



# Compact Fluid Power Systems

Catalog HY22-1131/US

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



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 **WARNING**

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

**Offer of Sale**

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**Parker Hannifin**  
HPS Division  
New Hope, MN 55428 USA

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## Oildyne Division

The Oildyne Division of Parker Hannifin Corporation has been manufacturing top quality compact hydraulic products since 1955. Anywhere in the world where there is a need for a compact fluid power system solution requiring flows up to 14.4 liters per minute (3.8 gallons per minute) and pressure to 276 bar (4000 psi), or integrated electro-hydraulic actuators, Parker Oildyne can provide the answer from concept to completion. Parker Oildyne is a company dedicated to providing solutions for today's high pressure, space saving, and power-dense hydraulic installations.

Parker Oildyne's current state-of-the-art manufacturing facility has been in operation since January 1999. An ISO9001 approach to delivering premium customer service is supported by a dedicated team of design, manufacturing and quality engineers using the latest technologies and equipment. Parker Oildyne pioneered the miniaturization of hydraulic components and offers this expertise to you.

Parker Oildyne products are used in a large range of diverse industries such as marine equipment, recreational vehicles, automotive, medical, material handling, construction equipment, turf care, industrial equipment and many more. Expand your hydraulic usage with compact fluid power systems from Parker Oildyne.

***Note: Oildyne products are designed to industrial standards; they are not to be used in aircraft applications.***





## Compact EHA

Electro-Hydraulic Actuators for  
high power density applications

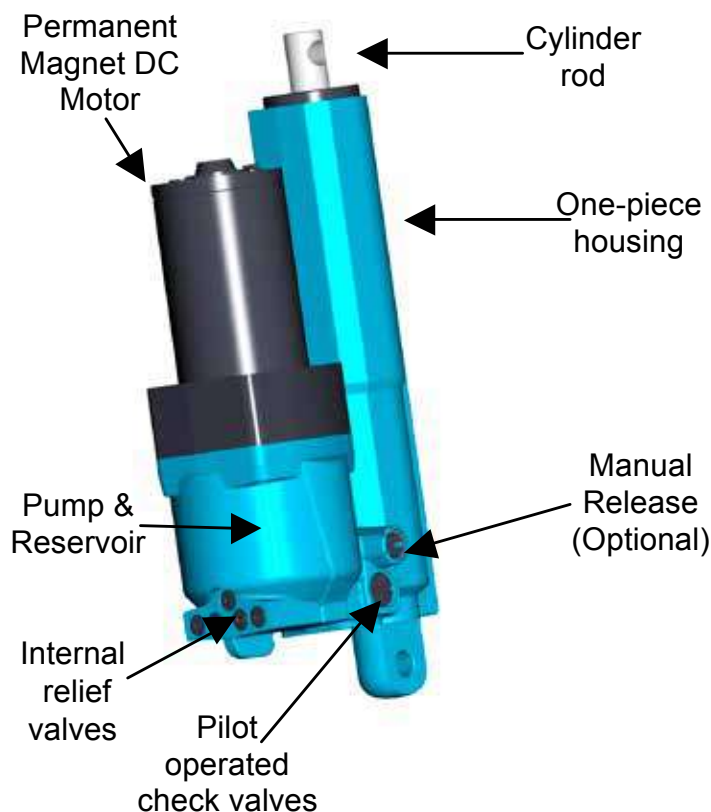
aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



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**Easy to Install and Connect**

Compact EHA is designed to make commissioning as simple as possible. The motor is connected to a suitable power supply and switching circuit, and the rod or base end is secured with a pivot pin. The unit is then actuated to align the opposite pivot pin connection, and the pin inserted to secure. And that's it – your Compact EHA is ready for use.



**Maintenance**

Because the Compact EHA is flushed, filled and sealed for life, there is virtually no maintenance required. This, in combination with the anodized housing, stainless steel rod and rugged seals and components, provides a longer service life with reduced warranty costs.

**Complete Compact EHA Solutions**

In addition to custom actuators, our engineers are experienced in the design of complete actuation systems. Where your requirement includes cable harnesses, switchgear and power supplies, please contact us for further information.

**For current Compact EHA literature, please call 1-800-CParker (1-800-272-7537) or e-mail to c-parker@parker.com and ask for Catalog Number HY22-3101.**

**Specifications**

**Actuator**

Type	hydraulic, double-acting
Bore sizes	25.4mm (1.0 in), 31.8mm (1.25 in), 36.5mm (1.44 in)
Standard stroke lengths	102mm (4 in), 152mm (6 in), 203mm (8 in)
Piston rod diameters	14.2mm (.561 in), 15.9mm (.625 in), 19.1mm (.750 in)
Standard mounting pin diameters	6.4mm (.250 in), 9.5mm (.375 in), 12.7mm (.500 in)

**Motor**

Motor types	12V DC, 245W (motor A) 12V DC, 560W (motor B) 24V DC, 245W (motor C) 24V DC, 560W (motor D)
Leads – length	1.5m (60 in)
Leads – gauge	14 gauge (motors A & C) 12 gauge (motors B & D)
Connector type	ring terminals, 6.6mm (.26 in) I/D

**Pump**

Pump type	gear, reversible
Pump capacities	.100 gear = .16cc/rev (.010 in <sup>3</sup> /rev) .190 gear = .31cc/rev (.019 in <sup>3</sup> /rev) .250 gear = .41cc/rev (.025 in <sup>3</sup> /rev) .327 gear = .53cc/rev (.032 in <sup>3</sup> /rev)
Fluid medium	automatic transmission fluid (ATF)

**Circuit**

Sealed hydraulic circuit with integrated pump, motor, actuator and reservoir, relief, thermal, check and back pressure valves.

**Certification and Testing**

Vibration	(minimum integrity test) MIL-STD-810F
Sealing	IP65 and IP67
Salt spray	1000 hours per ASTM B117
CE marked	in conformity with Machinery Directive 98/37/EC and 2007/42/EC

For other application-specific approvals, please consult factory.

**Performance**

Maximum force – extend	21.35kN (4800 lbf)
Maximum force – retract	16.00kN (3600 lbf)
Maximum speed	84mm/sec (3.3 in/sec)

**General**

Construction – body	anodized cast aluminium,
one-piece– piston rod	stainless steel
Orientation	universal
Manual release option	retained, for emergency use only
Operating temperature range	-34°C (-30°F) to +65°C (150°F)
Sound Level	< 70 dBA
Weight	under 5.5 kg (12 lbs)



## Oildyne 108/118 and 165/175 Series Hydraulic Power Units

Pressures to 241 bar (3500 psi)  
Flow to 5.3 lpm (1.4 gpm)

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



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## 108 and 165 Series Self-contained Hydraulic Power Units

The Oildyne Division's compact 108/165 Series power units let you put the power where you need it. They're completely self-contained with an AC or DC motor, gear pump, reservoir, internal valving, load hold checks and relief valves.

The 108/165 Series models are designed for intermittent service and come in six standard pump sizes which produce flows of .16, .31, .41, .52, .82 and 1.06 cc/rev (.0098, .0187, .0246, .0321, .050 and .065 cubic inches/rev). Locking check valves are available in all models. Performance will vary with the type of fluid used. Several hydraulic circuits are available.

108/165 Series units are available with single- or bi-directional rotation. Single direction units are commonly used to charge accumulators, power one-direction hydraulic motors and cylinders, provide pilot flow to servo valves, pressurize lube systems and supply multifunction circuits using external valving.

## Typical applications

### Positioning

- Hydraulic door operators
- Conveyor belt tensioners
- Medical chairs, beds, and equipment

### Recreational Vehicles

- Leveling
- Slideouts
- Tent Trailers

### Clamping

- Tool fixtures and jigs
- Hydraulic brakes
- Crimping tools
- Arbor presses
- Truck restraints

### Cycling

- Garbage compactors
- Valve operators
- Press controls
- Packing equipment
- Indexing tables

### Lifting

- Handicap lifts
- Scissor lift tables
- Pallet movers
- Cab tilts
- Mobile sign lifts
- Boat lifts

Bi-directional, reversible units operate double-acting cylinders and two-way motors.

New are the 118 and 175 Series codes. Instead of the standard threaded ports, these new versions provide a four-bolt, flat manifoldable surface to accept the solenoid manifold circuit or your custom manifold.

We'd like to work with you on your hydraulic applications. Our people know small hydraulics. We know how to design them, how to make them and how to apply them. Therefore, we can offer you a practical, economical solution to your fluid power problems.

Oildyne has pioneered top quality, compact hydraulic components since 1955. We can provide standard products or tailor high pressure, space saving solutions to your specific needs.

**Note: Parker Oildyne products are not to be applied in aviation applications.**



# Standard Product Ordering Code

<p><b>PRODUCT TYPE</b></p> <p>108 108 Power Unit                  118 118 Power Unit                  165 165 Power Unit                  175 175 Power Unit</p> <p><b>MOTOR CODE – 108/118</b></p> <p>AE 12 VDC Perm. Mag.                  AM 12 VDC Ser. Wnd.                  BE 24 VDC Perm. Mag.                  BI 24 VDC Ser. Wnd.                  HA 115 VAC, 1 phase                  HD 230 VAC, 1 phase                  IA 36 VDC Perm. Mag.                  IC 36 VDC Ser. Wnd.</p> <p><b>MOTOR CODE – 165/175</b></p> <p>AY 12 VDC Perm. Mag. 1 HP                  BY 24 VDC Perm. Mag. 1 HP</p> <p><b>PUMP TYPE</b></p> <p>S Standard                  C Cold Temp</p> <p><b>PUMP SIZE 108/118</b></p> <p>10 .16 cc/rev (.010 in<sup>3</sup>/rev)                  19 .31 cc/rev (.019 in<sup>3</sup>/rev)                  25 .41 cc/rev (.025 in<sup>3</sup>/rev)                  32 .52 cc/rev (.032 in<sup>3</sup>/rev)</p> <p><b>PUMP SIZE 165/175</b></p> <p>32 .52 cc/rev (.032 in<sup>3</sup>/rev)                  50 .82 cc/rev (.050 in<sup>3</sup>/rev)                  65 1.06 cc/rev (.065 in<sup>3</sup>/rev)</p> <p><b>RESERVOIRS</b></p> <table border="0" style="width: 100%;"> <tr> <td style="width: 30%;">Vertical Usable</td> <td style="width: 10%;">CODE</td> <td style="width: 30%;">Horizontal Usable</td> <td style="width: 30%;"></td> </tr> <tr> <td>340 cc</td> <td>21 in<sup>3</sup> A</td> <td>410 cc</td> <td>25 in<sup>3</sup></td> </tr> <tr> <td>600 cc</td> <td>37 in<sup>3</sup> B</td> <td>640 cc</td> <td>37 in<sup>3</sup></td> </tr> <tr> <td>410 cc</td> <td>25 in<sup>3</sup> C</td> <td></td> <td>N/A</td> </tr> <tr> <td>410 cc</td> <td>25 in<sup>3</sup> D</td> <td></td> <td>N/A</td> </tr> <tr> <td>1500 cc</td> <td>95 in<sup>3</sup> F</td> <td>1500 cc</td> <td>92 in<sup>3</sup></td> </tr> <tr> <td>750 cc</td> <td>46 in<sup>3</sup> G</td> <td>910 cc</td> <td>55 in<sup>3</sup></td> </tr> <tr> <td>1700 cc</td> <td>104 in<sup>3</sup> H</td> <td>2400 cc</td> <td>150 in<sup>3</sup></td> </tr> <tr> <td>3700 cc</td> <td>226 in<sup>3</sup> I</td> <td>4200 cc</td> <td>254 in<sup>3</sup></td> </tr> <tr> <td>5300 cc</td> <td>323 in<sup>3</sup> J</td> <td>5600 cc</td> <td>347 in<sup>3</sup></td> </tr> <tr> <td>950 cc</td> <td>58 in<sup>3</sup> P</td> <td>940 cc</td> <td>58 in<sup>3</sup></td> </tr> <tr> <td>1900 cc</td> <td>118 in<sup>3</sup> Q</td> <td>1500 cc</td> <td>95 in<sup>3</sup></td> </tr> <tr> <td>4500 cc</td> <td>277 in<sup>3</sup> R</td> <td>3000 cc</td> <td>185 in<sup>3</sup></td> </tr> <tr> <td>3200 cc</td> <td>201 in<sup>3</sup> S</td> <td>2300 cc</td> <td>141 in<sup>3</sup></td> </tr> </table> <p><b>NOTES:</b> C and D reservoirs are Vertical Mount only                  A, B and F reservoirs are available only for 108/118 Series                  Reservoir A with .32 pump cannot be horizontal mount</p>	Vertical Usable	CODE	Horizontal Usable		340 cc	21 in <sup>3</sup> A	410 cc	25 in <sup>3</sup>	600 cc	37 in <sup>3</sup> B	640 cc	37 in <sup>3</sup>	410 cc	25 in <sup>3</sup> C		N/A	410 cc	25 in <sup>3</sup> D		N/A	1500 cc	95 in <sup>3</sup> F	1500 cc	92 in <sup>3</sup>	750 cc	46 in <sup>3</sup> G	910 cc	55 in <sup>3</sup>	1700 cc	104 in <sup>3</sup> H	2400 cc	150 in <sup>3</sup>	3700 cc	226 in <sup>3</sup> I	4200 cc	254 in <sup>3</sup>	5300 cc	323 in <sup>3</sup> J	5600 cc	347 in <sup>3</sup>	950 cc	58 in <sup>3</sup> P	940 cc	58 in <sup>3</sup>	1900 cc	118 in <sup>3</sup> Q	1500 cc	95 in <sup>3</sup>	4500 cc	277 in <sup>3</sup> R	3000 cc	185 in <sup>3</sup>	3200 cc	201 in <sup>3</sup> S	2300 cc	141 in <sup>3</sup>	<p><b>DN RV SETTING</b>                  (Right Hand Port)                  In multiples of 100 psi                  Examples                  04 = 400 psi                  12 = 1200 psi                  29 = 2900 psi                  If Single Direction circuit use 00</p> <p><b>UP RV SETTING</b>                  (Left Hand Port)                  In multiples of 100 psi                  Examples                  04 = 400 psi                  12 = 1200 psi                  29 = 2900 psi</p> <p><b>MOUNTING</b></p> <p>V Vertical (motor up)                  H Horizontal (ports up)</p> <p><b>PORTS</b></p> <p>1 7/16-20 (SAE -4) (108 &amp; 165 only)                  2 7/16-24 (Inv. Flare) (108 only)                  3 1/8 in Pipe (NPSF) (108 only)                  4 1/8 in Pipe (BSPP) (108 &amp; 165 only)</p> <p><b>Note: for 118 or 175, use -1 for SAE mounting;                  use -4 for Metric mounting</b></p> <p><b>CIRCUIT TYPE</b></p> <p>NN Single direction                  WW Single dir. with check                  RR Reversible                  LL Reversible locking                  RB Reversible with Back Press.                  LB Rev. lock. with Back Press.</p> <p>Each Solenoid Valve option below includes the WW circuit:  <b>Use 118 or 175 when coding solenoid valve circuit</b>                  Coils have dual leads: 18 ga, 457 mm (18")</p> <p>S1 12 VDC, Normally Closed                  S2 24 VDC, Normally Closed                  S3 120 VAC, Normally Closed (108/118 only)                  S4 240 VAC, Normally Closed (108/118 only)                  S5 12 VDC, Normally Open                  S6 24 VDC, Normally Open                  S7 120 VAC, Normally Open (108/118 only)                  S8 240 VAC, Normally Open (108/118 only)</p>
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**ORDERING CODE INSTRUCTIONS**

Select the model code needed based on catalog information. All boxes above must be filled in before Oildyne can process the order. If the power unit is a single direction unit use '00' for the DN (Right Hand) relief valve box. For circuits LL and LB, the two relief valve settings should be within a 5:1 ratio.

**RELIEF VALVE TOLERANCES**

Pressure Range Bar	14 to 34.4	35 to 68.9	70 to 137.9	138+
Pressure Range PSI	200 to 499	500 to 999	1000 to 1999	2000+
Tolerance +/- (bar/psi)	5.2/75	6.9/100	10.3/150	13.8/200

**Hydraulic Fluid**

Acceptable fluids for 108/118/165/175 Series Power Units:

- Standard Automatic Transmission Fluid (ATF)
- Most mineral based hydraulic fluids

Viscosity range: 32-64 cSt (150-300 SSU) at 38°C (100°F).

**Temperature Range**

Temperature Ranges for 108/118/165/175 Series:

Operating: -7 to +60°C (+20 to +140°F)  
 Storage: -7 to +60°C (+20 to +140°F)  
 Please contact Parker Oildyne for usage outside of this range.

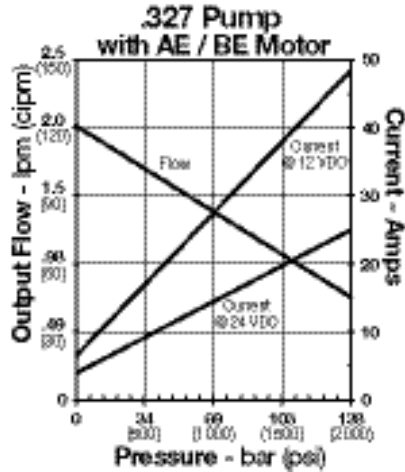
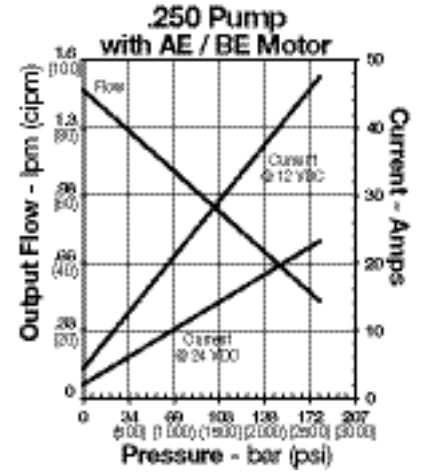
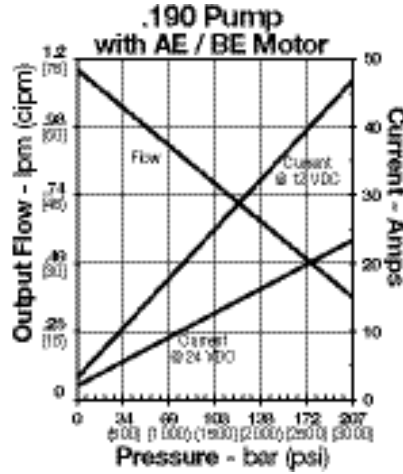
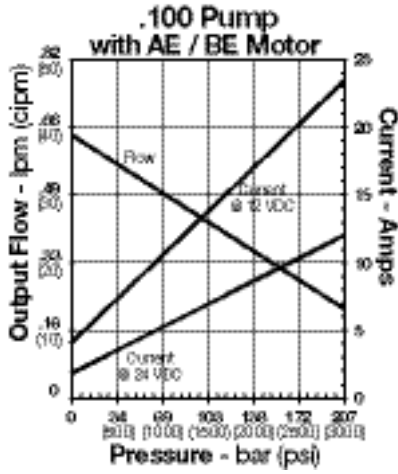
ALL DATA SUBJECT TO CHANGE WITHOUT NOTICE  
 FOR POWER UNIT CONFIGURATIONS OTHER THAN THOSE SHOWN PLEASE CONSULT OILDYNE.



# Performance Data

## 108/118 Series: Permanent Magnet Motors - AE/BE

Note: IA motor (36 VDC) flow will be equivalent to the AE/BE curves:  
current draw will be about 1/3 of the AE motor values



## BASIC MOTOR CONNECTIONS, BY MOTOR CODE

### 108/118 Series PM Motors: AE only (12 VDC)

1) For Single Direction only, and Reversible with UP port pressure:

- BLUE + 12 VDC
- GREEN Ground

2) Reversible with DN port pressure:

- BLUE Ground
- GREEN + 12 VDC

### 108/118 Series PM Motors: BE/IA only (24/36 VDC)

1) For Single Direction only, and Reversible with UP port pressure:

- BLACK + 24 or 36 VDC
- ORANGE Ground

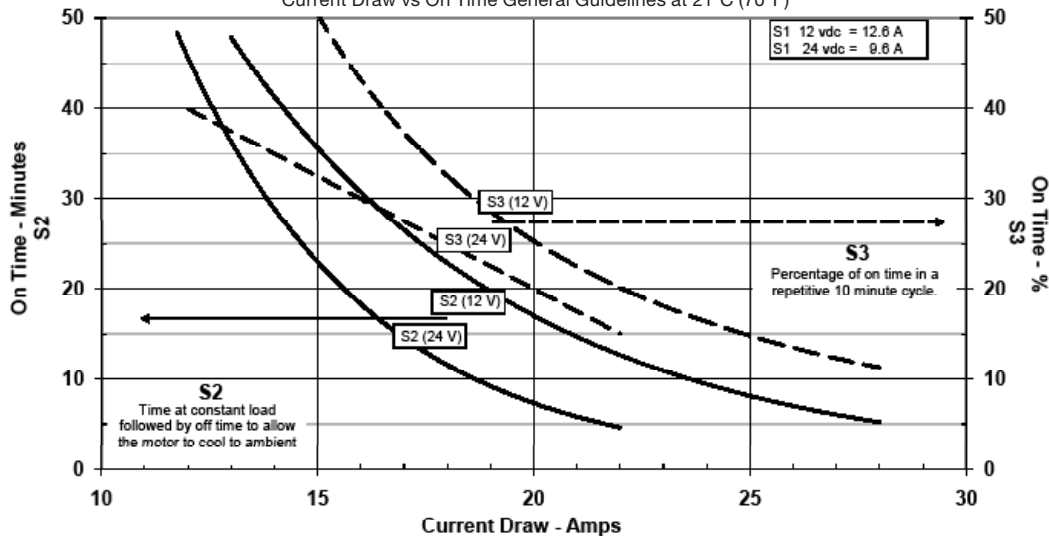
2) Reversible with DN port pressure:

- BLACK Ground
- ORANGE + 24 or 36 VDC

For electrical controls suggestions, see page 36

## DC Motor Duty Cycle Characteristics

108/118 Perm. Magnet Motors – AE/BE (for intermittent duty cycles only)  
Current Draw vs On Time General Guidelines at 21°C (70°F)

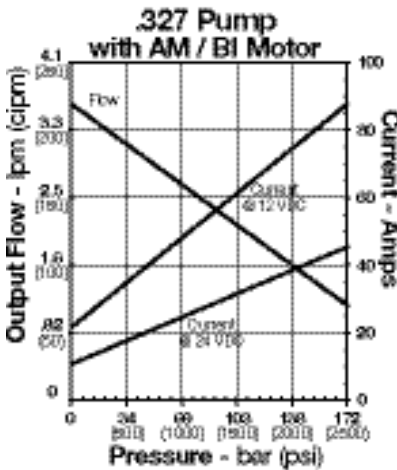
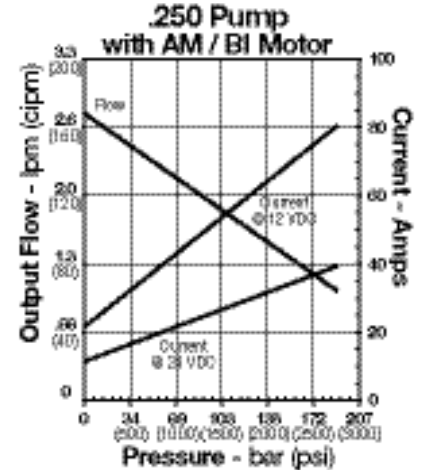
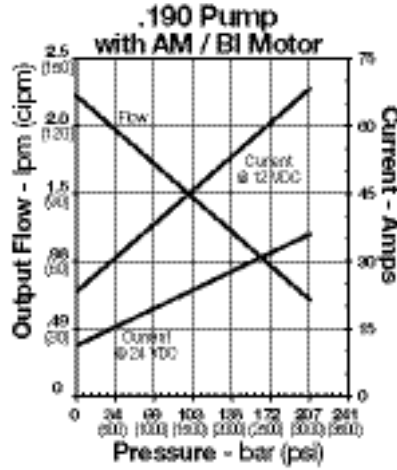
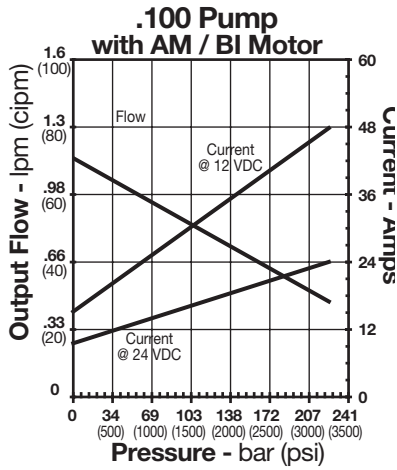


