



SV-150 Valve Specifications Table of Contents

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All PacSeal Hydraulics' SV Directional Control Valves are designed with ShearFlo® metal-to-metal sealing technology. ShearFlo® sealing technology features:

- High cycle life and anti-wear design is suitable for critical service applications, including contaminated fluids.
- Leak proof, contaminant resistant metal-to-metal seal is accomplished by lapping and polishing hardened stainless steel sealing elements to exacting standards of finish and flatness.
- The sealing elements are spring preloaded and pressure energized, which maintains contact between the two sealing surfaces at all times.

All SV Valves are tested to PacSeal's strict quality control standards to ensure proper function and reliability. Every ShearFlo® sealing component in a repair kit is inspected to ensure trouble-free performance after field maintenance and repair.

PacSeal Hydraulics' rotary SV Directional Control Valves direct fluid flow to one or two cylinder ports, based on the selected rotor and detent combination, as specified in the "Valve Shift Options" table.

The SV valves' modular design accommodates various operator options (manual and remote with manual override) to suit the application at hand. The options available for manual operation are as follows:

- Detented (2 or 3-position)
- Spring Centered (3-position)
- Pin Lock Detent (3-position)

The remote operator options with manual override are available in pneumatic or hydraulic with 2 or 3 positions as follows:

- Actuator Cylinder bracket mounted to valve
- SVX Integral Actuator assembled atop the valve providing higher efficiency and immediate actuation

Various porting options provide further customization, as follows:

- Inline
- Bottom
- Subplate
- Manifold

General Specifications

Port Size	1-1/2 in. NPT or SAE ORB
Working Pressure Options (Liquid)	3000 or 5000 psi
Working Pressure Options (Gas)	2000 or 4000 psi
Return Port Pressure	250 psi (Max) ¹
Proof Pressure	1.5X Working Pressure
Burst Pressure	2X Working Pressure
Cv Factor	21.0
Rated Flow	180 gpm
Temp Rating	-40 to 250°F
Fluid Media	Hydraulic oil or lubricated water ²
Weight	See Installation Drawings

Materials

ShearFlo Sealing Components (Rotor and Seal Rings)	400 series SS Hardened ²
Shaft	400 series SS
Body	400 series SS
Housing	Carbon Steel
Handle, Detent Disc and Spacers, Hardware	Plated Carbon Steel
O-rings	Buna-N (N), Viton (V), or EPR (E)
Backup Rings	Teflon

¹ Full rated pressure (3000 or 6000 psi) with All Blocked Rotor option

² For water based media, special alloy seal rings may be required - Contact PacSeal for details

Valve Shift Options

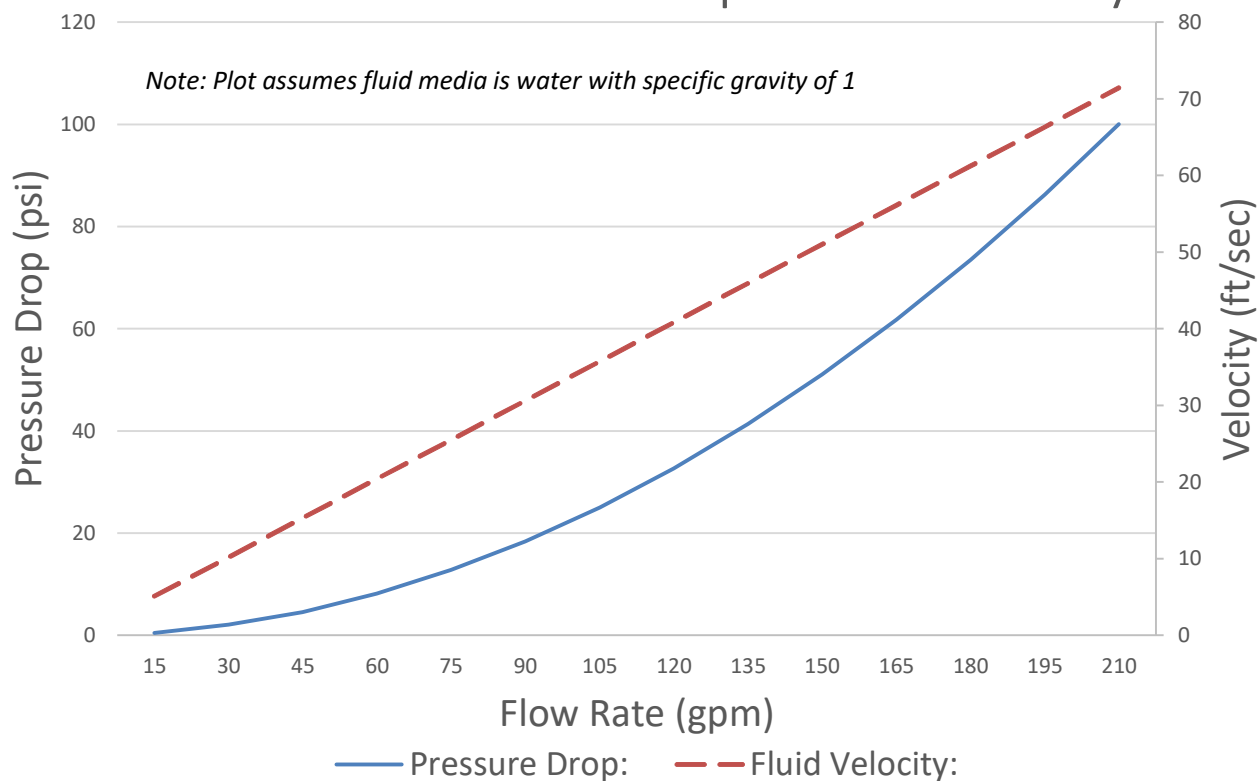
Detent Pattern	Valve Options
3-Position (4-way)	All options
2-Position 90° (4-way)	All options
2-Position 45° CW or CCW (3-way)	Selector, Manipulator, Open Center

Rotor Flow Options

Rotor Configuration	Center Position	CW or CCW Position
Manipulator	Cylinders drain to tank and pressure port blocked	Operates a cylinder port while the opposite port is returned to tank
Selector	Return port is open while cylinder and pressure ports are blocked	Operates a cylinder port while the opposite port is returned to tank
Bypass	Return port is open while cylinder and pressure ports are blocked	Operates a cylinder port while the opposite port is blocked
Open Center	Cylinder ports blocked while pressure and return ports are connected	Operates a cylinder port while the opposite port is returned to tank
All Blocked	All ports blocked. Case Drain Required	Operates a cylinder port while the opposite port is returned to tank



SV-150 Valve Pressure Drop and Fluid Velocity



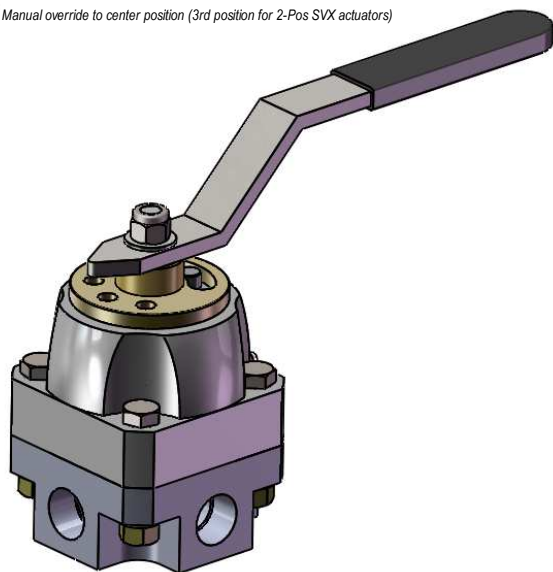
SV-150 Handle Torque (lb.-in.)

