD®

## 0,92 l/min - 0,84 kW

PE554S

PE554PT

PE552

Heavy duty multiple-applications pump. Heavy construction and concrete stressing. Low voltage starting possible.

**700 bar**

LR19814

PUMPS

| For use with Cyl. Type | Description | Order No.*** | Reservoir Valve Type | Valve No. | Valve Function | Control Switch †† | Motor | Usable (l) |
|---|---|---|---|---|---|---|---|---|
| Single-Acting | Base model 0,84 KW pump with 9,5 l reservoir, remote motor control & 3-way valve. | PE552-50-220 | 3-Way | 9582 | Advance Return** | Remote Motor | 0,84 KW*, 220 VAC 50Hz, Single Phase | 8,6 |
| Single-Acting | PE552-50-220, except also has solenoid operated remote valve. | PE552S-50-220 | 3-Way | 9570 | Advance Hold Return | Remote Motor & Valve | 0,84 KW*, 220 VAC 50Hz, Single Phase | 8,6 |
| Single-Acting | PE552-50-220, except has "Auto Dump" valve. | PE552A-50-220 ∞ | Auto/Dump | 9610 | Advance Return | Remote Motor | 0,84 KW*, 220 VAC 50Hz, Single Phase | 8,6 |
| Single-Acting | 0,84 KW pump with 9,5 l reservoir. Valve has "Posi-check" feature. | PE553-50-220 | 3-Way† | 9520 | Advance Hold Return | Remote Motor | 0,84 KW*, 220 VAC 50Hz, Single Phase | 8,6 |
| Single-Acting/ Double-Acting | Base model 0,84 KW pump with 9,5 l res. and 4-way valve for double-acting systems. | PE554-50-220 | 4-Way† | 9506 | Advance Hold Return | Remote Motor | 0,84 KW*, 220 VAC 50Hz, Single Phase | 8,6 |
| Single-Acting/ Double-Acting | PE554-50-220, except has 9500 tandem center valve. | PE554T-50-22.0 | 4-Way | 9500 | Advance Hold Return | Remote Motor | 0,84 KW*, 220 VAC 50Hz, Single Phase | 8,6 |
| Single-Acting/ Double-Acting | For use with single-acting Spring Seat, Stressing Jack or double-acting cylinder. | PE554P-50-220 | 4-Way | 9500 | Advance Hold Return | Remote Motor | 0,84 KW*, 220 VAC 50Hz, Single Phase | 8,6 |
| Double-Acting | For use with single- or double-acting Power Seat, Stressing Jacks ONLY. | PE554PT-50-220 | 4-Way | 9628 | Advance Hold Sequenced Return | Remote Motor | 0,84 KW*, 220 VAC 50Hz, Single Phase | 8,6 |
| Double-Acting | Pump suitable to run multiple . spring return tools | PE554C-50-220 | 4-Way | 9511††† | Advance Hold Return | Remote Motor | 0,84 KW*, 220 VAC 50Hz, Single Phase | 8,6 |
| Double-Acting | Pump equipped with 3/4-way solenoid valve. | PE554S-50-220 | 3/4-Way | 9552 | Advance Hold Return | Remote Motor & Valve | 0,84 KW*, 220 VAC 50Hz, Single Phase | 8,6 |
| Single-Acting/ Double-Acting | Same as PE554-50-220, except with weather protection enclosure | PE554W-50-220 | 4-Way† | 9506 | Advance Hold Return | Remote Motor | 0,84 KW*, 220 VAC 50Hz, Single Phase | 8,6 |

* Pumps available with 115 volt, 60 Hz motors. (to order remove the –50-220 suffix from the order code).

** Holds with motor shut off.

*** To order PE55 series pumps with CSA approval, add "–C" to the Order No.

† Valves have "Posi-Check®" feature. Universal motor run on 220V/50Hz or 60Hz/Single phase.

†† Control switch wired with line voltage. All remotes are 3,1m long except for PE552S which is 7,6m long.

††† Valving allows alternate and independent operation of two different spring return tools. Valve holds pressure only while valve is in "A" or "B" port position with pump motor shut off.

∞ Not to be used for lifting.

# Electric Pump
## HYDRAULIC PQ60 SERIES

## 0,98 l/min - 1,49 kW

Pump designed specifically for heavy duty, extended cycle operation.

- For operating single- or double-acting cylinders.
- Metal shroud keeps dirt and moisture out of motor andelectrical components.
- Electrical shut-down feature prevents unintentional restarting of motor following an electricalservice interruption.
- Internal relief valve limits pressure to 700 bar. External relief valve is adjustable from 70 to 700 bar.
- Pumps operate below maximum OSHA noise limitation (74-76 dBA).
- Start and operate under full load, even with voltage reduced 10%.
- Equipped with a 1.49KW, 1,725rpm, Single-phase. 50Hz induction motor.

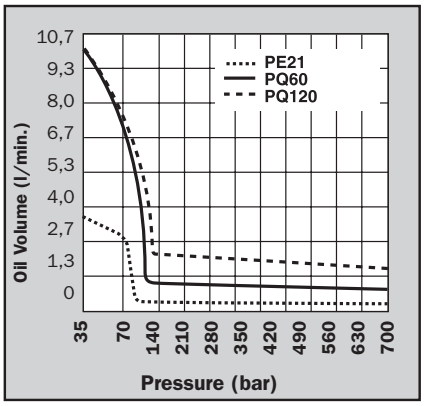
PQ603

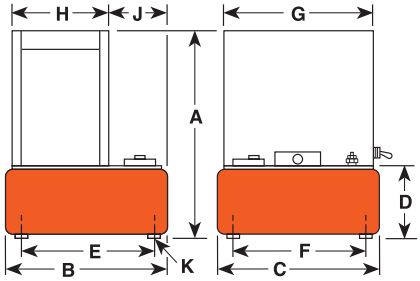
700 bar

LR19814

PQ604S

PUMPS




| Pump No. | Max. Pressure Output bar | rpm | Noise level at Idle and 700 bar (dBA) | Amp Draw at 700 bar (A) | Oil Del. (l/min at..) 7 bar | 70 bar | 350 bar | 700 bar | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) | J (mm) | K*** (in) | Prod. Wt. w/Oil (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PQ60 Series** | 700 | 1.437 | 74/76* | See below | 12,0 | 1,1 | 1,1 | 0,98 | 638 | 362 | 394 | 184 | 308 | 338 | 373 | 237 | 122,2 | 1/2–20 UNF | 76,6** |

Amp draw 220V at 700 bar: 11 Amps.

Amp draw 115V at 700 bar: 22 Amps.

* Measured at a 0,9 m distance, all sides.

** Total weight with oil and 3-way solenoid valve. Subtract 4,5 kg to obtain weight of pump with manual valve.

*** For 50,8 mm dia. swivel casters, order (4) No. 10494.

| For use with Cyl. Type | Description | Order No. | Valve Type | Valve No. | Valve Function | Max. Amp Draw at 700 bar (A) | Motor | Reservoir Usable (l) |
|---|---|---|---|---|---|---|---|---|
| Single-Acting | 1,49 KW pump with 21,6 l reservoir and manual valve, | **PQ603-50-220** | 3-Way | 9520* | Advance Hold Return | 230V - 11 amps | 1,49 KW, 220 Volt 50 Hz, Single phase | 20 |
| Single-Acting | PQ603-50-220, except has solenoid operated remote valve. | **PQ603S-50-220** | 3-Way | 9599† | Advance Hold Return | 230V - 11 amps | 1,49 KW, 220 Volt 50 Hz, Single phase | 20 |
| ††Single-Acting Double-Acting | 1,49 KW pump with 21,6 l reservoir and manual valve. | **PQ604-50-220** | 4-Way | 9506* | Advance Hold Return | 230V - 11 amps | 1,49 KW, 220 Volt 50 Hz, Single phase | 20 |
| Double-Acting- | PQ604-50-220, except has solenoid operated remote valve. | **PQ604S-50-220** | 4-Way | 9512† | Advance Hold Return | 230V - 11 amps | 1,49 KW, 220 Volt 50 Hz, Single phase | 20 |

* Manual valve. Pump is equipped with RUN/OFF/PULSE switch for control of motor.

† 24V Solenoid valve. Pump is equipped with a remote control switch with 3,1 m cord.

†† For single-acting operation, off the electric motor when manual valve in "Retract" position.

Available with 230 Volt, 60Hz motor (to order, remove suffix "-50-220" behind pump order number)
Available with 115 Volt, 60Hz motor (to order, remove suffix "–50-220" & add "-115" behind pump order number)

# Electric Pump

## HYDRAULIC PQ120 SERIES

## 2,0 l/min - 2,24 kW

Low speed, high torque pump designed specifically for heavy duty, extended cycle operation.
Ideal for press operation.

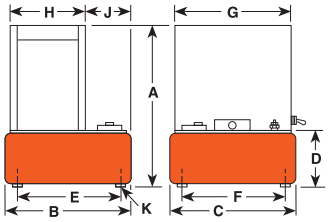

PQ1203

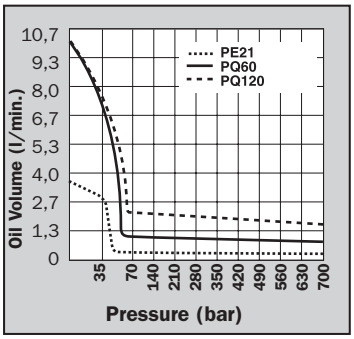

PQ1204S

700 bar

LR19814

- Start and operate under full load, even with voltage reduced 10%.
- Electrical shut-down feature prevents unintentional restarting of motor following an electrical service interruption.
- Internal relief valve limits pressure to 700 bar. External relief valve is adjustable from 70 to 700 bar.
- Pump prewired at factory with a 2,24 KW, 1,725rpm 380 volt, 50 Hz. 3 Phase induction motor. Other electrical configurations are available. See ordering information below.
- 24 volt control circuits on units with remote controls for added user/ operator safety.
- 2,24 KW(3 phase) motor with thermal overload protection. Motor starter and heater element supplied as standard equipment; no hidden charges!
- Metal shroud keeps dirt and moisture out of motor and electrical components.
- Pumps operate below maximum OSHA noise limitation.




PUMPS

| Pump No. | Max. Pressure Output bar | rpm | Noise level at Idle and 700 bar (dBA) | Amp Draw at 700 bar (A) | Oil Del. (l/min at..) 7 bar | 70 bar | 350 bar | 700 bar | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) | J (mm) | K*** (in) | Prod. Wt. w/Oil (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PQ120-Series** | 700 | 1.437 | 73/78* | See below | 12,0 | 2,6 | 2,1 | 2,0 | 638 | 362 | 394 | 184 | 308 | 338 | 373 | 237 | 122,2 | 1/2–20 UNF | 74,3** |

* Measured at a 0,9 m distance, all sides.
** Total weight with oil and 3-way solenoid valve. Subtract 4,5 kg to obtain weight of pump with manual valve.

*** For 50,8 mm dia. swivel casters, order (4) No. 10494.

Amp draw 230V at 700 bar: 10.5 Amps.
Amp draw 460V at 700 bar: 5.3 Amps.

| For use with Cyl. Type | Description | Order No. | Valve Type | Valve No. | Valve Function | Motor | Reservoir Usable (l) |
|---|---|---|---|---|---|---|---|
| Single-Acting | 2,24 KW pump with 21,6 l reservoir and manual valve. | **PQ1203-50-380** | 3-Way | 9520* | Advance Hold Return | 2,24 KW, 380 Volt 50 Hz, 3 Phase | 20 |
| Single-Acting | PQ1203-50-380, except has solenoid operated remote valve. | **PQ1203S-50-380** | 3-Way | 9599† | Advance Hold Return | 2,24 KW, 380 Volt 50 Hz, 3 Phase | 20 |
| †† Single-Acting/ Double-Acting | 2,24 KW pump with 21,6 l reservoir and manual valve. | **PQ1204-50-380** | 4-Way | 9506* | Advance Hold Return | 2,24 KW, 380 Volt 50 Hz, 3 Phase | 20 |
| Double-Acting | PQ1204-50-380, except has solenoid operated remote valve. | **PQ1204S-50-380** | 4-Way | 9512† | Advance Hold Return | 2,24 KW, 380 Volt 50 Hz, 3 Phase | 20 |

* Manual valve. Pump is equipped with RUN/OFF/PULSE switch for control of motor.

† 24V Solenoid valve. Pump is equipped with a remote control switch with 3,1 m cord.
††For single-acting operation, off the electric motor when manual valve in "Retract" position.

Available with 460 Volt, 60Hz, 3 phase motors (to order, remove suffix "50-380" behind pump order number), suitable for 440V, 50Hz, 3 phase
For 230 Volt, 60Hz, 3 phase motors (to order, change suffix to "-230" behind pump order number)
380V/50Hz/3 phase also suitable for 415V/50Hz/3 phase.

# Electric Pump

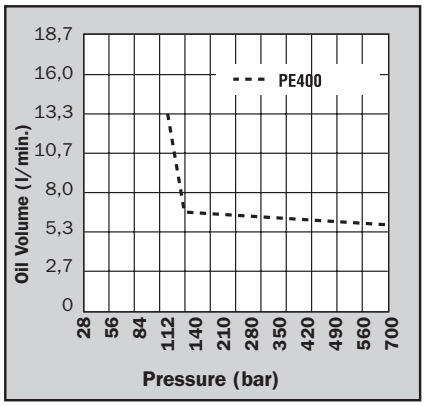
## HYDRAULIC PE400 SERIES

## 6,9 l/min - 7,46 kW

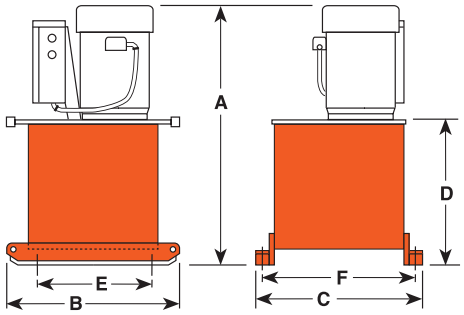
High tonnage double-acting cylinders, Single or multiple cylinder applications.
Up to 1,000 Tons

- Two-speed high output pump delivers up to 20 l/min of oil.
- Low noise level of 73-80 dBA.
- Integral electrical shut-down feature prevents unintentional restarting of motor following an electrical service interruption. Over-current protection prevents damage to motor as a result of overheating.
- "Stop" and "Start" control buttons are 24 volt. PE4004 has a 4-way/3-position manual valve. The PE4004S has a 4-way/3-position solenoid valve with a 24 volt remote hand switch.
- External pressure relief valve is adjustable from 100 to 700 bar.
- Heavy duty 101,6mm dia. casters assure easy maneuvering.
- 75,7 l(64,4 l usable) reservoir has a low oil level sight gauge.
- Powered by a dual voltage 7,46 KW, 3 phase, 1,725rpm induction motor.
- 3 phase motor has all the electrical components necessary to operate the pump.The customer has no hidden charges when making purchase.
- Deliver 20 l/min. of oil at 15 bar, 6,9 l/min. of oil at 700 bar.

PUMPS




PE4004S
700 bar




| Pump No. | Max. Pressure Output bar | rpm | Noise level at Idle and 700 bar (dBA) | Amp Draw at 700 bar (A) | Oil Del. (l/min at..) 15 bar | 90 bar | 350 bar | 700 bar | A* (mm) | B (mm) | C (mm) | D (mm) | E Caster Mfg. (mm) | F Caster Mfg. (mm) | Prod. Wt. w/Oil (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PE4004-50-380 | 700 | 1.437 | 73/80 | See below | 20 | 19,7 | 7,4 | 6,9 | 924 | 635 | 610 | 540 | 394 | 546 | 223 |
| PE4004S-50-380 | 700 | 1.437 | 73/80 | | 20 | 19,7 | 7,4 | 6,9 | 924 | 635 | 610 | 540 | 394 | 546 | 229 |

* Add 127mm and 3,6 kg when casters are mounted. (Units are supplied with four 102 mm dia. swivel casters.)

Amp draw 230V at 700 bar: 34 Amps.

Amp draw 460V at 700 bar: 17 Amps.

| For use with Cyl. Type | Description | Order No. | Valve Type | Valve No. | Valve Function | Motor†† | Reservoir Usable (l) |
|---|---|---|---|---|---|---|---|
| ††† Single-Acting/ Double-Acting | 7,46 KW pump with 75,5 l reservoir and manual valve. | PE4004-50-380 | 4-Way | 9506 | Advance Hold Return | 7,46 KW, 380 volt 50 Hz, 3 Phase | 64,4† |
| Double-Acting | PE4004, except has solenoid operated remote valve. | PE4004S-50-380 | 4-Way | 9512* | Advance Hold Return | 7,46 KW, 380 volt 50 Hz, 3 Phase | 64,4† |

* 24V Solenoid valve with remote control.

† Usable oil is calculated with oil fill at recommended level at 57 mm below cover plate.

380V/50Hz/3 phase also suitable for 415V/50Hz/3 phase.

†† PE400 series also available in 230V, 60Hz and 460V, 60Hz. Please specify when ordering. Example: 460V, 60Hz order PE4004 (also suitable for 440V, 50Hz, 3 phase) or for 230V, 60Hz order PE4004-230.

††† For single-acting operation, off the electric motor when manual valve in "Retract" position.

**NOTE:** Valves for spring return cylinders are available upon request. Consult the factory.

# Gasoline Pump
## HYDRAULIC PG30/55 SERIES

**0,5 - 0,9 l/min 1,49 - 4,5 kw**
Gasoline driven

Gasoline power supply ideal for remote locations.



PG303

PG554
700 bar

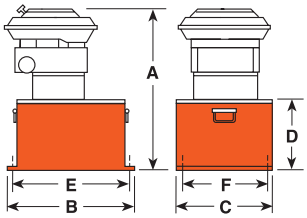
- A logical choice at work sites where electricity or compressed air are unavailable. For single-acting or double-acting cylinders at operating pressures to 700 bar.
- All gasoline engine/hydraulic pumps feature "Posi-Check®" valve to guard against pressure loss when valve is shifted from "advance" to "hold".

**PG303 and PG304**

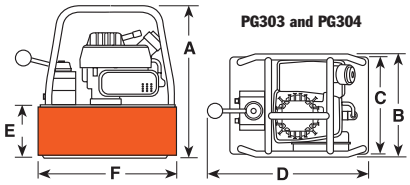
- Powered by a 4-cycle, 2 hp HONDA engine giving it the lowest weight to horsepower ratio of all gasoline driven pumps. Has an aluminum reservoir with 6 l of usable oil.
- PG30 series pumps are equipped with roll cages to protect pump from damage.
- PG30 series pumps weigh in at only 14,5 kg with oil.

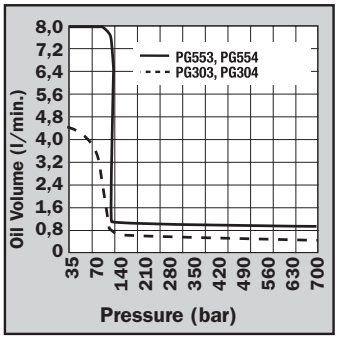
**PG553 and PG554**

- 6 hp Intek "Diamond Edge" 4-cycle, by Briggs & Stratton 21,3 l reservoir.
- Same basic pump as PE55 series electrical Vanguard®pumps.



PG553 and PG554




| Pump No. | Max. Pressure Output bar | rpm | Oil Del. (l/min at...) 7 bar | 70 bar | 350 bar | 700 bar | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | Prod. Wt. w/Oil (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PG303, PG304** | 700 | 6.000 | 4,5* | 0,6 | 0,6 | 0,5 | 378 | 264 | 241 | 406 | 130 | 343 | 14,5 |
| **PG553, PG554** | 700 | 3.600 | 7,9 | 1,2 | 1,1 | 0,9 | 559 | 457 | 318 | 219 | 422 | 229 | 54,4 |

* First stage oil delivery from 0-28 bar at 3,7 l/min minimum.

| For use with Cyl. Type | Description | Order No. | Valve Type | Valve No. | Valve Function | Reservoir Usable (l) | Horsepower (hp) | Cycle |
|---|---|---|---|---|---|---|---|---|
| Single-Acting | 2 hp pump with 7,6 l reservoir and single-acting valve. | **PG303** | 3-Way | 9520 | Advance Hold Return | 6 | 2 | 2 |
| Single-Acting | 6 hp pump with 21,6 l Reservoir and single-acting valve. | **PG553** | 3-Way | 9520 | Advance Hold Return | 21,3** | 6 | 4 |
| Double-Acting | PG303, except has double-acting valve. | **PG304** | 4-Way | 9506 | Advance Hold Return | 6 | 2 | 2 |
| Double-Acting | PG553, except has double-acting valve. | **PG554** | 4-Way | 9506 | Advance Hold Return | 21,3** | 6 | 4 |

** Usable oil is calculated with oil fill at recommended level at 13 mm below cover plate.

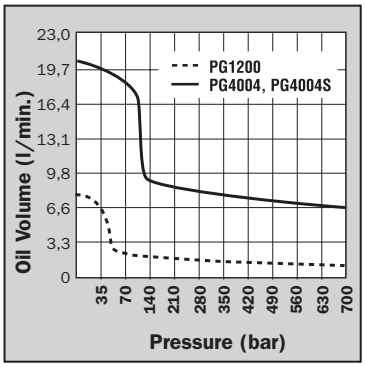
# Gasoline Pump
## PG120-PG400 SERIES

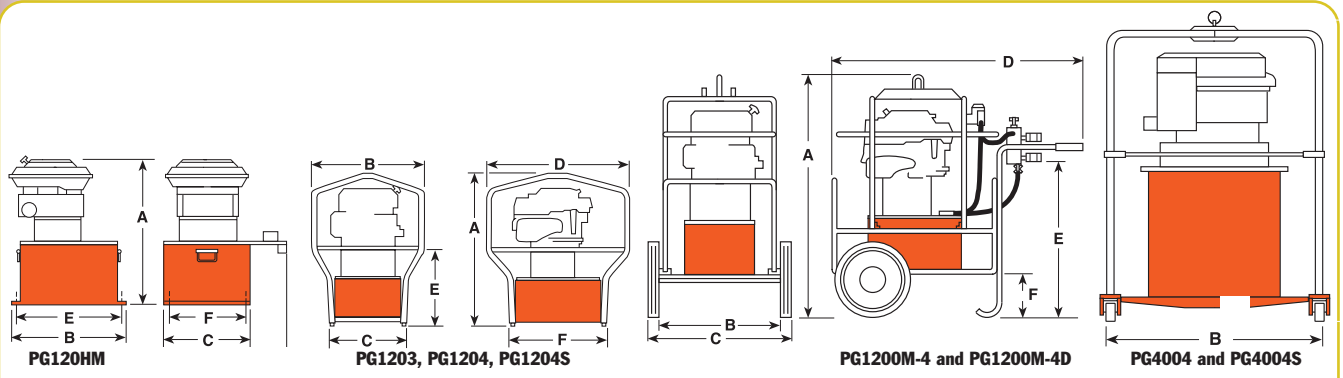
**2,1- 6,6 l/min - 4,1 - 14,9 kw**
Max.output gasoline powered pumps.

Large reservoir capacity roll cage equipped. PG120 for up to 300 ton cylinders. PG400 for up to 1,000 ton cylinders.

PUMPS

- Two-speed high performance pumps ideal for construction, structure moving and rigging applications.
- A logical choice at work sites where electricity or compressed air are unavailable. For single-acting or double-acting cylinders at operating pressures to 700 bar.
- All gasoline engine/hydraulic pumps feature "Posi-Check®" valve to guard against pressure loss when valve is shifted from "advance" to "hold".
- PG1200 Series pumps powered by a Honda 4-cycle, 5.5 hp engine with automatic decompression and electronic ignition. Deliver over 2,1 l/min at 700 bar.
- A 19 liter 5 gallon reservoir means adequate capacity for multi-cylinder applications. Dual element air cleaner protects engine from dusty environments.
- Heavy duty "roll cage" provides pick-up points for lifting. Horizontal bars on PG1203, PG1204 and PG1204S protect unit, provide hand holds for carrying.
- Rubber anti-skid insulation on bottom of reservoir resists skidding and dampens vibration. PG1200M-4 and PG1200M-4D include a pump cart with 305 mm wheels.
- Adjustable external pressure regulator.


| Pump No. | Max. Pressure Output bar | rpm | Oil Del. (l/min at...) 7 bar | 70 bar | 350 bar | 700 bar | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | Prod. Wt. w/Oil (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PG120HM** | 700 | 3,600 | 7,9 | 2,8 | 2,4 | 2,1 | 584 | 394 | 362 | 483 | 338 | 308 | 68 |
| **PG1203** | 700 | 3,600 | 7,9 | 2,8 | 2,4 | 2,1 | 708 | 514 | 362 | 667 | 343 | 464 | 70 |
| **PG1204** | 700 | 3,600 | 7,9 | 2,8 | 2,4 | 2,1 | 708 | 514 | 362 | 667 | 343 | 464 | 70 |
| **PG1204S** | 700 | 3,600 | 7,9 | 2,8 | 2,4 | 2,1 | 708 | 514 | 362 | 667 | 343 | 464 | 73 |
| **PG1200M-4** | 700 | 3,600 | 7,9 | 2,8 | 2,4 | 2,1 | 1070 | 457 | 635 | 1080 | 667 | 184 | 118 |
| **PG1200M-4D** | 700 | 3,600 | 7,9 | 2,8 | 2,4 | 2,1 | 1070 | 457 | 635 | 1080 | 667 | 184 | 127 |
| **PG4004** | 700 | 3,600 | 20,3 | 18,4 | 7,8 | 6,6 | 1276 | 1321 | 1321 | — | — | — | 197 |
| **PG4004S** | 700 | 3,600 | 20,3 | 18,4 | 7,8 | 6,6 | 1276 | 1321 | 1321 | — | — | — | 200 |

PG1204S

PG1200M-4D

**PG1200M-4**

- For single-acting cylinders. Has 9520 3-way/3-position (tandem center) valve, 9596 load lowering valve and 9644 4-port manifold with individual needle valves at each port.
- Has a 9796 coupler and 9797 dust cap at each port. Valving permits precise individual control of up to four cylinders.
- A 9052 heavy duty, fluid filled pressure gauge (0-700 bar) is included.

**PG1200M-4D**

- For single- or double-acting cylinders with precise individual control of up to four cylinders possible.
- Equipped same as PG1200M-4, except has 9506 4-way/3-position (tandem center) valve, and second 4-port manifold without needle valves mounted beneath 9644 manifold for operating double-acting cylinders.

**PG400 Series Maximum output Hydraulic Power Package**

- Ideal for single or multiple cylinder applications. Has a 4-cycle, 20 hp Honda engine and 76 l reservoir (64,4 l usable) with low oil level sight gauge.
- Steel "roll cage" protects pump, has a lifting hook; 102 mm dia. swivel casters provide mobility.
- Delivers 6,6 l/min of oil at maximum operating pressure.
- Has a 9506 4-way valve. On/off switch and speed control are protected by a panel. Sturdy molded case protects battery (not included).

| For use with Cyl. Type | Description | Order No. | Valve Type | Valve No. | Valve Function | Reservoir Usable (l) | Horsepower (hp) | Cycle |
|---|---|---|---|---|---|---|---|---|
| Single-Acting | Base model 51/2 hp gasoline pump with 22 l reservoir. | PG1203 | 3-Way | 9520 | Advance Hold Return | 21,3 | 5.5 | 4 |
| Single-Acting | PG1203 with cart, rollcage, load lowering valve, 4 port manifold & gauge. | PG1200M-4 | 3-Way Manifold | 9520 9644 | Advance Hold Return** | 21,3 | 5.5 | 4 |
| Single-Acting/ Double-Acting | PG1200M-4D, except without "Roll Cage" and cart. Ideal for house moving industry. | PG120HM | 4-Way Manifold | 9506 9642 (2 nos.) | Advance Hold Return** | 21,3 | 5.5 | 4 |
| Double-Acting | Base model 51/2 hp gasoline pump, with 22 l reservoir and double-acting valve. | PG1204 | 4-Way | 9506 | Advance Hold Return | 21,3 | 5.5 | 4 |
| Double-Acting | PG1204, except has roll cage, cart, solenoid valve and 7,6 m cord. | PG1204S | 4-Way Solenoid*** | 9516 | Advance Hold Return | 21,3 | 5.5 | 4 |
| Single-Acting/ Double-Acting | PG1200M-4, except for double-acting systems. | PG1200M-4D | 4-Way Manifold | 9506 9644 | Advance Hold Return** | 21,3 | 5.5 | 4 |
| Double-Acting | Base model 20 hp pump with 76 l reservoir. | PG4004 | 4-Way | 9506 | Advance Hold Return | 64,4* | 20 | 4 |
| Double-Acting | PG4004, except has solenoid operated remote valve. | PG4004S | 4-Way Solenoid*** | 9516 | Advance Hold Return | 64,4* | 20 | 4 |

* Usable oil is calculated with oil fill at recommended level at 57 mm below cover plate.

** Control up to 4 cylinders independently.

*** Has 7,6 m remote control cord.

# Hydraulic Pump
## ACCESSORIES

25017
202777
202778
304718

203225

10461

251660

309652
309653

209593

17627
216209

### ON/OFF MOTOR CONTROL

The following remote control switches will give you momentary "ON" control of your hydraulic pump. These switches are deadman type, spring loaded to the "OFF" position. They can be used with any Power Team electric hydraulic pumps.

**No. 25017** - Remote hand control. Has a push button switch, with a 3,1 m cord. Wt., 0.4 kg.

**No. 203225** - Remote hand control. Heavy-duty with single push button switch in a neoprene housing with 3,1 m cord. Housing seals out dust, lint and liquids (unit is not submersible). Wt., 0,4 kg.

**No. 10461** - Remote foot control, with 3,1 m cord. Wt., 1,4 kg.

**No. 251660** - Remote foot control, with 3,1 m cord. For use with the PE10 style pumps. Wt., 0,4 kg.

### SOLENOID & MOTOR CONTROL

For use on solenoid valves that are used on single-acting cylinders:

**No. 202777** - Remote hand control. Has rocker style switch that is momentary advance, spring center hold and detented retract. It comes with a 3,1 m cord, for use with 3-way/2 or 3-position valves. Wt.,0,4 kg. For use on solenoid valves that are used on double-acting cylinders:

**No. 202778** - Remote hand control. Has rocker style switch that is momentary advance, spring center hold and momentary retract. It comes with a 3,1 m cord, for use with 4-way/3-position valves. Wt., 0,4 kg

**No. 309653** – Remote foot control. Can be used in place of either of the above hand controls to control the same type of valves. The switch is momentary on both the advance and retract position and is spring centered to the hold position. This foot switch comes with 3,1 m cord. Wt., 1,8 kg.

**No. 17627** – Remote foot control. Same as the No. 309653 but without a cord. Wt., 0,9 kg.

**No. 304718** - Remote hand control. Has a rocker style switch that is momentary advance, spring center hold and momentary retract. The switch is wired to start and stop the motor when the valve is energized. It comes with a 3,1 m cord. To be used with 4-way/2-position valves. Wt., 0.4 kg.

**No. 309652** – Remote foot control. Has same functions as No. 304718. Supplied with a 3,1 m cord. To be used with 4-way/2-position valves. Wt., 1,8 kg.

**No. 216209** – Remote foot control. Same as the No. 309652, but without a cord. Wt., 0,9 kg.

NOTE: See valves listing to determine which remote to use (See page 30-33).

### REMOTE AIR MOTOR CONTROLS

This remote hand control has two momentary push buttons, one for advance and one for retract with spring offset to hold. To be used with 4-way/2-position air pilot valves.

**No. 209593** – Remote hand control with 3,7 m cord. Wt., 0,9 kg.

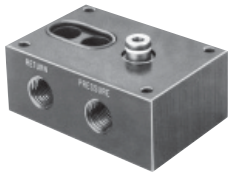
## SUBPLATES

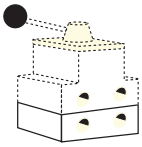
For remote mounting of control valves. They convert pump mounted valves to remote mounted valves quickly and easily.

**No. 9510 -** Subplate for remote mounting the following valves; 9500, 9501, 9502, 9504, 9506, 9507, 9511, 9552, 9572, 9575, 9576, 9592, 9594 and 9609. Wt., 1 kg 1.5 lbs.

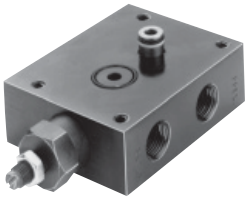
**No. 9620 -** For use with 9500, 9501, 9502, 9552, 9572, 9592 and 9594. Same as No. 9510 but has integral pressure regulating valve. Wt., 1,7 kg.

9510
9515





9620



**9510 and 9620 attach to the bottom of valve for remote mounting. The 9515 and 9521 mount between the pump cover plate and valve.**

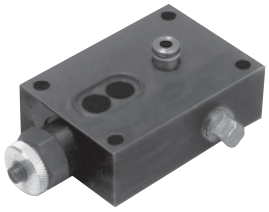
## PUMP-MOUNTED SUBPLATES

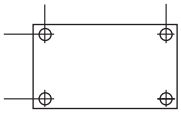
When fitted between pump cover plate valve mounting flange and control valve, provides a separate 3/8" NPTF female port, open to "return" regardless of position of valve. Also provides a separate 3/8" NPTF female pressure port. This subplate can be useful when you desire to use one pump with a deck-mounted control valve, plus a separate remote-mounted valve to control another function. For use with the following valves: 9500, 9501, 9502, 9504, 9506, 9507, 9511, 9552, 9572, 9575, 9576, 9592, 9594 and 9609.

**No. 9515 -** Subplate, Wt., 0,6 kg.

**No. 9521 -** Subplate for use under most pump mounted valves to provide adjustable pressure control on units not equipped with an external pressure regulator. Wt., 1,7 kg.

9521





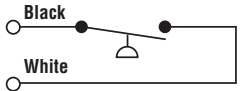
## PRESSURE SWITCH

**Application:** Used in a hydraulic circuit where system pressure must be "held". Automatically (electrically) turns off pump motor when predetermined system pressure is reached. Attaches directly to control valve manifold or can be mounted "in-line" to read system pressure. Has a 1/4" NPTF male thread, and a 1/4" NPTF fitting for gauge mounting if required. Adjustable from 70 to 700 bar. Can also be used to actuate other electrical devices in the system. Wired "normally open" and held closed by spring pressure.

**IMPORTANT: Electrical rating of switch is 5 amps at 250 volts max. To prevent permanent damage to switch, a control relay must be installed to handle currents or voltage exceeding these limits. Pressure switch should never be used to directly actuate the electrical motor.**

**No. 9625 -** In-line pressure switch with 1/4" NPTF gauge port. Wt., 0,5 kg.

9625




Wiring Schematic
N.O. Held Closed

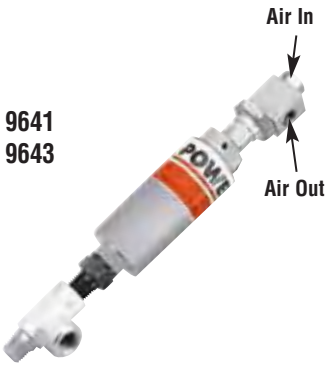
## PILOT OPERATED AIR CONTROL VALVES

**Application:** For use when an air pilot signal is required at a set hydraulic pressure. Can be used to shift valves, and start or stop pneumatic pumps. Attaches directly to control manifold or can be mounted " in-line" to read system hydraulic pressure. Automatically turns on an air pilot signal when a predetermined system pressure is reached. Has 1/4" NPTF male thread and 1/4" NPTF fitting for gauge mounting if required. Adjustable from 35-700 bar. Maximum rating of 700 l at 7 bar.

**No. 9641 -** Pilot operated control valve, normally closed, with 1/4" NPTF male thread. Wt., 0,4 kg.

**No. 9643 -** Same as 9641 except normally open. Wt., 0,4 kg.

9641
9643



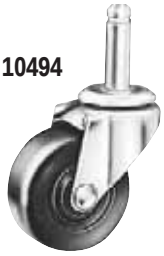
# Hydraulic Pump
## ACCESSORIES

252511
252512

206767
250175

350431

10494



207762

16339

### OIL COOLER KITS
**No. 252511 -** Oil cooler kit designed for use with PE604T or PE604PT pumps with 115 VAC. Wt.,2,2Kg.
**No. 252512 -** Oil cooler kit designed for use with PE604T or PE604PT pumps with 220 VAC. Wt.,2,2 kg.

### RESERVOIR BREATHER KITS
**No. 206767 -** Reservoir breather kit designed for use on PA17, PA55, PE17, PE55, PE84, PE90, PE120, PG55, PG120, PQ60 and PQ120 series pumps. Wt., 0,6 kg.
**No. 250175 -** Reservoir breather kit designed for use on PE21 and PE46 series pumps. These kits replace the reservoir filler cap when the pump is used in dusty and dirty environments. Wt., 0,6 kg.

### CASTERS
50,8 mm diameter casters attach to the bottom of large reservoir for portability. Sold individually; order the amount you need.
**No. 10494 -** Single caster wheel. Wt., 0,1kg.

### FLUID LEVEL/TEMPERATURE GAUGE
Displays fluid level and temperature of hydraulic oil in reservoir. 32°-212°F, 0°-100°C. 32 mm wide and 162 mm high.
**No. 350431 -** Fluid level/temperature gauge.

### FOOT CONTROL GUARD
Guard for use with 10461 and 251660 foot controls.
**No. 16339 -** Wt., 2 kg.

### MAGNETIC STRIP
Magnetic strip with adhesive back can be added to No. 25017, 202777, 202778 and 304718 hand controls. Provides 2,7 kg. of holding force.
**No. 207762 -** Wt., 0,1 kg.

**VITON* SEAL KITS**

Viton* seal kits

| Order Number | Use With | Model |
|---|---|---|
| 300507 | P12 | All |
| 300472 | P23, P55 | All |
| 300510 | P59 | All |
| 300508 | P157, P159, P300 | A |
| 300690 | P157, P159 | B |
| 300696 | P300 | B |
| 300508 | P157D, P159D, P300D | A |
| 300693 | P157D, P159D | B |
| 300699 | P300D | B |

**VITON* SEAL KITS** Can be used in all “C” and “RH” series cylinders, as well as the P12, P55, P59, P157/P159, P157D/P159D and P300/P300D series of hand pumps. These seals are required when fire resistant hydraulic fluids are used. For use with phosphate ester fluids. Not required with Flame-Out fluid.

*** Viton is the E.I. duPont De Nemours & Co., Inc, trade name for flouroelastomers.**

## UNIVERSAL PUMP CART

Mobilize your hydraulic pumps with the PC200. The rugged tubular frame can easily handle pumps weighing up to 90 kg. With 305 mm wheels, the cart rolls easily. Just load the pump onto the cart and wheel it right to the job. The universal mounting hole pattern lets you handle a wide variety of Power Team pumps.

**No. PC200 -** Universal pump cart with 305 mm wheels. Cart can be used with the following pumps: PA60, PA64 and PA554 air/hydraulic pumps; PE55 series, PE183-2 and PE184-2 electric/hydraulic pumps; PE21, PQ60 and PQ120 series "Quiet" pumps; PG55 series gas engine/hydraulic pumps; and pumps with optional 19- and 38 l - reservoirs; Nos. RP50, RP51, RP101 and RP103. Wt., 12,3 kg (Shown with pump, pump not included)

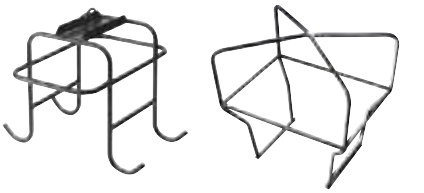
## PROTECTIVE PUMP ROLL CAGE

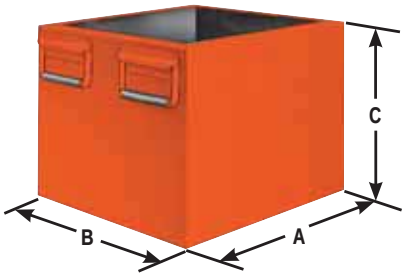
Safeguards pump, gas engine and valves on the job site. Horizontal bars provide convenient hand holds for carrying pump, a pick-up point permits lifting unit with an overhead crane or other device. Standard equipment on PG1203 and PG1204. Can be ordered as an option with any other gas, air, or electrically driven hydraulic pump equipped with a 38 l reservoir.

**Note: Refer to PG1203/PG1204 specification chart for dimensions of roll cage.**

**No. PC200RC -** Roll cage for use with PC200. (Cannot be used on pumps with 38 liter reservoirs.) Wt., 16 kg.

**No. RC5 -** Roll cage. Wt., 9 kg.






### LARGE CAPACITY RESERVOIRS

| Capacity (liter) | Order Number | Usable Oil (l/min) | Use With | Size (mm) A | B | C |
|---|---|---|---|---|---|---|
| 7,6 | RP20** | 7,1 | PA6, PA50 series (models A-E) | 292 | 241 | 165 |
| 7,6 | RP20-F** | 7,1 | PA6 series (model F), PA 50 series (model F & G) | 292 | 241 | 165 |
| 9,5 | RP20M* | 7,2 | PA6, PA50 series (models A-E) | 292 | 241 | 165 |
| 9,5 | RP20M-F* | 7,2 | PA6 series (model F), PA50 series (model F & G) | 292 | 241 | 165 |
| 9,5 | RP21* | 7,2 | PE18 series | 292 | 241 | 165 |
| 9,5 | RP22† | 7,1 | PE55, PE90, PE120, PA55 | 292 | 241 | 165 |
| 19 | RP50 | 18,4 | PE55, PE90, PE120, PA55 | 381 | 318 | 203 |
| 19 | RP51 | 18,4 | PA46, PE46, PE21 | 381 | 318 | 203 |
| 37,9 | RP100 | 35,1 | PE55, PE90, PE120, PA55 | 381 | 318 | 356 |
| 37,9 | RP101 | 35,1 | PG55, PG120 | 381 | 318 | 356 |
| 37,9 | RP103* | 37,0 | PQ60, PQ120 | 392 | 362 | 313 |
| 37,9 | RP104 | 35,1 | PA46, PE46, PE21 | 381 | 318 | 356 |

* **Four mounting holes: 1/2"-20, for 50.8 mm diameter swivel casters (No. 10494)**

** High density polyethylene reservoir. † Aluminum reservoir.

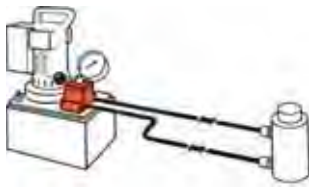
**NOTE: All metal reservoirs are equipped with drain plugs and all necessary conversion items. Hydraulic oil is not included with reservoir kits. Please order separately.**

### METAL RESERVOIR CONVERSION KITS FOR PUMPS *INCLUDES GASKETS AND FASTENERS.

| Metal Pump Number | Res. Order Number | Metal Reservoir Capacity (l) | Reservoir Weight (kg) | Metal Pump Number | Res. Order Number | Metal Reservoir Capacity (l) | Reservoir Weight (kg) | Metal Pump Number | Res. Order Number | Metal Reservoir Capacity (l) | Reservoir Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PA6 | 213896 | 1,7 | 1,4 | PA50 | 213896 | 1,7 | 1,4 | PA174 | 213895 | 9,5 | 4,1 |
| PA6A | 213896 | 1,7 | 1,4 | PA50R | 213896 | 1,7 | 1,4 | PE172 | 213895 | 9,5 | 4,1 |
| PA6D | 213896 | 1,7 | 1,4 | PA6R | 213896 | 1,7 | 1,4 | PE172A | 213895 | 9,5 | 4,1 |
| PA6-2 | 213895 | 9,5 | 4,1 | PA50R2 | 213895 | 9,5 | 4,1 | PE172S | 213895 | 9,5 | 4,1 |
| PA6D2 | 213895 | 9,5 | 4,1 | PA172 | 213895 | 9,5 | 4,1 | PE174 | 213895 | 9,5 | 4,1 |

# Valves
## SELECTION INFORMATION

## Pump Mounted Valves
700 bar



**PUMP MOUNTED VALVES**

| Order No. | Page No. | *Cylinder Application | Operation | Valve Type | Volt | Advance/ Return | Advance/ Hold Return | Posi-Check® Feature |
|---|---|---|---|---|---|---|---|---|
| 9500 | 33 | S.A & D.A. | Manual | 4-way, 3 Pos. Tandem Center | — | no | yes | no |
| 9501 | 33 | S.A. & D.A. | Manual | 4-way, 3 Pos. Closed Center | — | no | yes | no |
| 9502 | 32 | S.A. | Manual | 3-way, 3 Pos. Closed Ctr. | — | no | yes | yes |
| 9504 | CF | S.A. & D.A. | Manual | 3/4-way, 2 Pos. | — | yes | yes | no |
| 9506 | 33 | D.A. | Manual | 4-way, 3 Pos. Tandem Center | — | no | yes | yes |
| 9507 | 33 | D.A. | Manual | 4-way, 3 Pos. Closed Center | — | no | yes | yes |
| 9511 | CF | S.A. & D.A. | Manual | 4-way, 3 Pos. Open Center | — | yes | yes | no |
| 9512 | 35 | D.A. | Solenoid | 4-way, 3 Pos. Tandem Center | 24 | no | yes | yes |
| 9513 | 35 | D.A. | Solenoid | 4-way, 3 Pos. Tandem Center | 115 | no | yes | yes |
| 9516 | 35 | D.A. | Solenoid | 4-way, 3 Pos. Tandem Center | 12DC | no | yes | yes |
| 9517 | 32 | S.A. | Manual | 2-way, 2 Pos. | — | no | yes | no |
| 9519 | 35 | D.A. | Solenoid | 4-way, 3 Pos. Tandem Center | 230 | no | yes | yes |
| 9520 | 32 | S.A. | Manual | 4-way, 3 Pos. Tandem Center | — | no | yes | yes |
| 9522 | CF | D.A. | Solenoid | 4-way, 3 Pos. Open Center | 230 | yes | no | no |
| 9523 | CF | S.A. | Pilot Operated Solenoid | 3-way, 2 Pos. | 230 | yes | no | no |
| 9552 | 34 | S.A. & D.A. | Solenoid | 3/4-way, 2 Pos. | 230 | yes | no | no |
| 9553 | CF | S.A. | Pilot Operated Solenoid | 3-way, 2 Pos. | 24 | yes | no | no |
| 9569 | 34 | S.A. | Solenoid | 3-way, 2 Pos. | 24 | no | yes | no |
| 9570 | 34 | S.A. | Solenoid | 3-way, 2 Pos. | 230 | no | yes | no |
| 9572 | 34 | S.A. & D.A. | Solenoid | 3/4-way, 2 Pos. | 24 | yes | no | no |
| 9576 | CF | S.A. | Manual | 3-way, 3 Pos. Metering Tandem Ctr. | — | no | yes | no |
| 9579 | 34 | S.A. | Solenoid | 3-way, 2 Pos. | 115 | no | yes | no |
| 9582 | 32 | S.A. | Manual | 3-way, 2 Pos. | — | no | yes | no |
| 9584 | 32 | S.A. | Manual | 3-way, 2 Pos. | — | no | yes | no |
| 9589 | CF | S.A. | Pilot Operated Solenoid | 3-way, 2 Pos. | 115 | yes | no | no |
| 9590 | CF | D.A. | Solenoid | 4-way, 3 Pos. Open Center | 115 | yes | no | no |
| 9592 | 34 | S.A. & D.A. | Solenoid | 3/4-way, 2 Pos. | 115 | yes | no | no |
| 9594 | 34 | S.A. & D.A. | Air | 3/4-way, 2 Pos. | — | no | yes | yes |
| 9599 | 35 | S.A. | Pilot Operated Solenoid | 3-way, 3 Pos. Tandem Center | 24 | no | yes | yes |
| 9605 | CF | S.A. | Pilot Operated Solenoid | 3-way, 3 Pos. Tandem Center | 115 | no | yes | yes |
| 9609 | CF | S.A. | Manual | 3-way, 3 Pos. Tandem Center | — | no | yes | no |
| 9610 | CF | S.A. | Auto Pilot Operated | 3-way, 2 Pos. | — | yes | no | no |
| 9610A | CF | S.A. | Manual | 2/3-way, 2 Pos. | — | no | yes | no |
| 9615 | CF | D.A. | Solenoid | 4-way, 3 Pos. Open Center | 24 | yes | no | no |
| 9628 | CF | S.A. & D.A. | Manual | Post Tensioning | — | special | no | no |
| 9632 | CF | S.A. & D.A. | Manual | Post Tensioning | — | special | no | no |

* "S.A." represents single-acting cylinders, "D.A." represents double-acting cylinders
CF: Consult Factory

**Remote Mounted Valves Available: Consult Factory**

# HYDRAULIC ACCESSORIES

# Hoses

## Polyurethane Rubber Non-Conductive

- **3/8" NPTF fittings on both ends.**
- **Operating pressure is 700 bar (10,000psi). All comply with MHI standard IJ100.**

**A** **Non-conductive hose**

For applications requiring electrical isolation by the hose, non-conductive hose has a leakage factor of less than 50 microamperes, considered a safe level of conductivity by SAE standards. The covering is polyurethane and colored orange for easy identification as non-conductive hose. The covering is not perforated, preventing moisture from entering the hose and affecting its overall conductivity. All non-conductive hoses have a minimum burst pressure of 2800 bar.

