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1.0 GENERAL

To ensure proper and safe operation of the Barksdale Series III-L valve, the entire manual must be read and understood clearly. Please pay special attention to all safety information.

2.0 DESCRIPTION

This is a heavy duty Shear-Seal[®] piloted-directional control valve. The valve is designed to be actuated either with hydraulic oil or air depending on version. This 2 position valve is designed to work with oil-based hydraulic fluid only. It is not suitable for water-based hydraulic fluid. Standard wetted materials include carbon steel, stainless steel, Buna-N and PTFE materials.

3.0 SAFETY INFORMATION


The recommendations below are general and it is the responsibility of the user to assure that installation and maintenance are in accordance with local requirements, API and ASME practices. This valve should be installed by a trained service person. A media filter should be in the system to protect the valve. A water trap should also be in-line for the air-actuated model.


To maximize life it is suggested to follow ISO fluid cleanliness code ISO4406:1999 or thereafter. An ISO cleanliness code of **18/16/13 or better** is recommended.

Neither Barksdale nor its agents assume any liability for valves improperly used in the application or improperly installed and maintained.

3.1 Marking of safety instructions in the operating manual

The safety instructions are intended to protect the user from dangerous situations and/or material damage. In the operating instructions the seriousness of the potential risk is designated by the following signal words:

 **Warning:** Safety Instructions whose non-observance may be hazardous to persons, and/or cause damage to property.

 **Caution:** Safety Instructions whose non-observance may lead to product damage, or loss of function. Product Marking: Nameplate and label marking on the equipment itself contains the

primary functional limits information. This information must be absolutely followed and kept in legible condition.

3.2 Qualifications and training of personnel

Operating, maintenance, inspection and installation personnel must be qualified to carry out their respective duties. Areas of responsibility, competence, and proper levels of supervision should be clearly defined by the user. If personnel are not sufficiently qualified, additional training and instruction should be carried out, to ensure that operating instructions are fully understood by the responsible personnel

3.3 Non-compliance with safety instructions

Non-compliance with these safety instructions can jeopardize the safety of personnel, the environment, the valve and/or the system. Non-compliance with these safety instructions will lead to forfeiture of any rights to claims for damages.

3.4 Safety Awareness

It is essential to comply with the safety instructions contained in this manual, along with the relevant national, state and local health and safety regulations, and the operator's own internal operating and safety instructions.

3.5 Safety instructions for the operator/user

Isolate the valve from all system pressure before performing any service procedures. Leakage of any dangerous liquids (toxic or hot) at any exterior mechanical joint seal must be drained off without any danger to persons or the environment. Before service the system plumbing should be placed in zero energy (de-pressurized) state and operation locked-out.

All Federal, State and Local Rules regarding chemical disposal and handling must be followed.

3.6 Safety instructions for maintenance, inspection and installation work

The user must ensure that all maintenance, inspection and installation work is carried out by authorized personnel, who are familiar with the manual. As a rule all work on the unit should only be carried out after the valve has cooled down and pressure has been released. Proper tag out or lockout is strongly recommended. Immediately after completion of work, all safety and protective devices in system should be refitted and fully functional. Please observe all relevant system start-up safety rules.

3.7 Unapproved modifications and use of non-genuine spare parts

Modifications or changes to the unit are only permitted upon approval of Barksdale. Only genuine spare parts and original accessories will ensure the safety of the unit. The use of other than original parts voids the warranty and will lead to forfeiture of the declaration of conformity and will invalidate any liability for damages caused thereby.

3.8 Unapproved usage

The operating reliability and safety of the valve is only valid if used in accordance with its specified technical limits as described in the Installation and operating instructions. Any other use is not in conformity with the regulations, and Barksdale will not be liable for any resulting damages.

The installation and operating manual does not invalidate terms and conditions, general regulations and standards not referred to general technical rules should be observed.

