



# Air Driven, High Pressure Liquid Pumps

## Condensed Product Catalog

Catalog: 02-9326BE

May 2015

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



ENGINEERING YOUR SUCCESS.

## Table of Contents

Introduction.....	2
Pump Series Models .....	3
Drive Types .....	3
Quick Reference Guide .....	4
Pump Operation.....	5
Air Drive Section.....	5
Typical Pump Cut-away .....	6
Pump Special Features .....	7
ACL Series Pump .....	8
ACHL Series Pump.....	10
ASL Series Pump .....	12
AHL Series Pump.....	18
AFL Series Pump .....	22
Packaged Pressure Systems.....	25

### Introduction

Parker Autoclave Engineers has always been a large user of Air-over-Liquid pump technology and has a lifetime of experience using all variety of pumps in many different configurations. We have used this experience to develop a best-in-breed line of air-driven, high pressure pumps that are efficient to operate, simple in design, and will stand the test of time. Compared to other types of hydraulic pumps, they provide cost effective and energy saving benefits for many applications in the Oil and Gas, Chemical, Industrial and Research industries.

These pumps convert simple air pressure into high and ultra-high liquid pressures by utilizing a large area piston on the air side to move a small area plunger to compress the liquid into very high hydraulic pressures - as high as 60,000 psi (4137 bar). Some designs are for economy, some for manual use, some for low-flow & high pressure, some for high flow & medium pressure... Choice – what a concept! Pumps like these are perfect for product testing, valve actuation, chemical injection and other applications that require intense pressure. When used in conjunction with a Hydraulic Intensifier (another PAE product) pressures to 150,000 psi (10,000 bar) are normal.

Parker Autoclave Engineers has been making pressure and corrosion test systems as well as high pressure laboratory reaction vessels for over 70 years. Packaged Pressure Systems incorporating these Air-Driven, High Pressure Liquid pumps, plus our valves, fittings and other instrumentation was an automatic success story. We have created a wide range of self-contained portable, custom framed modules that “plug and play” for virtually any pressure test, control, or injection system you can imagine. They vary in size, flow capability, output pressure and can include optional features such as chart recording, data logging, cycle counters, injection controllers and almost any kind of electric or pneumatic valve control option.



## Pump Series Models



### ASL Series:

- Standard Liquid Pump
- Pressures up to 60,000 psi (4137 bar)
- Approximately 6 inches in diameter air piston
- Broad range of ratios



### ACL Series:

- Compact Liquid Pump
- Pressures up to 31,900 psi (2199 bar)
- Approximately 3 inches in diameter air piston



### ACHL Series:

- ACL Series Pump with hand lever
- Pressures up to 31,900 psi (2199 bar)
- Precise Pressure control operation, pump is spring returned



### AHL Series:




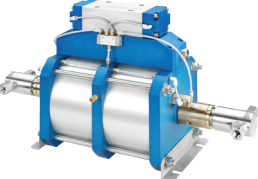
- High Flow Liquid
- Pressures up to 13,300 psi (917 bar)
- Approximately 10 inches in diameter air piston
- Dual Acting



### AFL Series:

- High Flow, High Pressure
- Pressures up to 12,500 psi (862 bar)
- Flow up to 3 gpm
- Dual Acting

## Drive Types

<b>Pump Model</b>				
<b>Catalog Number Suffix</b>	-01	-02	-1D	-2D
<b>Description</b>	Single Acting, Single Piston	Single Acting, Double Piston	Double Acting, Single Piston	Double Acting, Double Piston

Catalog Number Example: ACL189-01

## Quick Reference Guide

Pump Model Series	Pressure Ratio	Maximum Rated Outlet Pressure PSI (bar)	Displacement Per Cycle .in <sup>3</sup> (cm <sup>3</sup> )	Liquid Connections	
				Inlet	Outlet
<b>ACL Series</b>					
ACL72-01	1:88	12,500 (862)	0.09 (1.47)	3/8" FNPT	F250C
ACL111-01	1:130	18,850 (1,300)	0.05 (0.8)	3/8" FNPT	F250C
ACL189-01	1:220	31,900 (2,199)	0.04 (0.7)	3/8" FNPT	F250C
ACL189-02	1:440	60,000 (4,137)	0.04 (0.7)	3/8" FNPT	F250C
<b>ACHL Series</b>					
ACHL72-01	1:84	12,500 (862)	0.09 (1.47)	3/8" FNPT	F250C
ACHL189-01	1:213	31,900 (2,199)	0.035 (0.57)	3/8" FNPT	F250C
<b>ASL Series</b>					
ASL10-01	1:11	1,600 (110)	5.22 (85.5)	1" FNPT	1/2" FNPT
ASL15-01	1:16	2,300 (159)	3.62 (59.3)	1" FNPT	1/2" FNPT
ASL25-01	1:28	4,000 (276)	2.10 (34.4)	1/2" FNPT	1/2" FNPT
ASL35-01	1:39	5,600 (386)	1.50 (24.64)	1/2" FNPT	1/2" FNPT
ASL60-01	1:70	10,000 (689)	0.84 (13.8)	1/2" FNPT	1/2" FNPT
ASL100-01	1:113	15,000 (1,034)	0.52 (8.5)	1/2" FNPT	1/2" FNPT
ASL150-01	1:150	21,500 (1,482)	0.39 (6.4)	1/2" FNPT	F250C
ASL250-01	1:265	38,400 (2,648)	0.22 (3.6)	1/2" FNPT	F250C
ASL400-01	1:398	57,700 (3,978)	0.14 (2.3)	1/2" FNPT	F250C
ASL10-02	1:22	3,200 (221)	5.22 (85.5)	1" FNPT	1/2" FNPT
ASL15-02	1:32	4,600 (317)	3.62 (59.3)	1" FNPT	1/2" FNPT
ASL25-02	1:56	8,100 (558)	2.10 (34.4)	1/2" FNPT	1/2" FNPT
ASL35-02	1:78	11,200 (772)	1.50 (24.64)	1/2" FNPT	1/2" FNPT
ASL60-02	1:140	20,000 (1,379)	0.84 (13.8)	1/2" FNPT	9/16" SF562CX
ASL100-02	1:226	31,000 (2,137)	0.52 (8.5)	1/2" FNPT	F250C
ASL150-02	1:300	43,000 (2,965)	0.39 (6.4)	1/2" FNPT	F250C
ASL250-02	1:530	60,000 (4,137)	0.22 (3.6)	1/2" FNPT	F250C
ASL400-02	1:796	60,000 (4,137)	0.14 (2.3)	1/2" FNPT	F250C
<b>AHL Series</b>					
AHL33-2D	1:67	6,700 (462)	15.3 (250.7)	1" FNPT	1/2" FNPT
AHL66-2D	1:133	13,300 (917)	7.8 (127.8)	1/2" FNPT	1/2" FNPT
<b>AFL Series</b>					
AFL35-1D	1:39	5,600 (386)	6.02 (98.7)	1" FNPT	9/16" SF562CX
AFL60-1D	1:70	10,000 (690)	3.40 (55.7)	1" FNPT	9/16" SF562CX
AFL100-1D	1:113	15,000 (1034)	2.30 (37.7)	1" FNPT	9/16" SF562CX

## Pump Operation

### Piston to Plunger Ratio

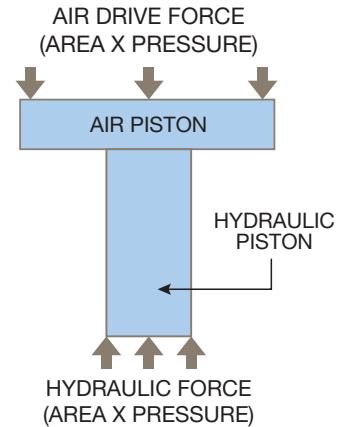
- Compressed air is used to produce hydraulic pressure
- Works on differential surface area between the large air piston and smaller hydraulic plunger
- Differential is represented by the pressure ratio of the pump

### Pressure Ratio = Area of Air Piston ÷ Area of Hydraulic Plunger

- The higher the pressure ratio, the higher the output hydraulic pressure

### Pressure Output = Pressure Ratio x Air Drive Pressure

- When air is applied to the pump it will cycle until the forces on the air piston equals the forces on the hydraulic plunger. This is the stall pressure.
- Pump will automatically restart if there is a drop in hydraulic pressure or an increase in air drive pressure.
- Double air pistons available which will double the pressure ratio because you have twice the air piston area acting on the same hydraulic plunger area.