**B** **Rubber hose**

2-ply rated hose reinforced with two braids of high tensile steel wire. The rubber covering is oil and weather resistant.

**C** **Polyurethane hose**

Made up of nylon core tube with polyester fiber reinforcement which will withstand the minimum SAE bend radius without shortening service life. These hoses last up to seven times longer than rubber hose, and are suitable for continuous service at temperatures from -40° to 150° F (-40˚ to 66˚C).

**D** **Hydraulic hose assembly**

**No. 9764** – Hose assembly consisting of 9767 (1,8 m hose), 6,4mm I.D. polyurethane with 9798 hose half coupler and 9800 dust cap.

**No. 9754** – Hose assembly consisting of 9756 (1,8 m hose), 6,4 mm I.D. rubber with 9798 hose half coupler and 9800 dust cap.


**The figures show the relative effect two styles of hose can have on return time. Actual times may vary.**

**CYLINDER RETURN TIME**

| Cylinder | No. 9769 3,1 m Hose 6,4 mm I.D. | No. 9781 3,1 m Hose 9,5 mm I.D |
|---|---|---|
| C2514C | 51 sec. | 14 sec. |
| C556C | 1 min., 30 sec. | 24 sec. |
| C5513C | 4 min., 12 sec. | 59 sec. |
| C10010C | 6 min., 56 sec. | 1 min., 3 sec. |

| Hose Type | Hose I.D. | Hose Length | Burst Rating | Order No. |
|---|---|---|---|---|
| Polyurethane | 6,4 mm | 0,6 m | 1 400 bar | 9765 |
| Polyurethane | 6,4 mm | 0,9 m | 1 400 bar | 9766 |
| Polyurethane | 6,4 mm | 1,8 m | 1 400 bar | 9767 |
| Polyurethane | 6,4 mm | 1,8 m | 1 400 bar | 9764* |
| Polyurethane | 6,4 mm | 2,4 m | 1 400 bar | 9768 |
| Polyurethane | 6,4 mm | 3,1 m | 1 400 bar | 9769 |
| Polyurethane | 6,4 mm | 3,7 m | 1 400 bar | 9770 |
| Polyurethane | 6,4 mm | 6,1 m | 1 400 bar | 9771 |
| Polyurethane | 6,4 mm | 15,3 m | 1 400 bar | 9772 |
| Polyurethane | 6,4 mm | 22,9 m | 1 400 bar | 9750 |
| Polyurethane | 6,4 mm | 30,5 | 1 400 bar | 9751 |
| Polyurethane | 9,5 mm High Flow | 1,8 m | 2 100 bar | 9780 |
| Polyurethane | 9,5 mm High Flow | 3,1 m | 2 100 bar | 9781 |
| Polyurethane | 9,5 mm High Flow | 6,1 m | 2 100 bar | 9782 |
| Polyurethane | 9,5 mm High Flow | 15,3 m | 2 100 bar | 9783 |
| Rubber, Wire-braid | 6,4 mm | 0,9 m | 1 400 bar | 9755 |
| Rubber, Wire-braid | 6,4 mm | 1,8 m | 1 400 bar | 9756 |
| Rubber, Wire-braid | 6,4 mm | 1,8 m | 1 400 bar | 9754* |

| Hose Type | Hose I.D. | Hose Length | Burst Rating | Order No. |
|---|---|---|---|---|
| Rubber, Wire-braid | 6,4 mm | 2,4 m | 1 400 bar | 9757 |
| Rubber, Wire-braid | 6,4 mm | 3,1 m | 1 400 bar | 9758 |
| Rubber, Wire-braid | 6,4 mm | 3,7 m | 1 400 bar | 9759 |
| Rubber, Wire-braid | 6,4 mm | 6,1 m | 1 400 bar | 9760 |
| Rubber, Wire-braid | 6,4 mm | 9,1 m | 1 400 bar | 9761 |
| Rubber, Wire-braid | 6,4 mm | 15,3 m | 1 400 bar | 9762 |
| Rubber, Wire-braid | 9,5 mm High Flow | 0,9 m | 1 400 bar | 9733 |
| Rubber, Wire-braid | 9,5 mm High Flow | 1,8 m | 1 400 bar | 9776 |
| Rubber, Wire-braid | 9,5 mm High Flow | 3,1 m | 1 400 bar | 9777 |
| Rubber, Wire-braid | 9,5 mm High Flow | 4,6 m | 1 400 bar | 9734 |
| Rubber, Wire-braid | 9,5 mm High Flow | 6,1 m | 1 400 bar | 9778 |
| Rubber, Wire-braid | 9,5 mm High Flow | 9,1 m | 1 400 bar | 9735 |
| Rubber, Wire-braid | 9,5 mm High Flow | 12,2 m | 1 400 bar | 9736 |
| Rubber, Wire-braid | 9,5 mm High Flow | 15,3 m | 1 400 bar | 9779 |
| Non-Conductive | 6,4 mm | 1,8 m | 2 800 bar | 9773 |
| Non-Conductive | 6,4 mm | 3,1 m | 2 800 bar | 9774 |
| Non-Conductive | 6,4 mm | 6,1 m | 2 800 bar | 9775 |

NOTE: Polyurethane hoses not recommended for use where heat or weld splatter conditions exist. * Furnished with 9798 hose half coupler and 9800 dust cap.

# Couplers

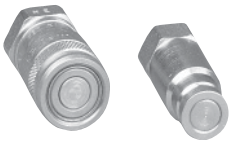
## Standard & Flush-Face

9795 Cylinder and Hose Couplers

9796

9798

9794 No-Spill Hose Couplers



9794 Flush-Face couplers

9793

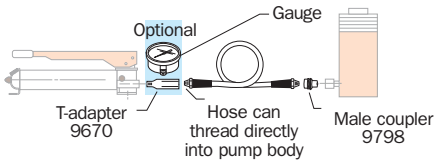
9792

9797

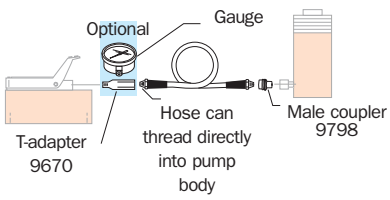
9799

9800

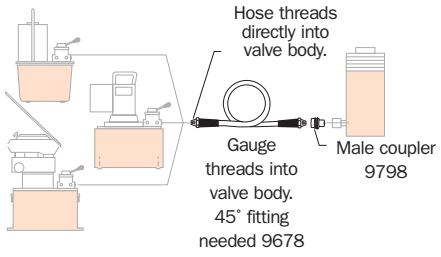
Hand pump system hook-up
T-adapter necessary for P12, P19, P23, P59 & P59F pumps.
All other hand pumps have a gauge mounting port.




Single-acting air pump system hook-up




Air, Electric & Gas Pumps with valve system hook-up




### CYLINDER AND HOSE COUPLERS

Designed for use up to 700 bar with hydraulic jacks, cylinders, etc. They are the threaded union type for interchanging cylinders in seconds. Each half is valved with a precision ball for a tight shutoff when disconnected. These couplers also permit the separation of cylinders or hose from pump when at 0 psi with minimal oil loss.

**No. 9795** – Complete quick coupler, 3/8" NPTF. (Includes two 9800 dust caps.)

**No. 9798** – Male (hose) half coupler (less hose half dust cap), 3/8" NPTF.

**No. 9796** – Female (cylinder) half coupler with No. 9800 dust cap, 3/8" NPTF.

**No. 9796-V** – Same as 9796, but with Viton seals.

**No. 9796-E** – Same as 9796, but with EPR seals.

**No. 9799** – Optional metal dust cap (hose half).

**No. 9797** – Optional metal dust cap (cylinder half).

### NO-SPILL, PUSH-TO-CONNECT HYDRAULIC HOSE COUPLERS

High flow, no-spill, push-to-connect couplers with locking collar and flush face designed for high pressure applications. The flush-face concept makes it easy to clean both coupler ends before connecting. Our unique push-to-connect, "dry-break" design eliminates oil spillage. The locking collar makes accidental disconnects a thing of the past. For 700 bar operation. Designed to permit high oil flow.

**No. 9792** – Female (cylinder) half quick coupler only. Wt., 0.1 kg.

**No. 9793** – Male (hose) half quick coupler only. Wt., 0,1 kg.

**No. 9794** – Complete quick coupler (male and female). Dust caps not included. Wt.,0,2 kg.

### HYDRAULIC COUPLER DUST CAP

Dust cap fits either male or female half couplers.

**No. 9800** – Dust cap. For male or female 3/8" NPTF half couplers. Wt., 0,1 kg.

# Gauges

## Analog & Digital

ASME B40.1
GRADE B

63,5 mm

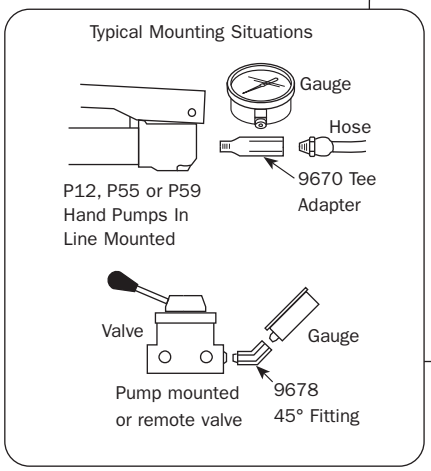
**9040**

101,6 mm

**9065**


152,4 mm

**9089**





**DG100**

**Heavy-duty Hydraulic Analog Pressure Gauges**

- Gauges feature an easily readable and highly visible, red day-glo needle.
- High strength steel bourdon tube ensures high cycle life.
- Stainless steel cases and lens locking rings.
- Have 1/4" NPT connections.

**Digital Pressure Gauges – DG100 / DG100B**

- Accurate to within 1%.
- Larger display characters than ordinary digital gauges.
- Long-life pressure transducer.
- 1/4" NPTF male threads for the pressure connection.
- 1,8 m signal input cable connects to back of display unit.

**FEATURES**

- Pressure values are displayed on large red LEDs in 10 psi increments.
- "Peak" hold feature with reset toggle switch and "Peak On" indicator; Hi/Low set point feature with relay outputs for Hi/Low alarms and/or control signals.
- A slow flashing display indicates pressure below the low limit; fast blinking display alerts if limit is exceeded.
- High and low limit relays are rated to 5 amps at 115 volts.
- Operating temperature of – 18 to 60 °C for the electronic display and -29 to 82 °C for the transducer. Gauge housings are extruded aluminum 1/8 DIN enclosures (NEMA 1 rating).
- When power cable is connected to gauge, display will scroll all characters, performing a self-diagnostic routine.

**Digital Pressure Gauge**

**No. DG100** – Pressure range 0-10.000 psi.
**No. DG100B** – Pressure range 0-700 bar.
**Note:** Serviced only at factory. Wt.,1 kg.
**Standard Adapter 115V –** For 220V adapter, please request when ordering.

**Digital Pressure Gauge Accessories**

**No. 420778** – Gauge stand for DG100. Has angled base mounting to hold gauge at a convenient viewing angle. Wt., 0,5 kg.
**No. 37045** – Auxiliary power cord for use with any 12 or 24V battery. Wt., 0,1 kg. Caution: For use on negative ground systems only.

**Standard Analog Pressure Gauge Accessories**

**No. 9046** – Silicone fill kit. 0,2 kg Requires one bottle to fill 100 mm gauge; four bottles to fill 150 mm gauge.
**No. 9048** – Replacement lens and pointer for 100mm dia. gauge. For maximum peak reading
**No. 9049** – High performance pulsation dampener. 1/4 " NPTF male x 1/4" NPTF female.


**STANDARD PRESSURE GAUGE ORDERING INFORMATION**

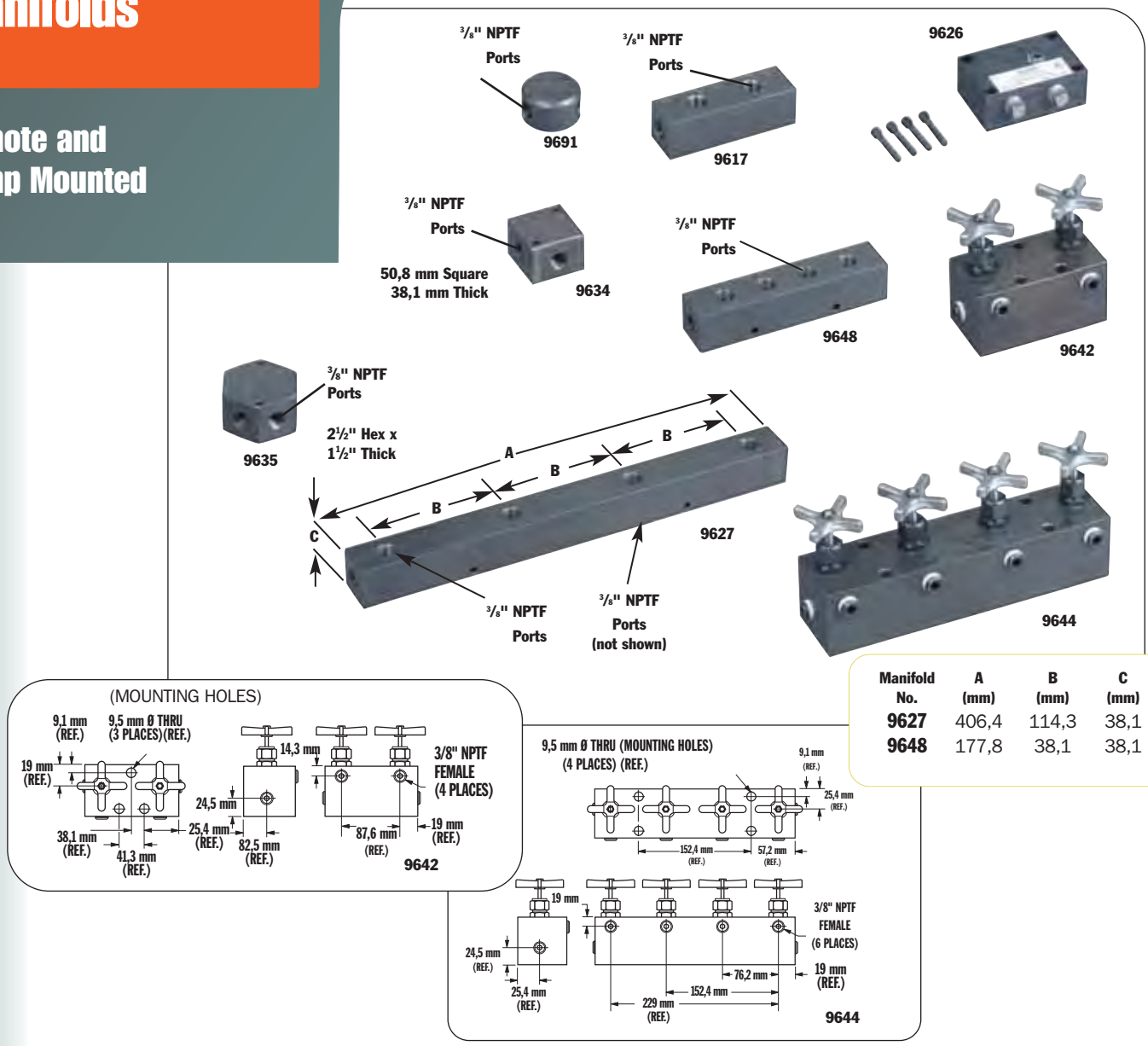
| Face Dia. | psi/Bar | Tons | Major Graduations | Minor Graduations | Silicone Filled | Use With Cylinder Series | Gauge No. |
|---|---|---|---|---|---|---|---|
| 63,5 mm | 0-10,000 /.0-690 | – | 2500 psi, 100 Bar | 500 psi, 20 Bar | No | All | 9041 |
| 63,5 mm | 0-10,000 /.0-690 | – | 2500 psi, 100 Bar | 500 psi, 20 Bar | Yes | All | 9040 |
| 100 mm | 0-10,000 /.0-690 | – | 1000 psi, 100 Bar | 200 psi, 10 Bar | No | All | 9051 |
| 100 mm | 0-10,000 /.0-690 | – | 1000 psi, 100 Bar | 200 psi, 10 Bar | Yes | All | 9052 |
| 100 mm | 0-10,000 /.0-690 | 0-17.5, 0-30 and 0-50 | 2000 psi, 5 Ton | 200 psi, .5 Ton on 30, 50 Ton Scales; .2 Ton on 17.5 Ton Scale | No | RT172, RT302, RT503 | 9059 |
| 100 mm | 0-10,000 /.0-690 | 0-5 | 2000 psi, 1 Ton | 200 psi, .1 Ton | No | C & RLS | 9053 |
| 100 mm | 0-10,000 /.0-690 | 0-10 | 2000 psi, 1 Ton | 200 psi, .1 Ton | No | C, RD, RH, RLS & RSS | 9055 |
| 100 mm | 0-10,000 /.0-690 | 0-25 | 2000 psi, 5 Ton | 200 psi, .5 Ton | No | C & RD | 9063 |
| 100 mm | 0-10,000 /.0-690 | 0-30 | 2000 psi, 5 Ton | 200 psi, .5 Ton | No | RH†, RLS & RSS | 9065 |
| 100 mm | 0-10,000 /.0-690 | 0-50 | 2000 psi, 5 Ton | 200 psi, .5 Ton | No | RH†, RLS & RSS | 9067 |
| 100 mm | 0-10,000 /.0-690 | 0-55 | 2000 psi, 5 Ton | 200 psi, .5 Ton | No | C, R, RA & RD | 9069 |
| 100 mm | 0-10,000 /.0-690 | 0-60 | 2000 psi, 5 Ton | 200 psi, 1 Ton | No | RH | 9071 |
| 100 mm | 0-10,000 /.0-690 | 0-100 | 2000 psi, 10 Ton | 200 psi, 1 Ton | No | C, R, RA, RD, RH, RLS†, RSS† & RT1004† | 9075 |
| 100 mm | 0-10,000 /.0-690 | 0-150 | 2000 psi, Initial 10 Then 20 Ton | 200 psi, 2 Ton | No | C, R, RD & RLS | 9077 |
| 100 mm | 0-10,000 /.0-690 | 0-200 | 2000 psi, 20 Ton 10 Then 20 Ton | 200 psi, 2 Ton | No | R, RD & RH† | 9079 |
| 150 mm | 0-10,000 /.0-690 | 0-690 | 1000 psi, 100 Bar | 100 psi, 10 Bar | No | All | 9089 |

† The tonnage scale on the gauge is based on a different effective area. A slight error in tonnage reading will occur relative to the different effective area.

# Manifolds

## Remote and Pump Mounted

HYDRAULIC ACCESSORIES




| Manifold No. | A (mm) | B (mm) | C (mm) |
|---|---|---|---|
| 9627 | 406,4 | 114,3 | 38,1 |
| 9648 | 177,8 | 38,1 | 38,1 |







**No. 9691 – "Y" Manifold**
Extremely useful when connecting two hydraulic cylinders to a single line. Has three 3/8" NPTF ports. Wt. 0,45 kg.

**No. 9634 – Manifold block**
This manifold is for multiple-cylinder installations, has four 3/8" NPTF ports and two 1/4" mounting holes. Wt. 0,7 kg.

**No. 9635 – Manifold block**
This hex-shaped manifold offers extra versatility with six 3/8" NPTF ports and two 1/4" mounting holes. Wt. 0,9 kg.

**No. 9617 – Manifold block**
When a multiple-cylinder installation is required, this manifold is invaluable. Has six 3/8" NPTF ports to handle larger multiple-cylinder systems. Wt. 1.4 kg.

**No. 9648 – Manifold block**
This 178 mm long manifold block has seven 3/8" NPTF ports and two 6,4 mm mounting holes. Wt.1,2 kg.

**No. 9627 – Manifold block**
This 406,4 mm long manifold block allows you to mount the 9575 or 9596 valves without interference. Has seven 3/8" NPTF ports and two 6,4 mm mounting holes. Wt. 2,7 kg.

**No. 9626 – Pump mounted manifold block**
Converts pumps with pump mounted valves for use with remote mounted valves. This manifold block is subplate mounted on the pump cover plate and provides 3/8" NPTF pressure and return ports. Maximum recommended flow rate is 19 l/min. Note: If used on PE30 or PG30 series pump, 12,7mm longer mounting screws are required. Order four (4) No. 11956 screws separately.

**9642 AND 9644 MANIFOLD BLOCKS WITH NEEDLE VALVES**
For independent multiple-cylinder operation, feature needle valves for precise manual control. Designed for remote-mounted applications. Can be used with all Power Team pumps.
**No. 9642** – Manifold with two needle valves for control of two cylinders. Has four 3/8" NPTF ports. Wt. 3,7 kg
**No. 9644** – Manifold with four needle valves for control of four cylinders. Has six 3/8" NPTF ports. Wt. 7,4 kg

# Fluids
## HYDRAULIC

Standard, Flame Out®, Biodegradable and Low Temp.





| Oil Description | Qty. | Order No. |
|---|---|---|
| Standard Oil | 0,9 ℓ | 9636 |
| Standard Oil | 3,8 ℓ | 9637 |
| Standard Oil | 9,5 ℓ | 9638 |
| Standard Oil | 208 ℓ | 9616 |
| Flame-Out® | 3,8 ℓ | 9639 |
| Flame-Out® | 9,5 ℓ | 9640 |
| Biodegradable | 3,8 ℓ | 9645 |
| Biodegradable | 9,5 ℓ | 9646 |
| Low Temp. | 3,8 ℓ | 9647 |

### SPECIFICATIONS

| Description | Grade (ASTM) | Spec. Gravity at 16°C (kg / ℓ) | Color (ASTM) | Flash Point | Fire Point | Pour Point | Viscosity SUS @ (38°C) | Viscosity SUS @ (99°C) | Viscosity Index | Foam Test (ASTM) |
|---|---|---|---|---|---|---|---|---|---|---|
| Standard Oil | 215 | 0.88 | 2.0 | 204°C | 221°C | -34°C | 215 | 48 | 100 min. | Pass |
| Flame-Out® | 220 | 0.91 | Light Amber | 260°C | 288°C | -26°C | 220 | 55 | 140 min. | Pass |
| Biodegradable | — | 0.92 | 2.0 | 224°C | NA* | -30°C | 183 | 53 | 213 min. | Pass |
| Low Temp. | — | 0.87 | 6.5 (Red) | 180°C | 204°C | -45°C | 183 | 52 | 190 min. | Pass |

*Not available.

**Standard Hydraulic Oil**
- For dependable performance of all your hydraulic pumps and cylinders.
- Contains foam suppressant additives and has a high viscosity index.

**Flame-Out® 220 fire resistant hydraulic fluid**
- Contains anti-rust, anti-foam and anti-sludge additives.
- Provides fire resistant protection.
- Provides maximum lubrication and heat transfer.
- Offers a wider operating temperature range.
- No need to change seals in your Power Team equipment. Just drain the standard oil and replace it with Flame-Out 220.

**Biodegradable Hydraulic Fluid**
- Biodegradable, non-toxic fluid withstands moderate to severe operating conditions; provides excellent protection against rust.
- Offers superior anti-wear properties, has excellent multi-metal compatibility.

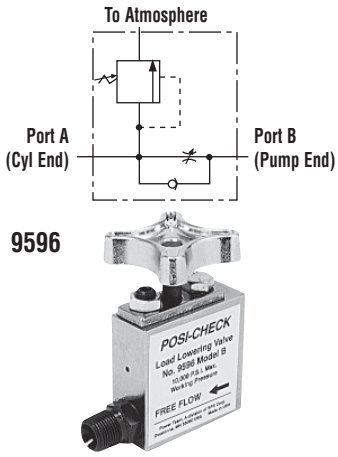
Developed to meet stringent performance requirements and satisfy growing environmental needs for hydraulic fluids which are readily biodegradable and non-toxic. Can be used with all Power Team pumps, cylinders, valves and other accessories using standard seals. Depending on the contamination or degradation levels which might be present in used fluid, small amounts of this substance, if spilled, will not affect ground water or the environment. Acceptable methods of disposal include use as a fuel supplement. Since this fluid will not typically be hazardous waste, additional disposal options may be available, including land farming or processing through sewage treatment facilities, if necessary approvals are obtained from appropriate regulatory authorities. This fluid has been tested against EPA 560/6-82-003 and OECD 301 for biodegradability, and toxicity has been tested against EPA 560/6-82-002 and OECD 203: 1-12. Not recommended for operation in temperatures below -7°C or above 71°C. Recommended storage temperatures not below -23°C or above 77°C.
For additional technical information or to order a **MATERIAL SAFETY DATA SHEET** call **1-800-477-8326**

**Low–Temperature Oil**
Provides smooth, reliable operation in the coldest climate conditions.

**(Note:** Will burn if heat source is extreme enough. Will not, however, propagate the flame and is self-extinguishing when there is no ignition source.)

# Valves
## HYDRAULIC IN-LINE

**700 bar, 19 l / min max flow rate**




### LOAD LOWERING VALVE (SAFETY CHECK VALVE)

**Application:** Precision metering for controlled cylinder piston return. For single-acting or double-acting cylinder.

**Operation:** Permits free flow when extending cylinder, built-in pressure relief and "Posi-Check®" locks and holds load in raised position until operator opens valve. May be pre-set to provide consistent metered return, or operator may select rate of return with each actuation. Has 3/8" NPTF ports.

**NOTE:** Pressure relief valve setting is 830 bar. Operating pressure is 700 bar and max. flow rate is 19 l /min.

**No. 9596** – Load lowering valve. Wt., 1 kg.

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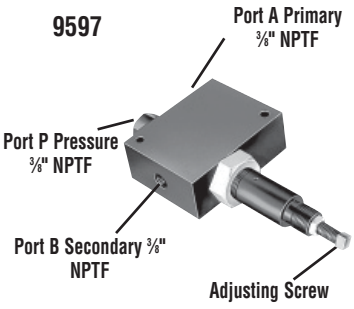


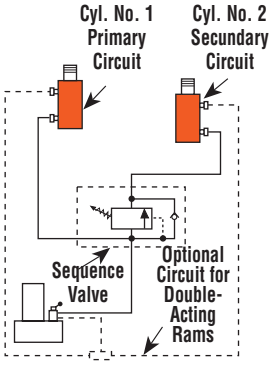


### SEQUENCE VALVE

**Application:** Used when one cylinder in a multi-cylinder application must advance before any other.

**Operation:** Pump is connected to port "P" and separate cylinders to ports "A" and "B". When pressure is applied to port "P", cylinder "A" advances. Cylinder "B" will not advance until a predetermined pressure setting is reached in cylinder "A". Pressure setting is adjustable from 35 to 550 bar with adjustment screw; factory preset at 70 bar. Has 3/8" NPTF ports.

**No. 9597** – Pressure control sequencing valve. Wt., 2,5 kg.

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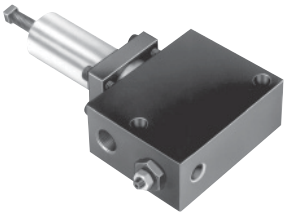


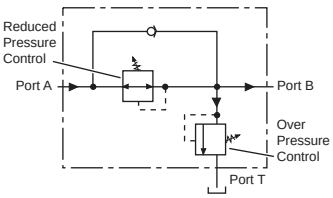


### PRESSURE REDUCING VALVE

**Application:** Provides complete, independent pressure control to two or more clamping systems operated by a single power source.

**Operation:** Can be used to provide different pressures in various stages of a single system. Virtually zero leakage across valve means each system can be operated by a single continuous pressure source. Adjustable from 70 to 350 bar at outlet port "B" (secondary). Has 1/4" NPTF ports.

**No. 9608** – Pressure reducing valve. Wt., 2,6 kg.

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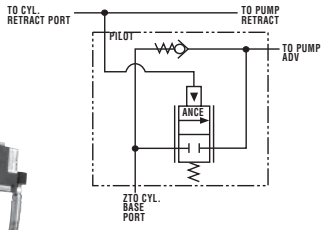
9720
9721




### COUNTER BALANCE VALVE

**Application:** : Double-acting cylinders. Provides positive holding and controlled, "chatter-free" lowering of a load.

**Operation:** Load is raised at flow rate of pump, and held when pump is shut off. When the pump is shifted to "retract", the counter balance valve will continue to hold the load until system pressure exceeds pressure caused by load. The load can then be lowered smoothly to the flow rate of the pump. The counter balance valve is designed to operate with pumps having a high pressure flow rate of up to 1,9 l /min. and cylinder ratios of 3 to 1.

**No. 9720** – Counter balance valve, including two male and two female half two hydraulic hoses, fittings and dust caps. Wt., 4,5 kg.

**No. 9721** – Same as 9720, but does not include couplers, hoses, fittings and dust caps. Wt.,4,2 kg.

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⚠ **CAUTION:** The 9720 patented counter balance valve has a pilot pressure as high as 210 bar. Because this pressure is applied to the rod end of the cylinder while it is already under load, the system should not be sized for loads greater than 80% of cylinder rated capacity.

⚠ **CAUTION:** To prevent sudden, uncontrolled descent of a load as it is being lowered, use a No. 9596 Load Lowering Valve or No. 9720 Counter Balance Valve in conjunction with the directional valve used in your application. See above, this page.

**Shut-off valve**
**Application:** This needle valve permits fine metering of hydraulic oil.
**Operation:** Can be used for controlling multiple single-acting cylinders.
**No. 9575** – Shut off valve with 3/8" NPTF ports. Wt., 0,6 kg.

**9575**

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**Check valve**
**Application:** Permits flow of hydraulic oil in one direction only.
**Operation:** Installs right in hydraulic line.
**No. 9580** – Check valve with 3/8" NPTF male ends. Wt., 0,2 kg.

**9580**

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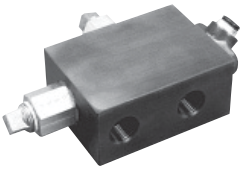
**Pilot operated check valve**
**Application:** For use with open or tandem center valves. Permits free flow of fluid in one direction.
**Operation:** Flow is blocked in opposite direction until pilot oil pressure is applied. This prevents the loss of pressure if the valve is inadvertently shifted or the pump line is broken. Minimum cracking pressure is 4,1 bar. Required pilot pressure is approximately 16% of checked system pressure.
**No. 9581** – Pilot operated check valve with 3/8" NPTF ports. Wt., 1,7 kg.

**9581**



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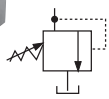
**"In-line" pressure relief valve**
**Application:** Single- or double-acting cylinders. For remote locations in a hydraulic circuit where maximum pressure requirements are less than basic overload valve setting in pump.
**Operation:** Adjustable from 70 to 700 bar. Valve is spring-loaded and direct-acting.
**No. 9623** – Pressure relief valve with 3/8" NPTF ports. Wt., 0,9 kg.

**9623**



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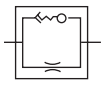
**Metering valve**
**Application:** For systems using large cylinders or extended lengths of hydraulic hose.
**Operation:** Controls surges by restricting flow if it exceeds 26,5 l / min. When flow subsides, valve reopens automatically. Has 3/8" NPTF male end to thread into return port of system control valve, and a 3/8" NPTF female end, permitting return hose to be directly connected.
**No. 9631** – Metering valve. Wt., 0.1 kg.

**9631**



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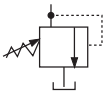
**"In-line" pressure regulator valve**
**Application:** Single- or double-acting cylinders. Permits adjusting operating pressures at various values below relief valve setting of pump.
**Operation:** Regulator valve is easily adjusted to maintain pressures between 20 and 700 bar. Maintainsa given pressure setting within 3% over repeated cycles. Flow range is 0,3 l/ min to 23 l / min.
**No. 9633** – In-line pressure regulator valve with two 3/8" NPTF inlet ports, one 1/8" NPTF tank port and 1 m drain line kit. Wt., 0,9 kg.
**Simply turn the handle clockwise to increase the pressure setting, counter-clockwise to reduce pressure.**

**Note:** 1 m Drain Line Kit is included.

**9633**



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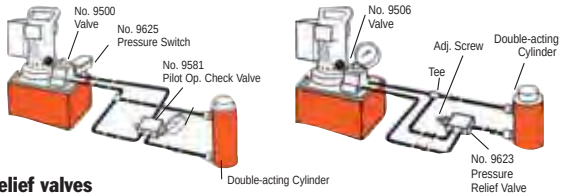
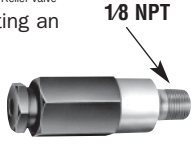



**Relief valves**
**Application:** Provide an economical means of protecting an hydraulic circuit against over pressurization.
**Operation:** These factory preset valves are designed for maximum flow rate of 19 l / min. Furnished with 1/8" NPTF male port. All valves weigh 0.1 kg. See chart to the right for ordering information.




**RV21278 Series**

| Valve Order No. | Pressure Setting (bar) | Valve Order No. | Pressure Setting (bar) |
|---|---|---|---|
| RV21278 | 697/738 | RV21278-52 | 366/407 |
| RV21278-6 | 41/44 | RV21278-55 | 386/428 |
| RV21278-10 | 62/69 | RV21278-57 | 400/442 |
| RV21278-15 | 103/117 | RV21278-60 | 421/462 |
| RV21278-20 | 131/152 | RV21278-65 | 455/497 |
| RV21278-28 | 186/207 | RV21278-70 | 490/531 |
| RV21278-30 | 207/235 | RV21278-75 | 524/566 |
| RV21278-32 | 214/228 | RV21278-80 | 559/600 |
| RV21278-35 | 241/262 | RV21278-83 | 580/621 |
| RV21278-40 | 283/310 | RV21278-86 | 600/642 |
| RV21278-43 | 304/331 | RV21278-88 | 614/662 |
| RV21278-48 | 338/366 | RV21278-90 | 628/669 |
| RV21278-50 | 352/393 | | |

Preset — Non-Serviceable

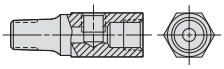
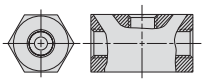
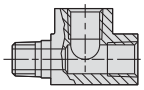
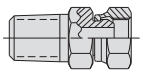
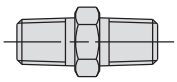
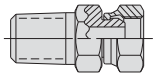
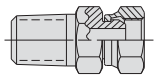
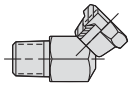
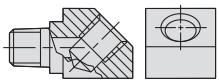
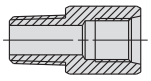
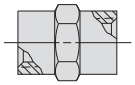
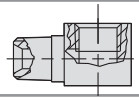
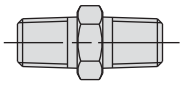
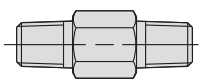
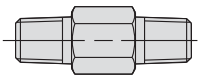
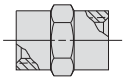
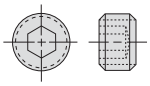
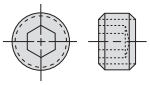
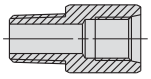
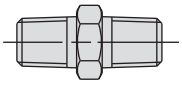
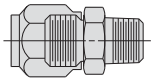
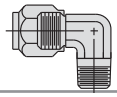
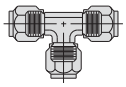
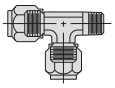
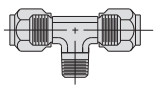
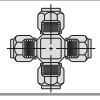
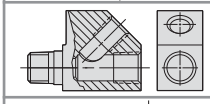
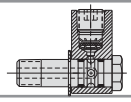
**NOTE:** Care should be exercised to protect workers from hot, pressurized hydraulic oil. Install these valves only in an enclosed or shielded area.

# Fittings

## 700 bar

Power Team fittings:
All applications.

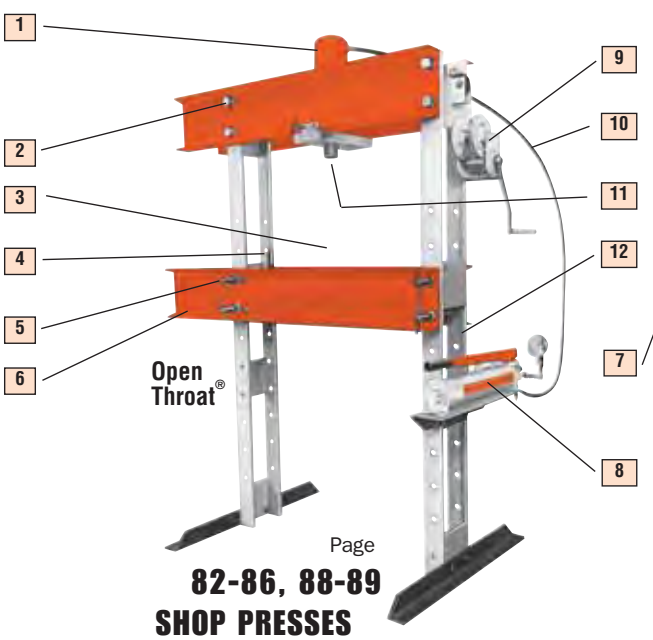
9670

| | | |
|---|---|---|
|  | 9190 | Hyd. tubing. 3/8" O.D. x .065" wall, 15,3 m. (10 pieces 1,53 m long.) Wt. 5,5 kg. |
|  | 9670 | Tee adapter. For installing gauge between pump and hose coupling. Has 1/4" and 3/8" NPTF female and 3/8" NPTF male ports. Wt. 0,2 kg. |
|  | 9671 | Double tee adapter. Permits use of more than one cylinder in series with one pump. Three 3/8" NPTF female ports. Wt. 0,5 kg. |
|  | 9672 | Service tee. Two 3/8" NPTF female internal, one 3/8" NPTF male external. Wt. 0.3 kg. |
|  | 9673* | Swivel connector. 3/8" NPSM male, 1/4" NPSM female. Wt. 0,1 kg. |
|  | 9674 | Male connector. 43 mm long, 1/4" x 3/8" NPTF. Wt. 0,1 kg. |
|  | 9675* | Swivel connector. 3/8" NPTF male, 3/8" NPSM female. Wt. 0,1 kg. |
|  | 9676* | Swivel connector. 1/4" NPTF male, 3/8" NPSM female. Wt. 0,1 kg. |
|  | 9677* | 45° swivel connector. 3/8" NPTF male, 3/8" NPSM female. Wt. 0,1 kg. |
|  | 9678 | 45° fitting. Used when mounting gauge at an angle on connection such as 9670. Male and female 1/4" NPTF ends. Wt. 0,1 kg. |
|  | 9679 | Connector. 1/4" NPTF female and 3/8" NPTF male. Wt. 0.1 kg. |
|  | 9680 | Coupling. Both ends 3/8" NPTF female. Wt. 0.1 kg. |
|  | 9681 | Street elbow. Male and female 3/8" NPTF ends. Wt. 0,1 kg. |
|  | 9682 | Male connector. 43 mm long, 3/8" NPTF male ends. Wt. 0,1 kg. |
|  | 9683 | Male connector. 57 mm long, 3/8" NPTF male ends. Wt. 0,1 kg. |
|  | 9684 | Male connector. 57 mm long, 1/4" NPTF male ends. Wt. 0,1 kg |
|  | 9685 | Coupling. 1/4" NPTF female and 3/8" NPTF female. Wt. 0.1 kg. |
|  | 9686 | 90° elbow. 3/8" NPTF female ends. Wt. 0.2 kg. |
|  | 9687 | Pipe plug. Heat-treated, 3/8" NPTF. Wt. 0.1 kg. |
|  | 9688 | Pipe plug. Heat-treated, 1/4" NPTF. Wt. 0.1 kg. |
|  | 9689 | Connector. 1/4" NPTF male and 3/8" NPTF female. Wt. 0.1 kg. |
|  | 9690 | Male connector. 43 mm long, 1/4" NPTF male ends. Wt. 0.1 kg. |
|  | 9692 | Straight connector. 3/8" tube x 3/8" male NPTF. Wt. 0.1 kg. |
|  | 9693 | 90° elbow. 3/8" tube x 3/8" male NPTF. Wt. 0.1 kg. |
|  | 9694 | 45° elbow. 3/8" tube x 1/4" male NPTF. Wt. 0.1kg. |
|  | 9695 | Tee. 3/8" tube. Wt. 0.1 kg. |
|  | 9696 | Male run tee. 3/8" tube x 1/4" male NPTF. Wt. 0.1 kg. |
|  | 9697 | Male branch tee. 3/8" tube x 1/4" male NPTF. Wt. 0.1 kg. |
|  | 9698 | Cross. 3/8" tube. Wt. 0.2 kg. |
|  | 9699 | 45° gauge fitting. 3/8" NPTF male and female, and 1/4" NPTF female at 45°. Wt. 0.3 kg. |
|  | 9705 | Fitting, swivel. 3/8" NPTF male to 3/8" NPTF female. 90° fitting with internal 370 micron screen. May be rotated 360° about male thread axis. |

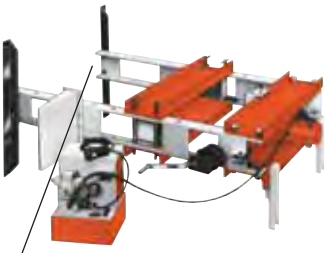
**NOTE:** Power Team hydraulic fittings are intended for use with our high pressure hydraulic products and are suitable for use at max. working pressures of 700 bar unless otherwise noted.

* ⚠ **CAUTION: On part numbers 9673, 9675, 9676 and 9677 the female swivel end of these adapters is a straight pipe thread (NPSM) with a 30° seat. All male pipe fittings that are used with these female swivel adapters must have an internal 30° seat in order to effect a proper seal. All Power Team male fittings are manufactured with a 30° seat except 9687 and 9688.**

# SHOP MAINTENANCE




Page
**82-86, 88-89**
**SHOP PRESSES**



**Horizontal pressing capabilities**

Page
**87**
**FLOOR CRANES**

**IMPORTANT SAFETY INFORMATION:**
Power Team has protective blankets available which may afford protection from injury to users and others should part breakage occur. Power Team recommends the use of these blankets for all pushing, pulling, pressing, and lifting applications. See page 145 for additional information.

## THE UNIQUE BENEFITS OF THE POWER TEAM PRESS

**1 2 TO 1 SAFETY FACTOR** on hydraulic cylinders and they meet ASME B30.1 standards. Cylinders are easily removed for other applications. Single-acting or double-acting cylinders are available; built-in relief valve on double-acting cylinders.

**2 FULL RATED CAPACITY** across width of upper frame, even with workhead moved to one side. (Heavy-duty presses only.)

**3 LARGER WORK AREA** than most competitors' models.

**4 ALIGNMENT LEVER** for simple pin replacement after raising or lowering the bed.

**5 CLOSE MANUFACTURING TOLERANCE** allows even load distribution over four alloy steel pins; not two, like some competitors. (Heavy-duty presses only.)

**6 OPEN THROAT® FEATURE** on 25 ton press provides additional work area by mounting cylinder on outside for C-frame advantage.

**7 FRAMES CAN BE USED HORIZONTALLY** for pressing jobs on extra-long shafts (see photo above).

**8 ELECTRIC, AIR OR HAND HYDRAULIC PUMPS** are available. All are standard Power Team pumps.

**Externally adjustable relief valve** for precise operator control of working pressure is standard on all electric pumps except PE10 and PE17 series.

**24 volt hand switch** for remote control on pumps equipped with solenoid valves.

**9 ONE-MAN OPERATION** for bed adjustment. Winch unit quickly raises or lowers bed to desired height. Self-locking winch mechanism prevents bed from dropping when handle is released.

**10 9,5 MM I.D. HOSE** on spring return cylinders on heavy-duty presses provides up to six times faster cylinder return than standard 6,4 mm I.D.hose.

**11 FAST CYLINDER APPROACH** to work provided by 2-speed hand, air or electric pumps.

**12 RUGGED UPRIGHTS,** 50 percent stronger than channel iron. Four post design means open side for easy loading of long material.

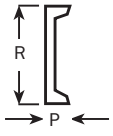
**NOTE:** Certain features do not apply to Power Team 10 ton, Roll-Bed, or economy presses.

**NOTE:** Certain press applications may require guarding. Because of the multitude of possible press uses, it is impossible to design a guard that will meet every customer need. The end user must provide their own guarding where the situations dictate.

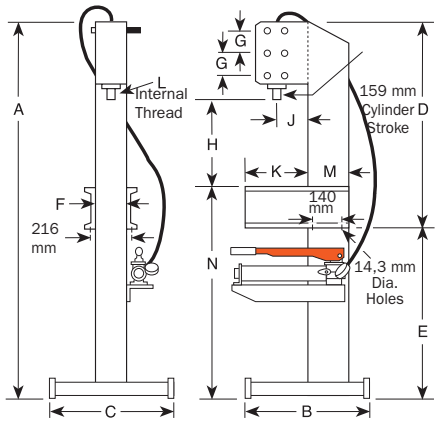
# Shop Press
## C FRAME

## 25 Tons
Press


- Can be bench mounted or on optional pedestal base.
- Bench mount requires less than 1.4 sq. m. of space; on optional pedestal, only 0,4 sq.m. of floor space is needed.
- "Open Throat" design makes loading and unloading of work easy.
- Cylinder head adjusts to three convenient working positions, providing up to 514 mm of "daylight."
- Hydraulic cylinder delivers a 159 mm stroke, is driven by a P59 two-speed hand pump.
- **Pedestal Base No. 60846** – Provides a stable base for SPM256C. Includes a bracket for mounting the pump on the side of pedestal press. Wt., 34,5 kg. (Available as optional)




**Lower Bolster**




**DIMENSIONS**

| A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (Cyl. Retracted) (mm) | J (mm) | K (mm) | L (mm) | M (mm) | N (mm) | P (mm) | R (mm) | Floor Space (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.972 | 622 | 610 | 1.057 | 914 | 152 | 127 | 260, 387, 514 | 165 | 318 | 1½ – 16 | 203 | 1.092 | 51 | 178 | 610 x 622 |

**ORDERING INFORMATION**

| Capacity (tons) | Type Cyl. Used | Stroke (mm) | Cyl. Model | Order No. | Speed** Advance | Pressing | Type Pump | Pump Model | Prod.Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|
| 25 | Single-Acting | 159 | C256C | SPM256C* | 3,3 mm/stroke | 0,8 mm/stroke | Hand | P59 | 108 |

* **SPM256C does not include No. 60846 pedestal base.**

** **Typical performance based on pump specifications. Actual speeds may vary with operating conditions.**

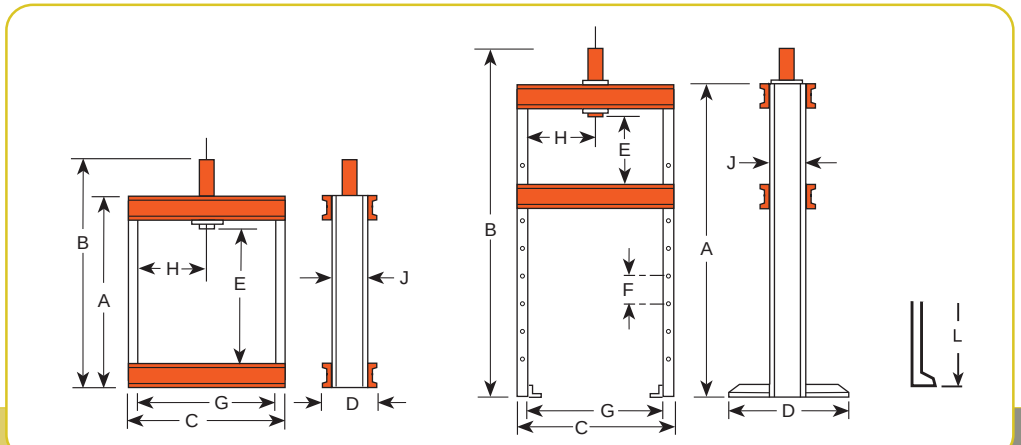
# Shop Press
## H FRAME

## 10 Tons
Bench/Floor Press


SP1010A


SPM1010

- Ideal for small pressing jobs; repairing small motors, armatures, removing and installing gears, bearings, other press-fit parts.
- Bench press has 391 x 457 mm work area; floor press bed height is adjustable from 127 mm to 1.041 mm with horizontal "daylight" of 553 mm.
- Choices of power sources: single-speed hand pump, electric/hydraulic or air/hydraulic.
- Hydraulic gauges, hoses and fittings included.
- Pump electrical specification PE10 series - 0.19kW 220/230V 50/60Hz, Single Phase.