<u>Rotor Type</u>	<u>At 1500 psi</u> <u>Supply Pressure</u>	<u>At 3000 psi</u> <u>Supply Pressure</u>	<u>At 5000 psi</u> <u>Supply Pressure</u>
<i>Selector</i>	300	420	480
<i>Bypass*</i>	550	720	900

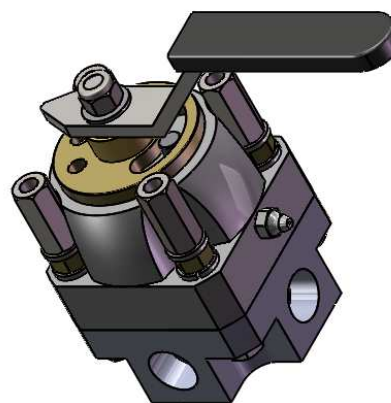
**Note: Higher torque is a result of having two supply pressures from C1 and C2*

Model Number Configurator

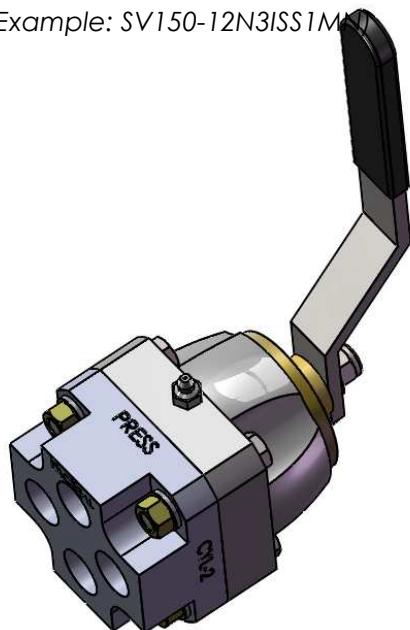
Basic Size	Port Size	Type of Ports	Pressure Rating	Port Location	Bolts	Rotor Flow Pattern	Valve/Actuator Positions	Actuation Type	Handle	O-Ring	Actuator Cylinder Orientation ²	Nameplate Add-on
SV150-	12 1-1/2"	N NPT	3 3000	I Inline / Side	S Std Short	S Selector	1 3-Pos.	None (leave blank)	M Standard Manual	N Buna-N	None (leave blank)	-0 Blank
		S SAE	5 5000	B Bottom	L Long	O Open Center	2 2-Pos. 90°	A Air	R Actuator Cylinder	V Viton	L Left Mount	
		M Manifold			P Panel Mount	M Manipulator	3 2-Pos. 45° CW	H Hydraulic	S Spring Centered	E EPR	R Right Mount	
		B Subplate ¹			N None ³	B Bypass	4 2-Pos. 45° CCW		L Pin Lock Detent			
						A All Blocked ¹			W Wing Handle			
SVX150-	12 1-1/2"	N NPT	3 3000	I Inline / Side		S Selector	1 2-Pos. 90°	A Air - Direct Piloted	S Straight ²	N Buna-N		-0 Blank
		S SAE	5 5000	B Bottom		O Open Center	2 2-Pos. 45° CW	H Hydraulic - Direct Piloted	W Wing ⁵	V Viton		
		M Manifold			N/A	M Manipulator	3 3-Pos. 90°	R Air - Solenoid Piloted	N Indicator ⁴	E EPR	N/A	
		B Subplate ¹				B Bypass	4 3-Pos. 90° - Spring Centered	U Hydraulic - Solenoid Piloted				
						A All Blocked ¹	5 2-Pos. 45° CCW					
							6 2-Pos. 45° CW - Spring Centered					
							7 2-Pos. 45° CCW - Spring Centered					

¹ Not a standard Option² Use only if Actuator Cylinder is selected³ For Manifold Mount Option⁴ No manual override⁵ Manual override to center position (3rd position for 2-Pos SVX actuators)

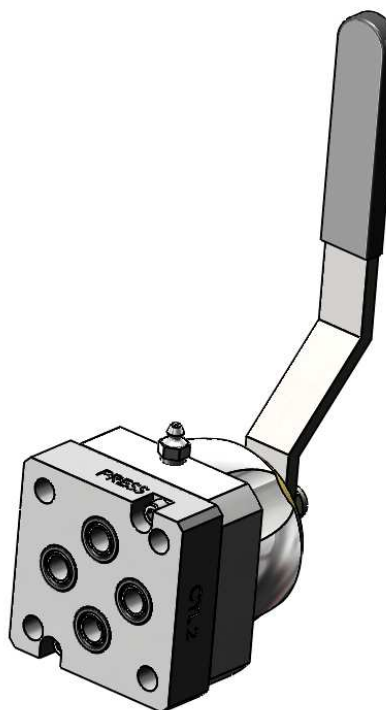
SV-150 Inline Ported
(Example: SV150-12N3ISS1MN)



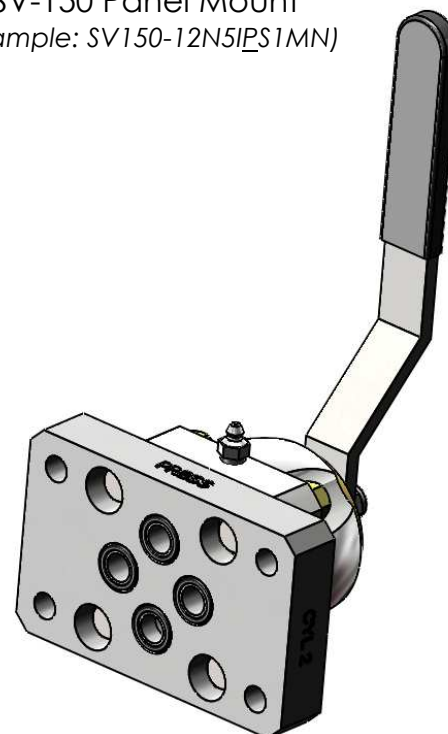
SV-150 Panel Mount
(Example: SV150-12N5IPS1MN)



SV-150 Bottom Ported
(Example: SV150-12N3BSS1MN)



SV-150 Manifold Ported
(Example: SV150-12M3BSS1MN)



SV-150 Subplate Ported
(Example: SV150-12B3BSS1MN)



