

TREVISO

Selection Manual for Check Valve Products



TREVISO TRANSMISSION MACHINERY S.R.L.

<u>01</u>	Working principle and types of check valves	01
	· Working principle	01
	· Types and characteristics	01

<u>02</u>	Technical data of check valves	02
	· Pressure - temperature rating	03
	· Opening pressure and resealing pressure at 20 °C (70 ° f)	04

<u>03</u>	Structural material of check valves	05
	· AT3005D and AT3006D series	05
	· AT3007D series	05

<u>04</u>	Size information of check valves	06
	· AT3005D series	06
	· AT3006D series	07
	· AT3007D series	08

01

Working principle and types of check valves

Working principle

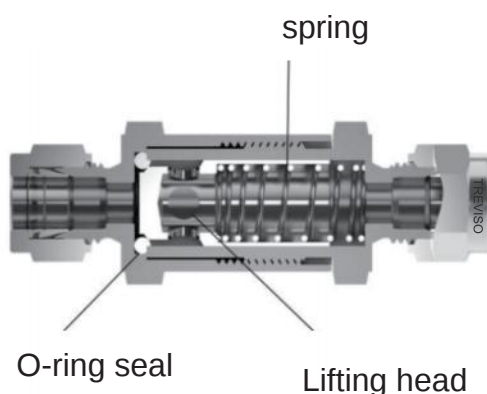
A one-way valve (also known as a check valve or check valve) is an automatic valve whose core function is to allow fluid to flow in one direction and prevent medium backflow.

Its working principle is based on the design of fluid pressure difference and movable components inside the valve:

1. When flowing forward: When the medium flows in from the inlet end, under the action of fluid pressure, the valve disc (or valve core) is pushed open, and the medium can flow through the valve. At this time, the valve is in the open state.
2. When reverse flow occurs: When the medium attempts to flow backwards, the valve disc quickly closes under the dual action of its own weight (sometimes supplemented by spring force) and the pressure of the backflow medium, preventing the medium from flowing backwards.
3. Automatic control feature: The entire process does not require external operation and relies entirely on the flow characteristics of the medium itself to achieve automatic opening and closing, similar to diodes in circuits.

Types and characteristics

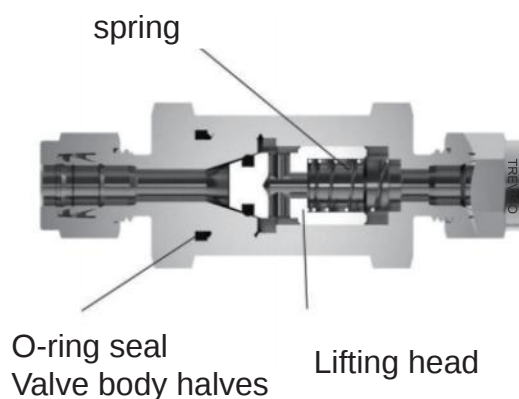
AT3005D SERIES



characteristic

Fixed opening pressure
From 1/3 to 25 psi (003 to 18bar)

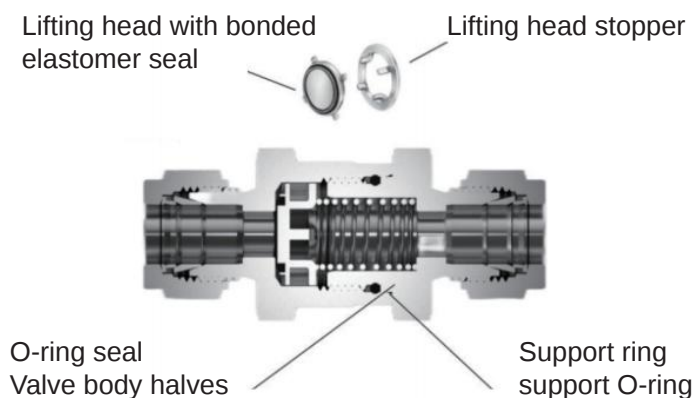
AT3006D SERIES



characteristic

Adjustable opening pressure
From 3 to 600psi (021 to 414bar)

AT3007D SERIES



02

Technical data of check valves

Opening pressure - Initially indicates the inlet pressure at which the flow occurs (steady bubble flow).
Reseating pressure - Pressure without flow indication. Back pressure the pressure difference between the inlet and outlet pressures.