Performance data for reference only. Based on ATF at 21°C (70°F)

# Performance Data

## 108/118 Series: Series Wound Motors - AM/BI

Note: IC motor (36 VDC) flow will be equivalent to the AM/BI curves:  
current draw will be about 1/3 of the AM motor values



### 108/118 Series SW Motors: AM/BI/IC only (12/24/36 VDC)

1) For Single Direction only, and Reversible with UP port pressure:

- BLUE + VDC 12 (AM); 24 (BI); 36 (IC)
- GREEN unused
- BLACK Ground

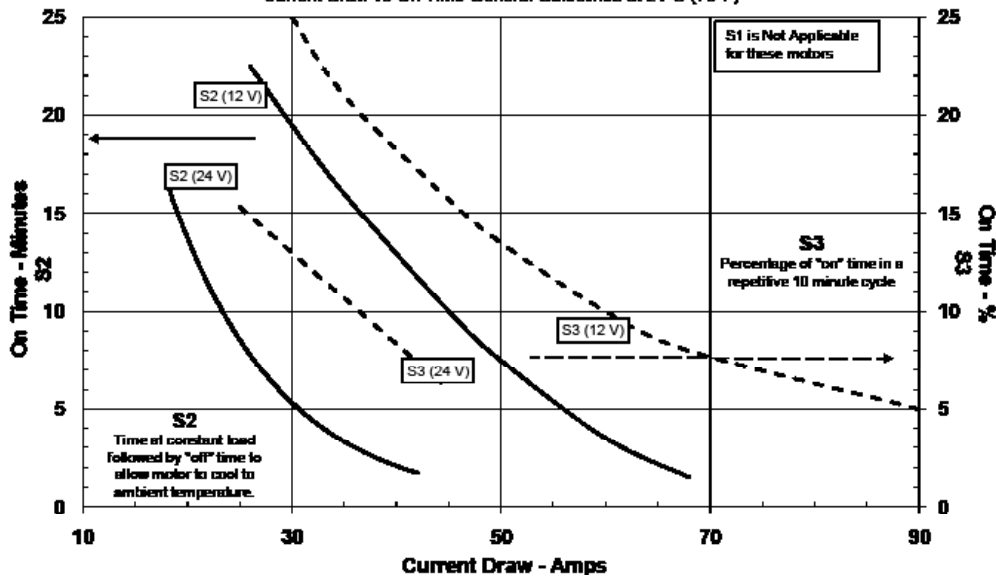
2) Reversible with DN port pressure:

- BLUE unused
- GREEN + VDC 12 (AM); 24 (BI); 36 (IC)
- BLACK Ground

For electrical controls suggestions, see page 36

## DC Motor Duty Cycle Characteristics Series Wound Motors - AM/BI

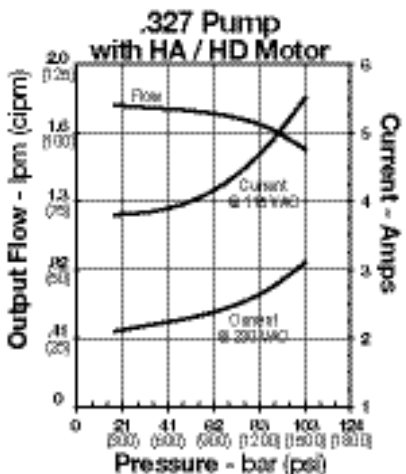
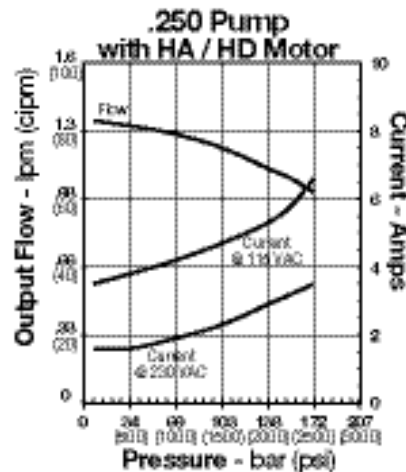
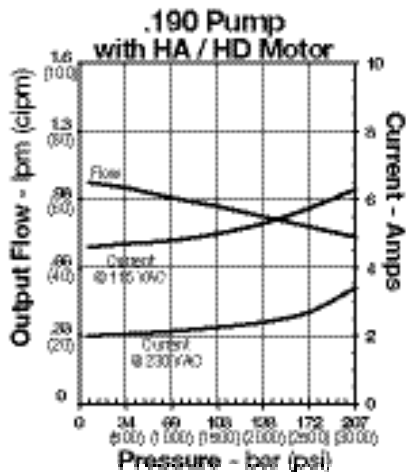
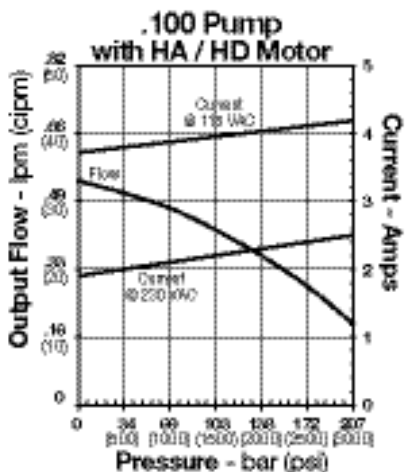
Current Draw vs On Time General Guidelines at room temperature  
Current Draw vs On Time General Guidelines at 21°C (70°F)



Performance data for reference only. Based on ATF at 21°C (70°F)

# Performance Data

## 108/118 Series: AC Motors - HA/HD

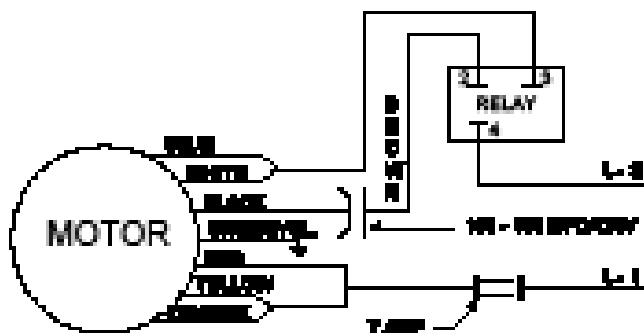


**NOTES:**

- S2 = 5 Maximum recommended ON time for the HA/HD motors is 5 minutes, after which the motors must be OFF until cooled to ambient temperature
- 50 Hz performance is about 83% of curves shown

**108/118 Series HA Motors (115 VAC)**

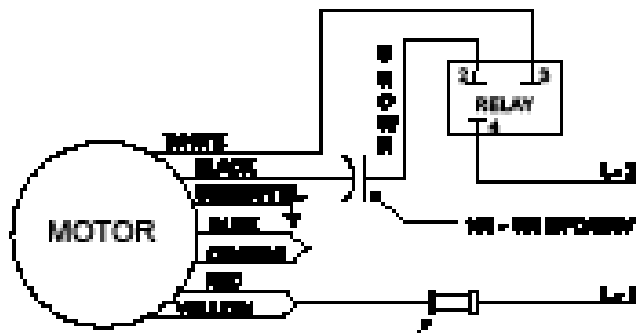
1) For Single Direction only, and Reversible with UP port pressure:



**115 VOLTAGE CONNECTION**

**108/118 Series HD Motors (230 VAC)**

1) For Single Direction only, and Reversible with UP port pressure:



**230 VOLTAGE CONNECTION**

For electrical controls suggestions, see page 36.

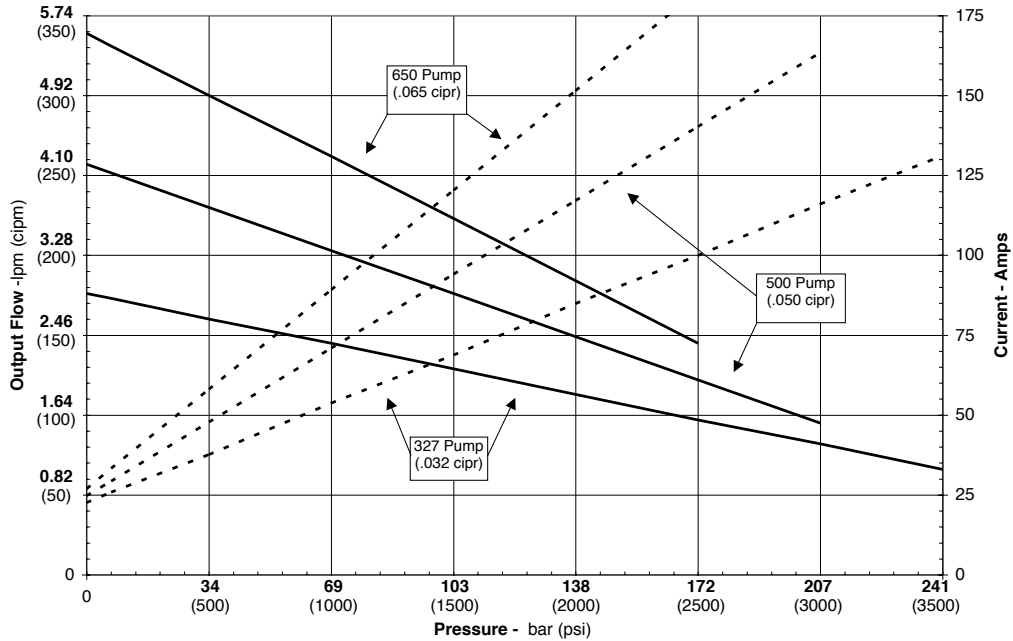
To reverse rotation, interchange the Black and Red wires.

Performance data for reference only. Based on ATF at 21°C (70°F)

# Performance Data

## 165/175 Series: Permanent Magnet Motors - AY

Note: BY motor (24 VDC) flow will be equivalent to the AY curves;  
 current draw will be about 1/2 of the AY motor values.



AY and BY motor electrical connections. For electrical controls suggestions, see page 36

### 165/175 Series AY Motor

1) For Single Direction only, and Reversible with UP port pressure:

- Terminal 1 Ground
- Terminal 2 + 12 VDC

2) Reversible with DN port pressure:

- Terminal 1 + 12 VDC
- Terminal 2 Ground

### 165/175 Series BY Motor

1) For Single Direction only, and Reversible with UP port pressure:

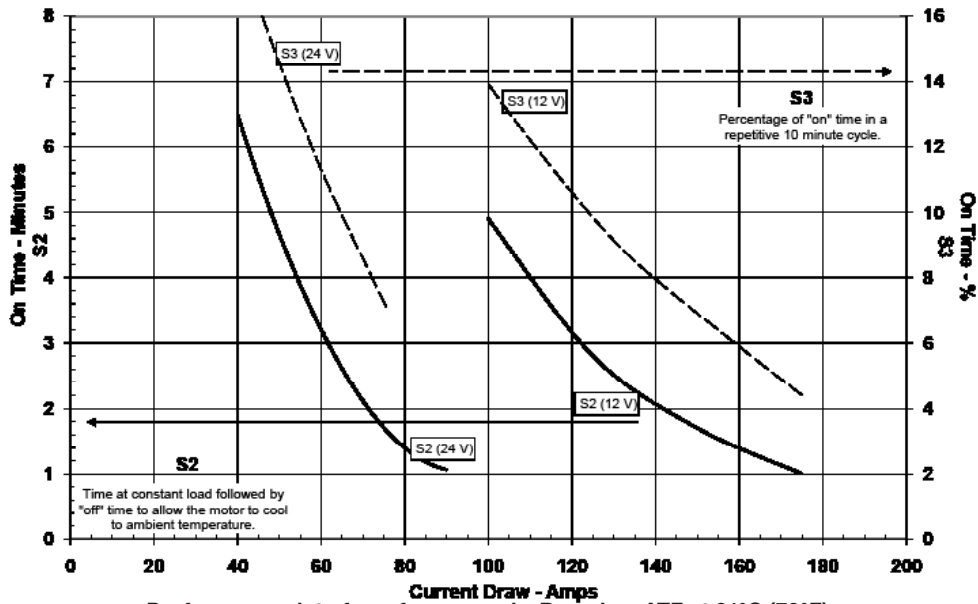
- Terminal 1 Ground
- Terminal 2 + 24 VDC

2) Reversible with DN port pressure:

- Terminal 1 + 24 VDC
- Terminal 2 Ground

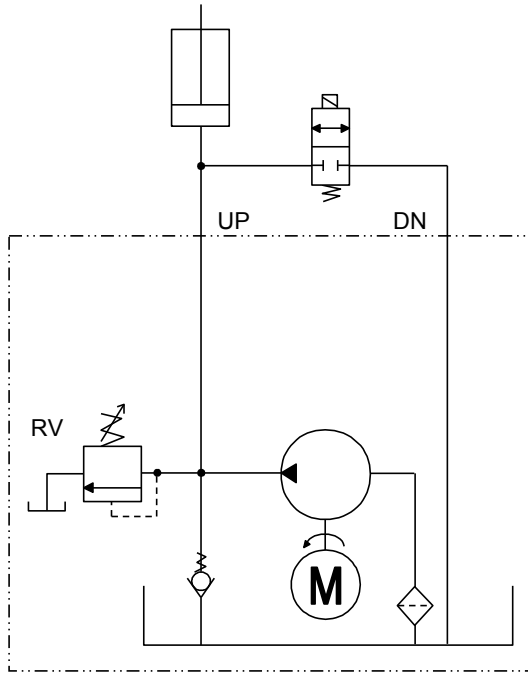
## DC Motor Duty Cycle Characteristics

165/175 Series Motors AY/BY (for intermittent duty cycles only)  
 Current Draw vs On Time General Guidelines at 21°C (70°F)

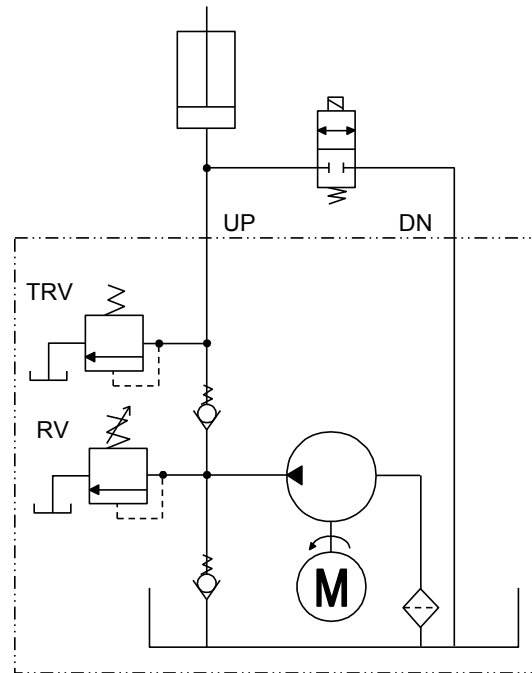


Performance data for reference only. Based on ATF at 21°C (70°F)

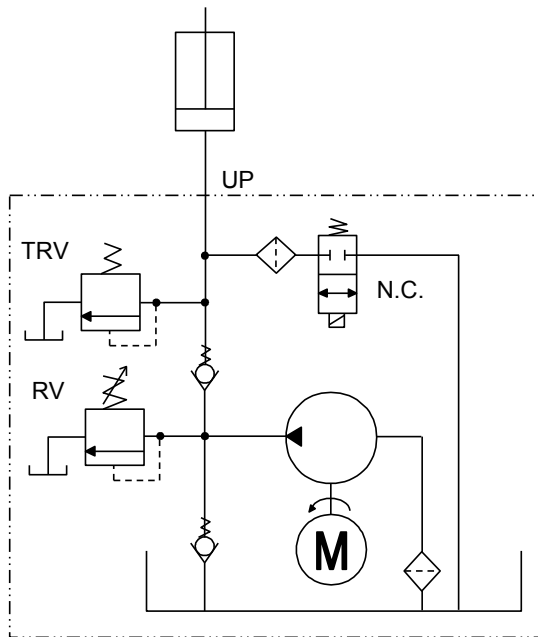
# Single Direction Circuits



**108/165 Series Single Direction NN Circuit**



**108/165 Series Single Direction WW Circuit**



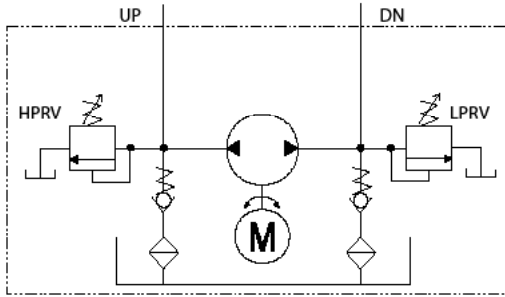
**118 and 175 Series S1 - S4 Circuit (N.C. valve)  
 S5-S8 Circuits use N.O. Valves**

## Thermal Relief Valves—Why?

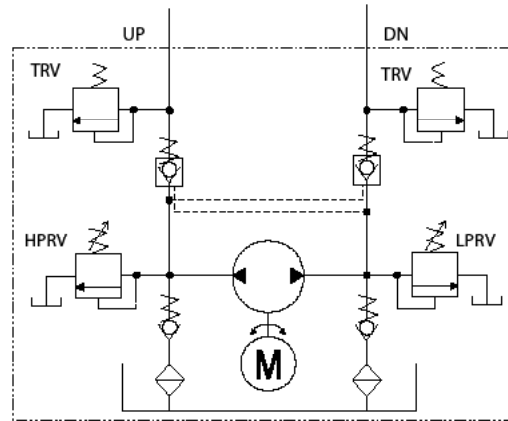
The thermal relief valve's (TRV) purpose is to allow a bleed off of built up pressure due to thermal expansion of the fluid or to act as a (very limited) shock load protection, should a cylinder in the system get bumped.

The thermal relief valve is included in circuits using a pilot operated check valve. The single direction units get one; the reversing units get two. It is located between the check valve and the 108 Series pump outlet port. It is a fixed relief valve with a pressure setting approximately 100-140 bar (1500-2000 psi) above the system relief valve pressure.

**Re**

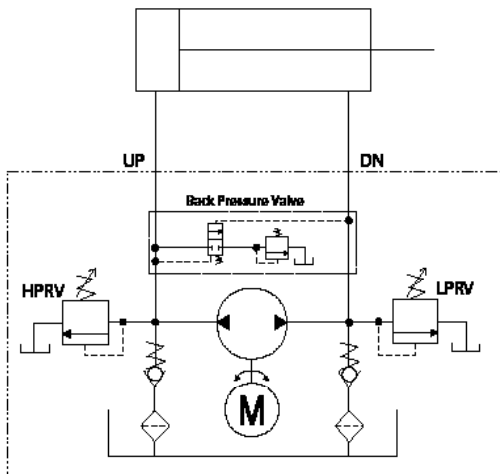


**108/118 and 165/175 Series RR Circuit  
 (Reversible)**

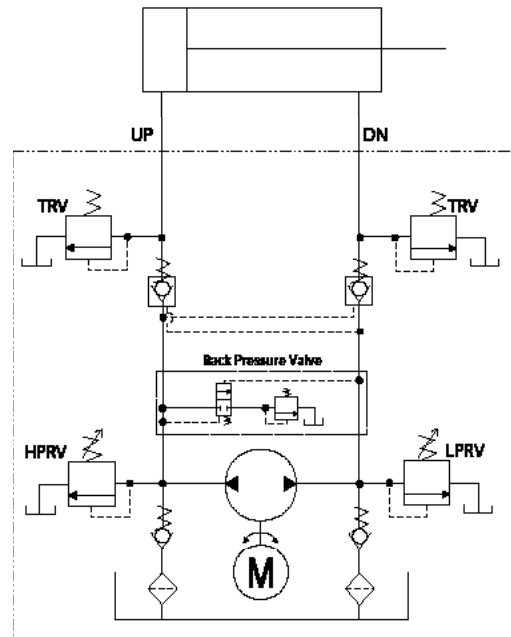


**108/118 and 165/175 Series LL Circuit  
 (Reversible Locking)**

**Note:** Back Pressure circuits (RB and LB) require the UP ports to be connected to the extend ports of cylinders.



**108/118 and 165/175 Series RB Circuit  
 (Reversible with Back Pressure)**



**108/118 and 165/175 Series LB Circuit  
 (Reversible Locking with Back Pressure)**

**Back Pressure Circuits—  
 Why?**

The basic reversible circuit is essentially a closed loop. The oil returning from the system is fed back into the pump inlet. When a cylinder is being retracted more oil is being returned to the power unit than is leaving it due to the rod volume. This results in the DN side relief valve cracking open allowing the rod volume of oil to go back to the tank. The larger the rod volume the more open the relief valve will be. In many applications this is not a problem. However, if work is being done on the retract stroke, or if a pressure switch is used to signal the cylinder is fully retracted, the back pressure circuit is required. This circuit allows the rod volume of oil to return

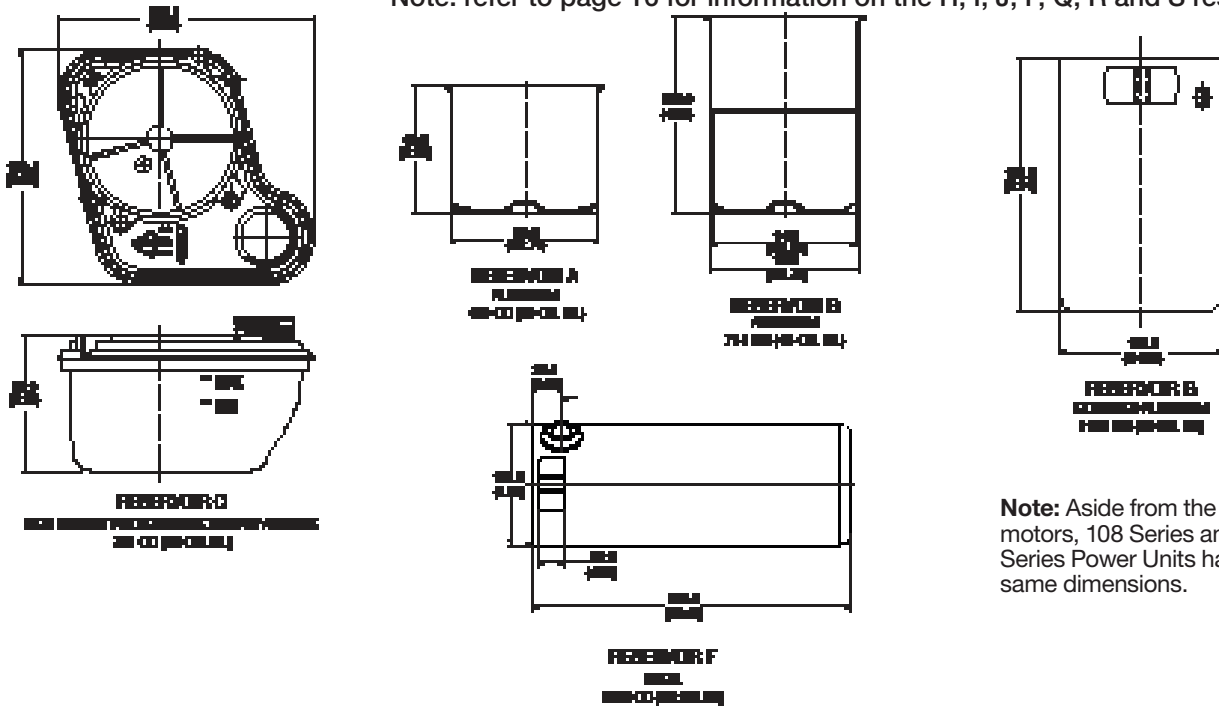
to the reservoir through a special shuttle spool, before it reaches the pump. Full relief valve pressure is then available to retract the cylinder, also preventing a pressure switch from tripping before the full retract position is achieved.