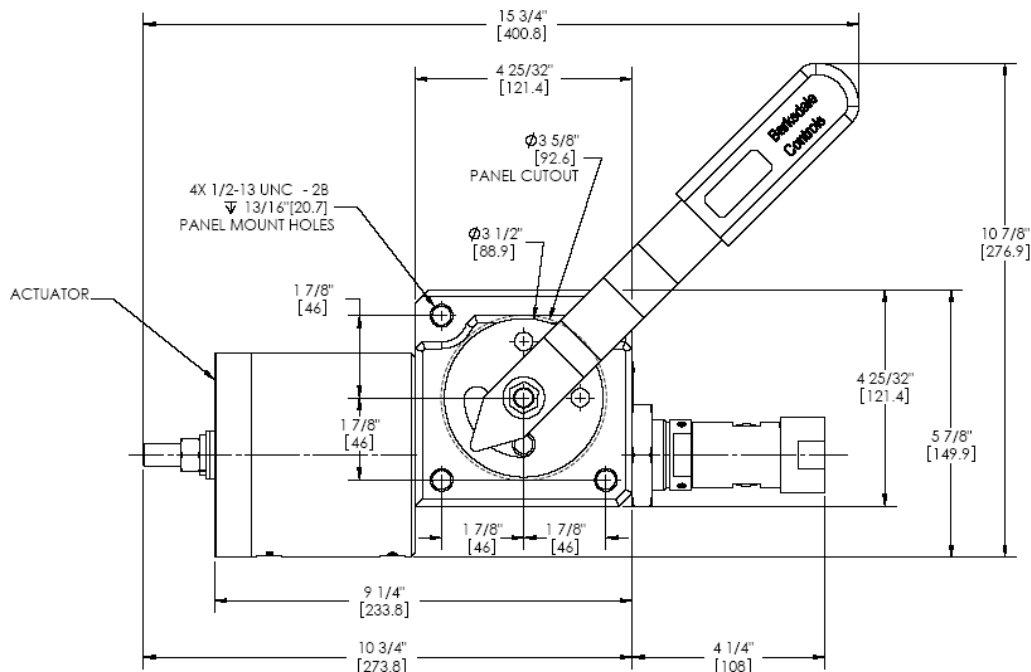
4.0 TECHNICAL DATA

4.1 SPECIFICATIONS:

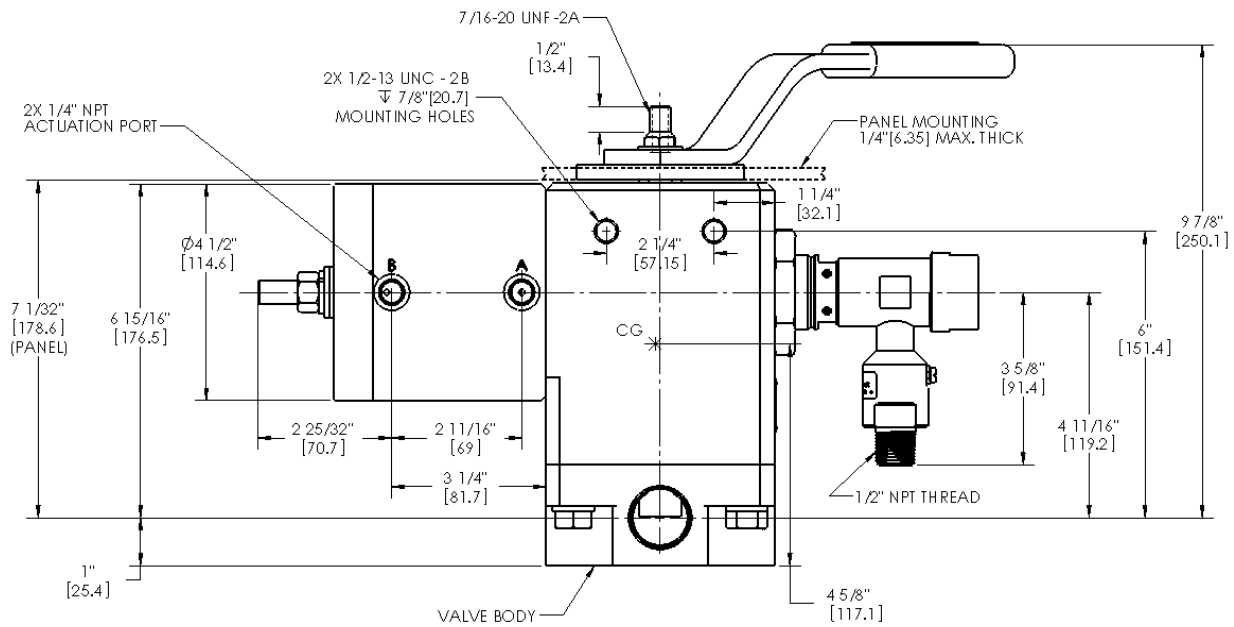
General Specifications*		Pilot Actuator	
Main Valve		Working Pressure:	
Media Type:	Hydraulic oil only -Not approved for water based fluid	Air:	Range: 80 to 120 psi (5.5 to 8.3 bar)
Working Pressure: 1" Size:	Hydraulic up to 3,000 or 5,000 psi (206 bar or 345 bar)	Hydraulic:	Range: 200 to 1,000 psi (13.8 to 68.9 bar)
Back Pressure:	250 psi (17.2 bar) max at return port	Porting:	1/4" - 18 NPT
Proof Pressure:	1.5x working pressure except at return port	Media Temperature Range:	-30° to +185°F (-34.4° to +85°C)
Burst Pressure:	2x working pressure except at return port (3,000 psi [206 bar])	Speed of Operation:	1/2 second or more for 90° throw to avoid damage
Porting:	1" NPT standard Optional: SAE 16 (SAE J1926)	Materials:	
