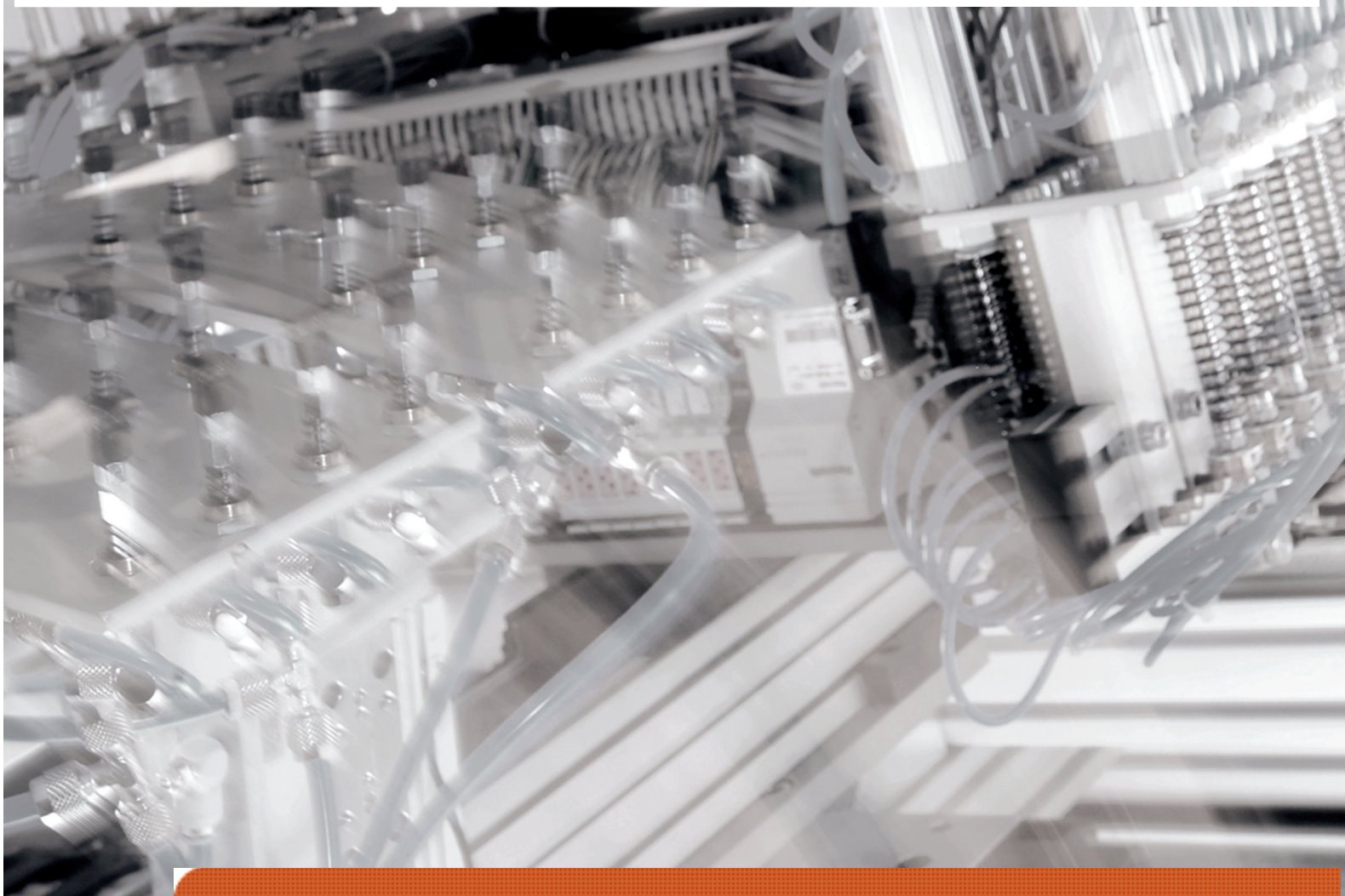


AVENTICS 

PNEUMATIC ACCESSORY VALVES AND DEVICES

Pneumatics
It's that easy



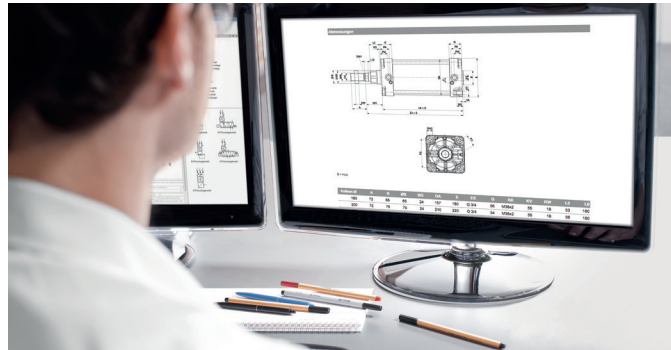
We're here for you – online and offline

Based on proven expertise and a first-class product portfolio

For us, collaboration means always being there for you. Prudent and customer-oriented in all respects – from initial consultation to after-sales, for both technical and financial questions. Our comprehensive range of pneumatic products provides a solid basis for your decisions.

- Cylinders and sensors
- Valves, valve systems, fieldbus connections
- Compressed air preparation, assembly material, accessories
- Gripper and vacuum technology

For us, collaboration also means continuously outperforming ourselves through interaction. Being innovative together to arrive at tailor-made pneumatic solutions more quickly than our competition. This allows us to ensure your technological lead.



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www.engineering-tools.com



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Configurators

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With the D&C Scheme Editor, you can quickly and easily create circuit diagrams that are based on your component layout and linked to your catalog selection.



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The eShop is our online shop that answers your price requests and monitors the whole order process up to delivery.

AVENTICS has a wide array of Pneumatic Accessory Valves/Devices

To complete your installation AVENTICS manufactures many accessory type air valves. Included are: Check Valves, Flow Control Valves, Quick Exhaust Valves (Quick Release), Relayair[®], Shuttle Valves and Type S Relay. Many selections are available with "inch" and metric (ISO-G) porting.

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- Best-in-class products and components
- Expertise in pneumatics: systems know-how and experience in the industry
- Comprehensive automation solutions with pneumatics

Successful collaboration with you is a major building block for our innovation. Every new project and daily practical experience add to our industry expertise and provide crucial impulses. Functional integration, component reduction, and alternative material management are just some trends on the way to optimized productivity. Thanks to the targeted use of new technologies and materials, as well as integration of electronic elements, we continually optimize the function and features of our products and solutions. A special plus for you – you can be sure of that.

Fittings & Tubing

- 02 Push-in Fittings, Metric, Series QR2-S/C
- 32 Fittings Metric (Blanking plugs, Reducing Nipples)
- 34 Adapter Fittings (ISO G to Inch, M7, Inch, R ISO, Inch Pipe Plugs/Nipples/Reducer Bushings)
- 35 Plastic Tubing, Metric / Inch
- 41 Plastic Tubing - Accessories

Accessory Valves

- 45 Flow Control Control Valves
- 54 Check Valves
- 62 Quick Exhaust Valves
- 65 Shuttle Valves
- 69 Relay Valves
- 77 Pressure Regulators - in port, right angle
- 80 Mechanical Slide Valve s- Inline, Sliding Actuation, Metric

Accessory Devices

- 81 Pressure Switch - Mechanical, Series PM1
- 83 Pressure Gauges
- 88 Silencers - Inch / Metric
- 95 Pneumatic Timing Volumes
- 96 Shock Absorbers

Push-in Fittings, Metric, Series QR2-S

Straight Fitting, External Thread, QR2-S-RPN



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

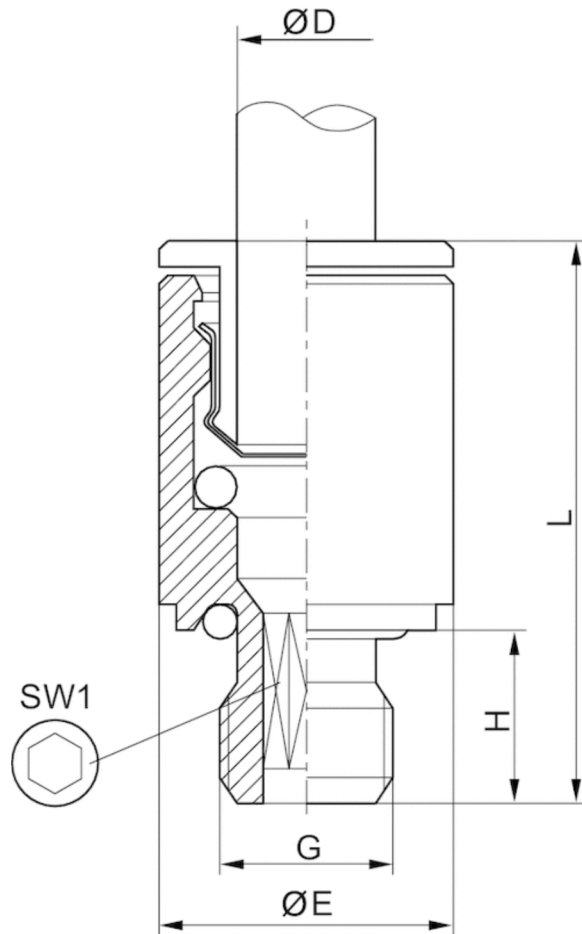
Materials:
Housing
Seal
Tooth lock washer
Release ring
Thread

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated
Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- Thread seal with captive O-ring
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

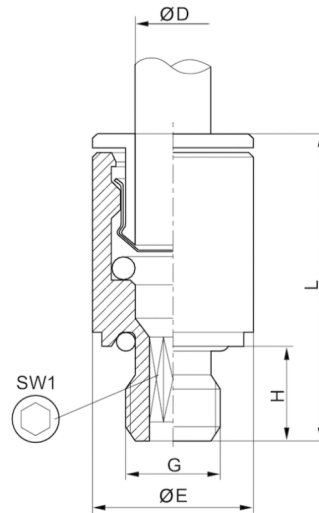
Fig. 1



Push-in Fittings, Metric, Series QR2-S

Straight Fitting, External Thread, QR2-S-RPN

Fig. 2



Part No.	Port G	Port D	Ø E	H	L	SW 1	SW 2	Delivery quantity [Piece]	Weight [kg]	Fig.
1823373038	M5	Ø 4	9	4	20.5	2.5	-	25	0.006	Fig.2
1823373039	M5	Ø 5	9.5	4	22	2.5	-	10	0.007	Fig.2
1823373040	M5	Ø 6	10.5	4	22	2.5	-	25	0.01	Fig.2
1823373100	M7	Ø 4	10.8	6	22	2.5	9	25	0.007	Fig.1
1823373088	M7	Ø 6	10.5	6	24	3.5	-	25	0.005	Fig.2
1823373041	G 1/8	Ø 4	13.5	6	20	2.5	9	25	0.005	Fig.1
1823373042	G 1/8	Ø 5	13.5	6	22	4	10	10	0.01	Fig.1
1823373043	G 1/8	Ø 6	13.5	6	24	4	11	25	0.011	Fig.1
1823373044	G 1/8	Ø 8	13	6	26.5	5	13	25	0.012	Fig.1
1823373045	G 1/4	Ø 4	17	8	21	2.5	9	25	0.012	Fig.1
1823373046	G 1/4	Ø 5	17	8	22	4	10	10	0.013	Fig.1
1823373047	G 1/4	Ø 6	17	8	24	4	11	25	0.015	Fig.1
1823373048	G 1/4	Ø 8	17	8	25	6	13	10	0.016	Fig.1
1823373049	G 1/4	Ø 10	16	8	29.5	7	16	10	0.026	Fig.1
1823391809	G 1/4	Ø 12	16	8	31	7	18	10	0.031	Fig.1
R412004708	G 1/4	Ø 12	17	8.3	31	7	-	10	0.022	Fig.2
1823373050	G 3/8	Ø 8	20	9	25	6	13	10	0.021	Fig.1
1823373051	G 3/8	Ø 10	21	9	29.5	8	16	10	0.028	Fig.1
1823373052	G 3/8	Ø 12	21	9	31	10	18	5	0.038	Fig.1
1823373053	G 3/8	Ø 14	21	9	34	10	21	5	0.059	Fig.1
1823373054	G 1/2	Ø 12	24	11	31	10	18	5	0.048	Fig.1
1823373055	G 1/2	Ø 14	24	11	34	12	21	5	0.064	Fig.1
R412007955	G 1/2	Ø 16	24	11	37	12	24	1	0.072	Fig.1

Push-in Fittings, Metric, Series QR2-S

Straight Female Stud Fitting, Internal Thread, QR2-S-RAI



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

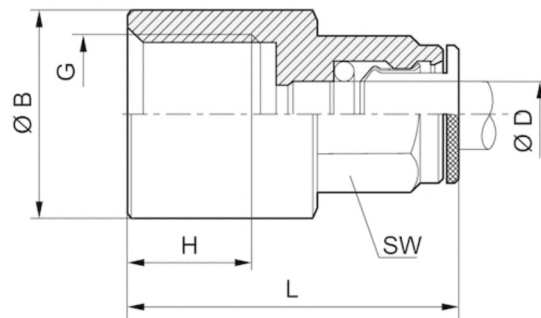
Materials:
Housing
Seal
Tooth lock washer
Release ring
Thread

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated
Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	Ø B	H	L	SW	Delivery quantity [Piece]	Weight [kg]
1823391643	G 1/8	Ø 4	11	6	26.5	9	10	0.01
1823391644	G 1/8	Ø 5	12	6	27	10	10	0.01
1823391645	G 1/8	Ø 6	11	6	27	11	10	0.011
1823391646	G 1/8	Ø 8	11	6	28	13	10	0.015
1823391647	G 1/4	Ø 4	16	10	29.5	9	10	0.014
1823391648	G 1/4	Ø 5	16	10	30	10	10	0.016
1823391649	G 1/4	Ø 6	16	10	31	11	10	0.018
1823391650	G 1/4	Ø 8	16	10	32	13	10	0.02

Push-in Fittings, Metric, Series QR2-S

Bulkhead Connector, Internal Thread, QR2-S-RSI



Ambient temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

Materials:

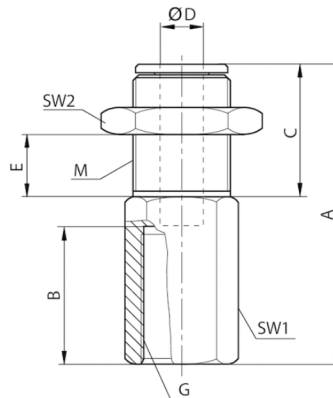
Housing
Seal
Tooth lock washer
Release ring
Thread

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated
Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	M	A	B	C	E ± 2 1)	SW1	SW2	Delivery Quantity [Piece]
1823391757	G 1/8	Ø 4	M10x1	25	8.5	15	9.5	15	13	10
1823391758	G 1/8	Ø 6	M14x1	26	8.5	15	9.5	17	17	10
1823391759	G 1/4	Ø 6	M14x1	30.5	13	15	9.5	17	17	10
1823391760	G 1/8	Ø 8	M16x1	28	8.5	15	9.5	17	19	10
1823391761	G 1/4	Ø 8	M16x1	33	13	15	9.5	17	19	10

1) Max.

Push-in Fittings, Metric, Series QR2-S

Male Elbow Fitting, Rotatable, External Thread, QR2-S-RVT



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

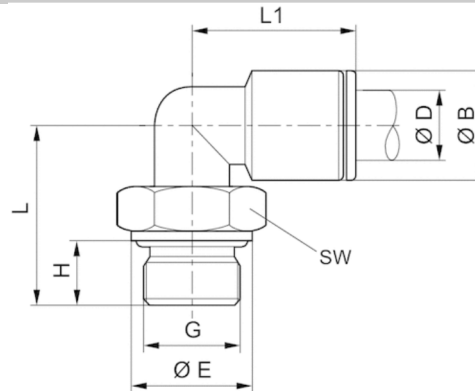
Materials:
Housing
Seal
Tooth lock washer
Release ring
Thread

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated
Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- Thread seal with captive O-ring
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	Ø B	Ø E	H	L	L1	SW	Delivery quantity [Piece]	Weight [kg]
1823391709	M5	Ø 4	9	8	4	14.5	19	9	10	0.015
1823391889	M5	Ø 6	11	8	4	14.5	21	9	10	0.016
1823391885	M7	Ø 4	9	10	6	16.5	18	9	10	0.017
1823391886	M7	Ø 6	11	10	6	16.5	19.5	9	10	0.017
1823391710	G 1/8	Ø 4	9	13	6	20	19	13	10	0.018
1823391711	G 1/8	Ø 6	11	13	6	20	21	13	10	0.02
1823391712	G 1/8	Ø 8	13	13	6	20	24	13	10	0.022
R412007687	G 1/8	Ø 10	15	13	6	24	27	13	5	0.032
1823391713	G 1/4	Ø 4	9	16	8	24	19	13	10	0.024
1823391714	G 1/4	Ø 6	11	16	8	24	21	13	10	0.025
1823391715	G 1/4	Ø 8	13	16	8	24	24	13	10	0.027
1823391718	G 1/4	Ø 10	15	16	8	24	27	16	10	0.031
1823391843	G 1/4	Ø 12	17	16	8	28.5	28	16	5	0.042
1823391716	G 3/8	Ø 8	13	20	9	25.5	24	13	5	0.042
1823391717	G 3/8	Ø 10	15	20	9	28	27	16	5	0.042
1823391838	G 3/8	Ø 12	17	20	9	28.5	28	20	5	0.045
1823391839	G 3/8	Ø 14	20	20	9	28.5	31	20	5	0.062
R412010182	G 3/8	Ø 16	23	20	9	33.5	33	20	1	0.072
R412007589	G 1/2	Ø 10	15	25	11	30	27	13	5	0.046
1823391840	G 1/2	Ø 12	17	25	11	33.5	28	20	5	0.065
1823391841	G 1/2	Ø 14	20	25	11	33.5	31	20	5	0.07
R41207956	G 1/2	Ø 16	23	25	11	38	33	20	1	0.084

Push-in Fittings, Metric, Series QR2-S

Right Angle Banjo Connection, External Thread, QR2-S-RW1



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

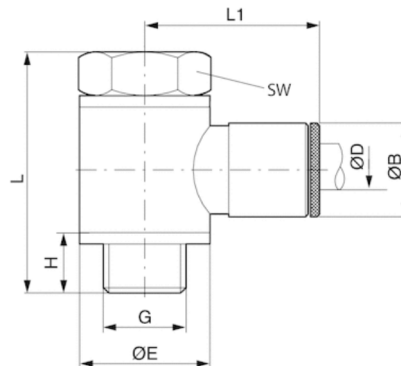
Materials:
Housing
Seal
Tooth lock washer
Release ring
Thread

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated
Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- Thread seal with captive O-ring
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	L	L1	H	Ø B	Ø E	SW	Delivery quantity [Piece]	Weight [kg]
1823391549	M5	Ø 4	17.5	18.5	4.5	9	7	8	10	0.01
1823391550	M5	Ø 5	17.5	19.5	4.5	10	7	8	10	0.016
1823391905	M5	Ø 6	19	19	4.5	10.5	10	8	10	0.018
1823391551	G 1/8	Ø 4	28	21	7.5	9	14	14	10	0.024
1823391552	G 1/8	Ø 5	28	22.5	7.5	10	14	14	10	0.026
1823391553	G 1/8	Ø 6	28	22.5	7.5	11	14	14	10	0.027
1823391554	G 1/8	Ø 8	28	24.5	7.5	13	14	14	10	0.032
1823391556	G 1/4	Ø 6	33	24	9	11	18	17	10	0.035
1823391557	G 1/4	Ø 8	33	26	9	13	18	17	10	0.048
1823391558	G 1/4	Ø 10	33	27	9	15	18	17	5	0.052
1823391559	G 3/8	Ø 8	36	28	9	13	21	19	5	0.072
1823391560	G 3/8	Ø 10	36	29	9	15	21	19	5	0.077
1823391561	G 3/8	Ø 12	36	30	9	17	21	19	5	0.088

Push-in Fittings, Metric, Series QR2-S

Male Branch Tee, Rotatable, External Thread, QR2-S-RTT



Ambient temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

Materials:

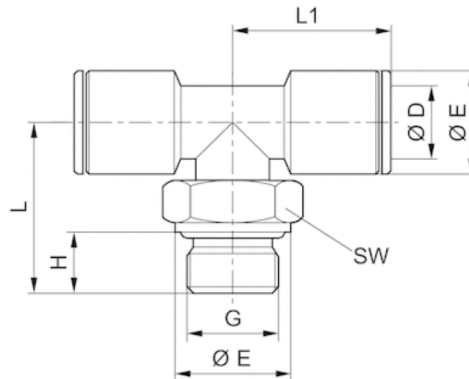
Housing
Seal
Tooth lock washer
Release ring
Thread

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated
Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- Thread seal with captive O-ring
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	Ø B	Ø E	H	L	L1	SW	Delivery quantity [Piece]	Weight [kg]
1823391812	M5	Ø 4	8	9	4	16.5	19	9	25	0.019
1823391813	G 1/8	Ø 4	12.8	9	6	18.5	17.5	13	25	0.022
1823391814	G 1/8	Ø 6	13	11	6	20	21	13	25	0.033
1823391815	G 1/8	Ø 8	13	13	6	20	23	13	25	0.034
1823391816	G 1/4	Ø 4	12.8	9	8	22.5	18	16	25	0.028
1823391817	G 1/4	Ø 6	16	11	8	24	21	13	25	0.035
1823391818	G 1/4	Ø 8	16	13	8	24	23	13	10	0.038
1823391819	G 1/4	Ø 10	15.8	15	8	24.5	25	16	10	0.043
1823391823	G 1/4	Ø 12	16	17	8	28.5	28	16	10	0.072
1823391820	G 3/8	Ø 8	20	13	9	25.5	24	18	10	0.045
1823391821	G 3/8	Ø 10	20	15	9	28	26	16	10	0.046
1823391822	G 3/8	Ø 12	20	17	9	26.5	27	18	5	0.057
1823391824	G 1/2	Ø 14	25	20	11	33.5	31	20	5	0.091

Push-in Fittings, Metric, Series QR2-S

Swivel Branch Tee, Rotatable, External Thread, QR2-S-RTS



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

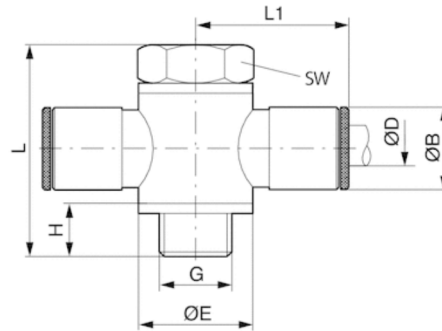
Materials:
Housing
Seal
Tooth lock washer
Release ring
Thread

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated
Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- Thread seal with captive O-ring
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	Ø B	Ø E	H	L	L1	SW	Delivery quantity [Piece]	Weight [kg]
1823391562	M5	Ø 4	9	8	4.5	17.5	18.5	8	10	0.02
1823391563	M5	Ø 5	10	7	4.5	17.5	19.5	8	10	0.024
1823391564	G 1/8	Ø 4	9	14	7.5	28	21	14	10	0.034
1823391565	G 1/8	Ø 5	10	14	7.5	28	22.5	14	10	0.036
1823391566	G 1/8	Ø 6	11	14	7.5	28	23	14	10	0.038
1823391567	G 1/8	Ø 8	13	14	7.5	28	24.5	14	10	0.041
1823391568	G 1/4	Ø 6	11	18	9	33	24	17	10	0.054
1823391568	G 1/4	Ø 8	13	18	9	33	26	17	10	0.056
1823391569	G 1/4	Ø 10	15	18	9	33	27	17	5	0.063
1823391570	G 3/8	Ø 8	13	21	9.5	36	28	22	5	0.076
1823391571	G 3/8	Ø 10	15	21	9.5	36	29	22	5	0.096
1823391573	G 3/8	Ø 12	17	21	9.5	36	30	22	5	0.117

Push-in Fittings, Metric, Series QR2-S

Male Run Tee, Rotatable, External Thread, QR2-S-RLT



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

Materials:

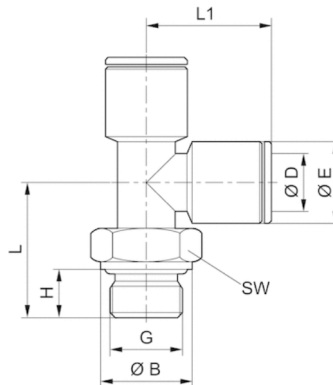
Housing
Seal
Tooth lock washer
Release ring
Thread

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated
Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- Thread seal with captive O-ring
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	Ø B	Ø E	H	L	L1	SW	Delivery quantity [Piece]	Weight [kg]
1823391825	M 5	Ø 4	8	9	4	20	19	9	25	0.015
1823391826	G 1/8	Ø 4	12.8	9	5.8	18.5	17.5	13	25	0.023
1823391827	G 1/8	Ø 6	12.8	11	5.8	18.5	21	13	25	0.023
1823391828	G 1/8	Ø 8	12.8	13	5.8	20.5	23	13	25	0.029
1823391829	G 1/4	Ø 4	15.8	9	8	22.5	19	16	25	0.028
1823391830	G 1/4	Ø 6	15.8	11	8	22.5	21	13	25	0.031
1823391831	G 1/4	Ø 8	15.8	13	8	22.5	24	13	10	0.037
1823391832	G 1/4	Ø 10	15.8	15	8	24.5	27	16	10	0.044
1823391833	G 1/4	Ø 12	15.8	17	8	24.5	27	16	10	0.054
1823391834	G 3/8	Ø 8	20	13	9	25.5	24	13	10	0.045
1823391835	G 3/8	Ø 10	20	15	9	24.5	25.5	16	10	0.047
1823391836	G 3/8	Ø 12	20	17	9	26.5	27	18	5	0.058
1823391837	G 1/2	Ø 14	25	20	11	30.5	31	21	5	0.092

Push-in Fittings, Metric, Series QR2-S

Blackhead Union, QR2-S-RSM



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

Materials:

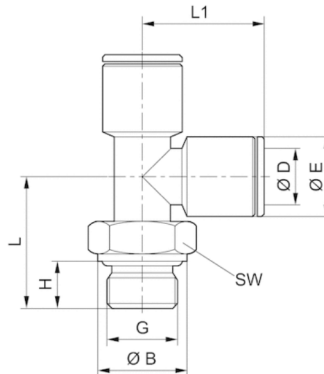
Housing
Seal
Tooth lock washer
Release ring

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	M	I 1)	L	SW	Delivery quantity [Piece]	Weight [kg]
1823391836	Ø 4	Ø 4	M10x1	8	32	13	10	0.017
1823391837	Ø 5	Ø 5	M11x1	8	33	14	10	0.02
1823391838	Ø 6	Ø 6	M14x1	8	33.5	17	10	0.022
1823391839	Ø 8	Ø 8	M16x1	10	37	18	10	0.029
1823391840	Ø 10	Ø 10	M17x1	12	39.5	20	10	0.058
1823391841	Ø 12	Ø 12	M20x1	17	42	24	5	0.063
1823391842	Ø 14	Ø 14	M22x1	18	45	25	5	0.092
R412010241	Ø 16	Ø 16		21	50	36	2	0.174

1) Max.