Recommended uses:

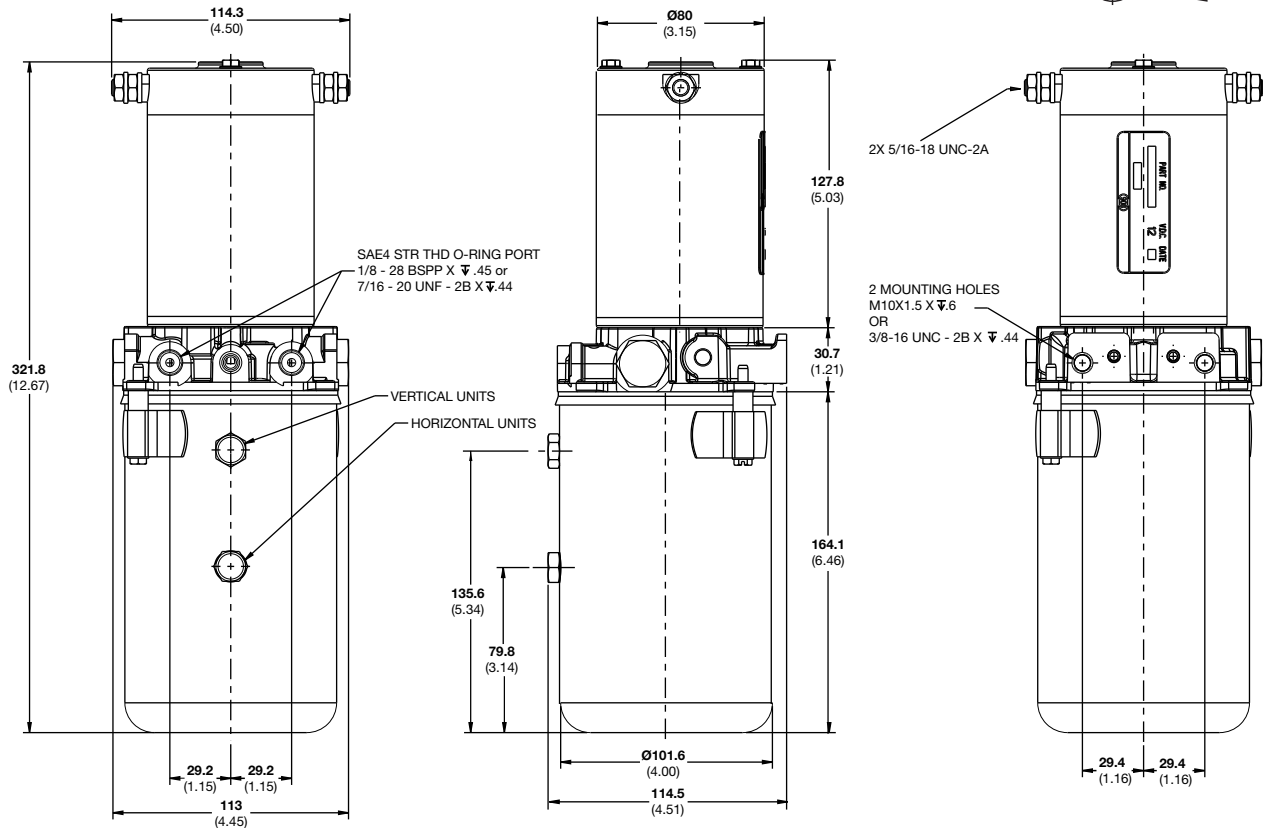
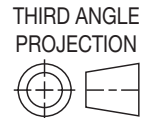
- In systems where work is being done on the retract stroke
- Where a pressure switch is used to signal the full retract position
- In systems requiring a faster retract than extend speed

# Reservoir Dimensions

Note: refer to page 16 for information on the H, I, J, P, Q, R and S reservoirs.



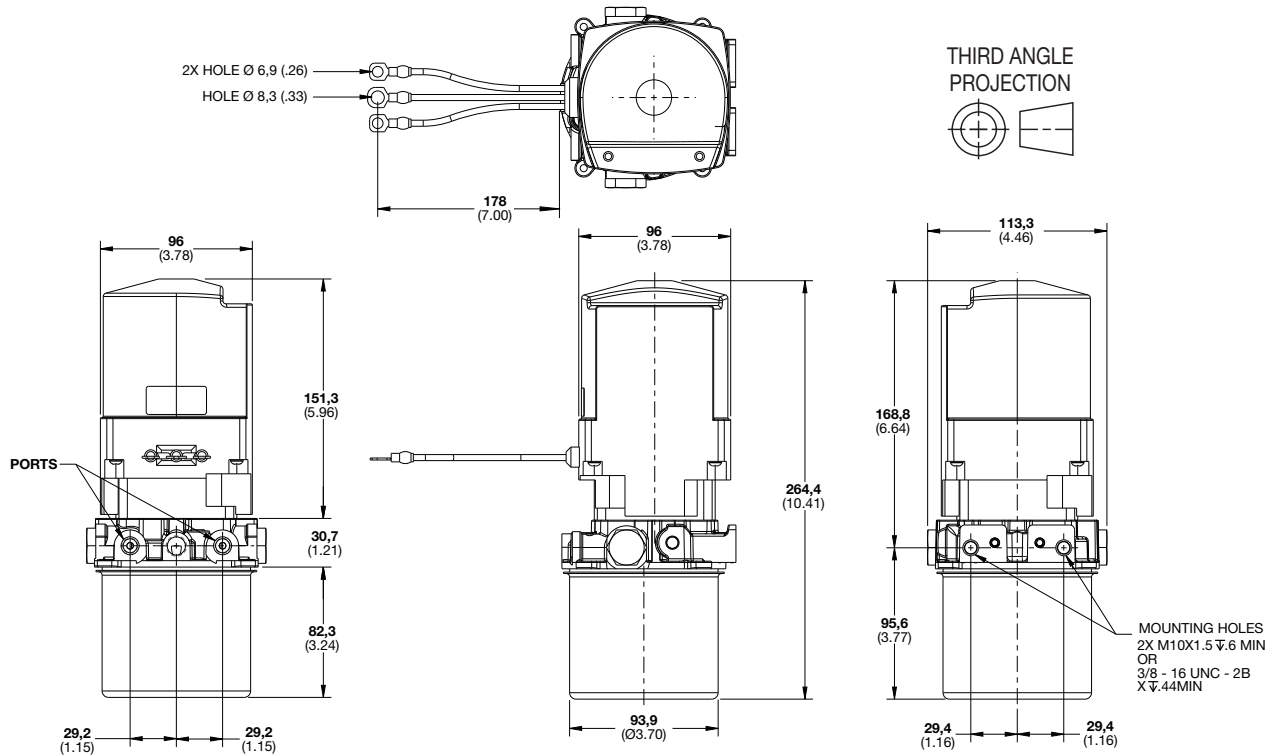
## 165 Series shown with "G" reservoir



Note: All dimensions in mm (inches).

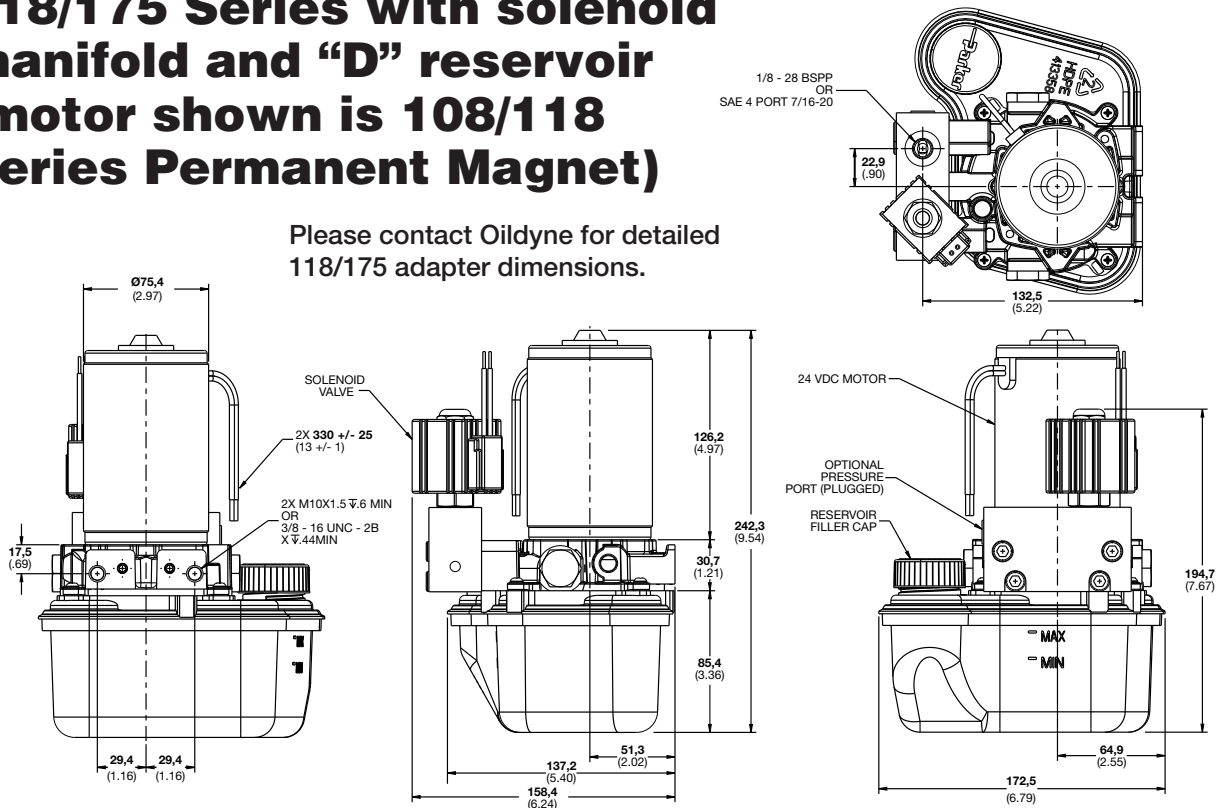


# 108 Series shown with Series Wound motor and "A" reservoir



# 118/175 Series with solenoid manifold and "D" reservoir (motor shown is 108/118 Series Permanent Magnet)

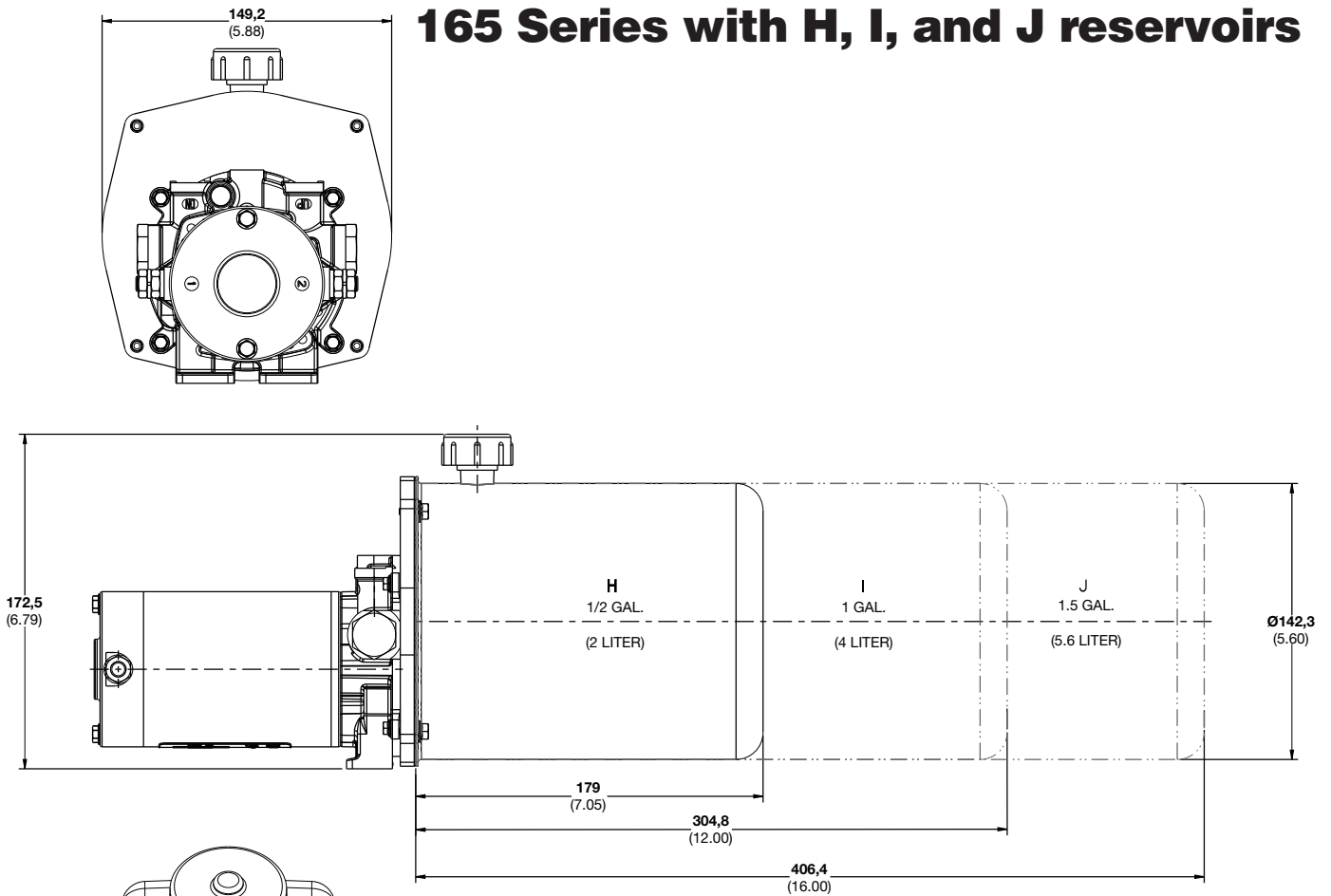
Please contact Oildyne for detailed 118/175 adapter dimensions.



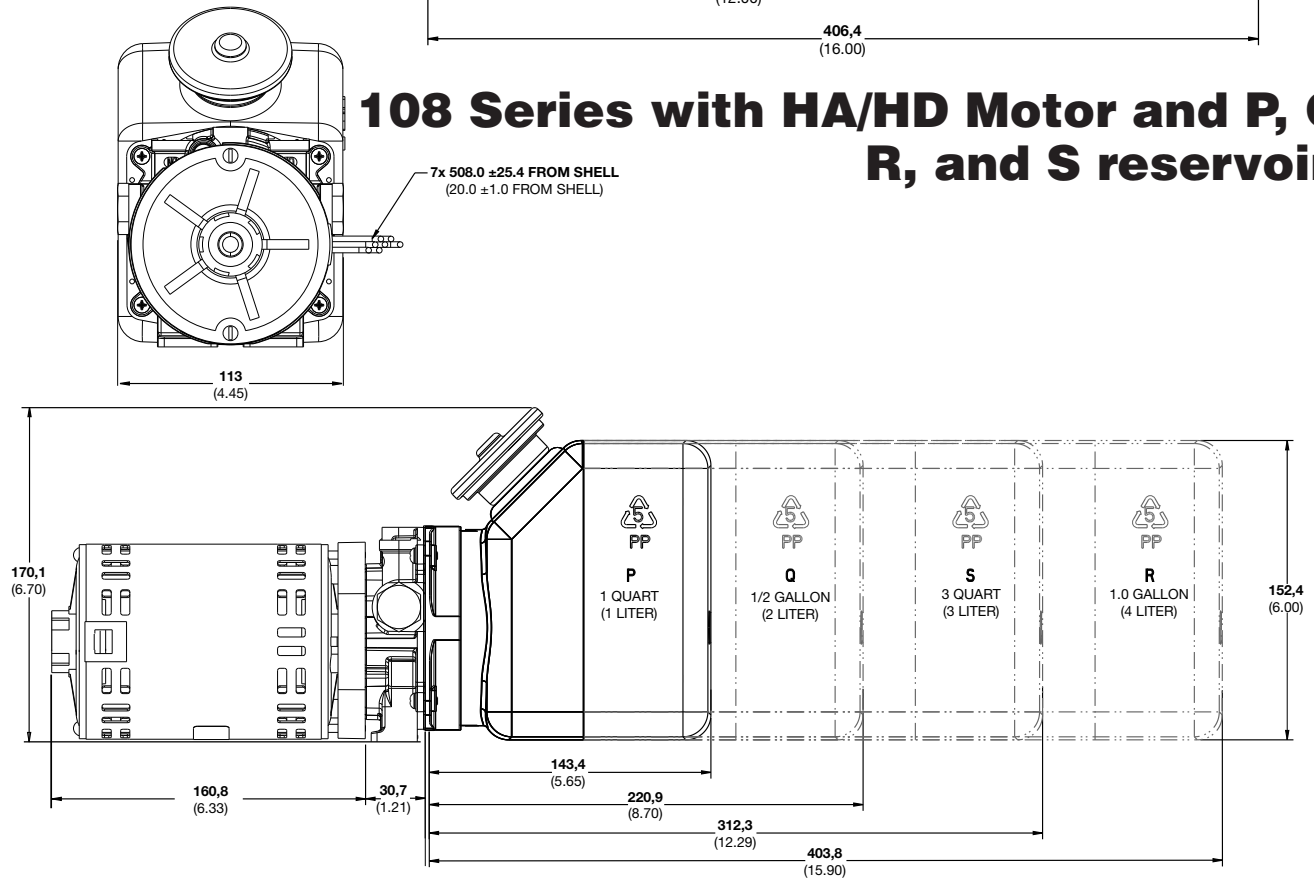
Note: All dimensions in mm (inches).

**Dimensions**

**165 Series with H, I, and J reservoirs**



**108 Series with HA/HD Motor and P, Q, R, and S reservoirs**



Note: All dimensions in mm (inches).



## Oildyne 550 Series Hydraulic Power Units

Pressures to 207 bar (3000 psi)  
Flow to 14.4 lpm (3.8 gpm)

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



ENGINEERING YOUR SUCCESS.

## 550 Series Hydraulic Power Units

The 550 Series combines the features and benefits our customers and markets have requested in a durable and economical package. The integral motor, pump and reservoir are complemented with a full line of Parker D03/NG6 and cartridge valve options. Add a linear or rotary actuator and you have a complete hydraulic system solution for your application.

These high quality power units are ideal for industrial machine tool clamping circuits, dock levelers, food processing, hose crimping, scissor lift, presses, and a myriad of AC applications. Let them go to work for you.

Your local Parker sales representative will be pleased to provide further information.

## Typical Applications

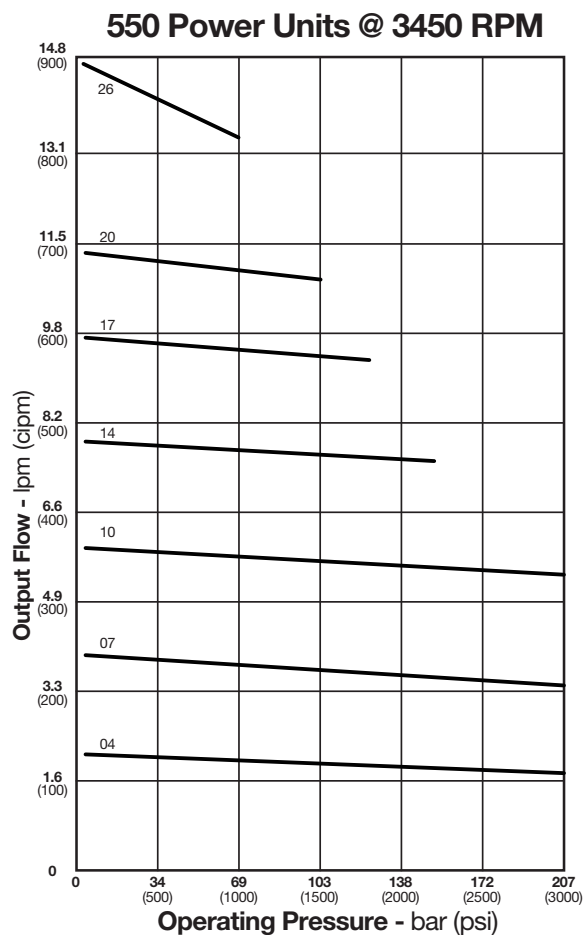
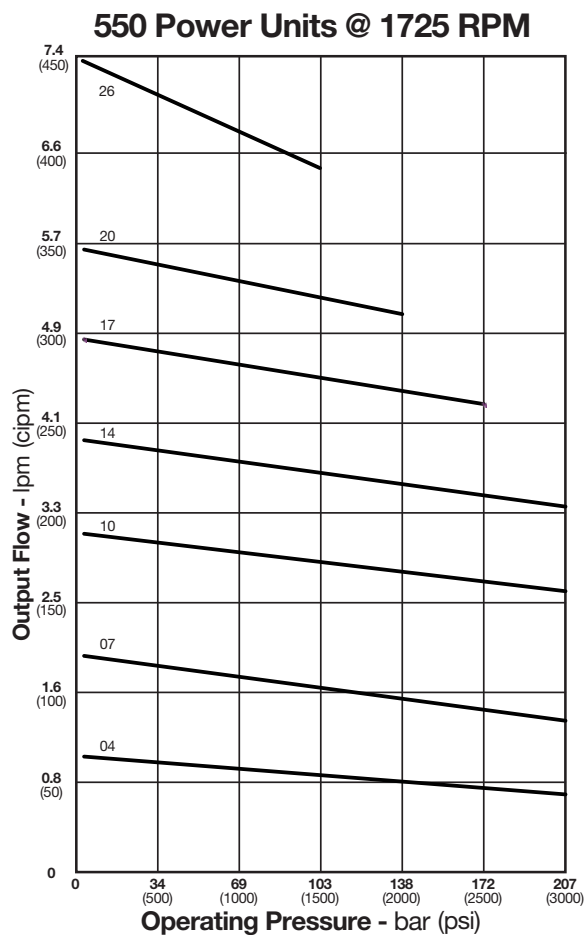
- Machine tool clamping
- Dock levelers
- Man lifts
- Scissors lifts
- Wheelchair lifts
- Trash compactors
- Hose crimpers
- Boat lifts
- Presses
- Commercial ovens



## Features

- Numerous motors from .67 to 4 kW (.5 to 3 HP)
- 7 pump sizes – flows from 1 to 14.4 lpm (.25 to 3.8 gpm)
- Externally adjustable relief valve
- Variety of reservoirs
- 207 bar (3000 psi) capability
- D03/NG6 pad or standard P and T ports
- Vertical and horizontal mounting





Performance data based on ATF @ 21°C (70°F)

**Motor Horsepower Recommendations at Flow/Pressure**

Pump Size	Nominal GPM		Pressure Bar (PSI)					
	@1725	@3450	34 (500)	69 (1000)	103 (1500)	138 (2000)	172 (2500)	207 (3000)
04	¼		.50 HP	.50 HP	.50 HP	.50 HP	.50 HP	.75 HP
04		½	.50 HP	.50 HP	.50 HP	.75 HP	1.0 HP	1.5 HP
07	½		.50 HP	.50 HP	.50 HP	.75 HP	1.0 HP	1.0 HP
07		1	.50 HP	.75 HP	1.0 HP	1.5 HP	2.0 HP	2.0 HP
10	¾		.50 HP	.50 HP	.75 HP	1.0 HP	1.5 HP	1.5 HP
10		1 ½	.75 HP	1.0 HP	1.5 HP	2.0 HP	3.0 HP	3.0 HP
14	1		.50 HP	.75 HP	1.0 HP	1.5 HP	2.0 HP	2.0 HP
14		2	1.0 HP	1.5 HP	2.0 HP	3.0 HP		
17	1 ¼		.50 HP	1.0 HP	1.5 HP	2.0 HP	2.0 HP	
17		2 ½	1.0 HP	2.0 HP	3.0 HP			
20	1 ½		.50 HP	1.0 HP	1.5 HP	2.0 HP		
20		3	1.0 HP	2.0 HP	3.0 HP			
26	1.9		.75 HP	1.5 HP	2.0 HP			
26		3.8	1.5 HP	3.0 HP				

**Note:** Performance data is for reference only

# Standard Product Ordering Code



**550 POWER UNIT**  
 - includes relief valve

**MOTOR SELECTION - TEFC**  
 Single Phase = 115/230 VAC, 60 HZ  
 Three Phase = 230/460 VAC, 60 HZ

CODE	HP	RPM	PHASE
TC	.50	1725	Single
TD	.50	1725	Three
TM	.50	3450	Single
TT	.50	3450	Three
TE	.75	1725	Single
TF	.75	1725	Three
TN	.75	3450	Single
TU	.75	3450	Three
TJ	1.0	1725	Single
TK	1.0	1725	Three
TP	1.0	3450	Single
TW	1.0	3450	Three
TL	1.5	1725	Single
TO	1.5	1725	Three
TQ	1.5	3450	Single
TX	1.5	3450	Three
TV	2.0	1725	Single
TR	2.0	1725	Three
TS	2.0	3450	Single
TY	2.0	3450	Three
TH	3.0	3450	Three
NN	None:	Customer Supplied	

