

Hi-Force®

HYDRAULIC TOOLS



**PRODUCT
CATALOG**



OUR MISSION STATEMENT

To support our valued customers through the design, manufacture and supply of first class products and services of exceptional quality, to assist them to gain competitive advantage in their markets.

To sustain our vision and mission by constantly seeking improvement via continuous education and learning, and the application of the best available technology and business practices.

To provide a pleasant, nurturing and growth orientated environment, which encourages our employees to be highly productive and to grow both personally and professionally.

To develop diversified markets, that provide stability, and adequate financial returns and allow us to achieve our vision and provide opportunities for existing and future employees.

www.hi-force.com

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HI-FORCE HYDRAULIC CYLINDERS

The extensive range of Hi-Force hydraulic cylinders includes a wide choice of options related to capacity, stroke length, single or double acting operation, steel or aluminum construction, hollow piston center hole and mechanical failsafe lock ring designs. All models are 10000 psi maximum working pressure and capacities range from 5 tons to 1115 tons, with special design cylinders also available on request. There is a Hi-Force hydraulic cylinder to suit every application and the high quality design and construction of all models, using the best available materials, ensures that Hi-Force hydraulic cylinders can cope with the most demanding applications in the harshest working conditions. Suitable manual and powered pumps for use with Hi-Force cylinders can be found on pages 26 to 52.





HYDRAULIC CYLINDERS

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SELECTION TABLE FOR HI-FORCE STANDARD RANGE CYLINDERS

| Cylinder stroke (in) | Maximum lifting capacity of cylinders (tons) | | | | | | | | | | | | |
|----------------------|----------------------------------------------|------------------|---------|--------------------------------------|------------------|----------------------------------------------------------|------------------|-----------------------------------------------------|--------------------|------------------------------------------|-------------------------------|------------------------------------------|----------------------|
| | 5 | 11-12 | 16-22 | 25-35 | 36-41 | 55-57 | 67-80 | 112-121 | 162-167 | 220-287 | 353-439 | 573-892 | 1115 |
| 0.24 | HPS50 | HVL10 | HVL20 | HVL30 | | HVL50 | | HVL100 | | | | | |
| 0.39 | | HPS100 | | | | | | | | | | | |
| 0.43 | | | HPS200 | | | | | | | | | | |
| 0.47 | | | | HPS300 | | | | | | | | | |
| 0.59 | | | | | | HPS500 | | | | | | | |
| 0.63 | HPS51 | | | | | | HPS750 | HPS1000 | HPS1500 | | | | |
| 0.99 | HSS51 | HSS101 HHS101 | | HLS301 | | HLS501 | | HLS1001 | HLS1501 | | | | |
| 1.58 | | HLS101 | | | | | | | | | | | |
| 1.73 | | | HLS201 | | | | | | | | | | |
| 1.77 | | | | | | | | | HFL1502 | HFL2502 | HFL4002 | HFL5002 | |
| 1.97 | HSS52 | HHS102 | HSS152 | HHS202 | HHS302 | | | HFL1002 | HLS1502 | HFG2002 | | | |
| 2.01 | | | HHA182 | HSS252 HAS302 HFA302 HRA302 | HHR302 HHA372 | HSS502 HFL502 HFG502 HAS502 HFA502 HRA502 | | HFG1002 HAS1002 HFA1002 HRA1002 | HFG1502 | | | | |
| 2.21 | | HSS102 | | | | | | | | | | | |
| 2.36 | | | | HLS302 | | HLS502 | | HLS1002 | | | | | |
| 2.96 | HSS53 | | | | | | | | | | | | |
| 2.99 | | | | | | | HHS603 HHR603 | HHS1003 HHR1003 | | | | | |
| 3.94 | HSS54 | HSS104 | HSS154 | | | | | HFG1004 | HFG1504 | | | | |
| 4.02 | | | | HSS254 | | HSS504 HFG504 | | HSS1004 | | | | | |
| 4.14 | | | | | | HHA504 | | | | | | | |
| 4.93 | HSS55 | | | | | | | | | | | | |
| 5.91 | | HSS106 | HSS156 | HHS206 HSS256 | HHR306 | HFG506 | HHS606 | HFG1006 HHS1006 | HFG1506 | | HFG3006 | | |
| 5.95 | | | | | | | | | | | HFG4006 | | |
| 5.99 | | HHS106 | | HDA256 HAS306 HFA306 HRA306 | HHS306 | HSS506 HDA506 HAS506 HFA506 HRA506 | HSS756 HHR606 | HDA1006 HHR1006 HAS1006 HFA1006 HRA1006 | HDA1506 HSG1506 | HDA2006 HFG2006 HSG2006 HFG2506 | HDA3006 HDA4006 HSG3006 | HDA5006 HFG5006 HDA8006 HFG8006 | HDA10006 HFG10006 |
| 6.03 | | | | | | | | HSS1006 | | | | | |
| 6.11 | | | | | | | | | HGG1506 | HGG2006 | HGG3006 | | |
| 6.93 | HSS57 | | | | | | | | | | | | |
| 8 | | | | HSS258 | | HSS508 | | | HHR1508 | HHR2508 | | | |
| 8.08 | | | | HSS308 | | | | | | | | | |
| 8.12 | | HSS108 | | | | | | | | | | | |
| 8.94 | HSS59 | | | | | | | | | | | | |
| 9.85 | | HSS1010 | HSS1510 | HSS2510 | | | | | | | | | |
| 10.01 | | | | | | | HHR6010 | HSS10010 | | | | | |
| 12.02 | | HSS1012 | | HAS3012 HFA3012 HRA3012 | HHR3012 | HAS5012 HFA5012 HRA5012 | | HAS10012 HFA10012 HRA10012 | HDA15012 | HDA20012 | HDA30012 | | |
| 13 | | | | | | HDA5013 HSS5013 | | HDA10013 | | | | | |
| 14.03 | | | | HSS2514 | | | | | | | | | |
| 18.01 | | | | HSS2518 | | | | | | | | | |
| 20.02 | | | | | | HDA5020 | | | | | | | |

| Cylinder range | Page | Cylinder principle | Main characteristics of Hi-Force cylinder range | | | | Stroke limiting device |
|----------------|------|--------------------|-------------------------------------------------|-----------------------------|---------------------------|------------------|------------------------|
| | | | Return action | Piston feature | Saddle | | |
| HVL | 7 | single acting | load/gravity return | solid piston | integrated | stop ring | |
| HPS | 8 | single acting | spring assisted return | solid piston | integrated | stop ring | |
| HLS | 9 | single acting | spring assisted return | solid piston | integrated | stop ring | |
| HSS | 10 | single acting | spring assisted return | solid piston | several options available | stop ring | |
| HHS | 11 | single acting | spring assisted return | hollow piston | several options available | stop ring | |
| HHR | 12 | double acting | hydraulic return | hollow piston | several options available | stop ring | |
| HDA | 13 | double acting | hydraulic return | solid piston | several options available | stop ring | |
| HFL | 14 | single acting | load/gravity return | threaded piston & lock ring | tilting saddle | restriction port | |
| HFG | 15 | single acting | load/gravity return | threaded piston & lock ring | tilting saddle | restriction port | |
| HAS | 16 | single acting | spring assisted return | solid piston | flat saddle | stop ring | |
| HHA | 17 | single acting | spring assisted return | hollow piston | several options available | stop ring | |
| HFA | 18 | single acting | spring assisted return | threaded piston & lock ring | tilting saddle | stop ring | |
| HRA | 19 | double acting | hydraulic return | solid piston | flat saddle | stop ring | |
| HGG | 20 | single acting | load/gravity return | solid piston | tilting saddle | stop ring | |
| HSG | 21 | single acting | load/gravity return | solid piston | tilting saddle | restriction port | |

HVL | SINGLE ACTING VERY LOW HEIGHT PANCAKE CYLINDERS

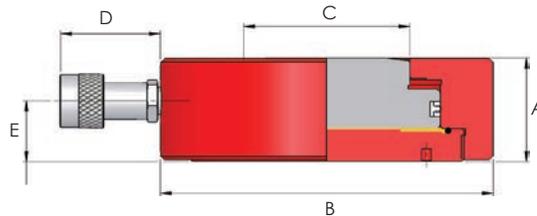


Capacities from 11 to 115 tons

Stroke length 0.24 inches

Working pressure 10000 psi

- ▶ Single acting, load return
- ▶ Compact, very low height design for access in narrow spaces
- ▶ Nitrocarburized piston rod for corrosion resistance
- ▶ Low friction bearing surfaces
- ▶ Anti-extrusion seals for improved performance at high pressures



Note: All models, excluding HVL100, are fitted with extension nipple for required coupling clearance (drawing is without coupling extension nipple). HVL10 also available with 16 inches extension hose and coupling. Please add suffix 'H' to model number. Base of all HVL cylinders must be fully supported during use.

| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) | Dimensions (in) | | | | |
|--------------|-----------------|-------------|---------------------------------|---------------------------------------|--------------|-----------------|------|------|------|------|
| | | | | | | A | B | C | D | E |
| HVL10 | 11 | 0.24 | 0.55 | 2.23 | 3.5 | 1.1 | 3.43 | 1.5 | 4.37 | 0.63 |
| HVL20 | 22 | 0.24 | 1.04 | 4.43 | 5.7 | 1.26 | 4.1 | 2.05 | 4.37 | 0.75 |
| HVL30 | 35 | 0.24 | 1.65 | 7.07 | 6.6 | 1.34 | 4.73 | 2.36 | 4.37 | 0.77 |
| HVL50 | 55 | 0.24 | 2.62 | 11.05 | 15.9 | 1.77 | 6.23 | 2.96 | 4.37 | 1.14 |
| HVL100 | 115 | 0.24 | 5.37 | 22.71 | 34.4 | 2.56 | 7.88 | 3.94 | 2.99 | 1.46 |

HPS | SINGLE ACTING LOW HEIGHT PAD CYLINDERS

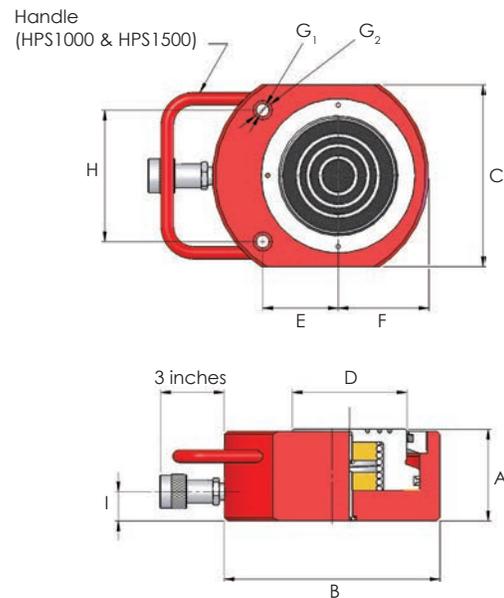


Capacities from 5 to 162 tons

Stroke lengths from 0.24 to 0.63 inches

Working pressure 10000 psi

- ▶ Single acting, spring assisted return
- ▶ Low closed height design for use in confined work areas
- ▶ Nitrocarburized piston rod for corrosion resistance
- ▶ Low friction bearing surfaces
- ▶ Anti-extrusion seals for improved performance at high pressures



| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) | Dimensions (in) | | | | | | | | | |
|--------------|-----------------|-------------|---------------------------------|---------------------------------------|--------------|-----------------|------|------|------|------|------|----------------|----------------|------|------|
| | | | | | | A | B | C | D | E | F | G ₁ | G ₂ | H | I |
| HPS50 | 5 | 0.24 | 0.24 | 0.99 | 1.8 | 1.26 | 2.36 | 1.5 | 0.95 | 0.79 | 0.75 | 0.22 | 0.38 | 1.02 | 0.75 |
| HPS51 | 5 | 0.63 | 0.61 | 0.99 | 2.0 | 1.65 | 2.36 | 1.5 | 0.95 | 0.79 | 0.75 | 0.22 | 0.38 | 1.02 | 0.75 |
| HPS100 | 11 | 0.39 | 0.85 | 2.23 | 3.5 | 1.81 | 3.19 | 2.21 | 1.5 | 1.34 | 1.1 | 0.27 | 0.44 | 1.46 | 0.75 |
| HPS200 | 22 | 0.43 | 1.89 | 4.43 | 5.7 | 2.05 | 3.94 | 2.99 | 2.01 | 1.58 | 1.54 | 0.35 | 0.56 | 1.97 | 0.75 |
| HPS300 | 35 | 0.47 | 3.36 | 7.07 | 9.3 | 2.32 | 4.53 | 3.74 | 2.36 | 1.81 | 1.89 | 0.35 | 0.56 | 2.05 | 0.75 |
| HPS500 | 55 | 0.59 | 6.53 | 11.05 | 14.6 | 2.64 | 5.52 | 4.49 | 2.76 | 2.13 | 2.36 | 0.43 | 0.68 | 2.64 | 0.79 |
| HPS750 | 80 | 0.63 | 10 | 15.92 | 22.9 | 3.19 | 6.5 | 5.52 | 3.23 | 2.64 | 2.76 | 0.51 | 0.75 | 2.99 | 0.83 |
| HPS1000 | 120 | 0.63 | 14.95 | 23.78 | 51.1 | 3.59 | 8.47 | 7.09 | 4.49 | 2.96 | 3.55 | 0.5 | 0.75 | 5.12 | 1.14 |
| HPS1500 | 162 | 0.63 | 20.13 | 31.96 | 62.8 | 3.94 | 8.47 | 7.53 | 4.49 | 3.27 | 3.74 | 0.51 | 0.75 | 4.61 | 1.14 |

HLS | SINGLE ACTING LOW HEIGHT CYLINDERS

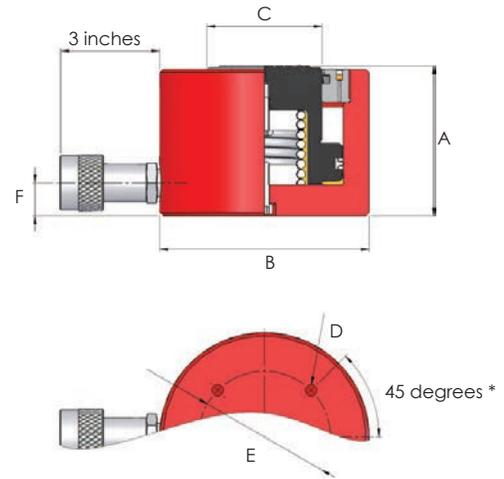


Capacities from 11 to 162 tons

Stroke lengths from 0.99 to 2.36 inches

Working pressure 10000 psi

- ▶ Single acting, spring assisted return
- ▶ Compact design with optimum stroke lengths
- ▶ Nitrocarburized piston rod for corrosion resistance
- ▶ Low friction bearing surfaces
- ▶ Anti-extrusion seals for improved performance at high pressures



*HLS101 features 2 base mounting holes at 90° from coupler

| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) | Dimensions (in) <i>(unless otherwise stated)</i> | | | | | |
|--------------|-----------------|-------------|---------------------------------|---------------------------------------|--------------|--------------------------------------------------|------|------|-----|------|------|
| | | | | | | A | B | C | D | E | F |
| HLS101 | 11 | 1.58 | 3.54 | 2.23 | 5.3 | 3.74 | 2.76 | 1.5 | M8 | 1.58 | 0.75 |
| HLS201 | 22 | 1.73 | 7.69 | 4.43 | 10.6 | 4.02 | 3.55 | 2.01 | M8 | 2.36 | 0.75 |
| HLS301 | 35 | 0.99 | 6.95 | 7.07 | 11.0 | 3.27 | 4.02 | 2.36 | M8 | 3.15 | 0.75 |
| HLS302 | 35 | 2.36 | 16.71 | 7.07 | 15.4 | 4.69 | 4.02 | 2.36 | M8 | 3.15 | 0.75 |
| HLS501 | 55 | 0.99 | 10.86 | 11.05 | 18.5 | 3.59 | 5 | 2.76 | M8 | 3.15 | 0.79 |
| HLS502 | 55 | 2.36 | 26.11 | 11.05 | 22.9 | 4.96 | 5 | 2.76 | M8 | 3.15 | 0.79 |
| HLS1001 | 120 | 0.99 | 23.42 | 23.78 | 43.7 | 4.26 | 7.01 | 4.49 | M12 | 5.52 | 1.18 |
| HLS1002 | 120 | 2.36 | 56.18 | 23.78 | 52.9 | 5.63 | 7.01 | 4.49 | M12 | 5.52 | 1.18 |
| HLS1501 | 162 | 0.99 | 31.48 | 31.96 | 81.6 | 5.12 | 8.51 | 4.49 | M12 | 6.5 | 1.62 |
| HLS1502 | 162 | 1.97 | 62.89 | 31.96 | 92.6 | 6.11 | 8.51 | 4.49 | M12 | 6.5 | 1.62 |

HSS | SINGLE ACTING MULTI-PURPOSE CYLINDERS

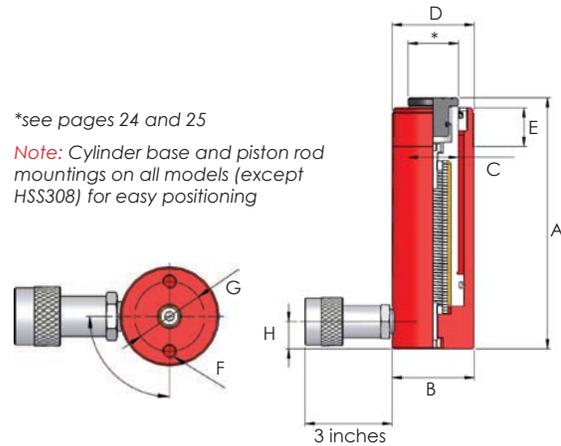


- ▶ Single acting, spring assisted return
- ▶ Nitrocarburized piston rod for corrosion resistance
- ▶ Low friction bearing surfaces
- ▶ Anti-extrusion seals for improved performance at high pressures
- ▶ Collar threads withstand full load
- ▶ Grooved saddles fitted as standard on all models
- ▶ Optional piston rod saddles listed on pages 24 and 25

Capacities from 5 to 120 tons

Stroke lengths from 0.99 to 18.01 inches

Working pressure 10000 psi



| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) | Dimensions (in) (unless otherwise stated) | | | | | | | |
|--------------|-----------------|-------------|---------------------------------|---------------------------------------|--------------|-------------------------------------------|------|------|--------------|------|-----|------|------|
| | | | | | | A | B | C | D | E | F | G | H |
| HSS51 | 5 | 0.99 | 0.98 | 0.99 | 2.2 | 4.22 | 1.5 | 0.95 | 1 1/2"-16 UN | 1.1 | M6 | 0.99 | 0.75 |
| HSS52 | 5 | 1.97 | 1.95 | 0.99 | 2.6 | 5.2 | 1.5 | 0.95 | 1 1/2"-16 UN | 1.1 | M6 | 0.99 | 0.75 |
| HSS53 | 5 | 2.96 | 2.93 | 0.99 | 3.1 | 6.19 | 1.5 | 0.95 | 1 1/2"-16 UN | 1.1 | M6 | 0.99 | 0.75 |
| HSS54 | 5 | 3.94 | 3.9 | 0.99 | 3.3 | 7.17 | 1.5 | 0.95 | 1 1/2"-16 UN | 1.1 | M6 | 0.99 | 0.75 |
| HSS55 | 5 | 4.93 | 4.88 | 0.99 | 4.0 | 8.16 | 1.5 | 0.95 | 1 1/2"-16 UN | 1.1 | M6 | 0.99 | 0.75 |
| HSS57 | 5 | 6.93 | 6.89 | 0.99 | 4.4 | 10.17 | 1.5 | 0.95 | 1 1/2"-16 UN | 1.1 | M6 | 0.99 | 0.75 |
| HSS59 | 5 | 8.94 | 8.91 | 0.99 | 5.3 | 12.14 | 1.5 | 0.95 | 1 1/2"-16 UN | 1.1 | M6 | 0.99 | 0.75 |
| HSS101 | 11 | 0.99 | 2.2 | 2.23 | 4.0 | 3.94 | 2.25 | 1.38 | 2 1/4"-14 UN | 1.06 | M8 | 1.58 | 0.75 |
| HSS102 | 11 | 2.21 | 4.94 | 2.23 | 5.3 | 5.16 | 2.25 | 1.38 | 2 1/4"-14 UN | 1.06 | M8 | 1.58 | 0.75 |
| HSS104 | 11 | 3.94 | 8.78 | 2.23 | 6.6 | 6.9 | 2.25 | 1.38 | 2 1/4"-14 UN | 1.06 | M8 | 1.58 | 0.75 |
| HSS106 | 11 | 5.91 | 13.24 | 2.23 | 9.3 | 8.87 | 2.25 | 1.38 | 2 1/4"-14 UN | 1.06 | M8 | 1.58 | 0.75 |
| HSS108 | 11 | 8.12 | 18.12 | 2.23 | 11.0 | 11.07 | 2.25 | 1.38 | 2 1/4"-14 UN | 1.06 | M8 | 1.58 | 0.75 |
| HSS1010 | 11 | 9.85 | 22.02 | 2.23 | 11.9 | 12.81 | 2.25 | 1.38 | 2 1/4"-14 UN | 1.06 | M8 | 1.58 | 0.75 |
| HSS1012 | 11 | 12.02 | 26.84 | 2.23 | 13.7 | 14.93 | 2.25 | 1.38 | 2 1/4"-14 UN | 1.06 | M8 | 1.58 | 0.75 |
| HSS152 | 16 | 1.97 | 6.16 | 3.15 | 7.5 | 6.07 | 2.76 | 1.62 | 2 3/4"-16 UN | 1.54 | M10 | 1.89 | 0.75 |
| HSS154 | 16 | 3.94 | 12.38 | 3.15 | 11.0 | 8.04 | 2.76 | 1.62 | 2 3/4"-16 UN | 1.54 | M10 | 1.89 | 0.75 |
| HSS156 | 16 | 5.91 | 18.54 | 3.15 | 14.6 | 10.01 | 2.76 | 1.62 | 2 3/4"-16 UN | 1.54 | M10 | 1.89 | 0.75 |
| HSS1510 | 16 | 9.85 | 30.93 | 3.15 | 19.4 | 13.95 | 2.76 | 1.62 | 2 3/4"-16 UN | 1.54 | M10 | 1.89 | 0.75 |
| HSS252 | 28 | 2.01 | 10.86 | 5.41 | 14.3 | 6.86 | 3.39 | 2.13 | 3 5/8"-12 UN | 1.93 | M12 | 2.36 | 0.99 |
| HSS254 | 28 | 4.02 | 21.72 | 5.41 | 17.6 | 8.87 | 3.39 | 2.13 | 3 5/8"-12 UN | 1.93 | M12 | 2.36 | 0.99 |
| HSS256 | 28 | 5.91 | 31.96 | 5.41 | 21.2 | 10.76 | 3.39 | 2.13 | 3 5/8"-12 UN | 1.93 | M12 | 2.36 | 0.99 |
| HSS258 | 28 | 8 | 43.25 | 5.41 | 24.7 | 12.77 | 3.39 | 2.13 | 3 5/8"-12 UN | 1.93 | M12 | 2.36 | 0.99 |
| HSS2510 | 28 | 9.85 | 53.31 | 5.41 | 27.8 | 14.74 | 3.39 | 2.13 | 3 5/8"-12 UN | 1.93 | M12 | 2.36 | 0.99 |
| HSS2514 | 28 | 14.03 | 75.76 | 5.41 | 37.0 | 18.91 | 3.39 | 2.13 | 3 5/8"-12 UN | 1.93 | M12 | 2.36 | 0.99 |
| HSS2518 | 28 | 18.01 | 97.42 | 5.41 | 47.2 | 24.07 | 3.39 | 2.13 | 3 5/8"-12 UN | 1.93 | M12 | 2.36 | 0.99 |
| HSS308 | 32 | 8.08 | 52.46 | 6.49 | 41.0 | 14.74 | 4.02 | 2.25 | 3 5/8"-12 UN | 1.97 | - | - | 1.97 |
| HSS502 | 55 | 2.01 | 22.2 | 11.05 | 28.7 | 5.91 | 5 | 3.11 | 5"-12 UN | 2.17 | M12 | 3.35 | 0.79 |
| HSS504 | 55 | 4.02 | 44.41 | 11.05 | 37.0 | 7.92 | 5 | 3.11 | 5"-12 UN | 2.17 | M12 | 3.35 | 0.79 |
| HSS506 | 55 | 5.99 | 66.12 | 11.05 | 44.1 | 9.89 | 5 | 3.11 | 5"-12 UN | 2.17 | M12 | 3.35 | 0.79 |
| HSS508 | 55 | 8 | 88.33 | 11.05 | 51.1 | 11.9 | 5 | 3.11 | 5"-12 UN | 2.17 | M12 | 3.35 | 0.79 |
| HSS5013 | 55 | 13 | 143.59 | 11.05 | 74.1 | 16.9 | 5 | 3.11 | 5"-12 UN | 2.17 | M12 | 3.35 | 0.79 |
| HSS756 | 80 | 5.99 | 95.22 | 15.92 | 68.3 | 10.72 | 5.75 | 3.74 | 5 3/4"-12 UN | 1.77 | M12 | 4.53 | 1.26 |
| HSS1004 | 120 | 4.02 | 95.47 | 23.78 | 91.7 | 8.79 | 7.29 | 4.49 | 6 7/8"-12 UN | 1.97 | M12 | 5.75 | 1.26 |
| HSS1006 | 120 | 6.03 | 143.17 | 23.78 | 109.8 | 10.8 | 7.29 | 4.49 | 6 7/8"-12 UN | 1.97 | M12 | 5.75 | 1.26 |
| HSS10010 | 120 | 10.01 | 237.66 | 23.78 | 144.4 | 14.78 | 7.29 | 4.49 | 6 7/8"-12 UN | 1.97 | M12 | 5.75 | 1.26 |

Note: If specifying this cylinder for use with the SLF and SLV synchronous lifting systems and associated mounting kit, please consider the increase in dimension A (closed height), see pages 43 and 47.

HHS | SINGLE ACTING HOLLOW PISTON CYLINDERS

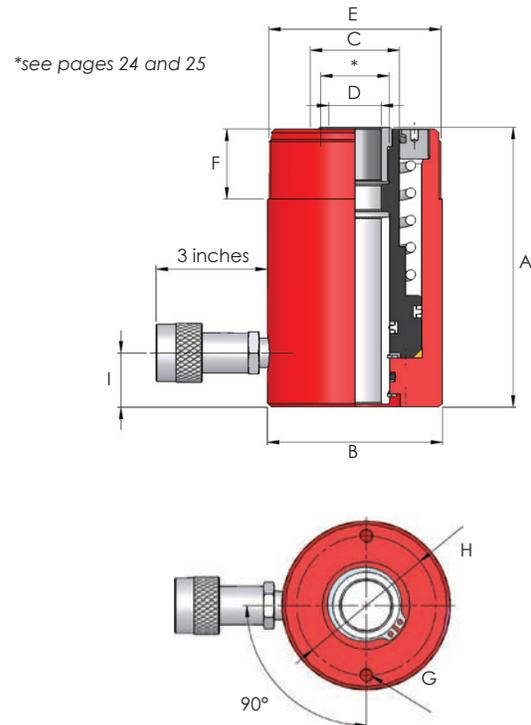


Capacities from 12 to 112 tons

Stroke lengths from 0.99 to 5.99 inches

Working pressure 10000 psi

- ▶ Single acting, spring assisted return
- ▶ Hollow piston design for tooling, maintenance and tensioning applications
- ▶ Nitrocarburized piston rod for corrosion resistance
- ▶ Low friction bearing surfaces
- ▶ Anti-extrusion seals for improved performance at high pressures
- ▶ Collar threads withstand full load
- ▶ Optional piston rod saddles listed on pages 24 and 25



| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) |
|--------------|-----------------|-------------|---------------------------------|---------------------------------------|--------------|
| HHS101 | 12 | 0.99 | 2.38 | 2.45 | 6.2 |
| HHS102 | 12 | 1.97 | 4.82 | 2.45 | 6.6 |
| HHS106 | 12 | 5.99 | 14.64 | 2.45 | 22.5 |
| HHS202 | 25 | 1.97 | 10.19 | 5.16 | 15.4 |
| HHS206 | 25 | 5.91 | 30.5 | 5.16 | 30.4 |
| HHS302 | 36 | 1.97 | 14.21 | 7.24 | 23.4 |
| HHS306 | 36 | 5.99 | 43.31 | 7.24 | 42.3 |
| HHS603 | 67 | 2.99 | 39.71 | 13.28 | 61.7 |
| HHS606 | 67 | 5.91 | 78.39 | 13.28 | 89.5 |
| HHS1003 | 112 | 2.99 | 66.37 | 22.18 | 141.1 |
| HHS1006 | 112 | 5.91 | 130.97 | 22.18 | 165.3 |

| Dimensions (in) (unless otherwise stated) | | | | | | | | |
|-------------------------------------------|------|------|------|------------|------|-----|------|------|
| A | B | C | D | E | F | G | H | I |
| 4.33 | 2.76 | 1.5 | 0.79 | 2 ¼"-16 UN | 1.18 | M8 | 2.01 | 0.75 |
| 5.52 | 2.76 | 1.5 | 0.79 | 2 ¼"-16 UN | 1.18 | M8 | 2.01 | 0.75 |
| 11.7 | 2.76 | 1.5 | 0.79 | 2 ¼"-16 UN | 1.18 | M8 | 2.01 | 0.75 |
| 6.3 | 3.94 | 2.01 | 1.18 | 3 ⅞"-12 UN | 1.58 | M8 | 3.25 | 1.22 |
| 12.06 | 3.94 | 2.01 | 1.18 | 3 ⅞"-12 UN | 1.58 | M8 | 3.25 | 1.22 |
| 6.5 | 4.53 | 2.36 | 1.38 | 4 ½"-12 UN | 1.58 | M8 | 3.62 | 1.22 |
| 12.61 | 4.53 | 2.36 | 1.38 | 4 ½"-12 UN | 1.58 | M8 | 3.62 | 1.22 |
| 8.9 | 6.3 | 3.62 | 2.17 | 6 ¼"-12 UN | 2.32 | M12 | 5.12 | 1.22 |
| 12.41 | 6.3 | 3.62 | 2.17 | 6 ¼"-12 UN | 2.32 | M12 | 5.12 | 1.22 |
| 10.87 | 8.39 | 5 | 3.19 | 8 ⅜"-12 UN | 2.36 | M16 | 7.01 | 1.77 |
| 13.79 | 8.39 | 5 | 3.19 | 8 ⅜"-12 UN | 2.36 | M16 | 7.01 | 1.77 |

Note: If specifying this cylinder for use with the SLF and SLV synchronous lifting systems and associated mounting kit, please consider the increase in dimension A (closed height), see pages 43 and 47.

HHR | DOUBLE ACTING HOLLOW PISTON CYLINDERS

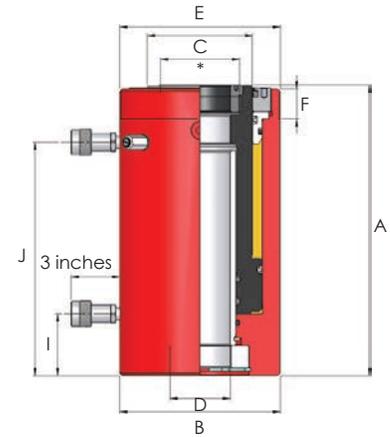
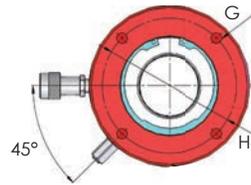


Capacities from 36 to 272 tons

Stroke lengths from 2.01 to 12.02 inches

Working pressure 10000 psi

- ▶ Double acting design for enhanced operating stages
- ▶ Hollow piston design for tooling, maintenance and tensioning applications
- ▶ Nitrocarburized piston rod for corrosion resistance
- ▶ Low friction bearing surfaces
- ▶ Annular area overload protection valve
- ▶ Anti-extrusion seals for improved performance at high pressures
- ▶ Collar threads withstand full load
- ▶ Optional piston rod saddles listed on pages 24 and 25



Note: 36 & 67 ton models feature 2 base mouting holes at 90° from coupler.
*see pages 24 and 25

| Model number | Capacity (tons) | | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) | Dimensions (in) (unless otherwise stated) | | | | | | | | | |
|--------------|-----------------|------|-------------|---------------------------------|---------------------------------------|--------------|-------------------------------------------|-------|-------|------|--------------|------|-----|------|------|-------|
| | Push | Pull | | | | | A | B | C | D | E | F | G | H | I | J |
| HHR302 | 36 | 26 | 2.01 | 14.52 | 7.24 | 26.9 | 7.09 | 4.53 | 2.38 | 1.38 | 4 1/2"-12 UN | 1.58 | M8 | 3.62 | 1.1 | 4.69 |
| HHR306 | 36 | 26 | 5.91 | 42.76 | 7.24 | 38.8 | 10.99 | 4.53 | 2.38 | 1.38 | 4 1/2"-12 UN | 1.58 | M8 | 3.62 | 1.1 | 8.59 |
| HHR3012 | 36 | 26 | 12.02 | 86.86 | 7.24 | 56.7 | 17.1 | 4.53 | 2.38 | 1.38 | 4 1/2"-12 UN | 1.58 | M8 | 3.62 | 1.1 | 14.7 |
| HHR603 | 67 | 42 | 2.99 | 39.77 | 13.28 | 67.5 | 9.42 | 6.3 | 3.62 | 2.17 | 6 1/4"-12 UN | 1.77 | M12 | 5.12 | 1.22 | 6.54 |
| HHR606 | 67 | 42 | 5.99 | 79.54 | 13.28 | 91.7 | 12.41 | 6.3 | 3.62 | 2.17 | 6 1/4"-12 UN | 1.77 | M12 | 5.12 | 1.22 | 9.53 |
| HHR6010 | 67 | 42 | 10.01 | 132.92 | 13.28 | 115.7 | 16.43 | 6.3 | 3.62 | 2.17 | 6 1/4"-12 UN | 1.77 | M12 | 5.12 | 1.22 | 13.55 |
| HHR1003 | 112 | 47 | 2.99 | 66.31 | 22.18 | 151.0 | 12.21 | 8.39 | 5.52 | 3.15 | 8 3/8"-12 UN | 1.58 | M16 | 7.01 | 3.23 | 9.22 |
| HHR1006 | 112 | 47 | 5.99 | 132.61 | 22.18 | 198.4 | 15.21 | 8.39 | 5.52 | 3.15 | 8 3/8"-12 UN | 1.58 | M16 | 7.01 | 3.23 | 12.21 |
| HHR1508 | 168 | 78 | 8 | 263.52 | 32.98 | 374.8 | 19.82 | 10.64 | 7.25 | 4.02 | n/a | n/a | n/a | na | 3.86 | 15.33 |
| HHR2508 | 272 | 84 | 8 | 429.38 | 53.71 | 593.0 | 19.9 | 13.79 | 10.01 | 5.91 | n/a | n/a | n/a | na | 3.86 | 15.33 |

Note: If specifying this cylinder for use with the SLF and SLV synchronous lifting systems and associated mounting kit, please consider the increase in dimension A (closed height), see pages 43 and 47.

HDA | DOUBLE ACTING HIGH TONNAGE CYLINDERS

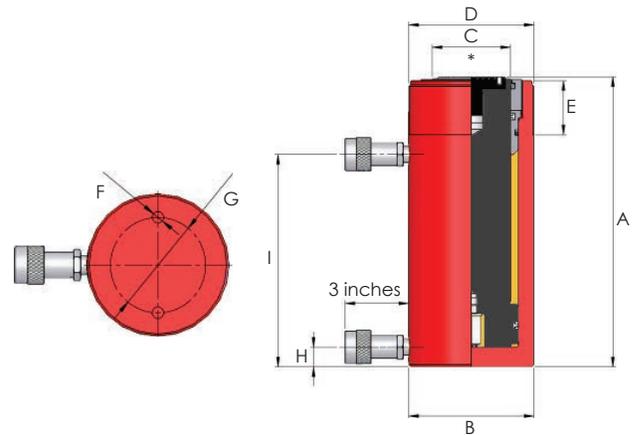


Capacities from 28 to 1115 tons

Stroke lengths from 5.99 to 20.02 inches

Working pressure 10000 psi

- ▶ Double acting design offers higher work output with improved performance and efficiency
- ▶ Substantial pulling force in the piston retraction mode provides increased versatility
- ▶ Nitrocarburized cylinder body and piston rod for increased corrosion protection
- ▶ Low friction bearing surfaces
- ▶ Internal annular area overload protection valve
- ▶ Anti-extrusion seals for improved performance at high pressures
- ▶ Flat saddle, collar thread and piston rod thread as standard on all models up to 224 tons
- ▶ Replaceable tilting saddle fitted as standard on models from 359 tons and upwards
- ▶ Lifting ring as standard on models from 55 to 120 tons
- ▶ Eyebolts as standard on models from 168 to 1115 tons
- ▶ Optional piston rod saddles listed on pages 24 and 25



Note: Base mounting holes (F) will not withstand full load. Base mounting holes for easy positioning. Base mounting holes on model HDA5020 are at a random angular orientation to the cylinder ports.

**see pages 24 and 25*

| Model number | Capacity (tons) | | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) |
|--------------|-----------------|------|-------------|---------------------------------|---------------------------------------|--------------|
| | Push | Pull | | | | |
| HDA256 | 28 | 11 | 5.99 | 32.34 | 5.41 | 33.1 |
| HDA506 | 55 | 17 | 5.99 | 65.91 | 11.05 | 62.6 |
| HDA5013 | 55 | 17 | 13 | 143.41 | 11.05 | 93.9 |
| HDA5020 | 55 | 17 | 20.02 | 220.91 | 11.05 | 138.4 |
| HDA1006 | 120 | 40 | 5.99 | 142.19 | 23.76 | 142.2 |
| HDA10013 | 120 | 40 | 13 | 308.78 | 23.76 | 196.2 |
| HDA1506 | 168 | 87 | 5.99 | 198.94 | 33.2 | 198.4 |
| HDA15012 | 168 | 87 | 12.02 | 398.48 | 33.2 | 265.7 |
| HDA2006 | 224 | 104 | 5.99 | 264.23 | 44.21 | 286.2 |
| HDA20012 | 224 | 104 | 12.02 | 530.3 | 44.21 | 369.1 |
| HDA3006 | 359 | - | 5.99 | 424.11 | 70.9 | 425.5 |
| HDA30012 | 359 | - | 12.02 | 851.28 | 70.9 | 551.2 |
| HDA4006 | 439 | - | 5.99 | 518.09 | 86.63 | 630.5 |
| HDA5006 | 573 | - | 5.99 | 676.75 | 113.13 | 820.1 |
| HDA8006 | 892 | - | 5.99 | 1054.49 | 175.79 | 1433.0 |
| HDA10006 | 1115 | - | 5.99 | 1319.33 | 220 | 1984.1 |

| Dimensions (in) (unless otherwise stated) | | | | | | | | | |
|-------------------------------------------|-------|-------|--------------|----------|----------|----------|------|-------|-----|
| A | B | C | D | E | F | G | H | I | J |
| 11.31 | 3.62 | 1.97 | 3 5/8"-12 UN | 2.09 | M10 | 2.36 | 1.18 | 8.35 | 40° |
| 11.62 | 5 | 3.11 | 5"-12 UN | 2.17 | M12 | 3.35 | 0.79 | 8.51 | 30° |
| 18.64 | 5 | 3.11 | 5"-12 UN | 2.17 | M12 | 3.35 | 0.79 | 15.52 | 30° |
| 28.76 | 5 | 3.11 | 5"-12 UN | 2.17 | M12 | 3.35 | 2.68 | 25.06 | 30° |
| 11.98 | 7.29 | 4.49 | 6 7/8"-12 UN | 2.01 | M12 | 5.75 | 1.18 | 8.9 | 30° |
| 18.99 | 7.29 | 4.49 | 6 7/8"-12 UN | 2.01 | M12 | 5.75 | 1.18 | 15.92 | 30° |
| 12.21 | 8.27 | 4.49 | 8"-12 UN | 2.17 | M16 | 6.3 | 1.38 | 9.1 | 30° |
| 18.24 | 8.27 | 4.49 | 8"-12 UN | 2.17 | M16 | 6.3 | 1.38 | 15.13 | 30° |
| 12.88 | 10.01 | 5.52 | 9 3/4"-12 UN | 2.56 | M20 | 7.29 | 1.69 | 9.38 | 30° |
| 18.91 | 10.01 | 5.52 | 9 3/4"-12 UN | 2.56 | M20 | 7.29 | 1.69 | 15.41 | 30° |
| 16.11 | 12.29 | 6.5 | Optional | Optional | M20 | 6.23 | 1.97 | 10.32 | 30° |
| 22.14 | 12.29 | 6.5 | Optional | Optional | M20 | 6.23 | 1.97 | 16.35 | 30° |
| 16.98 | 14.18 | 8.51 | Optional | Optional | M24 | 8 | 2.17 | 10.91 | 30° |
| 18.52 | 15.64 | 8 | Optional | Optional | M24 | 8 | 2.56 | 11.82 | 30° |
| 21.08 | 19.70 | 11.82 | Optional | Optional | Optional | Optional | 2.76 | 12.53 | 30° |
| 23.25 | 21.28 | 12.61 | Optional | Optional | Optional | Optional | 3.9 | 14.07 | 30° |

Note: Other capacities and stroke lengths available on request.

If specifying this cylinder for use with the SLF and SLV synchronous lifting systems and associated mounting kit, please consider the increase in dimension A (closed height), see pages 43 and 47.

HFL | SINGLE ACTING LOW HEIGHT FAILSAFE LOCK RING CYLINDERS

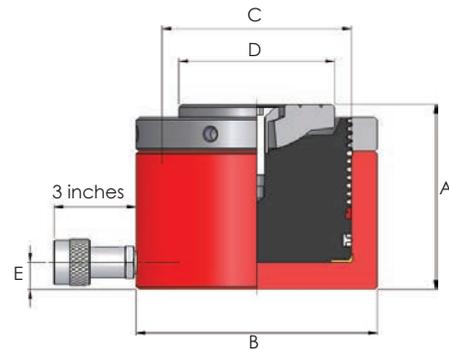


- ▶ Single acting, load return
- ▶ Mechanical lock ring feature allows for load holding for extended periods
- ▶ Compact, low height design suitable for vertical lifting applications only
- ▶ Threaded piston with tilting saddle fitted as standard to reduce the risk of side loading
- ▶ Nitrocarburized cylinder body and piston rod for increased corrosion protection
- ▶ Low friction bearing surfaces
- ▶ Anti-extrusion seals for improved performance at high pressures
- ▶ Overstroke restrictor port to prevent over extension of piston
- ▶ Tommy bars for easy rotation of the load holding lock ring are listed in the below table
- ▶ Saddle and piston rod details are listed on pages 24 and 25

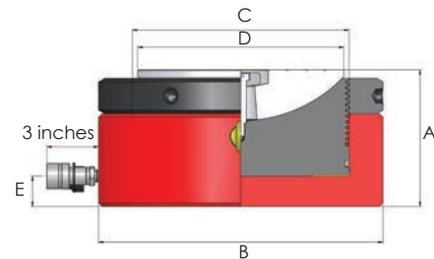
Capacities from 55 to 573 tons

Stroke lengths from 1.77 to 2.01 inches

Working pressure 10000 psi



HFL502, HFL1002, HFL1502



HFL2502, HFL4002, HFL5002

| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) | Tommy bar | Dimensions (in) | | | | |
|--------------|-----------------|-------------|---------------------------------|---------------------------------------|--------------|-----------|-----------------|-------|-------|-------|------|
| | | | | | | | A | B | C | D | E |
| HFL502 | 55 | 2.01 | 21.97 | 11.05 | 31.3 | TTB10 | 4.93 | 5 | 3.74 | 2.76 | 0.75 |
| HFL1002 | 120 | 1.97 | 46.99 | 23.78 | 61.5 | TTB10 | 5.4 | 7.29 | 5.52 | 4.53 | 0.79 |
| HFL1502 | 168 | 1.77 | 65.3 | 33.22 | 97.0 | TTB10 | 5.91 | 8.51 | 6.5 | 5.32 | 1.1 |
| HFL2502 | 287 | 1.77 | 100.69 | 56.75 | 153.0 | TTB14 | 6.26 | 10.76 | 8.51 | 7.88 | 1.22 |
| HFL4002 | 439 | 1.77 | 153.17 | 86.65 | 266.8 | TTB16 | 7.01 | 14.18 | 10.52 | 10.24 | 1.42 |
| HFL5002 | 573 | 1.77 | 200.77 | 113.13 | 410.1 | TTB20 | 7.56 | 15.76 | 12.02 | 11.43 | 1.69 |

Note: If specifying this cylinder for use with the SLF and SLV synchronous lifting systems and associated mounting kit, please consider the increase in dimension A (closed height), see pages 43 and 47.

HFG | SINGLE ACTING FAILSAFE LOCK RING CYLINDERS

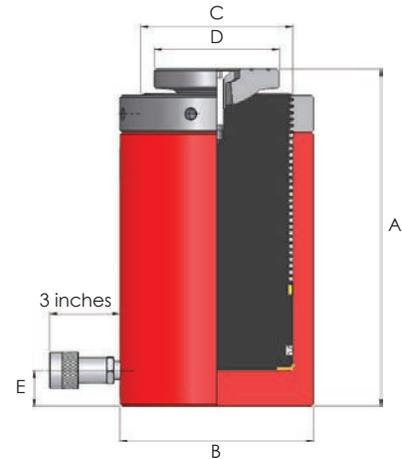


Capacities from 55 to 573 tons

Stroke lengths from 1.97 to 5.99 inches

Working pressure 10000 psi

- ▶ Single acting, load return
- ▶ Mechanical lock ring feature allows for load holding for extended periods
- ▶ Suitable for vertical lifting applications only
- ▶ Threaded piston with tilting saddle fitted as standard to reduce the risk of side loading
- ▶ Nitrocarburized cylinder body and piston rod for increased corrosion protection
- ▶ Low friction bearing surfaces
- ▶ Anti-extrusion seals for improved performance at high pressures
- ▶ Overstroke restrictor port to prevent over extension of piston
- ▶ Tommy bars for easy rotation of the load holding lock ring are listed in the below table
- ▶ Saddle and piston rod details are listed on pages 24 and 25



| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) | Tommy bar | Dimensions (in) | | | | |
|--------------|-----------------|-------------|---------------------------------|---------------------------------------|--------------|-----------|-----------------|-------|-------|-------|------|
| | | | | | | | A | B | C | D | E |
| HFG502 | 55 | 2.01 | 21.97 | 11.05 | 35.7 | TTB10 | 6.82 | 5 | 3.74 | 2.76 | 0.99 |
| HFG504 | 55 | 4.02 | 44.55 | 11.05 | 45.4 | TTB10 | 8.83 | 5 | 3.74 | 2.76 | 0.99 |
| HFG506 | 55 | 5.91 | 65.3 | 11.05 | 55.1 | TTB10 | 10.72 | 5 | 3.74 | 2.76 | 0.99 |
| HFG1002 | 120 | 2.01 | 46.38 | 23.78 | 77.2 | TTB10 | 7.45 | 7.29 | 5.52 | 4.53 | 1.08 |
| HFG1004 | 120 | 3.94 | 93.37 | 23.78 | 110.9 | TTB10 | 9.46 | 7.29 | 5.52 | 4.53 | 1.08 |
| HFG1006 | 120 | 5.91 | 140.35 | 23.78 | 144.2 | TTB10 | 12.25 | 7.29 | 5.52 | 4.53 | 1.08 |
| HFG1502 | 168 | 2.01 | 65.3 | 33.22 | 172.0 | TTB10 | 9.34 | 8.51 | 6.5 | 5.32 | 1.65 |
| HFG1504 | 168 | 3.94 | 130.59 | 33.22 | 185.2 | TTB10 | 11.35 | 8.51 | 6.5 | 5.32 | 1.65 |
| HFG1506 | 168 | 5.91 | 195.89 | 33.22 | 197.3 | TTB10 | 13.32 | 8.51 | 6.5 | 5.32 | 1.65 |
| HFG2002 | 224 | 1.97 | 86.65 | 44.19 | 210.3 | TTB14 | 10.28 | 10.01 | 7.49 | 5.32 | 1.97 |
| HFG2006 | 224 | 5.99 | 264.23 | 44.19 | 302.0 | TTB14 | 14.26 | 10.01 | 7.49 | 5.32 | 1.97 |
| HFG2506 | 282 | 5.99 | 335.63 | 56.81 | 377.0 | TTB14 | 15.8 | 10.76 | 8.51 | 5.91 | 1.97 |
| HFG3006 | 359 | 5.91 | 419.23 | 70.94 | 503.8 | TTB14 | 16.43 | 12.21 | 9.5 | 5.91 | 1.97 |
| HFG4006 | 439 | 5.95 | 515.04 | 86.65 | 680.1 | TTB14 | 18.08 | 14.18 | 10.52 | 7.09 | 2.76 |
| HFG5006 | 573 | 5.99 | 677.36 | 113.13 | 1007.5 | TTB16 | 19.62 | 15.76 | 12.02 | 7.09 | 3.15 |
| HFG8006 | 892 | 5.99 | 1066.15 | 175.79 | 1620.4 | TTB16 | 22.26 | 18.91 | 14.97 | 13.4 | 3.15 |
| HFG10006 | 1115 | 5.99 | 1318.8 | 220 | 2239.9 | TTB20 | 24.43 | 21.28 | 16.75 | 14.96 | 3.55 |

Note: Other capacities and stroke lengths available on request.

If specifying this cylinder for use with the SLF and SLV synchronous lifting systems and associated mounting kit, please consider the increase in dimension A (closed height), see pages 43 and 47.

HAS | SINGLE ACTING SOLID PISTON ALUMINUM CYLINDERS



Capacities from 35 to 121 tons

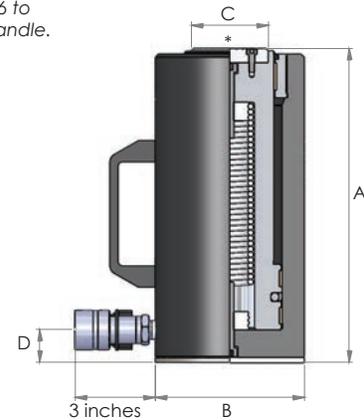
Stroke lengths from 2.01 to 12.02 inches

Working pressure 10000 psi

**see pages 24 and 25*

Note: Models from 56 to 121 tons feature a handle.

- ▶ Lightweight aluminum cylinders for applications where weight and portability are of prime importance
- ▶ Single acting, spring assisted return
- ▶ Hard anodized piston rod and cylinder for corrosion resistance and increased durability
- ▶ Steel base plate to protect cylinder body
- ▶ Low friction bearing surfaces
- ▶ Anti-extrusion seals for improved performance at high pressures
- ▶ Grooved saddles fitted as standard on all models
- ▶ Optional piston rod saddles listed on pages 24 and 25



| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) | Dimensions (in) | | | |
|--------------|-----------------|-------------|---------------------------------|---------------------------------------|--------------|-----------------|------|------|------|
| | | | | | | A | B | C | D |
| HAS302 | 35 | 2.01 | 13.73 | 6.85 | 8.8 | 7.13 | 4.14 | 1.97 | 0.99 |
| HAS306 | 35 | 5.99 | 40.99 | 6.85 | 13.2 | 11.11 | 4.14 | 1.97 | 0.99 |
| HAS3012 | 35 | 12.02 | 82.23 | 6.85 | 17.6 | 17.14 | 4.14 | 1.97 | 0.99 |
| HAS502 | 56 | 2.01 | 69.3 | 10.99 | 17.6 | 7.33 | 5.32 | 2.76 | 1.18 |
| HAS506 | 56 | 5.99 | 65.7 | 10.99 | 24.3 | 11.31 | 5.32 | 2.76 | 1.18 |
| HAS5012 | 56 | 12.02 | 414.31 | 10.99 | 35.3 | 17.34 | 5.32 | 2.76 | 1.18 |
| HAS1002 | 121 | 2.01 | 47.89 | 23.85 | 41.9 | 8.51 | 7.68 | 4.33 | 1.62 |
| HAS1006 | 121 | 5.99 | 142.74 | 23.85 | 50.7 | 12.49 | 7.68 | 4.33 | 1.62 |
| HAS10012 | 121 | 12.02 | 286.4 | 23.85 | 75.0 | 18.52 | 7.68 | 4.33 | 1.62 |

Note: Other capacities and stroke lengths available on request.

If specifying this cylinder for use with the SLF and SLV synchronous lifting systems and associated mounting kit, please consider the increase in dimension A (closed height), see pages 43 and 47.

HHA | SINGLE ACTING HOLLOW PISTON ALUMINUM CYLINDERS



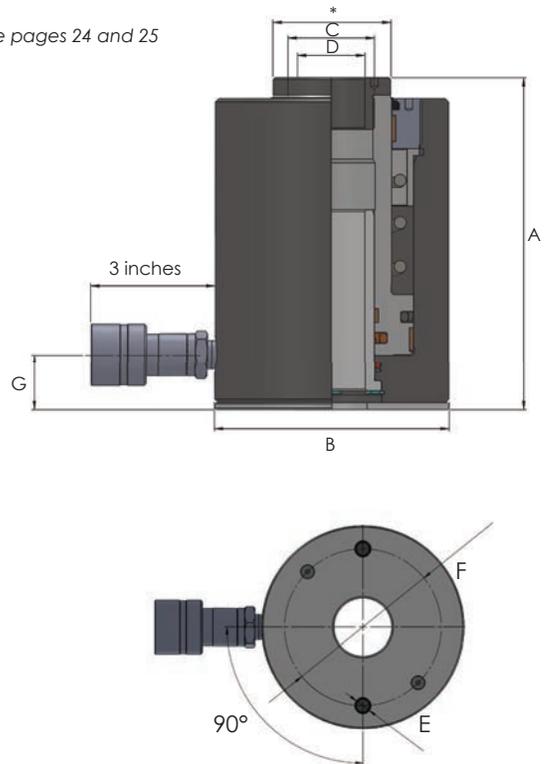
Capacities from 20 to 57 tons

Stroke lengths from 2.01 to 4.14 inches

Working pressure 10000 psi

- ▶ Lightweight aluminum cylinders for applications where weight and portability are of prime importance
- ▶ Single acting, spring assisted return
- ▶ Hollow piston design for pulling, pressing and tensioning applications
- ▶ Hard anodized piston rod and cylinder for corrosion resistance and increased durability
- ▶ Steel base plate to protect cylinder body
- ▶ Low friction bearing surfaces
- ▶ Anti-extrusion seals for improved performance at high pressures
- ▶ Grooved saddles fitted as standard on all models.
- ▶ Optional piston rod saddles listed on pages 24 and 25

*see pages 24 and 25



| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) | Dimensions (in) <i>(unless otherwise stated)</i> | | | | | | |
|--------------|-----------------|-------------|---------------------------------|---------------------------------------|--------------|--------------------------------------------------|------|------|------|--------|------|------|
| | | | | | | A | B | C | D | E | F | G |
| HHA182 | 20 | 2.01 | 7.87 | 3.91 | 7.9 | 6.9 | 3.86 | 1.77 | 1.02 | M8x10 | 2.6 | 1.02 |
| HHA372 | 41 | 2.01 | 16.23 | 8.08 | 15.9 | 7.6 | 5.36 | 2.72 | 1.54 | M10x15 | 4.14 | 1.26 |
| HHA504 | 57 | 4.14 | 46.67 | 11.28 | 29.5 | 11.03 | 6.3 | 3.11 | 2.01 | M10x15 | 5.13 | 1.54 |

Note: If specifying this cylinder for use with the SLF and SLV synchronous lifting systems and associated mounting kit, please consider the increase in dimension A (closed height), see pages 43 and 47.

HFA | SINGLE ACTING FAILSAFE LOCK RING ALUMINUM CYLINDERS



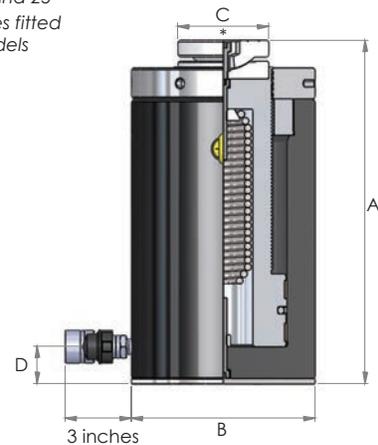
Capacities from 35 to 121 tons

Stroke lengths from 2.01 to 12.02 inches

Working pressure 10000 psi

- ▶ Lightweight aluminum cylinders for applications where weight and portability are of prime importance
- ▶ Single acting, spring assisted return
- ▶ Mechanical lock ring feature allows for load holding for extended periods
- ▶ Hard anodized piston rod and cylinder for corrosion resistance and increased durability
- ▶ Low friction bearing surfaces
- ▶ Anti-extrusion seals for improved performance at high pressures
- ▶ Tilting saddle fitted as standard on all models
- ▶ Steel base plate fitted as standard
- ▶ Integral stop ring
- ▶ Optional piston rod saddles listed on pages 24 and 25

*see pages 24 and 25
Note: Lifting eyes fitted on 121 tons models



| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) | Tommy bar | Dimensions (in) | | | |
|--------------|-----------------|-------------|---------------------------------|---------------------------------------|--------------|-----------|-----------------|------|------|------|
| | | | | | | | A | B | C | D |
| HFA302 | 35 | 2.01 | 14.15 | 7.04 | 13.2 | TTB10 | 8.94 | 4.26 | 1.97 | 0.79 |
| HFA306 | 35 | 5.99 | 42.15 | 7.04 | 17.6 | TTB10 | 12.92 | 4.26 | 1.97 | 0.79 |
| HFA3012 | 35 | 12.02 | 84.55 | 7.04 | 24.3 | TTB10 | 18.95 | 4.26 | 1.97 | 0.79 |
| HFA502 | 56 | 2.01 | 22.2 | 11.05 | 19.8 | TTB10 | 9.1 | 5.24 | 2.76 | 0.99 |
| HFA506 | 56 | 5.99 | 66.12 | 11.05 | 24.3 | TTB10 | 13.08 | 5.24 | 2.76 | 0.99 |
| HFA5012 | 56 | 12.02 | 132.68 | 11.05 | 37.5 | TTB10 | 19.11 | 5.24 | 2.76 | 0.99 |
| HFA1002 | 121 | 2.01 | 47.89 | 23.85 | 52.9 | TTB10 | 10.91 | 7.96 | 3.94 | 1.38 |
| HFA1006 | 121 | 5.99 | 142.74 | 23.85 | 66.1 | TTB10 | 14.89 | 7.96 | 3.94 | 1.38 |
| HFA10012 | 121 | 12.02 | 286.4 | 23.85 | 86.0 | TTB10 | 20.92 | 7.96 | 3.94 | 1.38 |

Note: Other capacities and stroke lengths available on request.
If specifying this cylinder for use with the SLF and SLV synchronous lifting systems and associated mounting kit, please consider the increase in dimension A (closed height), see pages 43 and 47.

HRA | DOUBLE ACTING HIGH TONNAGE ALUMINUM CYLINDERS



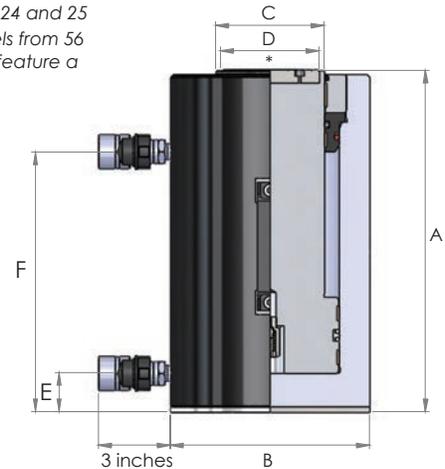
Capacities from 35 to 121 tons

Stroke lengths from 2.01 to 12.02 inches

Working pressure 10000 psi

- ▶ Lightweight aluminum cylinders for applications where weight and portability are of prime importance
- ▶ Double acting design offers higher work output with improved performance and efficiency
- ▶ Hard anodized piston rod and cylinder for corrosion resistance and increased durability
- ▶ Handles fitted as standard on models 56 ton upwards
- ▶ Low friction bearing surfaces
- ▶ Anti-extrusion seals for improved performance at high pressures
- ▶ Steel base plate fitted as standard on models
- ▶ Pressure relief valve on annulus side
- ▶ Optional piston rod saddles listed on pages 24 and 25

*see pages 24 and 25
Note: Models from 56 to 121 tons feature a handle.



| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) | Dimensions (in) | | | | | |
|--------------|-----------------|-------------|---------------------------------|---------------------------------------|--------------|-----------------|------|------|------|------|-------|
| | | | | | | A | B | C | D | E | F |
| HRA302 | 35 | 2.01 | 13.74 | 6.85 | 11.0 | 8.04 | 4.14 | 2.36 | 1.97 | 0.99 | 5.36 |
| HRA306 | 35 | 5.99 | 40.96 | 6.85 | 15.4 | 12.02 | 4.14 | 2.36 | 1.97 | 0.99 | 9.34 |
| HRA3012 | 35 | 12.02 | 82.2 | 6.85 | 22.0 | 18.05 | 4.14 | 2.36 | 1.97 | 0.99 | 15.37 |
| HRA502 | 56 | 2.01 | 22.05 | 10.99 | 22.0 | 8.71 | 5.32 | 3.11 | 2.76 | 1.18 | 5.56 |
| HRA506 | 56 | 5.99 | 65.72 | 10.99 | 28.7 | 12.69 | 5.32 | 3.11 | 2.76 | 1.18 | 9.53 |
| HRA5012 | 56 | 12.02 | 131.88 | 10.99 | 41.9 | 18.72 | 5.32 | 3.11 | 2.76 | 1.18 | 15.56 |
| HRA1002 | 121 | 2.01 | 47.89 | 23.85 | 48.5 | 10.17 | 7.96 | 4.33 | 3.94 | 1.62 | 6.78 |
| HRA1006 | 121 | 5.99 | 142.73 | 23.85 | 63.9 | 14.14 | 7.96 | 4.33 | 3.94 | 1.62 | 10.76 |
| HRA10012 | 121 | 12.02 | 286.4 | 23.85 | 86.0 | 20.17 | 7.96 | 4.33 | 3.94 | 1.62 | 16.78 |

Note: If specifying this cylinder for use with the SLF and SLV synchronous lifting systems and associated mounting kit, please consider the increase in dimension A (closed height), see pages 43 and 47.

HGG | SINGLE ACTING LOAD RETURN HIGH TONNAGE INDUSTRIAL CYLINDERS

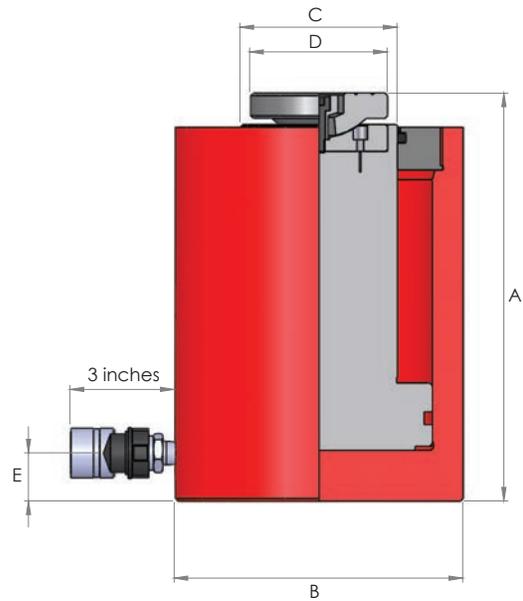


Capacities from 168 to 359 tons

Stroke length 6.11 inches

Working pressure 10000 psi

- ▶ Single acting, load return
- ▶ Heavy duty design for lifting and maintenance applications
- ▶ Integral stop ring for piston stroke limitation
- ▶ Tilting saddle fitted as standard to reduce the risk of side loading
- ▶ Low friction bearing surfaces
- ▶ Nitrocarburized piston rod for corrosion resistance
- ▶ Anti-extrusion seals for improved performance at high pressures
- ▶ Saddle and piston rod details are listed on pages 24 and 25



| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) | Dimensions (in) | | | | |
|--------------|-----------------|-------------|---------------------------------|---------------------------------------|--------------|-----------------|-------|------|------|------|
| | | | | | | A | B | C | D | E |
| HGG1506 | 168 | 6.11 | 202.6 | 33.22 | 128.5 | 11.7 | 8.27 | 4.49 | 3.94 | 1.46 |
| HGG2006 | 224 | 6.11 | 282.54 | 44.19 | 210.1 | 12.21 | 10.01 | 5.52 | 5.32 | 1.97 |
| HGG3006 | 359 | 6.11 | 433.27 | 70.94 | 338.4 | 13.51 | 12.29 | 6.5 | 5.91 | 1.97 |

Note: If specifying this cylinder for use with the SLF and SLV synchronous lifting systems and associated mounting kit, please consider the increase in dimension A (closed height), see pages 43 and 47.

HSG | SINGLE ACTING LOAD RETURN HIGH TONNAGE CONSTRUCTION CYLINDERS

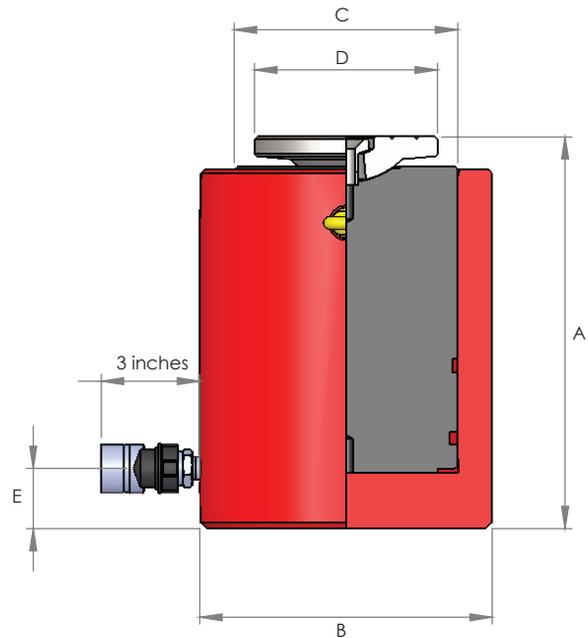


Capacities from 168 to 359 tons

Stroke length 5.99 inches

Working pressure 10000 psi

- ▶ Single acting, load return
- ▶ Heavy duty design for construction, civil engineering and heavy fabrication applications
- ▶ Overstroke restrictor port to prevent over extension of piston
- ▶ Tilting saddle fitted as standard to reduce the risk of side loading
- ▶ Nitrocarburized cylinder body and piston rod for corrosion resistance
- ▶ Low friction bearing surfaces
- ▶ Anti-extrusion seals for improved performance at high pressures
- ▶ Saddle and piston rod details are listed on pages 24 and 25



| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) | Dimensions (in) | | | | |
|--------------|-----------------|-------------|---------------------------------|---------------------------------------|--------------|-----------------|-------|------|------|------|
| | | | | | | A | B | C | D | E |
| HSG1506 | 168 | 5.99 | 195.89 | 33.22 | 170.9 | 11.54 | 8.51 | 6.5 | 5.32 | 1.77 |
| HSG2006 | 224 | 5.99 | 264.84 | 44.19 | 237.4 | 11.66 | 10.01 | 7.51 | 5.32 | 1.77 |
| HSG3006 | 359 | 5.99 | 426.56 | 70.94 | 386.2 | 12.84 | 12.29 | 9.51 | 5.91 | 1.97 |

Note: If specifying this cylinder for use with the SLF and SLV synchronous lifting systems and associated mounting kit, please consider the increase in dimension A (closed height), see pages 43 and 47.

