Airflex® Rotorseals and Quick Release Valves

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Airflex® Rotorseal Description

Section I

Description

The Airflex rotorseal is a rotary union (rotary joint) which permits the transfer of gases or liquids, under pressure or vacuum, into or out of the exposed end of a rotating shaft or body. It was designed primarily for the passage of compressed air or hydraulic fluid to control clutches or brakes. Other applications include the transmittal of cutting fluid to machine tools, lubrication of shaft-mounted components and circulation of oil for cooling systems.

The rotating seal is established by a non-metallic sealing ring, held against the rotorseal shaft by a light spring force. The sealing ring is designed so that media pressure acts on both of its ends to minimize the force on the sealing surface.

This design gives positive protection against leakage and compensates for seal wear. Ball bearings are used between the stationary and rotating ports to provide rigidity to the rotorseal assembly and to minimize the running torque.

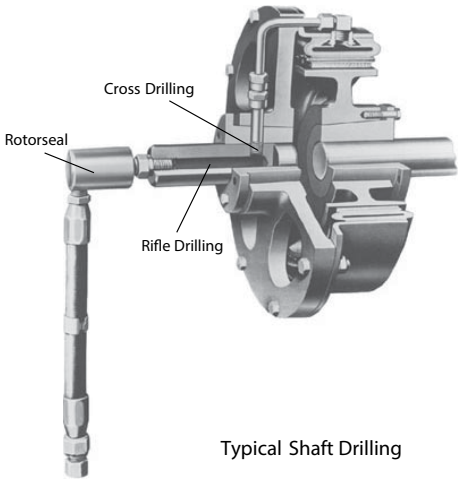
Rotorseals are available with single, dual and triple passages, in a variety of sizes and designs, to provide the versatility needed to handle most requirements. Single passage rotorseals, in pneumatic installation, can be plumbed with a quick release valve at its inlet port to provide a convenient exhaust.

In most applications, the rotorseal is mounted to the end of a shaft. The shaft is rifle and cross drilled to provide a passageway for the media transmitted. It is important that the rotorseal's axis of rotation be concentric with the rotating member's axis of rotation to minimize rotorseal wobble.

RotorsealType	No. of Passages	Inlet Port(s) ❶
AA2	1	1/8-27
B3	1	3/8-18 ❷
C2	1	1/2-14
3/4 RH	1	3/4-14
1 RH	1	1-11 1/2
1 1/4 RH	1	1 1/4-11 1/2
1 1/2 RH	1	1 1/2-11 1/2
2 RH	1	2-11 1/2
AD	2	1/4-18
ADP	2	1/4-18
BD	2	1/4-18
FDA	2	1/2-14
BTA	3	1/2-14 .

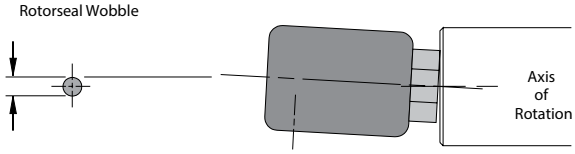
❶ American National Pipe Thread

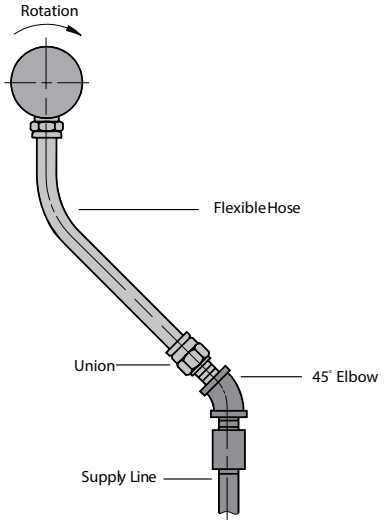
❷ Furnished with 3/8-18 NPT to 1/4-18 NPT reducer bushing



Typical Shaft Drilling

To accommodate eccentricities, a flexible connection must be used between the rotorseal and supply. A rigid connection will tend to preload the rotorseal bearings. The flexible connection should not be installed taut and should include a union and 45 ^{0} elbow as shown.





The flexible connection should be attached to the rotorseal prior to fastening the rotorseal to the rotating body to avoid seal or bearing damage. The union connection to the supply line is made last.

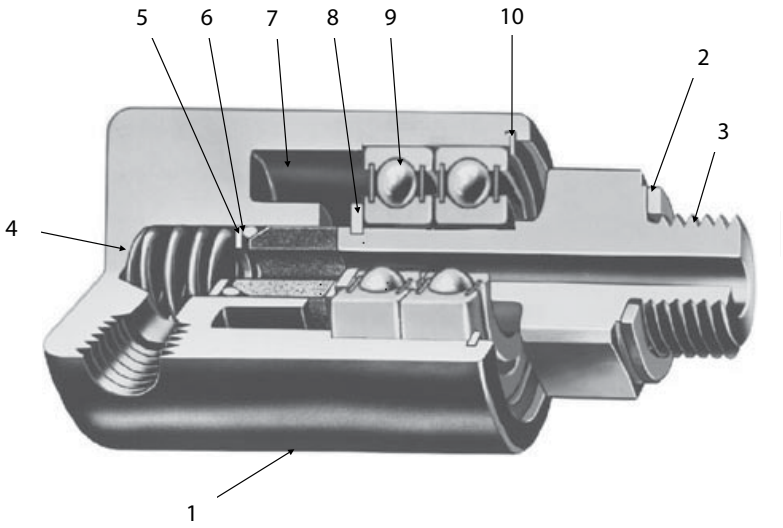
Airflex® Single Passage Rotorseals

Component Part Descriptions

Section I

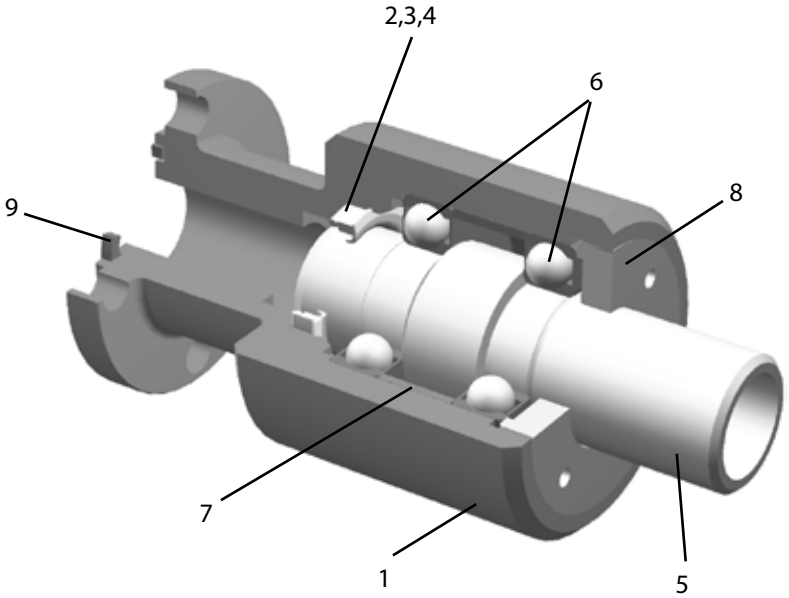
Types AA2, B3 and C2

Item	Description
1	Housing
2	Copper Gasket
3	Shaft
4*	Spring
5*	Spring Stop
6*	"O" Ring
7*	Carbon Seal
8	Snap Ring (Internal)
9	Bearing
10	Snap Ring (External)
*	Replacement Seal Kit