**PUMP SIZE**

CODE	DISPLACEMENT
04	0.66 cc/rev (.04 in <sup>3</sup> /rev)
07	1.15 cc/rev (.07 in <sup>3</sup> /rev)
10	1.64 cc/rev (.10 in <sup>3</sup> /rev)
14	2.29 cc/rev (.14 in <sup>3</sup> /rev)
17	2.79 cc/rev (.17 in <sup>3</sup> /rev)
20	3.28 cc/rev (.20 in <sup>3</sup> /rev)
26	4.26 cc/rev (.26 in <sup>3</sup> /rev)

**RESERVOIR**

CODE	VOLUME
05	2 Liter 0.5 Gallon Steel
10	4 Liter 1.0 Gallon Steel
15	6 Liter 1.5 Gallon Steel
50	19 Liter 5.0 Gallon Steel
06	2 Liter 0.5 Gallon Plastic
11	4 Liter 1.0 Gallon Plastic
16	6 Liter 1.5 Gallon Plastic
26	10 Liter 2.5 Gallon Plastic

**Note:** 19 liter (5 gallon) steel reservoir can be mounted vertically only. All others are vertical and horizontal ready

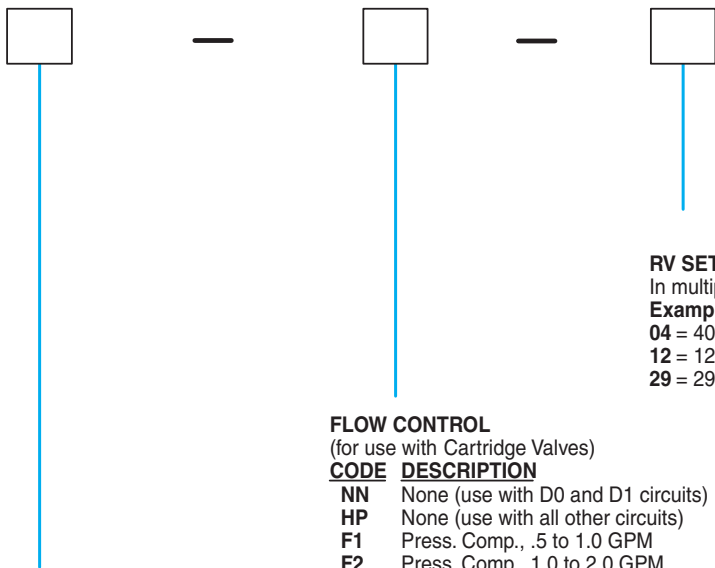
**CIRCUIT**

CODE	DESCRIPTION
D0	D03/NG6 Pad & Extension Fittings
D1	D03/NG6 Pad with Dual PO Check Manifold (Manapak) (for use with D03/NG6 Directional Control Valves)
SA	Standard Pressure & Tank Ports
SW	Std P & T Ports with Outlet Port Check Valve

**Two Position Two Way Cartridge Valves**  
 Following circuits include outlet port check valve:

CODE	DESCRIPTION
S1	12 VDC, Normally Closed, Conduit Connector
S2	24 VDC, Normally Closed, Conduit Connector
S3	120 VAC, Normally Closed, Conduit Connector
S4	240 VAC, Normally Closed, Conduit Connector
S5	12 VDC, Normally Open, Conduit Connector
S6	24 VDC, Normally Open, Conduit Connector
S7	120 VAC, Normally Open, Conduit Connector
S8	240 VAC, Normally Open, Conduit Connector

P1	12 VDC, Normally Closed, DIN Connector
P2	24 VDC, Normally Closed, DIN Connector
P3	120 VAC, Normally Closed, DIN Connector
P4	240 VAC, Normally Closed, DIN Connector
P5	12 VDC, Normally Open, DIN Connector
P6	24 VDC, Normally Open, DIN Connector
P7	120 VAC, Normally Open, DIN Connector
P8	240 VAC, Normally Open, DIN Connector



**RV SETTING**  
 In multiples of 100 psi  
**Examples**  
**04** = 400 psi  
**12** = 1200 psi  
**29** = 2900 psi

**FLOW CONTROL**  
 (for use with Cartridge Valves)

CODE	DESCRIPTION
<b>NN</b>	None (use with D0 and D1 circuits)
<b>HP</b>	None (use with all other circuits)
<b>F1</b>	Press. Comp., .5 to 1.0 GPM
<b>F2</b>	Press. Comp., 1.0 to 2.0 GPM

**4-WAY VALVE (ALL D03/NG6 SIZE)**

**CODE DESCRIPTION**

<b>NNN</b>	No 4-Way Valve Included
<b>01Y</b>	Closed Center, 120 VAC, Conduit Connectors
<b>01T</b>	Closed Center, 240 VAC, Conduit Connectors
<b>01K</b>	Closed Center, 12 VDC, Conduit Connectors
<b>01J</b>	Closed Center, 24 VDC, Conduit Connectors
<b>02Y</b>	Open Center, 120 VAC, Conduit Connectors
<b>02T</b>	Open Center, 240 VAC, Conduit Connectors
<b>02K</b>	Open Center, 12 VDC, Conduit Connectors
<b>02J</b>	Open Center, 24 VDC, Conduit Connectors
<b>07Y</b>	Float Center, 120 VAC, Conduit Connectors
<b>07T</b>	Float Center, 240 VAC, Conduit Connectors
<b>07K</b>	Float Center, 12 VDC, Conduit Connectors
<b>07J</b>	Float Center, 24 VDC, Conduit Connectors
<b>08Y</b>	Tandem Center, 120 VAC, Conduit Connectors
<b>08T</b>	Tandem Center, 240 VAC, Conduit Connectors
<b>08K</b>	Tandem Center, 12 VDC, Conduit Connectors
<b>08J</b>	Tandem Center, 24 VDC, Conduit Connectors
<b>30Y</b>	Single Solenoid, 120 VAC, Conduit Connector
<b>30T</b>	Single Solenoid, 240 VAC, Conduit Connector
<b>30K</b>	Single Solenoid, 12 VDC, Conduit Connector
<b>30J</b>	Single Solenoid, 24 VDC, Conduit Connector
<b>Y01</b>	Closed Center, 120 VAC, Hirschmann w/out Plugs
<b>T01</b>	Closed Center, 240 VAC, Hirschmann w/out Plugs
<b>K01</b>	Closed Center, 12 VDC, Hirschmann w/out Plugs
<b>J01</b>	Closed Center, 24 VDC, Hirschmann w/out Plugs
<b>Y02</b>	Open Center, 120 VAC, Hirschmann w/out Plugs
<b>T02</b>	Open Center, 240 VAC, Hirschmann w/out Plugs
<b>K02</b>	Open Center, 12 VDC, Hirschmann w/out Plugs
<b>J02</b>	Open Center, 24 VDC, Hirschmann w/out Plugs
<b>Y07</b>	Float Center, 120 VAC, Hirschmann w/out Plugs
<b>T07</b>	Float Center, 240 VAC, Hirschmann w/out Plugs
<b>K07</b>	Float Center, 12 VDC, Hirschmann w/out Plugs
<b>J07</b>	Float Center, 24 VDC, Hirschmann w/out Plugs
<b>Y08</b>	Tandem Center, 120 VAC, Hirschmann w/out Plugs
<b>T08</b>	Tandem Center, 240 VAC, Hirschmann w/out Plugs
<b>K08</b>	Tandem Center, 12 VDC, Hirschmann w/out Plugs
<b>J08</b>	Tandem Center, 24 VDC, Hirschmann w/out Plugs
<b>Y30</b>	Single Solenoid, 120 VAC, Hirschmann w/out Plug
<b>T30</b>	Single Solenoid, 240 VAC, Hirschmann w/out Plug
<b>K30</b>	Single Solenoid, 12 VDC, Hirschmann w/out Plug
<b>J30</b>	Single Solenoid, 24 VDC, Hirschmann w/out Plug

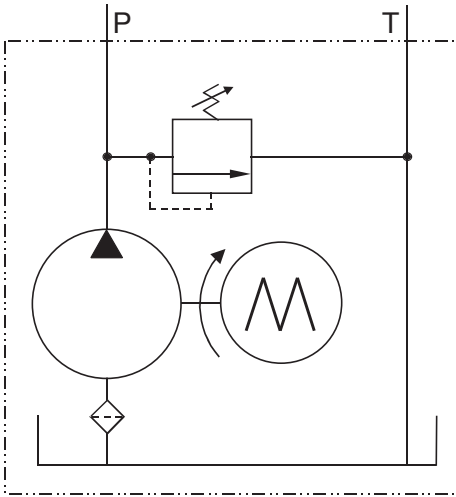
**Hydraulic Fluids:**

Standard Automatic Transmission Fluid (ATF)  
 Most mineral based hydraulic fluids

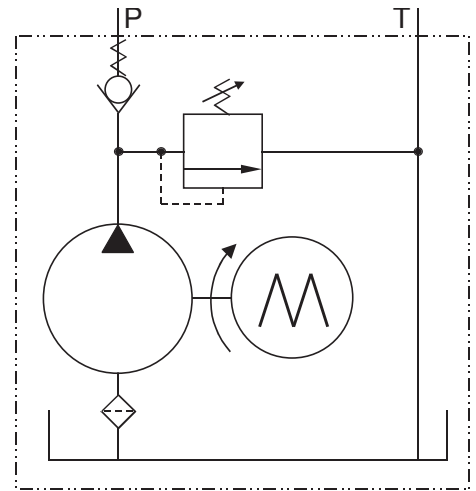
Viscosity range: 32-64 cSt (150-300 SSU) at 38°C (100°F)  
 Please contact Parker Oildyne to discuss any alternate fluids.

**Temperature Ranges:**

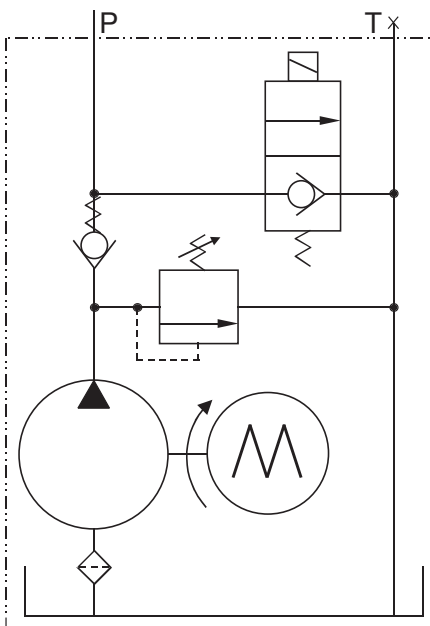
Operating: -7 to 60°C (+20 to 140°F)  
 Storage: -10 to 60°C (+14 to 140°F)



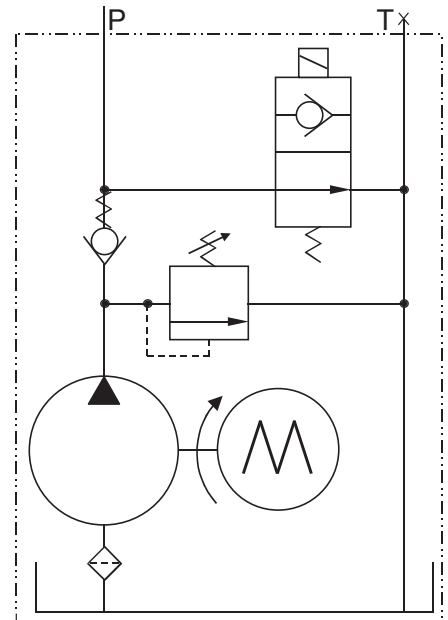
"SA" CIRCUIT



"SW" CIRCUIT

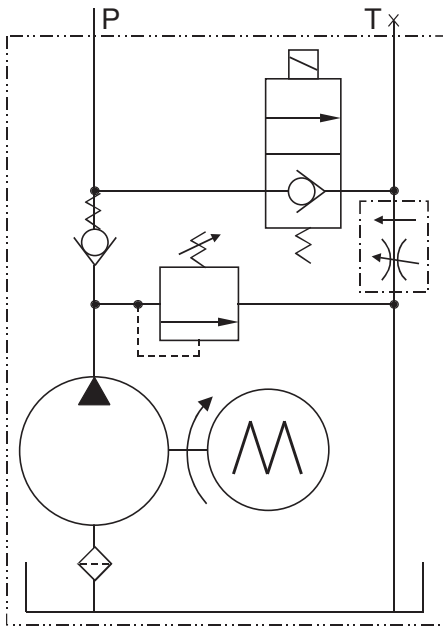


"S1-S4, P1-P4" CIRCUITS

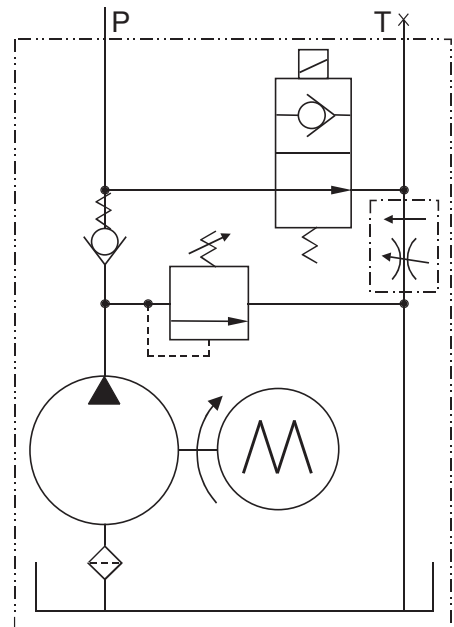


"S5-S8, P5-P8" CIRCUITS

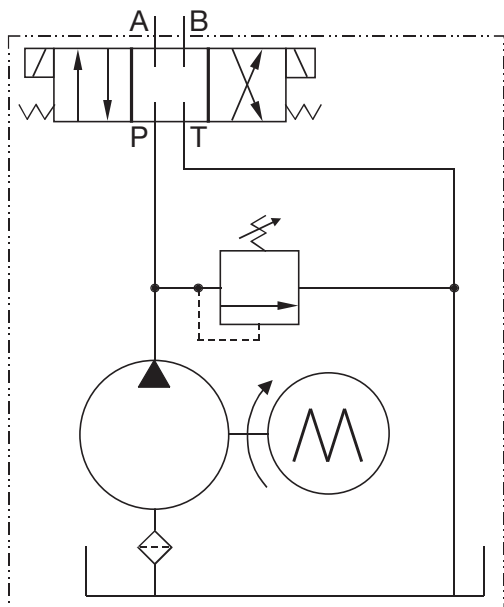
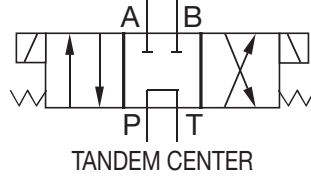
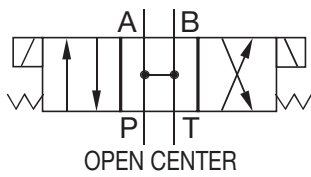
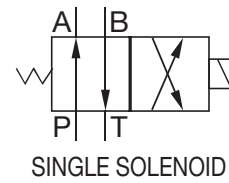
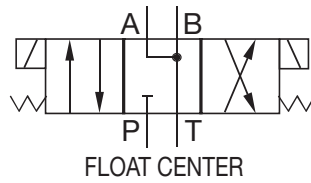
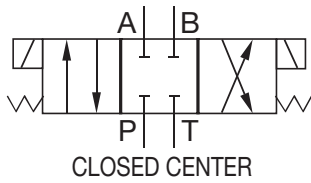




“S1-S4, P1-P4” CIRCUITS WITH  
PRESSURE COMPENSATED FLOW  
CONTROL F1 OR F2

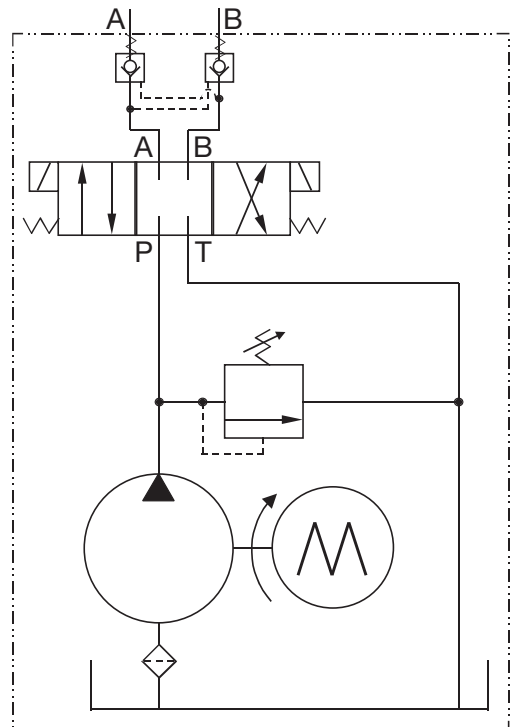


“S5-S8, P5-P8” CIRCUITS WITH  
PRESSURE COMPENSATED FLOW  
CONTROL F1 OR F2

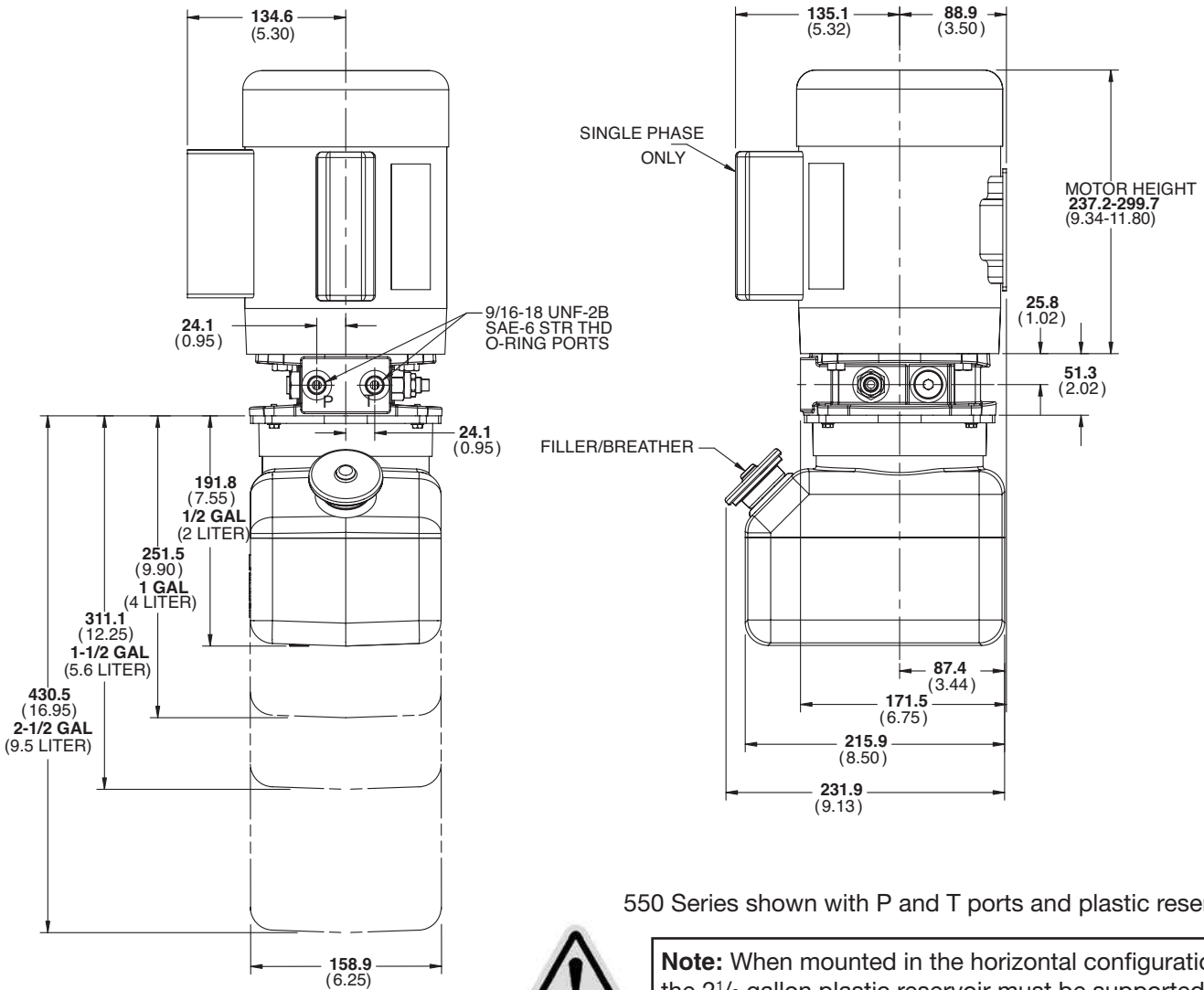


“D0” CIRCUIT (D03/NG6 VALVE TO BE SELECTED)

NOTE: For optimal performance of the D1 circuit, using an Open or Tandem center D03/NG6 valve is recommended.



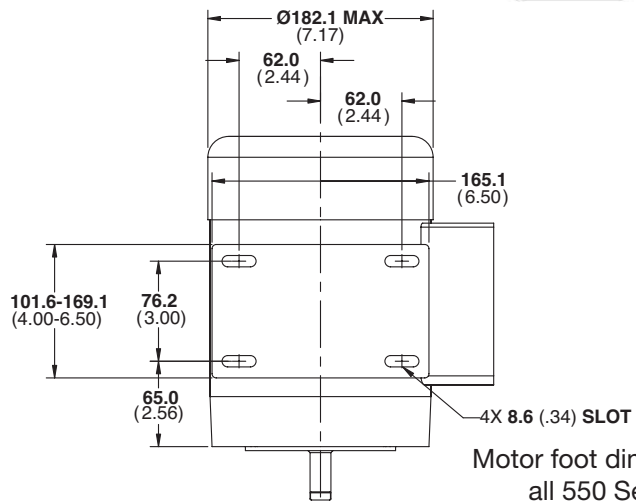
“D1” CIRCUIT INCLUDES MANAPAK DUAL PO CHECK VALVE (D03/NG6 VALVE TO BE SELECTED)



