

# Variable Volume Piston Pumps

HP2 Series Variable Displacement, Closed Loop Piston Pumps  
Catalog No. HY13-1592-001/US

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



ENGINEERING YOUR SUCCESS.

**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**

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the "Offer of Sale".

**WARNING**

This product can expose you to chemicals including lead and DEHP, which are known to the State of California to cause cancer, and birth defects or other reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

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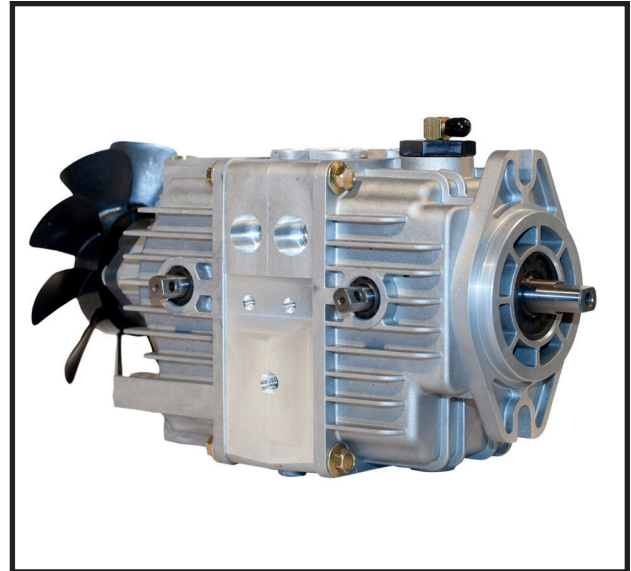
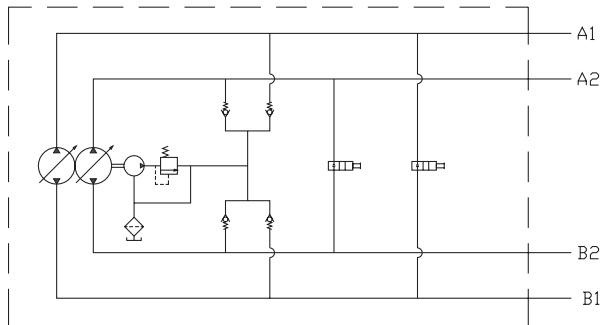


**HP2 Series variable displacement, closed loop dual piston pump****Features**

Complete hydrostatic pumping system consisting of:

- Two independently controlled, variable displacement, over center piston pumps
- Single input drive shaft
- 2.5 quart integral reservoir
- Shock and/or check valves
- Integral filter
- Integral system cooling fan

Direct drive possible, eliminate belts, pulleys

**Schematic Symbol****Specifications**

SAE "B" Two Bolt Mounting Flange

Speed Range: 1800 - 3600 RPM

Weight: 15.4kg (34 lb) with oil

Fluid Viscosity: 9 cst (55 SUS) minimum

Fluid Filtration: 20 micron

Charge Pump Displacement:  
3.2 cc (0.2 cu in/rev)

Operating Temperature Range:  
-29°C to 104°C (-20°F to 220°F)

**Quick Reference Data Sheet**

Displacement cc/rev (cu in/rev)	Continuous Rating bar (PSI)	Intermittent Rating bar (PSI)	Flow @ 3600 RPM 100 psi, max angle
11.5 (0.70)	90 (1300)	180 (2600)	41.3 lpm (10.9 GPM)
16.0 (0.98)	90 (1300)	180 (2600)	57.9 lpm (15.3 GPM)

