

Press Industry Solutions

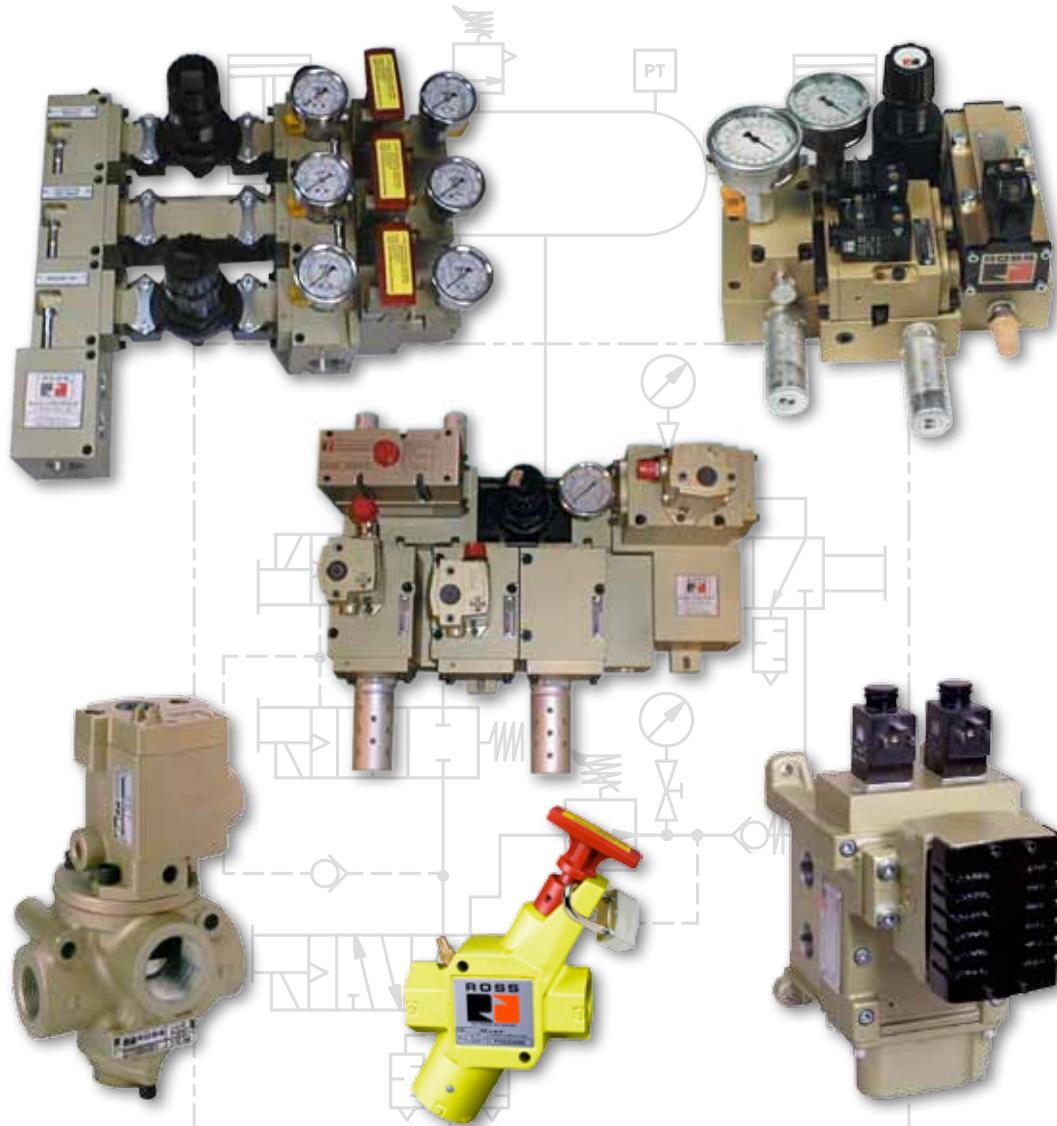
Lösungen für die Pressenindustrie

プレス・インダストリー・ソリューション

दबाव उद्यम समाधान

Soluções para Pressas

鍛压工业解决方案



• **Manufacturers of Premium Pneumatic Controls since 1921** •



Consider it **DONE!**

Pneumatic Press Applications

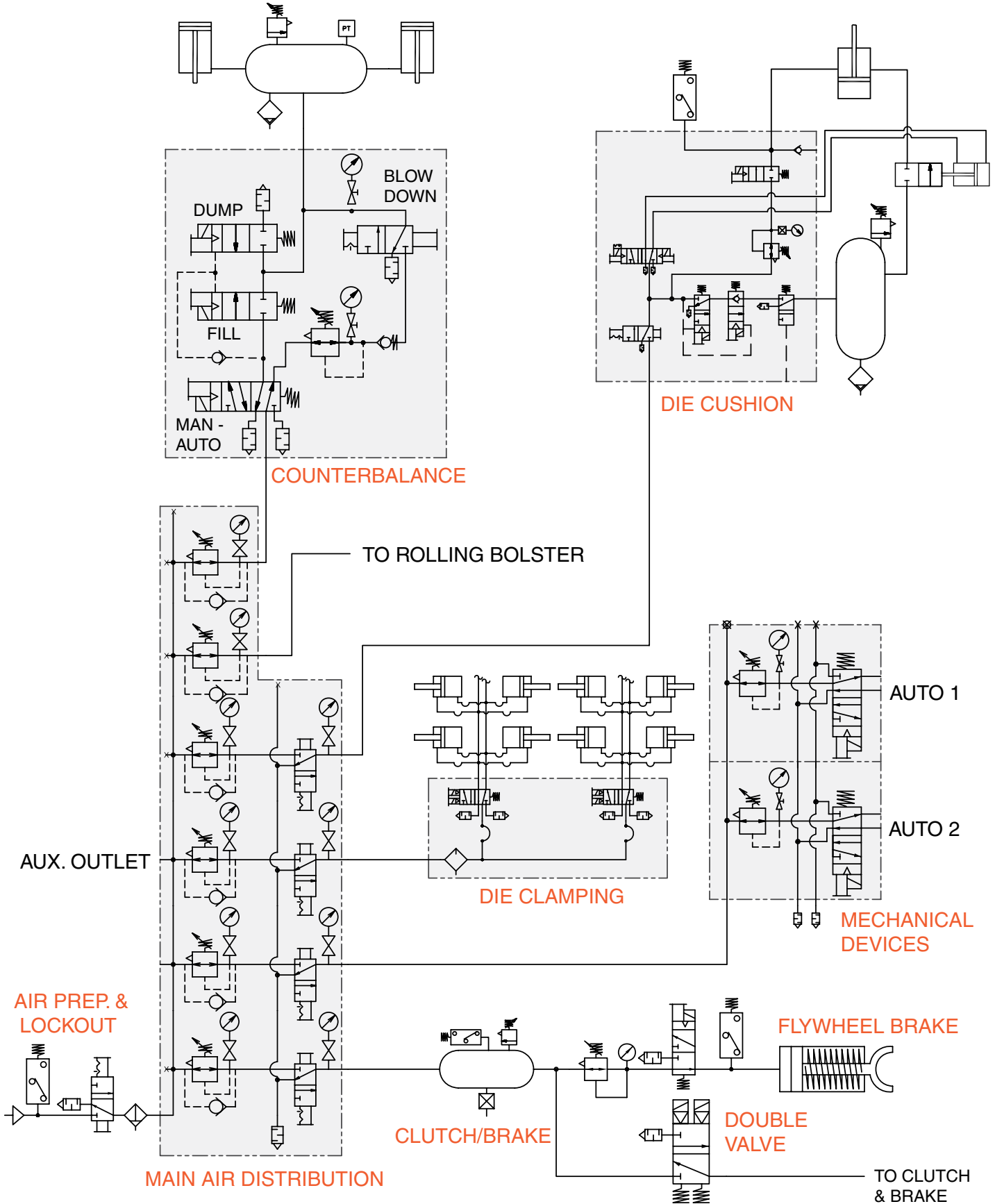


Table of Contents

Main Air Entry <i>Zentrale Luftspeisung</i> メインエアーエントリー मुख्य हवा प्रवेश <i>Entrada Principal de Ar</i> 主进气口	High Capacity Filters (pg. 4)
	High Capacity Regulators (pg. 5)
	L-O-X® Valves (pg. 6-7)
Air Distribution <i>Luftverteilung</i> エアーディストリビューション हवा वितरण <i>Distribuição de Ar</i> 气流分配	Standard Size 12 - 3/4" Port (pg. 8)
	Standard Size 20 - 1" Ports (pg. 9)
	Economy Size 8 & 12 - 1/2" to 3/4" Ports (pg. 10 - 12)
Automatic Systems <i>Automatische Systeme</i> 自動化システム स्वचालित प्रणालियाँ <i>Sistemas Automáticos</i> 自动系统	Counterbalance (pg. 13 - 14)
	Die Cushion (pg. 15)
	Die Clamping (pg. 15)
Automation Valves <i>Automatisierungsventile</i> オートメーションバルブ स्वचालित वाल्व <i>Válvulas para Automação</i> 自动化阀门	Flywheel Brake Mechanical Devices (pg. 16) Part Ejection
Clutch/Brake <i>Kupplung/Bremse</i> クラッチ/ブレーキ पंजा / गतिरोधक <i>Embreagem/Freio</i> 离合器/制动器	DM²⁰ Double Valves (pg. 17 - 19)
	SERPAR® Double Valves (pg. 20 - 21)
	Crossflow® Double Valves (pg. 22)
	5/2 CROSSMIRROR Double Valves (pg. 23)
Accessories <i>Zubehör</i> アクセサリ सहायक उपकरण <i>Acessórios</i> 辅助配件	Check Valves, Silencers, Silencers Kits (pg. 24)
	Ball Valves, Gauges, Pressure Switches, Transducers, etc. (pg. 25 - 26)
Cautions and Warranty	(pg. 27)

High-Capacity Filters

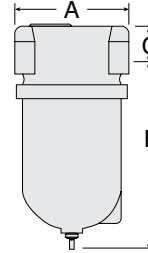
Filter • フィルター • छलनियों • Filtros • 过滤器

Ports: **3/4 & 1**
Flow to 275 scfm

Ports: **1 1/4, 1 1/2, & 2**
Flow to 1000 scfm



- **FEATURES:**
- Inline mounting
- High-strength polycarbonate plastic filter bowl with steel shatterguard; optional metal bowl with clear nylon sight glass
- Internal automatic drain; optional manual drain or external automatic drain
- NPTF port threads; optional SAE or BSPP threads

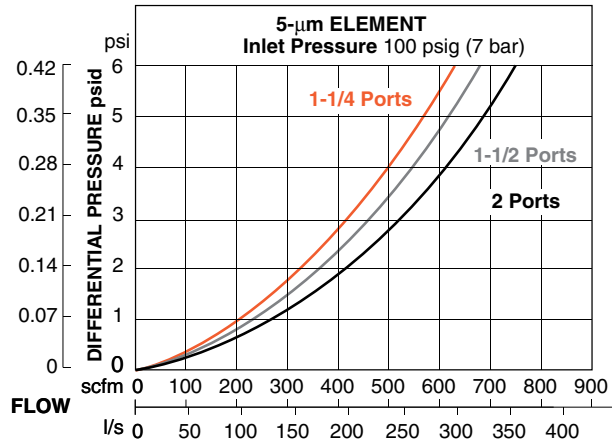
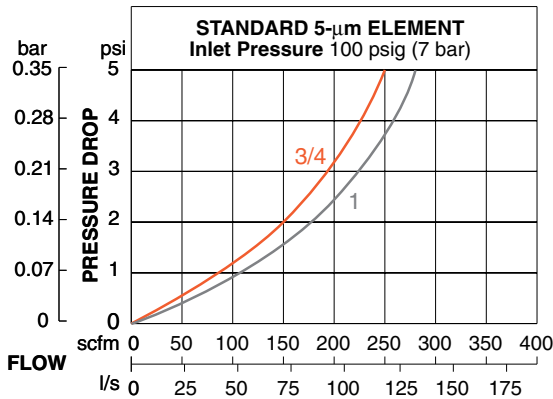


Port* Size	Air Flow scfm (l/s)	Bowl Material	Model Number*		Dimensions inches (mm)			Depth	Weight lb (kg)
			Automatic Drain	Manual Drain	A	B	C		
3/4	250 (120)	Plastic ††	5021B5008	5011B5008	4.5 (114)	8.0 (203)	0.8 (21)	4.2 (106)	2.44 (1.11)
3/4	250 (120)	Metal	5022B5005	5012B5006	4.5 (114)	8.3 (210)	0.8 (21)	4.2 (106)	3.25 (1.48)
1	275 (130)	Plastic ††	5021B6008	5011B6008	4.5 (114)	8.0 (203)	0.8 (21)	4.2 (106)	2.44 (1.11)
1	275 (130)	Metal	5022B6005	5012B6006	4.5 (114)	8.3 (210)	0.8 (21)	4.2 (106)	3.25 (1.48)
1 1/4	700 (330)	Metal	5X00B7025 †	5X00B7054	8.0 (203)	13.3 (337)	1.8 (45)	7.3 (186)	14.3 (6.59)
1 1/2	770 (363)	Metal	5X00B8018 †	5X00B8019	8.0 (203)	13.3 (337)	1.8 (45)	7.3 (186)	14.3 (6.59)
2	825 (390)	Metal	5X00B9004 †	5X00B9003	8.0 (203)	13.3 (337)	1.8 (45)	7.3 (186)	14.3 (6.59)

† With automatic external drain, dimension B is increased by 8.0 inches (203 mm), and weight is increased by 2.56 pounds (1.16 kg).

†† Plastic bowls include metal bowl guard.

*NPT threads, standard. For BSPP threads, add the letter "C" in front of the model number.



STANDARD SPECIFICATIONS:

Ambient/Media Temperature:

Plastic Bowl: 40° to 125°F (4° to 52°C).

Metal Bowl: 40° to 175°F (4° to 79°C).

Body: Aluminum.

Bowl capacity :

3/4 & 1: 16-ounce (480-ml).

1 1/4, 1 1/2 & 2: 123-ounce (3700-ml).

Bowl Drain: Internal automatic drain; optional manual drain or external automatic drain. Consult ROSS for optional internal float drain (on polycarbonate plastic bowl only).

Bowl Ring: Aluminum.

Filter Element:

3/4 & 1: 5-micron rated.

1 1/4, 1 1/2 & 2: 40-micron-rated; optional 5-micron-rated element.

Fluid Media: Compressed air.

For automatic drain model:

With plastic bowl: 15 to 150 psig (1 to 10 bar).

With metal bowl: 15 to 200 psig (1 to 14 bar).

For internal float drain model (1 1/4, 1 1/2 & 2): 30 to 200 psig (2 to 14 bar).

For manual drain model:

With plastic bowl: 0 to 150 psig (0 to 10 bar).

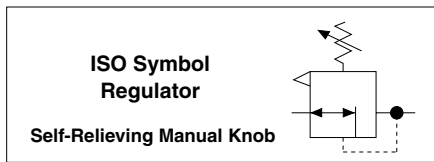
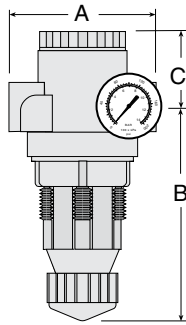
With metal bowl: 0 to 200 psig (0 to 14 bar).

Seals: Nitrile.

High-Capacity Regulators

Regler • レギュレーター • रेगुलेटरस • Reguladores • 減圧閥

Ports: 3/4, 1, 1 1/4 & 1 1/2
Flow to 800 scfm



Port Size	Dimensions inches (mm)				Weight † lb (kg)
	A	B*	C**	Depth †	
3/4, 1	4.4 (111)	6.1 (154)	2.4 (62)	2.8 (71)	2.19 (0.99)
1 1/4, 1 1/2	4.9 (124)	6.4 (162)	2.1 (54)	2.8 (71)	2.50 (1.14)

* Dome removal clearance: add 0.63 (16).

** Cap removal clearance: add 0.65 (16.5).

† Less gauge.

Regulators – Reverse Flow; Piston Type; Knob

Port Size	Air Flow scfm (l/s)	Model Number*	
		0 - 100 psi	0 - 50 psi
3/4	500 (236)	5X00B5049	5X00B5050
1	650 (300)	5X00D6003	5X00B6038
1 1/4	750 (350)	5X00C7003	5X00B7016
1 1/2	800 (380)	5X00C8001	5X00B8024

*NPT threads, standard. For BSPP threads, add the letter "C" in front of the model number.

STANDARD SPECIFICATIONS (for regulators with flow to 800 scfm):

Ambient/Media Temperature: 40° to 175°F (4° to 79°C).

Body: Aluminum.

Fluid Media: Compressed air.

Inlet Pressure: 300 psig (21 bar) maximum.

Outlet Pressure:

Manual: 0 to 100 psig (0 to 7 bar).

Remote Pilot: 0 to 200 psig (0 to 14 bar).

NOTE: Outlet pressure depends on the selection of the pilot regulator.