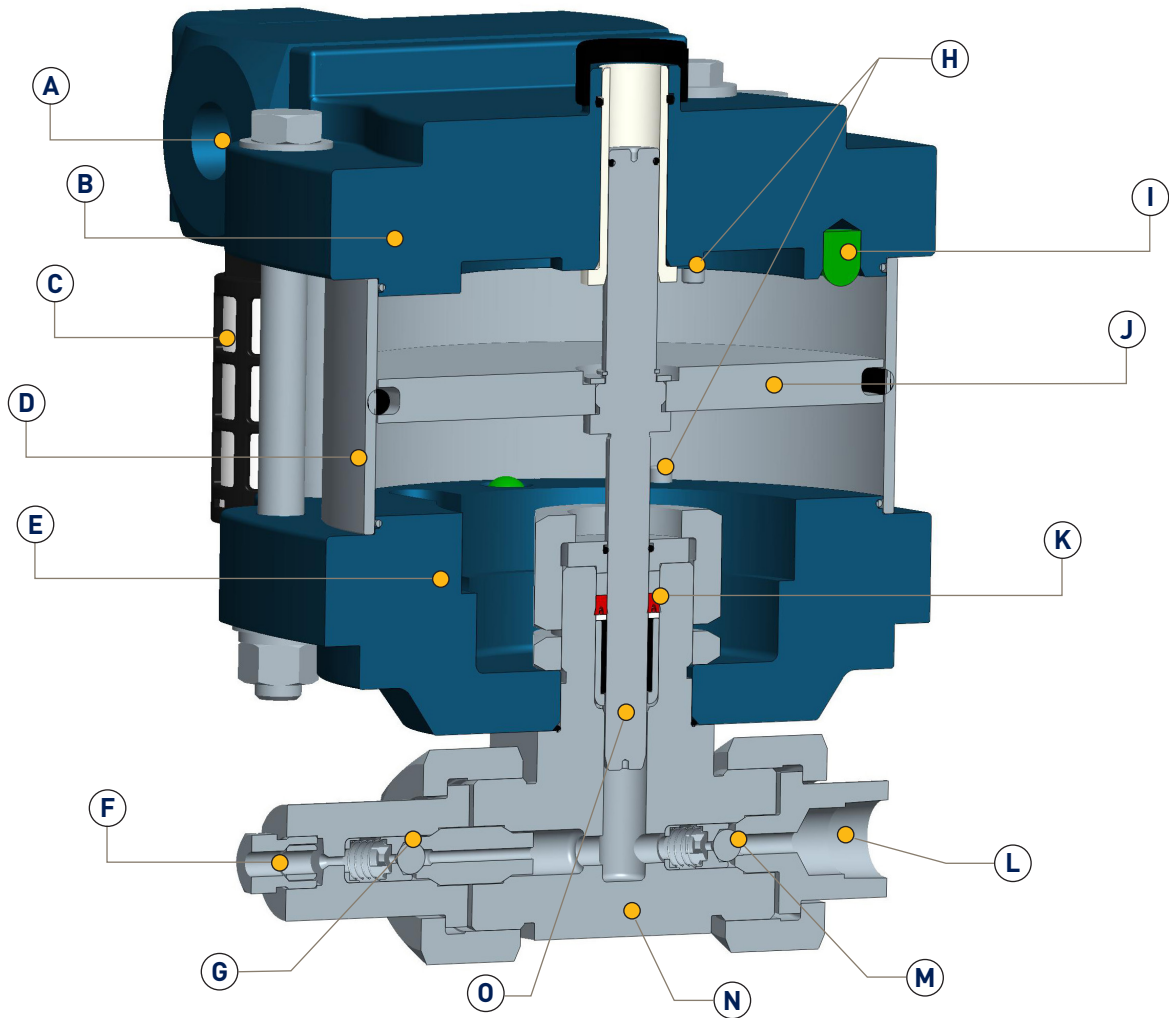


## Air Drive Section

- Compressed air is used to produce hydraulic pressure
- Works on differential surface area between the large air piston and smaller hydraulic plunger
- Differential is represented by the pressure ratio of the pump

<p>Section 1</p> <ul style="list-style-type: none"> <li>• Air pilot operated spool provides automatic cycling of air from one side of the piston to the other</li> <li>• At the end of each stroke, the air piston activates a pilot valve that will cause the spool to shift</li> </ul>	
<p>Section 2</p> <ul style="list-style-type: none"> <li>• The spool shifting will supply air to one side of the piston while venting the other side of the piston</li> <li>• This alternating action continues until the pump reaches its stall pressure</li> </ul>	

## Typical Pump Cut-Away



	Description		Description
A	Air Inlet	I	Air Piston Bumper
B	Top End Cap	J	Air Piston
C	Air Muffler	K	High Pressure Seal Assembly
D	Air Cylinder	L	Liquid Inlet Connection
E	Bottom End Cap	M	Inlet Check Valve
F	High Pressure Outlet Connection	N	Pump Head Body
G	Outlet Check Valve	O	Hydraulic Plunger
H	Pilot Valve		

## Pump Special Features & Benefits

- All Aluminum parts machined from high quality bar stock, not cast aluminum components
- Anodizing with special sealing technique to provide better protection from harsh environments
- Muffler specified to give a great combination of high flow and low noise
- Rubber bumpers in end caps to reduce noise of operation
- Latest lubrication technology provides long seal service life and improves pump efficiency and performance
- No lubricator required for air drive source
- Stainless steel tie-rods and hardware
- Stainless plunger coated with a proprietary multi-layer carbon based coating with diamond like carbon exterior layer:
  - High hardness (3 times harder than Stellite)
  - Inert, it has superior chemical compatibility and corrosion resistance
  - Low friction that limits seal wear and increases efficiency (coefficient of friction equal to or less than PTFE)
  - Tough coating that provides long plunger cycle life. (Have never had to replace a coated plunger during prototype testing)
- Pressure head specially designed and engineered for high cycle life
- Spring energized u-cup seal provides better sealing performance at wide ranges of pressures
- Extended service life check valves with Ceramic balls for high pressure applications

# ACL SERIES Single-Acting, Single Piston Air Drive

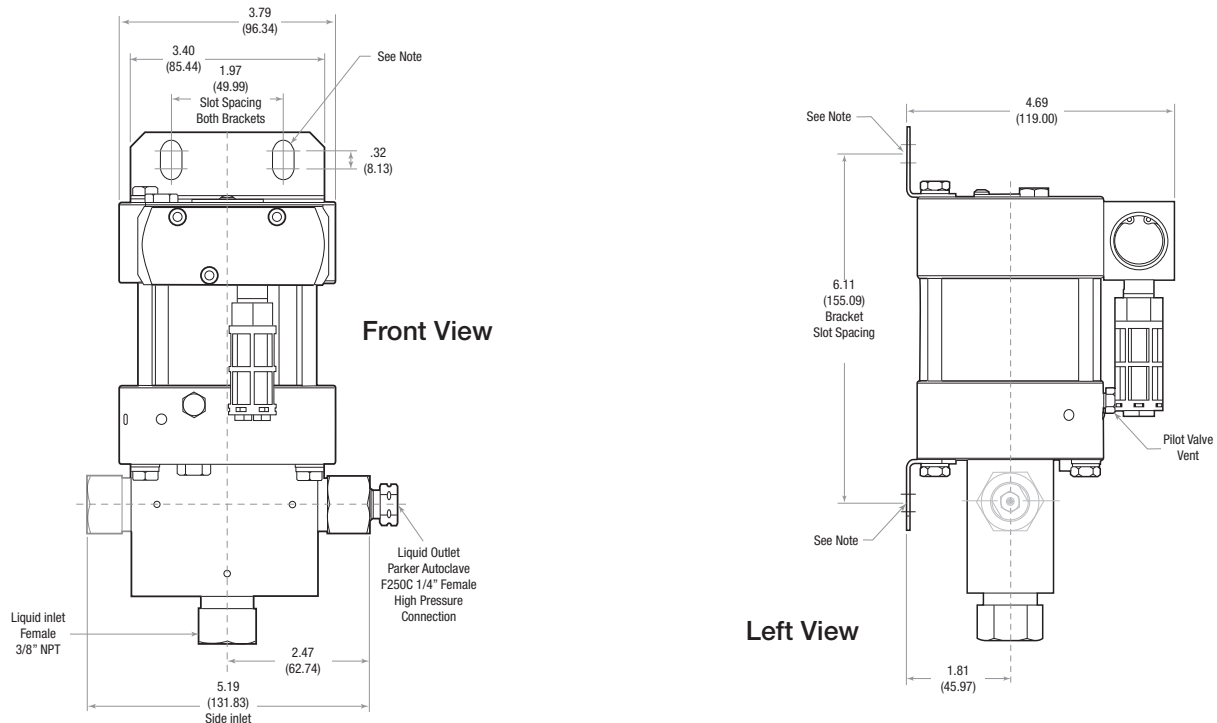
- Single-Acting, Single or Double Piston Air Drive
- Service: Oil, Water, Water/Oil mixture and other fluids depending on material compatibility
- Maximum Operating Temperature: 0-140° F (-18° to 60° C)
- Net Weight: 8 lbs. (3.6 kg)
- Pressure Head: 316 Stainless Steel
- Plunger: 440 Stainless Steel
- Check Valve Glands: 15-5PH Stainless Steel
- Liquid Seal: see Ordering Guide for options
- Air Drive Seals: Buna N



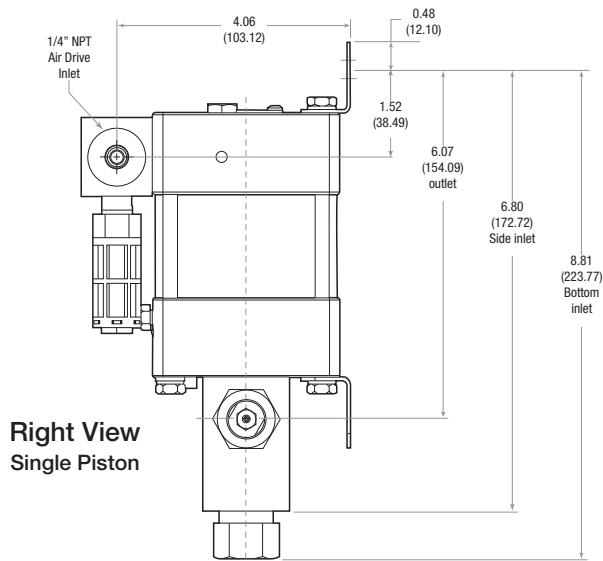
## Reference Guide

Pump Model Series	Pressure Ratio	Maximum Rated Outlet Pressure PSI (bar)	Displacement Per Cycle .in <sup>3</sup> (cm <sup>3</sup> )	Liquid Connections	
				Inlet	Outlet
<b>ACL Series</b>					
ACL72-01	1:88	12,500 (862)	0.09 (1.47)	3/8" FNPT	F250C
ACL111-01	1:130	18,850 (1,300)	0.05 (0.08)	3/8" FNPT	F250C
ACL189-01	1:220	31,900 (2,199)	0.04 (0.07)	3/8" FNPT	F250C
ACL189-02	1:440	60,000 (4,137)	0.04 (0.07)	3/8" FNPT	F250C