Push-in Fittings, Metric, Series QR2-S

Straight Union, QR2-S-RSK



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

Materials:

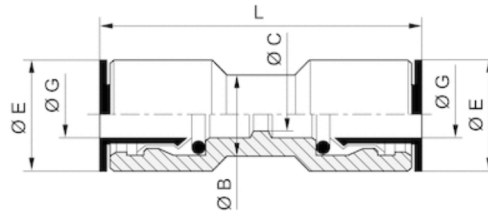
Housing
Seal
Tooth lock washer
Release ring

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated

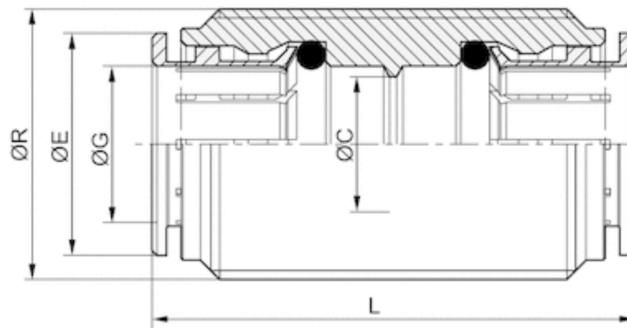
Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions



Dimensions for fitting with external thread



Part No.	Port G	Port R	Ø B	Ø C	Ø E	L	Delivery quantity [Piece]	Weight [kg]
1823386077	Ø 4	-	7	3	9	30	10	0.012
1823386078	Ø 5	-	8	4	9.5	32	10	0.014
1823386079	Ø 6	-	10	5	11	31.5	10	0.016
1823386080	Ø 8	-	12	7	13	36	10	0.023
1823386081	Ø 10	-	13	9	15	37	10	0.043
1823386082	Ø 12	-	16	11	17	40.5	5	0.052
1823386083	Ø 14	-	18	12	20	45	5	0.075
R412010539	Ø 16	M28x1,5	-	14	23	50	1	0.144

Push-in Fittings, Metric, Series QR2-S

Union Elbow, QR2-S-RVK



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

Materials:

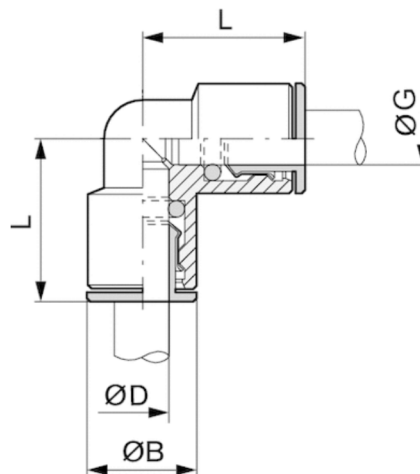
Housing
Seal
Tooth lock washer
Release ring

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

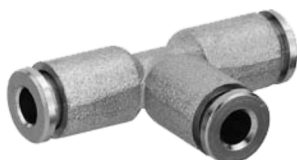
Dimensions



Part No.	Port G	Port D	Ø B	L	Delivery quantity [Piece]	Weight [kg]
1823380012	Ø 4	Ø 4	9	17.5	10	0.01
1823380013	Ø 5	Ø 5	9.5	19	10	0.011
1823380014	Ø 6	Ø 6	11	19.5	10	0.014
1823380015	Ø 8	Ø 8	13	23	10	0.019
1823380016	Ø 10	Ø 10	15	25	10	0.026
1823380017	Ø 12	Ø 12	17	27	5	0.037
1823380018	Ø 14	Ø 14	19	30	5	0.056
R412010540	Ø 16	Ø 16	23	33	1	0.064

Push-in Fittings, Metric, Series QR2-S

Union Tee, QR2-S-RTK



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

Materials:

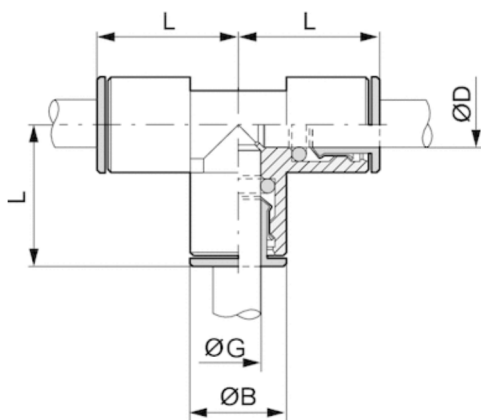
Housing
Seal
Tooth lock washer
Release ring

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	Ø B	L	Delivery quantity [Piece]	Weight [kg]
1823381043	Ø 4	Ø 4	9	17.5	10	0.015
1823381044	Ø 5	Ø 5	10	19	10	0.016
1823381045	Ø 6	Ø 6	11	19.5	10	0.019
1823381046	Ø 8	Ø 8	13	23	10	0.027
1823381047	Ø 10	Ø 10	15	25	10	0.038
1823381048	Ø 12	Ø 12	17	27	5	0.051
1823381049	Ø 14	Ø 14	19	30	5	0.076
R412010541	Ø 16	Ø 16	23	36	1	0.115

Push-in Fittings, Metric, Series QR2-S

Straight Fitting, QR2-S-REE



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

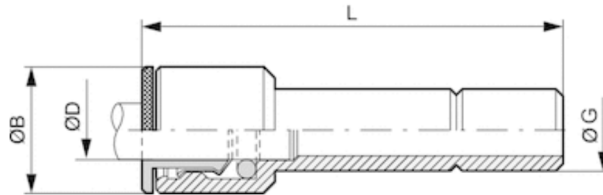
Materials:
Housing
Seal
Tooth lock washer
Release ring

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	Ø B	L	Delivery quantity [Piece]	Weight [kg]
1823391628	Ø 4	Ø 6	10.5	33.5	10	0.008
1823391890	Ø 6	Ø 8	13	39	10	0.01

Push-in Fittings, Metric, Series QR2-S

Straight Fitting, Reducing, QR2-S-RED



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

Materials:

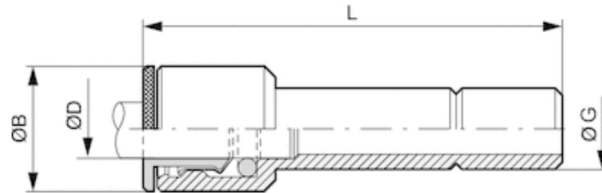
Housing
Seal
Tooth lock washer
Release ring

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	Ø B	L	Delivery quantity [Piece]	Weight [kg]
1823391614	Ø 4	Ø 5	9	32.5	10	0.007
1823391615	Ø 4	Ø 6	9	28.5	10	0.008
1823391616	Ø 5	Ø 6	9.5	35.5	10	0.009
1823391617	Ø 4	Ø 8	9	31	10	0.011
1823391618	Ø 5	Ø 8	9.5	32.5	10	0.011
1823391619	Ø 6	Ø 8	10.5	33.5	10	0.012
1823391620	Ø 6	Ø 10	10.5	36.5	10	0.016
1823391621	Ø 8	Ø 10	13	38	10	0.018
1823391622	Ø 4	Ø 12	13	39.5	10	0.024
1823391623	Ø 6	Ø 12	13	39.5	10	0.022
1823391624	Ø 8	Ø 12	13	38.5	10	0.02
1823391903	Ø 10	Ø 12	15	41	5	0.019
1823391625	Ø 4	Ø 14	15	43	5	0.024
1823391626	Ø 6	Ø 14	15	43	5	0.023
1823391627	Ø 8	Ø 14	15	43	5	0.026
1823391842	Ø 10	Ø 14	15	43	10	0.03
1823391811	Ø 12	Ø 14	17	43	10	0.041
R412010190	Ø 14	Ø 16	20	47	5	0.039

Push-in Fittings, Metric, Series QR2-S

Plug-in Elbow, QR2-S-RVA



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

Materials:

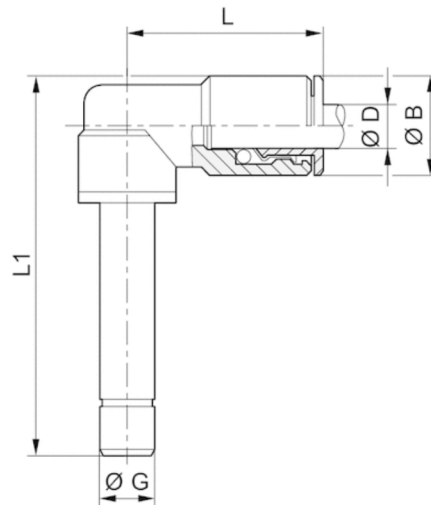
Housing
Seal
Tooth lock washer
Release ring

Brass, nickel-plated
Acrylonitrile butadiene rubber
Stainless steel
Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions, Series, QR2-S-RVK



Part No.	Port G	Port D	Ø D	Ø B	L	L1	Delivery quantity [Piece]	Weight [kg]
R412004851	Ø 4	Ø 4	4	9	18	24	10	0.007
R412004852	Ø 6	Ø 6	6	11	20	32	10	0.012
1823391942	Ø 8	Ø 8	8	13	23	37.5	10	0.018
1823391943	Ø 10	Ø 10	10	15	26	43.1	10	0.025
1823391944	Ø 12	Ø 12	12	17	28	49.5	10	0.033

Push-in Fittings, Metric, Series QR2-S

Banking Plug, QR2-S-RBS



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

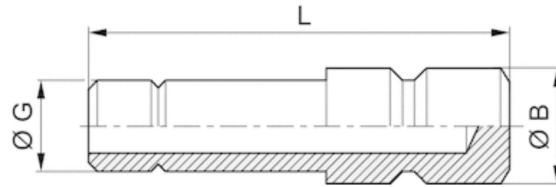
Materials:
Housing

Brass, nickel-plated

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Ø B	L	Delivery quantity [Piece]	Weight [kg]
1823391607	Ø 4	5	26.5	25	0.002
1823391608	Ø 5	6	26.5	25	0.006
1823391609	Ø 6	7	27.5	25	0.008
1823391610	Ø 8	9	30.5	25	0.015
1823391611	Ø 10	11	35	25	0.018
1823391612	Ø 12	13	37	25	0.023
1823391613	Ø 14	15	40	25	0.037

Push-in Fittings, Metric, Series QR2-S

Plug-in Union, QR2-S-RDS



Ambient Temperature min./max.
Working pressure min./max

-20°C / +80°C
-0.95 bar / 16 bar

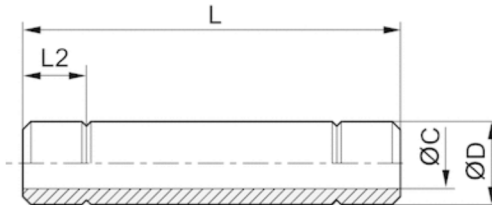
Materials:
Housing

Brass, nickel-plated

Technical Remarks

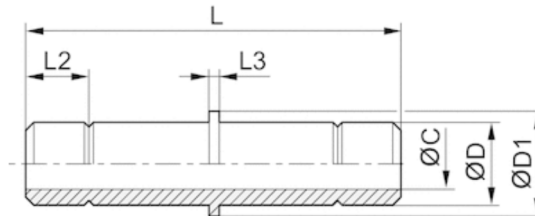
- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of compatible tubing, see the online section "Technical information".

Dimensions (no collar version)



Part No.	Port D	Ø C	L	L2	Delivery quantity [Piece]	Weight [kg]
1823391630	Ø 5	3	33	4.6	25	0.003
1823391633	Ø 10	8	45.5	6.5	25	0.1
1823391634	Ø 12	10	48	6.6	10	0.014
1823391635	Ø 14	12	53	7.7	10	0.018

Dimensions (with collar version)



Part No.	Port D	Ø C	L	L2	L3	Ø D1	Delivery quantity [Piece]	Weight [kg]
1823391629	Ø 4	2	35	5.4	0.6	17	25	0.003
1823391631	Ø 6	4	36.6	5.8	0.6	9	25	0.005
1823361632	Ø 8	6	40	6.9	1	7	25	0.007
R412010191	Ø 16	14	58	8.7	2	5	10	0.024

Push-in Fittings, Metric, Series QR2-C

Straight Fitting, QR2-C-RPN Stainless Steel



Ambient Temperature min./max.
Working pressure min./max

-20°C / +150°C
-0.95 bar / 16 bar

Materials:

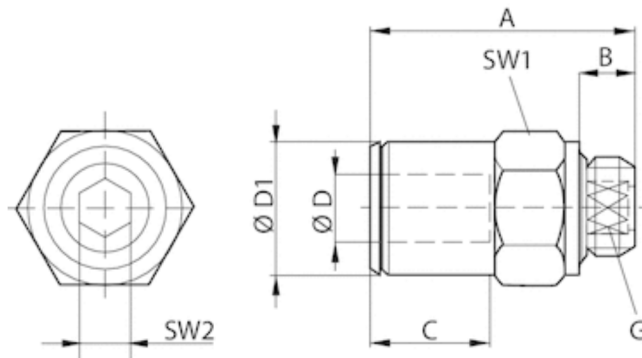
Housing
Seal
Tooth lock washer
Release ring
Thread

Stainless steel
Fluorocautchouc
Stainless steel
Stainless steel
Stainless steel

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- Thread seal with captive O-ring
- For further information about assembling and tolerances of adaptive tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	A	B	C	SW1	SW 2	Ø P	Delivery Quantity [Piece]	Weight [kg]
2544004050	M5	Ø 4	19.5	5	15	9	-	8	2	0.005
R412010036	M7	Ø 4	22.5	5.5	15	11	2.5	9	2	0.01
R412010037	M7	Ø 6	24	5.5	16	11	3.5	11	2	0.01
R412004890	G 1/8	Ø 4	16.5	6	15	13	3	13	2	0.008
R412004891	G 1/8	Ø 6	21.5	6	16	13	4	13	2	0.01
R412004892	G 1/8	Ø 8	24	6	18	13	5	13	2	0.013
R412004893	G 1/4	Ø 6	19	8	16	16	4	16	2	0.015
R412004894	G 1/4	Ø 8	22.5	8	18	16	6	16	2	0.019
R412004895	G 1/4	Ø 10	29.5	8	19	16	7	15	2	0.022
R412004896	G 3/8	Ø 10	30.5	9	19	21	8	15	2	0.039
R412004897	G 3/8	Ø 12	31.5	9	20	21	10	17	2	0.041
R412010043	G 1/2	Ø 10	29	9	14	23	8	25.5	2	0.057

Push-in Fittings, Metric, Series QR2-C

Elbow Fitting, External Thread, QR2-C-RVT Stainless Steel



Ambient temperature min./max.
Working pressure min./max

-20°C / +150°C
-0.95 bar / 16 bar

Materials:

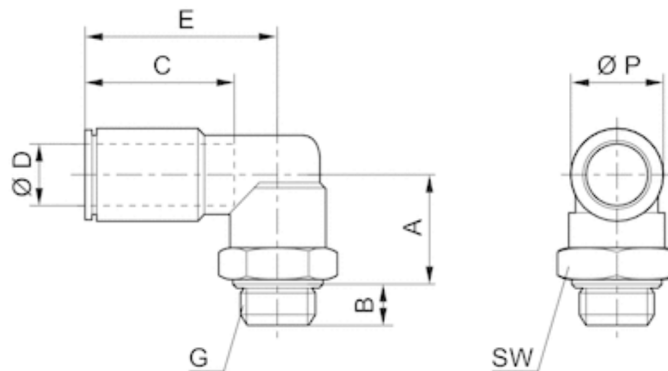
Housing
Seal
Tooth lock washer
Release ring
Thread

Stainless steel
Fluorocautchouc
Stainless steel
Stainless steel
Stainless steel

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- Thread seal with captive O-ring
- For further information about assembling and tolerances of adaptive tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	A	B	C	E	SW	Ø P	Delivery Quantity [Piece]	Weight [kg]
R412005617	M5	Ø 4	15	4	15	14.5	9	9	2	0.008
R412004898	G 1/8	Ø 4	14.5	5.5	15	19.5	13	9	2	0.012
R412004899	G 1/8	Ø 6	16.5	5.5	16	19.5	13	11	2	0.02
R412004900	G 1/8	Ø 8	18.5	5.5	18	19.5	13	13	2	0.022
R412004901	G 1/4	Ø 6	15.5	6.5	16	20.5	16	11	2	0.024
R412005616	G 1/4	Ø 8	17.5	6.5	18	20.5	16	13	2	0.025
R412004902	G 3/8	Ø 10	18.5	7	19	24	21	16	1	0.043
R412004903	G 3/8	Ø 12	21	7	19	26.5	21	19	1	0.06

Push-in Fittings, Metric, Series QR2-C

T-union, External Thread, QR2-C-RTT Stainless Steel



Ambient Temperature min./max.
Working pressure min./max

-20°C / +150°C
-0.95 bar / 16 bar

Materials:

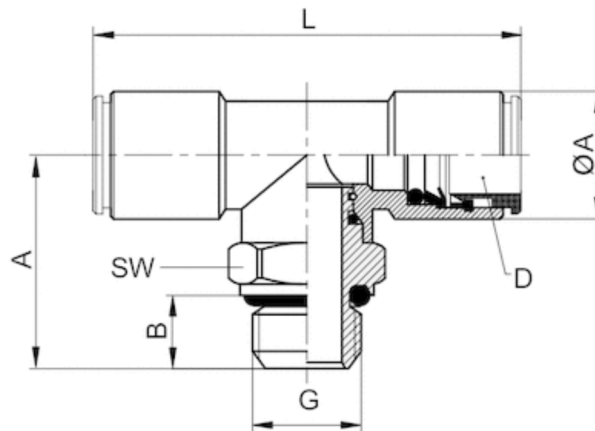
Housing
Seal
Tooth lock washer
Release ring
Thread

Stainless steel
Fluorocautchouc
Stainless steel
Stainless steel
Stainless steel

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- Thread seal with captive O-ring
- For further information about assembling and tolerances of adaptive tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	A	Ø A	B	C	E	SW	Delivery Quantity [Piece]	Weight [kg]
R412004889	M5	Ø 4	18	9	4	15	34	9	2	0.013
R412004904	G 1/8	Ø 4	20	9	5	15	34	13	2	0.017
R412004905	G 1/8	Ø 6	22.5	12	5	16	42	13	2	0.029
R412004906	G 1/8	Ø 8	22.5	14	5	18	43	13	2	0.03
R412004907	G 1/4	Ø 6	24.5	12	6.5	16	42	16	2	0.033
R412004908	G 1/4	Ø 8	24.5	14	6.5	18	43	16	2	0.035

Push-in Fittings, Metric, Series QR2-C

Straight Plug Connector, QR2-C-RSK Stainless Steel



Ambient Temperature min./max.
Working pressure min./max

-20°C / +150°C
-0.95 bar / 16 bar

Materials:

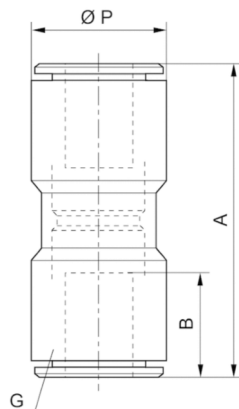
Housing
Seal
Tooth lock washer
Release ring

Stainless steel
Fluorocautchouc
Stainless steel
Stainless steel

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of adaptive tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	A	B	Ø P	Delivery Quantity [Piece]	Weight [kg]
R412004982	Ø 4	30	15	9	2	0.011
R412004983	Ø 6	33	16	11	2	0.016
R412004984	Ø 8	37	18	13	2	0.018
R412004985	Ø 10	37	19	15	2	0.025
R412004986	Ø 12	39	20	17	2	0.03

Push-in Fittings, Metric, Series QR2-C

Bulkhead Plug Connector, QR2-C-RSM Stainless Steel



Ambient Temperature min./max.
Working pressure min./max

-20°C / +150°C
-0.95 bar / 16 bar

Materials:

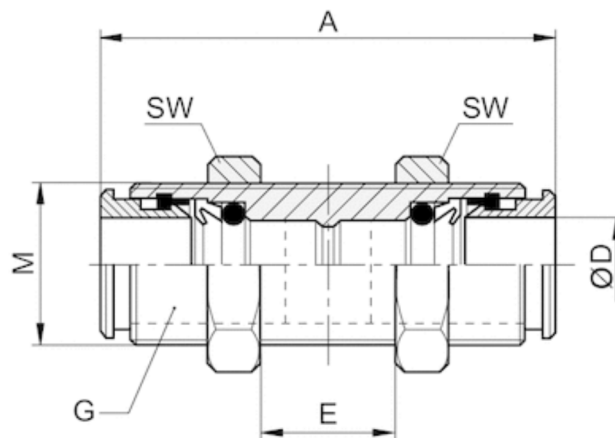
Housing
Seal
Tooth lock washer
Release ring

Stainless steel
Fluorocautchouc
Stainless steel
Stainless steel

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of adaptive tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	M	A	C	E 1)	SW	Delivery Quantity [Piece]	Weight [kg]
2544404000	Ø 4	Ø 4	15	9	13.5	11	15	2	0.024
2544406000	Ø 6	Ø 6	16	11	16.2	16	17	2	0.031
2544408000	Ø 8	Ø 8	18	13	16.5	17	19	2	0.038
2544410000	Ø 10	Ø 10	19	15	18.7	19	21	2	0.051
2544412000	Ø 12	Ø 12	20	17	19.7	20	24	2	0.06

1) max.

Push-in Fittings, Metric, Series QR2-C

Bulkhead Connector, External Thread, QR2-C-RSG Stainless Steel



Ambient Temperature min./max.
Working pressure min./max

-20°C / +150°C
-0.95 bar / 16 bar

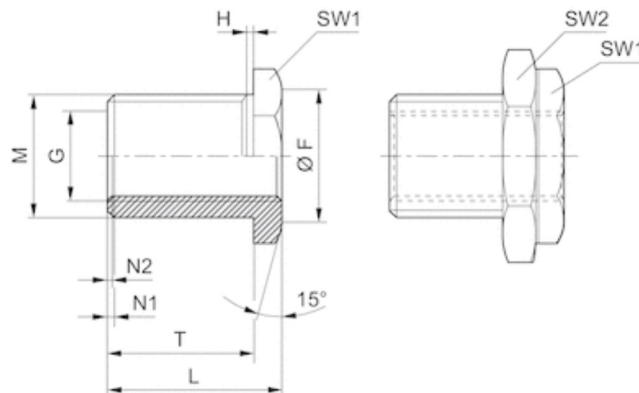
Materials:
Housing
Thread

Stainless steel
Stainless steel

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of adaptive tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	M	L	T	N1	N2	H	Ø F	SW1	SW2	Delivery Quantity [Piece]	Weight [kg]
R415009442	G 1/2	M28x1,5	33	27	1x45	1x45	2	31	32	36	1	0.11
R412004961	G 1/8	M16x1,5	18	14	1x45	0,5x45	1	18	19	22	2	0.028
R412004962	G 1/4	M20x1,5	25	21	1x45	1x45	2	23	24	24	2	0.054
R412004963	G 3/8	M26x1,5	26	21	1x45	1x45	2	29	30	32	2	0.09

Push-in Fittings, Metric, Series QR2-C

Angled Plug Connector, QR2-C-RVK Stainless Steel



Ambient Temperature min./max.
Working pressure min./max

-20°C / +150°C
-0.95 bar / 16 bar

Materials:

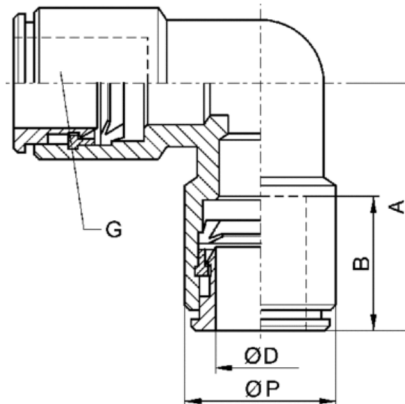
Housing
Seal
Tooth lock washer
Release ring

Stainless steel
Fluorocautchouc
Stainless steel
Stainless steel

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of adaptive tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	A	B	Ø P	Delivery Quantity [Piece]	Weight [kg]
2544204000	Ø 4	Ø 4	17	15	9	2	0.011
2544206000	Ø 6	Ø 6	20	16	12	2	0.018
2544208000	Ø 8	Ø 8	21	18	14	2	0.023
2544210000	Ø 10	Ø 10	25	19	16	2	0.041
2544212000	Ø 12	Ø 12	27	20	18	2	0.044

Push-in Fittings, Metric, Series QR2-C

T-plug Connector, SR2-C-RTK Stainless Steel



Ambient temperature min./max.
Working pressure min./max

-20°C / +150°C
-0.95 bar / 16 bar

Materials:

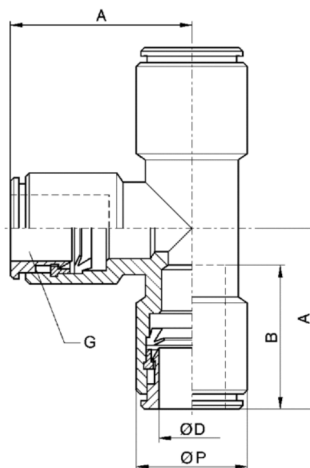
Housing
Seal
Tooth lock washer
Release ring

Stainless steel
Fluorocautchouc
Stainless steel
Stainless steel

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of adaptive tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	A	B	Ø P	Delivery Quantity [Piece]	Weight [kg]
2544304000	Ø 4	Ø 4	17	15	9	2	0.014
2544306000	Ø 6	Ø 6	20	16	12	2	0.029
2544308000	Ø 8	Ø 8	21	18	14	2	0.031
2544310000	Ø 10	Ø 10	25	19	16	2	0.055
2544312000	Ø 12	Ø 12	27	20	18	2	0.059

Push-in Fittings, Metric, Series QR2-C

Straight Fitting, Reducing, QR2-C-RED Stainless Steel



Ambient Temperature min./max.
Working pressure min./max

-20°C / +150°C
-0.95 bar / 16 bar

Materials:

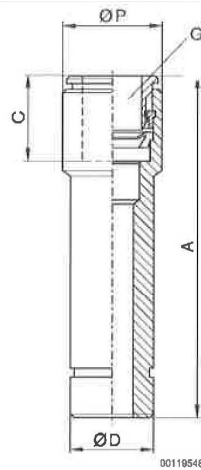
Housing
Seal
Tooth lock washer
Release ring

Stainless steel
Fluorocautchouc
Stainless steel
Stainless steel

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of adaptive tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	A	C	Ø P	Delivery Quantity [Piece]	Weight [kg]
2544506040	Ø 4	Ø 6	27	15	9	2	0.006
2544508060	Ø 6	Ø 8	32.5	16	12	2	0.01
2544510080	Ø 8	Ø 10	33	18	14	2	0.015

Push-in Fittings, Metric, Series QR2-C

Straight Fitting, R Threads, QR2-C-RPN Stainless Steel



Ambient Temperature min./max.
Working pressure min./max

-20°C / +150°C
-0.95 bar / 16 bar

Materials:

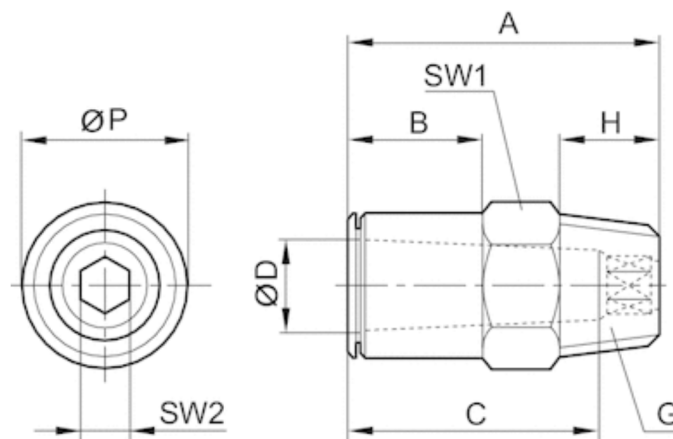
Housing
Seal
Tooth lock washer
Release ring
Thread