Type RH

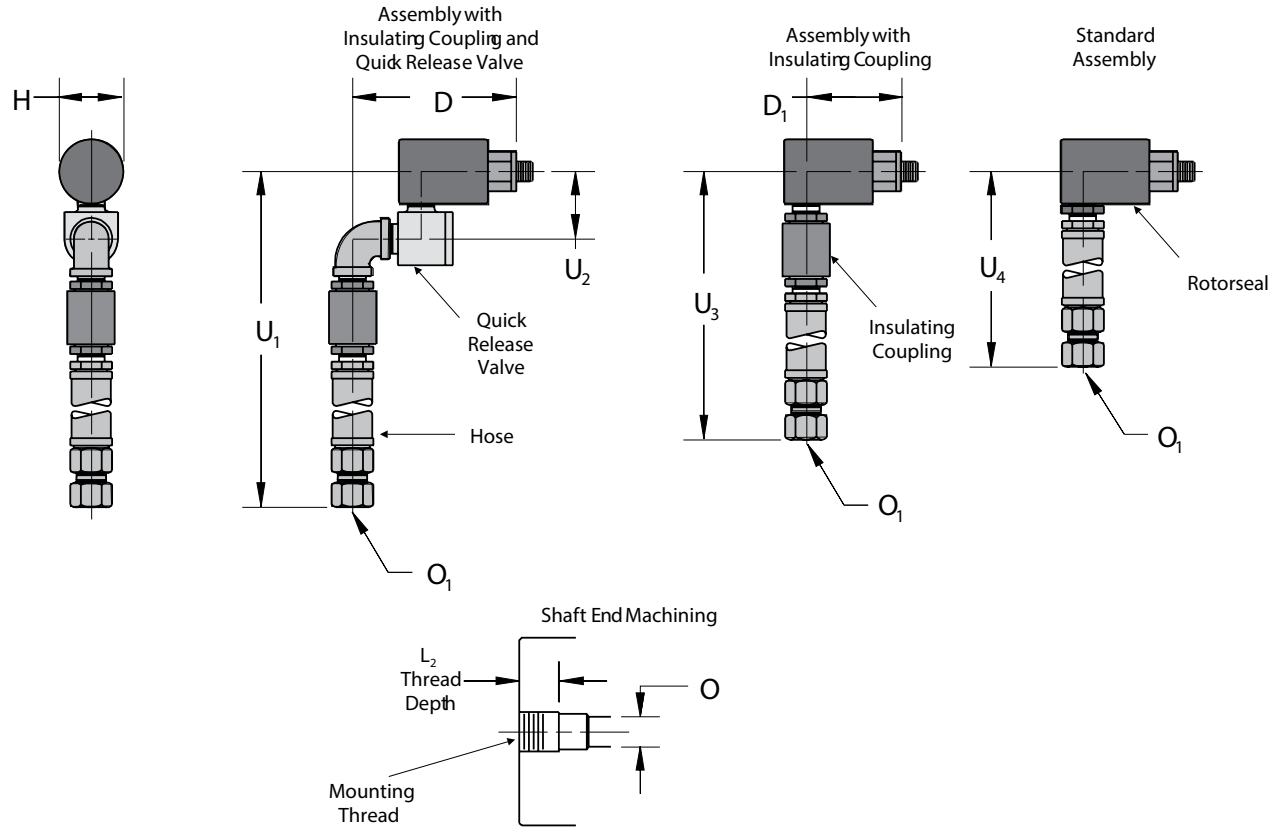
Item	Description
1	Housing
2*	Can Lip Seal
3*	Spirolox Retaining Ring
4*	"O" Ring
5	Shaft
6	Ball Bearings
7	Bearing Spacer
8	Cover
*9	Grommet
*	Replacement Seal Kit



Airflex® Single Passage Rotorseals

Mounting Dimensions Sizes AA2, B3, & C2

Section I



English	Dimensions in inches										
AA2	3/8-24	N/A	2.31	1.38	0.75	0.19	1/8-27	N/A	N/A	N/A	12.5
B3	5/8-18	3.70	2.53	1.63	0.75	0.50	3/8-18	15.3	1.7	14.5	12.5
C2	1-14	4.49	3.15	2.50	1.00	0.75	1/2-14	15.4	2.3	14.2	12.8
Size	Mounting Thread ❶	D	D_1	H	L_2	O	O_1 ❷	U_1	U_2	U_3	U_4
AA2	3/8-24	N/A	59	35	19	5	1/8-27	N/A	N/A	N/A	318
B3	5/8-18	94	64	41	19	13	3/8-18	389	43	368	318
C2	1-14	114	80	64	19	19	1/2-14	391	58	361	325
SI	Dimensions in millimeters										

Description	Part Numbers		
	AA2	B3	C2
Rotorseal	145631E	145106BQ	145107BG
Hose used in all arrangements	153x261	318x3	318x2
Insulating coupling ❹	N/A	153x263	153x263
Quick release valve	N/A	145406DG	145407DG
Assembly with insulating coupling	N/A	104921	104907
Assembly with insulating coupling & QRV	N/A	104921A	104907A

Notes:

❶ American National Standard for Unified Screw Threads.

❷ American National Pipe Thread.

❸ Operation at maximum pressure and speed should be avoided. Refer K-14 for operating parameters.

❹ Used to prevent the transmittal of stray electrical eddy current.

❺ Furnished with 3/8-18 NPT to 1/4-18 NPT reducer bushing.

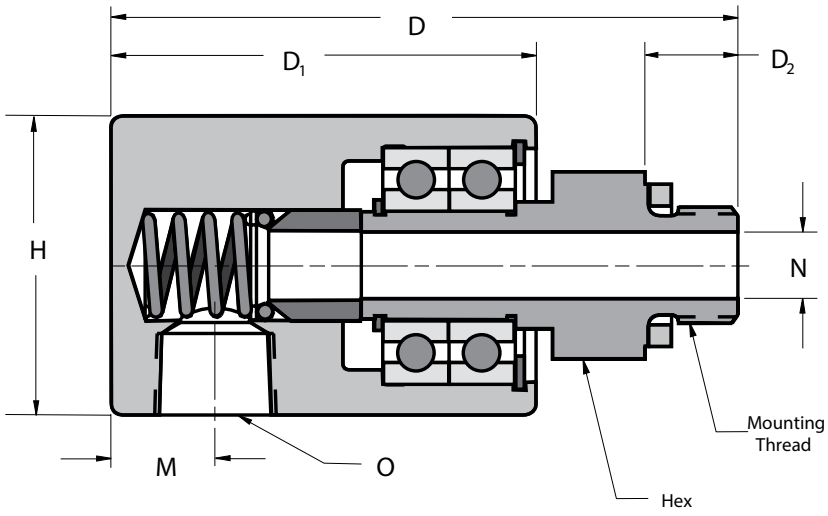
Airflex® Single Passage Rotorseals

Mounting Dimensions Sizes AA2, B3 & C2

Section I

Types AA2, B3 AND C2

In most applications, only one fluid is to be transmitted to a rotating assembly. This group of rotorseals will handle most medium volume, single passage requirements. External threads on the seal shaft and standard pipe threads on the inlet port make installations an easy job.



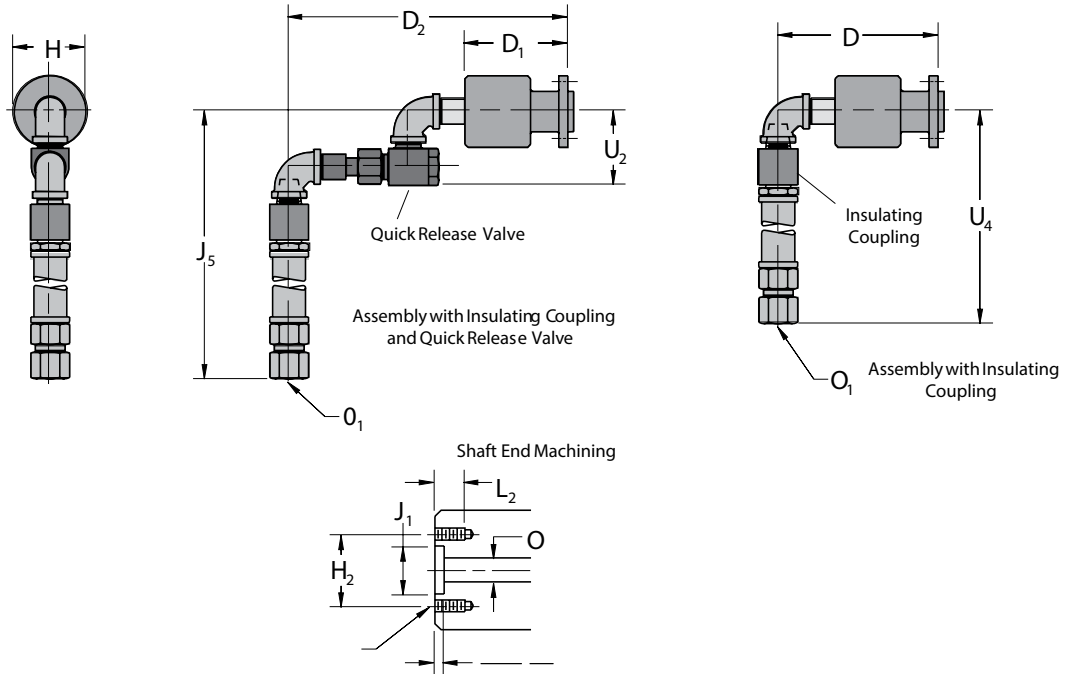
English	in ²	lb	Dimensions in inches								
AA2	0.019	0.4	0.625	3/8-24	2.81	2.00	0.50	1.38	0.38	0.16	1/8-27
B3	0.111	0.6	0.875	5/8-18	3.38	2.25	0.50	1.63	0.56	0.36	3/8-18 ❺
C2	0.307	2.0	1.375	1-14	4.45	3.00	0.75	2.38	0.69	0.63	1/2-14
Type	Passage Area	Weight / Mass	Hex Size	Mounting Thread ❶	D	D_1	D_2	H	M	N	O ❷
AA2	0,12	0,2	15,9	3/8-24	71	51	13	35	10	4	1/8-27
B3	0,72	0,3	22,2	5/8-18	86	57	13	41	14	9	3/8-18
C2	1,98	0,9	34,9	1-14	113	76	19	60	18	16	1/2-14
SI	cm2	kg	Dimensions in millimeters								

Type	Description	Part Number	Maximum rpm ❸	Maximum Pressure ❸	
				psi	bar
AA2	Standard model	145631E	4000	150	10,3
	High pressure	145631T	1000	1000	69
B3	Standard model	145106BQ	4000	150	10,3
	High pressure	145106BV	600	1000	69
	With left hand mounting thread	145106BE	4000	150	10,3
C2	Standard model	145107BG	3000	150	10,3
	High pressure	145107BK	400	1000	69
	With left hand mounting thread	145107AQ	3000	150	10,3