## Air Drive Connection - All ACL series pumps have a 1/4" FNPT main air drive supply connection

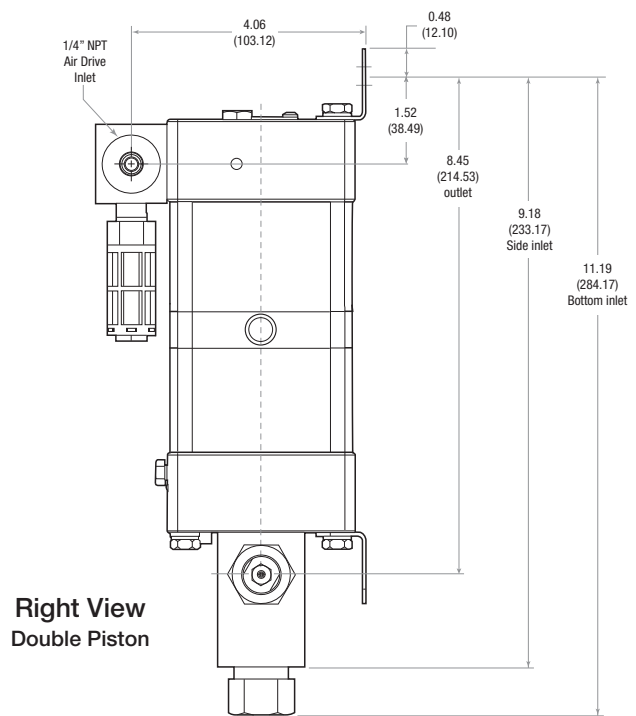






Right View  
Single Piston

Note:  
Each mounting bracket includes (2) x 3/8" (9.53) slots for 5/16" bolts.  
Bottom inlet pump head and side inlet pump head are mutually exclusive.  
All dimensions are for reference only and are subject to change without notice.  
Primary dimensions: Inches  
Secondary Dimensions: (Millimeters)



Right View  
Double Piston

## Ordering Guide

Typical catalog number example: **ACL189-01SNP**  
(catalog number is created based on customer selection of product parameters, see below for example)

ACL189-01	S	N	P
Pump Series Type/Size/Ratio	Liquid Inlet Location	Isolation Chamber	Liquid Seal Material
<b>ACL</b> <ul style="list-style-type: none"> <li>• Compact Liquid High Pressure Pump</li> <li>• 3" Single Piston Air Drive</li> <li>• 1:220 Air-to-Liquid Pressure Ratio</li> <li>• Maximum 31,900 psi (2,199 bar)</li> </ul>	<b>S*</b> = Side <b>B</b> = Bottom	<b>N*</b> = None	<b>P*</b> = UHMWPE U-Cup with Elgiloy Spring Energizer <b>U</b> = Urethane U-Cup

\* Standard for stock pumps

## Flow Rate Table: Air Drive Pressure (psi) vs. Outlet Pressure (psi)

Catalog Number	Air Drive Pressure (psi)	Outlet Pressure (psi)											in <sup>3</sup> /min.
		0	500	1,500	3,000	5,000	7,500	10,000	15,000	25,000	40,000	55,000	
ACL72-01	60	42	32	17	9	1							
	90	42	34	25	18	7	1						
	120	43	35	29	24	17	7	2					
ACL111-01	60	28	23	14	9	5	1						
	90	28	25	19	15	10	5	2					
	120	29	26	21	18	15	10	6	1				
ACL189-01	60	15	15	14	13	12	9	6					
	90	15	15	15	14	14	13	11	6				
	120	15	15	15	15	15	14	13	10	1			
ACL189-02	60	13	12	11	10	9	7	7	5	1			
	90	14	13	12	11	8	8	8	7	5			
	120	17	16	14	12	10	9	8	8	7	4		

# ACHL SERIES Single-Acting, Single Air Drive with Hand Lever

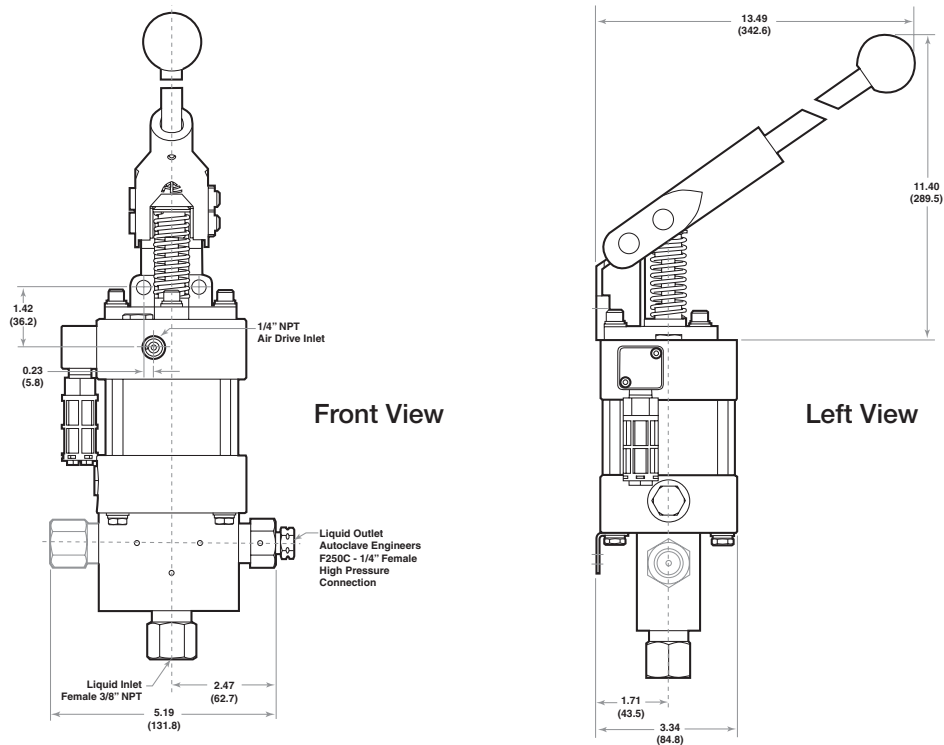
- Single-Acting, Single Air Drive with Hand Lever
- Service: Oil, Water, Water/Oil mixture and other fluids depending on material compatibility
- Standard Hand Lever for precise pressure control, remote locations or emergency back-up applications.
- Maximum Operating Temperature: 0-140° F (-18° to 60° C)
- Net Weight: 8 lbs. (3.6 kg)
- Pressure Head: 316 Stainless Steel
- Plunger: 440 Stainless Steel
- Check Valve Glands: 15-5PH Stainless Steel
- Liquid Seal: see Ordering Guide for options
- Air Drive Seals: Buna N

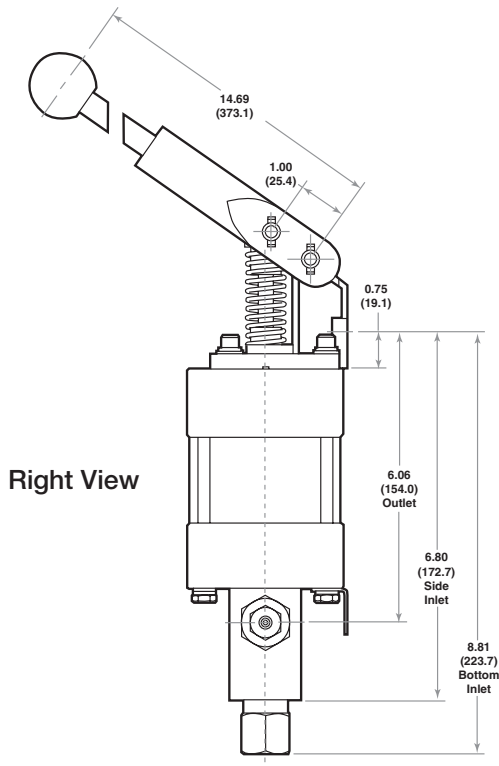


## Reference Guide

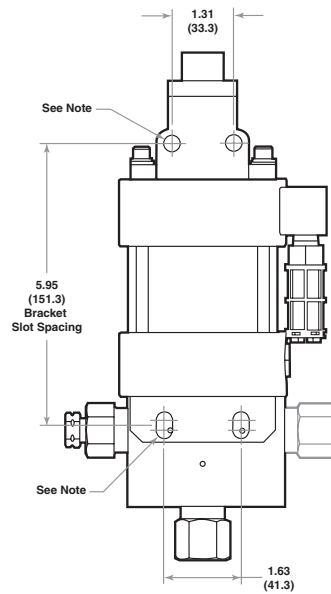
Pump Model Series	Pressure Ratio	Maximum Rated Outlet Pressure PSI (bar)	Displacement Per Cycle .in <sup>3</sup> (cm <sup>3</sup> )	Liquid Connections	
				Inlet	Outlet
<b>ACHL Series</b>					
ACHL72-01	1:84	12,500 (862)	0.09 (1.47)	3/8" FNPT	F250C
ACHL189-01	1:213	31,900 (2,199)	0.035 (0.57)	3/8" FNPT	F250C

**Air Drive Connection** - All ACHL series pumps have a 1/4" FNPT main air drive supply connection





Right View



Bottom View

Note:

Each mounting bracket includes (2) x 11/32" (8.73) slots for 5/16" bolts.  
 Bottom inlet pump head and side inlet pump head are mutually exclusive.  
 All dimensions are for reference only and are subject to change without notice.  
 Primary dimensions: Inches  
 Secondary Dimensions: (Millimeters)

## Ordering Guide

Typical catalog number example: **ACHL189-01SNP**  
 (catalog number is created based on customer selection of product parameters, see below for example)

ACHL189-01	S	N	P
<b>Pump Series Type/Size/Ratio</b>	<b>Liquid Inlet Location</b>	<b>Isolation Chamber</b>	<b>Liquid Seal Material</b>
<b>ACHL</b> • Compact Liquid High Pressure Pump with hand lever • 3" Single Piston Air Drive • 1:213 Max. Air-to-Liquid Pressure Ratio • Maximum 31,900 psi (2,199 bar)	<b>S*</b> = Side <b>B</b> = Bottom	<b>N*</b> = None	<b>P*</b> = UHMWPE U-Cup with Elgiloy Spring Energizer <b>U</b> = Urethane U-Cup

\* Standard for stock pumps

## Flow Rate Table: Air Drive Pressure (psi) vs. Outlet Pressure (psi)

Catalog Number	Air Drive Pressure (psi)	Outlet Pressure (psi)												in <sup>3</sup> /min.
		0	500	1,500	3,000	5,000	7,500	10,000	15,000	25,000	40,000	55,000		
ACHL72-01	60	42	32	17	9	1								
	90	42	34	25	18	7	1							
	120	43	35	29	24	17	7	2						
ACHL189-01	60	15	15	15	15	14	13	8						
	90	15	15	15	15	15	13	11	7					
	120	15	15	15	15	15	13	12	8	1				

## ASL SERIES Single-Acting, Single or Double Piston Air Drive

- Single-Acting, Single and Double Piston Air Drive
- Service: Oil, Water, Water/Oil mixture and other fluids depending on material compatibility
- Maximum Operating Temperature: 0-140° F (-18° to 60° C)
- Pressure Head: 316 Stainless Steel
- Check Valve Glands: 316 Stainless Steel
- Liquid Seal: see Ordering Guide for options
- Air Drive Seals: Buna N



### Reference Guide

Pump Model Series	Pressure Ratio	Maximum Rated Outlet Pressure PSI (bar)	Displacement Per Cycle .in <sup>3</sup> (cm <sup>3</sup> )	Liquid Connections	
				Inlet	Outlet
<b>ASL Series</b>					
ASL10-01	1:11	1,600 (110)	5.22 (85.5)	1" FNPT	1/2" FNPT
ASL15-01	1:16	2,300 (159)	3.62 (59.3)	1" FNPT	1/2" FNPT
ASL25-01	1:28	4,000 (276)	2.10 (34.4)	1/2" FNPT	1/2" FNPT
ASL35-01	1:39	5,600 (386)	1.50 (24.64)	1/2" FNPT	1/2" FNPT
ASL60-01	1:70	10,000 (689)	0.84 (13.8)	1/2" FNPT	1/2" FNPT
ASL100-01	1:113	15,000 (1,034)	0.52 (8.5)	1/2" FNPT	1/2" FNPT
ASL150-01	1:150	21,500 (1,482)	0.39 (6.4)	1/2" FNPT	F250C
ASL250-01	1:265	38,400 (2,648)	0.22 (3.6)	1/2" FNPT	F250C
ASL400-01	1:398	57,700 (3,978)	0.14 (2.3)	1/2" FNPT	F250C
ASL10-02	1:22	3,200 (221)	5.22 (85.5)	1" FNPT	1/2" FNPT
ASL15-02	1:32	4,600 (317)	3.62 (59.3)	1" FNPT	1/2" FNPT
ASL25-02	1:56	8,100 (558)	2.10 (34.4)	1/2" FNPT	1/2" FNPT
ASL35-02	1:78	11,200 (772)	1.50 (24.64)	1/2" FNPT	1/2" FNPT
ASL60-02	1:140	20,000 (1,379)	0.84 (13.8)	1/2" FNPT	9/16" SF562CX
ASL100-02	1:226	31,000 (2,137)	0.52 (8.5)	1/2" FNPT	F250C
ASL150-02	1:300	43,000 (2,965)	0.39 (6.4)	1/2" FNPT	F250C
ASL250-02	1:530	60,000 (4,137)	0.22 (3.6)	1/2" FNPT	F250C
ASL400-02	1:796	60,000 (4,137)	0.14 (2.3)	1/2" FNPT	F250C

## Ordering Guide

Typical catalog number example: **ASL250-01SNP** (catalog number is created based on customer selection of product parameters, see below for example)

<b>ASL250-01</b>	<b>S</b>	<b>N</b>	<b>P</b>
<b>Pump Series Type/Size/Ratio</b>	<b>Liquid Inlet Location</b>	<b>Isolation Chamber</b>	<b>Liquid Seal Material</b>
<b>ASL</b> <ul style="list-style-type: none"> <li>• Standard Liquid High Pressure Pump</li> <li>• 6" Single Piston Air Drive</li> <li>• 1:265 Max. Air-to-Liquid Pressure Ratio</li> <li>• Maximum 38,400 psi (2,648 bar)</li> </ul>	<b>S*</b> = Side <b>B</b> = Bottom	<b>N*</b> = None <b>C</b> = Included	<b>P*</b> = UHMWPE U-Cup <b>(See table below)</b>

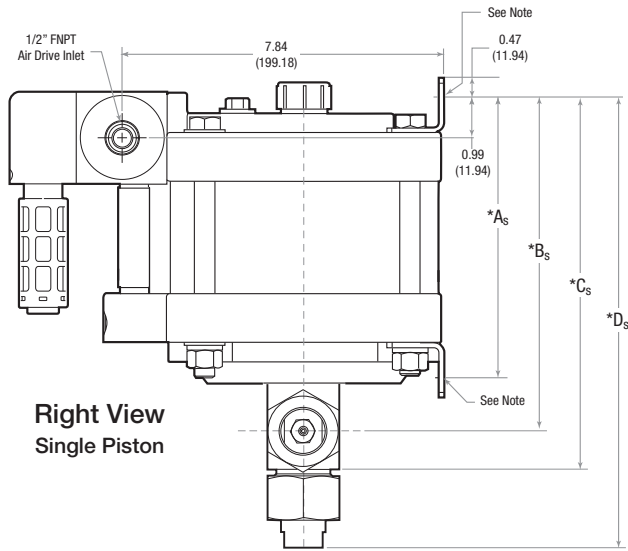
\* Standard for stock pumps

### Available seal material for the following models.

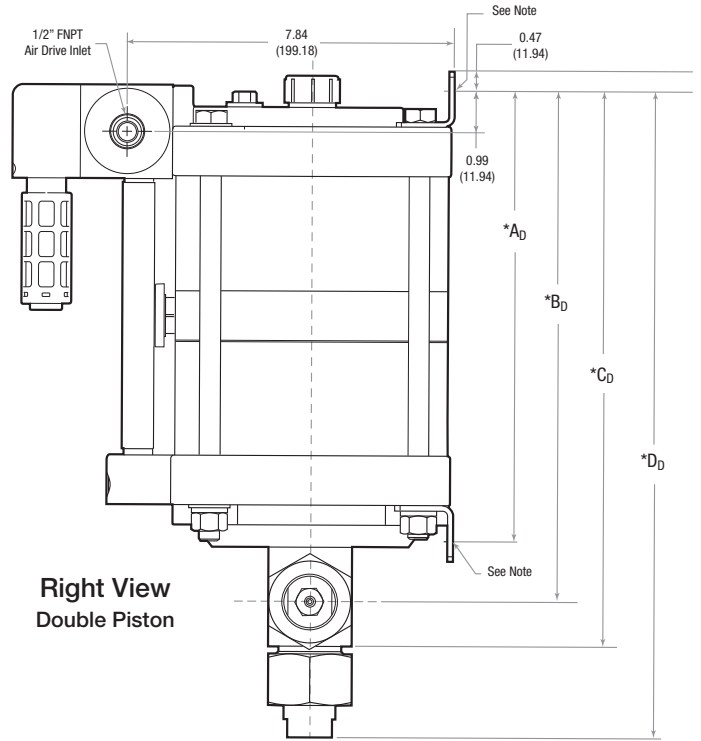
<b>Model Number</b>	<b>Seal Material</b>
ASL10 ASL15	<b>*PV</b> = UHMWPE U-Cup and Viton O-Rings <b>PE</b> = UHMWPE U-Cup and EPDM O-Rings <b>PB</b> = UHMWPE U-Cup and Buna-N O-Rings <b>PC</b> = UHMWPE U-Cup and Perfluoroelastomer O-Rings <b>UV</b> = Urethane U-Cup and Viton O-Rings <b>UE</b> = Urethane U-Cup and EPDM O-Rings <b>UB</b> = Urethane U-Cup and Buna-N O-Rings <b>TV</b> = Thermoplastic Polyester U-Cup and Viton O-Rings <b>TE</b> = Thermoplastic Polyester U-Cup and EPDM O-Rings <b>TB</b> = Thermoplastic Polyester U-Cup and Buna-N O-Rings <b>TC</b> = Thermoplastic Polyester U-Cup and Perfluoroelastomer O-Rings
ASL25 ASL35	<b>*PV</b> = UHMWPE U-Cup and Viton O-Rings <b>PE</b> = UHMWPE U-Cup and EPDM O-Rings <b>PB</b> = UHMWPE U-Cup and Buna-N O-Rings <b>PC</b> = UHMWPE U-Cup and Perfluoroelastomer O-Rings <b>UV</b> = Urethane U-Cup and Viton O-Rings <b>UE</b> = Urethane U-Cup and EPDM O-Rings <b>UB</b> = Urethane U-Cup and Buna-N O-Rings
ASL60	<b>*P</b> = UHMWPE U-Cup with Elgiloy Spring O-Rings <b>UV</b> = Urethane U-Cup and Viton O-Rings <b>UE</b> = Urethane U-Cup and EPDM O-Rings <b>UB</b> = Urethane U-Cup and Buna-N O-Rings
ASL100 ASL150 ASL250 ASL400	<b>*P</b> = UHMWPE U-Cup <b>UE</b> = Urethane U-Cup

\* Standard for stock pumps

**Air Drive Connection** - All ASL series pumps have a 1/2" FNPT main air drive supply connection and utilize a 1/8" FNPT pilot port connection for remote start/stop operation. It is recommended to operate the pilot port at a higher air pressure than the main air drive supply pressure for proper function.

