Airflex® Quick Release Valve Description

Section I

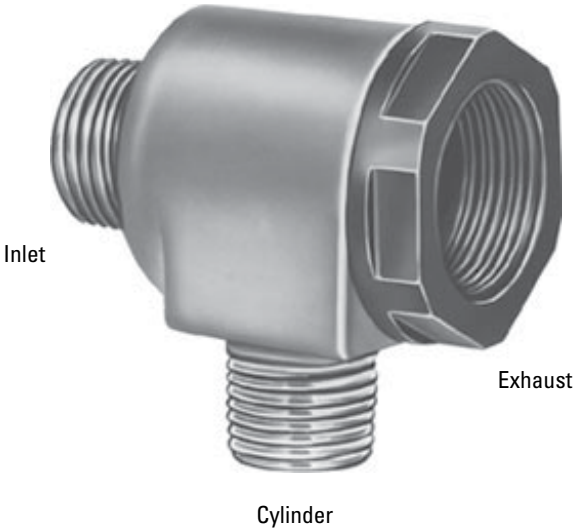
Description

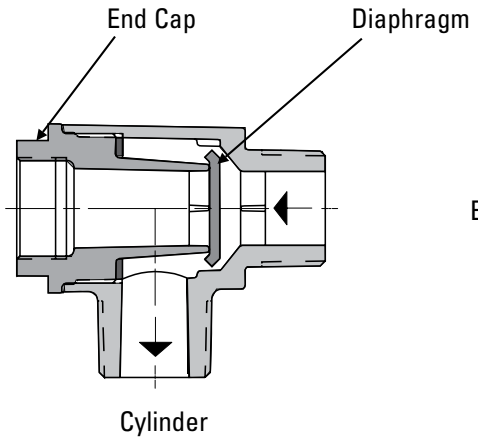
The Airflex quick release valve (QRV) is a pneumatic in-line, three-way valve designed to automatically close upon pressurization and open to exhaust when a pressure drop occurs in the supply line. The valve provides an exhaust port close to the pressurized chamber of the device being controlled rather than exhausting through long supply lines and/or control components. The end result is a reduction in lag time between the signal to exhaust and response. The benefits derived include:

- Faster cyclic rates
- Reduction or elimination of overlap
- Reduced wear of drive components

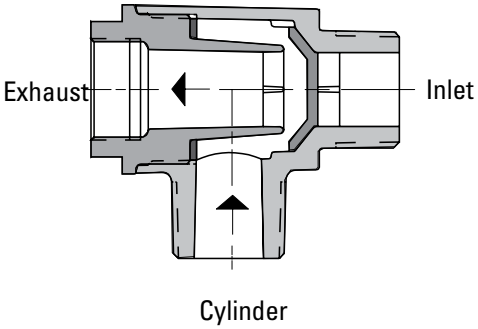
Four basic valve sizes are available, identified by the American National Pipe Thread on the cylinder port: 3/8", 1/2", 3/4" and 1" NPT. Models are available with inlet ports suitable for either pipe or tubing connections. Mufflers are also available to reduce exhaust noise.

Quick release valve sizes 3/8, 1/2 and 3/4 utilizes a diaphragm in their design. Air pressure, at the inlet, seats the diaphragm on the end cap, closing the exhaust port. Pressure on the outer unsupported diaphragm area causes it to deflect, allowing air to flow to the cylinder port. When a pressure drop occurs in the air supply, the pressure differential lifts the diaphragm from the exhaust port and seats it on the inlet port. Air from the pressurized device can now flow freely to atmosphere through the exhaust port.