Stainless steel
Fluorocautchouc
Stainless steel
Stainless steel
Stainless steel

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of adaptive tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	A	B	C	H	SW1	SW2	Ø P	Delivery Quantity [Piece]	Weight [kg]
2544004180	R 1/8	Ø 4	18	5	15	6.5	10	3	9	2	0.006
2544006180	R 1/8	Ø 6	20.5	6	18	7.5	12	5	11	2	0.009
2544008180	R 1/8	Ø 8	24	11.5	16	7.5	14	6	13	2	0.014
2544004140	R 1/4	Ø 4	21.5	1.5	16	10.5	14	3	9	2	0.016
2544006140	R 1/4	Ø 6	20.5	2.5	15	11	14	5	11	2	0.014
2544008140	R 1/4	Ø 8	22.5	4.5	19	11	14	6	13	2	0.014
2544010140	R 1/4	Ø 10	29.5	11	19	11	16	9	16	2	0.021
2544010380	R 3/8	Ø 10	25.5	6	19	11.5	17	5	16	1	0.021
2544012380	R 3/8	Ø 12	31.5	11	20	11.5	19	10	18	1	0.026
2544012120	R 1/2	Ø 12	31.5	8.5	20	14	22	10	18	1	0.041

Push-in Fittings, Metric, Series QR2-C

Elbow Fitting, R Threads, QR2-C-RVT Stainless Steel



Ambient Temperature min./max.
Working pressure min./max

-20°C / +150°C
-0.95 bar / 16 bar

Materials:

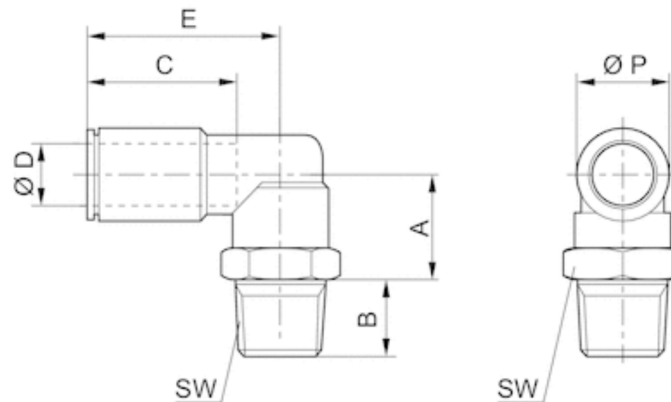
Housing
Seal
Tooth lock washer
Release ring
Thread

Stainless steel
Fluorocautchouc
Stainless steel
Stainless steel
Stainless steel

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of adaptive tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	A	B	C	E	SW	Ø P	Delivery Quantity [Piece]	Weight [kg]
2544004180	R 1/8	Ø 4	13	7	15	20	13	9	2	0.011
2544006180	R 1/8	Ø 6	13	7	16	21	13	11	2	0.021
2544008180	R 1/8	Ø 8	13	7	18	24	13	13	2	0.022
2544004140	R 1/4	Ø 4	14	11	15	20	14	9	2	0.025
2544006140	R 1/4	Ø 6	14	11	16	21	14	11	2	0.027
2544008140	R 1/4	Ø 8	14	11	18	24	14	13	2	0.028
2544010140	R 1/4	Ø 10	14.5	11	17	26.5	16	16	2	0.037
2544010380	R 3/8	Ø 10	15.5	11.5	17	25.5	17	16	1	0.034
2544012380	R 3/8	Ø 12	19	11.5	18.5	28	20	18	1	0.066
2544012120	R 1/2	Ø 12	19.5	14	18.5	28	22	18	1	0.067

Push-in Fittings, Metric, Series QR2-C

T-Union, R Threads, QR2-C-RTT Stainless Steel



Ambient Temperature min./max.
Working pressure min./max

-20°C / +150°C
-0.95 bar / 16 bar

Materials:

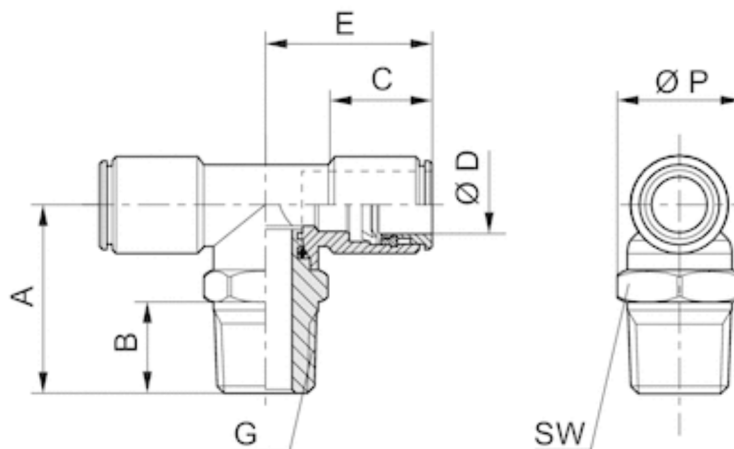
Housing
Seal
Tooth lock washer
Release ring
Thread

Stainless steel
Fluorocautchouc
Stainless steel
Stainless steel
Stainless steel

Technical Remarks

- The series QR1 (plastic) and QR2 (metal) can not be combined
- For further information about assembling and tolerances of adaptive tubing, see the online section "Technical information".

Dimensions



Part No.	Port G	Port D	A	B	C	E	SW	Ø P	Delivery Quantity [Piece]	Weight [kg]
R412004968	R 1/8	Ø 4	21.5	7.5	15	17	10	9	2	0.015
R412004969	R 1/8	Ø 6	24.5	7.5	16	21	13	12	2	0.03
R412004970	R 1/8	Ø 8	24.5	7.5	18	21.5	13	14	2	0.031
R412004971	R 1/4	Ø 6	28.5	11	16	21	14	12	2	0.034
R412004972	R 1/4	Ø 8	28.5	11	18	21.5	14	14	2	0.035
R412004909	R 1/4	Ø 10	32	11	19	25	16	16	2	0.058
R412004910	R 3/8	Ø 10	32.5	11.5	19	25	18	16	1	0.061

Fittings, Metric

Blanking Plug with Gasket/Flush Plug



Ambient Temperature min./max.
Working pressure min./max

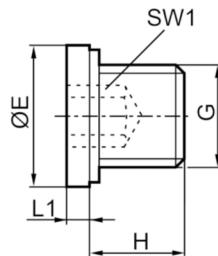
-20°C / +150°C
-0.95 bar / 16 bar

Materials:

Screw
Housing
Seal
Thread

Steel, galvanized
Steel, galvanized
Polyvinyl chloride, hard
Steel, galvanized

Dimensions



Part No.	Port G	Ø E	H	L1	SW1	Delivery Quantity [Piece]
1823462016	M5	SW8	4.5	3	-	25
1823462028	G 1/8	14	8	3	5	25
1823462029	G 1/4	18	12	3	6	25
1823462030	G 3/8	22	12	3	8	25
1823462031	G 1/2	26	14	4	10	25
1823462032	G 3/4	32	16	4	12	10
1823462033	G 1	39	16	5	17	5



Ambient Temperature min./max.
Working pressure min./max

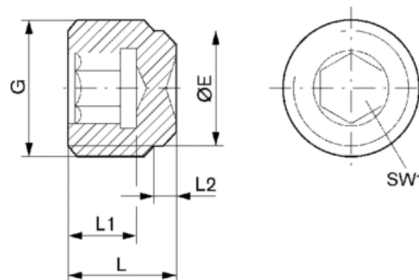
-20°C / +80°C
0 bar / 16 bar

Materials:

Screw
Housing
Thread

Brass
Brass
Brass

Dimensions



Part No.	Port G	Ø E	L	L1	L2	SW1	Delivery Quantity [Piece]
1823462004	G 1/8	8	8	5	2	5	10
1823462003	G 1/4	11	11	7	3.5	6	10

Fittings, Metric

Reducing Nipple, with Gasket



02110816

Ambient Temperature min./max.
Working pressure min./max

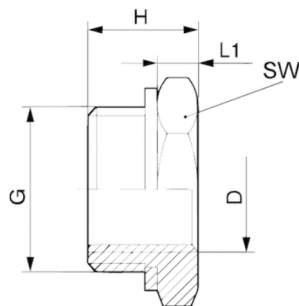
-20°C / +80°C
-0.95 bar / 16 bar

Materials:

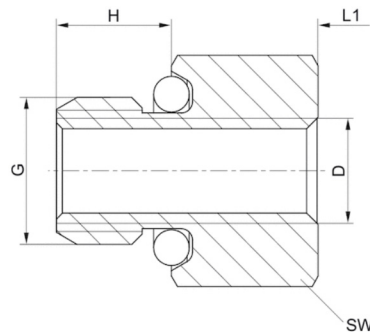
Screw
Housing
Seal
Thread

Brass, nickel-plated
Brass, nickel-plated
Polyvinyl chloride, hard
Brass, nickel-plated

Dimensions



Dimensions for fitting with external thread 2122807050



Part No.	Port G	Port D	H	L1	SW	Delivery Quantity [Piece]
1823391080	G 1/8	M5	7	4	13	10
2122807050	M7	M5	5.5	7	10	10
1823391012	G 1/4	G 1/8	9	4	17	10
1823391298	G 3/8	G 1/8	9	5	19	10
1823391013	G 3/8	G 1/4	10	5	19	10
1823391299	G 1/2	G 1/8	15.5	5.5	24	5
1823391300	G 1/2	G 1/4	15.5	5.5	24	5
1823391014	G 1/2	G 3/8	15.5	5.5	24	5
1823391301	G 3/4	G 1/4	12	7	32	5
1823391302	G 3/4	G 3/8	12	7	32	5
1823391028	G 3/4	G 1/2	12	7	32	5
1823391303	G 1	G 3/8	15	8	41	2
1823391304	G 1	G 1/2	15	8	41	2
1823391285	G 1	G 3/4	15	8	41	2

Adapter Fittings

Adapters - Metric to Inch/Common Inch Pipe Fittings

Male/Female Adapter ISO G (BSPP) to Inch.

A male	B female	Per Pack*	Part No.
ISO G1/8	1/8" NPT	10	R432011744
ISO G1/4	1/4" NPT	10	R432011874
ISO G3/8	3/8" NPT	10	R432011847
ISO G1/2	1/2" NPT	10	R432011745
1/8" NPT	ISO G1/8	10	R432012022
1/4" NPT	ISO G1/4	10	R432012023
3/8" NPT	ISO G3/8	10	R432012024
1/2" NPT	ISO G1/2	10	R432012025



M7 Adapter fittings

Type	Part No.	Thread	Tube O.D.	Pack Qty.*
Straight	1823373100	M7	4mm	25
Straight	1823373088	M7	6mm	25
Elbow	R412005377	M7	4mm	25
Elbow	R412005378	M7	6mm	25
Straight	R412004925	M7	1/8"	25
Straight	R412004926	M7	1/4"	25



Hex Socket Pipe Plug

Size	A min/max (in.)	Part No.	Pack Qty.*
1/8" NPT	0.290/0.370	R432027753	1
1/4" NPT	0.417/0.475	R432027754	1
3/8" NPT	0.475/0.520	R432012125	1
1/2" NPT	0.524/0.630	R432027755	1



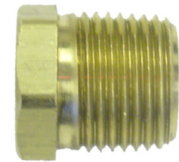
Hex Socket Pipe Plug

A	B (in.)	Hex Width (in.)	Part No.	Pack Qty.*
10-32 UNF	0.50	0.25	R432012043	1
1/8" NPT	0.97	0.44	R432012044	1
1/4" NPT	1.38	0.56	R432012041	1
3/8" NPT	1.41	0.69	R432030233	1
1/2" NPT	1.81	0.88	R432012042	1



Reducer Bushing

A male	B female	C (in.)	Hex Width (in.)	New Part No.	Pack Qty.*
1/8" NPT	10-32 UNF	0.53	0.44	R432030232	1
1/4" NPT	1/8" NPT	0.75	0.64	R432027750	1
3/8" NPT	1/8" NPT	0.75	0.68	R432012159	1
3/8" NPT	1/4" NPT	0.75	0.68	R432027749	1
1/2" NPT	1/4" NPT	1.00	0.88	R432027751	1
1/2" NPT	3/8" NPT	1.00	0.88	R432030225	1
3/4" NPT	1/4" NPT	1.00	1.12	R432030202	1
3/4" NPT	3/8" NPT	1.00	1.13	R432030201	1
3/4" NPT	1/2" NPT	1.06	1.13	R432012160	1



Hybrid Fittings - Inch tube to Male BSPT (R ISO)

Part Number	Ø D (in.)	C	F1 (in.)	F2 (in.)	H (in.)	K (in.)	Weight (oz.)
R432016913	5/32	R1/8	0.39	0.12	0.37	0.43	0.282
R432016914	1/8	R1/8	0.43	0.12	0.34	0.47	0.176
R432016917	1/4	R1/8	0.43	0.16	0.47	0.47	0.212
R432016918	1/4	R1/4	0.55	0.16	0.37	0.59	0.741
R432016919	3/8	R1/4	0.71	0.20	0.30	0.77	0.600
R432016922	1/2	R1/4	0.87	0.24	1.06	0.94	1.552
R432016920	3/8	R3/8	0.51	0.20	0.79	0.55	0.670
R432016923	1/2	R3/8	0.87	0.28	1.02	0.94	1.693
R432016921	3/8	R1/2	0.55	0.24	0.66	0.59	2.152
R432016924	1/2	R1/2	0.94	0.28	0.81	0.94	1.728

Note: BSP-T (R ISO tapered) threads can be used in an ISO G (BSPP) female port, with sealing ensured by thread sealant

*Pack Quantity is order quantity due to package size

Plastic Tubing, Metric

Plastic Tubing, Polyurethane (PUR) 3mm to 16mm O.D.



Ambient Temperature min./max.
Working pressure min./max

-30°C / +80°C
-0.95 bar / +10 bar

Materials:
Compressed air tubing

Polyester polyuerthane

Technical Remarks

- External calibrated
- Suitable for dynamic laying
- Halogen-free

Tubing diameter External	Wall thickness	Bending radius Min. At 20°C	Weight	Color	Length	Part No.
[mm]	[mm]	[mm]	[kg/m]		[m]	
3	0.6	8	0.005	Natural Black Red Blue	50	1820712069 1820712068 1820712066 1820712067
4	0.75	12	0.009	Natural Black Black Red Blue Blue Green Black Blue Blue Natural Black Red Blue Blue Yellow	25 25 25 25 25 50 50 100 100 100 100 100 100 100 100	1820712000 1820712010 1820712020 1820712030 1820712078 R412009984 R412009985 1820712007 1820712018 1820712026 1820712036 1820712036 1820712036 R412009986
5	0.95	13	0.015	Natural Black Red Blue Blue	25 25 25 25 25	1820712001 1820712011 1820712021 1820712031 R412009986

Plastic Tubing, Metric

Plastic Tubing, Polyurethane (PUR) 3mm to 16mm O.D.

Tubing diameter External	Wall thickness	Bending radius Min. At 20°C	Weight	Color	Length	Part No.				
[mm]	[mm]	[mm]	[kg/m]		[m]					
6	1.05	18	0.02	Natural	25	1820712002				
				Black	25	1820712012				
				Red	25	1820712022				
				Blue	25	1820712032				
				Green	25	1820712079				
				Black	50	R412009987				
				Blue	50	R412009988				
				Natural	100	1820712006				
				Black	100	1820712019				
				Red	100	1820712027				
				Blue	100	1820712037				
				Yellow	100	R412004861				
				Green	100	R412007650				
				8	1.15	30	0.03	Natural	25	1820712003
Black	25	1820712013								
Red	25	1820712023								
Blue	25	1820712033								
Green	25	1820712080								
Black	50	R412009989								
Blue	50	R412009990								
Natural	100	1820712008								
Black	100	1820712016								
Red	100	1820712028								
Blue	100	1820712038								
Yellow	100	1820712062								
Green	100	R412009921								
10	1.25	45	0.042					Natural	25	1820712005
				Black	25	1820712015				
				Red	25	1820712025				
				Blue	25	1820712035				
				Blue	50	R412009991				
				Natural	100	1820712009				
				Black	100	1820712081				
				Red	100	1820712029				
				Blue	100	1820712039				
				Yellow	100	R412004863				
				Green	100	R412004915				
				12	1.5	55	0.06	Natural	25	1820712004
								Black	25	1820712014
								Red	25	1820712024
Blue	25	1820712034								
Blue	50	R412009992								
Natural	100	1820712082								
Black	100	1820712017								
Red	100	1820712083								
Blue	100	1820712040								

Plastic Tubing, Metric

Plastic Tubing, Polyurethane (PUR) 3mm to 16mm O.D.

Tubing diameter External	Wall thickness	Bending radius Min. At 20°C	Weight	Color	Length	Part No.
[mm]	[mm]	[mm]	[kg/m]		[m]	
14	2	55	0.092	Natural	25	R412004790
				Black	25	R412004778
				Red	25	R412004786
				Blue	25	R412004782
				Natural	100	R412004791
				Black	100	R412004779
				Red	100	R412004787
Blue	100	R412004783				
16	2.5	65	0.129	Natural	25	R412004792
				Black	25	R412004780
				Red	25	R412004788
				Blue	25	R412004784
				Natural	100	R412004793
				Black	100	R412004781
				Red	100	R412004789
Blue	100	R412004785				

Plastic Tubing, Metric

Plastic Tubing, Polyurethane (PUR) 4mm to 16mm O.D.



Ambient Temperature min./max.
Working pressure max. at 20° C

-40°C / +80°C
See table below

Materials:
Compressed air tubing

Polyamide

00127734

Technical Remarks

- External calibrated

Tubing diameter External	Wall thickness	Bending radius Min. At 20°C	Weight	Color	Length	Part No.
[mm]	[mm]	[mm]	[kg/m]		[m]	
4	1	12	0.006	Natural	25	1820712100
	1			Black	25	1820712110
	0.5			Silver gray	25	R412009980
	0.5			Blue	25	R412009913
	0.5			Black	50	R412009931
	0.5			Natural	50	R412009937
	0.5			Blue	100	R412009914
	0.5			Silver gray	100	R412009943
6	1	12	0.011	Natural	25	1820712001
	1			Black	25	1820712011
	1			Red	25	R412007515
	1			Blue	25	R412007516
	0.65			Green	25	R412009915
	0.65			Blue	25	R412009998
	0.65			Silvery gray	50	R412009916
	0.65			Blue	50	R412009932
	0.65			Black	50	R412009938
	0.65			Natural	100	R412009917
	0.65			Blue	100	R412009944
	0.65			Silver gray	100	R412009936
	1			Green	100	R412009905
	1			Natural	100	R412009906
	1			Black	100	R412009906

Plastic Tubing, Metric

Plastic Tubing, Polyurethane (PUR) 4mm to 16mm O.D.

Tubing diameter External	Wall thickness	Working pressure max at 20°C	Bending radius Min. At 20°C	Weight	Color	Length	Part No.
[mm]	[mm]		[mm]	[kg/m]		[m]	
8	0.8	12	40	0.019	Blue	25	R412009918
	1	22			Natural	25	1820712102
	1	22			Black	25	1820412112
	1	22			Blue	25	R412007590
	0.8	12			Silver gray	25	R412009981
	0.8	12			Blue	50	R412009919
	0.8	12			Black	50	R412009933
	0.8	12			Natural	50	R412009939
	0.8	12			Blue	100	R412009920
	0.8	12			Silver gray	100	R412009945
10	1	13.5	50	0.028	Blue	25	R412009921
					Silver gray	25	R412009982
					Natural	25	1820712105
					Black	25	1820712115
					Black	50	R412009934
					Natural	50	R412009940
					Blue	50	R412009922
					Blue	100	R412009923
					Silver gray	100	R412009946
					Green	100	R412007632
Black	100	R412007633					
12	1.1	11	60	0.039	Blue	25	R412009924
	1.1	11			Silver Gray	25	R412009983
	1.5	18			Natural	25	1820712103
	1.5	18			Black	25	1820712113
	1.1	11			Black	50	R412009935
	1.1	11			Natural	50	R412009941
	1.1	11			Blue	50	R412009925
	1.1	11			Blue	100	R412009926
	1.1	11			Silver Gray	100	R412009947
14	1.25	11	90	0.052	Blue	25	R412009927
	1.5	15			Natural	25	1820712103
	1.5	15			Black	25	1820712113
	1.25	11			Silver Gray	25	R412009935
	1.25	11			Black	50	R412009941
	1.25	11			Blue	50	R412009925
	1.25	11			Silver Gray	50	R412009926
						R412009947	
16	1.35	10	90	0.065	Blue	25	R412009929
					Silver Gray	25	R412014468
					Blue	50	R412009930

Plastic Tubing, Inch

Plastic Tubing, Polyurethane

Material Polyurethane

Pressure medium	Air
Temperature range	-40°C to 165°F (-40° to 74°C)
Vacuum rating	To 28" Hg
Diameter tolerance	± .005"
Working pressure	3 to 1 safety factor (see table)
UV stabilized	Yes



Part Numbers: Tubing Size (Inch)	Blue Polyurethane Part Number	Clear Polyurethane Part Number	Bend Radius	Max. Pressure (psi)		Package Qty. (Feet)	Weight (Lbs.)
				75°F	150°F		
1/8" OD x .066 ID	R432026247	R432026251	1/4	225	100	50	0.25
1/4" OD x .160 ID	R432026248	R432026252	1/2	175	70	100	1.50
3/8" OD X .245 ID	R432026249	R432026253	7/8	170	70	100	3.40
1/2" OD x .320 ID	R432026250	R432030140	1 1/8	175	70	50	2.55

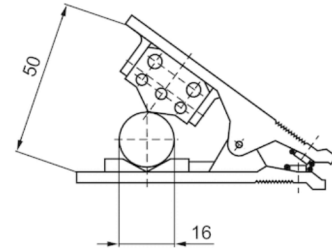
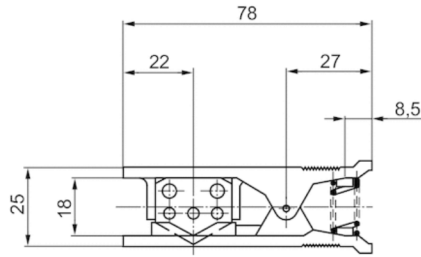
Material Polyethylene

Pressure medium	Air
Temperature range	-40°C to 165°F (-40° to 74°C)
Vacuum rating	To 28" Hg
Diameter tolerance	± .005"
Working pressure	3 to 1 safety factor (see table)
UV stabilized	Yes



Part Numbers: Tubing Size (Inch)	Blue Polyurethane Part Number	Clear Polyurethane Part Number	Bend Radius	Max. Pressure (psi)		Package Qty. (Feet)	Weight (Lbs.)
				75°F	150°F		
1/8" OD x .062 ID	R432026239	R432026243	1	305	120	100	0.4
1/4" OD x .170 ID	R432026240	R432026244	1 1/4	200	80	100	1.2
3/8" OD X .250 ID	R432026241	R432026245	2	190	75	100	2.3
1/2" OD x .375 ID	R432026242	R432030146	2 1/2	135	55	100	3.4

Plastic Tubing - Accessories
 Tubing Cutter, Plastic/Tubing Cutter, Metal



Part No.	Ø
1823391390	4-16

Part No.	Ø
1823391390	4-16



F100_163

Plastic Tubing - Accessories

Multi-Coupling, Series CP1 For 4 to 7 tubes



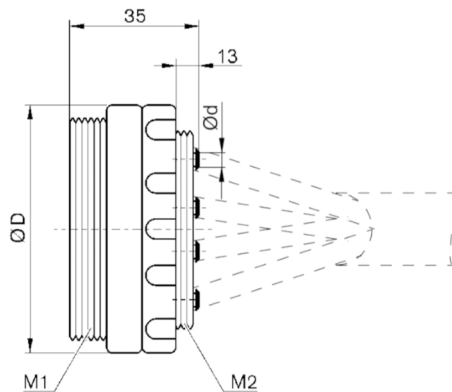
Working pressure max. min./max.
Ambient Temperature min./max.
Medium temperature min./max.
Medium

0 bar / 16 bar
-20 ° C / +80 ° C
-20 ° C / +80 ° C
Compressed air

Technical Remarks

- Connect and release 4 to 7 compressed air hoses.
- Clear hose assembly with guide pins

Coupling Plug

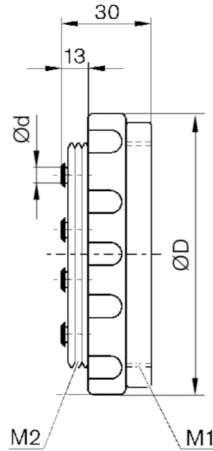


Part No.	M1	M2	Ø d 1)	Ø D	Number of ports	Housing	Delivery quantity [pcs]
R412007569	M46x1,5	M40x1,5	4	50	4	Polyamide	1
R412007571	M46x1,5	M40x1,5	4	50	7	Polyamide	1
R412007573	M46x1,5	M40x1,5	6	50	4	Polyamide	1
R412007575	M46x1,5	M40x1,5	6	50	7	Polyamide	1

1) Tubing - Ø (external)

Plastic Tubing - Accessories

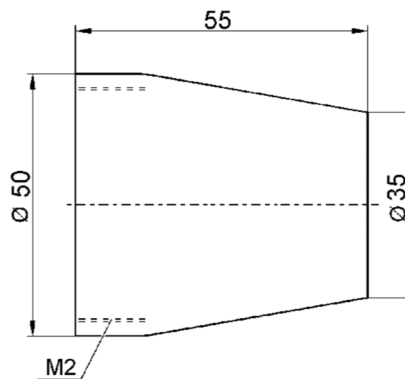
Multi-Coupling, Series CP1 For 4 to 7 tubes



Part No.	M1	M2	Ø d 1)	Ø D	Number of ports	Housing	Delivery quantity [pcs]
R412007569	M46x1,5	M40x1,5	4	50	4	Polyamide	1
R412007571	M46x1,5	M40x1,5	4	50	7	Polyamide	1
R412007573	M46x1,5	M40x1,5	6	50	4	Polyamide	1
R412007575	M46x1,5	M40x1,5	6	50	7	Polyamide	1

1) Tubing - Ø (external)

Protective cap

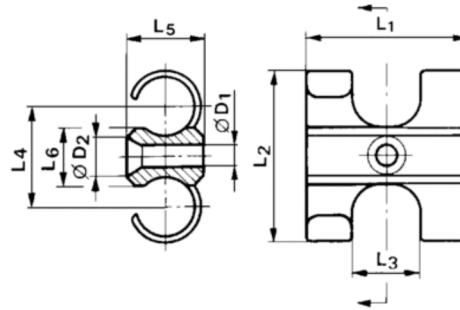


The protective cap can be assembled on both sides of the coupling

Part No.	M2	Number of ports	Housing	Delivery quantity [pcs]
R412007577	M40x1,5	4, 7	Polyamide	1

Plastic Tubing - Accessories

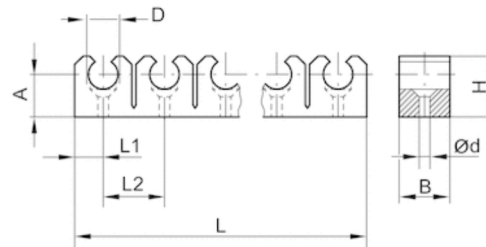
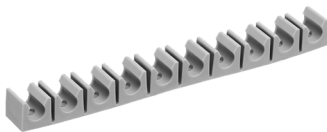
T-clips / Terminal Strips



Part No.	*)	Ø D1	Ø D2	L1	L2	L3	L4	L5	L6	Material
8186040000	4 - 5 x ...	3	6	18	15	6	10	9	7	Polyoxymethylene
8186060000	6 - 7 x ...	3	6	20	20	8	12	9	8	Polyoxymethylene
8186080000	8 - 9 x ...	4	8	24	25	10	15	12	10	Polyoxymethylene
8186100000	10 - 11 x ...	4	8	28	31	12	18	15	11	Polyoxymethylene
8186120000	12 - 14 x ...	4	9	35	34	14	21	17	12	Polyoxymethylene
8186160000	15 - 17 x ...	5	10	42	43	17	25	20	14	Polyoxymethylene
8186180000	18 - 21 x ...	5	12	49	51	20	31	23	16	Polyoxymethylene

Delivery unit is 50 pieces.

