



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



ENGINEERING YOUR SUCCESS.

 **WARNING**

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Parker Hannifin
HPS Division
New Hope, MN 55428 USA



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>PRODUCT TYPE 108 108 Power Unit 118 118 Power Unit 165 165 Power Unit 175 175 Power Unit</p> <p>MOTOR CODE – 108/118 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>MOTOR CODE – 165/175 AY 12 VDC Perm. Mag. 1 HP BY 24 VDC Perm. Mag. 1 HP</p> <p>PUMP TYPE S Standard C Cold Temp</p> <p>PUMP SIZE 108/118 10 .16 cc/rev (.010 in³/rev) 19 .31 cc/rev (.019 in³/rev) 25 .41 cc/rev (.025 in³/rev) 32 .52 cc/rev (.032 in³/rev)</p> <p>PUMP SIZE 165/175 32 .52 cc/rev (.032 in³/rev) 50 .82 cc/rev (.050 in³/rev) 65 1.06 cc/rev (.065 in³/rev)</p> <p>RESERVOIRS</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 in³ A</td> <td>410 cc</td> <td>25 in³</td> </tr> <tr> <td>600 cc</td> <td>37 in³ B</td> <td>640 cc</td> <td>37 in³</td> </tr> <tr> <td>410 cc</td> <td>25 in³ C</td> <td></td> <td>N/A</td> </tr> <tr> <td>410 cc</td> <td>25 in³ D</td> <td></td> <td>N/A</td> </tr> <tr> <td>1500 cc</td> <td>95 in³ F</td> <td>1500 cc</td> <td>92 in³</td> </tr> <tr> <td>750 cc</td> <td>46 in³ G</td> <td>910 cc</td> <td>55 in³</td> </tr> <tr> <td>1700 cc</td> <td>104 in³ H</td> <td>2400 cc</td> <td>150 in³</td> </tr> <tr> <td>3700 cc</td> <td>226 in³ I</td> <td>4200 cc</td> <td>254 in³</td> </tr> <tr> <td>5300 cc</td> <td>323 in³ J</td> <td>5600 cc</td> <td>347 in³</td> </tr> <tr> <td>950 cc</td> <td>58 in³ P</td> <td>940 cc</td> <td>58 in³</td> </tr> <tr> <td>1900 cc</td> <td>118 in³ Q</td> <td>1500 cc</td> <td>95 in³</td> </tr> <tr> <td>4500 cc</td> <td>277 in³ R</td> <td>3000 cc</td> <td>185 in³</td> </tr> <tr> <td>3200 cc</td> <td>201 in³ S</td> <td>2300 cc</td> <td>141 in³</td> </tr> </table> <p>NOTES: 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 ³ A	410 cc	25 in ³	600 cc	37 in ³ B	640 cc	37 in ³	410 cc	25 in ³ C		N/A	410 cc	25 in ³ D		N/A	1500 cc	95 in ³ F	1500 cc	92 in ³	750 cc	46 in ³ G	910 cc	55 in ³	1700 cc	104 in ³ H	2400 cc	150 in ³	3700 cc	226 in ³ I	4200 cc	254 in ³	5300 cc	323 in ³ J	5600 cc	347 in ³	950 cc	58 in ³ P	940 cc	58 in ³	1900 cc	118 in ³ Q	1500 cc	95 in ³	4500 cc	277 in ³ R	3000 cc	185 in ³	3200 cc	201 in ³ S	2300 cc	141 in ³	<p>DN RV SETTING (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>UP RV SETTING (Left Hand Port) In multiples of 100 psi Examples 04 = 400 psi 12 = 1200 psi 29 = 2900 psi</p> <p>MOUNTING V Vertical (motor up) H Horizontal (ports up)</p> <p>PORTS 1 7/16-20 (SAE -4) (108 & 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 & 165 only)</p> <p>Note: for 118 or 175, use -1 for SAE mounting; use -4 for Metric mounting</p> <p>CIRCUIT TYPE NN Single direction WW Single dir. with check RR Reversible LL Reversible locking RB Reversible with Back Press. LB Rev. lock. with Back Press. Each Solenoid Valve option below includes the WW circuit: Use 118 or 175 when coding solenoid valve circuit 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.

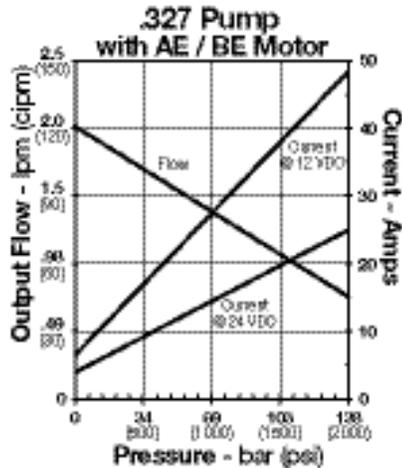
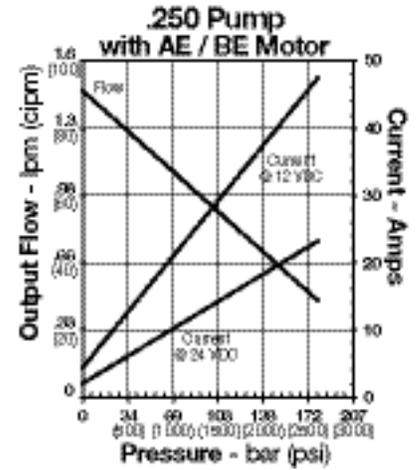
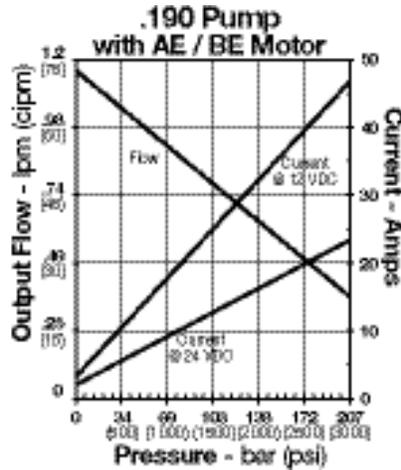
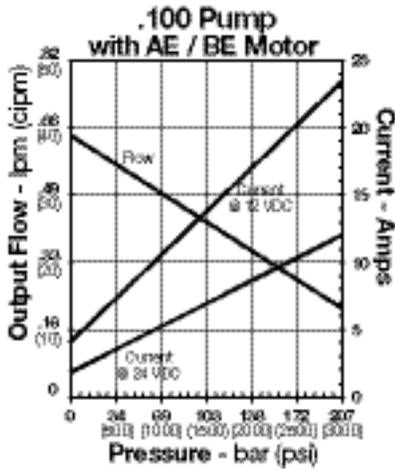
ALL DATA SUBJECT TO CHANGE WITHOUT NOTICE
 FOR POWER UNIT CONFIGURATIONS OTHER THAN THOSE SHOWN PLEASE CONSULT OILDYNE.