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TITLE

Porting
Configurations
Overview

SIZE

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REV

3

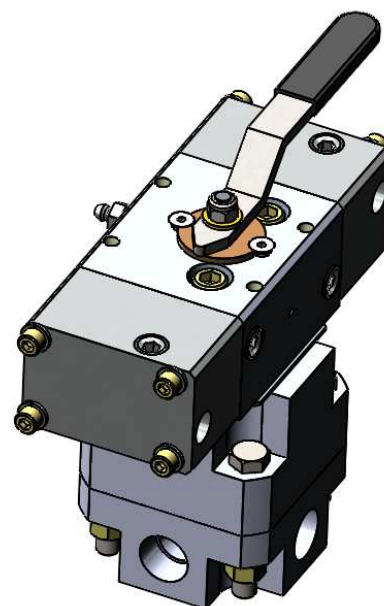
SHEET 4 OF 14

Model Number Configurator

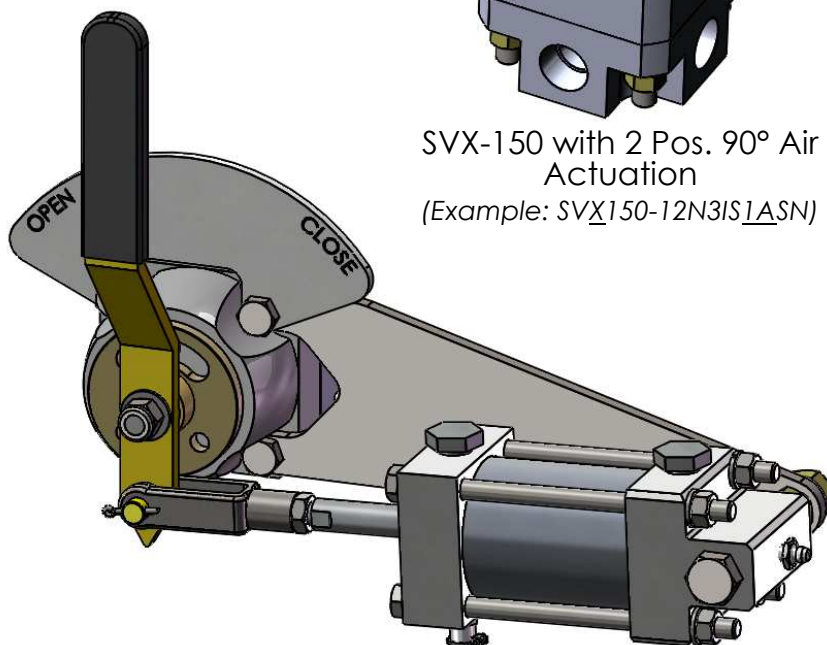
Basic Size	Port Size	Type of Ports	Pressure Rating	Port Location	Bolts	Rotor Flow Pattern	Valve/Actuator Positions	Actuation Type	Handle	O-Ring	Actuator Cylinder Orientation ²	Nameplate Add-on
SV150-	12 1-1/2"	N NPT	3 3000	I Inline / Side	S Std Short	S Selector	1 3-Pos.	None (leave blank)	M Standard Manual	N Buna-N	None (leave blank)	-0 Blank
		S SAE	5 5000	B Bottom	L Long	O Open Center	2 2-Pos. 90°	A Air	R Actuator Cylinder	V Viton	L Left Mount	
		M Manifold			P Panel Mount	M Manipulator	3 2-Pos. 45° CW	H Hydraulic	S Spring Centered	E EPR	R Right Mount	
		B Subplate ¹			N None ³	B Bypass	4 2-Pos. 45° CCW		L Pin Lock Detent			
						A All Blocked ¹			W Wing Handle			
SVX150-	12 1-1/2"	N NPT	3 3000	I Inline / Side		S Selector	1 2-Pos. 90°	A Air - Direct Piloted	S Straight ⁵	N Buna-N		-0 Blank
		S SAE	5 5000	B Bottom		O Open Center	2 2-Pos. 45° CW	H Hydraulic - Direct Piloted	W Wing ⁵	V Viton		
		M Manifold			N/A	M Manipulator	3 3-Pos. 90°	R Air - Solenoid Piloted	N Indicator ⁴	E EPR	N/A	
		B Subplate ¹				B Bypass	4 3-Pos. 90° -	U Hydraulic - Solenoid Piloted				
						A All Blocked ¹	Spring Centered					

¹ Not a standard Option² Use only if Actuator Cylinder is selected³ For Manifold Mount Option⁴ No manual override⁵ Manual override to center position (3rd position for 2-Pos SVX actuators)

SV-150 with Pin Lock Detent
(Example: SV150-12N5ISM1LN)



SVX-150 with 2 Pos. 90° Air Actuation
(Example: SVX150-12N3IS1ASN)



SV-150 with Air Cylinder Actuator
(Example: SV150-12N3ISS1RN-AR0)

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TITLE

**Operator
Configurations
Overview**

SIZE

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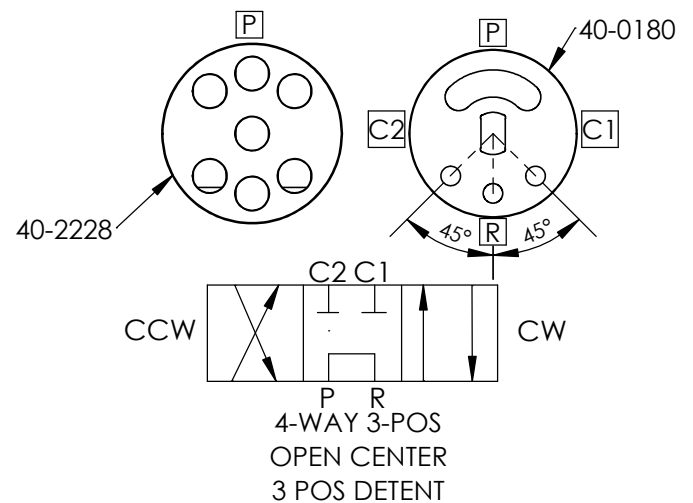
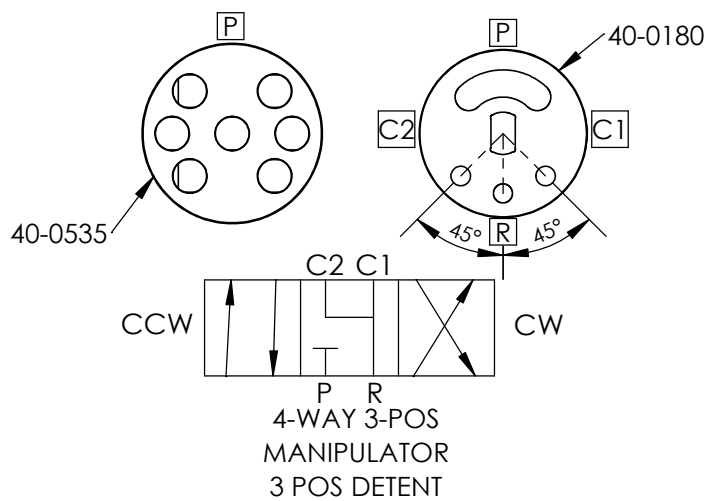
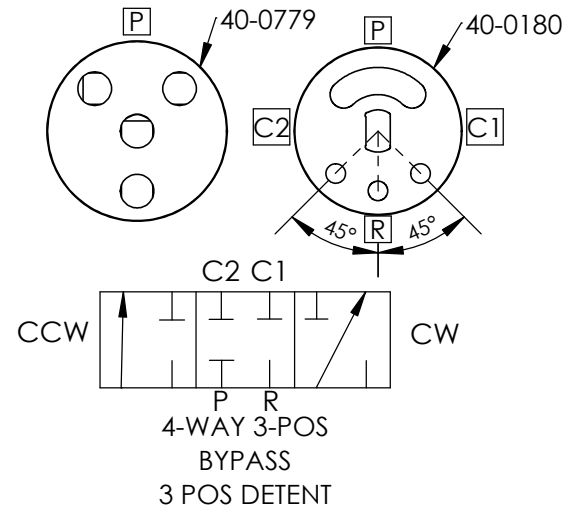
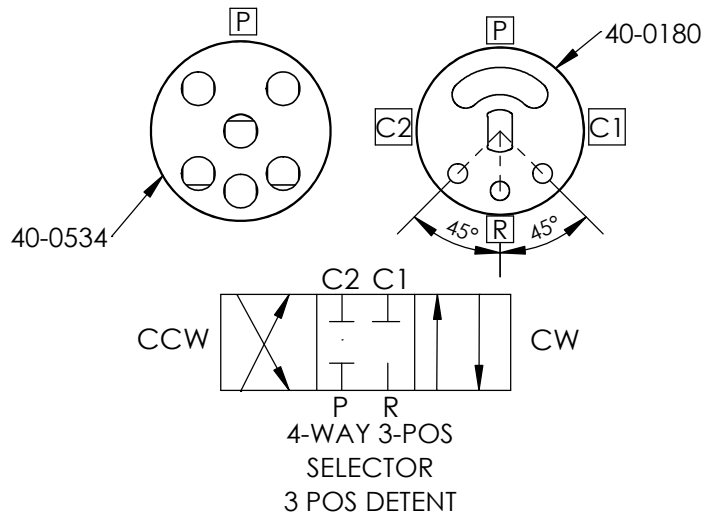
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SHEET 5 OF 14

