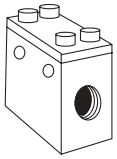
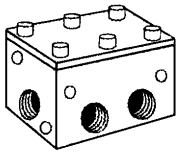
Check Valves

Pilot-Operated Check Valves

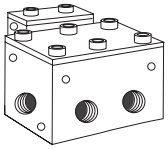


Type A Single P.O. Check Valve
Ports: 1/4, 3/8, 1/2

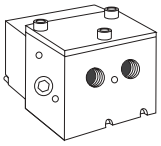
Type B Single P.O. Check Valve
Ports: 1/4 through 1-1/2



Type C Dual P.O. Check Valve
Ports: 3/8 through 1



Type D Internal Pilot Dual P.O. Check Valve (Remote Trapped Pressure Relief) Ports: 3/8 through 1

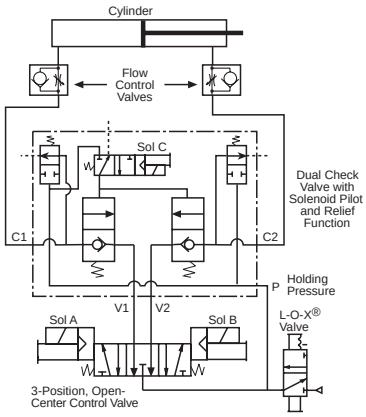


Type D Internal Pilot Dual P.O. Check Valve (Manual Trapped Pressure Relief) Ports: 3/8 through 1

Type E Solenoid Pilot Dual P.O. Check Valve Ports: 3/8 through 1

- Can be used wherever a high-flow or remotely-controlled checking function is needed.
- Can be used in a circuit to provide automatic stopping of a cylinder in the event of the loss of electrical or pneumatic power.
- Also available with an Automatic exhausting function, Remote and Manual Trapped Pressure Relief Function, or Solenoid Pilot Dual P.O. Check.
- For special applications where there is a restriction in the operating valve's exhaust, some models of the Type B check valve (see below) are available with heavier springs. It should be noted, however, that the heavier spring will raise the required pilot pressure for the check valve.

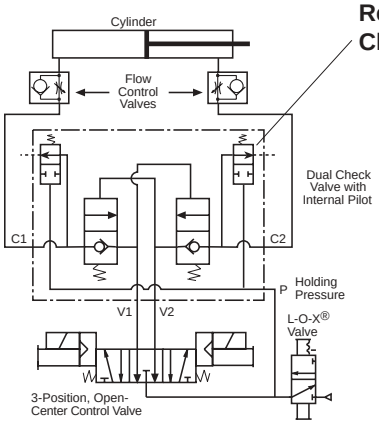
Solenoid PO Dual Check Valve Application



Pressure in cylinder is exhausted when the air supply at port "P" is lost or locked out.

Remote Trapped Pressure Relief

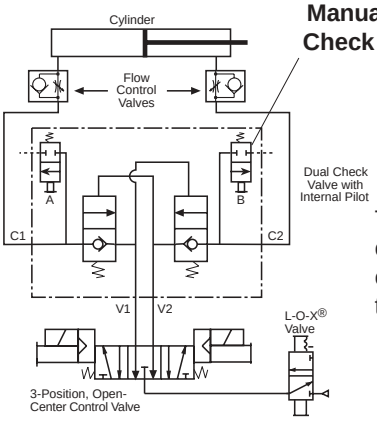
Remote-controlled Check Valve Relief



Trapped pressure between check valve and cylinder is exhausted when the air supply at "P" port is lost or locked out.

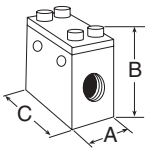
Manual Trapped Pressure Relief

Manual-controlled Check Valve Relief

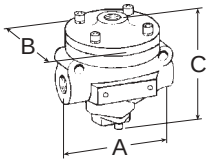


Trapped pressure between check valve and cylinder is exhausted when push buttons A and B are pressed.