550 Series shown with P and T ports and plastic reservoir



**Note:** When mounted in the horizontal configuration the 2½ gallon plastic reservoir must be supported.

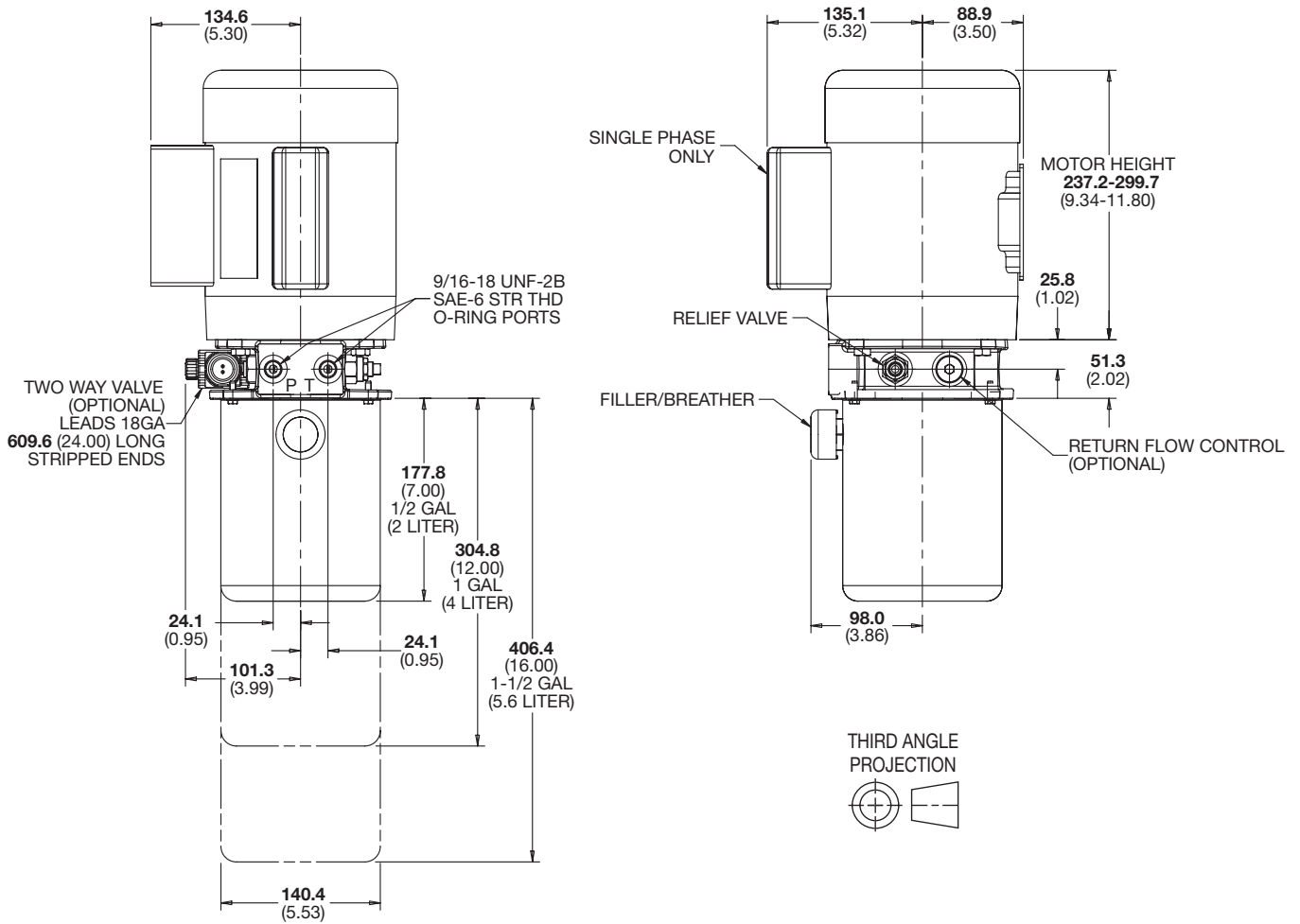


THIRD ANGLE PROJECTION



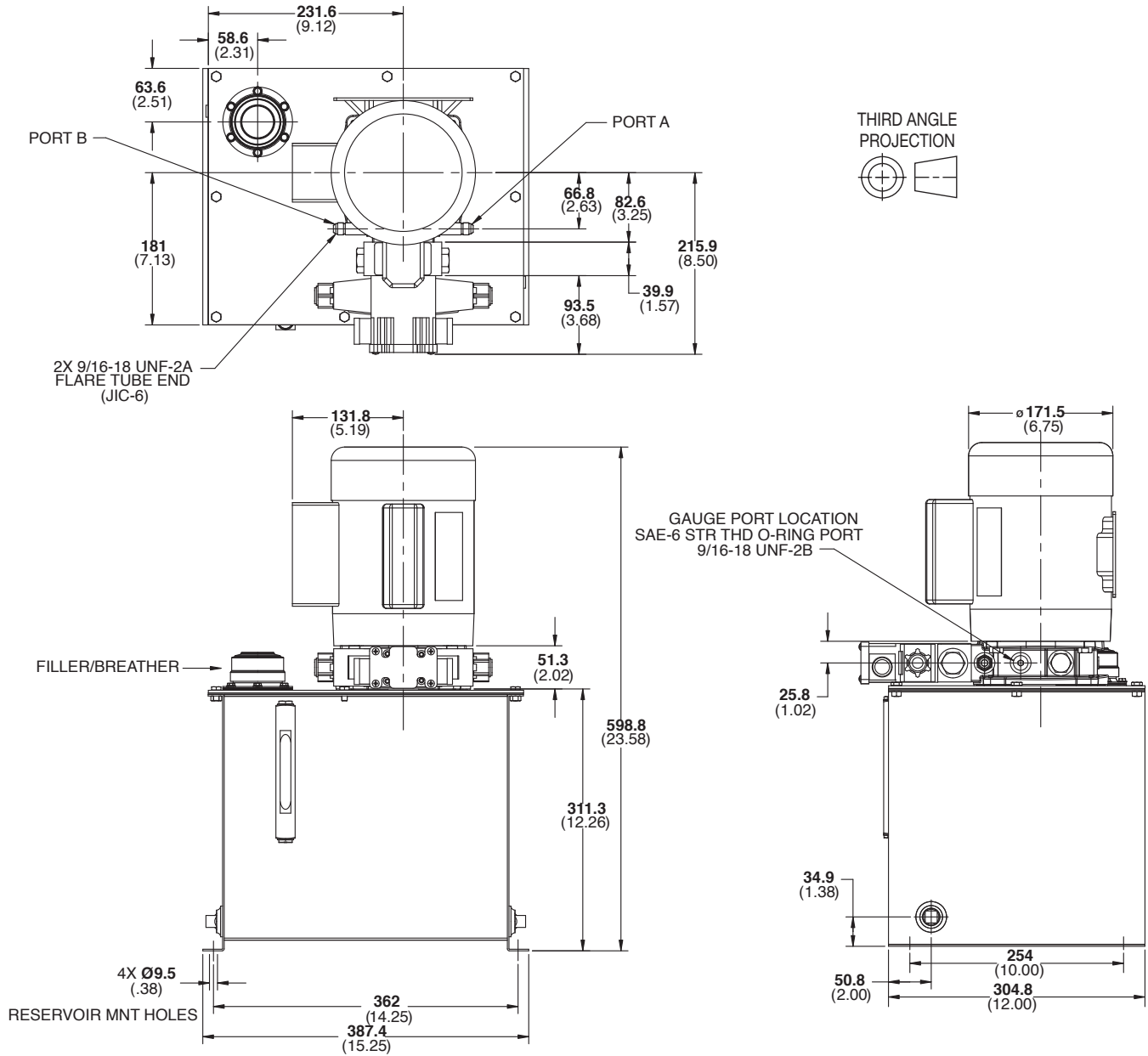
Motor foot dimensions are common to all 550 Series electric motors

**Note:** All dimensions in mm (inches).



550 Series shown with optional solenoid 2-way valve and steel reservoirs

**Note:** All dimensions in mm (inches).



550 Series shown with 19 liter (5 gallon) steel reservoir and NG6/D03 valves

**Note:** All dimensions in mm (inches).



## Miniature Piston Pumps 5 Piston & Cartridge Design

Pressures to 276 bar (4000 psi)

Displacements from .156 to .865cc/rev (.01 to .05 in<sup>3</sup>/rev)

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



ENGINEERING YOUR SUCCESS.

### Miniature Piston Pumps: Pumping Efficiencies up to 90% Allow Effective Use of .156 to .865 cc/rev Piston Pumps at Pressures to 276 bar (4000 psi)

Breakthrough designs come and go, succeed and fail. The really good designs pass the test of time and continue to succeed. The Oildyne Division mini pump is one of these good designs.

Mini pumps handle hydraulic oil, brake fluid, ultra-low viscosity fluids and many non-water based fluids with equal ease. Need greater versatility? These fixed displacement axial piston pumps are efficient and powerful too. Tests run on 15.1 cSt (78 SSU) fluid at 38°C (100°F) at 207 bar (3000 psi) showed a 90% volumetric

efficiency. Capable of 276 bar (4000 psi) operation, mini pumps are available in nine displacements ranging from .156 to .865 cc/rev (.01 to .053 in<sup>3</sup>/rev).

Compact size, versatility, efficiency, power and speed are combined in a very competitive package in the Oildyne mini pumps. They're suitable for many applications requiring compact power including automotive, marine, medical and military uses.

#### Mini Pump Features

- .156 to .865 cc (.01 to .053 in<sup>3</sup>) displacement per revolution
- Designed for open circuit systems
- Fixed displacement – Output flow is determined by motor drive speed.
- Operating temperature range: -40° to +149°C (-40° to 300°F)
- Inlet port on side or rear
- Will operate efficiently on extremely thin (5 cSt) fluid
- Tandem pumps, special configurations and bi-rotational pumps are available.

### Cartridge Piston Pumps: Compact Fluid Power Redefined by the Oildyne Division.

This cartridge piston pump raises the standard for compact fluid power! This three-piston cartridge style pump is an efficient, fixed displacement pump that provided high performance at a very economical price. Pressure ratings up to 276 bar (4000 psi), driven speeds up to 5000 RPM, and the ability to provide a variety of seal types make this the solution to your unique application. This uni-rotational pump is capable of pumping non-water based fluids ranging in viscosity from solvents to thick fluids.

The three-piston cartridge pump maintains the performance and flexibility of the Oildyne five-piston, standalone pump while reducing the overall package dimensions.

This ultra-compact cartridge piston pump, approximately

33 mm (1.3 in) in diameter and 51 mm (2 in) long, is designed to fit into your specially machined manifold allowing for a custom package that fits your space needs.

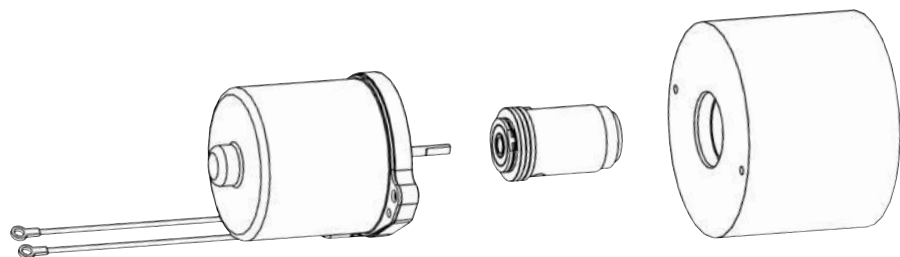
Three standard displacements are available all within the existing physical size. (The internal cam angle determines the displacement).

Contact Oildyne Division for a drawing showing the cavity details as well as the motor shaft and flange details needed for your motor to drive and mount this pump to your manifold.

#### Cartridge Pump Features

- .1 to .33 cc (.006 to .020 in<sup>3</sup>) displacement per revolution
- Designed for manifold mounting
- Fixed displacement – Output flow is determined by motor drive speed.
- Operating temperature range: -40° to +149°C (-40° to 300°F)
- Will operate efficiently on extremely thin (5 cSt) fluid
- Counter clockwise rotation (from pump drive end)

See Page 34 for Cartridge Pump ordering code

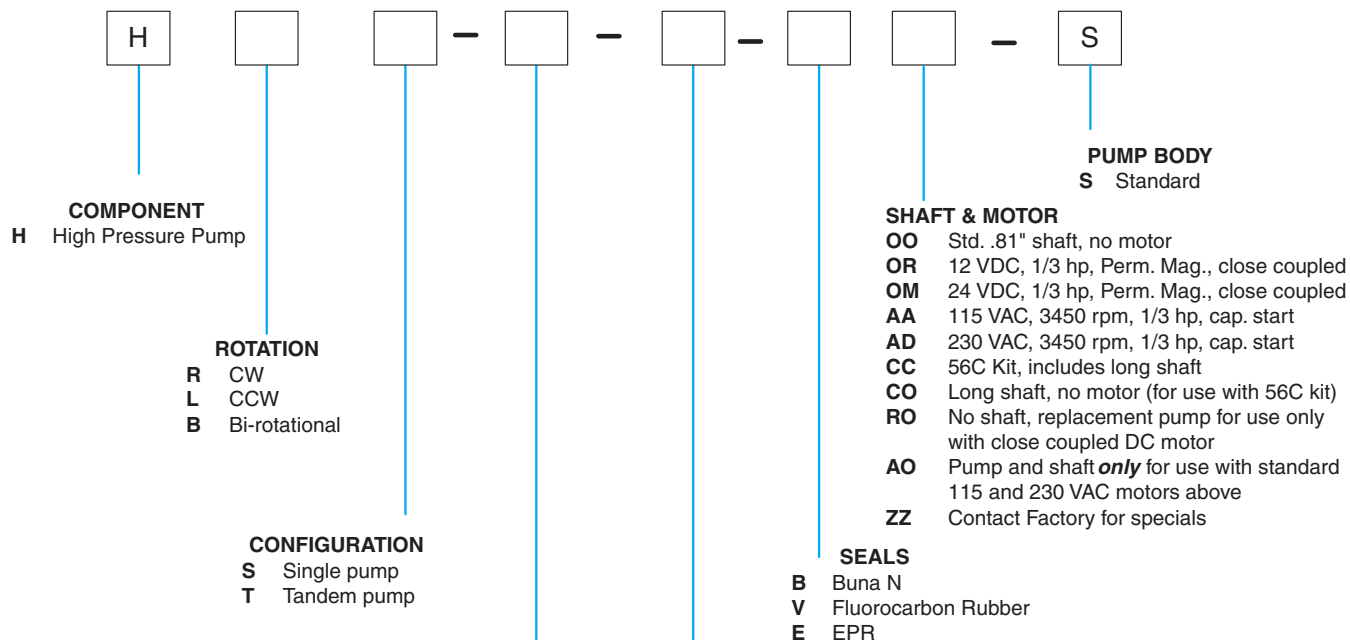


Your Motor

Pump

Your Manifold Package

### Miniature Piston Pump Standard Product Model Code



SINGLE or 1st PUMP SIZE		2nd PUMP SIZE	
CODE	DISP.	CODE	DISP.
156	.156 cc/rev	156	.156 cc/rev
206	.206 cc/rev	206	.206 cc/rev
259	.259 cc/rev	259	.259 cc/rev
311	.311 cc/rev	311	.311 cc/rev
346	.346 cc/rev	346	.346 cc/rev
417	.417 cc/rev	417	.417 cc/rev
519	.519 cc/rev	519	.519 cc/rev
692	.692 cc/rev	692	.692 cc/rev
865	.865 cc/rev	865	.865 cc/rev

Notes:

1. Tandem pumps must have the larger displacement called out first
2. Tandem pumps are not available with the standard AC or DC motors - only standard shaft or 56C kit
3. Drive shaft input torque must be under 3.5 Nm (525 in-oz) (equivalent to HRS865 operating at 207 bar (3000 psi); refer to catalog performance curves for torque data)
4. Bi-rotational pumps require the side port as case drain
5. For configurations not shown above please contact Oildyne

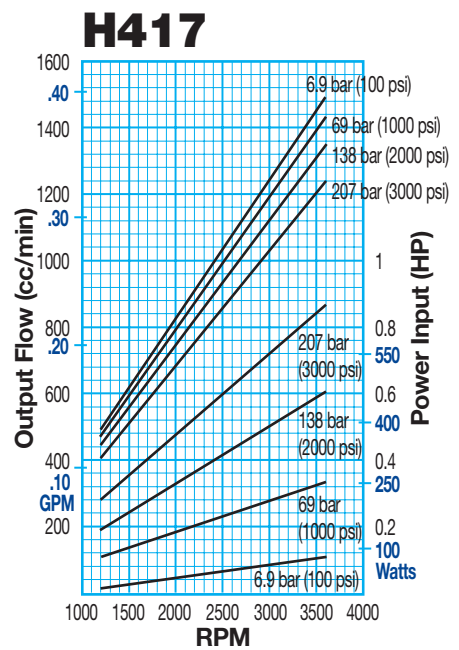
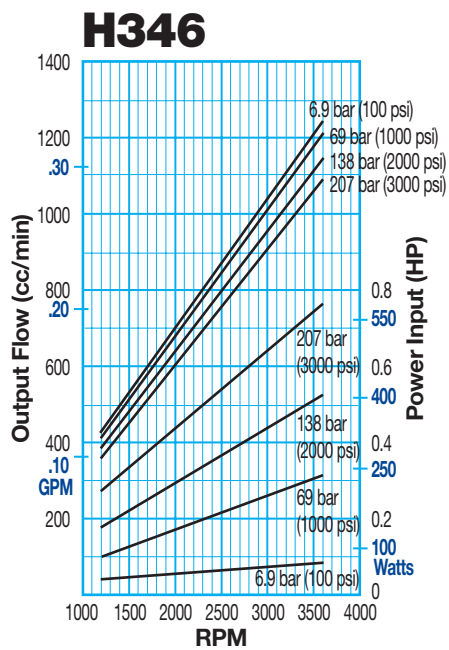
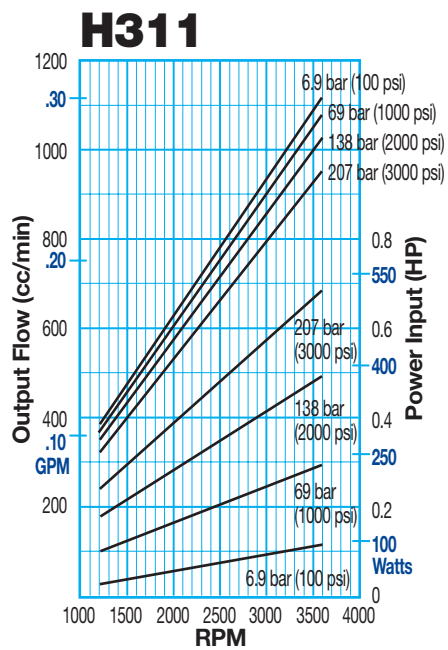
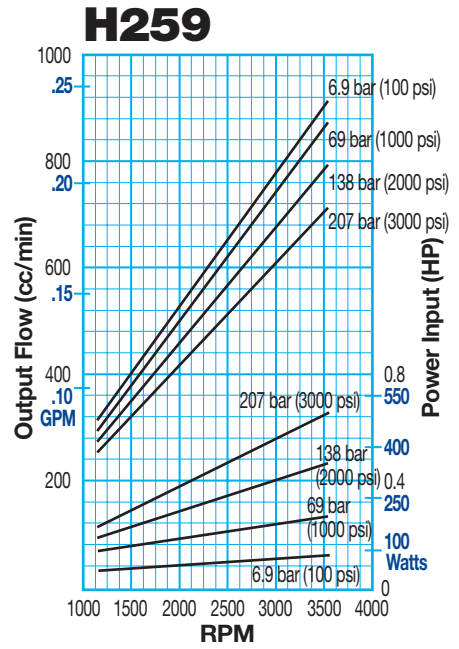
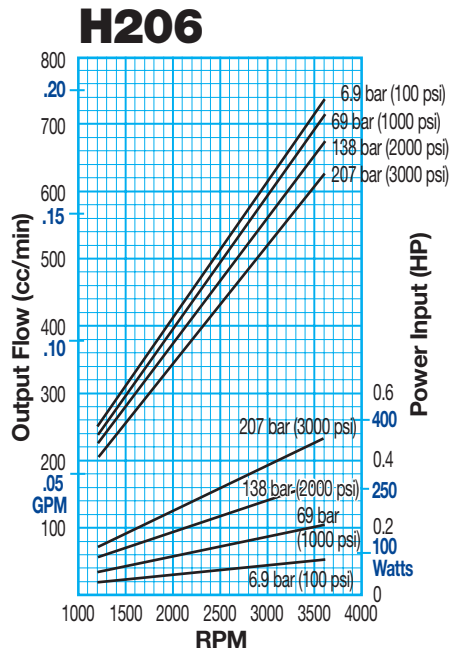
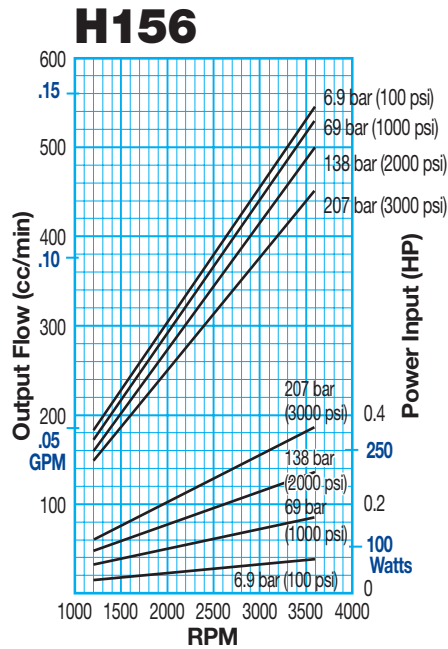
### Miniature Piston Pump Basic Specifications

Model	156	206	259	311	346	417	519	692	865
<b>Displacement</b>									
In <sup>3</sup> per rev.	.0095	.0126	.0158	.0190	.0211	.0255	.0317	.0422	.0527
cc /rev	.156	.206	.259	.311	.346	.417	.519	.692	.865
Max RPM @ rated pressure W/O supercharge	4400	4200	4000	3800	3800	3700	3700	3600	3500
<b>Operating Pressure (psi)</b>									
Continuous bar (psi)	241 (3500)	241 (3500)	241 (3500)	241 (3500)	241 (3500)	241 (3500)	241 (3500)	224 (3250)	207 (3000)
Intermittent bar (psi)	258 (3750)	258 (3750)	258 (3750)	258 (3750)	258 (3750)	258 (3750)	258 (3750)	241 (3500)	241 (3500)
Maximum bar (psi)	276 (4000)	276 (4000)	276 (4000)	276 (4000)	276 (4000)	276 (4000)	276 (4000)	258 (3750)	241 (3500)

# Performance Data

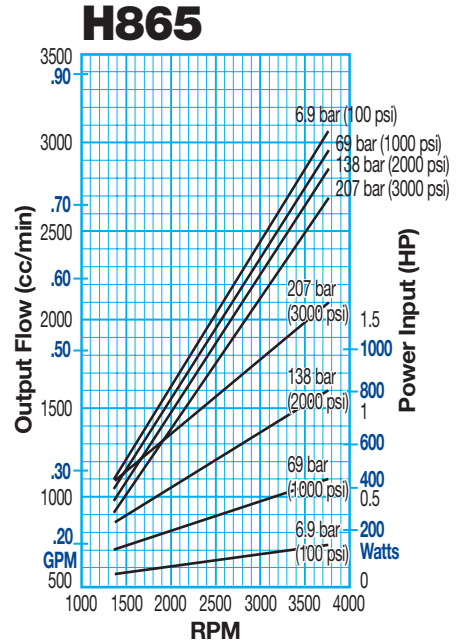
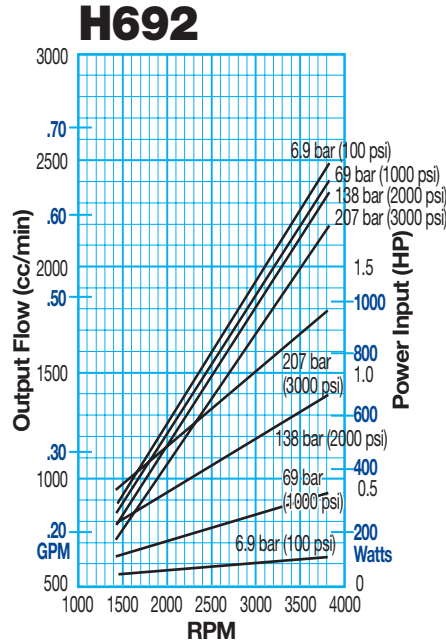
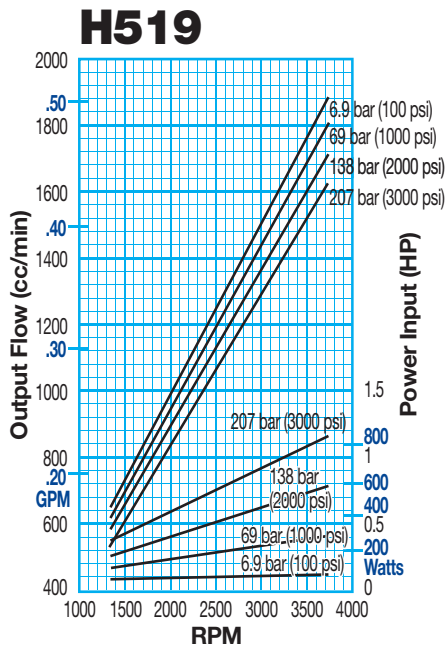
Performance data shown are the average results based upon a series of laboratory tests of production units and are not necessarily representative of any one unit. Tests were run with 15.1 cSt (78 SSU) fluid.

In accordance with our policy of continuing product development, we reserve the right to change specifications shown without notice.



Note: Performance data is for reference only.