### DIMENSIONS

| Frame | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) | J (mm) | K (mm) | L (mm) | Bench Space (mm) | Floor Space (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bench** | 622 | 841 | 641 | 182 | 391 | — | 559 | 279 | 102 | 40 | 102 | 182 x 641 | — |
| **Floor** | 1.499 | 1.718 | 641 | 711 | 127-1.041 | 152 | 559 | 63,5-470* | 102 | 40 | 102 | — | 711 x 730 |

*Lateral head movement

### ORDERING INFORMATION

| Frame | Cap. (tons) | Type of Cyl. Used | Stroke | Cylinder Model | Order No. | Speed (mm./min.)††† Advance | Pressing | Type Pump | Pump Model † | Prod. Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| 222481 Bench | 10 | Single-Acting | 257 | C1010C | **SPM1010** | 1,5 mm/stroke | | Hand | P55 | 41,2 |
| 222480 Floor | 10 | Single-Acting | 257 | C1010C | **SPH1010** | 1,5 mm/stroke | | Hand | P55 | 77,5 |
| 222480 Floor | 10 | Single-Acting | 257 | C1010C | **SPE1010-220** | 55,7 | 5,1 | Elec. †† | PE102-220 | 79,3 |
| 222480 Floor | 10 | Single-Acting | 257 | C1010C | **SP1010A** | 93,7 | 7,6 | Air | PA9H | 78,1 |
| 222480 Floor | 10 | Double-Acting | 254 | RD1010 | **SPE1010D-220** | 55,7 | 5,1 | Elec. †† | PE104-220 | 87,0 |

† Optional air/hydraulic pumps available on request.
†† "Advance" position holds pressure with motor shut off. "Return" position advances cylinder with motor running and returns cylinder with motor shut off.
††† Typical performance based on 7 bar and 700 bar pump specifications. Actual speeds may vary with operating conditions.

Available with 110/115V, 50/60Hz, Single Phase motor:-
- **SPE 1010** (Single-Acting) comes with PE102 Pump.
- **SPE 1010D** (Double-Acting) comes with PE104 Pump.

Optional: **PE17** series 2-speed pump with 0.37 kW motor.

# Press
## H FRAME

## Open Throat & Economy Press 25 Ton
Presses

SHOP EQUIPMENT

### OPEN THROAT PRESSES
- Design permits use as both "H" frame and "C" frame press; cylinder can be mounted on frame extension to handle jobs which won't fit between uprights.
- Open throat press models are also available with remote control to enable the operator to view work from all sides with fingertip control of cylinder piston travel.
- Off-center pressing loads of full capacity can be applied across entire width of frame.

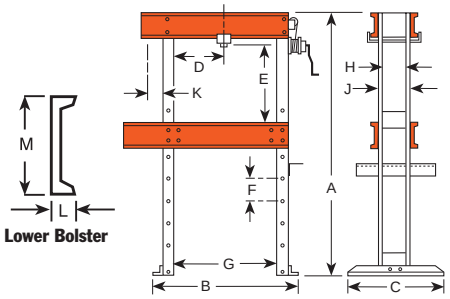
### ECONOMY PRESSES
- Rugged, yet reasonably priced. Handles many "big press" tasks, and perfect for many of the "in-between" jobs you see almost daily.

**Note:** stroke length limited to 159 mm on economy models.

### FEATURES OF BOTH OPEN THROAT AND ECONOMY PRESSES
- Press bed height easily adjustable with winch. Bed will not drop when handle is released.
- Choice of power sources for rapid cylinder advance: two-speed hydraulic hand pump, electric/hydraulic or air/hydraulic.

### PUMP ELECTRICAL SPECIFICATIONS
**PE17 Series –** 0,37 KW, 115 volt, 60 cycle or 220 volt, 50 cycle, single phase.


**Hydraulic gauge and hydraulic fittings are included with presses.**


**Open Throat feature enables cylinder to be mounted on outside of press frame for fast bearing removal and more.**

**DIMENSIONS**

| A (mm) | B (mm) | C (mm) | D* (mm) | E (mm) | F (mm) | G (mm) | H (mm) | J (mm) | K (mm) | L (mm) | M (mm) | Floor Space (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.727 | 1.092 | 711 | 76-737 | 175-1.102 | 114 | 813 | 140 | 165 | 178 | 64 | 203 | 1.092 x 711 |

*Lateral head movement

### ORDERING INFORMATION

| Cap. (tons) | Type of Cylinder Used | Stroke (mm) | Cylinder Model | Order No. | Speed (mm/min.) ††† Advance | Pressing | Type Pump | Valve Type | Pump‡ Model | Prod.Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| **"Open Throat" presses** | | | | | | | | | | |
| 25 | Single-Acting | 362 | C2514C | **SPA2514** | 249 | 30 | Air | 2-Way Foot | PA6 | 309 |
| 25 | Single-Acting | 362 | C2514C | **SPM2514** | 12,4 mm/ stroke | 0,8 mm/ stroke | Hand | Load - Release | P159 | 314 |
| 25 | Single-Acting | 362 | C2514C | **SPE2514-220** | 1.184 | 84 | Elec. | 2-Way†† | PE172-50-220 | 301 |
| 25 | Single-Acting | 362 | C2514C | **SPE2514S-220** | 1.321 | 102 | Elec. | 3-Way† | PE213S-50-220 | 344 |
| 25 | Double-Acting | 362 | RD2514 | **SPE2514DS-220** | 1.321 | 102 | Elec. | 4-Way† | PE214S-50-220 | 357 |
| **"Economy" presses** | | | | | | | | | | |
| 25 | Single-Acting | 159 | C256C | **SPA256** | 249 | 30 | Air | 2-Way Foot | PA6 | 197 |
| 25 | Single-Acting | 159 | C256C | **SPM256** | 3,0 mm/ stroke | 0,8 mm/ stroke | Hand | Load - Release | P59 | 205 |
| 25 | Single-Acting | 159 | C256C | **SPE256-220** | 1.184 | 84 | Elec. | 2-Way†† | PE172-50-220 | 210 |

**† Solenoid valve with 12 volt remote control hand switch.**
**†† Holds pressure with motor shut off. Also has an automatic dump setting. Furnished with a 3.1m remote motor control.**
**††† Typical performance based on 7 bar and 700 bar pump specifications. Actual speeds may vary under operating conditions.**
**‡ Pump standard with press. Other Power Team pumps can be substituted.**
**dBA at idle and 700 bar: PE172–67/81 dBA; PE 21-70 dBA measured at 0,9 m distance, all sides.**
Available with 115 Volt, 60Hz motor (to order, remove suffix "-220" from SPE no.)



POWER TEAM®

# Press
## H FRAME

## 55 Ton
Presses

- Full off-center pressing at full rated capacity across width of upper frame without buckling or bending.
- Maximum "daylight" is 1.067 x 914 mm, making positioning of even bulky work pieces easy.
- Height of press bed is easily adjusted with winch; friction brake prevents bed from dropping and handle from spinning upon release.
- Presses with single-acting cylinder offer choice of 2-speed hand operated, electric/hydraulic, or air/hydraulic pump. Models with double-acting cylinder have an electric/hydraulic pump.
- Press models equipped with remote control enable operator to view work from all sides with fingertip control of cylinder piston travel.
- Press can be used horizontally for special applications with user-supplied support legs.
- Pump electrical specifications
  PE 17 series - 0.37KW
  PE 21 series - 0.75KW
  PQ 60 series - 1.49KW
  All available in 115V/60Hz or 220V/50Hz
  Single phase

SF50

**No. SF50** – Straightening fixtures for use with 55-ton shop or 80-ton Roll-Bed® presses (2 ea.). Wt., 47,2 kg. **Not part of press, order separately.**


SPE5513S

**Hydraulic gauge and hydraulic fittings are included with presses.**

**DIMENSIONS**

| A (mm) | B (mm) | C (mm) | D* (mm) | E (mm) | F (mm) | G (mm) | H (mm) | J (mm) | L (mm) | M (mm) | Floor Space (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.829 | 1.232 | 914 | 83-832 | 152-1.067 | 152 | 914 | 171 | 203 | 76 | 305 | 1.232 x 914 |

*Lateral head movement

**ORDERING INFORMATION**

| Cap. (tons)† | Type of Cylinder Used | Stroke (mm) | Cylinder Model | Order No. | Speed (mm/min.)††† Advance | Pressing | Type Pump | Valve Type | Pump‡ Model | Prod.Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| 55 | Single-Acting | 159 | C556C | SPA556 | 114 | 12,7 | Air | 2-Way Foot | PA6 | 318 |
| 55 | Single-Acting | 159 | C556C | SPM556 | 5,8 mm/ stroke | 0,4 mm/ stroke | Hand | Load-Release | P159 | 323 |
| 55 | Single-Acting | 337 | C5513C | SPM5513 | 18,9 mm/ stroke | 0,7 mm/ stroke | Hand | 2-Way | P460 | 435 |
| 55 | Single-Acting | 159 | C556C | SPE556-220 | 551 | 38 | Elec. | 2-Way†† | PE172-50-220 | 333 |
| 55 | Single-Acting | 337 | C5513C | SPE5513-220 | 551 | 38 | Elec. | 2-Way†† | PE172-50-220 | 444 |
| 55 | Single-Acting | 337 | C5513C | SPE5513S-220 | 620 | 48 | Elec. | 3-Way† | PE213S-50-220 | 478 |
| 55 | Double-Acting | 333 | RD5513 | SPE5513D-220 | 551 | 38 | Elec. | 4-Way | PE174-50-220 | 450 |
| 55 | Double-Acting | 333 | RD5513 | SPE5513DS-220 | 1.679 | 137 | Elec. | 4-Way† | PQ604S-50-220 | 505 |

*** Frame is shipped assembled.**
**† Solenoid valve with 24 volt remote control hand switch.**
**†† Holds pressure with motor shut off. Also has an automatic dump setting. Furnished with a 3,1 m remote motor control.**
**††† Typical performance based on 7 bar and 700 bar pump specifications. Actual speeds may vary with operating conditions.**
**‡ Pump standard with press. Other Power Team pumps can be substituted. dBA at idle and 700 bar: PE172—67/81; PE21-70; PQ 60-74/76; measured at 0,9 m distance, all sides.**

Available with 115 Volt, 60Hz motor (to order, remove suffix "-220" from SPE no.)

# H Frame Presses

## 100, 150 & 200 Ton
Presses


**No. SF150** – Straightening fixtures for use with 100-ton shop press and 100-, 150-, and 200-ton RollBed® presses (2 ea.). Wt., 89 kg. **Not part of press, order separately.**

- Cylinder workhead glides across upper frame on rollers, locks in place for off-center pressing jobs. May be used horizontally for special pressing applications with user-supplied supports.
- Press bed is raised and lowered by winch which locks in place for insertion of bed retaining pins. Upper bolster can be lowered for convenient positioning on repetitive jobs.
- Generous "daylight" accommodates bulky work pieces, uprights are placed for easy side entry of bars or shafts for straightening or bending.
- Choice of single- or double-acting cylinder. Hydraulic pump options include: 2-speed hand pump with large 7,6 l reservoir, PE172 electric/hydraulic pump or "PQ" series "Quiet" electric/hydraulic pump with low noise level.

### PUMP ELECTRICAL SPECIFICATIONS

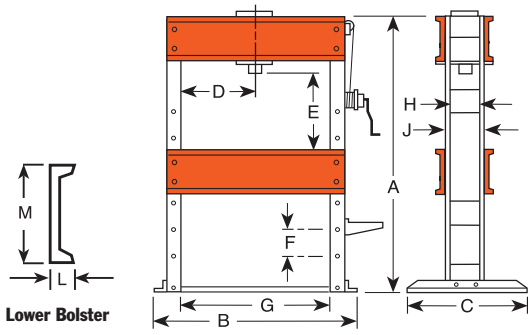
**PE17 Series** – 0,37 KW, 220 volt, 50 cycle, single phase. Also available in 115 volt, 60 cycle, remove suffix "-220" from order no.

**PQ60 Series** – 1.49 KW, 220 volt, 50 cycle, single phase. Also available in 115 volt, 60 cycle, remove suffix "-220" from order no.

**PQ120 Series** – 2,24 KW, 380V, 50 Hz, three phase. (Suitable for 415V/50Hz/3 Phase) Also available in 460V/60Hz/ 3 phase, remove suffix "-380" from order no. (Suitable for 440V/50Hz/ 3 Phase)


SPE10013DS

Hydraulic gauge and hydraulic fittings are included with presses.




Lower Bolster

### DIMENSIONS

| Cap | A (mm) | B (mm) | C (mm) | D* (mm) | E (mm) | F (mm) | G (mm) | H (mm) | J (mm) | L (mm) | M (mm) | Floor Space (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100T: | 1.962 | 1.626 | 914 | 178-1.092 | 51-1.067 | 203 | 1.270 | 203 | 254 | 86 | 381 | 914 x 1.988 |
| 200T: | 2.286 | 1.803 | 1.118 | 279-991 | 228-1.111 | 279 | 1.270 | 318 | 381 | 105 | 457 | 1.117 x 1.803 |

*Lateral head movement

### ORDERING INFORMATION

| Cap. (tons)† | Type of Cyl. Used | Stroke (mm) | Cylinder Model | Order No. | Speed (mm/min.)†† Advance | Pressing | Type Pump | Valve Type | Pump‡ Model | Prod. Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| 100 | Single-Acting | 260 | C10010C | SPM10010 | 9,0 mm/ stroke | 0,3 mm/ stroke | Hand | 3-way | P460 | 769 |
| 100 | Single-Acting | 260 | C10010C | SPE10010-220 | 889 | 74 | Elec. | 3-way | PQ603-50-220 | 813 |
| 100 | Single-Acting | 260 | C10010C | SPE10010R-220 | 292 | 20 | Elec. | 2-way | PE172-50-220 | 766 |
| 100 | Double-Acting | 333 | RD10013 | SPE10013DS-380 | 889 | 147 | Elec. | 4-way** | PQ1204S-50-380 | 854 |
| 150 | Double-Acting | 333 | RD15013 | SPE15013DS-380 | 610 | 99 | Elec. | 4-way** | PQ1204S-50-380 | 1.366 |
| 200 | Double-Acting | 333 | RD20013 | SPE20013DS-380 | 457 | 74 | Elec. | 4-way** | PQ1204S-50-380 | 1.484 |

† Frame is shipped assembled.

** Solenoid valve with 24 volt remote control hand switch.

†† Typical performance based on 7 bar and 700 bar pump specifications. Actual speeds may vary under operating conditions.

‡ Pump standard with press. Other Power Team pumps can be substituted.

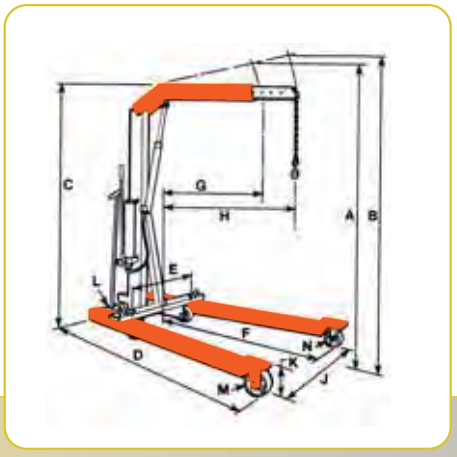
dBA at idle and 700 bar: PE172—67/81; PQ60—74/76; PQ120—73/78. Measured at 0,9 m distance, all sides.

# Mobile Floor Cranes

## 1000 - 2000 kg


**Load-Rotors (Tilters)**

- For lifting or positioning components, POWER TEAM'S heavy duty lifting slings are available (consult factory)




### DIMENSIONS

| Order No.: | FC2200 | FC4400 |
|---|---|---|
| Cap., boom ret. (kg) | 1,000 | 2,000 |
| Cap., boom ext. (kg) | 750 | 1,500 |
| A Max. boom hgt., ret (mm) | 2,718 | 2,819 |
| B Max. boom hgt., ext.(mm) | 2,972 | 3,099 |
| C Overall hgt., boom horiz.(mm) | 2,032 | 2,083 |
| D Overall length (mm) | 2,108 | 2,261 |
| E Min. throat width (mm) | 610 | 635 |
| F Inside leg length (mm) | 1,372 | 1,461 |
| G Eff. boom reach -ret.(mm) | 838 | 902 |
| H Eff. boom reach -ext. (mm) | 1,219 | 1,238 |
| J Inside leg width (mm) | 610 - 914 - 1,219 (3 –position) | 660 - 1,016 - 1,333 (3 –position) |
| K Leg height (mm) | 203 | 241 |
| L Dolly wheel diameter(mm) | 127 | 127 |
| M Wheel diameter (mm) | 152 | 203 |
| N Caster diameter (mm) | 152 | 152 |
| space, folded (mm) | 686 x 965 | 787 x 1,067 |
| Height, folded (mm) | 2,007 | 2,184 |

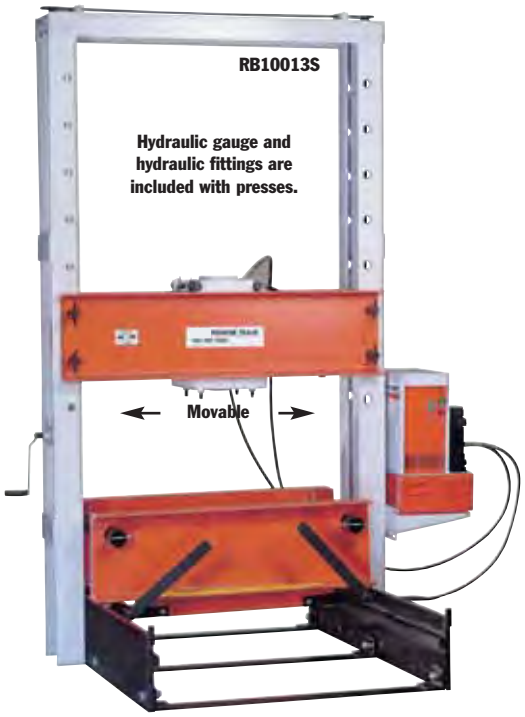
1000 kg and 2000 kg capacity with space-saving fold-away feature

- Adjustable legs spread to clear obstacles, telescoping boom for extra reach. Rugged construction, reliable hydraulics.
- Boom collapses completely and legs fold for compact storage.
- 2-speed hydraulic hand pump provides fast boom travel and precise operator controlled descent.
- Roller bearing wheels and a steering dolly provide ease of mobility. Lifting chain is included.

**No. FC4400** – 2000 kg cap. crane with fold-away feature, adj. leg spread, lifting chain and 2-speed hand pump. Wt.293 kg.

# Roll-Bed® Press

## 80-200 Ton
H Frame




### Heavy-Duty Straightening Fixtures

**No. SF50** – Fixtures for use with 80-ton Roll-Bed® presses or 55-ton heavy-duty shop presses. (2 ea.). Wt. 47,2 kg. **Not part of press, order separately.**

**No. SF150** – Fixtures for use with 100-, 150- and 200-ton Roll-Bed® presses and 100-ton shop presses only (1 pr.). Wt.89 kg. **Not part of press, order separately.**

- The original, patented Roll-Bed® design. Bed rolls out for easy loading and unloading with a crane or other lifting device.
- Movable workhead glides easily side-to-side for full off-center load capacity across width of upper frame.
- "Daylight" is 1.283 x 1.524 mm for 80- and 100-ton models; 1.302 x 1.625 mm on 150- and 200-ton presses.
- Fast approach of double-acting, 334 mm stroke cylinder is provided by PQ1204S "Quiet" electric/ hydraulic pump with remote control hand switch. Operator can view work from all sides with fingertip control of cylinder piston travel.

**PRESS FEATURES:**

- **Roll-Bed® design** – Bed glides in or out on bearings to make loading and unloading fast and easy.
- Adjustable lower bed width – For secure balancing and centering of heavy jobs. Loosen adjusting bolts to adjust bed from 102 to more than 686 mm. See dimension "H."
- **Movable workhead** – For off-center pressing jobs, workhead moves on bearings across upper bolster. Presses can be used at full capacity, regardless of where workhead is placed.
- **Lifting mechanism** – Simply turn crank handle to raise or lower upper bolster. Screw mechanism raises or lowers both sides evenly (a heavy-duty 1/2" drill motor can replace handle for automatic adjustment). Four locking pins hold bolster in place for pressing.
- **Optional heavy-duty straightening fixtures** – Make straightening jobs easy and accurate to within 0.1 mm! Rollers are ball bearing mounted and handle raises or lowers for easy turning of the work.

**PUMP ELECTRICAL SPECIFICATIONS**

**PQ120 Series** – 2,24 KW, 380 volt, 50 cycle, three phase.

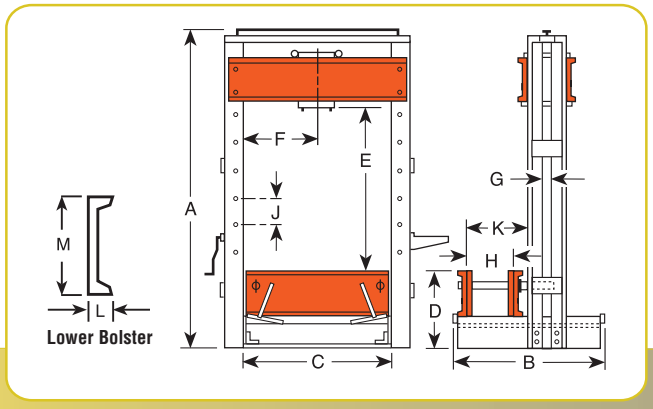
**NOTE:** Different voltage and valve options can be obtained by substituting certain PA, PE or PQ series pumps. Consult the factory.

Lifting screw and locking pins make bolster raising a one-man job.

Bearings make bed positioning smooth and easy.

Lever lowers bed for pressing, raises it for rolling.


Cylinder is easily moved across width of upper bolster.




Width adjusts from 102 mm to over 686 mm; is secured with locking bolts.

**DIMENSIONS**

| Cap (Tons) | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) | J (mm) | K (mm) | L (mm) | M (mm) | Floor Space (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80 | 2.861 | 1.632 | 1.283 | 686 | 305-1.524 | 368-914 | 76,2 | 102-692 | 203 | 927 | 86 | 381 | 1.632-1.537 |
| 100 | 2.861 | 1.632 | 1.283 | 686 | 305-1.524 | 368-914 | 76,2 | 102-692 | 203 | 927 | 86 | 381 | 1.632-1.537 |
| 150 | 3.131 | 1.734 | 1.302 | 762 | 229-1.626 | 352-949 | 76,2 | 102-689 | 279 | 946 | 105 | 457 | 1.734-1.607 |
| 200 | 3.131 | 1.734 | 1.302 | 762 | 229-1.626 | 352-949 | 76,2 | 102-689 | 279 | 946 | 105 | 457 | 1.734-1.607 |

**ORDERING INFORMATION**

| Capacity (tons)† | Type of Cylinder Used | Stroke (mm) | Cylinder Model | Order No. | Speed (mm/min.)†† Advance | Pressing | Type Pump | Valve Type | Pump‡ Model | Prod. Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| 80 | Double Acting | 333 | RD8013 | **RB8013S-380** | 1.168 | 190 | Elec. | 4-way* | PQ1204S-50-380 | 1.307 |
| 100 | Double Acting | 333 | RD10013 | **RB10013S-380** | 889 | 147 | Elec. | 4-way* | PQ1204S-50-380 | 1.334 |
| 150 | Double Acting | 333 | RD15013 | **RB15013S-380** | 610 | 99 | Elec. | 4-way* | PQ1204S-50-380 | 2.019 |
| 200 | Double Acting | 333 | RD20013 | **RB20013S-380** | 457 | 74 | Elec. | 4-way* | PQ1204S-50-380 | 2.059 |

*** Solenoid valve with 24 volt remote control hand switch.**
**† Frame is shipped assembled.**
**‡ Pump standard with press. Other Power Team pumps can be substituted. dBA at idle and 700 bar: PQ120-73/78; measured at 0,9 mdistance, all sides.**
**†† Typical performance based on 7 bar and 700 bar pump specifications. Actual speeds may vary with operating conditions.**

Available with 460Volt, 60Hz, 3-phase motors (to order, remove suffix "380" behind press order number), suitable for 440V, 50Hz, 3 phase. 380V/50Hz/3 phase also suitable for 415V/50Hz/3 phase.

# JACKS

# Bottle Jacks

## 2-110 Ton
Portable hydraulic power

Industrial lifting
and pushing applications.




- Choose from this complete line of premium–quality, standard bottle jacks. Ideal for use in any number of industrial lifting and pushing applications.
- The 9110B, 9015B, 9022B and 9033B feature a beveled base which allows the jack to "follow" the load, reducing the chance of dangerous side-loading.
- Many jacks feature screw extensions and all can be used in the vertical, angled or horizontal positions.
- Serrated or contoured saddles help stabilize the load for a safer lift.
- All jacks meet ASME B30.1 standards and carry the Power Team Marathon Lifetime Warranty.
- 110-ton jack features dual pumps for time-saving two-speed operation.

### For Low Clearance Jobs

- All the quality, features and lifting capacity of the standard jacks in short form. The 12-ton and 20-ton models feature screw extensions for added versatility.
- All jacks meet ASME B30.1 standards and carry the Power Team Marathon Lifetime Warranty.
- All jacks operate both vertically and horizontally for use in a variety of lifting, pushing and spreading applications.


### Standard

ORDERING INFORMATION

| Cap. Tons | Stroke (mm) | Order Number | Retracted Height Min. (mm) | Length of Screw Ext. (mm) | Height w/Screw Ext. (mm) | No. Pump Strokes to Ext. Piston completly | Saddle Dia. (mm) | Base Size (mm) | Pump Handle Length (mm) | Handle Effort at Rated Cap. (kg) | Carry Handle | Metric tons at 700 (bar) | Product Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 114 | **9002A** | 181 | 49 | 344 | 5 | 25 | 110x65 | 311 | 34 | No | 1,8 | 2,2 |
| 3 | 114 | **9003A** | 191 | 60 | 365 | 10 | 29 | 114x72 | 489 | 20,4 | No | 2,7 | 2,6 |
| 5 | 121 | **9005A** | 200 | 70 | 391 | 12 | 35 | 132x76 | 545 | 24,9 | No | 4,5 | 3,6 |
| 8 | 121 | **9008A** | 200 | 70 | 391 | 18 | 38 | 152x89 | 605 | 34 | No | 7,3 | 5,5 |
| 12 | 149 | **9112A** | 241 | 79 | 470 | 26 | 48 | 165x106 | 605 | 27,2 | Yes | 10,9 | 7,9 |
| 15 | 156 | **9015B** | 230 | 110 | 495 | 27 | 60 | 130x140† | 700 | 40,8 | No | 13,6 | 8,3 |
| 20 | 159 | **9120A** | 270 | 40 | 429 | 22 | 51 | 183x129 | 800 | 31,7 | Yes | 18,1 | 12,9 |
| 22 | 156 | **9022B** | 240 | 110 | 505 | 36 | 60 | 165x160† | 700 | 40,8 | Yes | 20,0 | 10,7 |
| 30 | 159 | **9030A** | 279 | — | 438 | 35 | 60 | 192x141 | 1.000 | 22,7 | Yes | 27,2 | 18,7 |
| 33 | 143 | **9033B** | 240 | 100 | 483 | 56 | 65 | 184x176† | 700 | 39,9 | No | 29,9 | 14,5 |
| 50 | 171 | **9050A** | 305 | — | 476 | 35 | 76 | 237x187 | 1.000 | 38,6 | Yes | 45,4 | 35,4 |
| 110 | 156 | **9110B** | 300 | — | 456 | 40/160‡ | 111 | 339x291 | 700 | 35,8 | Yes | 99,8 | 70 |

† Comes with a Beveled Base
‡ 2 Speed: Rapid advance≈40 strokes; Lift mode≈160 strokes

### Low Profile

ORDERING INFORMATION

| Cap. Tons | Stroke (mm) | Order Number | Retracted Height Min. (mm) | Length of Screw Ext. (mm) | Height w/Screw Ext. (mm) | No. Pump Strokes to Ext. Piston (mm) | Saddle Dia. (mm) | Base Size (mm) | Pump Handle Length (mm) | Handle Effort at Rated Cap. (kg) | Carry Handle | Metric tons at 700 bar | Product Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | 95 | **9012A** | 171 | 76 | 343 | 26 | 48 | 165x106 | 605 | 27 | Yes | 10,9 | 6,4 |
| 20 | 86 | **9020A** | 181 | 40 | 305 | 22 | 51 | 183x129 | 800 | 32 | Yes | 18,1 | 10,1 |
| 30 | 79 | **9130A** | 181 | — | 260 | 35 | 60 | 192x141 | 1.000 | 23 | Yes | 27,2 | 13,7 |

‡ 2 Speed: Rapid advance≈40 strokes; Lift mode≈160 stroke

# Bottle Jacks

## 5-20 Ton
Portable hydraulic power


- Telescoping jacks offer all of the quality features and capabilities of the standard bottle jack line with a bonus. The super-long stroke of these jacks saves time and effort by eliminating the need to lift, crib, lift, etc. In most applications, the user can place the jack once and complete the lift.
- The 9015X offers very low clearance capability, making it the ideal choice for forklift maintenance or machine lifting.
- The taller 9006X, 9011X and 9013X all feature a unique beveled base that allows the jack to "follow" the load laterally as it is raised, greatly reducing side-loading of the piston.

JACKS

### Telescoping Jacks

ORDERING INFORMATION

| Cap. Tons | Stroke (mm) | Order Number | Retracted Height Min. (mm) | Length of Screw Ext. (mm) | Height w/Screw Ext. (mm) | No. Pump Strokes to Ext. Piston 25,4 mm | Saddle Dia. (mm) | Base Size Beveled Base (mm) | Pump Handle Length (mm) | Handle Effort at Rated Cap. (kg) | Carry Handle | Metric tons at 700 bar | Product Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 305 | 9006X | 216 | — | 521 | 14 | 44 | 121 x 133 | 700 | 36 | No | 5,4 | 6,4 |
| 11 | 262 | 9011X | 200 | 68 | 530 | 25 | 41 | 160 x 165 | 700 | 40 | No | 10,0 | 8,8 |
| 13 | 254 | 9013X | 230 | 84 | 570 | 35 | 48 | 176 x 186 | 700 | 36 | Yes | 11,8 | 11,3 |
| 15 | 181 | 9015X | 170 | 70 | 419 | 32 | 52 | 143 x 194 | 600 | 43 | Yes | 13,6 | 12 |



- Retracted height of just 63,5 mm for the smallest jack and 130,2 mm for the 20 ton, allows you to slip this jack into the narrowest of crevices.
- Jacks operate either horizontally or vertically. Handles function in line with base for easier use in confined spaces.
- The perfect addition to any toolbox, this remarkable little jack has multiple uses that are limited only by your imagination. Use it as a jack or a spreader. Use it to turn your mechanical gear puller (puller capacity must match jack capacity) into a hydraulic puller. Use it vertically or horizontally in limited clearance.

### Sidewinder Jacks

ORDERING INFORMATION

| Cap. Tons | Stroke (mm) | Order Number | Retracted Height Min. (mm) | Max Height (mm) | No. Pump Strokes to Ext. Piston 25 mm | Saddle Dia. (mm) | Base Size Dia. (mm) | Pump Handle Length (mm) | Handle Effort at Rated Cap. (kg) | Carry Handle | Metric tons at 700 bar | Product Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 19 | 9105A | 63,5 | 85,7 | 30 | 29 | 73,8 | 240 | 26 | No | 4,5 | 1,9 |
| 5 | 38 | 9205A | 88,9 | 130,2 | 38 | 29 | 73,8 | 240 | 26 | No | 4,5 | 2,4 |
| 10 | 30 | 9210A | 120,7 | 149,2 | 36 | 42,1 | 109,9 | 440 | 28 | No | 9,1 | 5,5 |
| 20 | 30 | 9220A | 130,2 | 160,3 | 46 | 52,8 | 119,9 | 605 | 35 | No | 18,1 | 8,0 |

# Toe Jacks

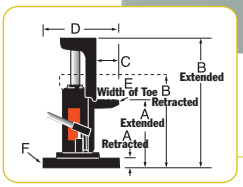
## 2 to 27.5 Ton

The right choice for those lower clearance jobs.


**ASME B30.1**

- These bottle jack-style toe jacks are loaded with many of the same features as our standard bottle jacks, but the toe-lift feature and swiveling pump handle socket make them ideal for machinery lifting and positioning.
- An internal pressure relief provides added safety by limiting the jack's lifting capability to the capacity of the toe.
- Spring return is an added feature on the larger jacks.
- Swiveling pump handle assembly available on the 5- and 10-ton models. The swiveling jack assembly allows you to access and pump the unit from numerous positions.


- With lifting points on the toe and on the top, these extremely rugged jacks are ideal for machine lifting, rigging, lift truck service and much more.
- Choose from 5.5-ton, 11-ton, and now, an amazing 27.5-ton lifting capacity.
- All jacks operate both vertically and horizontally.
- Base, toe and pumping assembly swivel independently, allowing the jack to work in confined areas.
- Get under equipment with only 27mm of ground clearance.

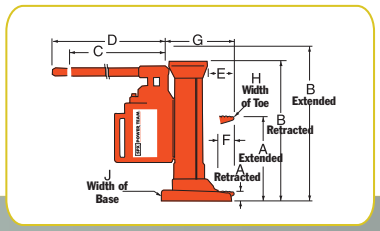



**DIMENSIONS**

| Order Number | A Ret. (mm) | A Ext. (mm) | B Ret. (mm) | B Ext. (mm) | C (mm) | D (mm) | E (mm) | F (mm) |
|---|---|---|---|---|---|---|---|---|
| **J24T** | 16 | 140 | 232 | 356 | 47,5 | 181 | 51 | 125 |
| **J55T** | 25 | 149 | 292 | 476 | 47,5 | 257 | 191 | 157 |
| **J106T** | 32 | 181 | 327 | 476 | 64 | 292 | 100 | 241 |

**ORDERING INFORMATION**

| Cap. Tons | Max Lift Stroke (mm) | Order Number | Strokes to Extend Piston 25 mm | Handle Effort at Max Load (kg) | Carry Handle | Metric tons at 700 bar | Product Wt. (kg) |
|---|---|---|---|---|---|---|---|
| 2 | 121 | **J24T** | 14 | 19 | Yes | 1,8 | 8,3 |
| 5 | 121 | **J55T** | 22 | 27 | Yes | 4,5 | 24 |
| 10 | 146 | **J106T** | 31 | 33 | Yes | 9,1 | 38 |




**DIMENSIONS**

| Order Number | A Ret. (mm) | A Ext. (mm) | B Ret. (mm) | B Ext. (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) | J (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **J58T** | 30 | 238 | 375 | 584 | 368 | 451 | 71 | 56 | 176 | 41 | 130 |
| **J109T** | 30 | 264 | 419 | 654 | 368 | 451 | 76 | 56 | 183 | 64 | 171 |
| **J259T** | 54 | 289 | 505 | 738 | 210 | 756 | 146 | 102 | 267 | 89 | 270 |

**ORDERING INFORMATION**

| Cap. Tons | Max Lift Stroke (mm) | Order Number | Strokes to Extend Piston 25,4 mm | Handle Effort at Max Load (kg) | Carry Handle | Metric tons at 700 bar | Product Wt. (kg) |
|---|---|---|---|---|---|---|---|
| 5½ | 210 | **J58T** | 8 | 38,1 | Yes | 5,0 | 19,5 |
| 11 | 235 | **J109T** | 13 | 40 | Yes | 10,0 | 29 |
| 27½ | 233 | **J259T** | 21 | 40 | Yes | 24,9 | 92,1 |

# Maintenance Sets

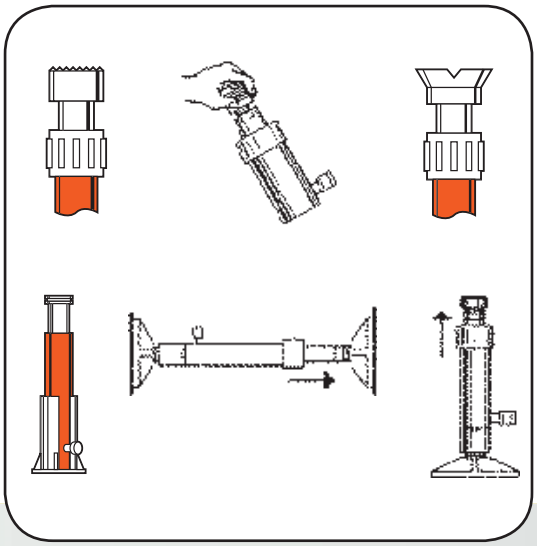
## Hydraulic System Components



IM10E-220

IM10H

### APPLICATION FLEXIBILITY



- Matched hydraulic system components, adapters and hydraulic spreader, contained in a rugged carrying and storage case.
- Portable sets are ideal for pushing, pulling, lifting, straightening, or clamping at remote job sites.
- Cylinders in set are rated at 10 tons at 700 bar. Set components are designed for full rated capacity of cylinders.
- Set IM10H includes hand operated pump.
- Set IM10E-220 includes the Quarter Horse® electrically driven portable power unit (220/230V, 50/60Hz, Single Phase).

### ORDERING INFORMATION

| CONTENTS OF SET | IM10E-220 |
|---|---|
| **Description** | **Order No.** |
| Hydraulic spreader | HS2000 |
| Electric hydraulic pump | PE102-220 |
| 700 bar hyd. gauge | 9041 |
| Tee adapter | 9670 |
| Hose & coupler assembly | 9754 |
| 90° V base | 25395 |
| Threaded coupler | 25664 |
| Serrated saddle | 31772 |
| Flat base | 32325 |
| Extension rod – 127mm length | 350897 |
| Extension rod – 254 mmlength | 38909 |
| Extension rod – 457 mm length | 350898 |
| Cyl. support base | 420062 |
| Cyl. ass'y, 10 ton, 257 mm stroke | C1010CBT |
| Cyl. ass'y, 10 ton, 156 mm stroke | C106CBT |
| Storage box* | 350722 |
| Prod. Weight – 48,1 kg. | |

| CONTENTS OF SET | IM10H | IM10L |
|---|---|---|
| **Description** | **Order No.** | **Order No.** |
| Hydraulic spreader | HS2000 | HS2000 |
| Hand pump | P59 | P59L |
| 700 bar hyd. gauge | 9041 | 9041 |
| Tee adapter | 9670 | 9670 |
| Hose & coupler assembly | 9754 | 9754 |
| 90° V base | 25395 | 25395 |
| Threaded coupler | 25664 | 25664 |
| Serrated saddle | 31772 | 31772 |
| Flat base | 32325 | 32325 |
| Extension rod - 127mm length | 350897 | 350897 |
| Extension rod - 254mm length | 38909 | 38909 |
| Extension rod - 457mm length | 350898 | 350898 |
| Cyl. support base | 420062 | 420062 |
| Cyl. ass'y, 10 ton, 156mm stroke | C106CBT | C106CBT |
| Storage box* | 350722 | 350722 |
| | Prod. Weight 40,4 kg. | Prod. Weight 36,8 kg. |

* Actual product may differ from photo.

# Post Tension
## & STRESSING JACKS

## 20 & 30 Ton


**SJ2010**
**SJ3010**

**SJ2010DA**
**SJ3010DA**

- Power Team Monostrand Stressing Jacks are the most durable in the industry.
- Ideally suited for work on slab-on-grade where dirt, heat and high volume use take their toll.
- Available in single- or double-acting models.
- Standard single-acting units have a 254 mm stroke. Other stroke lengths are available on special order.
- Dead-end seaters for production work and field work available on special order. (Part #400120)
- Service repair is simple; components are long lasting and easily replaced.
- 76,2 mm detachable seater nose assembly easily replaced with optional 152,4 mm nose assembly.
- The jack of choice for high-rise and elevated work, thanks to fast return time and light weight.
- All hydraulic fluid controls are interior designed; more efficient and safer operation during tensioning and retraction.
- Standard double-acting units have an 216 mm stroke; others available on special order.
- Specially designed Power Team Control Valves are available for post tensioning jacks.



### ORDERING INFORMATION

| Description | Cyl. Cap. Tons | Stroke (mm) | Order Number | Recommended Pumps for this Stressing Jack | Oil Capacity (l) | Strand Diameter (mm) | Seater Type | Tons at 700 bar | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|
| Post tension jack with spring seater, 12,7 mm strand. | 20 | 254 | **SJ2010** | PE554T/PE604T | 0,72 | 11,1-12,7 | Spring | 20,3 | 25 |
| Post tension jack with power seater, 12,7 mm strand. | 20 | 254 | **SJ2010P** | PE604PT | 0,72 | 11,1-12,7 | Power | 20,3 | 25 |
| Double-acting post tension jack with power seater, 12,7 mm strand. | 20 | 215 | **SJ2010DA** | PE554PT/PE604PT | 0,85 | 11,1-12,7 | Power | 23,9 | 19 |
| Post tension jack with spring seater, 15,2 mm strand. | 30 | 254 | **SJ3010** | PE554T/PE604T | 1 | 11,1-15,2 | Spring | 28,5 | 34,5 |
| Post tension jack with power seater, 15,2 mm strand. | 30 | 254 | **SJ3010P** | PE604PT | 1 | 11,1-15,2 | Power | 28,5 | 34,5 |
| Double-acting post tension jack with power seater, 15,2 mm strand. | 30 | 215 | **SJ3010DA** | PE554PT/PE604PT | 1,1 | 11,1-15,2 | Power | 36,0 | 23,5 |

### STRESSING JACK ACCESSORIES AND HOSES–ORDERING INFORMATION

| Used with Stressing Jack | 76,2 mm Nose Piece | 76,2 mm Wedge Seater | 152,4 mm Nose Piece | 152,4 mm Wedge Seater | 9,5 mm Diameter Gripper Set | 11,1 mm Diameter Gripper Set | 12,7 mm Diameter Gripper Set | 15,2 mm Diameter Gripper Set | Replacement Gripper Handle | Gripper Retainer Plate (2 used) |
|---|---|---|---|---|---|---|---|---|---|---|
| SJ2010 | **252564** | **252562** | **252759** | **252763** | **252568** | **252761** | **252567** | NA | **252570** | **252565** |
| SJ2010P | **252564** | **252562** | **252759** | **252763** | **252568** | **252761** | **252567** | NA | **252570** | **252565** |
| SJ2010DA | **252543** | **252542** | **252760** | **252764** | **252650** | **252762** | **252555** | NA | **252556** | **252544** |
| SJ3010 | **252564** | **252562** | **252759** | **252763** | **252568** | **252761** | **252567** | **252569** | **252570** | **252565** |
| SJ3010P | **252564** | **252562** | **252759** | **252763** | **252568** | **252761** | **252567** | **252569** | **252570** | **252565** |
| SJ3010DA | **253363** | **253361** | **253364** | **253362** | **253390** | NA | **253391** | **253365** | **252556** | **252544** |

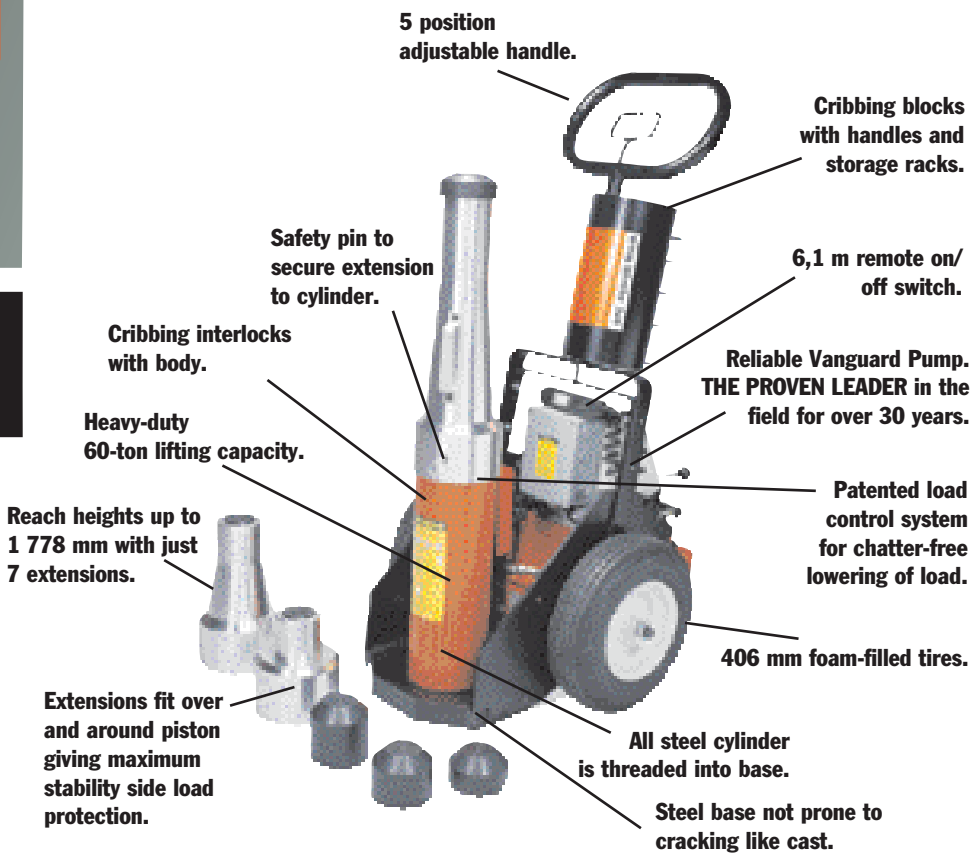
No. **9758** Hose – 3,1 m rubber, wire-braid (2-ply, 1,400 bar burst rating) 3/8" NPTF male hose ends
No. **9763** Hose – 3,1 m rubber, wire-braid (2-ply, 1,400 bar burst rating) 3/8" x 1/4" NPTF male hose ends

# Portable
## HIGH TONNAGE JACKS

## 60-100 Ton
Railroad Edition

Portable & compact, ideal for locomotive and railcar mining.