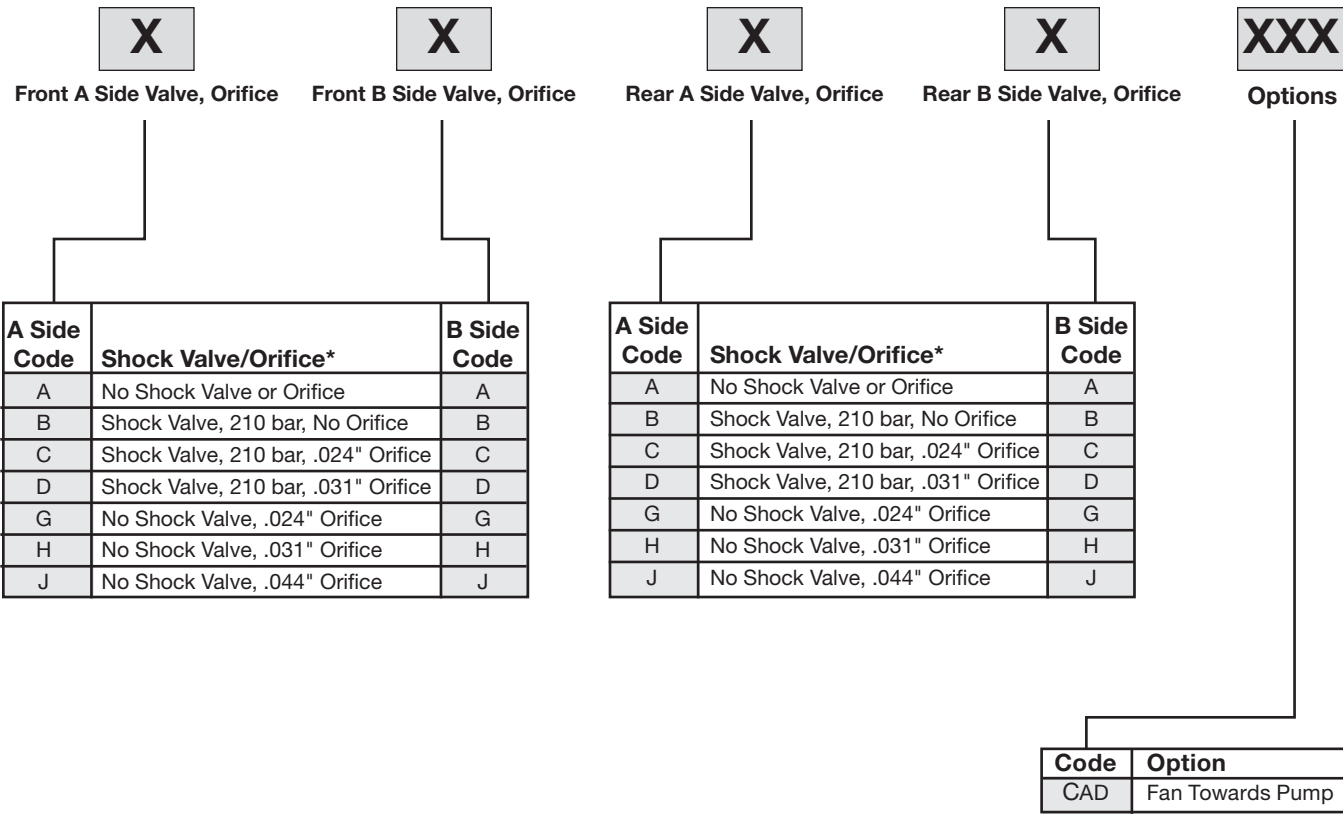
<b>HP2</b>	<b>XX</b>	<b>X</b>	<b>X</b>	<b>XX</b>	<b>X</b>															
Series	Displacement	Front Trunnion Shaft Location	Rear Trunnion Shaft Location	Input Shaft	Shaft Rotation															
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Code</th> <th>cm<sup>3</sup>/rev</th> <th>in<sup>3</sup>/rev</th> </tr> </thead> <tbody> <tr> <td>12</td> <td>11.5 /</td> <td>.702</td> </tr> <tr> <td>16*</td> <td>16.0 /</td> <td>.976</td> </tr> </tbody> </table> </div> <div style="width: 50%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Trunnion Shaft Location</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Right A side</td> </tr> <tr> <td>B</td> <td>Left B side</td> </tr> </tbody> </table> </div> </div>						Code	cm <sup>3</sup> /rev	in <sup>3</sup> /rev	12	11.5 /	.702	16*	16.0 /	.976		Trunnion Shaft Location	A	Right A side	B	Left B side
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**Note:** Codes are based on pump orientation with "A" & "B" ports on top position as viewed from input shaft end. "Front" pump closest to input shaft end.

\*Some sales restrictions apply to 16cc pump. Contact factory for information.