HPC | SINGLE ACTING PULL CYLINDERS

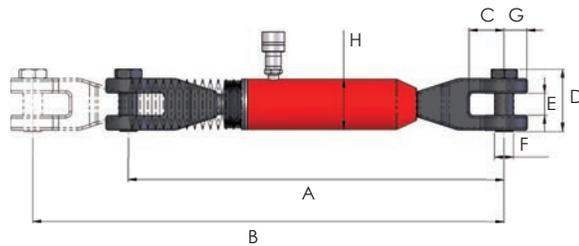


Capacities from 11 to 55 tons

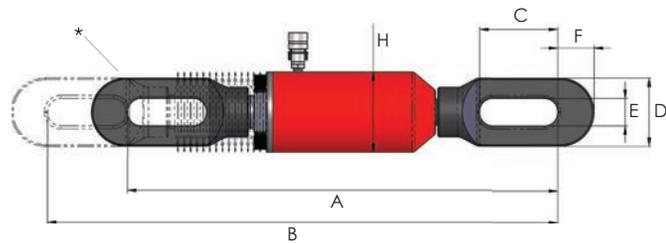
Stroke length 5.99 inches

Working pressure 10000 psi

- ▶ Single acting, spring assisted return
- ▶ Substantial hydraulic pulling force for steel plate alignment, cable tensioning and general load moving applications
- ▶ Replaceable pulling and clevis eyes fitted on the piston rod and cylinder base
- ▶ Nitrocarburized piston rod for corrosion resistance
- ▶ Anti-extrusion seals for improved performance at high pressures
- ▶ Protective piston rod bellows fitted as standard



HPC106C



HPC106, HPC306, HPC506

* Eye bolt thickness: HPC106 = 0.87", HPC306 = 1.38", HPC506 = 1.58"

| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Cylinder eff. area (in ²) | Weight (lbs) | Dimensions (in) | | | | | | | |
|--------------|-----------------|-------------|---------------------------------|---------------------------------------|--------------|-----------------|-------|------|------|------|------|------|------|
| | | | | | | A | B | C | D | E | F | G | H |
| HPC106 | 11 | 5.99 | 13.91 | 2.33 | 26.5 | 23.64 | 29.63 | 4.49 | 2.64 | 1.26 | 1.3 | - | 3.15 |
| HPC106C | 11 | 5.99 | 13.91 | 2.33 | 34.2 | 23.72 | 29.71 | 2.29 | 3.9 | 1.38 | 1.18 | 1.42 | 3.15 |
| HPC306 | 33 | 5.99 | 38.8 | 6.48 | 68.3 | 27.38 | 33.37 | 5.71 | 4.14 | 1.65 | 1.97 | - | 4.81 |
| HPC506 | 55 | 5.99 | 65.76 | 11.01 | 119.0 | 32.27 | 38.26 | 5.87 | 5.12 | 2.05 | 2.72 | - | 6.03 |

PCS | PUMP AND CYLINDER SETS



Capacities from 5 to 120 tons

Stroke lengths from 0.39 to 6.03 inches

Working pressure 10000 psi

- ▶ Choice of 18 models of pump, cylinder & hose set
- ▶ Single acting, spring assisted return cylinders with solid or hollow pistons
- ▶ Manually operated pumps with factory set safety relief valve
- ▶ Standard 6.5 feet length hose with quick connect coupler
- ▶ Optional piston rod saddles available for most models, see pages 24 and 25

| Model number | SET | | PUMP | | | CYLINDER | | HOSE | | Weight (lbs) |
|--------------|--------------|--------------------------|--------------|-----------------------------|--------------|-------------|--------------------|--------------|-------------|--------------|
| | Model number | Cylinder capacity (tons) | Model number | Capacity (in ³) | Model number | Stroke (in) | Closed height (in) | Model number | Length (ft) | |
| PCS50 | | 5 | HP110 | 61.02 | HPS51 | 0.63 | 1.65 | HC2 | 6.5 | 16.3 |
| PCS53 | | 5 | HP110 | 61.02 | HSS53 | 2.96 | 6.19 | HC2 | 6.5 | 17.6 |
| PCS100 | | 11 | HP110 | 61.02 | HPS100 | 0.39 | 1.81 | HC2 | 6.5 | 18.1 |
| PCS101 | | 11 | HP110 | 61.02 | HLS101 | 1.58 | 3.74 | HC2 | 6.5 | 19.8 |
| PCS102 | | 11 | HP110 | 61.02 | HSS102 | 2.21 | 5.16 | HC2 | 6.5 | 19.8 |
| PCS106 | | 11 | HP110 | 61.02 | HSS106 | 5.91 | 8.87 | HC2 | 6.5 | 23.8 |
| PCS200 | | 22 | HP110 | 61.02 | HPS200 | 0.43 | 2.05 | HC2 | 6.5 | 20.7 |
| PCS201 | | 22 | HP110 | 61.02 | HLS201 | 1.73 | 4.02 | HC2 | 6.5 | 24.9 |
| PCS256 | | 28 | HP110 | 61.02 | HSS256 | 5.91 | 10.76 | HC2 | 6.5 | 35.3 |
| PCS300 | | 35 | HP110 | 61.02 | HPS300 | 0.47 | 2.32 | HC2 | 6.5 | 23.8 |
| PCS302 | | 35 | HP110 | 61.02 | HLS302 | 2.36 | 4.69 | HC2 | 6.5 | 30.0 |
| PCS502 | | 55 | HP110 | 61.02 | HLS502 | 2.36 | 4.96 | HC2 | 6.5 | 37.5 |
| PCS506 | | 55 | HP232 | 122.05 | HSS506 | 5.99 | 9.89 | HC2 | 6.5 | 68.3 |
| PCS1002 | | 120 | HP232 | 122.05 | HLS1002 | 2.36 | 5.63 | HC2 | 6.5 | 78.3 |
| PCS1006 | | 120 | HP252 | 305.12 | HSS1006 | 6.03 | 10.8 | HC2 | 6.5 | 145.5 |
| PCS202H | | 25 | HP110 | 61.02 | HHS202 | 1.97 | 6.3 | HC2 | 6.5 | 30.6 |
| PCS302H | | 36 | HP110 | 61.02 | HHS303 | 1.97 | 6.5 | HC2 | 6.5 | 37.9 |
| PCS603H | | 67 | HP232 | 122.05 | HHS603 | 2.99 | 8.9 | HC2 | 6.5 | 76.3 |

Note: Models PCS202H, PCS302H & PCS603H are supplied with a hollow piston cylinder

CYLINDER SADDLES & PISTON ROD THREAD SPECIFICATIONS

| Cylinder range | Saddles | | | | | Piston rod thread | | | | |
|----------------|-----------------|--------|-----------------|------------------|-----------------|-------------------|------|-------------|---------------|----|
| | Standard saddle | | Optional saddle | | Dimensions (in) | | | Thread size | Figure | |
| | Model number | Figure | Model number | Figure | A | B | C | D | | |
| HAS | HAS - 30T | HA30 | 2 | HAT30 | 7 | 1.97 | 0.39 | - | - | 10 |
| | HAS - 50T | HA50 | 2 | HAT50 | 7 | 2.76 | 0.43 | - | - | 10 |
| | HAS - 100T | HA100 | 2 | HAT100 | 7 | 3.94 | 0.47 | - | - | 10 |
| HDA | HDA - 25T | HD25 | 3 | HD25T | 9 | 1.77 | 0.35 | 1.38 | 1"-12 UNF | 11 |
| | HDA - 50T | HD50 | 3 | HD50T | 9 | 2.76 | 0.43 | 1.77 | 1"-12 UNF | 11 |
| | HDA - 100T | HD100 | 3 | HD100T | 9 | 3.94 | 0.47 | 2.17 | 1 3/4"-12 UNF | 11 |
| | HDA - 150T | HD200 | 3 | HD200T | 9 | 3.94 | 0.47 | 2.05 | 2 1/2"-12 UNF | 11 |
| | HDA - 200T | HD200 | 3 | HD200T | 9 | 4.33 | 0.47 | 2.76 | 2 1/2"-12 UNF | 11 |
| | HDA - 300T | HD300T | 7 | HD300 | 2 | 5.91 | 0.99 | - | - | - |
| | HDA - 400T | HD400T | 7 | HD400 | 2 | 7.09 | 0.99 | - | - | - |
| | HDA - 500T | HD500T | 7 | HD500 | 2 | 7.09 | 0.99 | - | - | - |
| | HDA - 800T | TS800 | 8 | - | - | 7.09 | - | 2.01 | M24x3 | 14 |
| HDA - 1000T | TS1000 | 8 | - | - | 7.09 | - | 2.01 | M24x3 | 14 | |
| HFA | HFA - 30T | HAT30 | 7 | HA30 | 2 | 1.97 | 0.39 | - | - | 10 |
| | HFA - 50T | HAT50 | 7 | HA50 | 2 | 2.76 | 0.43 | - | - | 10 |
| | HFA - 100T | HAT100 | 7 | HA100 | 2 | 3.94 | 0.47 | - | - | 10 |
| HFG | HFG - 50T | TS50 | 8 | - | - | 1.22 | - | 0.59 | M8x1.25 | 14 |
| | HFG - 100T | TS100 | 8 | - | - | 2.36 | - | 0.71 | M12x1.75 | 14 |
| | HFG - 150T | TS150 | 8 | - | - | 2.36 | - | 0.71 | M12x1.75 | 14 |
| | HFG - 200T | TS200 | 8 | - | - | 2.36 | - | 0.71 | M12x1.75 | 14 |
| | HFG - 250T | TS300 | 8 | - | - | 2.76 | - | 0.63 | M10x1.5 | 14 |
| | HFG - 300T | TS300 | 8 | - | - | 4.93 | - | 0.67 | M10x1.5 | 14 |
| | HFG - 400T | TS400 | 8 | - | - | 4.93 | - | 0.67 | M12x1.75 | 14 |
| | HFG - 500T | TS500 | 8 | - | - | 4.93 | - | 0.67 | M12x1.75 | 14 |
| | HFG - 800T | TS800 | 8 | - | - | 6.9 | - | 1.97 | M24x3 | 14 |
| HFG - 1000T | TS1000 | 8 | - | - | 6.9 | - | 2.01 | M24x3 | 14 | |
| HFL | HFL - 50T | TS50 | 8 | - | - | 1.22 | - | 0.59 | M8x1.25 | 14 |
| | HFL - 100T | TS100 | 8 | - | - | 2.36 | - | 0.71 | M12x1.75 | 14 |
| | HFL - 150T | TS150 | 8 | - | - | 4.73 | - | 0.71 | M12x1.75 | 14 |
| | HFL - 250T | TS250 | 8 | - | - | 5.52 | - | 1.58 | M10x1.5 | 14 |
| | HFL - 400T | TS400 | 8 | - | - | 7.09 | - | 1.58 | M12x1.75 | 14 |
| HFL - 500T | TS500 | 8 | - | - | 7.88 | - | 1.58 | M12x1.75 | 14 | |
| HGG | HGG - 150T | TS150 | 8 | - | - | 0.71 | - | 2.36 | M12x1.75 | 14 |
| | HGG - 200T | TS201 | 8 | - | - | 0.71 | - | 4.91 | M12x1.75 | 14 |
| | HGG - 300T | TS301 | 8 | - | - | 0.83 | - | 3.74 | M12x1.75 | 14 |
| HHA | HHA - 18T | HA18 | 4 | HA18T | 5 | - | - | 1.1 | M35x1.5 | 12 |
| | HHA - 37T | HA37 | 4 | HA37T | 5 | - | - | 1.38 | M50x1.5 | 12 |
| | HHA - 50T | HA50 | 4 | HA50T | 5 | - | - | 1.46 | M60x1.5 | 12 |
| HHR | HHR - 30T | HA302 | 4 | HA302T, HA302G | 5,6 | 2.05 | 0.39 | 1.26 | M48x1.5 | 13 |
| | HHR - 60T | HA603 | 4 | HA603T, HA603G | 5,6 | 3.15 | 0.39 | 1.26 | M70x1.5 | 13 |
| | HHR - 100T | HA1003 | 4 | HA1003T, HA1003G | 5,6 | 4.49 | 0.47 | 1.5 | M105x2 | 13 |
| | HHR - 150T | HA1508 | 4 | HA1508G | 6 | 6.7 | 0.53 | 1.97 | M150x3 | 13 |
| HHR - 250T | HA2508 | 4 | HA2508G | 6 | 9.53 | 0.53 | 2.92 | M220x3 | 13 | |
| HHS | HHS - 10T | HA102 | 4 | HA102T, HA102G | 5,6 | 1.26 | 0.28 | 0.83 | M28x1.5 | 13 |
| | HHS - 20T | HA202 | 4 | HA202T, HA202G | 5,6 | 1.69 | 0.39 | 1.22 | M39x1.5 | 13 |
| | HHS - 30T | HA302 | 4 | HA302T, HA302G | 5,6 | 2.05 | 0.39 | 1.22 | M48x1.5 | 13 |
| | HHS - 60T | HA603 | 4 | HA603T, HA603G | 5,6 | 3.15 | 0.39 | 1.22 | M70x1.5 | 13 |
| | HHS - 100T | HA1003 | 4 | HA1003T, HA1003G | 5,6 | 4.49 | 0.47 | 1.5 | M105x2 | 13 |
| HRA | HRA - 30T | HA30 | 2 | HAT30 | 7 | 1.97 | 0.39 | - | - | 10 |
| | HRA - 50T | HA50 | 2 | HAT50 | 7 | 2.76 | 0.43 | - | - | 10 |
| | HRA - 100T | HA100 | 2 | HAT100 | 7 | 3.94 | 0.47 | - | - | 10 |
| HSG | HSG - 150T | TS150 | 8 | - | - | 0.71 | - | 2.36 | M12x1.75 | 14 |
| | HSG - 200T | TS201 | 8 | - | - | 0.71 | - | 4.91 | M12x1.75 | 14 |
| | HSG - 300T | TS302 | 8 | - | - | 1.1 | - | 6.3 | M22x2.5 | 14 |
| HSS | HSS - 5T | HA5 | 1 | - | - | - | - | 0.79 | 3/4"-16 UNF | 12 |
| | HSS - 10T | HA10 | 1 | HAT10 | 9 | - | - | 0.55 | 1"-8 UNC | 12 |
| | HSS - 15T | HA15 | 1 | HAT10 | 9 | - | - | 0.55 | 1"-8 UNC | 12 |
| | HSS - 25T | HA25 | 1 | HAT25 | 9 | - | - | 1.18 | 1 1/2"-16 UN | 12 |
| | HSS - 30T | HA25 | 1 | HAT25 | 9 | - | - | 1.18 | 1 1/2"-16 UN | 12 |
| | HSS - 50T | HA50 | 2 | HAT50 | 7 | 2.76 | 0.43 | - | - | 10 |
| | HSS - 75T | HA75 | 2 | HAT75 | 7 | 3.15 | 0.47 | - | - | 10 |
| HSS - 100T | HA100 | 2 | HAT100 | 7 | 3.94 | 0.47 | - | - | 10 | |

CYLINDER SADDLES & PISTON ROD THREAD SPECIFICATIONS

SADDLE DRAWINGS (for specifications, see facing page)

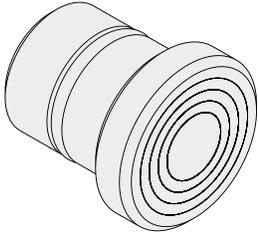


Figure 1

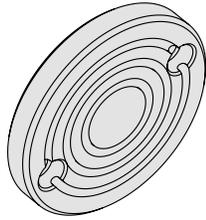


Figure 2

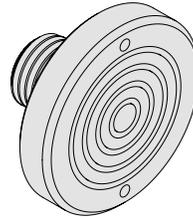


Figure 3

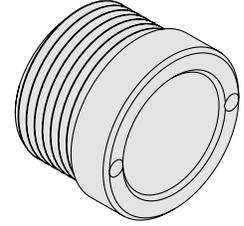


Figure 4

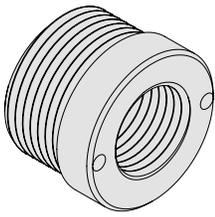


Figure 5

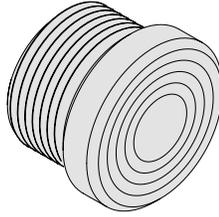


Figure 6

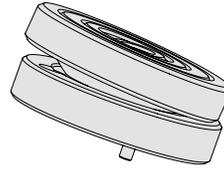


Figure 7

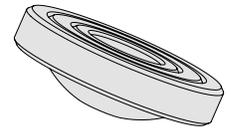


Figure 8

Note: See below table for details on internal saddle thread

| Saddle model | Internal saddle thread specification |
|--------------|--------------------------------------|
| HA18T | M24 |
| HA37T | M36 |
| HA50T | M48 |
| HA102T | ¾"-16 UNF |
| HA202T | 1" x 8 UNC |
| HA302T | 1 ¼" x 7 UNC |
| HA603T | 1 ⅝" x 5 ½" UNS |
| HA1003T | 2 ½" x 8 UN |

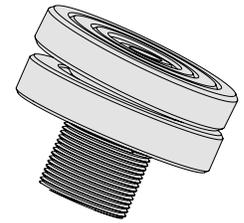


Figure 9

PISTON ROD DRAWINGS (for specifications, see facing page)

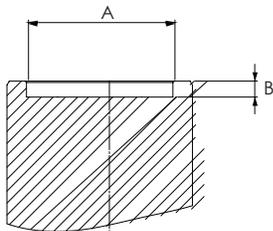


Figure 10

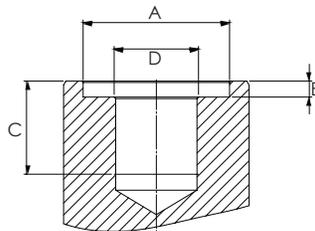


Figure 11

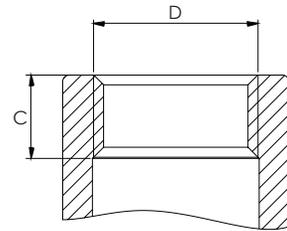


Figure 12

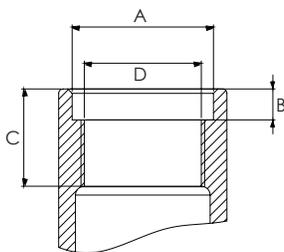


Figure 13

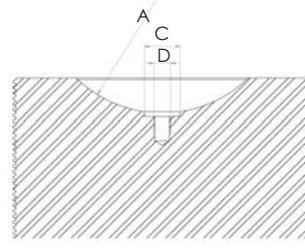


Figure 14

HI-FORCE HYDRAULIC PUMPS

The Hi-Force range of manual and powered hydraulic pumps comprises of standard models, with additional factory fitted options, of electric solenoid valves and 60 Hz motors, available to order. The range comprises of manual, battery, electric, air and gasoline engine driven options, all suitable for use at pressures up to 10000 psi maximum, excluding the HPX hand pump range on page 32, which offers even greater output pressure options, for specialist ultra-high pressure applications. Both the manual and the powered pump options are available in either single or two stage output flow rates and the extensive range and choice of models available, ensures that the user can select the best Hi-Force pump for the application.



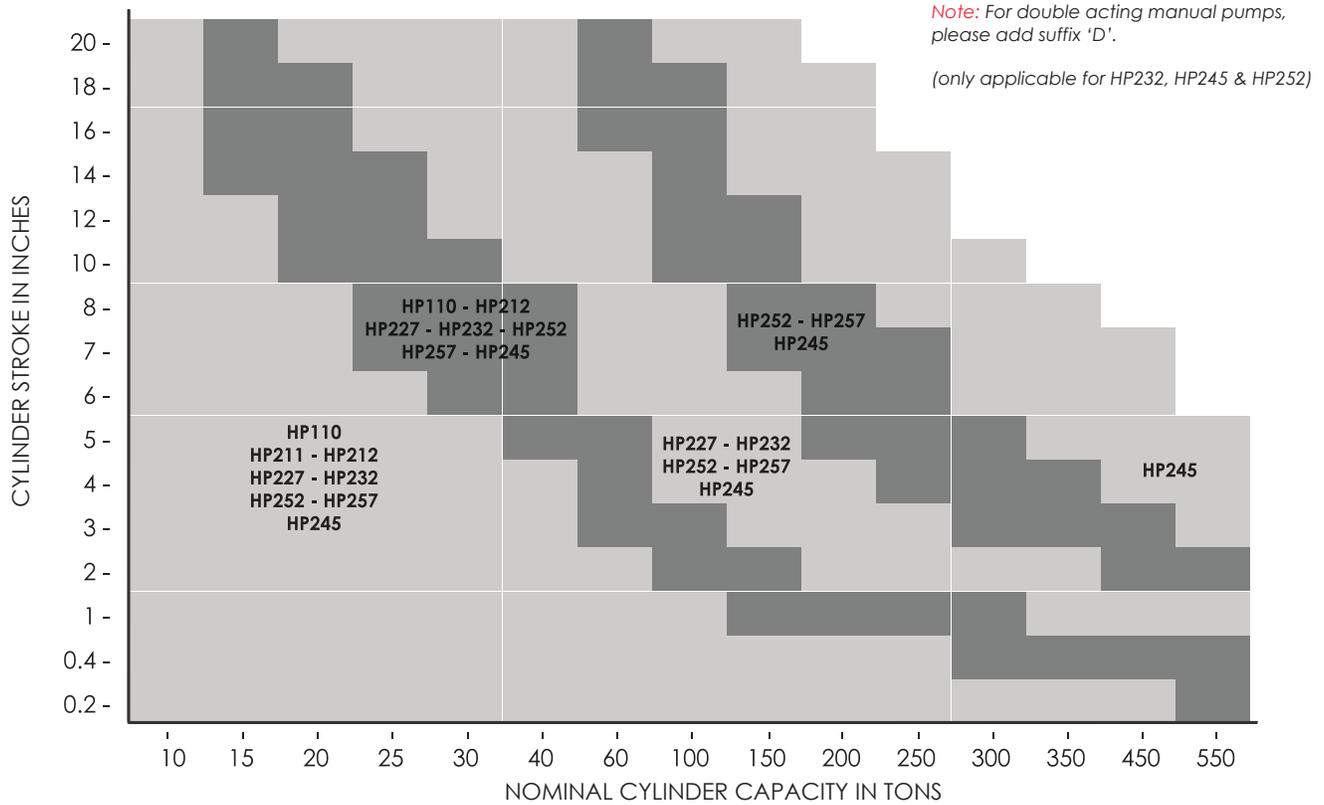


HYDRAULIC PUMPS

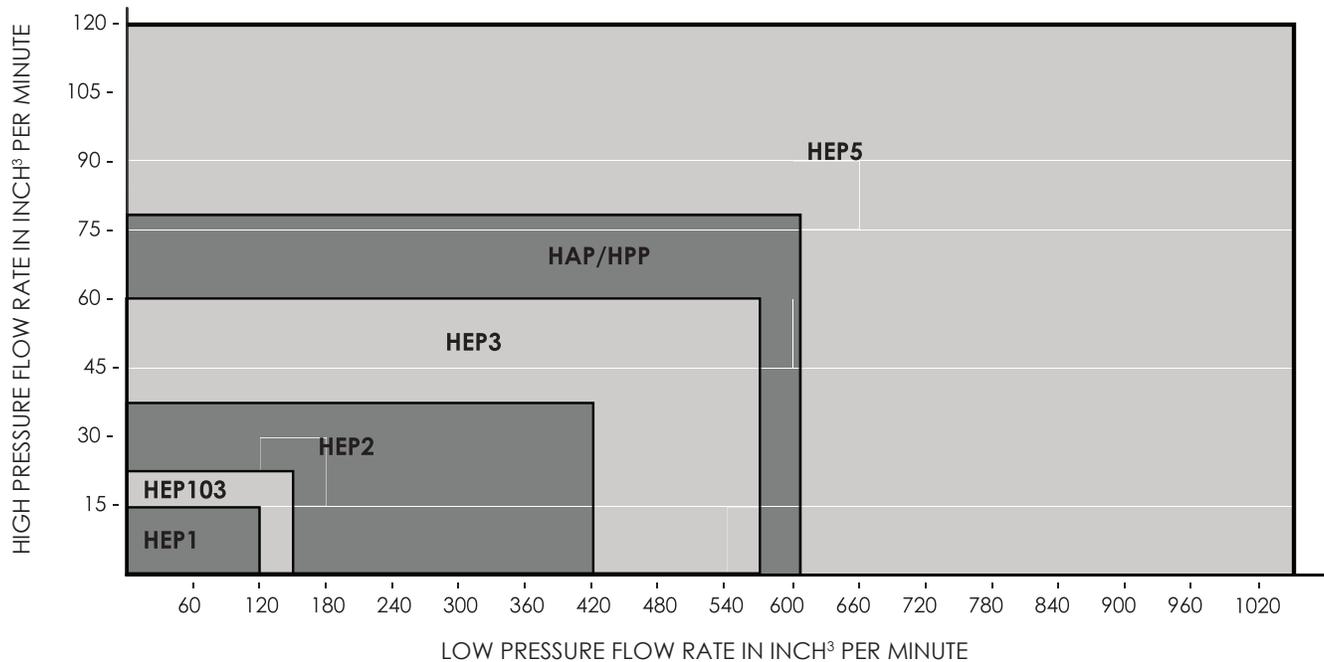
| | |
|------------------------------------------------------------------|-----------|
| SELECTION TABLE | 28 |
| HP STEEL | 29 |
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SELECTION TABLE FOR HI-FORCE HYDRAULIC PUMPS

MANUAL PUMPS



POWERED PUMPS



HP | MANUALLY OPERATED PUMPS - STEEL

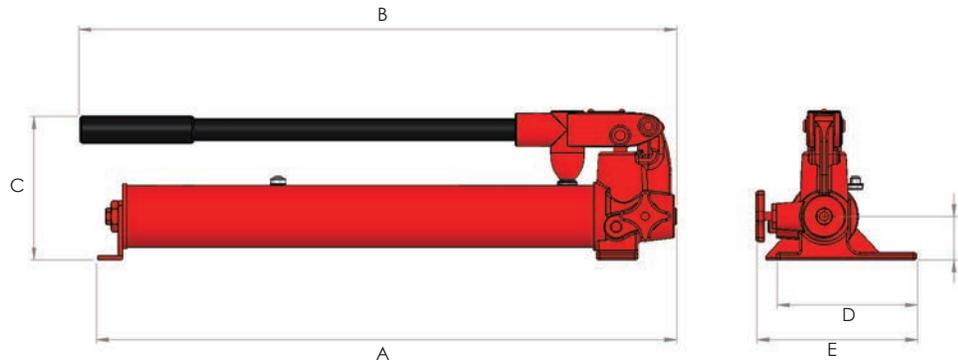


Single or two stage operation

Durable steel construction

Working pressure 10000 psi

- ▶ Oil reservoir capacity up to 250.2 inch³
- ▶ External pressure release valve and factory set safety relief valve
- ▶ Low handle effort and ergonomic grip for easy operation
- ▶ Changeover pressure for two stage models is 203 psi



| Model number | Valve type | Displacement per stroke (in ³) | | Usable oil capacity (in ³) | Handle effort (lbs) | Weight (lbs) | Dimensions (in) | | | | | | | | | |
|------------------------------------------------------------------------|------------|--------------------------------------------|-----------------------|----------------------------------------|---------------------|--------------|-----------------|-------|------|------|------|------|--|--|--|--|
| | | 1 st stage | 2 nd stage | | | | A | B | C | D | E | F | | | | |
| Single stage hand operated pumps for single acting cylinders and tools | | | | | | | | | | | | | | | | |
| HP110 | 2-way | 0.18 | - | 61.02 | 99 | 12.3 | 21.99 | 22.3 | 5.04 | 5.28 | 5.71 | 1.58 | | | | |
| Two stage hand operated pumps for single acting cylinders and tools | | | | | | | | | | | | | | | | |
| HP227 | 2-way | 0.79 | 0.14 | 140.35 | 84 | 23.1 | 21.43 | 23.52 | 6.62 | 5.32 | 5.71 | 2.09 | | | | |
| HP257 | 2-way | 0.79 | 0.14 | 250.2 | 84 | 33.5 | 21.47 | 23.52 | 6.62 | 5.32 | 5.91 | 2.09 | | | | |

HP | MANUALLY OPERATED PUMPS - ALUMINUM

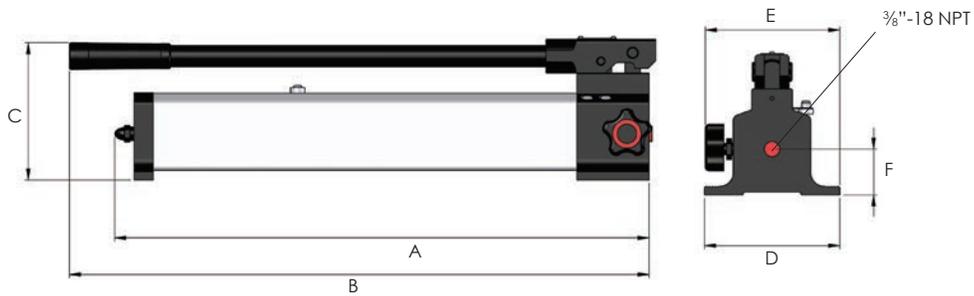


Two stage operation

Working pressure 10000 psi

Six models with choice of control valve

- ▶ Oil reservoir capacity up to 305.12 inch³
- ▶ Lightweight aluminum construction with external pressure release valve and factory set safety relief valve
- ▶ Changeover pressure is 203 psi
- ▶ Low handle effort and ergonomic grip for easy operation



| Model number | Valve type | Displacement per stroke (in ³) | | Usable oil capacity (in ³) | Handle effort (lbs) | Weight (lbs) | Dimensions (in) | | | | | |
|---------------------------------------------------------------------|------------|--------------------------------------------|-----------------------|----------------------------------------|---------------------|--------------|-----------------|-------|------|------|------|------|
| | | 1 st stage | 2 nd stage | | | | A | B | C | D | E | F |
| Two stage hand operated pumps for single acting cylinders and tools | | | | | | | | | | | | |
| HP211 | 2-way | 0.79 | 0.06 | 30.51 | 60 | 4.4 | 13.2 | 15.29 | 5.32 | 3.94 | 4.93 | 1.58 |
| HP212 | 2-way | 0.79 | 0.14 | 61.02 | 88 | 8.8 | 22.06 | 24.03 | 5.52 | 3.94 | 4.93 | 1.58 |
| HP232 | 2-way | 0.79 | 0.14 | 122.05 | 88 | 15.2 | 22.06 | 24.03 | 6.3 | 5.52 | 6.11 | 1.97 |
| HP252 | 2-way | 0.79 | 0.14 | 305.12 | 88 | 21.2 | 23.05 | 24.03 | 6.3 | 6.62 | 5.71 | 1.97 |
| Two stage hand operated pumps for double acting cylinders and tools | | | | | | | | | | | | |
| HP232D | 4-way | 0.79 | 0.14 | 122.05 | 88 | 19.2 | 22.85 | 24.63 | 6.3 | 5.52 | 6.9 | 1.18 |
| HP252D | 4-way | 0.79 | 0.14 | 305.12 | 88 | 30.0 | 23.84 | 24.63 | 6.3 | 6.62 | 6.9 | 1.18 |

HP | MANUALLY OPERATED PUMPS - HIGH FLOW

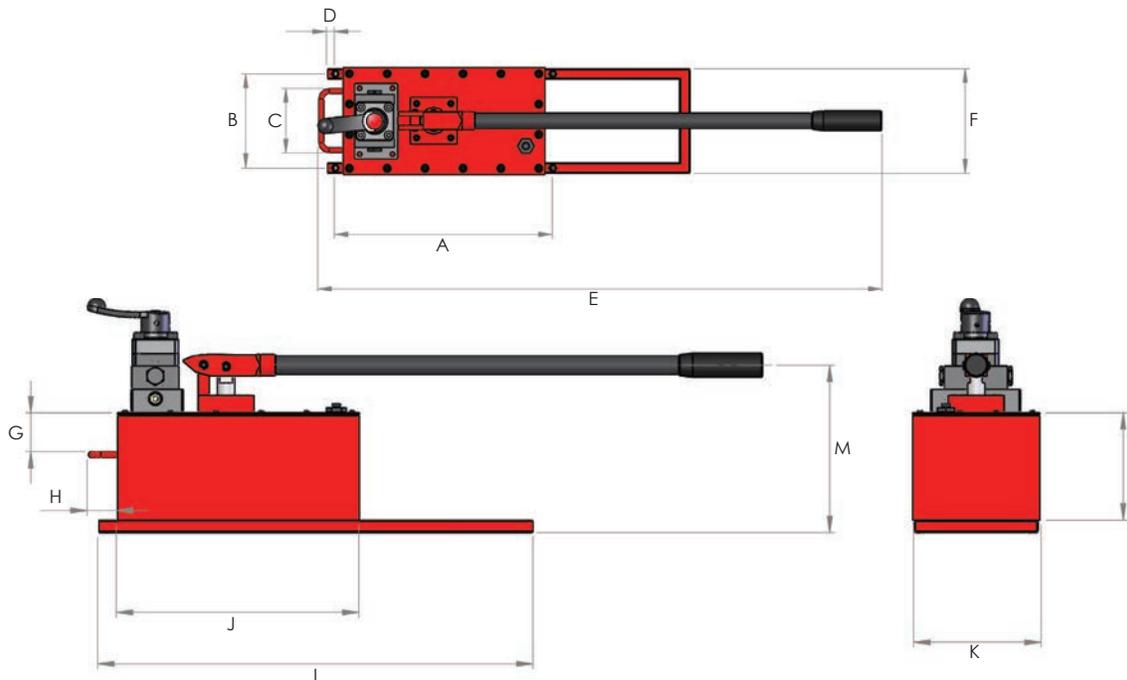


Heavy duty steel construction

Working pressure 10000 psi

Two stage with semi automatic changeover

- ▶ Oil reservoir capacity 2.64 gallons
- ▶ Factory set safety relief valve fitted as standard
- ▶ Available with 2-way valve for use with single acting cylinders and 4-way valve for use with double acting cylinders
- ▶ 1st stage flow rate of 6.89 in³ per handle stroke for faster extension & retraction of piston under no load
- ▶ Changeover pressure is 406 psi
- ▶ Low handle effort and ergonomic grip for easy operation



| Model number | Valve type | Displacement per stroke (in ³) | Usable oil capacity (gallons) | Handle effort (lbs) | Weight (lbs) |
|--------------|------------|--------------------------------------------|-------------------------------|---------------------|--------------|
| | | 1 st stage | 2 nd stage | | |

Two stage hand operated pump for single acting cylinders and tools

| | | | | | | |
|-------|-------|------|------|------|----|------|
| HP245 | 2-way | 6.89 | 0.24 | 2.64 | 88 | 65.0 |
|-------|-------|------|------|------|----|------|

Two stage hand operated pump for double acting cylinders and tools

| | | | | | | |
|--------|-------|------|------|------|----|------|
| HP245D | 4-way | 6.89 | 0.24 | 2.64 | 88 | 68.3 |
|--------|-------|------|------|------|----|------|

| Dimensions (in) | | | | | | | | | | | | |
|-----------------|------|------|------|-------|------|------|------|-------|-------|------|------|-------|
| A | B | C | D | E | F | G | H | I | J | K | L | M |
| 16.55 | 7.09 | 4.89 | 0.59 | 41.37 | 7.88 | 2.48 | 1.85 | 27.58 | 15.37 | 8.08 | 6.82 | 10.64 |

HPX | MANUALLY OPERATED ULTRA HIGH PRESSURE PUMPS

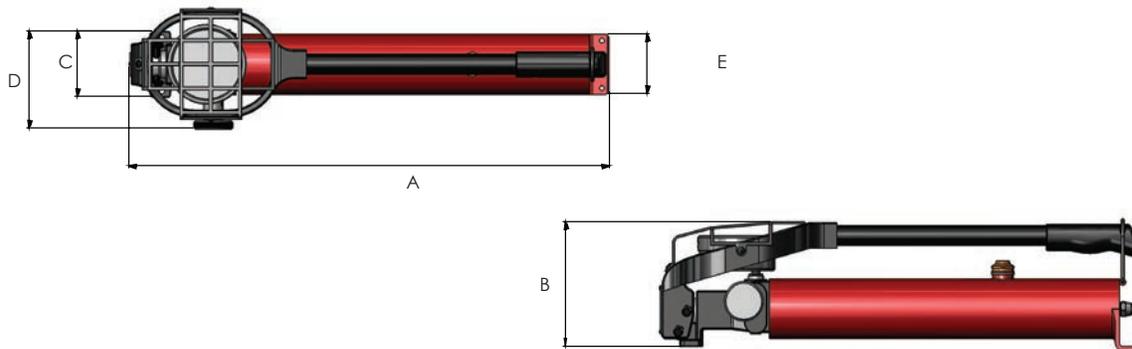


Compact lightweight aluminum construction

Two stage operation

Choice of 21750 or 40600 psi pressure rating

- ▶ Oil reservoir capacity 73.23 inch³
- ▶ External pressure release valve and factory set safety valve
- ▶ Specifically designed for high pressure applications
- ▶ Bespoke handle with ergonomic grip and mesh guard to protect pressure gauge



| Model number | Working pressure (psi) | Usable oil capacity (in ³) | Displacement per stroke (in ³) | | Outlet port | Weight (lbs) | Dimensions (in) | | | | |
|--------------|------------------------|----------------------------------------|--------------------------------------------|-----------------------|--------------|--------------|-----------------|------|------|------|------|
| | | | 1 st stage | 2 nd stage | | | A | B | C | D | E |
| HPX1500 | 21750 | 73.23 | 1.22 | 0.06 | 1/4" BSP | 14.3 | 24.23 | 6.34 | 3.31 | 4.93 | 3.01 |
| HPX2800 | 40600 | 73.23 | 1.22 | 0.05 | 3/16"-18 UNF | 14.3 | 24.23 | 6.34 | 3.31 | 4.93 | 3.01 |

Optional Hoses:

| Model number | Working pressure (psi) | Description | Weight (lbs) |
|--------------|------------------------|-----------------------------------------------------------|--------------|
| XHH3-15 | 21750 | 10 ft hose with 1/4" BSP male thread each end | 3.1 |
| XHH5-15 | 21750 | 16.5 ft hose with 1/4" BSP male thread each end | 5.7 |
| XHH3-30 | 43500 | 10 ft hose with 3/16"-18 UNF male coned thread each end | 7.1 |
| XHH5-30 | 43500 | 16.5 ft hose with 3/16"-18 UNF male coned thread each end | 11.2 |

HP-FP | MANUALLY OPERATED FOOT PUMPS

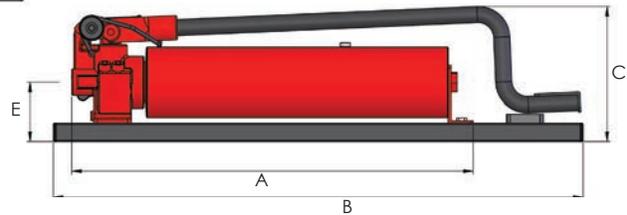


Working pressure 10000 psi

Two stage operation

Durable steel construction

- ▶ Oil reservoir capacity 140.35 inch³
- ▶ External pressure release valve and factory set safety relief valve
- ▶ Wide foot pedal for easy and controlled pumping action
- ▶ Steel framework for maximum stability



| Model number | Valve type | Displacement per stroke (in ³) | | Usable oil capacity (in ³) | Handle effort (lbs) | Weight (lbs) | Dimensions (in) | | | | |
|--------------|------------|--------------------------------------------|-----------------------|----------------------------------------|---------------------|--------------|-----------------|-------|------|------|------|
| | | 1 st stage | 2 nd stage | | | | A | B | C | D | E |
| HP227FP | 2-way | 0.79 | 0.14 | 140.35 | 86 | 27.6 | 21.43 | 28.17 | 7.29 | 7.88 | 3.07 |
| HP227FPC | 2-way | 0.79 | 0.14 | 140.35 | 86 | 32.0 | 21.43 | 30.06 | 8.94 | 7.88 | 3.07 |

Note: HP227FPC is supplied with pressure gauge, gauge mounting block and 10 ft hose with male coupler

BPP | BATTERY POWERED HYDRAULIC PUMP

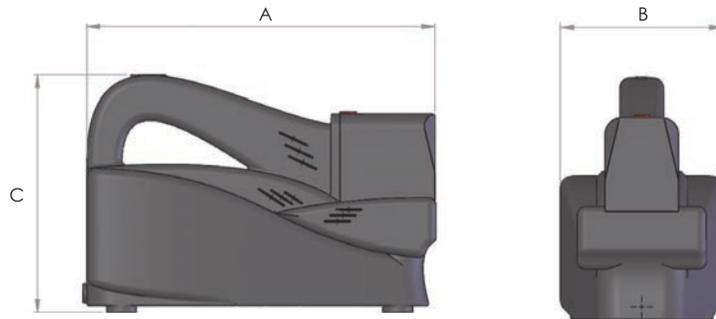


Working pressure 10000 psi

14.4V long life battery

Lightweight design

- ▶ Powerful hydraulic pump driven by 14.4 volt battery
- ▶ Compact and lightweight design with shoulder strap for easy carrying
- ▶ External pressure release valve and factory set safety valve
- ▶ Supplied with battery and charger



| Model number | Oil capacity (in ³) | Oil flow (in ³ /min) | | Weight (lbs) | Dimensions (in) | | |
|--------------|---------------------------------|---------------------------------|-----------------------|--------------|-----------------|-----|-------|
| | | 1 st stage | 2 nd stage | | A | B | C |
| BPP107 | 42.72 | 30.51 | 9.15 | 17.6 | 13.99 | 6.3 | 10.24 |

BPP ACCESSORIES



| Model number | Description |
|--------------|-----------------------------------------|
| CCU144 | 14.4V Vehicle power socket charger unit |



| Model number | Description |
|--------------|--------------------|
| BP12 | Battery Pack 14.4V |

Note: Charger supplied separately



| Model number | Voltage | Description |
|--------------|----------|--------------------------------------------------|
| MP110 | 110V | Power supply to operate unit directly from mains |
| MP220 | 220/230V | |



| Model number | Description |
|--------------|-------------------------|
| CU12 | Mains charger 110V-230V |

HEP1 | ELECTRIC DRIVEN LIGHTWEIGHT MINI PUMPS WITH CARRYING STRAP

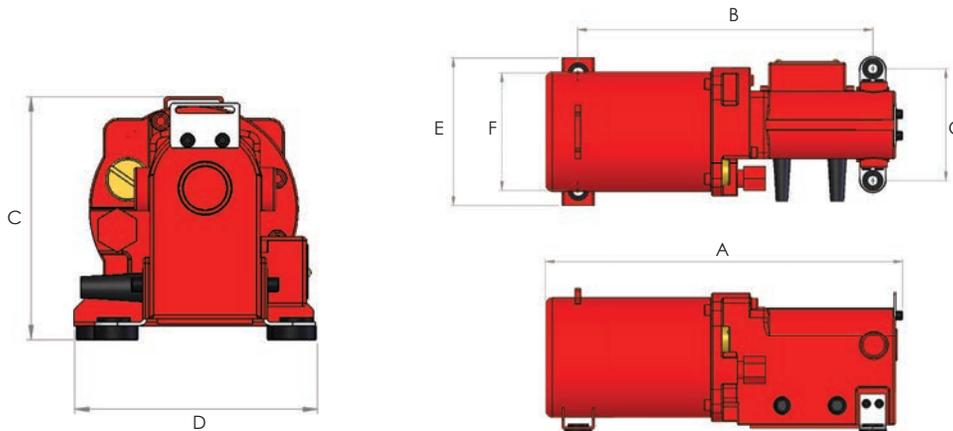


Working pressure 10000 psi

Two stage operation

Lightweight, compact design

- ▶ Oil reservoir capacity 48.82 inch³
- ▶ Choice of 110 or 240 volt single phase electric motor with 2-way electric solenoid valve
- ▶ Internal safety overload valve
- ▶ Remote hand pendant controller with 10 feet cable
- ▶ Supplied with handy carrying strap



| Model number | Motor voltage | Maximum flow rate (in ³ /min) | | Valve type | Usable oil capacity (in ³) | Weight (lbs) | Dimensions (in) | | | | | | |
|--------------|---------------|------------------------------------------|-----------------------|------------|----------------------------------------|--------------|-----------------|------|------|------|------|------|------|
| | | 1 st stage | 2 nd stage | | | | A | B | C | D | E | F | G |
| HEP1211S | 110V-1Ph | 122.05 | 12.2 | 2-way | 48.82 | 16.5 | 13.12 | 10.6 | 5.52 | 5.48 | 5.44 | 4.33 | 4.14 |
| HEP1212S | 240V-1Ph | 122.05 | 12.2 | 2-way | 48.82 | 16.5 | 13.12 | 10.6 | 5.52 | 5.48 | 5.44 | 4.33 | 4.14 |

HEP103 | ELECTRIC DRIVEN TWO STAGE COMPACT PUMPS

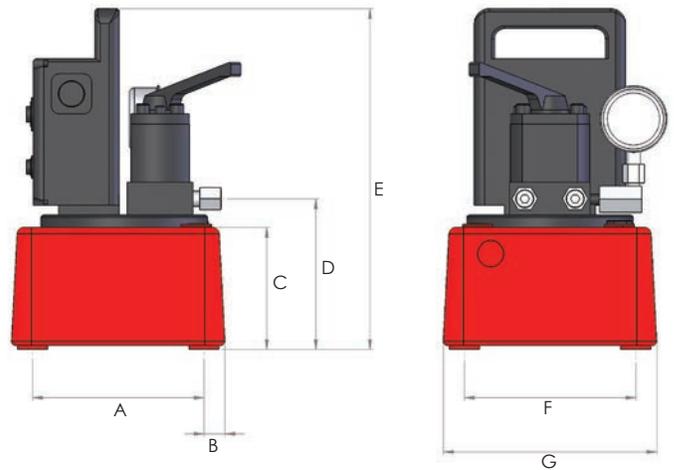


- ▶ Oil reservoir capacity 1.06 gallons
- ▶ Choice of 110 or 240 volt single phase electric motors with 50/60 Hz dual frequency
- ▶ Choice of manual or electric powered control valves in 2, 3 or 4-way configuration
- ▶ Control valves available with open center, closed center or locking valve design
- ▶ Supplied with glycerin filled pressure gauge
- ▶ Integral carrying handle for easy transportation
- ▶ Remote hand pendant controller with 10 feet control cable

Working pressure 10000 psi

Two stage operation

Choice of valve options



| Model number | Motor voltage | Maximum flow rate (in ³ /min) 1 st stage | 2 nd stage | Changeover pressure (psi) | Remote pendant functions | Usable oil capacity (gallons) | Weight (lbs) |
|--------------|---------------|-------------------------------------------------------------------|-----------------------|---------------------------|--------------------------|-------------------------------|--------------|
|--------------|---------------|-------------------------------------------------------------------|-----------------------|---------------------------|--------------------------|-------------------------------|--------------|

Below models feature 2-way solenoid valve, normally closed (hold function), suitable for use with single acting cylinders and tools, requiring load holding.

| | | | | | | | |
|-------------|----------|--------|-------|------|-----------------|------|------|
| HEP103241LS | 110V-1Ph | 152.56 | 21.36 | 2175 | advance/retract | 1.06 | 42.3 |
| HEP103242LS | 240V-1Ph | 152.56 | 21.36 | 2175 | advance/retract | 1.06 | 42.3 |

Below models featuring 2-way solenoid valve, normally open (auto retract function), suitable for use with single acting cylinders and tools, requiring auto retract.

| | | | | | | | |
|------------|----------|--------|-------|------|-----------------|------|------|
| HEP103241S | 110V-1Ph | 152.56 | 21.36 | 2175 | advance/retract | 1.06 | 45.2 |
| HEP103242S | 240V-1Ph | 152.56 | 21.36 | 2175 | advance/retract | 1.06 | 45.2 |

Below models feature 3-way manually operated valve, suitable for use with single acting cylinders and tools.

| | | | | | | | |
|-----------|----------|--------|-------|------|--------------|------|------|
| HEP103341 | 110V-1Ph | 152.56 | 21.36 | 2175 | motor on/off | 1.06 | 39.9 |
| HEP103342 | 240V-1Ph | 152.56 | 21.36 | 2175 | motor on/off | 1.06 | 39.9 |

Below models feature 4-way manually operated valve, suitable for use with double acting cylinders and tools.

| | | | | | | | |
|-----------|----------|--------|-------|------|--------------|------|------|
| HEP103441 | 110V-1Ph | 152.56 | 21.36 | 2175 | motor on/off | 1.06 | 39.9 |
| HEP103442 | 240V-1Ph | 152.56 | 21.36 | 2175 | motor on/off | 1.06 | 39.9 |

Below models feature 4-way solenoid valve, locking feature on A and B port, suitable for use with double acting cylinders and tools, requiring load holding.

| | | | | | | | |
|-------------|----------|--------|-------|------|-----------------|------|------|
| HEP103441LS | 110V-1Ph | 152.56 | 21.36 | 2175 | advance/retract | 1.06 | 45.2 |
| HEP103442LS | 240V-1Ph | 152.56 | 21.36 | 2175 | advance/retract | 1.06 | 45.2 |

| Model number | Dimensions (in) | | | | | | |
|--------------|-----------------|------|------|------|-------|------|-------|
| | A | B | C | D | E | F | G |
| All Models | 7.68 | 0.99 | 4.63 | 5.58 | 13.47 | 8.27 | 10.24 |

HEP2 | ELECTRIC DRIVEN PUMPS - GENERAL DUTY MEDIUM FLOW

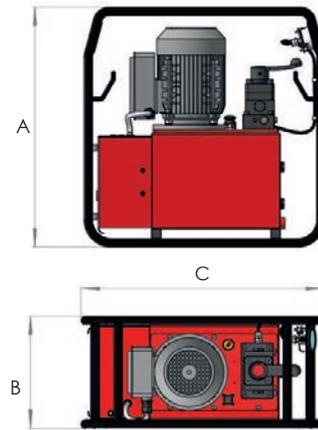


Working pressure 10000 psi

Two stage operation

Choice of 2.64 or 6.6 gallon oil reservoir

- ▶ Choice of 110/115, 220/240 or 380/440 volt electric motors available as standard
- ▶ Choice of 2, 3 or 4-way manual control valves with load holding feature on 3 & 4-way versions
- ▶ Externally adjustable pressure relief for pressure settings up to 10000 psi
- ▶ Completely enclosed fan cooled low noise electric motors
- ▶ Cable management features for cable/hose winding and stowage
- ▶ Supplied as standard with pressure gauge, couplers and a robust roll frame



| Model number | Valve type | Oil capacity (gallons) | Maximum flow rate (in ³ /min) | | Motor voltage | Model number (60 Hz motor) | Weight (lbs) | Dimensions (in) | | |
|--------------|------------|------------------------|------------------------------------------|-----------------------|---------------|----------------------------|--------------|-----------------|-------|-------|
| | | | 1 st stage | 2 nd stage | | | | A | B | C |
| HEP207111 | P-T Plate | 2.64 | 427.17 | 39.67 | 110/115V-1Ph | HEP207111H | 114.6 | 24.7 | 11.5 | 24.9 |
| HEP207112 | P-T Plate | 2.64 | 427.17 | 39.67 | 220/240V-1Ph | HEP207112H | 114.6 | 24.7 | 11.5 | 24.9 |
| HEP207114 | P-T Plate | 2.64 | 427.17 | 39.67 | 380/440V-3Ph | - | 114.6 | 24.7 | 11.5 | 24.9 |
| HEP207121 | P-T Plate | 6.6 | 427.17 | 39.67 | 110/115V-1Ph | HEP207121H | 149.9 | 24.7 | 13.87 | 29.71 |
| HEP207122 | P-T Plate | 6.6 | 427.17 | 39.67 | 220/240V-1Ph | HEP207122H | 149.9 | 24.7 | 13.87 | 29.71 |
| HEP207124 | P-T Plate | 6.6 | 427.17 | 39.67 | 380/440V-3Ph | - | 149.9 | 24.7 | 13.87 | 29.71 |
| HEP207211 | 2-way | 2.64 | 427.17 | 39.67 | 110/115V-1Ph | HEP207211H | 115.7 | 24.7 | 11.5 | 24.9 |
| HEP207212 | 2-way | 2.64 | 427.17 | 39.67 | 220/240V-1Ph | HEP207212H | 115.7 | 24.7 | 11.5 | 24.9 |
| HEP207214 | 2-way | 2.64 | 427.17 | 39.67 | 380/440V-3Ph | - | 115.7 | 24.7 | 11.5 | 24.9 |
| HEP207221 | 2-way | 6.6 | 427.17 | 39.67 | 110/115V-1Ph | HEP207221H | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP207222 | 2-way | 6.6 | 427.17 | 39.67 | 220/240V-1Ph | HEP207222H | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP207224 | 2-way | 6.6 | 427.17 | 39.67 | 380/440V-3Ph | - | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP207311 | 3-way | 2.64 | 427.17 | 39.67 | 110/115V-1Ph | HEP207311H | 115.7 | 24.7 | 11.5 | 24.9 |
| HEP207312 | 3-way | 2.64 | 427.17 | 39.67 | 220/240V-1Ph | HEP207312H | 115.7 | 24.7 | 11.5 | 24.9 |
| HEP207314 | 3-way | 2.64 | 427.17 | 39.67 | 380/440V-3Ph | - | 115.7 | 24.7 | 11.5 | 24.9 |
| HEP207321 | 3-way | 6.6 | 427.17 | 39.67 | 110/115V-1Ph | HEP207321H | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP207322 | 3-way | 6.6 | 427.17 | 39.67 | 220/240V-1Ph | HEP207322H | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP207324 | 3-way | 6.6 | 427.17 | 39.67 | 380/440V-3Ph | - | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP207411 | 4-way | 2.64 | 427.17 | 39.67 | 110/115V-1Ph | HEP207411H | 115.7 | 24.7 | 11.5 | 24.9 |
| HEP207412 | 4-way | 2.64 | 427.17 | 39.67 | 220/240V-1Ph | HEP207412H | 115.7 | 24.7 | 11.5 | 24.9 |
| HEP207414 | 4-way | 2.64 | 427.17 | 39.67 | 380/440V-3Ph | - | 115.7 | 24.7 | 11.5 | 24.9 |
| HEP207421 | 4-way | 6.6 | 427.17 | 39.67 | 110/115V-1Ph | HEP207421H | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP207422 | 4-way | 6.6 | 427.17 | 39.67 | 220/240V-1Ph | HEP207422H | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP207424 | 4-way | 6.6 | 427.17 | 39.67 | 380/440V-3Ph | - | 151.0 | 24.7 | 13.87 | 29.71 |

Note: 1) All 380/440V models are suitable for operation at 50 Hz and 60 Hz
 2) All 110/115 and 220/240 volt models are supplied to run at 50 Hz as standard, refer to the table for pumps with 60 Hz motor. 60 Hz models deliver approximately 15-20% higher flow rate.
 3) To order pumps with low voltage solenoid valve with hand pendant controller, suffix the pump model with 'S'
 4) Other configurations are available on request

HEP3 | ELECTRIC DRIVEN PUMPS - GENERAL DUTY HIGH FLOW

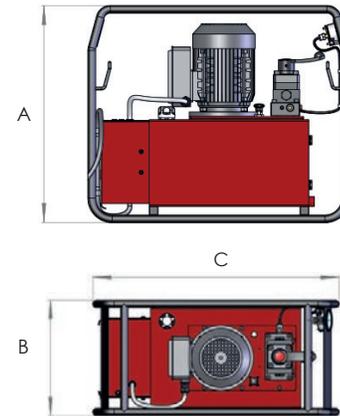


Working pressure 10000 psi

Two stage operation

10.56 gallon oil reservoir

- ▶ Choice of 110/115, 220/240 or 380/440 volt electric motors available as standard
- ▶ Choice of 2, 3 or 4-way manual control valves with load holding feature on 3 & 4-way versions
- ▶ Externally adjustable pressure relief for pressure settings up to 10000 psi
- ▶ Completely enclosed fan cooled low noise electric motors
- ▶ Cable management features for cable/ hose winding and stowage
- ▶ Supplied as standard with pressure gauge, couplers and a robust roll frame



| Model number | Valve type | Oil capacity (gallons) | Maximum flow rate (in ³ /min) | | Motor voltage | Model number (60 Hz motor) | Weight (lbs) | Dimensions (in) | | |
|--------------|------------|------------------------|------------------------------------------|-----------------------|---------------|----------------------------|--------------|-----------------|-------|-------|
| | | | 1 st stage | 2 nd stage | | | | A | B | C |
| HEP310121 | P-T Plate | 10.56 | 549.21 | 61.02 | 110/115V-1Ph | HEP310121H | 149.9 | 24.7 | 13.87 | 29.71 |
| HEP310122 | P-T Plate | 10.56 | 549.21 | 61.02 | 220/240V-1Ph | HEP310122H | 149.9 | 24.7 | 13.87 | 29.71 |
| HEP310124 | P-T Plate | 10.56 | 549.21 | 61.02 | 380/440V-3Ph | - | 149.9 | 24.7 | 13.87 | 29.71 |
| HEP310221 | 2-way | 10.56 | 549.21 | 61.02 | 110/115V-1Ph | HEP310221H | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP310222 | 2-way | 10.56 | 549.21 | 61.02 | 220/240V-1Ph | HEP310222H | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP310224 | 2-way | 10.56 | 549.21 | 61.02 | 380/440V-3Ph | - | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP310321 | 3-way | 10.56 | 549.21 | 61.02 | 110/115V-1Ph | HEP310321H | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP310322 | 3-way | 10.56 | 549.21 | 61.02 | 220/240V-1Ph | HEP310322H | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP310324 | 3-way | 10.56 | 549.21 | 61.02 | 380/440V-3Ph | - | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP310421 | 4-way | 10.56 | 549.21 | 61.02 | 110/115V-1Ph | HEP310421H | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP310422 | 4-way | 10.56 | 549.21 | 61.02 | 220/240V-1Ph | HEP310422H | 151.0 | 24.7 | 13.87 | 29.71 |
| HEP310424 | 4-way | 10.56 | 549.21 | 61.02 | 380/440V-3Ph | - | 151.0 | 24.7 | 13.87 | 29.71 |

- Note:**
- 1) All 380/440V models are suitable for operation at 50 Hz and 60 Hz
 - 2) All 110/115 and 220/240 volt models are supplied to run at 50 Hz as standard, refer to the table for pumps with 60 Hz motor. 60 Hz models deliver approximately 15-20% higher flow rate.
 - 3) To order pumps with low voltage solenoid valve with hand pendant controller, suffix the pump model with 'S'
 - 4) Other configurations are available on request

HEP5 | ELECTRIC DRIVEN PUMPS - HEAVY DUTY HIGH FLOW

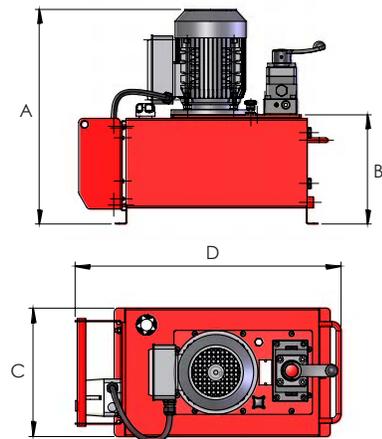


Working pressure 10000 psi

Two stage operation

Choice of 10.56 or 15.84 gallon oil reservoir

- ▶ 380/440 volt electric motors available as standard
- ▶ Choice of 2, 3 or 4-way manual control valves with load holding feature on 3 & 4-way versions
- ▶ Externally adjustable pressure relief for pressure settings up to 10000 psi
- ▶ Completely enclosed fan cooled low noise electric motors



| Model number | Valve type | Oil capacity (gallons) | Maximum flow rate (in ³ /min) | | Motor voltage | Weight (lbs) | Dimensions (in) | | | |
|--------------|------------|------------------------|------------------------------------------|-----------------------|---------------|--------------|-----------------|-------|-------|-------|
| | | | 1 st stage | 2 nd stage | | | A | B | C | D |
| HEP517144 | P-T Plate | 10.56 | 1067.91 | 115.95 | 380/440V-3Ph | 195.1 | 27.3 | 15.21 | 12.06 | 24.94 |
| HEP517164 | P-T Plate | 15.84 | 1067.91 | 115.95 | 380/440V-3Ph | 264.6 | 28.09 | 16.04 | 16 | 25.85 |
| HEP517244 | 2-way | 10.56 | 1067.91 | 115.95 | 380/440V-3Ph | 196.2 | 27.3 | 15.21 | 12.06 | 24.94 |
| HEP517264 | 2-way | 15.84 | 1067.91 | 115.95 | 380/440V-3Ph | 265.7 | 28.09 | 16.04 | 16 | 25.85 |
| HEP517344 | 3-way | 10.56 | 1067.91 | 115.95 | 380/440V-3Ph | 196.2 | 27.3 | 15.21 | 12.06 | 24.94 |
| HEP517364 | 3-way | 15.84 | 1067.91 | 115.95 | 380/440V-3Ph | 265.7 | 28.09 | 16.04 | 16 | 25.85 |
| HEP517444 | 4-way | 10.56 | 1067.91 | 115.95 | 380/440V-3Ph | 196.2 | 27.3 | 15.21 | 12.06 | 24.94 |
| HEP517464 | 4-way | 15.84 | 1067.91 | 115.95 | 380/440V-3Ph | 265.7 | 28.09 | 16.04 | 16 | 25.85 |

Note: All 380/440V models are suitable for operation at 50 Hz and 60 Hz. To order pumps with low voltage solenoid valve with hand pendant controller, suffix the pump model with 'S'.

WHEEL TROLLEY

| Model number | Description |
|--------------|--------------------------------------------------------------|
| PPA40WT | Wheel trolley for all pumps with 10.56 gallons oil reservoir |
| PPA60WT | Wheel trolley for all pumps with 15.84 gallons oil reservoir |

All HEP5 pumps can be supplied with a factory fitted wheel trolley. Just suffix model number with 'WT'.



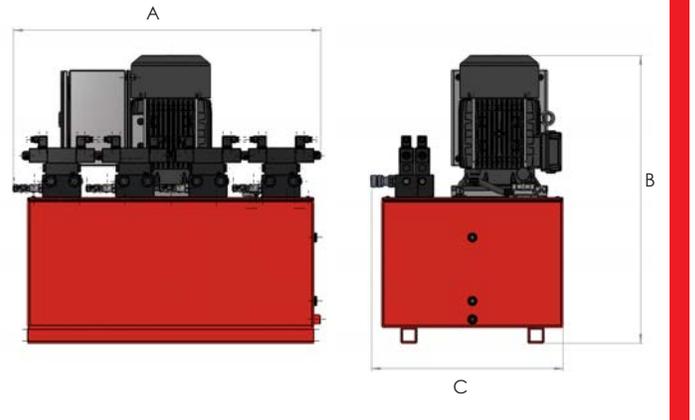
HSP | ELECTRIC DRIVEN SPLIT FLOW MULTI-OUTLET PUMPS



Working pressure 10000 psi

Efficient 3 phase motors with DC electric solenoids

Both single and double acting cylinder models available



- ▶ Selection of outlet valve configurations ranging from 4-outlet pump with manual valves to 8-outlet pump with electric solenoid valves
- ▶ Control system with individual outlet selection switches, providing choice of single or multiple synchronized operation
- ▶ Heavy duty completely enclosed, fan cooled three phase electric motor
- ▶ Externally adjustable pressure setting valves on each outlet, for pre-setting pressure up to 10000 psi maximum

| Model number | Valve configuration | Valve type | Oil capacity (gallons) | Oil flow per outlet (in ³ /min) | Motor voltage | Motor voltage (hp) | Weight (lbs) | Dimensions (in) | | |
|--------------|---------------------|------------|------------------------|--------------------------------------------|---------------|--------------------|--------------|-----------------|-------|-------|
| | | | | | | | | A | B | C |
| HSP4SM | 4 x 3-way | manual | 26.41 | 67.13 | 380/440V-3Ph | 10.05 | 599.7 | 39.4 | 35.85 | 24.03 |
| HSP4DM | 4 x 4-way | manual | 26.41 | 67.13 | 380/440V-3Ph | 10.05 | 599.7 | 39.4 | 35.85 | 24.03 |
| HSP4SE | 4 x 3-way | electric | 26.41 | 67.13 | 380/440V-3Ph | 10.05 | 604.1 | 39.4 | 35.85 | 24.03 |
| HSP4DE | 4 x 4-way | electric | 26.41 | 67.13 | 380/440V-3Ph | 10.05 | 604.1 | 39.4 | 35.85 | 24.03 |
| HSP6SE | 6 x 3-way | electric | 52.82 | 54.92 | 380/440V-3Ph | 14.74 | 738.5 | 49.25 | 41.76 | 31.52 |
| HSP6DE | 6 x 4-way | electric | 52.82 | 54.92 | 380/440V-3Ph | 14.74 | 738.5 | 49.25 | 41.76 | 31.52 |
| HSP8SE | 8 x 3-way | electric | 52.82 | 54.92 | 380/440V-3Ph | 14.74 | 815.7 | 49.25 | 41.76 | 31.52 |
| HSP8DE | 8 x 4-way | electric | 52.82 | 54.92 | 380/440V-3Ph | 14.74 | 815.7 | 49.25 | 41.76 | 31.52 |

SLF | SYNCHRONOUS LIFTING SYSTEM - FIXED SPEED DRIVE



Working pressure 10000 psi

Control from 4 to 8 lifting points

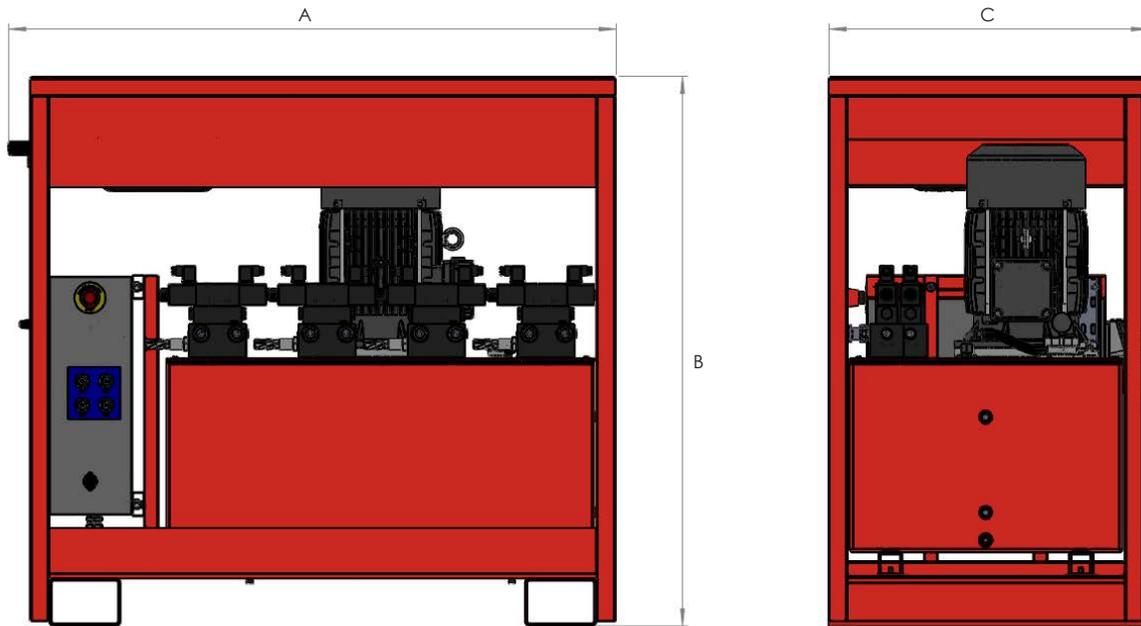
For use with standard single or double acting cylinders

Control unit complete with multiple screens (depending on configuration and monitoring requirements) and USB port, supplied on a cable for remote operation.



- ▶ Designed for precise lifting and lowering of heavy loads using multiple synchronized hydraulic cylinders
- ▶ System comprises of heavy duty three phase electric motor, operator control panel to monitor up to 8 channels and a robust framework for transportation and storage of the entire system
- ▶ Selection of outlet valves ranging from 4-outlet pump to 8-outlet pump with options of 3-way and 4-way valve configurations
- ▶ 10000 psi pressure transducers are fitted as standard on each outlet
- ▶ Reservoir capacity of 26.41 gallons on the 4-outlet pump and 52.82 gallons on the 6-outlet and 8-outlet pumps
- ▶ Intuitive touch screen controller with several display options including stroke, cylinder pressure, system pressure and indicative weight of load
- ▶ Specified for string pot displacement sensors as standard. Alternative sensor types available upon request.
- ▶ Operating modes for the SLF include Manual, Pre-load, Automatic control, Depressurization and Indicative weighing
- ▶ System can be adapted to suit customer's special lifting requirements
- ▶ Customized systems can be tailored for unique application requirements

SLF | SYNCHRONOUS LIFTING SYSTEM - FIXED SPEED DRIVE



| Model number | Number of outlets | Oil capacity (gallons) | Oil flow per outlet (in ³ /min) | Motor voltage |
|--------------|-------------------|------------------------|--------------------------------------------|---------------|
| SLF4S | 4 | 26.41 | 67.13 | 380/440V-3Ph |
| SLF6S | 6 | 52.82 | 56.75 | 380/440V-3Ph |
| SLF8S | 8 | 52.82 | 56.75 | 380/440V-3Ph |
| SLF4D | 4 | 26.41 | 67.13 | 380/440V-3Ph |
| SLF6D | 6 | 52.82 | 56.75 | 380/440V-3Ph |
| SLF8D | 8 | 52.82 | 56.75 | 380/440V-3Ph |

Note: All models are suitable for operation at 50 Hz and 60 Hz.

| Model number | Dimensions (in) | | |
|--------------|-----------------|-------|-------|
| | A | B | C |
| SLF4S | 50.24 | 45.51 | 26.6 |
| SLF6S | 61.07 | 51.22 | 33.88 |
| SLF8S | 61.07 | 51.22 | 33.88 |
| SLF4D | 50.24 | 45.51 | 26.6 |
| SLF6D | 61.07 | 51.22 | 33.88 |
| SLF8D | 61.07 | 51.22 | 33.88 |

SLF | SYNCHRONOUS LIFTING SYSTEM - FIXED SPEED DRIVE

Mounting kits to fit single and double acting cylinders are listed below.

| Model number | Mounting kit type | Applicable cylinder | Increase in cylinder height (in) |
|--------------|-------------------|---------------------|----------------------------------|
| SLMK-1 | 1 | HSS - 25T | +0.14 |
| | 1 | HSS - 30T | +0.14 |
| SLMK-2 | 2 | HAS - 30T | +0.39 |
| | 2 | HRA - 30T | +0.39 |
| SLMK-3 | 3 | HSS - 50T | +0.39 |
| | 3 | HAS - 50T | +0.39 |
| SLMK-4 | 3 | HRA - 50T | +0.39 |
| | 4 | HSS - 75T | +0.39 |
| SLMK-5 | 5 | HSS - 100T | +0.39 |
| | 5 | HAS - 100T | +0.39 |
| | 5 | HRA - 100T | +0.39 |
| SLMK-6 | 6 | HDA - 25T | +0.43 |
| SLMK-7 | 7 | HDA - 50T | +0.39 |
| SLMK-8 | 8 | HDA - 100T | +0.39 |
| SLMK-9 | 9 | HDA - 150T | +0.39 |
| | 9 | HDA - 200T | +0.39 |
| SLMK-10 | 10 | HHS - 20T | +0.43 |
| SLMK-11 | 11 | HHS - 30T | +0.47 |
| | 11 | HHR - 30T | +0.47 |
| SLMK-12 | 12 | HHS - 37T | +0.04 |
| SLMK-13 | 13 | HHA - 50T | +0.04 |
| SLMK-14 | 14 | HHS - 60T | +0.47 |
| | 14 | HHR - 60T | +0.47 |
| SLMK-15 | 15 | HHS - 100T | +0.39 |
| | 15 | HHR - 100T | +0.39 |
| SLMK-16 | 16 | HHR - 150T | +0.39 |
| SLMK-17 | 17 | HHR - 250T | +0.39 |
| SLMK-18 | 18 | HFA - 30T | 0 |
| SLMK-19 | 19 | HFA - 50T | +0.32 |
| SLMK-20 | 20 | HFA - 100T | 0 |
| | 20 | HGG - 150T | 0 |
| SLMK-21 | 21 | HDA - 300T | 0 |
| SLMK-22 | 22 | HDA - 400T | 0 |
| | 22 | HDA - 500T | 0 |
| SLMK-23 | 23 | HDA - 800T | 0 |
| | 23 | HDA - 1000T | 0 |
| | 23 | HFG - 800T | 0 |
| SLMK-24 | 24 | HFL - 50T | +0.32 |
| | 24 | HFG - 50T | +0.32 |
| SLMK-25 | 25 | HFG - 400T | 0 |
| | 25 | HFG - 500T | 0 |
| | 25 | HGG - 200T | 0 |
| | 25 | HSG - 200T | 0 |
| SLMK-26 | 26 | HFL - 100T | +0.35 |
| | 26 | HFG - 100T | +0.35 |
| SLMK-27 | 27 | HFL - 150T | +0.32 |
| | 27 | HFG - 150T | +0.32 |
| | 27 | HFG - 200T | +0.32 |
| | 27 | HSG - 150T | +0.32 |
| SLMK-28 | 28 | HFG - 250T | 0 |
| | 28 | HFG - 300T | 0 |
| | 28 | HGG - 300T | 0 |
| SLMK-29 | 29 | HSG - 300T | 0 |
| SLMK-30 | 30 | HFL - 250T | +0.32 |
| SLMK-31 | 31 | HFL - 400T | +0.39 |
| SLMK-32 | 32 | HFL - 500T | +0.39 |
| SLMK-33 | 33 | HFG - 1000T | 0 |

SLF | SYNCHRONOUS LIFTING SYSTEM - FIXED SPEED DRIVE

The SLF system is designed for use with standard single and double acting cylinders. Below table lists the SLF model and cylinder type that can be used with it.

| Model number | Applicable cylinder type | Applicable cylinder range | Cylinder stroke (in) | Page reference |
|-------------------------|--------------------------|---------------------------|----------------------|----------------|
| SLF4S SLF6S SLF8S | Single acting | HSS | 2.01 - 18.01 | 10 |
| | Single acting | HHS | 1.97 - 5.99 | 11 |
| | Single acting | HFL | 1.77 - 2.01 | 14 |
| | Single acting | HFG | 1.97 - 5.99 | 15 |
| | Single acting | HAS | 2.01 - 5.99 | 16 |
| | Single acting | HHA | 2.01 - 4.14 | 17 |
| | Single acting | HFA | 2.05 - 12.02 | 18 |
| | Single acting | HGG | 6.11 | 20 |
| SLF4D SLF6D SLF8D | Double acting | HHR | 2.01 - 12.02 | 12 |
| | Double acting | HDA | 5.99 - 20.02 | 13 |
| | Double acting | HRA | 2.01 - 12.02 | 19 |

DISPLACEMENT SENSORS

- ▶ 25 inches (635 mm) string pot
- ▶ Provides stroke feedback to controls
- ▶ Includes magnet for mounting
- ▶ Each lifting point requires one sensor
- ▶ String pot displacement sensors as standard, other displacement sensors available on request

| Model number | Type and stroke (in) |
|--------------|----------------------|
| SLDS650 | 25.61 |



SENSOR CABLES

- ▶ Each displacement sensor requires one cable

| Model number | Length (ft) |
|--------------|-------------|
| SLDC10 | 33 |
| SLDC25 | 82 |
| SLDC50 | 164 |
| SLDC75 | 246 |
| SLDC100 | 330 |

SLV | SYNCHRONOUS LIFTING SYSTEM - VARIABLE SPEED DRIVE



Working pressure 10000 psi

Control from 8 to 32 lifting points

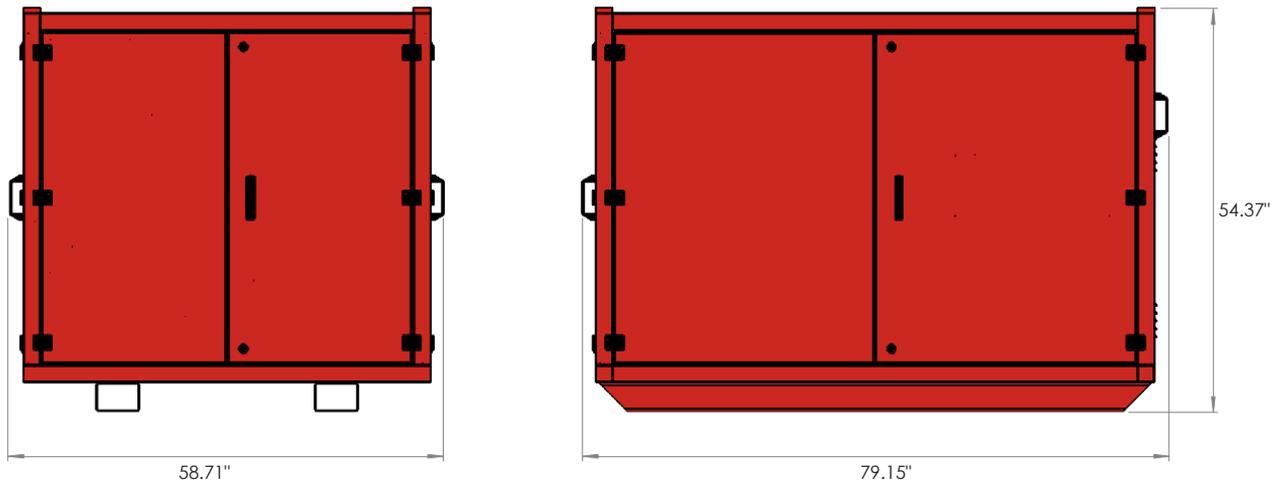
Variable speed control

Control unit complete with multiple screens (depending on configuration and monitoring requirements) and USB port, supplied on a cable for remote operation.