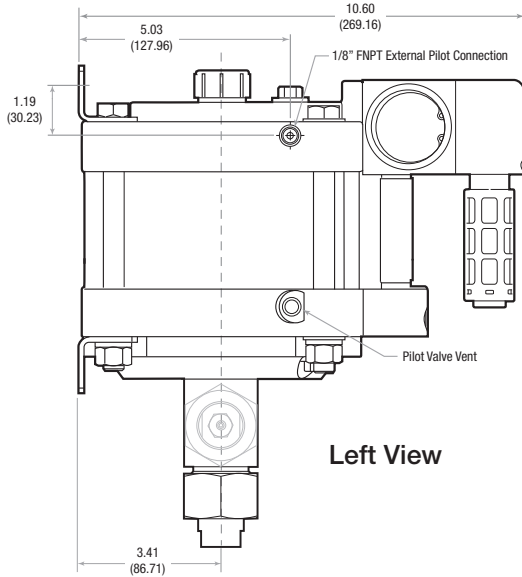


**Right View  
Single Piston**

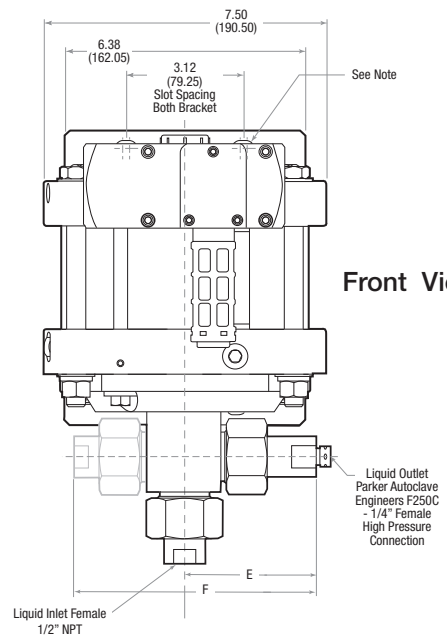


**Right View  
Double Piston**

\*See following page for product dimensions.



**Left View**



**Front View**

**Note:**

Each mounting bracket includes (2) x 11/32" (8.73) slots for 5/16" bolts.  
 Bottom inlet pump head and side inlet pump head are mutually exclusive.  
 All dimensions are for reference only and are subject to change without notice.

Primary dimensions: Inches  
 Secondary Dimensions: (Millimeters)

## ASL Series: Dimensions

Pump Model Series	A <sub>S</sub>	B <sub>S</sub>	C <sub>S</sub>	D <sub>S</sub>	E <sub>S</sub>	F <sub>S</sub>	G <sub>S</sub>
<b>Single Piston Air Drive</b>							
ASL10-01	6.87 (175)	8.25 (210)	9.83 (250)	12.51 (318)	3.27 (83)	7.57 (192)	3.95 (100)
ASL15-01	6.87 (175)	8.25 (210)	9.83 (250)	12.51 (318)	3.27 (83)	7.57 (192)	3.95 (100)
ASL25-01	6.87 (175)	8.25 (210)	9.83 (250)	11.54 (293)	3.27 (83)	6.92 (176)	3.95 (100)
ASL35-01	6.87 (175)	8.25 (210)	9.83 (250)	11.54 (293)	3.27 (83)	6.92 (176)	3.95 (100)
ASL60-01	6.87 (175)	8.31 (211)	9.25 (235)	12.10 (307)	3.43 (87)	7.24 (184)	3.95 (100)
ASL100-01	6.87 (175)	8.31 (211)	9.25 (235)	12.10 (307)	3.43 (87)	7.24 (184)	3.95 (100)
ASL150-01	6.87 (175)	8.31 (211)	9.25 (235)	11.55 (293)	4.18 (106)	7.45 (189)	3.95 (100)
ASL250-01	6.87 (175)	8.31 (211)	9.25 (235)	11.55 (293)	4.18 (106)	7.45 (189)	3.95 (100)
ASL400-01	6.87 (175)	8.37 (213)	9.39 (239)	11.74 (298)	2.75 (70)	6.13 (156)	3.95 (100)
<b>Double Piston Air Drive</b>							
Pump Model Series	A <sub>D</sub>	B <sub>D</sub>	C <sub>D</sub>	D <sub>D</sub>	E <sub>D</sub>	F <sub>D</sub>	G <sub>D</sub>
<b>Double Piston Air Drive</b>							
ASL10-02	10.81 (275)	12.19 (310)	13.77 (350)	16.45 (418)	3.27 (83)	7.57 (192)	3.95 (100)
ASL15-02	10.81 (275)	12.19 (310)	13.77 (350)	16.45 (418)	3.27 (83)	7.57 (192)	3.95 (100)
ASL25-02	10.81 (275)	12.19 (310)	13.77 (350)	15.48 (393)	3.27 (83)	6.92 (176)	3.95 (100)
ASL35-02	10.81 (275)	12.19 (310)	13.77 (350)	15.48 (393)	3.27 (83)	6.92 (176)	3.95 (100)
ASL60-02	10.81 (275)	12.25 (311)	13.19 (335)	16.04 (407)	3.43 (87)	7.24 (184)	3.95 (100)
ASL100-02	10.81 (275)	12.25 (311)	13.19 (335)	15.50 (394)	4.18 (106)	7.24 (184)	3.95 (100)
ASL150-02	10.81 (275)	12.25 (311)	13.19 (335)	15.50 (394)	4.18 (106)	7.45 (189)	3.95 (100)
ASL250-02	10.81 (275)	12.30 (312)	13.32 (338)	15.68 (398)	2.75 (70)	7.45 (189)	3.95 (100)
ASL400-02	10.81 (275)	12.30 (312)	13.32 (338)	15.68 (398)	2.75 (70)	6.13 (156)	3.95 (100)

**Note:**

Each mounting bracket includes two (2) x 13/32" (10.32) slots for 3/8" bolts. Bottom inlet pump head and side inlet pump head are mutually exclusive. All dimensions are for reference only and are subject to change without notice.

Primary Dimensions: Inches  
Secondary Dimensions: (Millimeters)

**Flow Rate Table: Air Drive Pressure (psi) vs. Outlet Pressure (psi)**

Catalog Number	Air Drive Pressure (psi)	Outlet Pressure (psi)												
		0	500	1,500	3,000	5,000	7,500	10,000	15,000	25,000	40,000	55,000		
ASL10-01	60	1277	489											
	90	305	826											
	120	1360	925											
ASL15-01	60	887	485											
	90	906	591											
	120	945	642	474										
ASL25-01	60	508	342	127										
	90	520	387	303										
	120	543	427	360	202									
ASL35-01	60	315	273	121										
	90	322	291	211	58									
	120	328	302	250	157									
ASL60-01	60	168	155	125	79									
	90	175	161	134	106	63								
	120	182	167	140	118	94	45							
ASL100-01	60	104	99	88	70	46								
	90	108	103	92	78	65	44	11						
	120	112	106	95	83	72	60	47						
ASL150-01	60	81	79	76	66	49	19							
	90	83	82	80	75	67	53	35						
	120	84	83	82	78	73	66	55	25					
ASL250-01	60	46	45	44	42	37	26	20	2					
	90	47	46	45	44	43	40	36	26					
	120	48	47	47	46	45	43	41	34	17				
ASL400-01	60	39	38	37	36	33	29	23	10					
	90	40	39	38	38	37	35	32	26	8				
	120	41	40	39	38	38	37	36	32	21				
ASL10-02	60	880	720											
	90	890	800	350										
	120	900	840	570										
ASL15-02	60	615	550	200										
	90	625	575	410										
	120	630	600	500	225									
ASL25-02	60	345	330	265	60									
	90	350	335	300	208	15								
	120	355	345	320	265	150								
ASL35-02	60	240	230	210	115									
	90	242	232	225	190	115								
	120	245	235	230	210	170	95							

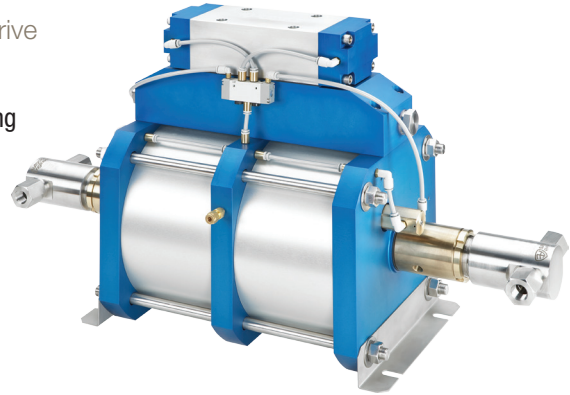
in<sup>3</sup> /min.