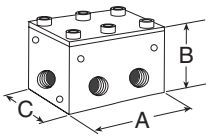
Pilot-Operated Check Valves



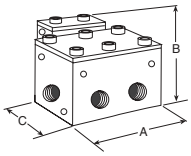
A**



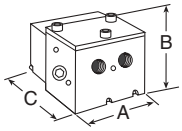
B



C**



D **Remote**

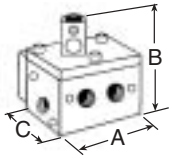


D **Manual**

Valve Type	Port Size	Valve Model Number	Avg. C_V (Fully open)	Dimensions inches (mm) A	B	C	Weight lb. (kg)
A	1/4	2751A2908	2.2	1.5 (38)	3.6 (91)	2.0 (51)	2.3 (1.0)
	3/8	2751A3908	2.9	1.5 (38)	3.6 (91)	2.0 (51)	
	1/2	2751A4915	3.2	1.5 (38)	3.6 (91)	2.5 (64)	
B	1/4	2751A2903	2.3	3.6 (91)	3.8 (95)	3.1 (79)	1.3 (0.6)
	3/8	2751A3901	3.8	3.6 (91)	3.8 (95)	3.1 (79)	
	1/2	2751A4902	4.0	3.6 (91)	3.8 (95)	3.1 (79)	
B	1/2	2751A4905	7.7	4.6 (116)	4.4 (112)	3.1 (79)	2.3 (1.0)
	3/4	2751A5903	9.0	4.6 (116)	4.4 (112)	3.1 (79)	
	1	2751A6901	9.0	4.6 (116)	4.4 (112)	3.1 (79)	
B	1	2751B6904	24	6.7 (169)	6.5 (165)	4.1 (104)	6.0 (2.7)
	1-1/4	2751B7901	29	6.7 (169)	6.5 (165)	4.1 (104)	
	1-1/2	2751B8902	29	6.7 (169)	6.5 (165)	4.1 (104)	
C Dual	3/8	2768C3900	2.9	3.4 (89)	3.7 (94)	2.4 (61)	2.0 (0.9)
	1/2	2768C4900	3.2	3.4 (89)	3.7 (94)	2.4 (61)	2.4 (1.1)
	3/4	2768C5900	8.5	4.4 (111)	4.1 (104)	3.0 (76)	3.8 (1.7)
	1	2768A6900	8.5	5.8 (147)	4.1 (104)	3.9 (99)	6.8 (3.1)
D Remote	3/8	2768C3901	2.9	3.4 (86)	3.7 (94)	3.8 (51)	3.5 (1.6)
	1/2	2768C4901	3.2	3.4 (86)	3.7 (94)	3.8 (51)	3.5 (1.6)
	3/4	2768C5901	8.5*	4.4 (112)	4.1 (104)	3.0 (112)	5.2 (2.3)
	1	2768A6901	8.5*	5.8 (147)	4.1 (104)	6.0 (153)	8.8 (4.0)
D Manual	3/8	2768C3904	2.9	3.4 (86)	3.4 (86)	4.2 (107)	3.2 (1.4)
	1/2	2768C4904	3.2	3.4 (86)	3.4 (86)	4.2 (107)	3.5 (1.6)
	3/4	2768C5904	8.5*	4.4 (112)	6.7 (170)	4.4 (112)	5.2 (2.3)
	1	2768A6904	8.5*	5.8 (147)	6.7 (170)	6.0 (152)	8.8 (4.0)

*Effective Cv varies with load and pressure drop. Consult ROSS for specifics on your system.

**** Sensing Port**
The type A, C & D PO Checks have additional ports provided for the installation of a pressure sensing device such as a pop-up indicator or pressure switch as shown on page 66. Standards suggest that machine design should include a method for verifying the release of stored energy.



E

Valve Type	Port Size	Avg. C_V	DIN Connector	3-Pin Mini Connector	24VDC 3-Pin Mini Connector	24VDC 4-Pin Micro Connector	Dimensions inches (mm) A	B	C	Weight lb. (kg)
E	3/8	2.9	2778C3900	2778C3901	2778C3902	2778C3904	3.4 (86)	5.6 (142)	3.8 (97)	4.0 (1.8)
	1/2	3.2	2778C4900	2778C4901	2778C4902	2778C4904	3.4 (86)	5.6 (142)	3.8 (97)	4.2 (1.9)
	3/4	8.5*	2778C5900	2778C5901	2778C5902	2778C5904	4.4 (112)	6.7 (170)	4.4 (112)	6.1 (2.8)
	1	8.5*	2778A6900	2778A6901	2778A6902	2778A6904	5.8 (147)	6.7 (170)	6.0 (152)	6.1 (2.8)

*Effective C_V varies with load and pressure drop. Consult ROSS for specifics on your system.

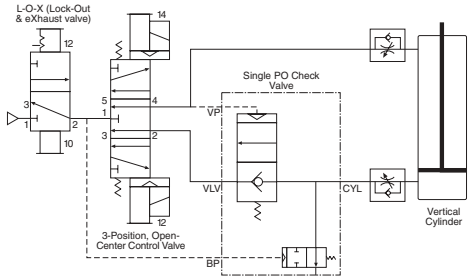
For further installation and application information, consult ROSS Bulletin 430.

IMPORTANT NOTE
Please read carefully and thoroughly all of the **CAUTIONS** on page 89.

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: Internal Pilot Models: 15 to 150 psig (1 to 10 bar); Solenoid Pilot Models: 30 to 150 psig (2 to 10 bar).
Signal Pressure: Must be equal to or greater than inlet.