- Patented load lowering valve. Lowers load smoothly and safely. Eliminates dangerous chatter and bounce.
- Full range of rod extensions. Jack comes fully equipped with extensions to match lifting pad heights on most rolling stock. Max. lifting height to 1 778 mm .
- Low collapsed height, long stroke. 610 mm collapsed height for low-clearance lift pads. 360 mm stroke for maximum lift.
- Adjustable, ergonomic handle. Handle tilts to start the job and is easily locked/ unlocked without moving from operating position.
- Cribbing block set with handles and convenient storage rack. Provides solid mechanical load holding.
- High-profile, low rolling resistance, foam-filled tires. Jack can be moved and positioned with minimal effort. No chance of downtime due to punctured tires.
- Electric and air motor options. Quiet, powerful air and electric motor powered units available.
- Contact factory for:-
  - lower collapsed height
  - custom cribbing block sizes
  - custom piston rod extensions

### POWER UNIT SPECIFICATIONS

| Order No. | Motor | Power Req. | Motor Control | Valve Function | Power Cord | dBa at 700 bar |
|---|---|---|---|---|---|---|
| **PLE6014-220** | 0,84 kW, 220 VAC***, 50 Hz Single Phase | 12 amps | 6,1 m Remote Control | Lift Hold Lower Manual | Pigtail | 80/95 |
| **PLA6014** | Rotary Air Powered | 1,4 cu.m at 6 bar | 6,1 m Remote Air Control | Lift Hold Lower Manual | NA | 82 |

*** For 110/115V-50/60 Hz order PLE6014

Electric Model
(PLE6014K)

Air Model
(PLA6014K)

**CRIBBING BLOCKS**
**(CBS60, INCLUDED)**

| Qty. | Height (mm) | Order Number |
|---|---|---|
| 1 | 38,1 | 351954 |
| 4 | 76,2 | 351953 |

**EXTENSIONS**
**(PL60 EXT, INCLUDED)**

| Extension Length (mm) | Order Number | Extension Weight (kg) |
|---|---|---|
| 25,4 | 351931 | 2,2 |
| 50,8 | 351927 | 4,0 |
| 76,2 | 351928 | 6,4 |
| 101,6 | 351929 | 8,7 |
| 127 | 66053 | 9,5 |
| 254 | 66054 | 13,8 |
| 508 | 66055 | 22,1 |

LIFTING RANGE

Lifting range (in 25,4 mm increments): 610 mm- 1.778 mm.

Only 3 extensions are needed to provide this range.

Do NOT exceed 1.778 mm lifting range on 60-ton unit or 1.489 mm on 100-ton unit.

**ORDER INFORMATION**

| Capacity (Tons) | Stroke (mm) | Order Number | Retracted Height (mm) | Extended Ht. w/Extensions (mm) | Product Wt. Less Cribbing & Ext. (kg) |
|---|---|---|---|---|---|
| 60 | 356 | *PLA6014K | 610 | 1.778 | 237 |
| 60 | 356 | *PLE6014K-220 | 610 | 1.778 | 237 |
| 100 | 356 | Consult Factory | 610 | 1.499 | 237 |

*Includes cribbing block set stored on jack handle rack, and 7 extensions (25,4; 50,8; 76,2; 101,6; 127; 254 and 308 mm)

**PLE6014 = Jack, Electric (115 V), includes: Cart, Pump & Cylinder**
**PLE6014-220 = Jack, Electric (220 V.) includes: Cart, Pump & Cylinder**
**PLA6014 = Jack, Air, includes: Cart, Pump & Cylinder**
**CBS60 = Cribbing Block Set (5 cribbing blocks)**
**PL60EXT = Extension Set (Consists of 7 extensions)**

# Portable
## HIGH TONNAGE

## 55, 100, 150, 200 & 300 Ton

Portable and compact, ideal for locomotive/railcar, mining and heavy equipment maintenance.

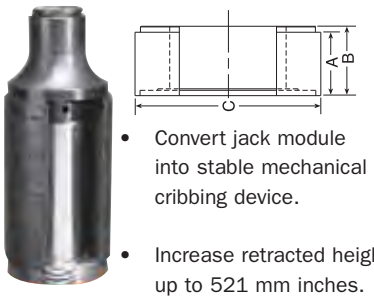



- Modular design - pump and cart separate from cylinder and base.
- Five tonnage capacity options - 55-ton, 100-ton, 150-ton, 200-ton and 300-ton.
- Three collapsed height options – 660, 838 and 1,143 mm.
- Two standard power options - air (PA55) and electric (PE55).
- Two control options - remote motor control and remote valve/motor control.
- Accessory options – 168 mm extension, load-holding rings.
- Select the collapsed height to fit your most frequent application - add jacking modules to suit your needs.
- Remote operation for maximum operator safety and control - choose "motor only" or "motor and valve" control in the hand.
- Easy to maneuver - large tires and small "footprint" make it easy to scoot into the tightest quarters, then locate the exact lifting position.
- Adjustable, heavy-duty handle - makes this jack easy to move, position under vehicles. Can also be used to transport jack on site with a forklift.
- Load-holding rings (optional) - provide full rated mechanical load-holding capability.
- Cylinder extension (optional) - adds more versatility by extending your jack's reach.
- Low-temperature oil (optional) - provides smooth, reliable operation in the coldest climate conditions.
- Modular design - allows you to change lifting modules to suit your tonnage or height requirements. Use the pump module as a portable power station for your other double-acting cylinders (700 bar ).
- Exclusive load-control system - provides positive, chatter-free control when lowering the load.
- Shielded and sheltered hydraulic lines - for safer, longer, trouble-free service.

### ORDER INFORMATION

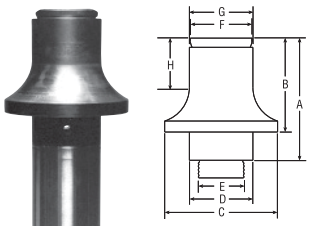
### CRIBBING BLOCK SETS - INCLUDES ONE JACK MODULE EXTENSION

| Order No. | 55 Ton CBS55 | | 100 Ton CBS100 | | 150 Ton CBS150 | | 200 Ton CBS200 | |
|---|---|---|---|---|---|---|---|---|
| No. in Set | 1 | 4 | 1 | 4 | 1 | 4 | 1 | 4 |
| A | 38,1 | 76,2 | 38,1 | 76,2 | 38,1 | 76,2 | 38,1 | 76,2 |
| B | 44,5 | 82,5 | 44,5 | 82,5 | 44,5 | 82,5 | 44,5 | 82,5 |
| C | 139,7 | 139,7 | 187,3 | 187,3 | 222,2 | 222,2 | 254 | 254 |
| Jack Module Ext. | 173 | | 177,8 | | 168,3 | | 168,3 | |
| Total Stack Ht. | 515,9 | | 520,7 | | 511,2 | | 511,2 | |
| Product Wt. (.kg) | 16,3 | | 30,9 | | 38,6 | | 47,6 | |




- Convert jack module into stable mechanical cribbing device.
- Increase retracted height up to 521 mm inches.

**CBS300** (300 Ton): Consult Factory




### ORDER INFORMATION

### JACK MODULE EXTENSIONS

| (Tons) | No. | A (mm) | B (mm) | C (mm) | D (mm) | E (in.) | F (mm) | G (mm) | H (mm) | Prod. Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| 55 | 58945 | 223,8 | 173 | 127 | 66,8 | $1^{11}/_{16}$–8UN | 63,5 | 66,8 | 92,2 | 9,5 |
| 100 | 58943 | 228,6 | 177,8 | 174,7 | 98,6 | $2^{3}/_{4}$–12UN | 95,3 | 98,6 | 95,3 | 18,2 |
| 150 | 58944 | 219,2 | 168,4 | 203,2 | 114,3 | $3^{1}/_{4}$–8UNC | 111,3 | 114,3 | 88,9 | 22,7 |

• Increases jack's reach. • Swivel cap (5° max.) provides more secure load holding.



**Pump & cart modules (PM)**
Pump and cart modules contain hydraulic pump, cart, remote control and all hoses and fittings required to connect to a jack module. Jack modules easily separate from the pump and cart module. Extra jack modules may be purchased for a wide variety of lifting applications.

**Air pump and cart module. (PMA)**

**Electric pump and cart module. (PME)**

| Pump | Remote Control Motor Only | Motor & Valve |
|---|---|---|
| Air | PMA55 | PMA55S |
| Electric (110V) | PME55† | PME55S† |
| Electric (220V) | PME55-50-220†† | PME55S-50-220†† |
| Air | PMA355 | PMA355S |
| Electric (220V) | PME355-50-220†† | PME355S-50-220†† |

†110V / 115V 60Hz Single phase motor.
††220V / 50Hz / 60Hz Single phase motor.

**660 mm (26") Jack Module**

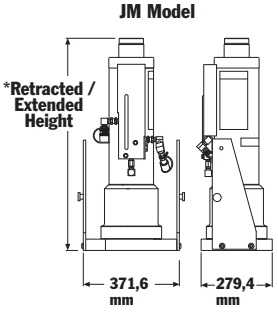
**838 mm (33") Jack Module**

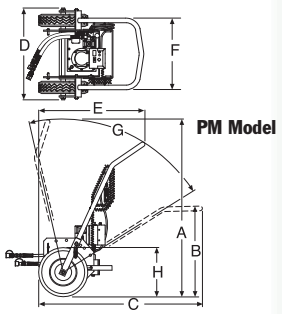
**1,143 mm (45") Jack Module**

**Jack modules (JM)**
Additional Jack Modules may be purchased for varying applications.

| Tonnage | Cylinder Stroke (mm) | Collapsed Height 26" 660mm | 33" 838mm | 45" 1,143mm |
|---|---|---|---|---|
| 55 | 333 | JM25 | JM35 | JM45 |
| 100 | 333 | JM210 | JM310 | JM410 |
| 150 | 460 | JM215** | JM315 | JM415 |
| 200 | 460 | JM220* | JM320 | JM420 |
| 300*** | 333 | JM300* | JM330 | JM430 |

* Collapsed height: 711 mm & Cylinder Stroke: 333 mm
** Cylinder Stroke 333 mm
*** Must use PMx355x versions of pump/cart modules above.




**DIMENSIONS (MM)**

| Model Series | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| PMA & PME | 1.464 | 752 | 1.353 | 762 | 872 | 594 | *70° | 406 mm Tire Dia. |

* Total range with varying degree increments.

**ORDER INFORMATION – Pump and Cart Modules with Assembled Jack Module**

| Capacity (tons) | Ret. Height (mm) | Ext. Height (mm) | Stroke (mm) | Pump Type | Power Required | Valve Type | Remote Control | Order No. |
|---|---|---|---|---|---|---|---|---|
| 55 | 660,4 | 994 | 333 | Electric | 25 amps | Manual | M | JEM5526† |
| 100 | 838,2 | 1.172 | 333 | Air | 1,4 cu m /min at 6 bar | Manual | M | JAM10033 |
| 100 | 838,2 | 1.172 | 333 | Air | 1,4 cu m /min at 6 bar | Air Pilot | M & V | JAR10033 |
| 150 | 660,4 | 994 | 333 | Electric | 25 amps | Manual | M | JEM15026† |
| 150 | 838,2 | 1.172 | 333 | Air | 1,4 cu m/min at 6 bar | Manual | M | JAM15033 |
| 200 | 711 | 1.044 | 333 | Electric | 25 amps | Remote | M & V | JER20026† |
| 300 | 838,2 | 1.172 | 333 | Air | 1,4 cu m /min at 6 bar | Air Pilot | M & V | JAR30033 |

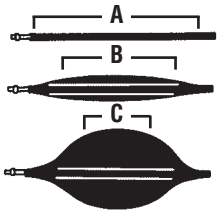
Different Modules Configuration available upon request.
†110V / 115V 60Hz Single phase motor. (220V / 50Hz / 60Hz Single phase motor upon request, please specify when ordering)

# Inflatable Jack

## 1-74 Ton



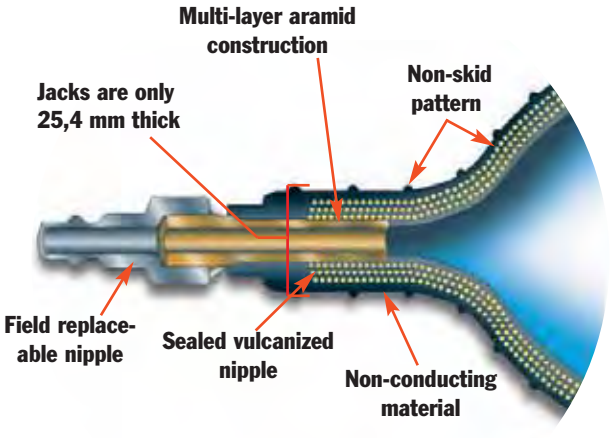
- Highly flexible and lightweight jacks only require an air supply of 8 bar maximum. Any non-explosive gas or water can also be used for inflation.
- Uninflated jacks are only 25,4 mm thick, making seemingly impossible lifting tasks routine.
- Space age reinforced, multi-layer aramid construction, widely overlapping on all sides. Tested at 12 bar.
- In rugged testing, jacks withstood tens of thousands of inflate/deflate cycles at 8 bar.
- Large surface area and material flexibility allow jacks to lift loads on soft or compressible surfaces without support cribbing being necessary.
- Safety first! The controller, shut-off and air hoses are all equipped with USA industrial interchange style air couplers. Female half coupler bodies have a locking collar, protecting operator from accidentally disconnecting jack while under load.
- Surface of jack has a non-skid pattern, assuring that the jack won't "walk away" from the job. Jacks can be used to lift a load from an uneven surface, are tolerant of side-loaded applications.
- Non-conducting material resists oil, ozone and most chemicals. Cold resistant down to -4° C, heat resistant up to 115°C(short term) or 93°C(long term).
- Field-replaceable nipples are made of tough steel, with internal thread to prevent abrasion damage. Ideal needle aperture of 6,4 mm allows rapid inflation, without risk of icing, and permits a safe lowering speed.
- Single jack controller with "dead man" control (350090). Can be used individually, or in multiples to regulate any number of jacks desired.
- Heavy attachment straps are provided on 4 largest sizes for attachment of a rope or hook to position the jack from a safe distance.
- Inflation hose system is color-coded (red and yellow) for easy recognition when using more than one jack.




**Maximum Effective Lifting Area**
All lifting capacities mentioned in the charts are measured at the maximum effective lifting area (A). As the jack is inflated (B), this effective area decreases (C) due to the rounded shape of the jack.Lifting capacity also decreases (see performance chart).

**Stack up to two jacks together to increase effective lifting height.**

**The non-skid space age reinforced inflatable jack is perfect for many applications.**





**IJ Series Inflatable Air Jacks**




* **NOTE:** 350090 air controller may be used individually to control one jack (see single line system), or in multiples to control additional jacks (see dual line system).



250343


250353


250682


15235


250341


250342

**No. 307159** – Pressure reducing valve. Allows use of bottled gases to operate jacks (works on CGA-580 Nitrogen/Argon/Helium bottles). Contains standard bottle fitting on inlet and 1/4" industrial interchange (female) outlet. Wt., 1,8 kg.

**No. 350090** – Air controller for single jack. Equipped with relief valve and pressure gauge.

**No. 350207** – Shut-off hose with shut-off valve and pressure relief valve. Includes a female and male quick coupler.

**No. 350208** – Air hose. Red, 9,2 m long. Includes No. 250341 female and No. 250342 male quick coupler.

**No. 350209** – Air hose. Same as 350208, except blue in color.

**No. 250343** – Female quick coupler. 1/4" industrial interchange x 1/8" NPT female. Wt.,0,1kg.

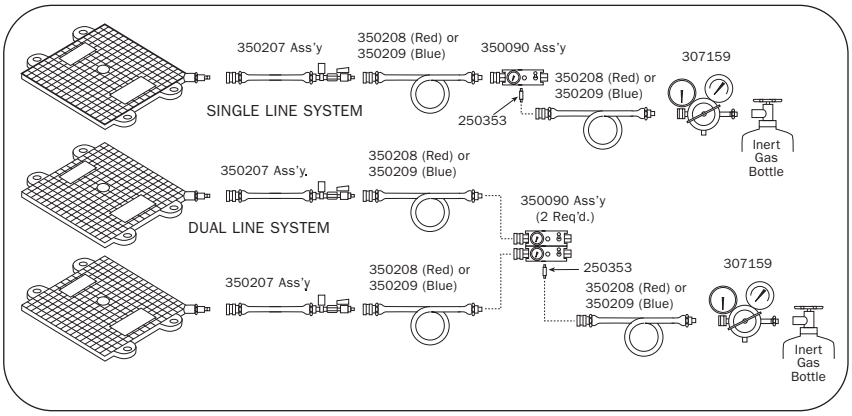
**No. 250353** – Male quick coupler. 1/4" industrial interchange x 1/8" NPT male. Wt., 0.1 kg.

**No. 250682** – Female quick coupler. 1/4" industrial interchange x 1/4" NPT male. Wt., 0.1 kg.

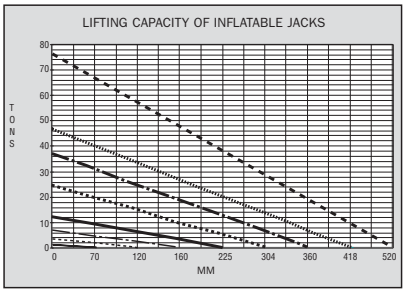
**No. 15235** – Connector 1/8" NPT male x 1/4" NPT female. Wt., 0.1 kg

**No. 250341** – Female quick coupler. 1/4" industrial x 9,5 mm I.D. hose.

**No. 250342** – Male Quick coupler. 9,5 mm I.D. Hose.




## PERFORMANCE




## ORDER INFORMATION

| Lifting Cap. (tons) | Lifting Height (mm) | Order Number | Air Contents at 8 bar (l) | Max. Working Pressure (bar) | Length (mm) | Width (mm) | Collapsed Height (mm) | Product Weight (kg) |
|---|---|---|---|---|---|---|---|---|
| 1,1 | 70 | IJ13 | 2,3 | 8 | 140 | 130 | 25,4 | 0,5 |
| 3,6 | 120 | IJ45 | 14,4 | 8 | 255 | 200 | 25,4 | 1,2 |
| 7 | 160 | IJ76 | 42 | 8 | 305 | 305 | 25,4 | 1,9 |
| 12 | 225 | IJ128 | 97 | 8 | 400 | 400 | 25,4 | 3,6 |
| 23,8 | 304 | IJ2211 | 268 | 8 | 550 | 550 | 25,4 | 7,3 |
| 34 | 360 | IJ3213 | 463 | 8 | 650 | 650 | 25,4 | 9,9 |
| 46,3 | 418 | IJ4416 | 729 | 8 | 750 | 750 | 25,4 | 13,1 |
| 74,6 | 520 | IJ7320 | 1.457 | 8 | 950 | 950 | 30,4 | 26,3 |

# HYDRAULIC TOOLS

# Measurements/ Specifications

## TORQUE WRENCH SELECTION GUIDE


TWSD Series
(Square Drive)

TWLC Series
(Low Clearance)

### Torque Wrench Selection Guide

| BOLT - TORQUE | | | | | | TOOL GUIDELINE | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | RECOMMENDED MODEL | | | |
| SAE1 SAE 2 30,000 PSI | ASTM 193 B7 BOLT | 8-7 A/F HEAVY HEX NUT | ASTM 354 B8 60000 PSI | FT. LBS. | Nm | SQUARE DRIVE MAKE-UP ONLY | LOW CLEARANCE MAKE-UP | SQUARE DRIVE Break Out | LOW CLEARANCE Break Out |
| 1” | 7/8” | 1-7/16” | | 300 | 408 | TWSD1 | TWLC2 | TWSD1 | TWLC2 |
| 1-1/8” | 1” | 1-5/8” | 7/8” | 425 | 578 | TWSD1 | TWLC2 | TWSD1 | TWLC2 |
| | | | | 500 | 680 | TWSD1 | TWLC2 | TWSD1 | TWLC2 |
| 1-1/4” | | | 1” | 600 | 816 | TWSD1 | TWLC2 | TWSD1 | TWLC2 |
| 1-3/8” | 1-1/8” | 1-13/16” | | 700 | 952 | TWSD1 | TWLC2 | TWSD1 | TWLC2 |
| | 1-1/4” | 2” | 1-1/8” | 800 | 1,088 | TWSD1 | TWLC2 | TWSD3 | TWLC4 |
| 1-1/2” | | | | 900 | 1,224 | TWSD1 | TWLC2 | TWSD3 | TWLC4 |
| | | | | 1,000 | 1,360 | TWSD1 | TWLC2 | TWSD3 | TWLC4 |
| 1-5/8” | 1-3/8” | 2-3/16” | 1-1/4” | 1.250 | 1.700 | TWSD1 | TWLC2 | TWSD3 | TWLC4 |
| | | | | 1,350 | 1,836 | TWSD1 | TWLC2 | TWSD3 | TWLC4 |
| | 1-1/2” | 2-3/8” | 1-3/8” | 1,500 | 2,040 | TWSD3 | TWLC2 | TWSD3 | TWLC4 |
| 1-3/4” | | | | 1,600 | 2,176 | TWSD3 | TWLC4 | TWSD6 | TWLC4 |
| 1-7/8” | | | | 1,800 | 2,448 | TWSD3 | TWLC4 | TWSD6 | TWLC4 |
| | 1-5/8” | 2-9/16” | | 2,000 | 2,720 | TWSD3 | TWLC4 | TWSD6 | TWLC4 |
| 2” | | | | 2,200 | 2,992 | TWSD3 | TWLC4 | TWSD6 | TWLC8 |
| | 1-3/4” | 2-3/4” | 1-5/8” | 2,600 | 3,536 | TWSD3 | TWLC4 | TWSD6 | TWLC8 |
| 2-1/4” | | | | 3,000 | 4,080 | TWSD3 | TWLC4 | TWSD6 | TWLC8 |
| | 1-7/8” | 2-15/16” | 1-3/4” | 3,700 | 5,032 | TWSD6 | TWLC4 | TWSD11 | TWLC8 |
| 2-1/2 ” | 2” | 3-1/8” | | 4,000 | 5,440 | TWSD6 | TWLC8 | TWSD11 | TWLC15 |
| | | | 1-7/8 | 4,400 | 5,984 | TWSD6 | TWLC8 | TWSD11 | TWLC15 |
| 2-3/4” | | | 2” | 5,100 | 6,936 | TWSD6 | TWLC8 | TWSD11 | TWLC15 |
| | 2-1/4” | 3-1/2” | | 6,000 | 8,160 | TWSD6 | TWLC8 | TWSD25 | TWLC15 |
| 3” | | 3-7/8” | 2-1/4” | 7,000 | 9,520 | TWSD11 | TWLC8 | TWSD25 | TWLC15 |
| | 2-1/2” | | | 8,000 | 10,880 | TWSD11 | TWLC15 | TWSD25 | TWLC30 |
| 3-1/4” | | | | 9,000 | 12,240 | TWSD11 | TWLC15 | TWSD25 | TWLC30 |
| 3-1/2” | 2-3/4” | 4-1/4” | 2-1/2” | 10,000 | 13,600 | TWSD11 | TWLC15 | TWSD25 | TWLC30 |
| | | | | 11,500 | 15,640 | TWSD25 | TWLC15 | TWSD25 | TWLC30 |
| 3-3/4” | 3” | 4-5/8” | 2-3/4” | 13,000 | 17680, | TWSD25 | TWLC15 | Please Inquire | TWLC30 |
| 4” | | | | 14,500 | 19,720 | TWSD25 | TWLC15 | Please Inquire | |
| | | | | 15,500 | 21,080 | TWSD25 | TWLC30 | Please Inquire | |
| | 3-1/4” | 5” | 3” | 16,500 | 22,440 | TWSD25 | TWLC30 | Please Inquire | |
| 4-1/4” | | | | 19,500 | 26,520 | TWSD25 | TWLC30 | Please Inquire | |
| | 3-1/2” | 5-3/8” | 3-1/4” | 20,500 | 27,880 | TWSD25 | TWLC30 | Please Inquire: For Higher Torque Values | |
| 4-1/2” | | | | 21,500 | 29,240 | TWSD25 | TWLC30 | | |
| | | | | 24,500 | 33,320 | TWSD25 | TWLC30 | | |
| 4-3/4” | 3-3/4” | 5-3/4” | 3-1/2” | 25,500 | 34,680 | Please Inquire | TWLC30 | | |
| 6-1/2” | 4-1/4” | | | 29,500 | 40,120 | Please Inquire | Please Inquire | | |

# Torque Wrench
## SQUARE DRIVE

## TWSD Series
## MAX TORQUE 33496 Nm
700 bar

Heavy duty simple-to-use. Accuracy and speed under load. Breaking nuts loose and torquing.


**TWSD Series**

Tool is shipped with standard reaction arm as shown.

**360° Reaction Arm**

RIGID LIGHTWEIGHT ALL-STEEL BODY

TOPSIDE SUB-SEA APPLICATION

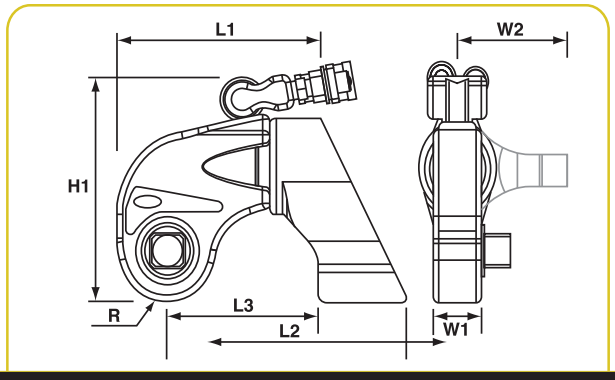
**360° x 180° Swivel**

HYDRAULIC TOOLS

**SQUARE DRIVE TORQUE WRENCHES**

- Low Weight, High Strength Design
- Superior Torsional Strength
- Fast Operation Cycle
- Fine Tooth Pawl
- Floating Piston Design
- Internal Swivel Manifold Relief
- Rigid Steel Body Construction
- Compact Frame Size
- Push Button Reversal of Square Drive
- Corrosion Resistant Finish
- 360˚ Reaction Arm
- Push to Click Reaction Arms
- Multi-Axis High Flow Swivel Manifold
- Simple Design
- Consistent Torque Output
- Fully Enclosed Drive Mechanism
- Accurate Torque Output
- Marathon Lifetime Warranty

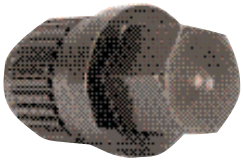
| **Extended Reaction Arm** (Optional) | |
|---|---|
| TWSD1-ERA<br>TWSD3-ERA<br>TWSD6-ERA<br>TWSD11-ERA<br>TWSD25-ERA |  |




| **Long Reaction Arm** (Optional) | |
|---|---|
| TWSD1-LRA<br>TWSD3-LRA<br>TWSD6-LRA<br>TWSD11-LRA<br>TWSD25-LRA |  |

| Tool Model | L1 (mm) | L2 (mm) | L3 (mm) | H1 (mm) | R (mm) | W2 (mm) | W1 (mm) |
|---|---|---|---|---|---|---|---|
| **TWSD1** | 139 | 170 | 112 | 146 | 29 | 87 | 34 |
| **TWSD3** | 169 | 196 | 124 | 176 | 39 | 105 | 45 |
| **TWSD6** | 195 | 237 | 142 | 206 | 46 | 136 | 51 |
| **TWSD11** | 234 | 292 | 179 | 242 | 55 | 165 | 61 |
| **TWSD25** | 306 | 375 | 231 | 314 | 72 | 200 | 77 |

| Tool Model | Square Drive | | Max. Torque | | Tool Weight Drive |
|---|---|---|---|---|---|
| | mm | (in.) | Nm | (ft. lbs.) | kg |
| TWSD1 | 19.0 | 3/4 | 1,880 | 1,390 | 2.3 |
| TWSD3 | 25.4 | 1 | 4,160 | 3,070 | 4.5 |
| TWSD6 | 38.1 | 1-1/2 | 8,157 | 6,020 | 7.9 |
| TWSD11 | 38.1 | 1-1/2 | 14,823 | 10,940 | 13.1 |
| TWSD25 | 63.5 | 2-1/2 | 33,496 | 24,700 | 29.5 |

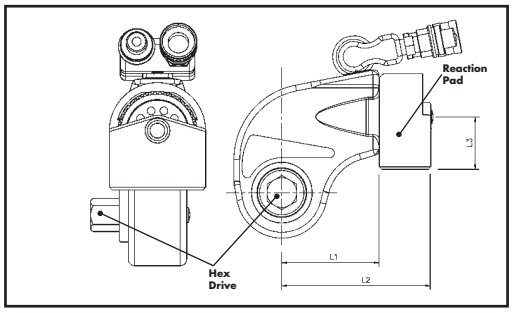


HEX DRIVES (Allen Drives)

# Sockets & Allen Drives
## SQUARE DRIVE

for TWSD Series
Square Drive
Torque Wrenches

| Torque Wrench | Hexagon Drive Size A/F (in.) | Part No. | Hexagon Drive Size A/F (mm) | Part No. |
|---|---|---|---|---|
| TWSD1 | 5/8" | TWD1-063 | 17mm | TWD1-017 |
| | 3/4" | TWD1-075 | 19mm | TWD1-019 |
| | 7/8" | TWD1-088 | 22mm | TWD1-022 |
| | 1" | TWD1-100 | 24mm | TWD1-024 |
| | - | - | 27mm | TWD1-027 |
| TWSD3 | 5/8" | TWD3-063 | 17mm | TWD3-017 |
| | 3/4" | TWD3-075 | 19mm | TWD3-019 |
| | 7/8" | TWD3-088 | 22mm | TWD3-022 |
| | 1" | TWD3-100 | 24mm | TWD3-024 |
| | 1-1/8" | TWD3-113 | 27mm | TWD3-027 |
| | 1-1/4" | TWD3-125 | 30mm | TWD3-030 |
| | 1-3/8" | TWD3-138 | 32mm | TWD3-032 |
| TWSD6 | 7/8" | TWD6-088 | 22mm | TWD6-022 |
| | 1" | TWD6-100 | 24mm | TWD6-024 |
| | 1-1/8" | TWD6-113 | 27mm | TWD6-027 |
| | 1-1/4" | TWD6-125 | 30mm | TWD6-030 |
| | 1-3/8" | TWD6-138 | 32mm | TWD6-032 |
| | 1-1/2" | TWD6-150 | 36mm | TWD6-036 |
| | 1-5/8" | TWD6-163 | 41mm | TWD6-041 |
| TWSD11 | 1-1/8" | TWD11-113 | 27mm | TWD11-027 |
| | 1-1/4" | TWD11-125 | 30mm | TWD11-030 |
| | 1-3/8" | TWD11-138 | 32mm | TWD11-032 |
| | 1-1/2" | TWD11-150 | 36mm | TWD11-036 |
| | 1-5/8" | TWD11-163 | 41mm | TWD11-041 |
| | 1-3/4" | TWD11-175 | 46mm | TWD11-046 |
| TWSD25 | 1-1/2" | TWD25-150 | 36mm | TWD25-036 |
| | 1-5/8" | TWD25-163 | 41mm | TWD25-041 |
| | 1-3/4" | TWD25-175 | 46mm | TWD25-046 |
| | 1-7/8" | TWD25-188 | 50mm | TWD25-050 |
| | 2" | TWD25-200 | 55mm | TWD25-055 |
| | 2-1/4" | TWD25-225 | 60mm | TWD25-060 |
| | 2-1/2" | TWD25-250 | 65mm | TWD25-065 |
| | 2-3/4" | TWD25-275 | 70mm | TWD25-070 |




| Reaction Pad | Reaction Pads for Hex Drives (Optional) L1 (mm) | L2 (mm) | L3 (mm) | WIDTH (mm) |
|---|---|---|---|---|
| TWSD1-RP | 71.5 | 115.5 | 43.5 | 63.0 |
| TWSD3-RP | 83.0 | 135.0 | 48.0 | 74.0 |
| TWSD6-RP | 91.0 | 154.0 | 57.0 | 90.0 |
| TWSD11-RP | 109.0 | 184.0 | 65.5 | 105.0 |
| TWSD25-RP | 135.0 | 242.0 | 88.5 | 143.0 |

Reaction Pad

Sockets

### Heavy-duty Square Drive Impact Sockets

| Socket Size (in.) | 3/4" Drive Part No. | 1" Drive Part No. | 1-1/2" Drive Part No. | 2-1/2" Drive Part No. |
|---|---|---|---|---|
| 7/8 | TWSIA088 | TWSIB088 | - | - |
| 1-1/16 | TWSIA106 | TWSIB106 | - | - |
| 1-1/4 | TWSIA125 | TWSIB125 | - | - |
| 1-3/8 | TWSIA138 | TWSIB138 | - | - |
| 1-7/16 | TWSIA144 | TWSIB144 | - | - |
| 1-5/8 | TWSIA163 | TWSIB163 | TWSIC163 | - |
| 1-13/16 | TWSIA181 | TWSIB181 | - | - |
| 2 | TWSIA200 | TWSIB200 | TWSIC200 | - |
| 2-3/16 | TWSIA219 | TWSIB219 | TWSIC219 | - |
| 2-3/8 | TWSIA238 | TWSIB238 | TWSIC238 | - |
| 2-9/16 | - | TWSIB256 | TWSIC256 | - |
| 2-3/4 | - | TWSIB275 | TWSIC275 | - |
| 2-15/16 | - | TWSIB294 | TWSIC294 | - |
| 3-1/8 | - | TWSIB313 | TWSIC313 | TWSIF313 |
| 3-3/8 | - | TWSIB338 | TWSIC338 | TWSIF338 |
| 3-1/2 | - | TWSIB350 | TWSIC350 | TWSIF350 |
| 3-3/4 | - | TWSIB375 | TWSIC375 | TWSIF375 |
| 3-7/8 | - | TWSIB388 | - | TWSIF388 |
| 4-1/8 | - | TWSIB413 | TWSIC413 | TWSIF413 |
| 4-1/4 | - | TWSIB425 | TWSIC425 | TWSIF425 |
| 4-5/8 | - | - | TWSIC463 | TWSIF463 |
| 5 | - | - | - | TWSIF500 |
| 5-3/8 | - | - | - | TWSIF538 |
| 5-3/4 | - | - | - | TWSIF575 |
| 6-1/8 | - | - | - | TWSIF613 |

| Socket Size (mm) | 3/4" Drive Part No. | 1" Drive Part No. | 1-1/2" Drive Part No. | 2-1/2" Drive Part No. |
|---|---|---|---|---|
| 22 | TWSMA022 | TWSMB022 | - | - |
| 24 | TWSMA024 | TWSMB024 | - | - |
| 32 | TWSMA032 | TWSMB032 | TWSMC032 | - |
| 36 | TWSMA036 | TWSMB036 | TWSMC036 | - |
| 41 | TWSMA041 | TWSMB041 | TWSMC041 | - |
| 46 | TWSMA046 | TWSMB046 | TWSMC046 | - |
| 50 | TWSMA050 | TWSMB050 | TWSMC050 | TWSMF050 |
| 55 | TWSMA055 | TWSMB055 | TWSMC055 | TWSMF055 |
| 60 | TWSMA060 | TWSMB060 | TWSMC060 | TWSMF060 |
| 65 | - | TWSMB065 | TWSMC065 | TWSMF065 |
| 70 | - | TWSMB070 | TWSMC070 | TWSMF070 |
| 75 | - | TWSMB075 | TWSMC075 | TWSMF075 |
| 80 | - | TWSMB080 | TWSMC080 | TWSMF080 |
| 85 | - | TWSMB085 | TWSMC085 | TWSMF085 |
| 90 | - | TWSMB090 | TWSMC090 | TWSMF090 |
| 95 | - | TWSMB095 | TWSMC095 | TWSMF095 |
| 100 | - | TWSMB100 | TWSMC100 | TWSMF100 |
| 110 | - | TWSMB110 | TWSMC110 | TWSMF110 |
| 115 | - | - | TWSMC115 | TWSMF115 |
| 120 | - | - | TWSMC120 | TWSMF120 |
| 130 | - | - | - | TWSMF130 |
| 135 | - | - | - | TWSMF135 |
| 145 | - | - | - | TWSMF145 |
| 150 | - | - | - | TWSMF150 |
| 155 | - | - | - | TWSMF155 |

# Torque Wrench
## LOW CLEARANCE

## TWLC Series
## 39,024 Nm MAX TORQUE
700 bar

The Lightweight, heavy-duty tool features a long neck, short height, and small radius for inaccessible bolting areas found in industry.

HYDRAULIC TOOLS

**LOW CLEARANCE TORQUE WRENCHES**
The TWLC Wrench was designed for the most inaccessible bolting areas found in industry. Its long neck, short height and small radius have all added to its great success

RIGID LIGHTWEIGHT ALL-STEEL BODY

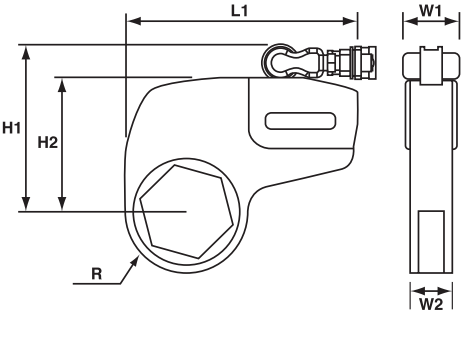
TOPSIDE SUB-SEA APPLICATION

- Low Weight, High Strength Design
- Superior Torsional Strength
- Fast Operation Cycle
- Fine Tooth Pawl
- Floating Piston Design
- Auto-Connect Drive Piston
- Compact Frame Size
- Rigid Steel Body Construction
- Internal Swivel Manifold Relief
- Built-in Reaction Pad
- Small Nose Radius
- Tool Free Link Change
- Corrosion Resistant Finish
- Multi-Axis High Flow Swivel Manifold
- Simple Design
- Consistent Torque Output
- Marathon Lifetime Warranty

TWLC Series

360° x 180° Swivel

* Links sold separately.
Tool is not shipped with link.




| Reaction Paddle (Optional) |
|---|
| TWLC2-RP |
| TWLC4-RP |
| TWLC8-RP |
| TWLC15-RP |
| TWLC30-RP |

| Reaction Bar (Optional) |
|---|
| TWLC2-RB |
| TWLC4-RB |
| TWLC8-RB |
| TWLC15-RB |
| TWLC30-RB |

| Tool Model | L1 (mm) | H1 (mm) | H2 (mm) | R (mm) | W1 (mm) | W2 (mm) |
|---|---|---|---|---|---|---|
| TWLC2 | 178 | 136 | 103 | 32–46 | 42 | 32 |
| TWLC4 | 223 | 163 | 130 | 37–59 | 52 | 42 |
| TWLC8 | 265 | 195 | 158 | 51–74 | 69 | 54 |
| TWLC15 | 306 | 223 | 186 | 61–87 | 80 | 63 |
| TWLC30 | 391 | 276 | 239 | 77–116 | 106 | 82 |

| Tool Model (Hydraulic Unit) | Link Hex Range (A/F) mm | (in.) | Max. Torque Nm | (ft. lbs) | Tool Weight kg |
|---|---|---|---|---|---|
| TWLC2 | 32 – 60 | 1 1/4 – 2 3/8 | 2,134 | 1,575 | 2.8 |
| TWLC4 | 40 – 80 | 1 1/2 – 3 1/8 | 5,386 | 3,975 | 5.7 |
| TWLC8 | 60 – 100 | 2 3/8 – 3 7/8 | 10,773 | 7,950 | 10.4 |
| TWLC15 | 65 – 120 | 2 9/16 – 4 5/8 | 20,221 | 14,850 | 16.9 |
| TWLC30 | 80 – 155 | 3 1/8 – 6 1/8 | 39,024 | 28,800 | 35.0 |

**Hydraulic Unit** (TWLC)


# Links & Reducers

## LOW CLEARANCE

**39,024 Nm MAX TORQUE**
700 bar

Available in the most common sizes.
Custom sizes available (consult factory).


| Tool | Link Part No. | Nut A/F inch | Nut A/F mm | Nose Radius (mm) | Reducer inch | Reducer mm | Reducer Part No. | Reducer inch | Reducer mm | Reducer Part No. | Reducer inch | Reducer mm | Reducer Part No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TWLC2 | TWL2-032 | 1-1/4" | 32 | 32 | - | - | - | - | | | - | - | |
| | TWL2-036 | 1-7/16" | 36 | 32 | - | - | - | - | | | - | - | |
| | TWL2-041 | 1-5/8" | 41 | 35 | 1-5/8"-1-7/16" | 41-36mm | TWR2-041036 | 1-5/8"-1-1/4" | 41-32mm | TWR2-041032 | - | - | |
| | TWL2-046 | 1-13/16" | 46 | 37 | 1-13/16"-1-5/8" | 46-41mm | TWR2-046041 | 1-13/16"-1-7/16" | 46-36mm | TWR2-046036 | 1-13/16"-1-1/4" | 46-32mm | TWR2-046032 |
| | TWL2-050 | 2" | 50 | 40 | 2"-1-13/16" | 50-46mm | TWR2-050046 | 2"-1-5/8" | 50-41mm | TWR2-050041 | 2"-1-7/16" | 50-36mm | TWR2-050036 |
| | TWL2-055 | 2-3/16" | 55 | 43 | 2-3/16"-2" | 55-50mm | TWR2-055050 | 2-3/16"-1-13/16" | 55-46mm | TWR2-055046 | 2-3/16"-1-5/8" | 55-41mm | TWR2-055041 |
| | TWL2-060 | 2-3/8" | 60 | 46 | 2-3/8"-2-3/16" | 60-55mm | TWR2-060055 | 2-3/8"-2" | 60-50mm | TWR2-060050 | 2-3/8"-1-13/16" | 60-46mm | TWR2-060046 |
| TWLC4 | TWL4-041 | 1-5/8" | 41 | 37 | 1-5/8"-1-7/16" | 41-36mm | TWR4-041036 | 1-5/8"-1-1/4" | 41-32mm | TWR4-041032 | - | - | |
| | TWL4-046 | 1-13/16" | 46 | 39 | 1-13/16"-1-5/8" | 46-41mm | TWR4-046041 | 1-13/16"-1-7/16" | 46-36mm | TWR4-046036 | 1-13/16"-1-1/4" | 46-32mm | TWR4-046032 |
| | TWL4-050 | 2" | 50 | 42 | 2"-1-13/16" | 50-46mm | TWR4-050046 | 2"-1-5/8" | 50-41mm | TWR4-050041 | 2"-1-7/16" | 50-36mm | TWR4-050036 |
| | TWL4-055 | 2-3/16" | 55 | 45 | 2-3/16"-2" | 55-50mm | TWR4-055050 | 2-3/16"-1-13/16" | 55-46mm | TWR4-055046 | 2-3/16"-1-5/8" | 55-41mm | TWR4-055041 |
| | TWL4-060 | 2-3/8" | 60 | 48 | 2-3/8"-2-3/16" | 60-55mm | TWR4-060055 | 2-3/8"-2" | 60-50mm | TWR4-060050 | 2-3/8"-1-13/16" | 60-46mm | TWR4-060046 |
| | TWL4-065 | 2-9/16" | 65 | 50 | 2-9/16"-2-3/8" | 65-60mm | TWR4-065060 | 2-9/16"-2-3/16" | 65-55mm | TWR4-065055 | 2-9/16"-2" | 65-50mm | TWR4-065050 |
| | TWL4-070 | 2-3/4" | 70 | 53 | 2-3/4"-2-9/16" | 70-65mm | TWR4-070065 | 2-3/4"-2-3/8" | 70-60mm | TWR4-070060 | 2-3/4"-2-3-16" | 70-55mm | TWR4-070055 |
| | TWL4-075 | 2-15/16" | 75 | 56 | 2-15/16"-2-3/4" | 75-70mm | TWR4-075070 | 2-15/16"-2-9/16" | 75-65mm | TWR4-075065 | 2-15/16"-2-3/8" | 75-60mm | TWR4-075060 |
| | TWL4-080 | 3-1/8" | 80 | 59 | 3-1/8"-2-15/16" | 80-75mm | TWR4-080075 | 3-1/8"-2-3/4" | 80-70mm | TWR4-080070 | 3-1/8"-2-9/16" | 80-65mm | TWR4-080065 |
| TWLC8 | TWL8-060 | 2-3/8" | 60 | 51 | 2-3/8"-2-3/16" | 60-55mm | TWR8-060055 | 2-3/8"-2" | 60-50mm | TWR8-060050 | 2-3/8"-1-13/16" | 60-46mm | TWR8-060046 |
| | TWL8-065 | 2-9/16" | 65 | 53 | 2-9/16"-2-3/8" | 65-60mm | TWR8-065060 | 2-9/16"-2-3/16" | 65-55mm | TWR8-065055 | 2-9/16"-2" | 65-50mm | TWR8-065050 |
| | TWL8-070 | 2-3/4" | 70 | 56 | 2-3/4"-2-9/16" | 70-65mm | TWR8-070065 | 2-3/4"-2-3/8" | 70-60mm | TWR8-070060 | 2-3/4"-2-3-16" | 70-55mm | TWR8-070055 |
| | TWL8-075 | 2-15/16" | 75 | 59 | 2-15/16"-2-3/4" | 75-70mm | TWR8-075070 | 2-15/16"-2-9/16" | 75-65mm | TWR8-075065 | 2-15/16"-2-3/8" | 75-60mm | TWR8-075060 |
| | TWL8-080 | 3-1/8" | 80 | 62 | 3-1/8"-2-15/16" | 80-75mm | TWR8-080075 | 3-1/8"-2-3/4" | 80-70mm | TWR8-080070 | 3-1/8"-2-9/16" | 80-65mm | TWR8-080065 |
| | TWL8-085 | 3-3/8" | 85 | 67 | 3-3/8"-3-1/8" | 85-80mm | TWR8-085080 | 3-3/8"-2-15/16" | 85-65mm | TWR8-085065 | 3-3/8"-2-3/4" | 85-70mm | TWR8-085070 |
| | TWL8-090 | 3-1/2" | 90 | 67 | 3-1/2"-3-3/8" | 90-85mm | TWR8-090085 | 3-1/2"-3-1/8" | 90-80mm | TWR8-090080 | 3-1/2"-2-15/16" | 90-75mm | TWR8-090075 |
| | TWL8-095 | 3-3/4" | 95 | 74 | 3-3/4"-3-1/2" | 95-90mm | TWR8-095090 | 3-3/4"-3-3/8" | 95-85mm | TWR8-095085 | 3-3/4"-3-1/8" | 95-80mm | TWR8-095080 |
| | TWL8-100 | 3-7/8" | 100 | 74 | 3-7/8"-3-3/4" | 100-95mm | TWR8-100095 | 3-7/8"-3-1/2" | 100-90mm | TWR8-100090 | 3-7/8"-3-3/8" | 100-85mm | TWR8-100085 |
| TWLC15 | TWL15-070 | 2-3/4" | 70 | 61 | 2-3/4"-2-9/16" | 70-65mm | TWR15-070065 | 2-3/4"-2-3/8" | 70-60mm | TWR15-070060 | 2-3/4"-2-3-16" | 70-55mm | TWR15-070055 |
| | TWL15-075 | 2-15/16" | 75 | 63 | 2-15/16"-2-3/4" | 75-70mm | TWR15-075070 | 2-15/16"-2-9/16" | 75-65mm | TWR15-075065 | 2-15/16"-2-3/8" | 75-60mm | TWR15-075060 |
| | TWL15-080 | 3-1/8" | 80 | 67 | 3-1/8"-2-15/16" | 80-75mm | TWR15-080075 | 3-1/8"-2-3/4" | 80-70mm | TWR15-080070 | 3-1/8"-2-9/16" | 80-65mm | TWR15-080065 |
| | TWL15-085 | 3-3/8" | 85 | 72 | 3-3/8"-3-1/8" | 85-80mm | TWR15-085080 | 3-3/8"-2-15/16" | 85-65mm | TWR15-085065 | 3-3/8"-2-3/4" | 85-70mm | TWR15-085070 |
| | TWL15-090 | 3-1/2" | 90 | 72 | 3-1/2"-3-3/8" | 90-85mm | TWR15-090085 | 3-1/2"-3-1/8" | 90-80mm | TWR15-090080 | 3-1/2"-2-15/16" | 90-75mm | TWR15-090075 |
| | TWL15-095 | 3-3/4" | 95 | 78 | 3-3/4"-3-1/2" | 95-90mm | TWR15-095090 | 3-3/4"-3-3/8" | 95-85mm | TWR15-095085 | 3-3/4"-3-1/8" | 95-80mm | TWR15-095080 |
| | TWL15-100 | 3-7/8" | 100 | 78 | 3-7/8"-3-3/4" | 100-95mm | TWR15-100095 | 3-7/8"-3-1/2" | 100-90mm | TWR15-100090 | 3-7/8"-3-3/8" | 100-85mm | TWR15-100085 |
| | TWL15-105 | - | 105 | 83 | - | 105-100mm | TWR15-105100 | - | 105-95mm | TWR15-105095 | - | 105-90mm | TWR15-105090 |
| | TWL15-425 | 4-1/4" | - | 83 | 4-1/4"-3-7/8" | - | TWR15-425388 | 4-1/4"-3-3/4" | - | TWR15-425375 | 4-1/4"-3-1/2" | - | TWR15-425350 |
| | TWL15-110 | - | 110 | 87 | - | 110-105mm | TWR15-110105 | - | 110-100mm | TWR15-110100 | - | 110-95mm | TWR15-110095 |
| | TWL15-115 | - | 115 | 87 | - | 115-110mm | TWR15-115110 | - | 115-105mm | TWR15-115105 | - | 115-100mm | TWR15-115100 |
| | TWL15-463 | 4-5/8" | - | 87 | 4-5/8"-4-1/4" | - | TWR15-463425 | 4-5/8"-3-7/8" | - | TWR15-463388 | 4-5/8"-3-3/4" | - | TWR15-463375 |
| TWLC30 | TWL30-080 | 3-1/8" | 80 | 77 | 3-1/8"-2-15/16" | 80-75mm | TWR30-080075 | 3-1/8"-2-3/4" | 80-70mm | TWR30-080070 | 3-1/8"-2-9/16" | 80-65mm | TWR30-080065 |
| | TWL30-085 | 3-3/8" | 85 | 77 | 3-3/8"-3-1/8" | 85-80mm | TWR30-085080 | 3-3/8"-2-15/16" | 85-65mm | TWR30-085065 | 3-3/8"-2-3/4" | 85-70mm | TWR30-085070 |
| | TWL30-090 | 3-1/2" | 90 | 77 | 3-1/2"-3-3/8" | 90-85mm | TWR30-090085 | 3-1/2"-3-1/8" | 90-80mm | TWR30-090080 | 3-1/2"-2-15/16" | 90-75mm | TWR30-090075 |
| | TWL30-095 | 3-3/4" | 95 | 83 | 3-3/4"-3-1/2" | 95-90mm | TWR30-095090 | 3-3/4"-3-3/8" | 95-85mm | TWR30-095085 | 3-3/4"-3-1/8" | 95-80mm | TWR30-095080 |
| | TWL30-100 | 3-7/8" | 100 | 83 | 3-7/8"-3-3/4" | 100-95mm | TWR30-100095 | 3-7/8"-3-1/2" | 100-90mm | TWR30-100090 | 3-7/8"-3-3/8" | 100-85mm | TWR30-100085 |
| | TWL30-105 | - | 105 | 88 | - | 105-100mm | TWR30-105100 | - | 105-95mm | TWR30-105095 | - | 105-90mm | TWR30-105090 |
| | TWL30-425 | 4-1/4" | - | 88 | 4-1/4"-3-7/8" | - | TWR30-425388 | 4-1/4"-3-3/4" | - | TWR30-425375 | 4-1/4"-3-1/2" | - | TWR30-425350 |
| | TWL30-110 | - | 110 | 88 | - | 110-105mm | TWR30-110105 | - | 110-100mm | TWR30-110100 | - | 110-95mm | TWR30-110095 |
| | TWL30-115 | - | 115 | 92 | - | 115-110mm | TWR30-115110 | - | 115-105mm | TWR30-115105 | - | 115-100mm | TWR30-115100 |
| | TWL30-463 | 4-5/8" | - | 92 | 4-5/8"-4-1/4" | - | TWR30-463425 | 4-5/8"-3-7/8" | - | TWR30-463388 | 4-5/8"-3-3/4" | - | TWR30-463375 |
| | TWL30-120 | - | 120 | 99 | - | 120-115mm | TWR30-120115 | - | 120-110mm | TWR30-120110 | - | 120-105mm | TWR30-120105 |
| | TWL30-500 | 5" | - | 99 | 5"-4-5/8" | - | TWR30-500463 | 5"-4-1/4" | - | TWR30-500425 | 5"-3-7/8" | - | TWR30-500388 |
| | TWL30-130 | - | 130 | 105 | - | 130-120mm | TWR30-130120 | - | 130-115mm | TWR30-130115 | - | 130-110mm | TWR30-130110 |
| | TWL30-135 | 5-3/8" | 135 | 105 | 5-3/8"-5" | 135-125mm | TWR30-135125 | 5-3/8"-4-5/8" | 135-120mm | TWR30-135120 | 5-3/8"-4-1/4" | 135-115mm | TWR30-135115 |
| | TWL30-145 | 5-3/4" | 145 | 110 | AVAILABLE UPON REQUEST | | | | | | | | |
| | TWL30-150 | - | 150 | 116 | | | | | | | | | |
| | TWL30-155 | 6-1/8" | 155 | 116 | | | | | | | | | |

# Electric Pump
## HYDRAULIC TORQUE WRENCH PUMP

### PE30 Series
### 5 l/min Max Flow
700 bar


**VANGUARD® ELECTRIC HYDRAULIC TORQUE WRENCH PUMPS**

- Two-speed general duty pump
- External adjustable pressure regulator
- Retract side internal relief valve protects tool
- Hand remote
- Use for double or single acting tools

⚠ **CAUTION:** This system should not be used for lifting applications.

| Pump Model | Oil Delivery | Oil Reservoir ( l) | Usable Oil ( l) | Overall Width (mm) | Overall Length (mm) | Overall Height (mm) | Pump Weight w/Oil (kg) |
|---|---|---|---|---|---|---|---|
| PE30TWP-220 | 5 l/min. at 7 bar<br>0,5 l/min. at 700 bar | 4,75 | 4,5 | 356 | 331 | 458 | 33 |

| Electrical Data | |
|---|---|
| Electric Motor | Electrical Control |
| 4,000 rpm<br>0,75 KW, 220V/50Hz, 7 A | 24 Volt remote control with 3 m cord |

## NON-CONDUCTIVE HOSE (700 BAR) For TWSD or TWLC Series Torque Wrench)

- For applications requiring electrical isolation.
- Quick Couplers & Plugs 1/4" fitting on both ends
- Leakage factor of less than 50 microampere.
- Orange polyurethane for easy identification.
- Covering is not perforated, preventing moisture from entering the hose and affecting its overall conductivity.
- Hoses feature a minimum 2,800 bar burst pressure.