When the valve has not been opened for a period of time, its initial opening pressure may be higher than the set opening pressure.

series	Maximum Flow Coefficient(Cv)	Nominal Opening Pressure psi (bar)	Max Back Pressure at 70 ° F (20 ° C) psig (bar)
Fixed Opening Pressure			
AT3005D	010	1/3,1,10and25 (003,007,069,and18)	1000(689)
AT3005D	047		200(137)
AT3005D	147		
AT3005D	168		
AT3005D	448		
AT3007D	067	1/3,1,5,10and25 (003,007,035069, and1.8)	6000(413)
AT3007D	1.8		5000(344)
AT3007D	4.7		
AT3008D	0.35	1/3,1,10and25 (003,007,069,and18)	3000(206)
AT3008D	1.2		
Adjustable Opening Pressure			
AT3009D	035	3 to 50(0.21 to 3.5) 50 to 150(3.5 to 10.4)	3000(206)
AT3009D	120	150 to 350(10.4 to 24.2) 350 to 600(24.2 to 41.4)	

For an opening pressure of 25 psi (18bar), the maximum back pressure is 3000 psig (206bar).

Pressure - temperature rating

AT3005D series are rated based on fluorocarbon fkm-o-rings in 316 stainless steel valves and nitrile rubber O-rings in brass valves.

AT3005D SERIES

material	316 SS	brass
temperatuer, ° C(° F)	working pressure, psig(bar)	
-23(-10)to37(100)	3000(206)	3000(206)
93(200)	2575(177)	2600(179)
121(250)	2450(168)	2405(165)
148(300)	2325(160)	/
190(375)	2185(150)	/

material	316 SS	brass
temperatuer, ° C(° F)	working pressure, psig(bar)	
-23(-10)to37(100)	2000(137)	1500(103)
93(200)	1715(118)	1300(89.5)
121(250)	1630(112)	1200(82.6)
148(300)	1545(106)	/
190(375)	1450(99.9)	/

AT3007D series

The rated value is based on fluorocarbon FKM seals.

AT3007D SERIES

material	316 SS	
series	AT3007D	AT3007D
temperatuer, °C (° F)	working pressure, psig(bar)	
-23(-10)to37(100)	6000(413)	5000(344)
93(200)	5160(355)	4290(295)
121(250)	4910(338)	4080(281)
148(300)	4660(321)	3875(266)
204(400)	4280(294)	3560(245)

Opening pressure and resealing pressure at 20 °C (70 ° f)

Opening pressure - the inlet pressure that initially indicates the occurrence of flow (steady bubble flow). Reclosing pressure - pressure without flow indication.

Back pressure - pressure difference between inlet and outlet pressure

AT3005D SERIES

Nominal Opening Pressure psi(bar)	Opening Pressure Range psi(bar)	Resealing Pressure psi(bar)
1/3(003)	Below 3(021)	Back Pressure Below 6 (0.42)
1(007)	Below 4(028)	Back Pressure Below 6 (0.42)
10(069)	7to15(049to11)	Inlet Pressure 3 (0.21) or Above
25(18)	20to30(14to21)	Inlet Pressure 17 (1.2) or Above

AT3007D SERIES

Nominal Opening Pressure psi(bar)	Opening Pressure Range psi(bar)	Resealing Pressure psi(bar)
1/3(003)	Below3(0.21)	Back Pressure Below 6 (0.42)
1(0.07)	Below4(0.28)	Back Pressure Below 6 (0.42)
5(0.35)	3to9(0.21to0.63)	Back Pressure Below 2(0.14)
10(0.69)	7to15(049to11)	Inlet Pressure 3 (0.21) or Above
25(18)	20to30(14to21)	Inlet Pressure 17 (1.2) or Above

- The dimensions are for reference only and may change at any time, and the details shall be subject to the actual order confirmation drawing.