- ▶ Designed for precise lifting and lowering of heavy loads using multiple synchronized hydraulic cylinders
- ▶ System comprises of heavy duty three phase electric motor, operator control panel to monitor up to 32 channels and a robust framework for transportation and storage of the entire system
- ▶ Selection of outlet valves ranging from 8-outlet pump to 32-outlet pump, with single or double acting controls on each outlet
- ▶ Two stage pump unit offers a maximum low pressure flow rate of 1196.06 inches³ per minute and a maximum high pressure flow rate of 292.91 inches³ per minute at 10000 psi, with an option of reducing the flow rate using the variable speed drive controller
- ▶ 10000 psi pressure transducers are fitted as standard on each outlet
- ▶ Reservoir capacity of 52.82 and 105.64 gallons
- ▶ Intuitive touch screen controller with several display options including stroke, cylinder pressure, system pressure and indicative weight of load
- ▶ Includes a system data logging feature which allows operators to obtain a post lift report or end of project technical summary
- ▶ Specified for string pot displacement sensors as standard. Alternative sensor types available upon request.
- ▶ Operating modes for the SLV include Manual, Pre-load, Automatic control, Depressurization, Center of gravity and Indicative weighing
- ▶ System can be adapted to suit customer's special lifting requirements
- ▶ Customized systems can be tailored for unique application requirements

SLV | SYNCHRONOUS LIFTING SYSTEM - VARIABLE SPEED DRIVE



| Model number | Number of outlets | Oil capacity (gallons) | Total oil flow per outlet (in ³ /min) | | Motor voltage |
|--------------|-------------------|------------------------|--------------------------------------------------|-----------------------|---------------|
| | | | 1 st stage | 2 nd stage | |
| SLV82 | 8 | 52.82 | 1196.06 | 292.91 | 380/440V-3Ph |
| SLV122 | 12 | 52.82 | 1196.06 | 292.91 | 380/440V-3Ph |
| SLV162 | 16 | 52.82 | 1196.06 | 292.91 | 380/440V-3Ph |
| SLV202 | 20 | 52.82 | 1196.06 | 292.91 | 380/440V-3Ph |
| SLV242 | 24 | 52.82 | 1196.06 | 292.91 | 380/440V-3Ph |
| SLV282 | 28 | 52.82 | 1196.06 | 292.91 | 380/440V-3Ph |
| SLV322 | 32 | 52.82 | 1196.06 | 292.91 | 380/440V-3Ph |
| SLV84 | 8 | 105.64 | 1196.06 | 292.91 | 380/440V-3Ph |
| SLV124 | 12 | 105.64 | 1196.06 | 292.91 | 380/440V-3Ph |
| SLV164 | 16 | 105.64 | 1196.06 | 292.91 | 380/440V-3Ph |
| SLV204 | 20 | 105.64 | 1196.06 | 292.91 | 380/440V-3Ph |
| SLV244 | 24 | 105.64 | 1196.06 | 292.91 | 380/440V-3Ph |
| SLV284 | 28 | 105.64 | 1196.06 | 292.91 | 380/440V-3Ph |
| SLV324 | 32 | 105.64 | 1196.06 | 292.91 | 380/440V-3Ph |

Note: All models are suitable for operation at 50 Hz and 60 Hz.

SLV | SYNCHRONOUS LIFTING SYSTEM - VARIABLE SPEED DRIVE

Mounting kits to fit single and double acting cylinders are listed below.

| Model number | Mounting kit type | Applicable cylinder | Increase in cylinder height (in) |
|--------------|-------------------|---------------------|----------------------------------|
| SLMK-1 | 1 | HSS - 25T | +0.14 |
| | 1 | HSS - 30T | +0.14 |
| SLMK-2 | 2 | HAS - 30T | +0.39 |
| | 2 | HRA - 30T | +0.39 |
| SLMK-3 | 3 | HSS - 50T | +0.39 |
| | 3 | HAS - 50T | +0.39 |
| SLMK-4 | 3 | HRA - 50T | +0.39 |
| | 4 | HSS - 75T | +0.39 |
| SLMK-5 | 5 | HSS - 100T | +0.39 |
| | 5 | HAS - 100T | +0.39 |
| | 5 | HRA - 100T | +0.39 |
| SLMK-6 | 6 | HDA - 25T | +0.43 |
| SLMK-7 | 7 | HDA - 50T | +0.39 |
| SLMK-8 | 8 | HDA - 100T | +0.39 |
| SLMK-9 | 9 | HDA - 150T | +0.39 |
| | 9 | HDA - 200T | +0.39 |
| SLMK-10 | 10 | HHS - 20T | +0.43 |
| SLMK-11 | 11 | HHS - 30T | +0.47 |
| | 11 | HHR - 30T | +0.47 |
| SLMK-12 | 12 | HHS - 37T | +0.04 |
| SLMK-13 | 13 | HHA - 50T | +0.04 |
| SLMK-14 | 14 | HHS - 60T | +0.47 |
| | 14 | HHR - 60T | +0.47 |
| SLMK-15 | 15 | HHS - 100T | +0.39 |
| | 15 | HHR - 100T | +0.39 |
| SLMK-16 | 16 | HHR - 150T | +0.39 |
| SLMK-17 | 17 | HHR - 250T | +0.39 |
| SLMK-18 | 18 | HFA - 30T | 0 |
| SLMK-19 | 19 | HFA - 50T | +0.32 |
| SLMK-20 | 20 | HFA - 100T | 0 |
| | 20 | HGG - 150T | 0 |
| SLMK-21 | 21 | HDA - 300T | 0 |
| SLMK-22 | 22 | HDA - 400T | 0 |
| | 22 | HDA - 500T | 0 |
| SLMK-23 | 23 | HDA - 800T | 0 |
| | 23 | HDA - 1000T | 0 |
| | 23 | HFG - 800T | 0 |
| SLMK-24 | 24 | HFL - 50T | +0.32 |
| | 24 | HFG - 50T | +0.32 |
| SLMK-25 | 25 | HFG - 400T | 0 |
| | 25 | HFG - 500T | 0 |
| | 25 | HGG - 200T | 0 |
| | 25 | HSG - 200T | 0 |
| SLMK-26 | 26 | HFL - 100T | +0.35 |
| | 26 | HFG - 100T | +0.35 |
| SLMK-27 | 27 | HFL - 150T | +0.32 |
| | 27 | HFG - 150T | +0.32 |
| | 27 | HFG - 200T | +0.32 |
| | 27 | HSG - 150T | +0.32 |
| SLMK-28 | 28 | HFG - 250T | 0 |
| | 28 | HFG - 300T | 0 |
| | 28 | HGG - 300T | 0 |
| SLMK-29 | 29 | HSG - 300T | 0 |
| SLMK-30 | 30 | HFL - 250T | +0.32 |
| SLMK-31 | 31 | HFL - 400T | +0.39 |
| SLMK-32 | 32 | HFL - 500T | +0.39 |
| SLMK-33 | 33 | HFG - 1000T | 0 |

SLV | SYNCHRONOUS LIFTING SYSTEM - VARIABLE SPEED DRIVE

The SLV system is designed for use with standard single and double acting cylinders. Below table lists the SLV model and cylinder type that can be used with it.

| Model number | Applicable cylinder type | Applicable cylinder range | Cylinder stroke (in) | Page reference | |
|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------------------|----------------|----|
| SLV82 SLV122 SLV162 SLV202 SLV242 SLV282 SLV322 SLV84 SLV124 SLV164 SLV204 SLV244 SLV284 SLV324 | Single acting | HSS | 2.01 - 18.01 | 10 | |
| | Single acting | HHS | 1.97 - 5.99 | 11 | |
| | Single acting | HFL | 1.77 - 2.01 | 14 | |
| | Single acting | HFG | 1.97 - 5.99 | 15 | |
| | Single acting | HAS | 2.01 - 5.99 | 16 | |
| | Single acting | HHA | 2.01 - 4.14 | 17 | |
| | Single acting | HFA | 2.05 - 12.02 | 18 | |
| | Single acting | HGG | 6.11 | 20 | |
| | Single acting | HSG | 5.99 | 21 | |
| | SLV82 SLV122 SLV162 SLV202 SLV242 SLV282 SLV322 SLV84 SLV124 SLV164 SLV204 SLV244 SLV284 SLV324 | Double acting | HHR | 2.01 - 12.02 | 12 |
| | | Double acting | HDA | 5.99 - 20.02 | 13 |
| | | Double acting | HRA | 2.01 - 12.02 | 19 |

DISPLACEMENT SENSORS

- ▶ 25 inches (635 mm) string pot
- ▶ Provides stroke feedback to controls
- ▶ Includes magnet for mounting
- ▶ Each lifting point requires one sensor
- ▶ String pot displacement sensors as standard, other displacement sensors available on request

| Model number | Type and stroke (in) |
|--------------|----------------------|
| SLDS650 | 25.61 |



SENSOR CABLES

- ▶ Each displacement sensor requires one cable

| Model number | Length (ft) |
|--------------|-------------|
| SLDC10 | 33 |
| SLDC25 | 82 |
| SLDC50 | 164 |
| SLDC75 | 246 |
| SLDC100 | 330 |

SYNCHRONOUS LIFTING SYSTEM FEATURES

| FEATURE | SLF | SLV |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PRESSURE TRANSDUCERS SUPPLIED AS STANDARD | ✓ | ✓ |
| TOUCH SCREEN DISPLAY TO MONITOR STROKE AND PRESSURE | ✓ | ✓ |
| CONTROL UNIT COMPLETE WITH TOUCH SCREEN | ✓ | ✓ |
| USB PORT FOR SYSTEM DATA LOGGING | - | ✓ |
| FORKLIFT ACCESS GUIDE CHANNELS | ✓ | ✓ |
| INDIVIDUAL SELECTION OF CYLINDERS | ✓ | ✓ |
| ACCURACY RANGE ADJUSTABLE UP TO +/- 0.04 in BETWEEN LEADING AND LAGGING CYLINDERS | ✓ | ✓ |
| FULL SYSTEM DIAGNOSTICS WITH CABLE UNPLUG DETECTION | ✓ | ✓ |
| CAN PROVIDE INDICATIVE WEIGHT OF LIFT | ✓ | ✓ |
| SYSTEM SUITABLE FOR PRELOADING | ✓ | ✓ |
| VARIABLE SPEED DRIVE FOR PRECISE FINE CONTROL | - | ✓ |
| TEMPERATURE MONITORING SYSTEM | - | ✓ |
| SYSTEM MOUNTED IN ENCLOSED FRAME WITH DOORS | - | ✓ |
| OIL COOLING SYSTEM | - | ✓ |
| CENTER OF GRAVITY INDICATION | - | ✓ |
| FOR USE WITH BOTH SINGLE AND DOUBLE ACTING CYLINDERS | Defined by model | ✓ |
| PUMP UNIT SPEC | Flow from 56.75 in ³ /min to 67.13 in ³ /min per outlet up to 10000 psi | Working pressure 10000 psi two stage pump unit: 1196.06 in ³ /min total flow up to 1450 psi, 292.91 in ³ /min total flow up to 10000 psi Option of reducing the flow rate using the variable speed drive controller, which offers an R.P.M. range from 200 to 1800 |
| TANK CAPACITY | Up to 52.82 gallons reservoir capacity | Up to 105.64 gallons reservoir capacity |
| INDIVIDUAL CONTROLLABLE LIFTING POINTS | 4 to 8 | 8 to 32 |
| DISPLACEMENT SENSOR | String pot displacement sensors as standard. Other displacement sensors available on request. | String pot displacement sensors as standard. Other displacement sensors available on request. |
| SENSOR CABLES | Lengths up to 330 feet | Lengths up to 330 feet |

AHP11 | AIR DRIVEN SINGLE STAGE HAND AND FOOT OPERATED PUMPS



Working pressure 10000 psi

Compact, lightweight & powerful

Standard 100 psi air input pressure required

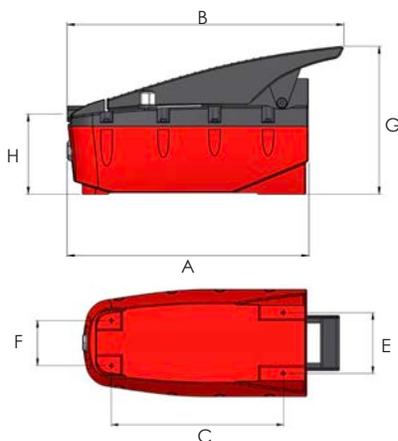
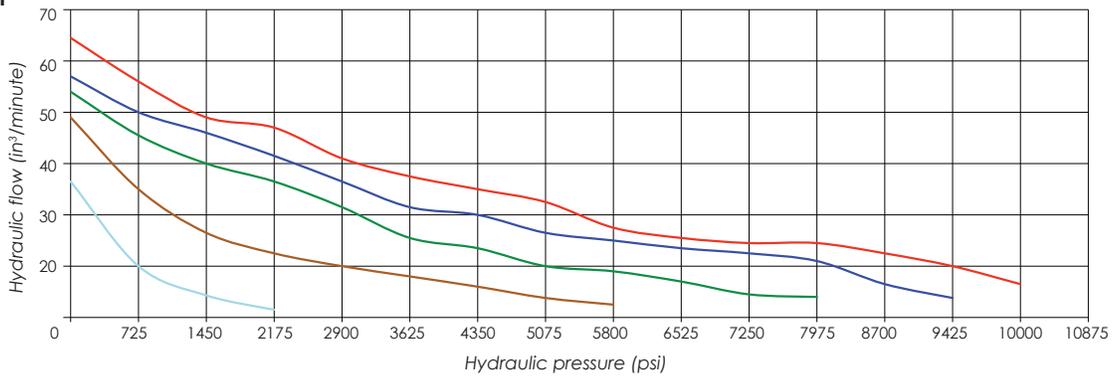
- ▶ Choice of oil reservoirs from 0.63 to 2.64 gallons capacity
- ▶ Choice of 2-way or 4-way control valves
- ▶ Safety overload protection valve fitted as standard
- ▶ All models fitted with steel oil reservoir (excluding AHP1120)
- ▶ Optional remote pendant controller available. Suffix model number with 'R'

Oil flow / Pressure chart

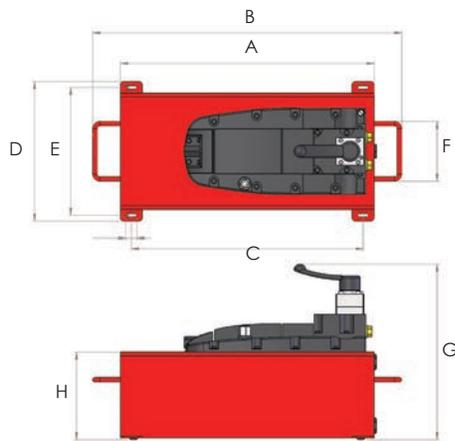
Airline pressure

- 41 psi
- 61 psi
- 81 psi
- 100 psi
- 120 psi

Air consumption
105.6 gal/min



AHP1120 (plastic oil reservoir)
AHP1121 (metal oil reservoir)
AHP1122 (metal oil reservoir)



AHP1141 (metal oil reservoir)
AHP1142 (metal oil reservoir)

| Model number | Maximum flow rate (in³/min) | Valve type | Usable oil capacity (gallons) | Air inlet connection G | Oil outlet connection NPTF | Weight (lbs) | Dimensions (in) | | | | | | | |
|--------------|-----------------------------|------------|-------------------------------|------------------------|----------------------------|--------------|-----------------|-------|-------|------|----------|------|-------|------|
| | | | | | | | A | B | C | D | E | F | G | H |
| AHP1120 | 48.82 | 2-way | 0.63 | 1/4" | 3/8" | 10.4 | 14.38 | * | 9.34 | 6.19 | 2.6-3.55 | * | 8.27 | 4.93 |
| AHP1121 | 48.82 | 2-way | 1.32 | 1/4" | 3/8" | 19.8 | 16.55 | * | 14.97 | 9.46 | 8.67 | * | 8.79 | 4.49 |
| AHP1122 | 48.82 | 2-way | 2.64 | 1/4" | 3/8" | 39.2 | 18.28 | 22.06 | * | 8.27 | * | 4.26 | 10.8 | 6.23 |
| AHP1141 | 48.82 | 4-way | 1.32 | 1/4" | 3/8" | 20.9 | 16.55 | * | 14.97 | 9.46 | 8.67 | * | 10.44 | 4.49 |
| AHP1142 | 48.82 | 4-way | 2.64 | 1/4" | 3/8" | 40.3 | 18.28 | 22.06 | * | 8.27 | * | * | 12.41 | 6.23 |

*Not Applicable

HAP | AIR DRIVEN PUMPS - GENERAL DUTY HIGH FLOW

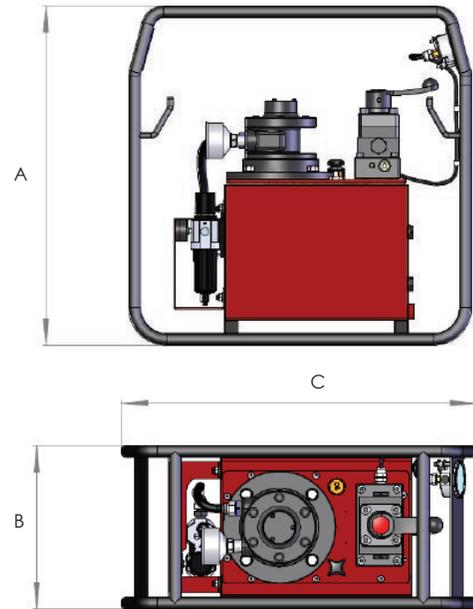


Working pressure 10000 psi

Two stage operation

Choice of 2.64 or 6.6 gallons oil reservoir

- ▶ Driven by a powerful 4.08 kW rotary air motor with a maximum air consumption of 84.75 cubic feet per minute at 100 psi inlet air pressure
- ▶ Choice of 2, 3 or 4-way manual control valves with load holding feature on 3 & 4-way versions
- ▶ Externally adjustable pressure relief valve for pressure setting up to a maximum of 10000 psi
- ▶ Cable management features for cable/hose winding and stowage
- ▶ Supplied as standard with pressure gauge, couplers, FRL unit and a robust roll frame



| Model number | Valve type | Oil capacity (gallons) | Maximum flow rate (in ³ /min) | | Weight (lbs) | Dimensions (in) | | |
|--------------|------------|------------------------|------------------------------------------|-----------------------|--------------|-----------------|-------|-------|
| | | | 1 st stage | 2 nd stage | | A | B | C |
| HAP21011 | P-T Plate | 2.64 | 610.24 | 79.33 | 102.5 | 24.7 | 11.5 | 24.9 |
| HAP21012 | P-T Plate | 6.6 | 610.24 | 79.33 | 137.8 | 24.7 | 13.87 | 29.71 |
| HAP21021 | 2-way | 2.64 | 610.24 | 79.33 | 103.6 | 24.7 | 11.5 | 24.9 |
| HAP21022 | 2-way | 6.6 | 610.24 | 79.33 | 138.9 | 24.7 | 13.87 | 29.71 |
| HAP21031 | 3-way | 2.64 | 610.24 | 79.33 | 103.6 | 24.7 | 11.5 | 24.9 |
| HAP21032 | 3-way | 6.6 | 610.24 | 79.33 | 138.9 | 24.7 | 13.87 | 29.71 |
| HAP21041 | 4-way | 2.64 | 610.24 | 79.33 | 103.6 | 24.7 | 11.5 | 24.9 |
| HAP21042 | 4-way | 6.6 | 610.24 | 79.33 | 138.9 | 24.7 | 13.87 | 29.71 |

HPP | GASOLINE ENGINE DRIVEN PUMPS - GENERAL DUTY HIGH FLOW

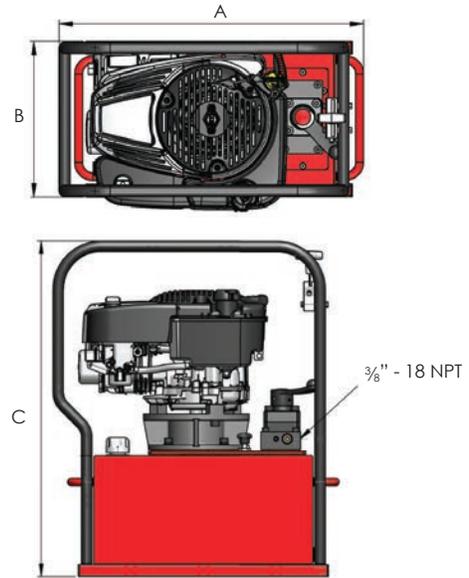


Working pressure 10000 psi

Two stage operation

Choice of 6.6, 10.56 or 15.84 gallons oil reservoir

- ▶ Choice of 2, 3 or 4-way manual control valves with load holding feature on 3 & 4-way versions
- ▶ Externally adjustable pressure relief valve for pressure setting up to a maximum of 10000 psi
- ▶ Factory fitted roll bar protection frame included



| Model number | Valve type | Oil capacity (gallons) | Maximum flow rate (in ³ /minute) | | Weight (lbs) | Dimensions (in) | | |
|--------------|------------|------------------------|---------------------------------------------|-----------------------|--------------|-----------------|-------|-------|
| | | | 1 st stage | 2 nd stage | | A | B | C |
| HPP21012 | P-T Plate | 6.6 | 610.24 | 79.33 | 155.4 | 22.46 | 12.06 | 27.03 |
| HPP21014 | P-T Plate | 10.56 | 610.24 | 79.33 | 188.5 | 22.46 | 12.06 | 31.32 |
| HPP21016 | P-T Plate | 15.84 | 610.24 | 79.33 | 250.2 | 22.97 | 16 | 32.15 |
| HPP21022 | 2-way | 6.6 | 610.24 | 79.33 | 156.5 | 22.46 | 12.06 | 27.03 |
| HPP21024 | 2-way | 10.56 | 610.24 | 79.33 | 189.6 | 22.46 | 12.06 | 31.32 |
| HPP21026 | 2-way | 15.84 | 610.24 | 79.33 | 251.3 | 22.97 | 16 | 32.15 |
| HPP21032 | 3-way | 6.6 | 610.24 | 79.33 | 156.5 | 22.46 | 12.06 | 27.03 |
| HPP21034 | 3-way | 10.56 | 610.24 | 79.33 | 189.6 | 22.46 | 12.06 | 31.32 |
| HPP21036 | 3-way | 15.84 | 610.24 | 79.33 | 251.3 | 22.97 | 16 | 32.15 |
| HPP21042 | 4-way | 6.6 | 610.24 | 79.33 | 156.5 | 22.46 | 12.06 | 27.03 |
| HPP21044 | 4-way | 10.56 | 610.24 | 79.33 | 189.6 | 22.46 | 12.06 | 31.32 |
| HPP21046 | 4-way | 15.84 | 610.24 | 79.33 | 251.3 | 22.97 | 16 | 32.15 |

WHEEL TROLLEY

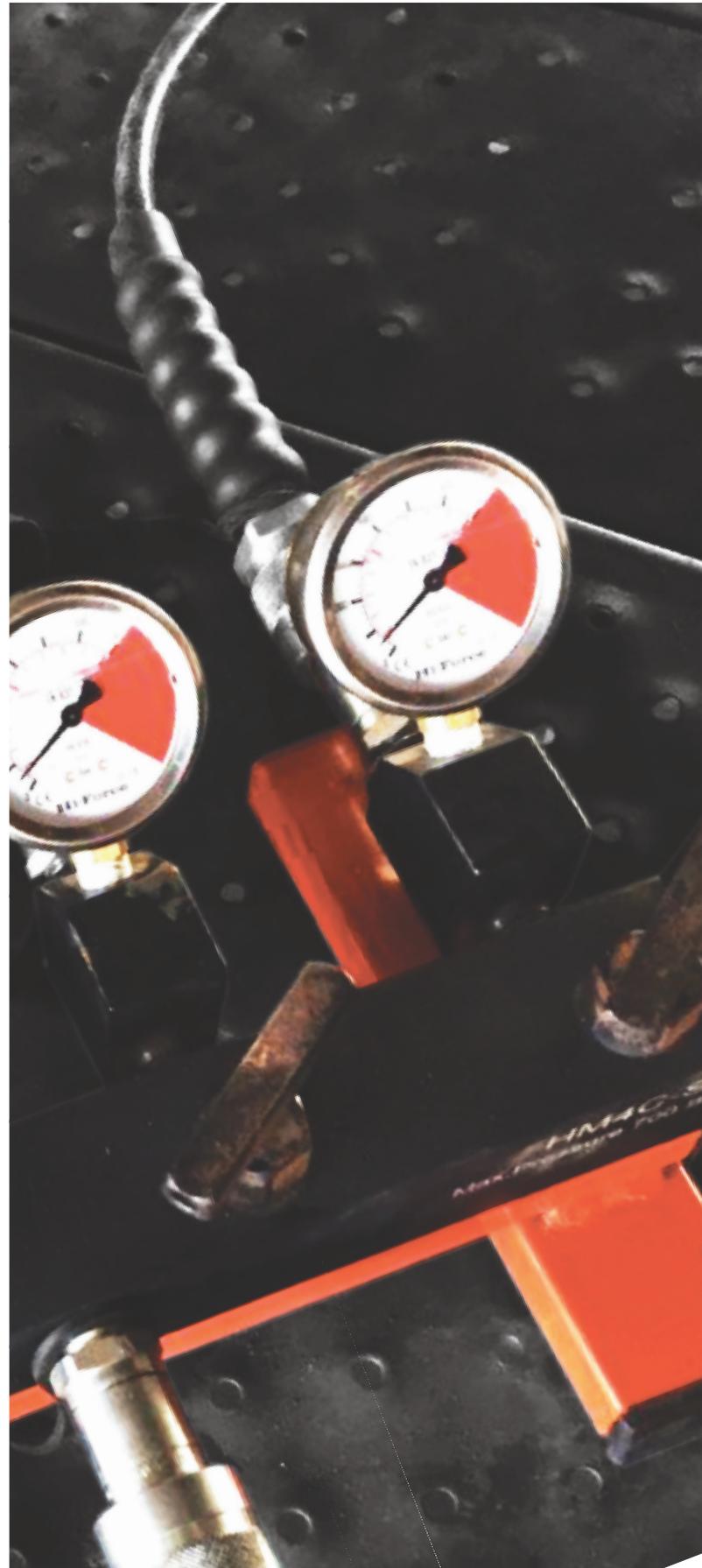
| Model number | Description |
|--------------|--------------------------------------------------------------|
| PPA40WT | Wheel trolley for all pumps with 10.56 gallons oil reservoir |
| PPA60WT | Wheel trolley for all pumps with 15.84 gallons oil reservoir |

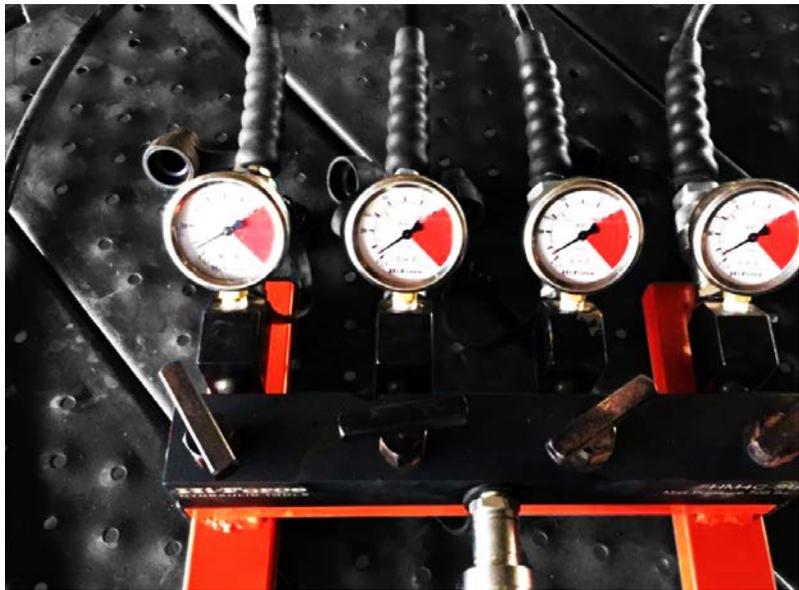


All 40L and 60L HPP pumps can be supplied with a factory fitted wheel trolley. Just suffix model number with 'WT'.

HI-FORCE SYSTEM COMPONENTS

The Hi-Force range of system components is designed and manufactured to provide all the essential accessory items required to complete the required high pressure hydraulic system. Whether the requirements are for a hose, pressure gauge and gauge block, for a simple hydraulic tool set up using a remote pump, or a more complex system of multiple lifting cylinders with manifolds, control valves, gauges, hoses, couplings and fittings, Hi-Force system components offer the essential high quality performance, to ensure the hydraulic system integrity and safe operation and use of your Hi-Force hydraulic tools, is maintained at all times. Specify Hi-Force system components for use with your Hi-Force hydraulic tools.





SYSTEM COMPONENTS

| | |
|--------------------------------------------------|-----------|
| HYDRAULIC HOSES | 56 |
| High pressure hydraulic hoses | |
| PRESSURE GAUGES & MOUNTING BLOCKS | 57 |
| Gauges and mounting blocks | |
| DIGITAL PRESSURE GAUGE | 58 |
| Digital gauge with LCD display | |
| PRESSURE TRANSDUCER & DIGITAL DISPLAY | 59 |
| Transducer and digital display | |
| MANIFOLDS | 60 |
| Distribution blocks | |
| CONTROLLED MANIFOLDS ASSEMBLIES | 61 |
| Manifold stations with pressure gauges | |
| HYDRAULIC OIL | 62 |
| Premium grade hydraulic oil | |
| HIGH PRESSURE COUPLERS & FITTINGS | 63 |
| High pressure couplers, fittings and adaptors | |
| DIRECTIONAL CONTROL VALVES | 64 |
| Directional control valves | |
| FLOW CONTROL VALVES | 65 |
| Flow control valves | |

HIGH PRESSURE HYDRAULIC HOSES



Working pressure 10000 psi

4:1 Factor of safety

Hand grip protective strain relievers

► Available in black or red outer covering to assist with identifying advance and return lines in double acting hydraulic systems

| Length (ft) | No couplers 3/8" - 18 NPT male fitting both ends | | Weight (lbs) | 3/8" - 18 NPT male fitting one end with CM1 coupler fitted one end | | Weight (lbs) | CM1 male couplers fitted both ends | | Weight (lbs) |
|-------------|-----------------------------------------------------|--------------|--------------|--------------------------------------------------------------------|--------------|--------------|------------------------------------|---------|--------------|
| | Model number | Model number | | Model number | Model number | | | | |
| | | | | | | | | | |
| 1.5 | HH0.5 | HH0.5R | 0.9 | HC0.5 | HC0.5R | 1.1 | HC0.5C | HC0.5CR | 1.5 |
| 3.3 | HH1 | HH1R | 1.1 | HC1 | HC1R | 1.5 | HC1C | HC1CR | 2.2 |
| 6.5 | HH2 | HH2R | 1.5 | HC2 | HC2R | 2.0 | HC2C | HC2CR | 2.4 |
| 10 | HH3 | HH3R | 2.0 | HC3 | HC3R | 2.2 | HC3C | HC3CR | 2.6 |
| 13 | HH4 | HH4R | 2.6 | HC4 | HC4R | 2.6 | HC4C | HC4CR | 3.3 |
| 16.5 | HH5 | HH5R | 2.9 | HC5 | HC5R | 3.1 | HC5C | HC5CR | 3.5 |
| 19.5 | HH6 | HH6R | 3.3 | HC6 | HC6R | 3.5 | HC6C | HC6CR | 4.0 |
| 33 | HH10 | HH10R | 4.9 | HC10 | HC10R | 5.3 | HC10C | HC10CR | 5.7 |
| 39.5 | HH12 | HH12R | 6.2 | HC12 | HC12R | 6.6 | HC12C | HC12CR | 7.1 |
| 49 | HH15 | HH15R | 6.8 | HC15 | HC15R | 7.3 | HC15C | HC15CR | 7.7 |
| 65.5 | HH20 | HH20R | 9.0 | HC20 | HC20R | 9.3 | HC20C | HC20CR | 9.7 |
| 82 | HH25 | HH25R | 11.7 | HC25 | HC25R | 12.1 | HC25C | HC25CR | 12.3 |
| 98.5 | HH30 | HH30R | 16.1 | HC30 | HC30R | 17.0 | HC30C | HC30CR | 17.4 |

Note: Hose bore is 1/4" and outside diameter is 1/2".

PRESSURE GAUGES & GAUGE MOUNTING BLOCKS



Clear precise dual scale readings

Manufactured to EN837-1

+/-1% full scale accuracy

GAUGES

- ▶ Choice of dry or glycerin filled models available
- ▶ Recommended for use within all hydraulic systems to monitor hydraulic pressure
- ▶ Dual scale reading on all models
- ▶ Gauges scaled to match high tonnage cylinders available on request
- ▶ Individual gauge calibration certificates available at extra cost on request

| Model number | Gauge diameter (in) | Gauge type | Reading inner scale | Reading outer scale | Inlet thread | Compatible Hi-Force cylinders | Weight (lbs) |
|--------------|---------------------|------------|---------------------|---------------------|--------------|-------------------------------|--------------|
| HG63G | 2.48 | glycerin | 0-700 bar | 0-10000 psi | ¼"-18 NPT | All models | 0.4 |
| HG1 | 3.94 | dry | 0-700 bar | 0-10000 psi | ½"-14 NPT | All models | 2.0 |
| HG1G | 3.94 | glycerin | 0-700 bar | 0-10000 psi | ½"-14 NPT | All models | 2.2 |
| HG2 | 5.91 | dry | 0-700 bar | 0-10000 psi | ½"-14 NPT | All models | 3.5 |
| HG2G | 5.91 | glycerin | 0-700 bar | 0-10000 psi | ½"-14 NPT | All models | 3.7 |

GAUGE MOUNTING BLOCKS

- ▶ For easy "inline" connection of the selected pressure gauge to the hydraulic system

| Model number | Dimensions (in) | | | Gauge thread | Inlet thread | Outlet thread | Weight (lbs) |
|--------------|-----------------|-------|--------|--------------|----------------|------------------|--------------|
| | Length | Width | Height | | | | |
| HGA1 | 2.96 | 1.26 | 1.26 | ½"-14 NPT | ⅜"-18 NPT male | ⅜"-18 NPT female | 0.6 |
| HGA2 | 6.3 | 1.26 | 1.26 | ½"-14 NPT | ⅜"-18 NPT male | ⅜"-18 NPT female | 1.9 |
| HGA1-25 | 2.96 | 1.26 | 1.26 | ¼"-18 NPT | ⅜"-18 NPT male | ⅜"-18 NPT female | 0.7 |
| HGA2-25 | 6.3 | 1.26 | 1.26 | ¼"-18 NPT | ⅜"-18 NPT male | ⅜"-18 NPT female | 2.0 |
| AGA1-25 | 2.96 | 1.26 | 1.97 | ¼"-18 NPT | ⅜"-18 NPT male | ⅜"-18 NPT female | 1.2 |

DIGITAL PRESSURE GAUGE

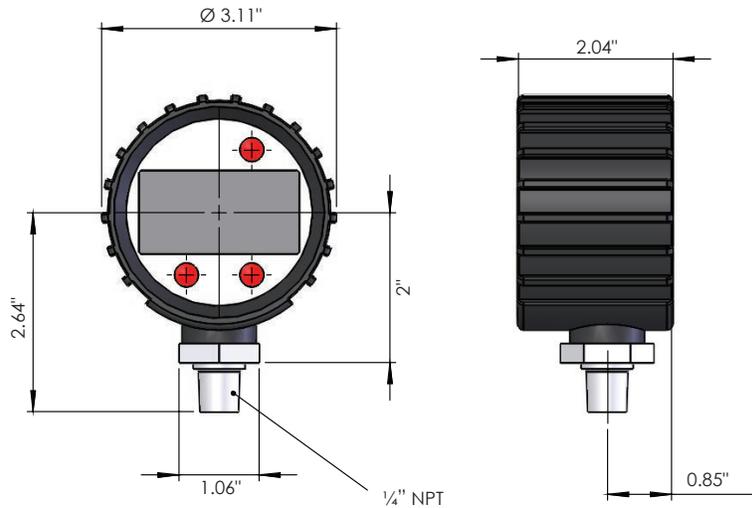


5 digit LCD display

Choice of pressure readings

0.5% full scale accuracy

- ▶ High quality, general purpose gauge to measure pressure up to 14500 psi (1000 bar)
- ▶ Displays readings in psi, psi, mpa and kg/cm²
- ▶ LCD display with 0.47 inches, 5 digit upper line pressure reading and 0.24 inches, 5 digit lower line unit reading
- ▶ Blue backlight allows for easy reading in poor visibility conditions
- ▶ Minimum 2000 hours battery life (3 VDC)
- ▶ Supplied with rubber enclosure to help protect against accidental impact
- ▶ Features include tare, min & max memory and IP65 weatherproof enclosure rating
- ▶ Compatible gauge mounting blocks are detailed on page 57



| Model number | Gauge diameter (in) | Pressure reading (psi) | Pressure reading (bar) | Pressure reading (mpa) | Pressure reading (kg/cm ²) | Inlet thread | Weight (lbs) |
|--------------|---------------------|------------------------|------------------------|------------------------|----------------------------------------|--------------|--------------|
| HDG1 | 2.76 | 0-14500 | 0-1000 | 0-100 | 0-1019.7 | 1/4"-18 NPT | 0.4 |

PRESSURE TRANSDUCER & DIGITAL DISPLAY



Pressure readings in bar and psi

0.5% full scale accuracy

Maximum working pressure 10000 psi

Pressure Transducer

- ▶ For precise measurement of system pressure up to 10000 psi
- ▶ Supplied complete with a 6.5 foot connecting cable
- ▶ Output 4-20 mA

| Model number | Pressure reading (psi) | Pressure reading (bar) | Connection thread | Accuracy percentage full scale | Weight (lbs) |
|--------------|------------------------|------------------------|-------------------|--------------------------------|--------------|
| HPT1 | 0-10000 | 0-700 | 1/4"-18 NPT | 0.5 | 0.2 |

Digital Display Unit

- ▶ For use with HPT1 transducer to record pressure in applications where remote reading is preferred
- ▶ Compact size with large LCD screen
- ▶ Displays readings in psi or bar
- ▶ Features include minimum and maximum value, average value, tare offset and reset
- ▶ Complete with worldwide power supply unit
- ▶ IP65 enclosure rating
- ▶ For use with 4-20 mA pressure transducer

| Model number | Pressure reading (psi) | Pressure reading (bar) | Screen display size (in) L x H | Overall size (in) L x W x H | Voltage VDC | Weight (lbs) |
|--------------|------------------------|------------------------|--------------------------------|-----------------------------|-------------|--------------|
| HDD1 | 0-10000 | 0-700 | 3 x 1 | 4.3 x 4.33 x 1.58 | 18 - 32 | 0.7 |

MANIFOLDS

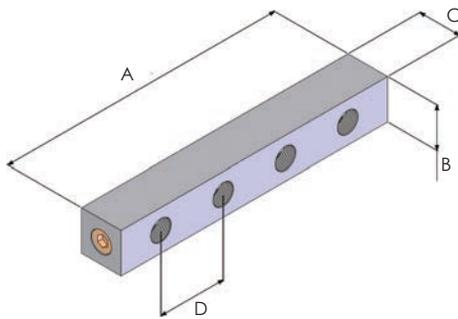


Working pressure 10000 psi

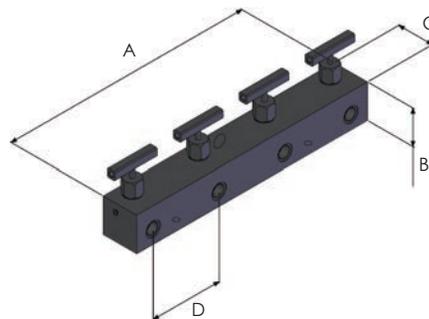
Choice of open or controlled manifolds

2, 4, 5, 6 or 8 outlet port models available

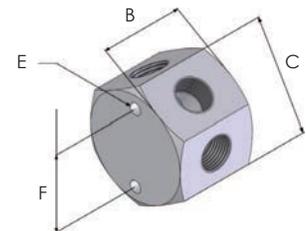
- ▶ Designed for easy control of the direction of flow of the hydraulic fluid within the system
- ▶ Available as open manifold blocks or with individual needle type shut off/throttle valves on each outlet



HM* & HM*L



HM*C



HM5

| Model number | Type | Design | Number of outlets | Connection ports female threads | | Weight (lbs) | Dimensions (in) | | | | | |
|--------------|---------------------|-------------------|-------------------|---------------------------------|-----------------|--------------|-----------------|------|------|------|----|-----|
| | | | | Inlet | Outlet | | A | B | C | D | E | F |
| HM2 | open manifold | parallel | 2 | 3/8"-18 NPT | 2 x 3/8"-18 NPT | 2.2 | 4.49 | 1.26 | 1.26 | 1.97 | - | - |
| HM4 | open manifold | parallel | 4 | 3/8"-18 NPT | 4 x 3/8"-18 NPT | 3.3 | 8.43 | 1.26 | 1.26 | 1.97 | - | - |
| HM5 | open manifold | hexagon | 5 | 3/8"-18 NPT | 5 x 3/8"-18 NPT | 1.5 | - | 1.62 | 2.01 | - | M6 | 1.5 |
| HM6 | open manifold | parallel | 6 | 3/8"-18 NPT | 6 x 3/8"-18 NPT | 4.4 | 12.37 | 1.26 | 1.26 | 1.97 | - | - |
| HM8 | open manifold | parallel | 8 | 3/8"-18 NPT | 8 x 3/8"-18 NPT | 5.5 | 16.31 | 1.26 | 1.26 | 1.97 | - | - |
| HM4L | open manifold | extended parallel | 4 | 3/8"-18 NPT | 4 x 3/8"-18 NPT | 5.3 | 15.52 | 1.26 | 1.26 | 4.33 | - | - |
| HM6L | open manifold | extended parallel | 6 | 3/8"-18 NPT | 6 x 3/8"-18 NPT | 8.2 | 24.19 | 1.26 | 1.26 | 4.33 | - | - |
| HM2C | controlled manifold | parallel | 2 | 3/8"-18 NPT | 2 x 3/8"-18 NPT | 4.4 | 5.91 | 2.01 | 1.5 | 3.94 | - | - |
| HM4C | controlled manifold | parallel | 4 | 3/8"-18 NPT | 4 x 3/8"-18 NPT | 7.7 | 13.79 | 2.01 | 1.5 | 3.94 | - | - |

CONTROLLED MANIFOLD ASSEMBLIES

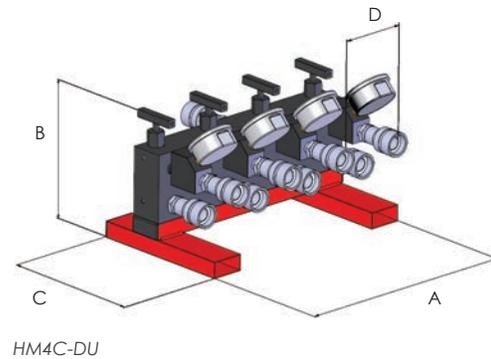
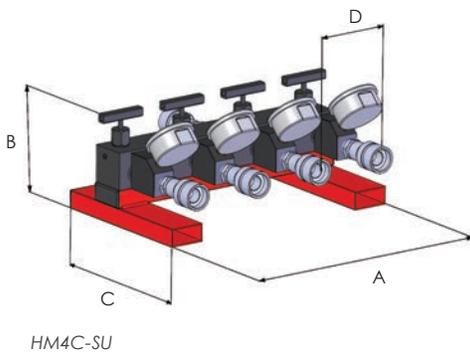
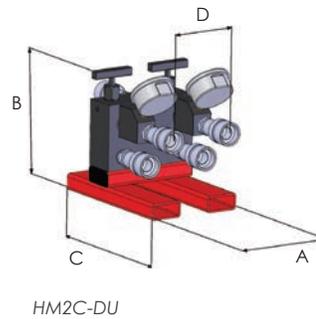
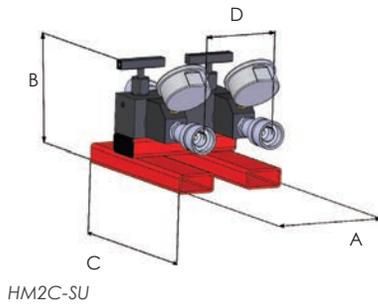


Working pressure 10000 psi

Up to 4 outlets with individual control on each

Choice of manifolds for single or double acting systems

- ▶ Pressure gauges fitted to advance ports on all models
- ▶ Quick connect couplings fitted as standard to all inlet and outlet ports
- ▶ Precise control of oil flow and pressure within the hydraulic system



| Model number | Description | Weight (lbs) | Dimensions (in) | | | |
|--------------|--------------------------------------------------------------------|--------------|-----------------|------|------|------|
| | | | A | B | C | D |
| HM2C-SU | 2-way controlled manifold unit, suitable for single acting systems | 4.4 | 5.91 | 2.01 | 2.01 | 3.94 |
| HM2C-DU | 2-way controlled manifold unit, suitable for double acting systems | 6.6 | 5.91 | 4.02 | 2.01 | 3.94 |
| HM4C-SU | 4-way controlled manifold unit, suitable for single acting systems | 7.7 | 13.79 | 2.01 | 2.01 | 3.94 |
| HM4C-DU | 4-way controlled manifold unit, suitable for double acting systems | 13.2 | 13.79 | 4.02 | 2.01 | 3.94 |

HYDRAULIC OIL



Premium grade hydraulic oil

High viscosity index

Supplied in a choice of 0.26, 1.32 or 6.6 gallon containers

- ▶ Effective and reliable lubricant
- ▶ Foaming resistance
- ▶ Provides optimum performance in all high pressure applications
- ▶ Specially formulated for use with all Hi-Force hydraulic tools

| Model number | Contents (gallons) |
|--------------|--------------------|
| HFO15-1 | 0.26 |
| HFO15-5 | 1.32 |
| HFO15-25 | 6.6 |
| HFO46-1 | 0.26 |
| HFO46-5 | 1.32 |
| HFO46-25 | 6.6 |

OIL TYPE RECOMMENDATION

| Product | Oil Type | |
|------------------------------|----------|-------|
| | HFO15 | HFO46 |
| ACP | • | ✓ |
| AHP/AHP-CR/AHP2/AHP2-CR/ATDP | • | ✓ |
| AHP11 | • | ✓ |
| BC | • | ✓ |
| BPP | • | ✓ |
| CH | • | ✓ |
| Controlled Manifolds | ✓ | ✓ |
| Couplers & Fittings | ✓ | ✓ |
| CT | ✓ | • |
| Digital Gauge | ✓ | ✓ |
| DNS | • | ✓ |
| Gauge/Blocks | ✓ | ✓ |
| HAP | • | ✓ |
| HAS | • | ✓ |
| HBW | • | ✓ |
| HCC | • | ✓ |
| HCH | • | ✓ |
| HDA | • | ✓ |
| HEP1 | • | ✓ |
| HEP103 | • | ✓ |
| HEP2/HEP3/HEP5 | • | ✓ |
| HFA | • | ✓ |
| HFG | • | ✓ |
| HFL | • | ✓ |
| HFS-H | • | ✓ |
| HFV42 | ✓ | • |
| HFV66 | ✓ | • |

| Product | Oil Type | |
|---------|----------|-------|
| | HFO15 | HFO46 |
| HGG | • | ✓ |
| HHA | • | ✓ |
| HHP | • | ✓ |
| HHR | • | ✓ |
| HHS | • | ✓ |
| HKP | ✓ | • |
| HLS | • | ✓ |
| HMJ | • | ✓ |
| HMNS | ✓ | • |
| Hoses | ✓ | ✓ |
| HP(All) | ✓ | • |
| HP-FP | ✓ | • |
| HPC | • | ✓ |
| HPF | • | ✓ |
| HPP | • | ✓ |
| HPR/HBR | ✓ | • |
| HPS | • | ✓ |
| HPT | ✓ | ✓ |
| HPX | ✓ | • |
| HPV152 | ✓ | • |
| HRA | • | ✓ |
| HSG | • | ✓ |
| HSP | • | ✓ |
| HSS | • | ✓ |
| HSWC | ✓ | • |
| HTN | • | ✓ |
| HTWP | • | ✓ |
| HTWR1 | • | ✓ |

| Product | Oil Type | |
|------------|----------|-------|
| | HFO15 | HFO46 |
| HVL | • | ✓ |
| HWRC | • | ✓ |
| JAH | ✓ | • |
| JAS | ✓ | • |
| JCS/JCH | ✓ | ✓ |
| Manifolds | ✓ | ✓ |
| MHP | ✓ | • |
| NS | • | ✓ |
| PB | ✓ | • |
| PKC | • | ✓ |
| PKS | • | ✓ |
| PMV2 | • | ✓ |
| PMV3/PMV3L | • | ✓ |
| PMV4/PMV4L | • | ✓ |
| RMV3/RMV3L | • | ✓ |
| RMV4/RMV4L | • | ✓ |
| SBT | • | ✓ |
| SC | ✓ | • |
| SCP | ✓ | • |
| SPP | ✓ | • |
| STS | • | ✓ |
| STU | • | ✓ |
| Toughlift | • | ✓ |
| TPA | • | ✓ |
| TPE | • | ✓ |

Note: ✓ Recommended and factory fitted grade
• Acceptable alternative

HIGH PRESSURE COUPLERS AND FITTINGS

- ▶ Suitable for working pressures up to 10000 psi
- ▶ Designed to ensure easy system connection and assembly

| Model number | See picture | Description | Thread specification |
|--------------|-------------|----------------------------------------------|------------------------------------|
| HF7 | 1 | Nipple | 1/4" NPT male to 1/4" NPT male |
| HF8 | 5 | Adaptor | 1/4" NPT female to 1/4" NPT female |
| HF10 | 2 | Elbow | 3/8" NPT female to 3/8" NPT female |
| HF12 | 3 | Equal tee | 3/8" NPT female |
| HF13 | 4 | Cross | 3/8" NPT female |
| HF14 | 5 | Adaptor | 3/8" NPT female to 3/8" NPT female |
| HF15 | 5 | Reducer | 3/8" NPT female to 1/4" NPT female |
| HF16 | 6 | Elbow | 3/8" NPT female to 3/8" NPT male |
| HF17 | 1 | Nipple | 3/8" NPT male to 3/8" NPT male |
| HF19 | 1 | Long nipple | 3/8" NPT male to 3/8" NPT male |
| HF24 | 7 | Adaptor | 3/8" NPT male to 3/8" BSP female |
| HF27 | 1 | Nipple | 1/4" NPT male to 3/8" NPT male |
| HF30 | 7 | Reducer | 3/8" NPT male to 1/4" NPT female |
| HF31 | 8 | Tee | 3/8" NPT female to 3/8" NPT male |
| HF33 | 7 | Reducer | 3/8" NPT male to 1/4" BSP female |
| HF55 | 7 | Reducer | 3/8" NPT female to 1/4" NPT male |
| HF69 | 7 | Adaptor | 1/2" BSP male to 3/8" NPT female |
| CF1 | 9 | Female coupler | 3/8" NPT male |
| CM1 | 10 | Male coupler | 3/8" NPT female |
| CMF1 | 9 + 10 | Complete coupler | 3/8" NPT |
| CF2 | 9 | Female coupler | 1/4" NPT male |
| CM2 | 10 | Male coupler | 1/4" NPT female |
| CMF2 | 9 + 10 | Complete coupler | 1/4" NPT |
| CFD1 | 11 | Metal dust cap for CF1 | |
| CMD1 | 12 | Metal dust cap for CM1 | |
| CFD2 | 11 | Metal dust cap for CF2 | |
| CMD2 | 12 | Metal dust cap for CM2 | |
| PPC1 | 13 | Moulded universal dust cap to suit CF1 & CM1 | |



Picture 1



Picture 2



Picture 3



Picture 4



Picture 5



Picture 6



Picture 7



Picture 8



Picture 9



Picture 10



Picture 11



Picture 12



Picture 13

DIRECTIONAL CONTROL VALVES

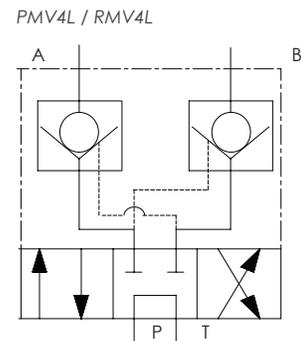
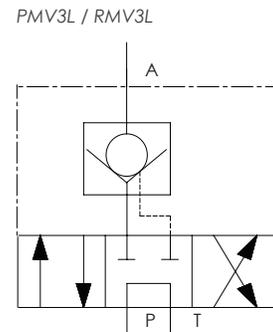
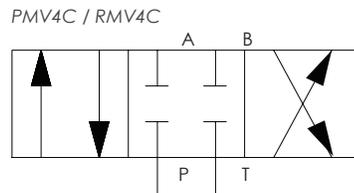
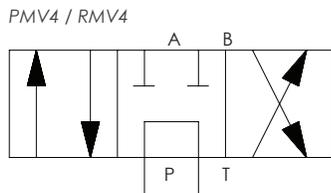
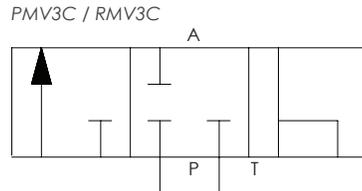
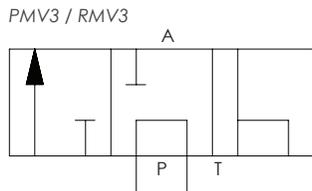
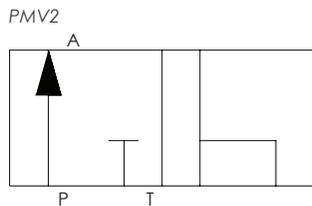


Working pressure 10000 psi

Pump or remote mounted design

Manual or solenoid options available

- ▶ Choice of 2, 3 or 4-way options
- ▶ Designed to provide precise control of oil flow and pressure



| Description | Manual valve no load holding | Model number Manual valve with load holding | Manual valve closed center |
|-----------------------------------------|---------------------------------|---------------------------------------------------|-------------------------------|
| Pump mounted, 2-way, 2 position valve | PMV2 | - | - |
| Pump mounted, 3-way, 3 position valve | PMV3 | PMV3L | PMV3C |
| Pump mounted, 4-way, 3 position valve | PMV4 | PMV4L | PMV4C |
| Remote mounted, 3-way, 3 position valve | RMV3 | RMV3L | RMV3C |
| Remote mounted, 4-way, 3 position valve | RMV4 | RMV4L | RMV4C |

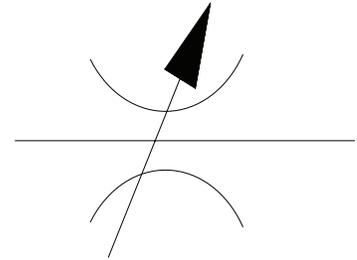
FLOW CONTROL VALVES



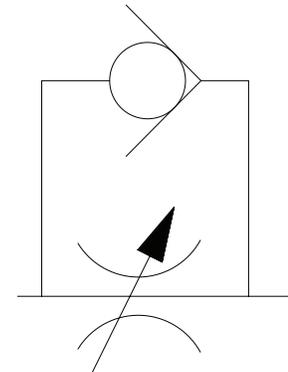
Working pressure 10000 psi

3/8" - 18 NPT female connection ports

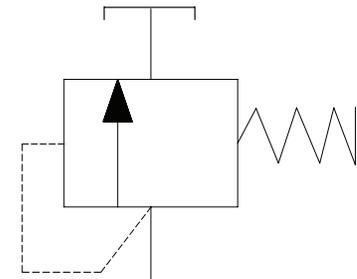
| Model number | Description | Dimensions (in) | | |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------|-------|
| | | Height | Length | Width |
| HM1C | Manual shut off valve with needle type flow control. Used for load holding and throttling functions. Can also be used as a gauge isolator. | 3.23 | 2.52 | 1.5 |



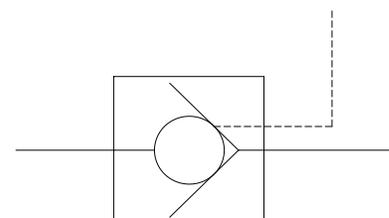
| Model number | Description | Dimensions (in) | | |
|--------------|------------------------------------------------------------------------------------------------|-----------------|--------|-------|
| | | Height | Length | Width |
| HFV66 | Manual check valve used for automatic load locking, with precise manual load lowering feature. | 3.39 | 2.96 | 1.85 |



| Model number | Description | Dimensions (in) | | |
|--------------|------------------------------------------------------------------------------------------------------------------------|-----------------|--------|-------|
| | | Height | Length | Width |
| HPV152 | Adjustable pressure relief valve, for pressure setting from 800 to 10000 psi. Supplied complete with return line hose. | 4.02 | 2.52 | 1.26 |

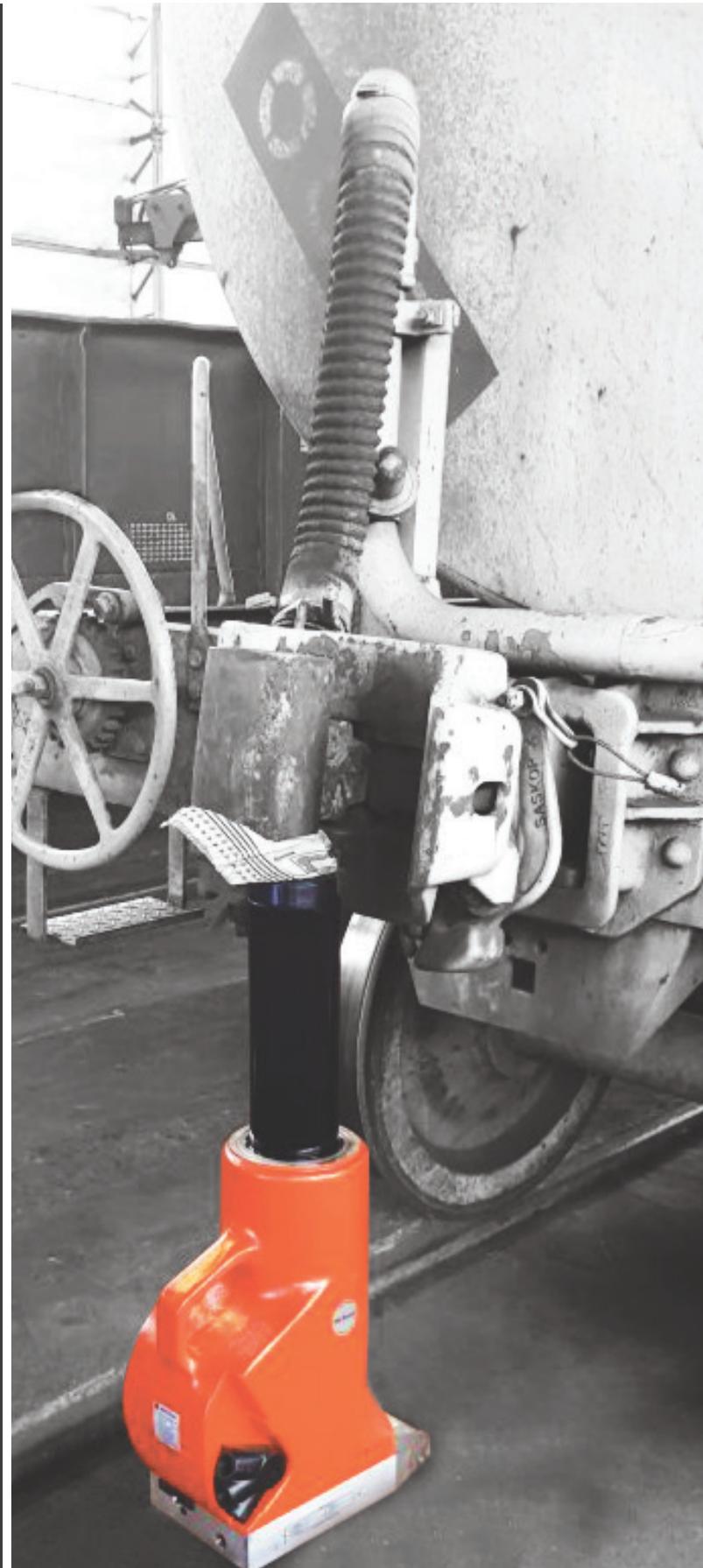


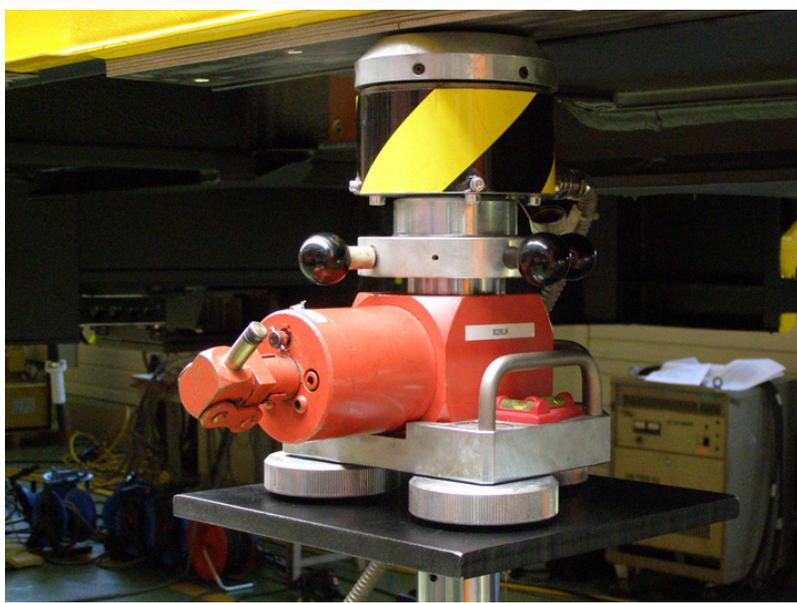
| Model number | Description | Dimensions (in) | | |
|--------------|------------------------------------------------------------------------------------------------------------------------------|-----------------|--------|-------|
| | | Height | Length | Width |
| HFV42 | Pilot operated check valve used as a safety valve for double acting cylinders. Pilot port connects to cylinder retract line. | 3.31 | 2.52 | 1.26 |



HI-FORCE HYDRAULIC JACKS

The Hi-Force range of hydraulic jacks offers a wide choice of lifting capacities, closed and extended heights, material construction and design. From self-contained aluminum to remote pump operated, steel toe lift jacks and compact low height jacks for confined space applications, the Hi-Force hydraulic jack range offers the user a wide choice of options, to suit every application. All jacks are supplied prefilled with oil ready to use.





JACKS

| | |
|-----------------------------------------------------------------|-----------|
| JAS RANGE | 68 |
| Aluminum jacks, compact multi-purpose design | |
| JAH RANGE | 69 |
| Aluminum jacks plain piston, claw jacks and locking ring design | |
| JCS & JCH RANGE | 70 |
| Steel & aluminum jacks, compact low height design | |
| HMJ RANGE | 71 |
| Steel jacks, low height access machine lift design | |

JAS | ALUMINUM JACKS

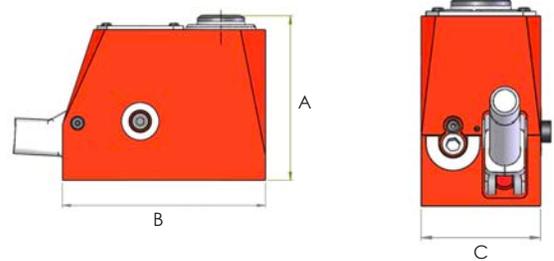


Maximum capacity 11 tons

Choice of 2.96 or 4.93 inches hydraulic lift height

Internal safety overload device

- ▶ Lightweight aluminum jack body
- ▶ Spring assisted piston retraction
- ▶ Nitrocarburized steel piston for increased corrosion resistance
- ▶ Over stroke safety limiting device



| Model number | Capacity (tons) | Stroke (in) | Weight (lbs) | Dimensions (in) | | |
|--------------|-----------------|-------------|--------------|-----------------|------|------|
| | | | | A | B | C |
| JAS103 | 11 | 2.96 | 9.5 | 5.16 | 6.38 | 2.96 |
| JAS105 | 11 | 4.93 | 12.6 | 7.13 | 6.38 | 2.96 |

JAH | ALUMINUM JACKS

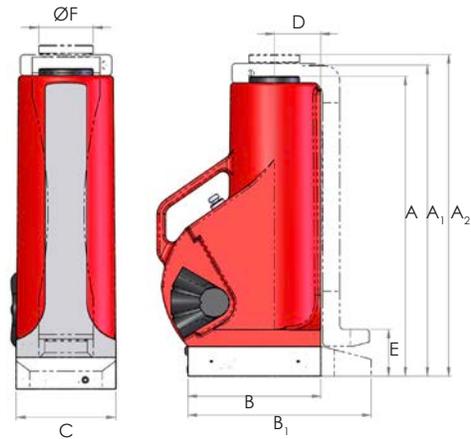


Capacities from 22 to 66 tons

Choice of 5.99 or 12.02 inches stroke lengths

Internal safety overload device

- ▶ Lightweight aluminum construction with critical parts manufactured from high quality steel
- ▶ Available with plain piston, lifting claw or failsafe mechanical lock ring
- ▶ Claw lift capacities from 9 to 26 tons
- ▶ Safety over stroke limiting device



| Model number | Jack capacity (tons) | Claw capacity (tons) | Stroke (in) | Weight (lbs) | Dimensions (in) | | | | | | | | | | |
|----------------------------------------------------------|----------------------|----------------------|-------------|--------------|-----------------|----------------|----------------|------|----------------|------|------|------|------|--|--|
| | | | | | A | A ₁ | A ₂ | B | B ₁ | C | D | E | F | | |
| Jack with plain piston | | | | | | | | | | | | | | | |
| JAH620 | 22 | - | 5.99 | 24.3 | 10.36 | - | - | 7.01 | - | 4.77 | 2.25 | - | 2.36 | | |
| JAH1220 | 22 | - | 12.02 | 37.5 | 17.26 | - | - | - | 9.69 | 4.77 | 2.25 | - | 2.36 | | |
| JAH630 | 33 | - | 5.99 | 35.3 | 10.36 | - | - | 8 | - | 5.52 | 2.76 | - | 2.99 | | |
| JAH1230 | 33 | - | 12.02 | 52.9 | 17.77 | - | - | - | 10.76 | 5.52 | 2.76 | - | 2.99 | | |
| JAH660 | 66 | - | 5.99 | 61.7 | 11.54 | - | - | 9.89 | - | 7.49 | 3.62 | - | 4.26 | | |
| JAH1260 | 66 | - | 12.02 | 97.0 | 19.7 | - | - | - | 13.47 | 7.49 | 3.62 | - | 4.26 | | |
| Jack with plain piston & lifting claw with extended base | | | | | | | | | | | | | | | |
| JAH620C | 22 | 9 | 5.99 | 33.1 | - | 11.03 | - | - | 9.69 | 4.77 | 2.25 | 2.64 | - | | |
| JAH1220C | 22 | 9 | 12.02 | 50.7 | - | 17.97 | - | - | 9.69 | 4.77 | 2.25 | 2.64 | - | | |
| JAH630C | 33 | 13 | 5.99 | 46.3 | - | 11.07 | - | - | 10.76 | 5.52 | 2.76 | 3.07 | - | | |
| JAH1230C | 33 | 13 | 12.02 | 70.5 | - | 18.6 | - | - | 10.76 | 5.52 | 2.76 | 3.07 | - | | |
| JAH660C | 66 | 26 | 5.99 | 97.0 | - | 13.2 | - | - | 13.47 | 7.49 | 3.62 | 3.07 | - | | |
| JAH1260C | 66 | 26 | 12.02 | 143.3 | - | 21.47 | - | - | 13.47 | 7.49 | 3.62 | 3.07 | - | | |
| Jack with failsafe mechanical load holding lock ring | | | | | | | | | | | | | | | |
| JAH620SR | 22 | - | 5.99 | 28.7 | - | - | 11.39 | 7.01 | - | 4.77 | 2.25 | - | 2.36 | | |
| JAH1220SR | 22 | - | 12.02 | 41.9 | - | - | 18.28 | - | 9.69 | 4.77 | 2.25 | - | 2.36 | | |
| JAH630SR | 33 | - | 5.99 | 37.5 | - | - | 11.5 | 8 | - | 5.52 | 2.76 | - | 2.99 | | |
| JAH1230SR | 33 | - | 12.02 | 55.1 | - | - | 18.87 | - | 10.76 | 5.52 | 2.76 | - | 2.99 | | |
| JAH660SR | 66 | - | 5.99 | 66.1 | - | - | 13 | 9.89 | - | 7.49 | 3.62 | - | 4.26 | | |
| JAH1260SR | 66 | - | 12.02 | 101.4 | - | - | 21.12 | - | 13.47 | 7.49 | 3.62 | - | 4.26 | | |

Note: Lifting claw capacity on toe is maximum 40% of jack capacity, do not exceed!