Catalog Number	Air Drive Pressure (psi)	Outlet Pressure (psi)											in <sup>3</sup> /min.
		0	500	1,500	3,000	5,000	7,500	10,000	15,000	25,000	40,000	55,000	
ASL60-02	60	150	148	145	120	70	2						
	90	155	152	147	136	117	80	33					
	120	157	154	152	145	133	112	82	8				
ASL100-02	60	86	84	82	77	72	53	30					
	90	87	86	84	82	82	70	61	36				
	120	89	88	86	84	84	77	72	57	13			
ASL150-02	60	64	64	63	60	57	50	38	14				
	90	65	65	64	62	60	57	53	41	9			
	120	66	66	65	64	63	61	58	51	32			
ASL250-02	60	37	36	36	35	35	34	32	27	12			
	90	37	36	36	36	36	36	34	31	25	10		
	120	37	37	36	36	36	36	35	34	30	21	9	
ASL400-02	60	31	31	30	30	29	29	28	26	16			
	90	31	31	31	30	30	30	29	27	23	14	2	
	120	31	31	31	31	30	30	30	29	27	21	14	

# AHL SERIES Double-Acting, Double Piston Air Drive

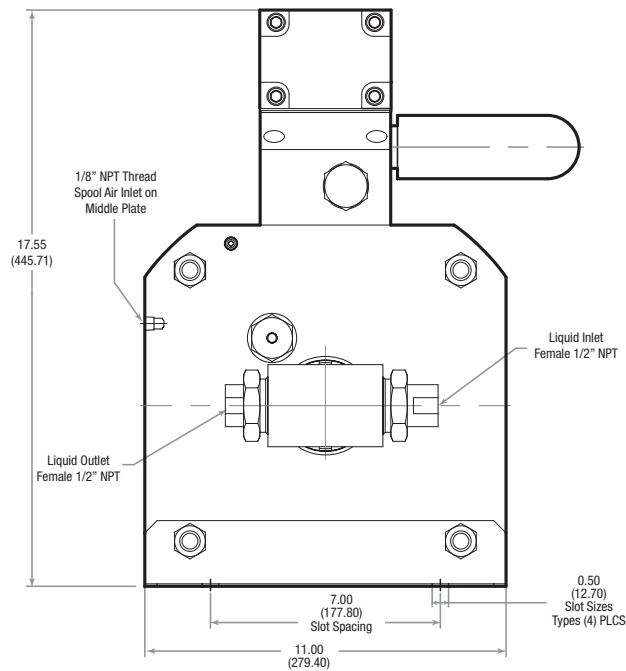
- Service: Oil, Water, Water/Oil mixture and other fluids depending on material compatibility
- Maximum Operating Temperature: 0-140° F (-18° to 60° C)
- Pressure Head: 15-5 PH Stainless Steel
- Check Valve Glands: 316 Stainless Steel
- Liquid Seal: see Ordering Guide for options
- Air Drive Seals: Buna N



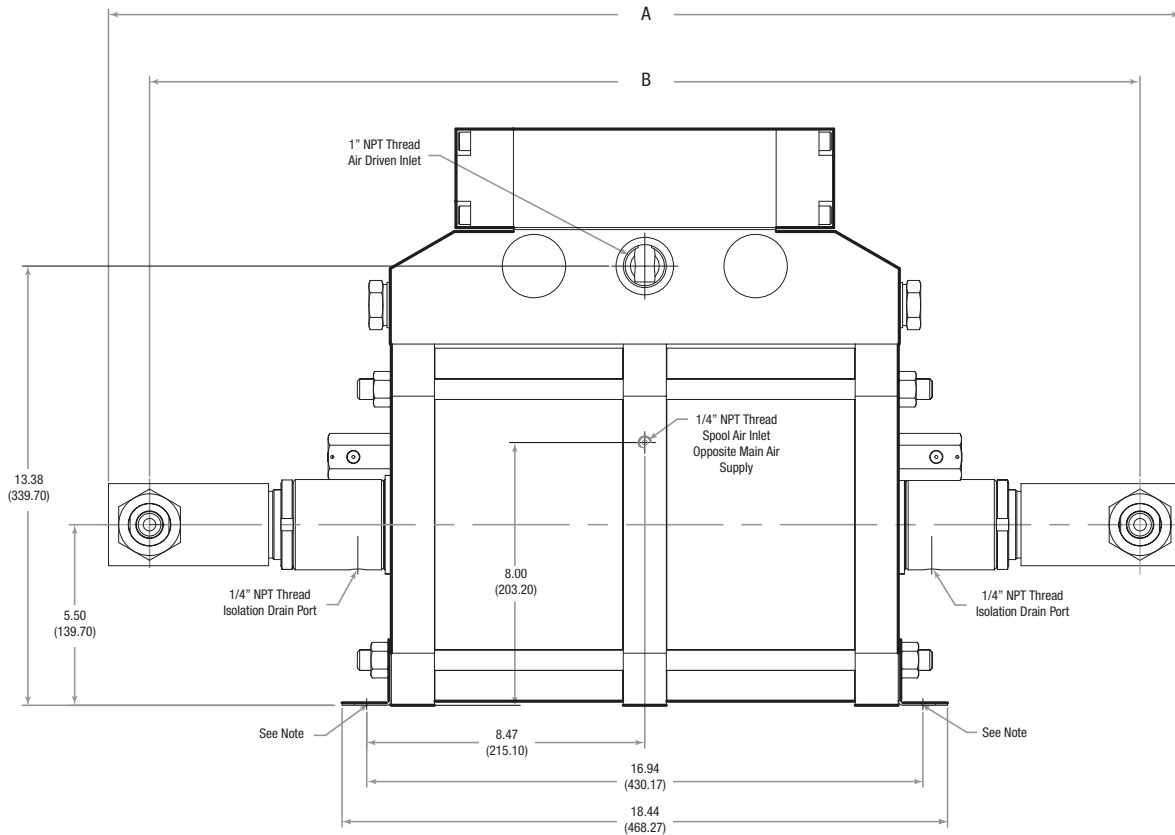
## Reference Guide

Pump Model Series	Pressure Ratio	Maximum Rated Outlet Pressure PSI (bar)	Displacement Per Cycle .in <sup>3</sup> (cm <sup>3</sup> )	Liquid Connections	
				Inlet	Outlet
<b>AHL Series</b>					
AHL33-2D	1:67	6,700 (462)	15.3 (250.7)	1" FNPT	1/2" FNPT
AHL66-2D	1:133	13,300 (917)	7.8 (127.8)	1/2" FNPT	1/2" FNPT

**Air Drive Connection** - All AHL series pumps have a 1" FNPT main air drive supply connection and utilize a 1/8" FNPT pilot port connection for remote start/stop operation. It is recommended to operate the pilot port at a higher air pressure than the main air drive supply pressure for proper function.



Side View



Front View

**Note:**

Each mounting bracket includes (2) x 9/16" (8.73) slots for 1/2" bolts.  
 Bottom inlet pump head and side inlet pump head are mutually exclusive.  
 All dimensions are for reference only and are subject to change without notice.  
 Primary dimensions: Inches  
 Secondary Dimensions: (Millimeters)

Model	A	B
AHL66	32.66 (829.61)	30.16 (766.11)
AHL33	32.41 (823.21)	30.42 (772.41)

## Ordering Guide

Typical catalog number example: **AHL66-2DSCUV** (catalog number is created based on customer selection of product parameters, see below for example)

AHL66-2D	S	C	UV
Pump Series Type/Size/Ratio	Liquid Inlet Location	Isolation Chamber	Liquid Seal Material (AHL33 and AHL66)
<b>AHL</b> • High Flow Liquid High Pressure Pump • 10" Dual Piston Air Drive • 1:133 Max. Air-to-Liquid Pressure Ratio • Maximum 13,300 psi (917 bar) • Double Acting Liquid Heads	<b>S*</b> = Side	<b>C*</b> = Included	<b>UV*</b> = Urethane U-Cup and Viton O-Rings <b>UE</b> = Urethane U-Cup and EPDM O-Rings <b>UB</b> = Urethane U-Cup and Buna-N O-Rings <b>TV</b> = Thermoplastic Polyester U-Cup and Viton O-Rings <b>TE</b> = Thermoplastic Polyester U-Cup and EPDM O-Rings <b>TB</b> = Thermoplastic Polyester U-Cup and Buna-N O-Rings <b>TC</b> = Thermoplastic Polyester U-Cup and Perfluoroelastomer O-Rings <b>C</b> = Perfluoroelastomer O-Rings

\* Standard for stock pumps

## Liquid Flow Rate vs. Outlet Pressure:

### AHL33-2DSC Series

Approximate Air Drive Pressure: 100 psi			
Pressure (PSI)	Pressure (bar)	Flow (gpm)	Flow (liter/min)
0	0	7.6* <small>(see note 2)</small>	28.8* <small>(see note 2)</small>
1000	69	6.1	23.0
2000	138	5.7	21.5
3000	207	4.9	18.4
4000	276	4.0	15.2
5000	345	3.2	12.3
6000	414	1.8	6.9

Nominal Liquid Pressure (Stalled)			
Air Drive Pressure		Liquid Pressure	
PSI	bar	PSI	bar
20	1.4	1340	92.4
30	2.1	2010	138.6
40	2.8	2680	184.8
50	3.4	3350	231.0
60	4.1	4020	277.2
70	4.8	4690	323.4
80	5.5	5360	369.6
90	6.2	6030	415.8
100	6.9	6700	461.9

## Liquid Flow Rate vs. Outlet Pressure:

### AHL66-2DSC Series

Approximate Air Drive Pressure: 100 psi			
Pressure (PSI)	Pressure (bar)	Flow (gpm)	Flow (liter/min)
0	0	3.6* <small>(see note 2)</small>	13.7* <small>(see note 2)</small>
1000	69	3.4	12.9
2000	138	3.1	12.0
3000	207	2.9	11.2
4000	276	2.7	10.3
5000	345	2.5	9.5
6000	414	2.3	8.7
7000	483	2.2	8.2
8000	552	2.0	7.7
9000	621	1.8	6.7
10000	690	1.5	5.7
11000	759	1.3	4.8
12000	828	1.0	3.9

Nominal Liquid Pressure (Stalled)			
Air Drive Pressure		Liquid Pressure	
PSI	bar	PSI	bar
20	1.4	2660	183.4
30	2.1	3990	275.2
40	2.8	5320	366.9
50	3.4	6650	458.6
60	4.1	7980	550.3
70	4.8	9310	642.1
80	5.5	10640	733.8
90	6.2	11970	825.5
100	6.9	13300	917.2

Note:

- Actual flow rates will vary depending on air flow capacity, downstream flow restrictions, and fluid type.
- Flow valve at approximately 50 psi air drive pressure.