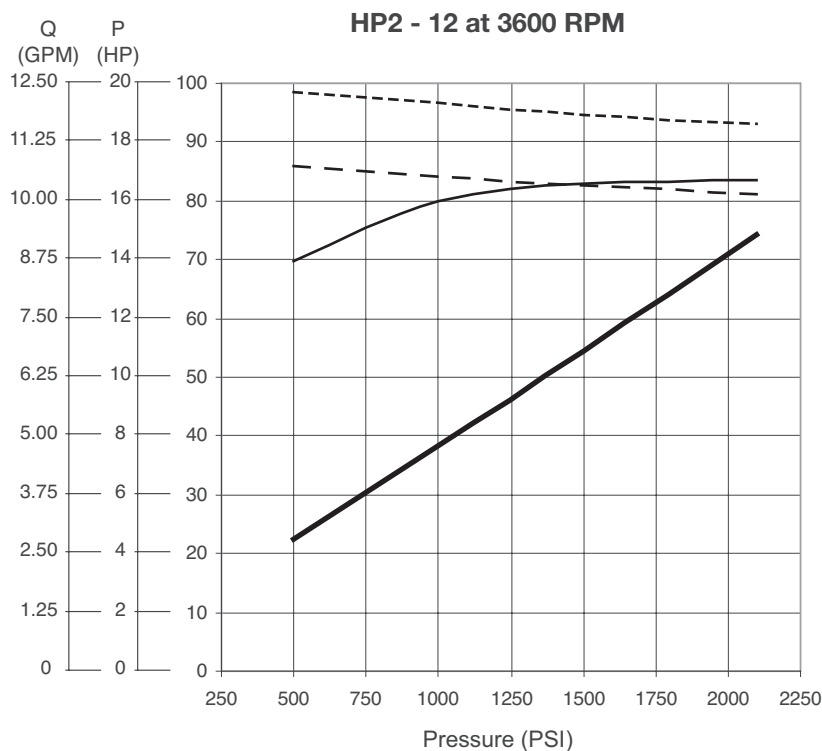
HP2 Ordering Information

Variable Volume Piston Pumps  
HP2 Series

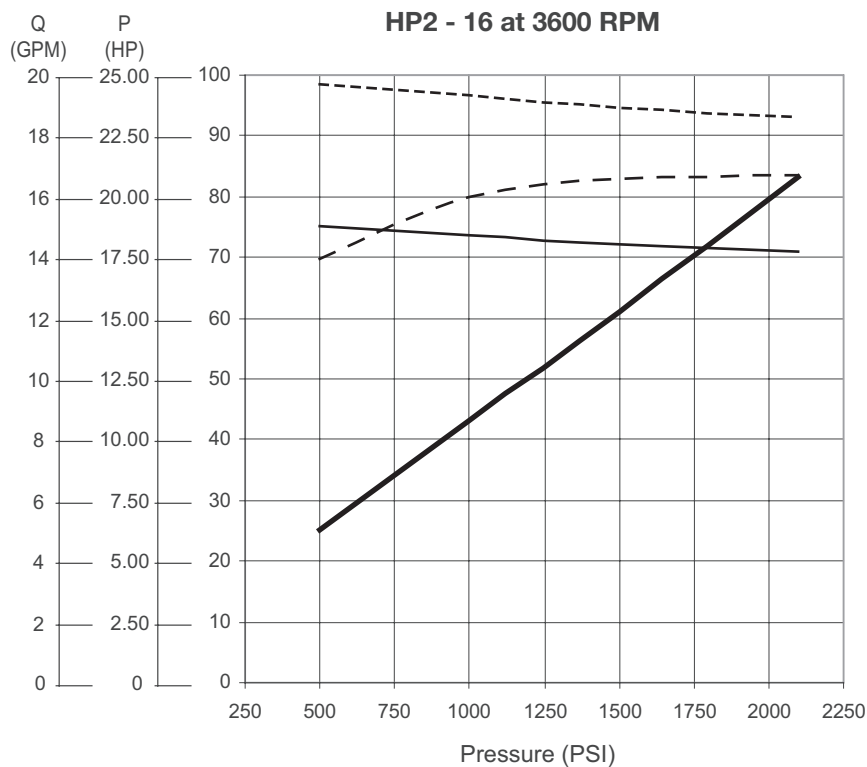


\*Consult factory for other available shafts/valving/options.