JCS & JCH | COMPACT JACKS

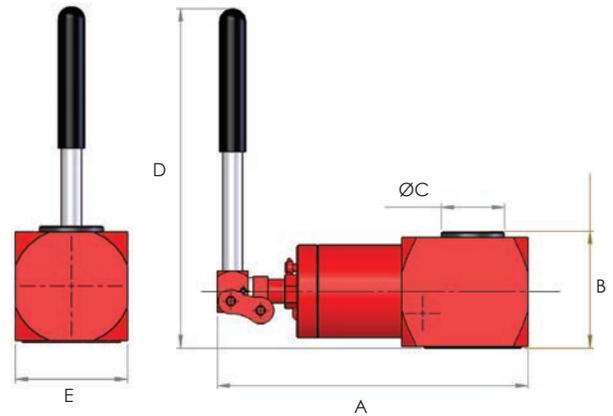


Capacities from 11 to 33 tons

Stroke lengths from 1.38 to 1.77 inches

Lightweight and compact

- ▶ Spring assisted piston retraction (JCS)
- ▶ Load return piston (JCH)
- ▶ Nitrocarburized steel piston rod for corrosion resistance
- ▶ 360 degree positional pumping mechanism for increased versatility
- ▶ Internal safety overload valve



JCS - SOLID PISTON

| Model number | Capacity (tons) | Body construction | Stroke (in) | Weight (lbs) |
|--------------|-----------------|-------------------|-------------|--------------|
| JCS10 | 11 | Steel | 1.38 | 9.9 |
| JCS20 | 22 | Aluminum | 1.62 | 12.1 |
| JCS30 | 33 | Aluminum | 1.77 | 17.6 |

| Dimensions (in) | | | | | |
|-----------------|------|------|-------|------|---|
| A | B | C | D | E | F |
| 9.46 | 2.99 | 1.5 | 10.48 | 2.76 | - |
| 10.13 | 4.02 | 2.01 | 11.07 | 4.02 | - |
| 11.07 | 4.41 | 2.36 | 11.23 | 4.93 | - |

JCH - HOLLOW PISTON

| Model number | Capacity (tons) | Body construction | Stroke (in) | Weight (lbs) |
|--------------|-----------------|-------------------|-------------|--------------|
| JCH13 | 14 | Aluminum | 1.62 | 12.1 |
| JCH21 | 23 | Aluminum | 1.77 | 17.6 |

| Dimensions (in) | | | | | |
|-----------------|------|------|-------|------|------|
| A | B | C | D | E | F |
| 10.13 | 3.74 | 2.01 | 11.07 | 4.02 | 0.99 |
| 11.07 | 4.49 | 2.36 | 11.23 | 4.93 | 1.38 |

HMJ | STEEL MACHINE LIFT JACKS

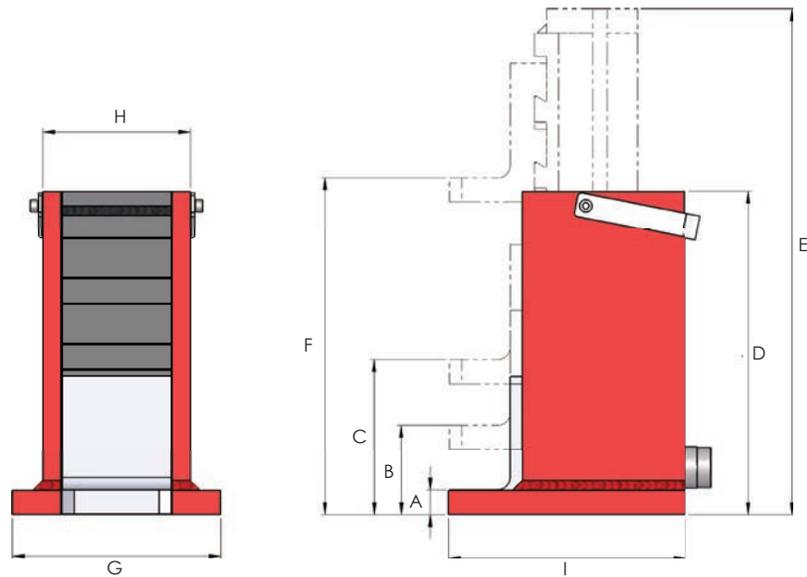


Capacities of 11 and 28 tons

Stroke length 5.91 inches

10000 psi maximum working pressure

- ▶ Lifting toe is precision guided throughout its lifting stroke to reduce friction and prevent potential side loading of the hydraulic cylinder
- ▶ Operated using a remote pump and hose for increased operator safety
- ▶ Lifting toe with minimum height of 1 inch, can be pre-set at three lifting positions
- ▶ Suitable for multiple lift point applications



| Model number | Capacity (tons) | | Stroke (in) | Weight (lbs) | Dimensions (in) | | | | | | | | |
|--------------|-----------------|------|-------------|--------------|-----------------|------|------|-------|-------|-------|------|------|------|
| | Toe | Head | | | A | B | C | D | E | F | G | H | I |
| HMJ10 | 9 | 11 | 5.91 | 64.4 | 0.99 | 3.11 | 5.24 | 10.72 | 16.63 | 11.15 | 7.96 | 4.81 | 7.37 |
| HMJ25 | 22 | 28 | 5.91 | 121.5 | 1.38 | 4.61 | 7.84 | 13 | 18.91 | 13.75 | 11.5 | 5.99 | 8.31 |

Note: Maximum permissible input hydraulic pressure when lifting on the jack toe is 8630 psi for HMJ10 and 8120 psi for HMJ25, do not exceed!

HI-FORCE TOUGHLIFT JACKING SYSTEM

The Hi-Force Toughlift Jacking System offers users the easiest and safest method of lifting heavy plant and construction vehicles, in the mining and construction industry and railway locomotives, when critical maintenance and breakdown repair work is required. Suitable for lifting, even the largest vehicles, currently in production around the world, the Hi-Force Toughlift is available in 55, 110, 165 & 220 ton lifting capacities.





TOUGHLIFT

| | |
|-----------------|-----------|
| TL RANGE | 74 |
|-----------------|-----------|

ToughLift jacking systems

| | |
|-----------------------|-----------|
| TL ACCESSORIES | 75 |
|-----------------------|-----------|

Slip lock & load lock extensions

| | |
|-----------------------|-----------|
| TL ACCESSORIES | 76 |
|-----------------------|-----------|

Load block sets, spacers

| | |
|-----------------------|-----------|
| TL ACCESSORIES | 77 |
|-----------------------|-----------|

ToughLift accessories configuration examples

TL | TOUGHLIFT JACKING SYSTEMS



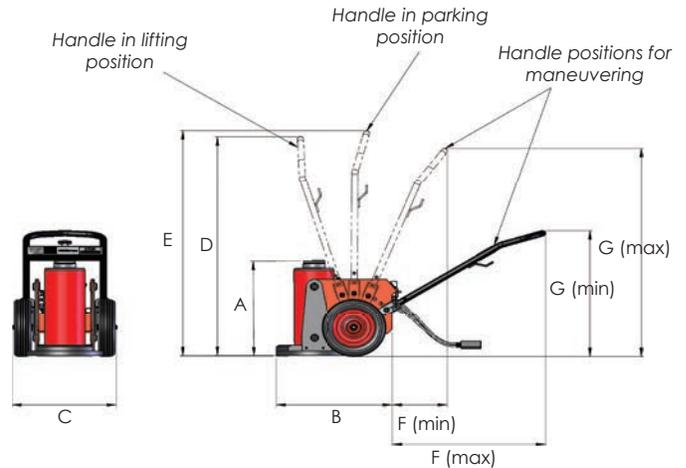
- ▶ Choice of air or electric driven hydraulic system
- ▶ High flow 3-stage pump unit offers faster advance and retract times
- ▶ Solid tyres fitted as standard with option of pneumatic tyres
- ▶ Narrow width wheels and redesigned wheel position for better ground clearance and balance when maneuvering
- ▶ Push button remote hand pendant controller with 16.5 feet control cable
- ▶ Tilting saddles fitted as standard on all models
- ▶ User friendly design with easily accessible maintenance features
- ▶ Wide range of accessories available for even greater versatility see pages 75 and 76

Choice of 8 models with capacities from 55 to 220 tons

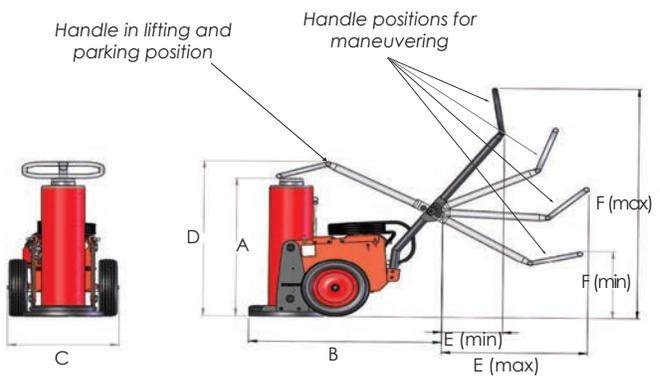
Lifting heights up to 27 inches

Working pressure 10000 psi

Dimensions for 55 ton models:



Dimensions for all other models:



| Model number | Capacity (tons) | Power supply | Stroke (in) | Weight (lbs) | Max additional stack (in) | Dimensions (in) | | | | | | |
|--------------|-----------------|----------------------|-------------|--------------|---------------------------|-----------------|-------|-------|-------|---------------|---------------|---------------|
| | | | | | | A | B | C | D | E (min-max) | F (min-max) | G (min-max) |
| TL050A255 | 55 | 90-psi air driven | 10.01 | 352.7 | 26.79 | 17.93 | 26 | 22.06 | 56.74 | 56.74 | 14.97 - 39.4 | 27.58 - 51.22 |
| TL050E255 | 55 | 240V electric, 50 Hz | 10.01 | 370.4 | 26.79 | 17.93 | 26 | 22.06 | 56.74 | 56.74 | 14.97 - 39.4 | 27.58 - 51.22 |
| TL050E255H | 55 | 240V electric, 60 Hz | 10.01 | 370.4 | 26.79 | 17.93 | 26 | 22.06 | 56.74 | 56.74 | 14.97 - 39.4 | 27.58 - 51.22 |
| TLA10016 | 110 | 90-psi air driven | 15.96 | 637.1 | 18.91 | 26.2 | 44.52 | 25.69 | 32.74 | 14.03 - 33.65 | 18.32 - 63.24 | - |
| TLA10021 | 110 | 90-psi air driven | 20.88 | 703.3 | 7.09 | 33.21 | 44.52 | 25.69 | 37.27 | 14.03 - 33.65 | 18.32 - 63.24 | - |
| TLA15015 | 165 | 90-psi air driven | 15.37 | 690.0 | 19.11 | 26.2 | 44.52 | 25.69 | 32.9 | 14.03 - 33.65 | 18.32 - 63.24 | - |
| TLA15020 | 165 | 90-psi air driven | 20.49 | 769.4 | 7.09 | 33.21 | 44.52 | 25.69 | 37.94 | 14.03 - 33.65 | 18.32 - 63.24 | - |
| TLA20015 | 220 | 90-psi air driven | 15.01 | 822.3 | 19.7 | 26 | 44.52 | 25.69 | 32.7 | 14.03 - 33.65 | 18.32 - 63.24 | - |
| TLA20027 | 220 | 90-psi air driven | 27 | 998.7 | 7.09 | 37.98 | 44.52 | 25.69 | 42.75 | 14.03 - 33.65 | 18.32 - 63.24 | - |

Note: 110, 165 and 220 ton electric driven Hi-Force ToughLift jacking systems available on request

TL ACCESSORIES

- ▶ Slip lock extensions can be used in multiples up to the maximum height as specified in the table
- ▶ Load lock extensions can only be used one at a time, and optionally in conjunction with slip lock extensions
- ▶ Both extension options will terminate with a swivel tilting saddle on the top of the extension stack

SLIP LOCK EXTENSIONS

| Length 7.1 in | Length 11.8 in | Length 15.8 in | Length 19.1 in | Length 19.7 in | To suit model | Recommended max. extension height (in) |
|------------------|-------------------|-------------------|-------------------|-------------------|--------------------------------------|-------------------------------------------|
| SLE180-50 | SLE300-50 | SLE400-50 | * | SLE500-50 | TL050A255 TL050E255 TL050E255H | 26.79 |
| SLE180-100 | SLE300-100 | * | SLE485-100 | * | TLA10016 | 19.11 |
| SLE180-100 | * | * | * | * | TLA10021 | 7.09 |
| SLE180-150 | SLE300-150 | * | SLE485-150 | * | TLA15015 | 19.11 |
| SLE180-150 | * | * | * | * | TLA15020 | 7.09 |
| SLE180-200 | SLE300-200 | SLE400-200 | * | SLE500-200 | TLA20015 | 19.7 |
| SLE180-200 | * | * | * | * | TLA20027 | 7.09 |

*Exceeds recommended maximum extension height



LOAD LOCK EXTENSIONS

| Length 7.1 in | Length 11.8 in | Length 15.8 in | Length 19.1 in | Length 19.7 in | To suit model | Recommended max. extension height (in) |
|------------------|-------------------|-------------------|-------------------|-------------------|--------------------------------------|-------------------------------------------|
| LLE180-50 | LLE300-50 | LLE400-50 | * | LLE500-50 | TL050A255 TL050E255 TL050E255H | 26.79 |
| LLE180-100 | LLE300-100 | * | LLE485-100 | * | TLA10016 | 19.11 |
| LLE180-100 | * | * | * | * | TLA10021 | 7.09 |
| LLE180-150 | LLE300-150 | * | LLE485-150 | * | TLA15015 | 19.11 |
| LLE180-150 | * | * | * | * | TLA15020 | 7.09 |
| LLE180-200 | LLE300-200 | LLE400-200 | * | LLE500-200 | TLA20015 | 19.7 |
| LLE180-200 | * | * | * | * | TLA20027 | 7.09 |

*Exceeds recommended maximum extension height



TL ACCESSORIES

TROLLEY MOUNTED LOAD BLOCK SETS

| Model number | Capacity (tons) | Lock out height (in) | Load blocks | Adaptor | To suit model |
|--------------|-----------------|----------------------|-------------|---------|--------------------------------------|
| TLB50-250 | 55 | 9.85 | 3 | 1 | TL050A255 TL050E255 TL050E255H |
| TLB100-405 | 110 | 15.76 | 5 | 1 | TLA10016 |
| TLB100-530 | 110 | 20.69 | 7 | 1 | TLA10021 |
| TLB150-390 | 165 | 15.17 | 5 | 1 | TLA15015 |
| TLB150-520 | 165 | 20.29 | 7 | 1 | TLA15020 |
| TLB200-380 | 220 | 14.78 | 5 | 1 | TLA20015 |
| TLB200-685 | 220 | 26.6 | 9 | 1 | TLA20027 |



SPACERS

- ▶ Base mounted spacer to increase closed height by 11.8 inches
- ▶ Only available for TLA20015 model and weight is increased by an extra 173.1 lbs when fitted
- ▶ Suffix TLA20015 with "E" when ordering with spacer fitted



TL ACCESSORIES

TOUGHLIFT ACCESSORIES CONFIGURATION EXAMPLES



Note: When using a combination of a load lock extension (LLE) with a slip lock extension (SLE), the LLE **must be** inserted into the cylinder first and then the SLE inserted into the LLE. The minimum Load Lock Extension must be 11.8 inches in length to allow the Slip Lock Extension to fully engage. The combination of the two extensions **must not** exceed the maximum recommended extension height for the relevant Toughlift model.

The recommended maximum height for each Toughlift model can be found on page 75 under the LLE and SLE tables. If you are in doubt about the selection, combination and use of both extensions, please contact your Hi-Force regional office.

HI-FORCE TORQUE TOOLS

The extensive range of Hi-Force torque tools, detailed in this section of the catalog, includes manual, air and hydraulically driven tools, available in a wide variety of accurate and controlled, torque output capacities. The range offers a choice of tool options, suitable for use in almost every bolt torque tightening, or loosening application, that are regularly required in many industrial applications worldwide. From basic, manually operated, calibrated, hand torque wrenches through to the latest generation of high output torque, hydraulic wrenches, Hi-Force torque tools are recognised as a leading brand within the global market for bolting tools. Detailed within this section of the catalog are manual hand torque wrenches, manual and pneumatic torque multipliers, square and hexagon drive hydraulic torque wrenches and all accessory items like extended hydraulic wrench reaction arms, heavy duty torque sockets, hexagon reducer bushes, back up wrenches, hydraulic torque wrench powered pumps, hoses and hose reels, impact wrenches and airline filter, regulator, lubricator unit.

iQ software is an innovative bolted joint integrity software programme designed to assist engineers with the provision of accurate bolt load calculations, based on key input data, related to each specific bolted joint, and is available for purchase through the provider company Asset55 Limited. Hi-Force is able to support our valued clients with bolt load calculations on an hourly chargeable time basis.





TORQUE TOOLS

| | |
|------------------------------------------------------------------------------------------------------------|------------|
| TWM RANGE Manual torque wrenches - Click type | 80 |
| HTW RANGE Manual torque wrenches - Break back type | 81 |
| TWG RANGE Manual torque multipliers | 82 |
| TWP RANGE Pistol grip pneumatic torque multipliers | 83 |
| TWP-OG RANGE Pistol grip pneumatic torque multipliers with offset gear box | 84 |
| TWS-N RANGE Hydraulic torque wrenches - Square drive | 85 |
| IS RANGE Imperial hexagon AF size heavy duty sockets | 86 |
| MS RANGE Metric hexagon AF size heavy duty sockets | 87 |
| TWS-N ACCESSORIES Hexagon drive adaptors and extended reaction arms, removable handle kits | 88 |
| TWH-N RANGE Hydraulic torque wrenches - Low profile hexagon | 89 |
| TWH-NRH - IMPERIAL RANGE Female hexagon ratchet heads for use with TWH-N torque wrenches | 90 |
| TWH-NRH - METRIC RANGE Female hexagon ratchet heads for use with TWH-N torque wrenches | 91 |
| TWH-N ACCESSORIES Square drive conversion kits and extended reaction arms, removable handle kits | 92 |
| IB RANGE Imperial hexagon AF size reducer bushes | 94 |
| MB RANGE Metric hexagon AF size reducer bushes | 95 |
| BW RANGE Backup wrenches | 96 |
| HTWP RANGE Torque wrench pumps - standard range | 97 |
| TPA RANGE Air driven torque wrench pumps - premium range | 98 |
| TPE RANGE Electric driven torque wrench pumps - premium range | 99 |
| TORQUE WRENCH PUMP ACCESSORIES Torque pump hoses, hose reel and couplers | 100 |
| IW RANGE Pneumatic impact wrenches | 101 |

TWM | MANUAL TORQUE WRENCHES - CLICK TYPE



Choice of 7 models with torque range from 7 to 630 lbf.ft (10 to 850 Nm)

Dual scale torque reading adjustment in lbf.ft & Nm

Repeatable accuracy of +/- 3% and supplied with individual calibration certificate

- ▶ Reversible square drives sizes from 3/8" to 3/4"
- ▶ Robust steel construction with corrosion resistant finish
- ▶ Heavy duty ratchet head with audible click when pre-set torque achieved
- ▶ Torque setting lock mechanism to prevent accidental change during use

| Model number | Square drive | Torque range | | Main scale grad (Nm) | Micro scale grad (Nm) | Overall length (in) | Ratchet head dia (in) | Weight (lbs) |
|--------------|--------------|--------------|-----------|----------------------|-----------------------|---------------------|-----------------------|--------------|
| | | lbf.ft | Nm | | | | | |
| TWM50 | 3/8" | 7 - 37 | 10 - 50 | 2.5 | 0.25 | 13.16 | 1.38 | 1.1 |
| TWM100 | 1/2" | 15 - 75 | 20 - 100 | 5 | 0.5 | 15.52 | 1.73 | 2.0 |
| TWM200 | 1/2" | 30 - 150 | 40 - 200 | 1 | 1 | 19.11 | 1.73 | 2.4 |
| TWM300 | 1/2" | 45 - 220 | 60 - 300 | 1 | 1 | 22.73 | 1.81 | 3.1 |
| TWM400 | 3/4" | 60 - 300 | 80 - 400 | 1 | 1 | 27.03 | 2.64 | 4.4 |
| TWM550 | 3/4" | 80 - 405 | 110 - 550 | 1 | 1 | 37.67 | 2.72 | 8.4 |
| TWM850 | 3/4" | 185 - 630 | 250 - 850 | 1 | 1 | 54.33 | 2.72 | 10.4 |

HTW | MANUAL TORQUE WRENCHES - BREAK BACK TYPE



Torque capacities from 220 to 1500 lbf.ft

Repeatable accuracy +/- 4%

Dual scale lbf.ft & Nm

- ▶ Choice of ¾" or 1" square drive sizes
- ▶ Robust steel construction with corrosion resistant finish
- ▶ Push-through square drive for bi-directional torque control
- ▶ Internal cam control ensures controlled 'break' once preset torque is achieved
- ▶ Large break angle prevents possibility of over torqueing
- ▶ Wrench automatically resets once hand pressure is released
- ▶ Marked with a unique serial number and supplied with calibration certificate
- ▶ Supplied in handy plastic storage case

| Model number | Square drive | Torque range | | Overall length (in) | Ratchet head dia (in) | Weight (lbs) |
|--------------|--------------|--------------|------------|---------------------|-----------------------|--------------|
| | | lbf.ft | Nm | | | |
| HTW1000B | ¾" | 220 - 750 | 300 - 1000 | 58.12 | 2.76 | 16.1 |
| HTW1500B | ¾" | 500 - 1000 | 700 - 1500 | 58.12 | 2.76 | 22.9 |
| HTW1800B | 1" | 500 - 1000 | 700 - 1500 | 58.12 | 2.76 | 22.9 |
| HTW2000B | 1" | 600 - 1500 | 900 - 2000 | 75.65 | 2.76 | 28.7 |

TWG | MANUAL TORQUE MULTIPLIERS

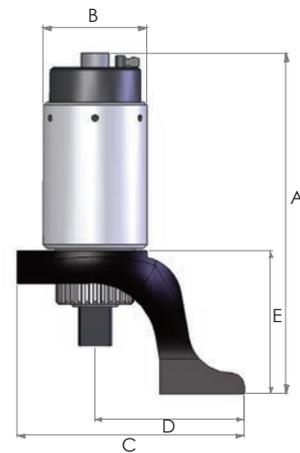


Torque capacities up to 7330 lbf.ft

Lightweight aluminum housing

Supplied complete with reaction arm

- ▶ Choice of output square drives of 3/4", 1" and 1 1/2"
- ▶ Suitable for use with Hi-Force TWM range of hand torque wrenches listed on page 80
- ▶ Compact design for easy fitment
- ▶ Single stage planetary gear in models up to 2050 lbf.ft
- ▶ Overload safety mechanism on models TWG40, TWG60, TWG100
- ▶ Multiplication ratios from 4:1 to 28.5:1



| Model number | Torque capacity | | Gearbox ratio | Input square drive | Output square drive | Overload Protection | Rec. torque wrench | Weight (lbs) | Dimensions (in) | | | | |
|--------------|-----------------|-------|---------------|--------------------|---------------------|---------------------|--------------------|--------------|-----------------|------|-------|------|------|
| | lbf.ft | Nm | | | | | | | A | B | C | D | E |
| TWG13 | 950 | 1300 | 5:1 | 1/2" | 3/4" | No | TWM300 | 2.9 | 5.24 | 3.15 | 4.89 | 3.78 | 3.86 |
| TWG20 | 1500 | 2000 | 4:1 | 3/4" | 1" | No | TWM550 | 4.0 | 5.16 | 3.47 | 7.49 | 5.91 | 3.15 |
| TWG28 | 2050 | 2800 | 5.5:1 | 3/4" | 1" | No | TWM550 | 5.3 | 5.75 | 4.18 | 8.71 | 6.26 | 3.27 |
| TWG40 | 2930 | 4000 | 16:1 | 1/2" | 1" | Yes | TWM300 | 9.3 | 8.94 | 3.47 | 6.9 | 5.32 | 4.33 |
| TWG60 | 4400 | 6000 | 18:1 | 3/4" | 1 1/2" | Yes | TWM400 | 14.6 | 10.09 | 4.02 | 9.46 | 7.49 | 5.71 |
| TWG100 | 7330 | 10000 | 28.5:1 | 3/4" | 1 1/2" | Yes | TWM400 | 24.0 | 11.5 | 5.59 | 10.52 | 8.47 | 6.42 |

TWP | PISTOL GRIP PNEUMATIC TORQUE MULTIPLIERS

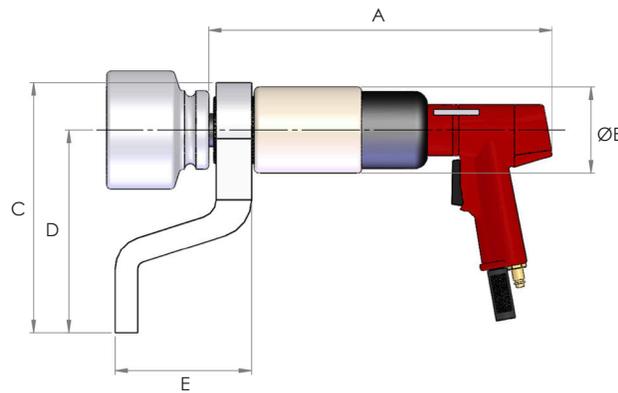


Torque capacities up to 4400 lbf.ft

Repeatable accuracy of +/- 5%

Lightweight and durable construction

- ▶ Air driven, single stage torque multipliers offering torque capacities from 150 to 4400 lbf.ft (200 to 6000 Nm)
- ▶ Ultra lightweight and durable construction with powerful performance for accurate tightening of bolted components
- ▶ Reversible, pistol grip design air motor allows for bi-directional torqueing
- ▶ Smooth, non-impacting design of planetary gears minimizes wear to components
- ▶ Gearbox manufactured from high grade steel and electrogalvanized for increased corrosion protection
- ▶ Slim line design of gearbox allows access in narrow spaces
- ▶ Sensitive trigger control allows for easy reaction arm positioning
- ▶ Average air consumption of 49.5 cubic feet per minute from a standard airline pressure of 116 psi (23 litres per second at 8 bar)
- ▶ Supplied with a FRL filter, regulator and lubricator unit including class 1.0 air inlet pressure gauge and 10 feet long hose (see page 101)



| Model number | Torque capacity * | | Square drive size | R.P.M. at max pressure | Weight (lbs) | Dimensions (in) | | | | |
|--------------|-------------------|-------------|-------------------|------------------------|--------------|-----------------|------|------|------|------|
| | lbf.ft | Nm | | | | A | B | C | D | E |
| TWP09S | 150 - 670 | 200 - 900 | 3/4" | 24 | 7.1 | 12.92 | 3.15 | 4.89 | 3.78 | 3.86 |
| TWP15S | 220 - 1110 | 300 - 1500 | 1" | 12 | 10.4 | 13.51 | 3.47 | 7.49 | 5.91 | 3.15 |
| TWP22S | 370 - 1620 | 500 - 2200 | 1" | 7 | 11.2 | 14.18 | 3.47 | 7.49 | 5.91 | 3.15 |
| TWP32S | 590 - 2360 | 800 - 3200 | 1" | 4 | 12.8 | 15.09 | 3.47 | 6.15 | 6.26 | 3.27 |
| TWP40S | 620 - 3100 | 850 - 4200 | 1" | 4 | 12.8 | 15.09 | 3.47 | 6.9 | 5.71 | 4.33 |
| TWP60S | 880 - 4400 | 1200 - 6000 | 1 1/2" | 4 | 17.0 | 15.76 | 4.02 | 9.46 | 7.49 | 5.71 |

*Minimum torque value at 22 psi, maximum torque value at 116 psi airline pressure. Weight is without reaction arm.

TWS-N | HYDRAULIC TORQUE WRENCHES - SQUARE DRIVE

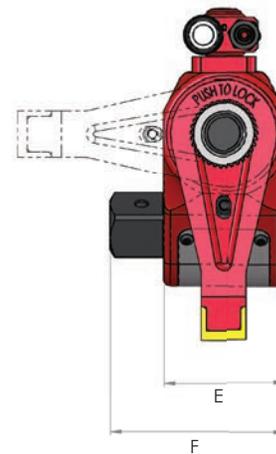
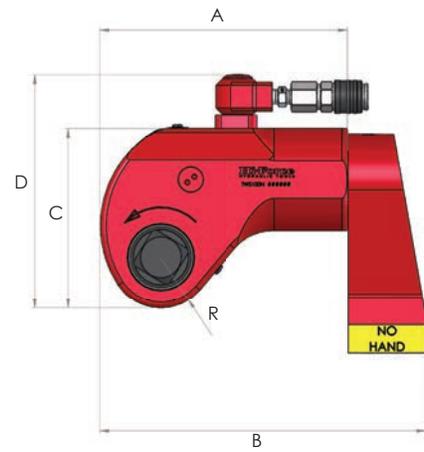


Torque capacities up to 26860 lbf.ft

Torque accuracy of +/- 3%

Working pressure 10000 psi

- ▶ Compact, lightweight aluminum body construction
- ▶ Output torque capacities from 1254 to 26860 lbf.ft (1727 to 36992 Nm)
- ▶ Choice of square drive sizes from ¾" to 2 ½"
- ▶ Reversible square drive for tightening or loosening applications
- ▶ Multi-position reaction arm with safety lock feature
- ▶ Fitted with 360° uni-swivel quick release couplings for easy positioning of hydraulic hoses during operation
- ▶ High quality torque wrench sockets for use with TWS-N range hydraulic wrenches are listed on pages 86 and 87
- ▶ Optional allen hex drives available from ½" to 2 ¼" and 14 to 60 mm (see page 88)



| Model number | Torque capacity | | Square drive size | Weight including reaction foot (lbs) | Dimensions (in) | | | | | | |
|--------------|---------------------|---------------|-------------------|--------------------------------------|-----------------|-------|------|-------|------|------|------|
| | lbf.ft at 10000 psi | Nm at 700 bar | | | A | B | C | D | E | F | R |
| TWS17N | 1254 | 1727 | ¾" | 4.2 | 5.08 | 6.58 | 3.55 | 5.16 | 2.01 | 2.88 | 0.99 |
| TWS45N | 3289 | 4529 | 1" | 10.6 | 6.58 | 8.59 | 4.77 | 6.7 | 2.68 | 3.86 | 1.34 |
| TWS100N | 7427 | 10064 | 1 ½" | 19.8 | 8.79 | 11.54 | 6.42 | 8.31 | 3.62 | 5.32 | 1.81 |
| TWS150N | 10873 | 14974 | 1 ½" | 33.1 | 9.73 | 12.73 | 7.56 | 9.3 | 3.94 | 5.56 | 2.13 |
| TWS370N | 26860 | 36992 | 2 ½" | 71.6 | 12.96 | 17.02 | 9.46 | 11.35 | 5.4 | 8.04 | 2.6 |

IS | IMPERIAL HEXAGON AF SIZE HEAVY DUTY SOCKETS

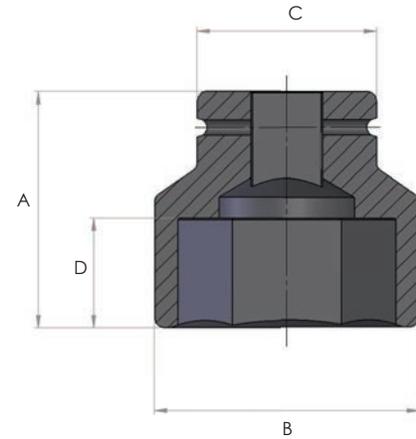


- ▶ High quality, imperial size heavy duty impact sockets
- ▶ Suitable for use with Hi-Force TWS-N hydraulic torque wrenches and IW impact wrenches
- ▶ Long length, bi-hexagonal and special sockets available on request

Square drives from 3/4" to 2 1/2"

Across flat sizes up to 6 7/8"

Supplied complete with retaining ring and pin



| Model number | Square drive | Nut AF (inches) | Dimensions (in) | | | |
|--------------|--------------|-----------------|-----------------|------|------|------|
| | | | A | B | C | D |
| IS2-101 | 3/4" | 1 1/16" | 2.05 | 1.58 | 1.5 | 0.63 |
| IS2-104 | 3/4" | 1 1/4" | 2.05 | 1.73 | 1.73 | 0.79 |
| IS2-107 | 3/4" | 1 7/16" | 2.21 | 2.01 | 1.73 | 0.91 |
| IS2-110 | 3/4" | 1 5/8" | 2.44 | 2.29 | 1.73 | 1.06 |
| IS2-113 | 3/4" | 1 3/8" | 2.68 | 2.64 | 1.73 | 1.26 |
| IS2-200 | 3/4" | 2" | 2.84 | 2.8 | 2.13 | 1.38 |
| IS2-203 | 3/4" | 2 3/16" | 2.92 | 3.03 | 2.13 | 1.38 |
| IS2-206 | 3/4" | 2 3/8" | 2.96 | 3.31 | 2.13 | 1.38 |
| IS9-101 | 1" | 1 1/16" | 2.29 | 1.73 | 2.01 | 0.67 |
| IS9-104 | 1" | 1 1/4" | 2.36 | 2.01 | 2.01 | 0.83 |
| IS9-107 | 1" | 1 7/16" | 2.44 | 2.21 | 2.05 | 1.02 |
| IS9-110 | 1" | 1 5/8" | 2.44 | 2.44 | 2.05 | 1.02 |
| IS9-113 | 1" | 1 13/16" | 2.52 | 2.68 | 2.29 | 1.06 |
| IS9-200 | 1" | 2" | 2.76 | 2.92 | 2.29 | 1.22 |
| IS9-203 | 1" | 2 3/16" | 2.84 | 3.15 | 2.44 | 1.26 |
| IS9-206 | 1" | 2 3/8" | 3.07 | 3.43 | 2.44 | 1.38 |
| IS9-209 | 1" | 2 1/16" | 3.15 | 3.66 | 2.44 | 1.42 |
| IS9-212 | 1" | 2 3/4" | 3.35 | 3.86 | 2.44 | 1.58 |
| IS9-215 | 1" | 2 15/16" | 3.74 | 4.1 | 3.39 | 1.89 |
| IS9-302 | 1" | 3 1/8" | 3.94 | 4.29 | 3.39 | 2.05 |
| IS9-308 | 1" | 3 1/2" | 4.14 | 4.93 | 3.39 | 2.05 |
| IS9-314 | 1" | 3 7/8" | 4.14 | 5.36 | 3.74 | 2.05 |
| IS5-113 | 1 1/2" | 1 13/16" | 3.31 | 2.99 | 3.39 | 1.06 |
| IS5-200 | 1 1/2" | 2" | 3.43 | 3.23 | 3.39 | 1.14 |

| Model number | Square drive | Nut AF (inches) | Dimensions (in) | | | |
|--------------|--------------|-----------------|-----------------|------|------|------|
| | | | A | B | C | D |
| IS5-203 | 1 1/2" | 2 3/16" | 3.55 | 3.39 | 3.39 | 1.42 |
| IS5-206 | 1 1/2" | 2 3/8" | 3.62 | 3.66 | 3.39 | 1.5 |
| IS5-209 | 1 1/2" | 2 1/16" | 3.74 | 3.82 | 3.39 | 1.58 |
| IS5-212 | 1 1/2" | 2 3/4" | 3.94 | 4.14 | 3.39 | 1.69 |
| IS5-215 | 1 1/2" | 2 15/16" | 4.06 | 4.33 | 3.39 | 1.77 |
| IS5-302 | 1 1/2" | 3 1/8" | 4.33 | 4.57 | 3.39 | 1.97 |
| IS5-308 | 1 1/2" | 3 1/2" | 4.65 | 5.12 | 3.39 | 2.17 |
| IS5-314 | 1 1/2" | 3 7/8" | 4.93 | 5.52 | 3.74 | 2.29 |
| IS5-404 | 1 1/2" | 4 1/4" | 4.93 | 5.91 | 3.74 | 2.29 |
| IS5-410 | 1 1/2" | 4 5/8" | 5.32 | 6.5 | 3.74 | 2.56 |
| IS5-500 | 1 1/2" | 5" | 5.52 | 7.05 | 5 | 2.76 |
| IS5-506 | 1 1/2" | 5 3/8" | 5.91 | 7.68 | 5 | 2.96 |
| IS6-302 | 2 1/2" | 3 1/8" | 5.52 | 4.89 | 5 | 2.01 |
| IS6-308 | 2 1/2" | 3 1/2" | 5.52 | 5.32 | 5 | 2.01 |
| IS6-314 | 2 1/2" | 3 7/8" | 5.91 | 5.79 | 5 | 2.25 |
| IS6-404 | 2 1/2" | 4 1/4" | 6.3 | 6.26 | 5 | 2.52 |
| IS6-410 | 2 1/2" | 4 5/8" | 6.7 | 6.78 | 5 | 2.8 |
| IS6-500 | 2 1/2" | 5" | 6.9 | 7.29 | 5 | 2.96 |
| IS6-506 | 2 1/2" | 5 3/8" | 7.09 | 7.76 | 5 | 3.11 |
| IS6-512 | 2 1/2" | 5 3/4" | 7.29 | 8.27 | 5 | 3.27 |
| IS6-602 | 2 1/2" | 6 1/8" | 7.49 | 8.79 | 5 | 3.59 |
| IS6-608 | 2 1/2" | 6 1/2" | 7.68 | 9.26 | 5 | 3.74 |
| IS6-614 | 2 1/2" | 6 7/8" | 7.88 | 9.77 | 5 | 4.14 |

MS | METRIC HEXAGON AF SIZE HEAVY DUTY SOCKETS

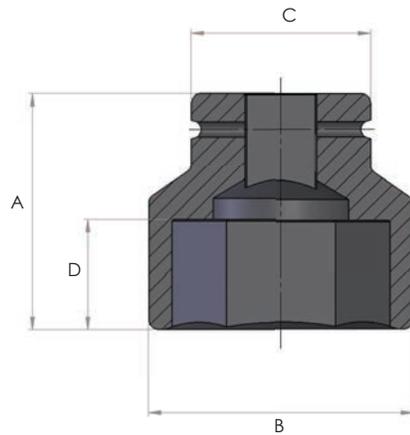


- ▶ High quality, metric size heavy duty impact sockets
- ▶ Suitable for use with Hi-Force TWS-N hydraulic torque wrenches and IW impact wrenches
- ▶ Long length, bi-hexagonal and special sockets available on request

Square drives from 3/4" to 2 1/2"

Across flat sizes up to 145 mm

Supplied complete with retaining ring and pin



| Model number | Square drive | Nut AF (mm) | Dimensions (mm) | | | |
|--------------|--------------|-------------|-----------------|-----|----|----|
| | | | A | B | C | D |
| MS2-24 | 3/4" | 24 | 50 | 39 | 44 | 16 |
| MS2-27 | 3/4" | 27 | 54 | 43 | 44 | 16 |
| MS2-30 | 3/4" | 30 | 54 | 47 | 44 | 23 |
| MS2-32 | 3/4" | 32 | 56 | 49 | 44 | 23 |
| MS2-36 | 3/4" | 36 | 56 | 54 | 44 | 23 |
| MS2-41 | 3/4" | 41 | 58 | 60 | 44 | 24 |
| MS2-46 | 3/4" | 46 | 63 | 67 | 44 | 30 |
| MS2-50 | 3/4" | 50 | 72 | 71 | 54 | 32 |
| MS2-55 | 3/4" | 55 | 74 | 78 | 54 | 35 |
| MS2-60 | 3/4" | 60 | 75 | 84 | 54 | 37 |
| MS9-24 | 1" | 24 | 58 | 42 | 54 | 17 |
| MS9-27 | 1" | 27 | 58 | 46 | 54 | 17 |
| MS9-30 | 1" | 30 | 60 | 50 | 54 | 21 |
| MS9-32 | 1" | 32 | 60 | 51 | 54 | 21 |
| MS9-36 | 1" | 36 | 65 | 56 | 54 | 30 |
| MS9-41 | 1" | 41 | 67 | 63 | 54 | 31 |
| MS9-46 | 1" | 46 | 74 | 69 | 54 | 36 |
| MS9-50 | 1" | 50 | 80 | 74 | 54 | 42 |
| MS9-55 | 1" | 55 | 84 | 80 | 54 | 44 |
| MS9-60 | 1" | 60 | 87 | 86 | 54 | 44 |
| MS9-65 | 1" | 65 | 90 | 92 | 54 | 46 |
| MS9-70 | 1" | 70 | 96 | 99 | 54 | 51 |
| MS9-75 | 1" | 75 | 98 | 106 | 86 | 45 |
| MS9-80 | 1" | 80 | 100 | 112 | 86 | 48 |
| MS9-85 | 1" | 85 | 105 | 118 | 86 | 52 |
| MS9-90 | 1" | 90 | 105 | 125 | 86 | 52 |
| MS9-95 | 1" | 95 | 115 | 131 | 86 | 52 |
| MS9-100 | 1" | 100 | 115 | 137 | 95 | 58 |

| Model number | Square drive | Nut AF (in) | Dimensions (mm) | | | |
|--------------|--------------|-------------|-----------------|-----|-----|----|
| | | | A | B | C | D |
| MS5-36 | 1 1/2" | 36 | 78 | 64 | 86 | 23 |
| MS5-41 | 1 1/2" | 41 | 80 | 70 | 86 | 26 |
| MS5-46 | 1 1/2" | 46 | 84 | 76 | 86 | 27 |
| MS5-50 | 1 1/2" | 50 | 87 | 81 | 86 | 29 |
| MS5-55 | 1 1/2" | 55 | 90 | 86 | 86 | 36 |
| MS5-60 | 1 1/2" | 60 | 92 | 93 | 86 | 38 |
| MS5-65 | 1 1/2" | 65 | 95 | 97 | 86 | 40 |
| MS5-70 | 1 1/2" | 70 | 100 | 105 | 86 | 43 |
| MS5-75 | 1 1/2" | 75 | 103 | 110 | 86 | 45 |
| MS5-80 | 1 1/2" | 80 | 110 | 116 | 86 | 50 |
| MS5-85 | 1 1/2" | 85 | 118 | 125 | 86 | 55 |
| MS5-90 | 1 1/2" | 90 | 118 | 130 | 86 | 55 |
| MS5-95 | 1 1/2" | 95 | 118 | 137 | 95 | 55 |
| MS5-100 | 1 1/2" | 100 | 125 | 140 | 95 | 58 |
| MS5-105 | 1 1/2" | 105 | 125 | 150 | 95 | 58 |
| MS5-110 | 1 1/2" | 110 | 125 | 156 | 95 | 58 |
| MS5-115 | 1 1/2" | 115 | 135 | 160 | 95 | 65 |
| MS5-130 | 1 1/2" | 130 | 140 | 185 | 127 | 70 |
| MS6-80 | 2 1/2" | 80 | 140 | 124 | 127 | 51 |
| MS6-85 | 2 1/2" | 85 | 140 | 130 | 127 | 51 |
| MS6-90 | 2 1/2" | 90 | 145 | 136 | 127 | 54 |
| MS6-95 | 2 1/2" | 95 | 145 | 143 | 127 | 54 |
| MS6-100 | 2 1/2" | 100 | 150 | 149 | 127 | 57 |
| MS6-105 | 2 1/2" | 105 | 155 | 155 | 127 | 61 |
| MS6-110 | 2 1/2" | 110 | 160 | 161 | 127 | 64 |
| MS6-115 | 2 1/2" | 115 | 165 | 167 | 127 | 67 |
| MS6-130 | 2 1/2" | 130 | 175 | 188 | 127 | 75 |
| MS6-145 | 2 1/2" | 145 | 185 | 208 | 127 | 83 |

TWS-N | ACCESSORIES



Imperial allen hex drives from 1/2" to 2 1/4" and Metric allen hex drives from 14 to 60 mm

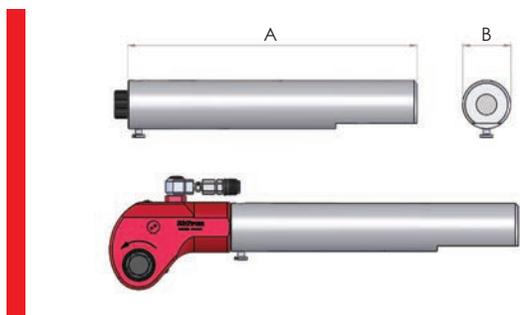
Extended reaction length arms with choice of length

Handle kits for TWS-N to allow user to better support the tools during operation

| For tool model number | Imperial allen hexagon drive adaptors | | | Metric allen hexagon drive adaptors | | |
|-----------------------|---------------------------------------|--------------|------------------------------|-------------------------------------|--------------|------------------------------|
| | Model number | Hexagon size | Maximum torque load (lbf.ft) | Model number | Hexagon size | Maximum torque load (lbf.ft) |
| TWS17N | IH17N-008 | 1/2" | 347 | MH17N-14 | 14 mm | 546 |
| | IH17N-010 | 5/8" | 686 | MH17N-17 | 17 mm | 996 |
| | IH17N-012 | 3/4" | 1180 | MH17N-19 | 19 mm | 1189 |
| | IH17N-014 | 7/8" | 1254 | MH17N-22 | 22 mm | 1254 |
| | IH17N-100 | 1" | 1254 | MH17N-24 | 24 mm | 1254 |
| TWS45N | IH45N-010 | 5/8" | 686 | MH45N-17 | 17 mm | 811 |
| | IH45N-012 | 3/4" | 1180 | MH45N-19 | 19 mm | 1180 |
| | IH45N-014 | 7/8" | 1881 | MH45N-22 | 22 mm | 1881 |
| | IH45N-100 | 1" | 2803 | MH45N-24 | 24 mm | 2729 |
| | IH45N-102 | 1 1/8" | 3319 | MH45N-27 | 27 mm | 2876 |
| | IH45N-104 | 1 1/4" | 3319 | MH45N-32 | 32 mm | 3319 |
| TWS100N | IH100N-014 | 7/8" | 1394 | MH100N-22 | 22 mm | 1829 |
| | IH100N-100 | 1" | 2803 | MH100N-24 | 24 mm | 2729 |
| | IH100N-102 | 1 1/8" | 4012 | MH100N-27 | 27 mm | 3429 |
| | IH100N-104 | 1 1/4" | 5458 | MH100N-30 | 30 mm | 4705 |
| | IH100N-106 | 1 3/8" | 7316 | MH100N-32 | 32 mm | 5623 |
| | IH100N-108 | 1 1/2" | 7375 | MH100N-36 | 36 mm | 7375 |
| TWS150N | IH150N-104 | 1 1/4" | 5458 | MH150N-30 | 30 mm | 5163 |
| | IH150N-106 | 1 3/8" | 7301 | MH150N-32 | 32 mm | 5531 |
| | IH150N-108 | 1 1/2" | 11063 | MH150N-36 | 36 mm | 8039 |
| | IH150N-110 | 1 5/8" | 11063 | MH150N-41 | 41 mm | 11063 |
| | IH150N-112 | 1 3/4" | 11063 | MH150N-46 | 46 mm | 11063 |
| TWS370N | IH370N-108 | 1 1/2" | 9514 | MH370N-36 | 36 mm | 7375 |
| | IH370N-110 | 1 5/8" | 12021 | MH370N-41 | 41 mm | 12021 |
| | IH370N-112 | 1 3/4" | 15045 | MH370N-46 | 46 mm | 16594 |
| | IH370N-114 | 1 7/8" | 18511 | MH370N-50 | 50 mm | 22568 |
| | IH370N-200 | 2" | 22568 | MH370N-55 | 55 mm | 27288 |
| | IH370N-204 | 2 1/4" | 27288 | MH370N-60 | 60 mm | 27288 |

Note: Check the maximum permissible torque load of hexagon drive adaptor before use.

EXTENDED REACTION ARMS



| For tool model number | Model number | Length A | | Diameter B | |
|-----------------------|--------------|----------|-----|------------|-------|
| | | inch | mm | inch | mm |
| TWS17N | ERA17-21 | 21" | 533 | 1 3/4" | 44.5 |
| | ERA17-24 | 24" | 610 | 1 3/4" | 44.5 |
| | ERA17-36 | 36" | 914 | 1 3/4" | 44.5 |
| TWS45N | ERA45-21 | 21" | 533 | 2 1/2" | 63.5 |
| | ERA45-24 | 24" | 610 | 2 1/2" | 63.5 |
| | ERA45-36 | 36" | 914 | 2 1/2" | 63.5 |
| TWS100N | ERA100-21 | 21" | 533 | 3 1/2" | 88.9 |
| | ERA100-24 | 24" | 610 | 3 1/2" | 88.9 |
| | ERA100-36 | 36" | 914 | 3 1/2" | 88.9 |
| TWS150N | ERA150-21 | 21" | 533 | 3 1/2" | 88.9 |
| | ERA150-24 | 24" | 610 | 3 1/2" | 88.9 |
| | ERA150-36 | 36" | 914 | 3 1/2" | 88.9 |
| TWS370N | ERA370-21 | 21" | 533 | 4 3/4" | 120.6 |
| | ERA370-24 | 24" | 610 | 4 3/4" | 120.6 |
| | ERA370-36 | 36" | 914 | 4 3/4" | 120.6 |

REMOVABLE HANDLE KITS

| For tool model number | Model number |
|-----------------------|--------------|
| TWS45N | TSH45 |
| TWS100N | TSH100 |
| TWS150N | TSH150 |
| TWS370N | TSH370 |

Note: Standard circlip pliers are required to fit the handle kits.



TWH-N | HYDRAULIC TORQUE WRENCHES - LOW PROFILE HEXAGON



Torque capacities up to 34985 lbf.ft

Torque accuracy of +/- 3%

Working pressure 10000 psi

- ▶ Lightweight, high grade aluminum body (excluding TWH430N)
- ▶ Output torque capacities from 1906 to 34985 lbf.ft (2625 to 48181 Nm)
- ▶ Low profile design for direct in-line reaction
- ▶ Narrow cassette head design makes it ideal for limited access applications
- ▶ Ratchet head can be easily changed by simply withdrawing/inserting a single pin
- ▶ Imperial ratchet heads available with across flat (AF sizes) sizes from 1 1/16" to 6 7/8" (page 90)
- ▶ Metric ratchet heads available with across flat (AF sizes) sizes from 24 to 175 mm (page 91)
- ▶ Fitted with 360° uni-swivel with quick release couplings for easy positioning of hydraulic hoses

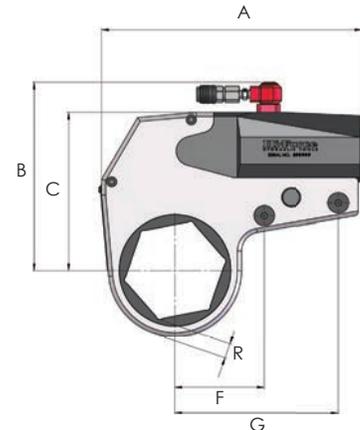
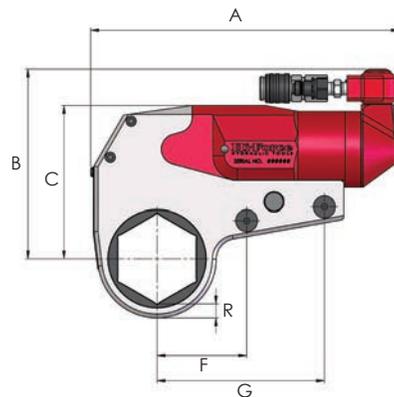
TWH27N, TWH54N, TWH120N, TWH210N
(aluminum body)

All models

TWH430N (steel body)

Note: Drawing shows drive cylinder, including ratchet head as detailed on pages 90 and 91.

Drive cylinder and ratchet head are separate items and must be ordered separately.



| Model number | Torque capacity | | Hexagon AF Size | | | | Weight (lbs) | Dimensions (in) | | | | | | | | |
|--------------|-----------------|---------------------|-----------------|------------|--------------|--------------|--------------|-----------------|-------|-------|------|------|------|-------|--------|--------|
| | Nm at 10000 psi | lbf.ft at 10000 psi | Metric min | Metric max | Imperial min | Imperial max | | A | B | C | D | E | F | G | R(min) | R(max) |
| TWH27N | 2625 | 1906 | 24 | 46 | 1 1/16" | 1 1/8" | 3.1 | 7.6 | 4.93 | 3.82 | 1.26 | 2.01 | 2.13 | 4.29 | 0.37 | 0.48 |
| | 3068 | 2228 | 50 | 60 | 2" | 2 3/8" | 3.1 | 7.6 | 5.36 | 4.26 | 1.26 | 2.01 | 2.13 | 4.29 | 0.4 | 0.41 |
| TWH54N | 5372 | 3901 | 36 | 65 | 1 7/16" | 2 1/8" | 5.1 | 9.85 | 6.23 | 4.93 | 1.62 | 2.52 | 2.88 | 5.4 | 0.42 | 0.54 |
| | 6037 | 4384 | 70 | 80 | 2 3/4" | 3 1/8" | 5.1 | 9.85 | 6.66 | 5.36 | 1.62 | 2.52 | 2.88 | 5.4 | 0.46 | 0.58 |
| TWH120N | 11737 | 8522 | 50 | 80 | 2 3/16" | 3 1/8" | 8.4 | 12.21 | 7.45 | 6.19 | 2.05 | 3.07 | 3.62 | 6.78 | 0.58 | 0.6 |
| | 14349 | 10419 | 85 | 100 | 3 1/2" | 3 7/8" | 8.4 | 12.21 | 8.43 | 7.17 | 2.05 | 3.07 | 3.62 | 6.78 | 0.63 | 0.74 |
| TWH210N | 21216 | 15405 | 70 | 100 | 2 3/4" | 3 7/8" | 14.1 | 14.89 | 8.79 | 7.53 | 2.52 | 3.82 | 4.49 | 8.39 | 0.71 | 0.73 |
| | 23124 | 16791 | 105 | 115 | 4 1/4" | 4 3/8" | 14.1 | 14.89 | 9.3 | 8.04 | 2.52 | 3.82 | 4.49 | 8.39 | 0.72 | 0.82 |
| TWH430N | 43792 | 31798 | 80 | 115 | 3 1/8" | 4 3/8" | 35.5 | 15.96 | 11.47 | 9.53 | 3.27 | 3.66 | 5.75 | 10.52 | 1.01 | 1.23 |
| | 48181 | 34985 | 130 | 175 | 5" | 6 7/8" | 35.5 | 16.75 | 12.06 | 10.24 | 3.27 | 3.66 | 5.75 | 10.52 | 0.98 | 1.08 |

Note: Above selection table is for drive unit only. Ratchet head(s) to be ordered separately see pages 90 and 91. Weight as stated is drive cylinder only, exact radius size (R) varies according to ratchet AF size selected.

TWH-NRH | IMPERIAL HEXAGON AF SIZE RATCHET HEADS



Choice of standard imperial sizes

Easily fitted to TWH-N drive units

High grade steel construction

- ▶ Imperial hexagon ratchet heads suitable for across flat (AF sizes) from 1 1/8" to 6 7/8"
- ▶ Easily fitted to TWH-N drive units by simply withdrawing/inserting a single pin
- ▶ Low profile design and minimum nose radius allows for fitment in confined spaces
- ▶ Imperial hexagon reducer bushes and square drive conversion kits also available (see pages 94 and 95)
- ▶ Special design ratchet heads made to order



| | | IMPERIAL RATCHET HEAD SELECTION TABLE | | | | | | | | | | | | | | |
|-----------|-------------|---------------------------------------|------|--------|-----------------|------|--------|------------------|------|--------|------------------|------|--------|----------------|------|--------|
| Bolt size | Nut AF size | For TWH27N | | | For TWH54N | | | For TWH120N | | | For TWH210N | | | For TWH430N | | |
| | | Model number | R in | Wt lbs | Model number | R in | Wt lbs | Model number | R in | Wt lbs | Model number | R in | Wt lbs | Model number | R in | Wt lbs |
| 5/8" | 1 1/8" | TWH27NRH1.1/16 | 0.41 | 3.3 | | | | | | | | | | | | |
| 3/4" | 1 1/4" | TWH27NRH1.1/4 | 0.38 | 3.5 | | | | | | | | | | | | |
| 7/8" | 1 3/8" | TWH27NRH1.7/16 | 0.39 | 3.5 | TWH54NRH1.7/16 | 0.53 | 6.4 | | | | | | | | | |
| 1" | 1 1/2" | TWH27NRH1.5/8 | 0.39 | 3.5 | TWH54NRH1.5/8 | 0.43 | 6.2 | | | | | | | | | |
| 1 1/8" | 1 5/8" | TWH27NRH1.13/16 | 0.41 | 3.7 | TWH54NRH1.13/16 | 0.42 | 6.4 | | | | | | | | | |
| 1 1/4" | 2" | TWH27NRH2 | 0.41 | 3.7 | TWH54NRH2 | 0.46 | 6.6 | | | | | | | | | |
| 1 3/8" | 2 1/8" | TWH27NRH2.3/16 | 0.41 | 4.0 | TWH54NRH2.3/16 | 0.46 | 6.8 | TWH120NRH2.3/16 | 0.58 | 13.4 | | | | | | |
| 1 1/2" | 2 1/4" | TWH27NRH2.3/8 | 0.41 | 4.0 | TWH54NRH2.3/8 | 0.46 | 7.1 | TWH120NRH2.3/8 | 0.58 | 14.1 | | | | | | |
| 1 5/8" | 2 3/8" | | | | TWH54NRH2.9/16 | 0.46 | 7.3 | TWH120NRH2.9/16 | 0.58 | 14.1 | | | | | | |
| 1 3/4" | 2 1/2" | | | | TWH54NRH2.3/4 | 0.46 | 7.5 | TWH120NRH2.3/4 | 0.59 | 14.3 | TWH210NRH2.3/4 | 0.72 | 26.7 | | | |
| 1 7/8" | 2 5/8" | | | | TWH54NRH2.15/16 | 0.58 | 7.7 | TWH120NRH2.15/16 | 0.59 | 14.3 | TWH210NRH2.15/16 | 0.72 | 26.9 | | | |
| 2" | 3 1/8" | | | | TWH54NRH3.1/8 | 0.48 | 7.7 | TWH120NRH3.1/8 | 0.59 | 14.3 | TWH210NRH3.1/8 | 0.73 | 27.1 | TWH430NRH3.1/8 | 1.02 | 51.1 |
| 2 1/4" | 3 1/2" | | | | | | | TWH120NRH3.1/2 | 0.67 | 17.4 | TWH210NRH3.1/2 | 0.76 | 27.3 | TWH430NRH3.1/2 | 1.06 | 52.7 |
| 2 1/2" | 3 3/8" | | | | | | | TWH120NRH3.7/8 | 0.77 | 18.7 | TWH210NRH3.7/8 | 0.77 | 27.6 | TWH430NRH3.7/8 | 1.04 | 56.7 |
| 2 3/4" | 4 1/4" | | | | | | | | | | TWH210NRH4.1/4 | 0.77 | 29.3 | TWH430NRH4.1/4 | 1.06 | 57.5 |
| 3" | 4 5/8" | | | | | | | | | | TWH210NRH4.5/8 | 0.76 | 30.4 | TWH430NRH4.5/8 | 1.02 | 58.0 |
| 3 1/4" | 5" | | | | | | | | | | | | | TWH430NRH5 | 1.08 | 61.5 |
| 3 1/2" | 5 3/8" | | | | | | | | | | | | | TWH430NRH5.3/8 | 1.02 | 62.4 |
| 3 3/4" | 5 1/2" | | | | | | | | | | | | | TWH430NRH5.3/4 | 0.98 | 64.6 |
| 4" | 6 1/8" | | | | | | | | | | | | | TWH430NRH6.1/8 | 0.99 | 66.4 |
| 4 1/4" | 6 1/2" | | | | | | | | | | | | | TWH430NRH6.1/2 | 0.99 | 68.3 |
| 4 1/2" | 6 7/8" | | | | | | | | | | | | | TWH430NRH6.7/8 | 1.08 | 70.1 |

TWH-NRH | METRIC HEXAGON AF SIZE RATCHET HEADS

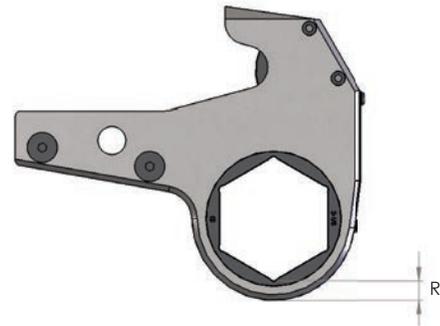


Choice of standard metric sizes

Easily fitted to TWH-N drive units

High grade steel construction

- ▶ Metric hexagon ratchet heads suitable for across flat (AF sizes) from 24 to 175 mm
- ▶ Easily fitted to TWH-N drive units by simply withdrawing/inserting a single pin
- ▶ Low profile design and minimum nose radius allows for fitment in confined spaces
- ▶ Imperial hexagon reducer bushes and square drive conversion kits also available (see pages 94 and 95)
- ▶ Special design ratchet heads made to order



| METRIC RATCHET HEAD SELECTION TABLE | | | | | | | | | | | | | | | | |
|-------------------------------------|-------------|--------------|------|--------|--------------|------|--------|---------------|------|--------|---------------|------|--------|---------------|------|--------|
| Bolt size | Nut AF size | For TWH27N | | | For TWH54N | | | For TWH120N | | | For TWH210N | | | For TWH430N | | |
| | | Model number | R mm | Wt lbs | Model number | R mm | Wt lbs | Model number | R mm | Wt lbs | Model number | R mm | Wt lbs | Model number | R mm | Wt lbs |
| 16 | 24 | TWH27NRH-24 | 12.1 | 3.3 | | | | | | | | | | | | |
| 18 | 27 | TWH27NRH-27 | 10.4 | 3.3 | | | | | | | | | | | | |
| 20 | 30 | TWH27NRH-30 | 10.7 | 3.5 | | | | | | | | | | | | |
| 22 | 32 | TWH27NRH-32 | 9.5 | 3.5 | | | | | | | | | | | | |
| 24 | 36 | TWH27NRH-36 | 10.1 | 3.5 | TWH54NRH-36 | 13.8 | 6.4 | | | | | | | | | |
| - | 38 | | | | TWH54NRH-38 | 12.6 | 6.2 | | | | | | | | | |
| 27 | 41 | TWH27NRH-41 | 10.1 | 3.5 | TWH54NRH-41 | 10.9 | 6.2 | | | | | | | | | |
| 30 | 46 | TWH27NRH-46 | 10.5 | 3.7 | TWH54NRH-46 | 10.7 | 6.4 | | | | | | | | | |
| 33 | 50 | TWH27NRH-50 | 10.4 | 3.7 | TWH54NRH-50 | 12.1 | 6.6 | TWH120NRH-50 | 15.2 | 12.8 | | | | | | |
| 36 | 55 | TWH27NRH-55 | 10.1 | 4.0 | TWH54NRH-55 | 12.1 | 6.8 | TWH120NRH-55 | 15 | 13.4 | | | | | | |
| 39 | 60 | TWH27NRH-60 | 10.5 | 4.0 | TWH54NRH-60 | 12 | 7.1 | TWH120NRH-60 | 15 | 14.1 | | | | | | |
| 42 | 65 | | | | TWH54NRH-65 | 11.7 | 7.3 | TWH120NRH-65 | 14.9 | 14.1 | | | | | | |
| 45 | 70 | | | | TWH54NRH-70 | 11.7 | 7.5 | TWH120NRH-70 | 14.8 | 14.3 | TWH210NRH-70 | 18.2 | 26.7 | | | |
| 48 | 75 | | | | TWH54NRH-75 | 14.6 | 7.7 | TWH120NRH-75 | 14.7 | 14.3 | TWH210NRH-75 | 18.1 | 26.9 | | | |
| 52 | 80 | | | | TWH54NRH-80 | 11.7 | 7.7 | TWH120NRH-80 | 14.7 | 14.3 | TWH210NRH-80 | 18.1 | 27.1 | TWH430NRH-80 | 25.6 | 51.1 |
| 56 | 85 | | | | | | | TWH120NRH-85 | 16.4 | 17.2 | TWH210NRH-85 | 18.2 | 27.3 | TWH430NRH-85 | 29 | 52.9 |
| 60 | 90 | | | | | | | TWH120NRH-90 | 16.2 | 17.4 | TWH210NRH-90 | 18.6 | 27.3 | TWH430NRH-90 | 31.3 | 57.3 |
| 64 | 95 | | | | | | | TWH120NRH-95 | 15.9 | 17.4 | TWH210NRH-95 | 18.6 | 27.6 | TWH430NRH-95 | 28.5 | 56.9 |
| 68 | 100 | | | | | | | TWH120NRH-100 | 18.7 | 18.7 | TWH210NRH-100 | 18.6 | 27.6 | TWH430NRH-100 | 25.6 | 56.4 |
| 72 | 105 | | | | | | | | | | TWH210NRH-105 | 18.4 | 28.4 | TWH430NRH-105 | 28.6 | 58.4 |
| 76 | 110 | | | | | | | | | | TWH210NRH-110 | 18.3 | 29.3 | TWH430NRH-110 | 25.7 | 57.8 |
| 80 | 115 | | | | | | | | | | TWH210NRH-115 | 20.7 | 30.4 | TWH430NRH-115 | 27.3 | 58.2 |
| 90 | 130 | | | | | | | | | | | | | TWH430NRH-130 | 25.6 | 60.2 |
| - | 135 | | | | | | | | | | | | | TWH430NRH-135 | 26.6 | 62.4 |
| 100 | 145 | | | | | | | | | | | | | TWH430NRH-145 | 25.4 | 64.8 |
| 110 | 155 | | | | | | | | | | | | | TWH430NRH-155 | 25 | 66.4 |
| 115 | 165 | | | | | | | | | | | | | TWH430NRH-165 | 25 | 68.3 |
| - | 175 | | | | | | | | | | | | | TWH430NRH-175 | 27.3 | 70.1 |

TWH-N | ACCESSORIES



Choice of 1", 1 ½" or 2 ½" square drive sizes

Suitable for TWH-N range (excluding TWH430N)

Easily fitted, no special tools required

SQUARE DRIVE CONVERSION KITS

- ▶ Converts TWH-N female hexagon drive torque wrench into a standard square drive wrench
- ▶ Kit comprises of reaction foot and standard hexagon AF to square drive adaptor

| Model number | Square drive | Hexagon AF size | Maximum torque (lbf.ft) | Maximum torque (Nm) | Suitable for drive cylinder | Suitable for ratchet head | Weight (lbs) |
|--------------|--------------|-----------------|-------------------------|---------------------|-----------------------------|---------------------------|--------------|
| SDC27-I | 1" | 1 13/16" | 2263 | 3068 | TWH27N | TWH27NRH1.13/16 | 2.4 |
| SDC27-M | 1" | 46 mm | 2263 | 3068 | TWH27N | TWH27NRH-46 | 2.4 |
| SDC54-I | 1 ½" | 2 9/16" | 4453 | 6037 | TWH54N | TWH54NRH2.9/16 | 6.6 |
| SDC54-M | 1 ½" | 65 mm | 4453 | 6037 | TWH54N | TWH54NRH-65 | 6.6 |
| SDC120-I | 1 ½" | 3 1/8" | 10583 | 14349 | TWH120N | TWH120NRH3.1/8 | 9.7 |
| SDC120-M | 1 ½" | 80 mm | 10583 | 14349 | TWH120N | TWH120NRH-80 | 9.7 |
| SDC210-I | 2 ½" | 3 7/8" | 17055 | 23124 | TWH210N | TWH210NRH3.7/8 | 20.1 |
| SDC210-M | 2 ½" | 100 mm | 17055 | 23124 | TWH210N | TWH210NRH-100 | 20.1 |

Note: When ordering SDC conversion kits, check to ensure that you already have the required size of ratchet head.