## AFL SERIES Double-Acting, Single Piston Air Drive

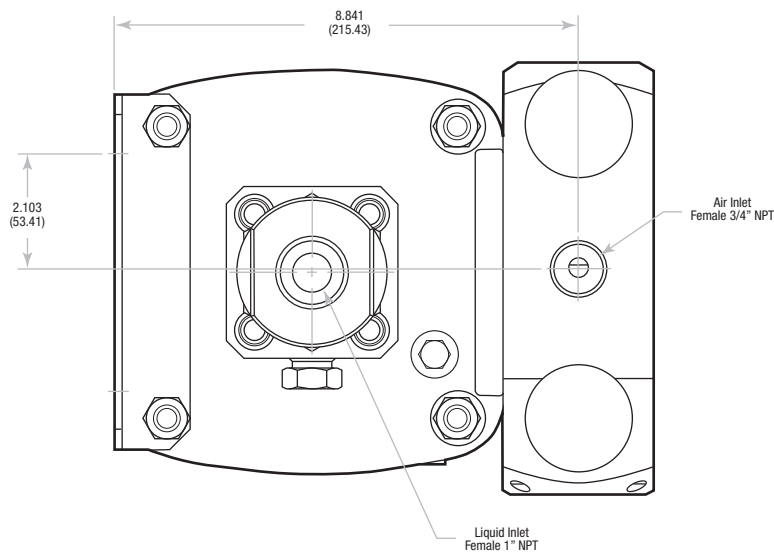
- Service: Oil, Water, Water/Oil mixture and other fluids depending on material compatibility
- Maximum Operating Temperature: 0-140° F (-18° to 60° C)
- Pressure Head: 15-5 PH Stainless Steel
- Check Valve Glands: 316 Stainless Steel
- Liquid Seal: see Ordering Guide for options
- Air Drive Seals: Buna N



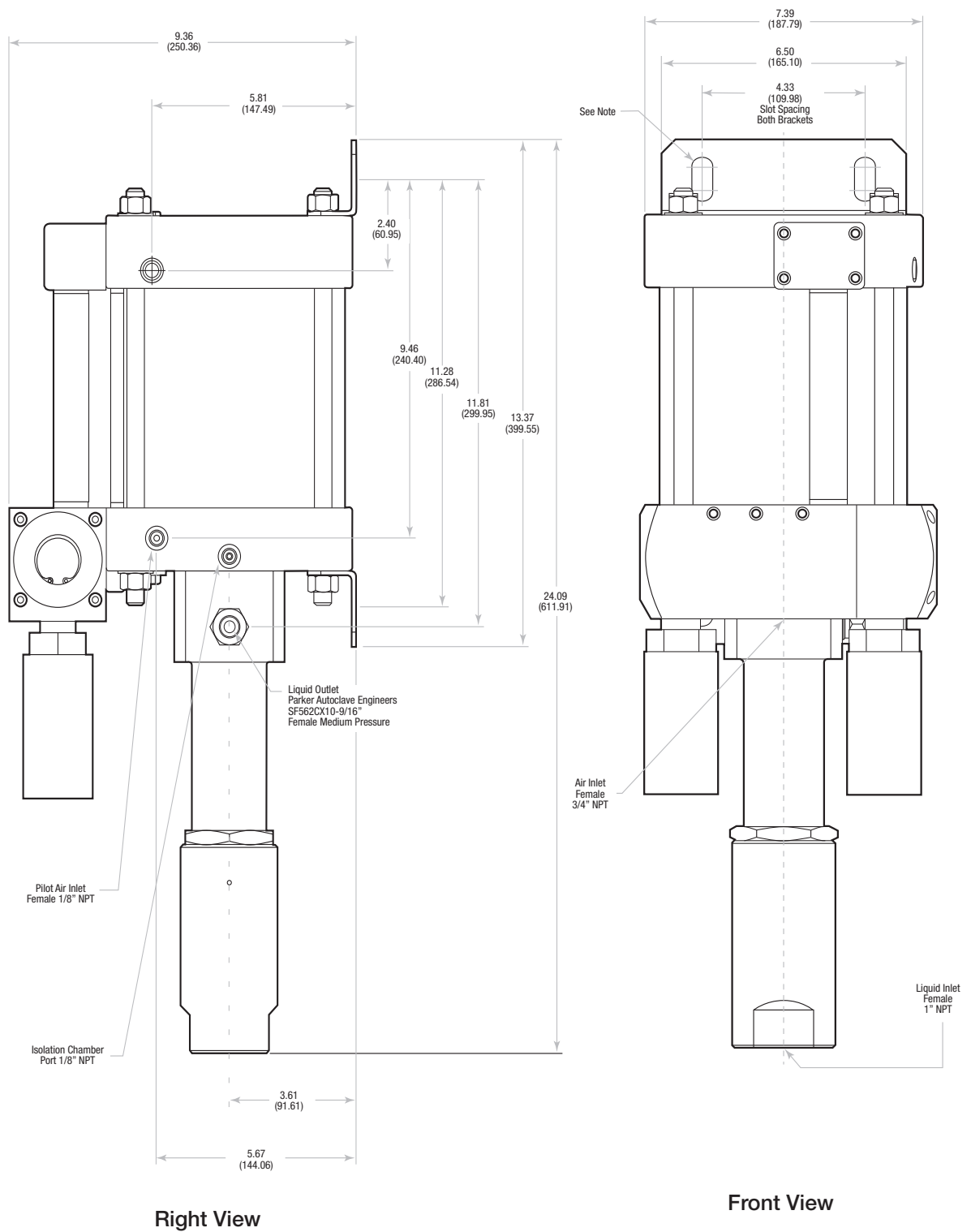
### Reference Guide

Pump Model Series	Pressure Ratio	Maximum Rated Outlet Pressure PSI (bar)	Displacement Per Cycle in <sup>3</sup> (cm <sup>3</sup> )	Liquid Connections	
				Inlet	Outlet
<b>AFL Series</b>					
AFL35-1D	1:39	5,600 (386)	6.02 (98.7)	1" FNPT	9/16" SF562CX
AFL60-1D	1:70	10,000 (690)	3.40 (55.7)	1" FNPT	9/16" SF562CX
AFL100-1D	1:113	15,000 (1034)	2.30 (37.7)	1" FNPT	9/16" SF562CX

**Air Drive Connection** - All ASL series pumps have a 1" FNPT main air drive supply connection and utilize a 1/8" FNPT pilot port connection for remote start/stop operation. It is recommended to operate the pilot port at a higher air pressure than the main air drive supply pressure for proper function.



Bottom View



Note:  
 Each mounting bracket includes (2) x 9/16" (14.29) slots for 1/2" bolts.  
 Bottom inlet pump head and side inlet pump head are mutually exclusive.  
 All dimensions are for reference only and are subject to change without notice.  
 Primary dimensions: Inches  
 Secondary Dimensions: (Millimeters)

## Ordering Guide

Typical catalog number example: **AFL100-1DBPV** (catalog number is created based on customer selection of product parameters, see below for example)

<b>AFL100-1D</b>	<b>B</b>	<b>C</b>	<b>PV</b>
<b>Pump Series Type/Size/Ratio</b>	<b>Liquid Inlet Location</b>	<b>Isolation Chamber</b>	<b>Liquid Seal Material (AFL35, AFL60, AFL100)</b>
<b>AFL</b> <ul style="list-style-type: none"> <li>• High Flow, High Pressure Pump</li> <li>• 6" Dual Piston Air Drive</li> <li>• 1:113 Max. Air-to-Liquid Pressure Ratio</li> <li>• Maximum 15,000 psi (1034 bar)</li> <li>• Single Ended, Double Acting Liquid Heads</li> </ul>	<b>B*</b> = Bottom	<b>C*</b> = Included	<b>PV*</b> = UHMWPE U-Cup and Viton O-Rings <b>PE</b> = UHMWPE U-Cup and EPDM O-Rings <b>PB</b> = UHMWPE U-Cup and Buna-N O-Rings <b>PC</b> = UHMWPE U-Cup and Perfluoroelastomer O-Rings

\* Standard for stock pumps

## Flow Rate Table: Air Drive Pressure (psi) vs. Outlet Pressure (psi)

Catalog Number	Air Drive Pressure (psi)	Outlet Pressure (psi)								Liters /min.
		0	500	1,500	3,000	4,500	6,000	10,000	15,000	
AFL35	60	24	19	9						
	90	25	21	16	6					
	120	26	23	19	12	2				
AFL60	60	14	12	9	4					
	90	14	13	11	8	6	1			
	120	15	14	12	10	8	6			
AFL100	60	10	9	7	5	3	1			
	90	11	10	8	7	6	5	1		
	120	12	11	9	8	7	6	3		



## Packaged Pressure Systems

Since our beginning in 1946, Parker Autoclave Engineers has been the world's market leader in the development and manufacture of high and ultra-high pressure components, valves and systems. At our modern factory in Erie Pennsylvania, USA we have engineers with the specialized experience to design and create products commonly used to control pressures exceeding 100,000 psi (6900 bar) while consistently exceeding customer expectations.