**TWH**

| HOSES – DUAL LINE | |
|---|---|
| TWH15 | 4.6m, 6.4mm ID non-conductive |
| TWH20 | 6.1m, 6.4mm ID non-conductive |
| TWH50 | 15.2m, 6.4mm ID non-conductive |

| Order No. | Couplers / Fittings | Metal Dust Cap |
|---|---|---|
| 251410 | Quick Coupler, Female Half, 1/4" NPTF Male | 252364 |
| 251411 | Quick Plug, Male Half, 1/4" NPTF Female | 252365 |
| 12740 | Coupling, 1/4" NPTF Female Both Ends | |
| 10672 | Straight Fitting, 1/4" NPTF Male Both Ends | |

# Electric Pump
## HYDRAULIC TORQUE WRENCH PUMP

## TWP55 Series
## 11,5 l/min MAX FLOW
700 bar

**VANGUARD® ELECTRIC HYDRAULIC TORQUE WRENCH PUMPS**

- Two-speed high performance pump
- External adjustable pressure regulator
- Retract side internal relief valve protects tool
- Hand remote
- Use for double or single acting tools


**TWP55-50-220-01**

**TWP55-220C00L**

**CAUTION:** This system should not be used for lifting applications.

| Pump Model | Manifold | Oil Delivery (l/min) | Oil Reservoir (l) | Usable Oil (l) | Overall Width (mm) | Overall Length (mm) | Overall Height (mm) | Pump Weight w/Oil (kg) |
|---|---|---|---|---|---|---|---|---|
| TWP55-50-220-01 | Single Tool | 11,5 at 7 bar<br>0,9 at 700 bar | 9,5 | 8,4 | 435 | 241 | 460 | 34 |
| TWP55-220C00L (With Oil Cooling Fan) | Single Tool | 11,5 at 7 bar<br>0,9 at 700 bar | 9,5 | 8,4 | 520 | 241 | 460 | 37 |

| Electrical Data | |
|---|---|
| Electric Motor | Electrical Control |
| 0,84 KW, 12000 rpm<br>220V/50Hz, 13 amps | Remote control with 3m cord |

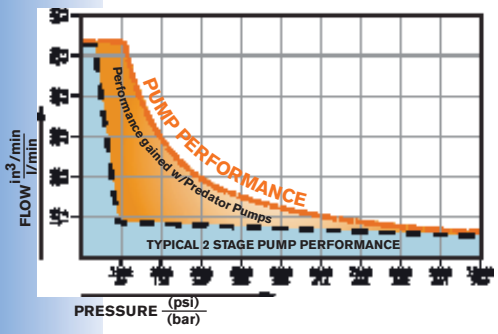
# Air Pump
## TORQUE WRENCH PUMP

### Air/Hydraulic
700 bar

## PREDATOR SERIES HYDRAULIC AIR PUMPS

The new Predator Series air pumps are the first constant horsepower pump or horsepower limiting pump in the portable hydraulic pump market.
What can torque wrench users expect? In a word..... SPEED.
A few advantages of the Predator Series Pumps:

- Powerful 4 HP air motor starts under load & yields up to twice the flow of other air pumps for greater application speed & productivity
- Continuous Duty Operation (Heavy-duty, extended cycle)
- External Pressure Adjustment to corresponding torque values
- Four Tool Manifold (Optional)
- Pneumatic remote control 25 ft. cord standard
- Calibratible, vibration damped 4" diameter gauge easy to read, 10,000 psi /700 bar
- Sealed Hydraulic Reservoir
- Easily replaceable pump cartridges minimize downtime & service costs
- 1,500 psi/103 Bar Return Side Relief Tool Protection
- Quiet operation
- Continuously variable performance curve offers maximum flow throughout the pressure range for greater productivity
- Exhaust air heat exchanger built-in:-
  - Internal oil path warms exhaust air to avoid freezing while cooling hydraulic oil to achieve optimum oil temperature
  - Muffled exhaust protects against elevated noise to ensure operator comfort
- Rugged construction for durability in tough environments
- ATEX II, CAT2, GDcT5 Compliant enables application in potentially explosive environments
- FRL Air Preparation Serviceable filter, regulator, lubricator ensures clean, lubricated & consistent air supply
- Optional roll bar design offers protection from damage




The above chart shows a traditional two stage hydraulic pump flow curve where high flow transitions to low flow at around 48 bar. The chart also shows that the Predator Series pump has much higher flow and flow remains smooth throughout the pressure curve. Flow is continually changing based on pressure, giving the maximum horsepower and flow for that pressure. The biggest increase in flow is between 69 & 345 bar.

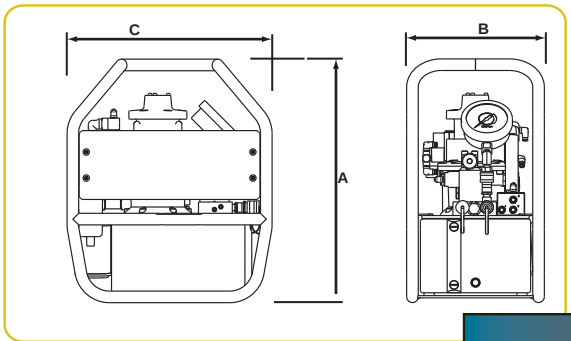
For tools such as torque wrenches that normally operate between 69 & 345 bar, the impact is significant – tools operate twice as fast, increasing productivity or getting the job done in much less time.

**CONSTANT HORSEPOWER PUMP OR HORSEPOWER LIMITING PUMP. QUALITY ENGINEERED AND PRECISION-MACHINED USING STRONG LIGHTWEIGHT ALLOYS.**

**PCHA60T3B0-C**
(with handle & guard)

Patent Pending

**PCHA60T3B0-CR**
(with roll cage)




**CAUTION:** This Pump should not be used for lifting applications

| Order No. | Required Air Pressure | Max. Pressure Output | RPM | dBa at Idle | Oil Delivery 52 bar | 172 bar | 350 bar | 700 bar | Reservoir Usable | A Height | B Width | C Length | Product Weight (w/oil) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCHA60T3B0-C | 2.5 m³/min @ 6 bar | 700 bar | 3,000 | 75 | 9.3 L/min. | 3.7 L/min. | 1.8 L/min. | 0.9 L/min. | 5.68L | 510mm | 300m | 460mm | 36.3kg |

PCHA60T3B0-CR : with roll cage



POWER TEAM®

# Air Pump
## HYDRAULIC TORQUE WRENCH

## RWP55 SERIES
## Max. flow 7,6 l/min
700 bar

### AIR HYDRAULIC TORQUE WRENCH PUMP

- Use where air is the preferred source of power
- Powerful 2,2 Kw motor starts under load
- External adjustable pressure regulator
- Retract side internal relief valve protects tool
- Use for double or single acting tools
- Safe to use in hazardous or explosive environments
- Four-tool manifold (-4 model only) allows use of up to four tools simultaneously

⚠ **CAUTION:** This system should not be used for lifting applications.




RWP55 RWP55-4

| Pump Model | Manifold | Oil Delivery (l/min) | Oil Reservoir (l) | Usable Oil (l) | Overall Width (mm) | Overall Length (mm) | Overall Height (mm) | Pump Weight w/Oil (kg) |
|---|---|---|---|---|---|---|---|---|
| RWP55 | Single Tool | 7,6 l/min at 7 bar<br>0,9 l/min at 700 bar | 9,5 | 8,4 | 450 | 280 | 483 | 44 |
| RWP55-4 | 4 Tool | 7,6 l/min at 7 bar<br>0,9 l/min at 700 bar | 9,5 | 8,4 | 450 | 280 | 483 | 45 |

| Motor Data | |
|---|---|
| Air Motor | Air Control |
| 2,25 KW<br>1,4 $m^3$ / min @ 6 bar | Pneumatic remote control with 3,6 m cord |

Note: Supplied without air servicing unit and roll cage.

# Nut Splitters
## HYDRAULIC

## 15 & 25 Ton Capacity
700 bar

**HYDRAULIC NUT SPLITTERS – 15- & 25-TON CAPACITY**

- "Dial-in" feature on HNS150 makes adjustment of splitter simple, without the worry of damaging the bolt
- Specially designed "tool steel" cutter blade penetrates the nut to the precise point where it cracks, stopping short of the bolt threads
- Nut splitter features a dramatically improved cutter blade with an 800% greater resistance to chipping and breaking over previous models
- All models feature a rugged one-piece cutting frame coupled to a heavy-duty hydraulic cylinder
- Compact size allows you to use it in confined areas where it will deliver enough force to split the toughest "fused" or rusted-on grade 2H nuts
- Simply split nut on one side, spin nut splitter 1/2 turn and make second cut on opposite side; nut separates into halves for easy removal

HNS150

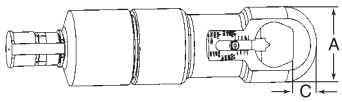
HNS225

Align mark on cutter blade with scale.

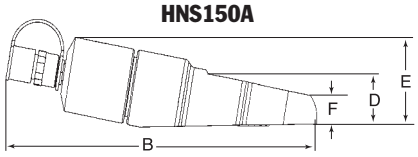
HNS150A

**Heavy-Duty Cut Wide Hex Size Range**

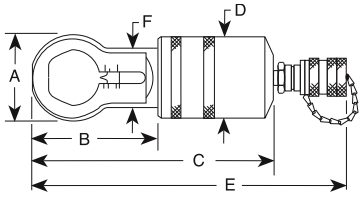
HNS150A




HNS150A




HNS150 & HNS225




| Cap. | Tool Model | HNS150 & HNS225 A | B | C | D | E | F | HEAD THICKNESS ((mm) | REPLACEMENT BLADE | TOOL WEIGHT (kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 ton | HNS150 | 73 | 86 | 200 | 70 | 264 | 53 | 25,4 | 308840 | 3,7 |
| 15 ton | HNS150A | 77 | 361 | 27 | 54 | 94 | 30 | 25,4 | 351985 | 7,2 |
| 25 ton | HNS225 | 108 | 153 | 366 | 99 | C | 82 | 38,1 | 308022 | 13,2 |

**CAPACITIES**

| Tool Model | 5 (2 or A) | Nut Grade 9 (5 or B) | 10 (8 or C) | 12 (2 or H) |
|---|---|---|---|---|
| HNS150 | 1/2 - 1-1/2" (12,7-38,1mm) hex | 1/2 - 1-1/2" (12,7-38,1mm) hex | 1/2 - 1-5/16" (12,7-33mm) hex | 1/2 - 1-1/8" (12,7-29mm) hex |
| HNS150A | 1/2 - 1-1/2" (12,7-36mm) hex | 1/2 - 1-1/2" (12,7-36mm) hex | 1/2 - 1-5/16" (12,7-33mm) hex | 1/2 - 1-1/8" (12,7-29mm) hex |
| HNS225 | 1-1/8 - 2-1/4" (29-57mm) hex | 1-1/8 - 2-1/4" (54-57mm ) hex | 1-1/8 - 2-1/16" (29-55 mm) hex | 1-1/8 - 1-11/16" (29-43mm) hex |

Hex Size: A/F

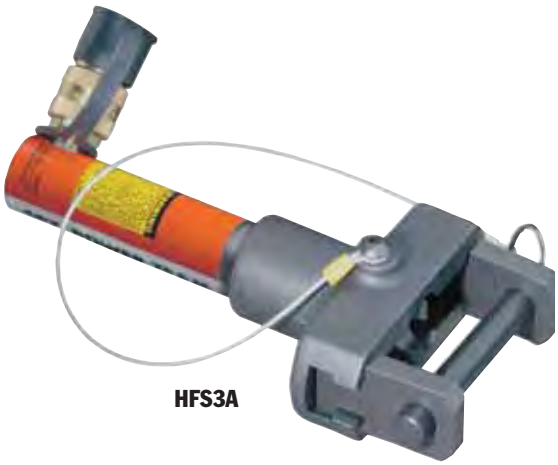
# Pipe Flange
## HYDRAULIC SPREADERS

**5 & 10 Ton**
700 bar

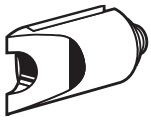
- You'll never again have to resort to "hammer and chisel" methods that waste time and effort. Flange spreaders should be used in pairs to provide even spreading force.
- Standard 60° wedge is suitable for most flanges; 30° "thin" and 60° "blunt" wedges are optional.
- The HFS3A is designed for applications where total thickness of flanges and max. spread gap is 76,2mm or less and flange bolts are a min. of 17,5mm dia.
- Use HFS6A if total thickness of flanges and max. spread gap is 152,4 mm or less, and flange bolts are a min. of 20,7 mm dia.



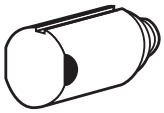
Lightweight!



**HFS3A**

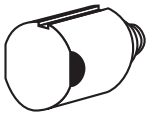


**350823**
(30˚ Thin wedge)



**350822**
(60˚ Blunt wedge)

**350549**
(30˚ Thin wedge)



**350550**
(60˚ Blunt wedge)

| Capacity (tons) | Order Number | Standard Wedge Type | Optional Wedges 30˚ Thin | Optional Wedges 60˚ Blunt | Min. Flange Opening (mm) 60˚ Std. | Min. Flange Opening (mm) 60˚ Blunt | Min. Flange Opening (mm) 30˚ | Max. Flange Opening (mm) 60˚ Std. | Max. Flange Opening (mm) 60˚ Blunt | Max. Flange Opening (mm) 30˚ | Combined Flange Opening (mm) | Max. Pin Dia. (mm) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | HFS3A | 60˚ Sharp | 350823 | 350822 | 1,6 | 25,4 | 1,6 | 38,1 | 38,1 | 18,3 | 76,2 | 17,4 | 4,1 |
| 10 | HFS6A | 60˚ Sharp | 350549 | 350550 | 1,6 | 38,1 | 1,6 | 50,8 | 50,8 | 24,6 | 152,4 | 20,6 | 8,2 |

* 30˚ Thin wedge provides more than twice spreading force of 60˚ wedge.
* 60˚ Blunt-faced wedge for wide flange openings.

# Hydraulic
## PUNCHES

## 20 & 35 Ton
700 bar

**HP35**
(Single-acting)

**HP20**
(Double-acting)

- Punch smooth, precise holes in seconds; much faster than drilling.
- Fully portable for construction, maintenance and service applications, or can be mounted on a workbench for production jobs. Has carrying handle for precise locating.
- Rugged, forged steel "C" frame for great strength and durability.
- Dual action, spring loaded stripper holds material during punching operation, strips material from punch on return. Scribe lines on stripper aid in locating the punch (HP 35 only).
- Double Acting prevents binding and speeds retraction (HP20 only).
- The PE172 electric/hydraulic pump is an ideal power source.

**No. HP35** – Punch only, includes metal case and die change tools. Wt., 19 kg.

**No. HP35S** – Punch with punches and dies. Includes HP35 punch, metal case and 250459 punch/die set. Wt.,20 kg.

**No. HP35SP-220** – Punch set with pump. Includes HP35 punch, PE172-50-220 (220V/50Hz) electric/hydraulic pump, 9756 hose, 9798 hose half coupler, 250459 punch/die set, metal case. Wt., 40 kg.

**NOTE:** Available in 115 volt, 60 Hz. Order without suffix "-220".

**No. HP35P-220** – Punch set with pump. Same as HP35SP-220, but does not include punch/die set. Wt., 39 kg.

**NOTE:** Available in 115 volt, 60 Hz. Order without suffix "-220".

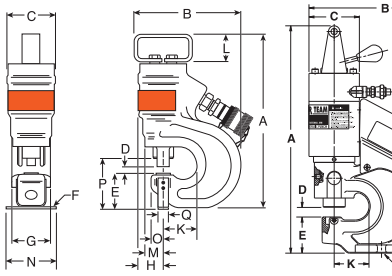
**No. 250459** – Punch/die set for round holes. Includes one each: PD437 11,1 mm punch/die, PD562 14,3 mm punch/die, PD688 17,5 mm punch/die, PD812 20,6 mm punch/die. Wt., 0,7 kg.

**PUNCH/DIE SETS FOR HP35 HYDRAULIC PUNCHES**

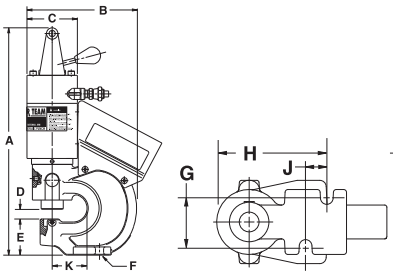
| Punch Size (mm) | Punch Style | For use with HP35 Hyd. Punch: Punch/w Flat Die Set | Punch/w Bevel Die Set |
|---|---|---|---|
| 7,9 | ○ Round | PD313 | — |
| 9,5 | | PD375 | PD375B |
| 11,1 | | PD437 | PD437B |
| 13,5 | | PD531 | PD531B |
| 14,3 | | PD562 | PD562B |
| 17,5 | | PD688 | — |
| 19,8 | | PD781 | — |
| 20,6 | | PD812 | — |

**Punch/Die sets for HP20 Hydraulic Punch: Consult factory**

**HP35**




**HP20**




| Cap. (tons) | Order Number | Max. Oper. Press. (bar) | Oil Cap. ($cm^3$) | Max. Material thickness A (mm) | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | Mtng. Holes F (mm) | G (mm) | H (mm) | Max. Throat Depth J (mm) | K (mm) | L (mm) | M (mm) | N (mm) | O (mm) | P (mm) | Q (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | HP20 | 700 | 64 | 12,7 | 419 | 202 | 93 | 16 | 66 | 14 | 54 | 124 | 24 | 57 | — | — | — | — | — | — |
| 35 | HP35 | 700 | 75 | 12,7 | 349 | 229 | 95 | 14 | 73 | 6 | 76 | 46 | — | 71 | 57 | 38 | 89 | 22 | 102 | 19 |

General reference guide for metal punching operations: Consult factory.

# Spreaders
## HYDRAULIC

## 1-1½ Ton

It's a hydraulic pry bar!

**HS3000**
**(High Grade Ductile Iron)**

**HS2000**
**(Forged Steel)**

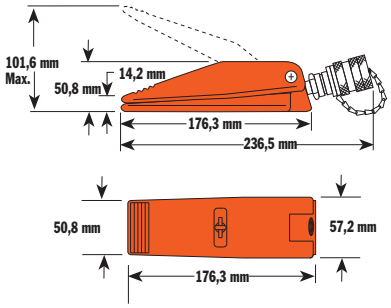
Tested to conform to ASME B30.1 standard

- Use to lift machines or as a clamp; spread concrete forms or rebar or perform straightening jobs.
- Conforms to ASME B30.1 standard.
- High strength alloy steel forged upper and lower jaws on HS2000.
- Jaws are spring-return; retract automatically when pressure is released.

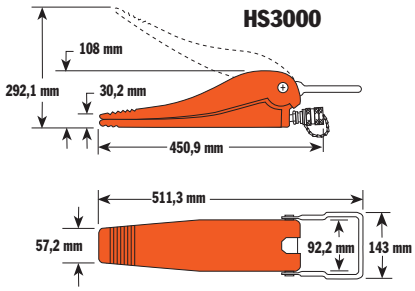
**No. HS2000** – 1-ton capacity spreader. Full 908 kg capacity at 700 bar with 102mm spread. Can be "dead-ended" at 102mm spread under full load. Needs only 14,2mm clearance to engage jaws.

**No. HS3000** – 1½-ton capacity spreader. Full 1.362 kg capacity at 700 bar with 292 mm spread. Greater than competitive units. Needs only 30,2 mm clearance to engage jaws. Can be "dead-ended" at 292 mm spread at full load.

**HS2000**




**HS3000**




| Capacity (tons) | Max. Spread (mm) | Order Number | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) | I (mm) | Oil Capacity (cm³) | Min. Clearance Required (mm) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 101,6 | HS2000 | 101,6 | 50,4 | 14,3 | 252,52 | 236,5 | 50,8 | 176 | 57 | — | 4 | 14,2 | 2,2 |
| 1½ | 292 | HS3000 | 292 | 108 | 30,2 | — | 451 | 57,2 | 511 | 143 | 92 | 20 | 30.2 | 10 |

**HS2000 SPECIFICATIONS**

Maximum rated capacity .....1 ton at 700 bar
Maximum spread .....101,6 mm
Minimum clearance required .....14,2 mm
Cm³ oil required ..... 4

**HS3000 SPECIFICATIONS**

Maximum rated capacity ..... 1½-ton at 700 bar
Maximum spread ..... 292 mm
Minimum clearance required.....30,2 mm
Cm³ oil required ..... 20

# Tire Removing
## BB SERIES TOOL
## 10 Ton Hydraulic

Unseat tire beads hydraulically on 25” to 49” diameter earth mover rims with pry bar pockets.

**TIRE REMOVING TOOL** (Bead Breaker)

- Made to fit into the pry bar pocket
- Hydraulic pressure does all the unseating.
- Lightweight and portable.
- P55 hydraulic hand pump and 9764 hose recommended to be used with BB1600.
- Ideal for field service repairs of large Off-The-Road (O.T.R.) Tractor, Truck, Grader, Farm and Earth Mover tire rims with pry bar pockets.


**700 bar**

Hydraulic hand pump & hose sold separately.

**BB1600**

| Tool Model | Rim Size | Cylinder Cap. (tons) | Stroke (mm) | Tool Weight kg. |
|---|---|---|---|---|
| BB1600 | 25”-49” | 10 | 101,6 | 10,25 |
| BB1601 | 25”-49” | 10 | 101,6 | 10,9 |

**Single, two, three piece rims**

# C-Clamps
## HYDRAULIC

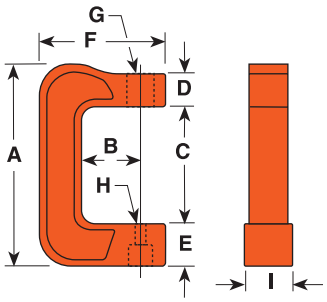
## Accessories

**"C" CLAMPS**

**5, 10 & 25 TONS**

**CC10**

- In 5, 10 and 25 ton capacities. For use with Power Team general purpose single-acting series cylinders of comparable capacity.
- For clamping, pressing and bending. Ideal for welding and metal fabrication for fit-up of sheet or plate steel.
- Clamps withstand full rated capacity of the cylinders for which they are intended.
- To minimize the effects of off-center loading, the CC5, CC10 and CC25 should be used with the optional 350144 and 350145 swivel caps.




**Items pictured at left are:**
**CC10**
**C104C**
**201923**

| Cap. (tons) | Order Number (C-Clamp only) | Use With Cyl. No. | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (in.) | H (mm) | I (mm) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | CC5 | C51C - C57C | 314 | 95,3 | 186 | 50,8 | 63,5 | 197 | 1 1/2"-16 UN | 22,2 | 76,2 | 11,3 |
| 10 | CC10 | C101C - C1010C | 403 | 152,4 | 240 | 50,8 | 85,8 | 273 | 2 1/4"-14 UNS | 22,2 | 88,9 | 20,9 |
| 25 | CC25 | C251C - C2514C | 533 | 152,4 | 319 | 76,2 | 114,3 | 313 | 3 5/16"-12 UNS | 36,5 | 117,5 | 41,3 |

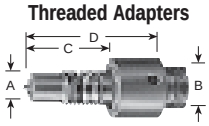
### OPTIONAL ACCESSORIES FOR USE WITH CC5, CC10 & CC25 HYDRAULIC CLAMPS

**Swivel Caps**


**10 ton**
**350144***
**A**–35 mm
**B**–19 mm

**25 ton**
**350145**
**A**–50,8 mm
**B**–25,4 mm

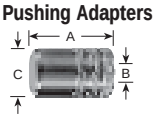
**Threaded Adapters**




**10 ton**
**38597**
**A**–1 - 8
**B**–1 - 8
**C**–19 mm
**D**–50,8 mm

**25 ton**
**38953**
**A**–1 1/4-7
**B**–1 1/2-16
**C**–70 mm
**D**–111 mm

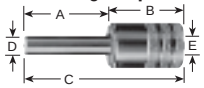
**Pushing Adapters**




**10 ton**
**28228****
**A**–60,3 mm
**B**–1 - 8
**C**–38,1 mm

**25 ton**
**28229****
**A**–73 mm
**B**–1 1/4-7
**C**–44,5 mm

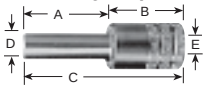
**Pushing Adapters**




**10 ton**
**201923****
**A**–79,4 mm
**B**–57,2 mm
**C**–136,5 mm
**D**–12,7 mm
**E**–1 - 8

**25 ton**
**34510****
**A**–82,6 mm
**B**–66,7 mm
**C**–149 mm
**D**–19 mm
**E**–1 1/4-7

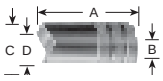
**Pushing Adapters**




**10 ton**
**201454****
**A**–79,4 mm
**B**–57,2 mm
**C**–137 mm
**D**–19 mm
**E**–1 - 8

**25 ton**
**34511****
**A**–82,6 mm
**B**–66,7 mm
**C**–149 mm
**D**–25,4 mm
**E**–1 1/4-7

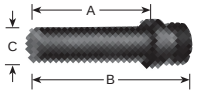
**V Pushing Adapters**




**10 ton**
**34806****
**A**–66,7 mm
**B**–1 - 8
**C**–38,1 mm
**D**–25,4 mm

**25 ton**
**34807****
**A**–79,4 mm
**B**–1 1/4-7
**C**–44,5 mm
**D**–31,8 mm

**Pushing Adapters**




**5 ton**
**309874***
**A**–51.6 mm
**B**–562,8 mm
**C**–15,9 mm

* May be used with CC5
** Must be used with a threaded adapter.

# Testers
## HYDRAULIC
## 200,300 and 750 l/min


HT200


HT50A

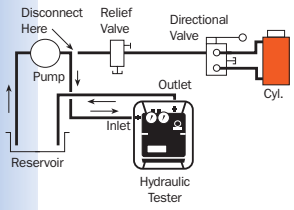
**200 , 300 AND 750 L/MIN IN-LINE HYDRAULIC TESTERS**

- Accurately measure oil flow, pressure and temperature on in-plant equipment, forklifts, machine tools and more.
- Temperature and flow readings are in Metric and English, accurate to within ±2% of full scale.
- Dual pressure gauges for high and low pressure readings; low pressure gauge is automatically shut off and protected as pressure rises beyond its maximum reading.
- Automatic pressure compensating feature lets you increase flow without affecting pressure setting.
- Reverse flow through tester will not cause damage; replaceable safety disc ruptures if pressure exceeds upper limit.
- Solid state voltage regulator eliminates errors caused by voltage change during testing.
- Troubleshoots systems with capacities to 750 l/min at pressures less than 350 bar. Accurately measure oil flow to ±5%, pressure to within 2% and temperature readings within 1%.
- Pressure gauge is liquid filled to dampen system pulsation.

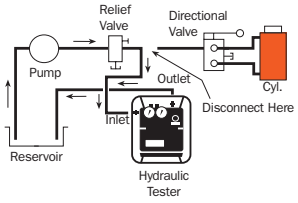
For more precise low pressure readings, an optional dual pressure gauge kit is available. Consult factory.

**No. HT50A** – Hydraulic circuit tester with single liquid filled pressure gauge, 0-5000 psi, 0-350 bar. Includes two adapter unions for 3/4" male NPTF fittings. Wt., 16,8 kg

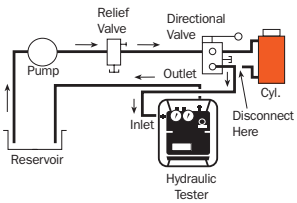
**Testing a pump**

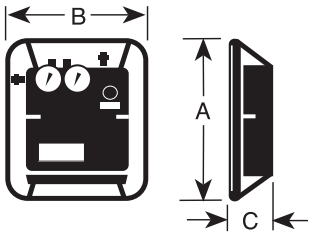



**Testing a relief valve**




**Testing a directional valve**




| Order Number | Max Flow (l/min) | Scale | Flow Ranges (gpm) | Flow Ranges (l/min) | Max. Oper. Pressure psi | Max. Oper. Pressure (bar) | Temp. Scale Range °F | Temp. Scale Range °C | Port Sizes | Weight lbs. | Weight kg. | A in. (mm) | B in. (mm) | C in. (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HT50A | 200 | — | 0-50 | 0-200 | 5,000 | 345 | 20-240 | -6 to 114 | 1 1/16-12UN Female "O" Ring with Union Adapt. 3/4" Female NPTF | 30.3 | 16.8 | 12 1/4 (311) | 6 1/4 (159) | 10 (255) |
| HT75 | 300 | High<br>Low | 15-75<br>3-15 | 50-300<br>10-60 | 5,000 | 345 | 100-250 | 40-120 | 3/4" NPT Swivel | 18.2 | 8.6 | 13 3/4 (349,25) | 11 7/8 (301,62) | 5 3/4 (146,05) |
| HT200 | 750 | High<br>Low | 25-200<br>5-40 | 100-750<br>20-150 | 5,000 | 345 | 100-250 | 40-120 | 1 1/2"* SAE Split Flange | 28.2 | 13.6 | 15 7/8 (403,47) | 13 1/4 (336,55) | 6 3/4 (171,45) |

For a complete listing of accessories for the HT series of hydraulic system testers, consult factory.
*Not included, must be ordered separately.

**USE THE 200, 300 OR 750 L/MIN TESTER TO SIMULATE ACTUAL OPERATING CONDITIONS OF THE SYSTEM UNDER TEST**

Testing the pump: Operator runs engine at a specific rpm and adjusts tester's pressure compensating valve to simulate a work load. By comparing meter readings with manufacturer specs, proper operation of pump can be confirmed. If oil flow and pressure do not meet specs, the pump is faulty. Or, if test results and specifications agree, the operator will know that the problem is elsewhere in the system and that other tests must be performed. Regardless of the component being tested, hook-up and testing is accomplished in minutes.

**NOTE:** These hydraulic testers should always be used with the owner's manual/manufacturers' specifications for the system under test.

**DUAL GAUGE CONVERSION KIT FOR 50 GPM TESTER.**

Provides more precise low pressure readings. Remove pressure gauge block and gauge from tester and replace it with this block. Install high pressure gauge from tester (350 bar) onto this new block.

**No. 307281** – Dual gauge conversion kit. Consists of gauge mounting block, pulsation dampener, thermal overload protector, low pressure gauge and gauge protector. Wt. 0,45 kg.

**307281** Low pressure gauge calibrated 0-600 psi 0-42 bar.

**37045**

**Auxiliary power cords for use with 300 and 750 l/min testers**

**No. 37045** – Auxiliary power cord. For use with any 12 or 24 volt battery to remotely power tester. Wt. 0,5 Kg. CAUTION: For use on negative ground systems only.

**No. 204990** – Auxiliary power converter. Permits use of 120/230 volt outlet to power tester. Wt. 0,45 kg.

**204990**

**9785**
**9786**
**8987**
**9788**

**Hoses**

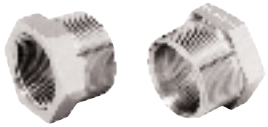
**No. 9785** – Hose, 19,1 mm I.D. x 3/4" NPTF male both ends. 3m length. 155 bar working pressure. (2 req'd on 200 & 300 l/min testers) Wt., 3kg.
The following hose assemblies are all 4-ply spiral wound wire, 3 m long. For use with 750 l/min testers.

**No. 9786** – Hose, 25,4 mm I.D. x 11/4" NPT mail both ends. Recommended max. flow 340 l/min, with a working pressure of 280 bar. Wt., 6,3 kg.

**No. 9787** – Hose, 31,8 mm I.D. x 11/4" NPT male both ends. Recommended max. flow 530 l/min, with a working pressure of 210 bar. Wt., 6.4kg.

**No. 9788** – Hose, 38,1 mm I.D. x 11/2" NPT male both ends. Recommended max flow 750 l/min, with a working pressure of 150 bar. Wt., 11,4 kg.

**203264**



**Hose reducer bushings**

**No. 203264** – Consists of two hose reducer bushings, 11/4" NPT female x 11/2 NPT male end. Needed to adapt No. 9786 25,4 mm I.D. hose and No. 9787 31,8 mm I.D. hose to tester. Wt., 1 kg.

Hydraulic fittings (5,000psi max.) for use with all testers available. Consult factory.

# Service Tools
## ACCESSORIES

3344A

### PHOTO TACHOMETER

- Infrared light source, micro-processor controlled crystal display.
- Strong magnetic base is included.

Machine speed: It is critical for proper machining operations. Speeds too fast or too slow can shorten tool life and cause expensive, unnecessary machine down-time. This digital photo tach can take readings from revolving shafts on drill presses, grinders, lathes and other machines. It can also be used to check engine operation on in-plant vehicles like forklifts. The 3344A is accurate to within ± 1 rpm. The 10mm high liquid crystal display is easily visible even in high ambient light areas.

**No. 3344A** – Digital Photo Tachometer. With memory, photo probe assembly, magnetic base, 2,75 m of reflective tape and plastic case. Wt., 2 kg.
**No. 39811** – Replacement magnetic base assembly. Wt. 0,1kg.
**No. 45329** – Replacement photo probe assembly. Wt., 0.2 kg.
**No. 204666** – Replacement retro-reflective indicator tape, 2,75 m long x 12,7mm wide. Wt., 0.1 kg.

### SPECIFICATIONS

**Readout:** Liquid crystal display: 4 (10mm high) digits, low battery indicator, memory mode indicator, high and low RPM memory mode indicator.
**Range:** 200 to 9999 rpm. Accuracy: ± .25%, ± 1 rpm. Update time: 3/4 second.
**Power switch:** Membrane switch (automatic shut-off after one minute of no signal input).
**Power source:** 9 volt alkaline battery. Light source: Infrared with 4,6m plug-in cable.
**Light holder assembly:** 13,6 kg rated magnet; 50,8 mm dia. x 6,4 mm high (102 mm high overall with post).
**Size:** 86 w, 152 h x 38 mm d.
**Carrying case:** 343 w, 254 h x 102 mm d.

### HTS50 HEAVY-DUTY PIPE SEALANT WITH TEFLON®

- Seals new or damaged threads; resists water, chemicals and oils.
- Replaces conventional tape methods; forms a clog-free seal. Effective at 700 bar.

When "plumbing" a hydraulic system, there's now a better answer than tapes which can tear or shred, possibly plugging filters, valves or gauges. This compound combines the lubricating qualities of Teflon® with a fast curing anaerobic sealant. Seals all metal fittings, plugs and threaded joints quickly and easily. Cures to form a permanent seal which is inert to hydrocarbons, most acids, chemicals, solvents and steam. Allows adjustment up to 16 hours after assembly; cannot loosen under vibration. Prevents galling of mating parts upon disassembly. Withstands temperatures from -54° to + 190° C.

**No. HTS50** – Sealant, 50 ml. tube. Wt., 0.2 kg.

(Teflon® is a registered trademark of duPont Co.)

HTS50


### "O" RING SEAL PICKS

Even the seemingly simple job of removing and installing "O" ring seals can be difficult without the aid of the proper tool. The 7312 all metal "O" ring seal pick does the job with ease. Two special picks in set No. 7103 get right to the trouble areas.

**No. 7312** – "O" ring seal pick. Wt., 0.1 kg.
**No. 7103** – Set of two "O" ring seal picks. Wt., 0.1 kg.

7312

7103

### UNIVERSAL OUTSIDE THREAD CHASER

Restore damaged threads on shafts, housings, cages, etc., for re-assembly of matching parts. Eliminates need for thread-cutting equipment. Will not harm threads. V-pads and dies can be replaced. Cap. 32 to 127 mm O.D.

**No. 7402** – Thread chaser, complete (with 6 dies: threads per inch – 4, 5, 6, 7, 7½, 8, 9, 10, 11, 11½, 12, 14, 16, 18, 20 and 24). Wt., 0,2 kg.
**No. 202817** – Metric die set (3 dies: mm per thread: 1, 1¼, 1½, 1¾, 2, 2½, 3, 3½, and 4). Wt., 0.1 kg.

7402

### MAGNETIC PICK-UP TOOL

Has permanent magnetic head for retrieving parts from otherwise inaccessible places.

**No. 7395** – Pick-up tool with pocket clip. 152 mm lg. Wt., 0.1 kg.

7395

### RATCHETING CHAIN WRENCHES

Special head design allows you to turn wrench in either direction. Ratcheting action makes it possible to re-grip without removal. For parts of most any size and shape.

**No. 7400** – Chain wrench, cap. 12,7 to 121 mm O.D. (Capacity= 450 Nm) Wt., 0,9kg

**No. 7401** – Chain wrench, cap. 76 to 171 mm O.D. (Capacity= 900 Nm ) Wt., 2,3 kg.

**No. 209199** – Replacement chain with pin for No. 7400 chain wrench (406 mm long).

**No. 209200** – Replacement chain with pin for No. 7401 chain wrench (610 mm long).

### ADJUSTABLE HOOK SPANNER WRENCH

Needed wherever turret adjusting nuts or packing gland nuts are used. Cap.: 38 to 102 mm. Handle overall length: 483 mm.

**No. 885** – Adjustable hook spanner wrench. Wt., 1,4 kg.

### ADJUSTABLE HOOK SPANNER WRENCHES

Replace many fixed-size wrenches... cover range of capacities needed to service industrial tractors and other equipment. Drop-forged jaws adjust to eleven positions for a capacity of 121 to 324 mm O.D. Handle overall length: 610 mm; diameter: 25,4 mm.

**No. 7307** – Spanner wrench with one 9,5 mm thick jaw. Wt., 3,3 kg.

**No. 7308** – Spanner wrench with two interchangeable jaws: one 9,5 mm thick, one 19 mm thick. Wt., 5 kg

### HEAVY-DUTY ADJUSTABLE SPANNER

Extra heavy construction. Has one 19 mm thick, eleven-position hook-jaw for a capacity of 131 to 324 mm O.D. Drop-forged. Handle length: 654 mm; handle dia.: 33.3 mm

**No. 7309** – Heavy duty adjustable hook spanner wrench. Wt., 5 kg.

### ADJUSTABLE GLAND NUT WRENCH

Designed to handle 51 to 152 mm dia. hydraulic cylinder gland nuts on many construction vehicles. Fits 6,4 and 7,9 mm dia. pin holes; features a 3/4" sq. drive.

**No. 1266** – Adjustable gland nut wrench. Wt., 1,4 kg.

**No. 204928** – Replacement pin for No. 1266

### PRY BARS

Our rolling head pry bars are an extremely popular and useful tool. Head may be used for almost any prying job since a great deal of leverage can be obtained. Long tapered body may be used as a lining-up drift.

**No. 7162** – Pry bar; 9,5 mm round, 152 mm long. Wt., 0,1 kg.

**No. 7163** – Pry bar; 11,1 mm round, 305 mm long. Wt., 0,3 kg.

**No. 7164** – Pry bar; 14,3 mm round, 406 mm long. Wt., 0,5 kg.

**No. 7165** – Pry bar; 19 mm round, 457 mm long. Wt., 1 kg.

### JIMMY BARS

Ideal for general lifting or prying. Heat treated chrome alloy steel to resist bending or breaking.

**No. 7166** – Jimmy bar; 15,9 mm round, 457 mm long. Wt., 0,6 kg.

**No. 7167** – Jimmy bar; 19 mm round, 610mm long. Wt., 1,1 kg.

**No. 7168** – Jimmy bar; 22,2 mm round, 762 mm long. Wt., 1 kg.

### "MAJOR PERSUADER" JIMMY BARS

Two big jimmy bars for big jobs. Forged from chrome alloy steel.

**No. 7420** – Jimmy bar; 22,2 mm round, 1.168 mm long. Wt., 3,4 kg.

**No. 7421** – Jimmy bar; 25,4 mm round, 1.372 mm long. Wt., 1,9 kg.

# BEARING MAINTENANCE

## CONSIDERATIONS:

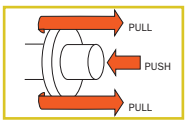
Determine the type of puller or puller combination. Which puller type is best suited for gripping the part?

Is a combination of puller types required?

Determine the reach needed for your particular pulling problem. The puller you select must have a reach equal or greater than the corresponding sizes of the part to be pulled.

Determine the spread need. The spread is determined by the width of the part being pulled. The puller's spread should be greater than the width of the part to be pulled.

Estimate the force needed to solve your pulling problem. A puller with the proper reach and spread will usually have enough capacity to remove the corresponding part. When in doubt, always use a puller with a larger capacity than what may be needed. Rusted parts or parts with a large area of resistance may need more pulling force.




# 1

## PULLING A GEAR, BEARING, WHEEL, PULLEY, ETC., FROM A SHAFT

**In order to perform a proper pull, be certain that you firmly grip the gear, bearing, wheel, pulley, etc., and apply force to the shaft. Use a 3-jaw puller, instead of a 2-jaw, whenever possible for better gripping power and a more uniform displacement of pulling force.**

## RECOMMENDED TOOLS:

**Jaw-type pullers:**
Either manual or hydraulic. For extra force and convenience, use a hydraulic puller. Both are available in 2 or 3 jaw configurations and are used to grip the outer circumference of a part or can be used with a pulling attachment, such as a bearing/ pulley attachment. (Page 127, 134, 136-137, 146-147)

**Push-Pullers**
can thread directly into a threaded part for easy and secure removal. Push-Pullers can be used in conjunction with bearing/pulley attachments which grip the part from behind. A wide assortment of male and female threaded adapters are available as well as metric adapters. (Page 128, 138-139)

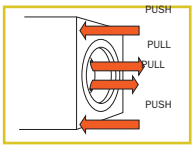
**Bearing/ pulley attachments**
provide a "knife-like" edge to get behind parts for added versatility and secure removal of parts. Great for parts that don't offer adequate grip with jaw-type pullers. (Page 129)

**Adapters**
Whether you need an adapter compatible with any number of threaded hole sizes, protection of part to be pulled or for assisting the installation of a component; Power Team offers a variety of adapters to assist in the removal or installation of parts. (Page 131)

# Puller selection
3 Basic Puller Problems



## 2 PULLING INTERNAL BEARING RACES, RETAINER, SEALS, ETC.




By extending the narrow jaws of an internal pulling attachment through the center of the part to be pulled, a straight pull is insured, and damage to the housing is avoided. While parts within a "blind hole" in a housing do present a problem, Power Team has the internal pulling attachment or a combination of an internal pulling attachment and puller to handle the situation.