Terminal Strips



D = 4, 5, 6, 8 mm



D = 10, 12 mm

Part No.	A	B	D*)	Ø d	H	L	L1	L2	**)	Material	Delivery quantity [Piece]
1824431005	6	14	4 - 5	2.4	9	100	5	10	10	Polyethylene	10
1824431006	5.5	14	6	3	9	110	5.5	11	10	Polyethylene	10
1824431007	7.5	15	8	2.8	12.5	141	6.4	14.2	10	Polyethylene	10
1824431008	9	18	10	2.8	14.7	121	9.8	20	6	Polyethylene	10
1824431009	10	18	11.5	2.8	16	121	10	20	6	Polyethylene	10

*) For plastic tubing with diameter D

***) Terminals per strip

Accessory Valves - Flow Control

Flow Control Valve, Inline, Floreg® 1/8" to 1" NPTF

Floreg® Type A

Type	Standard Flow Regulation
Working Pressures	Pneumatic - Vacuum to 250 PSIG Max. Hydraulic - 500 PSIG Max. Non-Shock applications.
Temperature Range	-40° to + 160°F (+200° F Intermittent)
Media	Air or hydraulic fluid
Port Size	1/8" to 1" NPTF
Body	Die cast, anodized aluminum



Floreg® Type B

Type	"Micrometer" or Fine Flow Regulation
Working Pressure	Vacuum to 250 PSIG Max.
Temperature Range	-40° to + 160°F (+200° F Intermittent)
Media	Air
Port Size	1/8" to 1" NPTF
Body	Die cast, anodized aluminum

Operating Characteristics

The Floreg® Valve is an adjustable device that works with other components of a fluid circuit to time, to sequence or to coordinate operations. It controls the rate at which a gas or liquid can flow in one direction through a circuit, yet allows free flow in the opposite direction.

CONTROLLED FLOW-Fluid is limited by orifice created by diameter differences of valve and valve seat.

FREE FLOW-Fluid forces valve upward to compress spring and increase orifice to maximum size.

Spring holds valve on its seat in body. Adjusting screw raises valve from seat for flow.

Type A - Standard Flow Regulation

Size NPTF	C _v	Part Number - Valve Current (old)	Approx. Valve Weight (oz.)	Part Number - Repair Kit* Current (Old)
1/8"	1.50	R431006861 (P - 066693-00000)	2.5	R431007472 (P - 069547-00000)
1/4"	1.81	R431003089 (P - 053025-00002)	2.5	R431007472 (P - 069547-00000)
3/8"	3.37	R431003085 (P - 053020-00002)	3.5	R431007473 (P - 069548-00000)
1/2"	4.95	R431003081 (P - 053010-00002)	6.0	R431007474 (P - 069549-00000)
3/4"	9.50	R431003539 (P - 055010-00000)	21.0	R431007475 (P - 069550-00000)
1"	13.78	R431003496 (P - 054986-00000)	22.0	R431007475 (P - 069550-00000)

*Repair kits include plunger assembly, screw, spring and 'o' rings.

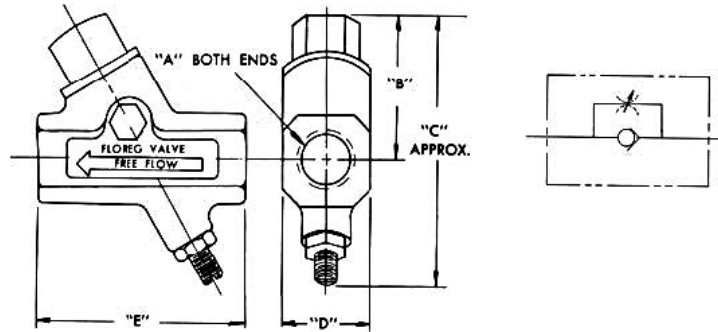
Type B - Micrometer or Fine Flow Regulation

Size NPTF	C _v	Part Number - Valve Current (old)	Approx. Valve Weight (oz.)	Part Number - Repair Kit* Current (Old)
1/8"	1.16	R431003544 (P - 055017-00000)	3.25	R431007476 (P - 069551-00000)
1/4"	1.28	R431003545 (P - 055018-00000)	3.25	R431007476 (P - 069551-00000)
3/8"	2.98	R431003546 (P - 055019-00000)	4.5	R431007477 (P - 069552-00000)
1/2"	3.35	R431003547 (P - 055020-00000)	8.5	R431007478 (P - 069553-00000)
3/4"	9.50	R431003551 (P - 055021-00000)	27.0	R431007479 (P - 069554-00000)
1"	13.28	R431003552 (P - 055022-00000)	25.0	R431007479 (P - 069554-00000)

*Repair kits include plunger assembly, and 'o' rings.

Accessory Valves - Flow Control

Flow Control Valve, Inline, Floreg® 1/8" to 1" NPTF



Dimensions					
Size	A	B	C	D	E
1/8"	1/8" - 27 Dryseal NPTF	1 1/4"	2 7/16"	7/8"	2"
1/4"	1/4" - 18 Dryseal NPTF	1 1/4"	2 7/16"	7/8"	2"
3/8"	3/8" - 18 Dryseal NPTF	1 1/2"	3"	1"	2 3/8"
1/2"	1/2" - 14 Dryseal NPTF	1 5/8"	3 3/16"	1 1/4"	2 3/4"
3/4"	3/4" - 14 Dryseal NPTF	2 1/2"	4 3/4"	2"	4"
1"	1" - 11 1/2 Dryseal NPTF	2 1/2"	2 1/2"	2"	4"

Accessory Valves - Flow Control

Flow Control Valve, Inline, Series CH01 G1/8 to G1/4

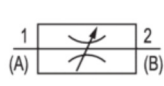


Working pressure min./max
Ambient Temperature min./max.
Ambient Temperature min./max.
Medium

0 bar / 10 bar
+0°C / +80°C
+0°C / +80°C
Compressed air

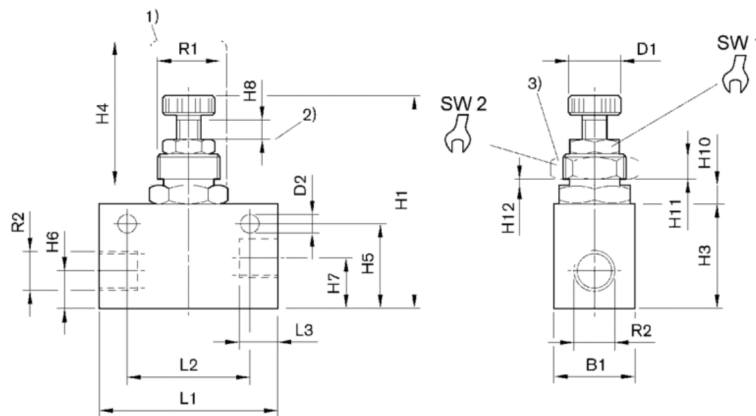
Materials:
Housing
Seals
Flow control screw

Aluminum, anodized
Acrylonitrile Butadiene Rubber
Steel, Galvanized

	Port 1	Port 2	Throttle bore [mm]	Qn [l/min]	Weight [kg]	Fig.	Part No.
	G 1/8	G 1/8	1	38	0.035	Fig. 1	0821201010
	G 1/8	G 1/8	2	140	0.035	Fig. 1	0821201014
	G 1/4	G 1/4	4	700	0.045	Fig. 1	0821201011
	G 1/2	G 1/2	8.5	2800	0.17	Fig. 2	0821201006

Nominal flow Qn at 6 bar and $\Delta p = 1$ bar

Fig. 1



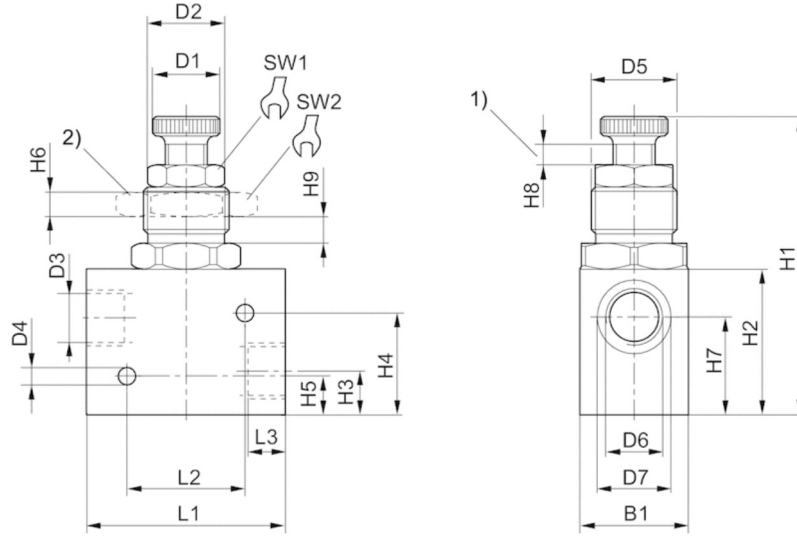
1) protective cap 2) throttle setting range 3) nut for control panel installation

Part No.	R1	R2	B1	D1	D2	H1	H3	H4	H5	H6	H7	H8
0821201010	M12x1	G 1/8	16	9, 8	4, 5	56	20	35	16, 5	8	8	4
0821201004	M12x1	G 1/8	16	9, 8	4, 5	56	20	35	16, 5	8	8	4
0821201011	M20x1, 5	G 1/8	25	15	5, 5	70	32	40	26	11	15	5
Part No.	H10	H11	H12	L1	L2	L3	SW1	SW2				
0821201010	4, 2	4	0	35	25	8	10	17				
0821201004	4, 2	4	0	35	25	8	10	17				
0821201011	5, 5	6	0	55	38	12	13	24				

Accessory Valves - Flow Control

Flow Control Valve, Inline, Series CH01 G1/8 to G1/4

Fig. 2



1) throttle setting range 2) nut for control panel installation

Part No.	R1	R2	B1	D1	D2	D3	H1	H2	H3	H4	H5	H6
0821201006	M32x1,5	G 1/2	40	25	10	27.5	120	50	38.5	38	17	13.5
Part No.	H7	H8	H9	L1	L2	L3	SW2					
0821201006	9	9	8	70	45	14	46					

Accessory Valves - Flow Control

Flow Control Valve, Right Angle, Inch, Meter-out Threaded and Push-in Versions

Right Angle - Inch

Type	Right Angle - for Push-in Fittings or threaded inlet
Supply Pressure	150 PSIG (10 bar)
Cracking Pressure	Check Valve: 7.5 PSIG (0.5 Bar)
Temperatures	15° to 160° F (-9° to 71° C)
Media	Air or inert gas
Materials:	
Body	Nickel Plated Brass
Swivel Housing	Anodized Aluminum
Seals	Buna-N
Spring	Stainless Steel
Needle	10-32, 1/8", 1/4" Stainless Steel 3/8", 1/2" Nickel Plated Brass



Right Angle - Inch Series

Operating Characteristics

Valves Mount Directly on Cylinder
Nickel Plated Brass for Corrosion
Spring Loaded Check Valve
Thread Sealant on Male Threads
360° Swivel Body
Compact Design

Threaded Style

Size	Part Number Slot Adjust	Part Number Knob Adjust
10-32 UNF	R432027180	--
1/8" NPTF	R432027181	R432027185
1/4" NPTF	R432027182	R432027186
3/8" NPTF	R432027183	R432027187
1/2" NPTF	R432027184	R432027188

Threaded Style

Size	Part Number Slot Adjust	Part Number Knob Adjust
10-32 UNF x 5/32" Tube	R432027189	--
1/8" NPTF x 1/4" Tube	R432027190	R432027193
1/4" NPTF x 1/4" Tube	R432027191	R432027194
3/8" NPTF x 3/8" Tube	R432027192	R432027195

*Push-in fitting not available in 1/2" NPTF size.

Tubing tolerances for push-in fittings are:

+/-0.2mm (0.008") except for 1/4" OD tubing, +0.15/-0.35mm (+0.0059"/0.0137")

Push-in fittings suitable for use with nylon, polyethylene, and soft copper tubing; not for use with polyurethane or PVC tubing.

Flow Characteristics

Thread Size		10-32	1/8"	1/4"	3/8"	1/2"
Free Flow (Throttle Closed)	SCFM [Cv]	3.4 [0.6]	12.8 [.34]	19.1 [.67]	28.9 [1.87]	53.2 [2.84]
	L/Min	98	364	542	819	1508
	Orifice Diameter	INCH	0.06	0.118	0.177	0.276
Office Diameter	Mm	1.5	1.5	4.5	7.0	10.0
	Lbs	0.022	0.055	0.121	0.209	0.407
	Kgs	0.01	0.025	0.055	0.095	0.185

Accessory Valves - Flow Control

Flow Control Valve, Right Angle, Series CC04 Metric Push-in, Meter-out



Working pressure min./max
Ambient Temperature min./max.
Ambient Temperature min./max.
Medium

0 bar / 10 bar
+0°C / +60°C
+0°C / +60°C
Compressed air

Materials:
Housing
Seal
Flow control screw

Polyamide
Acrylonitrile Butadiene Rubber
Brass, nickel-plated

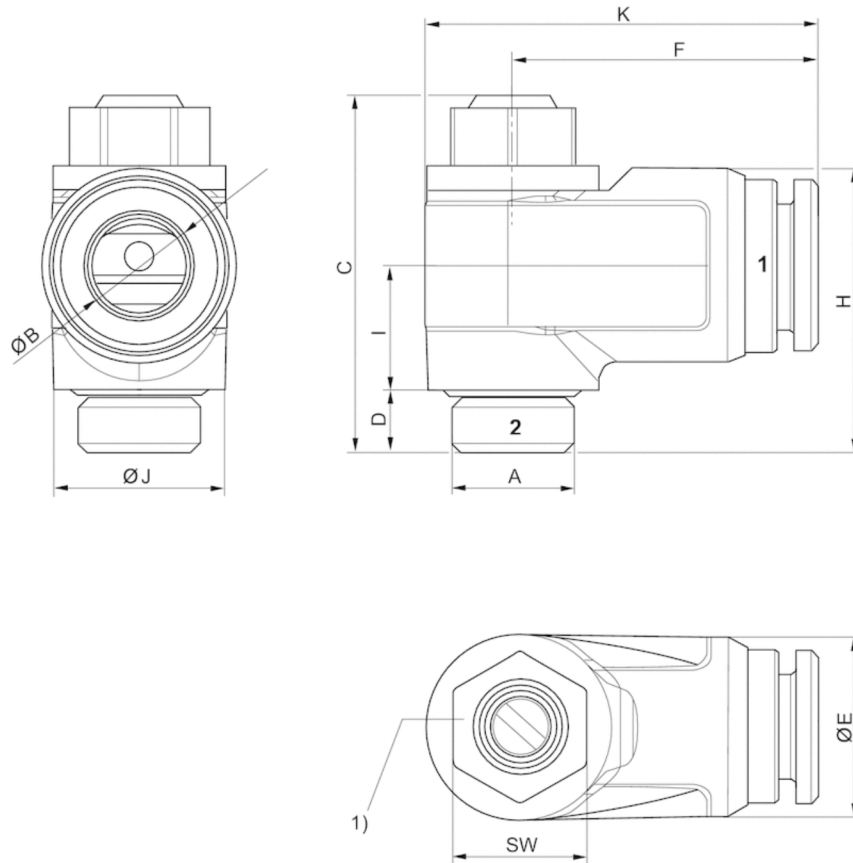
	Port 1	Port 2	Throttle bore [mm]	Qn 2-1 [l/min]	Weight [kg]	Fig.	Part No.
	Ø 4	M5	2	70	0.005	Fig. 1	R412010564
	Ø 6	M5	2	110	0.005	Fig. 1	R412010565
	Ø 4	G 1/8	3.5	150	0.017	Fig. 2	R412010568
	Ø 6	G 1/8	3.5	390	0.018	Fig. 2	R412010569
	Ø 8	G 1/8	3.5	470	0.019	Fig. 2	R412010570
	Ø 6	G 1/4	4.5	390	0.035	Fig. 3	R412010571
	Ø 8	G 1/4	4.5	490	0.036	Fig. 3	R412010572
	Ø 10	G 1/4	4.5	520	0.039	Fig. 3	R412010573
	Ø 8	G 3/8	6.6	860	0.035	Fig. 4	R412010574
	Ø 10	G 3/8	6.6	900	0.036	Fig. 4	R412010575
	Ø 12	G 3/8	6.6	960	0.039	Fig. 4	R412010576
	Ø 10	G 1/2	6.6	1530	0.045	Fig. 5	R412010577
	Ø 12	G 1/2	6.6	1850	0.049	Fig. 5	R412010578

Nominal flow Qn at 6 bar and $\Delta p = 1$ bar

Accessory Valves - Flow Control

Flow Control Valve, Right Angle, Series CC04 Metric Push-in, Meter-out

Dimensions



Part No.	A	Ø B	C	D	Ø E	F	G	H	I	Ø J	SW
R412010564	M5	4	21.8	4	9	15.9	20.4	12	7.5	8.7	7
R412010565	M5	6	21.8	4	11.1	17.2	21.8	13	7.5	8.7	7
R412010568	G 1/8	4	28.5	5.5	11.5	21.9	28.8	21	9.8	13.6	10
R412010569	G 1/8	6	28.5	5.5	13.5	22.4	29.3	21.7	9.8	13.6	10
R412010570	G 1/8	8	28.5	5.5	15.5	24.2	31.1	22.7	9.8	13.6	10
R412010571	G 1/4	6	33.6	6.5	13	24.3	33.5	25.3	12.8	17.6	13
R412010572	G 1/4	8	33.6	6.5	15.5	26.6	33.5	25.3	11.5	17.6	13
R412010573	G 1/4	10	33.6	6.5	18.1	29.2	38.1	26.7	11.5	17.6	13
R412010574	G 3/8	8	40.8	7	15.6	28.2	40.6	23.6	15.8	22.2	16
R412010575	G 3/8	10	40.8	7	19	32	43.3	33.5	16.4	22.2	16
R412010576	G 3/8	12	40.8	7	22.1	34.2	45.4	35.6	17.8	22.2	16
R412010577	G 1/2	10	47.8	8.3	19.2	34	47.7	41.1	20.3	26.6	18
R412010578	G 1/2	12	47.8	8.3	22	36.1	49.8	43.9	23.3	26.6	18

Accessory Valves - Flow Control

Flow Control Valve, Right Angle, Series CC04 Metric Push-in/External Threads, Meter-in

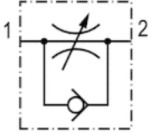


Working pressure min./max
Ambient Temperature min./max.
Ambient Temperature min./max.
Medium

0.5 bar / 10 bar
+0°C / +60°C
+0°C / +60°C
Compressed air

Materials:
Housing
Seal
Flow control screw

Polyamide
Acrylonitrile Butadiene Rubber
Brass, nickel-plated

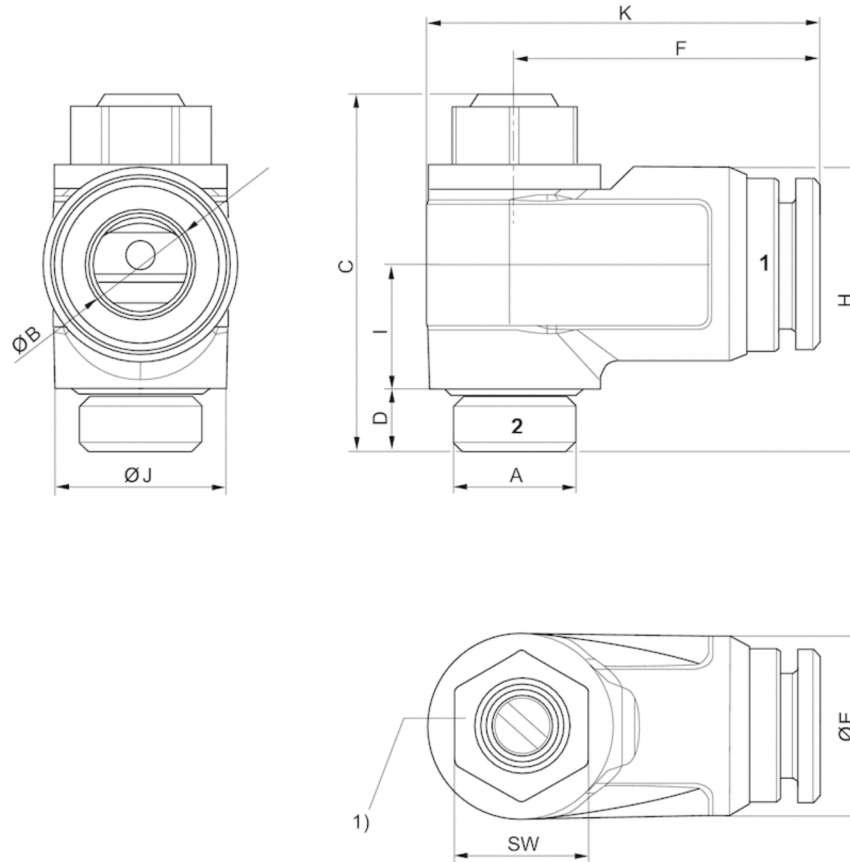
	Port 1	Port 2	Throttle bore Ø [mm]	Qn 1 → 2 [l/min]	Weight [kg]	Fig.	Part No.
	Ø 4	M5	2	70	0.005	Fig. 1	R412010581
	Ø 6	M5	2	110	0.005	Fig. 1	R412010582
	Ø 4	G 1/8	3.5	150	0.017	Fig. 2	R412010585
	Ø 6	G 1/8	3.5	390	0.018	Fig. 2	R412010586
	Ø 8	G 1/8	3.5	470	0.019	Fig. 2	R412010587
	Ø 6	G 1/4	4.5	390	0.035	Fig. 3	R412010588
	Ø 8	G 1/4	4.5	490	0.036	Fig. 3	R412010589
	Ø 10	G 1/4	4.5	520	0.039	Fig. 3	R412010590
	Ø 8	G 3/8	6.6	870	0.035	Fig. 4	R412010591
	Ø 10	G 3/8	6.6	1130	0.036	Fig. 4	R412010592
	Ø 12	G 3/8	6.6	1210	0.039	Fig. 4	R412010593
	Ø 10	G 1/2	6.6	1670	0.045	Fig. 5	R412010594
	Ø 12	G 1/2	6.6	1950	0.049	Fig. 5	R412010595

Nominal flow Qn at 6 bar and $\Delta p = 1$ bar

Accessory Valves - Flow Control

Flow Control Valve, Right Angle, Series CC04 Metric Push-in, Meter-out

Dimensions



Part No.	A	Ø B	C	D	Ø E	F	G	H	I	Ø J	SW
R412010564	M5	4	21.8	4	9	15.9	20.4	12	7.5	8.7	7
R412010565	M5	6	21.8	4	11.1	17.2	21.8	13	7.5	8.7	7
R412010568	G 1/8	4	28.5	5.5	11.5	21.9	28.8	21	9.8	13.6	10
R412010569	G 1/8	6	28.5	5.5	13.5	22.4	29.3	21.7	9.8	13.6	10
R412010570	G 1/8	8	28.5	5.5	15.5	24.2	31.1	22.7	9.8	13.6	10
R412010571	G 1/4	6	33.6	6.5	13	24.3	33.5	25.3	12.8	17.6	13
R412010572	G 1/4	8	33.6	6.5	15.5	26.6	33.5	25.3	11.5	17.6	13
R412010573	G 1/4	10	33.6	6.5	18.1	29.2	38.1	26.7	11.5	17.6	13
R412010574	G 3/8	8	40.8	7	15.6	28.2	40.6	23.6	15.8	22.2	16
R412010575	G 3/8	10	40.8	7	19	32	43.3	33.5	16.4	22.2	16
R412010576	G 3/8	12	40.8	7	22.1	34.2	45.4	35.6	17.8	22.2	16
R412010577	G 1/2	10	47.8	8.3	19.2	34	47.7	41.1	20.3	26.6	18
R412010578	G 1/2	12	47.8	8.3	22	36.1	49.8	43.9	23.3	26.6	18

Accessory Valves - Check

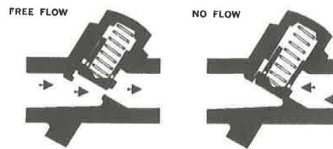
Check Valve, Inline 1/8" to 1" NPTF

Dryseal NPTF

Type	High Capacity
Working Pressure	250 PSI Maximum (17.2 bar)
Operating Temperature	-40°F to +160°F, +200°F Intermittent service (-40°C to 71°C, 93°C Intermittent)
Media	Air
Port Size	1/8" to 1" NPTF

Application

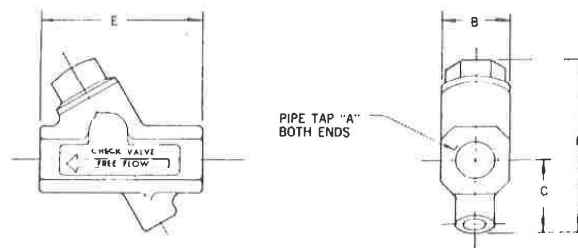
Check valves are installed in a pipeline to permit flow of air in one direction only. Less than 1/2 psi pressure is required to open the valve. The valve is spring loaded to close where no pressure differential exists. Therefore, it may be mounted in any position. The body is made of anodized die cast aluminum. A Stainless steel valve, plated spring and Buna N Seal also contribute to trouble free service.