Media Temperature Range:	-30° to +185°F (-34.4° to +85°C)	Cylinder (Air/Hydraulic):	Hard anodized aluminum
Handle Detent:	All valves have 3-position detents for manual shift to center position	End Plate:	Anodized aluminum
Wetted Materials:		Hardware:	Plated carbon steel
Body:	Phosphate coated carbon steel	Weight:	
Shaft:	Stainless steel	(Valve & actuator)	48 lbs (21.8 kg) : pneumatic model 49 lbs (22.2 kg) : hydraulic model
Rotor & Seals:	400 series stainless steel	<p style="text-align: center;">Series III-L</p>	
Standard O-Rings:	Buna N Option: Viton®, Neoprene, EPR		
External Materials:			
Housing:	Phosphate coated carbon steel		
Hardware:	Plated carbon steel		
Handle & Detent Disc:	Plated carbon steel		
Flow Characteristics:	Cv Factor = 9.2 Capacity : 75 GPM @ 60ft/sec		

4.2 OVERALL DIMENSIONS:

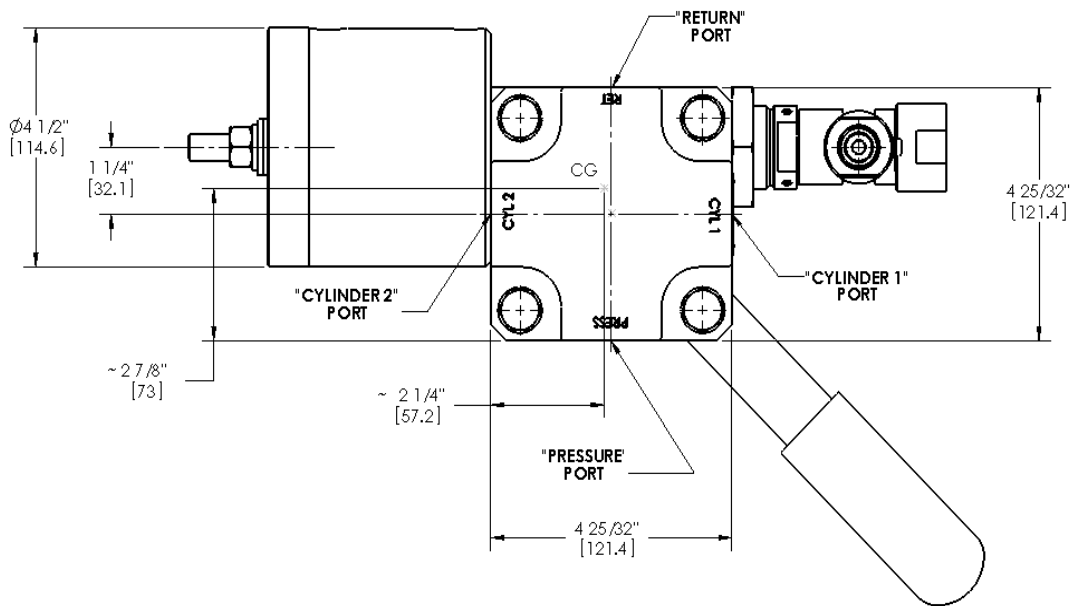
4.2.1 Top View of valve shown with position indicator