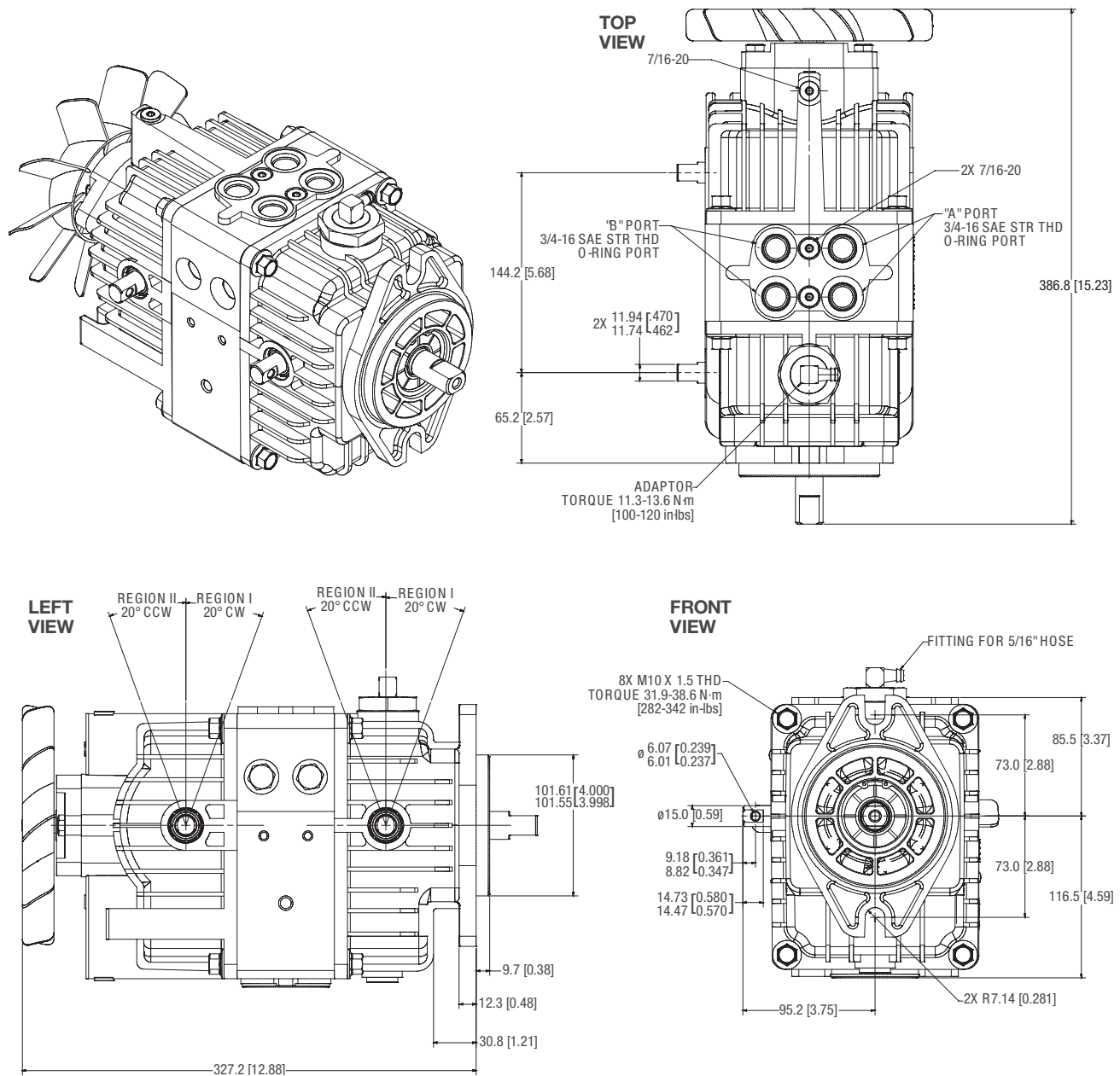


--- Volumetric Efficiency (%)      — Overall Efficiency (%)  
 --- Output Flow (GPM)      — Input Power at Full Flow (HP)