Symbol	Port Size NPTF	New Part No.	Old Part No.	Approx. Valve Weight (oz.)	C _v	"A" Pipe Taps (Dryseal NPTF)
	1/8"	R431003553	P - 055023-00000	2.8	1.19	1/8" - 27
	1/4"	R431003554	P - 055024-00000	2.5	1.34	1/4" - 18
	3/8"	R431003556	P - 055025-00000	3.8	3.03	3/8" - 18
	1/2"	R431003557	P - 055026-00000	6.5	3.50	1/2" - 14
	3/4"	R431003558	P - 055027-00000	26.0	10.00	3/4" - 26
	1"	R431003559	P - 055028-00000	24.0	13.80	1" - 11 1/2

Repair Kits:

1/8" - 1/4" R431007468, 3/8" R431007469, 1/2" R413007470, 3/4" - 1" R431007471



Dimensions

"A" Pipe Taps	B	C	D	E
1/8" - 27 Dryseal NPTF	7/8"	15/16"	2 3/16"	2"
1/4" - 18 Dryseal NPTF	7/8"	15/16"	2 3/16"	2"
3/8" - 14 Dryseal NPTF	1"	1 1/16"	2 9/16"	2 3/8"
1/2" - 14 Dryseal NPTF	1 1/4"	1 3/16"	2 13/16"	2 3/4"
3/4" - 14 Dryseal NPTF	2"	1 3/4"	4 1/4"	4"
1" - 11 1/2" Dryseal NPTF	2"	1 3/4"	4 1/4"	4"

Accessory Valves - Check

Check Valve, Metric Inline Threaded Connection, G 1/8 to G 3/4



Version
Medium

Poppet Valve
Compressed air

Materials:
Housing
Seals

Brass
Acrylonitrile butadiene rubber

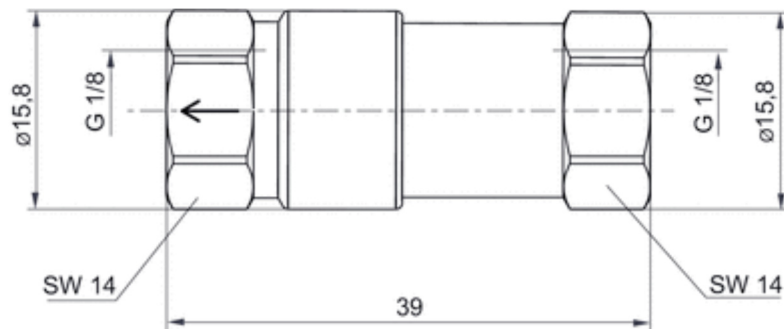
The delivered product varies from that in the illustration. See the drawing for an exact description

	Port 1	Port 2	Qn 1 → 2 [l/min]	Working pressure min/max.	Ambient tempera- ture min/ max.	Medium tempera- ture min/ max.	Weight [kg]	Part No.
	G 1/8	G 1/8	230	0.5 / 15	-10°C / +60°C	-10°C / +60°C	0.072	5340981000
	G 1/4	G 1/4	1050				0.168	5340981100
	G 3/8	G 3/8	1650				0.263	5340981200
	G 1/2	G 1/2	2200				0.283	5340981300
	G 3/4	G 3/4	6200				0.38	5340981400

Part No.	Fig.
5340981000	Fig. 1
5340981100	Fig. 2
5340981200	Fig. 2
5340981300	Fig. 3
5340981400	Fig. 2

Nominal flow Qn at 6 bar and Δp = 1 bar

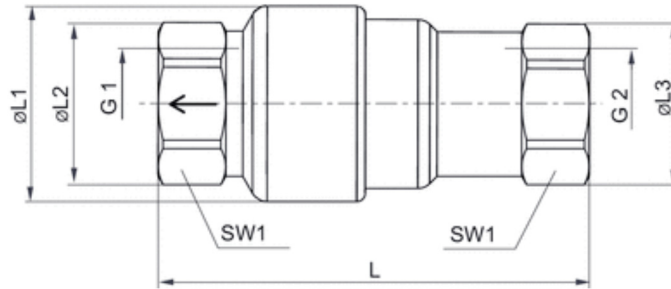
Fig. 1



Accessory Valves - Check

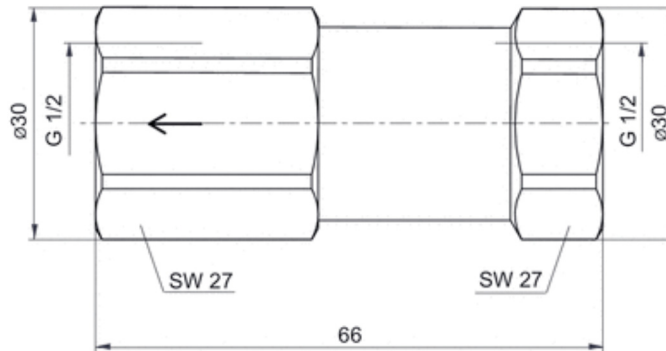
Check Valve, Metric Inline G1/8 to G3/4

Fig. 2



Part No.	G1	G2	L	L1	L2	L3	SW1
5340981100	G 1/4	G 1/4	51	23	19	19	17
5340981200	G 3/8	G 3/8	59.5	29	24.5	24.5	22
5340981400	G 3/4	G 3/4	77.5	39	35.8	35.8	32

Fig. 3



Accessory Valves - Check

Check Valve, Pilot Operated, Right Angle 1/8" to 1/2" NPTF

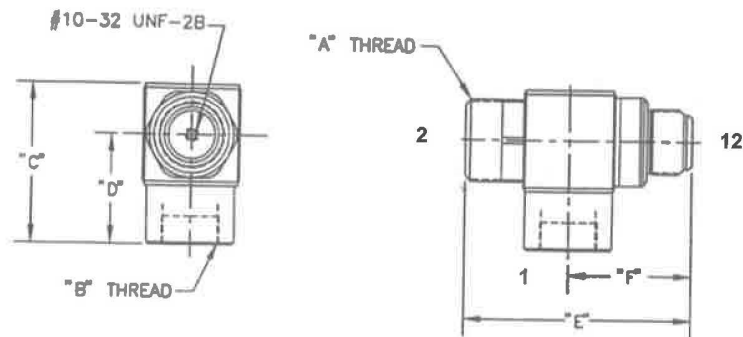
Check Valve, Right Angle, Inch Series, Pilot Operated

Type	Pilot Operated, Right Angle—for Inch Threaded Inlet	
Supply Pressure	150 PSIG (10 bar)	
Minimum Pressure	14.4 PSIG (1 bar)	
Temperatures	15° to 160°F (-9° to 71°C)	
Media	Air or inert gas	
Materials:		
Body	Nickel Plated Brass	
Swivel Housing	Anodized Aluminum	
Seals	Buna-N	
Pilot port thread	10-32 UNF for sizes	1/8 - 1/2 NPTF



Symbol	Tread Size NPTF	New Part No.	Old Part No.	Flow (2-1)* SCFM (NI/min)
	1/8"	R432009209	P - 0029977-00000	10.2 (289)
	1/4"	R432009210	P - 0029978-00000	23.8 (676)
	3/8"	R432009211	P - 0029979-00000	40.8 (1156)
	1/2"	R432009212	P - 0029980-00000	67.5 (1910)

*Flow measured at 87 psi, with 15 psi pressure drop.



Dimensions

Sizes	A	B	C	D	E	F
1/8	1/8" NPTF	1/8" NPTF	26.7	18.5	41.0	19.8
1/4	1/4" NPTF	1/4" NPTF	32.9	22.5	48.0	25.8
3/8	3/8" NPTF	3/8" NPTF	41.0	28.5	55.0	29.0
1/2	1/2" NPTF	1/2" NPTF	46.3	31.0	65.5	36.0

Dimensions in mm except as noted.

Accessory Valves - Check

Check Valve, Pilot Operated, Series NR02 G1/8 to G1/2 Threads



Version
Working pressure min./max.
Ambient Temperature min./max.
Ambient Temperature min./max.
Medium

Poppet valve
2 bar / 10 bar
-5°C / +70°C
-5°C / +70°C
Compressed air

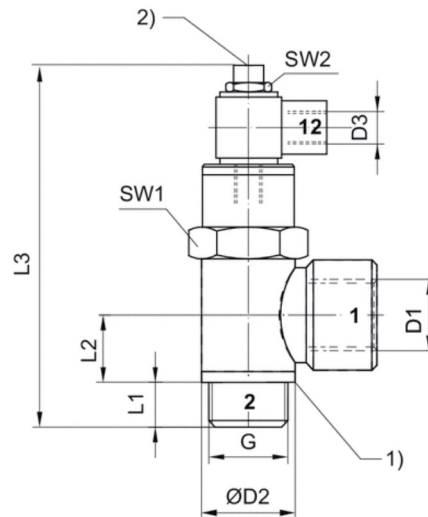
Materials:
Housing
Seals

Brass, nickel-plated
Acrylonitrile butadiene rubber

	Port 1	Port 2	Port 12	Qn 1 → 2 [l/min]	Weight [kg]	Fig.	Part No.
	G 1/8	G 1/8	M5	400	0.04	Fig. 1	0821003045
	G 1/4	G 1/4	M5	850	0.07	Fig. 1	0821003046
	G 3/8	G 3/8	G 1/8	1250	0.12	Fig. 2	0821003047
	G 1/2	G 1/2	G 1/8	1800	0.21	Fig. 2	0821003048

Nominal flow Qn at 6 bar and $\Delta p = 1$ bar

Fig. 1

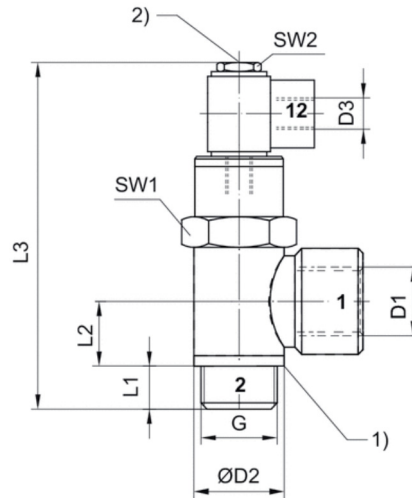


1) Seal, captive

Accessory Valves - Check

Check Valve, Pilot Operated, Series NR02 G1/8 to G1/2 Threads

Fig. 2



1) Seal, captive

Part No.	G	D2	D1	D3	L1	L2	L3	SW1	SW2
0821003045	G 1/8	14	G 1/8	M5	6	9.5	56	13	8
0821003046	G 1/4	18	G 1/4	M5	8.2	10.3	58.5	17	8
0821003047	G 3/8	21.8	G 3/8	G 1/8	9	12	67.5	20	14
0821003048	G 1/2	15.7	G 1/2	G 1/8	10	14	74	25	14

Accessory Valves - Quick Exhaust

Quick Exhaust Valve, Inline Quick Release Inch Porting, Aluminum or Polymer Body

Quick Release Valves

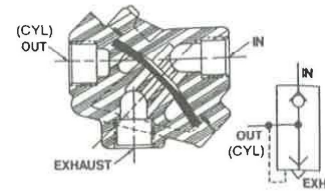
The Quick Release Valve speeds the exhausting of air cylinders, clutches, or other specific pneumatic devices.

It vents air pressure close to the operated device instead of back through the control valve.

Equipment cycling or release times are reduced for increased output.

Features

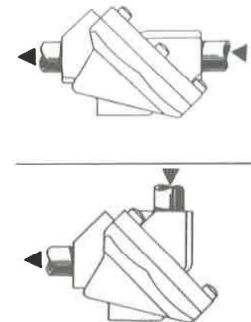
- Sensitivity: A few psi pressure differential across the diaphragm opens the exhaust.
- Large capacity: Large internal air passages exhaust air quickly for top speed of your operation.
- Quiet Operation: Special diaphragm design eliminates chattering associated with exhaust valves.
- Long operating life: Corrosion resistant body has only one wearing part - a rugged, oil resistant diaphragm.
- Reduced weight: Built of aluminum or polymer, they are light enough to be supported by piping alone. (Mounting brackets are optional on smaller sizes).



For instant response in Air Circuits

Mounting Flexibility - For in-line or right-angle piping

A desirable feature is that the inlet port may be assembled on the valve in one of two positions. This allows both ports to be mounted on the same center line, or at right angles to each other. The added flexibility simplifies many mounting problems. Field change-out is made by rotating the cover 180°.

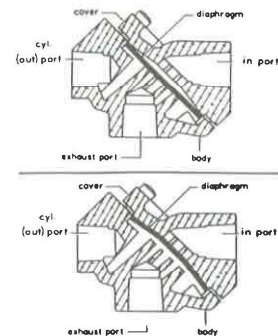


Operating Characteristics

Air pressure entering the inlet port forces the diaphragm against the exhaust port, closing it. Air pressure also deflects against the diaphragm to open a direct passage around the diaphragm to the outlet port.

When air pressure at the inlet port is reduced, a differential in the pressure acting on the diaphragm is created/ this differential in pressure lifts the diaphragm from the exhaust port and seats it on the inlet port. This opens the exhaust port, allows air to flow freely from the outlet port to atmosphere, and closes the inlet port.

Should outlet air pressure drop below inlet pressure, the differential in pressure seats the diaphragm on the exhaust port stopping further exhaust



Mounting

The 1/4" and 3/8" models are normally mounted directly in the piping. A mounting bracket is available as an accessory, if required. The 1/2", 3/4", and 1" models have an integral mounting bracket.

Accessory Valves - Quick Exhaust

Quick Exhaust Valve, Inline Quick Release Aluminum Body, 1/4" to 1" NPTF

Technical Data

Type	Aluminum, anodized, die cast. For inline or right angle piping
Working Pressure	200 psi (13.8 bar) max. on 1/4" and 3/8"
Temperature Range	150 psi (10.3 bar) max. on 1/2" thru 1" sizes -40°F to 160°F, 200°F intermittent (-40° to 71°C, 93°C intermittent)
Media	Air or inert gas
Port Size	1/4" to 1" NPTF



Port (NPT)	Piping	Valve Part No.	Old Part No.	Weight lbs. (kg)	C _v in to out	C _v out to exh.	Repair Kit	Old Repair Kit
1/4"	Inline	R431003038	P - 052935-00002	0.64 (0.29)	1.77	2.50	R431005410	P - 060213-00002
1/4"	Right Angle	R431003043	P - 052935-00021	0.64 (0.29)	1.77	2.50	R431005410	P - 060213-00002
3/8"	Inline	R431003039	P - 052935-00003	0.64 (0.29)	3.08	3.08	R431005410	P - 060213-00002
3/8"	Right Angle	R431003044	P - 052935-00031	0.64 (0.29)	3.08	3.08	R431005410	P - 060213-00002
1/2"	Inline	R431003040	P - 052935-00004	1.44 (0.46)	5.00	5.50	R431005412	P - 060214-00002
3/4"	Inline	R431003041	P - 052935-00006	2.88 (1.31)	9.70	10.55	R431005414	P - 060215-00002
1"	Inline	R431003042	P - 052935-00008	3.32 (1.51)	11.95	13.45	R431005414	P - 060215-00002

Mounting bracket for 1/4" and 3/8" models: Par no. R431003093 (old part no. P - 053067-00000).

Sizes 1/2" through 1" have integral mounting brackets.

Repair kits include diaphragm and gasket.

Inch Dimensions: QRV-Aluminum (in-line configuration shown)

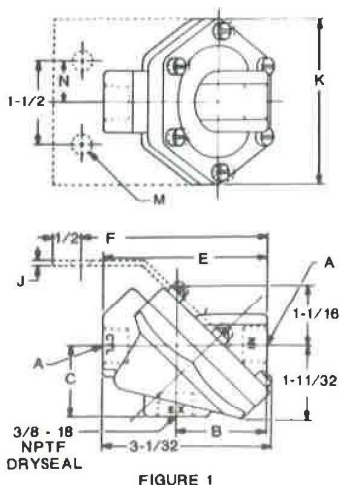


FIGURE 1

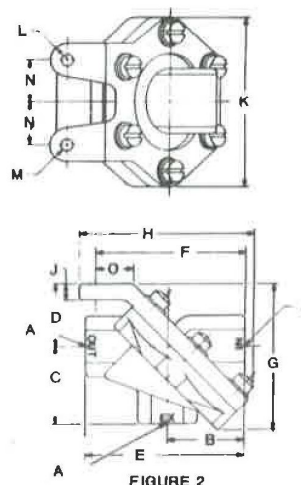


FIGURE 2

Fig. No	A NPTF Dryseal	B	C	D	E	f	G	H	J	K	L	M (2 Holes)	N	O
Fig. 1	1/4-18	1 3/4	1 11/32	-	3	3 3/8	-	-	1/16	3	-	11/32 Ø	3/4	-
Fig. 1	3/8-14	1 3/4	1 11/32	-	3	3 3/8	-	-	1/16	3	-	11/32 Ø	3/4	-
Fig. 2	1/2-14	1 3/4	1 11/32	1 1/2	3 11/16	3 7/16	3 15/32	4 1/8	3/8	3 15/16	3/8 R.	9/32 Ø	1	7/8
Fig. 2	3/4-14	2 11/16	2 21/32	2 1/16	5 1/4	5	4 13/16	5 1/2	7/16	6 1/2	1/2 R.	13/32 Ø	1 1/2	1 1/8
Fig. 2	1"-11 1/2	2 11/16	2 21/32	2 1/16	5 1/4	5	4 13/16	5 1/2	7/16	6 1/2	1/2 R.	13/32 Ø	1 1/2	1 1/8

Accessory Valves - Quick Exhaust

Quick Exhaust Valve, Inline Quick Release Polymer Body, 1/4" to 3/8" NPT

Technical Data

Type	Polymer Body, for inline for inline or right angle piping
Working Pressure	150 psi (10.3 bar) maximum
Temperature Range	-20°F to 160°F, 200°F intermittent (-29° to 71°C, 93°C intermittent)
Media	Air
Port Size	1/4" to 3/8" NPTF
Material-Body	Glass filled, Acetal co-polymer



Note - Torque Values:

Maximum Pipe Thread Torque: 120 in-lbs.
Maximum Body Screw Torque: 18 in-lbs.

Features:

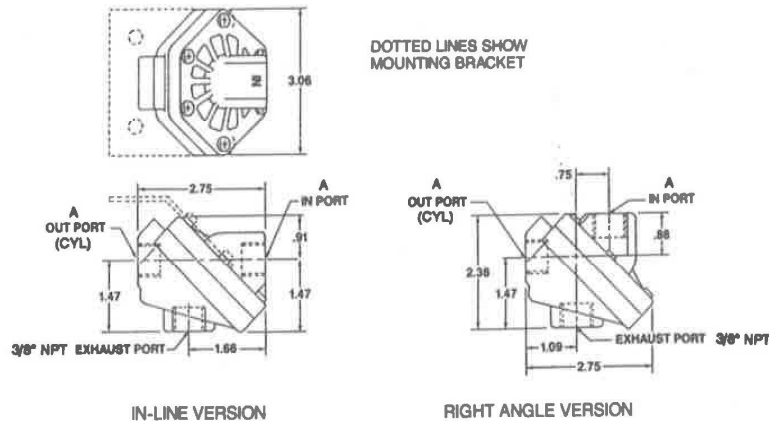
High exhaust flow capacity
Light weight for mounting in piping system
Polymer body for corrosion resistance
Ideal for industrial and mobile/oilfield applications
Special corrosion resistance version with stainless steel hardware available

Port (NPT)	Piping	Valve Part No.	Old Part No.	Weight lbs. (kg)	C _v in to out	C _v out to exh.	Repair Kit	Mounting Bracket
1/4"	Inline	R431007444	P - 069324-00002	7 (0.20)	1.54	1.84	R431005410	R431003093
1/4"	Right Angle	R431007446	P - 069324-00021	7 (0.20)	1.54	1.84	R431005410	R431003093
1/4"	Inline	R434001677	P - 031961-00002	7 (0.20)	2.30	2.76	R431005410	R431003093
3/8"	Inline	R431007445	P - 069324-00003	7 (0.20)	2.30	2.76	R431005410	R431003093
3/8"	Right Angle	R431007447	P - 069324-00031	7 (0.20)	2.30	2.76	R431005410	R431003093

1) The polymer Quick Exhaust Valve is normally mounted directly in the piping. A mounting bracket (part no. R431003093) is an accessory if required

2) R434001677 Is extra corrosion resistant due to stainless steel hardware.
Repair kit includes diaphragm and gasket.

Inch Dimensions: QRV-Polymer



Accessory Valves - Quick Exhaust

Quick Exhaust Valve, Metric Series 573 M5 to G1 Threads

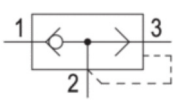


Version
Working pressure min./max.
Ambient temperature min./max.
Medium temperature
Medium

Poppet Valve
0.3 bar / 10 bar
-18°C / +70°C
-18°C / +70°C
Compressed Air

Materials:
Housing

Brass, nickel-plated

	Port 1	Port 2	Port 3 (Exhaust)	Qn 1 → 2 [l/min]	Qn 2 → 3 [l/min]	Weight [kg]	Fig.	Note	Part No.
	M5	M5	M5	220	300	0.03	Fig. 2	1)	5735040900
	G 1/8	G 1/8	G 1/8	680	1100	0.08	Fig. 1	2)	5735040000
	G 1/4	G 1/4	G 1/4	1200	2100	0.15	Fig. 1	2)	5735040100
	G 3/8	G 3/8	G 3/8	2300	4900	0.21	Fig. 1	1)	R412010750
	G 1/2	G 1/2	G 1/2	3400	6100	0.32	Fig. 1	2)	5735040300
	G 3/4	G 3/4	G 3/4	4000	13900	0.45	Fig. 1	1)	R412010751
G 1	G 1	G 1	6800	15600	1.65	Fig. 1	1)	R412010752	

1) Seal: Acrylonitrile Butadiene Rubber

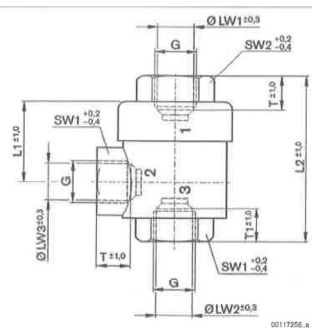
2) Seal: Polyurethane

Port 2: Internal thread

Port 3: (Exhaust): Internal thread

Nominal flow Qn at 6 bar and $\Delta p = 1$ bar

Fig. 1

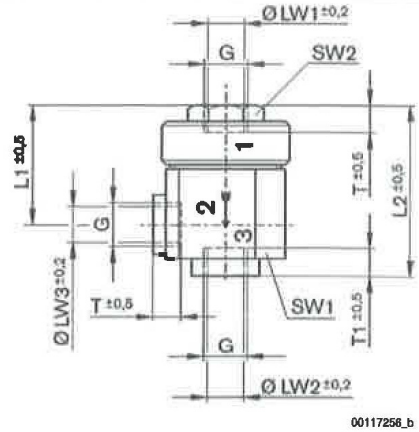


Part No.	G	T	T1	LW1	LW2	LW3	L1	L2	SW1	SW2
5735040000	G 1/8	8	8	6	6	6	28	43	14	14
5735040100	G 1/4	11	11	8.5	8.5	8.5	35	53	19	19
5735040200	G 3/8	12.5	12.5	11.2	8.5	11.2	35	54.5	21	20
5735040300	G 1/2	14	14	14	14	14	44	72	26	26
5735040400	G 3/4	18.5	18.5	18.5	18.5	24.5	37	88	32	32
5735030010	G 1	19	19	20	24	24	70	118	46	46

Accessory Valves - Quick Exhaust

Quick Exhaust Valve, Metric Series 573 M5 to G1 Threads

Fig. 2



00117256_b

Part No.	G	T	T1	LW1	LW2	LW3	L1	L2	SW1	SW2
5735040900	M5	3	4	4.2	4.2	4.2	16	25	17	10

Accessory Valves - Shuttle

Shuttle Valve, Inline, Aluminum Body, Inch 1/8" to 1/2" NPTF

NPTF Ports

Type	200 psi max. (13.8 bar)
Supply Pressure	-40°F to +160°F; intermittent 200°F is permissible (-40°C to 71°C, 93°C intermittent)
Temperature Range	
Media	Air or inert gas

Application Data

The Shuttle Valve automatically selects and directs the flow of air from one or the other of two controlling devices to a common outlet. It serves to connect two independent lines to a common line without destroying the segregation.



	Port (NPTF)	Valve Part No.	Old Part No.	Weight lbs. (kg)	Flow C _v	Repair Kit
	1/8"	R431003347	P - 054350-00001	0.44 (0.20)	1.25	R431005614
	1/4"	R431003348	P - 054350-00002	0.44 (0.0)	1.58	R431005614
	3/8"	R431003349	P - 054350-00003	1.19 (0.54)	3.61	R431005615
	1/2"	R431003350	P - 054350-00004	1.19 (0.54)	5.12	R431005615

Repair kits include diaphragm and gasket

Operating Characteristics

FEATURES

SIMPLE-Contains only one moving part-an easily replaceable fabric reinforced synthetic rubber diaphragm.

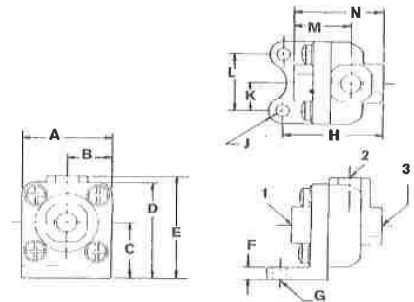
Two body segments, a gasket and four screws complete the assembly.

It has no spring; nothing can bind or stick. Its compact size presents no installation problems.

LIGHTWEIGHT - The Shuttle Valve can easily be supported by piping alone

SENSITIVE - Will seal off the opposite inlet line with less than one psi pressure differential

LONG LIFE - Tests have shown no diaphragm wear after hundreds of thousands of cycles.



To order, refer to pore size and part number.

When a pressure differential of one psi or more exists at either inlet port, the higher pressure forces the diaphragm to seal against the opposite.

The low (or zero) pressure inlet is sealed from both the outlet and the opposite inlet port.

Dimensions

DRYSEAL NPTF Ports			
All Ports		1/8"-27 and 1/4"-14	3/8"-18 and 1/2"-14
A		1 7/8"	2 1/2"
B		15/16"	1 1/4"
C		1 1/2"	1 7/8"
D		2 7/16"	3 1/8"
E		2 5/8"	3 3/4"
F		9/32"	5/16"
G dia.		9/32"	9/32"
H		2 1/8"	3 1/4"
J Radius		9/32"	21/64"
K		21/32"	29/32"
L		1 5/16"	1 13/16"
M		1 7/32"	2 1/8"
N		1 29/32"	3 3/8"

Accessory Valves - Shuttle

AS-Shuttle Valve, Inline Metric M5 to G1 Threads



Version
 Logic Function
 Sealing principle
 Working pressure min./max.
 Ambient temperature min./max.
 Medium temperature
 Medium
 Max. particle size
 Oil content of compressed air

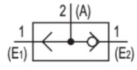
Poppet valve
 Shuttle valve (OR)
 Soft sealing
 1 bar / 10 bar
 +0°C / +80°C
 +0°C / +80°C
 Compressed Air
 5 µm
 0 mg/m³ - 1 mg/m³

Materials:
 Housing
 Seals
 Threaded bushing

See table below
 Acrylonitrile Butadiene Rubber
 See table below

Technical Remarks

- The pressure dew point must be at least 15°C under ambient and medium temperature and may not exceed 3°C
- The pol content of air pressure must remain constant during the life cycle
- Use only the approved oils from AVENTICS, see chapter, "Technical information".