TWH-N | ACCESSORIES



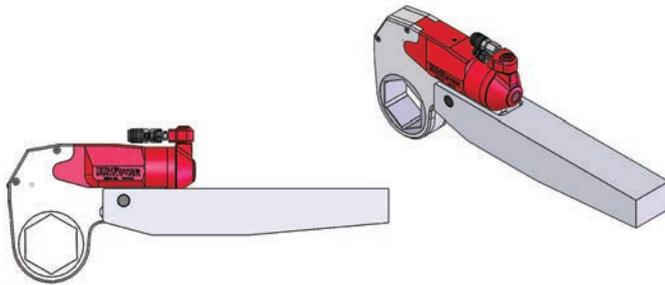
Lightweight aluminum alloy construction

Extended reaction length arms with choice of length

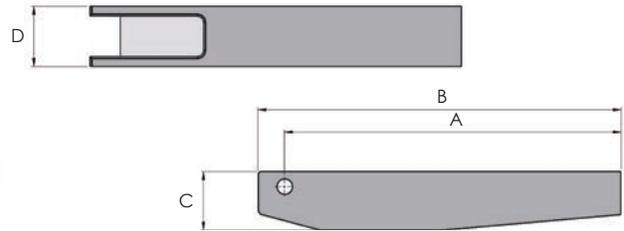
Handle kits for TWH-N to allow user to better support the tools during operation

EXTENDED REACTION ARMS

- ▶ Offers in-line reaction outside of the standard range of reaction points for TWH-N wrenches
- ▶ Increased accessibility for applications in confined spaces



TWH-N fitted with extended reaction arm



| Model number | Dimensions (in) | | | |
|--------------|-----------------|------------|------------|-----------|
| | Length (A) | Length (B) | Height (C) | Width (D) |
| ERA27-20 | 19.66 | 20.69 | 1.77 | 1.97 |
| ERA54-20 | 20.21 | 21.08 | 2.17 | 2.56 |
| ERA120-21 | 20.76 | 21.67 | 2.96 | 3.35 |
| ERA210-21 | 21.47 | 23.17 | 3.74 | 3.74 |
| ERA430-22 | 22.26 | 24.74 | 4.73 | 4.73 |

REMOVABLE HANDLE KITS

| For tool model number | Model number | Hex key to fit handle kit |
|-----------------------|--------------|---------------------------|
| TWH54N | TSH54 | 4 mm |
| TWH120N | TSH120 | 5 mm |
| TWH210N | TSH210 | 6 mm |
| TWH430N | TSH430 | 8 mm |



IB | IMPERIAL HEXAGON AF SIZE REDUCER BUSHES



- ▶ Economical solution of reducing female hexagon AF size of TWH-NRH imperial ratchet head
- ▶ Select the outside AF size (i.e. ratchet head AF size) and required inside AF size to determine the IB model number
- ▶ Note that wall thickness 'W' dimension of reducer bush must be added to the minimum radius dimension of the ratchet head

| Outside AF size | Inside AF size | For TWH27NRH | | For TWH54NRH | | For TWH120NRH | | For TWH210NRH | | For TWH430NRH | |
|-----------------|----------------|--------------|------|--------------|------|---------------|------|---------------|------|---------------|------|
| | | Model number | W in | Model number | W in | Model number | W in | Model number | W in | Model number | W in |
| 1 1/4" | 1 1/16" | IB27-104-101 | 0.09 | | | | | | | | |
| 1 7/16" | 1 1/16" | IB27-107-101 | 0.19 | | | | | | | | |
| 1 7/16" | 1 1/4" | IB27-107-104 | 0.09 | | | | | | | | |
| 1 5/8" | 1 1/4" | IB27-110-104 | 0.19 | IB54-110-104 | 0.19 | | | | | | |
| 1 5/8" | 1 7/16" | IB27-110-107 | 0.09 | IB54-110-107 | 0.09 | | | | | | |
| 1 13/16" | 1 7/16" | IB27-113-107 | 0.19 | IB54-113-107 | 0.19 | | | | | | |
| 1 13/16" | 1 5/8" | IB27-113-110 | 0.09 | IB54-113-110 | 0.09 | | | | | | |
| 2" | 1 5/8" | IB27-200-110 | 0.19 | IB54-200-110 | 0.19 | | | | | | |
| 2" | 1 13/16" | IB27-200-113 | 0.09 | IB54-200-113 | 0.09 | | | | | | |
| 2 3/16" | 1 5/8" | IB27-203-110 | 0.28 | IB54-203-110 | 0.28 | | | | | | |
| 2 3/16" | 1 13/16" | IB27-203-113 | 0.19 | IB54-203-113 | 0.19 | | | | | | |
| 2 3/16" | 2" | IB27-203-200 | 0.09 | IB54-203-200 | 0.09 | | | | | | |
| 2 3/8" | 1 13/16" | IB27-206-113 | 0.28 | IB54-206-113 | 0.28 | | | | | | |
| 2 3/8" | 2" | IB27-206-200 | 0.19 | IB54-206-200 | 0.19 | | | | | | |
| 2 3/8" | 2 3/16" | IB27-206-203 | 0.09 | IB54-206-203 | 0.09 | IB120-206-203 | 0.09 | | | | |
| 2 9/16" | 2" | | | IB54-209-200 | 0.28 | not available | - | | | | |
| 2 9/16" | 2 3/16" | | | IB54-209-203 | 0.19 | IB120-209-203 | 0.19 | | | | |
| 2 9/16" | 2 3/8" | | | IB54-209-206 | 0.09 | IB120-209-206 | 0.09 | | | | |
| 2 3/4" | 2 3/16" | | | IB54-212-203 | 0.28 | IB120-212-203 | 0.28 | | | | |
| 2 3/4" | 2 3/8" | | | IB54-212-206 | 0.19 | IB120-212-206 | 0.19 | | | | |
| 2 3/4" | 2 9/16" | | | IB54-212-209 | 0.09 | IB120-212-209 | 0.09 | | | | |
| 2 15/16" | 2 3/8" | | | IB54-215-206 | 0.28 | IB120-215-206 | 0.28 | | | | |
| 2 15/16" | 2 9/16" | | | IB54-215-209 | 0.19 | IB120-215-209 | 0.19 | | | | |
| 2 15/16" | 2 3/4" | | | IB54-215-212 | 0.09 | IB120-215-212 | 0.09 | IB210-215-212 | 0.09 | | |
| 3 1/8" | 2 9/16" | | | IB54-302-209 | 0.28 | IB120-302-209 | 0.28 | not available | - | | |
| 3 1/8" | 2 3/4" | | | IB54-302-212 | 0.19 | IB120-302-212 | 0.19 | IB210-302-212 | 0.19 | | |
| 3 1/8" | 2 15/16" | | | IB54-302-215 | 0.09 | IB120-302-215 | 0.09 | IB210-302-215 | 0.09 | | |
| 3 1/2" | 2 15/16" | | | | | IB120-308-215 | 0.28 | IB210-308-215 | 0.28 | | |
| 3 1/2" | 3 1/8" | | | | | IB120-308-302 | 0.19 | IB210-308-302 | 0.19 | IB430-308-302 | 0.19 |
| 3 7/8" | 3 1/8" | | | | | IB120-314-302 | 0.37 | IB210-314-302 | 0.37 | IB430-314-302 | 0.37 |
| 3 7/8" | 3 1/2" | | | | | IB120-314-308 | 0.19 | IB210-314-308 | 0.19 | IB430-314-308 | 0.19 |
| 4 1/4" | 3 1/2" | | | | | | | IB210-404-308 | 0.37 | IB430-404-308 | 0.37 |
| 4 1/4" | 3 7/8" | | | | | | | IB210-404-314 | 0.19 | IB430-404-314 | 0.19 |
| 4 5/8" | 3 7/8" | | | | | | | IB210-410-314 | 0.37 | IB430-410-314 | 0.37 |
| 4 5/8" | 4 1/4" | | | | | | | IB210-410-404 | 0.19 | IB430-410-404 | 0.19 |
| 5" | 4 1/4" | | | | | | | | | IB430-500-404 | 0.37 |
| 5" | 4 5/8" | | | | | | | | | IB430-500-410 | 0.19 |
| 5 3/8" | 4 5/8" | | | | | | | | | IB430-506-410 | 0.37 |
| 5 3/8" | 5" | | | | | | | | | IB430-506-500 | 0.19 |
| 5 3/4" | 5" | | | | | | | | | IB430-512-500 | 0.37 |
| 5 3/4" | 5 3/8" | | | | | | | | | IB430-512-506 | 0.19 |
| 6 1/8" | 5 3/8" | | | | | | | | | IB430-602-506 | 0.37 |
| 6 1/8" | 5 3/4" | | | | | | | | | IB430-602-512 | 0.19 |
| 6 1/2" | 5 3/4" | | | | | | | | | IB430-608-512 | 0.37 |
| 6 1/2" | 6 1/8" | | | | | | | | | IB430-608-602 | 0.19 |
| 6 7/8" | 6 1/8" | | | | | | | | | IB430-614-602 | 0.37 |
| 6 7/8" | 6 1/2" | | | | | | | | | IB430-614-608 | 0.19 |

MB | METRIC HEXAGON AF SIZE REDUCER BUSHES



- ▶ Economical solution of reducing female hexagon AF size of TWH-NRH metric ratchet head
- ▶ Select the outside AF size (i.e. ratchet head AF size) and required inside AF size to determine the MB model number
- ▶ Note that wall thickness 'W' dimension of reducer bush must be added to the minimum radius dimension of the ratchet head

| Outside AF size | Inside AF size | For TWH27NRH | | For TWH54NRH | | For TWH120NRH | | For TWH210NRH | | For TWH430NRH | |
|-----------------|----------------|--------------|------|--------------|------|---------------|------|---------------|------|---------------|------|
| | | Model number | W mm | Model number | W mm | Model number | W mm | Model number | W mm | Model number | W mm |
| 30 | 24 | MB27-30-24 | 3 | | | | | | | | |
| 32 | 24 | MB27-32-24 | 3 | | | | | | | | |
| 32 | 27 | MB27-32-27 | 3 | | | | | | | | |
| 36 | 30 | MB27-36-30 | 3 | MB54-36-30 | 3 | | | | | | |
| 41 | 36 | MB27-41-36 | 2.5 | MB54-41-36 | 2.5 | | | | | | |
| 46 | 36 | MB27-46-36 | 5 | MB54-46-36 | 5 | | | | | | |
| 46 | 41 | MB27-46-41 | 2.5 | MB54-46-41 | 2.5 | | | | | | |
| 50 | 41 | MB27-50-41 | 4.5 | MB54-50-41 | 4.5 | | | | | | |
| 50 | 46 | MB27-50-46 | 2 | MB54-50-46 | 2 | | | | | | |
| 55 | 41 | MB27-55-41 | 7 | MB54-55-41 | 7 | | | | | | |
| 55 | 46 | MB27-55-46 | 4.5 | MB54-55-46 | 4.5 | | | | | | |
| 55 | 50 | MB27-55-50 | 2.5 | MB54-55-50 | 2.5 | MB120-55-50 | 2.5 | | | | |
| 60 | 46 | MB27-60-46 | 7 | MB54-60-46 | 7 | not available | - | | | | |
| 60 | 50 | MB27-60-50 | 5 | MB54-60-50 | 5 | MB120-60-50 | 5 | | | | |
| 60 | 55 | MB27-60-55 | 2.5 | MB54-60-55 | 2.5 | MB120-60-55 | 2.5 | | | | |
| 65 | 50 | | | MB54-65-50 | 7.5 | MB120-65-50 | 7.5 | | | | |
| 65 | 55 | | | MB54-65-55 | 5 | MB120-65-55 | 5 | | | | |
| 65 | 60 | | | MB54-65-60 | 2.5 | MB120-65-60 | 2.5 | | | | |
| 70 | 55 | | | MB54-70-55 | 7.5 | MB120-70-55 | 7.5 | | | | |
| 70 | 60 | | | MB54-70-60 | 5 | MB120-70-60 | 5 | | | | |
| 70 | 65 | | | MB54-70-65 | 2.5 | MB120-70-65 | 2.5 | | | | |
| 75 | 60 | | | MB54-75-60 | 7.5 | MB120-75-60 | 7.5 | | | | |
| 75 | 65 | | | MB54-75-65 | 5 | MB120-75-65 | 5 | | | | |
| 75 | 70 | | | MB54-75-70 | 2.5 | MB120-75-70 | 2.5 | MB210-75-70 | 2.5 | | |
| 80 | 65 | | | MB54-80-65 | 7.5 | MB120-80-65 | 7.5 | not available | - | | |
| 80 | 70 | | | MB54-80-70 | 5 | MB120-80-70 | 5 | MB210-80-70 | 5 | | |
| 80 | 75 | | | MB54-80-75 | 2.5 | MB120-80-75 | 2.5 | MB210-80-75 | 2.5 | | |
| 85 | 70 | | | | | MB120-85-70 | 7.5 | MB210-85-70 | 7.5 | | |
| 85 | 75 | | | | | MB120-85-75 | 5 | MB210-85-75 | 5 | | |
| 85 | 80 | | | | | MB120-85-80 | 2.5 | MB210-85-80 | 2.5 | MB430-85-80 | 2.5 |
| 90 | 75 | | | | | MB120-90-75 | 7.5 | MB210-90-75 | 7.5 | not available | - |
| 90 | 80 | | | | | MB120-90-80 | 5 | MB210-90-80 | 5 | MB430-90-80 | 5 |
| 90 | 85 | | | | | MB120-90-85 | 2.5 | MB210-90-85 | 2.5 | MB430-90-85 | 2.5 |
| 95 | 80 | | | | | MB120-95-80 | 7.5 | MB210-95-80 | 7.5 | MB430-95-80 | 7.5 |
| 95 | 85 | | | | | MB120-95-85 | 5 | MB210-95-85 | 5 | MB430-95-85 | 5 |
| 95 | 90 | | | | | MB120-95-90 | 2.5 | MB210-95-90 | 2.5 | MB430-95-90 | 2.5 |
| 100 | 85 | | | | | MB120-100-85 | 7.5 | MB210-100-85 | 7.5 | MB430-100-85 | 7.5 |
| 100 | 90 | | | | | MB120-100-90 | 5 | MB210-100-90 | 5 | MB430-100-90 | 5 |
| 100 | 95 | | | | | MB120-100-95 | 2.5 | MB210-100-95 | 2.5 | MB430-100-95 | 2.5 |
| 105 | 90 | | | | | | | MB210-105-90 | 7.5 | MB430-105-90 | 7.5 |
| 105 | 95 | | | | | | | MB210-105-95 | 5 | MB430-105-95 | 5 |
| 105 | 100 | | | | | | | MB210-105-100 | 2.5 | MB430-105-100 | 2.5 |
| 110 | 95 | | | | | | | MB210-110-95 | 7.5 | MB430-110-95 | 7.5 |
| 110 | 100 | | | | | | | MB210-110-100 | 5 | MB430-110-100 | 5 |
| 110 | 105 | | | | | | | MB210-110-105 | 2.5 | MB430-110-105 | 2.5 |
| 115 | 100 | | | | | | | MB210-115-100 | 7.5 | MB430-115-100 | 7.5 |
| 115 | 105 | | | | | | | MB210-115-105 | 5 | MB430-115-105 | 5 |
| 115 | 110 | | | | | | | MB210-115-110 | 2.5 | MB430-115-110 | 2.5 |
| 130 | 105 | | | | | | | | | MB430-130-105 | 12.5 |
| 130 | 110 | | | | | | | | | MB430-130-110 | 10 |
| 130 | 115 | | | | | | | | | MB430-130-115 | 7.5 |
| 145 | 110 | | | | | | | | | MB430-145-110 | 17.5 |
| 145 | 115 | | | | | | | | | MB430-145-115 | 15 |
| 145 | 130 | | | | | | | | | MB430-145-130 | 7.5 |

BW | BACKUP WRENCHES

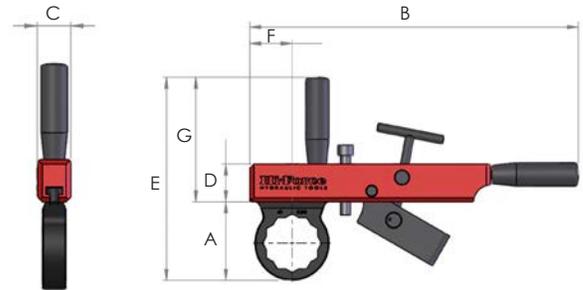


Suitable for use with TWS-N & TWH-N Wrenches

Interchangeable hexagon links

Positive release mechanism

- ▶ Prevents back nut rotation during torque tightening applications
- ▶ Heavy duty industrial construction with ergonomic grip for safe and easy operation
- ▶ 'T-Bar' design adjustable reaction point prevents lock up once tightening is completed
- ▶ Standard imperial and metric female hexagon links available



IMPERIAL

COMPLETE SET:

| Model number | Description | BWH incl. set of links: | |
|--------------|-------------------------------------------------|-------------------------|--------|
| | | From | To |
| BWI-SET | Holder complete with imperial link set (12 pcs) | 1 1/8" | 3 7/8" |

HOLDER AND IMPERIAL HEXAGON LINKS:

| Model number | Description | Hexagon AF size | Dimensions (in) | | | | | | |
|---------------|----------------------|-----------------|-----------------|-------|------|------|-------|------|------|
| | | | A | B | C | D | E | F | G |
| Holder | | | | | | | | | |
| BWH | Backup wrench holder | - | | | | | | | |
| Hexagon links | | | | | | | | | |
| BWI-107 | Hexagon link | 1 1/8" | 2.54 | 15.37 | 1.42 | 1.77 | 8.33 | 1.97 | 5.79 |
| BWI-110 | Hexagon link | 1 3/8" | 2.9 | 15.37 | 1.42 | 1.77 | 8.69 | 1.97 | 5.79 |
| BWI-113 | Hexagon link | 1 13/16" | 3.09 | 15.37 | 1.42 | 1.77 | 8.88 | 1.97 | 5.79 |
| BWI-200 | Hexagon link | 2" | 3.35 | 15.37 | 1.42 | 1.77 | 9.14 | 1.97 | 5.79 |
| BWI-203 | Hexagon link | 2 1/8" | 3.45 | 15.37 | 1.42 | 1.77 | 9.24 | 1.97 | 5.79 |
| BWI-206 | Hexagon link | 2 3/8" | 3.66 | 15.37 | 1.42 | 1.77 | 9.46 | 1.97 | 5.79 |
| BWI-209 | Hexagon link | 2 7/16" | 3.84 | 15.37 | 1.42 | 1.77 | 9.63 | 1.97 | 5.79 |
| BWI-212 | Hexagon link | 2 3/4" | 4.12 | 15.37 | 1.42 | 1.77 | 9.91 | 1.97 | 5.79 |
| BWI-215 | Hexagon link | 2 15/16" | 4.45 | 15.37 | 1.42 | 1.77 | 10.24 | 1.97 | 5.79 |
| BWI-302 | Hexagon link | 3 1/8" | 4.71 | 15.37 | 1.42 | 1.77 | 10.5 | 1.97 | 5.79 |
| BWI-308 | Hexagon link | 3 1/2" | 5.22 | 15.37 | 1.42 | 1.77 | 11.01 | 1.97 | 5.79 |
| BWI-314 | Hexagon link | 3 7/8" | 5.81 | 15.37 | 1.42 | 1.77 | 11.6 | 1.97 | 5.79 |

METRIC

COMPLETE SET:

| Model number | Description | BWH incl. set of links: | |
|--------------|-----------------------------------------------|-------------------------|--------|
| | | From | To |
| BWM-SET | Holder complete with metric link set (14 pcs) | 36 mm | 100 mm |

HOLDER AND METRIC HEXAGON LINKS:

| Model number | Description | Hexagon AF size | Dimensions (mm) | | | | | | |
|---------------|----------------------|-----------------|-----------------|-------|------|------|-------|------|------|
| | | | A | B | C | D | E | F | G |
| Holder | | | | | | | | | |
| BWH | Backup wrench holder | - | | | | | | | |
| Hexagon links | | | | | | | | | |
| BWM-36 | Hexagon link | 36 mm | 2.54 | 15.37 | 1.42 | 1.77 | 8.33 | 1.97 | 5.79 |
| BWM-41 | Hexagon link | 41 mm | 2.9 | 15.37 | 1.42 | 1.77 | 8.69 | 1.97 | 5.79 |
| BWM-46 | Hexagon link | 46 mm | 3.09 | 15.37 | 1.42 | 1.77 | 8.88 | 1.97 | 5.79 |
| BWM-50 | Hexagon link | 50 mm | 3.35 | 15.37 | 1.42 | 1.77 | 9.14 | 1.97 | 5.79 |
| BWM-55 | Hexagon link | 55 mm | 3.45 | 15.37 | 1.42 | 1.77 | 9.24 | 1.97 | 5.79 |
| BWM-60 | Hexagon link | 60 mm | 3.66 | 15.37 | 1.42 | 1.77 | 9.46 | 1.97 | 5.79 |
| BWM-65 | Hexagon link | 65 mm | 3.84 | 15.37 | 1.42 | 1.77 | 9.63 | 1.97 | 5.79 |
| BWM-70 | Hexagon link | 70 mm | 4.12 | 15.37 | 1.42 | 1.77 | 9.91 | 1.97 | 5.79 |
| BWM-75 | Hexagon link | 75 mm | 4.45 | 15.37 | 1.42 | 1.77 | 10.24 | 1.97 | 5.79 |
| BWM-80 | Hexagon link | 80 mm | 4.71 | 15.37 | 1.42 | 1.77 | 10.5 | 1.97 | 5.79 |
| BWM-85 | Hexagon link | 85 mm | 5.22 | 15.37 | 1.42 | 1.77 | 11.01 | 1.97 | 5.79 |
| BWM-90 | Hexagon link | 90 mm | 5.81 | 15.37 | 1.42 | 1.77 | 11.6 | 1.97 | 5.79 |
| BWM-95 | Hexagon link | 95 mm | 5.63 | 15.37 | 1.42 | 1.77 | 11.43 | 1.97 | 5.79 |
| BWM-100 | Hexagon link | 100 mm | 5.83 | 15.37 | 1.42 | 1.77 | 11.62 | 1.97 | 5.79 |

HTWP | TORQUE WRENCH PUMPS - STANDARD LINE

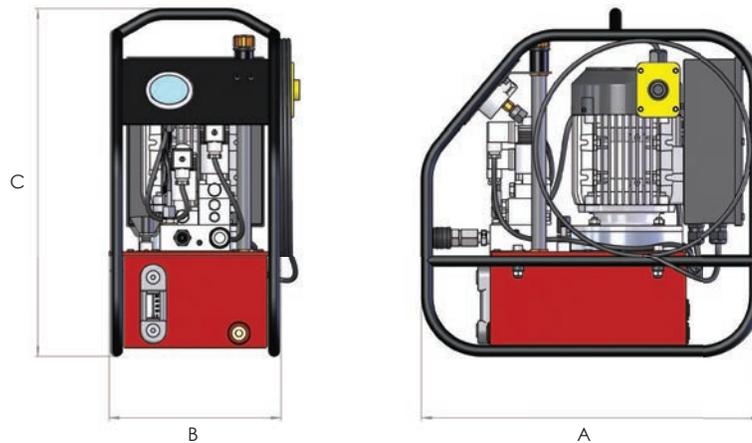


Working pressure 10000 psi

Two stage operation

Air or electric driven options

- ▶ Compatible for use with TWS-N and TWH-N series hydraulic torque wrenches
- ▶ Two stage operation with low pressure flow rate of up to 372.24 inch³ per minute
- ▶ 110, 120, 220 or 230 volt single phase electric motor with auto retract function
- ▶ Integral oil cooling system in air driven models
- ▶ Dual scale (psi/bar) glycerin filled pressure gauge
- ▶ Easily adjustable torque setting pressure relief valve
- ▶ Reservoir oil sight level gauge fitted on all models
- ▶ Air pressure gauge and filter, regulator and lubricator unit fitted on air driven models
- ▶ Oil reservoir capacity 1.32 gallons
- ▶ Remote hand pendant controller with 10 feet control line cable for easy operation
- ▶ Factory fitted roll bar protection frame included



| Model number | Power supply | Motor rating (hp) | Displacement (in ³ /min) | | Changeover pressure (psi) | Weight (lbs) | Dimensions (in) | | |
|--------------|--------------|-------------------|-------------------------------------|---------------|---------------------------|--------------|-----------------|------|-------|
| | | | low pressure | high pressure | | | A | B | C |
| HTWP2140P | 100 psi | 2.01 | 372.24 | 31.12 | 870 | 61.7 | 18.44 | 8.08 | 17.53 |
| HTWP2141AR | 110 volt | 1.01 | 237.99 | 21.97 | 870 | 75.0 | 19.15 | 9.65 | 19.62 |
| HTWP2141ARH | 120 volt | 1.01 | 237.99 | 21.97 | 870 | 75.0 | 19.15 | 9.65 | 19.62 |
| HTWP2142AR | 230 volt | 1.01 | 237.99 | 21.97 | 870 | 75.0 | 19.15 | 9.65 | 19.62 |
| HTWP2142ARH | 220 volt | 1.01 | 237.99 | 21.97 | 870 | 75.0 | 19.15 | 9.65 | 19.62 |

Note: Pumps with suffix 'H' in the model number are supplied with 60 Hz electric motor.

TPA | AIR DRIVEN TORQUE WRENCH PUMPS - PREMIUM LINE

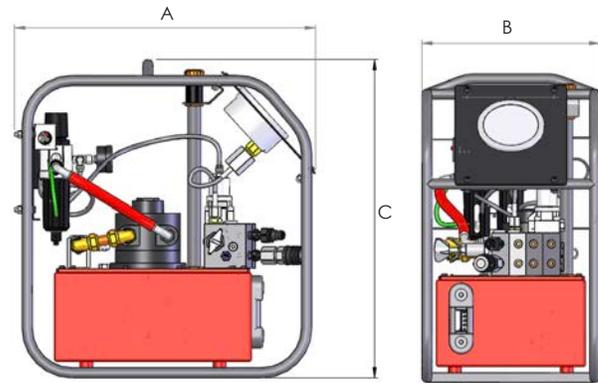


Working pressure 10000 psi

High flow 3-stage pump unit

Compact and lightweight

- ▶ Low noise operation (<90 db)
- ▶ Supplied fitted with one set of quick connect couplers
- ▶ Exhaust air radiator cooling system fitted as standard
- ▶ Adjustable torque setting pressure relief valve with locking nut
- ▶ Analog or digital gauge options
- ▶ Remote hand pendant controller with 16.5 feet cable for easy operation
- ▶ Multi-outlet 4-way split block for simultaneous operation of up to 4 torque wrenches
- ▶ Factory fitted roll bar protection and carrying frame



| Model number | Power supply | Pressure gauge | Gauge reading | Flow rate (gallons/min) | | | Oil capacity (gallons) | Max. oil temp (°C) | Weight incl. oil (lbs) | Dimensions (in) | | |
|--------------|--------------|----------------|-------------------|-----------------------------------|--------------------------------------|----------------------------------------|------------------------|--------------------|------------------------|-----------------|-------|-------|
| | | | | 1 st stage (0-943 psi) | 2 nd stage (943-4713 psi) | 3 rd stage (4713-10000 psi) | | | | A | B | C |
| TPA07A | 1000 psi air | analog | psi/bar | 427.17 | 97.64 | 48.82 | 1.85 | 80° | 66.1 | 18.68 | 11.27 | 19.74 |
| TPA07D | 1000 psi air | digital | psi/bar/Nm/lbf.ft | 427.17 | 97.64 | 48.82 | 1.85 | 80° | 66.1 | 18.68 | 11.27 | 19.74 |

Optional coupler sets for simultaneous operation of multiple torque wrenches (one set supplied fitted as standard)

| Model number | Description |
|--------------|------------------------------------------------------------------------------------------------------|
| TP-CS1 | Single set of male/female flat face couplers, for simultaneous operation of two hydraulic wrenches |
| TP-CS2 | Double set of male/female flat face couplers, for simultaneous operation of three hydraulic wrenches |
| TP-CS3 | Triple set of male/female flat face couplers, for simultaneous operation of four hydraulic wrenches |

TPE | ELECTRIC DRIVEN TORQUE WRENCH PUMPS - PREMIUM LINE

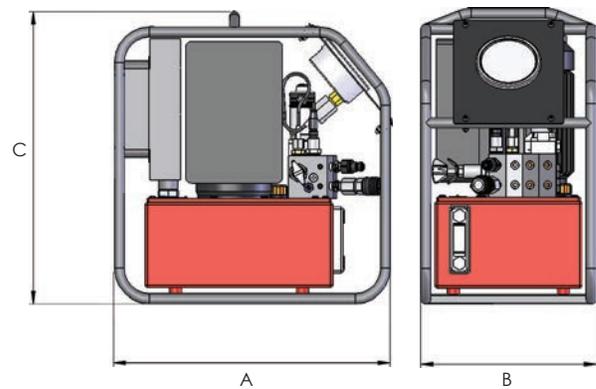


Working pressure 10000 psi

High flow 3-stage pump unit

Compact and lightweight

- ▶ Low noise operation (<88 db)
- ▶ Supplied fitted with one set of quick connect couplers
- ▶ Automatically activated oil cooling heat exchanger fitted as standard
- ▶ Adjustable torque setting pressure relief valve with locking nut
- ▶ Analog or digital gauge options
- ▶ Remote hand pendant controller with 16.5 feet cable for easy operation
- ▶ Choice of manual operation with auto retract or fully automatic operation
- ▶ Multi-outlet 4-way split block for simultaneous operation of up to 4 torque wrenches
- ▶ Factory fitted roll bar protection and carrying frame



| Model number | Power supply | Pressure gauge | Gauge reading | Flow rate (gallons/min) | | | Oil capacity (gallons) | Max. oil temp (°C) | Weight incl. oil (lbs) | Dimensions (in) | | |
|--------------|----------------|----------------|-------------------|-----------------------------------|--------------------------------------|----------------------------------------|------------------------|--------------------|------------------------|-----------------|-------|-------|
| | | | | 1 st stage (0-943 psi) | 2 nd stage (943-4713 psi) | 3 rd stage (4713-10000 psi) | | | | A | B | C |
| TPE15A | 110V-1Ph-50 Hz | analog | psi/bar | 6.5 | 1.5 | 0.75 | 1.85 | 80° | 86 | 17.97 | 11.27 | 18.75 |
| TPE15D | 110V-1Ph-50 Hz | digital | psi/bar/Nm/lbf.ft | 6.5 | 1.5 | 0.75 | 1.85 | 80° | 86 | 17.97 | 11.27 | 18.75 |
| TPE16A | 120V-1Ph-60 Hz | analog | psi/bar | 7.8 | 1.8 | 0.90 | 1.85 | 80° | 86 | 17.97 | 11.27 | 18.75 |
| TPE16D | 120V-1Ph-60 Hz | digital | psi/bar/Nm/lbf.ft | 7.8 | 1.8 | 0.90 | 1.85 | 80° | 86 | 17.97 | 11.27 | 18.75 |
| TPE25A | 230V-1Ph-50 Hz | analog | psi/bar | 6.5 | 1.5 | 0.75 | 1.85 | 80° | 86 | 17.97 | 11.27 | 18.75 |
| TPE25D | 230V-1Ph-50 Hz | digital | psi/bar/Nm/lbf.ft | 6.5 | 1.5 | 0.75 | 1.85 | 80° | 86 | 17.97 | 11.27 | 18.75 |
| TPE26A | 230V-1Ph-60 Hz | analog | psi/bar | 7.8 | 1.8 | 0.90 | 1.85 | 80° | 86 | 17.97 | 11.27 | 18.75 |
| TPE26D | 230V-1Ph-60 Hz | digital | psi/bar/Nm/lbf.ft | 7.8 | 1.8 | 0.90 | 1.85 | 80° | 86 | 17.97 | 11.27 | 18.75 |
| TPE45A | 400V-3Ph-50 Hz | analog | psi/bar | 6.5 | 1.5 | 0.75 | 1.85 | 80° | 86 | 17.97 | 11.27 | 18.75 |
| TPE45D | 400V-3Ph-50 Hz | digital | psi/bar/Nm/lbf.ft | 6.5 | 1.5 | 0.75 | 1.85 | 80° | 86 | 17.97 | 11.27 | 18.75 |
| TPE46A | 480V-3Ph-60 Hz | analog | psi/bar | 7.8 | 1.8 | 0.90 | 1.85 | 80° | 86 | 17.97 | 11.27 | 18.75 |
| TPE46D | 480V-3Ph-60 Hz | digital | psi/bar/Nm/lbf.ft | 7.8 | 1.8 | 0.90 | 1.85 | 80° | 86 | 17.97 | 11.27 | 18.75 |

Optional coupler sets for simultaneous operation of multiple torque wrenches (one set supplied fitted as standard)

| Model number | Description |
|--------------|------------------------------------------------------------------------------------------------------|
| TP-CS1 | Single set of male/female flat face couplers, for simultaneous operation of two hydraulic wrenches |
| TP-CS2 | Double set of male/female flat face couplers, for simultaneous operation of three hydraulic wrenches |
| TP-CS3 | Triple set of male/female flat face couplers, for simultaneous operation of four hydraulic wrenches |

TORQUE WRENCH PUMP ACCESSORIES



Hose lengths up to 330 feet

Supplied with quick connect couplings

Working pressure 10000 psi

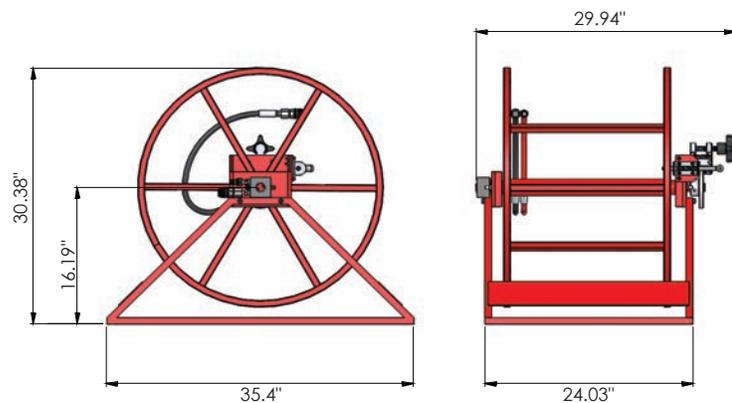
Torque Wrench Hoses and Couplers

- ▶ High quality hydraulic torque wrench bonded twin hose sets
- ▶ Maximum working pressure of 10000 psi with 4:1 safety factor
- ▶ Ergonomically designed protective, strain reliever hand grips on both ends

| Model number | Description | Weight (lbs) |
|--------------|---------------------------------------------------------------|--------------|
| HTWH4 | Bonded twin hoses with quick connect couplers, length 13 ft | 7.7 |
| HTWH5 | Bonded twin hoses with quick connect couplers, length 16.5 ft | 8.4 |
| HTWH6 | Bonded twin hoses with quick connect couplers, length 19.5 ft | 10.1 |
| HTWH8 | Bonded twin hoses with quick connect couplers, length 26 ft | 11.7 |
| HTWH10 | Bonded twin hoses with quick connect couplers, length 32 ft | 15.0 |
| HTWH50 | Bonded twin hoses with quick connect couplers, length 164 ft | 68.8 |
| HTWH75 | Bonded twin hoses with quick connect couplers, length 246 ft | 102.7 |
| HTWH100 | Bonded twin hoses with quick connect couplers, length 330 ft | 136.0 |
| CF4F | Female half coupler, 1/4" NPT Female | 0.7 |
| CM4F | Male half coupler, 1/4" NPT Female | 0.7 |

HTWR1 Torque Wrench Hose Reel

- ▶ Accommodates twin line hoses up to 330 feet long
- ▶ Supplied with twin 1.5 feet long lead hose for easy connection to main line hoses
- ▶ Disc brake allows for hose release speed control
- ▶ Fixing holes at the base of frame
- ▶ Weight 84 lbs



Note: We recommend the use of HTWR1 hose reel with hose lengths of 164 ft or more

IW | PNEUMATIC IMPACT WRENCHES



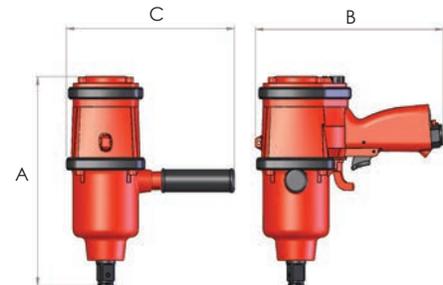
- ▶ Industrial impact wrenches offering torque capacities from 65 to 2370 lbf.ft
- ▶ Available with pistol grip or back handle grip
- ▶ Quiet operation and minimal vibration for reduced operator fatigue
- ▶ Compact design with excellent power to weight ratio
- ▶ Incorporates four position power output device
- ▶ High quality torque wrench sockets for use with IW range are listed on pages 86 and 87
- ▶ Filter, regulator & lubricator unit is recommended for use with IW impact wrenches

Industrial heavy duty design

Square drive sizes from ½" to 1 ½"

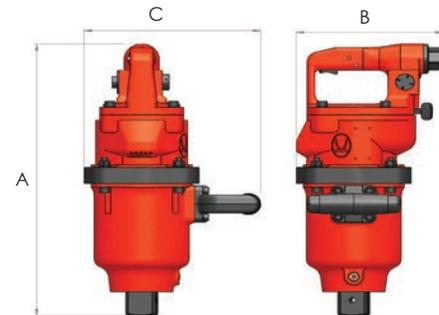
Operates from standard 90 psi air pressure

IW13P
IW19P



Note: Model IW13P does not have a side handle fitted

IW25B
IW38B



| Model number | Square drive size | Bolt capacity | | Free speed | | Maximum torque | | Recommended torque | | Air consumption | | Weight (lbs) | Dimensions (in) | | |
|---------------------------|-------------------|---------------|----|------------|-------|----------------|------|--------------------|-----------|-----------------|---------------------|--------------|-----------------|------|------|
| | | inch | mm | R.P.M. | I.P.M | lbf.ft | Nm | lbf.ft | Nm | cfm | m ³ /min | | A | B | C |
| Pistol grip versions | | | | | | | | | | | | | | | |
| IW13P | ½" | ⅝" | 16 | 6300 | 1200 | 300 | 450 | 65-260 | 90-350 | 12.5 | 0.35 | 6.2 | 7.8 | 8.75 | 3.07 |
| IW19P | ¾" | ⅞" | 22 | 3800 | 1100 | 640 | 870 | 185-590 | 250-800 | 21.4 | 0.6 | 13.7 | 9.93 | 9.65 | 8.67 |
| Back handle grip versions | | | | | | | | | | | | | | | |
| IW25B | 1" | 1 ¼" | 45 | 3700 | 700 | 1980 | 2700 | 740-1772 | 1000-2450 | 26.7 | 0.75 | 23.6 | 14.11 | 7.64 | 8.31 |
| IW38B | 1 ½" | 2" | 50 | 3000 | 600 | 2600 | 3500 | 740-2370 | 1000-3200 | 29.2 | 0.82 | 35.3 | 16.11 | 7.45 | 8.94 |

Note: Performance figures are at 90 psi (0.62 MPa (PE)) air pressure

Filter Regulator Lubricator (FRL) Unit



- ▶ Allows for easy adjustment of air pressure to suit tool requirements
- ▶ Prevents entry of contaminants and water into the air supply
- ▶ Lubricates air motor to ensure smooth operation
- ▶ Supplied with dual scale air inlet pressure gauge and 10 feet air hose with swivel end fittings

| Model number | Air inlet connection | Air outlet connection | Weight (lbs) | Length | Dimensions (in) | | |
|--------------|----------------------|-----------------------|--------------|--------|-----------------|--------|--|
| | | | | | Width | Height | |
| FRL11 | ½" NPT | ½" NPT | 6.6 | 7.88 | 7.88 | 12.21 | |

HI-FORCE HYDRAULIC STUD BOLT TENSIONERS

Hydraulic stud bolt tensioners are generally accepted as the preferred and most efficient method of accurately tightening bolts, to a predetermined and known bolt load, to ensure an even clamping force on all stud bolts within the joint. This is particularly critical for bolted joints, on pipelines and pressure vessels, in the oil, gas and petrochemical industries, where correctly sealed joints are essential for the safe movement and processing of hydrocarbons, usually under high pressure. Multiple use of hydraulic stud bolt tensioners, to tension 25, 33, 50 or in some cases 100% of the bolts simultaneously, ensures an even pull down of the joint faces onto the gasket, ensuring the correct gasket compression to achieve a leak free joint, first time every time.

The extensive range of Hi-Force hydraulic stud bolt tensioners, detailed in this section of the catalog, includes both spring assisted and manual piston retraction, topside tensioners, subsea tensioners, hydraulic tensioning nuts, special design tensioners made to exacting customer specifications, along with a range of manual and air driven bolt tensioner hydraulic pumps, hoses and accessories. The modular design of Hi-Force hydraulic stud bolt tensioners enables the user to adapt each model, to cover more than one stud bolt size, by simply ordering additional accessories. This greatly reduces investment costs, for users, that require to tension multiple sizes of stud bolts, whilst optimizing their investment costs.

iQ software is an innovative bolted joint integrity software programme designed to assist engineers with the provision of accurate bolt load calculations, based on key input data, related to each specific bolted joint, and is available for purchase through the provider company Asset55 Limited. Hi-Force is able to support our valued clients with bolt load calculations on an hourly chargeable time basis.





BOLT TENSIONERS

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SBT | SPRING RETURN BOLT TENSIONERS - IMPERIAL

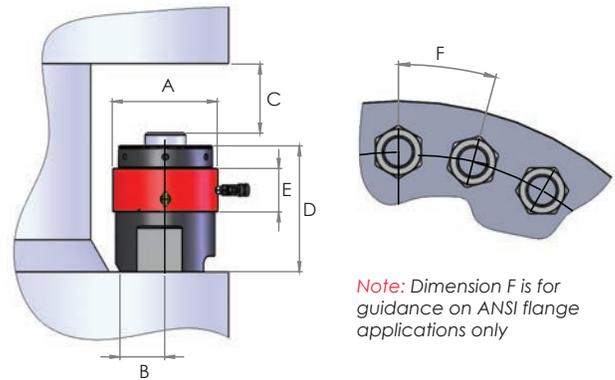


Capacities from 51 to 298 tons

Bolt sizes from 1 1/4" to 4" diameter

Maximum working pressure 21750 psi

- ▶ Single acting design with spring assisted piston retraction
- ▶ High grade alloy steel construction with nitrocarburized, corrosion resistant, piston
- ▶ Maximum stroke indicator to warn against piston over extension
- ▶ Safety over stroke device to protect operator from injury
- ▶ Self-energizing seals for improved performance and longevity at high pressure
- ▶ Dual quick connect inlet and outlet couplings for easy multiple tensioner connection
- ▶ Designed to fit most sizes of ANSI and API flanges and some Compact flanges
- ▶ Interchangeable accessories to cover multiple stud bolt sizes using same tensioner
- ▶ Non-standard size threaded pullers available to order on short delivery lead time



Note: Dimension F is for guidance on ANSI flange applications only

| Model number | Bolt thread size | Threads per inch | Capacity | | Effective area (in ²) | Stroke (in) | Weight (lbs) | Dimensions (in) | | | | | |
|--------------|------------------|------------------|----------|------|-----------------------------------|-------------|--------------|-----------------|------|---------|-------|------|------|
| | | | tons | kN | | | | A | B | C (min) | D | E | F |
| SBT2-125B1 | 1 1/4" | 8 | 51.4 | 457 | 4.73 | 0.59 | 8.8 | 4.02 | 1.54 | 5 | 6.46 | 3.59 | 2.92 |
| SBT2-137B1 | 1 3/8" | 8 | 51.4 | 457 | 4.73 | 0.59 | 8.8 | 4.02 | 1.54 | 5 | 6.46 | 3.59 | 3.03 |
| SBT2-150B1 | 1 1/2" | 8 | 51.4 | 457 | 4.73 | 0.59 | 8.8 | 4.02 | 1.54 | 4.85 | 6.46 | 3.59 | 3.15 |
| SBT3-162B1 | 1 5/8" | 8 | 92.4 | 822 | 8.49 | 0.59 | 14.8 | 5.4 | 1.85 | 5.75 | 7.41 | 3.7 | 3.62 |
| SBT3-175B1 | 1 3/4" | 8 | 92.4 | 822 | 8.49 | 0.59 | 14.8 | 5.4 | 1.85 | 5.63 | 7.41 | 3.7 | 3.66 |
| SBT3-175B2 | 1 3/4" | 8 | 92.4 | 822 | 8.49 | 0.59 | 15.9 | 5.4 | 1.97 | 5.83 | 7.6 | 3.7 | 3.7 |
| SBT3-187B1 | 1 7/8" | 8 | 92.4 | 822 | 8.49 | 0.59 | 14.8 | 5.4 | 1.85 | 5.48 | 7.41 | 3.7 | 3.82 |
| SBT3-187B2 | 1 7/8" | 8 | 92.4 | 822 | 8.49 | 0.59 | 15.9 | 5.4 | 1.97 | 5.67 | 7.6 | 3.7 | 4.1 |
| SBT3-200B2 | 2" | 8 | 92.4 | 822 | 8.49 | 0.59 | 15.9 | 5.4 | 1.97 | 5.56 | 7.6 | 3.7 | 4.1 |
| SBT4-187B1 | 1 7/8" | 8 | 142.1 | 1264 | 13.07 | 0.59 | 24.3 | 6.58 | 1.97 | 5.79 | 7.76 | 3.82 | 4.1 |
| SBT4-200B1 | 2" | 8 | 142.1 | 1264 | 13.07 | 0.59 | 24.3 | 6.58 | 1.97 | 5.63 | 7.76 | 3.82 | 4.1 |
| SBT4-200B2 | 2" | 8 | 142.1 | 1264 | 13.07 | 0.59 | 26.9 | 6.58 | 2.44 | 6.11 | 8.39 | 3.82 | 4.18 |
| SBT4-225B2 | 2 1/4" | 8 | 142.1 | 1264 | 13.07 | 0.59 | 26.9 | 6.58 | 2.44 | 5.91 | 8.39 | 3.82 | 4.77 |
| SBT4-250B2 | 2 1/2" | 8 | 142.1 | 1264 | 13.07 | 0.59 | 26.9 | 6.58 | 2.44 | 5.71 | 8.39 | 3.82 | 5 |
| SBT5-250B1 | 2 1/2" | 8 | 206 | 1833 | 18.94 | 0.59 | 36.4 | 8.23 | 2.88 | 6.38 | 9.02 | 4.02 | 5.28 |
| SBT5-275B1 | 2 3/4" | 8 | 206 | 1833 | 18.94 | 0.59 | 36.4 | 8.23 | 2.88 | 6.15 | 9.02 | 4.02 | 5.52 |
| SBT5-300B1 | 3" | 8 | 206 | 1833 | 18.94 | 0.59 | 36.4 | 8.23 | 2.88 | 5.87 | 9.02 | 4.02 | 5.79 |
| SBT6-300B1 | 3" | 8 | 297.6 | 2649 | 27.37 | 0.59 | 52.9 | 9.69 | 3.31 | 6.86 | 10.01 | 4.06 | 6.34 |
| SBT6-325B1 | 3 1/4" | 8 | 297.6 | 2649 | 27.37 | 0.59 | 52.9 | 9.69 | 3.31 | 6.66 | 10.01 | 4.06 | 6.58 |
| SBT6-350B1 | 3 1/2" | 8 | 297.6 | 2649 | 27.37 | 0.59 | 52.9 | 9.69 | 3.31 | 6.38 | 10.01 | 4.06 | 6.78 |
| SBT6-375B3 | 3 3/4" | 8 | 297.6 | 2649 | 27.37 | 0.59 | 65.3 | 9.69 | 4.14 | 7.64 | 11.62 | 4.06 | 7.53 |
| SBT6-400B3 | 4" | 8 | 297.6 | 2649 | 27.37 | 0.59 | 65.3 | 9.69 | 4.14 | 7.45 | 11.62 | 4.06 | 7.72 |

Note: Weight is for load cell and bridge only. Total weight of complete assembly depends on size of puller and nut rotating socket selected. Tommy bars are not included. Hi-Force recommends one tommy bar for every four tensioners.

SBT | BOLT TENSIONER COMPONENTS - IMPERIAL



Use with SBT Imperial Spring Return Tensioners

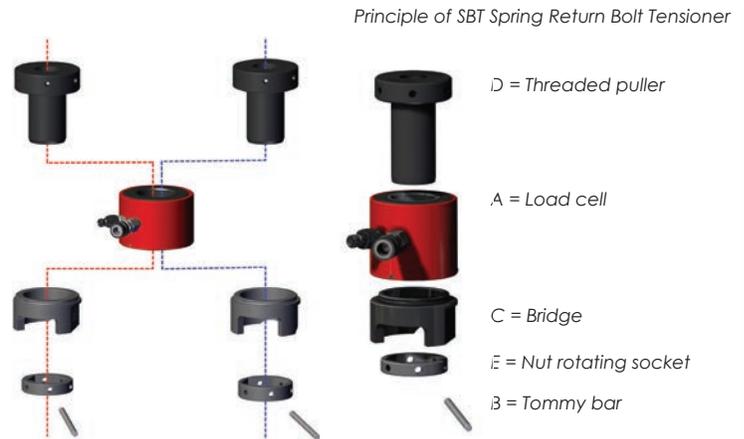
Modular design for greater flexibility

Versatile cost effective option

- ▶ Modify existing SBT tensioner assembly to another thread size, within the tensioner range
- ▶ All components or selected conversion kits must have the same suffix as the target tensioner size

Examples:

- ▶ To change from SBT3-162B1 to SBT3-187B1 would require conversion kit CKS3-187B1 only.
- ▶ To change from SBT3-187B1 to SBT3-200B2 would require conversion kit CKS3-200B2 and bridge STS3-B2.



- Denotes smaller bridge size within tensioner range
- Denotes larger bridge size within tensioner range
- Denotes one bridge size within tensioner range

DO NOT mix components from different colour lines, SBT2 & SBT5 models have only one size of tensioner bridge (B1)

| Complete tensioner | | Individual components | | | | | D&E Complete conversion kit |
|--------------------------|-------------|-----------------------|-------------|------------|-------------------|-------------------|-----------------------------|
| Model number | Bolt thread | A Load cell | B Tommy bar | C Bridge | D Threaded puller | E Rotating socket | |
| For tensioner range SBT2 | | | | | | | |
| SBT2-125B1 | 1 ¼" | SBT2-LC | TTB08 | | TPS2-125B1 | RS2-51B1 | CKS2-125B1 |
| SBT2-137B1 | 1 ¾" | | | STS2-B1 | TPS2-137B1 | RS2-56B1 | CKS2-137B1 |
| SBT2-150B1 | 1 ½" | | | | TPS2-150B1 | RS2-60B1 | CKS2-150B1 |
| For tensioner range SBT3 | | | | | | | |
| SBT3-162B1 | 1 ⅝" | SBT3-LC | TTB10 | | TPS3-162B1 | RS3-65B1 | CKS3-162B1 |
| SBT3-175B1 | 1 ¾" | | | STS3-B1 | TPS3-175B1 | RS3-70B1 | CKS3-175B1 |
| SBT3-187B1 | 1 ⅞" | | | TPS3-187B1 | RS3-75B1 | CKS3-187B1 | |
| SBT3-175B2 | 1 ¾" | | | TPS3-175B2 | RS3-70B2 | CKS3-175B2 | |
| SBT3-187B2 | 1 ⅞" | | | TPS3-187B2 | RS3-75B2 | CKS3-187B2 | |
| SBT3-200B2 | 2" | | | TPS3-200B2 | RS3-80B2 | CKS3-200B2 | |
| SBT3-200B2 | 2" | | | TPS3-200B2 | RS3-80B2 | CKS3-200B2 | |
| For tensioner range SBT4 | | | | | | | |
| SBT4-187B1 | 1 ⅞" | SBT4-LC | TTB10 | STS4-B1 | TPS4-187B1 | RS4-75B1 | CKS4-187B1 |
| SBT4-200B1 | 2" | | | TPS4-200B1 | RS4-80B1 | CKS4-200B1 | |
| SBT4-200B2 | 2" | | | TPS4-200B2 | RS4-80B2 | CKS4-200B2 | |
| SBT4-225B2 | 2 ¼" | | | TPS4-225B2 | RS4-90B2 | CKS4-225B2 | |
| SBT4-250B2 | 2 ½" | | | TPS4-250B2 | RS4-98B2 | CKS4-250B2 | |
| SBT4-250B2 | 2 ½" | | | TPS4-250B2 | RS4-98B2 | CKS4-250B2 | |
| For tensioner range SBT5 | | | | | | | |
| SBT5-250B1 | 2 ½" | SBT5-LC | TTB14 | STS5-B1 | TPS5-250B1 | RS5-100B1 | CKS5-250B1 |
| SBT5-275B1 | 2 ¾" | | | TPS5-275B1 | RS5-108B1 | CKS5-275B1 | |
| SBT5-300B1 | 3" | | | TPS5-300B1 | RS5-118B1 | CKS5-300B1 | |
| For tensioner range SBT6 | | | | | | | |
| SBT6-300B1 | 3" | SBT6-LC | TTB14 | | TPS6-300B1 | RS6-118B1 | CKS6-300B1 |
| SBT6-325B1 | 3 ¼" | | | STS6-B1 | TPS6-325B1 | RS6-127B1 | CKS6-325B1 |
| SBT6-350B1 | 3 ½" | | | TPS6-350B1 | RS6-137B1 | CKS6-350B1 | |
| SBT6-375B3 | 3 ¾" | | | TPS6-375B3 | RS6-146B3 | CKS6-375B3 | |
| SBT6-400B3 | 4" | | | TPS6-400B3 | RS6-156B3 | CKS6-400B3 | |
| SBT6-400B3 | 4" | | | TPS6-400B3 | RS6-156B3 | CKS6-400B3 | |

Note: Remember to check bridge compatibility for SBT3, SBT4 and SBT6 models when ordering components.

SBT | SPRING RETURN BOLT TENSIONERS - METRIC

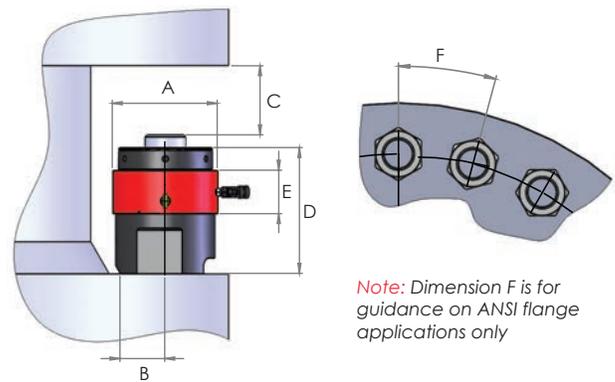


Capacities from 51 to 298 tons

Bolt sizes from M30 to M100 diameter

Maximum working pressure 21750 psi

- ▶ Single acting design with spring assisted piston retraction
- ▶ High grade alloy steel construction with nitrocarburized, corrosion resistant, piston
- ▶ Maximum stroke indicator to warn against piston over extension
- ▶ Safety over stroke device to protect operator from injury
- ▶ Self-energizing seals for improved performance and longevity at high pressure
- ▶ Dual quick connect inlet and outlet couplings for easy multiple tensioner connection
- ▶ Designed to fit most sizes of ANSI and API flanges and some Compact flanges
- ▶ Interchangeable accessories to cover multiple stud bolt sizes using same tensioner
- ▶ Non-standard size threaded pullers available to order on short delivery lead time



Note: Dimension F is for guidance on ANSI flange applications only

| Model number | Bolt thread size | Thread pitch | Capacity | | Effective area (in ²) | Stroke (in) | Weight (lbs) | Dimensions (in) | | | | | |
|--------------|------------------|--------------|----------|------|-----------------------------------|-------------|--------------|-----------------|------|---------|-------|------|------|
| | | | tons | kN | | | | A | B | C (min) | D | E | F |
| SBT2-M30B1 | M30 | 3.5 | 51.4 | 457 | 4.73 | 0.59 | 8.8 | 4.02 | 1.54 | 5.2 | 6.46 | 3.59 | 2.8 |
| SBT2-M33B1 | M33 | 3.5 | 51.4 | 457 | 4.73 | 0.59 | 8.8 | 4.02 | 1.54 | 5 | 6.46 | 3.59 | 2.92 |
| SBT2-M36B1 | M36 | 4 | 51.4 | 457 | 4.73 | 0.59 | 8.8 | 4.02 | 1.54 | 4.85 | 6.46 | 3.59 | 3.03 |
| SBT2-M39B1 | M39 | 4 | 51.4 | 457 | 4.73 | 0.59 | 8.8 | 4.02 | 1.54 | 4.85 | 6.46 | 3.59 | 3.15 |
| SBT3-M42B1 | M42 | 4.5 | 92.4 | 822 | 8.49 | 0.59 | 14.8 | 5.4 | 1.85 | 5.71 | 7.41 | 3.7 | 3.59 |
| SBT3-M45B1 | M45 | 4.5 | 92.4 | 822 | 8.49 | 0.59 | 14.8 | 5.4 | 1.85 | 5.59 | 7.41 | 3.7 | 4.14 |
| SBT3-M45B2 | M45 | 4.5 | 92.4 | 822 | 8.49 | 0.59 | 14.8 | 5.4 | 1.85 | 5.79 | 7.6 | 3.7 | 3.82 |
| SBT3-M48B1 | M48 | 5 | 92.4 | 822 | 8.49 | 0.59 | 14.8 | 5.4 | 1.85 | 5.48 | 7.41 | 3.7 | 4.14 |
| SBT3-M48B2 | M48 | 5 | 92.4 | 822 | 8.49 | 0.59 | 14.8 | 5.4 | 1.85 | 5.67 | 7.6 | 3.7 | 4.14 |
| SBT3-M52B2 | M52 | 5 | 92.4 | 822 | 8.49 | 0.59 | 14.8 | 5.4 | 1.85 | 5.52 | 7.6 | 3.7 | 3.82 |
| SBT4-M48B1 | M48 | 5 | 142.1 | 1264 | 13.07 | 0.59 | 24.3 | 6.58 | 1.97 | 5.91 | 7.76 | 3.82 | 4.14 |
| SBT4-M52B1 | M52 | 5 | 142.1 | 1264 | 13.07 | 0.59 | 24.3 | 6.58 | 1.97 | 5.71 | 7.76 | 3.82 | 4.26 |
| SBT4-M52B2 | M52 | 5 | 142.1 | 1264 | 13.07 | 0.59 | 24.3 | 6.58 | 2.44 | 6.3 | 8.39 | 3.82 | 4.73 |
| SBT4-M56B2 | M56 | 5.5 | 142.1 | 1264 | 13.07 | 0.59 | 24.3 | 6.58 | 2.44 | 6.11 | 8.39 | 3.82 | 4.73 |
| SBT4-M60B2 | M60 | 5.5 | 142.1 | 1264 | 13.07 | 0.59 | 24.3 | 6.58 | 2.44 | 5.91 | 8.39 | 3.82 | 4.89 |
| SBT4-M64B2 | M64 | 6 | 142.1 | 1264 | 13.07 | 0.59 | 24.3 | 6.58 | 2.44 | 5.71 | 8.39 | 3.82 | 4.96 |
| SBT5-M64B1 | M64 | 6 | 206 | 1833 | 18.94 | 0.59 | 36.4 | 8.23 | 2.88 | 6.46 | 9.02 | 4.02 | 5.28 |
| SBT5-M68B1 | M68 | 6 | 206 | 1833 | 18.94 | 0.59 | 36.4 | 8.23 | 2.88 | 6.26 | 9.02 | 4.02 | 5.36 |
| SBT5-M72B1 | M72 | 6 | 206 | 1833 | 18.94 | 0.59 | 36.4 | 8.23 | 2.88 | 6.15 | 9.02 | 4.02 | 5.48 |
| SBT5-M76B1 | M76 | 6 | 206 | 1833 | 18.94 | 0.59 | 36.4 | 8.23 | 2.88 | 5.87 | 9.02 | 4.02 | 5.59 |
| SBT6-M76B1 | M76 | 6 | 297.6 | 2649 | 27.37 | 0.59 | 52.9 | 9.69 | 3.31 | 6.93 | 10.01 | 4.06 | 6.23 |
| SBT6-M80B1 | M80 | 6 | 297.6 | 2649 | 27.37 | 0.59 | 52.9 | 9.69 | 3.31 | 6.78 | 10.01 | 4.06 | 6.3 |
| SBT6-M85B1 | M85 | 6 | 297.6 | 2649 | 27.37 | 0.59 | 52.9 | 9.69 | 3.31 | 6.66 | 10.01 | 4.06 | 6.38 |
| SBT6-M90B1 | M90 | 6 | 297.6 | 2649 | 27.37 | 0.59 | 52.9 | 9.69 | 3.31 | 6.38 | 10.01 | 4.06 | 6.7 |
| SBT6-M95B3 | M95 | 6 | 297.6 | 2649 | 27.37 | 0.59 | 65.3 | 9.69 | 3.78 | 7.64 | 11.62 | 4.06 | 7.25 |
| SBT6-M100B3 | M100 | 6 | 297.6 | 2649 | 27.37 | 0.59 | 65.3 | 9.69 | 3.78 | 7.45 | 11.62 | 4.06 | 7.49 |

Note: Weight is for load cell and bridge only. Total weight of complete assembly depends on size of puller and nut rotating socket selected. Tommy bars are not included. Hi-Force recommends one tommy bar for every four tensioners.

SBT | BOLT TENSIONER COMPONENTS - METRIC



Use with SBT Metric Spring Return Tensioners

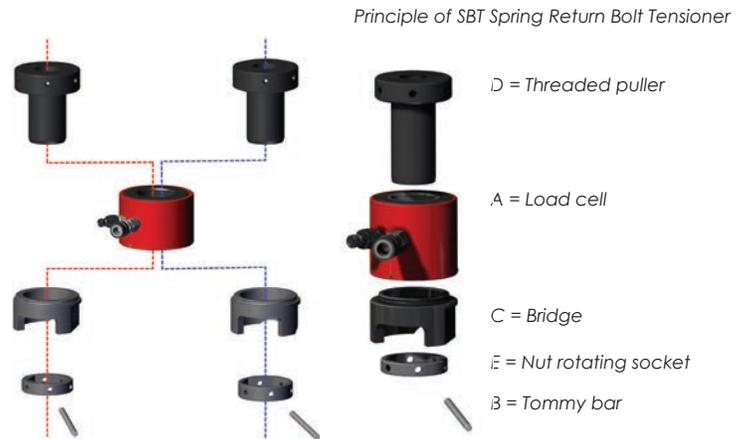
Modular design for greater flexibility

Versatile cost effective option

- ▶ Modify existing SBT tensioner assembly to another thread size, within the tensioner range
- ▶ All components or selected conversion kits must have the same suffix as the target tensioner size

Examples:

- ▶ To change from SBT3-M42B1 to SBT3-M48B1 would require conversion kit CKS3-M48B1 only.
- ▶ To change from SBT3-M48B1 to SBT3-M52B2 would require conversion kit CKS3-M52B2 and bridge STS3-B2.



- Denotes smaller bridge size within tensioner range
- Denotes larger bridge size within tensioner range
- Denotes one bridge size within tensioner range

DO NOT mix components from different colour lines, SBT2 & SBT5 models have only one size of tensioner bridge (B1)

| Complete tensioner | | Individual components | | | | | D&E Complete conversion kit |
|--------------------------|-------------|-----------------------|-------------|-------------|-------------------|-------------------|-----------------------------|
| Model number | Bolt thread | A Load cell | B Tommy bar | C Bridge | D Threaded puller | E Rotating socket | |
| For tensioner range SBT2 | | | | | | | |
| SBT2-M30B1 | M30 | SBT2-LC | TTB08 | STS2-B1 | TPS2-M30B1 | RS2-46B1 | CKS2-M30B1 |
| SBT2-M33B1 | M33 | | | | TPS2-M33B1 | RS2-51B1 | CKS2-M33B1 |
| SBT2-M36B1 | M36 | | | | TPS2-M36B1 | RS2-56B1 | CKS2-M36B1 |
| SBT2-M39B1 | M39 | | | | TPS2-M39B1 | RS2-60B1 | CKS2-M39B1 |
| For tensioner range SBT3 | | | | | | | |
| SBT3-M42B1 | M42 | SBT3-LC | TTB10 | STS3-B1 | TPS3-M42B1 | RS3-65B1 | CKS3-M42B1 |
| SBT3-M45B1 | M45 | | | | TPS3-M45B1 | RS3-70B1 | CKS3-M45B1 |
| SBT3-M48B1 | M48 | | | TPS3-M48B1 | RS3-75B1 | CKS3-M48B1 | |
| SBT3-M45B2 | M45 | | | TPS3-M45B2 | RS3-70B2 | CKS3-M45B2 | |
| SBT3-M48B2 | M48 | | | TPS3-M48B2 | RS3-75B2 | CKS3-M48B2 | |
| SBT3-M52B2 | M52 | | | TPS3-M52B2 | RS3-80B2 | CKS3-M52B2 | |
| For tensioner range SBT4 | | | | | | | |
| SBT4-M48B1 | M48 | SBT4-LC | TTB10 | STS4-B1 | TPS4-M48B1 | RS4-75B1 | CKS4-M48B1 |
| SBT4-M52B1 | M52 | | | | TPS4-M52B1 | RS4-80B1 | CKS4-M52B1 |
| SBT4-M52B2 | M52 | | | TPS4-M52B2 | RS4-80B2 | CKS4-M52B2 | |
| SBT4-M56B2 | M56 | | | TPS4-M56B2 | RS4-85B2 | CKS4-M56B2 | |
| SBT4-M60B2 | M60 | | | TPS4-M60B2 | RS4-90B2 | CKS4-M60B2 | |
| SBT4-M64B2 | M64 | | | TPS4-M64B2 | RS4-95B2 | CKS4-M64B2 | |
| For tensioner range SBT5 | | | | | | | |
| SBT5-M64B1 | M64 | SBT5-LC | TTB14 | STS5-B1 | TPS5-M64B1 | RS5-95B1 | CKS5-M64B1 |
| SBT5-M68B1 | M68 | | | | TPS5-M68B1 | RS5-100B1 | CKS5-M68B1 |
| SBT5-M72B1 | M72 | | | | TPS5-M72B1 | RS5-105B1 | CKS5-M72B1 |
| SBT5-M76B1 | M76 | | | | TPS5-M76B1 | RS5-110B1 | CKS5-M76B1 |
| For tensioner range SBT6 | | | | | | | |
| SBT6-M76B1 | M76 | SBT6-LC | TTB14 | STS6-B1 | TPS6-M76B1 | RS6-110B1 | CKS6-M76B1 |
| SBT6-M80B1 | M80 | | | | TPS6-M80B1 | RS6-115B1 | CKS6-M80B1 |
| SBT6-M85B1 | M85 | | | TPS6-M85B1 | RS6-120B1 | CKS6-M85B1 | |
| SBT6-M90B1 | M90 | | | TPS6-M90B1 | RS6-130B1 | CKS6-M90B1 | |
| SBT6-M95B3 | M95 | | | TPS6-M95B3 | RS6-135B3 | CKS6-M95B3 | |
| SBT6-M100B3 | M100 | | | TPS6-M100B3 | RS6-146B3 | CKS6-M100B3 | |

Note: Remember to check bridge compatibility for SBT3, SBT4 and SBT6 models when ordering components.

STS | TOPSIDE BOLT TENSIONERS - IMPERIAL

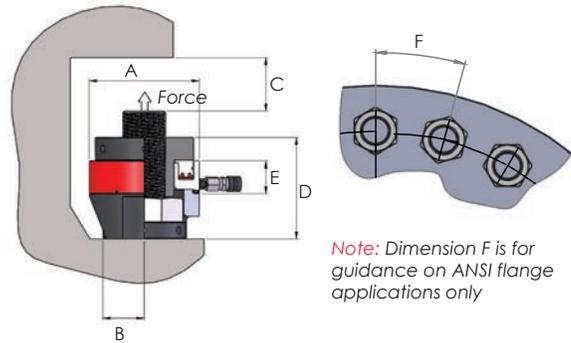


Capacities from 26 to 298 tons

Bolt sizes from 3/4" to 4" diameter

Maximum working pressure 21750 psi

- ▶ Single acting design with manual piston retraction
- ▶ High grade alloy steel construction with nitrocarburized, corrosion resistant, piston
- ▶ Maximum stroke indicator to warn against piston over extension
- ▶ Self-energizing seals for improved performance and longevity of use at high pressure
- ▶ Dual quick connect inlet and outlet couplers for easy multiple tensioner connection
- ▶ Designed to fit most sizes of ANSI and API flanges and some Compact flanges
- ▶ Interchangeable accessories to cover multiple stud bolt sizes using same tensioner
- ▶ Non-standard size threaded pullers available to order on short delivery lead time



| Model number | Bolt thread size | Threads per inch | Capacity tons | Capacity kN | Effective area (in ²) | Stroke (in) | Weight (lbs) | Dimensions (in) | | | | | |
|--------------|------------------|------------------|---------------|-------------|-----------------------------------|-------------|--------------|-----------------|------|---------|-------|------|------|
| | | | | | | | | A | B | C (min) | D | E | F |
| STS1-075B1 | 3/4" | 10 | 26.3 | 234 | 2.42 | 0.39 | 3.7 | 2.92 | 1.1 | 2.92 | 3.55 | 1.77 | 2.01 |
| STS1-087B1 | 7/8" | 9 | 26.3 | 234 | 2.42 | 0.39 | 3.7 | 2.92 | 1.1 | 2.92 | 3.55 | 1.77 | 2.13 |
| STS1-100B2 | 1" | 8 | 26.3 | 234 | 2.42 | 0.39 | 3.7 | 2.92 | 1.18 | 3.15 | 3.86 | 1.77 | 2.4 |
| STS1-112B2 | 1 1/8" | 8 | 26.3 | 234 | 2.42 | 0.39 | 3.7 | 2.92 | 1.18 | 3.15 | 3.86 | 1.77 | 2.52 |
| STS2-125B1 | 1 1/4" | 8 | 51.4 | 457 | 4.73 | 0.59 | 7.7 | 4.02 | 1.54 | 4.06 | 5.04 | 2.13 | 2.92 |
| STS2-137B1 | 1 3/8" | 8 | 51.4 | 457 | 4.73 | 0.59 | 7.7 | 4.02 | 1.54 | 4.06 | 5.04 | 2.13 | 3.03 |
| STS2-150B1 | 1 1/2" | 8 | 51.4 | 457 | 4.73 | 0.59 | 7.7 | 4.02 | 1.54 | 4.06 | 5.04 | 2.13 | 3.15 |
| STS3-162B1 | 1 5/8" | 8 | 92.4 | 822 | 8.49 | 0.59 | 13.4 | 5.24 | 1.85 | 4.53 | 5.91 | 2.21 | 3.62 |
| STS3-175B1 | 1 3/4" | 8 | 92.4 | 822 | 8.49 | 0.59 | 13.4 | 5.24 | 1.85 | 4.53 | 5.91 | 2.21 | 3.66 |
| STS3-175B2 | 1 3/4" | 8 | 92.4 | 822 | 8.49 | 0.59 | 13.4 | 5.24 | 1.97 | 4.61 | 6.11 | 2.21 | 4.1 |
| STS3-187B1 | 1 7/8" | 8 | 92.4 | 822 | 8.49 | 0.59 | 13.4 | 5.24 | 1.85 | 4.53 | 5.91 | 2.21 | 3.82 |
| STS3-187B2 | 1 7/8" | 8 | 92.4 | 822 | 8.49 | 0.59 | 13.9 | 5.24 | 1.97 | 4.61 | 6.11 | 2.21 | 4.1 |
| STS3-200B2 | 2" | 8 | 92.4 | 822 | 8.49 | 0.59 | 13.9 | 5.24 | 1.97 | 4.61 | 6.11 | 2.21 | 4.1 |
| STS4-187B1 | 1 7/8" | 8 | 142.1 | 1264 | 13.07 | 0.59 | 23.4 | 6.42 | 1.97 | 4.69 | 5.87 | 2.25 | 4.1 |
| STS4-200B1 | 2" | 8 | 142.1 | 1264 | 13.07 | 0.59 | 23.4 | 6.42 | 1.97 | 4.69 | 5.87 | 2.25 | 4.1 |
| STS4-200B2 | 2" | 8 | 142.1 | 1264 | 13.07 | 0.59 | 26.0 | 6.42 | 2.44 | 4.69 | 5.87 | 2.25 | 4.18 |
| STS4-225B2 | 2 1/4" | 8 | 142.1 | 1264 | 13.07 | 0.59 | 26.0 | 6.42 | 2.44 | 5.32 | 6.5 | 2.25 | 4.77 |
| STS4-250B2 | 2 1/2" | 8 | 142.1 | 1264 | 13.07 | 0.59 | 23.4 | 6.42 | 2.44 | 5.32 | 6.5 | 2.25 | 5 |
| STS5-250B1 | 2 1/2" | 8 | 206 | 1833 | 18.94 | 0.59 | 35.3 | 7.6 | 2.88 | 5.71 | 7.37 | 2.36 | 5.28 |
| STS5-275B1 | 2 3/4" | 8 | 206 | 1833 | 18.94 | 0.59 | 35.3 | 7.6 | 2.88 | 5.71 | 7.37 | 2.36 | 5.52 |
| STS5-300B1 | 3" | 8 | 206 | 1833 | 18.94 | 0.59 | 35.3 | 7.6 | 2.88 | 5.71 | 7.37 | 2.36 | 5.79 |
| STS6-300B1 | 3" | 8 | 297.6 | 2649 | 27.37 | 0.59 | 51.8 | 9.18 | 3.31 | 7.01 | 8.51 | 2.52 | 6.34 |
| STS6-325B1 | 3 1/4" | 8 | 297.6 | 2649 | 27.37 | 0.59 | 51.8 | 9.18 | 3.31 | 7.01 | 8.51 | 2.52 | 6.58 |
| STS6-350B1 | 3 1/2" | 8 | 297.6 | 2649 | 27.37 | 0.59 | 51.8 | 9.18 | 3.31 | 7.01 | 8.51 | 2.52 | 6.78 |
| STS6-375B3 | 3 3/4" | 8 | 297.6 | 2649 | 27.37 | 0.59 | 64.2 | 9.18 | 4.14 | 8.08 | 10.13 | 2.52 | 7.53 |
| STS6-400B3 | 4" | 8 | 297.6 | 2649 | 27.37 | 0.59 | 64.2 | 9.18 | 4.14 | 8.08 | 10.13 | 2.52 | 7.72 |

Note: Weight is for load cell and bridge only. Total weight of complete assembly depends on size of puller and nut rotating socket selected. Tommy bars are not included. Hi-Force recommends one tommy bar for every four tensioners.