03

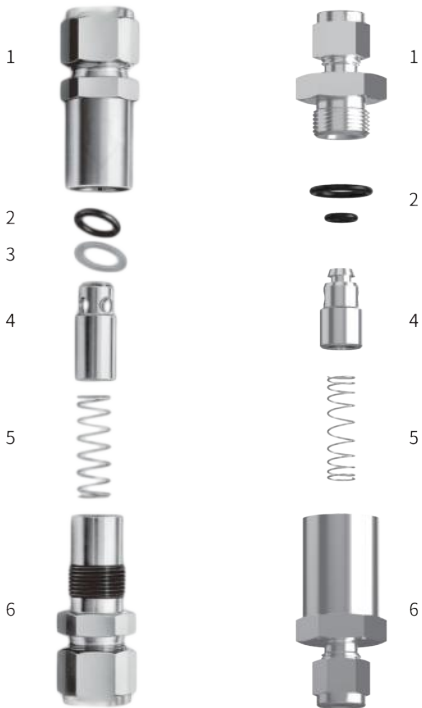
Structural material of check valves

AT3005D AND AT3006D SERIES

Component	Valve Body Material	
	316SS	Brass
	Material Grade / ASTM Spec	
1、 Inlet Body	316 SS/A276	Brass360/B16
2、 O-Ring	Fluorocarbon FKM	Nitrile Rubber
3.Inlet Washer	PTFE Coated 316 SS/A240	
4、 Poppet	316 SS/A276	Brass360/B16
5、 Spring	302 SS/A313	
6、 Outlet Body	316 SS/A276	Brass360/B16
Wetted Lubricant	Silicone-based(C Series);PTFE-based(CA Series)	
Non-Wetted Lubricant	Molybdenum Disulfide-based	/

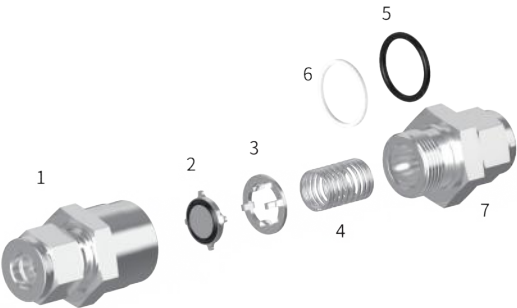
AT3005D SERIES

AT3006D SERIES



AT3007D SERIES

Component	Material Grade / ASTM Spec
1、 Inlet Body	316 SS/A276
2、 Poppet	Fluorocarbon FKM bonded to 316 SS/A276
3、 Poppet Stop	316 SS/A276
4、 Spring	302 SS/A313
5、 O-Ring	Fluorocarbon FKM
6、 Support Ring	PTFE/D1710
7、 Outlet Body	316 SS/A276
Lubricant	PTFE-based