4.2.2 Side View of valve shown with position indicator



4.2.3 Bottom View of valve with Port Markings – PRESS, CYL1, CYL2 and RET

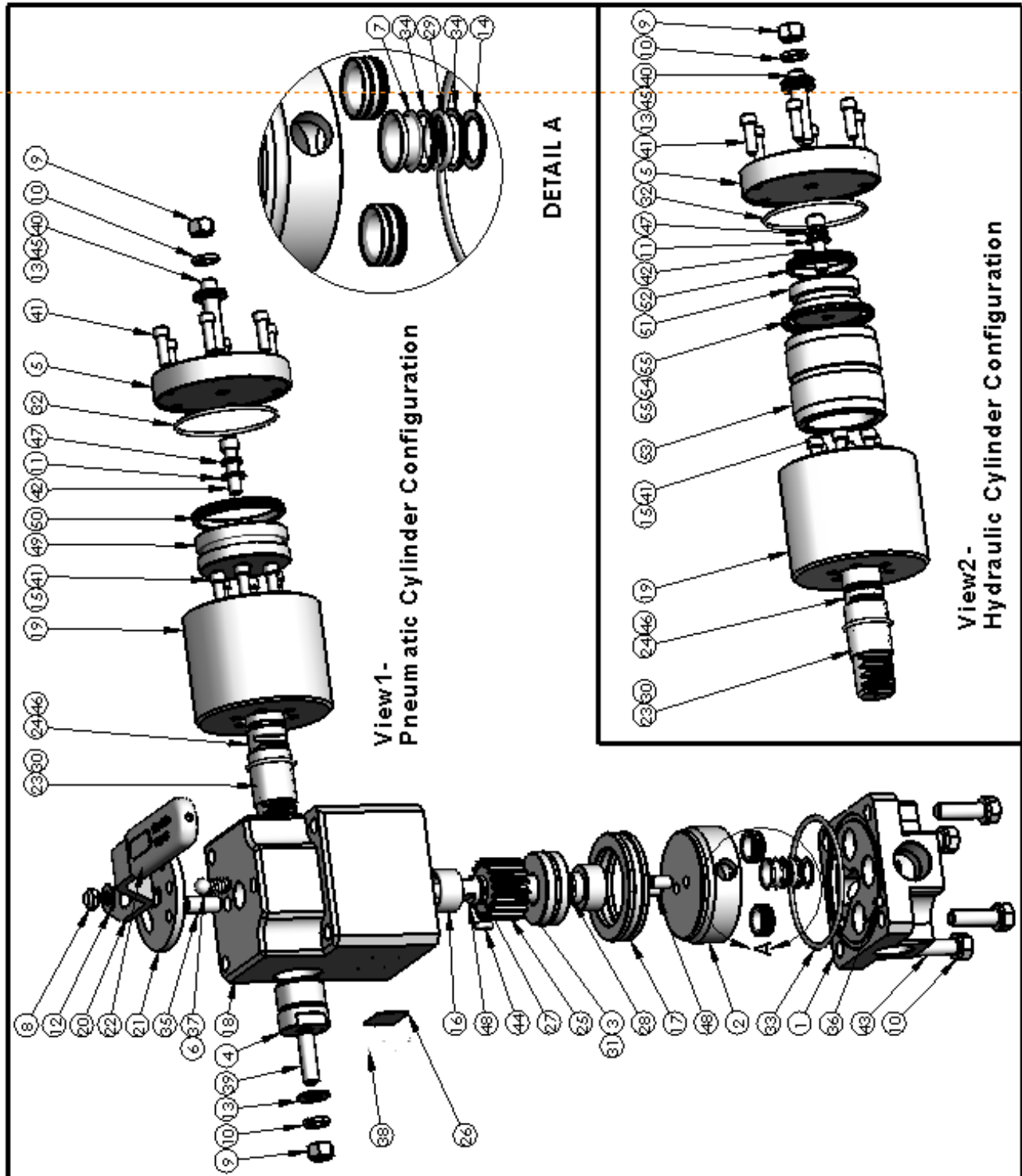


Dimensions in Inches [mm]

4.3 PRODUCT CONFIGURATOR:

Product Configurator		Example:	L	A	14	5	R	3	H	C	2									
Series III Land																				
Actuation Type																				
A	Air actuated cylinder																			
H	Hydraulic actuated cylinder																			
Valve Series																				
14	4-way selector or diverter																			
Port Size																				
5	1" NPT (SAE option)																			
Port Location																				
R	Regular side porting																			
P	Panel mount																			
Pressure Range																				
3	3,000 psi (206 bar)																			
5	5,000 psi (345 bar)																			
<p>Seal Material Option</p> <table border="1"> <tr> <td>Blank</td> <td>Buna N (Standard)</td> </tr> <tr> <td>-Z12</td> <td>Neoprene</td> </tr> <tr> <td>-Z13</td> <td>Viton®</td> </tr> <tr> <td>-Z15</td> <td>EPR</td> </tr> </table>													Blank	Buna N (Standard)	-Z12	Neoprene	-Z13	Viton®	-Z15	EPR
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<p>Options</p> <table border="1"> <tr> <td>-B</td> <td>Position Indicator¹</td> </tr> <tr> <td>-MS</td> <td>SAE J1926 porting</td> </tr> <tr> <td>-US</td> <td>Approved countries material origin</td> </tr> </table>													-B	Position Indicator ¹	-MS	SAE J1926 porting	-US	Approved countries material origin		