Airflex® Single Passage Rotorseals

Form RS 908 — Dimensional and Technical Data Type RH

Section I



English	Dimensions in inches												
3/4 RH	6.85	4.31	11.94	3.00	2.375	1.750	5/16-18	0.62	0.75	3/4-14	3.75	18.8	21.3
1RH	7.50	5.00	12.96	3.25	2.625	2.000	3/8-16	0.75	1.00	1-11 1/2	3.75	19.9	22.8
1 1/4 RH	8.51	5.50	N/A	3.75	3.125	2.500	3/8-16	0.75	1.25	1 1/4-11 1/2	N/A	29.0	N/A
1 1/2 RH	9.10	5.63	N/A	4.00	3.375	2.750	3/8-16	0.75	1.50	1 1/2-11 1/2	N/A	35.0	N/A
2RH	10.39	6.29	N/A	5.00	4.250	3.500	3/8-16	0.75	2.00	2-11 1/2	N/A	29.1	N/A
Size	D	D_1	D_2	H	H_2	J_1 ❺	L ❻	L_2	O	O_1 ❷	U_2	U_4	U_5
3/4 RH	174	109	303	76	60,3	44,5	5/16-18	16	19	3/4-14	95	478	541
1RH	191	127	329	83	66,7	50,8	3/8-16	19	25	1-11 1/2	95	505	579
1 1/4 RH	216	140	N/A	95	79,4	63,5	3/8-16	19	32	1 1/4-11 1/2	N/A	737	N/A
1 1/2 RH	231	143	N/A	102	85,7	69,9	3/8-16	19	38	1 1/2-11 1/2	N/A	889	N/A
2RH	264	160	N/A	127	108,0	88,9	3/8-16	19	51	2-11 1/2	N/A	739	N/A
SI	Dimensions in millimeters												

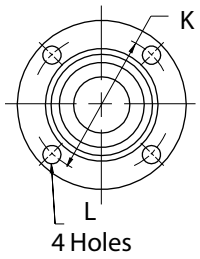
Description	3/4 RH	1 RH	1 1/4 RH	1 1/2 RH	2 RH
Rotorseal	145487AA	145488AB	145489AA	145461AA	46175AA
Hose used in all arrangements	318x4	250x20	250x37	250x38	250x25
Insulating coupling	153x264	153x267	153x265	153x266	153x782
Quick Release Valve	146506BR	146506BR	146506BR	N/A	N/A
Assembly with insulating coupling ❼	146506BR	104909AA	104910AA	105519AA	07815AA
Assembly with insulating coupling & QRV	104908AB	104909AB	104910AB	105519AB	N/A

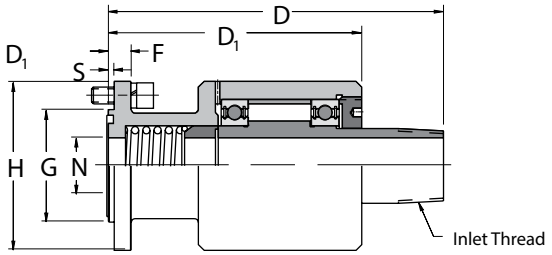
Airflex® Single Passage Rotorseals

Form RS 903 — Dimensional and Technical Data Type RH
Section I

Type RH

For applications which demand a large flow, single passage rotorseal, the RH (rotating housing) type provides a solution. This design incorporates a mounting flange for attachment to the machinery shaft or assembly. External American National Pipe Threads are provided on the rotorseal inlet shaft to facilitate supply line connections.





English		in²	lb	rpm	psi	Dimensions in inches									
3/4 RH	145487AA	0.44	3.5	1500	150	3/4-14	6.06	4.44	0.50	1.749	3.00	2.375	0.344	0.75	0.125
1RH	145488AB	0.79	4.5	1200	150	1-11 1/2	6.63	5.13	0.50	1.999	3.25	2.625	0.406	1.00	0.125
1-1/4 RH	145489AA	1.23	7	1000	150	1 1/4-11 1/2	7.44	5.63	0.50	2.499	3.75	3.125	0.406	1.25	0.125
1-1/2 RH	145461AA	1.77	12	800	150	1 1/2-11 1/2	7.84	5.75	0.63	2.749	4.00	3.375	0.406	1.50	0.125
2RH	146175AA	3.14	13	600	150	2-11 1/2	8.69	6.41	0.85	3.499	5.00	4.250	0.406	2.00	0.125
Size	Part Number	Passage Area	Weight / Mass	Max. ❶ Speed	Max. ❶ Pressure	Inlet ❷ Thread	D	D_1	F	G ❸	H	K	L	N ❹	S
3/4 RH	145487AA	3	1,6	1500	10,4	3/4-14	154	113	13	44,4	76	60,3	8,7	19	3,2
1RH	145488AB	5	2,0	1200	10,4	1-11 1/2	168	130	13	50,8	83	66,7	10,3	25	3,2
1-1/4 RH	145489AA	8	3,2	1000	10,4	1 1/4-11 1/2	189	143	13	63,5	95	79,4	10,3	32	3,2
1-1/2 RH	145461AA	11	5,4	800	10,4	1 1/2-11 1/2	199	146	16	69,8	102	85,7	10,3	38	3,2
2RH	146175AA	20	5,9	600	10,4	2-11 1/2	221	163	22	88,9	127	108,0	10,3	51	3,2
SI		cm2	kg	rpm	bar	Dimensions in millimeters									

Notes:

❶ Operation at maximum pressure and speed should be avoided. Refer to K-14 for operating parameters.

❷ American National Pipe Thread

❸ Tolerance +0.000/-0.002 in (+0,00/-0,05 mm)

❹ Tolerance +0.000/-0.005 in (+0,00/-0,13 mm)

❺ Tolerance +0.002/-0.000 in (+0,05/-0,00 mm)

❻ American National Standard for Unified Screw Threads.

❼ Used to prevent the transmittal of stray electrical eddy currents.

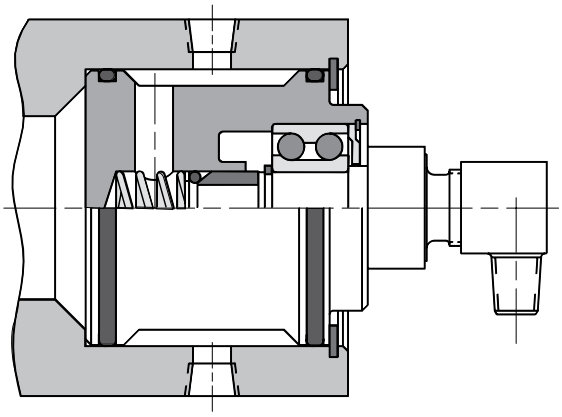
Airflex® Single Passage Internal Rotorseals

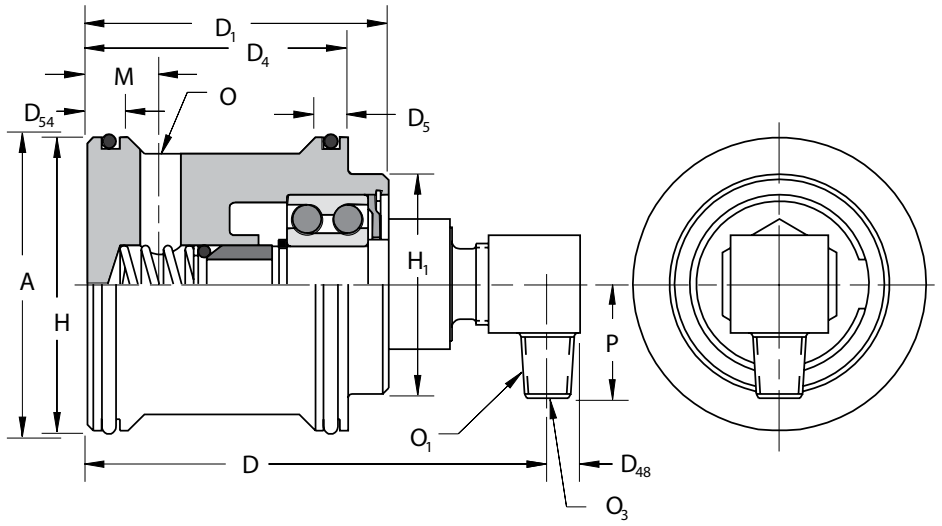
Dimensional and Technical Data — Types AA2, B3 & C2

Section I

Internal Rotorseals

Applications may arise where axial length is critical and space not available for an overhung rotorseal. If the shaft is of suf - ficient diameter, it may be possible to insert the rotorseal into the shaft end as shown in the figure at the right. The internal design and components are the same as those used in the single passage rotorseals.