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

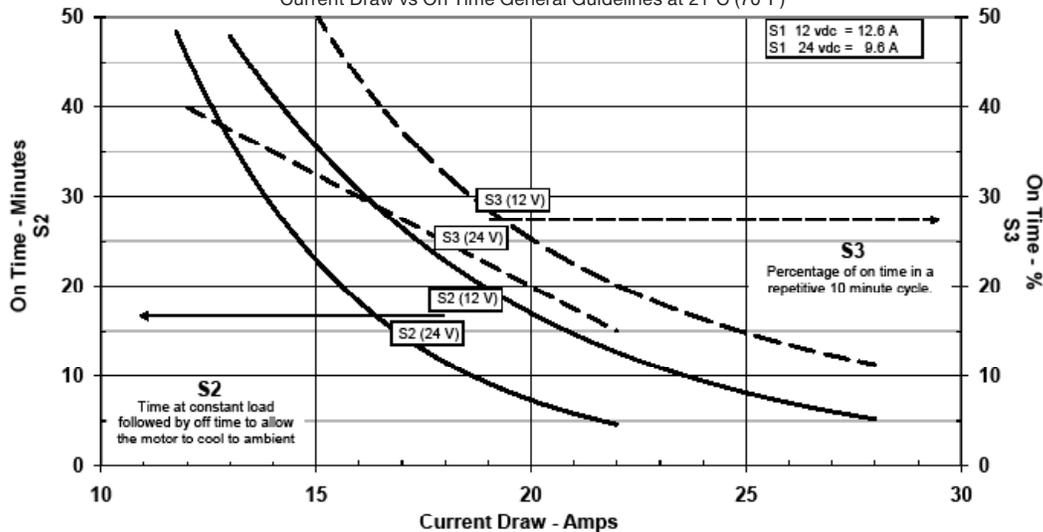
2) Reversible with DN port pressure:

- 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)

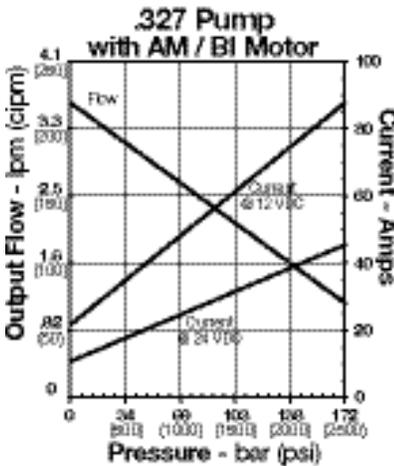
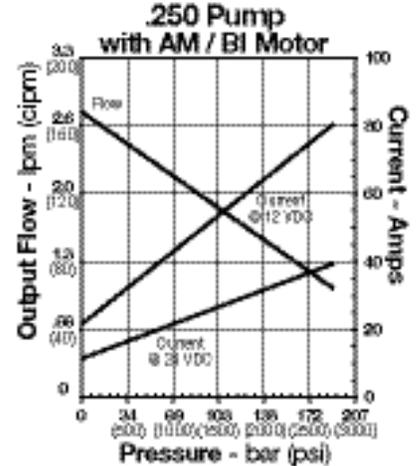
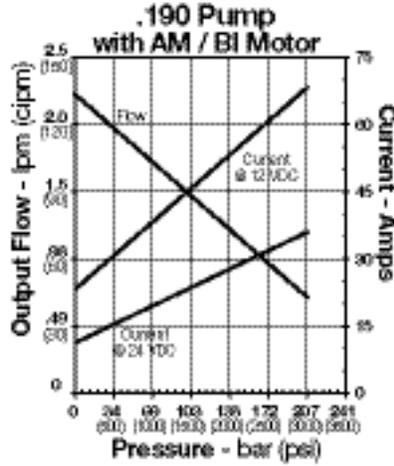
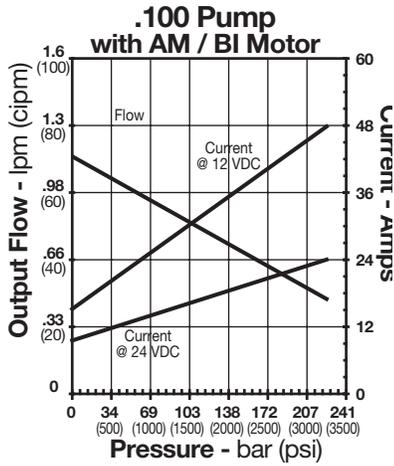


Performance data for reference only. Based on ATF at 21°C (70°F)

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

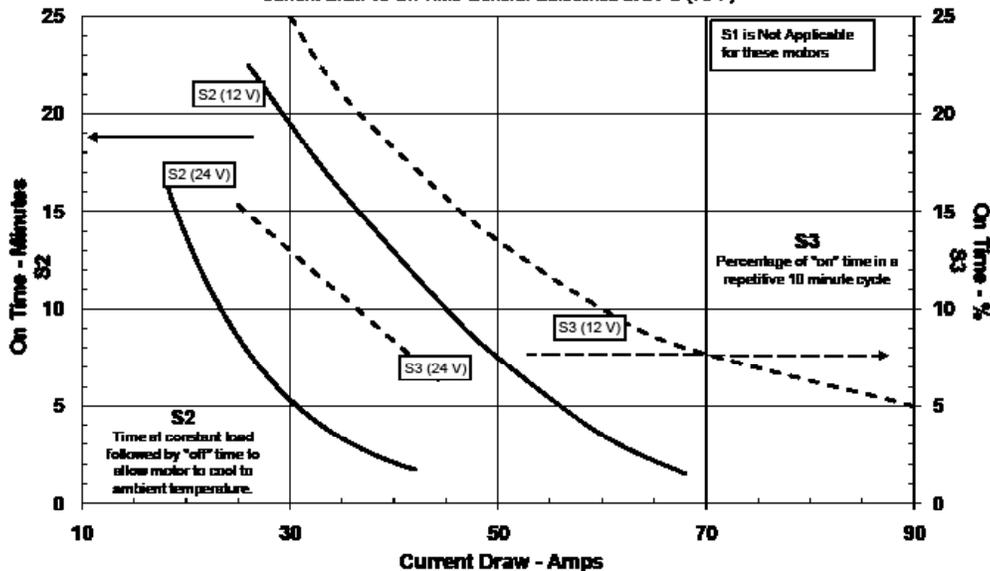
2) Reversible with DN port pressure:

- 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

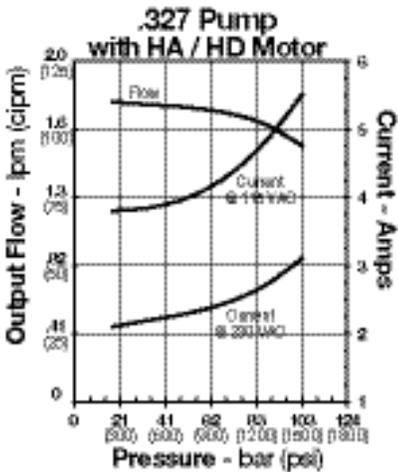
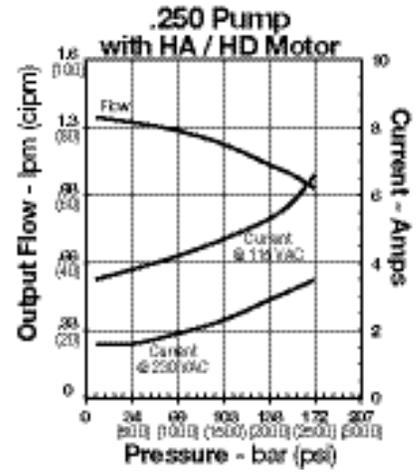
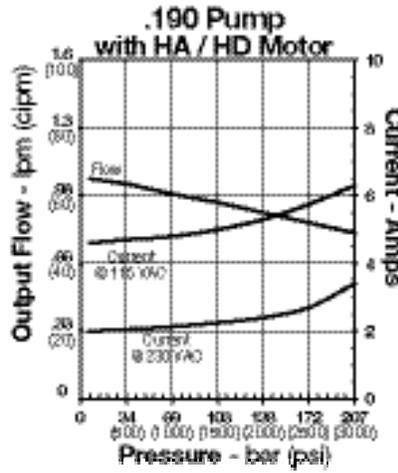
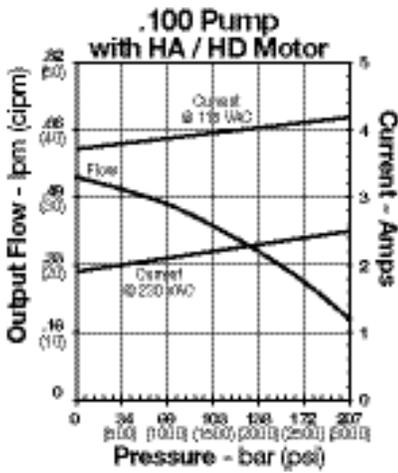
Current Draw vs On Time General Guidelines at room temperature
Current Draw vs On Time General Guidelines at 21°C (70°F)



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

Performance Data

108/118 Series: AC Motors - HA/HD

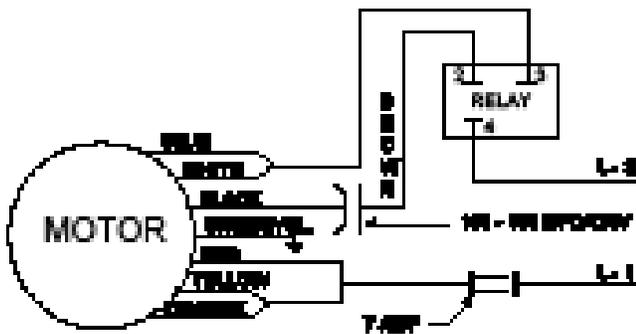


NOTES:

- 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)

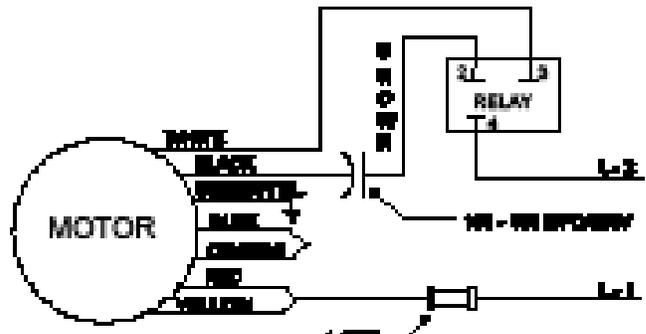
1) For Single Direction only, and Reversible with UP port pressure:



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.

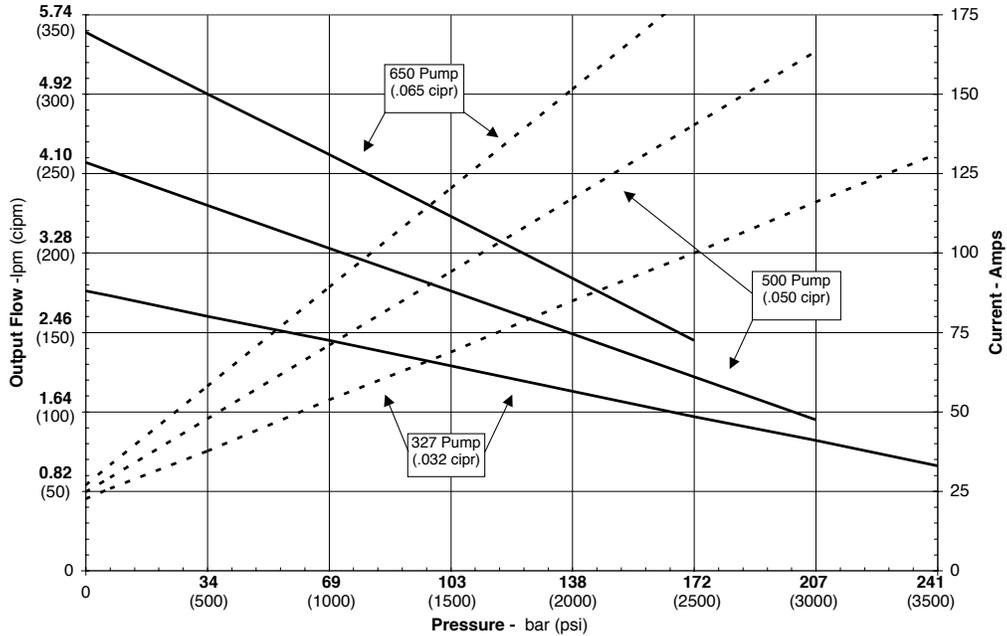
To reverse rotation, interchange the Black and Red wires.