	Compressed air connection		Qn	Weight	Fig.	Note	Part No.
	Input	Output	[l/min]	[kg]			
	M5	M5	80	0.011	Fig. 1	1); 3)	0821000004
	G 1/8	G 1/8	640	0.038	Fig. 2	2); 4)	0821000002
	G 1/4	G 1/4	1550	0.1	Fig. 2	2); 4)	0821000003
	G 3/8	G 3/8	2150	0.2	Fig. 3	2); 5)	0821000010
	G 1/2	G 1/2	2300	0.2	Fig. 3	2); 5)	0821000011
	G 3/4	G 3/4	4800	0.5	Fig. 4	2); 5)	0821000014
	G 1	G 1	6100	0.5	Fig. 1	2); 5)	0821000015

1) Housing material: Polyamide

2) Housing material: Aluminum

3) Material threaded bushing: Brass

4) Material threaded bushing: Aluminum; Steel

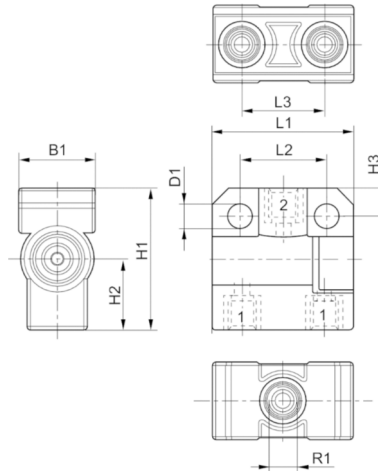
5) Material threaded bushing: Aluminum

Nominal flow Qn at 6 bar and $\Delta p = 1$ bar

Accessory Valves - Shuttle

Shuttle Valve, Inline Metric M5 to G1 Threads

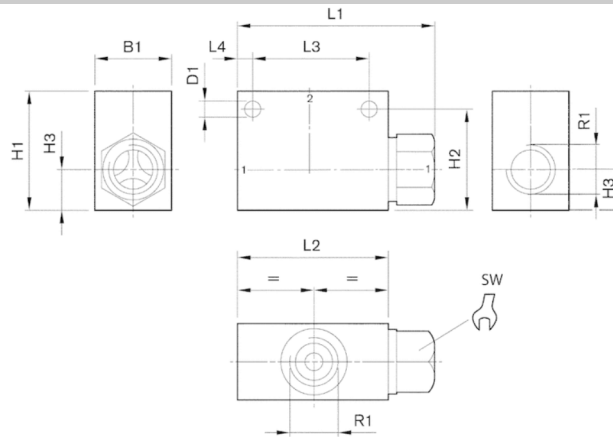
Fig. 1



Part No.	R1	S1	L1	L2	L3	L4	H1	H2	H3	B1	SW	*
0821000004	M5	4.3	26	16	15	-	26	13	5	14	-	5

* = Depth of tread

Fig. 2



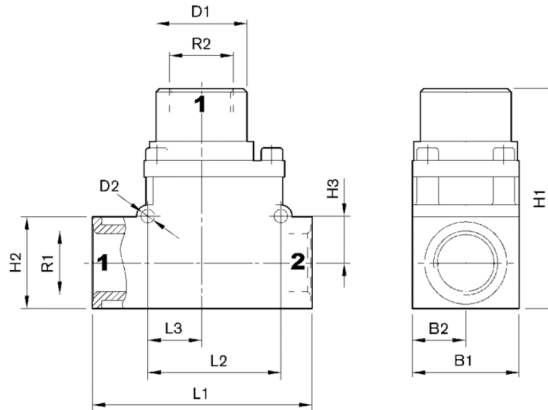
Part No.	R1	D1	L1	L2	L3	L4	H1	H2	H3	B1	SW	*
0821000002	G 1/8	4.3	42	32	25	3.5	25	21	8.5	16	14	8
0821000003	G 1/4	5.5	67.5	55	38	8.5	36.2	30.2	13.2	25	22	12

* = Depth of tread

Accessory Valves - Shuttle

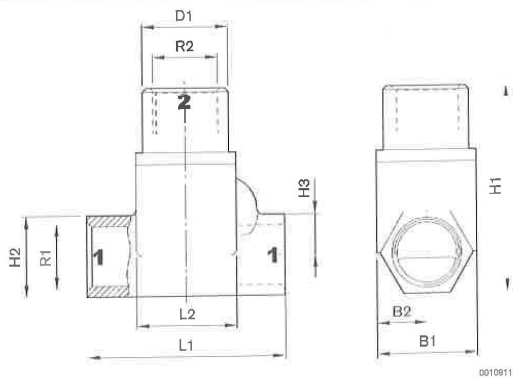
Shuttle Valve, Inline Metric M5 to G1 Threads

Fig. 3



Part No.	R1	R2	D1	D2	L1	L2	L3	H1	H2	H3	B1	B2
0821000010	G 3/8	G 3/8	34	4.5	72	44	18	72	30	15	35	17.5
0821000011	G 1/2	G 1/2	34	4.5	72	44	18	72	30	15	35	17.5

Fig. 4



Part No.	R1	R2	D1	D2	L1	L2	L3	H1	H2	H3	B1	B3
0821000014	G 3/4	44	44	-	100	51	-	107	41	20.5	50	25
0821000015	G 1	44	44	-	100	51	-	107	41	20.5	50	25

Accessory Valves - Shuttle

Shuttle Valve, Inline, Aluminum Body, Inch 1/8" to 1/2" NPTF

Type "S" Relay

Type	3 Way pilot operated pressure control	
Supply Pressure	250 psi max. (17.2 bar)	
Pilot Pressure	250 psi max. (17.2 bar)	
Ratio - Pilot to delivery	1:1 standard; others noted below.	
Temperature Range	-20°F to 160°F (-29°C to 71°C)	
Media	Air or inert gas	
Pilot Port Size	1/4" NPTF	
Body Port Size	1/4" and 1" as noted below	
Hysteresis	Less than 5 psi. (0.34 bar)	
Materials:	Body	3/8" and 1/2" die cast aluminum 3/4" and 1" die cast zinc
	Diaphragm	Nylon reinforced HYCAR
	Other	Anodized aluminum or plated.



Features

Reliability

Automatically sustains pressure directed by the pilot line on a 1 to 1 ratio (Optional ratios shown below).
The balanced internal valve functions to relieve excess pressure, or to maintain pressure against demand.
Rubber seated valves provide zero leakage.

Installation Versatility

Operates in any position. May be supported by piping along or by a mounting bracket.
The IN and OUT ports are plainly marked on the body.

Ease of Maintenance

The valve may be serviced without disturbing line connections.
All parts are accessible by removing top cover.
No special tools are required

Large Capacity

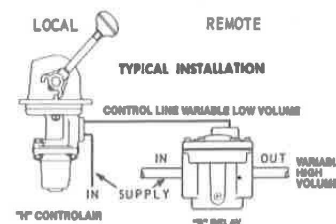
Designed with minimum valving to provide maximum flow (see graph)

Modern Construction

All materials are corrosion resistant.
The sturdy die cast body contains wrench flats for ease of installation.
Ports have dry seal pipe threads (suitable with standard pipe thread)

Positive Seals

Packing rings are located at all critical points in the assembly to eliminate internal and external leakage.



Application

The "S" Relay Valve is a pilot-operated, 3 way, pneumatic pressure control valve with open exhaust. The large capacity of this valve makes it an ideal volume booster.

It receives pressure signals from a remote control valve and repeats this pressure with a greater rate of flow to the component of being controlled.

The valve serves to speed response time between sending and receiving stations in a pneumatic circuit which involves long piping runs or branch circuit.

Where the controlled component is not in a readily accessible location, remote piloting provides a solution.

Model	Port Size NPTF	Version	Valve Part No.	Valve Old Part No.	Weight lbs. (kg)	Repair Kit Part No.
3-S	3/8"-18	Standard	R431003663	P-055160-00000	2.38 (1.08)	R431004153
4-S	1/2"-14	Standard	R431003664	P-055161-00000	2.25 (1.02)	R431004153
6-S	3/4"-14	Standard	R431003665	P-055162-00000	5.75 (2.61)	R431004155
8-S	1"-11	Standard	R431003666	P-055163-00000	5.55 (2.52)	R431004155
4-S	1/2"-14	Multi-function (2:1 ratio), air pilot*	R431006660	P-065671-00001	2.80 (1.27)	*
4-S	1/2"-14	Multi-function, hydraulic pilot 300 psi max., air inlet 150 psi max.*	R431009099	P-064955-00002	3.06 (1.39)	R431006572
2-S	1/4"-18"	Adjustable	R431000775	P-027257-00000	3.50 (1.59)	**
		Optional tapped exhaust kit for 3-S & 4-S	R431006791	P-066236-00000		**

Mounting bracket included with valves

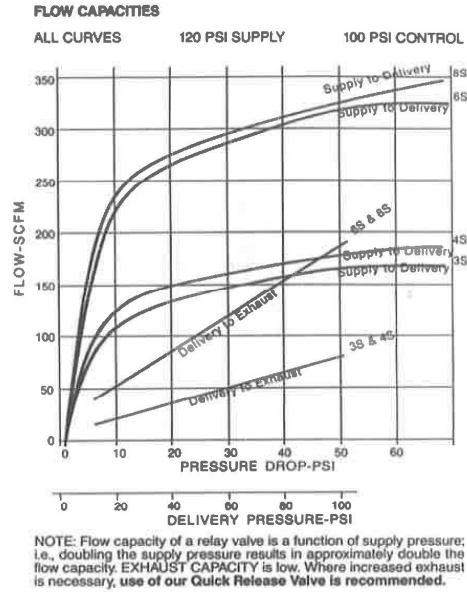
*Contact factory for outline drawings

** Contact factory for repair parts

Accessory Valves - Relay

Relay Valve, Type S Zinc or Aluminum Body, 1/4" NPTF Pilot Port

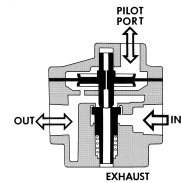
Operating Characteristics



Operating Characteristics

CLOSED CENTER POSITION

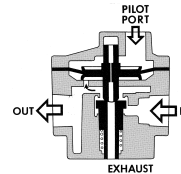
When the outlet pressure (pressure below the diaphragm) is equal to the pilot pressure (pressure above the diaphragm), the balance of pressure allows the inlet valve spring to move the valve assembly up. This seats the inlet valve and exhaust valve, sealing the IN and OUT ports.



INCREASING PRESSURE

Applying pressure to the pilot port moves the diaphragm assembly down to seat the exhaust valve, unseat the inlet valve plunger, and compress the inlet valve spring. Air pressure from a local source at the IN port flows to the OUT port.

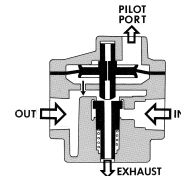
A controlled flow of air is also directed to the underside of the diaphragm. Air flow continues until the pressure at the OUT port equals the pressure at the pilot port.



DECREASING PRESSURE

Reducing pressure in the pilot port unbalances the pressure across the diaphragm. The diaphragm assembly and exhaust valve move away from the seated inlet valve, opening the OUT port to exhaust through the hollow inlet valve plunger.

Air continues to exhaust until the air pressure at the out port under the diaphragm balances the air pressure to the pilot on the top of the diaphragm.



Accessory Valves - Relay

Relay Valve, Type C2 Aluminum Body, 1/2" NPT Supply

Technical Data

Type	Spring loaded diaphragm
Supply Pressure	250 psi max. (17.2 bar)
Control Pressure	150 psi max. (10.3 bar)
Temperature Range	-20°F to 160°F (-29° to 71°C)
Media	Air or inert gas

Port Size

1-Supply	1/2"-14 NPT
2-Control	1/4"-18 NPT
3-Delivery	1/2"-14 NPT
EX-Exhaust	3/4"-14 NPT



Application Notes

The C-2 Relay Valve functions to reproduce in substantial volume whatever pressure is applied to the small volume control portion of the valve itself.

Its essential purpose is to increase the speed of operation for devices such as brakes, clutches, positioning devices, and to reduce transmission time in control lines. This valve is usually directed by a relatively small pressure control valve, such as a CONTROLAIR™ Valve, which is located at some distance from the controlled volume and is connected by small diameter pipe or tubing.

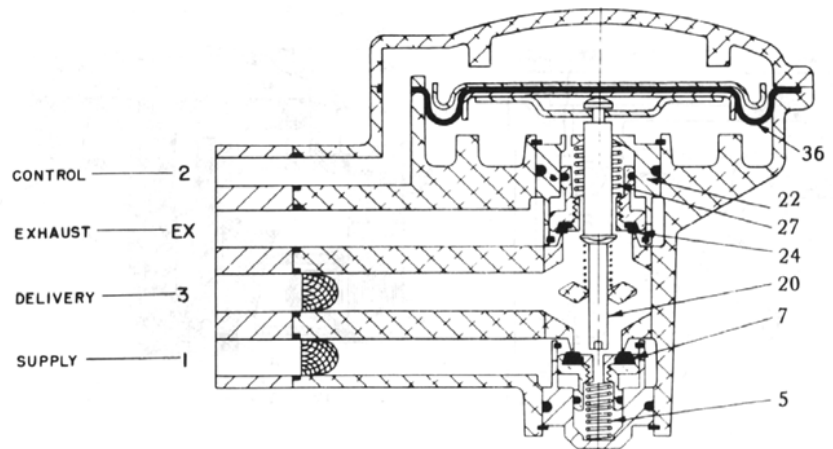
Description	Part Number	Old Part Number
C-2 Relay Valve (Complete)	R431000091	-538975-00001
Replacement (Valve portion only)	R431000011	-850012-K0000
Repair	R431004938	P - 059191-00000

Operating Characteristics

Supply air	Port 1
Control air signal	Port 2
Delivery	Port 3
Exhaust	EX

Application

Reproduces pressure from control line independent of leakage or temperature effects.

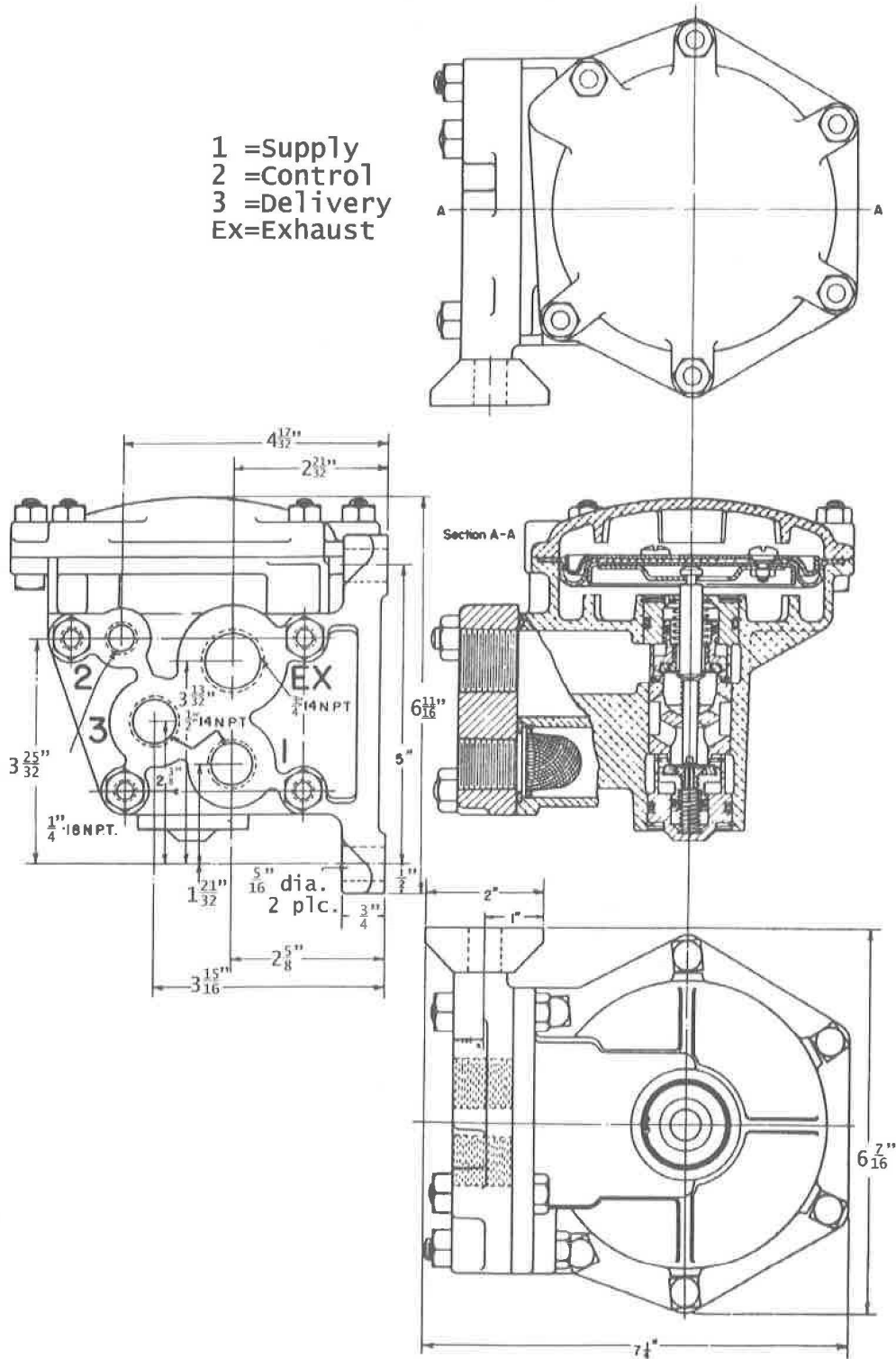


Accessory Valves - Relay

Relay Valve, Type C2 Aluminum Body, 1/2" NPT Supply

Dimensions

1 =Supply
 2 =Control
 3 =Delivery
 EX=Exhaust



Accessory Valves - Relay

Relayair® Valves - Type H & L Pilot Operated Sequence Valves, Aluminum Body

"H" & "L" Relayair® Valves

Type	Pilot operated sequence valve
Supply Pressure	200 psi max. (13.8 bar)
Control Pressure	140 psi max. (9.7 bar)
Temperature Range	-40°F to 160°F (-40° to 71°C)
Media	Air or inert gas

Port Size

Control port (port 10), breather port (port1):	1/4" NPT
All other ports:	3/8" NPTF



Operating Characteristics

The Relayair® Valve has three basic uses:

- 1) As a non-graduated relay to provide a large flow of air from a spate source when piloted by small amount of control media and to stop this flow and exhaust the air to atmosphere when the control pressure is vented.
- 2) As an interlock to govern the flow in one circuit by placing its control in another independent circuit.
- 3) As a pressure-sensitive sequence valve for such circuit functions as timing, cycling, etc.

Application Notes

RELAYAIR® Valves operated by pilot pressures less than 35 psi utilize one control spring while valves operated by pilot pressures greater than 35 psi use two springs. To obtain pilot pressures less than 10 psi, two diaphragms are used in series.

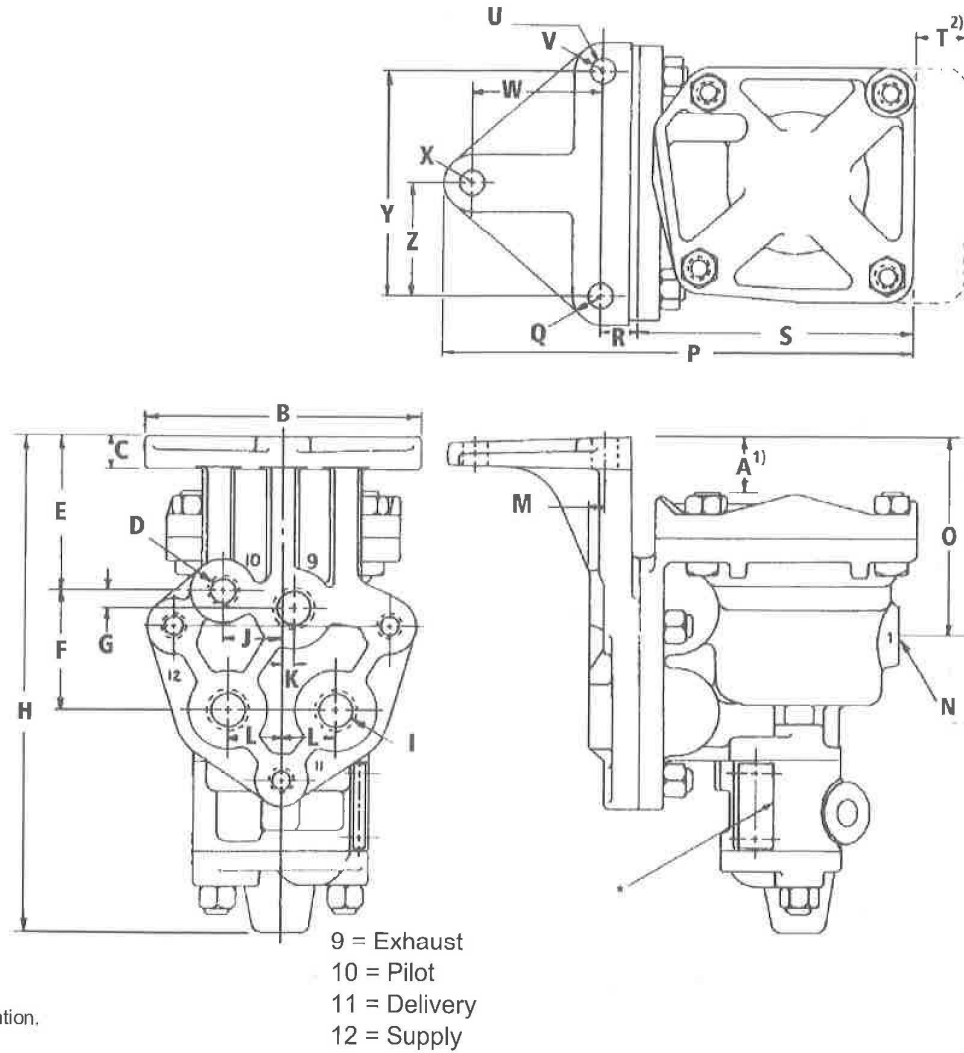
Model	Pilot Pressure	New Part No.	Old Part No.	Repair Kit Metal Parts	Repair Kit Rubber Parts
H-5-D	3	R431005195	P - 059567-00003	R431005482	R431005479
H-5-D	12	R431005196	P - 059567-00012	R431005482	R431005479
H-5	10	R431005110	P - 059155-00010	R431005482	R431005478
H-5*	10	R431005124	P - 059155-00010	R431005482	R431005478
H-5	15	R431005111	P - 059155-00015	R431005482	R431005478
H-5	20	R431005112	P - 059155-00020	R431005482	R431005478
H-5	25	R431005113	P - 059155-00025	R431005482	R431005478
H-5	30	R431005114	P - 059155-00030	R431005482	R431005478
H-5	35	R431005115	P - 059155-00035	R431005482	R431005478
H-5	45	R431005116	P - 059155-00045	R431005482	R431005478
H-5	50	R431005117	P - 059155-00050	R431005482	R431005478
H-5	60	R431005118	P - 059155-00060	R431005482	R431005478
H-5	70	R431005119	P - 059155-00070	R431005482	R431005478
H-5	80	R431005120	P - 059155-00080	R431005482	R431005478
H-5	90	R431005121	P - 059155-00090	R431005482	R431005478
H-5	100	R431005122	P - 059155-00100	R431005482	R431005478
H-5	100	R431005123	P - 059155-00110	R431005482	R431005478
L-2-A	40	R431006062	P - 062482-00040	R431005482	R431006157
L-2-A	70	R431006063	P - 062482-00070	R431005482	R431006157
L-2-A	85	R431006064	P - 062482-00085	R431005482	R431006157
L-2-A	110	R431006065	P - 062482-00110	R431005482	R431006157
L-2-A	135	R431006067	P - 062482-00135	R431005482	R431006157
L-2-A	150	R431006068	P - 062482-00150	R431005482	R431006157
L-2-A	220	R431006573	P - 065215-00000	R431005482	R431006157

* Non-magnetic version

Accessory Valves - Relay

Relayair[®] Valves - Type H & L Pilot Operated Sequence Valves, Aluminum Body

H-5 Relayair[®] Valve Dimensions



H-5 Relay Dimensions

A ¹⁾	B	C	D - NPTF	E	F	G	H	I - NPTF	J	K	L	M
13/16	4-3/8	1/2	1/4-18	2-7/16	1-7/8	9/32	7-3/4	3/8-18	15/16	3/16	27/32	1/4

N - NPT	O	P	Q	R	S	T ²⁾	U (3 Places)	V	W	X	Y	Z
1/4-18	3-1/8	7-3/8	Ø7/16	9/16	4-3/8	16/16	13/32	Ø7/16	2	Ø7/16	3-1/2	1-3/4

1) H-5 shown. "A" for H-5-d = 1/8"; for L-2-A = 5/16"

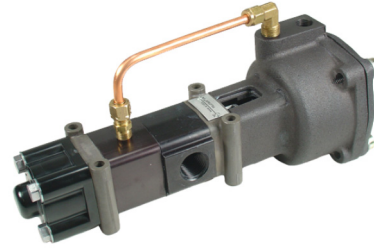
2) Clearance required for removal.

*Nameplate location

Accessory Valves - Relay

Series PD Relay Valve Aluminum Body, 1/2" NPT

Type	Relay
Supply Pressure	250 psi max. (17.2 bar)
Control Pressure	5 to 250 psi (0.34 to 17.2 bar)
Max. Operating Temperature	-20°F to 200°F (-29° to 93°C)
Media	Air
Port Size	1/2"-12 NPT
Materials: Body	Anodized Aluminum
Piston	Stainless Steel
Spool	Cast Aluminum



Function:

The PD Relay valve relays or repeats control pressure signals with large quantities of air at corresponding pressures. Used in systems where long lines are required from the control device to the receiving device, the PD2 Relay valve permits fast system response by source and the receiving device. This reduces the required capacity and size of the controlling device and the size of the control line. When control pressure is reduced or released, a local exhaust of pressure from the receiving device, through the Relay Valve, eliminates the delay normally caused by exhausting the air back through the long control line.

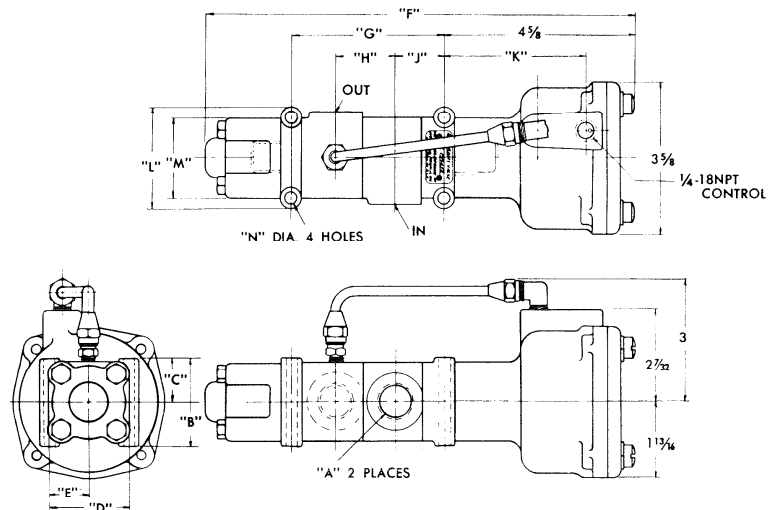
Sensitivity:

The outlet pressure follows very closely the control pressure through the control range. The chart below indicates the changes in outlet pressure required to operate the valve and restore the specified outlet pressure.