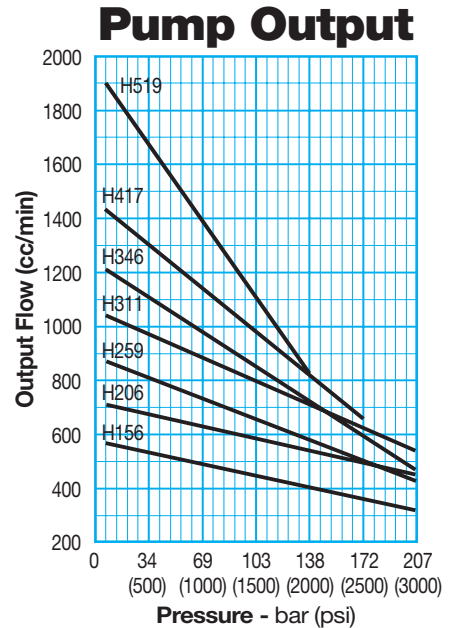
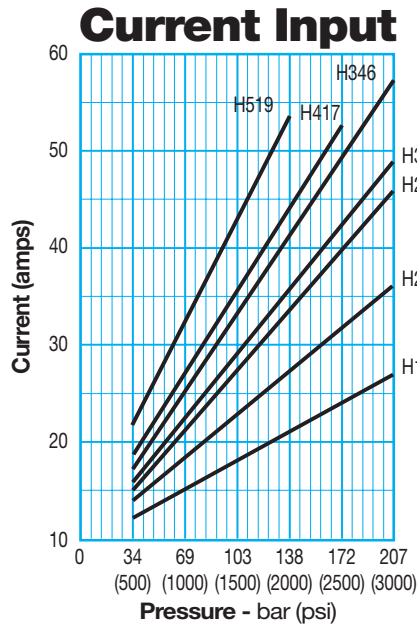




## Typical Performance Data

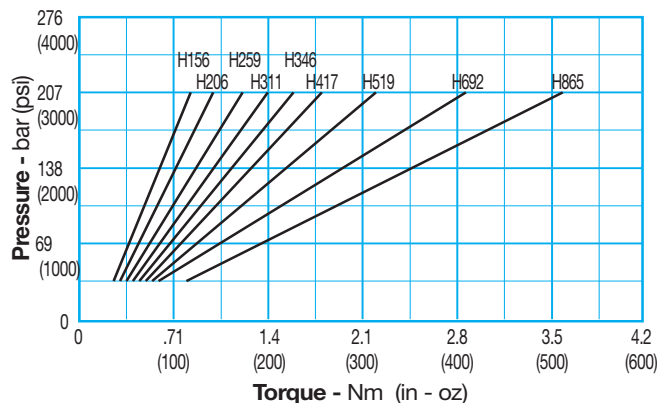
at 12 VDC as assembled with a standard DC motor

NOTE: 24 VDC motor current will be approximately 1/2 of the 12 VDC current shown here. Max current for continuous operation is:  
 12 VDC: 12.6 A  
 24 VDC: 9.6 A



## Average Input Torque

Speed: 3000 RPM



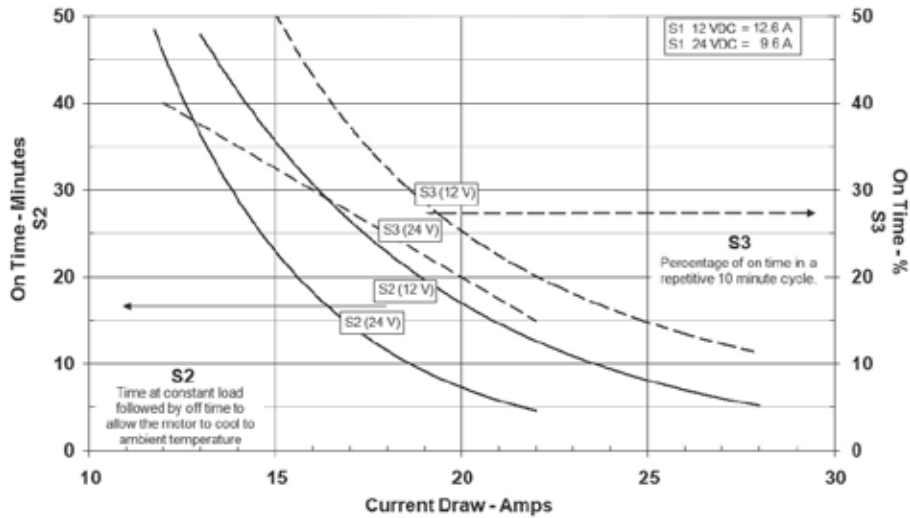
Note: Performance data is for reference only.



# Performance Data

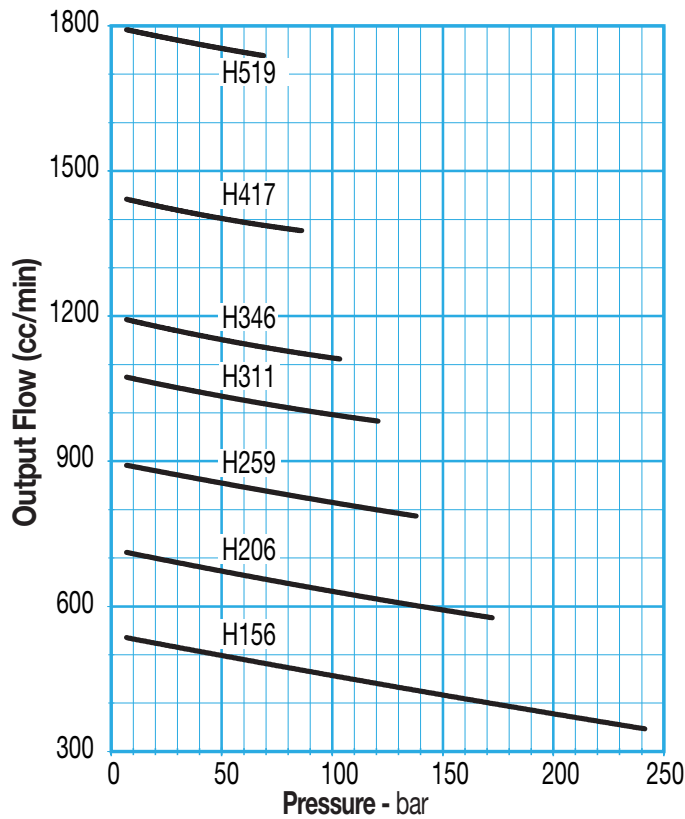
## DC Motor Duty Cycle Characteristics

Current Draw vs On Time General Guidelines at 21°C (70°F)

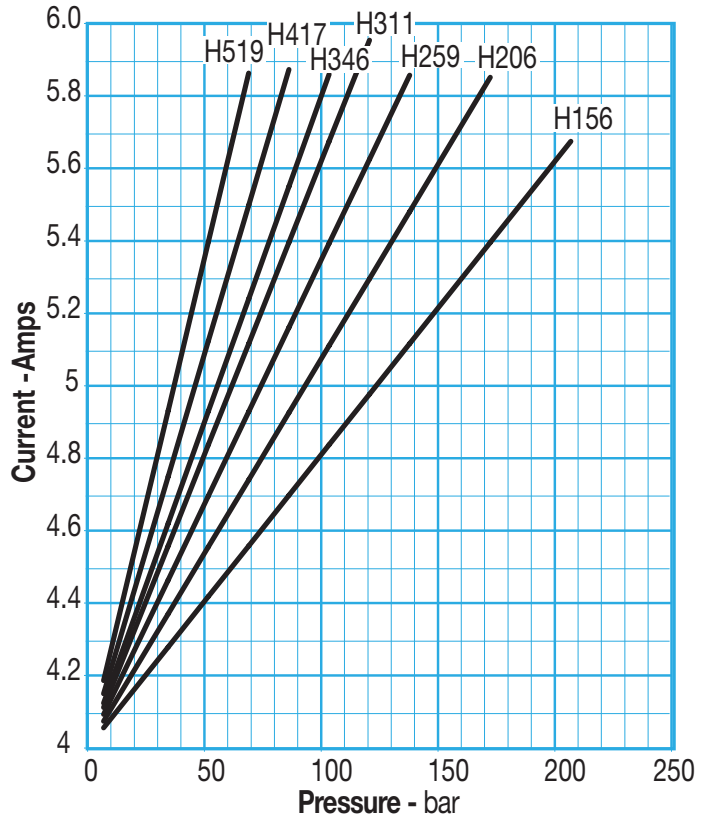


## AC Motor and Miniature Piston Pump Performance

115 VAC Motor Flow Rate 60 Hz



115 VAC Motor Current 60 Hz

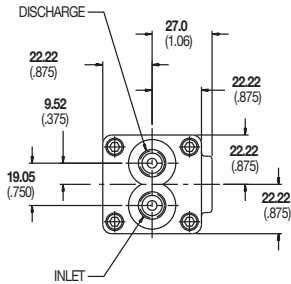


**NOTES:**

The 115 VAC performance shown is at 60 Hz.  
 At 230 VAC the current draw will be approximately 1/2 of that shown.  
 At 50 Hz, the flow will be about 5/6 of that shown and the current will be about 25% higher than the 60 Hz values.  
 Performance data shown is for reference only.

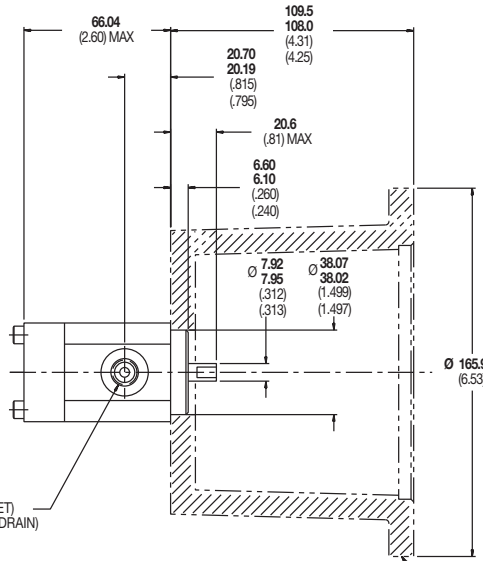
# Dimensions

## Miniature Piston Pump

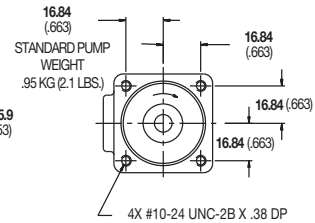


PORT SINGLE DIRECTION ROTATION (OPTIONAL INLET)  
PORT BI-DIRECTIONAL ROTATION (REQUIRED CASE DRAIN)

ALL PORTS ARE #4 SAE 7/16-20 UNF-2B  
PUMP SHOWN IS CLOCKWISE ROTATION  
56C ADAPTER SUPPLIED WITH COUPLING AND MOUNTING SCREWS

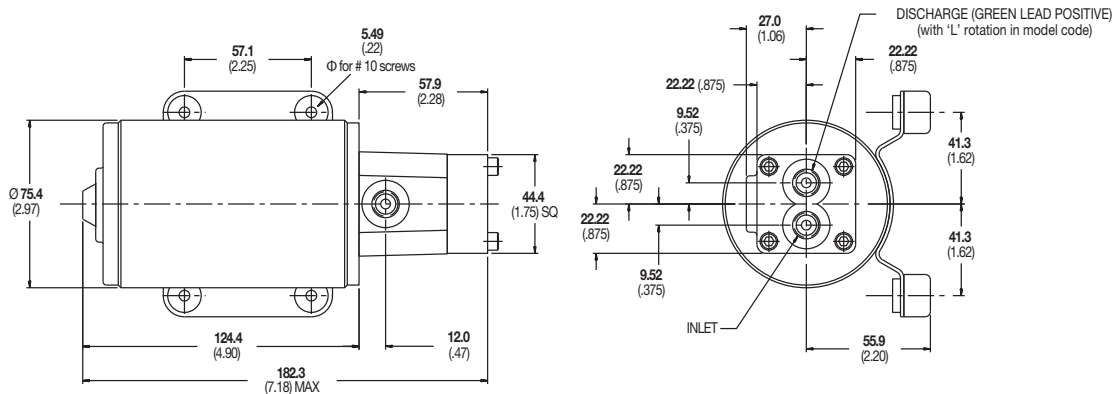


## Basic Pump



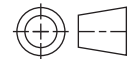
OPTIONAL 56C ADAPTER (REQUIRES LONG PUMP SHA)

## Standard 1/3 HP DC Permanent Magnet Motor with Pump

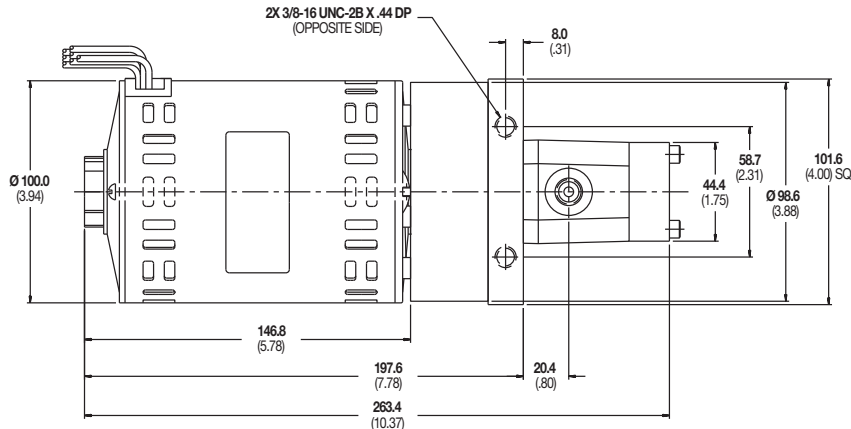


WEIGHT OF STANDARD MOTOR IS 1.82 KG (4 LBS)

THIRD ANGLE  
PROJECTION

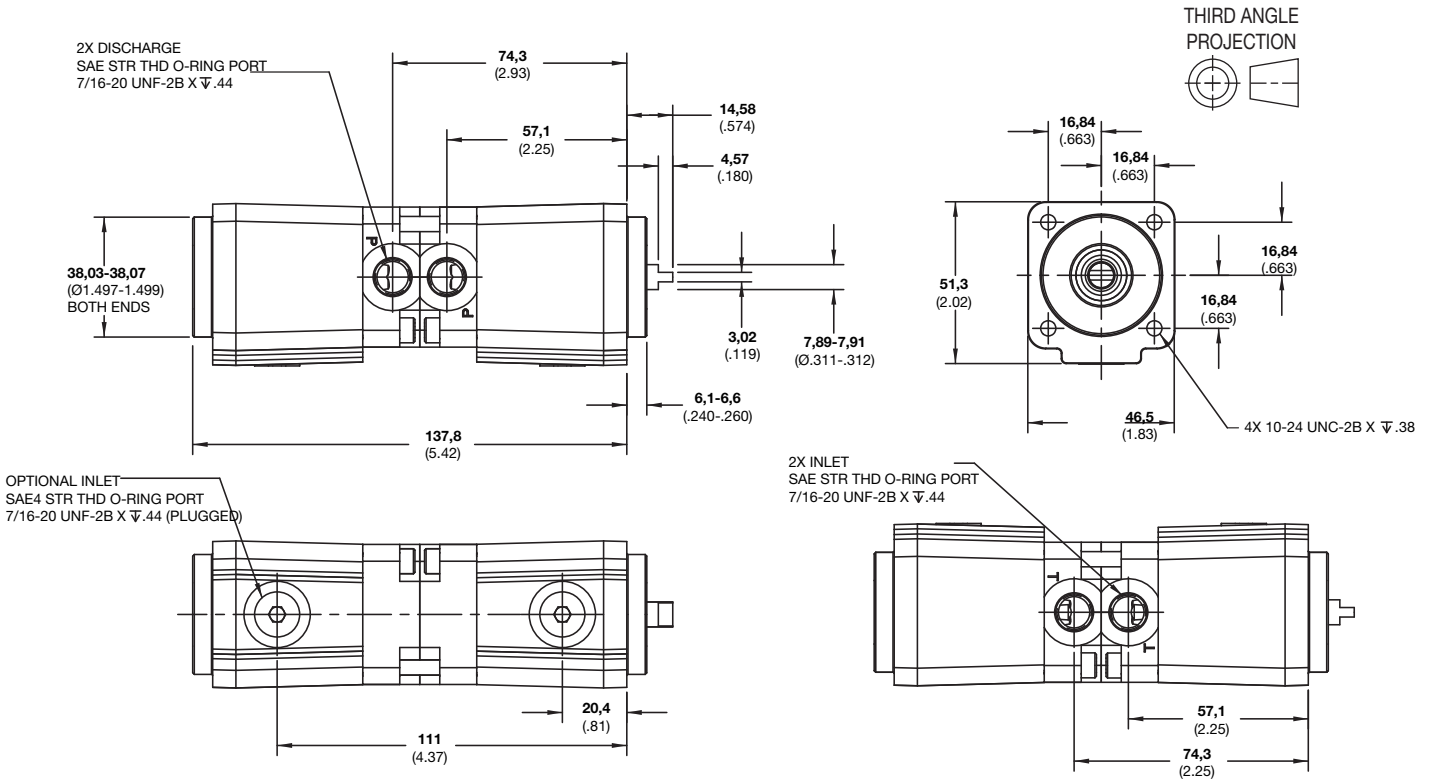


## Standard 1/3 HP AC Motor with Pump



Note: All dimensions in mm (inches).

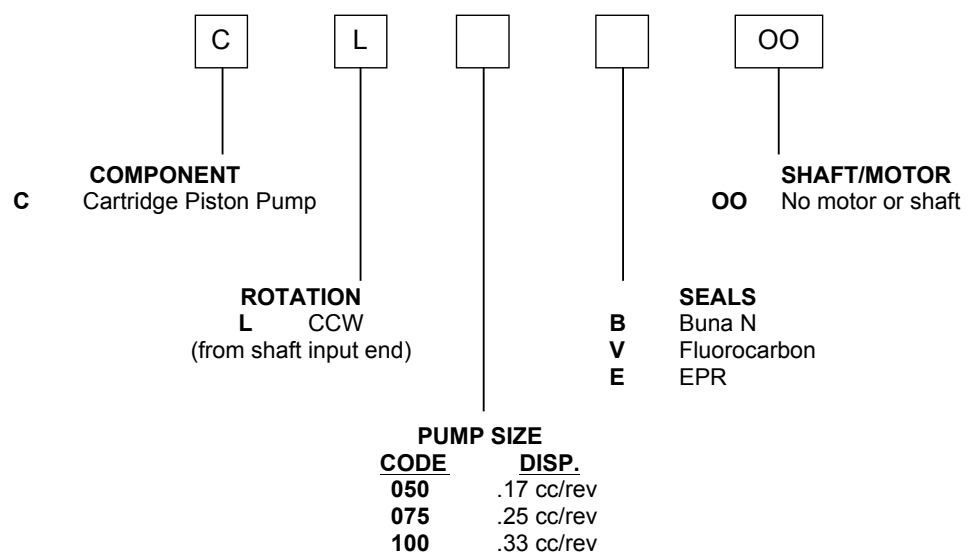
**Tandem Miniature Piston Pump**



**Note:** tandem pumps are not completely isolated from each other.

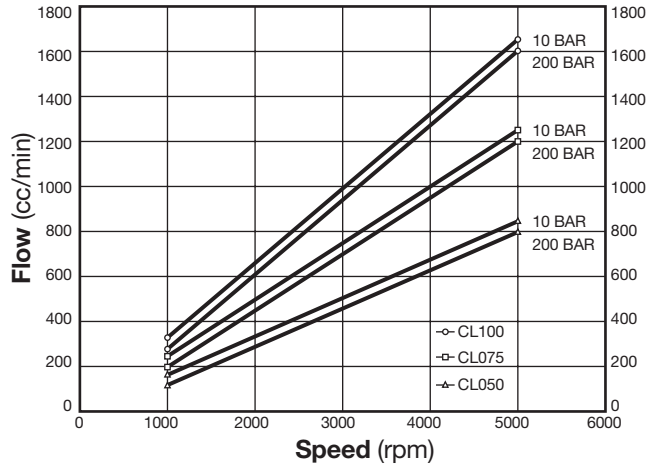
**Note:** All dimensions in mm (inches)

**Cartridge Pump Ordering Code**

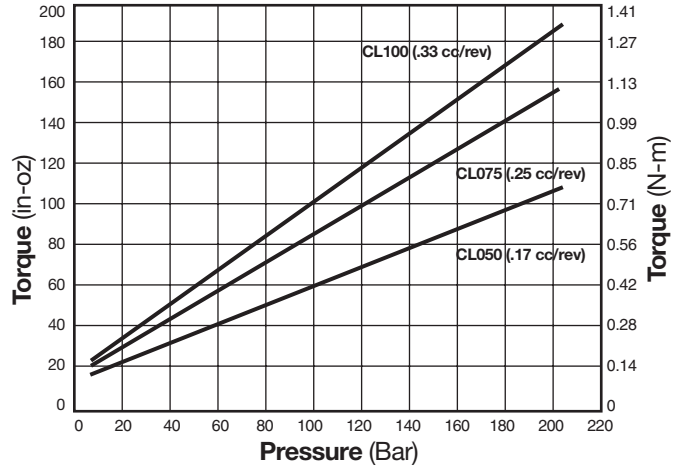


**Cartridge Piston Pump Performance**

**Cartridge pump flow at 23°C on DOT 3 brake fluid**



**Cartridge pump input torque at 23°C on DOT 3 brake fluid**



**Specifications**

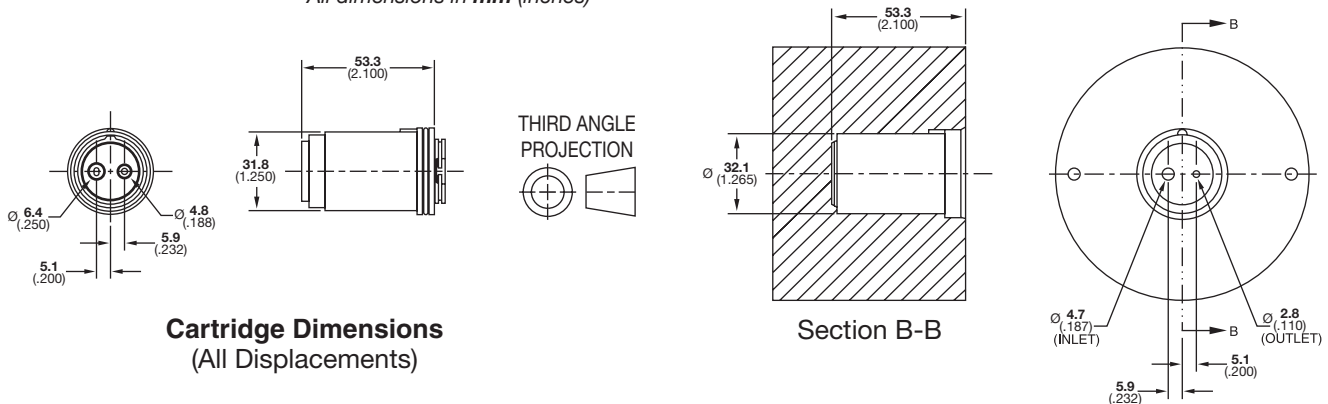
- Displacements:** .1 cc/rev. (.006 in<sup>3</sup>/rev.) to .33 cc/rev. (.020 in<sup>3</sup>/rev.)
- Speeds:** Up to 5000 rpm maximum
- Pressures:** 207 bar (3000 psi) maximum continuous  
276 bar (4000 psi) maximum intermittent
- Temperature Ranges:** Up to 120°C (250°F)
- Seals Available:** Variety
- Weight:** .19 kg (.42 lbs)
- Fluids Compatibility:** Variety, not water-based

*Specifications subject to change without notice.  
 Performance data is for reference only.*

This cartridge piston pump continues Oildyne's tradition of producing innovative products which can be customized to specific industries. Please call us to discuss how this cartridge pump can be used in your unique application. **Detailed cavity and motor interface dimensions are available on request. Ask for Oildyne drawing 500059**

**Cartridge Pump Dimensions**

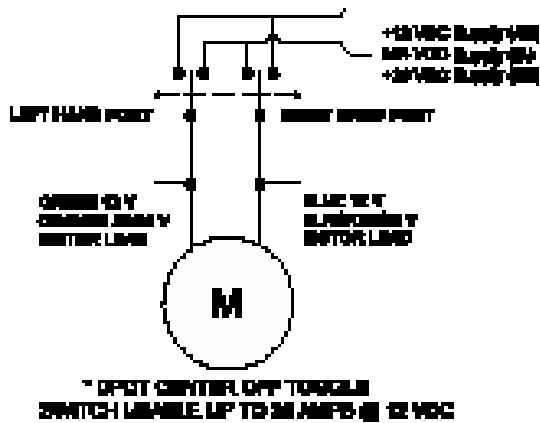
(with sample manifold requirements)  
 All dimensions in mm (inches)



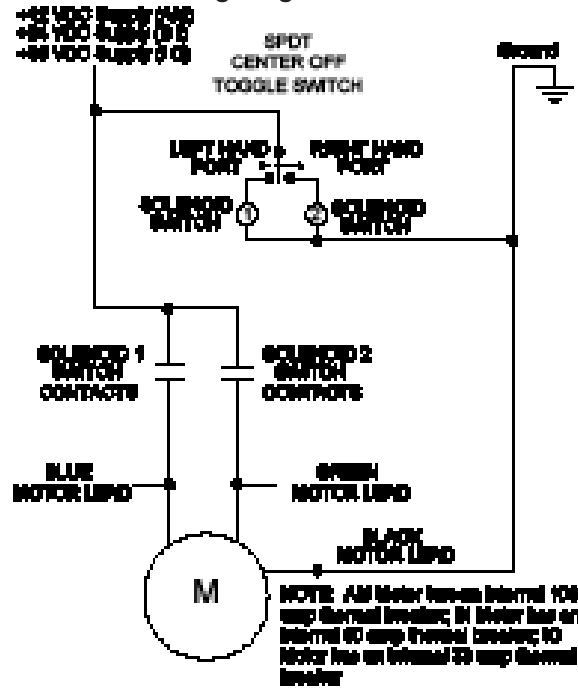
Reversing Motors Controls Suggestions

Suggested reversing electrical schematics

Wiring Diagram: AE/BE/IA

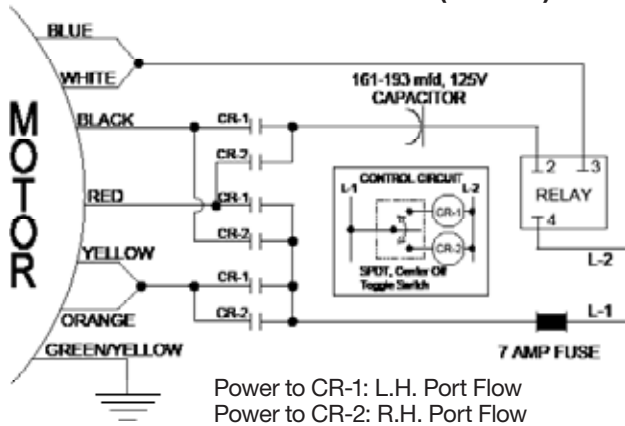


Wiring Diagram: AM/BI/IC

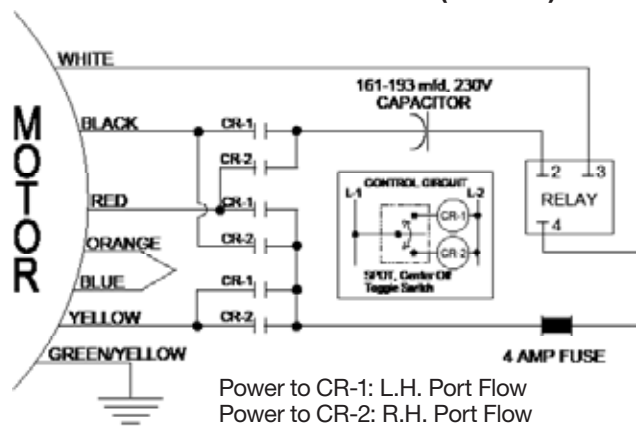


**NOTE:** If a Double Pole, Double Throw toggle switch with a current rating for your application is not available, refer to the "108/118 AE/BE/IA and 165/175 Motors" below for a possible reversing circuit using control relays.