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:

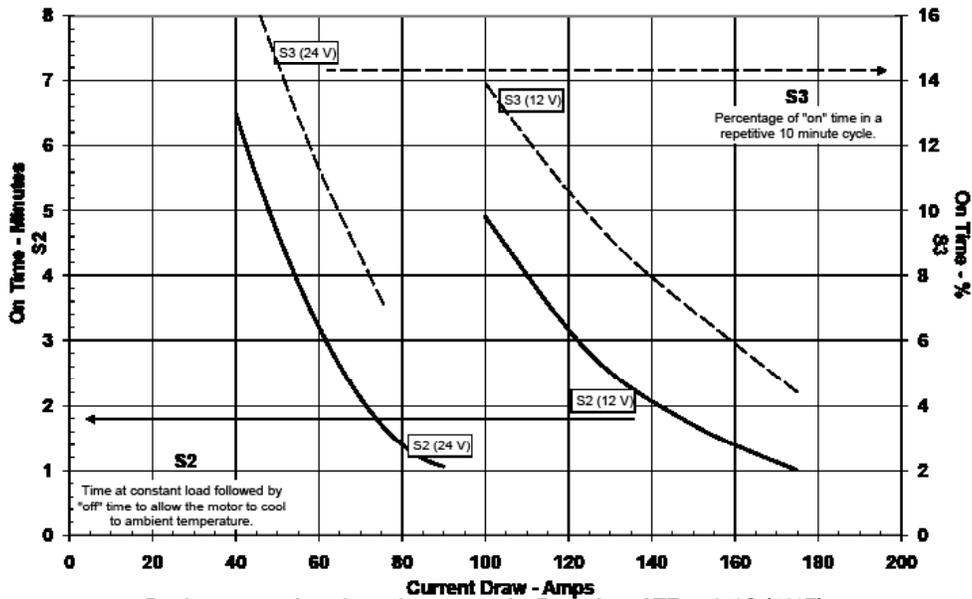
- Terminal 1 Ground
- Terminal 2 + 24 VDC

2) Reversible with DN port pressure:

- Terminal 1 + 24 VDC
- Terminal 2 Ground

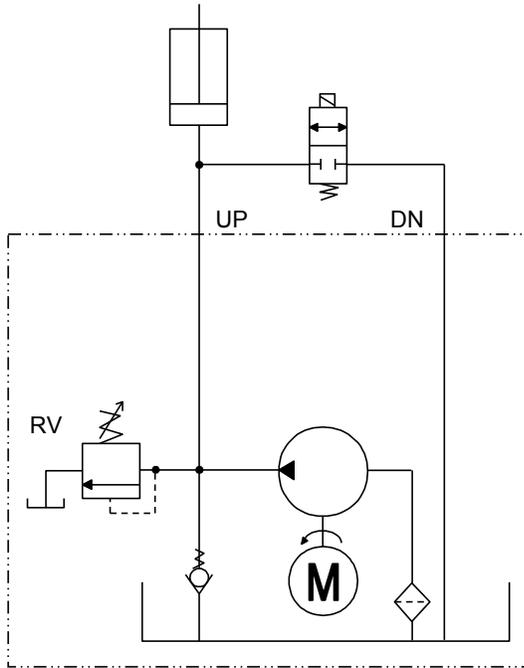
DC Motor Duty Cycle Characteristics

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

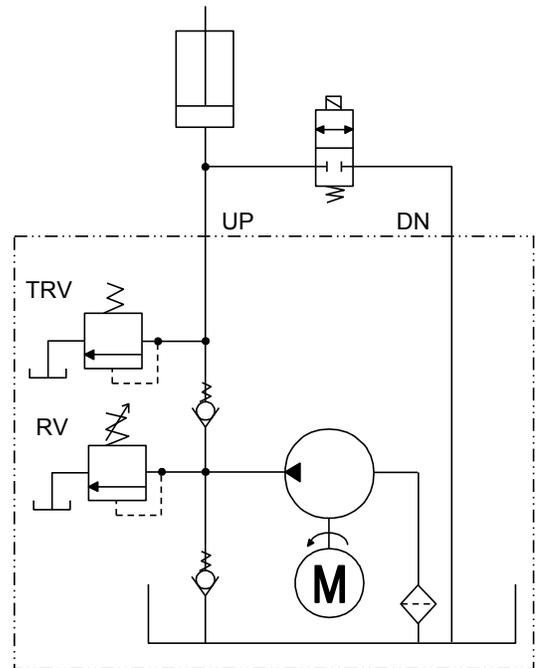


Performance data for reference only. Based on ATF at 21°C (70°F)