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<p>Position</p> <table border="1"> <tr> <td>2</td> <td>2-position actuator, 90° rotation</td> </tr> </table>													2	2-position actuator, 90° rotation						
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<p>Flow Pattern</p> <table border="1"> <tr> <td>C</td> <td>Closed center (selector)</td> </tr> <tr> <td>O</td> <td>Open center (tandem center) selector</td> </tr> <tr> <td>D</td> <td>Diverter (bypass)</td> </tr> </table>													C	Closed center (selector)	O	Open center (tandem center) selector	D	Diverter (bypass)		
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<p>Working Media</p> <table border="1"> <tr> <td>H</td> <td>Hydraulic oil</td> </tr> </table>													H	Hydraulic oil						
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<p>Note: 1. Refer to Position Indicator datasheet: Model 371MT75</p>																				

4.4 EXPLODED VIEW OF VALVE – AIR & HYDRAULIC MODELS



4.5 BILL OF MATERIALS OF AIR & HYDRAULIC MODELS

AIR	HYD.	ITEM NO.	DESCRIPTION	QTY.
✓	✓	1	BODY, MACHINING	1
✓	✓	2	ROTOR VE	1
✓	✓	3	BUSHING	1
✓	✓	4	FITTING	1
✓	✓	5	PLATE-END	1
✓	✓	6	SPRING	1
✓	✓	7	PRESSURE SEAL	3
✓	✓	8	NUT SELF LOCKING	1
✓	✓	9	NUT	2
✓	✓	10	LOCK WASHER	6
✓	✓	11	WASHER	1
✓	✓	12	WASHER	1
✓	✓	13	WASHER	2
✓	✓	14	WASHER SPRING	3
✓	✓	15	WASHER 12X18X1 MM	6
✓	✓	16	BEARING	1
✓	✓	17	THRUST BALL BEARING	1
✓	✓	18	HOUSING, MACHINING	1
✓	✓	19	HOUSING, PISTON	1
✓	✓	20	HANDLE	1
✓	✓	21	DISC DETENT	1
✓	✓	22	GRIP	1
✓	✓	23	SLEEVE	1
✓	✓	24	RACK-ACT	1
✓	✓	25	GEAR-PINION	1
✓	✓	26	NAMEPLATE	1
✓	✓	27	O-RING	1
✓	✓	28	O-RING	1