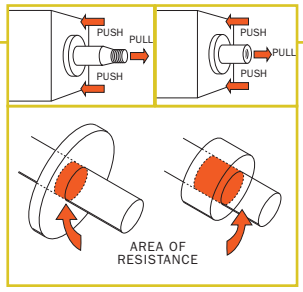
### RECOMMENDED TOOLS:

**Internal pulling attachments** have narrow jaws which extend through the center of the part to be pulled. They provide a straight pull and avoid damaging housings. Internal attachments feature adjustable jaws to fit various diameter parts. (Page 129)

**Slide hammer with internal attachment** is ideal for removing parts from blind holes, especially where there is no housing to brace puller legs against. (Page 132-133)

**Push-puller with internal attachment.** Push-puller is available in both manual and hydraulic versions. (Page 128-129, 138-139)

## 3 PULLING A PRESS-FITTED SHAFT FROM A HOUSING

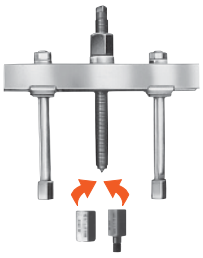



**Note:** Manual pullers require that the shaft being pulled is no more than twice the diameter of the puller's forcing screw. To determine the recommended tonnage for hydraulic pullers, multiply the diameter of the shaft to be pulled by ten. Example: For a 1" (25 mm) shaft, we recommend 10 tons of pulling force.

A shaft with a threaded end can be removed without damage by using one of our slide hammer, manual Push-puller or hydraulic Push-pullers, in conjunction with the proper threaded adapter. Removal is easy! If the shaft to be removed has external threads, simply choose one of our female threaded adapters of proper size/thread. If the shaft has internal threads, simply choose the correct size male threaded adapter.

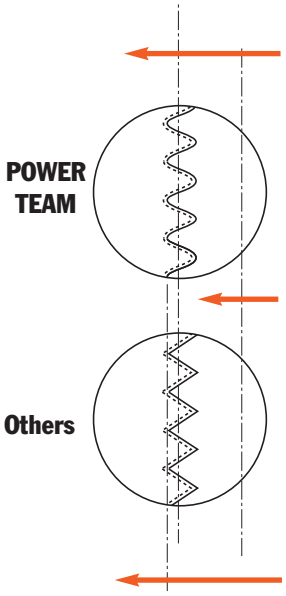
### RECOMMENDED TOOLS:

**Slide hammer puller** matched with a set of threaded adapters is a perfect tool for light duty pulling needs. (Page 132-133)



**Push-pullers** matched with a set of threaded adapters make for an extra versatile pulling tool. (Page 128, 131, 138-139)

## WHY POWER TEAM ROLLED PULLER THREADS ARE SUPERIOR:




**ROLLED THREADS** start with a material O.D. equal to the pitch diameter of the thread. The rolling process moves material from below the pitch diameter and creates a smoother and stronger thread.

**CUT THREADS** start with a material O.D. equal to the thread O.D.. Cutting can cause tears on the thread surface which can make it rough and can cause minute cracks at root of thread which can open up during heat treat and lessen the capacity of the screw.

| | Features | Benefits |
|---|---|---|
|  | • Grip-O-Matic® feature on jaw type pullers<br>• 2-way, 3-way and 2/3-way combination pullers<br>1 to 37 ton mechanical pullers<br>5 to 50 ton hydraulic pullers<br>$2^{1}/_{8}$" (54 mm) to $27^{5}/_{8}$" (702 mm) reach<br>$3^{1}/_{4}$" (83 mm) to 44" (1,118 mm) of spread | • The harder the pulling force, the tighter the jaws grip<br>• A wide variety of pullers; select a specific puller for a specific application or select one or more pullers for general applications |
|  | • Forged alloy steel jaws<br>• Machined puller jaw toes<br>• Alloy steel heads (forged or flame cut)<br>• Rolled “V” threads<br>• Special coating on threads<br>• Heat treated alloy steel cross bolts | • Strongest possible part; the grain of the material follows the contour of the part.<br>• Larger and stronger pulling toe than most competitors<br>• Heat treated and designed for maximum strength<br>• Stronger and smoother than cut threads<br>• Resists corrosion, traps lubrication better than black oxide<br>• Designed for max. shear strength |
|  | • Standard hydraulic cylinders on Grip-O-Matic® series | • Cylinder can be removed from puller and used in other hydraulic applications |

**NOTE:** The puller application photos shown in this catalog are shown without protective blankets for clarity of photos. Power Team strongly recommends you always make your pull with a protective device in place. For protective blankets, refer page 145.

# Basics

## Puller selection
3 Basic Puller Problems

**⚠ SAFETY FIRST!**

### Operator safety comes first!
Tons of force are being exerted with your Pulling System. You must respect this force, and observe safety precautions at all times

### ⚠ CAUTION

It is impossible to predict the exact force required for every pulling job: setup requirements and the size, shape and condition of the parts being pulled vary a great deal. In addition, the Power Team Pulling System is so versatile, it is possible that components in a pulling setup may have different tonnage ratings.

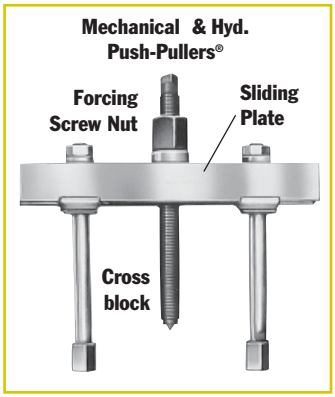
The lowest "capacity" component, then, determines the capacity of the setup. For example: When an accessory with a 1 ton capacity is used with a 10 ton capacity puller, the setup can be used only at a force of one ton.

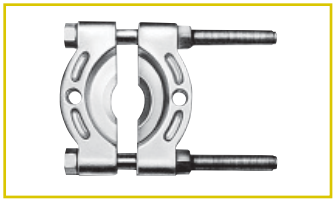
These tools should be used only by trained personnel familiar with them.

Always wear eye protection during a job since work parts, or the pulling tool itself, may break and parts may fly. It is recommended to cover the work with a Power Team Protective Blanket or use a shield while force is being applied. If you are at all unsure which tool or attachment to select, contact the Power Team factory.

### A few easy tips to remember:

1. **Wear safety glasses at all times!** You have only one pair of eyes, so protect them from possible flying parts.
2. **Keep your pulling tools in shape!** Clean and lubricate the puller's forcing screw frequently, from threads to tip, to assure long service life and proper operation.
3. **Cover work with a protective blanket!** With high forces being exerted on the part being pulled, breakage may sometimes result. By covering the work with a protective blanket, the mechanic reduces the danger of flying parts.
4. **Apply force gradually!** The component should give a little at a time. Do not try speed removal by using an impact wrench on the puller screw.
5. **Use the right size puller!** If you have applied maximum force and the part has not moved, go to a larger capacity puller. Resist sledging.
6. **Align puller legs and jaws!** Be sure the setup is rigid and that the puller is square with the work.
7. **Mount puller so grip is tight!** Tighten the adjusting strap-bolts when using a jaw type puller. Always use a 3-jaw puller whenever possible. A 3-jaw puller gives a more secure grip, more even pulling power. Apply force gradually. — Never use an extension on a wrench. — Never use an impact wrench. — Never strike the end of the forcing screw. Always cove work with a protective blanket.
8. **Do not couple puller legs!** The tonnage capacity of a Push-Puller®is reduced when longer than standard legs are used, or when legs are in compression. The chance of breaking, bending or misaligning legs increases. Keep reach to a minimum. Use shortest legs possible to reach workpiece. Thread legs into work piece, pulling attachment or adapters evenly. Uneven legs will cause greater pull or push on one side, creating a bending action which could cause damage to work piece or cause a leg to break. The sliding plates must always be on the opposite side of the cross block from the forcing screw nut or hydraulic cylinder. Always cover work with a protective blanket.



### Bearing pulling attachments:
These attachments may not withstand the full tonnage of the pullers with which they are used. The shape and condition of the part being pulled affects the tonnage at which the puller blocks and/or studs may bend or break. Always select the largest attachment which will fit the part to be pulled.

# Mechanical
## JAW PULLERS

## 1-25 Ton
2 & 2/3 Jaw Pullers

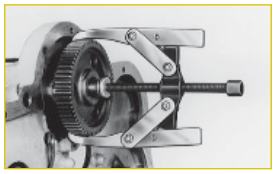
Pullers designed to pull gears, bearings and countless other press fitted parts.


Pulling attachment

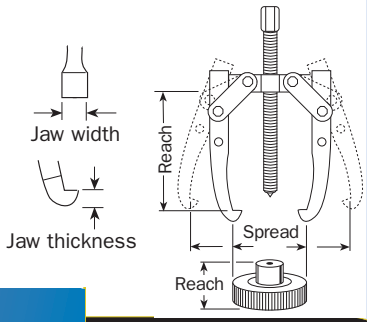

Shaft protector


Step plate

Styles of puller cross heads



Fed. Spec.: GGG-P-00781-D

- Grip-O-Matic® feature on all pullers. The harder the pull, the tighter the grip for removing gears, bearings and countless other press fitted parts.
- 2-way, 3-way and 2/3 way combination pullers make it easy to select a specific puller for a specific application.
- Forged from high quality steel, heat treated and subjected to rigorous tests which exceed rated puller capacity.
- Alloy steel heads are forged for maximum strength.
- Forcing screw threads are rolled, not cut. This process creates a smoother and stronger thread.
- Heat treated alloy steel cross bolts for maximum shear strength.
- Machined puller jaw toes produce larger and stronger pulling toes.




**Choosing the right size puller:** Compare the "reach" and "spread" of the pulling job with that of the pullers listed. The puller selected must have dimensions greater than those of the job.

| | Order No. | Max. Reach (mm) | Max. Spread (mm) | Screw Size (in.) | Jaw Thickness (mm) | Jaw Width (mm) | Capacity, Style and Weight |
|---|---|---|---|---|---|---|---|
| 1020  1021  | 1020 | 54 | 82,6 | 5/16–24 x 98,4 mm | 3,5 | 6,4 | 1-Ton, 2-Jaw; 0,14 kg |
| | 1021 | 54 | 82,6 | 5/16–24 x 98,4 mm | 3,5 | 6,4 | 1-Ton, 3-Jaw; 0,23 kg |
| 1022  1023  | 1022 | 85,7 | 101,6 | 3/8–24 x 124 mm | Upper 4,8 Lower 3,2 | Upper 6,4 Lower 12,7 | 2-ton, 2-Jaw; 0,4 kg (Reversible Jaws) |
| | 1023 | 85,7 | 121 | 3/8–24 x 124 mm | Upper 4,8 Lower 3,2 | Upper 6,4 Lower 12,7 | 2-ton, 2/3-Jaw; 0,6 kg (Reversible Jaws) |
| 1024  1026  | 1024 | 83 | 152 | 9/16–20 x 176 mm | Upper7,9 Lower 6,4 | Upper 9,5 Lower 19,1 | 5-Ton, 2-Jaw; 0,8 kg (Reversible Jaws) |
| | 1026 | 83 | 178 | 9/16–20 x 176 mm | Upper 7,9 Lower 6,4 | Upper 9,5 Lower 19,1 | 5-Ton, 2/3-Jaw; 1,3 kg (Reversible Jaws) |
| 1025  1027  | 1025 | 140 | 152 | 9/16–20 x 176 mm | Upper7,9 Lower 6,4 | Upper 9,5 Lower 19,1 | 5-Ton, Long 2-Jaw; (Reversible Jaws) 0,9 kg |
| | 1027 | 140 | 178 | 9/16–20 x 178 mm | Upper 7,9 Lower 6,4 | Upper 9,5 Lower 19,1 | 5-Ton, Long 2/3-Jaw; (Rev. Jaws) 1,5 kg |
| 1035  1037  | 1035 | 127 | 229 | 11/16–18 x 229 mm | Upper7,9 Lower 8,7 | Upper 25,4 Lower 25,4 | 7-Ton, 2-Jaw; (Reversible Jaws) 2 kg |
| | 1037 | 127 | 267 | 11/16–18 x 229 mm | Upper 7,9 Lower 8,7 | Upper 25,4 Lower 25,4 | 7-Ton, 2/3-Jaw; (Rev. Jaws) 2,8 kg |
| 1036  1038  | 1036 | 222 | 241 | 11/16–18 x 229 mm | 8,7 | 25,4 | 7-Ton, Long 2-Jaw; 2,3 kg |
| | 1038 | 222 | 279 | 11/16–18 x 229 mm | 8,7 | 25,4 | 7-Ton, Long 2/3-Jaw; 3,3 kg |
|   | 1039 | 279 | 318 | 13/16–16 x 305 mm | 14,3 | 25,4 | 13-Ton, 2-Jaw; 4,8 kg |
| | 1040 | 387 | 279 | 13/16–16 x 305 mm | 14,3 | 25,4 | 13-Ton, Long 2-Jaw; 5,9 kg |
| | 1041 | 279 | 356 | 13/16–16 x 305 mm | 14,3 | 25,4 | 13-Ton, 2/3-Jaw; 6,7 kg |
| 1039/1040 1041/1042 | 1042 | 387 | 432 | 13/16–16 x 305 mm | 14,3 | 25,4 | 13-Ton, Long 2/3-Jaw; 8,3 kg |

- For puller piece part identification, consult factory.
- Available standard 17.5 ton & 25 ton mechanical jaw pullers, consult factory.

# Mechanical
## PUSH PULLERS

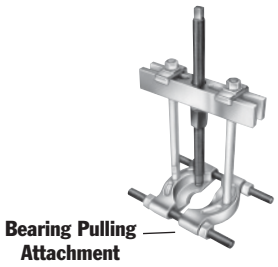
## 10, 17½, & 30 Ton Cap.

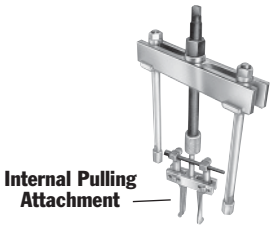
For removing and installing gears, bearings, pulleys and other press-fitted parts.

**No. 927 – 10-Ton Capacity** can be used with No. 1123 bearing pulling attachment or No. 679 pulley pulling attachment. May also be used with Nos. 1150, 1151, 1152, or 1153 internal pulling attachments.

**No. 938 – 17½-Ton Capacity** can be used with Nos. 1124 and 1130 bearing pulling attachment or Nos. 679 and 680 pulley pulling attachment. May also be used with Nos. 1150, 1151, 1153, or 1166 internal pulling attachments.

**No. 939 – 30-Ton Capacity** can be used with Nos. 1126 and 1127 bearing pulling attachment or No. 680 pulley pulling attachment (two 8012 adapters are required to connect 680 to puller). Can be used with No. 1165 internal pulling attachments.



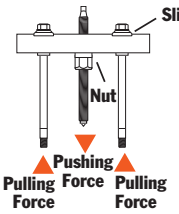



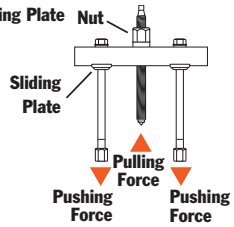

### ASSEMBLING THE TOOL TO APPLY PUSHING OR PULLING FORCE:

1. Determine if you want the tool's forcing screw to push or pull.
2. To exert pushing force, the forcing nut is installed beneath the cross block, as shown on left.
3. To cause the forcing screw to pull, the forcing nut is placed on top of the cross block.
4. The slididng plates must always be placed on the opposite side of the cross block from the forcing nut.

**Selection and capacity rating –**

Each Push-Puller's specified tonnage "capacity" is determined using its standard legs in tension. Using longer legs, or a setup in which the legs are in compression, will reduce the "capacity". Always select the largest "capacity" puller and the shortest legs that will fit the job.



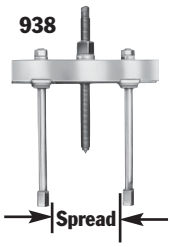

## 927


| Reach | Max. Spread | Screw | Size | Notes / Weight |
|---|---|---|---|---|
| 210 mm | 54 - 184 mm | ¾"–16 x 305 mm | ½" of forcing screw tip end is threaded ⅝"–18. No. 1100 legs and No. 24827 leg ends included. Wt., 3,2 kg. | |

| Order No. | Leg Length & Wt. | Order No. | Leg Length & Wt. |
|---|---|---|---|
| 1103 | 121 mm, 0,45 kg | 1102 | 298 mm, 1 kg |
| 1100* | 171 mm, 0,7 kg | 1101 | 400 mm, 1,5 kg |

Extra Legs (pair) for No. 927 Push-Puller (Reach equals leg length plus 50,8 mm with leg end caps.)

## 938

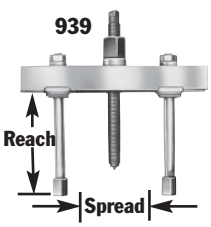



| Reach | Max. Spread | Screw | Size | Notes / Weight |
|---|---|---|---|---|
| 282 mm | 79–298 mm | 1"–14 x 336 mm | Leg ends threaded ⅝"–18. No. 1106 legs and No. 24827 leg ends included. Wt., 9,4 kg | |

| Order No. | Leg Length & Wt. | Order No. | Leg Length & Wt. |
|---|---|---|---|
| 1107 | 114 mm 1,1 kg | 1105 | 572 mm 4,1 kg |
| 1106* | 241 mm 2 kg | 1108 | 762 mm 5,2 kg |
| 1104 | 419 mm 3kg | | |

Extra Legs (pair) for No. 938 Push-Puller (Reach equals leg length plus 50,8 mm with leg end caps.)

## 939




| Reach | Max. Spread | Screw | Size | Notes / Weight |
|---|---|---|---|---|
| 267 mm | 178–413 mm | 1½"–12 x 438 mm | Leg ends threaded 1"–14. No. 1109 legs and No. 28390 leg ends included. Wt., 20 kg | |

| Order No. | Leg Length & Wt. | Order No. | Leg Length & Wt. |
|---|---|---|---|
| 1109* | 203 mm 3,6 kg | 1111 | 711 mm 10 kg |
| 1110 | 457 mm 6,8 kg | | |

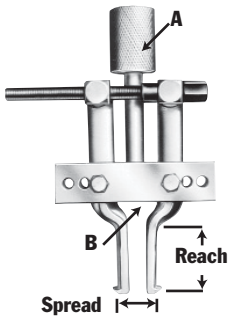
Extra Legs (pair) for No. 939 Push-Puller (Reach equals leg length plus 66,7 mm with leg end caps.)

* Standard legs (pair) with pullers.

# Jaw Spreads
## Bearing & Pulley



**CAUTION –** These attachments may not withstand the full tonnage of the pullers they are used with. The shape and condition of the part being pulled affects the tonnage at which the jaws may slip off. Always select the largest attachment which will fit behind the part being pulled (See page 126).




- Handles internal pulling jobs, such as, bearing /bearing cup removal, bushing removal, oil seals, etc.
- Remove hard to get at parts easily and without damage!
- Use with corresponding Power Team Slide Hammer or Push-Puller.®
- Adjustable jaws fit various diameters

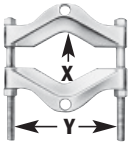
**Fed. Spec.: GGG-P-00781-D**

| Order No. | Jaw Spread (mm) | Reach (mm) | A (in. – thd.) | B (in. – thd.) | Wt. (kg) | Application |
|---|---|---|---|---|---|---|
| 1153 | 38,1–127 | 54 | 1–14 | 5/8–18 | 1,9 | Use with Nos. 927 and 938 Push-Pullers, |
| 1150 | 38,1–152 | 102 | 1–14 | 5/8–18 | 2 | |
| 1151 | 38,1–178 | 133 | 1–14 | 5/8–18 | 2 | |
| 1152 | 38,1–152 | 102 | – | 5/8–18 | 1,6 | Use with Nos. 927 and 938 Push-Pullers, 1155 and 1156 slide hammer pullers, or 24832 and 24833 puller screw. |
| 1154 | 38,1–152 | 102 | 1–8 | 5/8–18 | 2 | Use with No. PPH17. |
| 1165 | 76,7–229 | 149 | 1 1/2–12 | 1–14 | 6,1 | Use with No. 939 Push-Puller. |
| 1166 | 76,2–229 | 149 | 1 1/4–7 | 1–14 | 6,1 | Use with No. PPH30. |
| | **Puller Screws** | | | | | |
| 24832 | 349 mm long | 5/8–18 | 0,5 | | | Use with Nos. 1150, 1151, 1152, and 1153. |
| 24833 | 140 mm long | 5/8–18 | 0,2 | | | Use with Nos. 1150, 1152, and 1153. |

- 24832 & 24833 acts as a regular forcing screw when threaded directly into block of pulling attachment.

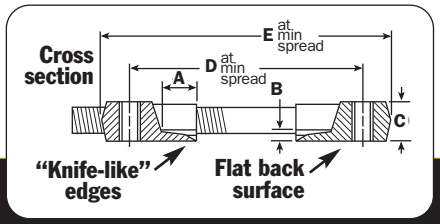
- "Knife-like" edges fit behind bearings and other hard-to-grip parts for easy removal, even where clearance is limited.
- Usable with both Grip-O-Matic® jaw type pullers and Push-Pullers®.
- All puller blocks are made from forged alloy steel.

**Fed. Spec.: GGG-P-00781-D**




**Attachment clamps down into V-groove to distribute load. Use with Grip-O-Matic® pullers or Push-Pullers.**

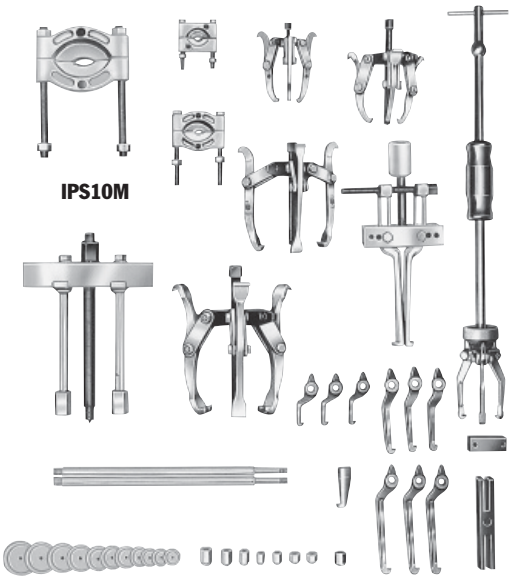
**X =** Thread of tapped hole in adapter.
**Y =** Distance between adjusting screws.



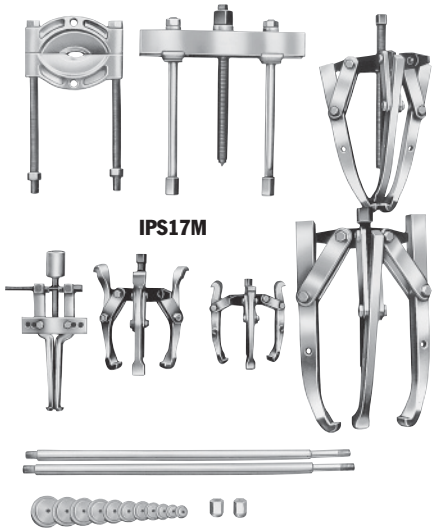

| Order No. | Max. Spread (mm) | X (in.) | Y (mm) | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | Wt. (kg) | Application - (Use with Puller Nos.) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1121 | 6,4-22,2 | 5/16–18 | 43 | 11,1 | 3,2 | 12,7 | 34,9 | 50,8 | 0,3 | 1020, 1022, and 1023. |
| 1122 | 3,2-51 | 3/8–16 | 62 | 11,1 | 4,0 | 15,9 | 50,8 | 69,9 | 0,6 | 1024, 1025, 1026, 1027, 7392 and 7393. |
| 1123 | 9,5-117 | 5/8–18 | 111 | 22,2 | 9,5 | 25,4 | 88,9 | 114,3 | 2.3 | 1035, 1036, 1037, 1038, and 927. |
| 1124 | 12,7-133 | 5/8–18 | 152 | 34,9 | 11,1 | 31,8 | 127 | 158,8 | 5,4 | 1039, 1040, 1041, 1042, PH172, PPH17, and 938. |
| 1126 | 16-203 | 1–14 | 181 | 34,9 | 17,5 | 34,9 | 146,1 | 190,5 | 9 | 1047, 1043, and 939. |
| 1127 | 19-340 | 1–14 | 260 | 44,5 | 17,5 | 44,5 | 158,8 | 215,9 | 18,8 | 1047, 1073, and 939. |
| 1128 | 127-327 | 1 3/4–12 | 330 | 44,5 | 19,1 | 57,2 | 327 | 406 | 45,4 | PH553C, and PPH50. (When using 1128 with PPH50, two 8024 adapters are required to connect PPH50 to the puller tees.) |
| 1130 | 12,7-219 | 5/8–18 | 152 | 34,9 | 11,1 | 31,8 | 127 | 158,8 | 5,4 | 1039, 1040, 1041, 1042, PH172, PPH17, and 938. |
| | | | | **V-belt pulley pulling attachments** | | | | | | |
| 679 | 45-149 | 5/8–18 | 152 | | | | | | 2 | 1035, 1036, 1037, 1038, and 927. |
| 680 | 42,3-254 | 5/8–18 | 257 | | | | | | 10,1 | 1039, 1040, 1041, 1042, 1047, PH172, PPH30* and 938. (When using 680 with PPH30, two 8012 adapters are required.) |

# Puller Sets
## MANUAL

## 10 & 17½ Ton


IPS10M

**10 ton manual puller set –** This puller set is just what you need for removing gears, bearings, etc. Includes pullers, attachments, and many accessories.


IPS17M

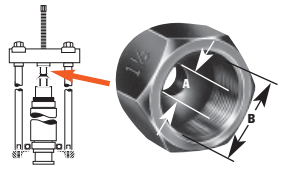
**17½ ton manual puller set –** The pullers and accessories in this set can be used for hundreds of applications including quick and easy maintenance involving removal and replacement of press-fit parts.

| Manual Puller Set No. Order No. | Set Contents | Pullers | Set Contents | Accessories |
|---|---|---|---|---|
| **IPS10M** 10 ton capacity Wt., 24 kg. | **927** | 10 ton capacity Push-Puller® with 171 mm legs | **8075** | Step plate adapter set |
| | **1023** | 2 ton combination 2/3-jaw puller | **8044** | Female threaded adapter set |
| | **1026** | 5 ton combination 2/3-jaw puller | **8035** | Female threaded adapter: ½"–20 x ⅝"–18 |
| | **1027** | 5 ton combination 2/3-jaw puller | **1151** | Bearing cup pulling attachment |
| | **1037** | 7 ton combination 2/3-jaw puller | **1121** | Bearing pulling attachment |
| | **1178** | Slide hammer set | **1122** | Bearing pulling attachment |
| | | | **1123** | Bearing pulling attachment |
| | | | **1101** | 400 mm long puller legs for 927 (pr.) |
| **IPS17M** 17½ ton capacity Wt., 52,7 kg. | **938** | 17½ ton capacity Push-Puller® with 241 mm legs | **8075** | Step plate adapter set |
| | **1027** | 5 ton combo 2/3-jaw puller, with long jaws | **1105** | 572 mm legs for 938 |
| | **1037** | 7 ton combination 2/3-jaw puller | **1130** | Bearing pulling attachment |
| | **1041** | 13 ton combination 2/3 jaw puller | **1151** | Bearing cup pulling attachment |
| | **1045** | 17½ ton 3-jaw puller | **8038** | Female adapter: ⅝"–18 F. x ¾"–16 F. (2) |

**Note:** Storing boards must be ordered separately.
**No. DB10M –** Board for storing IPS10M set. Size 9,5 x 900 x 1200 mm high. Wt., 10,9 kg.
**No. DB17M –** Board for storing IPS17M set. Size 9,5 x 900 x 1200 mm high. Wt., 11,4 kg.

• **Female threaded adapters -** Use these adapters on the ends of Push-Puller® forcing screws, legs, or slide hammers in the removal and installation of shafts, axles, and housings.

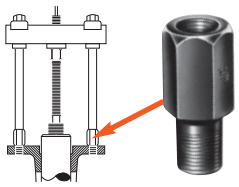
**Set No. 8044 –** consists of a set of 6 adapters (Nos. 8037-8042)




| Order No. | Female End "A" | Female End "B" | Order No. | Female End "A" |
|---|---|---|---|---|
| 8035* | 1/2"–20 | 5/8"–18 | 8040 | 5/8"–18 | 1"–14 |
| 8036* | 1"–14 | 1"–14 | 8041 | 5/8"–18 | 1 1/8"–12 |
| 8037 | 5/8"–18 | 5/8"–18 | 8042 | 5/8"–18 | 1 1/4"–12 |
| 8038 | 5/8"–18 | 3/4"–16 | 8043* | 5/8"–18 | 1 1/2"–12 |
| 8039 | 5/8"–18 | 7/8"–14 | | | |

**Note:** All adapters available separately. *Not included in set No. 8044. Order separately.

• **Male-female threaded adapters –** These adapters are used on ends of Push-Puller® legs, with forcing screws or slide hammers to assist in pulling shafts, bearing caps, pinions, and many other parts.



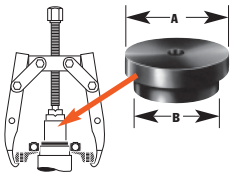
**Fed. Spec.:**
**GGG-P-00781-D**

| Order No. | Female End | Male End | Length (mm) | Order No. | Female End | Male End | Length (mm) |
|---|---|---|---|---|---|---|---|
| 8000 | 5/8"–18 | 1/4"–20 | 57,2 | 8015 | 5/8"–18 | 3/4"–10 | 57,2 |
| 8001 | 5/8"–18 | 5/16"–18 | 57,2 | 8016 | 1"–14 | 3/4"–10 | 63,5 |
| 8002 | 5/8"–18 | 7/16"–14 | 57,2 | 8017 | 5/8"–18 | 7/8"–14 | 57,2 |
| 8003 | 5/8"–18 | 7/16"–20 | 57,2 | 8018 | 5/8"–18 | 7/8"–9 | 57,2 |
| 8004 | 5/8"–18 | 3/8"–24 | 57,2 | 8019 | 5/8"–18 | 1"–14 | 57,2 |
| 8005 | 5/8"–18 | 3/8"–16 | 57,2 | 8020 | 1"–8 | 5/8"–18 | 76,2 |
| 8006 | 5/8"–18 | 1/2"–20 | 57,2 | 8021 | 1"–8 | 1"–14 | 76,2 |
| 8007 | 5/8"–18 | 1/2"–13 | 57,2 | 8022 | 5/8"–18 | 1/8" pipe | 57,2 |
| 8008 | 5/8"–18 | 9/16"–18 | 57,2 | 8023 | 1 1/4"–12 | 1"–14 | 114,3 |
| 8009 | 5/8"–18 | 9/16"–12 | 57,2 | 8024 | 1 1/4"–12 | 1 3/4"–12 | 114,3 |
| 8010 | 5/8"–18 | 5/8"–11 | 57,2 | 8025 | 1 1/4"–7 | 5/8"–18 | 101,6 |
| 8011 | 1"–14 | 5/16"–11 | 63,5 | 8027 | 1 1/4"–7 | 1"–14 | 101,6 |
| 8012 | 1"–14 | 5/8"–18 | 81 | 8028 | 1 5/8"–5 1/2 | 1"–8 | 101,6 |
| 8013 | 5/8"–18 | 3/4"–16 | 57,2 | 8029 | 1 5/8"–5 1/2 | 1"–14 | 101,6 |
| 8014 | 1"–14 | 3/4"–16 | 63,5 | | | | |

**Note:** Nos. 8000–8029 – each sold individually.

• **Step plate adapter sets –** Power Team step plate adapters are necessary for pulling and installing bearings, gears, or other parts on hollow shafts or housings. Puller screw forces against step plate adapter, as shown at right. May be used with Power Team jaw-type pullers, Push-Pullers® and shop presses.

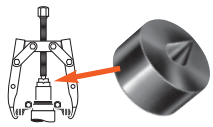
**Set No. 8075 –** set of 11 adapters (Nos. 8057-8067). **Set No. 8076 –** set of 6 adapters (Nos. 8068-8073).



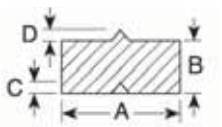

| Set No. 8075 Order No. | Dia."A" (mm) | Dia."B" (mm) | Set No. 8075 Order No. | Dia."A" (mm) | Dia."B" (mm) | Set No. 8076 Order No. | Dia."A" (mm) | Dia."B" (mm) |
|---|---|---|---|---|---|---|---|---|
| 8057 | 25,4 | 19,1 | 8063 | 47,5 | 38,1 | 8068 | 66,5 | 53,8 |
| 8058 | 28,4 | 22,1 | 8064 | 50,8 | 41,1 | 8069 | 69,9 | 57,2 |
| 8059 | 31,8 | 25,4 | 8065 | 53,8 | 44,5 | 8070 | 72,9 | 60,3 |
| 8060 | 34,8 | 28,4 | 8066 | 60,2 | 47,5 | 8071 | 76,2 | 63,5 |
| 8061 | 41,1 | 31,8 | 8067 | 63,5 | 50,8 | 8072 | 82,6 | 69,9 |
| 8062 | 44,5 | 34,8 | | | | 8073 | 88,9 | 76,2 |

• **Shaft protector set --** Power Team shaft protectors are designed to protect shaft centers from distortion when extreme pressures are applied with jaw-type pullers or Push-Pullers®. Shaft protectors are inserted between the end of the puller screw and the shaft.

**Set No. 8056 –** Set of 6 shaft protectors (Nos. 8050 thru 8055).



| Order No. | "A" (mm) | "B" (mm) | "C" (60°) (mm) | "D" (60°) (mm) | Order No. | "A" (mm) | "B" (mm) | "C" (60°) (mm) | "D" (60°) (mm) |
|---|---|---|---|---|---|---|---|---|---|
| 8050 | 38,1 | 19,1 | 9,4 | 11,1 | 8053 | 19,1 | 19,1 | 6,4 | 6,4 |
| 8051 | 31,8 | 19,1 | 9,4 | 9,4 | 8054 | 15,7 | 15,7 | 6,4 | 6,4 |
| 8052 | 25,4 | 19,1 | 9,4 | 7,9 | 8055 | 15,7 | 15,7 | 4,8 | 4,8 |



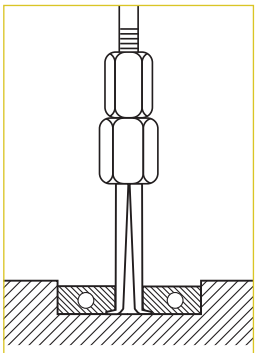

⚠ **CAUTION:** All the items shown may not withstand the full tonnage of the pullers they may be used with (Refer page 126).

# Pullers
## SLIDE HAMMER

Set No. 981

**Blind hole puller set –** Removal of bearings, bushings, sleeves and other friction-fitted parts from blind holes can now be accomplished with ease. Set provides selection of expanding collets 8 to 44,5 mm I.D. Collet is placed through bore of part to be removed, then expanded with actuator pin so that lips of collet secure a positive grip for pulling. Pulling force is exerted by means of a forcing screw and bridge assembly or with a slide hammer.

**No. 981 –** Blind-hole puller set with slide hammer, forcing screw, bridge, actuator pins, collets, and storage box. Wt., 9,5 kg.



blind hole puller example

| Order No. | Description | Order No. | Description |
|---|---|---|---|
| 24835 | Forcing Screw | 28253 | Actuator Pin (5 mm dia.) |
| 24836 | Forcing Screw Nut | 28256 | Actuator Pin (12,7 mm dia.) |
| 22185 | Hammer 1,1 kg. | 41331 | Bridge |
| 208627 | Shank & Tee Bar Assembly | 28323GY8 | Metal Box |
| 28250 | Actuator Pin (3,2 mm dia.) | 10419 | Metal Box |

| Order No. | Inch Range | MM Range | Order No. | Inc Range | MM Range |
|---|---|---|---|---|---|
| 33856* | 5/16" to 3/8" | 8 to 9.5 | 33861** | 3/4" to 7/8" | 19.1 to 22.2 |
| 33857* | 3/8" to 7/16" | 9.5 to 11.1 | 33862** | 7/8" to 1" | 22.2 to 25.4 |
| 33858** | 7/16" to 1/2" | 11.1 to 12.7 | 33863*** | 1" to 1 1/4" | 25.4 to 31.7 |
| 33859** | 1/2" to 5/8" | 12.7 to 15.9 | 33864** | 1 1/4" to 1 1/2" | 31.7 to 38.1 |
| 33860** | 5/8" to 3/4" | 15.9 to 19.1 | 33865*** | 1 1/2" to 1 3/4 | 38.1 to 44.4 |

*Use with 3 mm actuator pin. **Use with 4,8 mm actuator pin. ***Use with 12,7 mm actuator pin

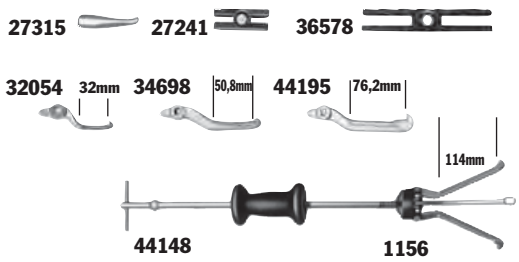
**Slide hammer puller set –** This very handy set is ideal for those close-quarter, inside pulling jobs. Very practical for pulling motor, generator, and magneto bearings. Also good for removing small-bore bushings, bearings, and oil seals.

**No. SS2 –** Slide hammer puller set. Wt., 2,6 kg.

| Jaw Set | | Inside Spread Min. (mm) | Inside Spread Max. (mm) |
|---|---|---|---|
| 1172 |  | 12,7 | 50,8 |
| 1174 |  | 12,7 | 34,9 |

**Slide hammer puller set –** This useful set contains a reversible-jaw slide hammer puller with a 1,1 kg sliding hammer plus an assortment of special jaws (3 of each size) and adapters. In this set, you get all the versatility you demand of a slide hammer puller.

**No. 1178 –** Slide hammer puller set with 1,1 kg. sliding hammer. Wt., 6,3 kg.




| Jaw | 2-Jaw Spread Inside Min. (mm) | 2-Jaw Spread Inside Max. (mm) | 2-Jaw Spread Outside Min. (mm) | 2-Jaw Spread Outside Max. (mm) | 3-Jaw Spread Inside Min. (mm) | 3-Jaw Spread Inside Max. (mm) | 3-Jaw Spread Outside Min. (mm) | 3-Jaw Spread Outside Max. (mm) |
|---|---|---|---|---|---|---|---|---|
| 44195 | 38,1 | 114,3 | 19,1 | 127 | 38,1 | 120,7 | 25,4 | 114 |
| 32054 | 19,1 | 60.3 | — | — | 25,4 | 69.9 | — | — |
| 44148 | 69,9 | 139.7 | 19,1 | 191 | 82,6 | 158,8 | 25,4 | 159 |
| 34698 | 31,8 | 88,9 | 25,4 | 114 | 38,1 | 108 | 38,1 | 114 |

**Sliding hammers only** -

**No. 22185 –** 1,1 kg sliding hammer.

**No. 34331 –** 2,3 kg sliding hammer.

22185

34331



POWER TEAM®

**Bearing cup remover –** The 7136 is perfect for pulling internal bearing cups, seals, bushings, etc. Jaw spread – 23,8 to 82,6 mm, reach to 88,9 mm. Use with any slide hammer having $^{5}/_{8}$"-18 thread (Power Team 1155, 1156 or 927 Push-Puller®).

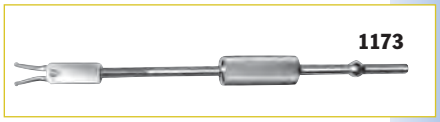
**No. 7136 –** Universal bearing cup remover. Wt., 0,7 kg.


**Pilot bearing pullers** -These very versatile pullers are built especially for inside pulling jobs, and particularly for removing flywheel pilot bearings on machines and construction vehicles. Also very practical for pulling motor, generator and magneto bearings.

**Special slide hammer puller –** Ideal for pulling jobs in very close quarters, as in removal of small-bore bushings, bearings, oil seals, etc. Internal pulling attachment has jaw spread of 12,7 to 35 mm. Handle end has a $^{1}/_{2}$"– 20 thread.

| Order | Reach | I.D. Spread Min. | I.D. Spread Max. | Wt. |
|---|---|---|---|---|
| 1170 | 19,1 | 12,7 | 38,1 | 2,2 |
| 1171 | 25,4 | 22,2 | 54 | 2,2 |
| 1172 | 44,5 | 12,7 | 50,8 | 2,2 |


**No. 1173 –** Slide hammer puller. Wt., 1,6 kg.

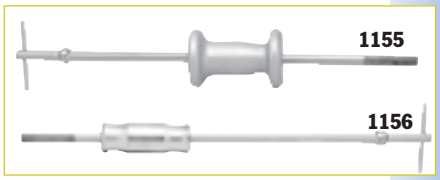



**No. 1174 –** Puller head, less slide hammer.

**Basic slide hammer units –** Compatible with internal pulling attachment (see page 198). Compatible with threaded adapters (see page 204-205). 610 mm length, $^{5}/_{8}$"–18 threaded end.

**No. 1155 –** Basic slide hammer unit with 2,3 kg hammer. Wt., 3,3 kg.

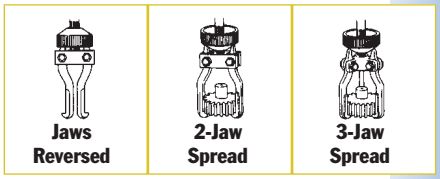
**No. 1156 –** Basic slide hammer unit with 1,1 kg hammer. Wt., 2,2 kg.



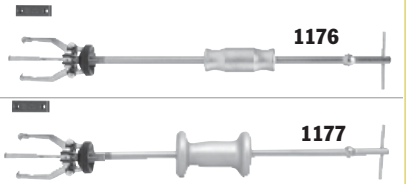

**Reversible-jaw slide hammer pullers –** Ideal for pulling gears, bearings, outer races, grease retainers, oil seals, etc. Two or three jaws may be used and positioned for "inside" or "outside" pulling jobs. Both have $^{5}/_{8}$"– 18 threaded end so attachments and adapters may be used.

**No. 1176 –** Slide hammer puller with 1,1 kg hammer, 27241 two-way head and 34698 jaws. Wt., 3,3 kg

**No. 1177 –** Same as 1176 but with 2,2 kg hammer. Wt., 4,8 kg




| Order No. | 2 Jaw Spread Inside Min. (mm) | 2 Jaw Spread Inside Max. (mm) | 2 Jaw Spread Outside Min. (mm) | 2 Jaw Spread Outside Max. (mm) | 3 Jaw Spread Inside Min. (mm) | 3 Jaw Spread Inside Max. (mm) | 3 Jaw Spread Outside Min. (mm) | 3 Jaw Spread Outside Max. (mm) | Prod. Wt. (kg) | Overall Length (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1176 | 31,8 | 88,9 | 25,4 | 114 | 38,1 | 108 | 38,1 | 114 | 3,6 | 686 |
| 1177 | 31,8 | 88,9 | 25,4 | 114 | 38,1 | 108 | 38,1 | 114 | 4,8 | 686 |




**Slide hammer pullers with cup pulling attachments –** These combine a basic slide hammer with No. 1152 internal pulling attachment for removing oil seals, outer races, and bearing cups from blind holes.

**No. 1157 –** Slide hammer puller consisting of 1156 slide hammer and 1152 internal pulling attachment.

**No. 1158 –** Same as 1157 but with 1155 slide hammer.

| Order No. | Reach Max. (mm) | Spread Min. (mm) | Spread Max. (mm) | Prod. Wt. (kg) | Overall Length (mm) |
|---|---|---|---|---|---|
| 1157 | 102 | 38,1 | 152 | 4,5 | 711 |
| 1158 | 102 | 38,1 | 152 | 5,6 | 711 |

# Hydra Grip-O-Matic®
## USE WITH 2/3 JAW PULLERS

## 6 - 30 Ton

A self contained pulling system in a compact package



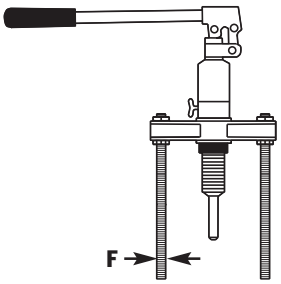
- You get the world's most copied puller design; the harder the pulling force, the tighter the jaws grip for secure holding force.
- Power Team pullers are tested for top performance and reliability at maximum capacity and jaw spread.
- Removing a wide variety of gears, bearings, bushings, pulleys and other press-fitted parts becomes a routine task.
- Easily metered release valve control knob.
- Spring loaded live centering cone.
- Bladder type oil reservoir.
- Rapid adjustment.
- Use with 2 or 3 jaws.
- Supplied with a sturdy storage/ carrying case.
- Features Power Team's exclusive Marathon Limited Lifetime Warranty.

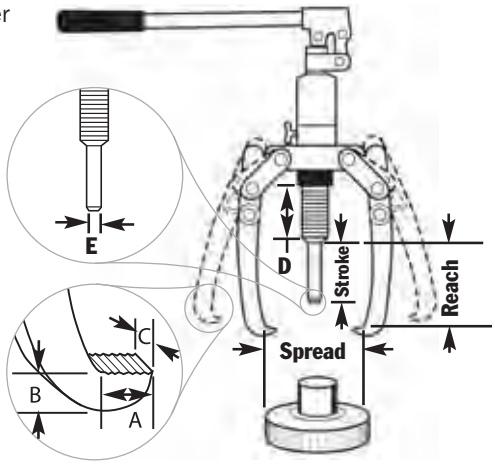
PH63C

**Hydra Grip-O-Matic® pulling system -** These pullers are ideal for pulling a wide variety of press-fitted parts including bushings, bearings, wheels, gears and pulleys. Applications can be found in a wide variety of industries as well. Grip-O-Matic® pullers have been rigorously tested for top performance and reliability. PH82K is a complete pulling system which includes a hydraulic power module, 2-way puller head, jaws, legs and bearing splitter attachment; all contained in a convenient carrying case.


PH303C


PH82K




| Cyl. Cap. (tons) | Order No. | Reach Studs (mm) | Reach Jaws (mm) | Min. Reach (mm) | Max. Studs (mm) | Spread Jaws (mm) | Stroke (mm) | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (in.) | Wt. (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | PH63C | — | 152 | — | — | 200 | 80 | 11 | 6,4 | 22 | 83 | 22 | — | 4,9 |
| 8 | PH83C | — | 190 | — | — | 249 | 80 | 11 | 9,5 | 25,4 | 83 | 22 | — | 6,6 |
| 11 | PH113C | — | 229 | — | — | 280 | 80 | 14,3 | 9,5 | 29 | 83 | 29 | — | 8,0 |
| 30 | *PH303C | — | 375 | — | — | 540 | 110 | 27 | 36.5 | 38 | 170 | 54 | — | 32.3 |
| 8 | PH82K | 266,7 | 207 | 125 | 300 | 245 | 80 | 52 | 25,4 | 16 | 83 | 22 | 5/8-18 UNF | 9,5 |
| 11 | HST11S | — | 150 | — | — | 102-410 | 80 | — | — | — | 65 | 29 | — | 14,5 |

* PH303C include protective blanket & storage case

**Hydra Grip-O-Matic® puller accessory kits –** K82 accessory kit for the Hydra-Grip-O-Matic® puller No. PH83C. Includes 2-way puller head, 2 jaws, 2 threaded legs and sturdy carrying/storage case.

**No. K82 –** Accessory kit for PH83C Grip-O-Matic® hydraulic puller. K83 2/3 way head accessories kit for a Hydra Grip-O-Matic® puller No. PH83C. Includes 2/3 way puller head, 3 jaws, 3 threaded legs and sturdy carrying/ storage case.

**No. K83 –** Accessory kit for PH83C Grip-O-Matic® hydraulic puller.

K82

K83

**Puller Accessory converts PH113C into a Hydraulic Straightening Tool –** Portable...Good for straightening mechanical shafts, round bars, etc. Simply remove pump and cylinder from puller head and insert them into the straightening tool accessory. This product is widely used in steel mills, wire roll companies, wire extruding companies, textile industry, and any straightening situation where portability and power are required. Contoured heat-treated shaft adapter included.