STS | BOLT TENSIONER COMPONENTS - IMPERIAL



Use with STS Imperial Tensioners

Modular design for greater flexibility

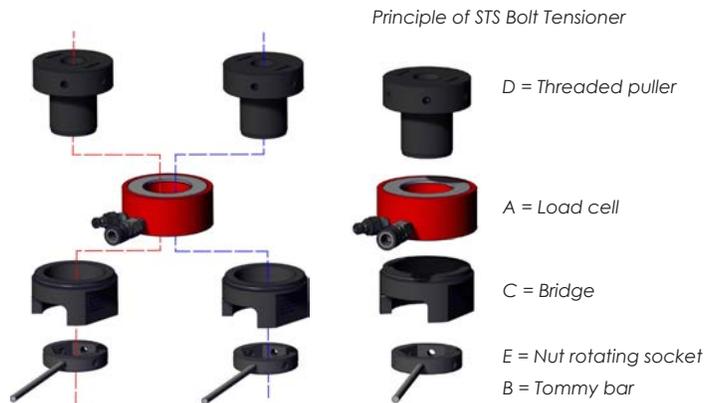
Versatile cost effective option

- ▶ Modify existing STS tensioner assembly to another thread size, within the tensioner range
- ▶ All components or selected conversion kits must have the same suffix as the target tensioner size

Examples:

- ▶ To change from STS3-162B1 to STS3-187B1 would require conversion kit CK3-187B1 only.
- ▶ To change from STS3-187B1 to STS3-200B2 would require conversion kit CK3-200B2 and bridge STS3-B2.

- Denotes smaller bridge size within tensioner range
- Denotes larger bridge size within tensioner range
- Denotes one bridge size within tensioner range



DO NOT mix components from different colour lines, STS2 & STS5 models have only one size of tensioner bridge (B1)

| Complete tensioner | | Individual components | | | | | D&E Complete conversion kit |
|--------------------------|-------------|-----------------------|-------------|-----------|-------------------|-------------------|-----------------------------|
| Model number | Bolt thread | A Load cell | B Tommy bar | C Bridge | D Threaded puller | E Rotating socket | |
| For tensioner range STS1 | | | | | | | |
| STS1-075B1 | 3/4" | STS1-LC | TTB06 | STS1-B1 | TP1-075B1 | RS1-32B1 | CK1-075B1 |
| STS1-087B1 | 7/8" | | | TP1-087B1 | RS1-37B1 | CK1-087B1 | |
| STS1-100B2 | 1" | | | TP1-100B2 | RS1-41B2 | CK1-100B2 | |
| STS1-112B2 | 1 1/8" | | | TP1-112B2 | RS1-46B2 | CK1-112B2 | |
| For tensioner range STS2 | | | | | | | |
| STS2-125B1 | 1 1/4" | STS2-LC | TTB08 | STS2-B1 | TP2-125B1 | RS2-51B1 | CK2-125B1 |
| STS2-137B1 | 1 3/8" | | | TP2-137B1 | RS2-56B1 | CK2-137B1 | |
| STS2-150B1 | 1 1/2" | | | TP2-150B1 | RS2-60B1 | CK2-150B1 | |
| For tensioner range STS3 | | | | | | | |
| STS3-162B1 | 1 5/8" | STS3-LC | TTB10 | STS3-B1 | TP3-162B1 | RS3-65B1 | CK3-162B1 |
| STS3-175B1 | 1 3/4" | | | TP3-175B1 | RS3-70B1 | CK3-175B1 | |
| STS3-187B1 | 1 7/8" | | | TP3-187B1 | RS3-75B1 | CK3-187B1 | |
| STS3-175B2 | 1 3/4" | | | TP3-175B2 | RS3-70B2 | CK3-175B2 | |
| STS3-187B2 | 1 7/8" | | | STS3-B2 | TP3-187B2 | RS3-75B2 | CK3-187B2 |
| STS3-200B2 | 2" | | | TP3-200B2 | RS3-80B2 | CK3-200B2 | |
| For tensioner range STS4 | | | | | | | |
| STS4-187B1 | 1 7/8" | STS4-LC | TTB10 | STS4-B1 | TP4-187B1 | RS4-75B1 | CK4-187B1 |
| STS4-200B1 | 2" | | | TP4-200B1 | RS4-80B1 | CK4-200B1 | |
| STS4-200B2 | 2" | | | TP4-200B2 | RS4-80B2 | CK4-200B2 | |
| STS4-225B2 | 2 1/4" | | | TP4-225B2 | RS4-90B2 | CK4-225B2 | |
| STS4-250B2 | 2 1/2" | | | TP4-250B2 | RS4-98B2 | CK4-250B2 | |
| For tensioner range STS5 | | | | | | | |
| STS5-250B1 | 2 1/2" | STS5-LC | TTB14 | STS5-B1 | TP5-250B1 | RS5-100B1 | CK5-250B1 |
| STS5-275B1 | 2 3/4" | | | TP5-275B1 | RS5-108B1 | CK5-275B1 | |
| STS5-300B1 | 3" | | | TP5-300B1 | RS5-118B1 | CK5-300B1 | |
| For tensioner range STS6 | | | | | | | |
| STS6-300B1 | 3" | STS6-LC | TTB14 | STS6-B1 | TP6-300B1 | RS6-118B1 | CK6-300B1 |
| STS6-325B1 | 3 1/4" | | | TP6-325B1 | RS6-127B1 | CK6-325B1 | |
| STS6-350B1 | 3 1/2" | | | TP6-350B1 | RS6-137B1 | CK6-350B1 | |
| STS6-375B3 | 3 3/4" | | | STS6-B3 | TP6-375B3 | RS6-146B3 | CK6-375B3 |
| STS6-400B3 | 4" | | | TP6-400B3 | RS6-156B3 | CK6-400B3 | |

Note: Remember to check bridge compatibility for STS1, STS3, STS4 and STS6 models when ordering components.

STS | TOPSIDE BOLT TENSIONERS - METRIC

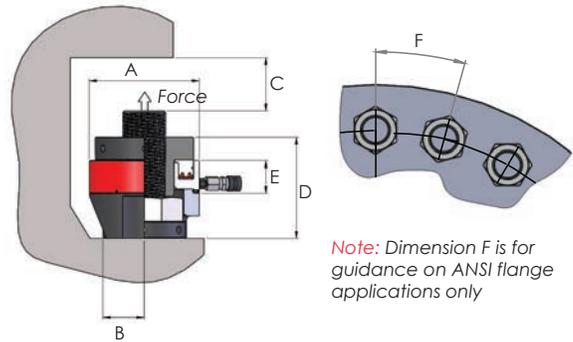


Capacities from 26 to 298 tons

Bolt sizes from M16 to M100 diameter

Maximum working pressure 21750 psi

- ▶ Single acting design with manual piston retraction
- ▶ High grade alloy steel construction with nitrocarburized, corrosion resistant, piston
- ▶ Maximum stroke indicator to warn against piston over extension
- ▶ Self-energizing seals for improved performance and longevity of use at high pressure
- ▶ Dual quick connect inlet and outlet couplers for easy multiple tensioner connection
- ▶ Designed to fit most sizes of ANSI and API flanges and some Compact flanges
- ▶ Interchangeable accessories to cover multiple stud bolt sizes using same tensioner
- ▶ Non-standard size threaded pullers available to order on short delivery lead time



| Model number | Bolt thread size | Thread pitch | Capacity tons | kN | Effective area (in ²) | Stroke (in) | Weight (lbs) | Dimensions (in) | | | | | |
|--------------|------------------|--------------|---------------|------|-----------------------------------|-------------|--------------|-----------------|------|---------|-------|------|------|
| | | | | | | | | A | B | C (min) | D | E | F |
| STS1-M16B1 | M16 | 2 | 26.3 | 234 | 2.42 | 0.39 | 3.7 | 2.92 | 1.1 | 2.92 | 3.55 | 1.77 | 1.85 |
| STS1-M18B1 | M18 | 2.5 | 26.3 | 234 | 2.42 | 0.39 | 3.7 | 2.92 | 1.1 | 2.92 | 3.55 | 1.77 | 1.93 |
| STS1-M20B1 | M20 | 2.5 | 26.3 | 234 | 2.42 | 0.39 | 3.7 | 2.92 | 1.1 | 2.92 | 3.55 | 1.77 | 2.01 |
| STS1-M22B2 | M22 | 2.5 | 26.3 | 234 | 2.42 | 0.39 | 4.2 | 2.92 | 1.18 | 3.15 | 3.86 | 1.77 | 2.21 |
| STS1-M24B2 | M24 | 3 | 26.3 | 234 | 2.42 | 0.39 | 4.2 | 2.92 | 1.18 | 3.15 | 3.86 | 1.77 | 2.32 |
| STS1-M27B2 | M27 | 3 | 26.3 | 234 | 2.42 | 0.39 | 4.2 | 2.92 | 1.18 | 3.15 | 3.86 | 1.77 | 2.4 |
| STS2-M30B1 | M30 | 3.5 | 51.4 | 457 | 4.73 | 0.59 | 7.7 | 4.02 | 1.54 | 4.06 | 5.04 | 2.13 | 2.8 |
| STS2-M33B1 | M33 | 3.5 | 51.4 | 457 | 4.73 | 0.59 | 7.7 | 4.02 | 1.54 | 4.06 | 5.04 | 2.13 | 2.92 |
| STS2-M36B1 | M36 | 4 | 51.4 | 457 | 4.73 | 0.59 | 7.7 | 4.02 | 1.54 | 4.06 | 5.04 | 2.13 | 3.03 |
| STS2-M39B1 | M39 | 4 | 51.4 | 457 | 4.73 | 0.59 | 7.7 | 4.02 | 1.54 | 4.06 | 5.04 | 2.13 | 3.15 |
| STS3-M42B1 | M42 | 4.5 | 92.4 | 822 | 8.49 | 0.59 | 13.4 | 5.24 | 1.85 | 4.53 | 5.91 | 2.21 | 3.59 |
| STS3-M45B1 | M45 | 4.5 | 92.4 | 822 | 8.49 | 0.59 | 13.4 | 5.24 | 1.85 | 4.53 | 5.91 | 2.21 | 3.7 |
| STS3-M45B2 | M45 | 4.5 | 92.4 | 822 | 8.49 | 0.59 | 13.9 | 5.24 | 1.97 | 4.61 | 6.11 | 2.21 | 4.14 |
| STS3-M48B1 | M48 | 5 | 92.4 | 822 | 8.49 | 0.59 | 13.4 | 5.24 | 1.85 | 4.53 | 5.91 | 2.21 | 3.82 |
| STS3-M48B2 | M48 | 5 | 92.4 | 822 | 8.49 | 0.59 | 13.9 | 5.24 | 1.97 | 4.61 | 6.11 | 2.21 | 4.14 |
| STS3-M52B2 | M52 | 5 | 92.4 | 822 | 8.49 | 0.59 | 13.9 | 5.24 | 1.97 | 4.61 | 6.11 | 2.21 | 4.14 |
| STS4-M48B1 | M48 | 5 | 142.1 | 1264 | 13.07 | 0.59 | 23.4 | 6.42 | 1.97 | 4.69 | 5.87 | 2.25 | 4.14 |
| STS4-M52B1 | M52 | 5 | 142.1 | 1264 | 13.07 | 0.59 | 23.4 | 6.42 | 1.97 | 4.69 | 5.87 | 2.25 | 4.26 |
| STS4-M52B2 | M52 | 5 | 142.1 | 1264 | 13.07 | 0.59 | 26.0 | 6.42 | 2.44 | 5.32 | 6.5 | 2.25 | 4.73 |
| STS4-M56B2 | M56 | 5.5 | 142.1 | 1264 | 13.07 | 0.59 | 26.0 | 6.42 | 2.44 | 5.32 | 6.5 | 2.25 | 4.73 |
| STS4-M60B2 | M60 | 5.5 | 142.1 | 1264 | 13.07 | 0.59 | 26.0 | 6.42 | 2.44 | 5.32 | 6.5 | 2.25 | 4.89 |
| STS4-M64B2 | M64 | 6 | 142.1 | 1264 | 13.07 | 0.59 | 26.0 | 6.42 | 2.44 | 5.32 | 6.5 | 2.25 | 4.96 |
| STS5-M64B1 | M64 | 6 | 206 | 1833 | 18.94 | 0.59 | 35.3 | 7.6 | 2.88 | 5.71 | 7.37 | 2.36 | 5.28 |
| STS5-M68B1 | M68 | 6 | 206 | 1833 | 18.94 | 0.59 | 35.3 | 7.6 | 2.88 | 5.71 | 7.37 | 2.36 | 5.36 |
| STS5-M72B1 | M72 | 6 | 206 | 1833 | 18.94 | 0.59 | 35.3 | 7.6 | 2.88 | 5.71 | 7.37 | 2.36 | 5.48 |
| STS5-M76B1 | M76 | 6 | 206 | 1833 | 18.94 | 0.59 | 35.3 | 7.6 | 2.88 | 5.71 | 7.37 | 2.36 | 5.59 |
| STS6-M76B1 | M76 | 6 | 297.6 | 2649 | 27.37 | 0.59 | 51.8 | 9.18 | 3.31 | 7.01 | 8.51 | 2.52 | 6.23 |
| STS6-M80B1 | M80 | 6 | 297.6 | 2649 | 27.37 | 0.59 | 51.8 | 9.18 | 3.31 | 7.01 | 8.51 | 2.52 | 6.3 |
| STS6-M85B1 | M85 | 6 | 297.6 | 2649 | 27.37 | 0.59 | 51.8 | 9.18 | 3.31 | 7.01 | 8.51 | 2.52 | 6.38 |
| STS6-M90B1 | M90 | 6 | 297.6 | 2649 | 27.37 | 0.59 | 51.8 | 9.18 | 3.31 | 7.01 | 8.51 | 2.52 | 6.7 |
| STS6-M95B3 | M95 | 6 | 297.6 | 2649 | 27.37 | 0.59 | 64.2 | 9.18 | 4.14 | 8.08 | 10.13 | 2.52 | 7.25 |
| STS6-M100B3 | M100 | 6 | 297.6 | 2649 | 27.37 | 0.59 | 64.2 | 9.18 | 4.14 | 8.08 | 10.13 | 2.52 | 7.49 |

Note: Weight is for load cell and bridge only. Total weight of complete assembly depends on size of puller and nut rotating socket selected. Tommy bars are not included. Hi-Force recommends one tommy bar for every four tensioners.

STS | BOLT TENSIONER COMPONENTS - METRIC



Use with STS Metric Tensioners

Modular design for greater flexibility

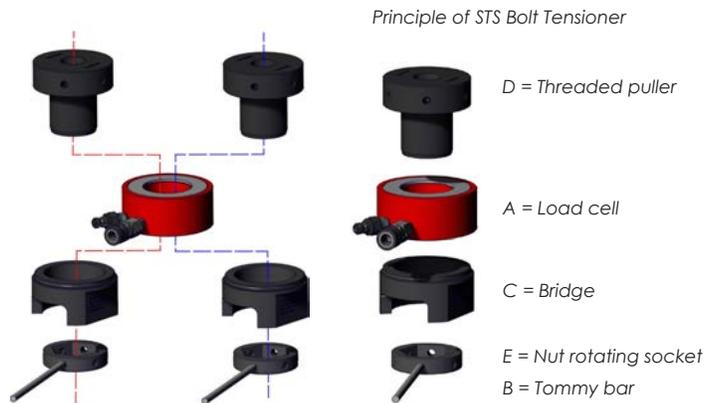
Versatile cost saving option

- ▶ Modify existing STS tensioner assembly to another thread size, within the tensioner range
- ▶ All components or selected conversion kits must have the same suffix as the target tensioner size

Examples:

- ▶ To change from STS3-M42B1 to STS3-M48B1 would require conversion kit CK3-M48B1 only.
- ▶ To change from STS3-M48B1 to STS3-M52B2 would require conversion kit CK3-M52B2 and bridge STS3-B2.

- Denotes smaller bridge size within tensioner range
- Denotes larger bridge size within tensioner range
- Denotes one bridge size within tensioner range



DO NOT mix components from different colour lines, STS2 & STS5 models have only one size of tensioner bridge (B1)

| Complete tensioner | | Individual components | | | | | D&E |
|--------------------------|-------------|-----------------------|----------------|-------------|----------------------|----------------------|-------------------------|
| Model number | Bolt thread | A Load cell | B Tommy bar | C Bridge | D Threaded puller | E Rotating socket | Complete conversion kit |
| For tensioner range STS1 | | | | | | | |
| STS1-M16B1 | M16 | STS1-LC | TTB06 | STS1-B1 | TP1-M16B1 | RS1-24B1 | CK1-M16B1 |
| STS1-M18B1 | M18 | | | | TP1-M18B1 | RS1-27B1 | CK1-M18B1 |
| STS1-M20B1 | M20 | | | | TP1-M20B1 | RS1-30B1 | CK1-M20B1 |
| STS1-M22B2 | M22 | | | STS1-B2 | TP1-M22B2 | RS1-32B2 | CK1-M22B2 |
| STS1-M24B2 | M24 | | | | TP1-M24B2 | RS1-37B2 | CK1-M24B2 |
| STS1-M27B2 | M27 | | | | TP1-M27B2 | RS1-41B2 | CK1-M27B2 |
| For tensioner range STS2 | | | | | | | |
| STS2-M30B1 | M30 | STS2-LC | TTB08 | STS2-B1 | TP2-M30B1 | RS2-46B1 | CK2-M30B1 |
| STS2-M33B1 | M33 | | | | TP2-M33B1 | RS2-51B1 | CK2-M33B1 |
| STS2-M36B1 | M36 | | | | TP2-M36B1 | RS2-56B1 | CK2-M36B1 |
| STS2-M39B1 | M39 | | | | TP2-M39B1 | RS2-60B1 | CK2-M39B1 |
| For tensioner range STS3 | | | | | | | |
| STS3-M42B1 | M42 | STS3-LC | TTB10 | STS3-B1 | TP3-M42B1 | RS3-65B1 | CK3-M42B1 |
| STS3-M45B1 | M45 | | | | TP3-M45B1 | RS3-70B1 | CK3-M45B1 |
| STS3-M48B1 | M48 | | | | TP3-M48B1 | RS3-75B1 | CK3-M48B1 |
| STS3-M45B2 | M45 | | | STS3-B2 | TP3-M45B2 | RS3-70B2 | CK3-M45B2 |
| STS3-M48B2 | M48 | | | | TP3-M48B2 | RS3-75B2 | CK3-M48B2 |
| STS3-M52B2 | M52 | | | | TP3-M52B2 | RS3-80B2 | CK3-M52B2 |
| For tensioner range STS4 | | | | | | | |
| STS4-M48B1 | M48 | STS4-LC | TTB10 | STS4-B1 | TP4-M48B1 | RS4-75B1 | CK4-M48B1 |
| STS4-M52B1 | M52 | | | | TP4-M52B1 | RS4-80B1 | CK4-M52B1 |
| STS4-M52B2 | M52 | | | | TP4-M52B2 | RS4-80B2 | CK4-M52B2 |
| STS4-M56B2 | M56 | | | STS4-B2 | TP4-M56B2 | RS4-85B2 | CK4-M56B2 |
| STS4-M60B2 | M60 | | | | TP4-M60B2 | RS4-90B2 | CK4-M60B2 |
| STS4-M64B2 | M64 | | | | TP4-M64B2 | RS4-95B2 | CK4-M64B2 |
| For tensioner range STS5 | | | | | | | |
| STS5-M64B1 | M64 | STS5-LC | TTB14 | STS5-B1 | TP5-M64B1 | RS5-95B1 | CK5-M64B1 |
| STS5-M68B1 | M68 | | | | TP5-M68B1 | RS5-100B1 | CK5-M68B1 |
| STS5-M72B1 | M72 | | | | TP5-M72B1 | RS5-105B1 | CK5-M72B1 |
| STS5-M76B1 | M76 | | | | TP5-M76B1 | RS5-110B1 | CK5-M76B1 |
| For tensioner range STS6 | | | | | | | |
| STS6-M76B1 | M76 | STS6-LC | TTB14 | STS6-B1 | TP6-M76B1 | RS6-110B1 | CK6-M76B1 |
| STS6-M80B1 | M80 | | | | TP6-M80B1 | RS6-115B1 | CK6-M80B1 |
| STS6-M85B1 | M85 | | | | TP6-M85B1 | RS6-120B1 | CK6-M85B1 |
| STS6-M90B1 | M90 | | | STS6-B3 | TP6-M90B1 | RS6-130B1 | CK6-M90B1 |
| STS6-M95B3 | M95 | | | | TP6-M95B3 | RS6-135B3 | CK6-M95B3 |
| STS6-M100B3 | M100 | | | | TP6-M100B3 | RS6-146B3 | CK6-M100B3 |

Note: Remember to check bridge compatibility for STS1, STS3, STS4 and STS6 models when ordering components.

STU | SUB-SEA BOLT TENSIONERS - IMPERIAL

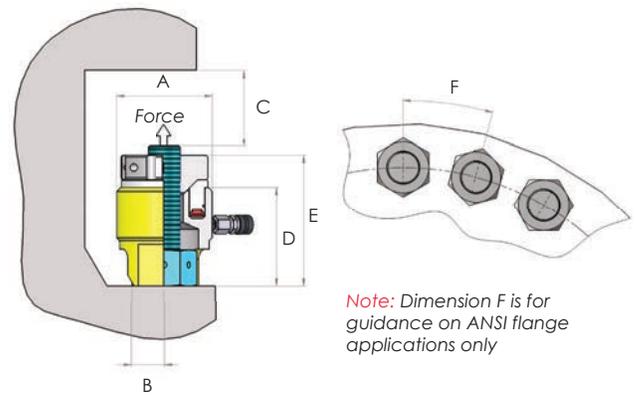


Capacities from 29 to 279 tons

Bolt sizes from 1" to 3 1/2" diameter

Maximum working pressure 21750 psi

- ▶ Single acting design with manual piston retraction
- ▶ Manufactured from high grade alloy steel with added corrosion protection
- ▶ Extra-long piston stroke on all models, to save valuable diver time subsea
- ▶ Simple two piece design for easy operation by divers subsea
- ▶ Visible maximum stroke indicator to warn operator against piston over extension
- ▶ Safety over stroke device to protect operator from injury
- ▶ Self-energizing seals for improved performance and longevity of use at high pressure
- ▶ Dual quick connect inlet and outlet couplings for easy multiple tensioner connection
- ▶ Designed to fit most sizes of ANSI and API flanges and some Compact flanges
- ▶ Interchangeable quick fit pullers, to cover secondary bolt size, for each STU model, are available as accessories for even greater versatility (see table below)



| Model number | Quick Fit Pullers | Bolt thread size | Capacity | | Effective area (in ²) | Stroke (in) | Weight (lbs) | Tommy bar | Dimensions (in) | | | | | |
|--------------|-------------------|------------------|----------|------|-----------------------------------|-------------|--------------|-----------|-----------------|------|------|------|-------|------|
| | | | tons | kN | | | | | A | B | C | D | E | F |
| STU1-100 | QFP1-100 | 1"-8 UN | 28.8 | 256 | 2.65 | 0.79 | 7.5 | TTB06 | 3.23 | 0.87 | 4.69 | 4.69 | 5.52 | 2.4 |
| STU1-112 | QFP1-112 | 1 1/8"-8 UN | 28.8 | 256 | 2.65 | 0.79 | 7.5 | TTB06 | 3.23 | 0.87 | 4.69 | 4.69 | 5.52 | 2.52 |
| STU2-125 | QFP2-125 | 1 1/4"-8 UN | 48.4 | 430 | 4.45 | 1.18 | 13.2 | TTB08 | 4.02 | 1.18 | 5.52 | 5.52 | 6.46 | 2.88 |
| STU2-137 | QFP2-137 | 1 3/8"-8 UN | 48.4 | 430 | 4.45 | 1.18 | 13.2 | TTB08 | 4.02 | 1.18 | 5.52 | 5.52 | 6.46 | 2.96 |
| STU3-150 | QFP3-150 | 1 1/2"-8 UN | 62.2 | 553 | 5.72 | 1.18 | 16.5 | TTB10 | 4.49 | 1.38 | 5.59 | 5.59 | 6.66 | 3.23 |
| STU3-162 | QFP3-162 | 1 5/8"-8 UN | 62.2 | 553 | 5.72 | 1.18 | 16.5 | TTB10 | 4.49 | 1.38 | 5.59 | 5.59 | 6.66 | 3.35 |
| STU4-175 | QFP4-175 | 1 3/4"-8 UN | 85 | 756 | 7.82 | 1.18 | 21.6 | TTB10 | 5.04 | 1.62 | 5.95 | 5.95 | 7.13 | 3.7 |
| STU4-187 | QFP4-187 | 1 7/8"-8 UN | 85 | 756 | 7.82 | 1.18 | 21.6 | TTB10 | 5.04 | 1.62 | 5.95 | 5.95 | 7.13 | 3.86 |
| STU5-200 | QFP5-200 | 2"-8 UN | 131.3 | 1168 | 12.07 | 1.18 | 32.0 | TTB12 | 5.91 | 1.89 | 6.46 | 6.46 | 7.96 | 4.41 |
| STU5-225 | QFP5-225 | 2 1/4"-8 UN | 131.3 | 1168 | 12.07 | 1.18 | 32.0 | TTB12 | 5.91 | 1.89 | 6.46 | 6.46 | 7.96 | 4.57 |
| STU6-250 | QFP6-250 | 2 1/2"-8 UN | 185.3 | 1649 | 17.04 | 1.18 | 50.3 | TTB14 | 6.93 | 2.36 | 7.21 | 7.21 | 9.1 | 5.36 |
| STU6-275 | QFP6-275 | 2 3/4"-8 UN | 185.3 | 1649 | 17.04 | 1.18 | 50.3 | TTB14 | 6.93 | 2.36 | 7.21 | 7.21 | 9.1 | 5.56 |
| STU7-300 | QFP7-300 | 3"-8 UN | 279 | 2483 | 25.66 | 1.18 | 78.5 | TTB16 | 8.47 | 3.51 | 8.47 | 8.47 | 10.24 | 6.38 |
| STU7-325 | QFP7-325 | 3 1/4"-8 UN | 279 | 2483 | 25.66 | 1.18 | 78.5 | TTB16 | 8.47 | 3.51 | 8.47 | 8.47 | 10.24 | 6.82 |
| STU7-350 | QFP7-350 | 3 1/2"-8 UN | 279 | 2483 | 25.66 | 1.18 | 78.5 | TTB16 | 8.47 | 3.51 | 8.47 | 8.47 | 10.24 | 6.9 |

Note: Tommy bars are not included. Hi-Force recommends one tommy bar for every four tensioners. Please note that the tommy bar listed will fit related quick fit puller; a different size may be required for the drilled hexagon nut.

STU | SUB-SEA BOLT TENSIONERS - METRIC

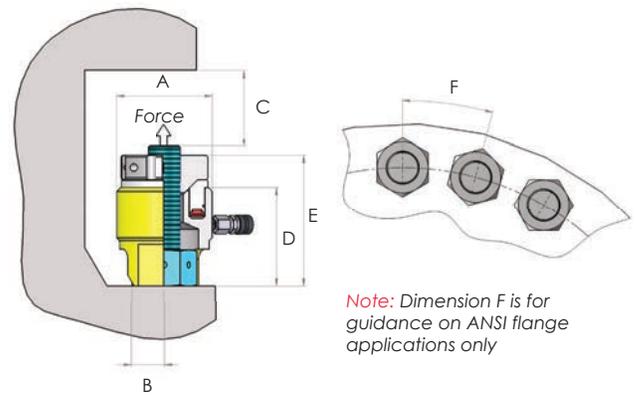


Capacities from 29 to 279 tons

Bolt sizes from M24 to M90 diameter

Maximum working pressure 21750 psi

- ▶ Single acting design with manual piston retraction
- ▶ Manufactured from high grade alloy steel with added corrosion protection
- ▶ Extra-long piston stroke on all models, to save valuable diver time subsea
- ▶ Simple two piece design for easy operation by divers subsea
- ▶ Visible maximum stroke indicator to warn operator against piston over extension
- ▶ Safety over stroke device to protect operator from injury
- ▶ Self-energizing seals for improved performance and longevity of use at high pressure
- ▶ Dual quick connect inlet and outlet couplings for easy multiple tensioner connection
- ▶ Designed to fit most sizes of ANSI and API flanges and some Compact flanges
- ▶ Interchangeable quick fit pullers, to cover multiple bolt sizes, for each STU model, are available as accessories for even greater versatility (see table below)



| Model number | Quick Fit Pullers | Bolt thread size | Capacity tons | Capacity kN | Effective area (in ²) | Stroke (in) | Weight (lbs) | Tommy bar | Dimensions (in) | | | | | |
|--------------|-------------------|------------------|---------------|-------------|-----------------------------------|-------------|--------------|-----------|-----------------|------|------|------|-------|------|
| | | | | | | | | | A | B | C | D | E | F |
| STU1-24 | QFP1-24 | M24x3 | 28.8 | 256 | 2.65 | 0.79 | 7.5 | TTB06 | 3.23 | 0.87 | 4.69 | 4.69 | 5.52 | 2.4 |
| STU1-27 | QFP1-27 | M27x3 | 28.8 | 256 | 4.45 | 1.18 | 13.2 | TTB06 | 3.23 | 0.87 | 4.69 | 4.69 | 5.52 | 2.52 |
| STU2-30 | QFP2-30 | M30x3.5 | 48.4 | 430 | 4.45 | 1.18 | 13.2 | TTB08 | 4.02 | 1.18 | 5.52 | 5.52 | 6.46 | 2.88 |
| STU2-33 | QFP2-33 | M33x3.5 | 48.4 | 430 | 4.45 | 1.18 | 13.2 | TTB08 | 4.02 | 1.18 | 5.52 | 5.52 | 6.46 | 2.96 |
| STU2-36 | QFP2-36 | M36x4 | 48.4 | 430 | 5.72 | 1.18 | 16.5 | TTB10 | 4.02 | 1.18 | 5.52 | 5.52 | 6.46 | 3.07 |
| STU3-39 | QFP3-39 | M39x4 | 62.2 | 553 | 5.72 | 1.18 | 16.5 | TTB10 | 4.49 | 1.38 | 5.59 | 5.59 | 6.66 | 3.23 |
| STU3-42 | QFP3-42 | M42x4.5 | 62.2 | 553 | 7.82 | 1.18 | 21.6 | TTB10 | 4.49 | 1.38 | 5.59 | 5.59 | 6.66 | 3.35 |
| STU4-45 | QFP4-45 | M45x4.5 | 85 | 756 | 7.82 | 1.18 | 21.6 | TTB10 | 5.04 | 1.62 | 5.95 | 5.95 | 7.13 | 3.7 |
| STU4-48 | QFP4-48 | M48x5 | 85 | 756 | 12.07 | 1.18 | 32.0 | TTB12 | 5.04 | 1.62 | 5.95 | 5.95 | 7.13 | 3.86 |
| STU5-52 | QFP5-52 | M52x5 | 131.3 | 1168 | 12.07 | 1.18 | 32.0 | TTB12 | 5.91 | 1.89 | 6.46 | 6.46 | 7.96 | 4.41 |
| STU5-56 | QFP5-56 | M56x5.5 | 131.3 | 1168 | 17.04 | 1.18 | 50.3 | TTB14 | 5.91 | 1.89 | 6.46 | 6.46 | 7.96 | 4.57 |
| STU6-60 | QFP6-60 | M60x5.5 | 185.3 | 1649 | 17.04 | 1.18 | 50.3 | TTB14 | 6.93 | 2.36 | 7.21 | 7.21 | 9.1 | 5.36 |
| STU6-64 | QFP6-64 | M64x6 | 185.3 | 1649 | 17.04 | 1.18 | 50.3 | TTB16 | 6.93 | 2.36 | 7.21 | 7.21 | 9.1 | 5.36 |
| STU6-68 | QFP6-68 | M68x6 | 185.3 | 1649 | 17.04 | 1.18 | 50.3 | TTB16 | 6.93 | 2.36 | 7.21 | 7.21 | 9.1 | 5.36 |
| STU6-72 | QFP6-72 | M72x6 | 185.3 | 1649 | 25.66 | 1.18 | 78.5 | TTB16 | 6.93 | 2.36 | 7.21 | 7.21 | 9.1 | 5.56 |
| STU7-76 | QFP7-76 | M76x6 | 279 | 2483 | 25.66 | 1.18 | 78.5 | TTB16 | 8.47 | 3.51 | 8.47 | 8.47 | 10.24 | 6.46 |
| STU7-80 | QFP7-80 | M80x6 | 279 | 2483 | 25.66 | 1.18 | 78.5 | TTB16 | 8.47 | 3.51 | 8.47 | 8.47 | 10.24 | 6.46 |
| STU7-85 | QFP7-85 | M85x6 | 279 | 2483 | 25.66 | 1.18 | 78.5 | TTB16 | 8.47 | 3.51 | 8.47 | 8.47 | 10.24 | 6.9 |
| STU7-90 | QFP7-90 | M90x6 | 279 | 2483 | 165.56 | 30 | 35.6 | TTB16 | 8.47 | 3.51 | 8.47 | 8.47 | 10.24 | 6.9 |

Note: Tommy bars are not included. Hi-Force recommends one tommy bar for every four tensioners. Please note that the tommy bar listed will fit related quick fit puller; a different size may be required for the drilled hexagon nut.

HTN | HYDRAULIC TENSIONER NUTS - IMPERIAL

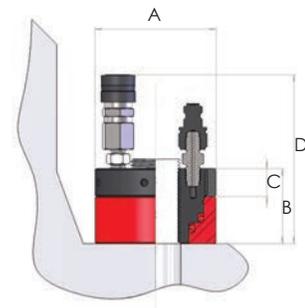


Capacities from 22 to 215 tons

Bolt sizes from 1" to 4" diameter

Maximum working pressure 21750 psi

- ▶ Single acting design with integral load holding lock nut
- ▶ Designed to permanently replace regular nuts on one side of the joint
- ▶ Ideally suited for bolted joints that need opening and closing, during maintenance, on a regular basis
- ▶ High grade alloy steel construction with nitrocarburized corrosion resistant piston
- ▶ Self-energizing seals for improved performance at high temperatures and pressures
- ▶ Dual quick connect inlet and outlet couplings for easy multiple tensioner nut connection
- ▶ Visible maximum stroke indicator to warn operator of potential over extension



| Model number | Bolt size | Capacity | | Effective area (in ²) | Stroke (in) | Weight (lbs) | Tommy bar | Dimensions (in) | | | |
|--------------|-------------|----------|------|-----------------------------------|-------------|--------------|-----------|-----------------|------|------|------|
| | | tons | kN | | | | | A | B | C | D |
| HTN1-100 | 1"-8 UN | 22.3 | 198 | 2.05 | 0.2 | 4.2 | TTB06 | 2.84 | 2.17 | 0.71 | 5.2 |
| HTN2-112 | 1 1/8"-8 UN | 24.3 | 216 | 2.24 | 0.2 | 4.4 | TTB06 | 2.96 | 2.17 | 0.71 | 5.2 |
| HTN3-125 | 1 1/4"-8 UN | 28.4 | 253 | 2.61 | 0.2 | 5.3 | TTB06 | 3.23 | 2.25 | 0.83 | 5.28 |
| HTN4-137 | 1 3/8"-8 UN | 34.4 | 306 | 3.16 | 0.2 | 6.0 | TTB06 | 3.47 | 2.25 | 0.87 | 5.32 |
| HTN5-150 | 1 1/2"-8 UN | 38.7 | 344 | 3.56 | 0.24 | 6.4 | TTB06 | 3.66 | 2.29 | 0.83 | 5.32 |
| HTN6-162 | 1 5/8"-8 UN | 44.7 | 398 | 4.11 | 0.24 | 7.7 | TTB06 | 3.94 | 2.44 | 0.91 | 5.59 |
| HTN7-175 | 1 3/4"-8 UN | 53.4 | 475 | 4.91 | 0.24 | 8.8 | TTB06 | 4.18 | 2.52 | 0.95 | 5.56 |
| HTN8-187 | 1 7/8"-8 UN | 56.3 | 501 | 5.18 | 0.24 | 9.3 | TTB06 | 4.33 | 2.52 | 0.99 | 5.59 |
| HTN9-200 | 2"-8 UN | 63.3 | 564 | 5.82 | 0.24 | 10.8 | TTB06 | 4.61 | 2.64 | 1.26 | 5.71 |
| HTN10-225 | 2 1/4"-8 UN | 83.9 | 746 | 7.71 | 0.32 | 14.1 | TTB06 | 5.04 | 2.92 | 1.1 | 5.99 |
| HTN11-250 | 2 1/2"-8 UN | 101.7 | 905 | 9.35 | 0.32 | 17.6 | TTB06 | 5.56 | 3.03 | 1.14 | 6.11 |
| HTN12-275 | 2 3/4"-8 UN | 112.3 | 1000 | 10.33 | 0.32 | 19.4 | TTB08 | 5.91 | 3.07 | 1.18 | 6.15 |
| HTN13-300 | 3"-8 UN | 135.2 | 1203 | 12.44 | 0.32 | 23.4 | TTB08 | 6.38 | 3.19 | 1.22 | 6.26 |
| HTN14-325 | 3 1/4"-8 UN | 158.9 | 1414 | 14.61 | 0.39 | 28.4 | TTB08 | 6.86 | 3.43 | 1.38 | 6.5 |
| HTN15-350 | 3 1/2"-8 UN | 180.3 | 1605 | 16.59 | 0.39 | 35.7 | TTB10 | 7.37 | 3.74 | 1.46 | 6.82 |
| HTN16-375 | 3 3/4"-8 UN | 191.5 | 1705 | 17.61 | 0.39 | 40.3 | TTB10 | 7.64 | 4.02 | 1.54 | 7.05 |
| HTN17-400 | 4"-8 UN | 214.8 | 1911 | 19.75 | 0.39 | 48.3 | TTB10 | 8.08 | 4.33 | 1.62 | 7.41 |

Note: Tommy bars are not included. Hi-Force recommends one tommy bar for every four tensioner nuts.

HTN | HYDRAULIC TENSIONER NUTS - METRIC

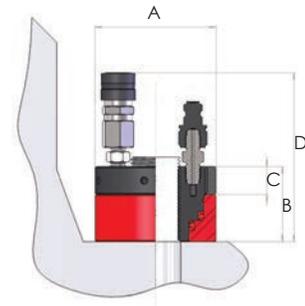


Capacities from 22 to 215 tons

Bolt sizes from M24 to M100 diameter

Maximum working pressure 21750 psi

- ▶ Single acting design with integral load holding lock nut
- ▶ Designed to permanently replace regular nuts on one side of the joint
- ▶ Ideally suited for bolted joints that need opening and closing, during maintenance, on a regular basis
- ▶ High grade alloy steel construction with nitrocarburized corrosion resistant piston
- ▶ Self-energizing seals for improved performance at high temperatures and pressures
- ▶ Dual quick connect inlet and outlet couplings for easy multiple tensioner nut connection
- ▶ Visible maximum stroke indicator to warn operator of potential over extension



| Model number | Bolt size | Capacity | | Effective area (in ²) | Stroke (in) | Weight (lbs) | Tommy bar | Dimensions (in) | | | |
|--------------|-----------|----------|------|-----------------------------------|-------------|--------------|-----------|-----------------|------|------|------|
| | | tons | kN | | | | | A | B | C | D |
| HTN1-M24 | M24x3 | 22.3 | 198 | 2.05 | 0.2 | 4.2 | TTB06 | 2.84 | 2.17 | 0.71 | 5.2 |
| HTN2-M27 | M27x3 | 24.3 | 216 | 2.24 | 0.2 | 4.4 | TTB06 | 2.96 | 2.17 | 0.71 | 5.2 |
| HTN3-M30 | M30x3.5 | 28.4 | 253 | 2.61 | 0.2 | 5.3 | TTB06 | 3.23 | 2.25 | 0.83 | 5.28 |
| HTN3-M33 | M33x3.5 | 28.4 | 253 | 2.61 | 0.2 | 5.3 | TTB06 | 3.23 | 2.25 | 0.83 | 5.28 |
| HTN4-M36 | M36x4 | 34.4 | 306 | 3.16 | 0.2 | 6.0 | TTB06 | 3.47 | 2.25 | 0.87 | 5.32 |
| HTN5-M39 | M39x4 | 38.7 | 344 | 3.56 | 0.24 | 6.4 | TTB06 | 3.66 | 2.29 | 0.83 | 5.32 |
| HTN6-M42 | M42x4.5 | 44.7 | 398 | 4.11 | 0.24 | 7.7 | TTB06 | 3.94 | 2.44 | 0.91 | 5.59 |
| HTN7-M45 | M45x4.5 | 53.4 | 475 | 4.91 | 0.24 | 8.8 | TTB06 | 4.18 | 2.52 | 0.95 | 5.56 |
| HTN8-M48 | M48x5 | 56.3 | 501 | 5.18 | 0.24 | 9.3 | TTB06 | 4.33 | 2.52 | 0.99 | 5.59 |
| HTN9-M52 | M52x5 | 63.3 | 564 | 5.82 | 0.24 | 10.8 | TTB06 | 4.61 | 2.64 | 1.26 | 5.71 |
| HTN10-M56 | M56x5.5 | 83.9 | 746 | 7.71 | 0.32 | 14.1 | TTB06 | 5.04 | 2.92 | 1.1 | 5.99 |
| HTN11-M60 | M60x5.5 | 101.7 | 905 | 9.35 | 0.32 | 17.6 | TTB06 | 5.56 | 3.03 | 1.14 | 6.11 |
| HTN11-M64 | M64x6 | 101.7 | 905 | 9.35 | 0.32 | 17.6 | TTB06 | 5.56 | 3.03 | 1.14 | 6.11 |
| HTN12-M68 | M68x6 | 112.3 | 1000 | 10.33 | 0.32 | 19.4 | TTB08 | 5.91 | 3.07 | 1.18 | 6.15 |
| HTN13-M72 | M72x6 | 135.2 | 1203 | 12.44 | 0.32 | 23.4 | TTB08 | 6.38 | 3.19 | 1.22 | 6.26 |
| HTN13-M76 | M76x6 | 135.2 | 1203 | 12.44 | 0.32 | 23.4 | TTB08 | 6.38 | 3.19 | 1.22 | 6.26 |
| HTN14-M80 | M80x6 | 158.9 | 1414 | 14.61 | 0.39 | 28.4 | TTB08 | 6.86 | 3.43 | 1.38 | 6.5 |
| HTN15-M85 | M85x6 | 180.3 | 1605 | 16.59 | 0.39 | 35.7 | TTB10 | 7.37 | 3.74 | 1.46 | 6.82 |
| HTN15-M90 | M90x6 | 180.3 | 1605 | 16.59 | 0.39 | 35.7 | TTB10 | 7.37 | 3.74 | 1.46 | 6.82 |
| HTN16-M95 | M95x6 | 191.5 | 1705 | 17.61 | 0.39 | 40.3 | TTB10 | 7.64 | 4.02 | 1.54 | 7.05 |
| HTN17-M100 | M100x6 | 214.8 | 1911 | 19.75 | 0.39 | 48.3 | TTB10 | 8.08 | 4.33 | 1.62 | 7.41 |

Note: Tommy bars are not included. Hi-Force recommends one tommy bar for every four tensioner nuts.

STS | CUSTOMIZED & SPECIAL DESIGN BOLT TENSIONERS



Custom design and built to customer requirements

Short delivery lead time due to in-house manufacture

Working pressure up to 33000 psi

Hi-Force offers customized and special design hydraulic bolt tensioners that can include:

- ▶ Fitment on non-standard size and shape nuts requiring special design bridge
- ▶ Applications where retaining nuts are recessed requiring special nut rotating sockets
- ▶ Stud bolts with two different thread diameters and specifications
- ▶ Larger diameter bolts above the 4" (M100) size covered in the standard range
- ▶ Applications with restricted amount of space available
- ▶ Special bridges requiring increased load bearing surface area



BOLT TENSIONER PUMPS



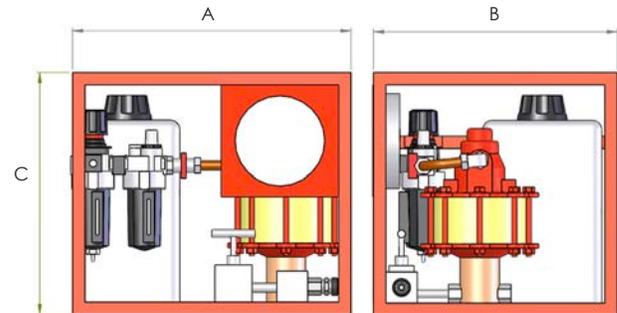
Operates from standard 7 bar air supply

Air consumption up to 1.59 m³/minute (56 scfm)

Working pressure 21750 psi

AHP-BTU

- ▶ Air driven hydraulic bolt tensioner pump operates from standard 100 psi air supply
- ▶ Lightweight stainless steel protective frame for easy storage and transportation
- ▶ Infinitely variable output pressure and flow rate
- ▶ Fitted with glycerin filled vibra-gauge and quick connect high pressure outlet coupling
- ▶ Airline filter regulator lubricator unit fitted as standard



| Model number | Usable oil capacity (gallons) | Oil flow per stroke (In ³) | Outlet coupler | Air consumption | Weight (lbs) | Dimensions (in) | | |
|--------------|-------------------------------|----------------------------------------|----------------|------------------------------------|--------------|-----------------|-------|-------|
| | | | | | | A | B | C |
| AHP275BTU | 1.98 | 0.1 | STFC4 | 28 scfm (0.79 m ³ /min) | 44.1 | 17.73 | 15.56 | 15.56 |
| AHP2-237BTU | 1.98 | 0.37 | STFC4 | 56 scfm (1.59 m ³ /min) | 52.9 | 17.73 | 15.37 | 18.32 |

BOLT TENSIONER PUMPS



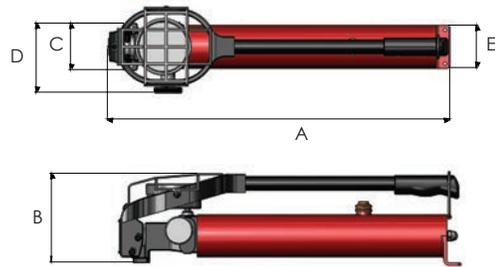
Compact, lightweight aluminum construction

Complete with pressure gauge

Working pressure 21750 psi

HPX-BTU

- ▶ Manually operated high pressure bolt tensioning pump
- ▶ Usable oil capacity 73.23 inch³
- ▶ Fitted with external pressure release valve and factory set safety valve
- ▶ Bespoke handle with ergonomic grip and mesh guard to protect gauge from accidental damage



| Model number | Usable oil capacity (in ³) | Displacement per stroke (in ³) | | Outlet coupler | Weight (lbs) | Dimensions (in) | | | | |
|--------------|----------------------------------------|--------------------------------------------|-----------------------|----------------|--------------|-----------------|------|------|------|------|
| | | 1 st stage | 2 nd stage | | | A | B | C | D | E |
| HPX1500BTU | 73.23 | 1.22 | 0.06 | STFC4 | 14.3 | 24.23 | 6.34 | 3.31 | 4.93 | 3.01 |

BOLT TENSIONER ACCESSORIES | HOSES, COUPLERS & HOSE REEL



Hose lengths up to 984 feet

Supplied with quick connect couplings

Design pressure 21750 psi with 3:1 safety factor

XHR1 Hose Reel

- ▶ Designed for sub-sea main line hose connection between the pump and the first tensioner
- ▶ Accommodates up to 984 ft of XHC bolt tensioner hydraulic hose
- ▶ Complete with quick connect couplings, integrated brake and a spring loaded locking bolt



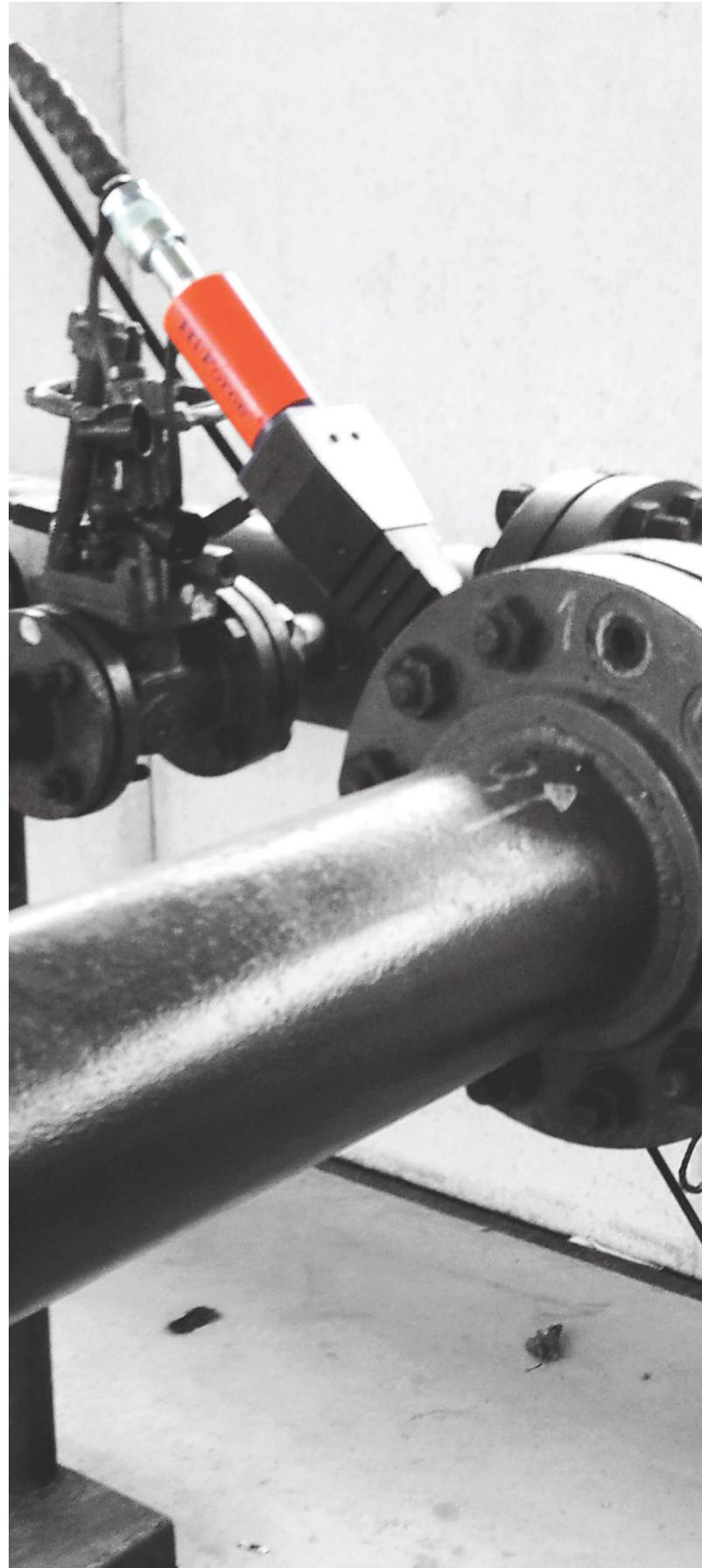
Dimensions
Length 31.5" x Width 23.6" x Height 34.2"

| Model number | Description | Weight (lbs) |
|--------------|-----------------------------------------------------------------------|--------------|
| XHC1.5B | Link hose complete with quick connect couplings, length 5 ft | 2.2 |
| XHC3B | Link hose complete with quick connect couplings, length 10 ft | 3.7 |
| XHC5B | Mainline hose complete with quick connect couplings, length 16.5 ft | 5.7 |
| XHC10B | Mainline hose complete with quick connect couplings, length 33 ft | 9.9 |
| XHC25B | Mainline hose complete with quick connect couplings, length 82 ft | 18.7 |
| XHC50B | Mainline hose complete with quick connect couplings, length 164 ft | 37.3 |
| XHC100B | Mainline hose complete with quick connect couplings, length 330 ft | 74.1 |
| XHC150B | Mainline hose complete with quick connect couplings, length 492 ft | 111.6 |
| XHC200B | Mainline hose complete with quick connect couplings, length 656 ft | 147.7 |
| XHC250B | Mainline hose complete with quick connect couplings, length 820 ft | 184.5 |
| XHC300B | Mainline hose complete with quick connect couplings, length 984 ft | 221.3 |
| XHR1 | Hose reel, suitable for up to 984 feet of XHC high pressure hose | 61.7 |
| STFC4 | Female coupling | 0.9 |
| STMC4 | Male coupling | 0.4 |
| STN1P2 | 1/8" x 1/4" BSP nipple for current model STS1 only | 0.9 |
| STN1P4 | 1/4" BSP nipple c/w bonded sealing washer (old design - not for STS1) | 1.1 |
| STN1P4-C | 1/4" BSP nipple with cone seat seal (current design - not for STS1) | 1.5 |

HI-FORCE NUT SPLITTERS AND SPREADERS

The Hi-Force range of hydraulic nut splitters provides the perfect answer for removal of worn, damaged or corroded fasteners. Manufactured from high quality steel, the range includes single acting and double acting versions, designed for splitting hexagon nuts from $1\frac{1}{4}$ " to $5\frac{3}{8}$ " AF sizes.

The flange spreader range offers mechanical and hydraulic spreader options and provides the ideal solution for opening flanges safely in the marine and oil & gas industries. The hydraulic flange spreaders are available as a single unit complete with pump and accessories or as a twin spreader arrangement which enables the operator to achieve parallel flange separation all around the joint.





NUT SPLITTERS AND SPREADERS

NS RANGE 122

Single acting nut splitters

HMNS RANGE 123

Self-contained nut splitters

DNS RANGE 124

Double acting nut splitters

HFS-H RANGE 125

Hydraulic flange spreaders

HFS & HFS-TK RANGE 126

Hydraulic flange spreader kits

MFS RANGE 127

Mechanical flange spreaders

JS RANGE 128

Jaw spreader

SJS & SJS-TK RANGE 129

Stepped jaw spreaders and jaw spreader kits

NS | SINGLE ACTING NUT SPLITTERS

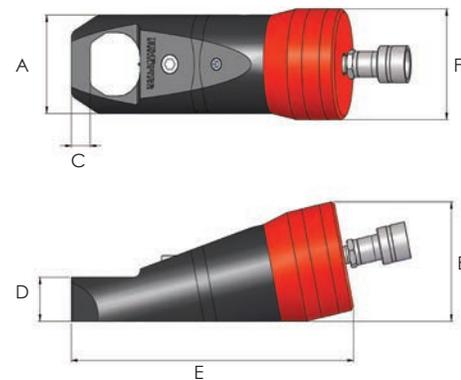


Nut AF sizes from 1 1/16" to 2 15/16"

Bolt sizes from 1/2" to 1 7/8"

Working pressure 10000 psi

- ▶ Single acting, spring assisted return
- ▶ Angled body design for increased clearance on flanges and flat surfaces
- ▶ High quality steel construction
- ▶ Suitable for splitting nuts up to RC44 hardness
- ▶ Designed to fit on most API and ANSI flanges
- ▶ Offers ideal 'cold cut' solution for applications where 'hot work' permits are not allowed
- ▶ Steel linkage keeps blade cutting edge parallel to the nut throughout the splitting process
- ▶ Compact and easy to use
- ▶ Optional 360° positional swivel coupling for fitment in confined spaces, available for use with NS104 and NS110 models only



| Model number | Capacity (tons) | Oil capacity (in ³) | Hexagon AF sizes inch | Hexagon AF sizes mm | Stud bolt thread sizes | | Weight (lbs) | Dimensions (in) | | | | | |
|--------------|-----------------|---------------------------------|-----------------------|---------------------|------------------------|-----------|--------------|-----------------|------|------|------|-------|------|
| | | | | | imperial | metric | | A | B | C | D | E | F |
| NS104 | 18 | 2.81 | 1 1/16" - 1 1/4" | 17 - 32 | 1/2" - 3/4" | M10 - M22 | 8.8 | 2.52 | 3.03 | 0.49 | 1.18 | 8.27 | 2.64 |
| NS110 | 27.4 | 3.78 | 1 1/4" - 1 5/8" | 32 - 41 | 3/4" - 1" | M22 - M27 | 16.3 | 3.07 | 3.78 | 0.79 | 1.46 | 11.27 | 2.68 |
| NS200 | 45.4 | 7.44 | 1 5/8" - 2" | 41 - 50 | 1" - 1 1/4" | M27 - M33 | 23.4 | 3.78 | 4.57 | 0.83 | 1.69 | 12.41 | 4.26 |
| NS206 | 63.7 | 11.9 | 2" - 2 3/8" | 50 - 60 | 1 1/4" - 1 1/2" | M33 - M39 | 34.8 | 4.53 | 5.44 | 0.95 | 2.05 | 13.24 | 4.96 |
| NS215 | 99.6 | 24.77 | 2 3/8" - 2 15/16" | 60 - 75 | 1 1/2" - 1 7/8" | M39 - M48 | 86.6 | 6.15 | 6.9 | 1.06 | 2.96 | 16.78 | 6.38 |

Note: NS nut splitters are for use on heavy duty nuts, where the nut height is equal to or greater than two-thirds of the blade length of the tool being used. Please check dimension 'C' to confirm the tool will fit in the space between the edge of the nut and the neck of the flange.

Replacement blades for NS nut splitters

| Blade part number | For nut splitter |
|-------------------|------------------|
| NS104-B | NS104 |
| NS110-B | NS110 |
| NS200-B | NS200 |
| NS206-B | NS206 |
| NS215-B | NS215 |

HMNS | SELF-CONTAINED NUT SPLITTERS

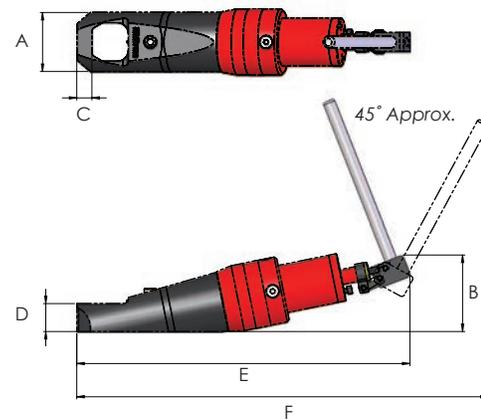


Nut AF sizes from 1 1/16" to 2"

Bolt sizes from 1/2" to 1 1/4"

Working pressure 10000 psi

- ▶ Single acting, spring assisted return
- ▶ Incorporates an integral hydraulic pump with multi-positional lever
- ▶ Angled body design for increased clearance on flanges and flat surfaces
- ▶ High quality steel construction
- ▶ Suitable for splitting nuts up to RC44 hardness
- ▶ Designed to fit on most API and ANSI flanges
- ▶ Offers ideal 'cold cut' solution for applications where 'hot work' permits are not allowed
- ▶ Steel linkage keeps blade cutting edge parallel to the nut throughout the splitting process
- ▶ Compact and easy to use



| Model number | Capacity (tons) | Hexagon AF sizes | | Stud bolt thread sizes | | Weight (lbs) | Dimensions (in) | | | | | |
|--------------|-----------------|------------------|---------|------------------------|-----------|--------------|-----------------|------|------|------|-------|-------|
| | | inch | mm | imperial | metric | | A | B | C | D | E | F |
| HMNS104 | 18 | 1 1/16" - 1 1/4" | 17 - 32 | 1/2" - 3/4" | M10 - M22 | 12.8 | 2.52 | 3.47 | 0.49 | 1.18 | 14.97 | 17.93 |
| HMNS110 | 27.4 | 1 1/4" - 1 5/8" | 32 - 41 | 3/4" - 1" | M22 - M27 | 17.4 | 3.07 | 3.98 | 0.79 | 1.46 | 17.34 | 21.28 |
| HMNS200 | 45.4 | 1 5/8" - 2" | 41 - 50 | 1" - 1 1/4" | M27 - M33 | 30.0 | 3.7 | 4.41 | 0.83 | 1.69 | 18.56 | 22.3 |

Note: HMNS nut splitters are for use on heavy duty nuts, where the nut height is equal to or greater than two-thirds of the blade length of the tool being used. Please check dimension 'C' to confirm the tool will fit in the space between the edge of the nut and the neck of the flange.

Replacement blades for HMNS nut splitters

| Blade part number | For nut splitter |
|-------------------|------------------|
| NS104-B | HMNS104 |
| NS110-B | HMNS110 |
| NS200-B | HMNS200 |

DNS | DOUBLE ACTING NUT SPLITTERS

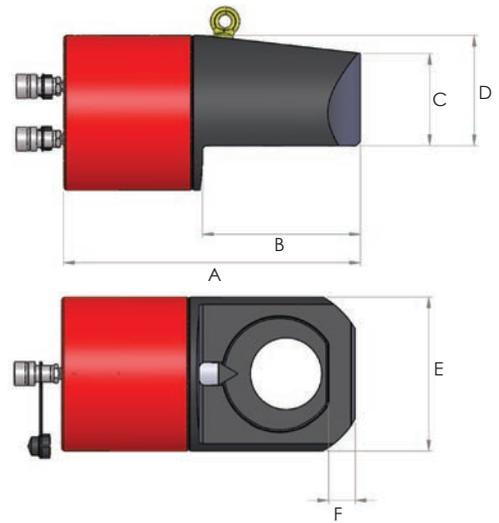


- ▶ Double acting hydraulic piston for easy extension and retraction of the blade
- ▶ Angled body design for increased clearance on flanges and flat surfaces
- ▶ High quality steel construction
- ▶ Suitable for splitting nuts up to RC44 hardness
- ▶ Designed to fit on most API and ANSI flanges
- ▶ Steel linkage keeps blade cutting edge parallel to the nut throughout the splitting process

Nut AF sizes from 2 15/16" to 5 3/8"

Bolt sizes from 1 7/8" to 3 1/2"

Working pressure 10000 psi



| Model number | Capacity (tons) | Oil capacity (in ³) | Hexagon AF sizes | | Stud bolt thread sizes | | Weight (lbs) | Dimensions (in) | | | | | |
|--------------|-----------------|---------------------------------|-------------------|-----------|------------------------|-----------|--------------|-----------------|------|------|------|------|------|
| | | | inch | mm | imperial | metric | | A | B | C | D | E | F |
| DNS404 | 131.8 | 48.56 | 2 15/16" - 4 1/4" | 75 - 105 | 1 7/8" - 2 3/4" | M48 - M72 | 110.2 | 14.95 | 7.56 | 3.92 | 5.14 | 7.21 | 1.34 |
| DNS506 | 224.2 | 92.11 | 4 1/4" - 5 3/8" | 105 - 136 | 2 3/4" - 3 1/2" | M72 - M95 | 211.6 | 17.77 | 9.46 | 5.52 | 6.6 | 9.26 | 1.62 |

Note: DNS nut splitters are for use on heavy duty nuts, where the nut height is equal to or greater than two-thirds of the blade length of the tool being used. Please check dimension 'F' to confirm the tool will fit in the space between the edge of the nut and the neck of the flange.

Replacement blades for DNS nut splitters

| Blade part number | For nut splitter |
|-------------------|------------------|
| DNS404-B | DNS404 |
| DNS506-B | DNS506 |

HFS-H | HYDRAULIC FLANGE SPREADERS

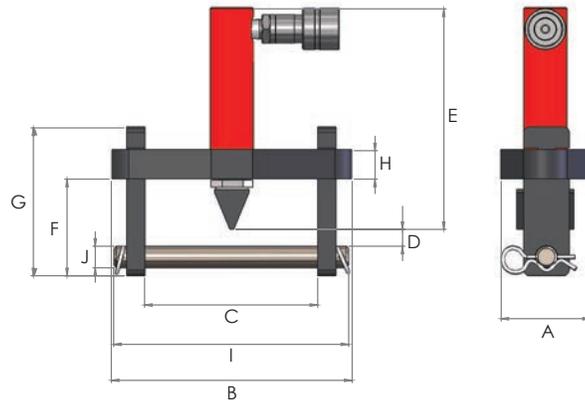


Capacities from 5 to 11 tons

Quick and easy to assemble on flange

Working pressure 10000 psi

- ▶ Single acting, spring assisted return cylinder for fast and safe operation
- ▶ Capable of opening flanges up to 2 x 2 1/4" thick
- ▶ Suitable for fitment on flanges with maximum bolt size of 1 5/8" (41 mm)
- ▶ Spreading range from 2.4 to 8.83 inches
- ▶ Lightweight ergonomic design for ease of use



| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Maximum flange thickness (in) | Stud size (in) | Standard wedge (in) | Weight (lbs) |
|--------------|-----------------|-------------|---------------------------------|-------------------------------|-----------------|---------------------|--------------|
| HFS50H | 5 | 2.96 | 2.93 | 2 x 2 1/4" | 3/4" - 1 1/8" | 1/8" - 1 1/8" | 11.0 |
| HFS100H | 11 | 2.21 | 4.94 | 2 x 3 5/8" | 1 1/4" - 1 5/8" | 1/8" - 1 1/8" | 25.6 |

| Model number | Dimensions (in) | | | | | | | | | | |
|--------------|-----------------|-------|---------|---------|------|------|------|------|------|-------|------|
| | A | B | C (min) | C (max) | D | E | F | G | H | I | J |
| HFS50H | 2.99 | 8.27 | 2.4 | 6.11 | 0.39 | 7.56 | 2.72 | 5.08 | 0.99 | 8.12 | 0.71 |
| HFS100H | 4.26 | 11.43 | 2.4 | 8.83 | 1.18 | 6.5 | 3.51 | 7.01 | 1.5 | 10.76 | 1.22 |

HFS & HFS-TK | HYDRAULIC FLANGE SPREADER KITS

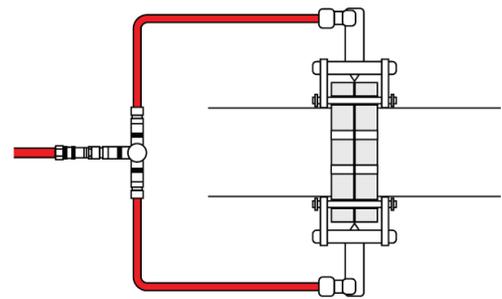
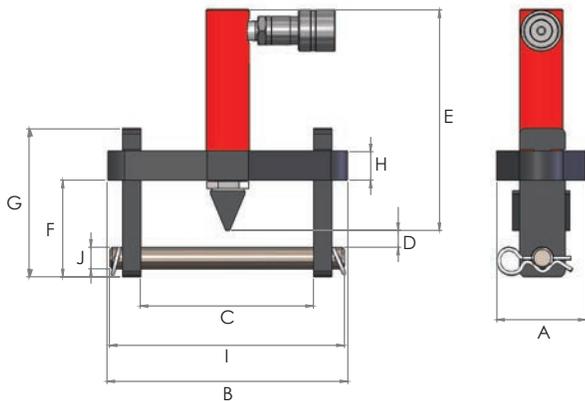


Capacities from 5 to 11 tons per spreader

Complete with manual hydraulic pump

Working pressure 10000 psi

- ▶ Single acting, spring assisted return for fast and safe operation
- ▶ Capable of opening flanges up to 2 x 3 5/8" thick
- ▶ Suitable for fitment on flanges with maximum bolt size of 1 5/8" (41 mm)
- ▶ Spreading range from 2.4 to 8.83 inches
- ▶ Lightweight ergonomic design for ease of use
- ▶ Available as single spreader or twin spreader arrangement
- ▶ Supplied complete with manually operated pump and hose assembly



Twin kit offers parallel flange separation on larger size flanges

| Model number | Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Maximum flange thickness (in) | Stud size (in) | Standard wedge (in) | Weight (lbs) |
|--------------|-----------------|-------------|---------------------------------|-------------------------------|-----------------|---------------------|--------------|
| HFS50 | 5 | 2.96 | 2.93 | 2 x 2 1/4" | 3/4" - 1 1/8" | 1/8" - 1 1/8" | 49.6 |
| HFS100 | 11 | 2.21 | 4.94 | 2 x 3 5/8" | 1 1/4" - 1 5/8" | 1/8" - 1 1/8" | 64.2 |
| HFS50-TK | 2 x 5 | 2.96 | 2 x 2.93 | 2 x 2 1/4" | 3/4" - 1 1/8" | 1/8" - 1 1/8" | 60.6 |
| HFS100-TK | 2 x 11 | 2.21 | 2 x 4.94 | 2 x 3 5/8" | 1 1/4" - 1 5/8" | 1/8" - 1 1/8" | 78.7 |

| Model number | Dimensions (in) | | | | | | | | | | |
|--------------|-----------------|-------|---------|---------|------|------|------|------|------|-------|------|
| | A | B | C (min) | C (max) | D | E | F | G | H | I | J |
| HFS50 | 2.99 | 8.27 | 2.4 | 6.11 | 0.39 | 7.56 | 2.72 | 5.08 | 0.99 | 8.12 | 0.71 |
| HFS100 | 4.26 | 11.43 | 2.4 | 8.83 | 1.18 | 6.5 | 3.51 | 7.01 | 1.5 | 10.76 | 1.22 |
| HFS50-TK | 2.99 | 8.27 | 2.4 | 6.11 | 0.39 | 7.56 | 2.72 | 5.08 | 0.99 | 8.12 | 0.71 |
| HFS100-TK | 4.26 | 11.43 | 2.4 | 8.83 | 1.18 | 6.5 | 3.51 | 7.01 | 1.5 | 10.76 | 1.22 |

MFS | MECHANICAL FLANGE SPREADERS

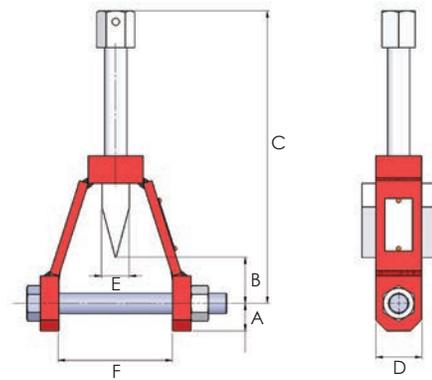


Suitable for bolt diameters up to 1 1/4"

Maximum spread 9.1 inches

No external power source required

- ▶ Manually operated mechanical feed screw design
- ▶ Capable of opening flanges up to 2 x 3 3/4" thickness
- ▶ Economical and safe operation
- ▶ High grade steel construction with high tensile cross bolt
- ▶ Case hardened spreading wedge
- ▶ Compact, portable and easy to use



| Model number | Pin diameter | | Min flange bolt hole diameter | Maximum flange thickness | | Weight (lbs) | Dimensions (in) | | | | | | |
|--------------|--------------|----|-------------------------------|--------------------------|--------|--------------|-----------------|---------|---------|---------|------|------|------|
| | inch | mm | | inch | mm | | A | B (max) | C (min) | C (max) | D | E | F |
| MFS16 | 5/8" | 16 | 1 1/8" | 2 x 7/8" | 2 x 22 | 4.9 | 0.99 | 1.1 | 7.29 | 9.14 | 1.58 | 0.99 | 2.76 |
| MFS19 | 3/4" | 19 | 1 3/8" | 2 x 1 3/8" | 2 x 35 | 6.0 | 1.18 | 1.97 | 7.29 | 10.01 | 1.97 | 0.99 | 3.74 |
| MFS22 | 7/8" | 22 | 1 5/8" | 2 x 1 13/16" | 2 x 47 | 9.0 | 1.18 | 1.97 | 9.73 | 12.53 | 1.97 | 1.18 | 4.89 |
| MFS25 | 1" | 25 | 1" | 2 x 2 7/16" | 2 x 62 | 14.1 | 1.18 | 3.35 | 9.73 | 13.91 | 1.97 | 1.18 | 6.11 |
| MFS28 | 1 1/8" | 28 | 1 1/8" | 2 x 2 3/4" | 2 x 70 | 18.1 | 1.18 | 3.15 | 10.84 | 15.05 | 2.36 | 1.58 | 7.13 |
| MFS31 | 1 1/4" | 31 | 1 1/4" | 2 x 3 3/4" | 2 x 95 | 21.2 | 1.26 | 3.31 | 10.84 | 15.17 | 2.36 | 1.58 | 9.1 |

JS | JAW SPREADER

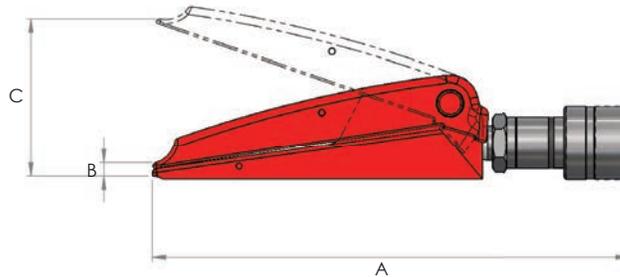


Capacity 1 ton

Maximum spread 3.31 inches

Working pressure 10000 psi

- ▶ Single acting, spring assisted return
- ▶ Narrow design requires access gap of only 0.51 inches
- ▶ High strength forged steel construction
- ▶ Easy connection to hydraulic pump and hose using supplied quick connect coupling
- ▶ Compact, lightweight and easy to use



| Model number | Capacity (tons) | Oil capacity (in ³) | Weight (lbs) | Dimensions (in) | | |
|--------------|-----------------|---------------------------------|--------------|-----------------|------|------|
| | | | | A | B | C |
| JS4 | 1 | 0.61 | 4.9 | 9.22 | 0.51 | 3.31 |

SJS | STEPPED JAW SPREADERS

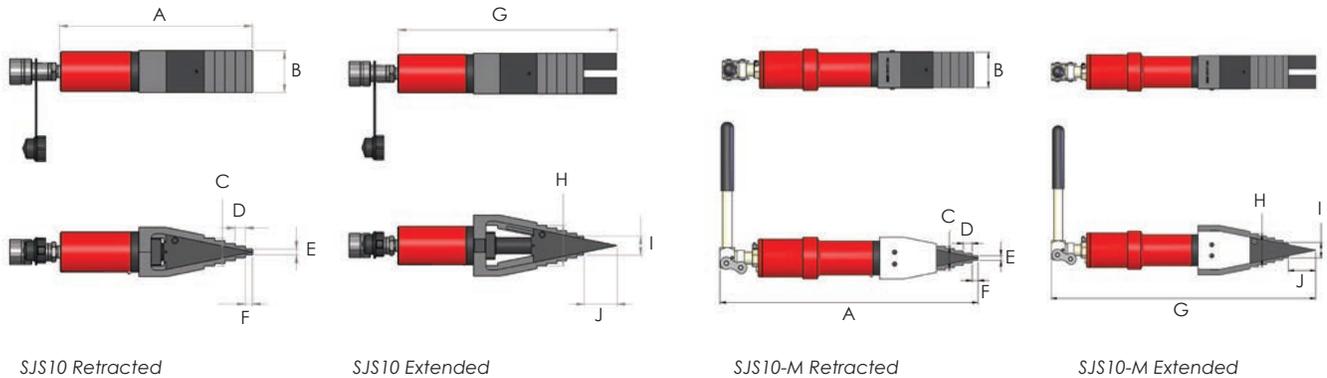


Capacity 14 tons per spreader unit

Maximum spread 2.36 inches

Supplied with safety block & stepped blocks

- ▶ Single acting, spring assisted return
- ▶ High strength steel construction
- ▶ Compact, lightweight and easy to use
- ▶ Low height jaw tips can easily fit into an 0.32 inches gap
- ▶ Maximum spreading distance 2.36 inches when using the supplied step blocks
- ▶ Self-contained spreader unit (SJS10-M) incorporates an integral manual hydraulic pump with multi-position operating lever



| Model number | Capacity (tons) | Stroke (in) | Minimum height (in) | Maximum spread (in) | Oil capacity (in ³) | Weight (lbs) | Dimensions (in) | | | | | | | | | |
|--------------|-----------------|-------------|---------------------|---------------------|---------------------------------|--------------|-----------------|------|------|------|------|------|-------|------|-----|------|
| | | | | | | | A | B | C | D | E | F | G | H | I | J |
| SJS10 | 14 | 1.97 | 0.32 | 2.36 | 4.51 | 12.1 | 10.99 | 2.36 | 1.58 | 0.59 | 0.32 | 0.39 | 12.92 | 2.36 | 1.1 | 1.93 |
| SJS10-M | 14 | 1.97 | 0.32 | 2.36 | 4.51 | 16.5 | 17.06 | 2.36 | 1.58 | 0.59 | 0.32 | 0.39 | 19.03 | 2.36 | 1.1 | 1.93 |

TWIN KIT:

- ▶ Twin spreader kit is ideal for applications requiring two tools to be operated simultaneously
- ▶ Offers an even spread of the flange joint during gasket replacement

| Model number | Spreaders 2 x | Pump 1 x | Hoses 2 x | Manifold 1 x | Gauges 2 x | Gauge blocks 2 x | Metal box 1 x | Weight (lbs) |
|--------------|---------------|----------|-----------|--------------|------------|------------------|---------------|--------------|
| SJS10-TK | SJS10 | HP212 | HC3C | HM2C | HG63G | AGA1-25 | MSB4 | 76.1 |

HI-FORCE HYDROTEST PUMPS

The Hi-Force range of hydrotest pumps is specifically designed for applications requiring pressure testing using water as a fluid medium. Extensively used for pressure testing valves, pipelines and pressure vessels, in various industries including oil and gas, petrochemical and food processing. The range offers a choice of two speed manually operated versions, with maximum output pressures up to 14500 psi, through to an extensive range of air driven options, offering a wide variety of piston displacement outputs and pressure outputs up to 40000 psi. All air driven versions also offer a factory fitted, integral chart recorder if required. All models can be factory fitted with special seals, manufactured from viton and ethylene propylene for use with special fluids or chemicals on request.