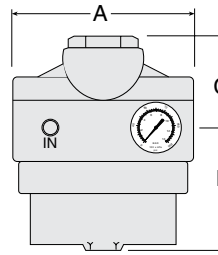
Remote Pilot Port: 1/4 NPTF.

Pressure Gauge: 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

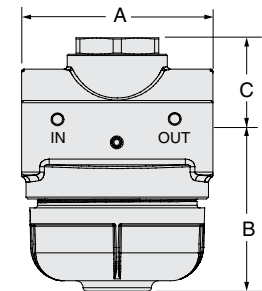
Seals: Nitrile; optional Viton.

Valve: 3/4" to 2" Ports - Brass; 3" Port - Aluminum.

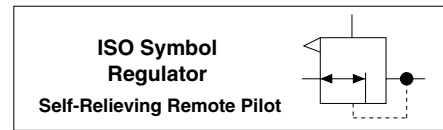
Ports: 1 1/2, 2 & 3
Flow to 4000 scfm



Port Size 1 1/2" & 2"



Port Size 3"



Port Size	Dimensions inches (mm)				Weight † lb (kg)
	A	B	C	Depth †	
1 1/2, 2	6.4 (162)	5.0 (127)	3.0 (76)	2.8 (71)	8.94 (4.06)
3	8.4 (214)	7.36 (187)	3.74 (95)	8.00 (203)	21.77 (9.88)

† Less gauge.

Regulators – Remote Pilot; Piston Type

Port Size	Air Flow scfm (l/s)	Model Number*	
		0 - 200 psi	
1 1/2	850 (400)	5211B8027	
2	850 (400)	5211B9007	
3	4000 (1900)	5211B9008	- Nitrile Seals
3	4000 (1900)	5X00B9021	- Viton Seals

*NPT threads, standard. For BSPP threads, add the letter "C" in front of the model number.

STANDARD SPECIFICATIONS (for regulators with flow to 4000 scfm):

Ambient/Media Temperature: 40° to 175°F (4° to 79°C).

Body and Dome: Aluminum.

Fluid Media: Compressed air.

Inlet Pressure: 300 psig (21 bar) maximum.

Outlet Pressure: 0 to 200 psig (0 to 14 bar).

NOTE: Outlet pressure depends on the selection of the pilot regulator.

Pilot Ports: 1/4 NPTF.

Pressure Gauge: 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

Seals: Nitrile; optional Viton.

Valve: 1 1/2" to 2" Ports - Brass; 3" Port - Aluminum.

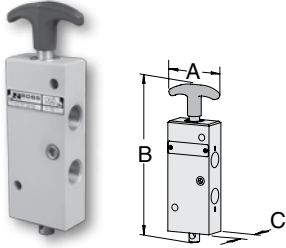
Valve Cap: Aluminum.



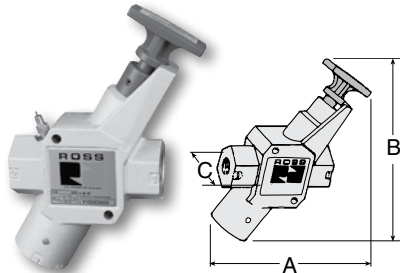
Manual L-O-X® Valves

Absperrventile • ロックアウトバルブ • तालेवाला वाल्व
Válvulas de Fechamento e Exaustão • 安全锁定阀

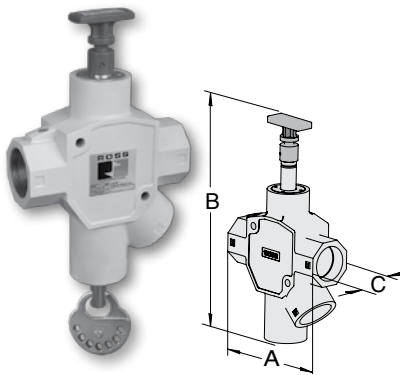
Main Air and Auxiliary Pneumatic Lockout/Tagout



Port Sizes 1/4 and 3/8



Port Sizes 3/8 thru 1 1/4



Port Sizes 1 1/2 and 2

ROSS manual L-O-X® energy isolation valves are generally used as the first valve in a line supplying compressed air to equipment. Each manual L-O-X® valve is equipped with a lockout function that immediately exhausts all downstream air into the atmosphere.

Air can be shut off by pushing the red L-O-X® handle inward; downstream air is simultaneously exhausted through the L-O-X® exhaust port. OSHA compliance requires that the valve be padlocked in this position to prevent handle from being pulled out inadvertently during maintenance and/or servicing.

The ROSS manual L-O-X® valve has a large red operating handle for high visibility. When the handle is pulled out, there is full line pressure. A short, full inward push of the handle closes off the flow of air, and quickly exhausts the pressure in the downstream line. This action is swift and doesn't require a difficult, slow, or confusing twisting action.

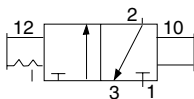
The controlling spool of the valve employs seals made of very low-friction material. These seals enable the L-O-X® spool to shift smoothly and easily even after being on standby for a long period of time. The exhaust port is threaded for the installation of a silencer or a line for remote exhausting. Two mounting holes are provided to simplify the installation of the L-O-X® valve.

Port Size In-Out	Exh.	Valve Model Number*	Avg. Cv		Dimensions inches (mm)			Weight lb (kg)
			1 to 2	2 to 3	A	B	C	
1/4	1/4	Y1523C2002	1.9	1.9	2.3 (58)	6.5 (166)	1.0 (26)	0.9 (0.4)
3/8	3/8	Y1523C3012	2.5	2.6	2.3 (58)	6.5 (166)	1.0 (26)	0.9 (0.4)
3/8	3/4	Y1523C3002	6.0	8.0	6.3 (159)	8.8 (225)	2.0 (51)	1.5 (0.7)
1/2	3/4	Y1523C4002	7.1	8.3	6.3 (159)	8.8 (225)	2.0 (51)	1.5 (0.7)
3/4	3/4	Y1523C5012	8.6	9.5	6.3 (159)	8.8 (225)	2.0 (51)	1.5 (0.7)
3/4	1 1/4	Y1523C5002	13	12	7.6 (194)	10.6 (270)	2.3 (57)	2.5 (1.1)
1	1 1/4	Y1523C6002	13	14	7.6 (194)	10.6 (270)	2.3 (57)	2.5 (1.1)
1 1/4	1 1/4	Y1523C7012	20	14	7.6 (194)	10.6 (270)	2.3 (57)	2.5 (1.1)
1 1/2	2	Y1523C8002	38	47	8.2 (209)	14.9 (379)	3.0 (77)	8.2 (3.6)
2	2	Y1523C9012	38	47	8.2 (209)	14.9 (379)	3.0 (77)	8.2 (3.6)

*NPT threads, standard. For BSPP threads, insert a "D" after "Y" to the model number, e.g., YD1523C2002.

Manual L-O-X® valve shown padlocked in closed position. The valve can only be locked in the closed position.

Push/pull operation - Push the handle inward to exhaust downstream air (lockable in this position). Pull the handle outward to supply air downstream.



For coordinating silencers, see **MUFL-AIR® Silencers** (model numbers 5500A2003, 5500A3003, 5500A5003, 5500A7013 and 5500B9001).

NOTE: Model number 5500B9001 is female threaded as is the exhaust port in the valve. Therefore, a pipe nipple will be needed in order to attach the muffler to the valve.

CAUTION: These L-O-X® valves are rated to 20 bar (300 psig), but the mufflers listed above are rated only to 10 bar (150 psig). These mufflers must not be used for applications with pressures greater than 10 bar (150 psig) or serious injury or damage could occur.

L-O-X® Sensing Port

Series 15 manual L-O-X® valves are now provided with 1/8 NPT sensing ports, enabling installation of a pressure sensing device such as the Pop-Up Indicator or Pressure Switch shown below. Standards suggest a method for verifying the release of energy after lockout.

The ROSS 988A30 Pop-Up Indicator offers 360° visibility and a redundant verification feature. By pushing on the red plunger, the operator can "feel" the presence of pressure and verify that the indicator is performing its sensing function.

The ROSS 586A86 Pressure Switch offers an electronic pressure sensing option that can be integrated into a safety monitoring system, which confirms energy isolation throughout the circuit.

STANDARD SPECIFICATIONS (for valves on this page):

Ambient/Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air; 5 micron recommended.

Inlet Pressure:

Port sizes 1/4 to 3/8: 15 to 145 psig (1.0 to 10.0 bar).

Port sizes 3/8 to 2: 15 to 300 psig (1.0 to 20 bar).

Lock Hole Diameter: Port sizes 1/4 to 3/8: 0.27 inch (7.06 mm).

Port sizes 1 1/2 to 2: 0.38 inch (9.6 mm).

Length of Hole: Port sizes 1/4 to 3/8: 0.43 inch (10.92 mm).

Port sizes 1 1/2 to 2: 0.75 inch (19.1 mm).

NOTE: Per specifications and regulations, these products are defined as energy isolation devices, **NOT AS EMERGENCY STOP DEVICES.**

IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS** on the inside back cover.

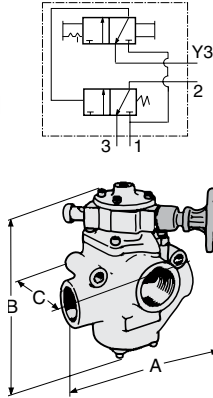


Piloted L-O-X® Valves

Absperrventile • ロックアウトバルブ • तालेवाला वाल्व
Válvulas de Fechamento e Exaustão • 安全锁定阀

Main Air and Auxiliary Pneumatic Lockout/Tagout

MANUAL PILOT

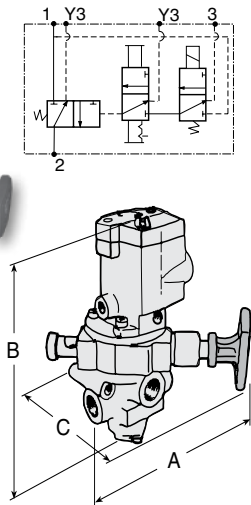
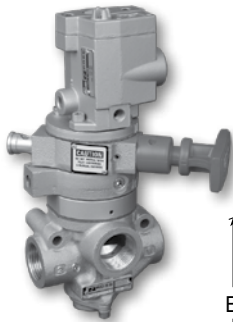


Operated just like the smaller manual L-O-X® valve. The position of the red handle indicates instantaneous full flow pressurizing or exhausting capability.

Port In-	Port Out Exh.	Valve Model Number*	Avg. C _v		Dimensions inches (mm)			Weight lb (kg)
			1 to 2	2 to 3	A	B	C	
1	1½	Y2783A6006	23	34	7.4 (187)	8.6 (218)	6.4 (162)	7.0 (3.2)
1¼	1½	Y2783A7006	30	32	7.4 (187)	8.6 (218)	6.4 (162)	7.0 (3.2)
1½	1½	Y2783A8016	30	31	7.4 (187)	8.6 (218)	6.4 (162)	7.0 (3.2)
1½	2½	Y2783A8006	68	70	8.4 (213)	10.2 (259)	6.6 (162)	15.3 (6.9)
2	2½	Y2783A9006	70	70	8.4 (213)	10.2 (259)	6.6 (162)	15.3 (6.9)
2½	2½	Y2783A9016	70	71	8.4 (213)	10.2 (259)	6.6 (162)	15.3 (6.9)
3	2½	3900A0829**	140	140	19.6 (496)	25.3 (643)	11.5 (292)	110 (49.9)

*NPT standard. For BSPP threads, insert a "D" after "Y" to the model number, e.g., YD2783A8006 or a "D" prefix on 3" L-O-X®, e.g., D 3900A0829.

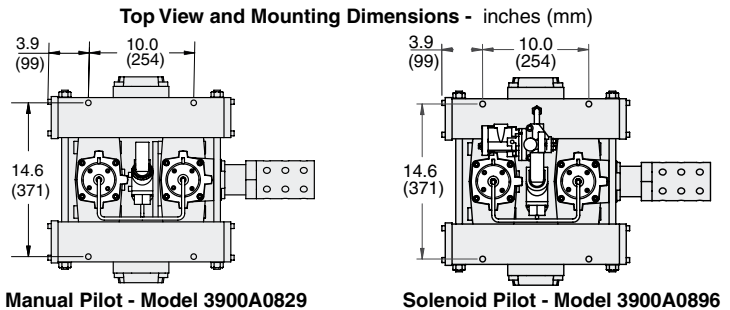
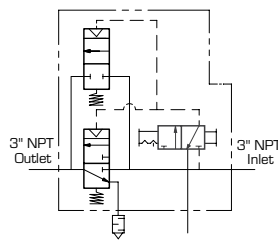
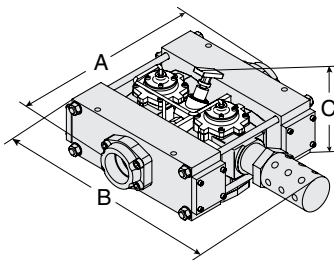
SOLENOID PILOT



Port In-	Port Out Exh.	Valve Model Number*	Avg. C _v		Dimensions inches (mm)			Weight lb (kg)
			1 to 2	2 to 3	A	B	C	
1/4	1/2	Y2773A2072	2.5	3.1	7.1 (181)	8.4 (212)	6.5 (165)	3.5 (1.6)
3/8	1/2	Y2773A3072	3.6	5.3	7.1 (181)	8.4 (212)	6.5 (165)	3.5 (1.6)
1/2	1/2	Y2773A4082	3.3	5.3	7.1 (181)	8.4 (212)	6.5 (165)	3.5 (1.6)
1/2	1	Y2773A4072	6.3	9.2	7.1 (181)	9.0 (228)	6.9 (175)	4.3 (1.9)
3/4	1	Y2773A5072	7.7	11	7.1 (181)	9.0 (228)	6.9 (175)	4.3 (1.9)
1	1	Y2773A6082	8.0	12	7.1 (181)	9.0 (228)	6.9 (175)	4.3 (1.9)
1	1½	Y2773A6072	23	34	8.1 (206)	11.8 (299)	6.9 (175)	8.0 (3.6)
1¼	1½	Y2773A7072	30	32	8.1 (206)	11.8 (299)	6.9 (175)	8.0 (3.6)
1½	1½	Y2773A8082	30	31	8.1 (206)	11.8 (299)	6.9 (175)	8.0 (3.6)
1½	2½	Y2773A8072	68	70	9.3 (235)	13.8 (352)	7.3 (184)	17.5 (7.9)
2	2½	Y2773A9072	70	70	9.3 (235)	13.8 (352)	7.3 (184)	17.5 (7.9)
2½	2½	Y2773A9082	70	71	9.3 (235)	13.8 (352)	7.3 (184)	17.5 (7.9)
3	2½	3900A0896**	140	140	19.6 (496)	25.3 (643)	14.9 (379)	115 (53.0)

*NPT threads, standard. For BSPP threads, insert a "D" after "Y" to the model number, e.g., YD2773A2072 or a "D" prefix on 3" L-O-X®, e.g., D 3900A0829.

**3 Inch L-O-X® Valve for Lockout



For coordinating silencers, see **MUFFL-AIR® Silencers** (model numbers 5500A4003, 5500A6003, 5500A8001 and 5500A9002).

STANDARD SPECIFICATIONS (for valves on this page):

Ambient/Media Temperature: Manual Pilot: 40° to 175°F (4° to 80°C).
Ambient Temperature: Solenoid Pilot: 40° to 120°F (4° to 50°C).
Media Temperature: Solenoid Pilot: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air; 5 micron recommended.
Inlet Pressure: Manual Pilot:
 Port sizes 1 to 2½: 15 to 150 psig (1.0 to 10.3 bar).
 Port sizes 1½ to 2½: 30 to 150 psig (2 to 10.3 bar).
Inlet Pressure: Solenoid Pilot:
 Port sizes 1/4 to 1½: 15 to 150 psig (1.0 to 10.3 bar).
 Port sizes 1½ to 2½: 30 to 150 psig (2.1 to 10.3 bar).

STANDARD SPECIFICATIONS: For 3 inch L-O-X®:

Inlet Pressure: 30 to 150 psig (2 to 10 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.
Flow Media: Filtered air; 5 micron filter recommended.
For model Y3900A0829
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
For model Y3900A0896
Solenoids: AC or DC power.
Power Consumption: 87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.
Ambient Temperature: 40° to 120°F (4° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).

Air Distribution

Luftverteilung • エアーディストリビューション • हवा वितरण • **Distribuição de Ar** • 气流分配

Standard Size 12

Main Air Panel Applications

Inlet Port 3/4"
Outlet Port 3/4"

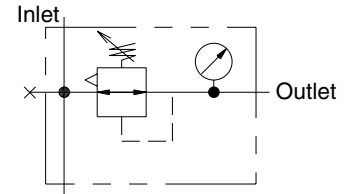
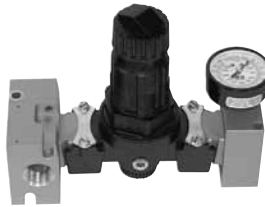
- Supply headers equipped with an auxiliary outlet 3/4" port
- Independent exhaust ports on circuit branches
- All inlet and outlet ports are 3/4" size
- Additional 1/4" port on outlet
- Modules (of like size) can be stacked to fit application – assembly hardware included

PAD-HR-N12-A (NPT)

PAD-HR-B12-A (BSPP)

Supply header with regulator.