AIR	HYD.	ITEM NO.	DESCRIPTION	QTY.
✓	✓	29	O-RING	3
✓	✓	30	O-RING	1
✓	✓	31	O-RING	1
✓	✓	32	O-RING	1
✓	✓	33	O-RING	1
✓	✓	34	BACK-UP RING	6
✓	✓	35	GROOVE PIN	1
✓	✓	36	GROOVE PIN	2
✓	✓	37	BALL	1
✓	✓	38	SCREW DRIVE	4
✓	✓	39	SCREW SOCKET HD	1
✓	✓	40	SCREW SOCKET HD	1
✓	✓	41	SCREW SOCKET HD	12
✓	✓	42	SCREW SOCKET HD	1
✓	✓	43	SCREW HEX HD	4
✓	✓	44	KEY-WOODRUFF	1
✓	✓	45	SEAL THREAD BUNA	1
✓	✓	46	T-SEAL	1
✓	✓	47	LOCK WASHER	1
✓	✓	48	SHAFT ASSEMBLY	1
✓	-	49	PISTON	1
✓	-	50	T-SEAL	1
-	✓	51	PISTON	1
-	✓	52	T-SEAL	1
-	✓	53	SLEEVE, PISTON HYD.	1
-	✓	54	O-RING	1
-	✓	55	BACK-UP RING	2

5.0 INSTALLATION:

Make sure ports are clean from debris that may have accumulated during storage or transportation.

5.1 Install valve using optional mounting holes (1/2-13 UNC-2B), 4 places

5.2 Pipe the valve into your system using ports PRESS, CYL 1, CYL 2 and RET

Note:  **Caution**

Back pressure: Pressure on the return port must not exceed 250 psi (17.2 bars) for satisfactory operation.

5.3 Attach pilot connections to the actuator ports A, B

5.4 If position indication is desired, Barksdale position indicator may be attached to a Series III-L valve. This allows the operator to get a feedback on their controller on the valve position.

Note: Position Indicator -See Position Indicator Installation Instructions 272245, and I.S. Control Drawing 272263 for Intrinsically Safe applications.

Note: Pilot valve must be provided by customer. It may be one 4 way /2 position solenoid valve or 2 3-way solenoid valve

Note: For center of gravity of valve, please refer to Sales drawing LX145. Center of gravity location can shift slightly due to location of handle and fluid inside unit.

6.0 OPERATION

The series III-L valve is a 4-way 2 position valve with an integrated actuator. The actuator may be driven either by air or hydraulic fluid. Due to different internal construction of actuator between air and hydraulic model, customer needs to specify "H" for hydraulic and "A" for air in the product part number when ordering.

⚠ Caution: Series III-L valve is designed to work only with oil-based hydraulic fluid. It is not compatible with water-based hydraulic fluid

⚠ Warning: Series III-L valve is normally actuated pneumatically or hydraulically, operator is cautioned to stay clear of the handle operating zone to avoid potential injury.