For a full list of fluids approved for use with Hi-Force hydrotest pumps please contact your Hi-Force Regional Office or approved Hi-Force Distributor.





HYDROTEST PUMPS

MHP RANGE 132

Manually operated hydrotest pumps

MHP-PU RANGE 133

Manually operated hydrotest pump units

AHP RANGE 134

Air driven hydrotest pumps - Standard flow

AHP-CR RANGE 135

Air driven hydrotest pumps - Standard flow with chart recorder

AHP2 RANGE 136

Air driven hydrotest pumps - Medium flow

AHP2-CR RANGE 137

Air driven hydrotest pumps - Medium flow with chart recorder

AHP3 RANGE 138

Air driven hydrotest pumps - High flow

ATDP RANGE 139

Air driven hydrotest pumps - High flow, twin double acting design

MHP | MANUALLY OPERATED HYDROTEST PUMPS

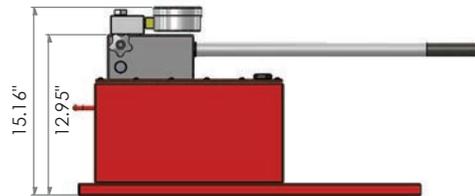
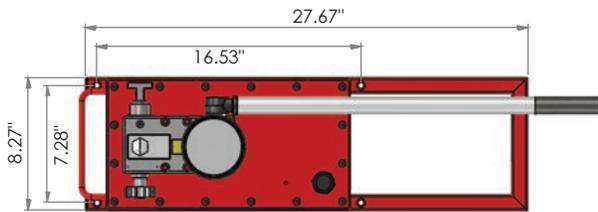


Choice of 5 models available

Maximum output pressures up to 14500 psi

Two stage displacement with manual changeover button

- ▶ Lightweight aluminum alloy pump unit with integral factory set safety relief valve
- ▶ High grade stainless steel pistons for increased resistance to corrosion
- ▶ Smooth manually operated 2-way pressure and release valve with precise control
- ▶ Stainless steel powder coated 4 gallons capacity reservoir with extended foot reaction bar
- ▶ Multi-positional 24 inches length operating lever with retaining washer and bolt
- ▶ Optional 4 inches diameter hydraulic pressure gauges with fixing kit
- ▶ Standard 10 feet length hose with swivel end fittings available as optional extra



| Model number (with reservoir) | Working pressure (psi) | Displacement per stroke (in ³) | | Changeover pressure (psi) | Outlet port | Weight with reservoir (lbs) |
|-------------------------------|------------------------|--------------------------------------------|-----------------------|---------------------------|-------------|-----------------------------|
| | | 1 st stage | 2 nd stage | | | |
| MHP100 | 1450 | 3.05 | 1.34 | 725 | 3/8" NPT | 44.1 |
| MHP300 | 4350 | 3.05 | 0.49 | 725 | 3/8" NPT | 44.1 |
| MHP500 | 7250 | 3.05 | 0.24 | 725 | 3/8" NPT | 44.1 |
| MHP700 | 10150 | 3.05 | 0.18 | 725 | 3/8" NPT | 44.1 |
| MHP1000 | 14500 | 3.05 | 0.12 | 725 | 3/8" BSP | 44.1 |

ACCESSORIES

PRESSURE GAUGES



| Model number | Pressure range (psi) |
|--------------|----------------------|
| MHP100GK | 1600 |
| MHP300GK | 4500 |
| MHP500GK | 8000 |
| MHP700GK | 10000 |
| MHP1000GK | 14500 |

HOSES



| Model number | Max WP (psi) | Length (ft) | Weight (lbs) | End fitting | For model number |
|--------------|--------------|-------------|--------------|----------------------|------------------|
| HH3-6NMS-1 | up to 4350 | 10 | 1.8 | 3/8" NPT Male Swivel | MHP100 & MHP300 |
| HH3-6NMS-2 | up to 10000 | 10 | 2.0 | 3/8" NPT Male Swivel | MHP500 & MHP700 |
| HH3-6NMS-3 | 14500 | 10 | 3.3 | 3/8" BSP Male Swivel | MHP1000 |

MHP-PU | MANUALLY OPERATED HYDROTEST PUMP UNITS

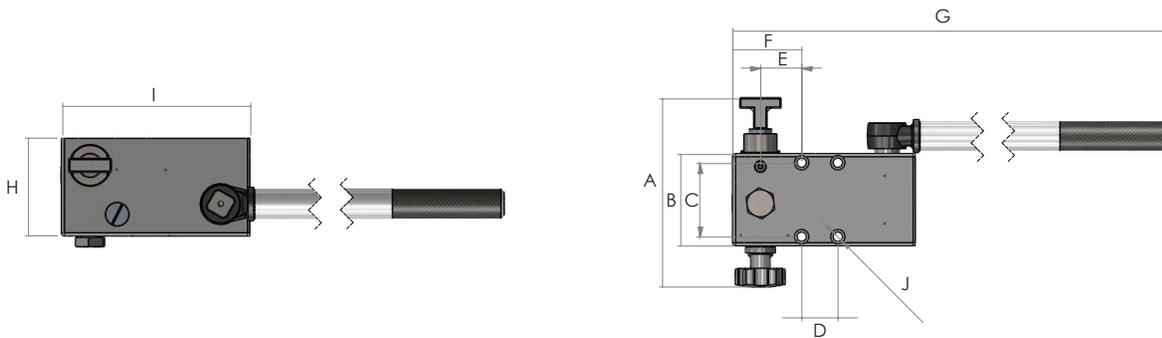


Choice of 5 models available

Maximum output pressures up to 14500 psi

Two stage displacement with manual changeover button

- ▶ Supplied as pump unit and operating lever only, reservoir not included
- ▶ Includes four bolt fixing kit with gasket for easy mounting on fluid reservoir



| Model number (pump only) | Working pressure (psi) | Valve type | Displacement per stroke (in ³) | | Changeover pressure (psi) | Outlet port | Suction port | Weight (lbs) |
|--------------------------|------------------------|------------|--------------------------------------------|-----------------------|---------------------------|-------------|--------------|--------------|
| | | | 1 st stage | 2 nd stage | | | | |
| MHP100PU | 1450 | 2-way | 3.05 | 1.34 | 725 | 3/8" NPT | 3/8" BSP | 11 |
| MHP300PU | 4350 | 2-way | 3.05 | 0.49 | 725 | 3/8" NPT | 3/8" BSP | 11 |
| MHP500PU | 7250 | 2-way | 3.05 | 0.24 | 725 | 3/8" NPT | 3/8" BSP | 11 |
| MHP700PU | 10150 | 2-way | 3.05 | 0.18 | 725 | 3/8" NPT | 3/8" BSP | 11 |
| MHP1000PU | 14500 | 2-way | 3.05 | 0.12 | 725 | 3/8" BSP | 3/8" BSP | 11 |

| Model number | Dimensions (in) | | | | | | | | | |
|--------------|-----------------|------|------|------|------|------|-------|------|------|--------|
| | A | B | C | D | E | F | G | H | I | J |
| All models | 7.21 | 3.51 | 2.82 | 1.38 | 1.58 | 2.64 | 29.94 | 3.62 | 6.97 | 4 x M8 |

RESERVOIR



| Model number | Description |
|--------------|------------------------------|
| MHR15 | 4 gallons standard reservoir |

AHP | AIR DRIVEN HYDROTEST PUMPS - STANDARD FLOW

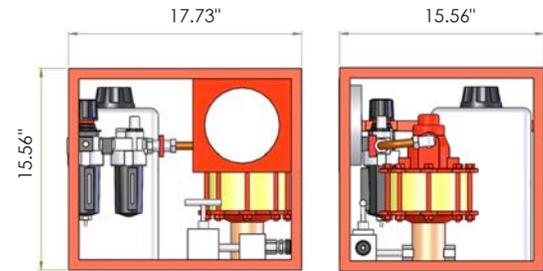


Output pressures up to 42500 psi

Suitable for use with various fluids

6 inches dual scale vibra pressure gauge

- ▶ Infinitely variable output pressure and fluid displacement speed
- ▶ Integral inlet air filtration and lubrication unit with air pressure gauge
- ▶ Airline regulator for easy setting of input air and output hydraulic pressure
- ▶ Maximum air consumption of 28 scfm (0.79 m³) per minute at 100 psi
- ▶ Smooth and easily operated hydraulic pressure hold and release valve
- ▶ Fitted with input air pump start/stop valve for easy and fast pressure shut off
- ▶ Robust powder coated stainless steel protective framework
- ▶ Lightweight plastic, 2 gallons capacity, fluid reservoir
- ▶ Optional stainless steel reservoir, stroke counter system and pressure isolation valve available on request



| Model number | Max output pressure (psi) at airline input pressure | | | Fluid volume displacement per stroke (in ³) | Outlet port thread | Weight (lbs) |
|--------------|-----------------------------------------------------|--------------------|--------------------|---------------------------------------------------------|--------------------|--------------|
| | 10 psi 0.69 bar | 50 psi 3.45 bar | 100 psi 6.9 bar | | | |
| AHP10 | 87 | 493 | 1000 | 2.58 | ½" NPT | 50.7 |
| AHP26 | 203 | 1305 | 2625 | 0.98 | ½" NPT | 46.3 |
| AHP36 | 247 | 1769 | 3625 | 0.75 | ½" NPT | 44.1 |
| AHP58 | 406 | 2900 | 5800 | 0.46 | ½" NPT | 44.1 |
| AHP107 | 899 | 5409 | 10701 | 0.24 | ½" NPT | 44.1 |
| AHP187 | 1407 | 9251 | 18749 | 0.13 | ¼"-18 UNF | 44.1 |
| AHP275 | 2248 | 13500 | 27507 | 0.1 | ¼"-18 UNF | 44.1 |
| AHP425 | 5503 | 20996 | 42500 | 0.06 | ¼"-18 UNF | 44.1 |

| Hydraulic pressure psi | bar | Approximate rate of discharge (gallons/min) at air input pressure 100 psi (7 bar) | | | | | | | |
|---------------------------|------|-----------------------------------------------------------------------------------|-------|-------|-------|--------|--------|--------|--------|
| | | AHP10 | AHP26 | AHP36 | AHP58 | AHP107 | AHP187 | AHP275 | AHP425 |
| 0 | 0 | 6.1 | 2.32 | 1.58 | 0.94 | 0.52 | 0.3 | 0.19 | 0.11 |
| 500 | 35 | 3.17 | 1.54 | 1.16 | 0.81 | 0.4 | 0.28 | 0.18 | 0.11 |
| 1000 | 69 | * | 1.25 | 1 | 0.66 | 0.34 | 0.26 | 0.17 | 0.1 |
| 1500 | 104 | * | 1.03 | 0.88 | 0.63 | 0.33 | 0.24 | 0.16 | 0.1 |
| 2000 | 138 | * | 0.79 | 0.79 | 0.59 | 0.32 | 0.21 | 0.15 | 0.09 |
| 2500 | 173 | * | 0.32 | 0.68 | 0.54 | 0.31 | 0.2 | 0.13 | 0.09 |
| 3000 | 207 | * | * | 0.51 | 0.49 | 0.31 | 0.19 | 0.13 | 0.08 |
| 4000 | 276 | * | * | * | 0.41 | 0.27 | 0.18 | 0.12 | 0.08 |
| 5000 | 345 | * | * | * | 0.27 | 0.25 | 0.18 | 0.11 | 0.07 |
| 7500 | 517 | * | * | * | * | 0.2 | 0.16 | 0.11 | 0.07 |
| 10000 | 690 | * | * | * | * | 0.12 | 0.14 | 0.1 | 0.06 |
| 15000 | 1034 | * | * | * | * | * | 0.1 | 0.09 | 0.06 |
| 20000 | 1379 | * | * | * | * | * | * | 0.08 | 0.05 |
| 25000 | 1724 | * | * | * | * | * | * | 0.06 | 0.04 |
| 30000 | 2069 | * | * | * | * | * | * | * | 0.03 |
| 40000 | 2760 | * | * | * | * | * | * | * | 0.01 |

* Pressure exceeds pump capacity

AHP-CR | AIR DRIVEN HYDROTEST PUMPS - STANDARD FLOW WITH CHART RECORDER

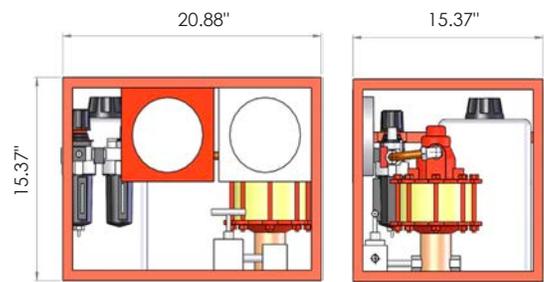


Output pressures up to 42500 psi

Suitable for use with various fluids

6 inches dual scale vibra pressure gauge

- ▶ Fitted with integral single pen chart recorder with isolation valve
- ▶ Supplied with 50 recorder charts and one black chart recorder pen
- ▶ Infinitely variable output pressure and fluid displacement speed
- ▶ Integral inlet air filtration and lubrication unit with air pressure gauge
- ▶ Airline regulator for easy setting of input air and output hydraulic pressure
- ▶ Maximum air consumption of 28 scfm (0.79 m³) per minute at 100 psi
- ▶ Smooth and easily operated hydraulic pressure hold and release valve
- ▶ Fitted with input air pump start/stop valve for easy and fast pressure shut off
- ▶ Robust powder coated stainless steel protective framework
- ▶ Lightweight plastic, 2 gallons capacity, fluid reservoir
- ▶ Optional stainless steel reservoir, stroke counter system and pressure isolation valve available on request



| Model number | Max output pressure (psi) at airline input pressure | | | Fluid volume displacement per stroke (in ³) | Outlet port thread | Weight (lbs) |
|--------------|-----------------------------------------------------|--------------------|--------------------|---------------------------------------------------------|--------------------|--------------|
| | 10 psi 0.69 bar | 50 psi 3.45 bar | 100 psi 6.9 bar | | | |
| AHP10-CR | 87 | 493 | 1000 | 2.58 | ½" NPT | 68.3 |
| AHP26-CR | 203 | 1305 | 2625 | 0.98 | ½" NPT | 63.9 |
| AHP36-CR | 247 | 1769 | 3625 | 0.75 | ½" NPT | 61.7 |
| AHP58-CR | 406 | 2900 | 5800 | 0.46 | ½" NPT | 61.7 |
| AHP107-CR | 899 | 5409 | 10701 | 0.24 | ½" NPT | 61.7 |
| AHP187-CR | 1407 | 9251 | 18749 | 0.13 | ¼" -18 UNF | 61.7 |
| AHP275-CR | 2248 | 13500 | 27507 | 0.1 | ¼" -18 UNF | 61.7 |
| AHP425-CR | 5503 | 20996 | 42500 | 0.06 | ¼" -18 UNF | 61.7 |

PUMP ACCESSORIES

Replacement pen for chart recorder

| Model number | Colour | Description |
|--------------|--------|-------------------------------------------------------------------------------|
| AHP-PB | Black | Suitable for pressure recording on all Hi-Force AHP pumps with chart recorder |

| Hydraulic pressure | | Approximate rate of discharge (gallons/min) at air input pressure 100 psi (7 bar) | | | | | | | |
|--------------------|------|-----------------------------------------------------------------------------------|----------|----------|----------|-----------|-----------|-----------|-----------|
| psi | bar | AHP10-CR | AHP26-CR | AHP36-CR | AHP58-CR | AHP107-CR | AHP187-CR | AHP275-CR | AHP425-CR |
| 0 | 0 | 6.1 | 2.32 | 1.58 | 0.94 | 0.52 | 0.3 | 0.19 | 0.11 |
| 500 | 35 | 3.17 | 1.54 | 1.16 | 0.81 | 0.4 | 0.28 | 0.18 | 0.11 |
| 1000 | 69 | * | 1.25 | 1 | 0.66 | 0.34 | 0.26 | 0.17 | 0.1 |
| 1500 | 104 | * | 1.03 | 0.88 | 0.63 | 0.33 | 0.24 | 0.16 | 0.1 |
| 2000 | 138 | * | 0.79 | 0.79 | 0.59 | 0.32 | 0.21 | 0.15 | 0.09 |
| 2500 | 173 | * | 0.32 | 0.68 | 0.54 | 0.31 | 0.2 | 0.13 | 0.09 |
| 3000 | 207 | * | * | 0.51 | 0.49 | 0.31 | 0.19 | 0.13 | 0.08 |
| 4000 | 276 | * | * | * | 0.41 | 0.27 | 0.18 | 0.12 | 0.08 |
| 5000 | 345 | * | * | * | 0.27 | 0.25 | 0.18 | 0.11 | 0.07 |
| 7500 | 517 | * | * | * | * | 0.2 | 0.16 | 0.11 | 0.07 |
| 10000 | 690 | * | * | * | * | 0.12 | 0.14 | 0.1 | 0.06 |
| 15000 | 1034 | * | * | * | * | * | 0.1 | 0.08 | 0.06 |
| 20000 | 1379 | * | * | * | * | * | * | 0.06 | 0.05 |
| 25000 | 1724 | * | * | * | * | * | * | 0.21 | 0.04 |
| 30000 | 2069 | * | * | * | * | * | * | * | 0.03 |
| 40000 | 2760 | * | * | * | * | * | * | * | 0.01 |

Pack of 100 spare charts, diameter 6.5 inches, 4-hour time scale

| Model number | Chart reading (psi) | Suitable for hydrotest pump unit |
|--------------|---------------------|----------------------------------|
| AHP-C01 | 0 - 1500 | AHP10-CR |
| AHP-C03 | 0 - 3000 | AHP26-CR |
| AHP-C05 | 0 - 5000 | AHP36-CR |
| AHP-C10 | 0 - 10000 | AHP58-CR |
| AHP-C15 | 0 - 15000 | AHP107-CR |
| AHP-C20 | 0 - 20000 | AHP187-CR |
| AHP-C30 | 0 - 30000 | AHP275-CR |
| AHP-C45 | 0 - 45000 | AHP425-CR |

* Pressure exceeds pump capacity

AHP2 | AIR DRIVEN HYDROTEST PUMPS - MEDIUM FLOW

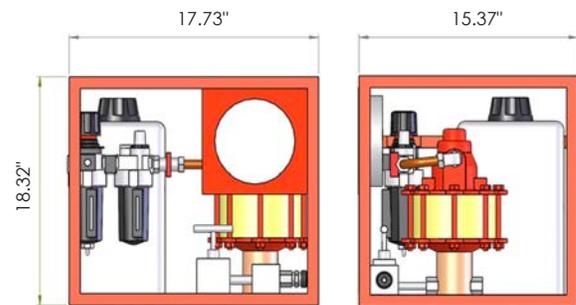


Output pressures up to 23700 psi

Suitable for use with various fluids

6 inches dual scale vibra pressure gauge

- ▶ Infinitely variable output pressure and fluid displacement speed
- ▶ Integral inlet air filtration and lubrication unit with air pressure gauge
- ▶ Airline regulator for easy setting of input air and output hydraulic pressure
- ▶ Maximum air consumption of 56 scfm (1.59 m³) per minute at 100 psi
- ▶ Smooth and easily operated hydraulic pressure hold and release valve
- ▶ Fitted with input air pump start/stop valve for easy and fast pressure shut off
- ▶ Robust powder coated stainless steel protective framework
- ▶ Lightweight plastic, 2 gallons capacity, fluid reservoir
- ▶ Optional stainless steel reservoir, stroke counter system and pressure isolation valve available on request

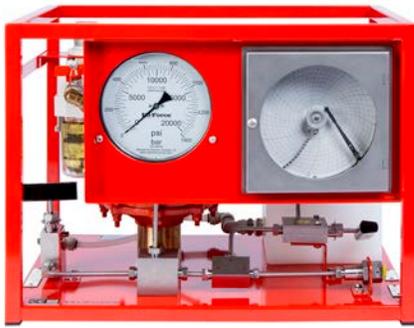


| Model number | Max output pressure (psi) at airline input pressure | | | Fluid volume displacement per stroke (in ³) | Outlet port thread | Weight (lbs) |
|--------------|-----------------------------------------------------|--------------------|--------------------|---------------------------------------------------------|--------------------|--------------|
| | 10 psi 0.69 bar | 50 psi 3.45 bar | 100 psi 6.9 bar | | | |
| AHP2-036 | 249 | 1799 | 3600 | 2.49 | ½" NPT | 52.9 |
| AHP2-060 | 450 | 2899 | 6000 | 1.5 | ½" NPT | 52.9 |
| AHP2-097 | 750 | 4749 | 9700 | 0.93 | ½" NPT | 52.9 |
| AHP2-144 | 1099 | 7098 | 14400 | 0.62 | ½" NPT | 52.9 |
| AHP2-237 | 1900 | 11597 | 23700 | 0.37 | ⅝" -18 UNF | 52.9 |

| Hydraulic pressure | | Approximate rate of discharge (gallons/min) at air input pressure 100 psi (7 bar) | | | | |
|--------------------|------|-----------------------------------------------------------------------------------|----------|----------|----------|----------|
| psi | bar | AHP2-036 | AHP2-060 | AHP2-097 | AHP2-144 | AHP2-237 |
| 0 | 0 | 2.69 | 1.64 | 1.03 | 0.71 | 0.41 |
| 500 | 35 | 2.27 | 1.45 | 0.94 | 0.66 | 0.4 |
| 1000 | 69 | 1.91 | 1.27 | 0.84 | 0.62 | 0.39 |
| 1500 | 104 | 1.62 | 1.19 | 0.79 | 0.57 | 0.37 |
| 2000 | 138 | 1.43 | 1.11 | 0.76 | 0.57 | 0.36 |
| 3000 | 207 | 0.81 | 0.92 | 0.67 | 0.5 | 0.34 |
| 4000 | 276 | * | 0.73 | 0.6 | 0.46 | 0.32 |
| 5000 | 345 | * | 0.57 | 0.55 | 0.43 | 0.32 |
| 7500 | 517 | * | * | 0.38 | 0.36 | 0.29 |
| 10000 | 690 | * | * | * | 0.3 | 0.26 |
| 15000 | 1034 | * | * | * | * | 0.21 |
| 20000 | 1379 | * | * | * | * | 0.13 |
| 23700 | 1634 | * | * | * | * | 0.09 |

* Pressure exceeds pump capacity

AHP2-CR | AIR DRIVEN HYDROTEST PUMPS - MEDIUM FLOW WITH CHART RECORDER

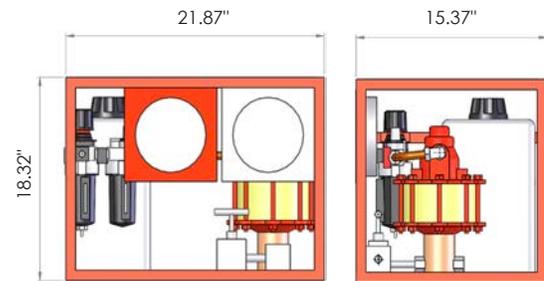


Output pressures up to 23700 psi

Suitable for use with various fluids

6 inches dual scale vibra pressure gauge

- ▶ Fitted with integral single pen chart recorder with isolation valve
- ▶ Supplied with 50 recorder charts and one black chart recorder pen
- ▶ Infinitely variable output pressure and fluid displacement speed
- ▶ Integral inlet air filtration and lubrication unit with air pressure gauge
- ▶ Airline regulator for easy setting of input air and output hydraulic pressure
- ▶ Maximum air consumption of 56 scfm (1.59 m³) per minute at 100 psi
- ▶ Smooth and easily operated hydraulic pressure hold and release valve
- ▶ Fitted with input air pump start/stop valve for easy and fast pressure shut off
- ▶ Robust powder coated stainless steel protective framework
- ▶ Lightweight plastic, 2 gallons capacity, fluid reservoir
- ▶ Optional stainless steel reservoir, stroke counter system and pressure isolation valve available on request



| Model number | Max output pressure (psi) at airline input pressure | | | Fluid volume displacement per stroke (in ³) | Outlet port thread | Weight (lbs) |
|--------------|-----------------------------------------------------|--------------------|--------------------|---------------------------------------------------------|--------------------|--------------|
| | 10 psi 0.69 bar | 50 psi 3.45 bar | 100 psi 6.9 bar | | | |
| AHP2-036CR | 249 | 1799 | 3600 | 2.49 | ½" NPT | 70.5 |
| AHP2-060CR | 450 | 2899 | 6000 | 1.5 | ½" NPT | 70.5 |
| AHP2-097CR | 750 | 4749 | 9700 | 0.93 | ½" NPT | 70.5 |
| AHP2-144CR | 1099 | 7098 | 1440 | 0.62 | ½" NPT | 70.5 |
| AHP2-237CR | 1900 | 11597 | 23700 | 0.37 | ⅜" -18 UNF | 70.5 |

PUMP ACCESSORIES

Replacement pen for chart recorder

| Model number | Colour | Description |
|--------------|--------|-------------------------------------------------------------------------------|
| AHP-PB | Black | Suitable for pressure recording on all Hi-Force AHP pumps with chart recorder |

| Hydraulic pressure psi | bar | Approximate rate of discharge (gallons/min) at air input pressure 100 psi (7 bar) | | | | |
|---------------------------|------|-----------------------------------------------------------------------------------|------------|------------|------------|------------|
| | | AHP2-036CR | AHP2-060CR | AHP2-097CR | AHP2-144CR | AHP2-237CR |
| 0 | 0 | 2.69 | 1.64 | 1.03 | 0.71 | 0.41 |
| 500 | 35 | 2.27 | 1.45 | 0.94 | 0.66 | 0.4 |
| 1000 | 69 | 1.91 | 1.24 | 0.84 | 0.62 | 0.39 |
| 1500 | 104 | 1.62 | 1.19 | 0.79 | 0.57 | 0.37 |
| 2000 | 138 | 1.43 | 1.11 | 0.76 | 0.57 | 0.36 |
| 3000 | 207 | 0.81 | 0.92 | 0.67 | 0.5 | 0.34 |
| 4000 | 276 | * | 0.73 | 0.6 | 0.46 | 0.32 |
| 5000 | 345 | * | 0.57 | 0.55 | 0.43 | 0.32 |
| 7500 | 517 | * | * | 0.38 | 0.36 | 0.29 |
| 10000 | 690 | * | * | * | 0.3 | 0.26 |
| 15000 | 1034 | * | * | * | * | 0.21 |
| 20000 | 1379 | * | * | * | * | 0.13 |
| 23700 | 1634 | * | * | * | * | 0.09 |

Pack of 100 spare charts, diameter 6.5 inches, 4-hour time scale

| Model number | Chart reading (psi) | Suitable for hydrotest pump unit |
|--------------|---------------------|----------------------------------|
| AHP-C05 | 0 - 5000 | AHP2-036CR |
| AHP-C10 | 0 - 10000 | AHP2-060CR |
| AHP-C15 | 0 - 15000 | AHP2-097CR |
| AHP-C20 | 0 - 20000 | AHP2-144CR |
| AHP-C30 | 0 - 30000 | AHP2-237CR |

* Pressure exceeds pump capacity

ATDP | AIR DRIVEN TWIN DOUBLE ACTING HYDROTEST PUMPS

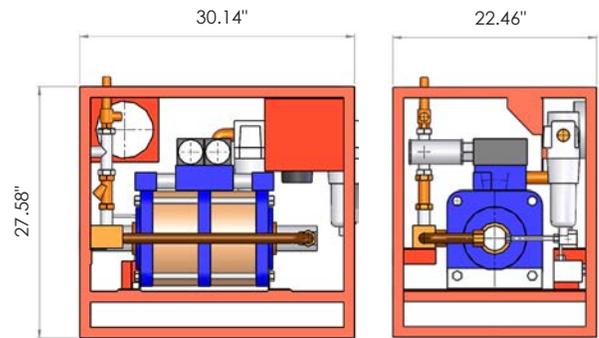


Output pressures up to 21600 psi

Suitable for use with various fluids

6 inches dual scale vibra pressure gauge

- ▶ Infinitely variable output pressure and fluid displacement speed
- ▶ Integral inlet air filtration and lubrication unit with air pressure gauge
- ▶ Airline regulator for easy setting of input air and output hydraulic pressure
- ▶ Maximum air consumption of 212 scfm (6 m³) per minute at 100 psi
- ▶ Smooth and easily operated hydraulic pressure hold and release valve
- ▶ Fluid inlet port of 1 1/4" BSPF with integral Y-type fluid strainer
- ▶ Fitted with input air pump start/stop valve for easy and fast pressure shut off
- ▶ Robust powder coated stainless steel protective framework
- ▶ Optional stroke counter system, chart recorder and isolation section for chemical duty available on request



| Model number | Max output pressure (psi) at airline input pressure | | | Fluid volume displacement per stroke (in ³) | Outlet port thread | Weight (lbs) |
|--------------|-----------------------------------------------------|--------------------|--------------------|---------------------------------------------------------|--------------------|--------------|
| | 20 psi 1.38 bar | 60 psi 4.14 bar | 100 psi 6.9 bar | | | |
| ATDP63 | 1260 | 3770 | 6300 | 16.78 | 1/2" NPT | 211.6 |
| ATDP125 | 2494 | 7497 | 12500 | 8.54 | 1/2" NPT | 211.6 |
| ATDP216 | 4321 | 12963 | 21600 | 4.82 | 1 1/8"-12 UNF | 211.6 |

| Hydraulic pressure | | Approximate rate of discharge (gallons/min) at air input pressure 100 psi (7 bar) | | |
|--------------------|------|-----------------------------------------------------------------------------------|---------|---------|
| psi | bar | ATDP63 | ATDP125 | ATDP216 |
| 0 | 0 | 8.5 | 4.46 | 2.51 |
| 1000 | 69 | 6.78 | 3.7 | 2.32 |
| 2000 | 138 | 5.41 | 3.25 | 2.11 |
| 3000 | 207 | 4.28 | 2.8 | 1.95 |
| 4000 | 276 | 3.3 | 2.48 | 1.82 |
| 5000 | 345 | 2.11 | 2.19 | 1.69 |
| 6000 | 414 | 0.74 | 1.93 | 1.61 |
| 8000 | 552 | * | 1.27 | 1.45 |
| 10000 | 690 | * | 0.79 | 1.29 |
| 12000 | 828 | * | 0.11 | 1.14 |
| 16000 | 1103 | * | * | 0.84 |
| 20000 | 1379 | * | * | 0.42 |

* Pressure exceeds pump capacity

HI-FORCE HYDRAULIC PULLER KITS

The Hi-Force range, of hydraulic puller kits, comprises of self-contained and remote operation, manually operated, 2 and 3-way jaw type pullers, with or without auto-center option, bearing pullers, bearing cup pullers and cross head pullers. The range offers pulling capacities up to 55 tons, in the manually operated versions, plus from 83 to 242 tons, powered trolley mounted, heavy duty 2 and 3-way pullers. All components are manufactured from high strength alloy and drop forged steel.

Additionally, within this section of the catalog Hi-Force also offers hydraulic pin and bush puller and instalment tool kits, ideally suited for use on heavy duty trucks, earth moving equipment and crane and jib arm lifting equipment, the range offers capacities up to 55 tons, at 10000 psi maximum working pressure.





PULLER KITS

| | |
|--------------------------------------|------------|
| SCP RANGE | 142 |
| Self-contained hydraulic pullers | |
| ACP RANGE | 143 |
| Auto-center hydraulic puller kits | |
| PKS RANGE | 144 |
| Hydraulic 2 and 3-way puller kits | |
| PKC RANGE | 145 |
| Comprehensive hydraulic puller kits | |
| SPP RANGE | 146 |
| Heavy duty hydraulic pullers | |
| HBR RANGE | 148 |
| Spring eye bush replacement tool kit | |
| HPR RANGE | 149 |
| Pin & bush replacement tool kits | |

SCP | SELF-CONTAINED HYDRAULIC PULLERS

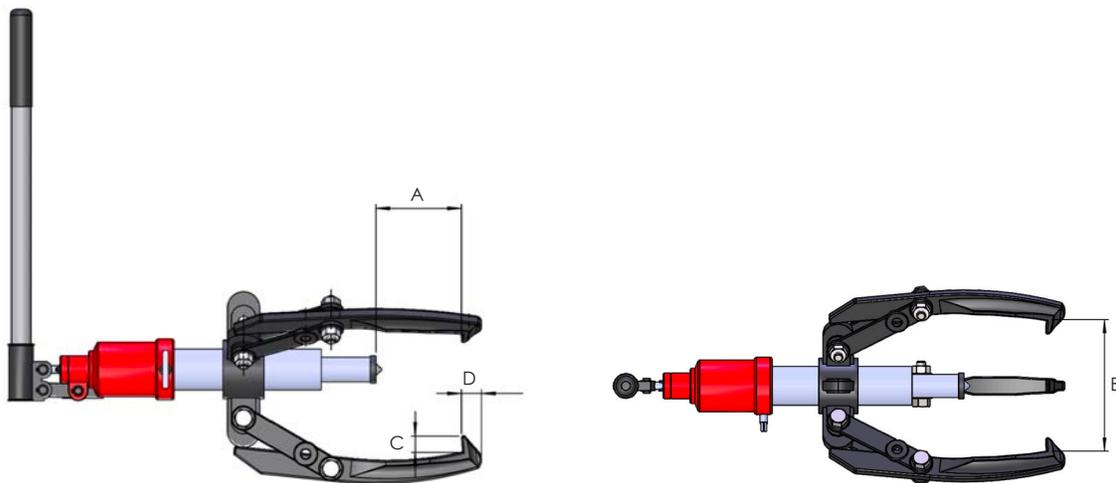


Capacities from 11 to 33 tons

Self-contained hydraulic system

Operates in any position

- ▶ Available in 3-jaw configuration only
- ▶ Integrated hydraulic cylinder, pump and puller assembly for easy operation
- ▶ Ergonomic 360° rotating handle for easy positioning during use
- ▶ Incorporates safety valve to minimize the risk of puller overload
- ▶ Spring-loaded center point for easy centering of the puller to the shaft
- ▶ Supplied complete with piston rod extension piece and storage case



| Model number | Capacity (tons) | Type of puller | Hydraulic stroke (in) | Piston rod extension (in) | Weight (lbs) | Dimensions (in) | | | | |
|--------------|-----------------|----------------|-----------------------|---------------------------|--------------|-----------------|---------|---------|------|------|
| | | | | | | A | B (min) | B (max) | C | D |
| SCP103 | 11 | 3-way jaw | 3.23 | 1.97 | 25.6 | 7.68 | 1.18 | 12.21 | 0.87 | 0.24 |
| SCP203 | 22 | 3-way jaw | 3.23 | 3.94 | 52.2 | 10.84 | 1.97 | 16.94 | 1.14 | 0.39 |
| SCP303 | 33.1 | 3-way jaw | 4.33 | 5.91 | 110.2 | 15.96 | 3.94 | 24.03 | 1.5 | 1.42 |

ACP | AUTO-CENTER HYDRAULIC PULLER KITS

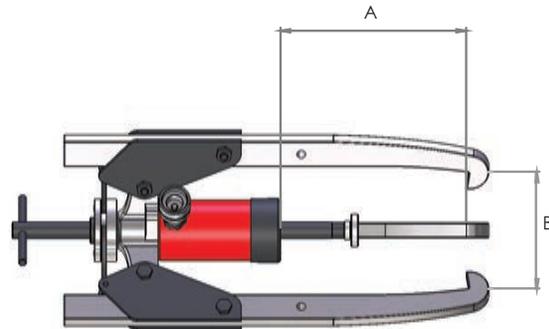


Capacities from 11 to 55 tons

Quick set-up time, easy to use

High quality, drop forged steel components

- ▶ Self-centering design allows secure positioning of jaws
- ▶ Incorporates safety overload prevention valve within hydraulic pump
- ▶ Detachable hydraulic system, with hollow bore cylinder, for use in other applications
- ▶ Supplied as a complete set with all necessary hydraulic components in handy storage case
- ▶ Model ACP10 offers choice of either 2-way or 3-way puller operation



| Model number | Capacity (tons) | Type of puller | Cylinder model | Pump model | Weight (lbs) | Dimensions (in) | | |
|--------------|-----------------|----------------|----------------|------------|--------------|-----------------|---------|---------|
| | | | | | | A | B (min) | B (max) |
| ACP10 | 11 | 2 & 3-way jaw | HHS102 | HP110 | 54.0 | 11.66 | 1.97 | 13.79 |
| ACP20 | 22 | 3-way jaw | HHS202 | HP110 | 97.0 | 12.61 | 2.76 | 18.91 |
| ACP30 | 33 | 3-way jaw | HHS302 | HP110 | 168.7 | 16.04 | 3.55 | 22.85 |
| ACP50 | 55 | 3-way jaw | HHS603 | HP227 | 399.0 | 28.64 | 4.73 | 36.25 |

PKS | HYDRAULIC 2 & 3 WAY PULLER KITS

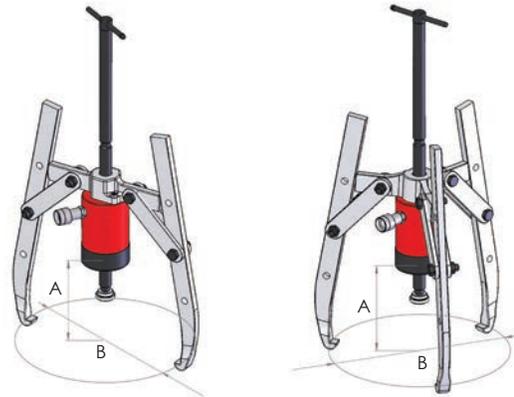


- ▶ Available in choice of 2 or 3-way puller configurations with 5 ton and 11 ton models offering a combination of both options
- ▶ Incorporates safety overload prevention valve within hydraulic pump
- ▶ Detachable hydraulic system with hollow bore cylinder for use in other applications (excluding 5 ton model which has solid piston design cylinder)
- ▶ Supplied as a complete set with all necessary hydraulic components in handy storage case

Capacities from 5 to 55 tons

Quick set-up time, easy to use

High quality, drop forged steel components



Note: Dimensions calculated with 15° outward angled puller legs.

| Model number | Capacity (tons) | Type of puller | Cylinder model | Pump model | Weight (lbs) | Dimensions (in) | | |
|--------------|-----------------|----------------|----------------|------------|--------------|-----------------|---------|---------|
| | | | | | | A | B (min) | B (max) |
| PKS5-2-3 | 5 | 2 & 3-way jaw | HSS53 | HP110 | 29.5 | 8.87 | * | 9.46 |
| PKS10-2-3 | 11 | 2 & 3-way jaw | HHS102 | HP110 | 45.9 | 11.66 | 1.97 | 13.79 |
| PKS20-2 | 22 | 2-way jaw | HHS202 | HP110 | 67.9 | 12.61 | 2.76 | 18.91 |
| PKS20-3 | 22 | 3-way jaw | HHS202 | HP110 | 78.7 | 12.61 | 2.76 | 18.91 |
| PKS30-2 | 33 | 2-way jaw | HHS302 | HP110 | 98.8 | 16.04 | 3.55 | 22.85 |
| PKS30-3 | 33 | 3-way jaw | HHS302 | HP110 | 119.9 | 16.04 | 3.55 | 22.85 |
| PKS50-2 | 55 | 2-way jaw | HHS603 | HP227 | 218.3 | 28.64 | 4.73 | 36.25 |
| PKS50-3 | 55 | 3-way jaw | HHS603 | HP227 | 268.3 | 28.64 | 4.73 | 36.25 |
| PK202 | 22 | 2-way jaw beam | * | * | 6.6 | * | * | * |
| PK302 | 33 | 2-way jaw beam | * | * | 8.8 | * | * | * |
| PK502 | 55 | 2-way jaw beam | * | * | 15.4 | * | * | * |

Note: PK202, PK302 & PK502 are 2-way jaw beam only for modifying applicable capacity 3-way jaw pullers to 2-way jaw operation.

PKC | COMPREHENSIVE HYDRAULIC PULLER KITS

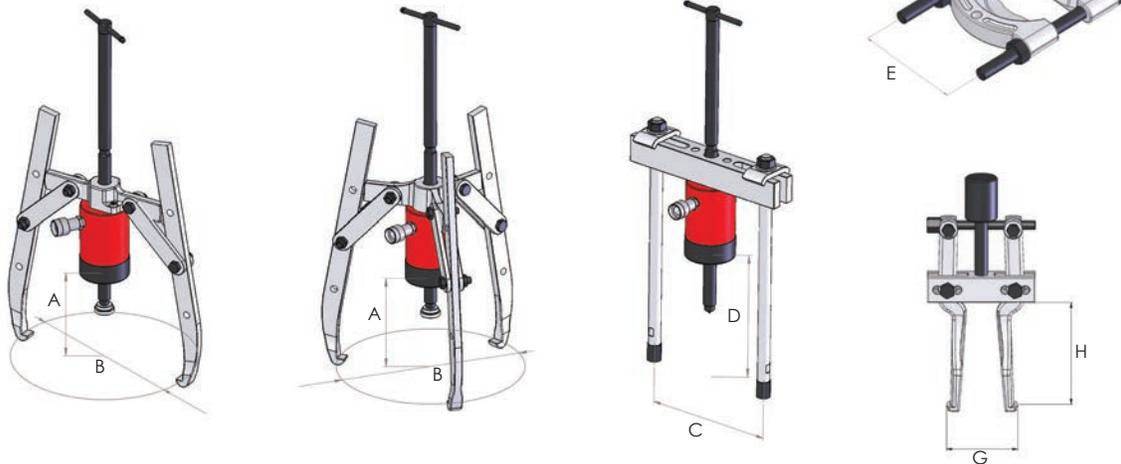


Capacities from 11 to 55 tons

Combination of 4 different pullers in one set

High quality, drop forged steel components

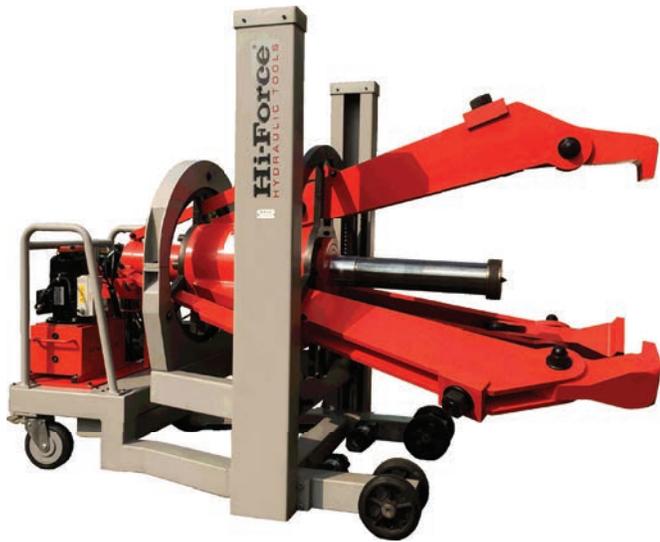
- ▶ Multi-purpose puller kit comprising of grip puller, bearing puller, bearing cup puller and cross head puller
- ▶ Choice of 2-way or 3-way jaw pulling options
- ▶ Incorporates safety overload prevention valve within hydraulic pump
- ▶ Detachable hydraulic system with hollow bore cylinder for use in other applications
- ▶ Supplied as a complete set with all necessary hydraulic components in handy storage case



| Model number | Capacity (tons) | Cylinder model | Pump model | Weight (lbs) | Dimensions (in) | | | | | | | | | | | |
|--------------|-----------------|----------------|------------|--------------|-----------------|---------|---------|---------|---------|-------|-------|---------|---------|---------|---------|------|
| | | | | | A | B (min) | B (max) | C (min) | C (max) | D | E | F (min) | F (max) | G (min) | G (max) | H |
| PKC10 | 11 | HHS102 | HP110 | 72.3 | 11.66 | 1.97 | 13.79 | 4.53 | 10.24 | 11.82 | 4.33 | 0.39 | 4.33 | 1.58 | 5.71 | 4.53 |
| PKC20 | 22 | HHS202 | HP110 | 130.7 | 12.61 | 2.76 | 18.91 | 5.32 | 13.59 | 10.44 | 5.99 | 0.43 | 5.28 | 1.58 | 5.71 | 4.53 |
| PKC30 | 33.1 | HHS302 | HP110 | 257.9 | 16.04 | 3.55 | 22.85 | 7.09 | 17.34 | 11.19 | 10.24 | 0.59 | 9.85 | 2.36 | 9.46 | 5.91 |
| PKC50 | 55.1 | HHS603 | HP227 | 518.1 | 28.64 | 4.73 | 36.25 | 9.06 | 22.85 | 17.61 | 10.24 | 0.67 | 10.05 | 2.36 | 9.46 | 5.91 |

Note: Dimensions A & B calculated with 15° outward angled puller legs

SPP | HEAVY DUTY HYDRAULIC PULLERS



Capacities from 83 to 242 tons

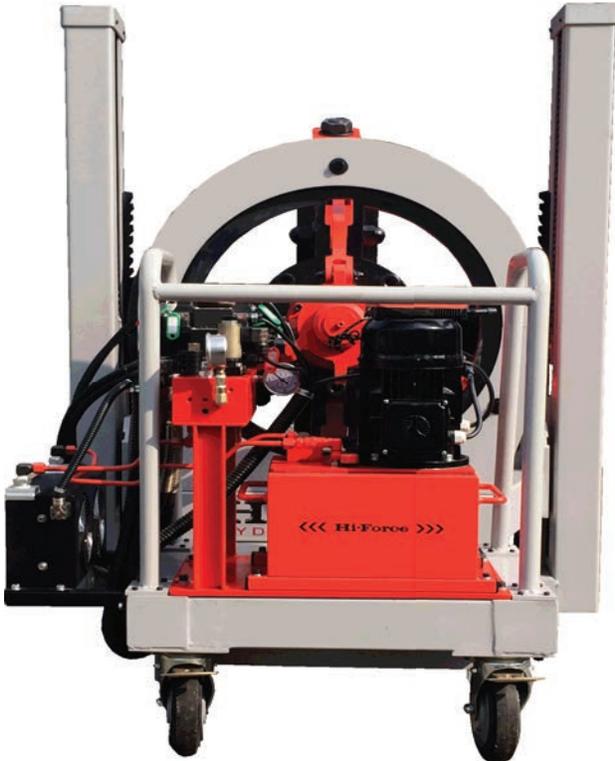
Wireless remote controlled operation

Power driven trolley with wheel lock function

- ▶ Combination 2-way and 3-way jaw puller
- ▶ Twin vertical support posts for increased stability & puller jaw height adjustment
- ▶ Self-centering, 180° rotating pulling jaws offer added versatility during positioning
- ▶ Anti-slip mechanism fitted to puller jaws for increased safety
- ▶ Powered by standard HEP2 series electric driven hydraulic pump

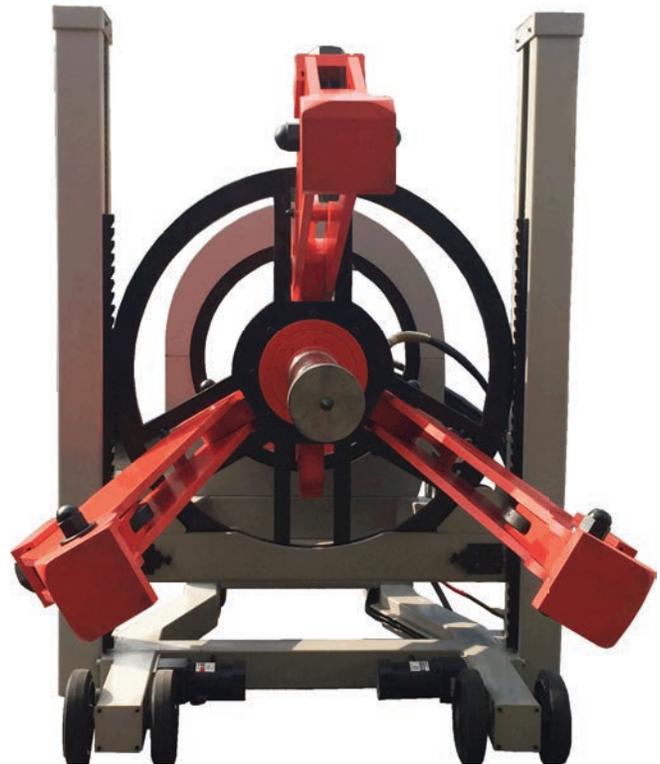
| Model number | Capacity (tons) | Motor voltage | Stroke (in) | Weight (lbs) | Reach (in) | | Spread (in) | | Dimensions (in) | | |
|-------------------------|-----------------|---------------|-------------|--------------|------------|-------|-------------|-------|-----------------|-------|--------|
| | | | | | min | max | min | max | Length | Width | Height |
| Puller with 50 Hz motor | | | | | | | | | | | |
| SPP7515 | 83 | 110/115V | 6.5 | 1455.0 | 19.31 | 27.58 | 4.33 | 48.07 | 86.68 | 47.28 | 63.63 |
| SPP7525 | 83 | 220/240V | 6.5 | 1455.0 | 19.31 | 27.58 | 4.33 | 48.07 | 86.68 | 47.28 | 63.63 |
| SPP7545 | 83 | 380/440V | 6.5 | 1455.0 | 19.31 | 27.58 | 4.33 | 48.07 | 86.68 | 47.28 | 63.63 |
| SPP12015 | 132 | 110/115V | 6.7 | 1957.7 | 35.46 | 43.34 | 5.91 | 48.07 | 94.95 | 47.28 | 63.43 |
| SPP12025 | 132 | 220/240V | 6.7 | 1957.7 | 35.46 | 43.34 | 5.91 | 48.07 | 94.95 | 47.28 | 63.43 |
| SPP12045 | 132 | 380/440V | 6.7 | 1957.7 | 35.46 | 43.34 | 5.91 | 48.07 | 94.95 | 47.28 | 63.43 |
| SPP22015 | 242 | 110/115V | 6.7 | 2866.0 | 35.46 | 43.34 | 5.91 | 48.07 | 97.32 | 50.04 | 64.22 |
| SPP22025 | 242 | 220/240V | 6.7 | 2866.0 | 35.46 | 43.34 | 5.91 | 48.07 | 97.32 | 50.04 | 64.22 |
| SPP22045 | 242 | 380/440V | 6.7 | 2866.0 | 35.46 | 43.34 | 5.91 | 48.07 | 97.32 | 50.04 | 64.22 |
| Puller with 60 Hz motor | | | | | | | | | | | |
| SPP7516 | 83 | 110/115V | 6.5 | 1455.0 | 19.31 | 27.58 | 4.33 | 48.07 | 86.68 | 47.28 | 63.63 |
| SPP7526 | 83 | 220/240V | 6.5 | 1455.0 | 19.31 | 27.58 | 4.33 | 48.07 | 86.68 | 47.28 | 63.63 |
| SPP7546 | 83 | 380/440V | 6.5 | 1455.0 | 19.31 | 27.58 | 4.33 | 48.07 | 86.68 | 47.28 | 63.63 |
| SPP12016 | 132 | 110/115V | 6.7 | 1957.7 | 35.46 | 43.34 | 5.91 | 48.07 | 94.95 | 47.28 | 63.43 |
| SPP12026 | 132 | 220/240V | 6.7 | 1957.7 | 35.46 | 43.34 | 5.91 | 48.07 | 94.95 | 47.28 | 63.43 |
| SPP12046 | 132 | 380/440V | 6.7 | 1957.7 | 35.46 | 43.34 | 5.91 | 48.07 | 94.95 | 47.28 | 63.43 |
| SPP22016 | 242 | 110/115V | 6.7 | 2866.0 | 35.46 | 43.34 | 5.91 | 48.07 | 97.32 | 50.04 | 64.22 |
| SPP22026 | 242 | 220/240V | 6.7 | 2866.0 | 35.46 | 43.34 | 5.91 | 48.07 | 97.32 | 50.04 | 64.22 |
| SPP22046 | 242 | 380/440V | 6.7 | 2866.0 | 35.46 | 43.34 | 5.91 | 48.07 | 97.32 | 50.04 | 64.22 |

SPP | HEAVY DUTY HYDRAULIC PULLERS



Hydraulic system powered by
HEP2 series pump

Self-centering puller jaws with anti-slip
mechanism



HBR | SPRING EYE BUSH REPLACEMENT TOOL KIT



Powerful 20 tons output capacity

Maximum working pressure 10000 psi

Lightweight and compact design

- ▶ Choice of manual or air driven hydraulic pump
- ▶ Kit includes a lightweight aluminum alloy hollow bore cylinder
- ▶ Supplied complete with wide range of standard tooling accessories
- ▶ Handy storage and transportation box included with each kit

| Model number | Capacity (tons) | Stroke (in) | Cylinder | Pump | Hose | Base plate | Threaded rods | Dolleys | Pull sleeves | Weight (lbs) |
|--------------|-----------------|-------------|----------|---------|------|------------|---------------|---------|--------------|--------------|
| HBR-1 | 20 | 2.01 | HHA182 | n/a | n/a | 1 | 3 | 5 | 2 | 59.5 |
| HBR-1H | 20 | 2.01 | HHA182 | HP212 | HC2 | 1 | 3 | 5 | 2 | 72.8 |
| HBR-1A | 20 | 2.01 | HHA182 | AHP1120 | HC2 | 1 | 3 | 5 | 2 | 77.2 |

Note: Model HBR-1 does not include pump and hose assembly.

PUMP OPTIONS

The HBR-1 hydraulic spring eye bush replacement tool kit can be operated by either the AHP1120 air driven foot pump or the HP212 lightweight aluminum hand pump.



HPR | PIN & BUSH REPLACEMENT TOOL KITS



Capacities up to 55 tons

Maximum working pressure 10000 psi

Lightweight and compact design

- ▶ Choice of manual or air driven hydraulic pump
- ▶ Kit includes a lightweight aluminum alloy hollow bore cylinder
- ▶ Supplied complete with wide range of standard tooling accessories
- ▶ Handy storage and transportation box included with each kit

| Model number | Capacity (tons) | Stroke (in) | Cylinder | Pump | Hose | Base plate | Threaded rods | Pull sleeves | Adaptors | Reducer sleeves | Weight (lbs) |
|--------------|-----------------|-------------|----------|---------|------|------------|---------------|--------------|----------|-----------------|--------------|
| HPR-1 | 41 | 2.01 | HHA372 | n/a | n/a | 1 | 1 | 2 | 2 | 1 | 83.8 |
| HPR-1H | 41 | 2.01 | HHA372 | HP212 | HC2 | 1 | 1 | 2 | 2 | 1 | 97.0 |
| HPR-1A | 41 | 2.01 | HHA372 | AHP1120 | HC2 | 1 | 1 | 2 | 2 | 1 | 101.4 |
| HPR-2 | 55 | 4.1 | HHA504 | n/a | n/a | 2 | 1 | 4 | 1 | 1 | 145.5 |
| HPR-2H | 55 | 4.1 | HHA504 | HP212 | HC2 | 2 | 1 | 4 | 1 | 1 | 158.7 |
| HPR-2A | 55 | 4.1 | HHA504 | AHP1120 | HC2 | 2 | 1 | 4 | 1 | 1 | 163.1 |

Note: Model numbers HPR-1 and HPR-2 do not include pump and hose assembly.

PUMP OPTIONS

The HPR hydraulic pin and bush replacement tool kits can be operated by either the AHP1120 air driven foot pump or the HP212 lightweight aluminum hand pump.



HI-FORCE CRIMPERS AND CUTTERS

Hi-Force hydraulic cable crimping tools are designed and manufactured for crimping un-insulated compression and mechanical connectors, in copper and aluminum, to a wide range of electrical power cables including distribution and transmission lines. Offering a choice of self-contained operation with inbuilt manually operated hydraulic pump mechanism, separate remote operation crimping head for use with a separate hydraulic pump and hose assembly, or battery operated which offers all the versatility of our self-contained and manually operated tools but, with the added speed and ease of use associated with a battery powered tool.

The Hi-Force hydraulic crimping tools range offers the most optimum choice to suit the widest range of electrical cable crimping applications. All models are designed and manufactured for use at 10000 psi maximum working pressure, supplied complete with all applicable die sets, compatible for use with the selected tool and include a convenient carrying and storage case. Self-contained manually operated and battery powered crimper tools are fitted with an automatic pump pressure relief valve, which activates and releases the hydraulic pressure immediately, once the compression (crimping) process has been successfully achieved. All remote operation crimper heads must be operated with a compatible Hi-Force 10000 psi hydraulic pump unit, fitted with an inbuilt pump safety overload, pressure relief valve, 10000 psi pressure gauge and 10000 psi rated hydraulic hose assembly.





CRIMPERS & CUTTERS

| | |
|-------------------------------------------------------|------------|
| CH RANGE | 152 |
| Cable crimping heads | |
| SC RANGE | 153 |
| Self-contained cable crimping tools | |
| BC RANGE | 154 |
| Battery operated cable crimping tools | |
| BC ACCESSORIES | 155 |
| Accessories for battery operated cable crimping tools | |
| HCH RANGE | 156 |
| Cutter heads | |
| CT RANGE | 157 |
| Self-contained cutters | |
| HWC RANGE | 158 |
| Hammer blow, wire rope and cable cutters | |
| HSWC RANGE | 159 |
| Self-contained wire rope cutters | |
| HWRC RANGE | 160 |
| Double acting wire rope cutters | |
| HCC RANGE | 161 |
| Chain cutters | |

CH | CABLE CRIMPING HEADS



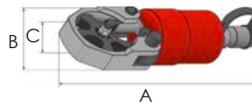
Choice of 7 models available

180 degree rotating head for easy fitment

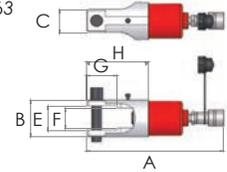
Working pressure 10000 psi

- ▶ Open 'C' jaw or parallel guide design
- ▶ 180° rotating head for easy access in confined spaces
- ▶ Fitted with quick connect coupling for easy connection to 10000 psi rated hydraulic pump
- ▶ Supplied with standard die sets and carrying case
- ▶ Suitable foot operated pump assembly detailed on page 33
- ▶ Model CH21 is suitable for crimping non-insulated terminals up to 240 mm²
- ▶ Models CH30, CH32 & CH40 are suitable for crimping connectors up to 400 mm²
- ▶ Models CH63 & CH80 are suitable for crimping connectors up to 630 mm²
- ▶ Model CH1000N is suitable for crimping distribution and transmission lines up to 1000 mm²

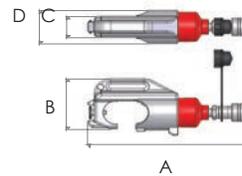
CH21



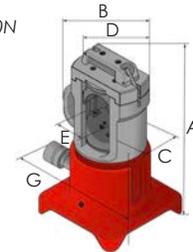
CH32/CH63



CH30/CH40/CH80



CH1000N



Crimping heads complete with die sets:

| Model number | Output (tons) | C-Jaw opening | Applicable range DIN (mm ²) | Standard dies (mm ²) | Length (in) | Weight (lbs) | Dimensions (in) | | | | | | | | |
|--------------|---------------|----------------|-----------------------------------------|---------------------------------------------------------------------------------------------------------------|-------------|--------------|-----------------|------|------|------|------|------|------|------|---|
| | | | | | | | A | B | C | D | E | F | G | H | |
| CH21 | 11 | not applicable | 16-240 | With die (4pcs) 16-25, 35-70, 70-185, 240 Female die (1pc) 25-35, 50-70, 95-120, 150-185, 240 | 8.27 | 6.6 | 10.95 | 3.47 | 1.1 | - | - | - | - | - | - |
| CH30 | 13 | 1.18 in | 35-400 | With die 35, 50, 70, 95, 120, 150, 185, 240, 300, 400 | 8.67 | 8.8 | 11.58 | 4.14 | 1.69 | 2.68 | - | - | - | - | - |
| CH32 | 20 | not applicable | 16-400 | With die (4pcs) 16, 25-35, 50-120, 150-400 Female die (8pcs) 16-25, 35-70, 95-120, 150, 185, 240, 300, 400 | 8.27 | 7.9 | 11.19 | 3.07 | 1.97 | - | 2.09 | 1.69 | 2.48 | 3.78 | - |
| CH40 | 13 | 1.65 in | 35-400 | With die 35, 50, 70, 95, 120, 150, 185, 240, 300, 400 | 9.65 | 10.6 | 12.84 | 4.45 | 1.69 | 2.92 | - | - | - | - | - |
| CH63 | 20 | not applicable | 35-630 | With die 35, 50, 70, 95, 120, 150, 185, 240, 300, 400, 500, 630 | 9.46 | 10.6 | 12.57 | 3.07 | 1.97 | - | 1.93 | - | 6.42 | - | - |
| CH80 | 16 | 1.97 in | 35-630 | With die 35, 50, 70, 95, 120, 150, 185, 240, 300, 400, 500, 630 | 11.82 | 15.4 | 14.58 | 4.18 | 2.48 | 2.48 | - | - | - | - | - |
| CH1000N | 66 | not applicable | 500-1000 | With die 500, 630, 800, 1000 | 16.55 | 67.7 | 15.56 | 8.27 | 3.55 | 6.7 | 3.23 | - | 9.26 | - | - |

Complete set:

| Model number | Description |
|--------------|-------------------------------------------------------------------------------------------------------------|
| CHP21 | Comprehensive kit, comprising of crimper head CH21, manually operated foot pump HP227FPC and steel box CSB1 |
| CHP30 | Comprehensive kit, comprising of crimper head CH30, manually operated foot pump HP227FPC and steel box CSB1 |
| CHP32 | Comprehensive kit, comprising of crimper head CH32, manually operated foot pump HP227FPC and steel box CSB1 |
| CHP40 | Comprehensive kit, comprising of crimper head CH40, manually operated foot pump HP227FPC and steel box CSB1 |
| CHP63 | Comprehensive kit, comprising of crimper head CH63, manually operated foot pump HP227FPC and steel box CSB1 |
| CHP80 | Comprehensive kit, comprising of crimper head CH80, manually operated foot pump HP227FPC and steel box CSB1 |

Note: Models CH21 & CH32 are supplied with single indent dies, all other models are supplied with hexagonal dies. Please refer to page 155 for the mm² to AWG/mcm conversions.

OPTIONAL DIE SETS

| Model number | Description |
|--------------|---------------------------------------------------------------------------|
| CD10 | Die set 10 mm ² , suitable for crimping tool CH30, CH40 & CH60 |
| CD16 | Die set 16 mm ² , suitable for crimping tool CH30, CH40 & CH60 |
| CD25 | Die set 25 mm ² , suitable for crimping tool CH30, CH40 & CH60 |

SC | SELF-CONTAINED CABLE CRIMPING TOOLS

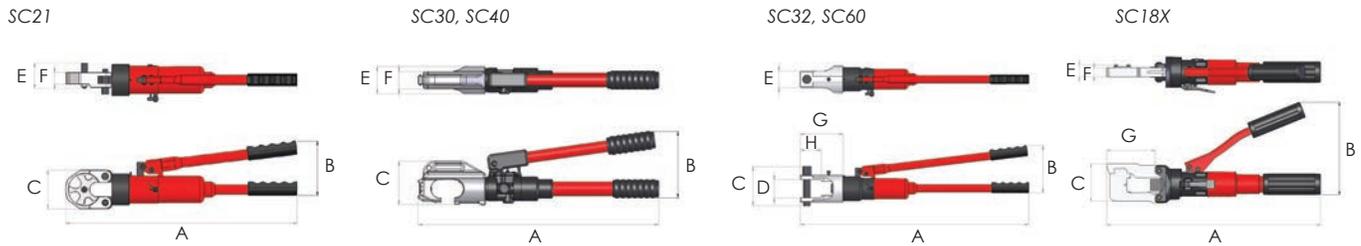


Choice of 6 models available

Supplied complete with die set

Choice of open jaw or parallel guide design

- ▶ 180° rotating head standard on all open jaw design models
- ▶ Incorporates an integral hydraulic pump for easy operation
- ▶ Automatic pump pressure release valve for correct pre-set crimping force
- ▶ Ergonomic grip handles for reduced operator effort and ease of use
- ▶ Supplied with standard die sets and carrying case
- ▶ Model SC18X is suitable for crimping non-insulated terminals up to 185 mm²
- ▶ Model SC21 is suitable for crimping connectors up to 240 mm²
- ▶ Models SC30, SC32 & SC40 are suitable for crimping connectors up to 400 mm²
- ▶ Model SC60 is suitable for crimping non-insulated terminals up to 630 mm²



| Model number | Output (tons) | C-Jaw opening | Applicable range DIN (mm ²) | Standard dies (mm ²) | Length (in) | Weight (lbs) | Dimensions (in) | | | | | | | |
|--------------|---------------|----------------|-----------------------------------------|---------------------------------------------------------------------------------------------------------------|-------------|--------------|-----------------|------|------|------|------|------|------|------|
| | | | | | | | A | B | C | D | E | F | G | H |
| SC18X | 7 | not applicable | 10-185 | With die 10-16, 25-35, 50-70, 95-120, 150, 185 | 14.58 | 4.4 | 14.97 | 5.59 | 2.76 | - | 0.83 | 0.63 | 3.39 | - |
| SC21 | 11 | not applicable | 25-240 | With die (4pcs) 16-25, 35-70, 70-185, 240 Female die (1pc) 25-35, 50-70, 95-120, 150-185, 240 | 20.8 | 11.5 | 20.49 | 4.81 | 3.39 | - | 2.25 | 1.06 | - | - |
| SC30 | 13 | 1.18 in | 35-400 | With die 35, 50, 70, 95, 120, 150, 185, 240, 300, 400 | 24.03 | 13.9 | 23.72 | 6.54 | 4.57 | - | 2.68 | 1.69 | - | - |
| SC32 | 20 | not applicable | 16-400 | With die (4pcs) 16, 25-35, 50-120, 150-400 Female die (8pcs) 16-25, 35-70, 95-120, 150, 185, 240, 300, 400 | 25.61 | 13.7 | 26.79 | 5.4 | 4.57 | 2.05 | 1.97 | - | 5.04 | 2.48 |
| SC40 | 13 | 1.65 in | 35-400 | With die 35, 50, 70, 95, 120, 150, 185, 240, 300, 400 | 25.06 | 17.0 | 24.82 | 6.54 | 4.45 | - | 2.92 | 1.89 | - | - |
| SC60 | 20 | not applicable | 35-630 | With die 35, 50, 70, 95, 120, 150, 185, 240, 300, 400, 500, 630 | 25.61 | 14.3 | 27.19 | 5.52 | 4.57 | 2.05 | 1.97 | - | 6.42 | - |

Note: Models SC21 & SC32 are supplied with single indent dies, all other models are supplied with hexagonal dies. Please refer to page 155 for the mm² to AWG/mcm conversions.