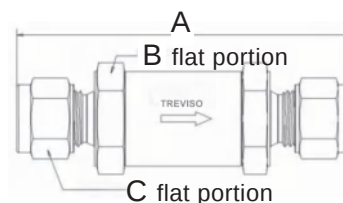


04

Size information of check valves

AT3005D SERIES

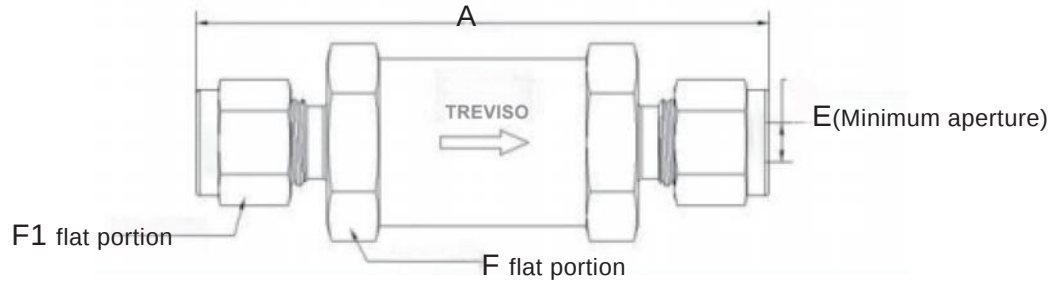
Connection		Size, in(mm)		
Inlet/Outlet	Size	A	B	C
Fixed Opening Pressure, C Series				
Imperial Tube Fitting	1/8 in	214(543)	5/8	7/16
	1/4 in	235(597)		9/16
	3/8 in	317(805)	7/8	11/16
	1/2 in	342(869)		7/8
	3/4 in	432(110)	11/4	11/8
	1 in	474(120)	13/8	11/2
Metric Tube Fitting	6mm	236(599)	5/8	(14)
	10 mm	332(843)	7/8	(19)
	12 mm	342(869)		(22)
Female NPT Thread	1/8 in	189(480)	5/8	
	1/4 in	215(546)	3/4	
	3/8 in	298(757)	7/8	
	1/2 in	358(909)	11/16	
	3/4 in	408(104)	11/4	
	1 in	484(123)	15/8	
Male NPT Thread	1/8 in	171(434)	5/8	
	1/4 in	209(531)		
	3/8 in	278(706)	7/8	
	1/2 in	316(803)		
	3/4 in	408(104)	11/4	
	1 in	452(115)	15/8	
Male NPT x Tube Fitting	1/4 in	2.22(56.4)	5/8	9/16
Male VCR Fitting	1/4 in	2.21(56.1)	5/8	1
	1/2 in	3.56(90.4)	15/16	
	3/4 in	4.64(118)	15/8	
	1 in	4.76(121)		



The one-way valve is designed for one-way flow control only and shall not be used as a safety unloading device.

■ The dimensions are for reference only and may change at any time, and the details shall be subject to the actual order confirmation drawing.

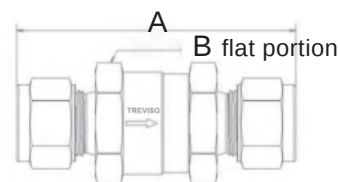
AT3006D SERIES



Connection		Bore Size	Size, in. (mm)		
Inlet/Outlet	Size	E in. (mm)	A	F1	F
Metric Double Ferrule Fitting	φ3mm	0.08 (2.0)	2.61(66.3)	0.43(11.0)	0.67(17.0)
	φ6mm	0.20 (5.0)	3.07(78.0)	0.67(17.0)	0.87(22.0)
	φ8mm	0.24 (6.0)	3.15(80.0)	0.63(16.0)	0.87(22.0)
	φ10mm	0.24 (6.0)	3.25(82.5)	0.75(19.0)	0.87(22.0)
	φ12mm	0.24 (6.0)	3.43(87.0)	0.87(22.0)	0.87(22.0)
	φ20mm	0.47 (12.0)	3.82(97.0)	1.26(32.0)	1.18(30.0)
Imperial Double Ferrule Fitting	1/8"	0.08 (2.0)	2.60(66.0)	0.43(11.0)	0.67(17.0)
	1/4"	0.20 (5.0)	3.07(78.0)	0.55(14.0)	0.87(22.0)
	1/2"	0.35 (9.0)	3.76(95.5)	0.87(22.0)	1.06(27.0)
Female NPT Thread	1/4"	0.20 (5.0)	2.76(70.0)	/	0.87(22.0)
	1/2"	0.31 (8.0)	3.19(81.0)	/	1.06(27.0)
	3/4"	0.47 (12.0)	3.23(82.0)	1	1.50(38.0)
ISO Parallel Internal Thread	1/4"	0.20 (5.0)	2.76(70.0)	/	0.87(22.0)
ISO Tapered Internal Thread	1/2"	0.31 (8.0)	3.19(81.0)	/	1.06(27.0)
Male Thread	M30x1.5	0.55 (14.0)	4.06(103.0)	/	1.61(41.0)
Male Thread/	1/4to1/4	0.20 (5.0)	2.68(68.0)	/	0.87(22.0)
	1"NPTto1"NPT	0.63 (16.0)	3.98(101.0)	/	1.81(46.0)
Butt Weld	BWφ8x1	0.24 (6.0)	5.12(130.0)	0.75(19.0)	0.87(22.0)
	BWφ10x1	0.24 (6.0)	5.35(136.0)	0.87(22.0)	0.87(22.0)
	BW1/2	0.20 (5.0)	3.23(82.0)	/	0.87(22.0)
	BWφ21.3	0.35 (9.0)	4.17(106.0)	1.26(32.0)	1.18(30.0)
Socket Weld	SWφ34.2	0.63 (16.0)	6.30(160.0)	/	2.13(54.0)
	SWφ32	0.87 (22.0)	6.69(170.0)	/	1.97(50.0)
Cajon	DN20	0.59 (15.0)	5.33(135.5)	/	1.57(40.0)
	DN32	0.79 (20.0)	5.35(135.9)	1	1.73(44.0)
	DN40	0.98 (25.0)	5.43(138.0)	/	1.93(49.0)
	DN50	1.46 (37.0)	6.42(163.0)	/	2.95(75.0)
	DN65	1.89 (48.0)	8.27(210.0)	/	3.46(88.0)
	DN80	1.97 (50.0)	8.27(210.0)	/	3.54(90.0)
SAE	BWφ60X5.5	1.93 (49.0)	12.95(329.0)	/	3.33(84.6)
	BW75X10	2.05 (52.0)	15.16(385.0)	/	3.54(90.0)