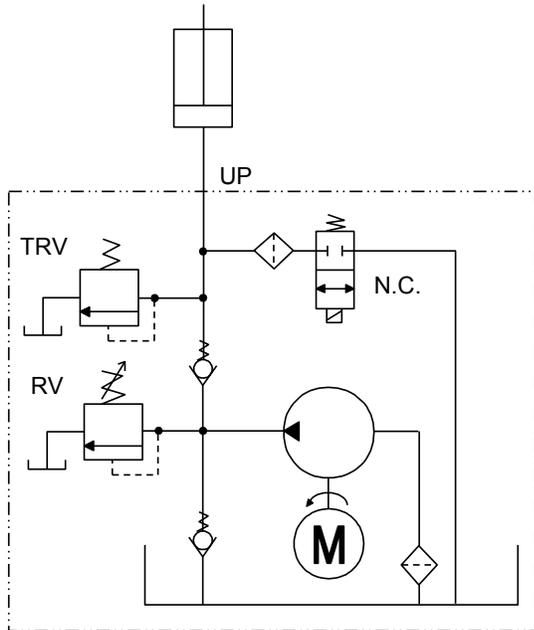
Single Direction Circuits



108/165 Series Single Direction NN Circuit



108/165 Series Single Direction WW Circuit



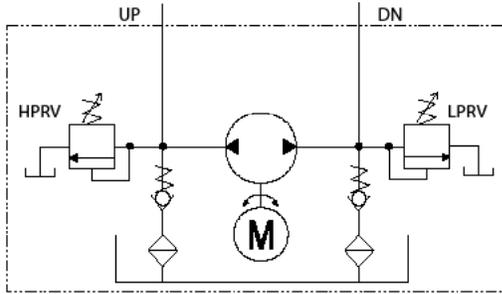
**118 and 175 Series S1 - S4 Circuit (N.C. valve)
 S5-S8 Circuits use N.O. Valves**

Thermal Relief Valves—Why?

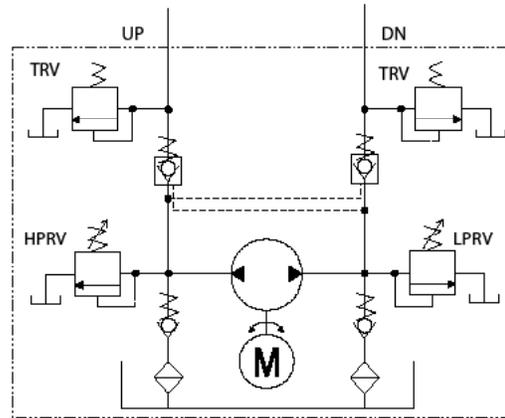
The thermal relief valve's (TRV) purpose is to allow a bleed off of built up pressure due to thermal expansion of the fluid or to act as a (very limited) shock load protection, should a cylinder in the system get bumped.

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

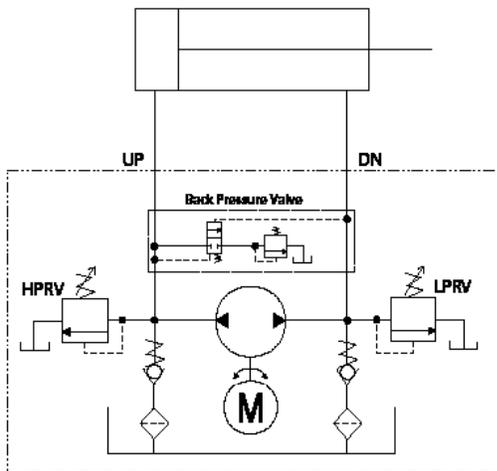


**108/118 and 165/175 Series RR Circuit
 (Reversible)**

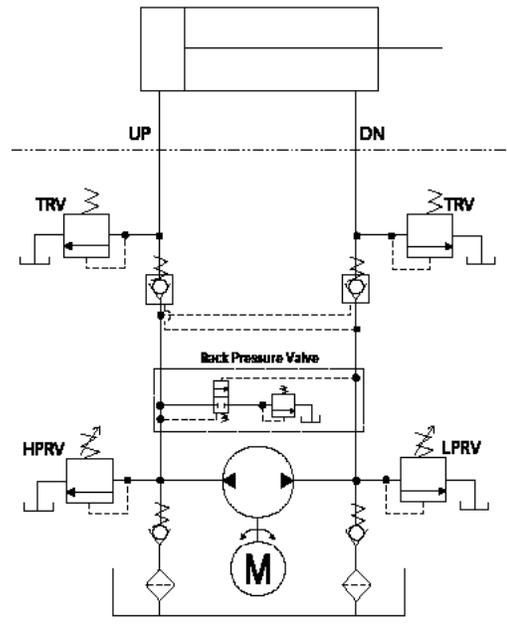


**108/118 and 165/175 Series LL Circuit
 (Reversible Locking)**

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

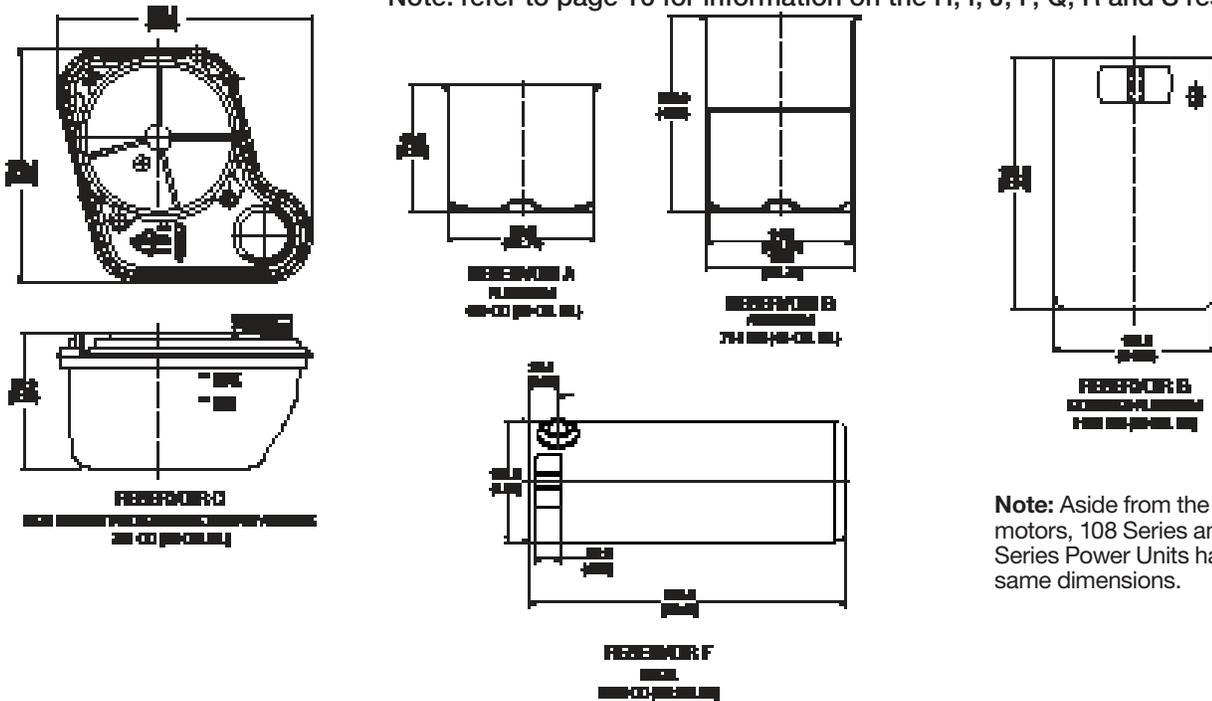
to the reservoir through a special shuttle spool, before it reaches the pump. Full relief valve pressure is then available to retract the cylinder, also preventing a pressure switch from tripping before the full retract position is achieved.