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**HP2 Dimensional Data****Variable Volume Piston Pumps****HP2 Series**

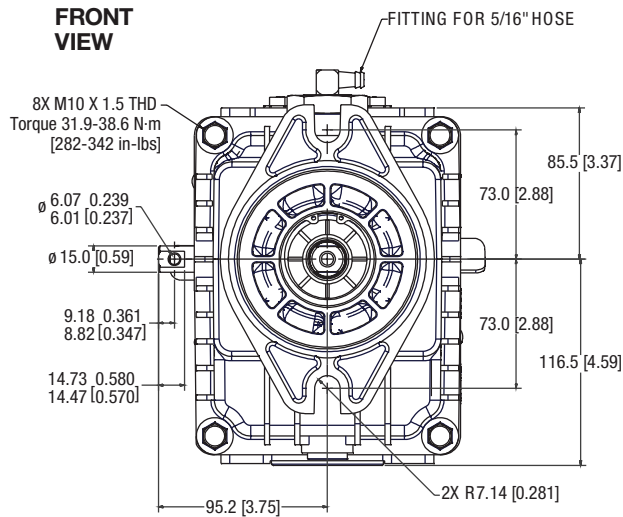
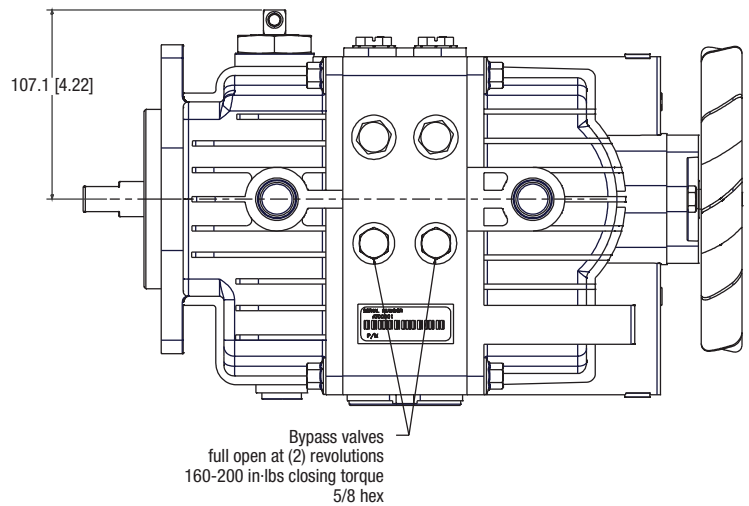
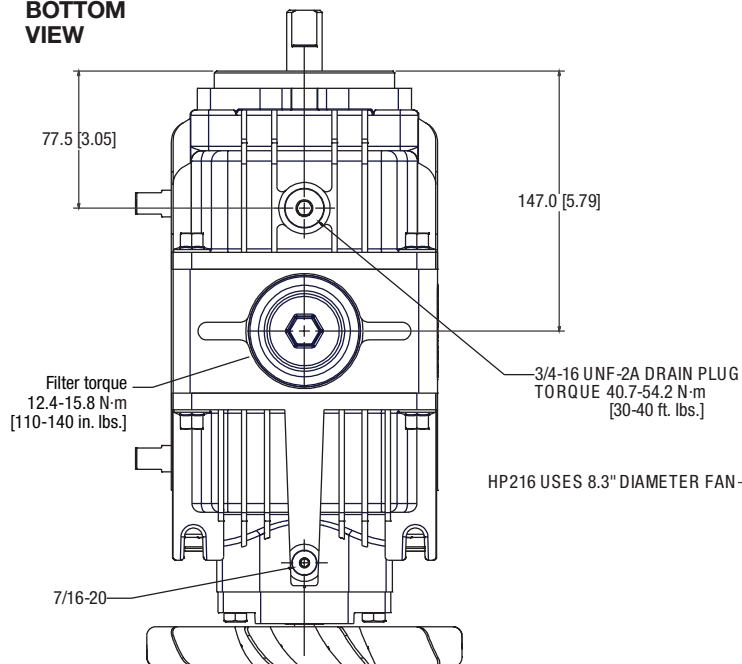
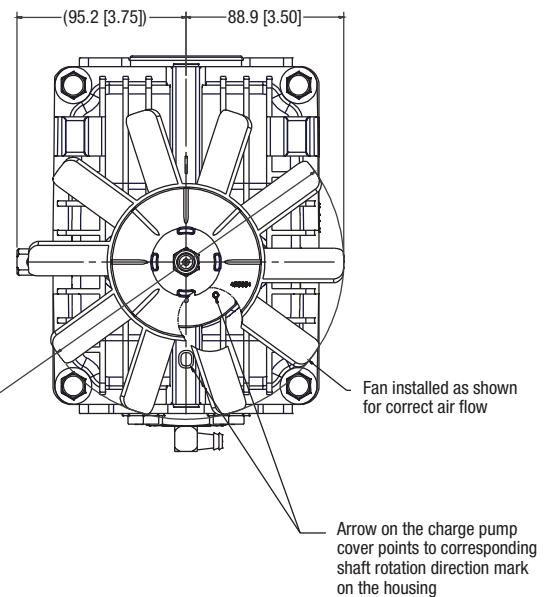
TRUNNION SHAFT LOCATION	RIGHT SIDE ("A" PORT SIDE)							
INPUT SHAFT ROTATION	CCW				CW			
SECTION	Front		Rear		Front		Rear	
TRUNNION SHAFT ROTATION	REGION I	REGION II	REGION I	REGION I	REGION II	REGION II	REGION I	REGION II
DIRECTION	(CCW)	(CW)	(CCW)	(CCW)	(CW)	(CW)	(CCW)	(CW)
SYSTEM PORT "A" FLOW	IN	OUT	OUT	IN	OUT	IN	IN	OUT
SYSTEM PORT "B" FLOW	OUT	IN	IN	OUT	IN	OUT	OUT	IN