Notes:

1. Rotor and Detent Disc Part No.'s displayed

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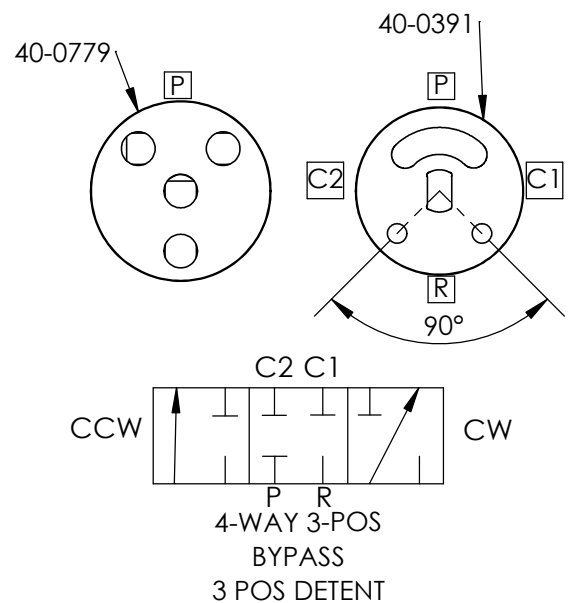
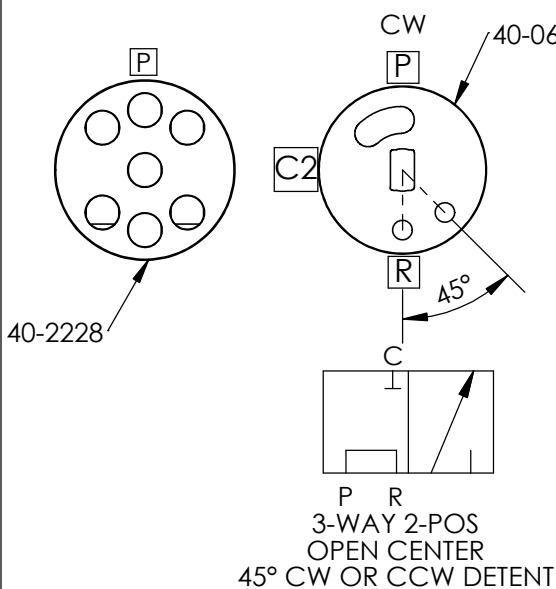
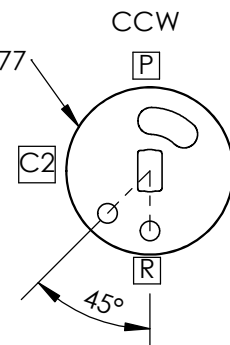
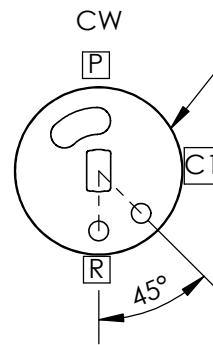
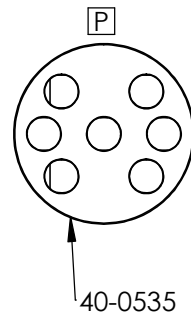
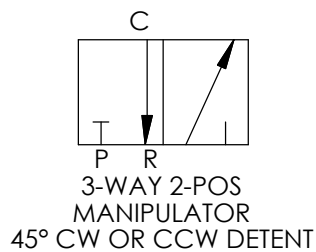
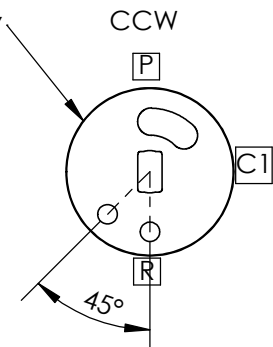
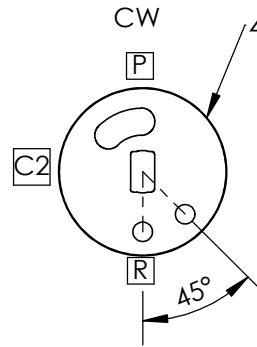
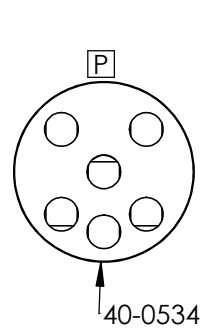
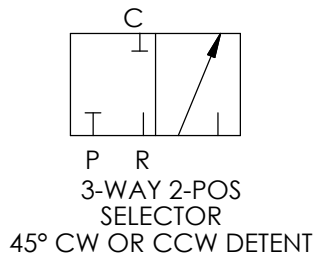
**SV-150 Rotor Flow
and Detent Disc
3-Position Options**

SIZE**A****REV****3**

SHEET 6 OF 14

Notes:

- Rotor and Detent Disc Part No.'s displayed



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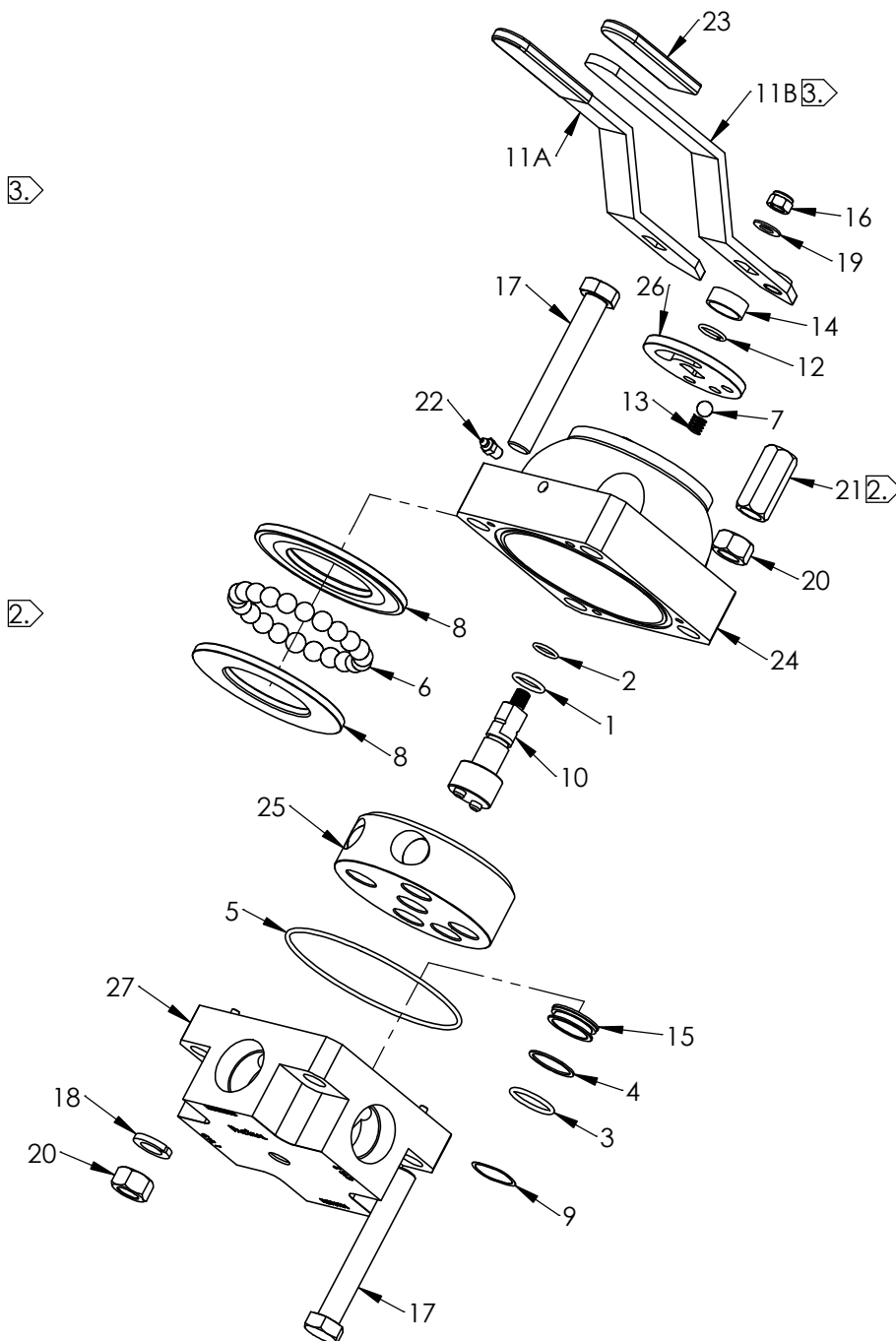
TITLE
**SV-150 Rotor Flow
and Detent Disc
2-Position Options**