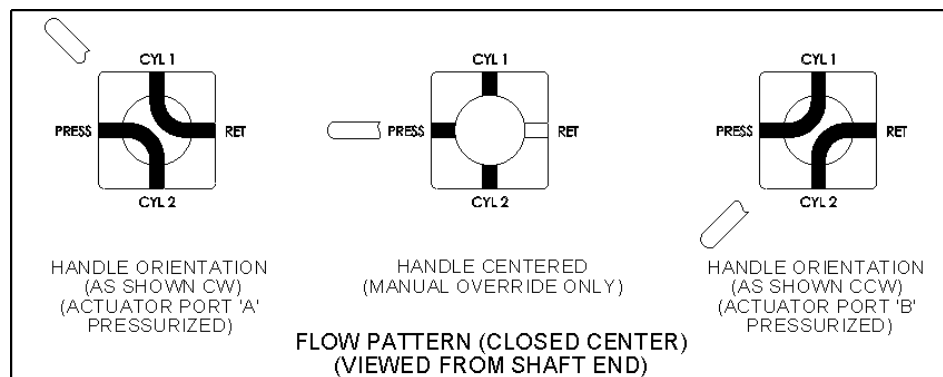
Actuated air pressure is recommended to be between 80 psi to 120 psi.

Hydraulic actuated pressure should be between 200 psi to 1,000 psi.

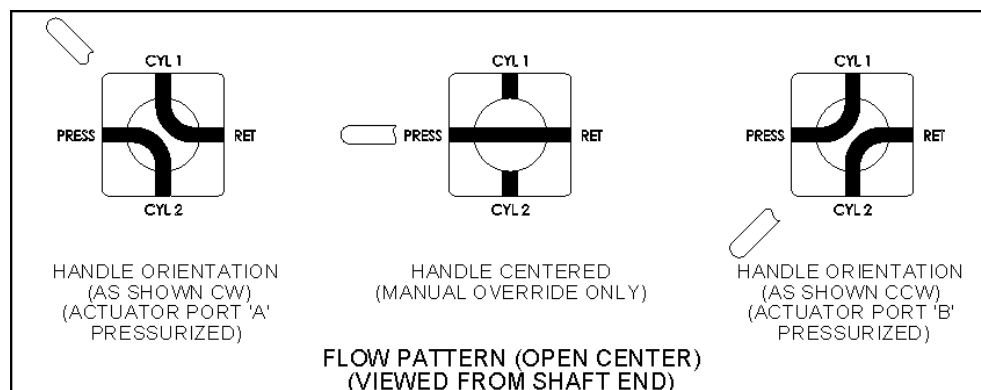
The valve is available with 3 different configurations

- a) Closed center (selector) option "C"
- b) Open center (tandem center) option "O"
- c) Diverter (Bypass) option "D"

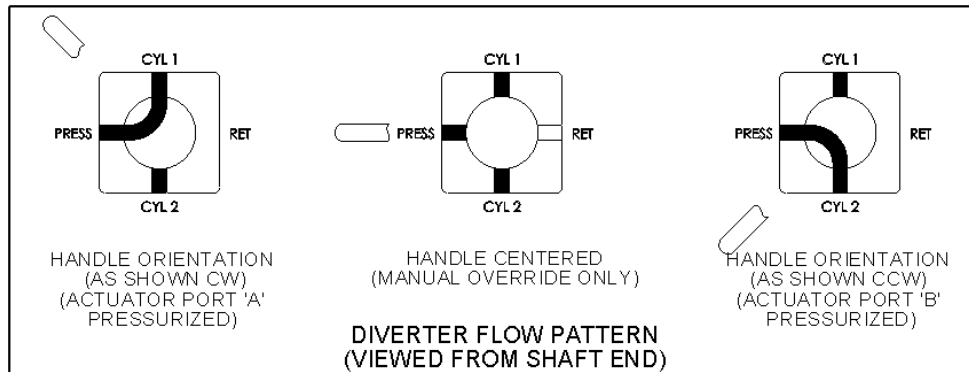
CLOSED CENTER (SELECTOR) OPTION



OPEN CENTER (TANDEM CENTER) OPTION



DIVERTER (BYPASS) OPTION



7.0 MAINTENANCE / REPAIR KITS

Warning **Caution**

Barksdale valves have factory lubricated bearings and seals, and are factory tested for proper valve function. However responsibility for safe installation and proper valve function in specific application environments lies with the end user. Periodic functional checks and preventive maintenance work should be carried out at the discretion of the end user. **To maximize equipment reliability and safety, it is recommended that the ISO fluid cleanliness code of the valve should be 18/16/13 as per ISO 4406: 1999.**

Inspections are recommended after every 1000 cycles or annually, whichever comes first. If the media is contaminated or other severe services, more frequent maintenance is recommended.