AT3007D SERIES

Connection		Pressure Rating (psig/bar) at 100° F (37° C)	Size, in(mm)	
Type	Size		A	B
Imperial Tube Fitting	1/8 in	6000(413)	2.27(57.7)	11/16
	1/4in		2.43(61.7)	
	3/8in		2.75(69.9)	1
	1/2in		2.96(75.2)	
Metric Tube Fitting	3/4in	5000(344)	432(110)	15/8
	1in	4700(323)	474(120)	
	6mm	6000(413)	2.43(61.7)	1
	8mm		2.70(68.6)	
	10 mm		2.80(71.1)	
	12 mm		2.96(75.2)	
	22 mm	4900(337)	3.48(88.4)	15/8
	25mm	4600(316)	3.88(98.6)	
Female NPT Thread	1/4in	6000(413)	2.13(54.1)	11/16
	3/8 in	5300(365)	2.55(64.8)	1
	1/2in	4900(337)	3.03(77.0)	11/16
	3/4in	4600(316)	3.23(82.0)	15/8
	1in	4400(303)	3.83(97.3)	
Male NPT Thread	1/8in	6000(413)	1.79(45.5)	11/16
	1/4in		2.17(55.1)	
	3/8in		2.36(59.9)	1
	1/2in		2.73(69.3)	
	3/4in	5000(344)	3.29(83.6)	15/8
	1in		3.67(93.2)	
Female Thread ISO	1/4in	6000(413)	2.21(56.1)	5/8
	1/2in	5100(351)	3.56(90.4)	15/16
	3/4in	4800(330)	4.64(118)	15/8
	1in	4400(303)	4.76(121)	
Male Thread ISO	1/4in	6000(413)	2.17(55.1)	11/16
	1/2in		2.73(69.3)	1
	3/4in	5000(344)	3.29(83.6)	15/8
	1in		3.67(93.2)	
Female Thread SAE/MS	1/2in	4600(316)	2.74(69.6)	1
Male Thread SAE/MS	1/2in	4600(316)	2.48(63.0)	
Male VCO Fitting	1/4in	6000(413)	1.98(50.3)	11/16
	1/2in		2.35(59.7)	1
	3/4in	5000(344)	2.90(73.7)	15/8
	1in			
Male VCR Fitting	1/4in	6000(413)	2.28(57.9)	11/16
	1/2in	4300(296)	2.73(69.3)	1
	3/4in	3700(254)	3.78(96.0)	15/8



The one-way valve is designed for one-way flow control only and shall not be used as a safety unloading device.

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