English		rpm	psi	in 2	lb	Dimensions in inches														
AA2	145631L	4000	150	0.019	0.4	0.63	1.596	3.19	2.00	2.000	0.22	0.41	0.25	1.498	1.50	0.41	0.19	1/8-27	0.16	0.63
B3	145106BM	4000	150	0.058	1	0.88	2.250	3.53	2.31	2.000	0.28	0.31	0.25	2.248	1.69	0.56	0.31	3/8-14	0.27	0.91
B3	145106BL	4000	150	0.058	1	0.88	2.625	3.53	2.31	2.000	0.28	0.31	0.25	2.623	1.88	0.56	0.31	3/8-14	0.27	0.91
C2	145107BA	3000	150	0.307	3	1.38	3.063	4.84	3.00	2.312	0.50	0.31	0.25	3.061	2.44	0.56	0.38		❻	1.31
Type	Part Number	❶ Max. Speed	❶ Max. Pres.	Pass. Area	Weight / Mass	Hex Size	A ❷	D	D_1	D_4 ❸	D_{48}	D_{54}	D_{55}	H ❹	H_1	M	O	O_1 ❺	O_3	P
AA2	145631L	4000	10,4	0,12	0,2	16	40,5	81	51	50,8	6	10	6	38,0	38	10	5	1/8-27	4	16
B3	145106BM	4000	10,4	0,37	0,5	22	57,2	90	59	50,8	7	8	6	57,1	43	14	8	3/8-14	7	23
B3	145106BL	4000	10,4	0,37	0,5	22	66,7	90	59	50,8	7	8	6	66,6	48	14	8	3/8-14	7	23
C2	145107BA	3000	10,4	1,98	1,4	35	77,8	123	76	58,7	13	8	6	77,7	62	14	10		❻	33
SI		rpm	bar	cm2	kg	Dimensions in millimeters														

Notes:

❶ Operation at maximum pressure and speed should be avoided. Refer to K-14 for operating parameters.

❷ Shaft counterbore diameter. Tolerance +0.002/-0.000 in (+0,05/-0,00 mm)

❸ Tolerance +0.000/-0.005 in (+0,00/-0,13 mm)

❹ Tolerance +0.000/-0.002 in (+0,00/-0,05 mm)

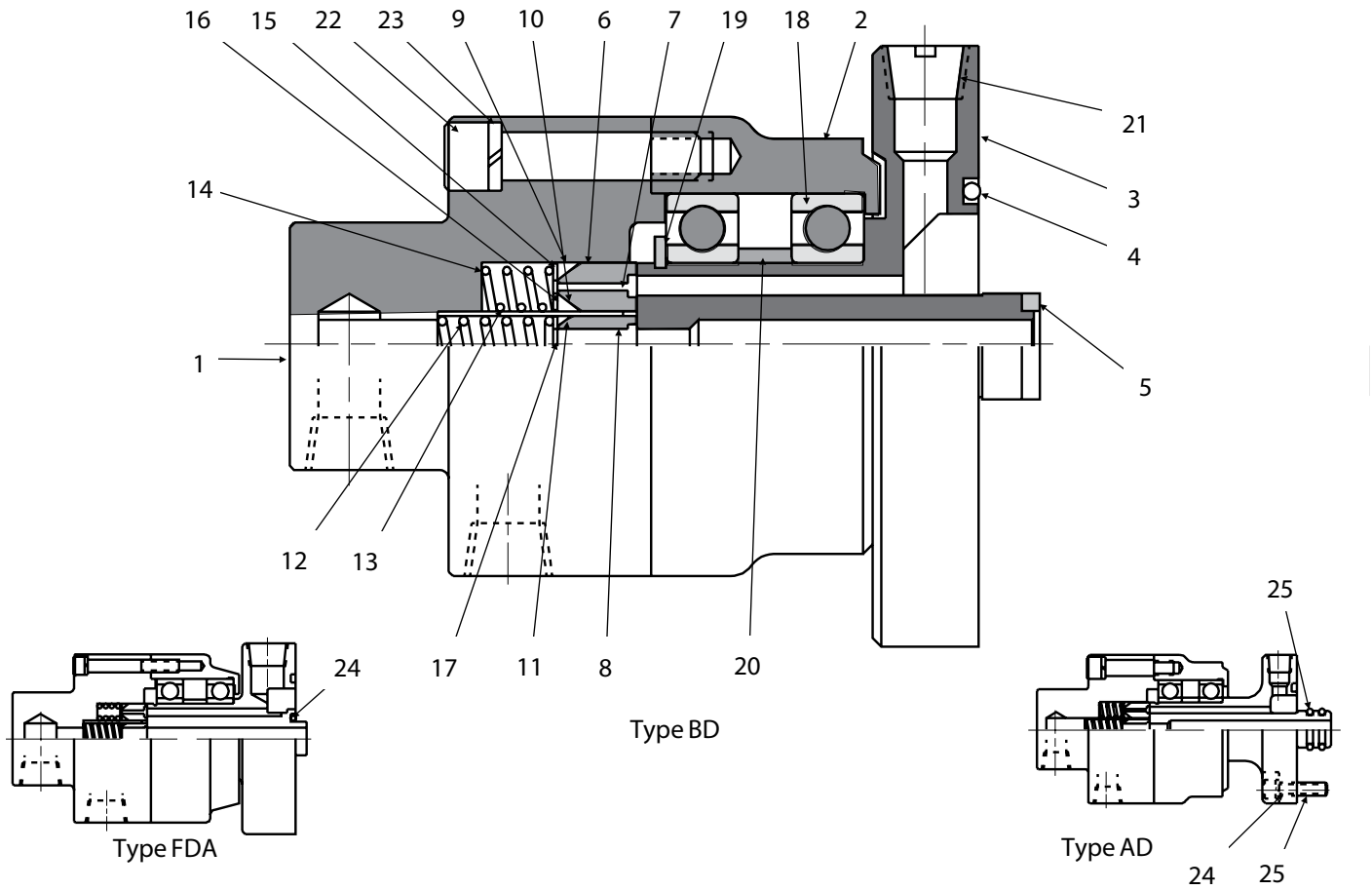
❺ American National Pipe Thread

❻ 1/2-14 American National Pipe Thread female port.

Airflex® Dual Passage Rotorseals

Component Part Descriptions

Section I



Item	Description
1	Rear Housing and Spring Retainer Assembly
2	Front Housing
3	Shaft
4*	Grommet
5*	Grommet
6*	Outer Carbon
7*	Intermediate Carbon
8*	Inner Carbon
9*	Outer “O” Ring
10*	Intermediate “O” Ring
11*	Inner “O” Ring
12*	Inner Seal Spring
13*	Intermediate Seal Spring
14*	Outer Seal Spring

Item	Description
15*	Outer Spring Retainer Ring
16*	Intermediate Spring Retainer Ring
17*	Inner Spring Retainer Ring
18	Bearing
19	Snap Ring
20	Bearing Spacer
21	Pipe Plug
22	Socket Head Cap Screw
23	Lockwasher
24*	Grommet
25*	Grommet
26	Hex or Socket Head Cap Screw
27	Lockwasher
*	Seal Kit (includes items marked *)

Airflex® Component Part Descriptions

Dimensional and Technical Data — Types AD, ADP, BD & FDA
Section I

Dual Passage Rotorseals

Dual passage rotorseals allow the transfer of media through two separate shaft passages located on the same shaft end. Each passage can be used for a different medium; for instance, air for clutch actuation and oil for bearing lubrication. Inlet and outlet ports have American National Pipe Threads.

Type AD

The AD rotorseal has 1/4-18 inlet ports for each of the passages. Both passage outlets can discharge directly into the shaft end. An optional 1/4-18 outlet port in the mounting flange could be used for the outer passage. The inner passage nose is sealed on its outside diameter by a pair of "O" rings. The outer passage is sealed to the shaft end with a compression grommet.

Type ADP

The type ADP rotorseal attaches to the shaft end with a 1-11 1/2 thread outlet instead of a mounting flange. The outer passage outlet feeds into the end of the machine shaft. The inner passage is a 1/4-18 port located on a flat of the hex mounting nut.

Type BD

The type BD is similar to the AD, except for a larger diameter mounting flange. The inner passage is sealed with a flat rubber washer which compresses on the bottom of a counterbore in the shaft end. A compression grommet is used between the shaft end and mounting flange to seal the outer passage.

Type FDA

The FDA type rotorseal has larger passages than the BD rotorseal. The two inlet ports and the two flange outlet ports for the outer passage are 1/2-14. Compression grommets are used between the shaft end and mounting flange to seal the inner and outer passages.