Dimensions inches (mm)			Weight
Height	Width	Length	lb (kg)
7.34 (184)	8.7 (221)	3.2 (82)	4.0 (1.9)

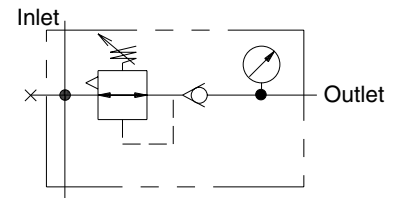
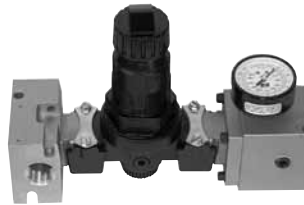


PAD-HRC-N12-A (NPT)

PAD-HRC-B12-A (BSPP)

Supply header with regulator and check.

Dimensions inches (mm)			Weight
Height	Width	Length	lb (kg)
7.34 (184)	10.1 (257)	3.2 (82)	5.0 (2.3)



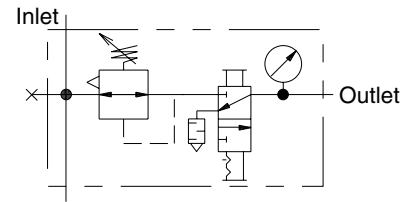
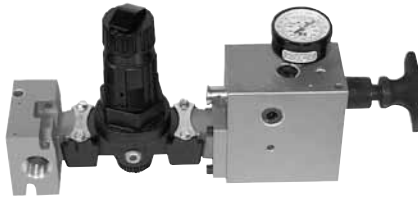
NOTE: This circuit requires a downstream pressure release.

PAD-HRX-N12-A (NPT)

PAD-HRX-B12-A (BSPP)

Supply header with regulator and L-O-X® valve.

Dimensions inches (mm)			Weight
Height	Width	Length	lb (kg)
7.34 (184)	15.3 (387)	3.2 (82)	10.0 (4.6)

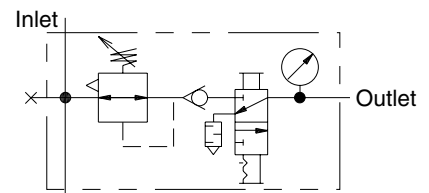
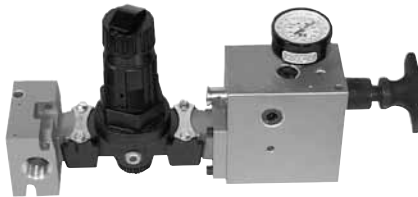


PAD-HRCX-N12-A (NPT)

PAD-HRCX-B12-A (BSPP)

Supply header with regulator, check, and L-O-X® valve.

Dimensions inches (mm)			Weight
Height	Width	Length	lb (kg)
7.34 (184)	15.3 (387)	3.2 (82)	10.0 (4.6)



STANDARD SPECIFICATIONS (for valves on this page):

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air; 5 micron recommended.

Inlet Pressure: 0 to 150 psig (0 to 10.3 bar).

Air Distribution

Luftverteilung • エアーディストリビューション • हवा वितरण • **Distribuição de Ar** • 气流分配

Standard Size 20

Main Air Panel Applications

Inlet Port 1¼"

Outlet Port 1"

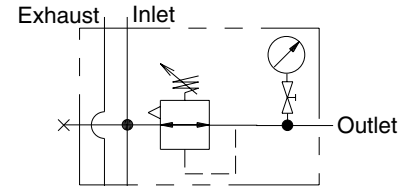
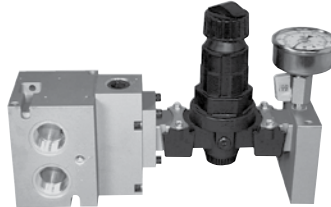
- All inlet and exhaust ports are 1¼" size. Outlets are 1" size
- Additional 1/4" port on outlet
- Supply headers equipped with an auxiliary 1" outlet port
- Common exhaust port on circuit branches and headers
- Modules (of like sizes) can be stacked to fit application – assembly hardware included

PAD-HR-N20-A (NPT)

PAD-HR-B20-A (BSPP)

Supply header with regulator.

Dimensions inches (mm)			Weight
Height	Width	Length	lb (kg)
8.7 (221)	13.1 (332)	3.4 (86)	10.0 (4.6)

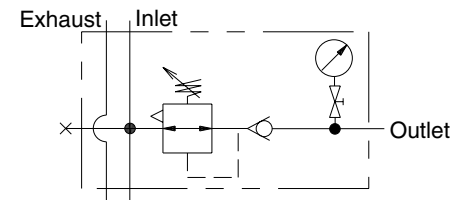
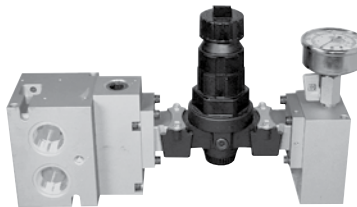


PAD-HRC-N20-A (NPT)

PAD-HRC-B20-A (BSPP)

Supply header with regulator and check.

Dimensions inches (mm)			Weight
Height	Width	Length	lb (kg)
8.7 (221)	14.4 (365)	3.4 (86)	11.0 (5.0)



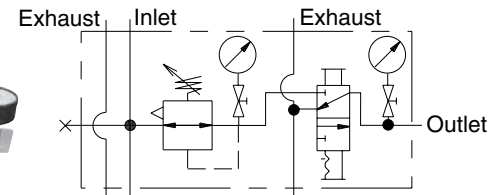
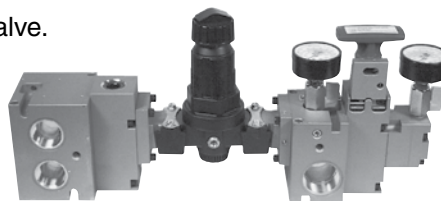
NOTE: This circuit requires a downstream pressure release.

PAD-HRX-N20-A (NPT)

PAD-HRX-B20-A (BSPP)

Supply header with regulator, and L-O-X® valve.

Dimensions inches (mm)			Weight
Height	Width	Length	lb (kg)
8.7 (221)	17.9 (454)	3.4 (86)	13.0 (5.9)

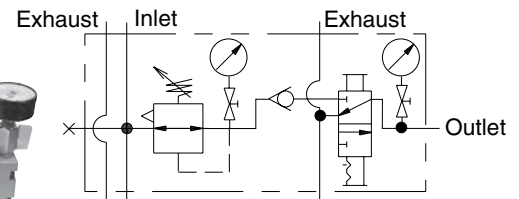
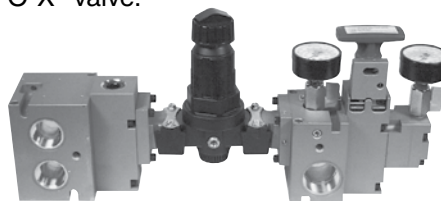


PAD-HRCX-N20-A (NPT)

PAD-HRCX-B20-A (BSPP)

Supply header with regulator, check, and L-O-X® valve.

Dimensions inches (mm)			Weight
Height	Width	Length	lb (kg)
8.7 (221)	18.8 (477)	3.4 (86)	13.0 (5.9)



STANDARD SPECIFICATIONS (for valves on this page):

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air; 5 micron recommended.

Inlet Pressure: 0 to 150 psig (0 to 10.3 bar).

Air Distribution

Luftverteilung • エアーディストリビューション • हवा वितरण • **Distribuição de Ar** • 气流分配

Economy Size 8

Main Air Panel Applications

Inlet Port 3/4"
Outlet Port 1/2"

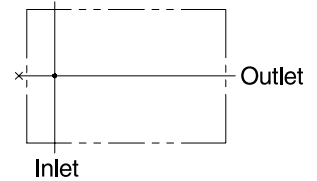
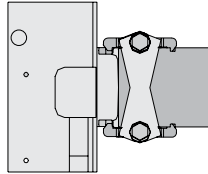
- Supply headers equipped with auxiliary outlet 3/4" NPT or BSPP port
- Gauges shipped loose for field installation
- Modules can be stacked to fit application - assembly hardware included
- For circuits with valves and other options, consult ROSS

MAS-H-N8-A (NPT)

MAS-H-B8-A (BSPP)

Supply header outlet.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
3.2 (81.2)	2.8 (71)	3.8 (96.5)	3.0 (1.36)

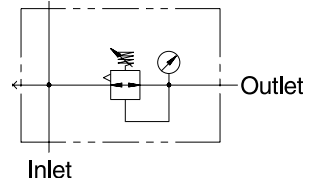
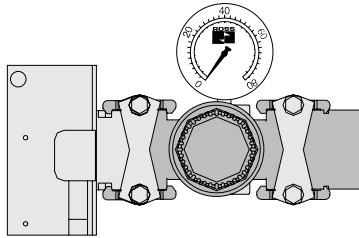


MAS-HR-N8-A (NPT)

MAS-HR-B8-A (BSPP)

Supply header with regulator.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
4.1 (104)	4.7 (119)	6.7 (170)	4.2 (1.90)

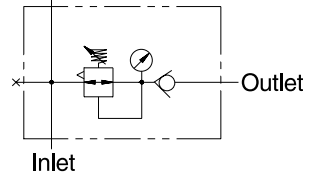
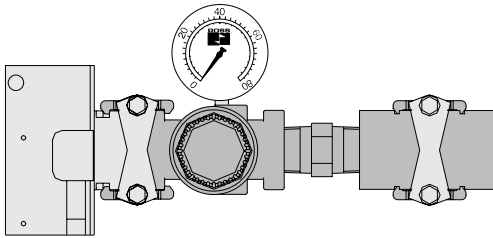


MAS-HRC-N8-A (NPT)

MAS-HRC-B8-A (BSPP)

Supply header with regulator and check.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
4.1 (104)	4.7 (119)	9.3 (236)	4.67 (2.12)

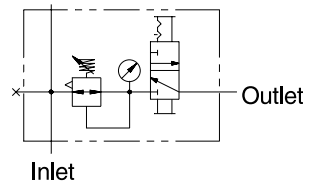
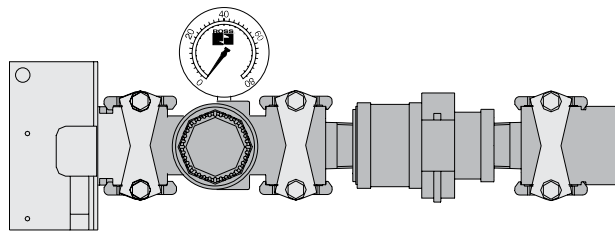


MAS-HRX-N8-A (NPT)

MAS-HRX-B8-A (BSPP)

Supply header with regulator and shut-off.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
4.1 (104)	4.7 (119)	11.5 (292)	5.0 (2.27)

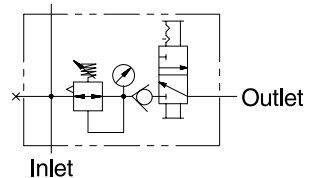
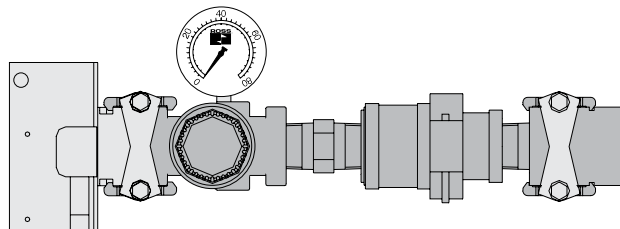


MAS-HRCX-N8-A (NPT)

MAS-HRCX-B8-A (BSPP)

Supply header with regulator, check, and shut-off.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
4.1 (104)	4.7 (119)	11.7 (297)	4.75 (2.15)



STANDARD SPECIFICATIONS (for valves on this page):

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air; 5 micron recommended.

Inlet Pressure: 0 to 150 psig (0 to 10.3 bar).

Air Distribution

Luftverteilung • エアーディストリビューション • हवा वितरण • **Distribuição de Ar** • 气流分配

Economy Size 12

Main Air Panel Applications

Inlet Port 3/4
Outlet Port 3/4

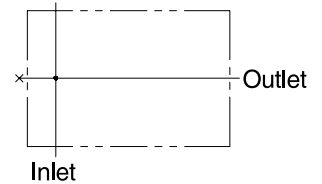
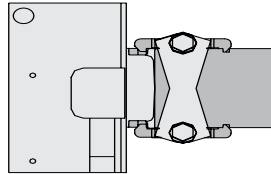
- Supply headers equipped with auxiliary outlet 3/4" NPT or BSPP port
- Gauges shipped loose for field installation
- Modules can be stacked to fit application - assembly hardware included
- For circuits with valves and other options, consult ROSS

MAS-H-N12-A (NPT)

MAS-H-B12-A (BSPP)

Supply header outlet.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
3.2 (81.2)	2.8 (71)	3.8 (96.5)	3.0 (1.36)

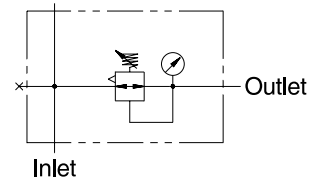
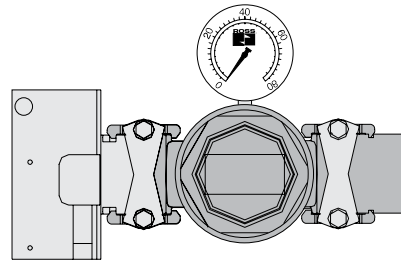


MAS-HR-N12-A (NPT)

MAS-HR-B12-A (BSPP)

Supply header with regulator.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
4.6 (117)	7.2 (103)	7.5 (191)	5.4 (2.45)

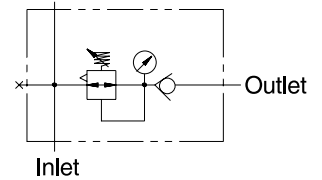
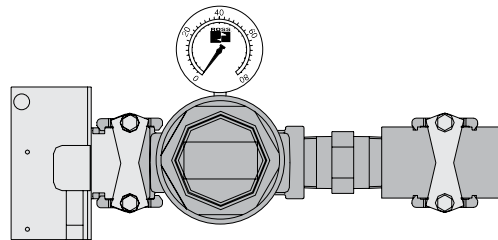


MAS-HRC-N12-A (NPT)

MAS-HRC-B12-A (BSPP)

Supply header with regulator and check.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
4.6 (117)	7.2 (183)	10.4 (264)	5.87 (2.66)

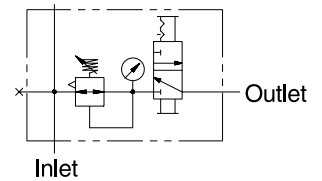
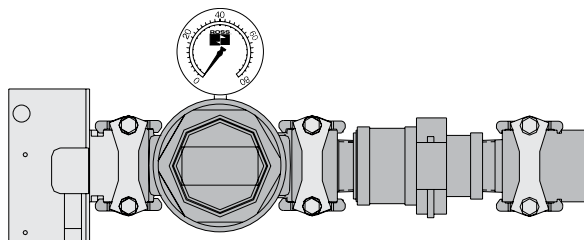


MAS-HRX-N12-A (NPT)

MAS-HRX-B12-A (BSPP)

Supply header with regulator and shut-off.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
4.6 (117)	7.2 (183)	12.1 (307)	5.97 (2.71)

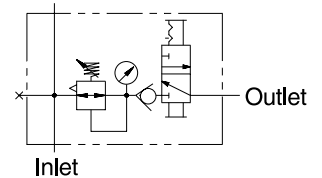
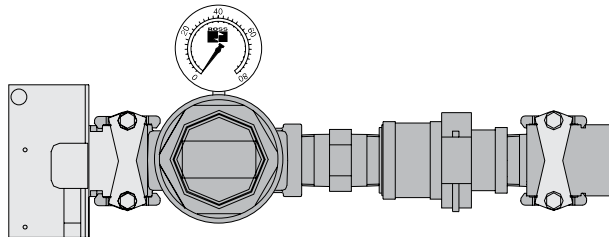


MAS-HRCX-N12-A (NPT)

MAS-HRCX-B12-A (BSPP)

Supply header with regulator, check, and shut-off.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
4.6 (117)	7.2 (183)	12.7 (323)	6.08 (2.76)



STANDARD SPECIFICATIONS (for valves on this page):

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air; 5 micron recommended.

Inlet Pressure: 0 to 150 psig (0 to 10.3 bar).