Static Outlet Pressure	Outlet Pressure Changes Required	
	To Open Inlet Valve	To Open Exhaust Valve
10 psi (0.69 bar)	-1 psi (0.07 bar)	+ 1 psi (0.07 bar)
60 psi (4.14 bar)	-1.5 psi (0.10 bar)	+ 1.5 psi (0.10 bar)
120 psi (8.28 bar)	- 2 psi (0.14 bar)	+ 2 psi (0.14 bar)

Part Number: R434005641 (Old Part No. P - 054452-00000)

	Inches	MM
A	1/2"-14 NPT	1/2"-15 NPT
B	2 1/8	54.0
C	1 1/16	27.0
D	1 15/16	49.2
E	31/32	24.6
F	10 3/8	263.5
G	3 11/16	93.7
H	1 7/16	36.5
J	1 3/16	30.2
K	3 1/2	88.9
L	2 7/16	61.9
M	1 15/16	49.2
N	9/32	7.1



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PR Nov., 1967

Accessory Valves - Pressure Regulators

In-port Pressure Regulator, Inch Version 1/8" to 1/2" NPTF Threads

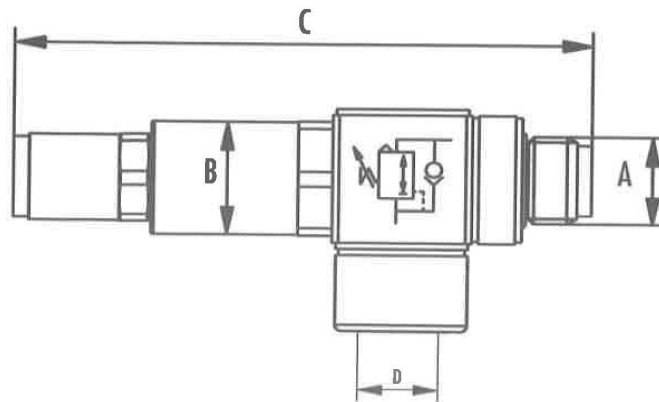
Working pressure min./max. 15 psi / 232 psi (1 bar / 16 bar)
 Ambient temperature min./max 14°F / 158°F (-10° to +70°C)
 Medium temperature min./max 14°F / 158°F (-10° to +70°C)
 Medium Compressed air

Materials:

Housing Brass, galvanized; polyamide
 Aluminum, black anodized
 Seals Acrylonitrile Butadiene Rubber



Input Connection (male)	Output Connection (female)	Pressure Output Range Psi [bar]	Flow Rate SCFM [l/min]	Part Number
1/8 NPTF	1/8 NPTF	15-116 [1 - 8]	10.6 [300]	R432031096
1/4 NPTF	1/4 NPTF	15-116 [1 - 8]	21.2 [600]	R432031097
3/8 NPTF	3/8 NPTF	15-116 [1 - 8]	26.5 [750]	R432031098
1/2 NPTF	1/2 NPTF	15-116 [1 - 8]	26.5 [750]	R432031099



Part Number	A (male)	B mm	C Inch [mm]	D (female)
R432031096	1/8 NPTF	17mm	2.9 [73]	1/8 NPTF
R432031097	1/4 NPTF	17mm	3.2 [81]	1/4 NPTF
R432031098	3/8 NPTF	22mm	3.5 [88]	3/8 NPTF
R432031099	1/2 NPTF	27mm	3.6 [90]	1/2 NPTF

Accessory Valves - Pressure Regulators

In-Port Pressure Regulator, Metric Push-in Version



Working pressure min./max.
Ambient temperature min./max.
Medium temperature min./max.
Medium

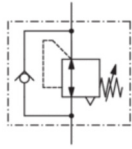
1 bar / 10 bar
-10°C / +70°C
-10°C / +70°C
Compressed Air

Materials:
Housing
Seals

Brass, galvanized; Polyamide
Acrylonitrile Butadiene Rubber

Technical Remarks

- The pressure dew point must be at least 15°C under ambient and medium temperature and may not exceed 3°C

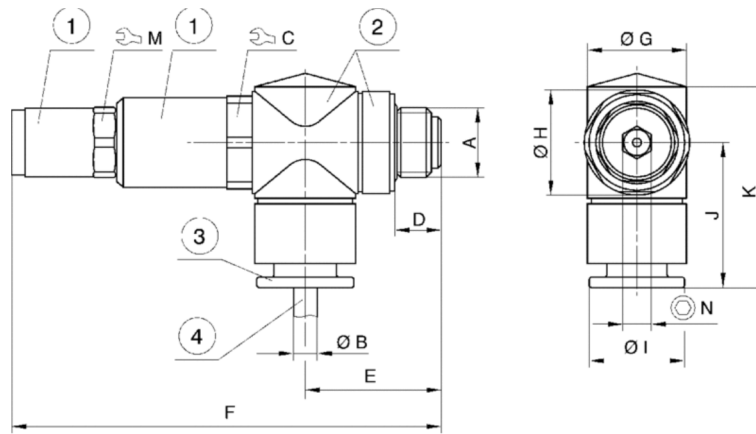
	Compressed air connection		Adjustment range min./max	Nominal flow Qn 1 → 2	Weight	Fig.	Part No.
	Input	Output					
	G 1/8	Ø 4	1/8	400	0.075	Fig. 1	0821302083
	G 1/8	Ø 6	1/8	400	0.075	Fig. 1	0821302084
	G 1/8	Ø 6	1/8	600	0.105	Fig. 2	0821302086
	G 1/8	Ø 8	1/8	400	0.075	Fig. 1	0821302085
	G 1/8	Ø 8	1/8	600	0.105	Fig. 2	0821302087
	G 1/4	Ø 6	1/8	600	0.08	Fig. 1	0821302088
	G 1/4	Ø 8	1/8	600	0.08	Fig. 1	0821302089
	G 1/4	Ø 10	1/8	600	0.08	Fig. 1	0821302090

Nominal flow Qn at 6 bar and $\Delta p = 1$ bar

Accessory Valves - Pressure Regulators

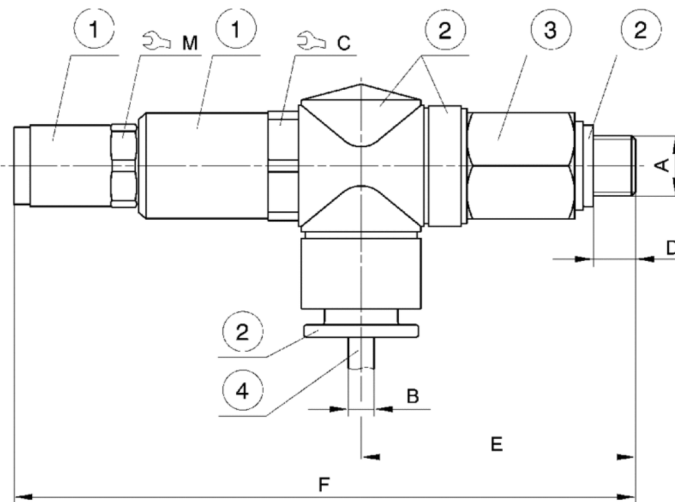
In-Port Pressure Regulator, Metric Push-in Version

Fig. 1



Part No.	A	B	C	D	E	F	G	H	I	J	K	M	N
0821302083	G 1/8	4	17	6.3	19.8	70.8	11	15	11	21.7	31.4	13	5
0821302084	G 1/8	6	17	6.3	19.8	70.8	13	15	13	25	33.9	13	5
0821302085	G 1/8	8	17	6.3	19.8	70.8	14	15	18	25.2	35.3	13	5
0821302088	G 1/4	6	17	9.5	25.8	70.8	13	19	13	26	38.1	13	5
0821302089	G 1/4	8	17	9.5	25.8	70.8	18	19	18	27	39.8	13	5
0821302090	G 1/4	10	17	9.5	25.8	70.8	18	19	18	27	39.8	13	5

Fig. 2



Part No.	A	B	C	D	E	F	M
08231302086	G 1/8	6	17	6.5	42.3	95.3	13
08231302087	G 1/8	8	17	6.2	42.3	95.3	13

Accessory Valves - Mechanical Slide

Mechanical Spool Valve, Inline Metric Sliding Actuation G 1/8 to G 1/2 Threads

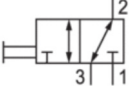


Version
Working pressure min./max.
Ambient temperature min./max.
Medium temperature min./max.
Medium

Materials:
Housing
Seals

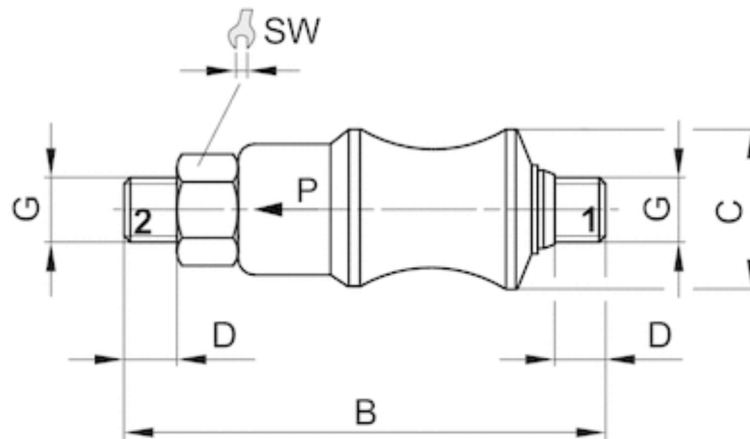
Spool Valve
0 bar / 10 bar
+0°C / +80°C
+0°C / +80°C
Compressed Air

Brass
Acrylonitrile Butadiene Rubber

	Port 1	Port 2	Qn	Weight	Part No.
	G 1/8	G 1/8	750	0.09	0820402007
	G 1/4	G 1/4	1300	0.16	0820405001
	G 3/8	G 3/8	1900	0.22	0820406001
	G 1/2	G 1/2	3200	0.35	0820407001

Nominal flow Qn at 6 bar and $\Delta p = 1$ bar

Dimensions



Part No.	A	B	Ø C	D	SW
0820402007	G 1/8	72	26	8	14
0820405001	G 1/4	81	32	10	19
0820406001	G 3/8	85	37	10	22
0820407001	G 1/2	98	44	12	27

Accessory Devices - Pressure Switch









Pressure Switch, Mechanical, Series PM1

- Operating pressure -0.9 ... 0, -0.9 ... 3, 0.2 ... 16 bar
- mechanical
- Spring-loaded bellow, adjustable
- Electr. connection Plug, ISO 4400, form A
- Compressed air connection Internal thread, G 1/4, Flange with O-ring, Ø 5x1,5



Type	mechanical
Function	change-over contact (mechanical)
Mounting orientation	Any
Working pressure min./max.	See table below
Ambient temperature min./max.	-20 ... 80 °C
Medium temperature min./max.	-10 ... 80 °C
Medium	Compressed air
Measurement	Relative pressure
Switching element	microswitch (input/output)
Protection against overpressure	80 bar
Max. switching frequency	1,5 Hz
Shock resistance max.	15 g
Vibration resistance	10 g (60 - 500 Hz)
Repeatability (% of full scale value)	± 1 %
Switching point	adjustable
Hysteresis	max. switching pressure difference
DC operating voltage, min./max.	12 ... 30 V DC
Operational voltage AC, min./max.	12 ... 250 V AC
Mounting types	via through holes
Protection class	IP65
Electr. connection	Plug, ISO 4400, form A
Weight	0.16 kg

Technical data

Part No.		Type	Operating pressure range	Compressed air connection	Scope of delivery	Fig.
			min./max.			
R412010711		PM1-M3-G014	-0.9 ... 0 bar	Internal thread, G 1/4	With valve plug connector	Fig. 1
R412022752		PM1-M3-G014	-0.9 ... 3 bar	Internal thread, G 1/4	Without valve plug connector	Fig. 1
R412010712		PM1-M3-G014	0.2 ... 16 bar	Internal thread, G 1/4	Without valve plug connector	Fig. 1
R412010713		PM1-M3-G014	0.2 ... 16 bar	Internal thread, G 1/4	With valve plug connector	Fig. 1
R412010714		PM1-M3-F001	-0.9 ... 0 bar	Flange with O-ring, Ø 5x1,5	With valve plug connector	Fig. 2
R412010715		PM1-M3-F001	0.2 ... 16 bar	Flange with O-ring, Ø 5x1,5	Without valve plug connector	Fig. 2
R412010718		PM1-M3-F001	0.2 ... 16 bar	Flange with O-ring, Ø 5x1,5	With valve plug connector	Fig. 2

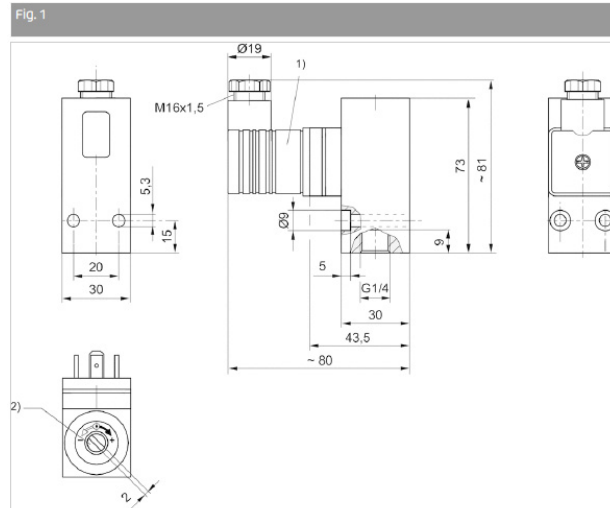
Part No.	
R412010711	-
R412022752	-
R412010712	1)
R412010713	1)
R412010714	-
Part No.	
R412010715	1)
R412010718	1)

1) Min. switching pressure range 0.2 bar falling/0.5 bar rising

Accessory Devices - Pressure Switch

Pressure Switch, Mechanical, Series PM1

Fig. 1

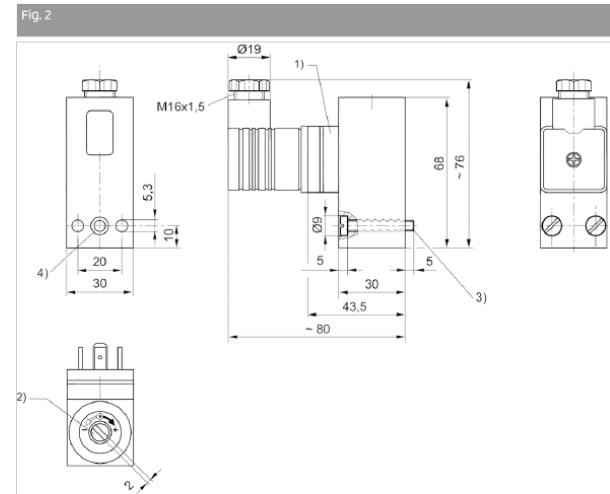


- 1) Electrical connector
- 2) Adjustment screw
- 3) Adjustment protection

* minimum screw-in depth

** approx. 9,5 mm for 3410582000; 0821100012; 0821100013

Fig. 2

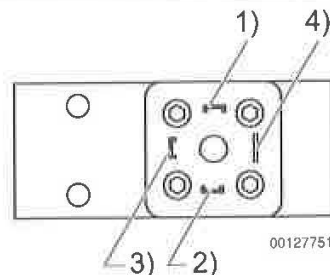


- 1) Electrical connector
- 2) Adjustment screw
- 3) Adjustment protection
- 4) cylinder screw M5x35 (included in scope of delivery)
- 5) O-ring Ø5x1.5 (included in scope of delivery)

* 0 mm for 0821 1100023 and 0821100024

- 1) Valve plug connector
- 2) Adjustment screw, self-holding
- 3) cylinder screw M5x30 (included in scope of delivery)
- 4) O-ring Ø5x1,5 (included)

PIN assignment for electrical connector



- 1) +UB
- 2) Break contact
- 3) make contact
- 4) GND

Accessory Devices - Pressure Gauges

Pressure Gauges, Series PG1 G 1/4 Connection



Ambient temperature min./max.
Medium

32°F / 122°F (+0°C / +50°C)

Compressed air class
Version

Compressed air acc.
To ISO 8573-1: 2001
Class 6-4-3
Bourdon tube pressure gauge

Housing color

Polyamide
PTFE (polytetrafluoroethylene)
Brass

Class

2.5

Materials:

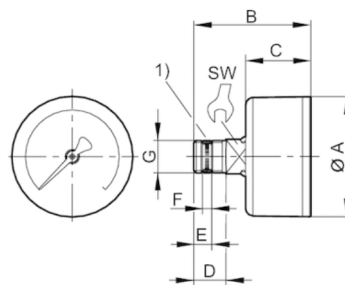
Housing
Seal
Thread

Polyamide
Polytetrafluoroethylene (PTFE)
Brass

Symbol	Port	Display range psi [bar]	Application psi [bar]	Housing diameter Inch [mm]	Weight lbs. [kg]	Part No.
	G 1/4	0 - 17 (0 - 1.6)	0 - 17 (0 - 1.2)	1.58	0.176	R412004407
	G 1/4	0 - 36 (0 - 2.5)	0 - 29 (0 - 2)	1.58	0.176	R412004408
	G 1/4	0 - 58 (0 - 4)	0 - 46 (0 - 3.2)	1.58	0.176	R412004409
	G 1/4	0 - 87 (0 - 6)	0 - 58 (0 - 4)	1.58	0.176	R412004410
	G 1/4	0 - 145 (0 - 10)	0 - 116 (0 - 8)	1.58	0.176	R412004411
	G 1/4	0 - 232 (0 - 16)	0 - 145 (0 - 10)	1.58	0.176	R412004412
	G 1/4	0 - 17 (0 - 1.6)	0 - 17 (0 - 1.2)	1.97	0.198 (0.09)	R412004413
	G 1/4	0 - 36 (0 - 2.5)	0 - 29 (0 - 2)	1.97	0.198 (0.09)	R412004414
	G 1/4	0 - 58 (0 - 4)	0 - 46 (0 - 3.2)	1.97	0.198 (0.09)	R412004415
	G 1/4	0 - 87 (0 - 6)	0 - 58 (0 - 4)	1.97	0.198 (0.09)	R412004416
	G 1/4	0 - 145 (0 - 10)	0 - 116 (0 - 8)	1.97	0.198 (0.09)	R412004417
	G 1/4	0 - 232 (0 - 16)	0 - 145 (0 - 10)	1.97	0.198 (0.09)	R412004418
	G 1/4	0 - 17 (0 - 1.6)	0 - 17 (0 - 1.2)	2.48	0.22 (0.1)	R412004419
	G 1/4	0 - 36 (0 - 2.5)	0 - 29 (0 - 2)	2.48	0.22 (0.1)	R412004420
	G 1/4	0 - 58 (0 - 4)	0 - 46 (0 - 3.2)	2.48	0.22 (0.1)	R412004421
	G 1/4	0 - 87 (0 - 6)	0 - 58 (0 - 4)	2.48	0.22 (0.1)	R412004422
	G 1/4	0 - 145 (0 - 10)	0 - 116 (0 - 8)	2.48	0.22 (0.1)	R412004423
	G 1/4	0 - 232 (0 - 16)	0 - 145 (0 - 10)	2.48	0.22 (0.1)	R412004424

Housing and Dial: black

Dual Scales: Bar = White (outside); psi = gray (inside)



\varnothing (mm/Inch)	$\varnothing A$	B	C	D	E	F	G	SW (A/F) (mm)
40 / 1.58"	1.537	1.752	0.926	0.394	0.221	0.083	G 1/4	14 mm
50 / 1.97"	1.931	1.872	1.044	0.512	0.284	0.146	G 1/4	14 mm
63 / 2.48"	2.443	1.872	1.143	0.284	0.284	0.146	G 1/4	14 mm

Dimensions in inches.

Accessory Devices - Pressure Gauges

Pressure Gauges, Series PG1 G 1/8 Connection



ATEX
Version
Standardization
Main scale unit (outside)
Secondary scale unit (inside)
Ambient temperature min./max.
Medium
Pointer Color
Main scale color (outside)
Secondary scale color (inside)
Class

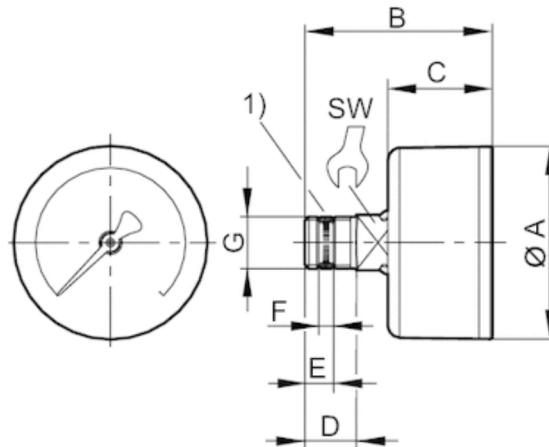
II 2G2D T4 X
Bourdon tube pressure gauge
EN 837-1
Bar
Psi
-40°C / +60°C
Compressed air
White
White
Grey
2, 5

Materials:
Housing
Thread
Viewing window
Seal

Acrylonitrile butadiene styrene
Brass
Polystyrene
Polytetrafluorethylene

	Compressed air connection	Nominal diameter [mm]	Application [bar]	Display range [bar]	Operating pressure [bar]	Scale value	Weight [kg]	Part No.
	G 1/8	40	0 - 1.2 0 - 2 0 - 3.2 0 - 4 0 - 8 0 - 12	0 - 1.6 0 - 2.5 0 - 4 0 - 6 0 - 10 0 - 16	0 / 1.6 0 / 2.5 0 / 4 0 / 6 0 / 10 0 / 16	0.05 0.1 0.1 0.2 0.2 0.5	0.08	R412003853 R412003854 R412003855 R412003856 R412003857 R412003858

Dimensions



Compressed air connection G	Nominal diameter	Ø A	B	C	D	E	F 1)	SW
G 1/8	40	39	44.5	26.5	10	5.6	2.1	14

1) Gasket thread

Accessory Devices - Pressure Gauges

Pressure Gauges, Series PG1-SFB 1/8" NPT Connection, 304 Stainless Steel



Version
Main scale unit (outside)
Medium
Pointer Color
Main scale color (outside)
Class

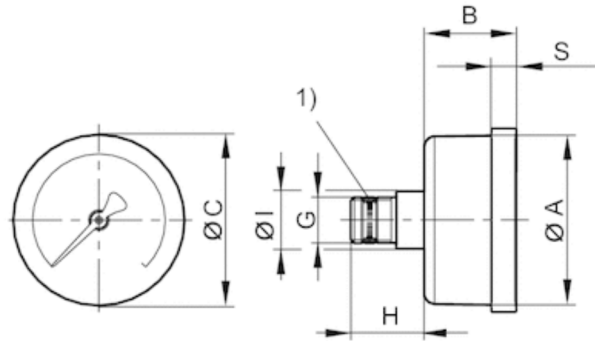
Bourdon tube pressure gauge
Psi
Compressed air
Black
Black
2

Materials:
Housing
Thread
Viewing window
Seal

Stainless steel
Stainless steel
Safety glass
Stainless steel

	Compressed air connection	Nominal diameter [mm]	Application [bar]	Display range [bar]	Operating pressure [bar]	Scale value	Ambient temperature min./max. [°C]	Weight [kg]	Part No.
	1/8 NPT	40	0 - 130	0 - 200	0 / 200	5	-40 / 120	0.08	R432035768

Dimensions in mm



1) Gasket thread

Compressed air connection G	Nominal diameter	Ø A	B	C	H	I	S
1/8 NPT	40	40.8	27.5	42.2	18	14	7.8

The values are in shown in mm. (Conversion factor 1 inch = 25.4 mm)

Accessory Devices - Pressure Gauges

Pressure Gauges, Series PG1-SFB R 1/8 Connection, Stainless Steel



Version	Bourdon tube pressure gauge
Standardization	EN 837-1
Main scale unit (outside)	Bar
Secondary scale unit (inside)	Psi
Medium	-25°C / +60°C
Pointer color	Compressed air
Main scale color (outside)	Black
Secondary scale color (inside)	Black
Class	2, 5

Materials:	
Housing	Stainless steel
Thread	Stainless steel
Pointer	Stainless steel


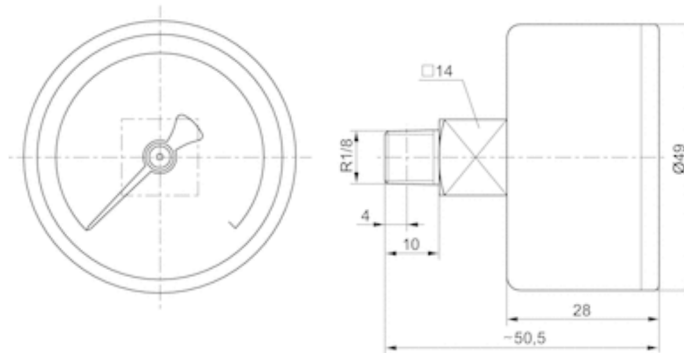
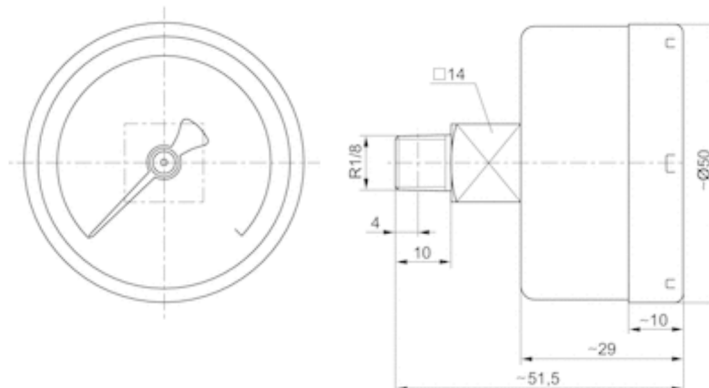
	Compressed air connection	Nominal diameter [mm]	Application [bar]	Display range [bar]	Operating pressure [bar]	Scale value	Weight [kg]	Note	Part No.
	R 1/8	50	0 - 10	0 - 12	0 / 12	0.2	0.091	Fig.1	R412010678
								Fig. 2	R421010679

Fig. 1 Polycarbonate viewing window
 Fig. 2 Safety glass viewing window

Dimensions, Fig. 1



Dimensions, Fig. 2



Accessory Devices - Pressure Gauges

Pressure Gauges, Pipe Mount NPT Connection

Material: Steel case, black

Background: White

Graduations: psi/bar

PSI - Pounds per square inch

For use with compressed air or other inert gases.

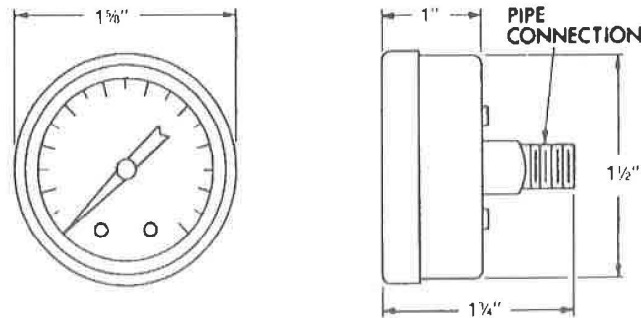
Air gauges are generally most accurate at about half their maximum dial marking and should be ordered with dials approximately double the working pressure desired.