Valve Pressurized



Valve Open to Exhaust

Airflex® Quick Release Valve Description

Component Part Descriptions

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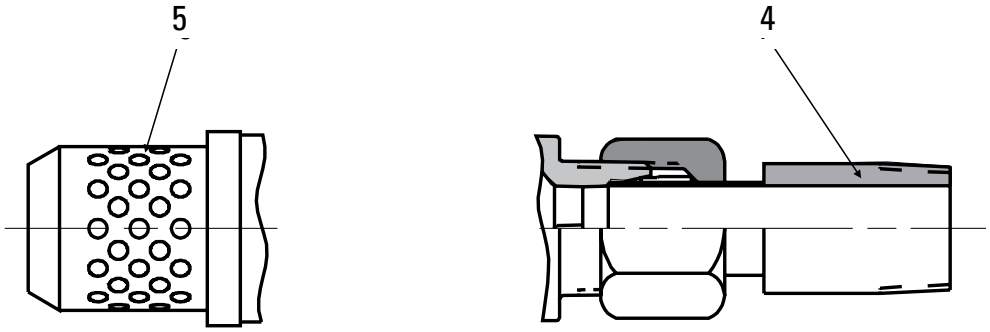
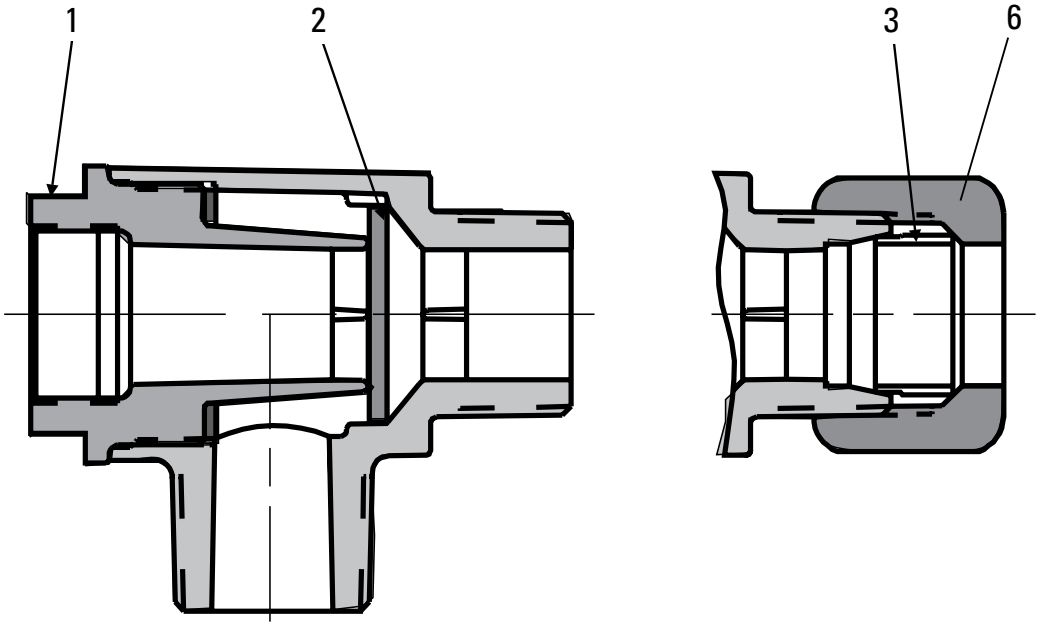


Diaphragm Type Valve



Item	Description
1	End Cap
2	Diaphragm
3	Rubber Sleeve Metal Sleeve
4	Pipe Adapter
5	Muffler
6	Nut

Airflex® Quick Release Valves

Forms QRV 909 & 910 Technical Data
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Technical Data for Diaphragm Type Valve

Maximum operating pressure: 150 psi (10,3 bar)

Minimum sealing pressure: 2 psi (0,14 bar)

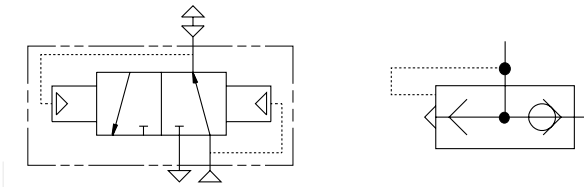
Air quality: Clean and dry to avoid contamination of housing and diaphragm. Any additive used in air supply must be compatible with valve materials.