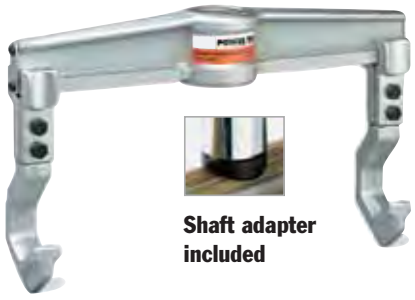
**No. HST11 –** Spread: 89 to 410 mm, Reach: 150 mm. Wt., 9,5 kg.

**Long jaw set for PH83C and PH113C Grip-O-Matic® pullers –** This long jaw set is the perfect addition to the PH83C or PH113C Grip-O-Matic® hydraulic pullers. The extra long jaws give you the added capability of pulling a wider variety of parts. Jaw capacity is 8 tons when used with the PH83C puller; 11 tons when used with the PH113C puller.

**No. 1188 –** Spread: 280 to 317 mm, Reach: 317mm.

HST11S

HST11



Shaft adapter included

1188

BEARING MAINTENANCE

# Pullers
## HYDRAULIC

## 5, 10, 17½, 30 & 50 Ton





- Remove gears, bearings, and other press- fitted parts with speed and ease.
- Broad capacity range of 5, 10, 17½, 30 and 50 tons.
- 5 and 10 ton sets include: single-acting, spring return hydraulic cylinder with hose, coupler and dust cap; single-speed hydraulic hand pump; puller.
- 17½, 30 and 50 tons sets include: Power-Twin® single acting, spring return hydraulic cylinder with hose, coupler and dust cap; single-speed hydraulic hand pump; puller, adjusting screw and crank.
- Hydraulic cylinder of all models is readily removable from puller for use with pump in other hydraulic applications. You get maximum maintenance versatility for your investment.

### 5 ton capacity, 2/3 jaw puller –

**No. PH53C –** Combination 2-jaw/3-jaw puller set. Includes 1057 5 ton puller, RPS55 hydraulic set (C55C cylinder, P12 700 bar hand pump, fittings, coupler, and 1,8 m hose), and 309874 pushing adapter. I Wt., 9,1 kg.

**No. PH53CR –** Combination 2-jaw/3-jaw puller set. Includes 1057 5 ton puller, C55C cylinder, and 309874 pushing adapter. Wt., 5,5 kg

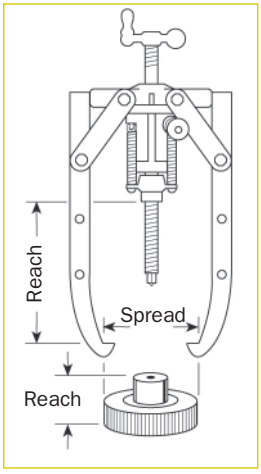
**No. 1057 –** 5 ton cap. 2-jaw/3-jaw puller only. Wt., 3,5 kg.

**Available components -**

**No. 309874 –** 15,9 mm diameter pushing adapter. (Included with PH53C and PH53CR hydraulic puller sets.) Wt., 0,3 kg.

**No. 309875 –** 22,2 mm diameter pushing adapter. Wt., 0,3 kg.

**No. 47997 –** 2-way/3-way puller head. (Can be used to convert No. 1038 7 ton manual puller into a 5 ton hydraulic puller.) Wt., 1,1 kg.




**Fed. Spec.: GGG-P-00781-D**

### 10 ton capacity, 2/3 jaw puller -

**No. PH103C –** Combination 2-jaw/3-jaw puller; 10 ton capacity. Set includes 1060 10 ton puller, RPS1010 cylinder and pump set, 202179 threaded adapter, and 34602 pushing adapter. Wt., 23,6 kg.

**No. PH103CR –** Combination 2-jaw/3-jaw puller, 10 ton capacity. Set includes 1060 10 ton puller, 202179 threaded adapter, 34602 pushing adapter, and C1010C cylinder only. (Pump and hose not included.) Wt., 14,5 kg.

**No. 1060 –** Combination 2-jaw/3-jaw puller only; 10 ton capacity. (Cylinder and pump set, hose, coupler, and adapter No. 202179 not included.) Wt., 7,7 kg.

**NOTE:** This puller may be used with any 10 ton single-acting cylinder having a 2¼"–14 straight collar thread.


PH172


PH173

**17½ ton capacity, 2-jaw puller –**

**No. PH172 –** 2-jaw puller with RT172 center-hole Power-Twin® cylinder, cylinder half coupler, P55 pump, 1,8 m hose, hose half coupler, 1"– 8 x 508 mm long adjusting screw, and adjusting crank. Wt., 27,7 kg.

**No. 1064 –** Puller only. (Cylinder, pump, hose, coupler, screw, and crank not included). Wt.,10 kg.

**17½ ton capacity, 3-jaw puller –**

**No. PH173 –** 3-jaw puller with RT172 center-hole Power-Twin® cylinder, cylinder half coupler, P55 pump, 1,8 m hose, hose half coupler, 1"– 8 x 508 mm long adjusting screw, and adjusting crank. Wt., 34 kg.

**No. PH173R –** 3-jaw puller with screw and crank, and RT172 center-hole twin cylinder. Wt.,25,4 kg .

**No. 1066 –** Puller only. (Cylinder, pump, hose, coupler, screw, and crank not included). Wt., 16,3 kg.

**30 ton capacity, 3-jaw puller –**

**No. PH303 –** 3-jaw puller with RT302 center-hole Power-Twin® cylinder, cylinder half coupler, P55 pump, 1,8 m hose, hose half coupler, 1¼"– 7 x 610 mm lg. adjusting screw, and adjusting crank. Wt., 67,7 kg.

**No. PH303R –** 3-jaw puller with screw and crank, and RT302 center-hole twin cylinder. Wt., 59 kg.

**No. 1074 –** Puller only. (Cylinder, pump, hose, coupler, screw, and crank not included). Wt., 40,9 kg.

**50 ton capacity, 3-jaw puller –**

**No. PH503 –** 3-jaw puller with RT503 center-hole Power-Twin® cylinder, cylinder half coupler, P55 pump, 1,8 m hose, hose half coupler, 1⅝"– 51/2 x 772 mm long adjusting screw, and adjusting crank. Wt., 130 kg.

**No. 1080 –** 3-jaw puller only. (Cylinder, pump, hose, coupler, screw, and crank not included). Wt., 86,7 kg.

**PULLER ONLY**

| Order No. | Cap. (Tons) | Jaws | Jaw Reach (mm) | Jaw Spread (mm) | Jaw Thickness (mm) | Jaw Width (mm) | Wt. (kg) |
|---|---|---|---|---|---|---|---|
| **1057** | 5 | 2/3 | 222 | 292 | 8,7 | 25 | 3,5 |
| **1060** | 10 | 2/3 | 381 | 432 | 14,3 | 25 | 7,7 |
| **1064** | 17½ | 2 | 292 | 406 | 20,6 | 32,5 | 10 |
| **1066** | 17½ | 3 | 292 | 508 | 20,6 | 32,5 | 16,3 |
| **1074** | 30 | 3 | 494 | 864 | 28,6 | 41,3 | 40,9 |
| **1080** | 50 | 3 | 702 | 1.118 | 35,7 | 47,6 | 86,7 |

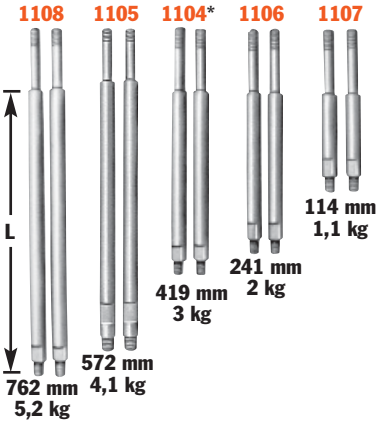
⚠ **CAUTION:** Always use a 3-jaw puller where clearance permits in order to provide a more stable setup and a more even pulling force.

# Push-Pullers®
## HYDRAULIC

## 17½, 30-50 Ton

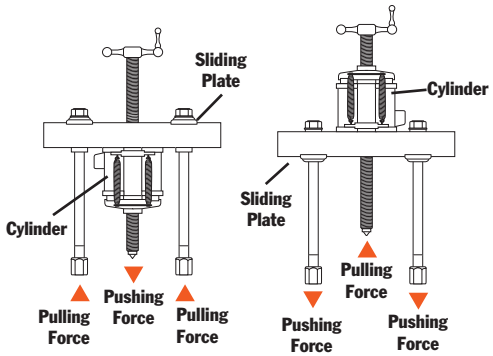
The power to make impossible jobs become routine.

- Can apply a hydraulic pushing or pulling force, depending on how thepuller is set up.
- Each unit includes perfectly matched hydraulic components that can be detached from the Push-Puller® for other tasks requiring dependable Power Team power; assuring maximum return on your investment.
- Optional leg kits adapt your Push-Puller® to extra long or extra short reach.
- A wide variety of threaded adapters, bearing pulling attachments and internal pulling attachments can be used in combination with our Push-Pullers®.




### ASSEMBLING THE TOOL TO APPLY PUSHING OR PULLING FORCE:

1. Determine if you want the tool's forcing screw to push or pull.
2. To exert pushing force, the forcing nut is installed beneath the cross block, as shown on left.
3. To cause the forcing screw to pull, the forcing nut is placed on top of the cross block.
4. The sliding plates must always be placed on the opposite side of the cross block from the forcing nut.




**NOTE:** L = leg length: 114; 241; 419; 572 and 762 mm subtract 124 mm from leg length to determine reach when using leg end caps.

**Selection and capacity rating –** Each Push-Puller's specified tonnage "capacity" is determined using its standard legs in tension. Using longer legs, or a setup in which the legs are in compression, will reduce the "capacity". Always select the largest "capacity" puller and the shortest legs that will fit the job.

**Power Twin® cylinder –** This unique center-hole cylinder powers each Push-Puller®. Puller screw runs right between the twin spring cylinder. A basic head allows you to change from a tapped hole to a plain hole by merely changing the head insert.

**17½ ton capacity Push-Puller® –**

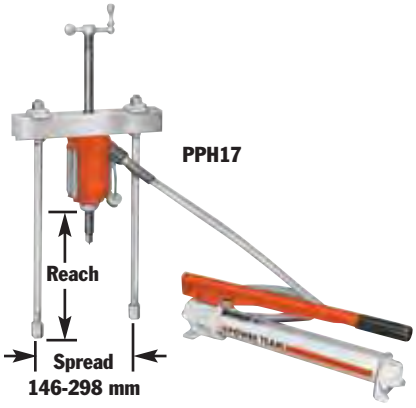
**No. PPH17 –** Push-Puller® with RT172 center-hole Power Twin® cylinder, cylinder half coupler, P55 pump, 9767 1,8 m. hose, 9798 hose half coupler, 419* mm legs, 24827 leg ends, 1"-8 x 508 mm lg. adjusting screw and adjusting crank. Wt., 26,8 kg.

**No. PPH17R –** Same as above, but without P55pump, 9767 1,8 m. hose and 9798 hose half coupler. Wt., 18,2 kg.

**No. 1062 –** Puller only. (Cylinder, pump, hose, coupler, screw and crank not included.) Wt., 9,1 kg.

**USE WITH:**

Bearing pulling attachments: **Nos. 1124 and 1130**.
Pulley pulling attachment: **No. 679**.
Internal pulling attachment: **No. 1154**.
Legs: **Nos. 1104, 1105, 1106, 1107 and 1108 -** Pair of legs for 17½-ton "capacity" Push-Puller®.




**Leg Ends –** Upper leg ends are threaded ¾"-16. Lower leg ends are threaded ⅝"-18 x 25 mm lg.

* No. 1104 included in PPH17, PPH17R & 1062.

**30 ton capacity Push-Puller® -**

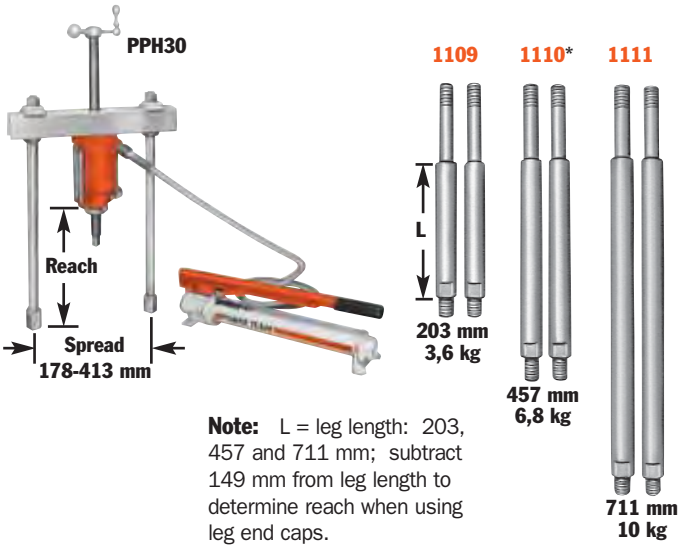
**No. PPH30 –** Push-Puller® with RT302 center-hole Power Twin® cylinder, cylinder half coupler, P55 pump, 9767 1,8 m. hose, 9798 hose half coupler, 457* mm legs, 28390 leg ends, 1¼"-7 x 610 mm lg. adjusting screw and adjusting crank. Wt., 46,3 kg.

**No. PPH30R –** Same as above, but without P55 pump, 9767 1,8 m hose and 9798 hose half coupler. Wt., 37,2 kg.

**No. 1070 –** Puller only. (Cylinder, pump, hose, coupler, screw and crank not included.) Wt., 19,1 kg.

**USE WITH:**

Bearing pulling attachments. **No. 680** (Use two 8012 adapters to connect to puller.)
Pulley pulling attachment: **No. 679**.
Internal pulling attachment: **No. 1166**.
Legs: **Nos. 1109, 1110 and 1111 -** Pair of legs for 30 ton "capacity" Push-Puller®.




**Note:** L = leg length: 203, 457 and 711 mm; subtract 149 mm from leg length to determine reach when using leg end caps.

**Leg ends** are threaded 1"-14 x 32 mm lg.

* No. 1110 included in PPH30, PPH30R & 1070.

**50 ton capacity Push-Puller® -**

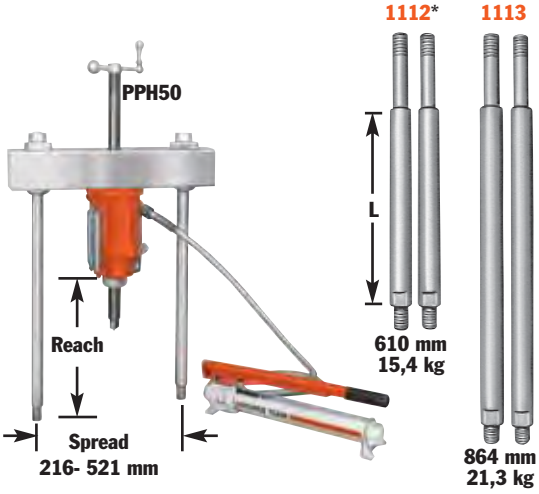
**No. PPH50 –** Push-Puller® with RT503 center-hole Power Twin® cylinder, cylinder half coupler, P55 pump, 9767 1,8 m hose, 9798 hose half coupler, 610* mm legs, 1⅝"-5½ x 722 mm lg. adjusting screw and adjusting crank. Wt., 91,3 kg.

**No. PPH50R –** Same as above, but without P55 pump, 9767 1,8 m hose and 9798 hose half coupler. Wt., 82,2 kg.

**No. 1076 –** Puller only. (Cylinder, pump, hose, coupler, screw and crank not included.) Wt., 48,1 kg.

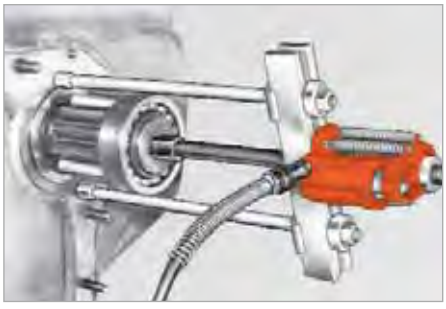
**USE WITH:**

Bearing pulling attachments: **Nos. 1128 and 1129**.
Legs: **Nos. 1112 and 1113 -** Pair of legs for 50 ton "capacity" Push-Puller®.



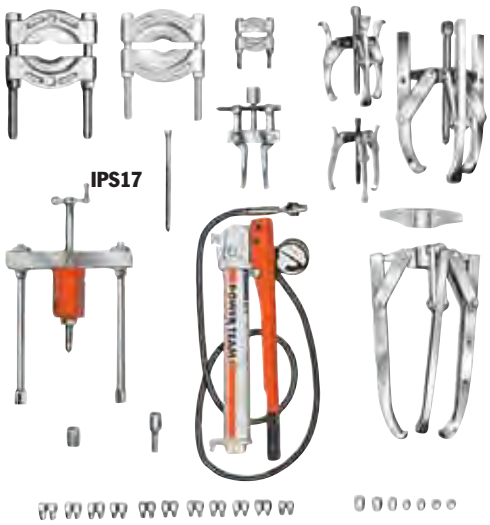

**Leg ends** are threaded 1¼"-12 x 44,5 mm lg.

* No. 1112 included in PPH50, PPH50R & 1076.



# Puller Sets
## HYDRAULIC

## 17½, 30 & 50 Ton




Wooden storage box No. **3084350R9** is included with the sets listed on this page. 1.016L x 406 W x 406 mmD Metal storage boxes also available (See page 145).

**17½ ton hydraulic master puller sets –** Having this Power Team puller set at your fingertips will not only reduce your downtime, but also increase your profits.

**No. IPS17 –** 17½ ton capacity puller set. Includes hydraulics, pullers, wooden storage box and accessories listed below. Wt., 86,7 kg.

**No. IPS17B –** Puller set with MB5 metal box. Wt., 96,7 kg.

**No. DB17 –** Board for storing IPS17 set. Must be ordered separately. Size: 15,9 x 1.200 x 1.800 mm long. Wt., 30,9 kg.


**17½ ton hydraulic puller set -** This set includes a 3-jaw puller and a Push-Puller®. Ideal for heavy duty applications; put this set to work wherever large gears, bearings, wheels, pulleys, etc. are found.

**No. IPS17H –** 17½ ton capacity hydraulic puller set. Includes hydraulics, pullers, wooden storage box and accessories listed below. Wt., 62,2 kg.

**No. DB17H –** Board for storing IPS17H set. Must be ordered separately. Size 15,9 x 1.200 x 1.200 mm Wt., 13,6 kg.

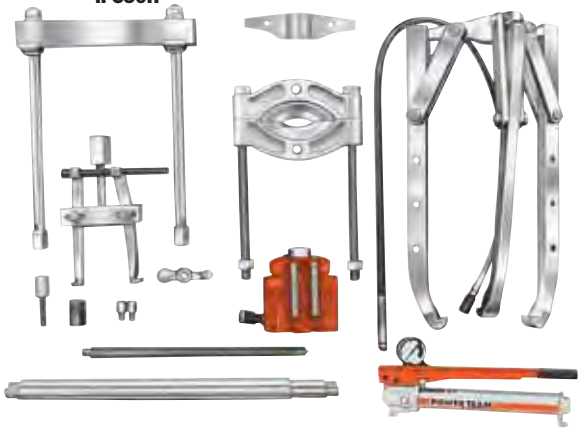
**CONTENTS OF SET NO. IPS17**

| Contents | Hydraulics | Contents | Accessories |
|---|---|---|---|
| P55 | Single-stage hyd. hand Pump assembly | 1154 | Bearing cup pulling attach |
| RT172 | 17½ ton cylinder with threaded insert | 1122 | Bearing pulling attachment |
| 9798 | Hose half coupler | 1123 | Bearing pulling attachment |
| 9767 | Hydraulic hose – 1,8 m | 1130 | Bearing pulling attachment |
| 9670 | Tee adapter | **Threaded Adapters** | |
| 9059 | Pressure gauge | 8005 | 5/8" – 18 F. x 3/8" – 16 M. (2) |
| **Pullers** | | 8006 | 5/8" – 18 F. x 1/2" – 20 M. (2) |
| 1062 | 17½ ton cap. Push-Puller® with 419 mm legs | 8007 | 5/8" – 18 F. x 1/2" – 13 M. (2) |
| 24814 | Speed crank | 8010 | 5/8" – 18 F. x 5/8" – 11 M. (2) |
| 32118 | Adjusting screw | 8013 | 5/8" – 18 F. x 3/4" – 16 M. (2) |
| 201923 | Pushing adapter | 8015 | 5/8" – 18 F. x 3/4" – 10 M. (2) |
| 1105 | 572 mm legs (pr) | 8017 | 5/8" – 18 F. x 7/8" – 14 M. (2) |
| 1066 | 17½ ton 3-jaw hyd. puller | 8018 | 5/8" – 18 F. x 7/8" – 9 M. (2) |
| 1027 | Combination 2/3-jaw puller | 8019 | 5/8" – 18 F. x 1" – 14 M. (2) |
| 41224 | 17½ ton 2-jaw puller head | 8020 | 1" – 8 F. x 5/8" – 18 M. (1) |
| 24832 | Puller screw | 8021 | 1" – 8 F. x 1" – 14 M. (1) |
| 1037 | Combination 2/3-jaw puller | 8044 | Female threaded adapter set |
| 1041 | Combination 2/3-jaw puller | 8038 | 5/8" –18 F. x 3/4"–16 F. (2) |
| 28228 | Cylinder cap | 679 | V-belt pulley pulling attachment |
| | | 8056 | Set of 6 shaft protectors (8050-8055) |
| | | 8075 | Set of 11 adaptors (8057-8067) |

**CONTENTS OF SET NO. IPS17H**

| Contents | Hydraulics | Contents | Accessories |
|---|---|---|---|
| P55 | Single-stage hydraulic hand pump assembly | 1154 | Bearing cup pulling attach. |
| RT172 | 17½ ton cylinder with threaded insert | 1130 | Bearing pulling attachment |
| 9798 | Hose half coupler | 1105 | 572 mm legs (pr) |
| 9767 | Hydraulic hose – 1,8 m | 24814 | Speed crank |
| 9670 | Tee adapter | 28228 | Screw cap |
| 9059 | Pressure gauge | 32118 | Adjusting screw |
| **Pullers** | | 201454 | Pushing adapter |
| 1062 | 17½ ton cap. Push-Puller with 419 mm legs | 41224 | 2-jaw head for 1066 |
| 1066 | 17½ ton 3-jaw hyd. puller | **Threaded Adapters** | |
| | | 8020 | 1" – 8 F. x 5/8" – 18 M. (1) |
| | | 8038 | 5/8" – 8 F. x 3/4" – 16 F. (1) |

IPS30H



**30 ton capacity puller set –** Just what you need for those big jobs. Not only do you get a 30 ton hydraulic Push-Puller®, you also get a 2-jaw and 3-jaw hydraulic puller. Plus, many popular accessories and the hardware to tackle the big jobs right away.

**No. IPS30H –** 30 ton capacity hydraulic maintenance puller set. Includes hydraulics, pullers, wooden storage box and accessories listed below. Wt., 150 kg.

**No. DB30H –** Board for storing IPS30H set. Must be ordered separately. Size 15,9 x 1.200 x 1.800 mm Wt., 35,4 kg.

**CONTENTS OF SET NO. IPS30H**

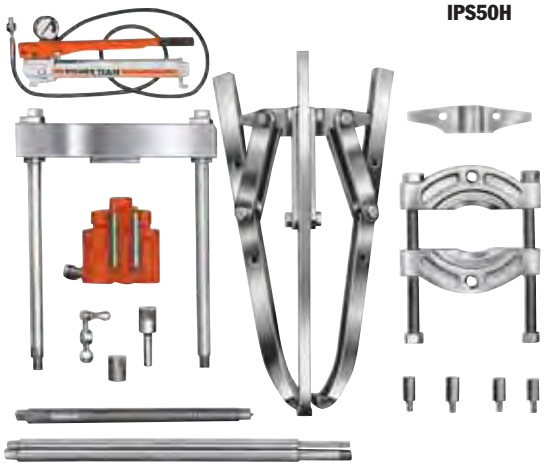
| Contents | Hydraulics | Contents | Pullers |
|---|---|---|---|
| **P55** | Single-stage hydraulic hand pump assembly | **1074** | 30 ton, 3-jaw hyd. puller |
| **RT302** | 30 ton cylinder with threaded insert | **41226** | 2-way head for 1074 |
| **9798** | Hose half coupler | **1070** | 30 ton cap. hydraulic Push-Puller® with 457 mm legs |
| **9767** | Hydraulic hose – 1,8 m | **1111** | 711 mm legs for 1070 |
| **9670** | Tee adapter | **27198** | Speed crank |
| **9059** | Pressure gauge | **28229** | Screw cap |
| | **Accessories** | **34510** | Pushing adapter |
| **8036** | Female threaded adapters 1" – 14F. x 1" – 14F. (2) | **34758** | Adjusting screw |
| **1166** | Bearing cup pulling attach. | | |
| **1127** | Bearing pulling attachment | | |

**Note:** Wooden storage box No. **3084380R9** is provided with the sets listed on this page. 1180L x 615H x 579D Metal storage boxes also available (See page 145).

**50 ton capacity puller set -** For those really big jobs, this 50 ton puller set is what you need. Just think of the jobs you can do with a 50 ton hydraulic Push-Puller®, a 2-jaw and a 3-jaw puller, both with a 50 ton capacity. Of course, you also get many versatile accessories and attachments.

**No. IPS50H –** 50 ton capacity hydraulic maintenance puller set. Includes hydraulics, pullers, wooden storage box and accessories listed below. Wt., 261 kg.

IPS50H



**CONTENTS OF SET NO. IPS50H**

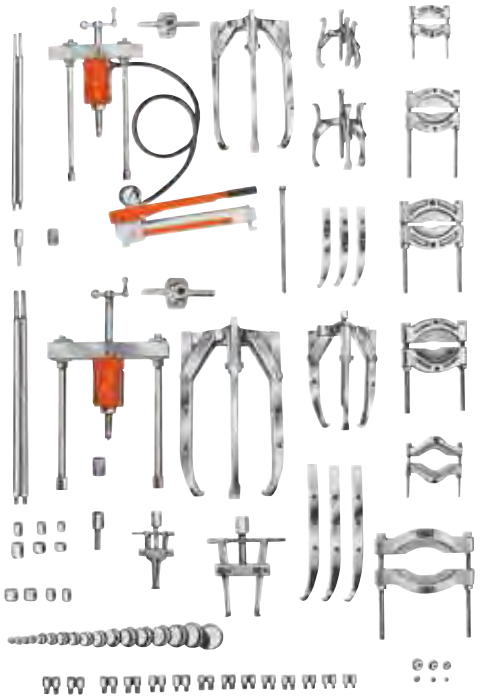
| No. | Hydraulics | No. | Pullers |
|---|---|---|---|
| **P55** | Single-stage hydraulic hand pump assembly | **1080** | 50 ton, 3-jaw hyd. puller |
| **RT503** | 50 ton cylinder with threaded insert | **50449** | 2-way head for 1080 |
| **9798** | Hose half coupler | **1076** | 50 ton cap. hydraulic Push-Puller® with 610 mm legs |
| **9767** | Hydraulic hose – 1,8 m | **1113** | 864 mm legs for 1076 |
| **9670** | Tee adapter | **29595** | Speed crank |
| **9059** | Pressure gauge | **28230** | Screw cap |
| | **Threaded Adapters** | **34755** | Pushing adapter |
| **8024** | 1¼" – 12F. x 1¾" – 12M. (2) | **32698** | Adjusting screw |
| **8028** | 1⅝" – 5½ F. x 1" – 8M. | | **Accessories** |
| **8029** | 1⅝" – 5½ F. x 1" – 14M. | **1128** | Bearing pulling attachment |

⚠ **CAUTION:** All the items shown may not withstand the full tonnage specified. Example: When an accessory with a 1 ton capacity is used with a 7 ton puller, the setup can be used only at a force of 1 ton.

# Puller Sets
## HYDRAULIC

## 17½ & 30 Ton
## 17½ & 50 Ton

IPS3017



**17½ and 30 ton capacity puller sets –** These heavy-duty maintenance sets will more than pay for themselves, especially in saving you costly damage to parts. This set lets you tackle hundreds of applications where pushing and pulling are required.

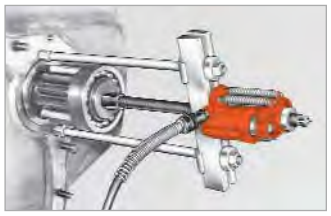
**No. IPS3017 –** 17½ and 30 ton capacity manual and hydraulic puller set. Includes hydraulics, pullers, and accessories listed below. Wt., 244 kg.

**No. IPS3017B –** Puller set with MB8 metal box. Wt., 256 kg.

**Note:** Wooden storage box No. **3084360R9** is provided with this set. 1.016 L x 432 H x 610 mm D Metal storage boxes also available (See page 145).

2-jaw puller reaches through spokes of gear to grip hub. Hand pump supplies hydraulic power.

Flexible coupler is removed from electric motor shaft with 2-jaw puller.



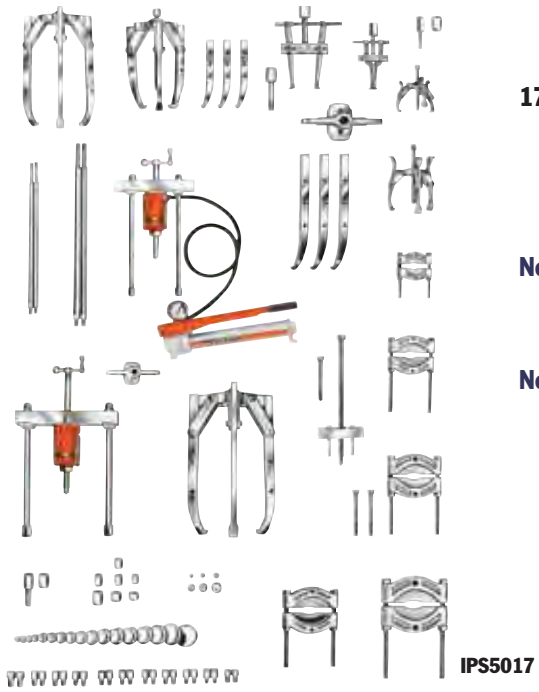
Typical setup for removing sprocket drive pinion shaft. Puller screw is attached to shaft by threaded adapter. Shaft is now ready to be pulled out hydraulically.

⚠ **CAUTION**: All the items shown may not withstand the full tonnage specified. Example: When an accessory with a 1 ton capacity is used with a 7 ton puller, the setup can be used only at a force of 1 ton.

**CONTENTS OF SET NO. IPS3017**

| No. | Hydraulics |
|---|---|
| P55 | Single-stage hyd. hand pump assembly |
| RT172 | 17½ ton center-hole twin cylinder w/ threaded insert |
| RT302 | 30 ton center-hole twin cylinder w/ threaded insert |
| 9798 | Hose half coupler |
| 9767 | Hydraulic hose – 1,8 m |
| 9670 | Tee adapter |
| 9059 | Pressure gauge |
| | **Pullers** |
| 1062 | 17½ ton cap. hydraulic Push-Puller® w/419 mm legs |
| 1070 | 30 ton cap. hydraulic Push-Puller® w/457 mm legs |
| 1066 | 17½ ton 3-jaw hyd. puller |
| 1074 | 30 ton 3-jaw hyd. puller |
| 41224 | 17½ ton 2-jaw puller head |
| 41226 | 30 ton 2-jaw puller head |
| 1027 | Combination 2/3-jaw puller |
| 1037 | Combination 2/3-jaw puller |
| 1041 | Combination 2/3-jaw puller |
| 43892 | Long jaws (3) for 1037 |
| 30902 | Long jaws (3) for 1041 |
| 1105 | 572 mm legs for 1062 |
| 1111 | 711 mm legs for 1070 |
| 24814 | Speed crank |
| 27198 | Speed crank |
| 28229 | Screw cap |
| 28228 | Cylinder cap |
| 32118 | Adjusting screw |
| 34758 | Adjusting screw |
| 34510 | Pushing adapter |
| 201923 | Pushing adapter |

| No. | Accessories |
|---|---|
| 24832 | Special puller forcing screw |
| 8075 | Step plate adapter set |
| 8076 | Step plate adapter set |
| 8056 | Shaft protector set |
| 679 | Pulley pulling attachment |
| 680 | Pulley pulling attachment |
| 1154 | Bearing cup pulling attach. |
| 1166 | Bearing cup pulling attach. |
| 1122 | Bearing pulling attachment |
| 1123 | Bearing pulling attachment |
| 1126 | Bearing pulling attachment |
| 1130 | Bearing pulling attachment |
| | **Threaded Adapters** |
| 8005 | 5/8" – 18 F. x 3/8" – 16 M. (2) |
| 8006 | 5/8" – 18 F. x 1/2" – 20 M. (2) |
| 8007 | 5/8" – 18 F. x 1/2" – 13 M. (2) |
| 8010 | 5/8" – 18 F. x 5/8" – 11 M. (2) |
| 8012 | 1" – 14 F. x 5/8" – 18 M. (2) |
| 8013 | 5/8" – 18 F. x 3/4" – 16 M. (2) |
| 8015 | 5/8" – 18 F. x 3/4" – 10 M. (2) |
| 8017 | 5/8" – 18 F. x 7/8" – 14 M. (2) |
| 8018 | 5/8" – 18 F. x 7/8" – 9 M. (2) |
| 8019 | 5/8" – 18 F. x 1" – 14 M. (2) |
| 8020 | 1" – 8 F. x 5/8" – 18 M. (1) |
| 8021 | 1" – 8 F. x 1" – 14 M. (1) |
| 8025 | 1¼" – 7 F. x 5/8" – 18 M. (2) |
| 8027 | 1¼" – 7 F. x 1" – 14 M. (2) |
| 8036 | 1" – 14 F. x 1" – 14 F. (2) |
| 8038 | 5/8" – 18 F. x 3/4" – 16 F. (2) |
| 8044 | Female threaded adapter set |



IPS5017

**17½ and 50 ton capacity puller sets –** If your looking for a maintenance puller set that will handle a wide variety of applications, this is the one for you. The mechanical and hydraulic pullers and attachments are designed to handle most removing and installing jobs with a minimal amount of effort.

**No. IPS5017 –** 17½ and 50 ton capacity manual and hydraulic puller set. Includes hydraulics, pullers, wooden storage box and accessories listed below. Wt., 405 kg.

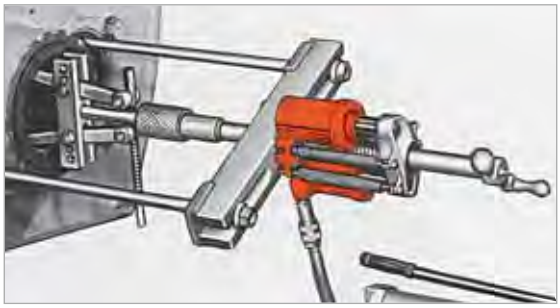
**No. IPS5017B –** Puller set with MB16 metal box. Wt., 415 kg.

**CONTENTS OF SET NO. IPS5017**

| No. | Hydraulics |
|---|---|
| P55 | Single-stage hyd. hand pump assembly |
| RT172 | 17½ ton center-hole twin cylinder w/ threaded insert |
| RT503 | 50 ton center-hole twin cylinder w/ threaded insert |
| 9798 | Hose half coupler |
| 9767 | Hydraulic hose – 1,8 m |
| 9670 | Tee adapter |
| 9059 | Pressure gauge |
| | **Pullers** |
| 1062 | 17½ ton cap. hydraulic Push-Puller® w/419 mm legs |
| 1076 | 50 ton cap. hydraulic Push-Puller® w/610 mm legs |
| 1066 | 17½ ton 3-jaw hyd. puller |
| 1080 | 50 ton 3-jaw hyd. puller |
| 41224 | 17½ ton 2-jaw puller head |
| 50449 | 50 ton 2-jaw puller head |
| 1027 | Combination 2/3-jaw puller |
| 1037 | Combination 2/3-jaw puller |
| 1041 | Combination 2/3-jaw puller |
| 43892 | Long jaws (3) for 1037 |
| 30902 | Long jaws (3) for 1041 |
| 1105 | 572 mm legs for 1062 |
| 1113 | 864 mm legs for 1076 |
| 24814 | Speed crank |
| 29595 | Speed crank |
| 28228 | Screw cap |
| 28230 | Cylinder cap |
| 32118 | Adjusting screw |
| 32698 | Adjusting screw |
| 34755 | Pushing adapter |
| 201923 | Pushing adapter |
| 7392 | Gear and pulley puller |
| 24833 | Forcing screw for 7392 |

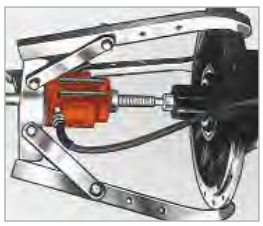
| No. | Accessories |
|---|---|
| 8075 | Step plate adapter set |
| 8076 | Step plate adapter set |
| 8056 | Shaft protector set |
| 1154 | Bearing cup pulling attach. |
| 1166 | Bearing cup pulling attach. |
| 1122 | Bearing pulling attachment |
| 1123 | Bearing pulling attachment |
| 1126 | Bearing pulling attachment |
| 1127 | Bearing pulling attachment |
| 1130 | Bearing pulling attachment |
| 34479 | Reducing adapter for 1166 |
| 10215 | Hex nut; ¾" – 16 (2) |
| 24829 | Short bolt |
| | **Threaded Adapters** |
| 8005 | ⅝" – 18 F. x ⅜" – 16 M. (2) |
| 8006 | ⅝" – 18 F. x ½" – 20 M. (2 |
| 8007 | ⅝" – 18 F. x ½" – 13 M. (2) |
| 8010 | ⅝" – 18 F. x ⅝" – 11 M. (2) |
| 8013 | ⅝" – 18 F. x ¾" – 16 M. (2) |
| 8015 | ⅝" – 18 F. x ¾" – 10 M. (2) |
| 8019 | ⅝" – 18 F. x 1" – 14 M. (2) |
| 8020 | 1" – 8 F. x ⅝" – 18 M. (1) |
| 8021 | 1" – 8 F. x 1" – 14 M. (1) |
| 8023 | 1¼" – 12 F. x 1" – 14 M. (2) |
| 8028 | 1⅝" – 5½ F. x 1" – 8 M. (1) |
| 8029 | 1⅝" – 5½ F. x 1" – 14 M. (1) |
| 8038 | ⅝" – 18 F. x ¾" – 16 F. (1) |
| 8044 | Female threaded adapter set |

**Note:** Wooden storage box No. **3084360R9** is provided with this set. 1143 L x 572 H x 762 mm D Metal storage boxes also available (See page 145).



Combination of 50 ton capacity Push-Puller and cup pulling attachment simplifies the removal of a final drive axle seal.

Hydraulically powered Push-Puller removes drive wheel. Pulling attachment is used to provide gripping surface.



3-jaw puller provides grip while hydraulic hand pump provides power to push shaft from housing. Shaft protector is used on end of puller screw.

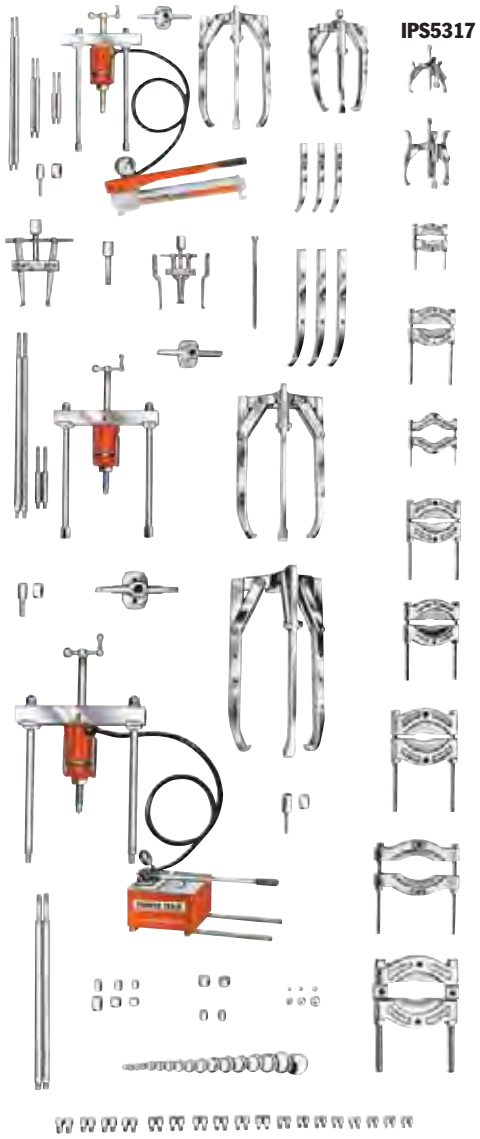
⚠ **CAUTION:** All the items shown may not withstand the full tonnage specified. Example: When an accessory with a 1 ton capacity is used with a 7 ton puller, the setup can be used only at a force of 1 ton.

# Puller Sets
## HYDRAULIC

## 17½, 30 & 50 Ton

**17½, 30 & 50 ton capacity puller set –** Here's the ultimate in industrial puller sets! You'll find a puller for just about every job. Included in this "master set" are 17½, 30 and 50 ton hydraulics, along with an extensive assortment of pullers, attachments and adapters.

**No. IPS5317 –** 17½, 30 and 50 ton capacity manual and hydraulic puller set. Includes hydraulics, pullers, wooden storage box and accessories listed below. Wt., 572 kg.



IPS5317

**Note:** Wooden storage box No. **3084400R9** is provided with this set. 1168 L x 571H x 571 mm D Metal storage boxes also available (See page 145).

**⚠ CAUTION:** All the items shown may not withstand the full tonnage specified. Example: When an accessory with a 1 ton capacity is used with a 7 ton puller, the setup can be used only at a force of 1 ton.

**CONTENTS OF SET NO. IPS5317**

| Contents | Hydraulics |
|---|---|
| P55 | Single-stage hyd. hand pump assembly |
| P460 | Two-stage hyd. hand pump w/ 3-way control valve |
| RT172 | 17½ ton center-hole twin cylinder w/ threaded insert |
| RT302 | 30 ton center-hole twin cylinder w/ threaded insert |
| RT503 | 50 ton center-hole twin cylinder w/ threaded insert |
| 9798 | Hose half coupler (2) |
| 9767 | Hydraulic hose – 1,8 m (2) |
| 9670 | Tee adapter |
| 9059 | Pressure gauge |
| | **Pullers** |
| 1062 | 17½ ton cap. hydraulic Push-Puller® w/419 mm legs |
| 1070 | 30 ton cap. hydraulic Push-Puller® w/457 mm legs |
| 1076 | 50 ton cap. hydraulic Push-Puller® w/610 mm legs |
| 1066 | 17½ ton 3-jaw hyd. puller |
| 1074 | 30 ton 3-jaw hyd. puller |
| 1080 | 50 ton 3-jaw hyd. puller |
| 41224 | 17½ ton 2-jaw puller head |
| 41226 | 30 ton 2-jaw puller head |
| 50449 | 50 ton 2-jaw puller head |
| 1027 | Combination 2/3-jaw puller |
| 1037 | Combination 2/3-jaw puller |
| 1041 | Combination 2/3-jaw puller |
| 43892 | Long jaws (3) for 1037 |
| 30902 | Long jaws (3) for 1041 |
| 32136 | Long jaws (3) for 1154 |
| 1105 | 572 mm legs for 1062 |
| 1106 | 241 mm legs for 1062 |
| 1107 | 114 mm legs for 1062 |
| 1109 | 203 mm legs for 1070 |
| 1111 | 711 mm legs for 1070 |
| 1113 | 864 mm legs for 1070 |
| | **Accessories** |
| 24832 | Special puller forcing screw |
| 24814 | Speed crank |
| 27198 | Speed crank |
| 29595 | Speed crank |
| 28228 | Screw cap |
| 28229 | Screw cap |

| Contents | Accessories |
|---|---|
| 28230 | Screw cap |
| 32118 | Adjusting screw |
| 32698 | Adjusting screw |
| 34758 | Adjusting screw |
| 34510 | Pushing adapter |
| 34755 | Pushing adapter |
| 201923 | Pushing adapter |
| 8075 | Step plate adapter set |
| 8076 | Step plate adapter set |
| 8056 | Shaft protector set |
| 679 | Pulley pulling attachment |
| 680 | Pulley pulling attachment |
| 1154 | Bearing cup pulling attach. |
| 1166 | Bearing cup pulling attach. |
| 1122 | Bearing pulling attachment |
| 1123 | Bearing pulling attachment |
| 1126 | Bearing pulling attachment |
| 1127 | Bearing pulling attachment |
| 1128 | Bearing pulling attachment |
| 1130 | Bearing pulling attachment |
| 34479 | Reducing adapter |
| | **Threaded Adapters** |
| 8005 | 5/8" – 18 F. x 3/8" – 16 M. (2) |
| 8006 | 5/8" – 18 F. x 1/2" – 20 M. (2) |
| 8007 | 5/8" – 18 F. x 1/2" – 13 M. (2) |
| 8010 | 5/8" – 18 F. x 5/8" – 11 M. (2) |
| 8012 | 1" – 14 F. x 5/8" – 18 M. (2) |
| 8013 | 5/8" – 18 F. x 3/4" – 16 M. (2) |
| 8015 | 5/8" – 18 F. x 3/4" – 10 M. (2) |
| 8017 | 5/8" – 18 F. x 7/8" – 14 M. (2) |
| 8018 | 5/8" – 18 F. x 7/8" – 9 M. (2) |
| 8019 | 5/8" – 18 F. x 1" – 14 M. (2) |
| 8020 | 1" – 8 F. x 5/8" – 18 M. (1) |
| 8021 | 1" – 8 F. x 1" – 14 M. (1) |
| 8023 | 1¼" – 12 F. x 1" – 14 M. (2) |
| 8024 | 1¼" – 12 F. x 1¾" – 12 M. (2) |
| 8025 | 1¼" – 7 F. x 5/8" – 18 M. (2) |
| 8027 | 1¼" – 7 F. x 1" – 14 M. (2) |
| 8028 | 1⅝" – 5½ F. x 1" – 8 M. (1) |
| 8029 | 1⅝" – 5½ F. x 1" – 14 M. (1) |
| 8036 | 1" – 14 F. x 1" – 14 F. (2) |
| 8038 | 5/8" – 18 F. x 3/4" – 16 F. (2) |
| 8044 | Female threaded adapter set |

# Protective Blankets and Security Chests

**Power Team protective blanket –** Our blankets are designed to contain broken or lying parts from the most extreme forces, thus resulting in a much safer work environment.

**Testing results –** In our lab, this style of blanket held the parts of a necked-down grade 8 bolt, which shattered in a 100 ton center-hole hydraulic cylinder. The blanket sustained no visible damage when shot with a force and impact that shattered safety glasses!

- Effectively contain broken or flying parts from the most extreme pulling, pressing, pushing or stressing forces.
- Ideal for use with pullers and forcing presses.
- Made of see-through, high-tensile, tear resistant material.
- Unlike rigid, fixed guards, these blankets can be wrapped and strapped around a job.
- The clear protective blankets allow you to visually monitor the job from start to finish.
- Protective blankets come in a carrying/storage pounch to reduce aging caused by prolonged exposure to light.

Protect yourself and your equipment.

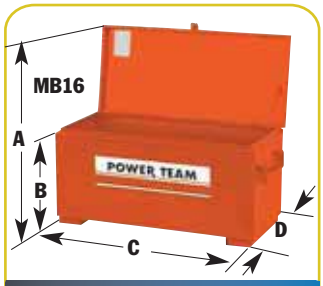


PB1230C

| Order No. | Size (mm) | Number of Straps | Wt. (kg) |
|---|---|---|---|
| PB1230C | 305 x 762 | 2 | 1,3 |
| PB2036C | 508 x 914 | 2 | 1,9 |
| PB2860C | 711 x 1.524 | 3 | 4,2 |
| PB3372C | 838 x 1.829 | 3 | 5,3 |
| PB44120C | 1.118 x 3.048 | 4 | 10,9 |
| PB51156C | 1.295 x 3.962 | 4 | 15,5 |

**Note:** Custom sizes are available on a special order basis. Please consult factory.

**Job-site and maintenance security chests –** Protect your valuable tools and equipment from theft and weather. When the day's work is finished, you want to rest assured that your tools and equipment will be present the next day. In these times, security is a real concern. These rugged, lockable chests are the answer that many of our customers have been asking for.