Warning *Isolate the valve from all system pressure before performing any disassembly procedures*

Barksdale supplies repair kits to maintain optimum valve performance. **Repair kits shall be installed only by Barksdale-trained and skilled personnel.** All work for repair of Barksdale Shear-Seal® valves should be performed in a clean, non-hazardous area free of excess dirt and debris. The Shear-Seal® components are manufactured to precise tolerances and can be damaged if proper care is not taken.


Caution After any field service or repair, the user shall ensure that proper valve function, and suitability for safe use in potentially hazardous environments, has been maintained.

The service repair kits can be purchased from Barksdale authorized dealers or Barksdale directly by contacting our Customer Care department.

<u>Repair Kit Part Number</u>	<u>Description</u>
KC1108	Valve Seal Repair Kit
KC1109	Air Actuator Repair Kit
KC1110	Hydraulic Actuator Repair Kit
KD2466	Valve Minor Repair Kit
KD2467	Valve/Air Actuator Major Repair Kit
KD2468	Valve/Hydraulic Actuator Major Repair Kit

The Series III-L valve may be returned to Barksdale for "Factory Service" to ensure that original valve function has been restored, and the valves are safe for service.

8.0 TROUBLE-SHOOTING

 **Caution** Chart is used as a quick trouble shooting tool and mainly for reference only. It does not mean to list all possible causes and solutions to the problems as seen by the user on the Series III-L. Contact factory or authorized dealers for technical support and issues.

PROBLEM	POSSIBLE CAUSE	SOLUTION / RECOMMENDATION
Handle does not move	Incorrect valve plumbing	PRESS port for pressure source; CYL1 & CYL2 ports are for process RET return port is back to tank or atmosphere - 250 PSI max back pressure
	Return port is plugged	Return port cannot be plugged or line be blocked
	Return line has restriction	Return port pressure is 250 PSI or less
	Valve plumbed in series	Return port pressure is 250 PSI or less
No Actuation	No pilot pressure	Provide pressure to pilot line
	Pilot line pressure blocked	Only one pilot port may be pressurized at a time.
	Pilot line leaking	Tighten or replace pilot line
External Leakage	Loose connections	Tighten connections
Internal leakage	Valve handle not in detent	Place handle in detent

9.0 TRANSPORT / STORAGE

Severe shock and vibration should be avoided during transport. Store it in a clean and dry environment. Valves are ready for operation upon delivery. The protective port plugs should not be removed until immediately before connecting the piping. **To avoid damaging valve or/and position indicator, do not lift or carry by the handle, or position indicator.**

It is recommended to transport valve with the lifting equipment suitable for the weight to be moved. Do not hook-up lifting equipment to accessory such as handle, or pressure bores. When using a suspension belt it must be placed around the valve body, position indicator, providing edge protection and ensuring weight distribution. Transport/storage temperature is recommended to be between -40° C (-40° F) to +93°C (200°F). Protect existing sealing surface on the connections from damage. Do not damage the corrosion protective layer.

10.0 DISPOSAL/RETURNS

Valves that have come in contact with health – threatening media must be decontaminated prior to disposal or returned to Barksdale. Follow proper Federal/ State and local regulations for appropriate disposal to protect the environment.

11.0 NAMEPLATE



Nameplate is permanently secured to side of valve with the followings information: model part number, working pressure (WPR) and serial number (SN). The first 6 digit numbers of the serial number represent the date of manufacture (XX month/YY date/ ZZ year).

12.0 WARRANTY

See Barksdale “STANDARD TERMS AND CONDITIONS” document for **STANDARD WARRANTY**.

13.0 MANUFACTURE AND INQUIRIES

Please contact Customer Care for product inquiry or any product related questions or issues.

Barksdale

Control Product
3211 Fruitland Avenue
Los Angeles, CA 90058
Phone: (800)-835-1060
Fax: (323)-589-3463
WWW.barksdale.com