TRUNNION SHAFT LOCATION	LEFT SIDE ("B" PORT SIDE)							
INPUT SHAFT ROTATION	CCW				CW			
SECTION	Front		Rear		Front		Rear	
TRUNNION SHAFT ROTATION	REGION I	REGION II	REGION I	REGION II	REGION I	REGION II	REGION I	REGION II
DIRECTION	(CCW)	(CW)	(CCW)	(CW)	(CCW)	(CW)	(CCW)	(CW)
SYSTEM PORT "A" FLOW	OUT	IN	IN	OUT	IN	OUT	OUT	IN
SYSTEM PORT "B" FLOW	IN	OUT	OUT	IN	OUT	IN	IN	OUT

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**Parker Hannifin Corporation**  
Pump & Motor Division  
Greeneville, Tennessee, USA

**HP2 Dimensional Data****Variable Volume Piston Pumps****HP2 Series****FRONT VIEW****RIGHT VIEW****BOTTOM VIEW****REAR VIEW**

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**2. Payment:** Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

**3. Delivery:** Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

**4. Warranty:** Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from Parker Hannifin Corporation. **THIS WARRANTY COMPROMISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW. TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.**

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**6. Changes, Reschedules and Cancellations:** Buyer may request to modify the designs or specification for items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between buyer and Seller unless accepted by Seller in written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

**7. Special Tooling:** A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. 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 items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

**8. 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, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are 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. Taxes:** Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount hereof shall be in addition to amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

**10. Indemnity For Infringement of Intellectual Property Rights:** Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter "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 an item sold pursuant to this contract 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 an item sold hereunder 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 said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items 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 item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, buyer shall defend and indemnify Seller for all costs, expenses of or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

**11. Force Majeure:** Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation, accidents, acts of god, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carries or suppliers, shortages of materials and any other cause beyond Seller's control.

**12. Entire Agreement/Governing Law:** The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representation or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.



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Tel: (86) 21 5031 2525

**Czech Republic and Slovakia,**  
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**Finland,** Vantaa  
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**France,** Contamine-sur-Arve  
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**Germany,** Kaarst  
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**Taiwan,** Taipei  
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**Northeast Region,** Lebanon, NJ  
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**Southern Region,** Alpharetta, GA  
Tel: (770) 619 9767

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**Eastern Region,** St. Helena Island, SC  
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**Midwest Region,** Hiawatha, IA  
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**Southern Region,** Aledo, TX  
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