Using the knowledge developed over the last 70 years, Parker Autoclave Engineers Packaged Pressure Systems have been developed to incorporate any of our Air-Driven, High Pressure Liquid pumps, valves and fittings into a wide range of self-contained portable, or custom framed modules that "plug and play" for virtually any test, control, or injection system you can imagine. They vary in size, flow capability, output pressure and can include optional features such as chart recording, data logging, cycle counters, injection controllers and almost any kind of electric or pneumatic valve control option. Applications include: Hydrostatic/Burst/Leak/Functional testing, Chemical injection, Valve/Hose/Gauge testing, Bolt tensioning, Hydraulic Control systems, Laboratory Research and Autofrettage systems.

### Portable Pressure Systems

Move your high pressure test stand anywhere you need it to be...

Powder Coated Steel, Stainless Steel or Aluminum Frame Options  
Single or Dual Pump Systems with or without reservoir  
Utilizes any Combination ASL, ACL, ACHL, AFL, or AHL Air-Driven Liquid Pumps  
Outlet Pressures to 60,000 PSI (4140 bar) – Flows to 7.6 GPM (29 lpm)  
Vertical or Horizontal Frame Designs with Optional Casters  
Totally Self Contained-Electricity not Required, Only Air  
All Air Controls Included, No Lubrication Needed  
Isolation Valves, Relief Valves, Rupture Disks, Stroke Counters  
and other Options Available



### Custom Pressure Systems

Modify the Standard Design to Incorporate Specified Instruments or Request Fit-for-Purpose Designs

Powder Coated Steel, Aluminum or Stainless Steel Open/Enclosed Frame Options  
Fit-for-Purpose Enclosures/Benches/Reels or Test Chambers  
Utilize any Parker Autoclave Engineers Air-Driven Liquid Pump  
Options Include All Standard Options plus: Remote Controlled Valves,  
Chart Recorders, Data Loggers, PLC or Computer Controls, and Digital Displays.



**Call for more information or visit us online at [www.autoclave.com](http://www.autoclave.com)**





# Parker Worldwide

**AE** – UAE, Dubai  
Tel: +971 4 8875600  
parker.me@parker.com

**AR** – Argentina, Buenos Aires  
Tel: +54 3327 44 4129  
falecom@parker.com

**AT** – Austria, Wiener Neustadt  
Tel: +43 (0)2622 23501-0  
parker.austria@parker.com

**AT** – Eastern Europe, Wiener Neustadt  
Tel: +43 (0)2622 23501 970  
parker.easteurope@parker.com

**AU** – Australia, Dandenong  
Tel: +61 (0)3 9768 5555  
customer.service.au@parker.com

**AZ** – Azerbaijan, Baku  
Tel: +994 50 2233 458  
parker.azerbaijan@parker.com

**BE/LX** – Belgium, Nivelles  
Tel: +32 (0)67 280 900  
parker.belgium@parker.com

**BR** – Brazil, Sao Jose dos Campos  
Tel: +55 12 4009 3504  
falecom@parker.com

**BY** – Belarus, Minsk  
Tel: +375 17 209 9399  
parker.belarus@parker.com

**CA** – Canada, Grimsby, Ontario  
Tel: +1 905-945-2274  
ipd\_canada@parker.com

**CH** – Switzerland, Etoy  
Tel: +41 (0) 21 821 02 30  
parker.switzerland@parker.com

**CL** – Chile, Santiago  
Tel: +56 (0) 2 2303 9640  
falecom@parker.com

**CN** – China, Shanghai  
Tel: +86 21 2899 5000  
INGtechnical.china@parker.com

**CZ** – Czech Republic, Klecany  
Tel: +420 284 083 111  
parker.czechrepublic@parker.com

**DE** – Germany, Kaarst  
Tel: +49 (0)2131 4016 0  
parker.germany@parker.com

**DK** – Denmark, Ballerup  
Tel: +45 43 56 04 00  
parker.denmark@parker.com

**ES** – Spain, Madrid  
Tel: +34 902 33 00 01  
parker.spain@parker.com

**FI** – Finland, Vantaa  
Tel: +358 (0)20 753 2500  
parker.finland@parker.com

**FR** – France, Contamine s/Arve  
Tel: +33 (0)4 50 25 80 25  
parker.france@parker.com

**GR** – Greece, Athens  
Tel: +30 210 933 6450  
parker.greece@parker.com

**HU** – Hungary, Budapest  
Tel: +36 1 220 4155  
parker.hungary@parker.com

**ID** – Indonesia, Tangerang  
Tel: +62 (0)21 7588 1906  
parker.id@parker.com

**IE** – Ireland, Dublin  
Tel: +353 (0)1 466 6370  
parker.ireland@parker.com

**IN** – India, Mumbai  
Tel: +91 22 6513 7081-85

**IT** – Italy, Corsico (MI)  
Tel: +39 02 45 19 21  
parker.italy@parker.com

**JP** – Japan, Tokyo  
Tel: +(81) 3 6408 3900  
infophj@parker.com

**KR** – South Korea, Seoul  
Tel: +82 2 559 0400  
parkerkr@parker.com

**KZ** – Kazakhstan, Almaty  
Tel: +7 7272 505 800  
parker.easteurope@parker.com

**LV** – Latvia, Riga  
Tel: +371 6 745 2601  
parker.latvia@parker.com

**MX** – Mexico, Toluca  
Tel: +52 722 275 4200  
contacto@parker.com

**MY** – Malaysia, Selangor  
Tel: +603 784 90 800  
parkermy@parker.com

**NL** – The Netherlands, Oldenzaal  
Tel: +31 (0)541 585 000  
parker.nl@parker.com

**NO** – Norway, Stavanger  
Tel: +47 (0)51 826 300  
parker.norway@parker.com

**NZ** – New Zealand, Mt Wellington  
Tel: +64 9 574 1744

**PL** – Poland, Warsaw  
Tel: +48 (0)22 573 24 00  
parker.poland@parker.com

**PT** – Portugal, Leca da Palmeira  
Tel: +351 22 999 7360  
parker.portugal@parker.com

**RO** – Romania, Bucharest  
Tel: +40 21 252 1382  
parker.romania@parker.com

**RU** – Russia, Moscow  
Tel: +7 495 645-2156  
parker.russia@parker.com

**SE** – Sweden, Spånga  
Tel: +46 (0)8 59 79 50 00  
parker.sweden@parker.com

**SG** – Singapore,  
Tel: +65 6887 6300  
parkersg@parker.com

**SK** – Slovakia, Banská Bystrica  
Tel: +421 484 162 252  
parker.slovakia@parker.com

**SL** – Slovenia, Novo Mesto  
Tel: +386 7 337 6650  
parker.slovenia@parker.com

**TH** – Thailand, Bangkok  
Tel: +66 2 186 7000  
phthailand@parker.com

**TR** – Turkey, Istanbul  
Tel: +90 216 4997081  
parker.turkey@parker.com

**TW** – Taiwan, Taipei  
Tel: +886 2 2298 8987  
enquiry.taiwan@parker.com

**UA** – Ukraine, Kiev  
Tel: +380 44 494 2731  
parker.ukraine@parker.com

**UK** – United Kingdom, Warwick  
Tel: +44 (0)1926 317878  
parker.uk@parker.com

**USA** – IPD, Huntsville  
Tel: +1 256 881 2040  
ipdcct@parker.com

**USA** – Autoclave Engineers, Erie  
Tel: +1 814 860 5700  
ipdaecct@parker.com

**VN** – Vietnam, Hochi Minh City  
Tel: +84 (0)8337 546 51  
parker\_viet@parker.com

**ZA** – South Africa, Kempton Park  
Tel: +27 (0)11 961 0700  
parker.southafrica@parker.com

## WARNING

**FAILURE, 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 available for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. Any sale contract entered by Parker will be governed by the provisions stated in Parker's standard terms and conditions of sale (copy available upon request).



**Instrumentation Products Division**  
Autoclave Engineers Operation  
8325 Hessinger Drive  
Erie, PA 16509-4679  
Tel: 814 860 5700  
Fax: 814 860 5811  
www.autoclave.com

**Instrumentation Products Division**  
Autoclave Engineers Operation, Houston  
15340 Vantage Parkway, East  
Houston, TX 77032  
Tel: 281 987 3828  
Fax: 281 987 2318

**Parker Hannifin Manufacturing Ltd.**  
Instrumentation Products Division, Europe  
Industrial Estate Whitmill  
Wexford, Republic of Ireland  
Tel: 353 53 914 1566  
Fax: 353 53 914 1582

**Parker Hannifin Manufacturing Ltd.**  
Instrumentation Products Division, Europe  
Riverside Road, Pottington Business Park  
Barnstaple, UK, EX31 1NP, UK  
Tel: 44 1271 313131  
Fax: 44 1271 373636

**Caution!** Do not mix or interchange component parts or tubing with those of other manufacturers. Doing so is unsafe and will void warranty.

**Caution!** Parker Autoclave Engineers Valves, Fittings, and Tools are not designed to interface with common commercial instrument tubing and are designed to only connect with tubing manufactured to Parker Autoclave Engineers AES specifications. Failure to do so is unsafe and will void warranty.