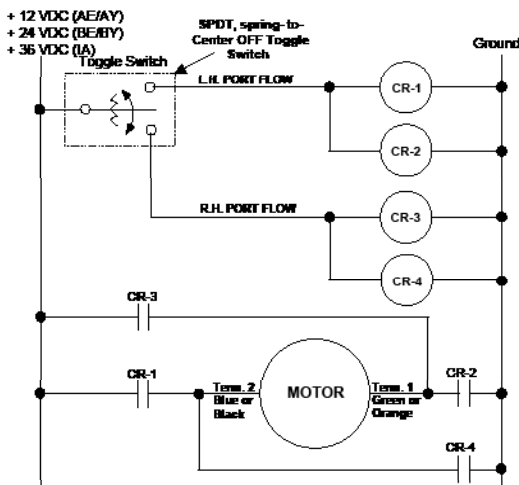
108/118 Series HA Motors (115 VAC)



108/118 Series HD Motors (230 VAC)



108/118 AE/BE/IA and 165/175 AY/BY Motors Using Control Relays



**NOTE:** The UP port corresponds to the Left Hand Port Flow in these schematics. The DN port corresponds to the Right Hand Port Flow. 108/118/165/175 Series power unit castings are marked above the pressure ports UP and DN.



## 750 Series Hand Pumps

Pressures to 172 bar (2500 psi)

Handle Force at 610 mm (24"): 1kg/6.9 bar (2.2 lbs/100 psi)

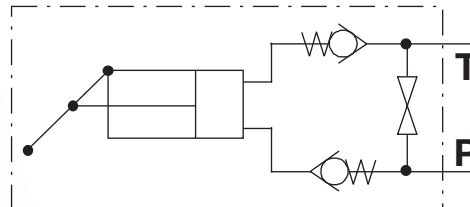
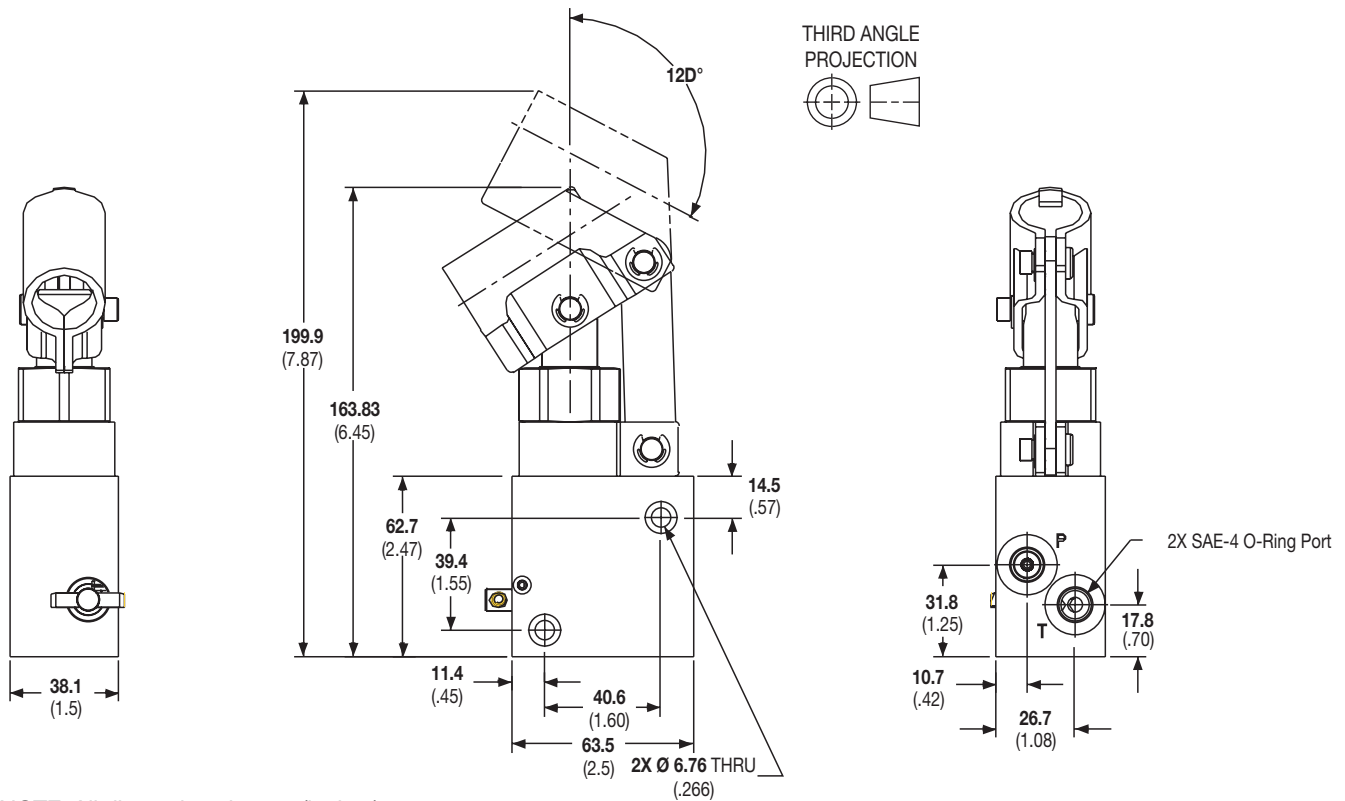
Temperature Range: -34 to 100°C (-30 to 212°F)

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



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# Hand Pump Dimensions



## Circuit

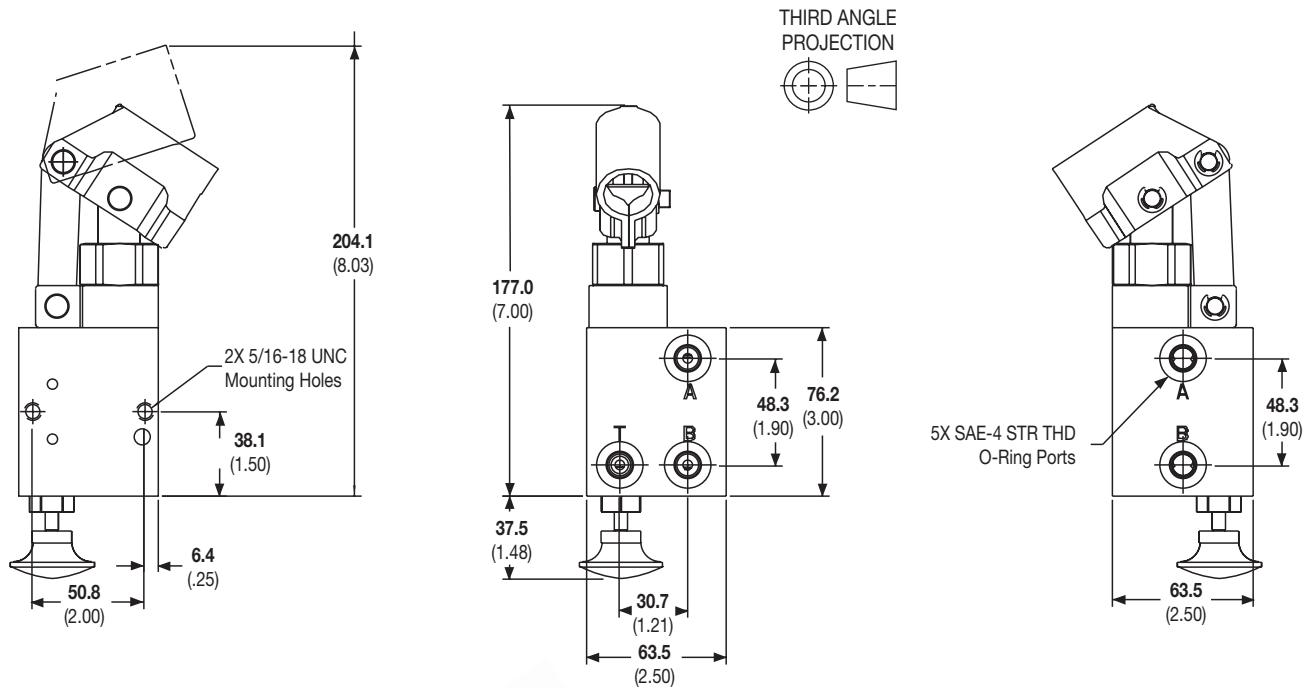
### Model 750-1 Hand Pump

- 8.2 cc/Stroke (.5 in<sup>3</sup>/Stroke)
- Suitable for use in Single Acting Cylinder circuits
- Metering release valve for controlled return of fluid
- Weight: .91 kg (2 lbs) pump only

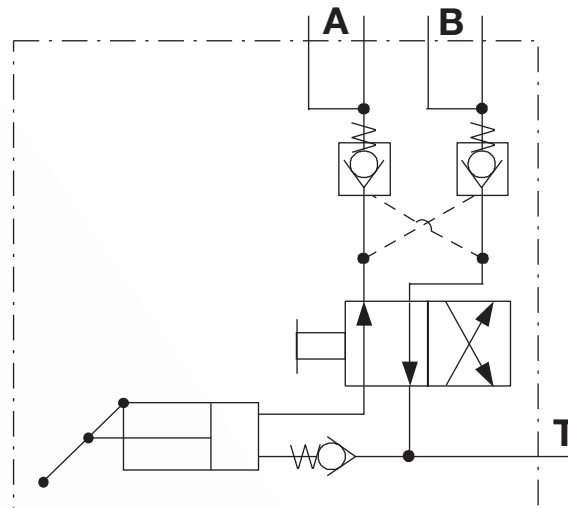
**Note:** Specifications subject to change without notice.



# Hand Pump Dimensions



NOTE: All dimensions in **mm** (inches)

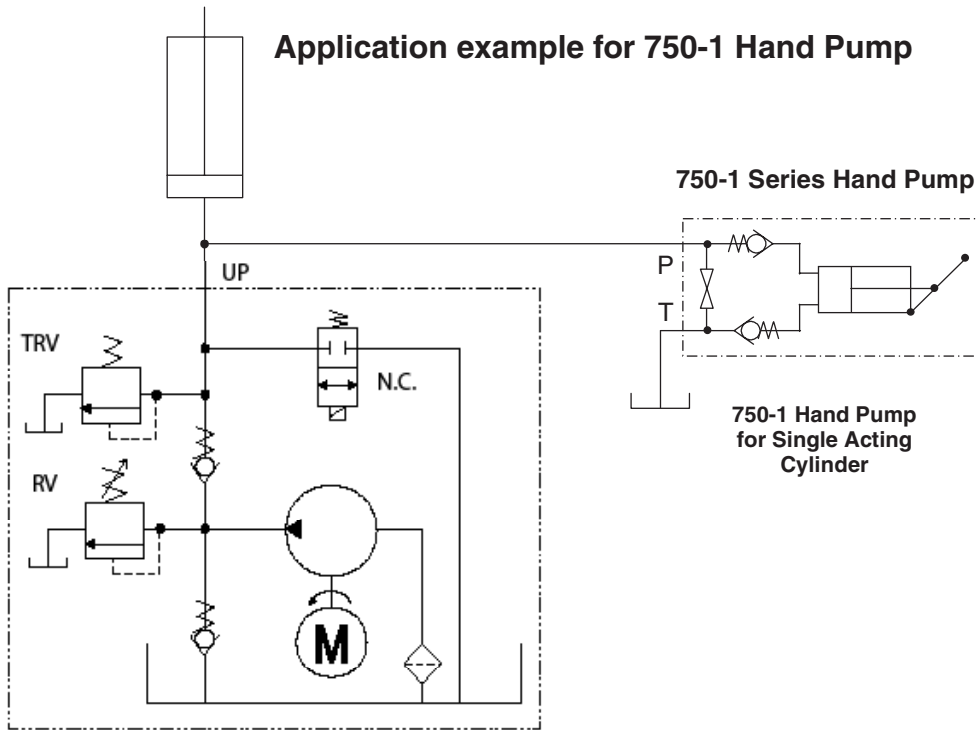


## Circuit

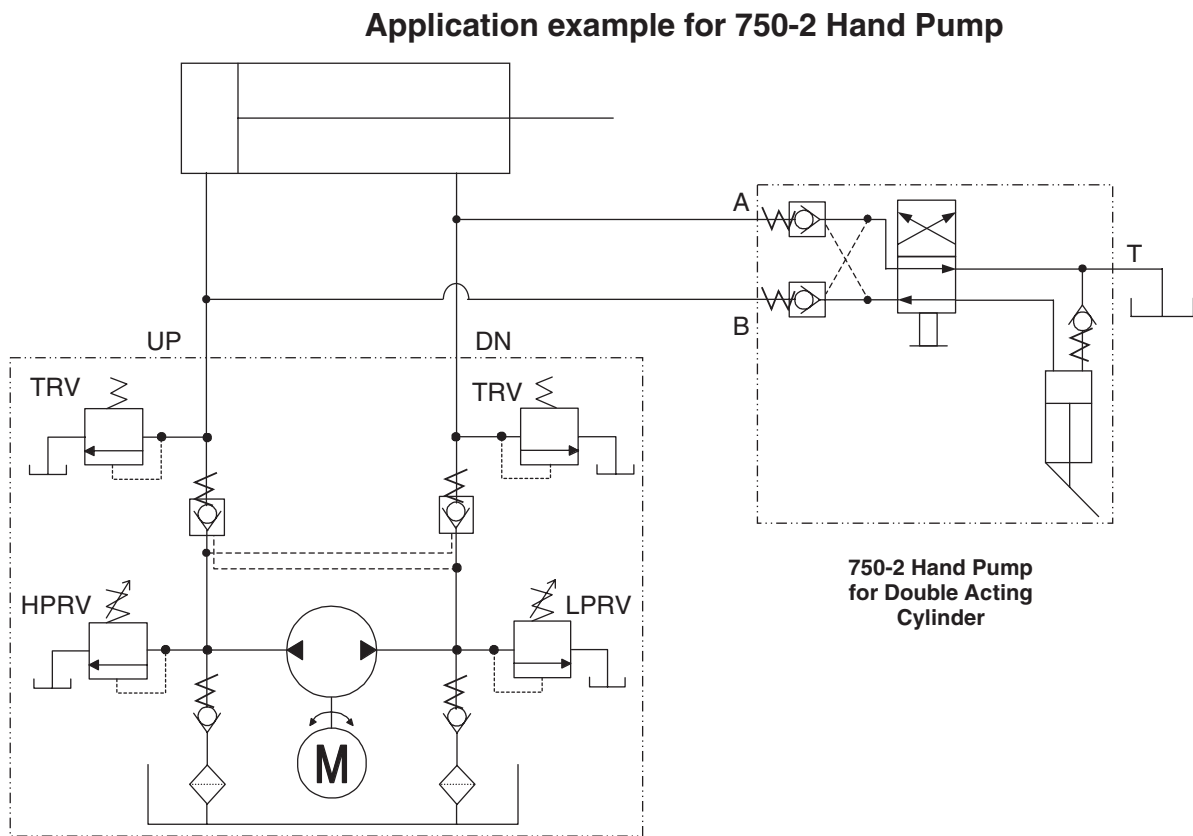
### Model 750-2 Hand Pump

- 8.2 cc/Stroke (.5 in<sup>3</sup>/Stroke)
- Suitable for use in Double Acting Cylinder circuits
- Integral double pilot operated check valves (with soft face seal poppets) hold the load and isolate the hand pump when not in use
- Weight: 1.4 kg (3 lbs) pump only

**Note:** Specifications subject to change without notice.



118/175 Series Single Direction with 2-way valve



750-2 Hand pump used with a reversible locking power unit



### Motor Data

Rotation - Bi Directional

Displacement - 1.48 cc/rev (.09 cpr)

Torque - Approximately 1.47 Nm/70 bar (13 in-lbs/1,000 psi)

Starting Torque - Approximately 1.36 Nm/70 bar (12 in-lbs/1,000 psi)

Static Slip - 541 cc/70 bar (33 CIPM/1,000 psi)

## 09 Series Hydraulic Gear Motor

Pressures to 276 bar (4000 psi)

Speeds to 20,000 rpm

Torque to 6.1 Nm (54 in-lbs)

Concentric Center Drive

Face or Flange Mounting

Instantly Reversible

Variety of Shaft Options

Compact Size

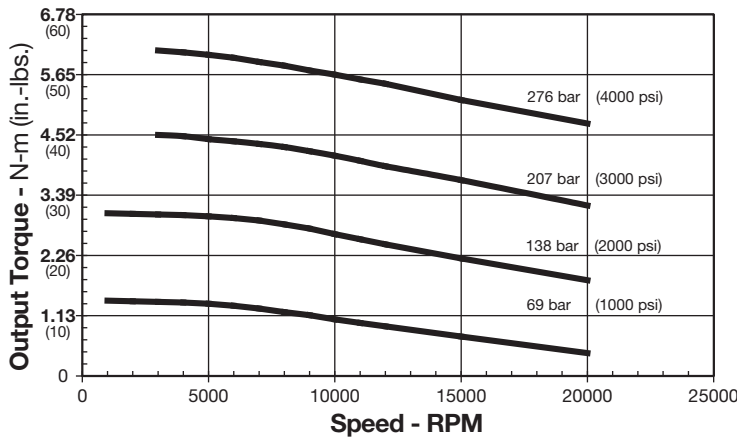
aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



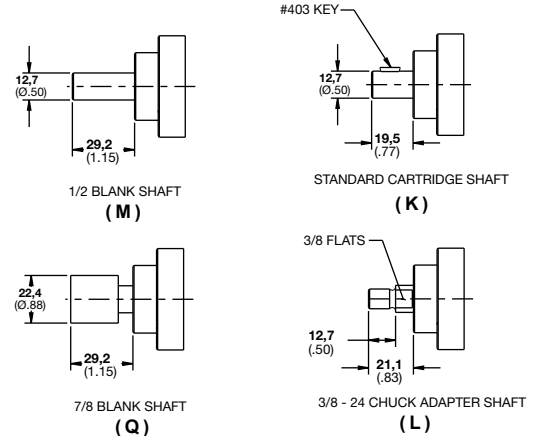
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# Performance

09 Series Hydraulic Motor

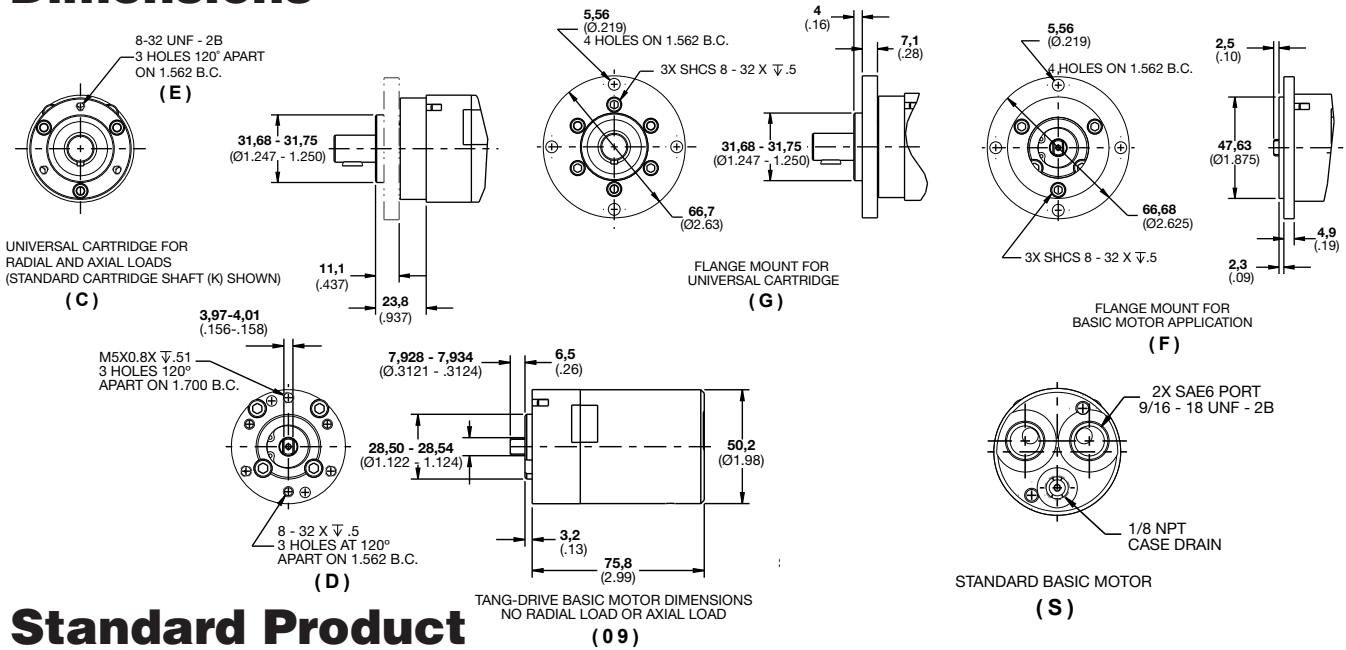


## Shaft Options



Note: All dimensions in mm (inches).

## Dimensions



## Standard Product Ordering Code

**09 S - G - C K - P**

- Basic Motor**  
09
- Porting**  
A — Auto Case Drain — Single Rotation Only (Specify Rotation From Shaft End)  
S — Case Drain
- Mounting**  
D — Face Mounting — Basic Motor  
E — Face Mounting — Cartridge Motor  
F — Flange Mounting — Basic Motor  
G — Flange Mounting — Cartridge Motor
- Cartridge**  
C — Universal Cartridge  
N — Basic Motor W/O Cartridge
- Seals (Fluid)**  
P — Oil  
T — Other (Specify)
- Shaft**  
B — Basic Motor Shaft  
K — Cartridge Shaft Extension — Std.  
L — Cartridge Shaft Extension — 3/8-24  
M — Cartridge Shaft Extension — 1/2" Blank  
Q — Cartridge Shaft Extension — 7/8" Blank

**AXIAL LOAD**  
 Basic Motor = 0  
 Cartridge = 9.1 kg (20 lbs.) max

**RADIAL LOAD**  
 Basic Motor = 0  
 Cartridge = 23 kg (50 lbs.) max

Note: Specifications subject to change without notice. Performance data is for reference only.