Check Valves

Single Pilot-Operated Check Valves with Trapped Pressure Relief



Port Size	Model Number	Average C_v	Weight Lb (kg)
3/8 NPT	2751A3922	2.6	1.8 (0.8)
G 3/8	D2751A3922	2.6	1.8 (0.8)
1/2 NPT	2751A4922	2.8	1.8 (0.8)
G 1/2	D2751A4922	2.8	1.8 (0.8)
3/4 NPT	2751A5917	9.2	2.9 (1.3)

Pilot operated check valves with trapped pressure relief can be used to control vertically mounted pneumatic cylinders in the following ways.

- Maintaining a vertical cylinder in a stationary position. Even upon loss of electrical power.
- Jogging a vertical cylinder.
- Relieving pressure trapped between check valve and cylinder.

CIRCUIT FEATURES:

- Trapped pressure between check valve and cylinder is exhausted when the air supply at the Blowdown Signal Port (BP) is lost or locked out.
- Cylinder moves as long as the control valve solenoid is energized. Use for continuous motion or jogging.
- Cylinder remains stationary if neither control valve solenoid is energized, or if electrical signal is lost.
- The single PO check with pressure relief have an additional 1/8" NPT port provided for the installation of a pressure sensing device such as a pop-up indicator or pressure switch as shown on page 66. Standards suggest that machine design should include a method for verifying the release of stored energy.

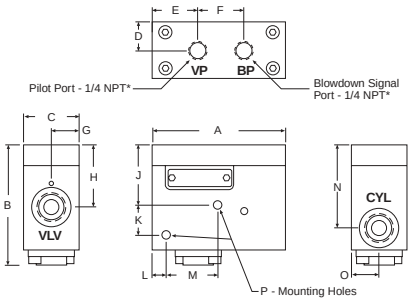
IMPORTANT NOTES and CAUTIONS:

- Cylinder movement may occur when inlet pressure is lost. The cylinder's movement is slowed only by the restrictions of the flow control valves, and by the exhaust capacity of the check valve relief flow capacity.
- For best response, flow control valves should be installed between the check valve and the cylinder.
- Pressurizing the system after supply air has been off may cause rapid movement of the cylinder because cylinder air was exhausted while the supply air was off.

INSTALLATION:

- Locate the check valve as close to the cylinder as possible. This will minimize cylinder bounce and drift.
- Use non-expandable hose between check valve and cylinder. The expandability of thin-wall flexible hose can magnify cylinder bounce and drift.
- To install threaded pipe or fittings, engage threads one turn, apply thread sealant (tape not recommended) to threads, and tighten pipe or fitting fully.
- After system is pressurized, check all connections with soapy water to ensure that there are no leaks. Drifting can occur if leaks are present between the check valve and the cylinder.
- Pressure at port BP must be equal to or greater than the pressure in the cylinder and greater than the minimum operating pressure of the control valve.
- Do not restrict the exhaust of the control valve.

Dimensions – inches (mm)



Dimensions inches(mm)	Port Sizes* 3/8 & 1/2	Port Sizes* 3/4
A	3.9 (100)	4.3 (110)
B	3.5 (89)	4.2 (107)
C	1.7 (44)	2.2 (56)
D	0.8 (21)	1.1 (28)
E	1.3 (34)	1.6 (41)
F	1.4 (36)	1.7 (44)
G	0.8 (21)	1.1 (28)
H	1.8 (46)	2.1 (54)
J	1.7 (43)	1.6 (41)
K	0.9 (23)	1.5 (38)
L	0.4 (10)	0.4 (10)
M	1.5 (38)	2.1 (53)
N	2.4 (61)	2.8 (72)
O	0.8 (21)	1.1 (28)
P	0.27 (6.9)	0.34 (8.7)

* All ports have G (metric) threads on model numbers with D prefix, e.g. D2751A3922.

IMPORTANT NOTE
Please read carefully and thoroughly all of the **CAUTIONS** on page 89.

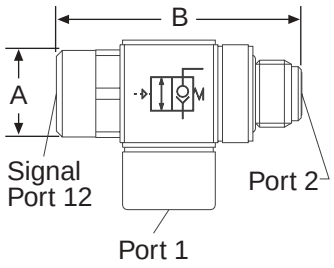
STANDARD SPECIFICATIONS: For valves on this page.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 15 to 150 psig (1 to 10 bar)
Pilot Pressure: Must be equal to or greater than inlet pressure.

Right-Angle Pilot Operated Check Valves

Pilot-Operated Check Valves

Pilot-Operated Check Valves are used to block the return of air from cylinders or other devices. Air flows freely from port 1 to port 2, but a signal at port 12 is required to allow flow in the reverse direction from port 2 to port 1.

Right angle design with banjo for easy positioning of pipe or tubing.