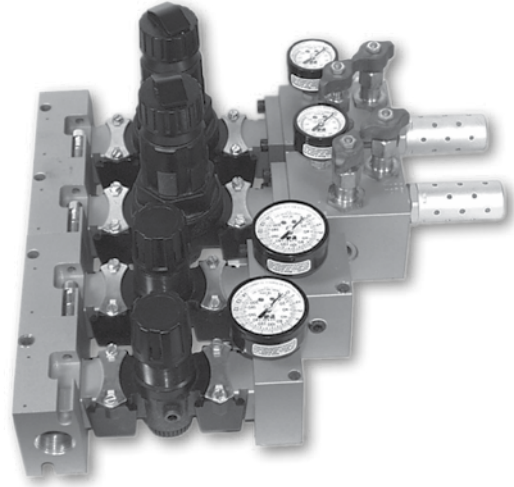
Air Distribution

Luftverteilung • エアーディストリビューション • हवा वितरण • **Distribuição de Ar** • 气流分配

Main Air Panel Applications

Features:

- Supply headers equipped with 3/4" auxiliary outlet port on size 8 and 12
- Supply header equipped with 1" auxiliary outlet port on size 20
- Modules of same basic size can be stacked together to fit any application - assembly hardware included
- Common exhaust port on size 20 header blocks
- More efficient use of space
- Reduced engineering cost
- Fast easy installation
- Reduced procurement
- Standardization and improved appearance
- Energy savings



HOW TO ORDER

(Choose your options (in red) to configure your valve model number.)

		PAD	-	HR	-	N	12	-	A		
PRODUCT SERIES	Standard.....	PAD								BASIC SIZE	
	Economy.....	MAS								3/4 inlet x 1/2 outlet	8*
										3/4 inlet x 3/4 outlet	12
										1 1/4 inlet x 1 outlet	20
										*Only available on MAS Series.	
CONFIGURATION	Header Block.....			H*						THREAD	
	Header + Regulator.....			HR						BSPP (G).....	B
	Header + Regulator + Check.....			HRC						NPT	N
	Header + Regulator + Lockout			HRX						SAE	S*
	Header + Regulator + Check + Lockout			HRCX						*Only available on PAD Series air distribution stations.	
	*Only available on MAS Series Air Distribution Stations.										

STANDARD SPECIFICATIONS (for valves on this page):

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

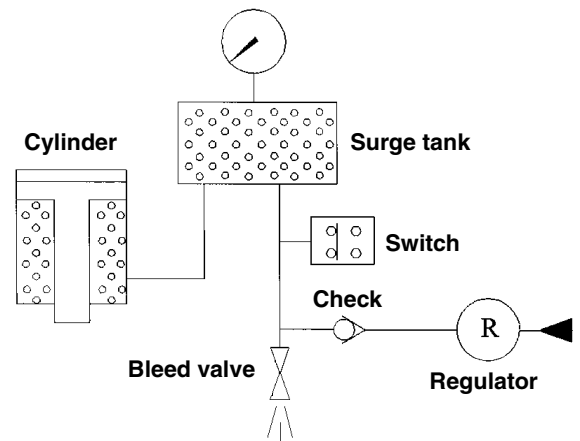
Flow Media: Filtered air; 5 micron recommended.

Inlet Pressure: 0 to 150 psig (0 to 10 bar).

Counterbalance for Mechanical Stamping Presses

The ROSS counterbalance system integrates modern air valve technology with electrical controls to monitor and maintain appropriate counterbalance pressures. An automatic counterbalance system receives an input value (called the set pressure) for a particular die and then monitors and maintains the counterbalance pressure automatically. In its simplest form, the operator manually inputs this value from a die/pressure table. In more advanced systems, this can be pre-loaded using a die recipe program. The operator inputs a die number during set-up or the system can read the die number automatically, allowing the set value to be retrieved from stored tables.

The standard OEM system includes two or more air cylinders attached between the slide and main frame, a pressure control regulator, a check valve, a surge tank, and a manual bleed off valve. The surge tank is used to store air displaced from the cylinders, since it would be cost prohibitive to refill the system with every stroke of the press. The system acts like an adjustable spring. The regulator is used to set the pressure for the total weight of the slide plus the die. The press OEM provides a chart for setting the pressure on any given die weight. This setting is the pressure at the full ram up position (top dead center). **Surveys show however, that 90% of companies have pressures set at maximum plant pressure or 80-90 psi and never adjust it!**

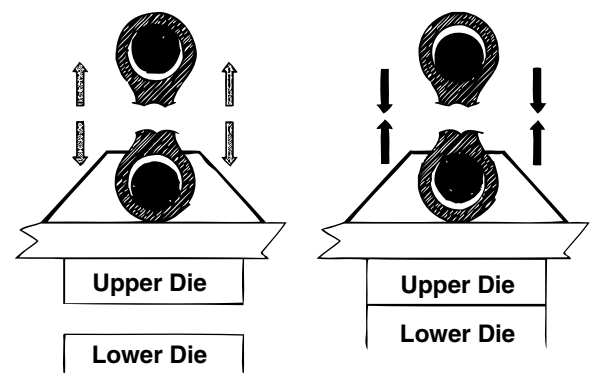


Standard Counterbalance System

Press position is given in degrees, which represents the position of the crankshaft during the press cycle. 0 degrees is referred to as TDC (top dead center) and 180 degrees, where the work is done, is referred to as BDC (bottom dead center). As the crank moves from TDC to BDC, we are in the downward stroke. As the crank moves from BDC back to TDC, we are in the upward stroke. During the downward stroke, the weight of the slide and die are acted on by gravity, which pulls the slide away from the press drive, opening up small tolerances. When the upper and lower dies meet, the upper die decelerates until all tolerance openings close and the drive begins to push. This creates damaging shock loads throughout the press. After this initial shock loading, the die is driven through the work and then immediately reversed to pull the die back up. Before the die can move upward, all of the tolerances are re-opened, sending additional shock loads into the system. Properly set counterbalance pressures will close these tolerances to eliminate shock loading. The adverse effects of an underbalanced condition include heavy shock loads, increased operating costs (due to the heavier motor loads required to lift the slide), lower parts rates and higher scrap costs, loss of ram parallelism and excessive wear to the drive, dies, gibs and cylinder packings.

While an underbalanced condition is most undesirable, too much pressure in the system also has its drawbacks. An overbalanced condition consumes a great deal of flywheel energy, can reduce tonnage to the part and even result in the slide becoming “stuck on bottom” if there is not sufficient energy to overcome die separation, slide reversal and loading forces. The effects of an overbalanced condition include damage to shut height equipment, tripping of motor overloads, higher air consumption, excessive clutch and brake wear, inconsistent die velocity, inaccurate starting or stopping and higher maintenance costs.

So, what is wrong with the equipment that came on the press? Nothing...but it is a system with a number of minimal performance characteristics. If the system leaks, it is desirable to correct the pressure as quickly as possible and to maintain set pressures. The standard OEM system does not do this. The recovery time to increase pressure is long, due to the regulator effect, and has no way of decreasing pressure, should it be necessary. The ROSS automatic system takes pressure snap-shots (via a transducer mounted on the counterbalance tank) at a pre-determined window (TDC), where set pressure values can be compared to actual pressure in the system. Depending upon requirements, the automatic counterbalance units can fill or exhaust to accurately maintain the set pressure. High flow poppet valves controlling large volumes of air offer maximum adjustment speeds during production as well as during die changes. Each unit has built-in check valves and a manual regulation circuit, should the automatic system require service. Lockout valves are standard for required cylinder maintenance.



Shock at die strike without counterbalances

Improper Counterbalance settings affect just about every area of press performance. Installing an automatic counterbalance system can improve performance, minimize wear, reduce strain on the press, reduce operating costs and enhance safety.

Automatic Counterbalance

Gewichtsausgleich • カウンターバランス • बराबर भार • **Compensador** • 平衡力

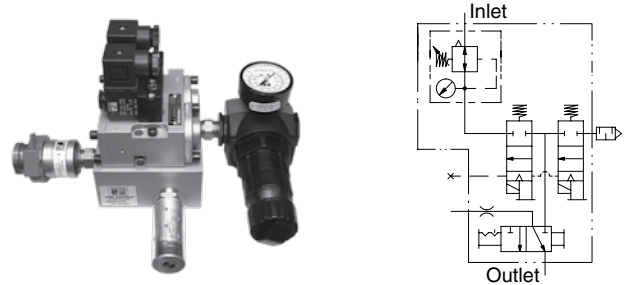
3900A1018Z (110 volts AC)

3900A1018W (24 volts DC)

Economy 1/2" fill-dump.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
4.2 (107)	7.5 (191)	5.7 (145)	6.0 (2.8)

* For BSPP threads add "D" prefix to the model number, e.g., D3900A1018W.



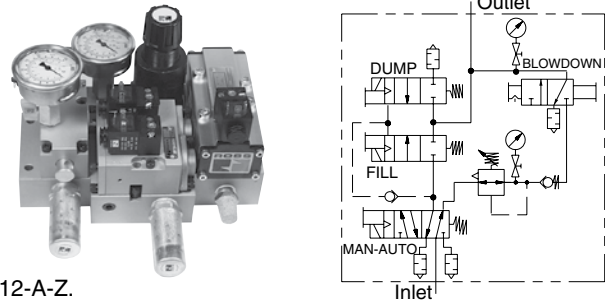
PFD-MPARX-N12-A-Z (110 volts AC)

PFD-MPARX-N12-A-W (24 volts DC)

3/4" fill-dump with auto-manual select and parallel manual circuit.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
7.1 (181)	10.0 (254)	11.7 (298)	20.0 (9.1)

* For BSPP threads change "N" to "B" in the model number, e.g., PFD-MPARX-B12-A-Z.



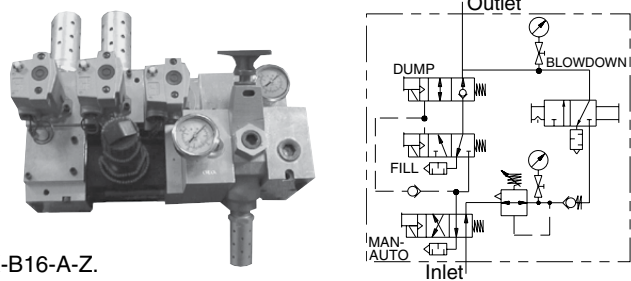
PFD-MSARX-N16-A-Z (110 volts AC)

PFD-MSARX-N16-A-W (24 volts DC)

1" fill-dump with auto-manual select and parallel manual circuit.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
8.3 (211)	15.4 (392)	12.1 (308)	45.0 (20.5)

* For BSPP threads change "N" to "B" in the model number, e.g., PFD-MSARX-B16-A-Z.



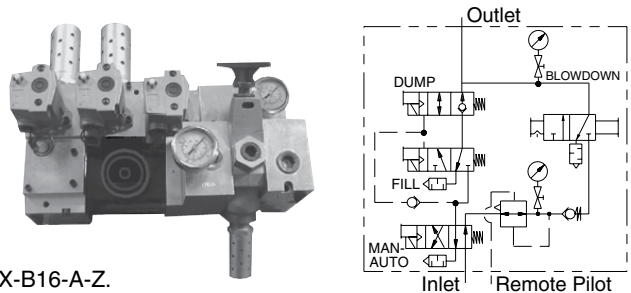
PFD-MSAR1X-N16-A-Z (110 volts AC)

PFD-MSAR1X-N16-A-W (24 volts DC)

1" fill-dump with auto-manual select and parallel remote manual adjustment circuit.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
8.3 (211)	15.4 (392)	12.1 (308)	45.0 (20.5)

* For BSPP threads change "N" to "B" in the model number, e.g., PFD-MSAR1X-B16-A-Z.



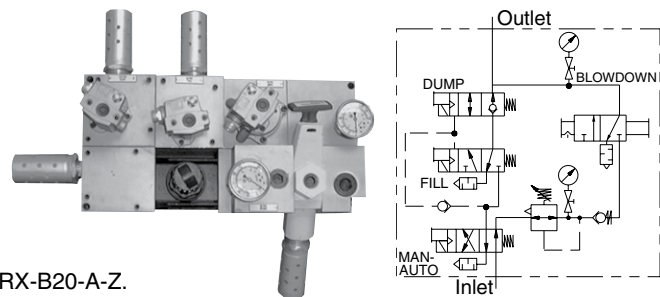
PFD-MSARX-N20-A-Z (110 volts AC)

PFD-MSARX-N20-A-W (24 volts DC)

1 1/4" fill-dump with auto-select and parallel manual circuit.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
10.4 (264)	26.5 (673)	19.2 (488)	87.0 (39.5)

* For BSPP threads change "N" to "B" in the model number, e.g., PFD-MSARX-B20-A-Z.



STANDARD SPECIFICATIONS (for valves on this page):

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air; 5 micron recommended.

Inlet Pressure: 30 to 150 psig (2 to 10 bar).

Automatic Pressure Control Applications

- Interfaces with controls to monitor/maintain correct counterbalance pressure
- 3/4" units furnished with DIN electrical connections
- 1" & 1 1/4" units furnished with Brad Harrison connectors

Die Cushion Module

Ziehkissendämpfung • *ダイクッション* • डाई गद्दी • *Almofada* • 模具缓冲器

Size 20

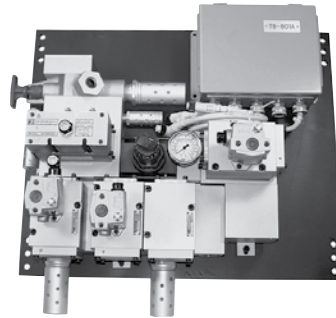
Inlet Port 1 1/4
Outlet Port 1 1/4

- Butterfly control valve included
- Slow raise cushion circuit included
- Available mounted on a plate and pre-wired
- Furnished with Brad Harrison connectors

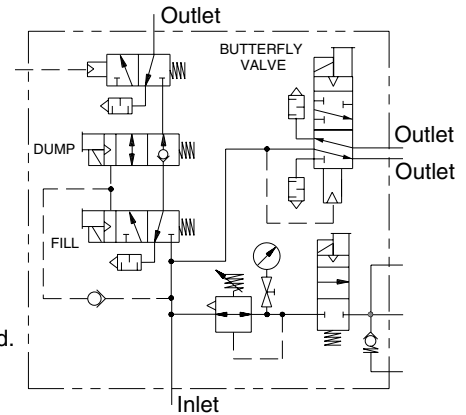
PFD-USMRR-N20-A-Z (110 volts AC)
PFD-USMRR-N20-A-W (24 volts DC)
1-1/4" fill-dump solenoid circuit, butterfly operator valve and remote Blow-down.

Dimensions inches (mm)			Weight lb (kg)
Height	Width	Length	
11.9 (303)	23.5 (597)	21.1 (536)	164.0 (74.7)

* For BSPP threads change "N" to "B" in the model number, e.g., PFD-USMSRR-B20-A-Z.



Shown with mounting plate and pre-wired.
(Option P – PFD-USMRR-PN20-A-Z)



Accessory Kit (PFD-KITB):

Kit includes electrical junction box, twenty terminals, transducer (with integral pressure switch/digital gauge), four solenoid cords with cord grips, and 5-meter transducer cord with connector.

Transducer and electrical box available separately – see page 26.
Note: When ordering with option P (pre-mounted and pre-wired), order transducer and 5-meter cord separately. See page 26.

Die Clamping

Ziehkissenspanner • *ダイクランプ* • डाई पकड़ • *Grampo* • 模具夹具

Size 12

Ports 3/4

- Includes electrical cords with cord grips
- Valves are built to the ANSI mounting standard (ISO 5599/II valves also available – Consult ROSS)
- Mounted on a plate and pre-wired

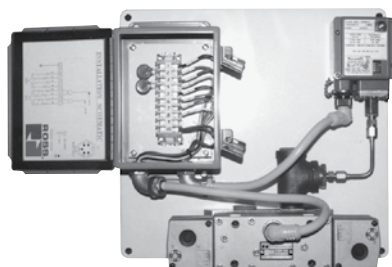
Single Solenoid

PDC-121-PN16-A-Z (110 volts AC)
PDC-121-PN16-A-W (24 volts DC)

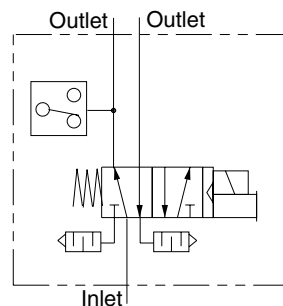
Double Solenoid

PDC-221-PN16-A-Z (110 volts AC)
PDC-221-PN16-A-W (24 volts DC)

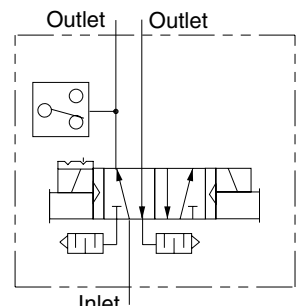
3/4" 5/2 SAE valve with pressure switch.
Mounted on a steel plate, pre-piped and pre-wired to a NEMA 12 junction box.