English		in ^{2}	in ^{2}	rpm	psi	lb
AD	145785C	0.049	0.155 ❷	1200	150	4.3
ADP	145785B	0.049	0.124 ❸	1200	150	4.0
BD	145405T	0.049	0.171 ❹	1200	150	5.8
FDA	145583AJ	0.196	0.221 ❺	1000	150	9.4
Size	Part Number	Passage Area		❶ Maximum Speed	❶ Maximum Pressure	Weight / Mass
		Inner	Outer			
AD	145785C	0,32	1,00 ❷	1200	10,4	1,9
ADP	145785B	0,32	0,80 ❸	1200	10,4	1,8
BD	145405T	0,32	1,10 ❹	1200	10,4	2,6
FDA	145583AJ	1,26	1,43 ❺	1000	10,4	4,3
SI		cm $_2$	cm $_2$	rpm	bar	kg

English	Dimensions in inches																
AD	5.69	4.56	0.75	0.75	4.14	1.13	3.25	1.75	2.562	3.250	2.17	1.50	0.34	0.38	1/4-18	0.38	0.798
ADP	5.28	4.16	1.00	1.00	3.73	1.13	3.25	1.75	N/A	N/A	N/A	N/A	N/A	0.50	1/4-18	❸	N/A
BD	4.88	3.75	0.393 ❾	0.75	3.34	1.13	3.25	1.75	3.562	4.250	2.78	1.88	0.40	0.38	1/4-18	0.38	0.750
FDA	6.31	4.94	0.25	1.19	4.22	1.47	3.75	2.06	3.562	4.250	3.22	2.25	0.40	0.63	1/2-14	0.50	0.750
Size	D	D_1	D_{30}	D_{31}	D_{48}	D_{49}	H	H_1	H_2	H_{11} ❻	H_{13}	H_{16}	L	M	O_1 ❼	O_3	S ❽
AD	145	116	19	19	105	29	83	44	65,1	82,6	55	38	9	10	1/4-18	10	20,3
ADP	134	106	25 o	25	95	29	83	44	N/A	N/A	N/A	N/A	N/A	13	1/4-18	❸	N/A
BD	124	95	10,0	19	85	29	83	44	90,5	108,0	71	48	10	10	1/4-18	10	19,1
FDA	160	125	6	30	107	37	95	52	90,5	108,0	82	57	10	16	1/2-14	13	19,1
SI	Dimensions in millimeters																

Notes:

❶ Operation at maximum pressure and speed should be avoided. Refer to K-14 for operation parameters.

❷ Passage consists of ten 0.14 in (3,6 mm) diameter holes.

❸ Passage consists of eight 0.14 in (3,6 mm) diameter holes.

❹ Passage consists of eleven 0.14 in (3,6 mm) diameter holes.

❺ Passage consists of eight 0.18 in (4,8 mm) diameter holes.

❻ Tolerance +0.000/-0.001 in (+0,00/-0,03 mm)

❼ American National Pipe Thread

❽ Tolerance +0.000/-0.002 in (+0,00/-0,05 mm)

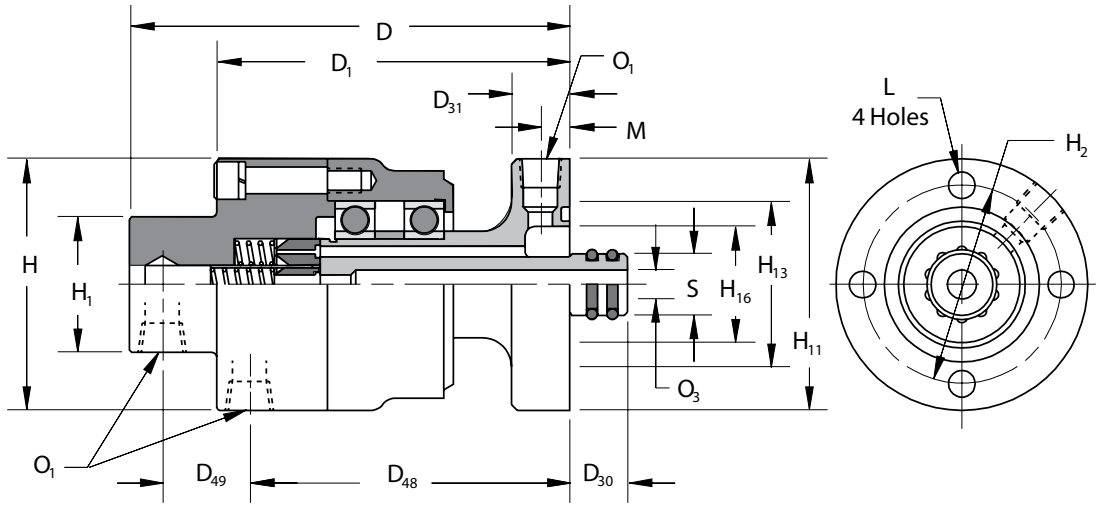
❾ Tolerance +0.000/-0.003 in (+0,00/-0,08 mm)

Airflex® Component Part Descriptions

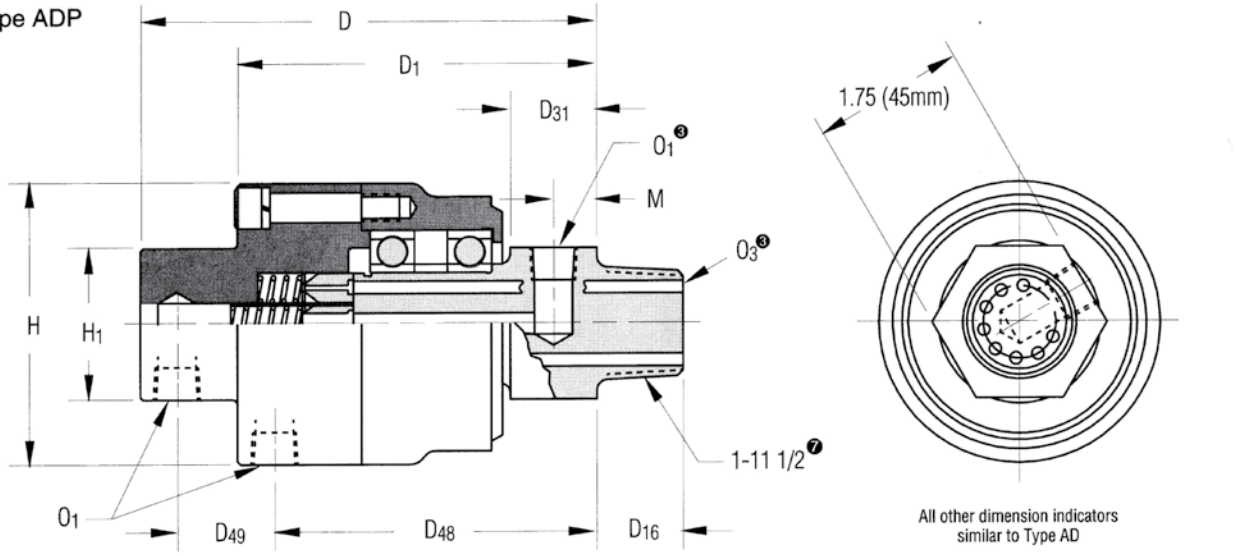
Forms RS905 & RS906 Dimensional Data — Types AD, ADP, BD & FDA