## Pressure Switches for AC Power

3.4-345 bar (50-5000 psi) Range

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



ENGINEERING YOUR SUCCESS.

## Pressure Switch Features

- **Versatile**

Our designs allow the switches to be used in any mounting orientation. They can sense hydraulic fluid pressure or air/gas pressure. A simple spring change allows the same basic switch to be used through a wide range of pressure settings.

- **Durable**

Heavy-duty electrical contacts are rated for 15 amps at 125, 250 or 460 VAC. Normally open and normally closed contacts are provided.

- **Reliable**

Repeatability is accomplished through a combination of a PTFE seal and a hardened, nickel-plated steel piston. This use of low-friction materials and the design of the unique PTFE seal (or diaphragm\*) prevents the piston from sticking. Repeatability, sensitivity and reliability are excellent. Limited piston movement prevents inertial forces from damaging the piston stop.

\*Used for lower pressure differential applications.

## Typical Applications

Pressure switches sense when a pre-selected fluid pressure is reached or lost and make or break an electrical circuit. Their operation can stop or start a machine's cycle, actuate indicator lights or sequential operations. Properly installed, their operation is automatic and limited by your imagination and need.

- **Spring Range**

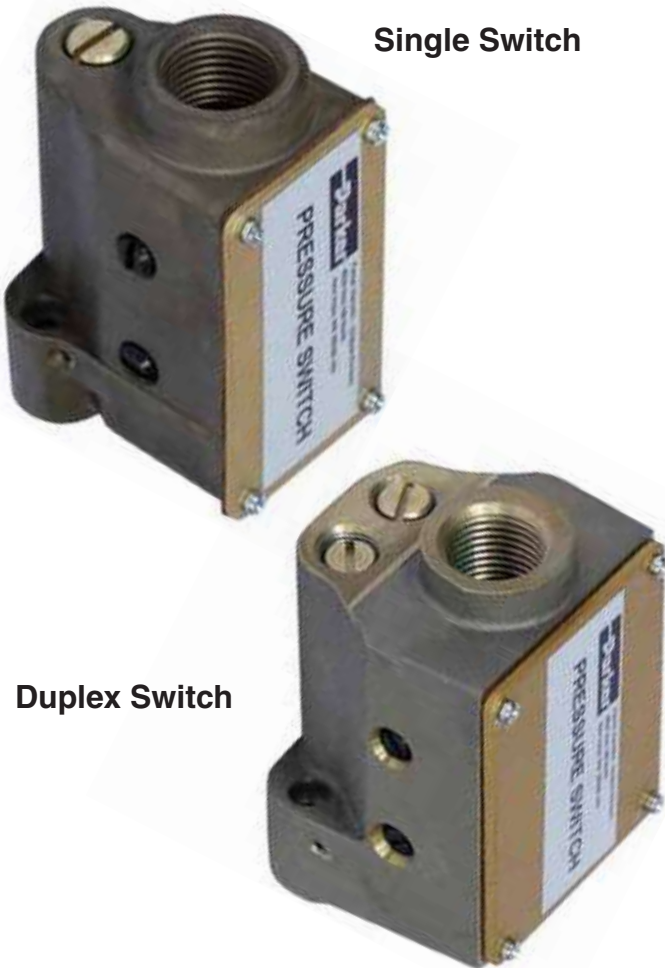
Duplex models contain two separate switches which can be activated by one or two sensing ports depending on the subplate configuration. See dimensional data for options.

- **Environmentally Resistant**

Environmentally resistant models are available on special order.

## Subplates

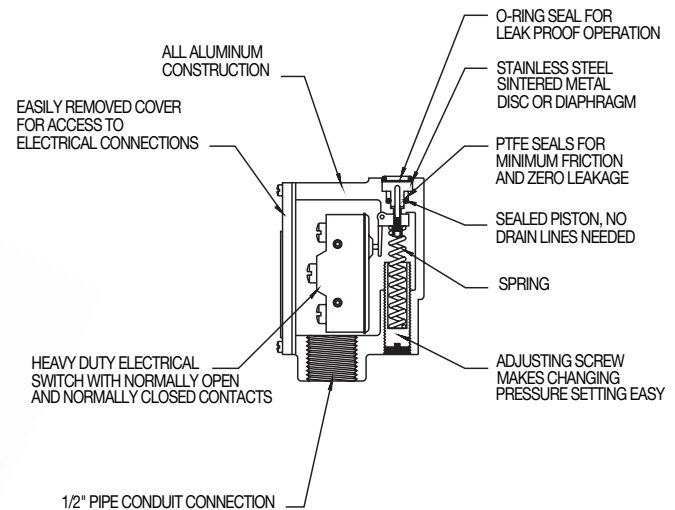
Subplates are available for in-line mounting of Oildyne pressure switches. This allows further flexibility in mounting to existing equipment. Ports in 1/8 NPT or 7/16-20 (SAE-4) straight thread are standard. The duplex switch has two types of subplates, one with a port for each side of the switch, the other with one port only, for both sides of the switch.



Single Switch

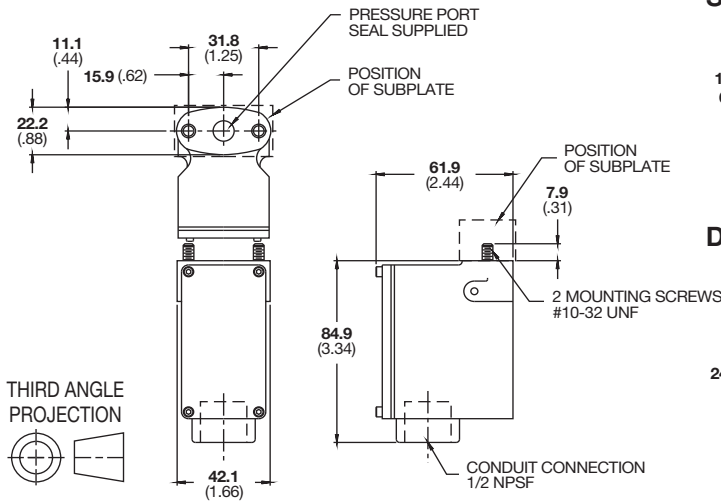
Duplex Switch

## Construction



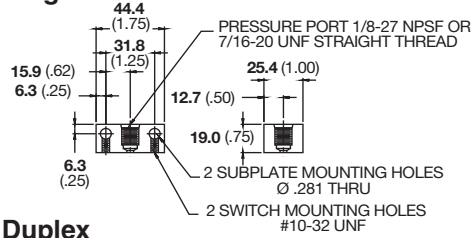
# Dimensions

## Single Pressure Switch

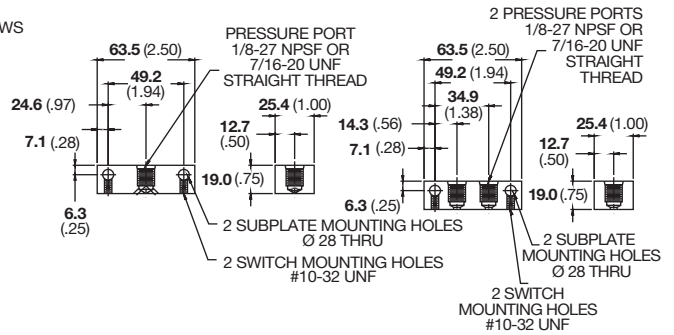


## Subplates (Single & Duplex)

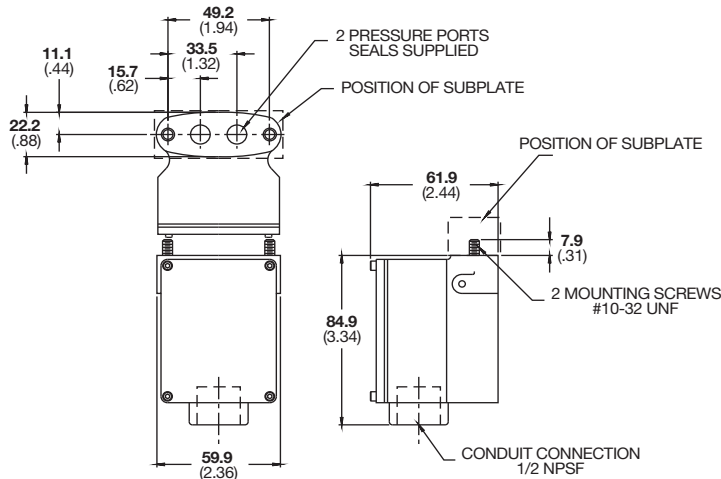
### Single



### Duplex



## Duplex Pressure Switch



Note: All dimensions in mm (inches).

## Weight

### Single

Standard .3 kg (10 oz.)

### Duplex

Standard .4 kg (14 oz.)

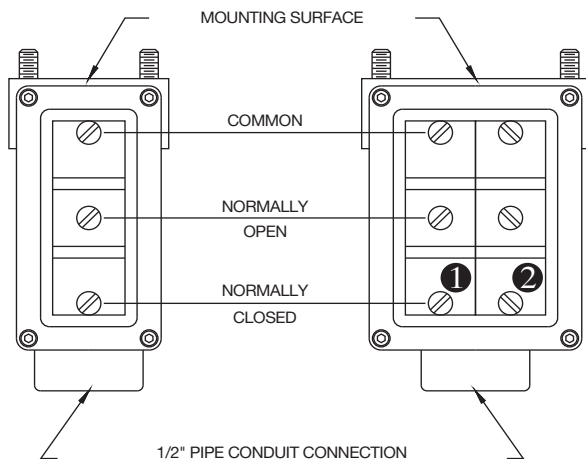
## Electrical Duty

Single pole, double throw element, U.L. rated for 15 amps at 125, 250 or 460 VAC. Electrical leads are not furnished with the switch.

## Recommended Oil

Any clean hydraulic fluid. Standard Buna N seals supplied, optional fluorocarbon rubber seals also available.

## Wiring



## Spring Selection Guide

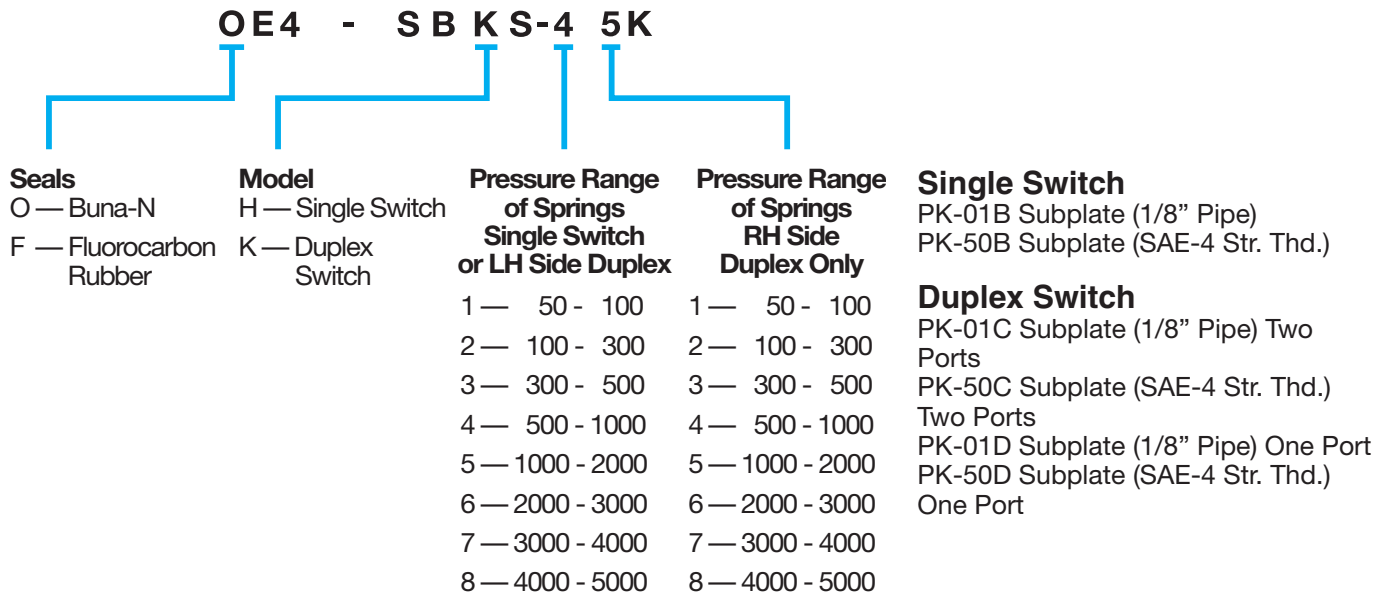
Spring Number	Spring Range	Adjustment Range	Repeatability Plus or Minus	Differential Range	Spring Color
1	50 - 100 psi	50 to 100 psi	2 psi	50 to 90 psi	Green
2	100 - 300 psi	75 to 300 psi	4 psi	50 to 100 psi	Black
3	300 - 500 psi	150 to 500 psi	5 psi	50 to 125 psi	Red
4	500 - 1000 psi	200 to 1000 psi	8 psi	50 to 150 psi	Blue
5	1000 - 2000 psi	300 to 2000 psi	15 psi	75 to 250 psi	White
6	2000 - 3000 psi	400 to 3000 psi	20 psi	75 to 250 psi	Yellow
7	3000 - 4000 psi	500 to 4000 psi	25 psi	125 to 350 psi	Orange
8	4000 - 5000 psi	500 to 5000 psi	50 psi	150 to 450 psi	Pink

**Note:** 100 psi = 6.9 bar.

## Differential

This is the pressure required to open and close the switch contacts. It is a constant value dependent on the characteristics of the switch. The differential will be in the range as shown on the above table. For minimum differential, select the lightest spring including the maximum setting desired.

## Standard Product Ordering Code





**PARKER-HANNIFIN CORPORATION**  
**OFFER OF SALE**

The goods, services or work (referred to as the "Products") offered by **Parker-Hannifin Corporation**, its subsidiaries, groups, divisions, and authorized distributors ("Seller") are offered for sale at prices indicated in the offer, or as may be established by Seller. The offer to sell the Products and acceptance of Seller's offer by any customer ("Buyer") is contingent upon, and will be governed by all of the terms and conditions contained in this Offer of Sale. Buyer's order for any Products specified in Buyer's purchase document or Seller's offer, proposal or quote ("Quote") attached to the purchase order, when communicated to Seller verbally, or in writing, shall constitute acceptance of this offer.

**1. Terms and Conditions.** Seller's willingness to offer Products for sale or accept an order for Products is subject to the terms and conditions contained in this Offer of Sale or any newer version of the same, published by Seller electronically at [www.parker.com/salesterms/](http://www.parker.com/salesterms/). Seller objects to any contrary or additional terms or conditions of Buyer's order or any other document or other communication issued by Buyer.

**2. Price; Payment.** Prices stated on Seller's Quote are valid for thirty (30) days, except as explicitly otherwise stated therein, and do not include any sales, use, or other taxes or duties unless specifically stated. Seller reserves the right to modify prices to adjust for any raw material price fluctuations. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2010). Payment is subject to credit approval and payment for all purchases is due thirty (30) days from the date of invoice (or such date as may be specified by Seller's Credit Department). Unpaid invoices beyond the specified payment date incur interest at the rate of 1.5% per month or the maximum allowable rate under applicable law.

**3. Shipment; Delivery; Title and Risk of Loss.** All delivery dates are approximate. Seller is not responsible for damages resulting from any delay. Regardless of the manner of shipment, delivery occurs and title and risk of loss or damage pass to Buyer, upon placement of the Products with the shipment carrier at Seller's facility. Unless otherwise stated, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyers' request beyond the respective dates indicated will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions.

**4. Warranty.** Seller warrants that the Products sold hereunder shall be free from defects in material or workmanship for a period of twelve (12) months from the date of delivery or 2,000 hours of normal use, whichever occurs first. All prices are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **DISCLAIMER OF WARRANTY: THIS WARRANTY IS THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

**5. Claims; Commencement of Actions.** Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reported to the Seller within ten (10) days of delivery. No other claims against Seller will be allowed unless asserted in writing within thirty (30) days after delivery. Buyer shall notify Seller of any alleged breach of warranty within thirty (30) days after the date the defect is or should have been discovered by Buyer. Any claim or action against Seller based upon breach of contract or any other theory, including tort, negligence, or otherwise must be commenced within twelve (12) months from the date of the alleged breach or other alleged event, without regard to the date of discovery.

**6. LIMITATION OF LIABILITY.** IN THE EVENT OF A BREACH OF WARRANTY, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE WITHIN A REASONABLE PERIOD OF TIME. **IN NO EVENT IS SELLER LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, WHETHER BASED IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.**

**7. User Responsibility.** The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.

**8. Loss to Buyer's Property.** Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, will be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer ordering the items manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

**9. Special Tooling.** A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the Products, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller has the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

**10. Buyer's Obligation; Rights of Seller.** To secure payment of all sums due or otherwise, Seller retains a security interest in all Products delivered to Buyer and this agreement is deemed to be a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

**11. Improper Use and Indemnity.** Buyer shall indemnify, defend, and hold Seller harmless from any losses, claims, liabilities, damages, lawsuits, judgments and costs (including attorney fees and defense costs), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, application, design, specification or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Products; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

**12. Cancellations and Changes.** Buyer may not cancel or modify or cancel any order for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change Product features, specifications, designs and availability.

**13. Limitation on Assignment.** Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.

**14. Force Majeure.** Seller does not assume the risk and is not liable for delay or failure to perform any of Seller's obligations by reason of events or circumstances beyond its reasonable control (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

**15. Waiver and Severability.** Failure to enforce any provision of this agreement will not invalidate that provision; nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.

**16. Termination.** Seller may terminate this agreement for any reason and at any time by giving Buyer thirty (30) days prior written notice. Seller may immediately terminate this agreement, in writing, if Buyer: (a) breaches any provision of this agreement (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or one if filed by a third party (d) makes an assignment for the benefit of creditors; or (e) dissolves its business or liquidates all or a majority of its assets.

**17. Governing Law.** This agreement and the sale and delivery of all Products are deemed to have taken place in, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.

**18. Indemnity for Infringement of Intellectual Property Rights.** Seller is not liable for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that a Product sold pursuant to this agreement infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If a Product is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product and refund the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller is not liable for claims of infringement based on information provided by Buyer, or directed to Products delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any Product sold hereunder. The foregoing provisions of this Section constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

**19. Entire Agreement.** This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged. The terms contained herein may not be modified unless in writing and signed by an authorized representative of Seller.

**20. Compliance with Laws.** Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards of care, including those of the United Kingdom the United States of America, and the country or countries in which Buyer may operate, including without limitation the U. K. Bribery Act, the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act") and the U.S. Food Drug and Cosmetic Act ("FDCA"), each as currently amended, and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that it is familiar with the provisions of the U. K. Bribery Act, the FCPA, the FDA, and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly to any governmental official, any foreign political party or official thereof, any candidate for foreign political office, or any commercial entity or person, for the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller.





# Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 1 800 C-Parker (1 800 272 7537)



## Aerospace

### Key Markets

Aftermarket services  
Commercial transports  
Engines  
General & business aviation  
Helicopters  
Launch vehicles  
Military aircraft  
Missiles  
Power generation  
Regional transports  
Unmanned aerial vehicles

### Key Products

Control systems & actuation products  
Engine systems & components  
Fluid conveyance systems & components  
Fluid metering, delivery & atomization devices  
Fuel systems & components  
Fuel tank inerting systems  
Hydraulic systems & components  
Thermal management  
Wheels & brakes



## Climate Control

### Key Markets

Agriculture  
Air conditioning  
Construction Machinery  
Food & beverage  
Industrial machinery  
Life sciences  
Oil & gas  
Precision cooling  
Process  
Refrigeration  
Transportation

### Key Products

Accumulators  
Advanced actuators  
CO<sub>2</sub> controls  
Electronic controllers  
Filter driers  
Hand shut-off valves  
Heat exchangers  
Hose & fittings  
Pressure regulating valves  
Refrigerant distributors  
Safety relief valves  
Smart pumps  
Solenoid valves  
Thermostatic expansion valves



## Electromechanical

### Key Markets

Aerospace  
Factory automation  
Life science & medical  
Machine tools  
Packaging machinery  
Paper machinery  
Plastics machinery & converting  
Primary metals  
Semiconductor & electronics  
Textile  
Wire & cable

### Key Products

AC/DC drives & systems  
Electric actuators, gantry robots & slides  
Electrohydraulic actuation systems  
Electromechanical actuation systems  
Human machine interface  
Linear motors  
Stepper motors, servo motors, drives & controls  
Structural extrusions



## Filtration

### Key Markets

Aerospace  
Food & beverage  
Industrial plant & equipment  
Life sciences  
Marine  
Mobile equipment  
Oil & gas  
Power generation & renewable energy  
Process  
Transportation  
Water Purification

### Key Products

Analytical gas generators  
Compressed air filters & driers  
Engine air, coolant, fuel & oil filtration systems  
Fluid condition monitoring systems  
Hydraulic & lubrication filters  
Hydrogen, nitrogen & zero air generators  
Instrumentation filters  
Membrane & fiber filters  
Microfiltration  
Sterile air filtration  
Water desalination & purification filters & systems



## Fluid & Gas Handling

### Key Markets

Aerial lift  
Agriculture  
Bulk chemical handling  
Construction machinery  
Food & beverage  
Fuel & gas delivery  
Industrial machinery  
Life sciences  
Marine  
Mining  
Mobile  
Oil & gas  
Renewable energy  
Transportation

### Key Products

Check valves  
Connectors for low pressure fluid conveyance  
Deep sea umbilicals  
Diagnostic equipment  
Hose couplings  
Industrial hose  
Mooring systems & power cables  
PTFE hose & tubing  
Quick couplings  
Rubber & thermoplastic hose  
Tube fittings & adapters  
Tubing & plastic fittings



## Hydraulics

### Key Markets

Aerial lift  
Agriculture  
Alternative energy  
Construction machinery  
Forestry  
Industrial machinery  
Machine tools  
Marine  
Material handling  
Mining  
Oil & gas  
Power generation  
Refuse vehicles  
Renewable energy  
Truck hydraulics  
Turf equipment

### Key Products

Accumulators  
Cartridge valves  
Electrohydraulic actuators  
Human machine interfaces  
Hybrid drives  
Hydraulic cylinders  
Hydraulic motors & pumps  
Hydraulic systems  
Hydraulic valves & controls  
Hydrostatic steering  
Integrated hydraulic circuits  
Power take-offs  
Power units  
Rotary actuators  
Sensors



## Pneumatics

### Key Markets

Aerospace  
Conveyor & material handling  
Factory automation  
Life science & medical  
Machine tools  
Packaging machinery  
Transportation & automotive

### Key Products

Air preparation  
Brass fittings & valves  
Manifolds  
Pneumatic accessories  
Pneumatic actuators & grippers  
Pneumatic valves & controls  
Quick disconnects  
Rotary actuators  
Rubber & thermoplastic hose & couplings  
Structural extrusions  
Thermoplastic tubing & fittings  
Vacuum generators, cups & sensors



## Process Control

### Key Markets

Alternative fuels  
Biopharmaceuticals  
Chemical & refining  
Food & beverage  
Marine & shipbuilding  
Medical & dental  
Microelectronics  
Nuclear Power  
Offshore oil exploration  
Oil & gas  
Pharmaceuticals  
Power generation  
Pulp & paper  
Steel  
Water/wastewater

### Key Products

Analytical Instruments  
Analytical sample conditioning products & systems  
Chemical injection fittings & valves  
Fluoropolymer chemical delivery fittings, valves & pumps  
High purity gas delivery fittings, valves, regulators & digital flow controllers  
Industrial mass flow meters/ controllers  
Permanent no-weld tube fittings  
Precision industrial regulators & flow controllers  
Process control double block & bleeds  
Process control fittings, valves, regulators & manifold valves



## Sealing & Shielding

### Key Markets

Aerospace  
Chemical processing  
Consumer  
Fluid power  
General industrial  
Information technology  
Life sciences  
Microelectronics  
Military  
Oil & gas  
Power generation  
Renewable energy  
Telecommunications  
Transportation

### Key Products

Dynamic seals  
Elastomeric o-rings  
Electro-medical instrument design & assembly  
EMI shielding  
Extruded & precision-cut, fabricated elastomeric seals  
High temperature metal seals  
Homogeneous & inserted elastomeric shapes  
Medical device fabrication & assembly  
Metal & plastic retained composite seals  
Shielded optical windows  
Silicone tubing & extrusions  
Thermal management  
Vibration dampening

ENGINEERING YOUR SUCCESS.



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