PDC-121-PN16-A-Z/W



PDC-221-PN16-A-Z/W



Model Number*	Dimensions inches (mm)			Weight lb (kg)
	Height	Width	Length	
PDC-121-PN16-A-Z	6.8 (172)	16.0 (381)	15.0 (407)	25.0 (11.4)
PDC-221-PN16-A-Z	8.2 (207)	16.0 (381)	15.0 (407)	25.0 (11.4)

*Specify voltage and hertz when ordering.

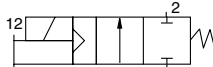
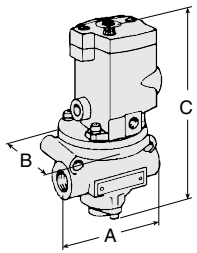
For BSPP threads change "N" to "B" in the model number, e.g., PDC-121-PB16-A-Z.

Mechanical Devices/Inline Poppet Valves

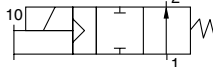
Mechanische Geräte • 機械の機構 • यांत्रिकी उपकरण • Dispositivos Mecânicos • 机械装置

Flywheel Brake, Bolster and Part Ejection Applications

2/2 Valves



Normally Closed (NC)

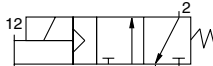


Normally Open (NO)

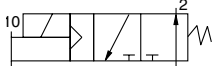
Port Size	Valve Model Number*		Avg. C _v		Dimensions inches (mm)			Weight lb (kg)
	NC	NO	NC	NO	A	B	C	
1/4	2771B2001	2772B2001	2.3	2.3	3.6 (91)	3.2 (79)	6.9 (175)	2.5 (1.2)
3/8	2771B3001	2772B3001	3.8	3.3	3.6 (91)	3.2 (79)	6.9 (175)	2.5 (1.2)
1/2	2771B4011	2772B4011	4.0	3.5	3.6 (91)	3.2 (79)	6.9 (175)	2.5 (1.2)
1/2	2771B4001	2772B4001	7.7	6.5	4.6 (116)	3.2 (79)	7.6 (193)	3.3 (1.5)
3/4	2771B5001	2772B5001	9.0	7.3	4.6 (116)	3.2 (79)	7.6 (193)	3.3 (1.5)
1	2771B6011	2772B6011	9.0	7.9	4.6 (116)	3.2 (79)	7.6 (193)	3.3 (1.5)
1	2771B6001	2772B6001	24	21	6.7 (169)	4.1 (104)	10.4 (265)	7.0 (3.2)
1¼	2771B7001	2772B7001	29	20	6.7 (169)	4.1 (104)	10.4 (265)	7.0 (3.2)
1½	2771B8011	2772B8011	29	21	6.7 (169)	4.1 (104)	10.4 (265)	7.0 (3.2)
1½	2771B8001	2772B8001	49	49	8.7 (219)	5.2 (131)	11.8 (300)	15.5 (6.9)
2	2771B9001	2772B9001	57	57	8.7 (219)	5.2 (131)	11.8 (300)	15.5 (6.9)
2½	2771B9011	2772B9011	64	72	8.7 (219)	5.2 (131)	11.8 (300)	15.5 (6.9)

*NPT standard. For BSPP threads, add a "D" prefix to the model number, e.g., D2771B2001.
For 110 volts AC add "Z" suffix to the model number, for 24 volts DC add "W" suffix to the model number.

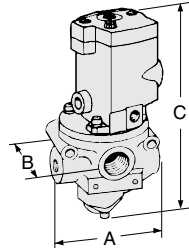
3/2 Valves



Normally Closed (NC)



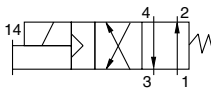
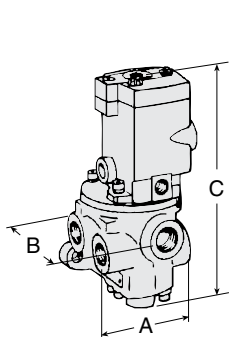
Normally Open (NO)



Port Sizes In-Out Exh.		Valve Model Number*		Avg. C _v		Dimensions inches (mm)			Weight lb (kg)
NC	NO	NC	NO	A	B	C			
1/4	1/2	2773B2001	2774B2001	2.8	2.5	3.6 (91)	3.2 (79)	7.2 (182)	2.5 (1.2)
3/8	1/2	2773B3001	2774B3001	4.0	3.0	3.6 (91)	3.2 (79)	7.2 (182)	2.5 (1.2)
1/2	1/2	2773B4011	2774B4011	3.8	3.0	3.6 (91)	3.2 (79)	7.2 (182)	2.5 (1.2)
1/2	1	2773B4001	2774B4001	7.8	7.2	4.6 (116)	3.6 (92)	7.9 (201)	3.3 (1.5)
3/4	1	2773B5001	2774B5001	9.4	7.2	4.6 (116)	3.6 (92)	7.9 (201)	3.3 (1.5)
1	1	2773B6011	2774B6011	10	7.2	4.6 (116)	3.6 (92)	7.9 (201)	3.3 (1.5)
1	1½	2773B6001	2774B6001	29	21	6.7 (169)	4.9 (123)	10.4 (265)	7.0 (3.2)
1¼	1½	2773B7001	2774B7001	31	22	6.7 (169)	4.9 (123)	10.4 (265)	7.0 (3.2)
1½	1½	2773B8011	2774B8011	31	21	6.7 (169)	4.9 (123)	10.4 (265)	7.0 (3.2)
1½	2½	2773B8001	2774B8001	69	58	8.7 (219)	6.4 (161)	12.4 (313)	16.5 (7.4)
2	2½	2773B9001	2774B9001	70	60	8.7 (219)	6.4 (161)	12.4 (313)	16.5 (7.4)
2½	2½	2773B9011	2774B9011	71	55	8.7 (219)	6.4 (161)	12.4 (313)	16.5 (7.4)

*NPT standard. For BSPP threads, add a "D" prefix to the model number, e.g., D2773B2001.
For 110 volts AC add "Z" suffix to the model number, for 24 volts DC add "W" suffix to the model number.

4/2 Valves



Port Sizes In-Out Exh.		Valve Model Number*	Avg. C _v	Dimensions inches (mm)			Weight lb (kg)
A	B	C					
1/4	1/2	2776B2001	2.5	4.0 (100)	3.9 (97)	7.2 (182)	3.0 (1.4)
3/8	1/2	2776B3001	3.6	4.0 (100)	3.9 (97)	7.2 (182)	3.0 (1.4)
1/2	1/2	2776B4011	3.7	4.0 (100)	3.9 (97)	7.2 (182)	3.0 (1.4)
1/2	1	2776B4001	6.9	4.7 (118)	5.3 (135)	9.0 (228)	5.3 (2.4)
3/4	1	2776B5001	8.2	4.7 (118)	5.3 (135)	9.0 (228)	5.3 (2.4)
1	1	2776B6011	8.9	4.7 (118)	5.3 (135)	9.0 (228)	5.3 (2.4)
1	1½	2776B6001	23	6.5 (166)	8.3 (211)	10.7 (271)	11.3 (5.1)
1¼	1½	2776B7001	24	6.5 (166)	8.3 (211)	10.7 (271)	11.3 (5.1)
1½	1½	2776B8011	25	6.5 (166)	8.3 (211)	10.7 (271)	11.3 (5.1)

*NPT standard. For BSPP threads, add a "D" prefix to the model number, e.g., D2776B2001.
For 110 volts AC add "Z" suffix to the model number, for 24 volts DC add "W" suffix to the model number.

STANDARD SPECIFICATIONS (for valves on this page):

Solenoids: AC or DC power.

Standard Voltages: 110 volts AC, 24 volts DC.

Power Consumption: 87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air; 5 micron recommended.

Inlet Pressure: 1/4 to 1½ Port Sizes: 15 to 150 psig (1 to 10 bar);
1½ to 2½ Port Sizes: 30 to 150 psig (2 to 10 bar).

Pilot Pressure: When external supply is used, pressure must be equal to or greater than inlet pressure.

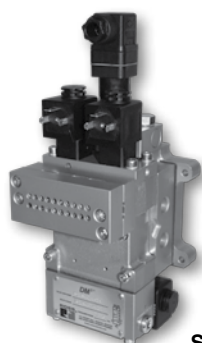
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS** on the inside back cover.

DM^{2®} Series D Double Valves for Clutch/Brake

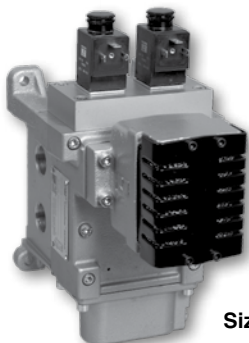
Kupplung/Bremse • クラッチ/ブレーキ

पंजा / गतिरोधक • *Embreagem/Freio* • 离合器/制动器

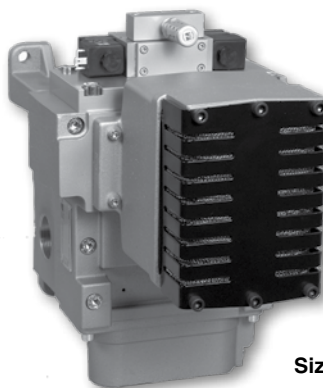
Double Valves with Dynamic Monitoring & Complete Memory Self Monitored - Clutch/Brake Control



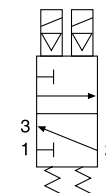
Size 2



Size 8



Size 30



Simplified Schematic

Size 2, 4, 8, 12 and 30

- **Dynamic Monitoring With Complete Memory:** Memory, monitoring, and air flow control functions are simply integrated into two identical valve elements. Valves lock-out due to asynchronous movement of valve elements during actuation or de-actuation, resulting in a residual outlet pressure of less than 1% of supply. Overt action is required for reset – cannot be reset by removing and re-applying supply pressure. Reset can only be accomplished by remote air signal or by optional integrated electrical (solenoid) reset.
- **Basic 3/2 Normally Closed Valve Function:** Dirt tolerant, wear compensating poppet design for quick response and high flow capacity. Teflon back-up rings on pistons to enhance valve endurance – operates with or without inline lubrication.
- **Status Indicator (Optional):** Includes a pressure switch with both normally open and normally closed contacts to provide status feedback to the press control system indicating whether the valve is in the lockout or ready-to-run condition. The Status Indicator can be ordered installed or purchased separately and added to any DM^{2®} base.
- **Silencers:** All models include high flow, clog resistant silencers.
- **Mounting:** Base mounted – with BSPP or NPT pipe threads. Inlet and outlet ports on both sides provide for flexible piping (plugs for unused ports included). Captive valve-to-base mounting screws.

Size 12 and 30

- **Intermediate Pilots:** Increase pilot air flow for fast valve response, make it possible to use the same size solenoids as valve sizes 2, 4 & 8, thereby reducing electrical power requirements for these larger valves.

STANDARD SPECIFICATIONS (for DM^{2®} Series D double valves):

Pilot Solenoids: According to VDE 0580. Enclosure rating according to DIN 40050, IEC 60529 IP65. Two solenoids, rated for continuous duty (additional solenoid on optional reset).

Standard Voltages: 110 volts, 50/60 Hz; 220** volts, 50/60 Hz; 24 volts DC. For other voltages, consult ROSS.

** 220 volts AC not available in the U.S. (OSHA regulations limit press control voltage to no more than 120 volts AC. Specify voltage and frequency on order.

Power Consumption (each solenoid):

Size 2, 4, 12, 30:

For primary and reset solenoids:

6.0 watts on DC; 15.8 VA inrush and 10.4 VA holding on AC.

Size 8:

Primary solenoids:

15 watts on DC; 36 VA inrush and 24.6 VA holding on AC.

Reset solenoid:

6.0 watts on DC; 15.8 VA inrush and 10.4 VA holding on AC.

Electrical connection:

Size 2, 4, 8, 12, 30: DIN 43650, Form A. Order connectors separately.

Ambient Temperature: 15° to 120°F (-10° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered, lubricated or unlubricated (mineral oils according to DIN 51519, viscosity classes 32-46); 5 micron recommended.

Inlet Pressure:

Size 2: 45 to 150 psig (3 to 10 bar).

Size 4, 8, 12, 30: 30 to 120 psig (2 to 8 bar).

Reset Pressure: For remote reset option – equal to inlet pressure.

Pressure Switch (Status Indicator) Rating: Contacts - 5 amps at 250 volts AC, or 5 amps at 30 volts DC.

Monitoring: Dynamically, cyclically, internally during each actuating and de-actuating movement. Monitoring function has memory and requires an overt act to reset unit after lockout.

Mounting orientation: Preferably horizontally (valve on top of base) or vertically (with pilot solenoids on top).

Valve Weight: Valve and base assembly with status indicator and solenoid reset.

Size 2: 5.0 lb (2.3 kg).

Size 4: 6.0 lb (2.8 kg).

Size 8: 9.1 lb (4.2 kg).

Size 12: 15.5 lb (7.1 kg).

Size 30: 32.6 lb (14.8 kg).

IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS** on the inside back cover.

DM²® Series D Double Valves for Clutch/Brake

Kupplung/Bremse • クラッチ/ブレーキ

पंजा / गतिरोधक • **Embreagem/Freio** • 离合器/制动器

HOW TO ORDER

(Choose your options (in red) to configure your valve model number.)

PRODUCT DM2D **D** **A** **4** **2** **A** **1** **1** **STATUS INDICATOR**

THREAD

BSPP **D**

NPT **N**

N/A (no base) **X**

REVISION LEVEL

BASIC SIZE

2 **2**

4 **4**

8 **5**

12 **6**

30 **8**

RESET TYPE

1 REMOTE

2 SOLENOID

4 MANUAL

VOLTAGE

A 24 volts DC

B 110 volts AC, 50/60 Hz

C** 220 volts AC, 50/60 Hz

** 220 VAC not available in the U.S. (OSHA regulations limit press control voltage to no more than 120 volts AC).

BASE PORT SIZE

Size 2

1/4 inlet – 1/4 outlet **0**

3/8 inlet – 3/8 outlet **1**

Size 4

1/2 inlet – 1/2 outlet **2**

1/2 inlet – 3/4 outlet **3**

Size 8

3/4 inlet – 3/4 outlet **4**

1 inlet – 1 outlet **5**

Size 12

1inlet – 1outlet **6**

1inlet – 1½ outlet **7**

Size 30

1½ inlet – 2 outlet **8**

Valve only (less base) **X**

BASE MODEL NUMBERS and BASE SPECIFIC INFORMATION

Port Size	Base	Status	Weight	
Inlet	Outlet	Model Number*	Indicator	lb (kg)
1/4	1/4	1872C91	No	1.7 (0.8)
1/4	1/4	1873C91	Yes	2.1 (1.0)
3/8	3/8	1874C91	No	1.7 (0.8)
3/8	3/8	1875C91	Yes	2.1 (1.0)
1/2	1/2	1697C91	No	1.7 (0.8)
1/2	1/2	1698C91	Yes	2.3 (1.1)
1/2	3/4	1699C91	No	1.7 (0.8)
1/2	3/4	1700C91	Yes	2.3 (1.1)
3/4	3/4	1701C91	No	3.6 (1.6)
3/4	3/4	1702C91	Yes	4.2 (1.9)
1	1	1703C91	No	3.6 (1.6)
1	1	1704C91	Yes	4.2 (1.9)
1	1	1705C91	No	6.2 (2.8)
1	1	1706C91	Yes	6.8 (3.1)
1	1½	1707C91	No	6.2 (2.8)
1	1½	1708C91	Yes	6.8 (3.1)
1½	2	1709C91	No	12.0 (5.4)
1½	2	1710C91	Yes	12.6 (5.7)

Note: DIN electrical connectors must be ordered separately.

*NPT port threads. For BSPP threads add a "D" prefix to the model number, e.g., D1700C91.