Dial Size	Pressure Range	Drawing Ref.	Dial graduations	Pipe Connection	Part No.	Old Part No.
1 1/2"	0-60 psig	No. 1	2 psi	1/8"-27 NPT	R432012182	P - 049788-00006
1 1/2"	0-200 psig	No. 1	5 psi	1/8"-27 NPT	R432012183	P - 049788-00007
2"	0-60 psig	No. 2	2 psi	1/8"-27 NPT	R432012179	P - 049788-00003
2"	0-60 psig	No. 2	2 psi	1/4"-18 NPT	R432012181	P - 049788-00005
2"	0-160 psig	No. 2	2 psi	1/8"-27 NPT	R432012176	P - 049788-00000
2"	0-160 psig	No. 2	2 psi	1/4"-18 NPT	R432012178	P - 049788-00002
2"	0-160 psig	No. 2	5 psi	1/8"-27 NPT	R432012177	P - 049788-00001
2"	0-160 psig	No. 2	5 psi	1/4"-18 NPT	R432012180	P - 049788-00004

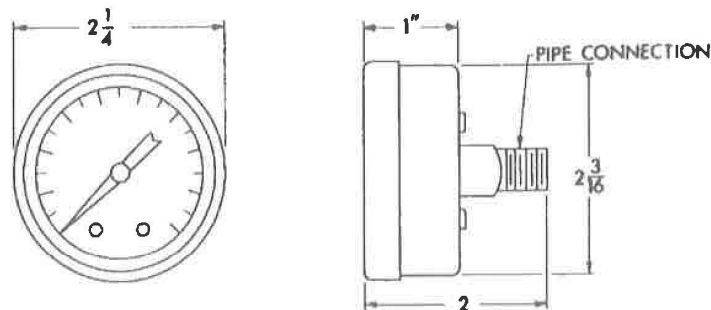
Dimensions No. 1

1 1/2" WHITE DIAL - BLACK STEEL CASE PIPE MOUNTED



Dimensions No. 2

2" WHITE DIAL - BLACK STEEL CASE PIPE MOUNTED



Accessory Devices - Silencers

Silencers, NPT Threads Metal Construction

Canister-Style Silencer - NPT Threads



Recommended for pressures up to 125 PSI. Construction of brass and zinc-plated steel.

Part Number	A	B (in.)	C (in.)	Flow (SCFM) At 90 psi	Weight (oz.)
R432012062	1/8-27 NPT	1.38	0.43	44	0.02
R432012060	1/4-18 NPT	1.75	0.56	96	0.05
R432012058	3/8-18 NPT	2.10	0.68	200	0.08
R432011952	1/2-14 NPT	2.75	0.87	450	0.50
R432012059	3/4-14 NPT	3.15	1.06	560	0.30
R432012057	1-11 1/2 NPT	3.87	1.31	800	0.50
R432012061	1 1/4-11 1/2 NPT	4.50	1.68	1120	0.85

Sintered Bronze Cone Silencer - NPT Threads



Recommended for pressures up to 125 PSI. Construction of brass and bronze. Porosity: 40 micron

Part Number	A	B (in.)	C (in.)	D (in.)
R432000825	1/8-27 NPT	7/16	0.89	0.50
R432000826	1/4-18 NPT	9/16	1.28	0.65
R432000827	3/8-18 NPT	11/16	1.52	0.81
R432000828	1/2-14 NPT	7/8	1.98	1.03
R432000829	3/4-14 NPT	1 1/16	2.28	1.25

Sintered Bronze Breather/Vent - NPT Threads



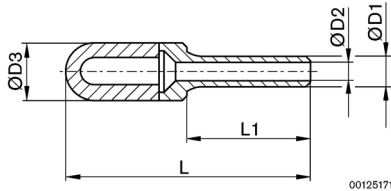
Recommended for pressures up to 125 PSI. Construction of brass and bronze. Porosity: 90 micron

Part Number	A	B (in.)	C (in.)	D (in.)
R432000830	1/8-27 NPT	0.40	7/16	0.50
R432000831	1/4-18 NPT	0.68	9/16	0.65
R432000832	3/8-18 NPT	0.79	11/16	0.81
R432000833	1/2-14 NPT	0.97	7/8	1.03
R432000834	3/4-14 NPT	1.06	1 1/16	1.25

Accessory Devices - Silencers

Silencers, Inch, Push-in Type Polyethylene Construction

Silencers, Inch Push-in Type, Polyethylene



Part Number	Ø D1	Ø D2	Ø D3	L1	L	Flow SCFM
R412005727	1/4"	0.14	0.49	0.81	1.77	1.1*
R412005728	3/8"	0.26	0.61	1.04	2.26	2.3*
R412007714	1/2"	0.36	0.73	1.14	3.23	2.1**

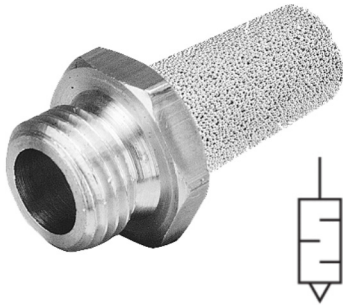
All dimensions in inches.

*Minimum based on 0.73 psi backpressure

**Minimum based on 0.36 psi backpressure.

Accessory Devices - Silencers

Silencers, Metric, Series S1 Conical, Sintered Bronze



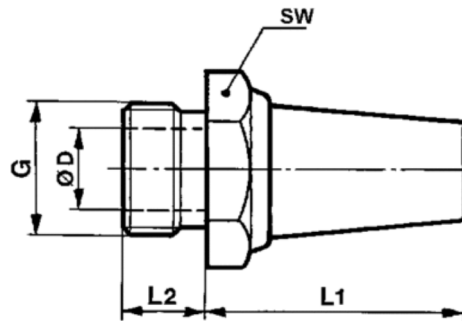
Working pressure min./max.
Ambient temperature min./max.
Medium

0 bar / 10 bar
-25°C / +80°C
Compressed Air

Materials:
Housing
Seals

Sintered bronze
Brass

Dimensions



Part Number	Port G	Sound pressure level [db(a)]	Qn [l/min]	SW	Ø D	L1	L2	Weight [kg]	Delivery quantity [Piece]
1827000006	M5	72	460	7	2.5	15	5	0.004	10
8140000700	M7	-	-	10	4	15	5	0.006	10
1827000000	G 1/8	75	1500	13	6	18	6	0.01	10
R412004817	G 1/4	-	-	16	8.5	18.7	7.6	0.013	10
1827000001	G 1/4	79	2900	17	8.5	25	8	0.02	10
1827000002	G 3/8	84	5900	22	12	34	10	0.05	5
1827000003	G 1/2	90	7100	27	14.5	44	12	0.08	2
1827000004	G 3/4	92	8800	32	19	66	14	0.13	1
1827000005	G 1	102	11100	41	25	66	16	0.18	1

Sound pressure level measured at 6 bar a 1m distance

Accessory Devices - Silencers

Silencers, Metric, Series S1 Low Profile, Sintered Bronze



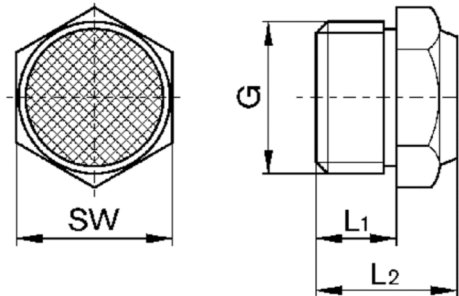
Working pressure min./max.
Ambient temperature min./max.
Medium

0 bar / 10 bar
-25°C / +80°C
Compressed Air

Materials:
Housing
Seals

Sintered bronze
Brass

Dimensions



Part Number	Port G	Sound pressure level [db(a)]	Qn [l/min]	L1	L2	SW	Weight [kg]	Delivery quantity [Piece]
1827000032	M5	79	280	5	10.3	7	0.005	10
1827000031	G 1/8	85	640	6	11.5	13	0.001	10
1827000033	G 1/4	88	900	8	13.5	17	0.01	10
1827000034	G 3/8	90	1750	10	17.5	22	0.016	5
1827000035	G 1/2	85	2000	12	19.5	27	0.035	2
8145003400	G 3/4	82	3400	14	22.5	32	0.095	1
8145001000	G 1	82	5100	16	22.5	41	0.057	1

Sound pressure level measured at 6 bar a 1m distance

Accessory Devices - Silencers

Silencers, Metric, Series S1 Canister Type, Aluminum



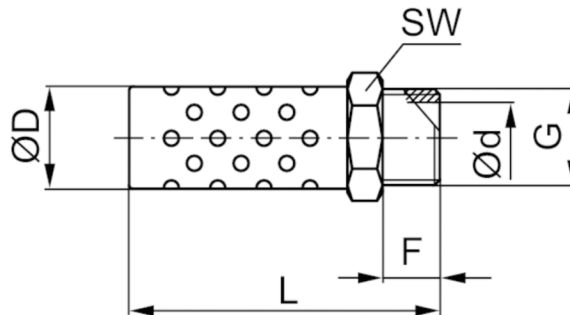
Working pressure min./max.
Ambient temperature min./max.
Medium

0 bar / 15 bar
-10°C / +150°C
Compressed Air

Materials:
Housing
Seals

Metal braiding
Aluminum

Dimensions

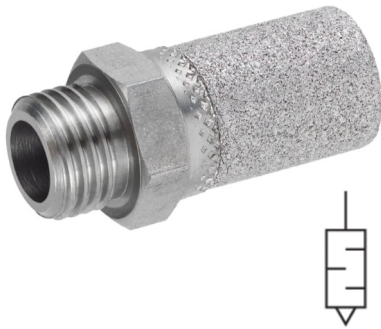


Part Number	Port G	Sound pressure level [db(A)]	Qn [l/min]	L	F	D	d	SW	Delivery quantity [piece]
R412010283	G 1/8	94	520	33.5	6	10.4	6	11	10
R412010245	G 1/4	96	810	42.5	8.5	13.4	8.5	14	10
R412010246	G 3/8	98	1800	49.2	9	16.5	12	17	5
R412010247	G 1/2	100	3000	65.2	11	21.5	15	22	5
R412010248	G 3/4	102	5800	74.5	12	16.5	20	27	2
R412010249	G 1	104	8500	91	15.5	32.3	26	33	2

Sound pressure level measured at 6 bar a 1m distance

Accessory Devices - Silencers

Silencers, Metric, Series S1 Stainless Steel



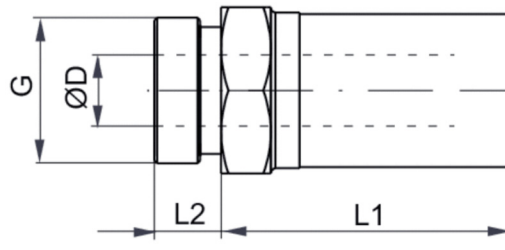
Working pressure min./max.
Ambient temperature min./max.
Medium

0 bar / 12 bar
-20°C / +150°C
Compressed Air

Materials:
Housing
Seals

Stainless steel
Stainless steel

Dimensions



Part Number	Port G	Sound pressure level [db(A)]	Qn [l/min]	SW	Ø D	L1	L2	Weight [kg]	Delivery quantity [piece]
R412010090	M5	85	125	8	3.1	10.5	3.5	0.003	1
R412010081	G 1/8	90	465	13	6.6	20	6	0.011	1
R412010082	G 1/4	93	850	16	8.6	29.5	7.5	0.021	1
R412010083	G 3/8	101	1300	19	12.1	33.5	7.5	0.028	1
R412010084	G 1/2	95	1915	24	15.3	39.5	9.5	0.048	1
R412010085	G 3/4	110	2415	30	19.9	45	10	0.076	1
R412010086	G 1	100	6000	36	25.5	49.5	11.5	0.099	1

Sound pressure level measured at 6 bar a 1m distance

Accessory Devices - Silencers

Silencers, Metric, Series S1 Polyethylene Threaded and Push-in



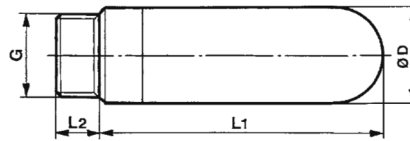
Working pressure min./max.
Ambient temperature min./max.
Medium

0 bar / 10 bar
-25°C / +80°C
Compressed Air

Materials:
Silencers
Thread

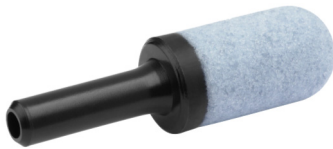
Polyethylene
Polyethylene

Dimensions



Part Number	Port G	Sound pressure level [db(A)]	Qn [l/min]	Ø D	L1	L2	Weight [kg]	Delivery quantity [piece]
1827000018	M5	-	-	6.5	17.5	4	0.001	5
1827000019	G 1/8	78	1500	12.5	28.5	5.5	0.002	5
1827000020	G 1/4	80	3100	15.5	34.5	8	0.003	5
1827000021	G 3/8	85	5300	18.5	56	11.5	0.008	2
1827000022	G 1/2	88	7000	23.3	66.5	11	0.013	1
1827000023	G 3/4	-	-	38.5	115.5	16	0.04	1
1827000024	G 1	-	-	49	140	21	0.055	1

Sound pressure level measured at 6 bar a 1m distance



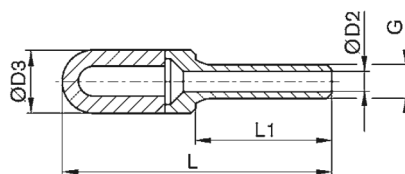
Working pressure min./max.
Ambient temperature min./max.
Medium

0 bar / 10 bar
-25°C / +80°C
Compressed Air

Materials:
Silencers
Thread

Polyethylene
Polyethylene

Dimensions

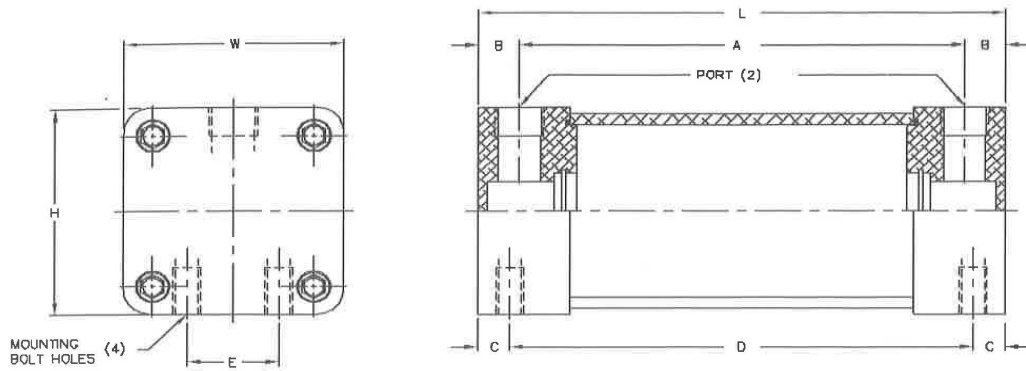


Part Number	Port G	Qn [l/min]	Ø D2	Ø D3	L1	L	Weight [kg]	Delivery quantity [piece]
R412007519	Ø 4	15	2.5	7	16	32	0.002	5
R412007899	Ø 6	30	3.5	10	20.5	45	0.002	5
R412000591	Ø 6	30	3.5	12.5	20.5	45	-	5
R412007520	Ø 8	45	4.8	13.5	21.5	43.5	0.002	5
R412000593	Ø 10	70	6.9	15.5	26.5	57.5	0.004	5
R412007715	Ø 12	-	8.4	18.5	29	82	0.007	5

Accessory Devices - Timing Volume

Pneumatic Timing Volume

AVENTICS offers a wide range of timing volumes for a variety of pneumatic system uses. These volumes are rated at 200 psi (13.8 bar) maximum working pressure with a 5 to 1 safety factor. They are constructed of lightweight, corrosion resistant anodized aluminum ends and tubing. Each end has two threaded mounting holes.



Volume Capacity Cu. Inch*	Overall Size			Dimensions (Ports)			Mounting Holes				Part Number	Weight (lbs.)
	H	W	L	Thread*	A	B	Thread	C	D	E		
5	2	2	5-5/16	1/4-18	4-3/16	9/16	1/4-20	7/16	4-7/16	5/8	R432013441	1.0
5	2	2	7-1/16	1/4-18	5-15/16	9/16	1/4-20	7/16	6-3/16	5/8	R432013442	1.3
8	3	3	4-5/16	1/4-18	3-3/16	9/16	3/8-16	7/16	3-7/16	1-1/4	R434002910	1.8
12	2	2	9-5/16	1/4-18	8-3/16	9/16	1/4-20	7/16	8-7/16	5/8	R432013443	1.5
12	3	3	5-3/16	1/4-18	4-1/16	9/16	3/8-16	7/16	4-5/16	1-1/4	R434002987	2.0
20	2	2	13-13/16	1/4-18	12-11/16	9/16	1/4-20	7/16	12-	5/8	R432013444	2.0
20	3	3	6-13/16	1/4-18	5-11/16	9/16	3/8-16	7/16	15/16	1-1/4	R131002896	2.3
20	4-1/2	4-1/2	4-1/8	3/8-18	3-1/8	1/2	1/2-13	9/16	5-15/16 3	2-1/16	R434002906	3.8
30	3	3	8-13/16	1/4-18	7-11/16	9/16	3/8-16	7/16	7-15/16	1-1/4	R434002985	2.6
30	4-1/2	4-1/2	3/8-18	3/8-18	3-7/8	1/2	1/2-13	9/16	3-3/4	2-1/16	R434002905	4.1
45	3	3	11-15/16	1/4-18	10-13/16	9/16	3/8-16	7/16	11-1/16	1-1/4	R434002894	3.2
45	4-1/2	4-1/2	6-1/8	3/8-18	5-1/8	9/16	1/2-13	9/16	5	2-1/16	R434002904	4.7
60	4-1/2	4-1/2	7-3/8	3/8-18	6-3/8	1/2	1/2-13	9/16	6-1/4	2-1/16	R434004028	5.2
80	4-1/2	4-1/2	8-7/8	3/8-18	7-7/8	1/2	1/2-13	9/16	8-1/8	2-1/16	R434002903	5.8
100	4-1/2	4-1/2	10-1/2	3/8-18	9-1/2	1/2	1/2-13	9/16	9-3/8	2-1/16	R434002902	6.6
225	4-1/2	4-1/2	20-1/2	3/8-18	19-1/2	1/2	1/2-13	9/16	19-1/4	2-1/16	R434002899	10.9

*NPTF ports
 Dimensions in inches
 Other sizes available, contact factory.

Accessory Devices - Shock Absorbers

Shock Absorbers, Series 370




Ambient temperature min./max.
Medium temperature min./max.
Medium

-10°C / +70°C
-10°C / +70°C
Oil

Materials:
Cylinder tube
Piston rod
Lock nut
Stop

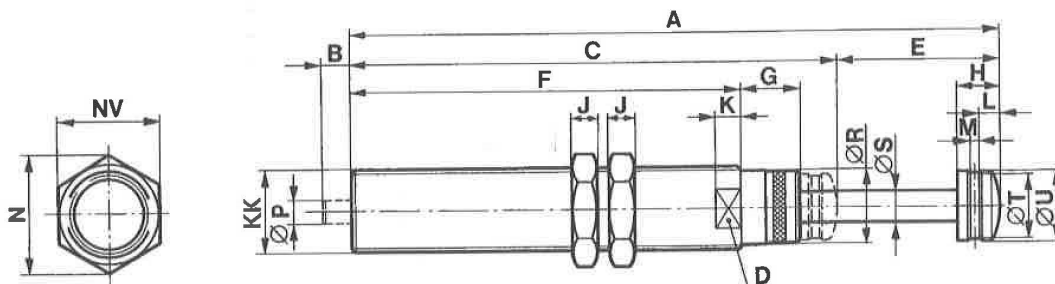
Steel, bronzed
Steel, hard chromated
Steel, bronzed
Steel, hardened

	Type	Stroke [mm]	Effective mass me Min./max. [kg]	Return spring force Min./max. [N]	Adsorption energy/stroke max. [nm]	Adsorption energy/hour max. [nm/h]	Part No.
	370-MA	25	10 / 500	25 / 40	60	54000	3701202000
		40	15 / 500	25 / 40	100	54000	3701204000
		50	50 / 5000	50 / 90	375	126000	3701206000
		80	50 / 5000	50 / 90	600	126000	3701208000

Part No.	Mounting Thread	Weight [kg]
3701202000	M27x2	0.5
3701204000	M27x2	0.5
3702005000	M42x3	1.85
3702008000	M42x3	1.85

Adjustable stop weight and speed comes with 2 counter nuts.

Note: Maximum side load mis-alignment is 5 degrees



D370_003

Part Number	KK	A	B	C	D	E	F	G	H	J	K	L
3701202000	M27x2	183	6.5	158	24	25	115	27	16	8	10	7.5
3701204000	M27x2	198.5	9.5	158	24	40	115	27	16	8	10	7.5
3702005000	M42x3	297	5.5	247	39	50	197	30	20	12	13	9
3702008000	M42x3	326	5.5	247	39	80	197	30	20	12	13	9

Part Number	M	N	P	R	S	T	U	NV
3701202000	5	37	6	23.5	12	22	23	32
3701204000	5	37	6	23.5	12	22	23	32
3702005000	6	58	8	37.5	16	34	35	50
3702008000	6	58	8	37.5	16	34	35	50

Note: Additional shock absorbers, Series SA1 and SA2 available in the online catalog.

NOTICE TO PRODUCT USERS

1. WARNING: FLUID MEDIA

AVENTICS pneumatic devices are designed and tested for use with filtered, clean, dry, chemical free air at pressures and temperatures within the specified limits of the device. For use with media other than air or for human life support systems, AVENTICS must be consulted. Hydraulic cylinders are designed for operation with filtered, clean, petroleum based hydraulic fluid; operation using fire-resistant or other special types of fluids may require special packing and seals. Consult the factory.

2. WARNING: MATERIAL COMPATIBILITY

Damage to product seals or other parts caused by the use of non-compatible lubricants, oil additives or synthetic lubricants in the air system compressor or line lubrication devices voids the AVENTICS warranty and can result in product failure or other malfunction. See lubrication recommendations below.

AIR LINE LUBRICANTS! In service higher than 18 cycles per minute or with continuous flow of air through the device, an air line lubricator is recommended.* (Do not use line lubrication with vacuum products.) However, the lubricator must be maintained since the oil will wash out the grease, and lack of lubrication will greatly shorten the life expectancy. The oils used in the lubricator must be compatible with the elastomers in the device. The elastomers are normally BUNA-N, NEOPRENE, VITON, SILICONE and HYTREL. AVENTICS recommends the use of only petroleum based oils without synthetic additives, and with an aniline point between 180° F and 210° F.

COMPRESSOR LUBRICANTS! All compressors (with the exception of special "oil free" units) pass oil mist or vapor from the internal crankcase lubricating system through to the compressed air. Since even small amounts of non-compatible lubricants can cause severe seal deterioration (which could result in component and system failure) special care should be taken in selecting compatible compressor lubricants.

3. WARNING: INSTALLATION AND MOUNTING

The user of these devices must conform to all applicable electrical, mechanical, piping and other codes in the installation, operation or repair of these devices.

INSTALLATION! Do not attempt to install, operate or repair these devices without proper training in the technique of working on pneumatic or hydraulic systems and devices, unless under trained supervision. Compressed air and hydraulic systems contain high levels of stored energy. Do not attempt to connect, disconnect or repair these products

when a system is under pressure. Always exhaust or drain the pressure from a system before performing any service work. Failure to do so can result in serious personal injury.

MOUNTING! Devices should be mounted and positioned in such a manner that they cannot be accidentally operated.

4. WARNING: APPLICATION AND USE OF PRODUCTS

The possibility does exist for any device or accessory to fail to operate properly through misuse, wear or malfunction. The user must consider these possibilities and should provide appropriate safe guards in the application or system design to prevent personal injury or property damage in the event of a malfunction.

5. WARNING: CONVERSION, MAINTENANCE AND REPAIR

When a device is disassembled for conversion to a different configuration, maintenance or repair, the device must be tested for leakage and proper operation after being reassembled and prior to installation.

MAINTENANCE AND REPAIR! Maintenance periods should be scheduled in accordance with frequency of use and working conditions. All AVENTICS products should provide a minimum of 1,000,000 cycles of maintenance free service when used and lubricated as recommended. However, these products should be visually inspected for defects and given an "in system" operating performance and leakage test once a year. Where devices require a major repair as a result of the one million cycles, one year, or routine inspection, the device must be disassembled, cleaned, inspected, parts replaced as required, rebuilt and tested for leakage and proper operation prior to installation. See individual catalogs for specific cycle life estimates.

6. PRODUCT CHANGES

Product changes including specifications, features, designs and availability are subject to change at any time without notice. For critical dimensions or specifications, contact factory.

*Many AVENTICS pneumatic valves and cylinders can operate with or without air line lubrication; see individual sales catalogs for details.

-Refer to the appropriate service manual for parts and service information, most are available for download from www.aventics.com/us/downloads

WARRANTIES

7.1 Emerson warrants that:

- Emerson will transfer title to the Goods (excluding Software and Firmware) to Customer under Clause 4 of our Terms and Conditions of Sale*;
- Goods, Documentation and Services will conform with the Specification;
- Goods made by Emerson or its Affiliates will, under normal use and care, be free from defects in materials or workmanship; and
- Emerson and its Affiliates' Personnel delivering Services are trained and will use reasonable skill and care.

7.2 **Warranty Periods.** Unless otherwise specified by Emerson, the warranties in Clause 7.1 apply as follows:

- Goods:** until the earlier of 12 months from the first installation or 18 months from delivery (90 days from delivery in the case of consumables);
- Services:** for 90 days from completion of the Services;
- Goods repaired, replacement items and Services re-performed:** from delivery of the replacement or completion of the repair or re-performance, for 90 days or until the end of the original warranty period (if later).

7.3 **Warranty Procedure.** Clause 7.3 applies if, within the warranty period, Customer discovers any non-conformity with a warranty in Clause 7.1, tells Emerson in writing and, in the case of Goods, returns the non-conforming items at Customer's cost, freight and insurance pre-paid, to the repair facility chosen by Emerson. Where this Clause applies, Emerson will, at its sole option, either:

- correct any non-conforming Documents and Services; or
- repair or replace non-conforming Goods FCA (Incoterms® 2010) at the repair location; or
- instead refund the price of the non-conforming item.

7.4 Exclusions from Warranty.

- The warranties in Clause 7.1(b), (c) and (d) exclude and Customer will pay the cost of all repairs and replacements caused by any of the following: normal wear and use; inadequate maintenance; unsuitable power sources or environmental conditions; improper handling, storage, installation, or operation; misuse or accident caused by anybody except Emerson; a modification or repair not approved by Emerson in writing; materials or workmanship made, provided or specified by Customer; contamination; the use of unapproved parts, firmware or software; Cyber Attack; any other cause not the fault of Emerson.
- Emerson will not pay any costs relating to non-compliance with a warranty in Clause 7.1, except where agreed in writing in advance. Unless accepted in writing by Emerson, Customer will pay:
 - all costs of dismantling, freight, reinstallation and the time and expenses of Emerson Personnel for travel under Clause 7; and
 - all costs incurred by Emerson in correcting nonconformities for which Emerson is not responsible under Clause 7 and in examining items that comply with the warranties in Clause 7.1.
- If Emerson relies on wrong or incomplete information supplied by Customer, all warranties are void unless Emerson agrees otherwise in writing.
- Customer alone is responsible for the selection, maintenance and use of the Goods.
- Resale Products carry only the warranty given by the original manufacturer. Emerson has no liability for Resale Products beyond making a reasonable commercial effort to arrange procurement and shipping of the Resale Products.

7.5 **Disclaimer.** The limited warranties set out in this Clause 7 are the only warranties made by Emerson and can be changed only with Emerson's signed written agreement. THE WARRANTIES AND REMEDIES IN CLAUSE 7 ARE EXCLUSIVE. THERE ARE NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, ABOUT MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE OR ANYTHING ELSE FOR ANY OF THE GOODS, DOCUMENTATION OR SERVICES.

*Additional conditions apply - for full details, visit our website to download our Terms and Conditions of Sale:

For U.S.: www.aventics.com/us/downloads | For Canada: www.aventics.com/ca | (AVENTICS Corporation is owned by Emerson Electric Co.)

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The data specified only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.