Operating temperature range: -40°F (-40°C) to 120°F (49°C).

Mean life: Over five million cycles at 75 psi (5,2 bar) and 80°F (27°C).

Diaphragm material: Polyurethane

Housing material: Zinc alloy



ANSI Symbol

ISO Symbol

Part Numbers

The basic quick release valve part numbers are given in the following table. A double alpha suffix must be added, to the basic number to completely identify the valve. For instance, part number 145407DG identifies a 1/2 QRV having pipe threads on its inlet port.

Size	Basic Part Number
13/8	145406
1/2	145407
3/4	145141
1	146506

Size	Inlet Port Options		Cylinder Port American National Pipe Thread
	American National Pipe Thread	Tubing Outside Diameter (in)	
3/8	3/8-18	0.500	3/8-18
1/2	1/2-14	0.625	1/2-14
3/4	3/4-14	0.750	3/4-14
1	1-11 1/2	1.000	1-11 1/2

Flow Capacity ❻

Size	English		SI	
	Standard Cubic Feet per Minute		Cubic Meter per Minute	
	Inlet to Cylinder	Cylinder to Exhaust	Inlet to Cylinder	Cylinder to Exhaust
3/8	121	206	3,4	5,8
1/2	172	256	4,9	7,2
3/4	287	376	8,1	17,2

Muffler Part Numbers

Size	Basic Part Number
3/8", 1/2", 3/4"	414915
1"	305018

3/8, 1/2, 3/4 Quick Release Valve Options

Description	Designation
w/Metal Sleeve	DE
w/Rubber Sleeve	DF
w/Inlet Pipe Thread	DG
w/Metal Sleeve & Muffler	DS
w/Rubber Sleeve & Muffler	DR
w/Inlet Pipe Thread & Muffler	DT
w/Metal Sleeve & Pipe Adapter	DL
w/Metal Sleeve & 1/4 Pipe Adapter	DM
Diaphragm & End Cap Kit	DP
Diaphragm, Muffler & End Cap Kit	DQ

1 Quick Release Valve Options

Description	Designation
w/Steel Sleeve	BD
w/Steel Sleeve & Muffler	BE
w/1-11 1/2 Pipe Threads Both Ports	BF
w/Pipe Adapter	BR
w/Pipe Adapter & Muffler	CA
Replacement Kit ❼	BZ
Replacement Kit w/Muffler ❼	DX

Airflex® Quick Release Valves

Forms QRV 909 & 910 Dimensional Data

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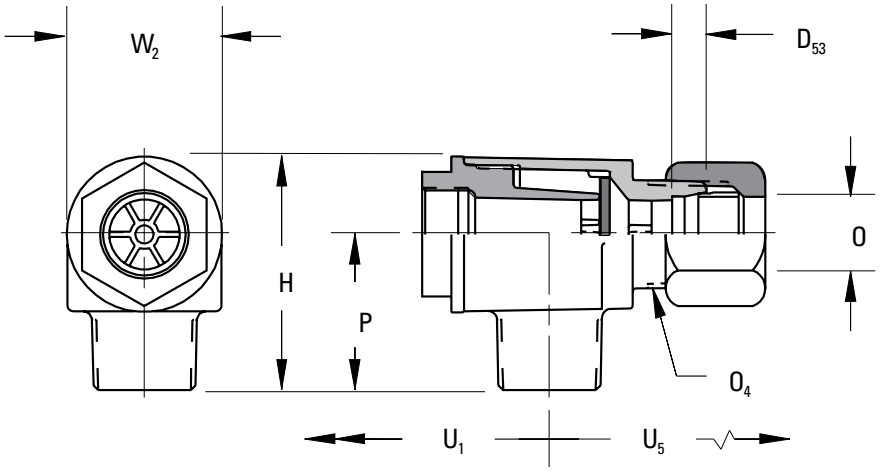
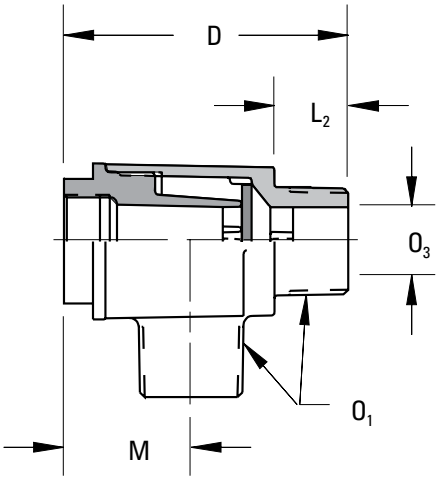
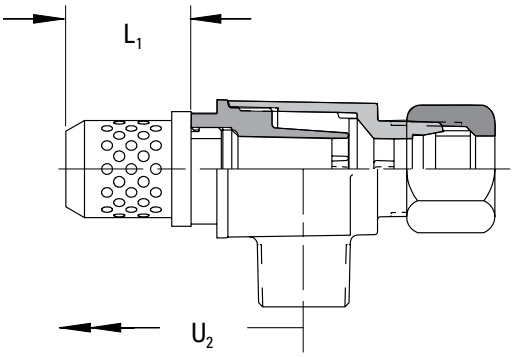