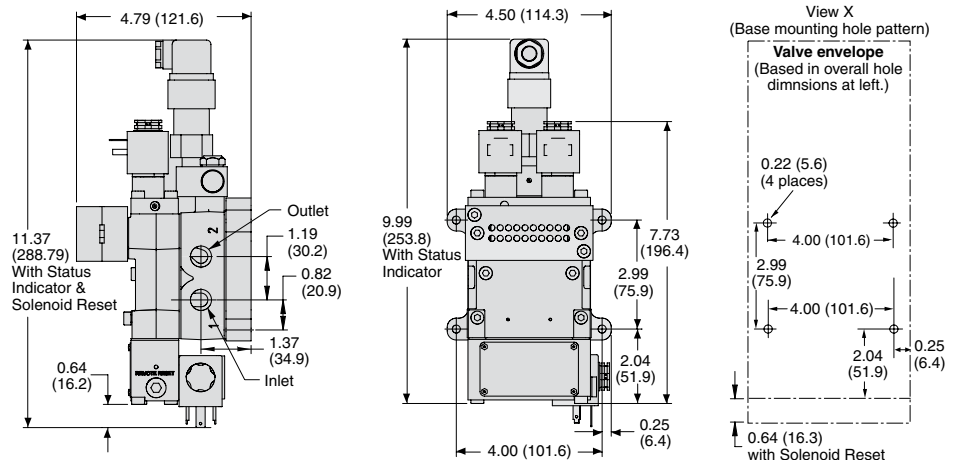
SIZE 2

Average C_v:

1 to 2: 2.17

2 to 3: 3.66

DIMENSIONS – inches (mm)



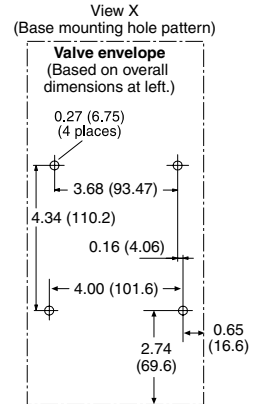
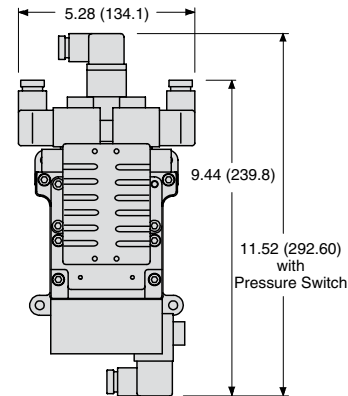
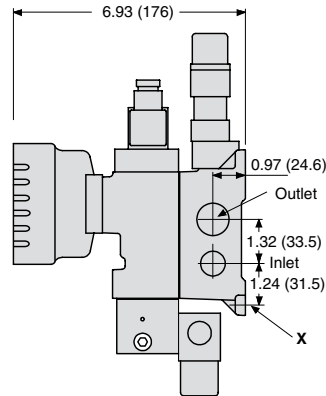
DM²® Series D Double Valves for Clutch/Brake

Kupplung/Bremse • クラッチ/ブレーキ

पंजा / गतिरोधक • **Embreagem/Freio** • 离合器/制动器

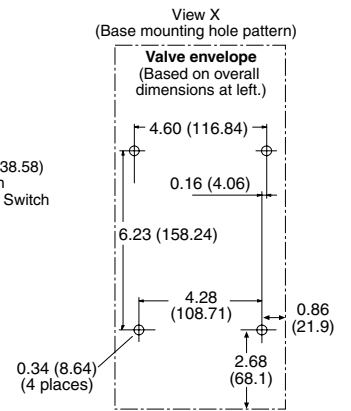
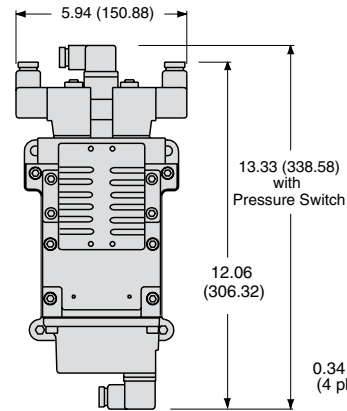
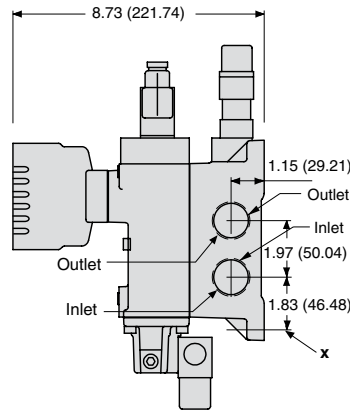
SIZE 4

DIMENSIONS – inches (mm)



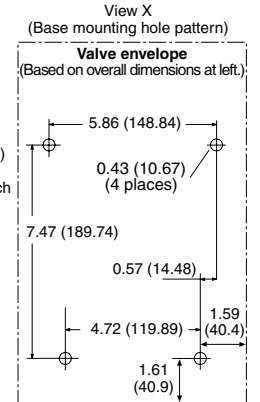
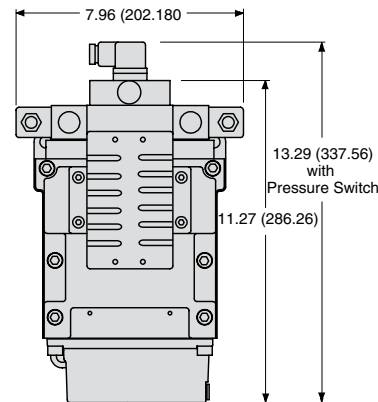
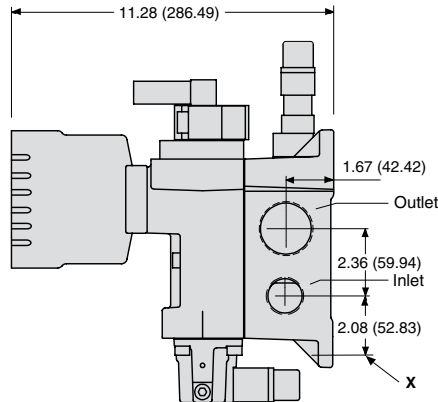
Average C_v :
1 to 2: 2.80
2 to 3: 6.70

SIZE 8



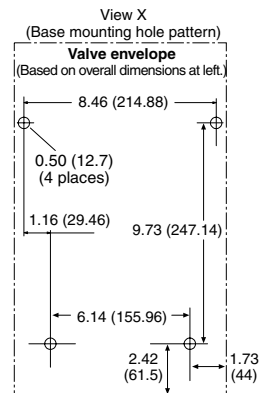
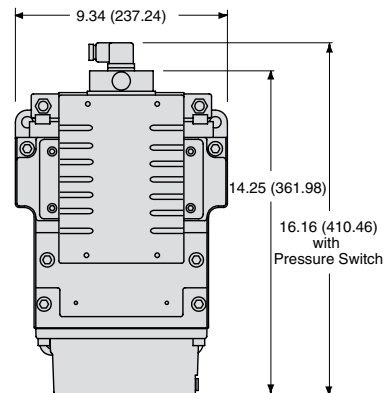
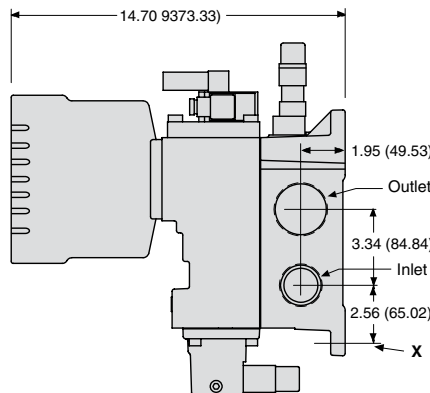
Average C_v :
1 to 2: 4.63
2 to 3: 12.55

SIZE 12



Average C_v :
1 to 2: 8.86
2 to 3: 20.78

SIZE 30



Average C_v :
1 to 2: 20.22
2 to 3: 53.68



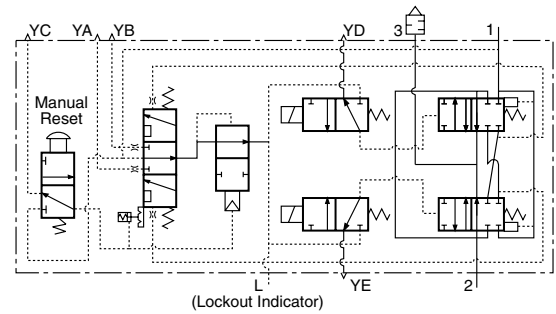
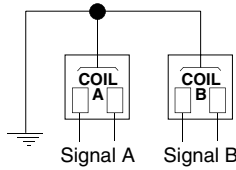
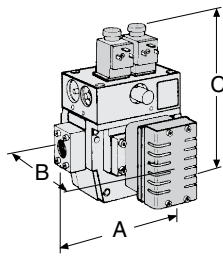
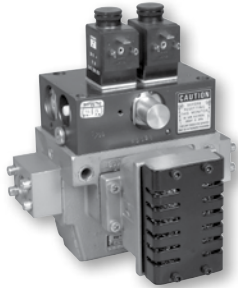
SERPAR® L-G Double Valves for Clutch/Brake

Kupplung/Bremse • クラッチ/ブレーキ

पंजा / गतिरोधक • **Embreagem/Freio** • 离合器/制动器

Self Monitored - Clutch/Brake Control

Size 4

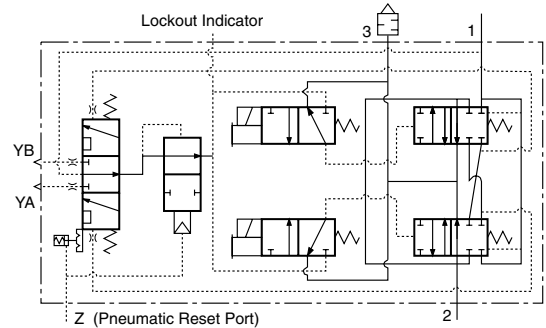
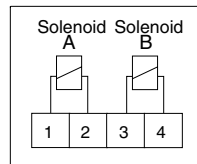
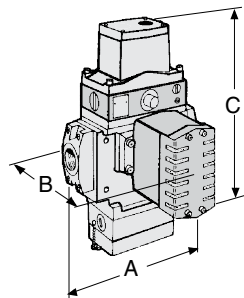
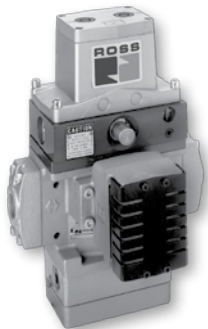


Valve Size	Port Size	Monitor Reset	Valve Model Number*		Average C _v		Dimensions inches (mm)			Weight lb (kg)
			Right Inlet	Left Inlet	In-Out	Out-Exh.	A	B	C	
4	3/8	Manual	3573D3191	3573D3195	3.0	6.0	7.4 (188)	6.3 (160)	7.4 (188)	8.3 (3.7)
4	3/8	Remote	3573D3192	3573D3196	3.0	6.0	7.4 (188)	6.3 (160)	7.4 (188)	8.3 (3.7)
4	1/2	Manual	3573D4211	3573D4215	3.0	8.0	7.4 (188)	6.3 (160)	7.4 (188)	8.3 (3.7)
4	1/2	Remote	3573D4212	3573D4216	3.0	8.0	7.4 (188)	6.3 (160)	7.4 (188)	8.3 (3.7)
4	3/4	Manual	3573D5211	3573D5215	3.0	9.0	7.4 (188)	6.3 (160)	7.4 (188)	8.3 (3.7)
4	3/4	Remote	3573D5212	3573D5216	3.0	9.0	7.4 (188)	6.3 (160)	7.4 (188)	8.3 (3.7)

*NPT standard. For BSPP threads, add a "D" prefix to the model number, e.g., D3573D3191.

For 110 volts AC add "Z" suffix to the model number, for 24 volts DC add "W" suffix to the model number, e.g., 3573D3192Z, 3573D3192W.

Sizes 8, 12, 30



Valve Size	Port Size	Valve Model Number*		Average C _v		Dimensions inches (mm)			Weight lb (kg)
		w/ Overrides	w/o Overrides	In-Out	Out-Exh.	A	B	C	
8	1/2	3573A4142	3573A4162	3.5	8.5	8.5 (216)	7.1 (180)	12.3 (312)	15.3 (6.9)
8	3/4	3573A5142	3573A5162	4.0	12	8.5 (216)	7.1 (180)	12.3 (312)	19.0 (8.6)
12	3/4	3573A5152	3573A5172	8.0	15	9.0 (228)	8.5 (216)	13.4 (340)	19.0 (8.6)
8	1	3573A6152	3573A6172	4.0	12	8.5 (216)	7.1 (180)	12.3 (312)	15.3 (6.9)
12	1	3573A6162	3573A6182	8.5	19	9.0 (228)	8.5 (216)	13.4 (340)	19.0 (8.6)
12	1 1/4	3573A7162	3573A7182	9.0	21	9.0 (228)	8.5 (216)	13.8 (351)	19.0 (8.6)
30*	1 1/4	3573A7152	3573A7172	20	42	12.4 (314)	11.1 (282)	17.7 (450)	37.5 (16.9)
30*	1 1/2	3573A8162	3573A8182	21	43	12.4 (314)	11.1 (282)	17.7 (450)	37.5 (16.9)

*NPT standard. For BSPP threads, add a "D" prefix to the model number, e.g., D3573A4142.

2 inch port size available on size 30 valves. Order part number 1999H77 flange kit separately.

For 110 volts AC add "Z" suffix to the model number, for 24 volts DC add "W" suffix to the model number, e.g., 3573A4142Z, 3573A4142W.

STANDARD SPECIFICATIONS (for valves on this page):

Pilot Solenoids: Two, rated for continuous duty.

Standard Voltages: 100-110 volts, 50Hz; 100-120 volts, 60 Hz;

24 volts DC, 110 volts DC. Other voltages available, consult ROSS.

Power Consumption: Size 4: Each solenoid, 30 VA inrush, 16 VA holding on 50 or 60 Hz; 11 watts on DC. Sizes 8, 12, 30: Each solenoid, 87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.

Electrical Connections: Size 4 uses Form A DIN connectors at solenoids. Size 8, 12 and 30 has built-in terminal strip.

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air; 5 micron recommended.

Inlet Pressure: Size 4: 30 to 100 psig (2 to 7 bar).

Sizes 8, 12, 30: 30 to 125 psig (2 to 8.5 bar).

L-G Reset Pressure: Size 4: Remote pneumatic reset models require a pressure of at least 30 psig (2 bar). Manual reset models use internal valve pressure. Sizes 8, 12, 30: 60 psig (4 bar) minimum.

Inlet Port: Models are available with the inlet port on either the right or the left side of the valve body (size 4 only).

IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS** on the inside back cover.

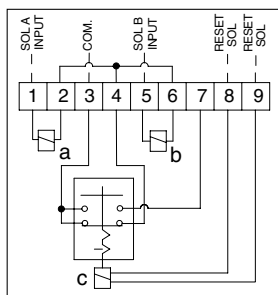
SERPAR® E-P Double Valves for Clutch/Brake

Kupplung/Bremse • クラッチ/ブレーキ

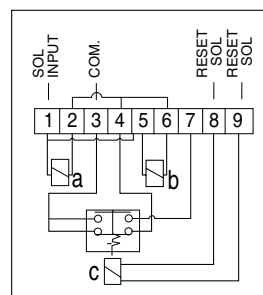
पंजा / गतिरोधक • **Embreagem/Freio** • 离合器/制动器

Sizes 8 to 30

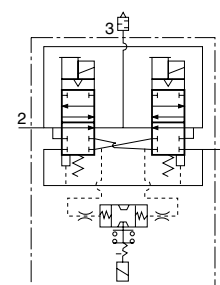
Self Monitored - Clutch/Brake Control



Dual Input Wiring Diagram

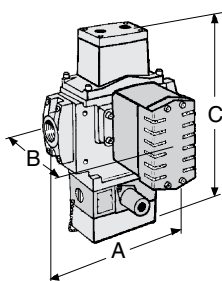


Single Input Wiring Diagram



During lock-out:

Terminals 3 and 7 are connected which allows a panel light, bell, or other electrical device to be wired to terminal 7 and serve as a lockout indicator.



Single Input Signal and Dual Input Signal models are available in the E-P series of double valves. Both models can be equipped with, or without, manual overrides.

Single input valves require only one main solenoid signal wired into the terminal strip of the E-P monitored double valve. The main solenoid signal is wired into terminal 1 and internally jumpered to the second main solenoid. Commons are wired into terminal 3. This allows both solenoids to be energized and de-energized simultaneously for proper valve operation.

Dual Input valves require two solenoid signals wired independently into the terminal strip of the E-P monitored double valve. One main solenoid signal is wired into terminal 1 and the second main solenoid signal is wired into terminal 5. Commons are wired into terminal 3. Both solenoid signals must arrive simultaneously for proper valve operation.

Valve Model Number*

Valve Size	Port Size	Single Signal Input		Dual Signal Input		Avg. C _v		Dimensions inches (mm)			Weight lb (kg)
		w/ Overrides	w/o Overrides	w/ Overrides	w/o Overrides	In-Out	Out-Exh	A	B	C	
8	1/2	3573A4141	3573A4161	3573A4341	3573A4361	3.5	8.5	8.5 (216)	7.2 (184)	11.4 (288)	11.8 (5.3)
8	3/4	3573A5141	3573A5161	3573A5341	3573A5361	4.0	12	8.5 (216)	7.2 (184)	11.4 (288)	11.8 (5.3)
12	3/4	3573A5151	3573A5171	3573A5351	3573A5371	8.0	15	8.6 (219)	8.6 (219)	12.0 (303)	15.5 (7.0)
8	1	3573A6151	3573A6171	3573A6351	3573A6371	4.0	12	8.5 (216)	7.2 (184)	11.4 (288)	11.8 (5.3)
12	1	3573A6161	3573A6181	3573A6361	3573A6381	8.5	19	8.6 (219)	8.6 (219)	12.0 (303)	15.5 (7.0)
12	1¼	3573A7161	3573A7181	3573A7361	3573A7381	9.0	21	9.0 (228)	8.5 (216)	12.8 (324)	15.5 (7.0)
30	1¼	3573A7151	3573A7171	3573A7351	3573A7371	20	42	12.4 (314)	11.1 (282)	17.3 (440)	35.0 (15.8)
30	1½	3573A8161	3573A8181	3573A8361	3573A8381	21	43	12.4 (314)	11.1 (282)	17.3 (440)	35.0 (15.8)

*NPT standard. For BSPP threads, add a "D" prefix to the model number, e.g., D3573A4141.