- Rugged, 16 gauge (1,6 mm) steel construction with fully arc welded seams for extra strength and weather protection.
- Full length piano hinges, mating cover to body, protect against weather and theft.
- Single or double latch security tabs for padlocks.
- Mechanical cover supports, two 57 mm high skids.
- Fold-down 19 mm pipe handles on each end of chest.
- Pre-drilled for optional casters, which enhance mobility.
- Durable baked enamel finish.

| Order No. | Dimensions A (mm) | B (mm) | C (mm) | D (mm) | Cap. (cu. m) | Storage Wt. (kg) | Optional Caster Wheels |
|---|---|---|---|---|---|---|---|
| MB5<br>MB8 | 883<br>1.010 | 356<br>483 | 813<br>1.670 | 483<br>483 | 0,14<br>0,25 | 30<br>40,9 | **No. 251646 –** Set of four 102 mm casters (two swivel and two rigid). Furnished with mounting screws. Wt., 5,7 kg. |
| MB16 | 1264 | 610 | 1.219 | 610 | 0,45 | 57,2 | **No. 251647 –** Set of four 152 mm casters (two swivel and two rigid). Furnished with mounting screws. Wt., 7 kg. |

# Universal Puller

## 55 Ton
Enforcer 55

PH553C

## ENFORCER 55

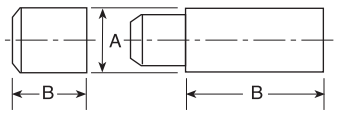
1. Hydraulic lift system for easy, precise position of puller.
2. Unique dual pump arrangement: Low pressure pump positions, holds and opens jaws. The high pressure pump advances and retracts the pushing cylinder without releasing clamped jaws.
3. Hydraulically-actuated jaws. Cylinder moves in or out to provide a safe, secure grip on workpiece.
4. Puller can be assembled in 2 or 3 jaw configurations.
5. Choice of cylinder with a 159 mm or 337 mm stroke.
6. Self-centering: Center cylinder on work; puller jaws will automatically grip work evenly.
7. Super Grip-O-Matic® feature means the harder the pull, the tighter the puller jaws grip. No chains or cages required to keep puller jaws from slipping or springing off the part being pulled.
8. Guards at pinch points protect operator.
9. Cart's swivel casters give ease of mobility.
10. Large wheels make movement of cart easy.
11. Puller can be mounted on cart 90 degrees to right or left of puller cart centerline, permitting use in tight quarters, such as between machinery.

**Conversion kit**
**No. 251468 –** Kit converts PH553C series to PH553CL series. Jaws are 305 mm longer. Kit contains three jaws and six straps with guards. Wt., 114 kg.

**Note:** Four cylinder extensions (not pictured) are included. The included lifting eyes (not pictured) permit use of an overhead crane to raise entire assembly.

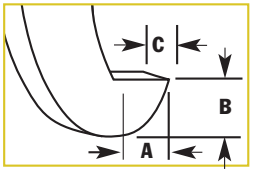
### Pushing Adapters

| Order No. | A (mm) | B (mm) | Qty.** |
|---|---|---|---|
| 251002 | 69,9 | 69,9 | 1 |
| 350593 | 69,9 | 152,4 | 2 |
| 350594 | 69,9 | 76,2 | 1 |
| 350637 | 69,9 | 254 | 1 |




** Number of adapters supplied with each Enforcer.

| Order No. | Min. Spread (mm) | Reach Min. Spread (mm) | Max. Spread (mm) | Reach Max. Spread (mm) | Overall Length* (mm) | Cyl. Stroke (mm) | Power Source Requirements | Prod. Wt. (lbs.) | Puller Jaw Tip Dimensions A (mm) | B (mm) | C (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PH553C | 101,6 | 559 | 1.219 | 356 | 2.286 | 159 | 115 V, 60Hz, 25 Amp Cap. | 339 | 22 | 32 | 48 |
| PH553C13 | 101,6 | 381 | 1.219 | 178 | 2.286 | 337 | 115 V, 60Hz, 25 Amp Cap. | 352 | | | |
| PH553CL13* | 63,5 | 651 | 1.149 | 559 | 2.591 | 337 | 115 V, 60Hz, 25 Amp Cap. | 379 | | | |
| PH553C-230 | 101,6 | 559 | 1.219 | 356 | 2.286 | 159 | 230 V, 50/60 Hz, 15 Amp Cap. | 339 | | | |
| PH553C13-230 | 101,6 | 381 | 1.219 | 178 | 2.286 | 337 | 230 V, 50/60 Hz, 15 Amp Cap. | 352 | | | |
| PH553CL-230* | 63,5 | 829 | 1.149 | 737 | 2.591 | 159 | 230 V, 50/60 Hz, 15 Amp Cap. | 366 | | | |
| PH553CL13-230* | 63,5 | 651 | 1.149 | 559 | 2.591 | 337 | 230 V, 50/60 Hz, 15 Amp Cap. | 379 | | | |



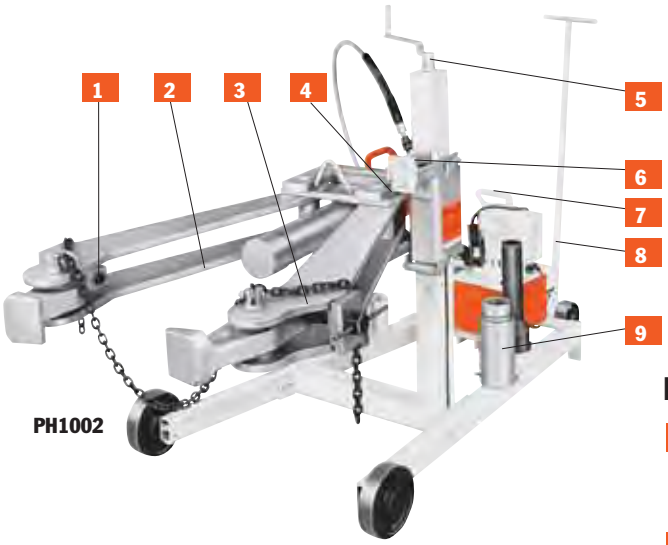

Protective blankets available, see page 145.

* Long Jaws

**Note:** Cart and Puller (cart width is 813 mm)

# Universal Puller

## 100 TON
Enforcer 100



PH1002

An ideal puller for steel mills, mines, oil fields, utility projects, paper mills, construction sites, railroads, airline shops, shipyards or anywhere else where large equipment and machinery pose tough maintenance challenges.

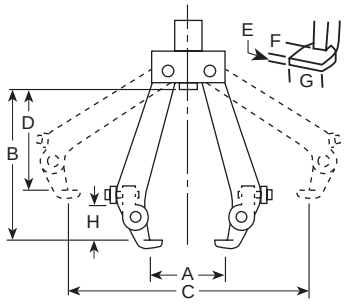
### "Enforcer 100" universal puller –

**No. PH1002-220 –** 100 ton, 2-jaw universal hydraulic puller. Includes: 2-jaw Grip-O-Matic® puller, PE552S-50-220 2-speed electric/hydraulic power unit, C10010C 100 ton hydraulic cylinder with 260 mm stroke and six adapters. Wt., 404 kg.

**No. PH1002J –** Same as PH1002-220, but without hydraulic power unit. Wt., 375 kg.

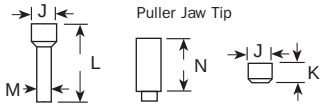
**No. PE552S-50-220 –** Pump only. 0,84 KW, 220 volt, 50Hz/60Hz, single phase, draws 15 amps at full load. Also available in 115 volt, 60Hz, order No. **PE552S**

**Note:** For 115 volt, 60Hz applications, Order No. **PH1002**




## ENFORCER 100

1. Adjustable jaws mean they always pull on a flat surface. Retaining chain holds jaws in place during positioning.
2. Grip-O-Matic® feature means jaws grip progressively tighter as morepulling force is applied.
3. 100 ton hydraulic cylinder is single-acting, spring return type with a maximum working pressure of 700 bar.
4. Lifting bracket allows puller to be lifted if the workpiece center is more than 914 mm off the floor.
5. Adjusting screw allows operator to move vertical position of the puller.
6. Spring loaded feature means Enforcer 100 will align itself on uneven pulls.
7. Hydraulic pump is a 2-stage, high pressure unit controlled by remotehand switch with 7,6 m cord.
8. Tow bar provides puller with plenty of mobility.
9. Pushing adapters have a diameter of 105 and 63,5 mm.




### Ram extensions

| Order No. | Adapter Type | Amount included w/puller | J (mm) | K (mm) | L (mm) | M (mm) | N (mm) |
|---|---|---|---|---|---|---|---|
| 44745 | Push | 1 | 105 | — | 343 | 63,5 | — |
| 44766 | Ext. | 4 | 105 | — | — | — | 203 |
| 303045 | Push | 1 | 105 | 79,4 | — | — | — |

| Order No. | Min. Spread A (mm) | Reach Min. Spread B (mm) | Max. Spread C (mm) | Reach Max. Spread D (mm) | Puller Jaw Tip E (mm) | F (mm) | G (mm) | Cylinder Height H (mm) | Vertical Stroke Adjust. (mm) | Overall Length (mm) | Max. Thickness Workpiece (mm) | Wheel Dia. (mm) | Power Source Requirements |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PH1002-220 | 381 | 1.067 | 1.219 | 864 | 25,4 | 57,1 | 127 | 260 | 305-914 | 2.388 | 305 | 260 | 220 V, 50 Hz, 13 Amp Cap. |
| PH1002J | 381 | 1.067 | 1.219 | 864 | 25,4 | 57,1 | 127 | 260 | 305-914 | 2.388 | 305 | 260 | — |

Protective blankets available, see page 145.

# Roller Bearing
## PULLER/INSTALLER

## (Railroad Edition)
100 Ton Pulling Capacity

- Quickly remove or install tapered roller bearings.
- Designed with cooperation of major bearing manufacturers.
- It's a fast, simple, one-man operation with 100-ton of pulling force provided.
- Completely portable for easy, convenient positioning and out-of-the-way storage.
- The standard in most wheel shops.



**Universal railroad axle journal roller bearing puller/installer –** For years, the standard in most wheel shops. Power Team now has four models to choose for greater flexibility. With both sling and jack models available and two pumps to choose from, you can tailor the unit to match your needs. With the proper equipment and know-how, removal and installation of axle journal roller bearings takes an absolute minimum of time and effort.

Each unit will service a full line of bearings with rotating end caps, from class B thru GG. No other method can match Power Team's simplicity. Removal is very easy. Simply remove the end caps, slip the pulling shoe between the bearings and the wheel, actuate the pump, and in seconds, 100 tons of pulling force removes the bearing. Installation is just as easy! Each unit is CSA certified (LR19814) and comes complete with a heavy-duty 100-ton hydraulic cylinder, 10,000 P.S.I. (700 bar) pump with remote control solenoid valve, hydraulic pressure gauge (No. 11543), a pulling shoe and installing tube.

| Order No. | Model Type | Cylinder Type | Valve Type | Pump Information H.P | Phase | Voltage |
|---|---|---|---|---|---|---|
| PR2100J† | Jack | Double Acting | Solenoid | 2** | 1 | 115 or 230*/60Hz |
| PR3100J† | Jack | Double Acting | Solenoid | 3 | 3 | 230 or 460*/60Hz |
| PR2100S† | Sling | Double Acting | Solenoid | 2 | 1 | 115 or 230*/60Hz |
| PR3100S† | Sling | Double Acting | Solenoid | 3 | 3 | 230 or 460*/60Hz |

* Prewired at factory for this voltage. Other voltages available upon request.

** The 1,49 KW., 115 volt requires 30 amp service.

For 220V/50Hz/Single-phase: Order **PR2100J -50-220**

For 380V/50Hz/3-phase: Order **PR3100J -50-380** (Suitable for 415V/50Hz/3 phase)

460V/60Hz/3-phase suitable for 440V/50Hz/3-phase.

Our roller bearing pullers are ideal for replacing tough, worn-out bearings on RR freight cars.

The photo above shows the Universal Puller in position on the roller bearing assembly, which is ready for removal.

**Tooling order information -** IMPORTANT...This tooling chart applies only to standard AAR configurations for freight care applications. In order to provide adapters needed to service housing-type locomotive and passenger car bearings, as well as metric bearings, Power Team must be provided with the following information: bearing manufacturer's name and general arrangement drawing number, size of bearing to be serviced, railroad name and location and part numbers of adapters already in your possession if you currently own a Puller/Installer.

| Tool Description | Class and size of bearing assembly TBU & SP "Metric Tooling" 120 | 130 | 140 | 150 |
|---|---|---|---|---|
| Pulling Shoe Insert Adapter | No. 351830 | No. 30512 | No. 30521 | No. 30520 |
| Guide Tube & Cap Screw Assembly | No. 253341 | No. 253342 | No. 253343 | No. 253344 |
| Cap Screw** | No. 253339 | No. 253394 | No. 253339 | No. 253395 |
| Guide Tube Adapter | No. 21247 | No. 21247 | No. 21247 | No. 21247 |
| Installing Tube Adapter Ring | No. 253335 | No. 253336 | No. 253337 | No. 253338 |

** Screws are supplied with the guide tube and should be ordered as replacements only.

# Roller Bearing
## PULLER/INSTALLER

## (Railroad Edition)
100 Ton Pulling Capacity


PR3100J


PR3100S

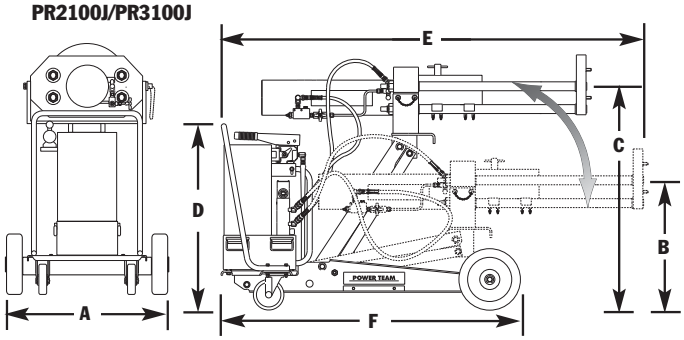


| Tool Description | Class and size(mm) of bearing assembly to be serviced | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Class B 108 x 203 (No.) | Class C 127 x 229 (No.) | Class D 140 x 254 (No.) | Class E 152 x 279 (No.) | Class EE 140 Axle. (No.) | Class EE 152 Axle. (No.) | Class F 165 x 305 (No.) | Class G 178 x 305 (No.) | Class G 165 Axle. (No.) | Class GG 165 Axle. (No.) |
| Pulling Shoe | **No. 420845** is included as part of basic machine – Do Not Order | | | | | | | 420846 | 420846 | 420846 |
| Pulling Shoe Insert Adapter | 30522 | 30512 | 30521 | 30520 | 30520 | 30519 | 30519 | — | — | — |
| Guide Tube & Cap Screw Assembly | 253313 | 253314 | 253317 | 253318 | 253316 | 253327 | 253320 | 253321 | 253319 | 253323 |
| Cap Screw** | 253156 | 253349 | 253308 | 253155 | 253307 | 253308 | 253310 | 253326 | 253309 | 253309 |
| Guide TubeNo. Adapter | 23934 | 21248 | 21248 | 21247 | 21247 | 21247 | 21247 | 21247 | 21247 | 21247 |
| Installing Tube | **No. 420845** is included as part of basic machine – Do Not Order | | | | | | | 30417 | 30417 | 30417 |
| Installing Tube Adapter Ring | 21242 | 21258 | 21256-1 | 21255-1 | 21255-1 | 21257-1 | 21257-1 | 30586 | 30585 | 30585 |

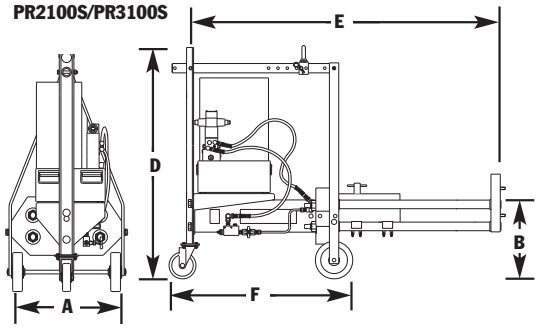
**Note:** Adapters listed above are for servicing the following roller bearing assemblies: Brenco "Crown-Taper", New Departure-Hyatt "Hy-Roll Taper", SKF "Expediter" and Timken "AP".

** Screws are supplied with the guide tube and should be ordered as replacements only.

PR2100J/PR3100J




PR2100S/PR3100S




| Order No. | Stroke (mm) | Capacity Pull (Tons) | Capacity Inst. (Tons) | Speed Advance (mm/min.) | Speed Pull (mm/min.) | Speed Inst. (mm/min.) | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PR2100J | 394 | 100 | 68 | 900 | 81 | 113 | 813 | 383 | 1.059 | 912 | 1.981 | 1.493 | 528 |
| PR3100J | 394 | 100 | 68 | 900 | 81 | 113 | 813 | 383 | 1.059 | 912 | 1.981 | 1.493 | 520 |
| PR2100S | 394 | 100 | 68 | 900 | 81 | 113 | 619 | 279 | — | 1.283 | 1.632 | 985 | 455 |
| PR3100S | 394 | 100 | 68 | 900 | 81 | 113 | 619 | 279 | — | 1.283 | 1.632 | 985 | 458 |

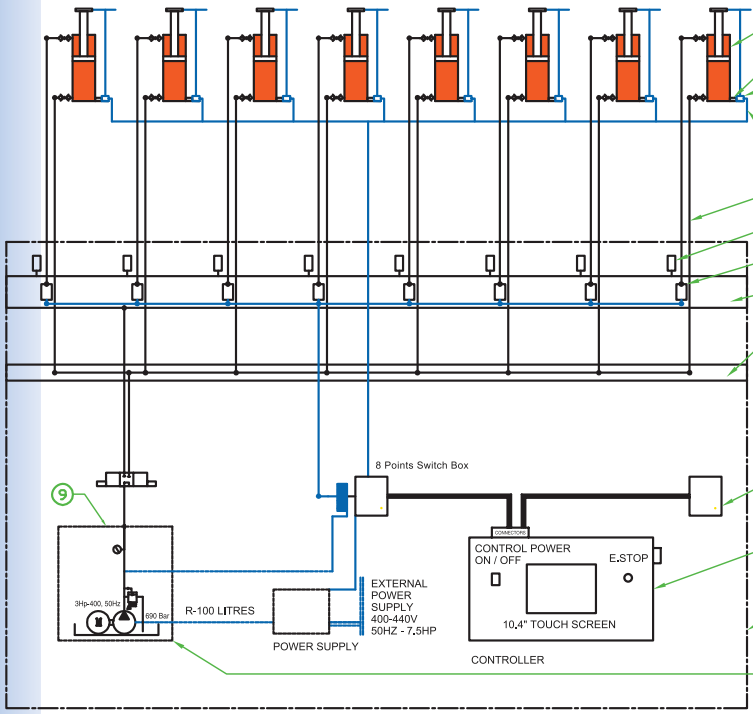
# PLC Synchronous Lift

POWER TEAM® AN SPX BRAND

## PLC Synchronous Lift and Lowering System

- For precise controlled hydraulic movement and weighing of Oil Rig Platforms, Heavy Structures, Vessels & Machineries etc.
- It uses feedback from multiple sensors to control 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.
- Programmable, failsafe monitoring & safety alarms of system include operating parameters, such as displacement accuracy, lifting velocity, valve response errors.

  (Optional: Data logging, load tilting, remote/online system troubleshooting)




1. Hydraulic Cylinder
2. Magnetic Connector
3. **PDC-1:** Displacement Sensor

Sensor

4. **PSC-15:** 15m Sensor Cable
5. Hydraulic Hose
6. **PPS-1:** Pressure Transducer / Gauge
7. **PSV-1:** 2/2 Way Solenoid Valve
8. **PAB-4:** Advance Manifold Block
9. **PRB-4:** Retract Manifold Block
10. External Switch Box
11. **PSLL-8:** PLC Controller
12. **CP-8:** Control Panel
13. Hydraulic Pump

### Features

- Computerized PLC System c/w Touch Screen Panel
- Control from 4 to 60 Jacking Points
- 10 to 1000 Ton on each Jacking Point
- Precision Accuracy at +/- 1mm full scale
- Pressure / Load Display on Control Panel
- Displacement Display on Control Panel
- Linkage to Data Logger and Printer
- Standard Hydraulic Components
- System incorporates emergency alarms with auto-stop features

### Option

- Basic System with Analogue Gauge
- Heat Exchanger for continuous operation
- Available up to 80 jacking points on request

PLC Controller

Control Panel

# Pump Capacity
## SELECTION CHART

## Choosing the Right Pump

The following guidelines are for general lifting and construction applications. Hydraulic tools, pullers and presses may fall outside these recommendations. Always check to see that the pump's "usable reservoir capacity" exceeds the cylinder(s) oil capacity.

| Generally Recommended | Marginal Check Requirements | Not Recommended for most applications |
|---|---|---|

**700 bar Maximum Working Pressure**

| | Page No. | | PRESSURE STAGE ▼ | Cylinder Capacity (Tons) 5 | 10 | 15 | 20 | 25 | 30 | 55 | 75 | 100 | 150 | 200 | 300 | 400 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hand Pumps* | 34 | P12‡ | Single | 14 | 32 | 44 | 65 | 72 | 93 | | | | | | | | |
| | 34 | P55‡ | Single | 6 | 14 | 19 | 28 | 31 | 40 | 71 | | | | | | | |
| | 35 | P19/ P19L | Low | 4 | 8 | 10 | 15 | 17 | 21 | | | | | | | | |
| | | | High | 13 | 30 | 42 | 59 | 68 | 86 | | | | | | | | |
| | 35 | P59F | Low | 1,8 | 4,1 | 5,7 | 8 | 9 | 12 | 20 | 29 | | | | | | |
| | | | High | 8 | 17 | 24 | 3 | 48 | 50 | 85 | 122 | | | | | | |
| | 35 | P59(L)‡ | Low | 1,5 | 3,2 | 4,7 | 7 | 7,7 | 9,7 | 16,7 | 23,9 | | | | | | |
| | 36 | P157‡ | High | 6 | 14 | 19 | 28 | 31 | 40 | 71 | 101 | | | | | | |
| | 36 | P159‡ | Low | ,5 | 1 | 1,3 | 1,9 | 2,2 | 2,8 | 5 | 7 | 9 | 13 | 18 | | | |
| | 36 | P300‡ | High | 7 | 15 | 21 | 30 | 34 | 43 | 77 | 110 | 143 | 200 | 250 | | | |
| | 36 | P460‡ | Low | ,1 | ,3 | ,6 | ,6 | ,7 | ,9 | 1,5 | 2,2 | 2,8 | 4,2 | 5,6 | 8,4 | 11,2 | |
| | | | High | 3,3 | 7,7 | 9 | 14 | 17,5 | 22 | 37 | 55 | 71 | 105 | 143 | 213 | 284 | |
| Electric/ Hydraulic Pumps† | | PE10 | Low | ,5 | 1,2 | 1,6 | 2,2 | 2,6 | 3,2 | 5,5 | | | | | | | |
| | | | High | 6 | 13,4 | 18,9 | 27 | 31 | 39 | 66,2 | | | | | | | |
| | 42 | PE17‡ | Low | ,2 | ,5 | ,7 | ,9 | 1,1 | 1,4 | 2,3 | 3,3 | 4,3 | 6,5 | 8,7 | | | |
| | | | High | 3,5 | 7,9 | 10,9 | 16 | 18 | 23 | 39 | 56,3 | 73 | 109 | 146 | | | |
| | 43 | PE18 | Low | ,4 | ,8 | 1,2 | 1,6 | 1,8 | 2,3 | 3,9 | 5,7 | 7,3 | 10,8 | 14,6 | 21,9 | 29,2 | |
| | | | High | 3,3 | 7,5 | 10,3 | 15 | 17 | 21 | 37 | 53 | 69 | 102 | 136 | 207 | 276 | |
| | 44 | PE21‡ | Low | ,2 | ,5 | ,7 | 1,0 | 1,1 | 1,4 | 2,5 | 3,6 | 4,6 | 6,8 | 9,2 | 13,8 | 18,4 | |
| | | | High | 2,8 | 6,4 | 9 | 13 | 15 | 19 | 32 | 45,5 | 59 | 88 | 118 | 177 | 236 | |
| | | PED25 | Low | ,2 | ,4 | ,6 | ,9 | 1,0 | 1,3 | 2,2 | 3,2 | 4,1 | 6,1 | 8,3 | 12,0 | 15,7 | 19,9 |
| | | | High | 2,4 | 5,4 | 7,5 | 10,6 | 12,4 | 15,6 | 26,5 | 38,2 | 49,5 | 73,6 | 99,1 | 144,3 | 188,5 | 238,6 |
| | | PE30‡ | Low | ,2 | ,45 | ,6 | ,9 | 1 | 1,3 | 2,2 | 3,2 | 4,1 | 6 | | | | |
| | | | High | 2 | 4,5 | 6 | 9 | 10 | 13 | 22 | 32 | 41 | 60 | | | | |
| | 45 | PE46‡ | Low | ,1 | ,3 | ,4 | ,5 | ,6 | ,7 | 1,3 | 1,8 | 2,4 | 3,5 | 4,7 | 7,2 | 9,6 | |
| | | | High | 1,3 | 2,9 | 4,1 | 5,9 | 6,8 | 8,6 | 14 | 22 | 28 | 42 | 56 | 84 | 112 | |
| | 46-47 | PE55‡ | Low | ,1 | ,2 | ,3 | ,4 | ,4 | ,6 | ,9 | 1,4 | 1,8 | 2,6 | 3,5 | 5,4 | 7,2 | |
| | | PE60‡ | High | 1,1 | 2,4 | 3,4 | 4,8 | 5,6 | 7,1 | 12 | 17,8 | 23 | 34 | 45 | 69 | 92 | |
| | 48 | PQ60 | Low | ,1 | ,2 | ,3 | ,4 | ,4 | ,5 | ,9 | 1,3 | 1,7 | 2,5 | 3,4 | 5,1 | 6,8 | 8,5 |
| | | | High | 1 | 2,2 | 3,3 | 4,4 | 5,2 | 6,5 | 11 | 16,2 | 21 | 31 | 41 | 63 | 84 | 105 |
| | 49 | PQ120 | Low | ,1 | ,2 | ,3 | ,4 | ,4 | ,5 | ,9 | 1,3 | 1,7 | 2,5 | 3,4 | 5,1 | 6,8 | 8,5 |
| | | | High | ,5 | 1,1 | 1,6 | 2,2 | 2,6 | 3,2 | 5,5 | 7,7 | 10 | 15 | 21 | 30 | 40 | 50 |
| | 50 | PE400 | Low | ,1 | ,1 | ,2 | ,2 | ,3 | ,3 | ,6 | 8 | 1 | 1,5 | 2,1 | 3 | 4 | 5 |
| | | | High | ,1 | ,3 | ,4 | ,6 | ,7 | ,9 | 1,6 | 2,2 | 2,9 | 4,4 | 5,9 | 8,7 | 11,6 | 14,5 |
| Air/Hydraulic Pumps† | 38-39 | PA6‡ | Single | 10 | 22,4 | 31 | 44,4 | 51,3 | 65,2 | - | - | - | - | - | | | |
| | 37 | PA9‡ | Single | 10 | 22,4 | 31 | 44,4 | 51,3 | 65,2 | - | - | - | - | - | | | |
| | 40 | PA17‡ | Low | ,2 | ,5 | ,7 | ,9 | 1,1 | 1,4 | 2,3 | 3,3 | 4,3 | 6,5 | 8,7 | - | - | |
| | | | High | 3,5 | 7,9 | 10,9 | 16 | 18 | 23 | 39 | 56 | 73 | 109 | 146 | | | |
| | 41 | PA46‡ | Low | ,1 | ,3 | ,4 | ,5 | ,6 | ,7 | 1,3 | 2 | 2,4 | 3,5 | 4,7 | 7,2 | 9,6 | |
| | | | High | 1,3 | 2,9 | 4,1 | 5,9 | 6,8 | 8,6 | 14 | 22 | 28 | 56 | 42 | 84 | 112 | |
| | 41 | PA55‡ | Low | ,1 | ,3 | ,4 | ,6 | ,7 | ,9 | 1,5 | 2,2 | 2,8 | 4,1 | 5,5 | 8,4 | 11,2 | |
| | | | High | 1,1 | 2,4 | 3,4 | 4,8 | 5,6 | 7,1 | 12 | 18 | 23 | 34 | 45 | 69 | 92 | |
| Gas/Hydraulic Pumps† | 51 | PG30 | Low | ,3 | ,7 | 1 | 1,3 | 1,6 | 2 | 3,3 | 4,8 | 6,2 | 9,3 | 12,4 | 18,1 | - | |
| | | | High | 2 | 4,5 | 6,3 | 8,9 | 10,3 | 13 | 22 | 31,8 | 41,3 | 61,4 | 83 | 121 | - | |
| | 51 | PG55‡ | Low | ,1 | ,3 | ,4 | ,6 | ,7 | ,8 | 1,4 | 2 | 2,6 | 3,9 | 5,2 | 7,6 | 9,9 | 12,5 |
| | | | High | 1,1 | 2,5 | 3,5 | 4,9 | 5,6 | 7,1 | 12,1 | 17,3 | 22,5 | 33,5 | 45 | 66 | 86 | 109 |
| | 52-53 | PG120‡ | Low | ,1 | ,3 | ,4 | ,6 | ,7 | ,8 | 1,4 | 2 | 2,6 | 3,9 | 5,2 | 7,6 | 9,9 | 12,5 |
| | | | High | ,5 | 1,0 | 1,5 | 2,0 | 2,4 | 3,0 | 5,1 | 7,3 | 9,5 | 14,2 | 19,1 | 27,8 | 36,3 | 46,0 |
| | 52-53 | PG400 | Low | ,1 | ,1 | ,2 | ,2 | ,3 | ,3 | ,6 | ,8 | 1,0 | 1,5 | 2,0 | 3,0 | 3,8 | 4,9 |
| | | | High | ,2 | ,3 | ,5 | ,7 | ,8 | 1,0 | 1,7 | 2,4 | 3,1 | 4,6 | 6,2 | 9,0 | 11,8 | 15,0 |

‡ Some Power Team pumps are available in special configurations not listed in this catalog. Power Team can "Assemble to order" pumps with special seals, voltages, valves, relief valve settings, etc. For your special requirements please consult your local distributor or the Power Team factory.
* Hand Pumps = Number of strokes required to move piston 25,4 mm.
† Air, Electric and Gasoline Engine/Hydraulic pumps = Number of seconds required to move piston 25,4 mm.

# Accessories

## Seal Kits


| Handpump Order No. | Model | Repair Kit* | Viton Seal Kit | EPR Seal Kit |
|---|---|---|---|---|
| **P12** | A | 300260 | 300507 | |
| **P23** | B | 300943 | 300472 | |
| **P55** | B | 300943 | 300472 | |
| **P19** | A | 300894 | | |
| **P19L** | | 3000179 | | |
| **P59** | C | 300506 | 300510 | |
| **P59F** | B | 300814 | 300815 | |
| **P59L** | | 3000178 | | |
| **P157** | C | 300942 | 300690 | 300691 |
| **P159** | C | 300942 | 300690 | 300691 |
| **P300** | B | 300695 | 300696 | 300697 |
| **P460** | D | 300811 | 300812 | 300813 |
| **P157D** | C | 300692 | 300693 | 300694 |
| **P159D** | C | 300692 | 300693 | 300694 |
| **P300D** | B | 300698 | 300699 | |
| **P460D** | D | 300811 | 300812 | 300813 |

| Electric Powered Pump Order No. | Model | Repair Kit* | Viton Seal Kit | EPR Seal Kit |
|---|---|---|---|---|
| **PE102-220** | B | 300651 | | 300653 |
| **PE102A-220** | B | 300651 | | 300653 |
| **PE104-220** | B | 300651 | | 300653 |
| **PE172-50-220** | A | 300430 | | 300648 |
| **PE172A-50-220** | A | 300430 | | 300648 |
| **PE172M-50-220** | A | 300430 | | 300648 |
| **PE174-50-220** | A | 300430 | | 300648 |
| **PE174M-50-220** | A | 300430 | | 300648 |
| **PE182-50-220** | C | 300914 | | |
| **PE183-2-50-220** | C | 300914 | | |
| **PE183-50-220** | C | 300914 | | |
| **PE183A-50-220** | C | 300914 | | |
| **PE184-2-50-220** | C | 300914 | | |
| **PE184-50-220** | C | 300914 | | |

| Air Powered Pump Order No. | Model | Repair Kit* | Viton Seal Kit | EPR Seal Kit |
|---|---|---|---|---|
| **PA172** | B | 300430 | | 300648 |
| **PA174** | B | 300430 | | 300648 |
| **PA6** | F | 300805 | | |
| **PA6-2** | F | 300848 | | |
| **PA64** | F | 300883 | | |
| **PA6A** | F | 300840 | | |
| **PA6AM** | F | 300840 | | |
| **PA6D** | F | 300844 | | |
| **PA6D2** | F | 300850 | | |
| **PA6DM** | F | 300844 | | |
| **PA6DM-1** | F | 300844 | | |
| **PA6DM-2** | F | 300850 | | |
| **PA6M** | F | 300805 | | |
| **PA6M-1** | F | 300831 | | |
| **PA6M-2** | F | 300848 | | |
| **PA6R** | F | 301030 | | |
| **PA6RM** | F | 301030 | | |
| **PA9** | B | 300949 | | |
| **PA9H** | B | 300949 | | |

| Couplers Order No. | Model | Repair Kit* | Viton Seal Kit | EPR Seal Kit |
|---|---|---|---|---|
| **9795** | | 209100 | 9796-V | 9796-E |
| **9796** | | 300826 & 209100 | 9796-V | 9796-E |

| Hydraulic Tools Order No. | Model | Repair Kit* |
|---|---|---|
| **FC2200** | | 300373 |
| **FC4400** | | 300376 |
| **HFS3A** | A | 300404 |
| **HFS6A** | B | 300116 |
| **HNS225** | B | 300147 |
| **HP20** | A | 300879 |
| **HP35** | A | 300608 |
| **HS2000** | A | 300514 |
| **HS3000** | A | 300620 |

| Valves Order No. | Model | Repair Kit* |
|---|---|---|
| **9500** | | 300451 |
| **9504** | | 300451 |
| **9506** | | 300451 |
| **9508** | | 300451 |
| **9509** | | 300451 |
| **9511** | | 300451 |
| **9512** | C | 300835 |
| **9519** | C | 300835 |
| **9520** | | 300451 |
| **9552** | B | 300332 |
| **9555** | C | 300835 |
| **9556** | | 300489 |
| **9569** | | 300605 |
| **9570** | | 300605 |
| **9575** | A | 300683 |
| **9581** | B | 27345 |
| **9582** | B | 300129 |
| **9628** | D | 300571 |
| **9632** | | 300594 |
| **9642** | | 300592 |
| **9644** | | 300593 |

* These seals come standard on all above products. Refer Parts List for correct model no. & more details.

## Seal Kits


300114

| Cylinder Order No. | Seal Kit* | Viton Seal Kit |
|---|---|---|
| C51C | 300404 | 300210 |
| C53C | 300404 | 300210 |
| C55C | 300404 | 300210 |
| C57C | 300404 | 300210 |
| C59C | 300404 | 300210 |
| C101C | 300116 | 300211 |
| C102C | 300116 | 300211 |
| C104C | 300116 | 300211 |
| C106C | 300116 | 300211 |
| C108C | 300116 | 300211 |
| C1010C | 300116 | 300211 |
| C1012C | 300116 | 300211 |
| C1014C | 300116 | 300211 |
| C1016C | 300116 | 300211 |
| C151C | 300453 | 300471 |
| C152C | 300453 | 300471 |
| C154C | 300453 | 300471 |
| C156C | 300453 | 300471 |
| C158C | 300453 | 300471 |
| C1510C | 300453 | 300471 |
| C1512C | 300453 | 300471 |
| C1514C | 300453 | 300471 |
| C1516C | 300453 | 300471 |
| C251C | 300147 | 300213 |
| C252C | 300147 | 300213 |
| C254C | 300147 | 300213 |
| C256C | 300147 | 300213 |
| C258C | 300147 | 300213 |
| C2510C | 300147 | 300213 |
| C2512C | 300147 | 300213 |
| C2514C | 300147 | 300213 |
| C552C | 300114 | 300215 |
| C554C | 300114 | 300215 |
| C556C | 300114 | 300215 |
| C5510C | 300114 | 300215 |
| C5513C | 300114 | 300215 |
| C756C | 300647 | 300846 |
| C7513C | 300647 | 300846 |
| C1002C | 300112 | 300216 |
| C1006C | 300112 | 300216 |
| C10010C | 300112 | 300216 |
| C55CBT | 300404 | 300210 |
| C106CBT | 300116 | 300211 |
| C1010CBT | 300116 | 300211 |
| C256CBT | 300147 | 300213 |
| C2514CBT | 300147 | 300213 |
| R552C | 300674 | — |
| R556C | 300674 | — |
| R5510C | 300674 | — |
| R1002C | 300675 | — |
| R1006C | 300675 | — |

| Cylinder Order No. | Seal Kit* | Viton Seal Kit |
|---|---|---|
| R10010C | 300675 | — |
| R1502C | 300676 | — |
| R1506C | 300676 | — |
| R15010C | 300676 | — |
| R2002C | 300677 | — |
| R2006C | 300677 | — |
| R20010C | 300677 | — |
| R2802C | 300678 | — |
| R2806C | 300678 | — |
| R28010C | 300678 | — |
| R3552C | 300679 | — |
| R3556C | 300679 | — |
| R35510C | 300679 | — |
| R4302C | 300680 | — |
| R4306C | 300680 | — |
| R43010C | 300680 | — |
| R5652C | 300681 | — |
| R5656C | 300681 | — |
| R56510C | 300681 | — |
| R1002D | 301042 | — |
| R1006D | 301042 | — |
| R10010D | 301042 | — |
| R1502D | 301043 | — |
| R1506D | 301043 | — |
| R15010D | 301043 | — |
| R2002D | 301044 | — |
| R2006D | 301044 | — |
| R20010D | 301044 | — |
| R2802D | 301045 | — |
| R2806D | 301045 | — |
| R28010D | 301045 | — |
| R3552D | 301046 | — |
| R3556D | 301046 | — |
| R35510D | 301046 | — |
| R4302D | 301047 | — |
| R4306D | 301047 | — |
| R43010D | 301047 | — |
| R5652D | 301048 | — |
| R5656D | 301048 | — |
| R56510D | 301048 | — |
| R552L | 300674 | — |
| R556L | 300674 | — |
| R5510L | 300674 | — |
| R1002L | 300675 | — |
| R1006L | 300675 | — |
| R10010L | 300675 | — |
| R1502L | 300676 | — |
| R1506L | 300676 | — |
| R15010L | 300676 | — |
| R2002L | 300677 | — |
| R2006L | 300677 | — |

| Cylinder Order No. | Seal Kit* | Viton Seal Kit |
|---|---|---|
| R20010L | 300677 | — |
| R2802L | 300678 | — |
| R2806L | 300678 | — |
| R28010L | 300678 | — |
| R3552L | 300679 | — |
| R3556L | 300679 | — |
| R35510L | 300679 | — |
| R4302L | 300680 | — |
| R4306L | 300680 | — |
| R43010L | 300680 | — |
| R5652L | 300681 | — |
| R5656L | 300681 | — |
| R56510L | 300681 | — |
| RA202 | 300631 | — |
| RA204 | 300631 | — |
| RA206 | 300631 | — |
| RA302 | 300632 | — |
| RA304 | 300632 | — |
| RA306 | 300632 | — |
| RA552 | 300391 | — |
| RA554 | 300391 | — |
| RA556 | 300391 | — |
| RA5510 | 300391 | — |
| RA1002 | 300444 | — |
| RA1006 | 300444 | — |
| RA556L | 300395 | — |
| RA1006L | 300396 | — |
| RD106 | 300017 | — |
| RD1010 | 300017 | — |
| RD256 | 300118 | — |
| RD2514 | 300118 | — |
| RD556 | 300005 | — |
| RD5513 | 300005 | — |
| RD5518 | 300005 | — |
| RD8013 | 300410 | — |
| RD1006 | 300006 | — |
| RD10013 | 300006 | — |
| RD10020 | 300006 | — |
| RD1506 | 300007 | — |
| RD15013 | 300007 | — |
| RD15018 | 300007 | — |
| RD2006 | 300008 | — |
| RD20013 | 300008 | — |
| RD3006 | 300466 | — |
| RD30013 | 300466 | — |
| RD4006 | 300467 | — |
| RD40013 | 300467 | — |
| RD5006 | 300468 | — |
| RD50013 | 300468 | — |
| RH102 | 300071 | 300221 |
| RH108 | 300071 | 300221 |

| Cylinder Order No. | Seal Kit* | Viton Seal Kit |
|---|---|---|
| RH120 | 300657 | — |
| RH121 | 300576 | — |
| RH121T | 300576 | — |
| RH123 | 300576 | — |
| RH202 | 300615 | — |
| RH203 | 300069 | 300222 |
| RH206 | 300615 | — |
| RH302 | 300037 | 300223 |
| RH306 | 300037 | 300223 |
| RH503 | 300059 | 300225 |
| RH603 | 300477 | 300476 |
| RH606 | 300477 | 300476 |
| RH1003 | 300485 | 300585 |
| RH303 | 300077 | 300224 |
| RH306D | 300822 | 300224 |
| RH3010 | 300625 | — |
| RH605 | 300269 | 300226 |
| RH6010 | 300626 | — |
| RH1001 | 300927 | — |
| RH1006 | 300295 | 300227 |
| RH10010 | 300629 | — |
| RH1505 | 300154 | 300228 |
| RH1508 | 300583 | — |
| RH2008 | 300582 | — |
| RHA306 | 300867 | 300868 |
| RHA604D | 300269 | 300226 |
| RLS50 | 300454 | — |
| RLS100 | 300455 | — |
| RLS200 | 300456 | — |
| RLS300 | 300457 | — |
| RLS500S | 300458 | — |
| RLS750S | 300459 | — |
| RLS1000S | 300460 | — |
| RLS1500S | 300461 | — |
| RP25 | 300628 | — |
| RP55 | 300627 | — |
| RSS101 | 300010 | — |
| RSS202 | 300011 | — |
| RSS302 | 300297 | — |
| RSS502 | 300292 | — |
| RSS1002 | 300293 | — |
| RSS2503 | — | — |
| RSS1002D | 300578 | — |
| RT172 | 300358 | — |
| RT302 | 300359 | — |
| RT503 | 300360 | — |
| RT1004 | 300024 | — |

* These seals come standard on all above cylinders.
Refer Parts List for correct model no. & more details.

# Standards

Power Team's commitment to quality is evident in everything we do, from raw material receipt to how we support our customers years after they purchase our products. Power Team is registered to ISO 9001: 2000 international quality standard. ISO 9001: 2000 requires compliance with standards for management, administration, product development, manufacturing and continual improvement. Our Registration verifies that Power Team has adopted and maintains documentation for processes ranging from suppliers to customers, inspection, handling, and training. ISO 9001 also requires periodic internal and external audits to ensure all aspects of work affecting quality control are monitored. This always has been, and will continue to be, our philosophy. That's our guarantee to you.

### ASME B30.1

Power Team hydraulic cylinders fully comply with the criteria set forth in the American Society of Mechanical Engineers standard ASME B30.1:

1. Our cylinders are designed to have a minimum of a 2-to-1 safety factor on typical material yield strength; Each cylinder is tested at 125 percent of rated pressure at full travel and is inspected to assure functionality and freedom from leaks.

### ASME B40.1

Power Team heavy-duty pressure gauges are designed in accordance with the recommendations set forth in the American Society of Mechanical Engineers standard ASME B40.1, Grade B.

### CE MARK

Power Team is committed to designing, manufacturing, and marketing products that meet or exceed the needs of the customers we serve. Power Team supplies a Letter of Incorporation or a Declaration of Conformity and CE Marking for products that conform with European community directives.

### IJ100

Power Team hoses meet the criteria set forth in the Material Handling Institute's specification #IJ100 for hydraulic hose. Under the procedures outlined in this standard, hydraulic hose shall:

1. Have an average minimum life of 30,000 cycles at full rated capacity.

2. Have a minimum burst pressure of at least twice the rated operating pressure.

### CSA

Where specified, Power Team electric power pump assemblies meet the design, assembly, and test requirements of the Canadian Standards Association.

Note: If CSA certification is required, it must be requested at the time the pump is ordered.

### NEMA

Where specified, Power Team electric power pump assemblies meet the design, assembly, and test requirements of NEMA 12, a National Electrical Manufacturers' Association standard relating to electrical components used to resist moisture and dust.

### POWER TEAM PRODUCT DESIGN CRITERIA

All Power Team brand hydraulic components are designed and/or tested to be safe for use at maximum operating pressures of 700 bar unless otherwise specifically noted.

### QUALITY ASSURANCE

All of our hydraulic cylinders are subjected to quality checks during production. All steel bar is certified and has material traceability to the mill. Before leaving the factory, all cylinders are pressure tested to 875 bar, except the RT series which are tested to 700 bar to insure on-the-job reliability. We have made every effort to include the latest specifications for our products in this catalog. Please call the Power Team factory for the most current product specifications. The Power Team Lifetime Marathon Warranty is described in more detail on page 155 of this catalog.

# WARRANTY


## POWER TEAM®

All Power Team products and parts, with the exception noted below, are warranted against defects in materials and workmanship for the life of the product or part. (The life of the product or part is defined as that point in time when it no longer functions due to normal wear.) This warranty does not cover any product or part that has been worn out, abused, heated, ground or otherwise altered, used for a purpose other than that for which it was intended or used in a manner inconsistent with any instructions regarding its use. Chains, batteries, electric motors, gas engines, knives and cutter blades which are sold with Power Team products are not covered by this warranty. All electric motors and gas engines are separately warranted by their manufacturer under the conditions stated in their separate warranty.

Power Team's electronic products are warranted against defects in material and workmanship for one year.

To qualify for warranty consideration, return the Power Team product, freight prepaid, to a Power Team authorized repair center or to the Power Team factory. If any product or part manufactured by Power Team is found to be defective by Power Team, in its sole judgement, Power Team will, at its option, either repair or replace such defective product or part and return it via best ground transportation, freight prepaid. THIS REMEDY SHALL BE THE EXCLUSIVE REMEDY AVAILABLE FOR ANY DEFECTS IN THE PRODUCTS OR PARTS MANUFACTURED AND SOLD BY POWER TEAM OR FOR DAMAGES RESULTING FROM ANY OTHER CAUSE WHATSOEVER, INCLUDING WITHOUT LIMITATION, POWER TEAM'S NEGLIGENCE. POWER TEAM SHALL NOT, IN ANY EVENT, BE LIABLE TO ANY BUYER FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES OF ANY KIND, WHETHER FOR DEFECTIVE OR NON-CONFORMING GOODS, NEGLIGENCE, ON THE BASIS OF STRICT LIABILITY OR FOR ANY OTHER REASON.

Power Team's warranty is expressly limited to persons who purchase Power Team's products or parts for the resale or use in the ordinary course of the buyer's business.

THIS WARRANTY IS EXCLUSIVE, AND POWER TEAM MAKES NO OTHER WARRANTY OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, WITH RESPECT TO THE PRODUCTS MANUFACTURED AND SOLD BY IT, WHETHER AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER MATTER. No agent, employee or representative of Power Team has any authority to bind Power Team to any affirmation, representation or warranty concerning Power Team products or parts, except as stated herein.

The purpose of this exclusive remedy shall be to provide the buyer with repair or replacement of products or parts manufactured by Power Team found to be defective in materials or workmanship or negligently manufactured. This exclusive remedy shall not be deemed to have failed of its essential purpose so long as Power Team is willing and able to replace said defective products or parts in the prescribed manner.

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