SIZE A	REV 3
SHEET 7 OF 14	

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	23-1122	O-Ring	1
2	23-1352	O-Ring	1
3	23-1417	O-Ring	3
4	23-1418	Backup Ring	3
5	23-1419	O-Ring	1
6	40-0092	Ball Bearing	22
7	40-0174	Ball Bearing	1
8	40-0226	Thrust Washer	2
9	40-0239	Wave Spring	3
10	40-0276	Shaft	1
11A	40-0281	Handle, Manual	1
11B	40-0284	Handle, Remote	1
12	40-0288	Retaining Ring	1
13	40-0295	Spring	1
14	40-0773	Spacer, Handle	1
15A	40-2203	Seal Ring (3 ksi)	3
15B	40-3272	Seal Ring (6 ksi)	3
16	50-0093	Nut, Shaft	1
17	50-0102	Bolt	4
18	50-0105	Lock Washer	4
19	50-0108	Washer, Shaft	1
20	50-0111	Nut	4
21	50-0116	Nut, Panel Mount	4
22	50-0176	Grease Fitting	1
23	50-0236	Grip, Handle	2
24	40-0354	Housing	1
25	Note 3	Rotor	1
26	Note 3	Detent Disc	1
27	Note 4	Body	1

Notes:

- Standard Inline Ported SV-150 shown for illustration purposes. (Refer to Model Configuration for options.)
- Panel Mount Option.
- Remote Handle Option.
- See sheets 6-7 "Rotor and Detent Shift Options" for replacement parts.
- See sheet 9 "SV-150 Porting Options" for Body option part numbers.
- See sheets 10-14 for other operator and actuator options.
- Contact PacSeal for Viton or EPR O-rings.
- Refer to SV-150 Maintenance Instructions for more details.



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TITLE

**SV-150
General Assembly
Overview**

SIZE

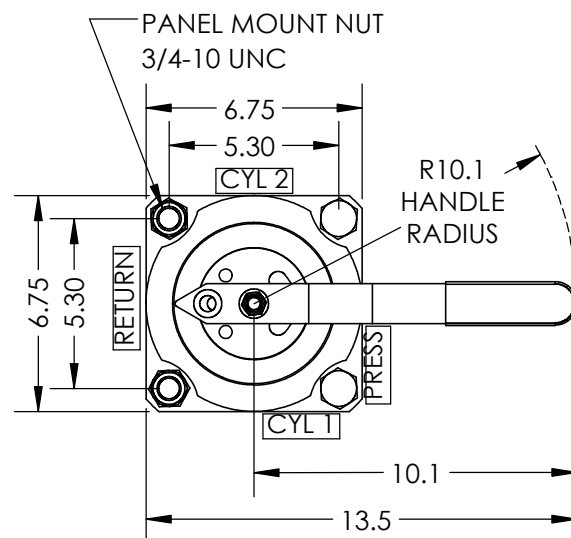
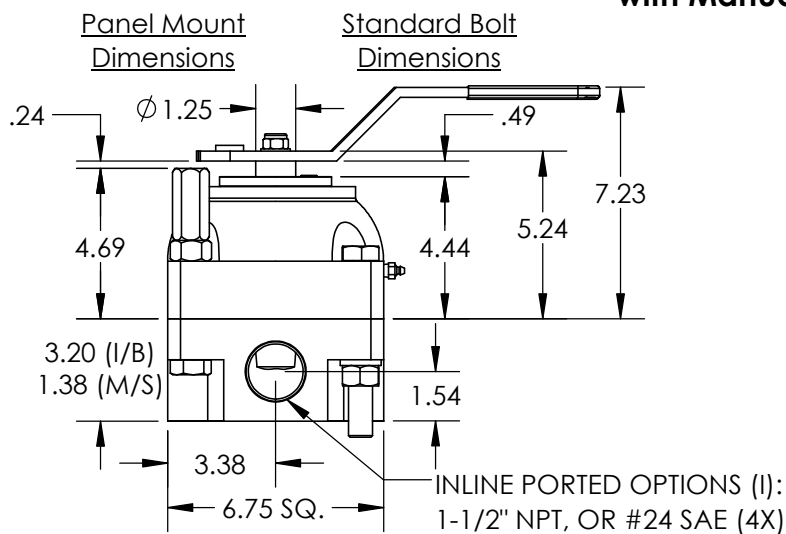
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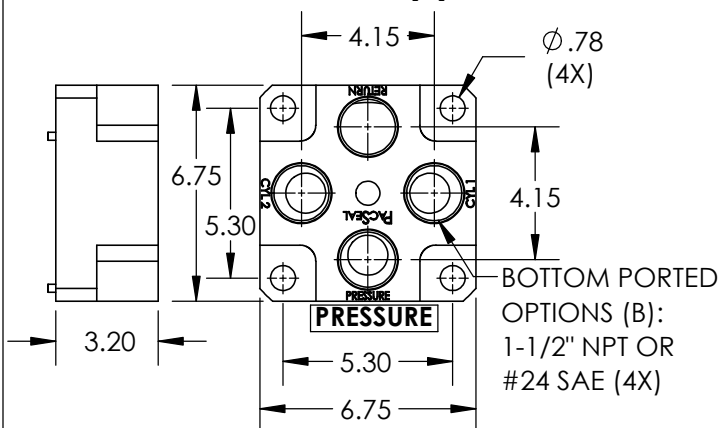
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SHEET 8 OF 14

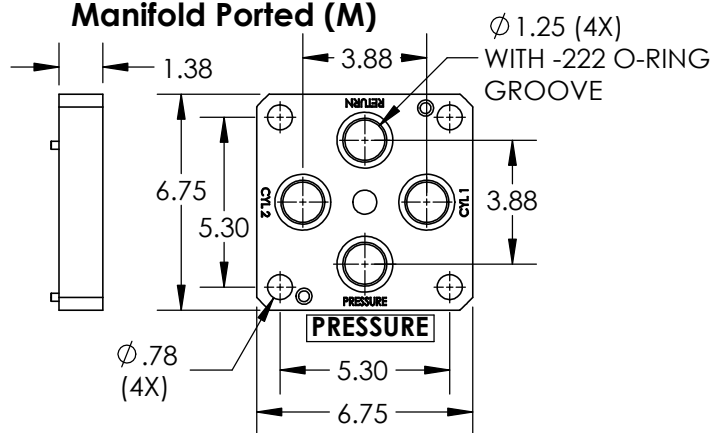
NPT or SAE Inline Ported (I) with Manual Operator