2 inch port size available on size 30 valves. Order part number 1999H77 flange kit separately.

**For 110 volts AC add "Z" suffix to the model number, for 24 volts DC add "W" suffix to the model number, e.g., 3573A4141Z, 3573A4141W.

STANDARD SPECIFICATIONS (for valves on this page):

Pilot Solenoids: Two, rated for continuous duty.

Standard Voltages: 100-110 volts, 50Hz; 100-120 volts, 60 Hz; 24 volts DC, 110 volts DC. Other voltages available, consult ROSS.

Power Consumption: Each solenoid, 87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.

E-P Reset Solenoid: Rated for *intermittent* duty.

Voltages: 24-48 or 100-120 volts AC or DC (for E-P only).

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air; 5 micron recommended.

Pressure Range: 30 to 125 psig (2 to 8.5 bar).

IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS** on the inside back cover.

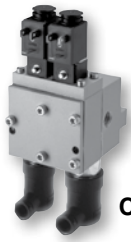


Crossflow™ Double Valves*

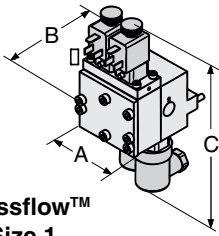
Kupplung/Bremse • クラッチ/ブレーキ

पंजा / गतिरोधक • Embreagem/Freio • 离合器/制动器

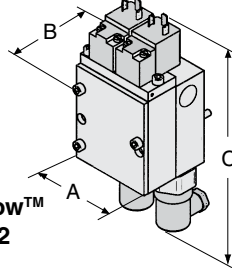
Size 1 & 2



Crossflow™
Size 1

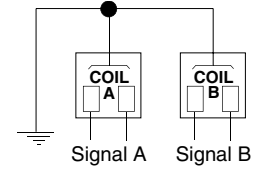


Crossflow™
Size 2



External Monitoring - Clutch/Brake Control

* Non-monitored



Valve Size	Valve Model Number*	Avg. C _v		Pressure Switches**	Press. Switch Provision	Port Sizes		Dimensions inches (mm)			Avg. Response Constants			Weight lb (kg)
		1-2	2-3			1 & 2	3	A	B	C	M	F In-Out	Out-Exh.	
1	3573B2632	0.9	1.4	None	Yes	1/4	1/4	2.7 (69)	3.3 (84)	5.0 (127)	28	4.6	3.4	2.1 (95)
1	3573B2640	0.9	1.4	None	No	1/4	3/8	2.7 (69)	3.3 (84)	5.0 (127)	24	4.4	3.1	2.1 (95)
1	3573B2642	0.9	1.4	Two	Yes	1/4	1/4	2.7 (69)	3.3 (84)	7.5 (191)	28	4.6	3.4	2.5 (1.14)
1	3573B2644	1.2	1.7	Two	Yes	3/8	3/8	2.7 (69)	3.3 (84)	7.6 (195)	25	3.1	2.8	2.9 (1.32)
1	3573B2645	1.2	1.7	None	Yes	3/8	3/8	2.7 (69)	3.3 (84)	5.1 (130)	25	3.1	2.8	2.5 (1.14)
2	3573B4620	3.7	6.6	None	No	1/2	1/2	3.4 (86)	3.2 (81)	6.3 (160)	30	1.2	1.0	4.3 (1.95)
2	3573B4632	3.7	6.6	None	Yes	1/2	1/2	3.4 (86)	3.2 (81)	6.5 (165)	30	1.2	1.0	4.3 (1.95)
2	3573B4640	3.7	9.0	None	No	1/2	3/4	3.4 (86)	3.2 (81)	6.5 (165)	25	1.1	0.9	4.3 (1.95)
2	3573B4642	3.7	6.6	Two	Yes	1/2	1/2	3.4 (86)	3.2 (81)	9.0 (229)	30	1.2	1.0	4.8 (2.18)
2	3573B4643	4.2	9.0	None	No	3/4	3/4	3.4 (86)	3.2 (81)	6.5 (165)	25	1.1	0.9	4.7 (2.13)
2	3573B4644	4.2	9.0	Two	Yes	3/4	3/4	3.4 (86)	3.2 (81)	9.0 (165)	25	1.1	0.9	5.2 (2.36)
2	3573B4645	4.2	9.0	None	Yes	3/4	3/4	3.4 (86)	3.2 (81)	6.5 (165)	25	1.1	0.9	4.7 (2.13)
2	3573B4652	3.7	9.0	None	Yes	1/2	3/4	3.4 (86)	3.2 (81)	9.0 (165)	25	1.1	0.9	4.3 (1.95)

* Model number includes base. For BSPP threads, order with a "D" prefix. For JIS threads, order with a "J" prefix. Valve and base can be ordered separately; consult ROSS.

** Only valves with pressure switches should be used to control clutch/brake mechanisms on press machinery. The pressure switches must be used in conjunction with a monitoring device to assist with OSHA compliance (Ref. 1910.217).

Valve Response Time

The constants below, designated M and F, can be used to determine the amount of time required to fill or exhaust a volume of any size using the following formula:

$$\text{Vlv. Resp. Time (msec)} = M + F \cdot V$$

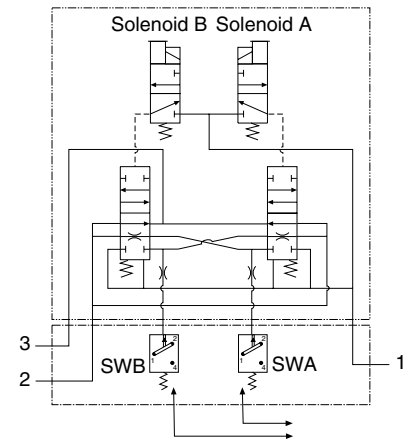
M = avg. time for parts movement

F = msec. per cubic inch of volume

V = volume in cubic inches

*Pressure Switches & Monitoring:

Valves without pressure switches must not be used to control clutch/brake mechanisms on press machinery. Valves with pressure switches must be used in conjunction with an external monitoring device to assist with OSHA compliance (Ref. 1910.217). The valves on this page do not have a built-in monitor, and must only be used in conjunction with an external monitoring system. Such monitoring system must be capable of inhibiting the operation of the valve in the event of a failure within the valve.



To customer's external monitor

STANDARD SPECIFICATIONS (for valves on this page):

Pilot Solenoids: Two, rated for continuous duty.

Standard Voltages: 100-110 volts, 50Hz; 100-120 volts, 60 Hz; 24 volts DC, 110 volts DC. Other voltages available, consult ROSS.

Power Consumption:

Size 1: Each solenoid, 12 VA maximum inrush, 9.8 VA maximum holding on 50 or 60 Hz; 7.5 watts nominal on DC.

Size 2: Each solenoid, 8.5 VA maximum inrush, 8.5 VA maximum holding on 50 or 60 Hz; 6 watts maximum on DC.

Electrical Connections: Uses two cord-grip connectors at solenoids (order separately).

Size 1: DIN 43650 Form B connector P/N 266K77.

Size 2: Din 43650 Form A connector P/N 937K87.

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air; 5 micron recommended.

Inlet Pressure: 40 to 100 psig (2.8 to 7 bar).

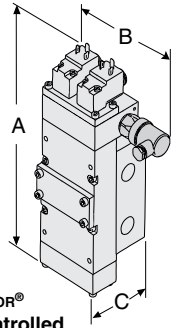
CAUTION: If the system must be reset, electrical signals to both solenoids must be removed to prevent the machine from immediately recycling and producing a potentially hazardous condition.

IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS** on the inside back cover.

5/2 CROSSMIRROR® Double Valves

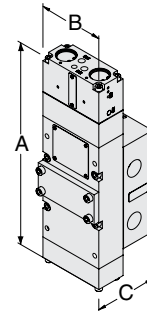


5/2 CrossMirror®
Solenoid Pilot Controlled
double valve with pressure switch



5/2 CrossMirror®
Sizes 2 & 4 are BG Certified

ISO 13849-1:2006
Category 4 PL e applications



5/2 CrossMirror®
Pressure Controlled
double valve without pressure switch



Model* Number	Port Sizes		C _v				Pressure Switch**	Dimensions inches (mm)			Weight lb (kg)	Replacements Model No.*	
	1	2, 3, 4, 5	1-2	1-4	2-3	4-5		A	B	C		Valve No.	Base No.
Size 2 Solenoid Pilot Controlled													
7776A3410	1/2	3/8	2.0	1.6	1.6	2.8	Without	11.1 (282)	4.1 (104)	3.2 (81)	7.6 (3.4)	7776A3400	996C91
7776A3411	1/2	3/8	2.0	1.6	1.6	2.8	With	11.1 (282)	6.7 (170)	3.2 (81)	8.4 (3.8)	7776A3401	996C91
Size 2 Pressure Controlled													
7786A3410	1/2	3/8	2.0	1.6	1.6	2.8	Without	10.9 (277)	4.1 (104)	3.2 (81)	7.6 (3.4)	7786A3400	996C91
7786A3411	1/2	3/8	2.0	1.6	1.6	2.8	With	10.9 (277)	6.7 (170)	3.2 (81)	8.4 (3.8)	7786A3401	996C91
* Model number includes base supplied with NPT threads. For BSP threads, order model or base with a "D" prefix, e.g., D7776A3410, D996C91. **For 110 volts AC add "Z" suffix to the model number, for 24 volts DC add "W" suffix to the model number, e.g., 7776A3411Z, 7776A3401W.													
Size 4 Solenoid Pilot Controlled													
7776A4420	3/4	1/2	3.2	3.4	2.7	7.2	Without	12.1 (307)	4.3 (109)	4.1 (104)	10.2 (4.6)	7776A4400	1049C91
7776A4421	3/4	1/2	3.2	3.4	2.7	7.2	With	12.1 (307)	6.9 (175)	4.1 (104)	11.2 (5.1)	7776A4401	1049C91
7776A5410	3/4	3/4	3.2	3.4	2.7	7.2	Without	12.1 (307)	4.3 (109)	4.1 (104)	10.2 (4.6)	7776A4400	1153C91
7776A5411	3/4	3/4	3.2	3.4	2.7	7.2	With	12.1 (307)	6.9 (175)	4.1 (104)	11.2 (5.1)	7776A4401	1153C91
Size 4 Pressure Controlled													
7786A4420	3/4	1/2	3.2	3.4	2.7	7.2	Without	12.1 (307)	4.3 (109)	4.1 (104)	10.6 (4.6)	7786A4400	1049C91
7786A4421	3/4	1/2	3.2	3.4	2.7	7.2	With	12.1 (307)	6.9 (175)	4.1 (104)	11.6 (5.1)	7786A4401	1049C91
7786A5410	3/4	3/4	3.2	3.4	2.7	7.2	Without	12.1 (307)	4.3 (109)	4.1 (104)	10.6 (4.6)	7786A4400	1153C91
7786A5411	3/4	3/4	3.2	3.4	2.7	7.2	With	12.1 (307)	6.9 (175)	4.1 (104)	11.6 (5.1)	7786A4401	1153C91
* Model number includes base supplied with NPT threads. For BSP threads, order model or base with a "D" prefix, e.g., D7776A4420, D1049C91. **For 110 volts AC add "Z" suffix to the model number, for 24 volts DC add "W" suffix to the model number, e.g., 7776A4421Z, 7776A4401W.													
Size 4 SAE Solenoid Pilot Controlled													
S7776A4H10	SAE 12	SAE 12	3.2	3.4	2.7	7.2	Without	12.1 (307)	4.3 (109)	4.1 (104)	10.2 (4.6)	7776A4400	1159G91
S7776A4H11	SAE 12	SAE 12	3.2	3.4	2.7	7.2	With	12.1 (307)	6.9 (175)	4.1 (104)	11.2 (5.1)	7776A4401	1159G91
Size 4 SAE Pressure Controlled													
S7786A4H10	SAE 12	SAE 12	3.2	3.4	2.7	7.2	Without	12.1 (307)	4.3 (109)	4.1 (104)	10.6 (4.6)	7786A4400	1159G91
S7786A4H11	SAE 12	SAE 12	3.2	3.4	2.7	7.2	With	12.1 (307)	6.9 (175)	4.1 (104)	11.6 (5.1)	7786A4401	1159G91
* Model number includes base. **For 110 volts AC add "Z" suffix to the model number, for 24 volts DC add "W" suffix to the model number, e.g., S7776A4H11Z, 7776A4401W.													

Pressure Switches: Pressure switch provides a signal when valve is in a faulted position.

This valve is not designed for controlling clutch/brake mechanisms on mechanical power presses.

STANDARD SPECIFICATIONS (for valves on this page):

Solenoid Pilot Controlled:

Pilot Solenoids: Rated for continuous duty.

Standard Voltages: 100-110 volts, 50Hz; 100-120 volts, 60 Hz; 24 volts DC, 110 volts DC. Other voltages available, consult ROSS.

Power Consumption: Each solenoid, 18 VA inrush, 14 VA holding on 50 or 60 Hz; 6 watts on DC.

Electrical Connections: Uses cord-grip connectors at solenoids. Order connectors separately (see page 25).

Inlet Pressure: 40 to 150 psig (2.5 to 10 bar).

Pressure Controlled:

Inlet Pressure: 40 to 100 psig (2.5 to 7 bar).

Pilot Pressure: Must be equal or greater than inlet pressure, but should not exceed maximum inlet pressure.

Pressure Switch Rating: Max Current 4A, Max 250 volts AC.
Max Current 50 mA, Max 24 volts DC.

Pressure Switch: Pressure Switch signal indicates when the input signals or parts movement is asynchronous.

Common Specifications:

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air; 5 micron recommended.

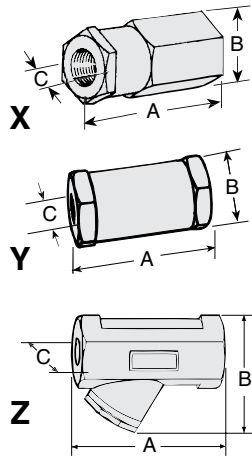
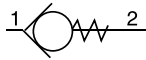
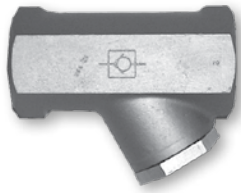
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS** on the inside back cover.

Accessories

Zubehör • アクセサリー • सहायक उपकरण • Acessórios • 辅助配件

Series 19 Check Valves

ROSS check valves are self-actuating and designed to provide free air flow in one direction, and to be closed to flow in the opposite direction.



Valve Type	Port Size	Valve Model Number*	Avg. C _v	Dimensions inches (mm)			Weight lb (kg)
				A	B	C	
X	1/8	1968D1005	0.5	2.7 (67)	1.2 (29)	1.0 (25)	0.5 (0.2)
	1/4	1968D2005	0.5	2.7 (67)	1.2 (29)	1.0 (25)	0.5 (0.2)
Y	1/4	1968D2001	2.9	2.8 (71)	1.6 (40)	1.4 (35)	0.5 (0.2)
	3/8	1968D3001	3.7	2.8 (71)	1.6 (40)	1.4 (35)	0.5 (0.2)
	1/2	1968D4001	3.9	3.7 (94)	1.5 (40)	1.4 (35)	0.5 (0.2)
	1/2	1968A4107	5.2	4.8 (122)	3.2 (81)	1.8 (46)	0.9 (0.4)
	3/4	1968A5107	8.6	4.8 (122)	3.2 (81)	1.8 (46)	0.9 (0.4)
	1	1968A6117	8.3	4.8 (122)	3.2 (81)	1.8 (46)	0.9 (0.4)
Z*	1	1968A6107	17	5.4 (137)	4.3 (109)	2.3 (58)	2.0 (0.9)
	1 1/4	1968A7107	22	5.4 (137)	4.3 (109)	2.3 (58)	2.0 (0.9)
	1 1/2	1968A8117	22	5.4 (137)	4.3 (109)	2.3 (58)	2.0 (0.9)
	1 1/2	1968A8107	50	7.5 (191)	5.7 (145)	3.5 (89)	4.7 (2.1)
	2	1968A9107	50	7.5 (191)	5.7 (145)	3.5 (89)	4.7 (2.1)
	2 1/2	1968A9117	50	7.5 (191)	5.7 (145)	3.5 (89)	4.7 (2.1)

*NPT port threads. For BSPP threads add a "D" prefix to the model number, e.g., D1968D1005.

STANDARD SPECIFICATIONS: For valves on this page.

Ambient/Media Temperature:

40° to 175°F (4° to 80°C).

Flow Media: Filtered air; 5 micron recommended.

Inlet Pressure: 5 to 150 psig (0.3 to 10 bar).

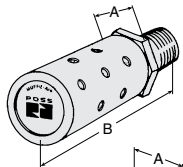
Signal Pressure: Must be equal to or greater than inlet.