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

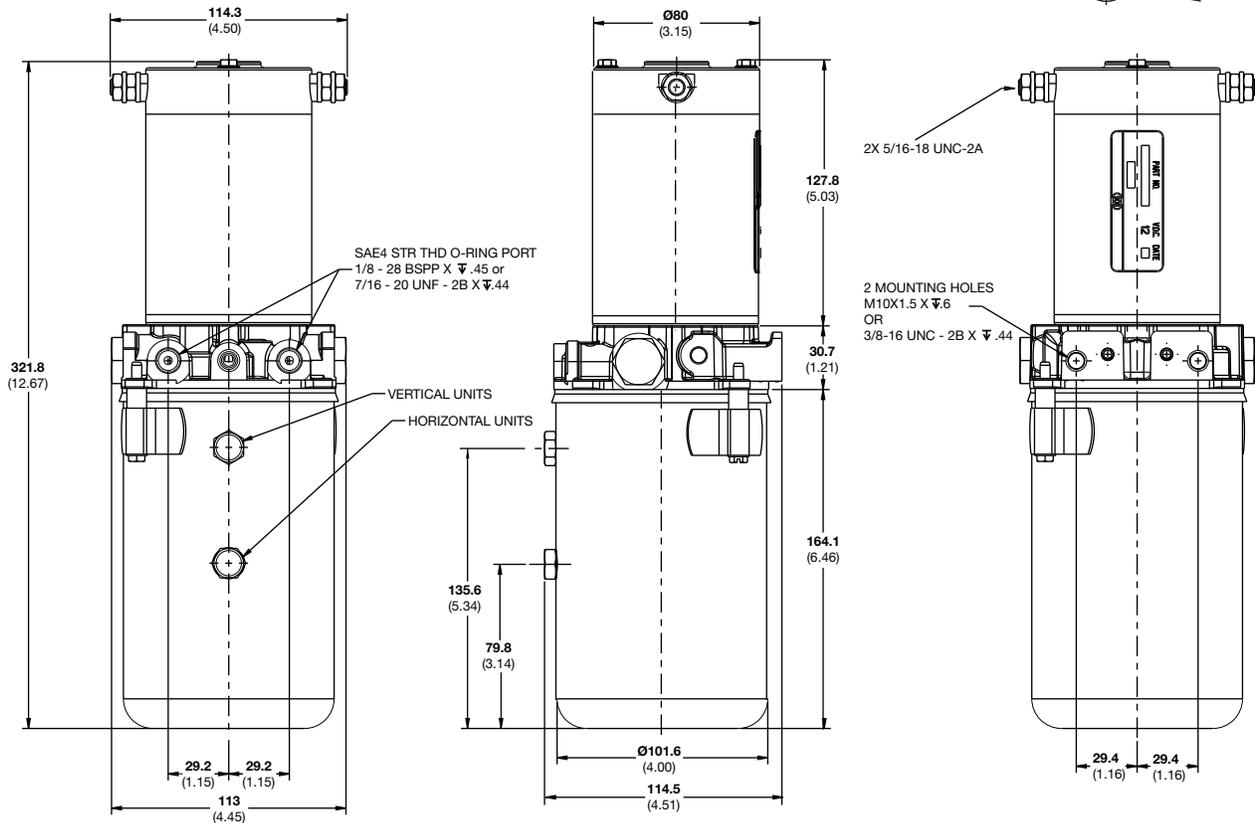
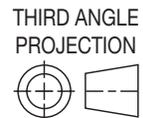
Reservoir Dimensions

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



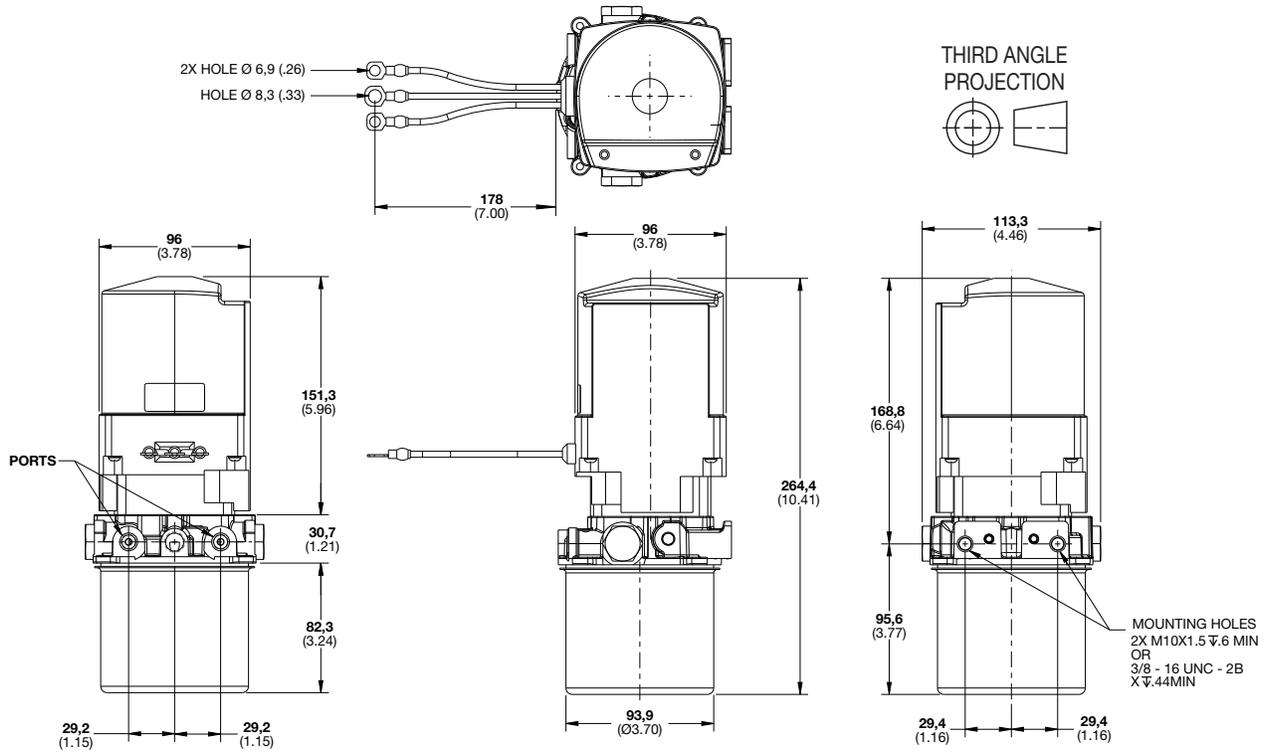
Note: Aside from the electric motors, 108 Series and 165 Series Power Units have the same dimensions.