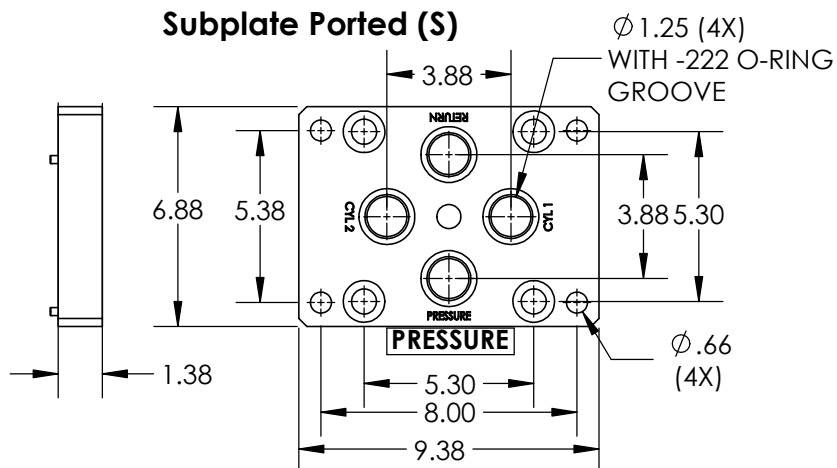
NPT or SAE Bottom Ported (B)



Manifold Ported (M)



Subplate Ported (S)



Body Option Part Numbers

Body Type	NPT Body Part No.	SAE Body Part No.
Inline (I)	40-2206	40-1092
Bottom (B)	40-3759	N/A
Manifold (M)	40-1080	
Subplate (S)	40-3925	

Weight (lb.) of Manual Valve Porting Option

Inline (I)	65
Bottom (B)	65
Manifold (M)	54
Subplate (S)	76

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TITLE
**SV-150 Porting Options
with Manual Operator
Installation Drawing**

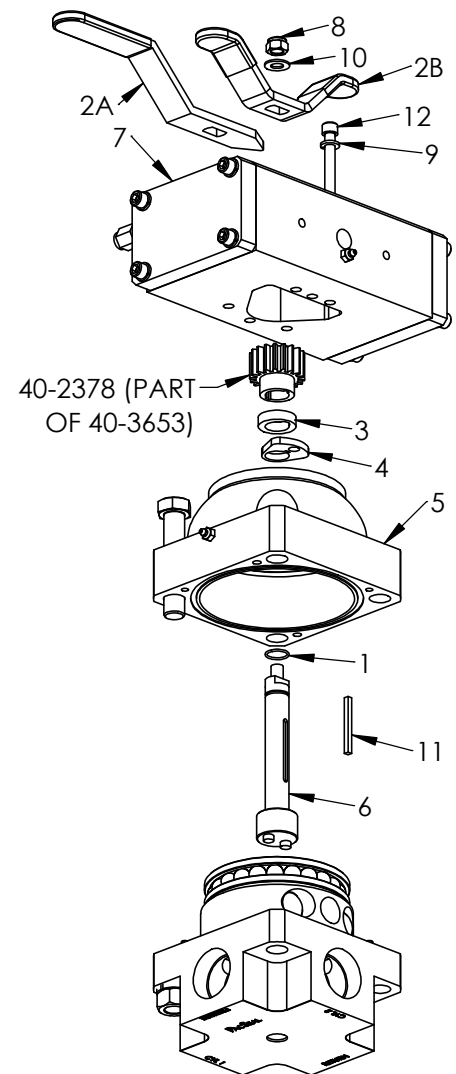
SIZE
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REV
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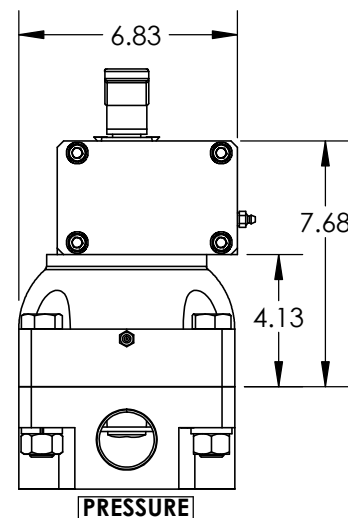
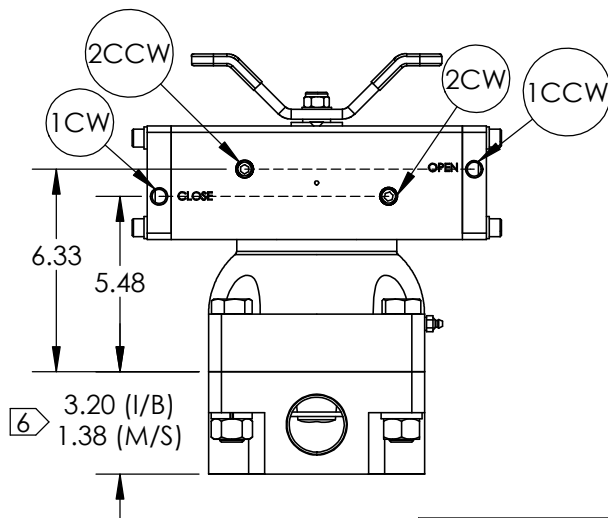
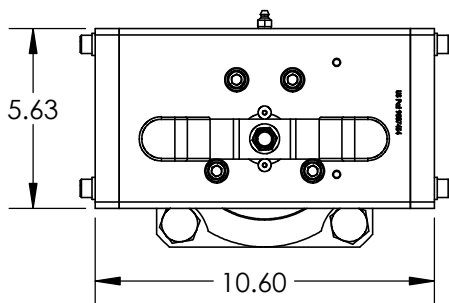
SHEET 9 OF 14

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	23-1326	O-Ring	1
2A	40-1447	Straight Handle	1
2B	40-2746	Wing Handle	1
3	40-2299	Shaft Bushing, SVx-150	1
4	40-2381	Detent, SVx-100	1
5	40-3110	Housing, SVx-150	1
6	40-3480	Shaft, SVx-150	1
7	40-3653	Air Actuator Assy, SVX-150	1
8	50-0093	Nut, Shaft	1
9	50-0103	Lock Washer	4
10	50-0108	Washer, Shaft	1
11	50-0507	Key	1
12	50-0526	Bolt	4

1/4 NPT Air Inlet Porting Location Options	
Clockwise (CW) Option #	Counter-Clockwise (CCW) Option #
1CW	1CCW
2CW	2CCW

**Notes:**

- Model displays SVX with 2-Position 90° Direct Air actuation.
- Center (3rd) position is accomplished with manual override.
- Air Actuator working pressure - 80 to 150 psi
- Actuator material - Aluminum (anodized)
- Retrofitting an existing valve is not an option.
- See "SV-150 Porting Options with Manual Operator Installation Drawing" (sheet 9) for installation dimensions of other porting options.
- Solenoid piloted porting option not shown.