MUFFL-AIR® Silencers

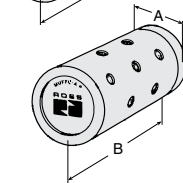
ROSS MUFFL-AIR® silencers substantially reduce exhaust noise levels yet produce little back pressure. Typical impact noise reduction is in the 20–25 dB range.



MUFFL-AIR® Silencer
male threads illustrated



Male Pipe Threads
For ports 1/8 through 1 1/4



Female Pipe Threads
For ports 1 1/4 through 2 1/2

Port Size	NPT Threads	Model Number*	Average C _v	Dimensions inches (mm)		Weight lb (kg)
				A	B	
1/8	Male	5500A1003	2.0	0.8 (21)	2.2 (56)	0.3 (0.1)
1/4	Male	5500A2003	2.0	0.8 (21)	2.2 (56)	0.3 (0.1)
3/8	Male	5500A3013	2.0	0.8 (21)	2.2 (56)	0.3 (0.1)
3/8	Male	5500A3003	5.7	1.3 (32)	3.8 (96)	0.5 (0.2)
1/2	Male	5500A4003	7.0	1.3 (32)	3.8 (96)	0.5 (0.2)
3/4	Male	5500A5013	7.0	1.3 (32)	3.8 (96)	0.5 (0.2)
3/4	Male	5500A5003	15	2.0 (51)	5.6 (142)	1.5 (0.7)
1	Male	5500A6003	18	2.0 (51)	5.6 (142)	1.5 (0.7)
1 1/4	Male	5500A7013	18	2.0 (51)	5.6 (142)	1.5 (0.7)
1 1/4	Female	5500A7001	37	2.5 (64)	5.9 (149)	2.3 (1.0)
1 1/2	Female	5500A8001	38	2.5 (64)	5.9 (149)	2.3 (1.0)
2	Female	5500B9001	50	3.0 (77)	7.3 (185)	3.5 (1.6)
2 1/2	Female	5500A9002	65	4.0 (102)	6.9 (173)	3.5 (1.6)

*NPT port threads. For BSPP threads add a "D" prefix to the model number, e.g., D5500A1003.

Ambient/Media Temperature: Up to 160°F (71°C).

Pressure Range: 150 psig (10 bar) maximum.

Silencer Kits

High-flow, noise-reduction silencers for DM® Series D double valves.

Valve Size	Threads Type	Kit Model Number*	Flow scfm	Overall Dimensions inches (mm)		
				Width	Height	Depth
4	NPT	2324H77	800	4.34 (110.2)	19.06 (484.1)	7.27 (184.7)
8	NPT	2325H77	800	5.41 (137.4)	21.18 (538.0)	8.41 (213.6)
12	NPT	2326H77	2080	6.74 (117.2)	25.85 (656.6)	10.66 (270.8)
30	NPT	2327H77	7200	9.85 (250.2)	41.55 (1055.4)	13.47 (342.1)
4	BSPP	2329H77	800	4.34 (110.2)	21.40 (543.6)	7.27 (184.7)
8	BSPP	2330H77	800	5.41 (137.4)	23.52 (597.4)	8.41 (213.6)
12	BSPP	2331H77	2080	6.74 (117.2)	28.20 (716.3)	10.66 (270.8)
30	BSPP	2332H77	7200	9.85 (250.2)	41.55 (1055.4)	13.47 (342.1)

* Exhaust adapter required for installation, consult ROSS.

Pressure Range: 125 psig (8.6 bar) maximum.

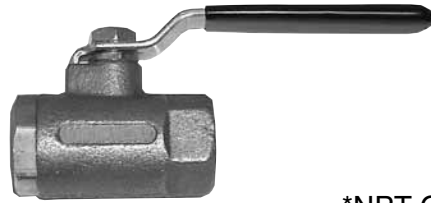
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS** on the inside back cover.

Accessories

Zubehör • アクセサリー • सहायक उपकरण • **Acessórios** • 辅助配件

Ball Valves (2/2)

- Chrome plated ball
- Blowout-proof stem w/adjustable packing
- RTFE seats and seals
- Pressure range: 29" Hg to 600 psig (41.3 bar)
- Temperature range: -35° to 400°F



*NPT Only

Model Number*

1/4"	– 164H74
3/8"	– 165H74
1/2"	– 166H74
3/4"	– 167H74
1"	– 168H74
1 1/4"	– 169H74
1 1/2"	– 170H74
2"	– 171H74

Locking/Relieving Ball Valves (3/2)

- Chrome plated ball
- Blowout-proof stem w/adjustable packing
- RTFE seats and seals
- Pressure range: 29" Hg to 600 psig
- Temperature range: -35° to 400°F

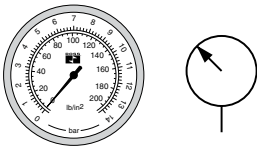


*NPT Only

Model Number*

1/4"	– 172H74
3/8"	– 173H74
1/2"	– 174H74
3/4"	– 175H74
1"	– 176H74
1 1/4"	– 177H74
1 1/2"	– 178H74
2"	– 179H74

Pressure Gauges



Port Size	Model Number*	Range psig (bar)	Diameter inches (mm)
1/8	5400A1002	0-160 (0-11)	1.7 (43)
1/4	5400A2010	0-60 (0-4)	2.2 (56)
1/4	5400A2011	0-200 (0-14)	2.2 (56)
1/4	5400A2012	0-300 (0-21)	2.2 (56)

*NPT port threads. For BSPP threads add a "D" prefix to the model number, e.g., D5400A1002.

Liquid Filled Gauges

Model Number
5400A2014 (NPT)
D5400A2014 (BSPP)



- Liquid filled
- Case: Stainless steel, 2 1/2" diameter
- Scale: Dual (Lb/in² – bar – x100 kpa)
- Dial range: 0 to 160 psig
- Bourdon tube type: ANSI grade B
- Connection: Brass 1/4" NPT center back mount
- Surge protector: Standard

DIN Form Electrical Connectors

WIRED CONNECTORS have 2 meter (6 1/2 ft) cord with three 18 gauge conductors. Cord exits upward, and is available in either 6 mm or 10 mm diameter.



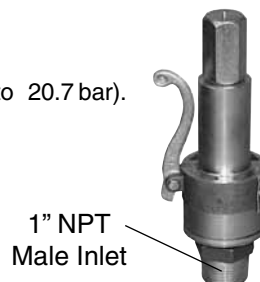
Part Numbers of Form A Electrical Connectors

Connector Type	Without Light	With Light*
For use with dropcord (Cord not included)	937K87	936K87*
Wired with 6-mm cord	721K77	720K77*
Wired with 10-mm cord	371K77	383K77*
For use with threaded conduit	723K77	724K77*

*Specify solenoid voltage when ordering.

Safety Relief Valve

- Adjustable setpoint pressure range: 2 to 300 psig (0.1 to 20.7 bar). Factory set at 125 psig (8.6 bar)
- Bronze construction
- Plated steel spring, washers, stem, lever
- Aluminum alloy cap
- Teflon® PFA flouorocarbon seat
- Maximum temperature: 400°F



Model Number

111H74-125 (125 psi max.)	– NPT
111H74-150 (150 psi max.)	– NPT
111H74-230 (230 psi max.)	– NPT
D111H74-125 (125 psi max.)	– BSPP
D111H74-150 (150 psi max.)	– BSPP
D111H74-230 (230 psi max.)	– BSPP

Accessories

Zubehör • アクセサリー • सहायक उपकरण • Acessórios • 辅助配件

Pressure Switches

- 3 to 150 psi (0.2 to 10.3 bar) pressure range (adjustable)
- 475 psi (37.8 bar) maximum pressure
- High shock resistance & set point stability
- SPDT double break contacts
- NEMA 4, 13 enclosure
- Diaphragm actuated
- Non-adjustable differential
- Numerical range scale window
- UL and CSA listed
- Indicator light
- 5 pin mini-connector



Model Number
717H30* (NPT)
D717H30* (BSPP)

*Specify voltage when ordering.
1/4" NPT Female inlet

Visual Pop-Up Indicator or Pressure Switch (electrical)

- May be installed on all L-O-X® valves with pressure sensing port
- Provides a means to verify the release of downstream pressure to next obstruction



Verification Option	Model Number	Inlet Port Size*
Pop-Up Indicator	988A30	1/8
Pressure Switch	586A86	1/8

* Pressure sensing port threads are NPT on all L-O-X® valves models. (including BSPP)

Gauge Shut-Off

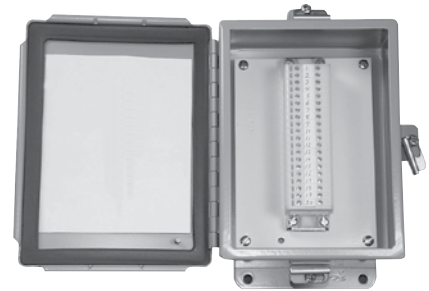
- Allows gauge installation without system shutdown
- Male-female ported for compact installation
- Nickel plated brass construction
- Rated to 250 psi (17.2 bar)



Model Number 112H74

Junction Box

- 6" x 10" X 4" deep
- 20 pre-mounted terminals
- NEMA 12 construction



Model Number 608F94

Three Function Transducer with Integral Pressure Switch and Digital Gauge

Pressure setpoint range	7.5 to 150 psi (0.5 to 10.3 bar)
Overpressure limit	700 psi (48.3 bar)
Burst pressure	2000 psi (137.9 bar)
Port connection	1/4 NPT female
Supply voltage	18 to 30 volts DC
Status indicators	1 red LED: switched output status, 3 numeric LEDs: system pressure
Outputs	Programmable NO or NC (with window function) & 4–20 mA output
Switch point accuracy	± 1.5% of full range
Programmable switch delay	0 to 50 seconds
Repeatability	± 0.25% of full range
Wetted parts	304 stainless steel, ceramic cell, Viton O-ring
Protection rating	NEMA 3, 4, 12, 13, IP65
Electrical connections	Quick disconnect MICRO DC type



Model Number 911H30

Single Function Unit – Transducer Only: 935H30
5 Meter Cord: 936H30

Cautions

PRE-INSTALLATION or SERVICE

1. Before servicing a valve or other pneumatic component, be sure that all sources of energy are turned off, the entire pneumatic system is shut off and exhausted, and all power sources are locked out (ref: OSHA 1910.147, EN 1037).
2. All ROSS products, including service kits and parts, should be installed and/or serviced only by persons having training and experience with pneumatic equipment. Because any installation can be tampered with or need servicing after installation, persons responsible for the safety of others or the care of equipment must check every installation on a regular basis and perform all necessary maintenance.
3. All applicable instructions should be read and complied with before using any fluid power system in order to prevent harm to persons or equipment. In addition, overhauled or serviced valves must be functionally tested prior to installation and use.
4. Each ROSS product should be used within its specification limits. In addition, use only ROSS parts to repair ROSS products. Failure to follow these directions can adversely affect the performance of the product or result in the potential for human injury or damage to property.

FILTRATION and LUBRICATION

5. Dirt, scale, moisture, etc. are present in virtually every air system. Although some valves are more tolerant of these contaminants than others, best performance will be realized if a filter is installed to clean the air supply, thus preventing contaminants from interfering with the proper performance of the equipment. ROSS recommends a filter with a 5-micron rating for normal applications.
6. All standard ROSS filters and lubricators with polycarbonate plastic bowls are designed for compressed air applications only. Do *not* fail to use the metal bowl guard, where provided, to minimize danger from high pressure fragmentation in the event of bowl failure. Do not expose these products to certain fluids, such as alcohol or liquefied petroleum gas, as they can cause bowls to rupture, creating a combustible condition, hazardous leakage, and the potential for human injury or damage to property. Immediately replace a crazed, cracked, or deteriorated bowl. When bowl gets dirty, replace it or wipe it with a clean dry cloth.

7. Only use lubricants which are compatible with materials used in the valves and other components in the system. Normally, compatible lubricants are petroleum based oils with oxidation inhibitors, an aniline point between 180°F (82°C) and 220°F (104°C), and an ISO 32, or lighter, viscosity. Avoid oils with phosphate type additives which can harm polyurethane components, potentially leading to valve failure which risks human injury, and/or damage to property.

AVOID INTAKE/EXHAUST RESTRICTION

8. Do not restrict the air flow in the supply line. To do so could reduce the pressure of the supply air below the minimum requirements for the valve and thereby cause erratic action.
9. Do not restrict a valve's exhaust port as this can adversely affect its operation. Exhaust silencers must be resistant to clogging and must have flow capacities at least as great as the exhaust capacities of the valves. Contamination of the silencer can result in reduced flow and increased back pressure.

ROSS expressly disclaims all warranties and responsibility for any unsatisfactory performance or injuries caused by the use of the wrong type, wrong size, or an inadequately maintained silencer installed with a ROSS product.

POWER PRESSES

10. Mechanical power presses and other potentially hazardous machinery using a pneumatically controlled clutch and brake mechanism must use a press control double valve with a monitoring device. A double valve without a self-contained monitoring device should be used only in conjunction with a control system which assures monitoring of the valve. All double valve installations involving hazardous applications should incorporate a monitoring system which inhibits further operation of the valve and machine in the event of a failure within the valve mechanism.

ENERGY ISOLATION/EMERGENCY STOP

11. Per specifications and regulations, ROSS **L-O-X®** and **L-O-X®** with **EEZ-ON®** operation products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

STANDARD WARRANTY

ROSS' obligation under this warranty is limited to repair or replacement of the product or refund of the purchase price paid solely at the discretion of ROSS and provided such product is returned to ROSS freight prepaid and upon examination by ROSS is found to be defective. This warranty becomes void in the event that product has been subject to misuse, misapplication, improper maintenance, modification or tampering.

THE WARRANTY EXPRESSED ABOVE IS IN LIEU OF AND EXCLUSIVE OF ALL OTHER WARRANTIES AND ROSS EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES EITHER EXPRESSED OR IMPLIED WITH RESPECT TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ROSS MAKES NO WARRANTY WITH RESPECT TO ITS PRODUCTS MEETING THE PROVISIONS OF ANY GOVERNMENTAL OCCUPATIONAL SAFETY AND/OR HEALTH LAWS OR REGULATIONS. IN NO EVENT IS ROSS LIABLE TO PURCHASER, USER, THEIR EMPLOYEES OR OTHERS FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM A BREACH OF THE WARRANTY DESCRIBED ABOVE OR THE USE OR MISUSE OF THE PRODUCTS. NO STATEMENT OF ANY REPRESENTATIVE OR EMPLOYEE OF ROSS MAY EXTEND THE LIABILITY OF ROSS AS SET FORTH HEREIN.

All products sold by ROSS CONTROLS are warranted for a one-year period [with the exception of all Filters, Regulators and Lubricators ("FRLs") which are warranted for a period of seven years] from the date of purchase to be free of defects in material and workmanship.





GLOBAL Reach with a LOCAL TouchSM

ROSS CONTROLS

Troy, MI., U.S.A.

Telephone: + 1-248-764-1800

Fax: + 1-248-764-1850

In the United States:

Customer Service: 1-800-GET ROSS
(438-7677)

Technical Service: 1-888-TEK-ROSS
(835-7677)

www.rosscontrols.com

ROSS EUROPA GmbH

Langen, Germany

Telephone: + 49-6103-7597-0

Fax: + 49-6103-74694

Email: info@rosseuropa.com

www.rosseuropa.com

ROSS ASIA K.K.

Kanagawa, Japan

Telephone: + 81-427-78-7251

Fax: + 81-427-78-7256

www.rossasia.co.jp

ROSS UK Ltd.

Birmingham, United Kingdom

Telephone: + 44-121-559-4900

Fax: + 44-121-559-5309

Email: sales@rossuk.co.uk

ROSS CONTROLS INDIA Pvt. Ltd.

Chennai, India

Telephone: + 91-44-2624-9040

Fax: + 91-44-2625-8730

Email: rossindia@airtelmail.in

ROSS SOUTH AMERICA Ltda.

São Paulo, Brazil CEP 09725-020

Telephone: + 55-11-4335-2200

Fax: + 55-11-4335-3888

Email: vendas@ross-sulamerica.com.br

DIMAFLUID s.a.s.

Saint Ouen, France

Telephone: + 33-01-49-45-65-65

Fax: + 33-01-49-45-65-30

Email: dimafluid@dimafluid.com

www.dimafluid.com

ROSS CONTROLS (CHINA) Ltd.

Shanghai, China

Telephone: + 86-21-6915-7951

Fax: + 86-21-6915-7960

www.rosscontrolschina.com

Your local ROSS distributor is:

There are ROSS Distributors Throughout the World

To meet your requirements across the globe, ROSS distributors are located throughout the world. Through ROSS or its distributors, guidance is available for the selection of ROSS products, both for those using pneumatic components for the first time and those designing complex pneumatic systems.

This catalog presents an overview of the extensive ROSS product line. Other literature is available for engineering, maintenance, and service requirements. If you need products or specifications not shown here, please contact ROSS or your ROSS distributor. They will be happy to assist you in selecting the best product for your application.