Section I

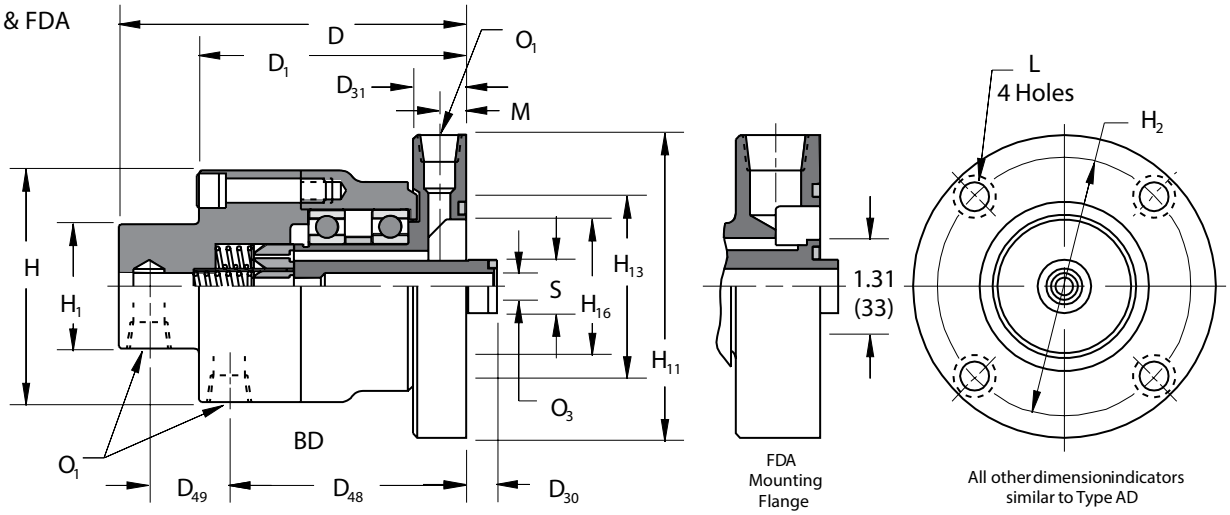
Type AD



Type ADP



Type BD & FDA

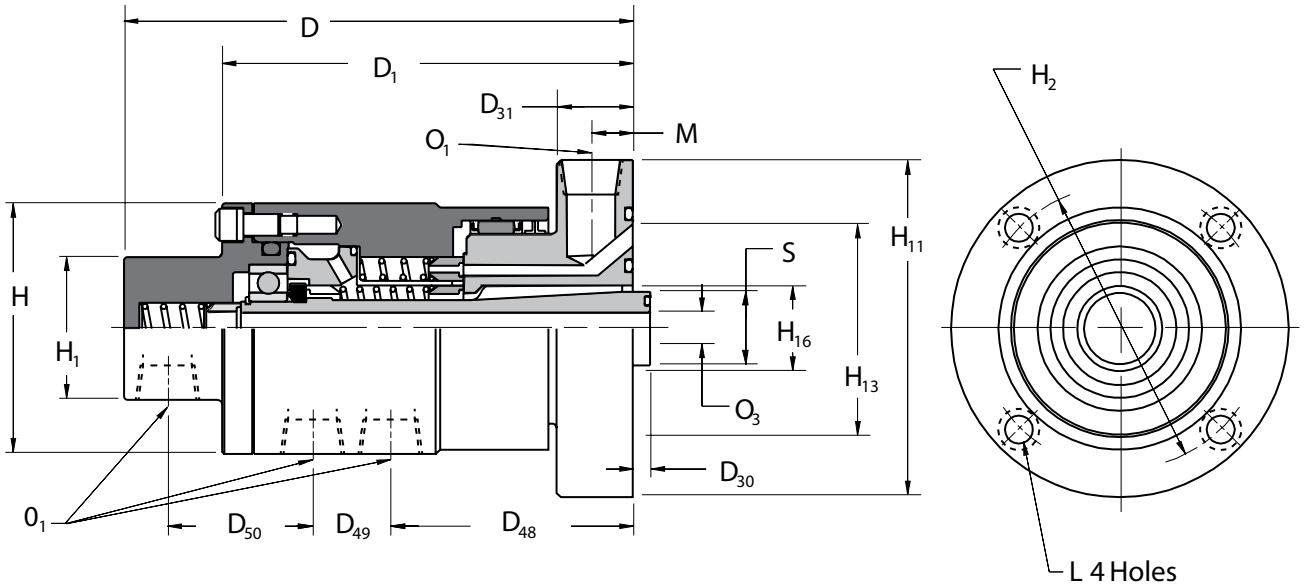


Airflex® BTA Triple Passage Rotorseal

Form RS 907 — Dimensional and Technical Data
Section I

Type BTA

The BTA rotorseal was designed for simultaneous transfer of as many as three different fluids. A mounting flange simplifies installation to the shaft end. Three 1/2-14 American National Pipe Thread inlet ports on the side of the stationary rotorseal body provide access to the concentric fluid passages. All three passages can discharge directly into the rotating shaft. However, a 1/2-14 port in the mounting flange can be used as an optional outlet for the outermost passage.



Technical Data	English Units	SI Units
Inner Passage Area	0.196 in ²	1,26 cm ²
Intermediate Passage Area	0.260 in ²	1,68 cm ²
Outer Passage Area ❶	0.307 in ²	1,98 cm ²
Maximum Speed ❷	1000 rpm	1000 rpm
Maximum Pressure ❷	150 psi	10,3 bar
Weight/Mass	11 lb	5 kg

Dimension	inches	millimeters
D	7.34	186
D_1	5.94	151
D_{30}	0.250	6,4
D_{31} ❸	1.09	28
D_{48}	3.50	89
D_{49}	1.13	29
D_{50}	2.09	53
H	3.63	92
H_1	2.06	52

Dimension	inches	millimeters
H_2	4.125	104,8
H_{11}	4.88	124
H_{13}	3.14	80
H_{16}	1.25	32
L	0.40	10
M	0.59	15
O_1 ❹	1/2-14	1/2-14
O_3	0.47	12
S ❺	1.063	27,0

Notes:

❶ Passage consists of sixteen 0.15 in (3,8 mm) diameter holes.

❷ Operation at maximum pressure and speed should be avoided. Refer to K-14 for operation parameters.

❸ Tolerance +0.005/-0.000 in (+0,08/-0,00 mm)

❹ American National Pipe Thread

❺ Tolerance +0.000/-0.001 in (+0,00/-0,03 mm)

❻ Tolerance +0.001/-0.000 in (+0,03/-0,00 mm)

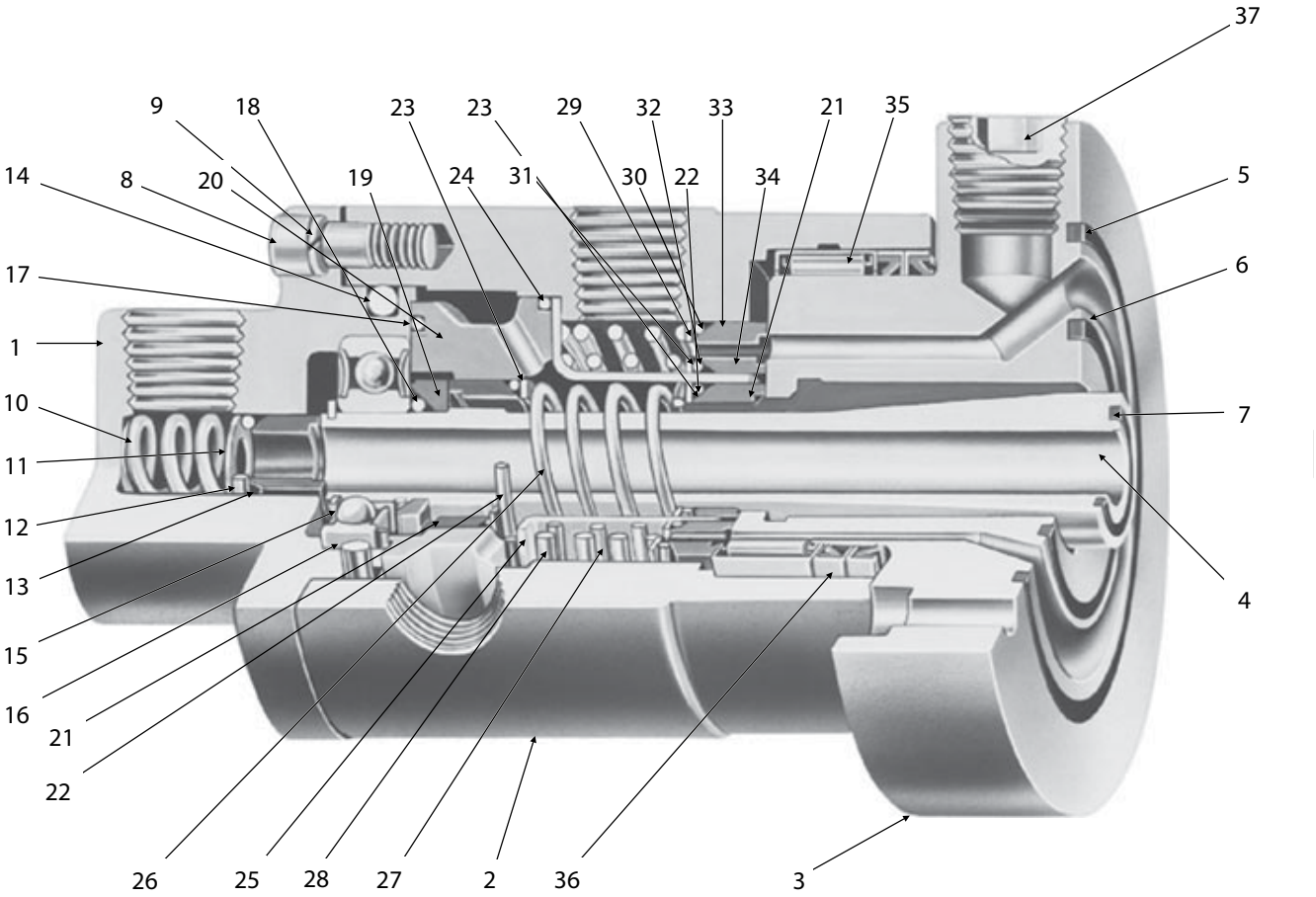
❼ American National Standard for Unified Screw Threads.