**Weight (lb.) of Valve Porting Options**

Inline (I)	80
Bottom (B)	80
Manifold (M)	69
Subplate (S)	91

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TITLE **SVX-150 2-Position 90° Direct Air Actuation Installation and Assembly Drawing**

SIZE **A**

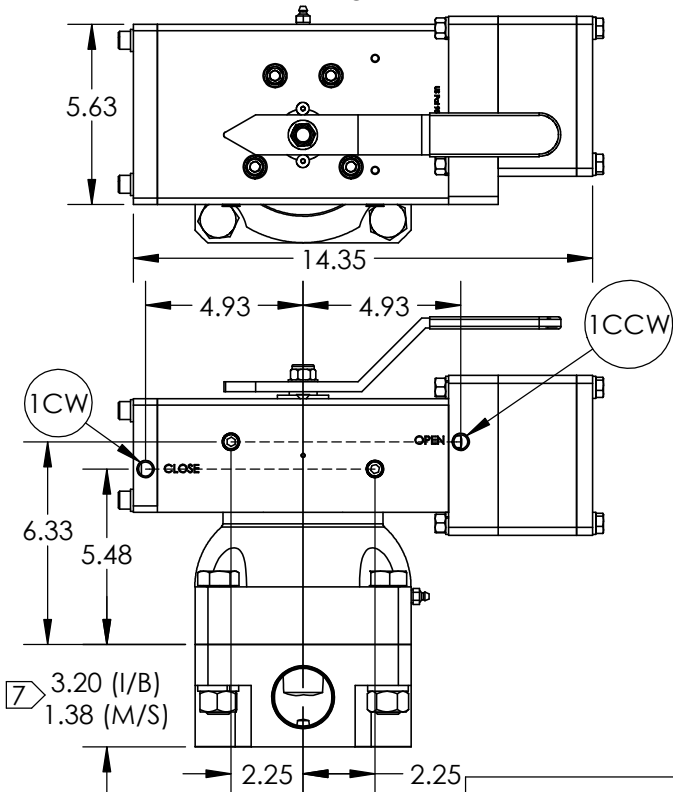
REV **3**

SHEET 11 OF 14

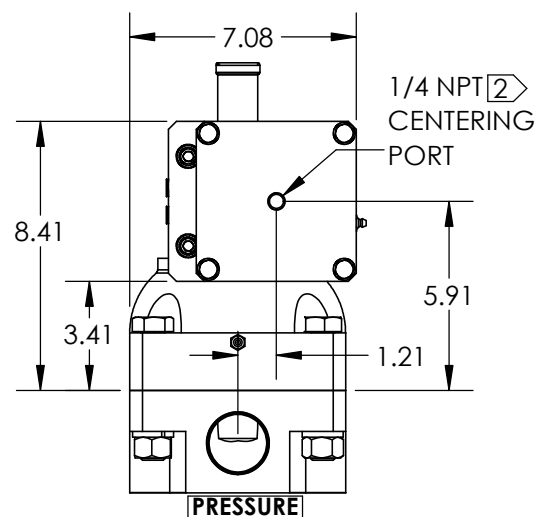
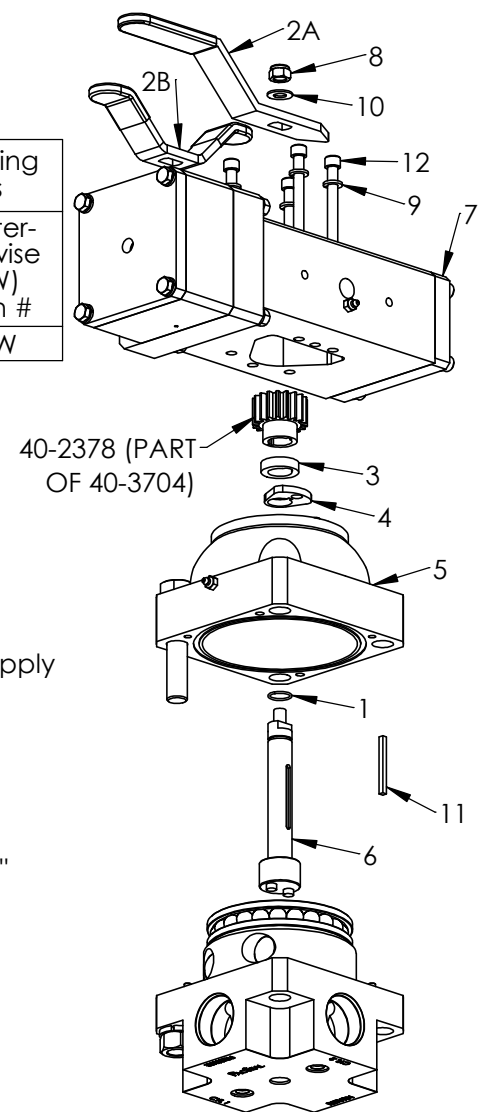
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	23-1326	O-Ring	1
2A	40-1447	Straight Handle	1
2B	40-2746	Wing Handle	1
3	40-2299	Shaft Bushing, SVx-150	1
4	40-2381	Detent, SVx-100	1
5	40-3110	Housing, SVx-150	1
6	40-3480	Shaft, SVx-150	1
7	40-3704	3-Pos Air Actuator Assy, SVx-150	1
8	50-0093	Nut, Shaft	1
9	50-0103	Lock Washer	4
10	50-0108	Washer, Shaft	1
11	50-0507	Key	1
12	50-0526	Bolt	4

Notes:

- Model displays SVX with 3-Position 90° Direct Air actuation.
- For center position, first apply air pressure to "CENTERING PORT", then apply air pressure to a "CW" port.
- For 2-position operation, apply air to "CW" and "CCW" ports only.
- Air Actuator working pressure - 80 to 150 psi
- Actuator material - Aluminum (anodized)
- Retrofitting an existing valve is not an option.
- See "SV-150 Porting Options with Manual Operator Installation Drawing" (sheet 9) for installation dimensions of other porting options.
- Solenoid piloted porting option not shown.



1/4 NPT Air Inlet Porting Location Options	
Clockwise (CW) Option #	Counter-Clockwise (CCW) Option #
1CW	1CCW

**Weight (lb.) of Valve Porting Options**

Inline (I)	92
Bottom (B)	92
Manifold (M)	81
Subplate (S)	103

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TITLE **SVX-150 3-Position 90° Direct Air Actuation Installation and Assembly Drawing**

SIZE **A**

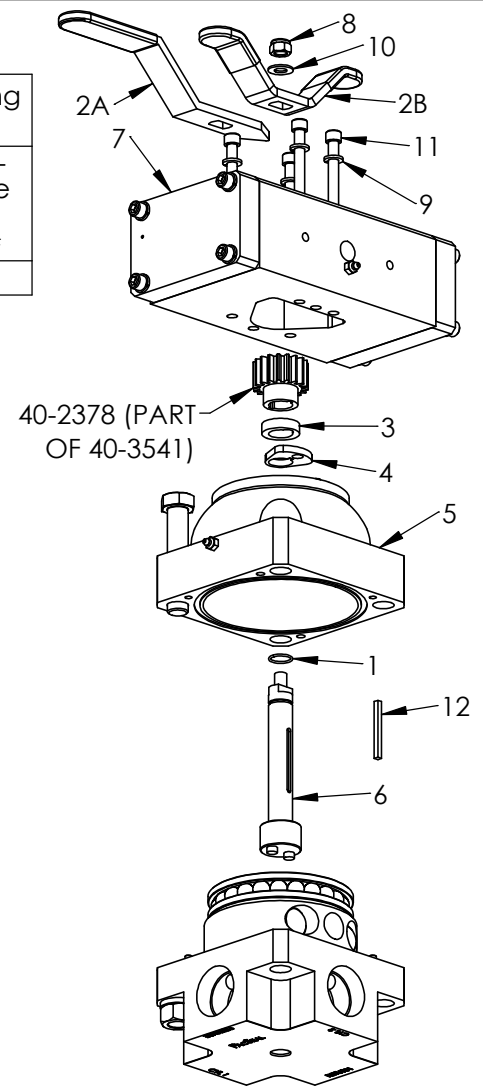
REV **3**

SHEET 12 OF 14

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	23-1326	O-Ring	1
2A	40-1447	Straight Handle	1
2B	40-2746	Wing Handle	1
3	40-2299	Shaft Bushing, SVx-150	1
4	40-2381	Detent, SVx-100	1
5	40-3110	Housing, SVx-150	1
6	40-3480	Shaft, SVx-150	1
7	40-3541	Actuator Assy	1
8	50-0093	Nut, Shaft	1
9	50-0103	Lock Washer	4
10	50-0108	Washer, Shaft	1
11	50-0229	Bolt	4
12	50-0507	Key	1