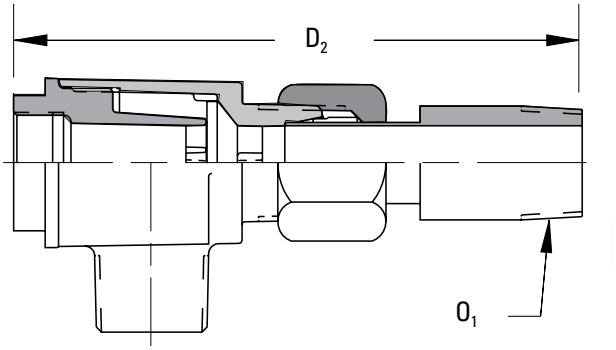
QRV with metal or rubber sleeve



QRV with inlet pipe thread



QRV with metal or rubber sleeve and muffler



QRV with metal sleeve and pipe adapter

English	Dimensions in inches															
3/8	2.10	3.52	0.31	1.93	1.42	0.56	0.95	0.500	3/8-18	0.43	3/4-16	1.26	1.17	2.47	2.00	1.36
1/2	2.50	3.92	0.34	2.18	1.42	0.63	1.10	0.625	1/2-14	0.56	7/8-14	1.44	1.33	2.63	2.15	1.49
3/4	2.85	4.27	0.34	2.33	1.42	0.74	1.28	0.750	3/4-14	0.67	1 1/16-16	1.56	1.49	2.80	2.52	1.56
1	3.38	6.04	0.38	2.94	3.09	0.81	1.61	1.000	1-11 1/2	0.94	1 5/16-16	1.94	1.90	4.50	2.75	2.00
Size	**D**	**D_2**	**D_{53} ❶**	**H**	**L_1**	**L_2**	**M**	**O ❷**	**O_1 ❸**	**O_3**	**O_4 ❹**	**P**	**U_1 ❺**	**U_2 ❺**	**U_5 ❺**	**W_2**
3/8	53	89	8	49	36	14	24	12,7	3/8-18	11	3/4-16	32	30	63	51	35
1/2	64	100	9	55	36	16	28	15,9	1/2-14	14	7/8-14	37	34	67	55	38
3/4	72	108	9	59	36	19	33	19,1	3/4-14	17	1 1/16-16	40	38	71	64	40
1	86	153	10	75	78	21	41	25,4	1-11 1/2	24	1 5/16-16	49	48	114	70	51
SI	**Dimensions in millimeters**															

Notes:

❶ Depth of tube insertion.

❷ Outside tube diameter.

❸ American Pipe Thread

❹ American National Standard for Unified Screw Threads.

❺ Swing radius.

❻ At 100 psi (6,9 bar) inlet pressure with full pressure drop.