165 Series shown with "G" reservoir



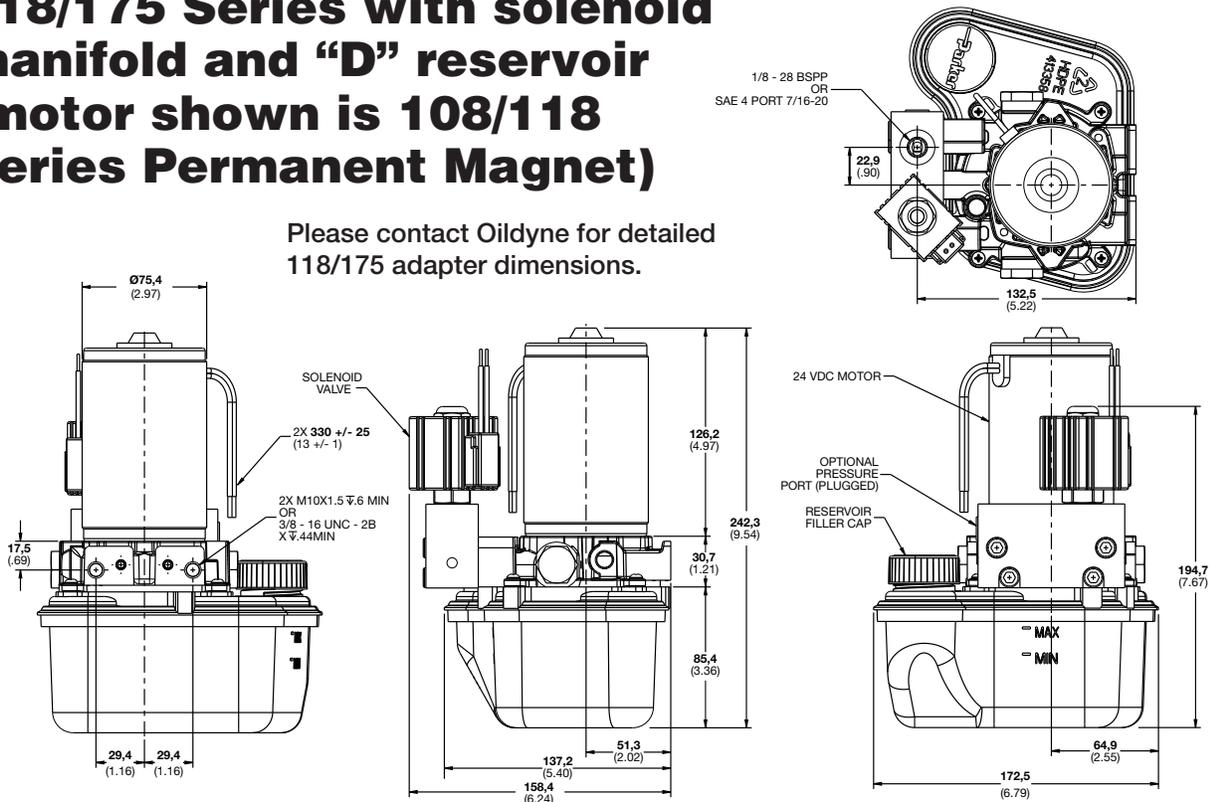
Note: All dimensions in mm (inches).

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)