OPTIONAL DIE SETS

| Model number | Description |
|--------------|---------------------------------------------------------------------------|
| CD10 | Die set 10 mm ² , suitable for crimping tool SC30, SC40 & SC60 |
| CD16 | Die set 16 mm ² , suitable for crimping tool SC30, SC40 & SC60 |
| CD25 | Die set 25 mm ² , suitable for crimping tool SC30, SC40 & SC60 |

BC | BATTERY OPERATED CABLE CRIMPING TOOLS

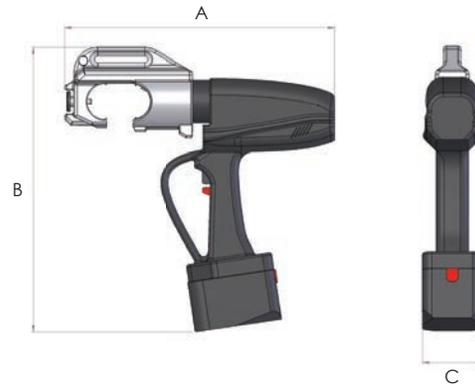


Fast self-contained battery powered tools

Supplied complete with standard set of dies

Lightweight and easy to operate

- ▶ Open jaw design with rotating head (excl. BC18X & BC63)
- ▶ Fast and quiet operation with no vibration
- ▶ Built in automatic pump pressure release valve
- ▶ Low battery power warning light
- ▶ Supplied complete with battery, charger, carrying strap and storage case



| Model number | Output (tons) | C-Jaw opening | Applicable range DIN (mm ²) | Standard dies (mm ²) | Weight (lbs) | Dimensions (in) | | |
|--------------|---------------|----------------|-----------------------------------------|-----------------------------------------------------------------|--------------|-----------------|-------|------|
| | | | | | | A | B | C |
| BC18X | 8 | not applicable | 10-185 | With die 10-16, 25-35, 50-70, 95-120, 150, 185 | 8.4 | 14.58 | 11.03 | 2.76 |
| BC30 | 13 | 1.18 in | 35-400 | With die 35, 50, 70, 95, 120, 150, 185, 240, 300, 400 | 13.0 | 15.76 | 11.03 | 2.76 |
| BC40 | 13 | 1.5 in | 35-400 | With die 35, 50, 70, 95, 120, 150, 185, 240, 300, 400 | 15.9 | 16.94 | 10.64 | 2.76 |
| BC63 | 20 | not applicable | 35-630 | With die 35, 50, 70, 95, 120, 150, 185, 240, 300, 400, 500, 630 | 15.2 | 16.55 | 12.61 | 2.96 |

OPTIONAL DIE SETS

| Model number | Description |
|--------------|---------------------------------------------------------------------------|
| CD10 | Die set 10 mm ² , suitable for crimping tool BC30, BC40 & BC63 |
| CD16 | Die set 16 mm ² , suitable for crimping tool BC30, BC40 & BC63 |
| CD25 | Die set 25 mm ² , suitable for crimping tool BC30, BC40 & BC63 |

Note: Please refer to page 155 for the mm² to AWG/mcm conversions

BC | ACCESSORIES



CCU144

| Model number | Description |
|--------------|-----------------------------------------|
| CCU144 | 14.4V Vehicle power socket charger unit |



BP12

| Model number | Description |
|--------------|--------------------|
| BP12 | Battery pack 14.4V |

Note: Charger supplied separately



MP220

| Model number | Description |
|--------------|--------------------------------------------------|
| | Power supply to operate unit directly from mains |
| MP110 | 110V |
| MP220 | 220/230V |

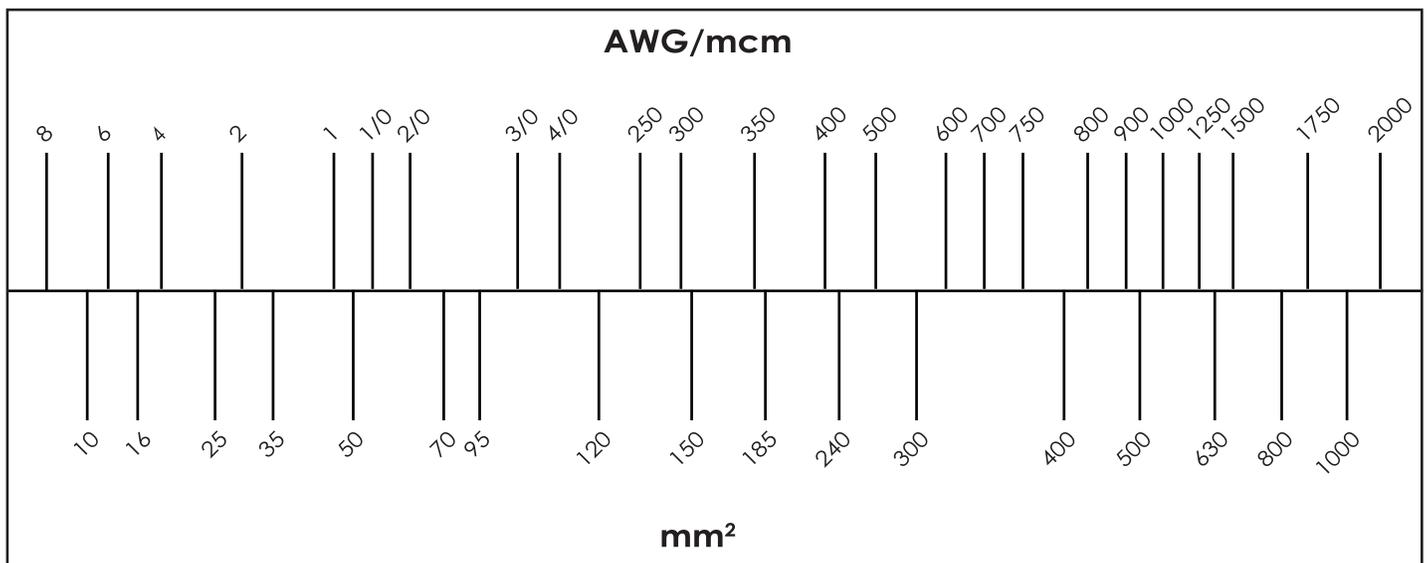


CU12

| Model number | Description |
|--------------|-------------------------|
| CU12 | Mains charger 110V-230V |

CONVERSION TABLE

The metric die sets supplied with Hi-Force hydraulic crimpers are suitable for crimping non-insulated connectors and terminals to DIN standards only. The standard metric wire sizes do not correspond exactly to AWG/mcm standards. The illustration below provides a cross reference of closest equivalents of metric and AWG/mcm sizes.



HCH | HYDRAULIC CUTTER HEADS

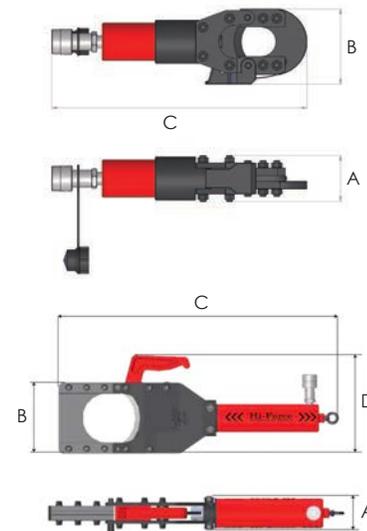


- ▶ High quality tool steel cutting blades
- ▶ Fitted with quick connect coupling for easy connection to hydraulic pump & hose
- ▶ Suitable for cutting copper, aluminum and telephone cables
- ▶ Carrying handle fitted as standard on HCH120 model

Single acting spring assisted return design

Compact and lightweight

Working pressure 10000 psi



| Model number | Cutting force (tons) | Weight (lbs) | Dimensions (in) | | | |
|--------------|----------------------|--------------|-----------------|------|-------|------|
| | | | A | B | C | D |
| HCH40 | 8 | 6.2 | 2.36 | 3.98 | 13 | - |
| HCH120 | 14 | 33.1 | 3.15 | 7.01 | 27.66 | 9.77 |

| Material | Description | Maximum diameter cutting capacity (in) | |
|-----------------|-----------------------------|----------------------------------------|--------|
| | | HCH40 | HCH120 |
| Steel Wire Rope | 6 x 7 Hempcore | 0.79 | - |
| | 6 x 12 Hempcore | 0.99 | - |
| | 6 x 19 Hempcore | 0.99 | - |
| Round Bar | Soft copper bar | 0.99 | - |
| | Soft aluminum bar | 0.99 | - |
| | Soft steel bar (below SS41) | 0.63 | - |
| Wire Strands | Bare copper strands | 1.58 | 1.65 |
| | Bare aluminum strands | 1.58 | 1.81 |
| Cable | Telephone cable CCP | - | 4.73 |
| | Armored underground cable | 1.58 | 4.73 |

Note: The cable of XLPE armored underground cable cannot contain 'PVC cover' and 'steel wire'.

Replacement blades for HCH hydraulic cutter heads:

| Blade part number | Blade type | For cutter |
|-------------------|------------|------------|
| CT40-11 | Moving | HCH40 |
| CT40-05 | Static | HCH40 |
| HCH120-01 | Moving | HCH120 |
| HCH120-02 | Static | HCH120 |

CT | SELF-CONTAINED HYDRAULIC CUTTERS



Cutting capacity up to 1.58 inches diameter

Cuts a wide variety of materials

Compact and lightweight

- ▶ High quality tool steel cutting blades
- ▶ Incorporates an integral hydraulic pump for easy operation
- ▶ Ergonomic grip handles for reduced operator effort
- ▶ Suitable for cutting steel wire rope, round bar, wire strands and cable



| Model number | Cutting force (tons) | Weight (lbs) | Dimensions (in) | | | |
|--------------|----------------------|--------------|-----------------|------|------|------|
| | | | A | B | C | D |
| CT20 | 7 | 6.2 | 15.37 | 5.71 | 2.99 | 1.58 |
| CT40 | 8 | 13.2 | 22.06 | 6.11 | 4.06 | 2.56 |

| Material | Description | Maximum diameter cutting capacity (in) | |
|-----------------|-----------------------------|----------------------------------------|------|
| | | CT20 | CT40 |
| Steel Wire Rope | 6 x 7 Hempcore | 0.63 | 0.79 |
| | 6 x 12 Hempcore | 0.79 | 0.99 |
| | 6 x 19 Hempcore | 0.79 | 0.99 |
| Round Bar | Soft copper bar | 0.79 | 0.99 |
| | Soft aluminum bar | 0.79 | 0.99 |
| | Soft steel bar (below SS41) | 0.63 | 0.63 |
| Wire Strands | Bare copper strands | 0.79 | 1.58 |
| | Bare aluminum strands | 0.79 | 1.58 |
| Cable | Armored underground cable | 0.79 | 1.58 |

Replacement blades for CT self-contained cutter models:

| Blade part number | Blade type | For cutter |
|-------------------|------------|------------|
| CT20-04 | Moving | CT20 |
| CT20-05 | Static | CT20 |
| CT40-11 | Moving | CT40 |
| CT40-05 | Static | CT40 |

HWC | HAMMER BLOW WIRE ROPE AND CABLE CUTTERS

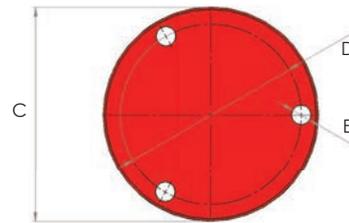
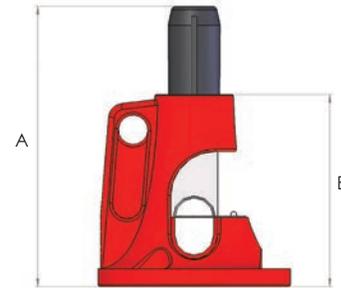


Highly cost efficient impact design

Cutting capacities up to 1.5 inches diameter

Portable and lightweight

- ▶ Manufactured from high quality, shock resistant ductile iron
- ▶ Heat treated, tool steel cutting blade, fully contained within housing for increased safety
- ▶ Suitable for cutting wire ropes and electrical cables



| Model number | Wire rope Ø in | Cutting capacity | | Weight (lbs) |
|--------------|-------------------|------------------------|-----------------|--------------|
| | | Electric cable mcm* | mm ² | |
| HWC90 | 0.75 | 250 | 127 | 7.1 |
| HWC91 | 1.06 | 300 | 152 | 15.4 |
| HWC92 | 1.5 | 750 | 380 | 28.7 |

| Dimensions (In) | | | | |
|-----------------|------|------|------|------|
| A | B | C | D | E |
| 8.87 | 5.52 | 3.47 | n/a | n/a |
| 9.65 | 6.07 | 6.3 | 5.83 | 0.55 |
| 11.23 | 7.68 | 7.68 | 6.46 | 0.71 |

*mcm = 1000 circular mils

Replacement blades for HWC hammer blow wire rope and cable cutters:

| Blade part number | For cutter |
|-------------------|------------|
| HWC90-105 | HWC90 |
| HWC91-125 | HWC91 |
| HWC92-135 | HWC92 |

HSWC | SELF-CONTAINED HYDRAULIC WIRE ROPE CUTTERS

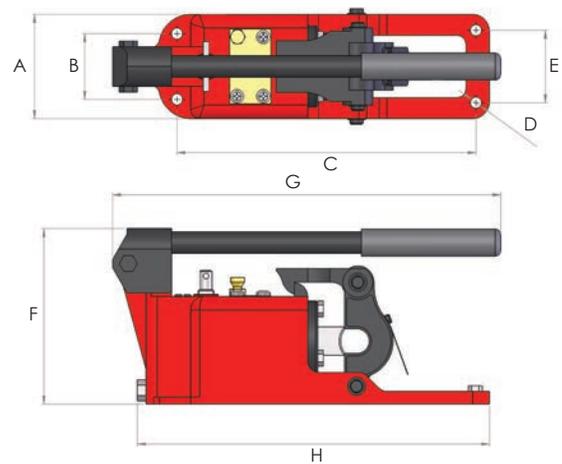


Cutting capacities up to 1.73 inches diameter

Strong rigid steel construction

Easy to use with minimum operator effort

- ▶ Self-contained design for applications where no external power is available
- ▶ Open jaw design cutting head allows easy access for the material to be cut
- ▶ Heat treated, high quality tool steel blade
- ▶ Ergonomic grip handle for low operator effort
- ▶ Smooth guillotine action reduces risk of blade jamming



| Model number | Cutting capacity Wire rope Ø (in) | Weight (lbs) | Dimensions (in) | | | | | | | |
|--------------|--------------------------------------|--------------|-----------------|------|-------|-----|------|------|-------|-------|
| | | | A | B | C | D | E | F | G | H |
| HSWC19 | 0.75 | 20.9 | 3.66 | 2.29 | 10.44 | 0.4 | 2.52 | 6.07 | 13.59 | 12.41 |
| HSWC28 | 1.1 | 34.2 | 4.14 | 2.52 | 11.58 | 0.4 | 2.64 | 6.86 | 14.74 | 14.07 |
| HSWC44 | 1.75 | 66.1 | 4.93 | 2.76 | 15.48 | 0.4 | 3.31 | 8 | 19.31 | 18.12 |

Replacement blades for HSWC self-contained wire rope cutters:

| Blade part number | For cutter |
|-------------------|------------|
| HSWC19-4 | HSWC19 |
| HSWC28-4 | HSWC28 |
| HSWC44-4 | HSWC44 |

HWRC | DOUBLE ACTING WIRE ROPE CUTTERS

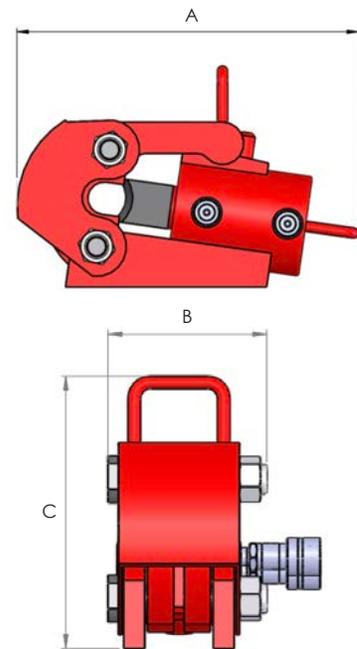


Double acting design

Smooth guillotine cutting action

Working pressure 10000 psi

- ▶ Features a double acting cylinder which offers a faster and positive return
- ▶ High grade steel construction
- ▶ Open jaw design cutting head allows easy access for the material to be cut
- ▶ Specially toughened high tensile steel blades and jaws
- ▶ Designed for cutting high tensile locked coil wire ropes and solid steel bars
- ▶ Fitted with quick connect couplings for easy connection to hydraulic pump and hoses



| Model number | Output (tons) | Cutting capacity (in) | | | Oil capacity (in ³) | Weight (lbs) | Dimensions (in) | | |
|--------------|---------------|-----------------------|-------|-----------------|---------------------------------|--------------|-----------------|-------|-------|
| | | Wire rope Ø | Cable | Reinforcing bar | | | A | B | C |
| HWRC1115 | 40 | 1.5 | 1.5 | 0.79 | 21.35 | 66.1 | 15.76 | 6.11 | 10.64 |
| HWRC1125 | 88 | 2.48 | 2.48 | 1.26 | 54.9 | 132.3 | 17.73 | 7.88 | 15.37 |
| HWRC1136 | 88 | 3.55 | 3.55 | 1.26 | 73.23 | 154.3 | 20.29 | 7.88 | 15.37 |
| HWRC1145 | 132 | 4.49 | 4.49 | 1.58 | 146.46 | 209.4 | 22.46 | 11.03 | 17.53 |

Replacement blades for HWRC wire rope cutter models:

| Blade part number | For cutter |
|-------------------|------------|
| 111511 | HWRC1115 |
| 112511 | HWRC1125 |
| 113611 | HWRC1136 |
| 114511 | HWRC1145 |

HCC | CHAIN CUTTERS

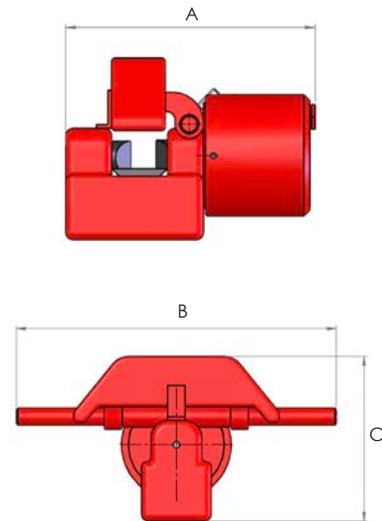


Cutting capacities up to 1.97 inches diameter

Smooth guillotine cutting action

Working pressure 10000 psi

- ▶ Single acting spring assisted return hydraulic piston
- ▶ High grade steel construction
- ▶ Swivel locking safety guard allows easy access for material to be cut
- ▶ Specially toughened high tensile steel blades and jaws
- ▶ Fitted with overload protection valve for extra safety
- ▶ Includes quick connect hydraulic coupling for easy connection to pump and hose
- ▶ Designed for cutting grade 100 and 47 HRC high tensile steel chains and reinforcing bars



| Model number | Output (tons) | Cutting capacity Ø (in) | Maximum allowed | | Oil capacity (in ³) | Weight (lbs) | Dimensions (in) | | |
|--------------|---------------|-------------------------|-----------------|----------------|---------------------------------|--------------|-----------------|-------|-------|
| | | | Chain grade | Steel hardness | | | A | B | C |
| HCC26-100 | 77 | 1.02 | 100 | 47 HRC | 16.84 | 50.7 | 17.34 | 7.09 | 7.09 |
| HCC34-100 | 110 | 1.34 | 100 | 47 HRC | 30.01 | 88.2 | 16.15 | 18.12 | 9.85 |
| HCC46-100 | 154 | 1.81 | 100 | 47 HRC | 59.78 | 158.7 | 22.26 | 25.02 | 13.59 |
| HCC50-100 | 160 | 1.97 | 100 | 47 HRC | 67.1 | 169.8 | 22.26 | 25.02 | 14.18 |

Replacement blades for HCC chain cutter models:

| Blade part number | Blade type | For cutter |
|-------------------|------------|------------|
| HCC26-4M100 | Moving | HCC26-100 |
| HCC26-4S100 | Static | HCC26-100 |
| HCC34-5M100 | Moving | HCC34-100 |
| HCC34-5S100 | Static | HCC34-100 |
| HCC46-11M100 | Moving | HCC46-100 |
| HCC46-11S100 | Static | HCC46-100 |
| HCC50-17M100 | Moving | HCC50-100 |
| HCC50-17S100 | Static | HCC50-100 |

HI-FORCE SKATES

The Hi-Force range of skates are designed for moving, installing and relocating heavy machinery and equipment in a safe and cost effective way. The range comprises of a choice of six different designs, all manufactured to provide a flexible and dependable solution for heavy load movement. All models incorporate an endless hardened roller chain, which revolves around the skate and ensures at least four rollers remain in contact with the load bearing surface, at all times to ensure smooth travel, even over cracked concrete floors. Ideally suited for confined space applications and heavy irregular shaped loads, Hi-Force skates offer a more economical alternative, for moving heavy loads, than most other lifting and positioning devices.

With a range of accessories like turntables, stabilisers, spacer bars and steering handles available, as well as the option of bespoke designs, to customer exact requirements, Hi-Force skates have all your heavy equipment movements covered.

Typical applications for Hi-Force skates include bridge building, oil rig installation, movement of transformers, generators, turbines and heavy machinery.





SKATES

| | |
|------------------------------------------------------|------------|
| RKT RANGE | 164 |
| Roller skate kit - tricycle | |
| RKF RANGE | 165 |
| Roller skate kits - quad | |
| RSN RANGE | 166 |
| Multi-purpose skates | |
| RSA RANGE | 167 |
| Heavy duty skates | |
| RSG RANGE | 168 |
| Heavy duty skates with grooved guide - single roller | |
| RSD RANGE | 169 |
| Heavy duty skates with grooved guide - double roller | |

RKT | ROLLER SKATE KITS - TRICYCLE



Capacity 39 tons

Available as a complete kit

Endless hardened roller chain

- ▶ Low height design for increased stability and safety
- ▶ Heavy duty construction with minimal maintenance required
- ▶ Kit comprises of three skates with all necessary accessories
- ▶ Center front skate fitted with turntable for easy change of direction
- ▶ Twin rear skates supplied with tie bar for increased stability

| Model number | Cap. per set (tons) | Twin rollers (ø in) | Single rollers (ø in) | Height (in) | Turntable (ø in) | Handle length (in) | Weight (lbs) |
|--------------|---------------------|---------------------|-----------------------|-------------|------------------|--------------------|--------------|
| RKT35 | 39 | 1.18 | 0.95 | 4.33 | 9.85 | 34.67 | 149.9 |

METAL BOX



| Length | Dimensions (in) | |
|--------|-----------------|--------|
| | Width | Height |
| 24.03 | 12.21 | 6.5 |

Note: RKT kit is supplied in a metal storage case

RKF | ROLLER SKATE KITS - QUAD



Capacities from 22 to 66 tons

Minimum turning circle 10 feet

Endless hardened roller chain

- ▶ Low height design for increased stability and safety
- ▶ Heavy duty construction with minimal maintenance required
- ▶ Kit comprises of four skates with all necessary accessories
- ▶ Includes two turntables for fitment to front steering skates
- ▶ Maximum recommended speed of movement of 16 feet per minute

| Model number | Cap. per set (tons) | Skates Qty: 4 | Turntables Qty: 2 | Levelling plates Qty: 2 | Link bars Qty: 2 | Handles Qty: 2 | Weight (lbs) |
|--------------|---------------------|---------------|-------------------|-------------------------|------------------|----------------|--------------|
| RKF20 | 22 | RSN10 | RTT10 | RLP10 | RLB00 | RPH00 | 105.8 |
| RKF30 | 33 | RSN15 | RTT15 | RLP15 | RLB00 | RPH00 | 123.5 |
| RKF60 | 66 | RSN30 | RTT30 | RLP30 | RLB00 | RPH00 | 198.4 |

Note: Each set carrying capacity is calculated taking into consideration that two roller skates are sufficient to support the full load.

Dimensions:

| Model number | Rollers (ø in) | Total height (in) | Turntable (ø in) | Handle length (in) |
|--------------|----------------|-------------------|------------------|--------------------|
| RKF20 | 0.71 | 4.26 | 5.12 | 34.67 |
| RKF30 | 0.95 | 4.61 | 5.12 | 34.67 |
| RKF60 | 1.18 | 5.52 | 5.91 | 34.67 |

METAL BOX



| Length | Dimensions (in) | |
|--------|-----------------|--------|
| | Width | Height |
| 24.03 | 12.21 | 6.5 |

Note: RKF kit is supplied in a metal storage case

RSN | MULTI-PURPOSE SKATES



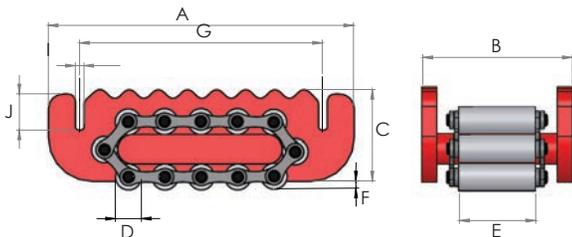
Capacities from 11 to 88 tons

Endless hardened roller chain

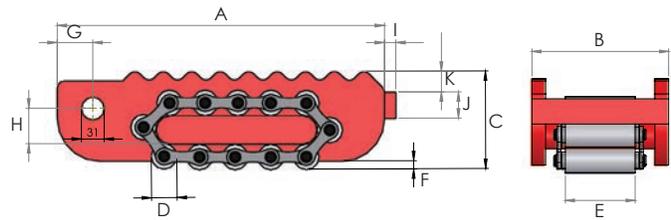
Full range of accessories available

- ▶ Low height design for increased stability and safety
- ▶ Heavy duty construction with minimal maintenance required
- ▶ Turntables and levelling plates available for easy directional change
- ▶ Maximum recommended speed of movement of 16 feet per minute

Drawings for models RSN10, RSN15 and RSN30



Drawings for models RSN60 and RSN80



| Model number | Capacity (tons) | Rollers in contact | Rollers total | Weight (lbs) | Dimensions (in) | | | | | | | | | | |
|--------------|-----------------|--------------------|---------------|--------------|-----------------|------|------|------|------|------|------|------|------|------|------|
| | | | | | A | B | C | Ø D | E | F | G | H | I | J | K |
| RSN10 | 11 | 5 | 15 | 11.5 | 8.27 | 3.94 | 2.6 | 0.71 | 2.01 | 0.24 | 6.58 | - | 0.24 | 0.99 | - |
| RSN15 | 16 | 4 | 13 | 16.1 | 8.67 | 4.45 | 2.96 | 0.95 | 2.36 | 0.39 | 7.09 | - | 0.24 | 0.99 | - |
| RSN30 | 33 | 4 | 13 | 28.7 | 10.64 | 5.12 | 3.62 | 1.18 | 2.68 | 0.39 | 8.55 | - | 0.24 | 0.99 | - |
| RSN60 | 66 | 4 | 13 | 70.5 | 14.97 | 6.62 | 5 | 1.65 | 2.99 | 0.63 | 1.42 | 1.89 | 0.39 | 1.58 | 0.59 |
| RSN80 | 88 | 6 | 17 | 134.5 | 20.88 | 7.17 | 5.79 | 1.97 | 3.39 | 0.75 | 1.42 | 2.36 | 0.39 | 1.58 | 0.59 |

ACCESSORIES

| Model number | Description | Diameter (in) | Capacity (tons) | Weight (lbs) |
|--------------|-----------------|---------------|-----------------|--------------|
| RTT10 | Turntable | 5.12 | 11 | 9.9 |
| RTT15 | Turntable | 5.12 | 16 | 9.9 |
| RTT30 | Turntable | 5.91 | 33 | 14.8 |
| RTT60 | Turntable | 7.49 | 66 | 30.2 |
| RTT80 | Turntable | 8.67 | 88 | 41.7 |
| RLP10 | Levelling plate | n/a | 11 | 8.2 |
| RLP15 | Levelling plate | n/a | 16 | 8.2 |
| RLP30 | Levelling plate | n/a | 33 | 11.7 |
| RLP60 | Levelling plate | n/a | 66 | 30.4 |
| RLP80 | Levelling plate | n/a | 88 | 41.4 |

RSA | HEAVY DUTY SKATES

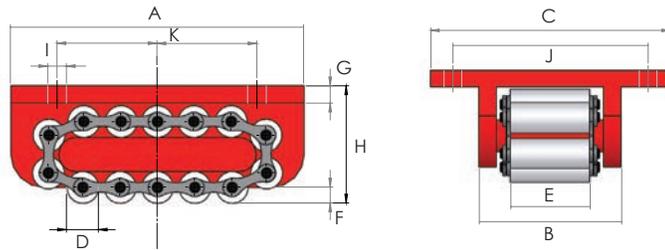


Capacities from 16 to 94 tons

Choice of 6 models available

Fitted with large load bearing top plate

- ▶ Low height design for increased stability and safety
- ▶ Drilled bolt holes (4 nr.) on all models up to 55 tons capacity
- ▶ Specially positioned bolt holes can be included as required
- ▶ Maximum recommended speed of movement of 16 feet per minute
- ▶ Can be used as a conveyor in fixed position under the moving load



| Model number | Capacity (tons) | Rollers in contact | Rollers total | Weight (lbs) | Dimensions (in) | | | | | | | | | | |
|--------------|-----------------|--------------------|---------------|--------------|-----------------|------|-------|------|------|------|------|------|------|------|------|
| | | | | | A | B | C | Ø D | E | F | G | H | Ø I | J | K |
| RSA15 | 16 | 5 | 15 | 19.6 | 8.27 | 3.94 | 6.9 | 0.71 | 2.01 | 0.24 | 0.51 | 2.99 | 0.55 | 5.52 | 2.96 |
| RSA20 | 22 | 4 | 13 | 25.8 | 8.67 | 4.45 | 7.49 | 0.95 | 2.36 | 0.39 | 0.55 | 3.43 | 0.55 | 6.11 | 2.96 |
| RSA40 | 44 | 4 | 13 | 42.5 | 10.64 | 5.12 | 8.27 | 1.18 | 2.68 | 0.39 | 0.55 | 4.1 | 0.71 | 6.9 | 3.74 |
| RSA50 | 55 | 6 | 17 | 63.9 | 12.61 | 5.52 | 8.67 | 1.18 | 2.68 | 0.39 | 0.71 | 4.53 | 0.71 | 7.09 | 4.73 |
| RSA65 | 72 | 4 | 13 | 112.4 | 14.97 | 6.62 | 10.64 | 1.65 | 2.99 | 0.75 | 0.75 | 5.71 | 0.87 | 8.67 | 5.52 |
| RSA85 | 94 | 6 | 17 | 202.8 | 20.88 | 7.17 | 11.82 | 1.97 | 3.39 | 0.75 | 0.75 | 6.5 | 0.87 | 9.46 | 8.08 |

RSG | HEAVY DUTY SKATES WITH GROOVED GUIDE - SINGLE ROLLER

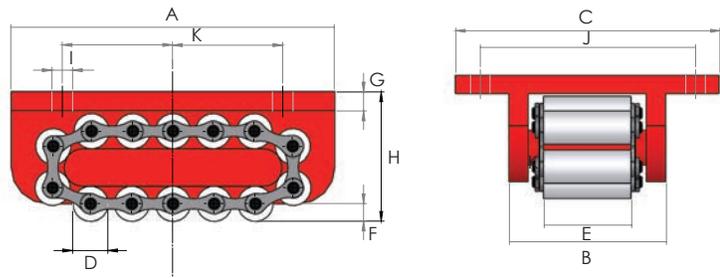


Capacities from 44 to 220 tons

Choice of 7 models available

Fitted with large load bearing top plate

- ▶ Suitable for use over longer distances and/or permanent loads
- ▶ Center plate chain guide reduces wear significantly
- ▶ Optional fixing bolt holes available (standard on models RSG40 & RSG50)
- ▶ Maximum recommended speed of movement 16 feet per minute
- ▶ Can be used as a conveyor in fixed position under the moving load



| Model number | Capacity (tons) | Rollers in contact | Rollers total | Weight (lbs) | Dimensions (in) | | | | | | | | | | |
|--------------|-----------------|--------------------|---------------|--------------|-----------------|------|-------|------|------|------|------|------|------|-------|-------|
| | | | | | A | B | C | Ø D | E | F | G | H | Ø I | J | K |
| RSG40 | 44 | 4 | 13 | 43.2 | 10.64 | 5.12 | 8.27 | 1.18 | 2.68 | 0.39 | 0.55 | 4.1 | 0.71 | 6.9 | 3.74 |
| RSG50 | 55 | 6 | 17 | 65.0 | 12.61 | 5.52 | 8.67 | 1.18 | 2.68 | 0.39 | 0.71 | 4.53 | 0.71 | 7.09 | 4.73 |
| RSG65 | 72 | 4 | 13 | 114.0 | 14.97 | 6.62 | 10.64 | 1.65 | 2.99 | 0.75 | 0.75 | 5.71 | 0.87 | 8.67 | 5.52 |
| RSG85 | 94 | 6 | 17 | 205.0 | 20.88 | 7.17 | 11.82 | 1.97 | 3.39 | 0.75 | 0.75 | 6.5 | 0.87 | 9.46 | 8.08 |
| RSG100 | 110 | 8 | 21 | 240.3 | 22.85 | 7.29 | 11.82 | 1.97 | 3.39 | 0.75 | 0.91 | 6.7 | 1.02 | 9.85 | 9.85 |
| RSG150 | 165 | 9 | 23 | 357.1 | 25.61 | 8.08 | 13.79 | 1.97 | 3.94 | 0.79 | 1.1 | 7.49 | 1.02 | 11.03 | 9.46 |
| RSG200 | 220 | 13 | 31 | 586.4 | 35.46 | 8.08 | 14.97 | 1.97 | 3.94 | 0.79 | 1.5 | 7.88 | 1.3 | 11.82 | 14.18 |

RSD | HEAVY DUTY SKATES WITH GROOVED GUIDE - DOUBLE ROLLER

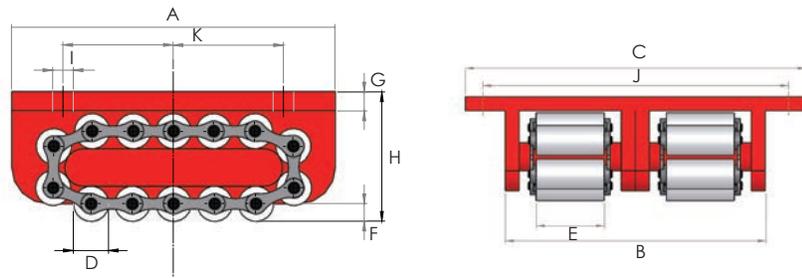


Capacities from 88 to 441 tons

Choice of 7 models available

Fitted with large load bearing top plate

- ▶ Low height double roller design for even greater stability and safety
- ▶ Twin center plate chain guides reduce wear significantly
- ▶ Fixing bolt holes (6 nr.) included as standard feature
- ▶ Maximum recommended speed of movement 16 feet per minute
- ▶ Can be used as a conveyor in fixed position under the moving load



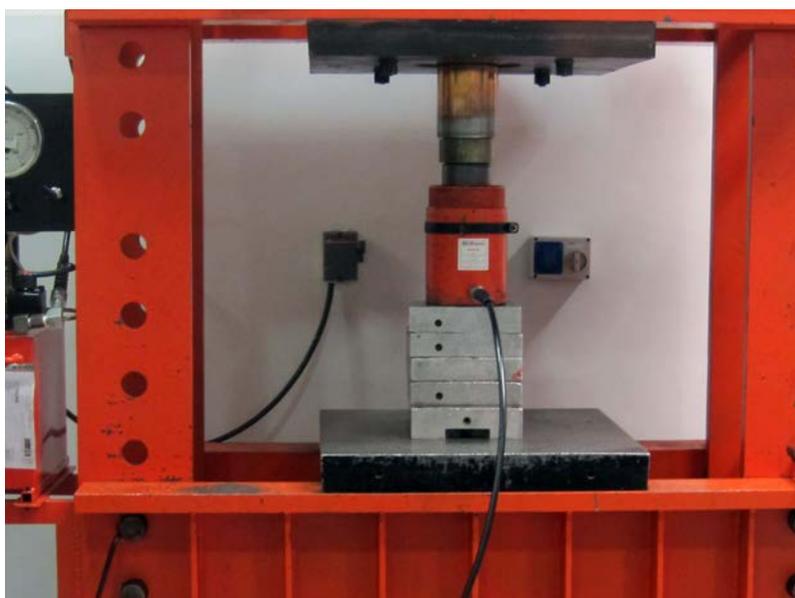
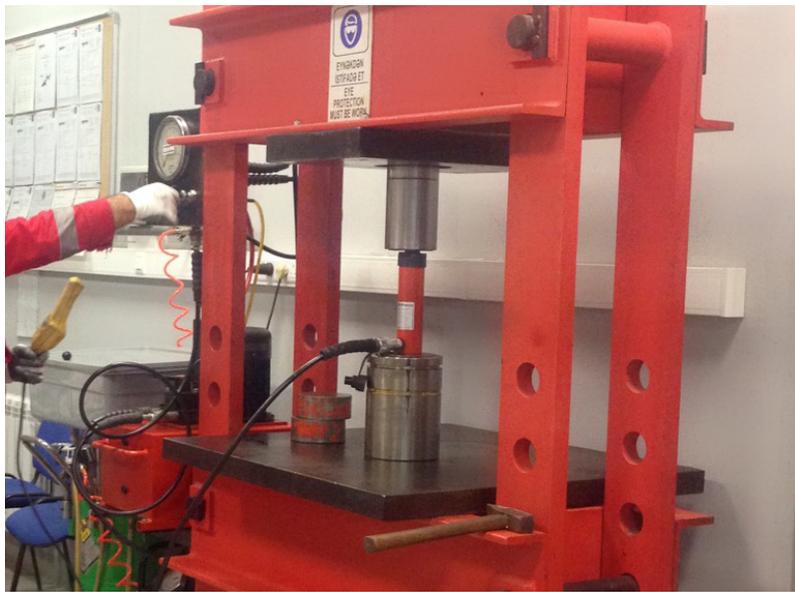
| Model number | Capacity (tons) | Rollers in contact | Rollers total | Weight (lbs) | Dimensions (in) | | | | | | | | | | |
|--------------|-----------------|--------------------|---------------|--------------|-----------------|-------|-------|------|------|------|------|------|------|-------|-------|
| | | | | | A | B | C | Ø D | E | F | G | H | Ø I | J | K |
| RSD80 | 88 | 2x4 | 2x13 | 79.8 | 10.64 | 10.24 | 13.4 | 1.18 | 2.68 | 0.39 | 0.55 | 4.1 | 0.71 | 12.02 | 3.74 |
| RSD100 | 110 | 2x6 | 2x17 | 126.8 | 12.61 | 11.03 | 14.18 | 1.18 | 2.68 | 0.39 | 0.71 | 4.53 | 0.71 | 12.81 | 4.73 |
| RSD130 | 143 | 2x4 | 2x13 | 211.6 | 14.97 | 13.24 | 15.76 | 1.65 | 2.99 | 0.75 | 0.75 | 5.71 | 0.87 | 15.37 | 5.91 |
| RSD170 | 187 | 2x6 | 2x17 | 385.8 | 20.88 | 14.34 | 18.91 | 1.97 | 3.39 | 0.75 | 0.75 | 6.5 | 0.87 | 16.94 | 8.27 |
| RSD200 | 220 | 2x8 | 2x21 | 456.4 | 22.85 | 14.34 | 18.91 | 1.97 | 3.39 | 0.75 | 0.91 | 6.7 | 1.02 | 16.94 | 9.85 |
| RSD300 | 331 | 2x9 | 2x23 | 672.4 | 25.61 | 16.15 | 22.06 | 1.97 | 3.94 | 0.79 | 1.1 | 7.49 | 1.02 | 19.31 | 9.46 |
| RSD400 | 441 | 2x13 | 2x31 | 1069.2 | 35.46 | 16.15 | 23.25 | 1.97 | 3.94 | 0.79 | 1.5 | 7.88 | 1.3 | 19.7 | 14.18 |

HI-FORCE HYDRAULIC PRESSES

The Hi-Force range of workshop hydraulic presses offers a choice of 25 models with either single acting or double acting cylinder and manually operated, air powered or electric powered hydraulic pump. All models incorporate an adjustable work table with additional adjustable top bed adjustment on all models 55 tons capacity and above. All models supplied with dual scale, hydraulic pressure gauge for increased safety and load monitoring. Factory fitted optional accessories include a mechanical bed winch for easy adjustment of the work table, rolling head kit for horizontal adjustment of the hydraulic cylinder and multi-positional work piece V-blocks.

Ideally suited for use in workshop maintenance departments, Hi-Force hydraulic presses are designed and manufactured, with maximum strength and durability, to provide years of trouble-free use in a wide variety of applications.





PRESSES

HPF RANGE

172

Workshop presses, V-blocks and bed winches

HPF | WORKSHOP PRESSES



Capacities from 11 to 220 tons

Stroke lengths from 9.85 to 13 inches

Working pressure 10000 psi

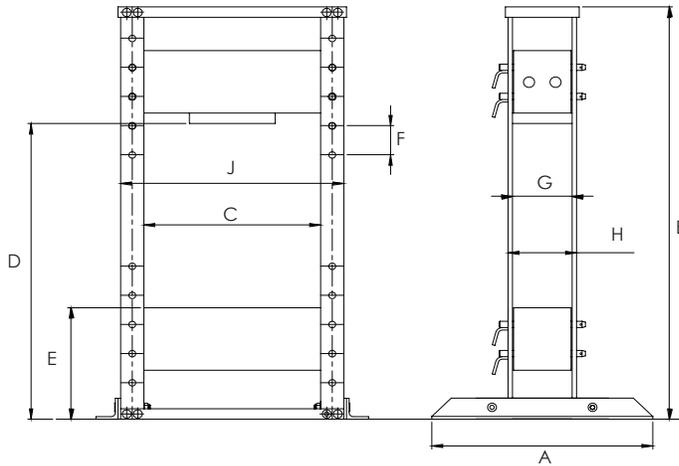
- ▶ Strong steel frame construction
- ▶ Choice of single or double acting hydraulic cylinder
- ▶ Manual, air or electric driven pump options
- ▶ Easily adjustable work table on all models
- ▶ Adjustable upper bed on all models 55 tons and above

| Model number | Capacity (tons) | Stroke (in) | Cylinder model | Cylinder principle | Pump model | Pump operation | Weight (lbs) |
|--------------|-----------------|-------------|----------------|--------------------|------------|----------------------|--------------|
| HPF1020 | 11 | 9.85 | HSS1010 | single acting | HP110 | hand operated | 209.4 |
| HPF1030 | 11 | 9.85 | HSS1010 | single acting | AHP1120 | air powered | 187.4 |
| HPF2520 | 28 | 9.85 | HSS2510 | single acting | HP227 | hand operated | 319.7 |
| HPF2530 | 28 | 9.85 | HSS2510 | single acting | AHP1120 | air powered | 304.2 |
| HPF2541 | 28 | 9.85 | HSS2510 | single acting | HEP103341 | electric driven 110V | 352.7 |
| HPF2542 | 28 | 9.85 | HSS2510 | single acting | HEP103342 | electric driven 240V | 352.7 |
| HPF2544 | 28 | 9.85 | HSS2510 | single acting | HEP207314 | electric driven 415V | 352.7 |
| HPF5020S | 55 | 13 | HSS5013 | single acting | HP257 | hand operated | 1036.2 |
| HPF5020D | 55 | 13 | HDA5013 | double acting | HP252D | hand operated | 1102.3 |
| HPF5030S | 55 | 13 | HSS5013 | single acting | AHP1121 | air powered | 1113.3 |
| HPF5030D | 55 | 13 | HDA5013 | double acting | AHP1141 | air powered | 1113.3 |
| HPF5041S | 55 | 13 | HSS5013 | single acting | HEP207311 | electric driven 110V | 1113.3 |
| HPF5041D | 55 | 13 | HDA5013 | double acting | HEP207411 | electric driven 110V | 1060.4 |
| HPF5042S | 55 | 13 | HSS5013 | single acting | HEP207312 | electric driven 240V | 1128.8 |
| HPF5042D | 55 | 13 | HDA5013 | double acting | HEP207412 | electric driven 240V | 1142.0 |
| HPF5044S | 55 | 13 | HSS5013 | single acting | HEP207314 | electric driven 415V | 1142.0 |
| HPF5044D | 55 | 13 | HDA5013 | double acting | HEP207414 | electric driven 415V | 1142.0 |
| HPF10020 | 110 | 13 | HDA10013 | double acting | HP245D | hand operated | 2228.9 |
| HPF10030 | 110 | 13 | HDA10013 | double acting | HAP21042 | air powered | 2268.5 |
| HPF10041 | 110 | 13 | HDA10013 | double acting | HEP207421 | electric driven 110V | 2299.4 |
| HPF10042 | 110 | 13 | HDA10013 | double acting | HEP207422 | electric driven 240V | 2299.4 |
| HPF10044 | 110 | 13 | HDA10013 | double acting | HEP207424 | electric driven 415V | 2299.4 |
| HPF20041 | 220 | 12.02 | HDA20012 | double acting | HEP310421 | electric driven 110V | 7165.0 |
| HPF20042 | 220 | 12.02 | HDA20012 | double acting | HEP310422 | electric driven 240V | 7165.0 |
| HPF20044 | 220 | 12.02 | HDA20012 | double acting | HEP310424 | electric driven 415V | 7165.0 |

Note: All 380/440V models are suitable for operation at 50 Hz and 60 Hz. All 110/120 and 220/240 volt models are supplied to run 50 Hz as standard. For 60 Hz requirements please add suffix 'H' to the Press model number.

HPF | WORKSHOP PRESSES

PRESS FRAME



Note: Press bed and press head are adjustable in steps of 'F', 55 tons have 4 positions, 110 tons has 3 positions, 220 tons has 7 positions. 11 and 28 ton press frame has fixed press head and adjustable press bed.

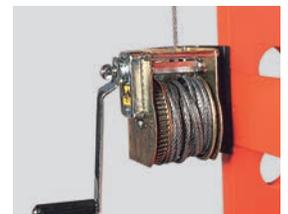
| Model number | Dimensions (in) | | | | | | | | | | |
|--------------|-----------------|--------|-------|---------------|-------|---------------|-------|------|-------|-------|-------|
| | A | B | C | D (min - max) | | E (min - max) | | F | G | H | J |
| HPF1000 | 29.23 | 57.05 | 20.02 | 49.57 | | 10.24 39.79 | | 5.91 | - | 5.99 | 26 |
| HPF2500 | 29.94 | 57.05 | 20.02 | 49.57 | | 10.24 39.79 | | 5.91 | - | 5.99 | 26 |
| HPF5000 | 39.4 | 80.97 | 31.52 | 44.92 | 61.46 | 15.56 | 32.11 | 5.52 | 10.17 | 11.74 | 39.4 |
| HPF10000 | 39.4 | 78.01 | 39.4 | 42.95 | 53.98 | 21.67 | 32.7 | 5.52 | 13.32 | 15.29 | 48.86 |
| HPF20000 | 47.28 | 110.32 | 49.25 | 71.51 | 83.33 | 24.03 | 59.49 | 5.91 | 13 | 16.15 | 68.95 |

Note: Press frame only available for fitment of customer existing hydraulic components.

BED WINCHES

- ▶ Allows for easy mechanical adjustment of the work table
- ▶ Supplied as a factory fitted option on 55 & 110 ton models only

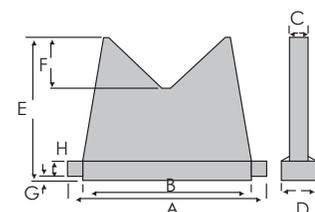
| Suffix | Description |
|--------|-----------------------------------------------|
| BW | Bed winch, suitable for 55 and 110 ton models |



V-BLOCKS

- ▶ Multi-position V-blocks with flat bed and V-shape press surfaces
- ▶ Available as standard for 11, 28, 55 and 110 ton presses

| Model number | Capacity per set (tons) | Dimensions (in) | | | | | | | |
|--------------|-------------------------|-----------------|-------|------|------|-------|------|------|------|
| | | A | B | C | D | E | F | G | H |
| HVB2500 | 11 - 28 | 8.04 | 6.07 | 0.79 | 1.77 | 6.11 | 1.77 | 0.32 | 0.79 |
| HVB5000 | 55 | 9.69 | 8.12 | 0.99 | 1.97 | 7.49 | 2.36 | 0.39 | 0.99 |
| HVB10000 | 110 | 12.84 | 10.87 | 1.38 | 2.36 | 10.44 | 3.35 | 0.39 | 1.38 |



HI-FORCE SPECIALITY TOOLS

Hi-Force speciality tools includes a range of tools for a variety of tool specific applications. The range includes hydraulic hole punchers for heavy duty steel plates, knock out punches for electrical control panels and thin steel plates and hydraulic pipe benders. All tools are 10000 psi maximum working pressure and can be operated using standard range Hi-Force hydraulic pumps and accessories.





SPECIALITY TOOLS

| | |
|-------------------------------|------------|
| HHP RANGE | 176 |
| Hole punchers | |
| HKP RANGE | 177 |
| Knock out punches | |
| PB RANGE | 178 |
| Pipe bender | |
| TOOL BOXES | 179 |
| Metal storage transport boxes | |

HHP | HOLE PUNCHERS

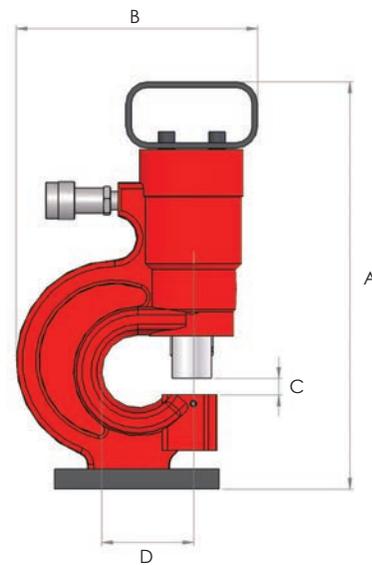


- ▶ Choice of single or double acting models
- ▶ Fitted with integral positioning and carrying handle
- ▶ Supplied with standard set of punches and dies
- ▶ Includes standard quick connect couplings for easy attachment to pump and hose

Punching force up to 55 tons

Throat depth up to 2.96 inches

Working pressure 10000 psi



| Model number | Maximum force (tons) | Throat depth (in) | Punch capacity (in) | | Standard punch/die sets included (in) | Weight excluding pump (lbs) | Dimensions (in) | | | |
|--------------|----------------------|-------------------|---------------------|---------------------|---------------------------------------|-----------------------------|-----------------|-------|------|------|
| | | | Steel plate | Hole punch diameter | | | A | B | C | D |
| HHP30 | 33 | 2.96 | 0.39 | up to 0.81 | 7/16", 1/2", 11/16", 13/16" | 28.7 | 14.78 | 8.67 | 0.59 | 2.96 |
| HHP50 | 55 | 2.56 | 0.59 | up to 1 | 7/16", 1/2", 11/16", 13/16", 1" | 92.6 | 16.75 | 11.07 | 0.59 | 2.56 |

| Model number | Recommended pump and hose | |
|--------------|-------------------------------------------|--------------------------------------------|
| | Manually operated | Pneumatically operated |
| HHP30 | HP232 complete with HC3 10 feet hose | AHP1120 complete with HC3 10 feet hose |
| HHP50 | HP232D complete with 2 x HC3 10 feet hose | AHP1141 complete with 2 x HC3 10 feet hose |

Note: Pumps and hoses supplied separately

HKP | KNOCK OUT PUNCHERS

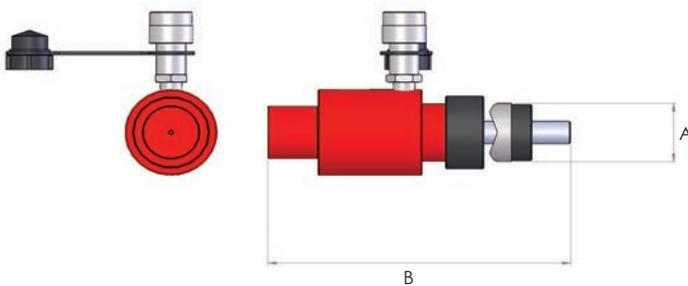


Capacity 11 tons

Standard die sets included

Working pressure 10000 psi

- ▶ Incorporates a single acting, spring assisted return cylinder
- ▶ Supplied with standard punches/die sets in a carrying case
- ▶ Can be supplied with or without manually operated pump and hydraulic hose
- ▶ Portable and easy to use
- ▶ Ideal for use in several punching applications including on-site hole punching in electric control panels and metal plates



| Model number | Maximum force (tons) | Punch capacity (in) | | Pump model | Hose model | Complete set weight (lbs) |
|--------------|----------------------|---------------------|------------|--------------|--------------|---------------------------|
| | | Stainless steel | Mild steel | | | |
| HKP10-2 | 11 | 0.06 | 0.13 | HP110 | HC2 | 32.2 |
| HKP10-4 | 11 | 0.06 | 0.13 | HP110 | HC2 | 57.5 |
| HKP10-2H | 11 | 0.06 | 0.13 | Not included | Not included | 15.4 |
| HKP10-4H | 11 | 0.06 | 0.13 | Not included | Not included | 40.8 |

| Model number | Description | Punches / dies included | | | | | | | | | |
|--------------|------------------------|-------------------------|------|------|------|------|------|------|------|------|------|
| HKP10-2 | Standard punch/die (A) | 0.86 | 1.09 | 1.34 | 1.68 | 1.92 | 2.38 | | | | |
| | Conduit size | ½" | ¾" | 1" | 1 ¼" | 1 ½" | 2" | | | | |
| | Length (B) | 12.06 | 9.46 | 9.46 | 9.46 | 9.46 | 9.46 | | | | |
| HKP10-4 | Standard punch/die (A) | 0.86 | 1.09 | 1.34 | 1.68 | 1.92 | 2.38 | 3 | 3.5 | 4.05 | 4.55 |
| | Conduit size | ½" | ¾" | 1" | 1 ¼" | 1 ½" | 2" | 2 ½" | 3" | 3 ½" | 4" |
| | Length (B) | 12.06 | 9.46 | 9.46 | 9.46 | 9.46 | 9.46 | 9.97 | 9.97 | 9.97 | 9.97 |

PB | HYDRAULIC PIPE BENDER

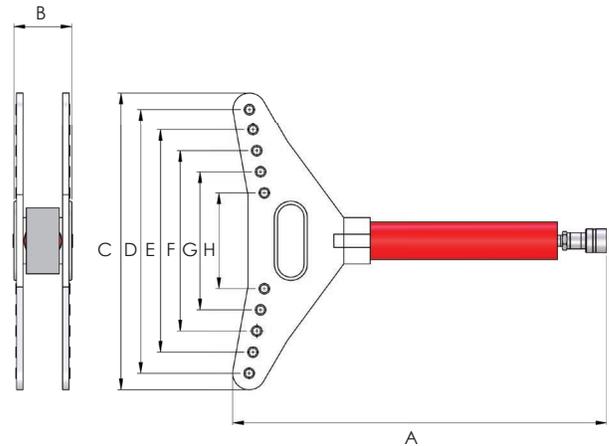


Capacity 11 tons

Bends up to 90 degrees

Working pressure 10000 psi

- ▶ Lightweight aluminum bending frame
- ▶ Designed to offer smooth, wrinkle free bend on various sizes and thicknesses of JIS standardized conduit pipes
- ▶ For use on pipe sizes from ½" to 3" (16 to 82 mm)
- ▶ Can be operated by manual or powered pumps up to 10000 psi
- ▶ Portable and easy to use
- ▶ Bending shoes are available as individual items



| Model number | Max Capacity (tons) | Stroke (in) | Oil capacity (in ³) | Weight (lbs) | Applicable range / included bending shoes | Dimensions (in) | | | | | | | |
|--------------|---------------------|-------------|---------------------------------|--------------|---------------------------------------------------|-----------------|------|-------|-------|-------|------|-------|-------|
| | | | | | | A | B | C | D | E | F | G | H |
| PB10B | 11 | 9.85 | 24.41 | 137.8 | Thick steel conduit from ½" (16 mm) to 3" (82 mm) | 28.37 | 5.79 | 29.75 | 27.38 | 23.44 | 19.5 | 15.56 | 11.62 |

Note: Weight for PB10B includes metal storage box but excludes pump and hose.

BENDING SHOES

| Model number | Pipe size (inch) | For thick steel conduit from ½" (16 mm) to 3" (82 mm) | | |
|--------------|------------------|-------------------------------------------------------|--------------------------|---------------------|
| | | Pipe outer diameter (in) | Pipe inner diameter (in) | Bending radius (in) |
| BS-B16 | ½" | 0.83 | 0.65 | 2.96 |
| BS-B22 | ¾" | 1.04 | 0.86 | 3.55 |
| BS-B28 | 1" | 1.31 | 1.12 | 5.12 |
| BS-B36 | 1 ¼" | 1.65 | 1.45 | 7.68 |
| BS-B42 | 1 ½" | 1.88 | 1.69 | 9.06 |
| BS-B54 | 2" | 2.35 | 2.13 | 10.64 |
| BS-B70 | 2 ½" | 2.96 | 2.74 | 17.73 |
| BS-B82 | 3" | 3.46 | 3.24 | 19.7 |

TOOL BOXES



Metal storage and transport box

Width up to 19.7 inches

Strong durable steel construction

- ▶ Choice of 4 sizes
- ▶ Anti-corrosion powder coated surface finish
- ▶ Ideal for storing and transporting Hi-Force products and accessories
- ▶ Maintains and protects tool condition in harsh environments
- ▶ Lockable feature helps control authorized tool usage

| Model number | Weight (lbs) | Length (in) | Width (in) | Height (in) |
|--------------|--------------|-------------|------------|-------------|
| MSB2 | 21.4 | 24.43 | 13.4 | 5.79 |
| MSB4 | 30.4 | 34.48 | 11.03 | 9.85 |
| MSB6 | 35.9 | 28.37 | 19.7 | 9.85 |
| MSB8 | 67.2 | 43.34 | 19.7 | 9.85 |

| MODEL NUMBER | DESCRIPTION | PAGE NUMBER |
|--------------|----------------------------------------------------------------|---------------|
| ACP | Auto-centre hydraulic puller kits | 143 |
| AGA | Gauge mounting block | 57 |
| AHP | Air driven hydrotest pumps - standard flow | 134 |
| AHP-BTU | Air driven pumps for bolt tensioners | 117 |
| AHP-C | Chart recorder for AHP-CR and AHP2-CR pumps | 135, 137 |
| AHP-CR | Air driven hydrotest pumps - standard flow with chart recorder | 135 |
| AHP-PB | Replacement pen for AHP-CR and AHP2-CR pumps | 135, 137 |
| AHP11 | Air driven single stage hand or foot operated pumps | 50 |
| AHP2 | Air driven hydrotest pumps - medium flow | 136 |
| AHP2-CR | Air driven hydrotest pumps - medium flow with chart recorder | 137 |
| ATDP | Air driven twin double acting hydrotest pumps | 139 |
| BC | Battery operated cable crimping tools | 154 |
| BP | Battery pack for BPP & BC | 34, 155 |
| BPP | Battery powered hydraulic pump | 34 |
| BS | Bending shoes for hydraulic pipe bender | 178 |
| BW | Bed winches for HPF presses | 173 |
| BWH | Backup wrench holder | 96 |
| BWI | Backup wrench imperial hexagon links | 96 |
| BWM | Backup wrench metric hexagon links | 96 |
| CCU | Vehicle charger unit | 34, 155 |
| CD | Optional die sets for CH, SC & BC range | 152, 153, 154 |
| CF | Female couplers | 63, 100 |
| CFD | Metal dust cap for CF | 63 |
| CH | Cable crimping heads | 152 |
| CHP | Comprehensive crimper and pump kits | 152 |
| CK | Complete conversion kits for STS | 109, 111 |
| CKS | Complete conversion kits for SBT | 105, 107 |
| CM | Male couplers | 63, 100 |
| CMD | Metal dust cap for CM | 63 |
| CMF | Complete coupler | 63 |
| CT | Self-contained hydraulic cutters | 157 |
| CU | Charger for BPP & BC | 34, 155 |
| DNS | Double acting nut splitters | 124 |
| ERA | Extended reaction arms for TWS-N and TWH-N | 88, 93 |
| FRL | Filter/regulator/lubricator unit | 101 |
| HA | Cylinder saddles | 24, 25 |
| HA-G | Cylinder saddles | 24, 25 |
| HA-T | Cylinder saddles | 24, 25 |
| HAP | Air driven two stage general duty pumps | 51 |
| HAS | Single acting solid piston aluminium cylinders | 16 |
| HBR | Bush replacement tool kit | 148 |
| HC | Black hoses with coupler | 56 |
| HC-C | Black hoses with couplers | 56 |
| HC-CR | Red hoses with couplers | 56 |
| HC-R | Red hoses with coupler | 56 |
| HCC | Chain cutters | 161 |
| HCH | Hydraulic cutter heads | 156 |
| HD | Cylinder saddles | 24, 25 |
| HD-T | Cylinder saddles | 24, 25 |
| HDA | Double acting high tonnage cylinders | 13 |
| HDD | Digital display unit | 59 |
| HDG | Digital pressure gauge | 58 |
| HEP1 | Electric driven two stage mini pumps | 35 |
| HEP103 | Electric driven two stage compact pumps | 36 |

| MODEL NUMBER | DESCRIPTION | PAGE NUMBER |
|----------------|---------------------------------------------------------------------|-------------|
| HEP2 | Electric driven two stage pumps - medium flow | 37 |
| HEP3 | Electric driven two stage pumps - high flow | 38 |
| HEP5 | Electric driven two stage pumps - heavy duty high flow | 39 |
| HF | Fittings and adaptors | 63 |
| HFA | Single acting failsafe lock ring aluminium cylinders | 18 |
| HFG | Single acting failsafe lock ring cylinders | 15 |
| HFL | Single acting low height failsafe lock ring cylinders | 14 |
| HFO | Premium grade hydraulic oil | 62 |
| HFS | Hydraulic flange spreader kits | 126 |
| HFS-H | Hydraulic flange spreaders | 125 |
| HFS-TK | Hydraulic flange spreader twin kits | 126 |
| HFV | Flow control valves | 65 |
| HG | Pressure gauges | 57 |
| HG-G | Pressure gauges - glycerine | 57 |
| HGA | Gauge mounting blocks | 57 |
| HGG | Single acting load return high tonnage industrial cylinders | 20 |
| HH | Black hoses without couplers | 56 |
| HH-NMS | Hoses for MHP pumps | 132 |
| HHA | Single acting hollow piston aluminium cylinders | 17 |
| HHP | Hole punchers | 176 |
| HH-R | Red hoses without couplers | 56 |
| HHR | Double acting hollow piston cylinders | 12 |
| HHS | Single acting hollow piston cylinders | 11 |
| HKP | Knock out punchers | 177 |
| HLS | Single acting low height cylinders | 9 |
| HM | Manifolds | 60 |
| HM1C | Manual shut off valve | 65 |
| HM-C | Controlled manifolds | 60 |
| HM-C-SU | Controlled manifold assemblies (single) | 61 |
| HM-C-DU | Controlled manifold assemblies (double) | 61 |
| HM-L | Manifolds (extended parallel) | 60 |
| HMJ | Steel machine lift jacks | 71 |
| HMNS | Self-contained nut splitters | 123 |
| HP-STEEL | Manually operated steel hand pumps | 29 |
| HP-ALU | Manually operated aluminium hand pumps | 30 |
| HP-FP | Manually operated foot pump | 33 |
| HP-FPC | Manually operated foot pump with gauge, mounting block and hose | 33 |
| HP-HIGH FLOW | Manually operated high flow hand pumps | 31 |
| HPC | Single acting pull cylinders | 22 |
| HPF | Workshop presses | 172, 173 |
| HPP | Petrol engine driven pumps | 52 |
| HPR | Pin and bush replacement tool kits | 149 |
| HPS | Single acting low height pad cylinders | 8 |
| HPT | Pressure transducer | 59 |
| HPV | Adjustable pressure relief valve | 65 |
| HPX | Manually operated ultra high pressure hand pumps | 32 |
| HPX-BTU | Manually operated ultra high pressure hand pump for bolt tensioners | 118 |
| HRA | Double acting high tonnage aluminium cylinders | 19 |
| HSG | Single acting load return high tonnage construction cylinders | 21 |
| HSP | Electric driven split flow multi-outlet pumps | 40 |
| HSS | Single acting multi-purpose cylinders | 10 |
| HSWC | Self-contained hydraulic wire rope cutters | 159 |
| HTN (imperial) | Hydraulic tensioner nuts | 114 |
| HTN (metric) | Hydraulic tensioner nuts | 115 |

| MODEL NUMBER | DESCRIPTION | PAGE NUMBER |
|--------------|-----------------------------------------------------------------|--------------------|
| HTW | Manual torque wrenches - break back type | 81 |
| HTWH | Torque hose sets including couplers | 100 |
| HTWP | Torque wrench pumps | 97 |
| HTWR | Torque wrench hose reel | 100 |
| HVB | Multi-position V-blocks for HPF presses | 173 |
| HVL | Single acting very low height pancake cylinders | 7 |
| HWC | Hammer blow wire rope cutters | 158 |
| HWRC | Double acting wire rope cutters | 160 |
| IB | Imperial hexagon AF size reducer bushes | 94 |
| IH | Imperial allen hexagon drive adaptors | 88 |
| IS | Imperial hexagon AF size heavy duty sockets | 86 |
| IW | Pneumatic impact wrenches | 101 |
| JAH | Aluminium jacks | 69 |
| JAS | Aluminium multi-purpose jacks | 68 |
| JCH | Compact hollow piston jacks | 70 |
| JCS | Compact solid piston jacks | 70 |
| JS | Jaw spreader | 128 |
| LLE | Load lock extensions for TL | 75 |
| MB | Metric hexagon AF size reducer bushes | 95 |
| MFS | Mechanical flange spreaders | 127 |
| MH | Metric allen hexagon drive adaptors | 88 |
| MHP | Manually operated hydrotest pumps | 132 |
| MHP-GK | Pressure gauge kits for MHP pumps | 132 |
| MHP-PU | Manually operated hydrotest pump units | 133 |
| MHR | Reservoir for MHP pump units | 133 |
| MP | Power supply for BPP & BC | 34, 155 |
| MS | Metric hexagon AF size heavy duty sockets | 87 |
| MSB | Metal storage transport boxes | 179 |
| NS | Single acting nut splitters | 122 |
| PB | Hydraulic pipe bender | 178 |
| PCS | Pump and cylinder sets | 23 |
| PKC | Comprehensive hydraulic puller kits | 145 |
| PKS | Hydraulic 2 and 3-way puller kits | 144 |
| PMV | Directional control valve, pump mounted | 64 |
| PMV-C | Directional control valve, pump mounted, closed centre | 64 |
| PMV-L | Directional control valve, pump mounted, load holding feature | 64 |
| PPA-WT | Wheel trolley | 39, 52 |
| PPC | Universal dust cap | 63 |
| QFP | Quick fit pullers | 112, 113 |
| RKF | Roller skate kits - quad | 165 |
| RKT | Roller skate kit - tricycle | 164 |
| RLB | Link bars for RKF | 165 |
| RLP | Levelling plates for RKF and RSN | 165, 166 |
| RMV | Directional control valve, remote mounted | 64 |
| RMV-C | Directional control valve, remote mounted, closed centre | 64 |
| RMV-L | Directional control valve, remote mounted, feature load holding | 64 |
| RPH | Handles for RKF | 165 |
| RS | Rotating sockets for SBT & STS | 105, 107, 109, 111 |
| RSA | Heavy duty skates | 167 |

| MODEL NUMBER | DESCRIPTION | PAGE NUMBER |
|----------------|------------------------------------------------------|----------------------------------------|
| RSD | Heavy duty skates with grooved guide - double roller | 169 |
| RSG | Heavy duty skates with grooved guide - single roller | 168 |
| RSN | Multi-purpose skates | 166 |
| RTT | Turntables for RKF and RSN | 165, 166 |
| SBT (imperial) | Spring return topside bolt tensioners | 104 |
| SBT (metric) | Spring return topside bolt tensioners | 106 |
| SBT-LC | Tensioner load cell | 105, 107 |
| SC | Self-contained crimping tools | 153 |
| SCP | Self-contained hydraulic pullers | 142 |
| SDC | Square drive conversion kits | 92 |
| SJS | Stepped jaw spreader | 129 |
| SJS-M | Self-contained stepped jaw spreader | 129 |
| SJS-TK | Stepped jaw spreader twin kit | 129 |
| SLDC | Sensor cables | 44, 48 |
| SLDS | Displacement sensors | 44, 48 |
| SLE | Slip lock extensions for TL | 75 |
| SLF | Synchronous lifting system, fixed speed drive | 41-44 |
| SLMK | Sensor cylinder mounting kits | 43, 47 |
| SLV | Synchronous lifting system, variable speed drive | 45-48 |
| SPP | Heavy duty hydraulic pullers | 146-147 |
| STFC | Female tensioner coupler | 119 |
| STMC | Male tensioner coupler | 119 |
| STN | Nipple | 119 |
| STS (imperial) | Topside bolt tensioners | 108 |
| STS (metric) | Topside bolt tensioners | 110 |
| STS-B | Tensioner bridge for SBT and STS | 105, 107, 109, 111 |
| STS-LC | Tensioner load cell | 109, 111 |
| STU (imperial) | Sub-sea bolt tensioners | 112 |
| STU (metric) | Sub-sea bolt tensioners | 113 |
| TL | ToughLift jacking systems | 74-77 |
| TLB | Load block sets for TL | 76 |
| TP | Tensioner threaded puller for STS | 109, 111 |
| TP-CS | Torque coupling sets | 98, 99 |
| TPA | Air driven torque pumps - premium line | 98 |
| TPE | Electric driven torque pumps - premium line | 99 |
| TPS | Tensioner threaded puller for SBT | 105, 107 |
| TS | Cylinder saddles | 24, 25 |
| TSH | Removable handle kits for TWS-N and TWH-N | 88, 93 |
| TTB | Tommy bar for HFL, HFG and HFA | 14, 15, 18 |
| TTB | Tensioner tommy bar for SBT, STS, STU and HTN | 105, 107, 109, 111, 112, 113, 114, 115 |
| TWG | Manual torque multipliers | 82 |
| TWH-N | Hydraulic torque wrenches - hexagon drive | 89 |
| TWH-NRH | Ratchet heads for TWH-N | 90, 91 |
| TWM | Manual torque wrenches - click type | 80 |
| TWP | Pneumatic torque multipliers | 83 |
| TWS-N | Hydraulic torque wrenches - square drive | 85 |
| XHC | High pressure bolt tensioner hoses | 119 |
| XHH | High pressure hoses for HPX pumps | 32 |
| XHR | Hose reel for XHC hoses | 119 |

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