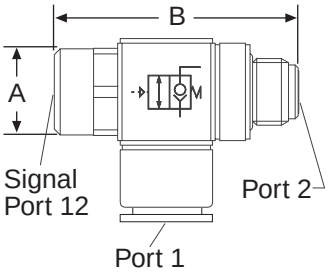


Threaded Banjo

Models with Threaded Banjo

Port Size		Valve Model Numbers	Average C_v		Dimensions inches (mm)		Tightening Torque Max. Ft-lb (Nm)
Port 1*	Port 2**		1 to 2	2 to 1	A	B	
G1/8	G1/8	D1958A1010	0.4	0.4	0.5 (13)	1.7 (41)	7.38 (10)
G1/4	G1/4	D1958A2010	0.8	0.7	0.7 (17)	1.9 (48)	8.85 (12)
G3/8	G3/8	D1958A3010	1.2	1.3	0.9 (22)	2.2 (55)	14.75 (20)
G1/2	G1/2	D1958A4010	2.3	2.2	1.1 (27)	2.6 (66)	22.13 (30)
1/8	1/8	1958A1010	0.4	0.4	0.5 (13)	1.7 (41)	11.06 (15)
1/4	1/4	1958A2010	0.8	0.7	0.7 (17)	1.9 (48)	14.75 (20)
3/8	3/8	1958A3010	1.2	1.3	0.9 (22)	2.2 (55)	22.13 (30)
1/2	1/2	1958A4010	2.3	2.2	1.1 (27)	2.6 (66)	29.50 (40)

* Threads in port 1 are female.
** Port 2 threads are male.



Push-to-Connect Fitting

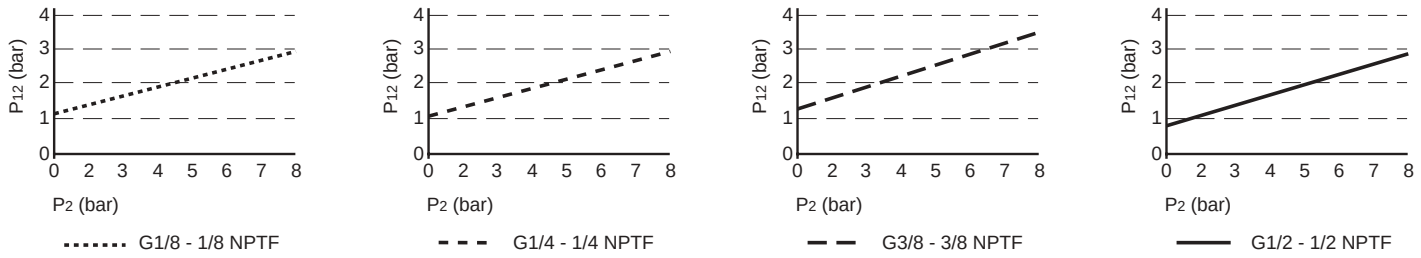
Models with Push-to-Connect Fitting

Port Size		Valve Model Numbers	Average C_v		Dimensions inches (mm)		Tightening Torque Max. Ft-lb (Nm)
Port 1#	Port 2**		1 to 2	2 to 1	A	B	
4.0 6.0 8.0	G1/8	D1958A1140 D1958A1160 D1958A1180	0.4	0.4	0.5 (13)	1.7 (41)	7.38 (10)
6.0 8.0 10.0	G1/4	D1958A2160 D1958A2180 D1958A2110	0.8	0.7	0.7 (17)	1.9 (48)	8.85 (12)
8.0 10.0	G3/8	D1958A3180 D1958A3110	1.2	1.3	0.9 (22)	2.2 (55)	14.75 (20)
5/32” 1/4”	1/8	1958A1115 1958A1120	0.4	0.4	0.5 (13)	1.7 (41)	11.06 (15)
1/4” 3/8”	1/4	1958A2120 1958A2130	0.8	0.7	0.7 (17)	1.9 (48)	14.75 (20)
3/8”	3/8	1958A3130	1.2	1.3	0.9 (22)	2.2 (55)	22.13 (30)

Port 1 tubing size in mm ( ) or inches (”).
** Port 2 threads are male.

Pilot port (12) thread is M5 for models with G threads and 10-32UNF for models with NPTF threads. Manual override models available - consult ROSS.

Signal Pressure: The charts below show the minimum signal pressure (P12) to open the valve versus port 2 pressure (P_2) when there is no pressure at port 1 (P_1 = 0 bar).



IMPORTANT NOTE
Please read carefully and thoroughly all of the **CAUTIONS** on page 89.

STANDARD SPECIFICATIONS:
Ambient/Media Temperature: 15° to 160°F (-10° to 70°C).
Flow Media: Filtered air. 5 micron recommended.
Operating Pressure: 15 to 150 psig (1 to 10 bar).