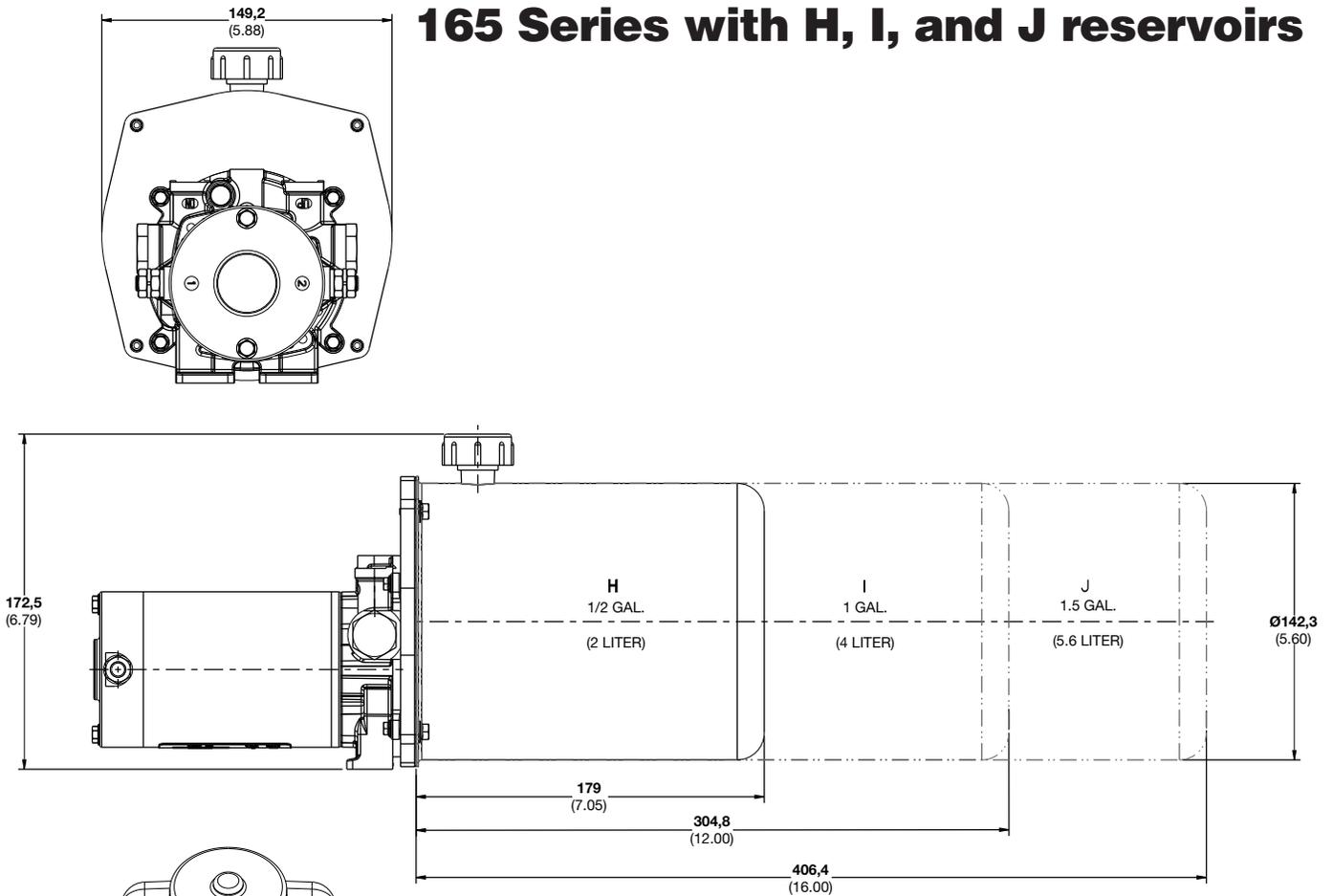
Please contact Oildyne for detailed 118/175 adapter dimensions.



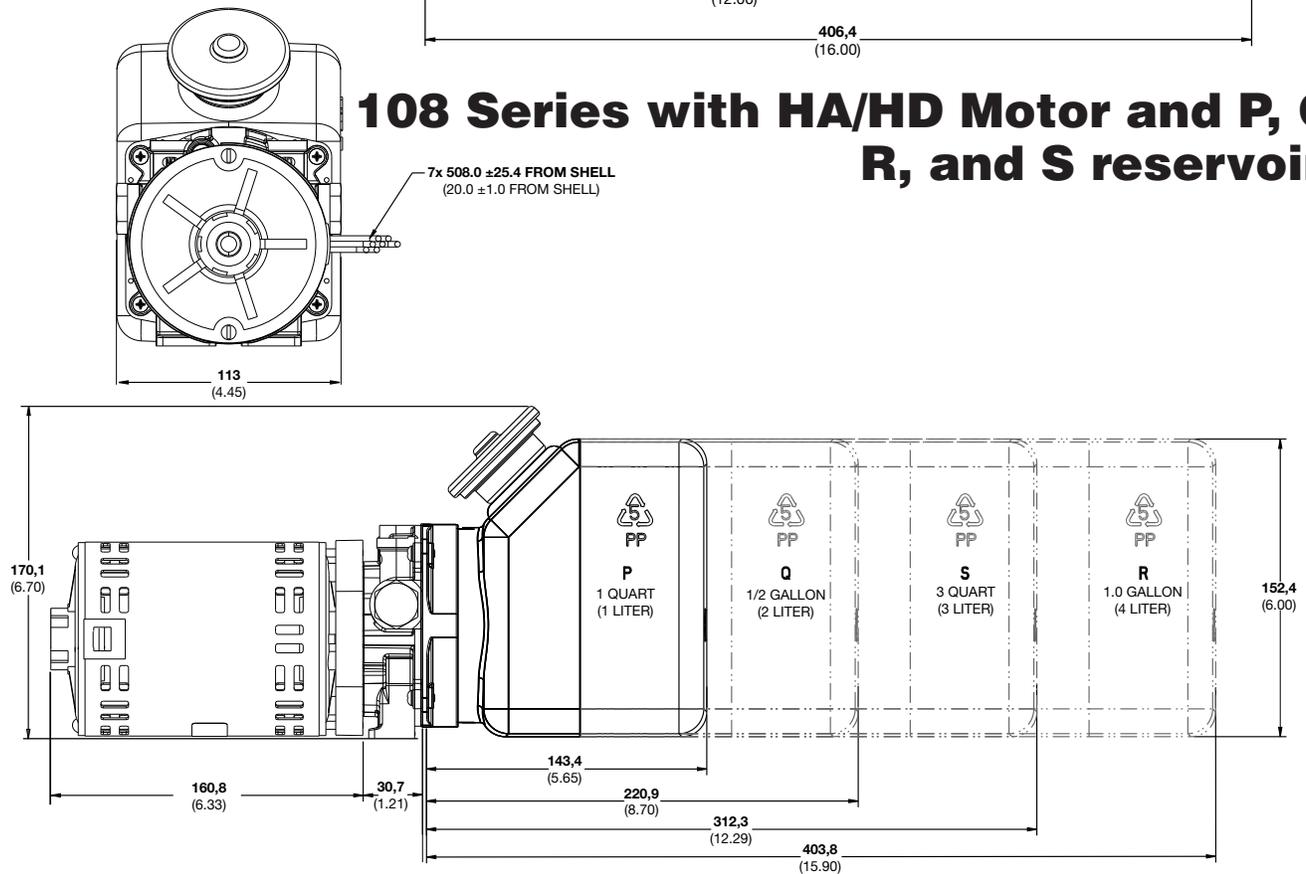
Note: All dimensions in mm (inches).

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).

PARKER-HANNIFIN CORPORATION
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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/saleterms/. 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.