❽ Tolerance +0.010/-0.000 in (+0,25/-0,00 mm)

Airflex® BTA Triple Passage Rotorseal

Component Part Descriptions

Section I



Item	Description
1	Rear Housing
2	Front Housing
3&4	Shaft Assembly
5*	Outer Grommet
6*	Intermediate Grommet
7*	Inner Grommet
8	Socket Head Cap Screw
9	Lockwasher
10	Rear Seal Spring
11*	Rear Seal Washer
12*	Rear Seal “O” Ring
13*	Rear Carbon Seal
14	Housing “O” Ring
15	Snap Ring
16	Ball Bearing
17*	Seal Support Rear “O” Ring
18*	Seal Ring “O” Ring
19	Seal Ring
20	Seal Support

Item	Description
21*	Inner Carbon Seal
22*	Inner Carbon Seal “O” Ring
23*	Inner Seal Washer
24*	Seal Support Front “O” Ring
25	Sleeve
26*	Inner Spring
27*	Intermediate Spring
28*	Outer Spring
29*	Outer Seal Washer
30*	Outer Carbon Seal “O” Ring
31*	Intermediate Seal Washer
32*	Intermediate Carbon Seal “O” Ring
33*	Outer Carbon Seal
34*	Intermediate Carbon Seal
35	Needle Bearing
36	Shaft Seal
37	Pipe Plug
*	Seal Replacement Kit (includes parts marked *)

Airflex® Typical Rotorseal Shaft Mountings

Types AD, BD, FDA, & BTA

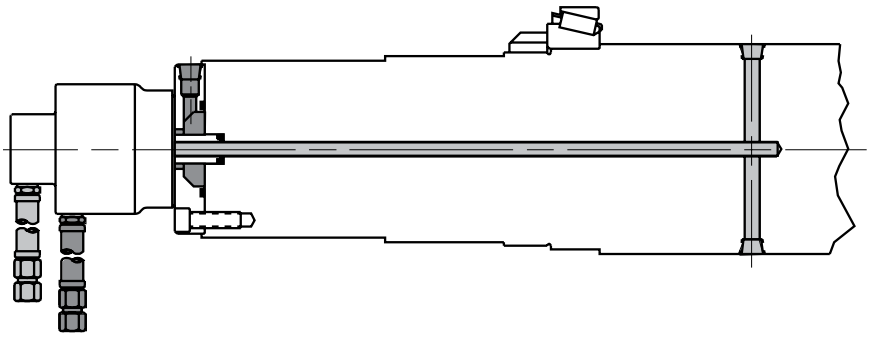
Section I

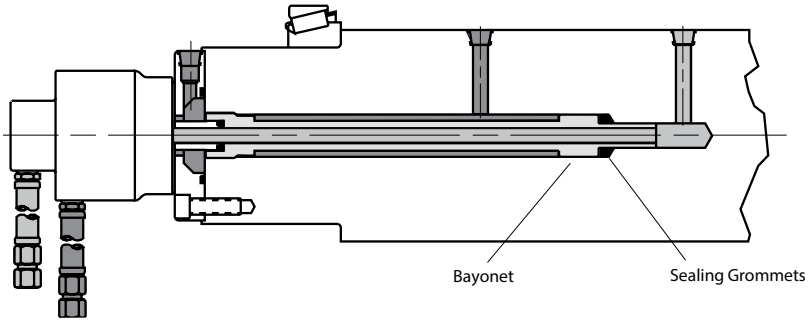
Dual Passage Rotorseal

The diagrams on the right illustrate typical shaft drilling for fluid passages.

In the top diagram, one outlet is required outboard of the shaft support bearing. This outlet can be the one provided in the mounting flange of the rotorseal. The second outlet, between the shaft bearings, requires an axial hole and cross drilling.

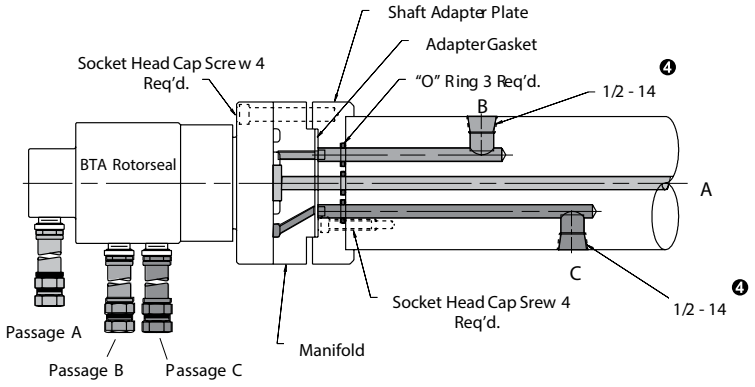
In the bottom diagram, both outlets are between the shaft bearings. A bayonet assembly, consisting of a length of steel tubing properly supported at both ends, is inserted into the axial hole. One passage is formed by the outside diameter of the tube and the wall of the axial hole. The inner passage is the inside diameter of the tube. Rubber grommets are used at the inner bayonet support to seal the passages from each other.



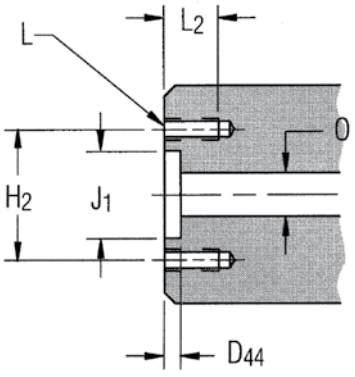


Triple Passage Rotorseal

The diagram on the right illustrates a BTA rotorseal mounting to shaft diameters smaller than the rotorseal mounting flange. The manifold and adapter plate are not required for larger diameter shafts.



Shaft End Machining



English	Dimensions in inches					
AD	0.81	2.562	0.800	5/16-18	0.56	0.38
BD	0.395 ❽	3.562	0.751	3/8-16	0.50	0.38
BTA	0.255 ❸	4.125	1.064	3/8-16	0.75	0.47
FDA	0.31	3.562	0.751	3/8-16	0.75	0.50
Type	D_{44}	H_2	J_1 ❻	L ❼	L_2	O
AD	21	65,1	20,3	5/16-18	14	10
BD	10,0 ❽	90,5	19,1	3/8-16	13	10
BTA	6,5 ❸	104,8	27,0	3/8-16	19	12
FDA	8	90,5	19,1	3/8-16	19	13
SI	Dimensions in millimeters					

Airflex® Rotorseal Operating Parameters

Section I

Temperature

Rotorseal maximum operating temperature is dependent upon the sealing "O" ring and grommet rubber compounds and/or the type of ball bearings used in their design. The following temperatures should not be exceeded.

Rotorseal Type	Operating Temperature
AA2, B3 & C2	200 °F (93 °C)
All other types	130 °F (54 °C)

Pressure and Speed

The allowable pressure shown for each rotorseal is determined by the bursting strengths of the carbon sealing ring. Maximum rpm is determined by the bearings used. Operation at maximum pressure and speed should be avoided. Rather for good carbon seal life, operating pressure and speed should satisfy the following:

$K \geq C_1 \cdot n + C_2 \cdot n \cdot p_o$

where

K= 45000 for air

K= 50000 for fluids

n= Operating rpm

p_o= Operating pressure psi (bar)

C_1 & C_2= Constants from following table

Rotorseal Type	C_1	C_2	
		English	SI
AA2	3.41	0.098	1,421
B3	4.80	0.070	1,015
C2	9.04	0.113	1,639
3/4 RH	10.25	0.143	2,074
1RH	11.68	0.165	2,393
1 1/4 RH	34.61	0.205	2,973
1 1/2 RH	52.04	0.237	3,437
2RH	7.53	0.034	0,493
AD, ADP & BD	1.14	0.162	2,349
FDA	9.25	0.235	3,408
BTA	2.25	0.052	0,754

Compatibility

The media which flows through the rotorseal must be compatible with the rotorseal materials it contacts. In general, the housings are an aluminum alloy, the shafts and springs are steel and the seals are carbon. The components most susceptible to attack, both chemically and thermally, are the "O" rings and grommets. As an example, shop air may contain synthetic lubricant from the compressor or, in the case of an outdoor installation, a deicer may be added to the compressor air. Composition of the "O" rings and grommets are given in the table.

Internal "O" Rings	Flange and Nose Grommets	Material
AA2, B3, C2	3/4, 1, 1 1/4, 1 1/2 & 2 RH AD, FDA & BTA BD (Flange only) RD (Flange Gasket)	Buna N
3/4 & 2 RH FDA, BTA, RD		Viton
AD, ADP, BD	BD (Nose only)	Neoprene
RT		Buna N, Viton, Ethylon Propylene

Example

A B3 rotorseal will be used to transmit air to a 2000 rpm shaft. For good seal life, what is the maximum allowable air pressure?

$K = 45000$

$C_1 = 4.80$

$C_2 = 0.70$ (1,015)

$n = 2000$

$C_1 \cdot n + C_2 n \cdot p = K$

$4.800 \cdot 2000 + 0.070 \cdot 2000 \cdot p = 45000$

$140\ p = 45000 - 9600$

$p = 253$ psi (18 bar)

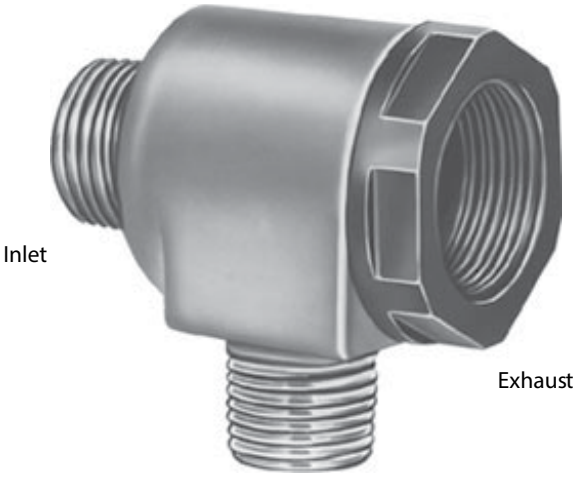
Airflex® Quick Release Valve Description