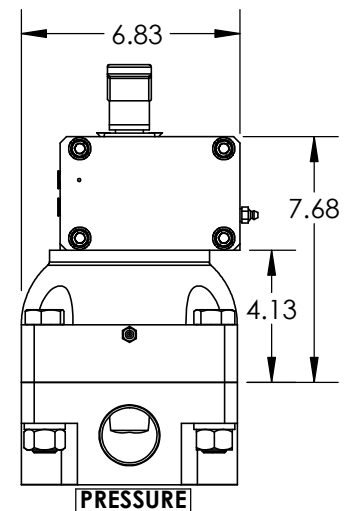
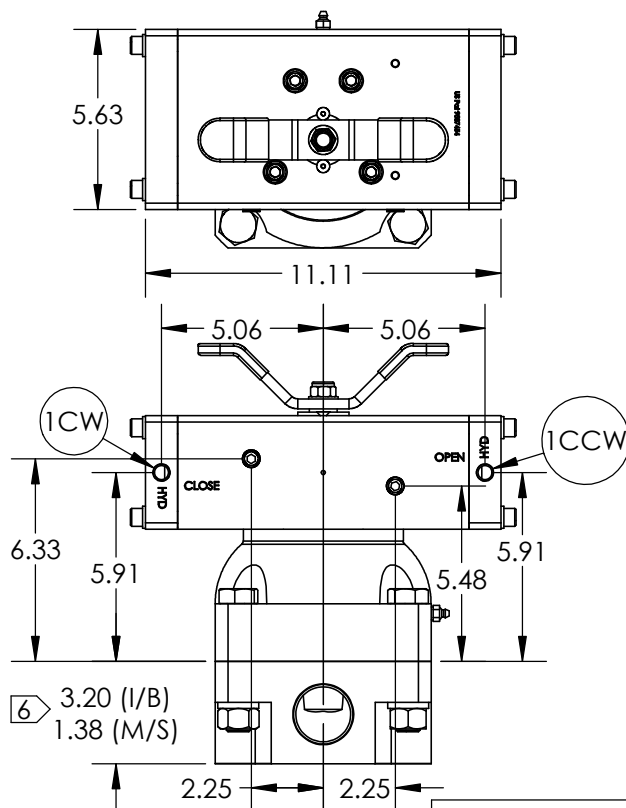
1/4 NPT Hyd. Inlet Porting
Location Options

Clockwise (CW) Option #	Counter- Clockwise (CCW) Option #
1CW	1CCW



Notes:

- Model displays SVX with 2-Position 90° Direct Hydraulic actuation.
- Center (3rd) position is accomplished with manual override.
- Hydraulic Actuator working pressure 800 to 1500 psi
- Actuator material - Aluminum (anodized)
- Retrofitting an existing valve is not an option.
- See "SV-150 Porting Options with Manual Operator Installation Drawing" (sheet 9) for installation dimensions of other porting options.
- Solenoid piloted porting option not shown.



Weight (lb.) of Valve
Porting Options

Inline (I)	80
Bottom (B)	80
Manifold (M)	69
Subplate (S)	91

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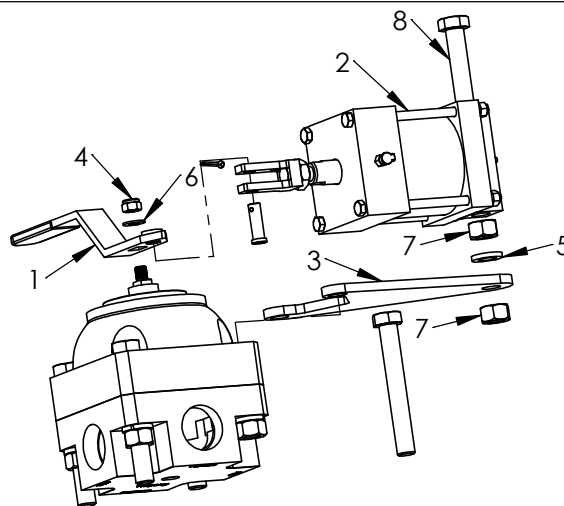
TITLE **SVX-150 2-Position 90°
Direct Hydraulic
Actuation Installation
and Assembly Drawing**

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A

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3

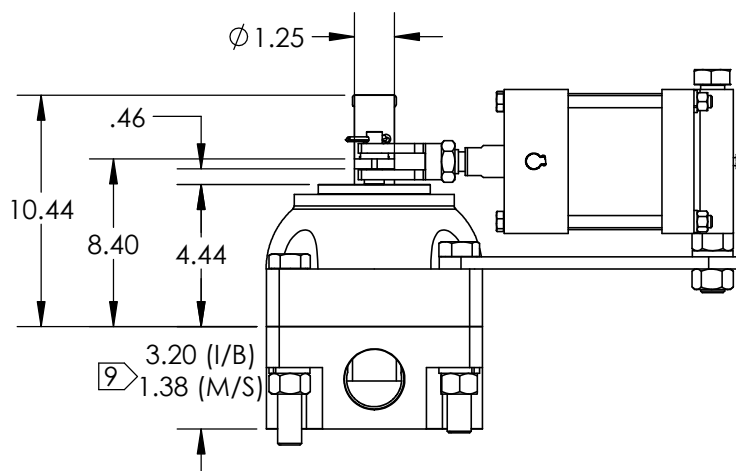
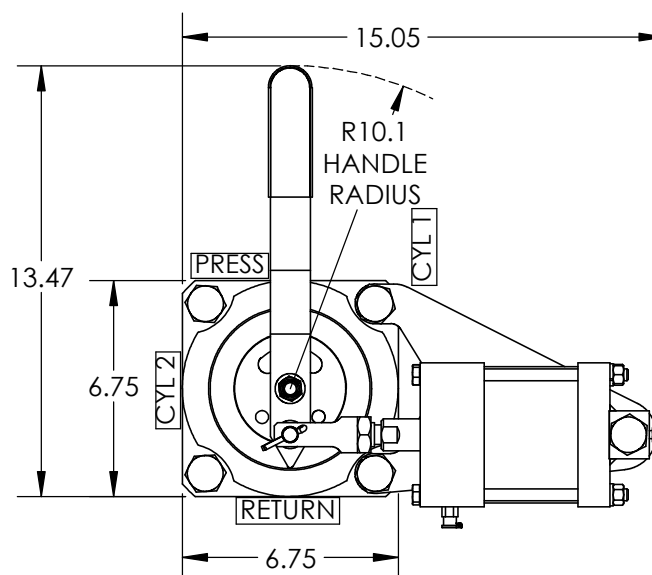
SHEET 13 OF 14

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	40-0284	Handle, Remote	1
2	40-1604	Air Actuator Cylinder Assembly, AAC-402	1
3	40-2307	Bracket	1
4	50-0093	Nut, Shaft	1
5	50-0105	Lock Washer	1
6	50-0108	Washer, Shaft	1
7	50-0111	Nut	2
8	50-0380	Bolt	1



Notes:

1. Model displays Right Mounted Air Cylinder Actuator
2. Cylinder Positions - 2
3. Cylinder Air working pressure - 80 to 150 psi
4. Cylinder Rating - 250 psi
5. Cylinder Stroke - 2.13 in.
6. Cylinder Bore/Rod - 4 x 1 in.
7. Actuator Material - Aluminum (anodized)
8. See "SV-150 Porting Options with Manual Operator Installation Drawing" (sheet 9) for installation dimensions of other porting options.



Weight (lb.) of Valve Porting Options

Inline (I)	91
Bottom (B)	91
Manifold (M)	80
Subplate (S)	102

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TITLE

**SV-150 Air
Cylinder Actuator**

SIZE

A

REV

3

SHEET 14 OF 14