Section I

Description

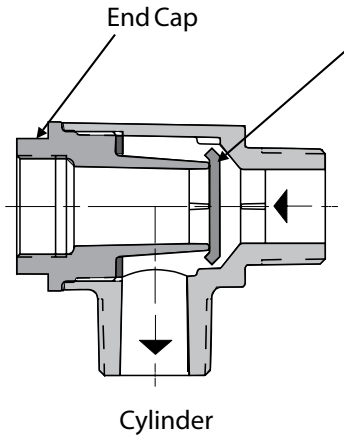
The Airflex quick release valve (QRV) is a pneumatic in-line, three-way valve designed to automatically close upon pressurization and open to exhaust when a pressure drop occurs in the supply line. The valve provides an exhaust port close to the pressurized chamber of the device being controlled rather 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

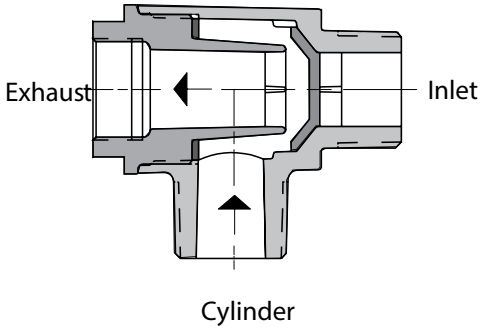


Four basic valve sizes are available, identified by the American National Pipe Thread on the cylinder port: 3/8", 1/2", 3/4" and 1" NPT. Models are available with inlet ports suitable for either pipe or tubing connections. Mufflers are also available to reduce exhaust noise.

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

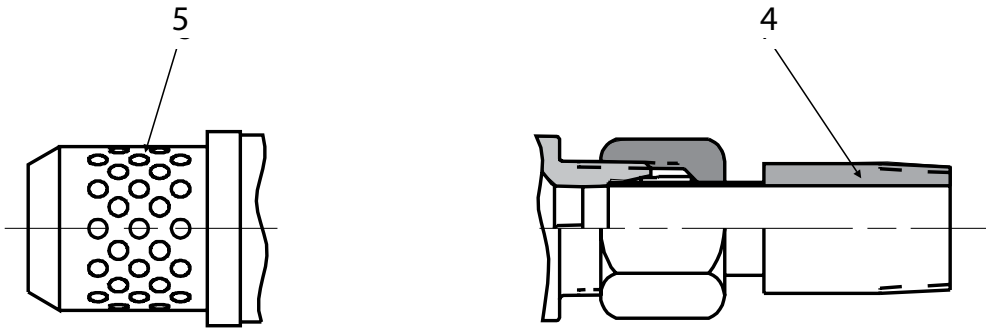


Valve Open to Exhaust

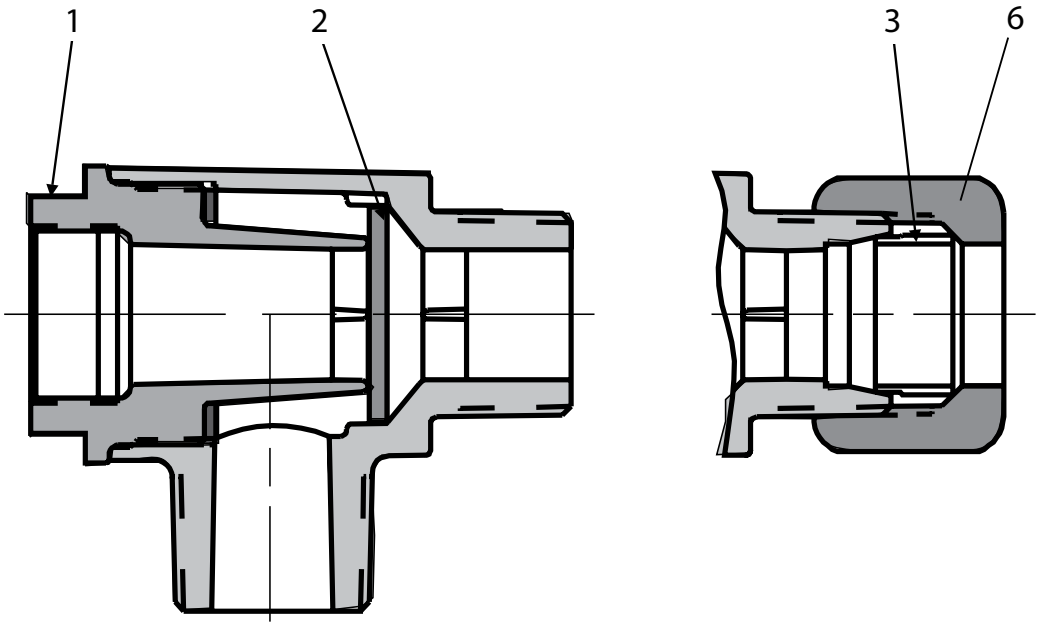
Airflex® Quick Release Valve Description

Component Part Descriptions

Section I



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

Section I

Technical Data for Diaphragm Type Valve

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

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

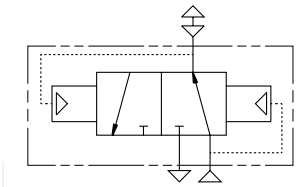
Air quality: Clean and dry to avoid contamination of housing and diaphragm. Any additive used in air supply must be com - patible with valve materials.

Operating temperature range: -40 ^{0}F (-40 ^{0}C) to 120 ^{0}F (49 ^{0}C).

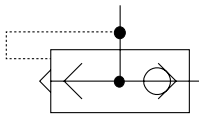
Mean life: Over five million cycles at 75 psi (5,2 bar) and 80 ^{0}F (27 ^{0}C).

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 PipeThread
	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

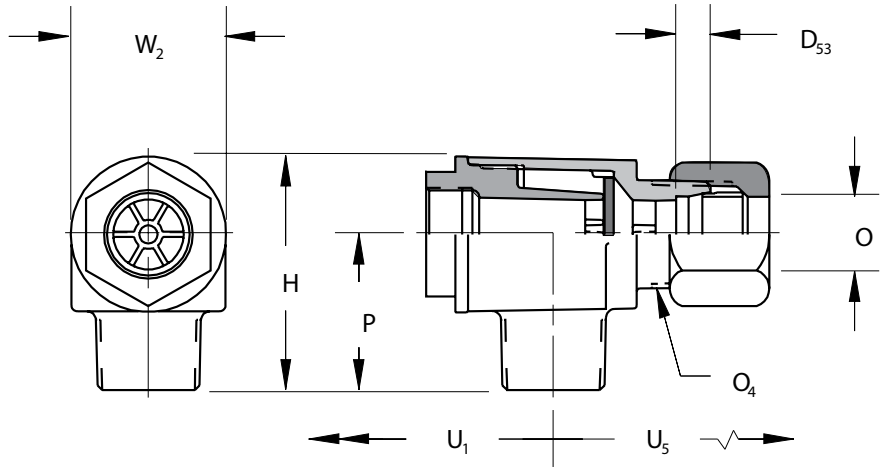
1 Quick Release Valve Options

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

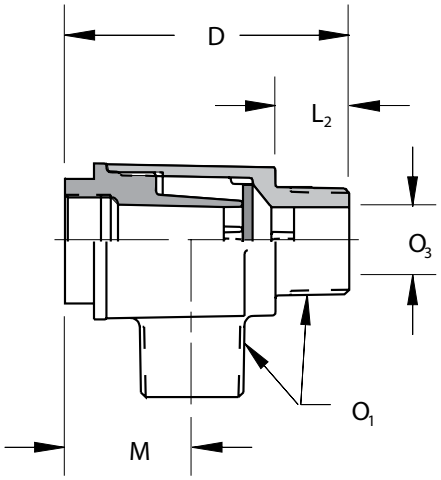
Airflex® Quick Release Valves

Forms QRV 909 & 910 Dimensional Data

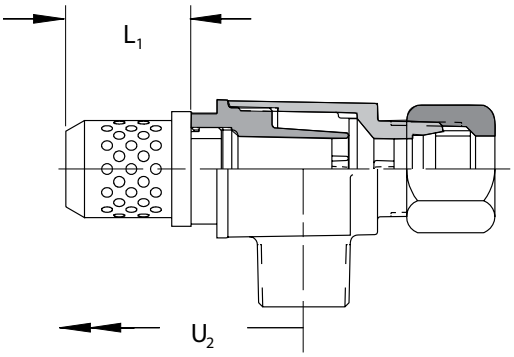
Section I



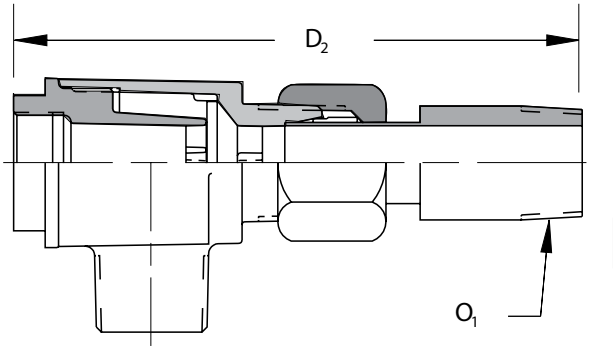
QRV with metal or rubber sleeve



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 ❻	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.

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