

Trunnion ball valve

BT & BTH series

Total 316 stainless steel structure

Max. working pressure 70 MPa (10150 psi)

The max. permissible temperature 232°C (450°F)

Connector type:

1/8 to 1/2in. and 6 to 12mm bite type tube fittings

NPT internal thread connector

Trunnion ball valve

Structural features

Technical parameters

Test

Data on flows

Pressure-temperature
rated value

Parts details

Coding rule for item No.

Order info & size

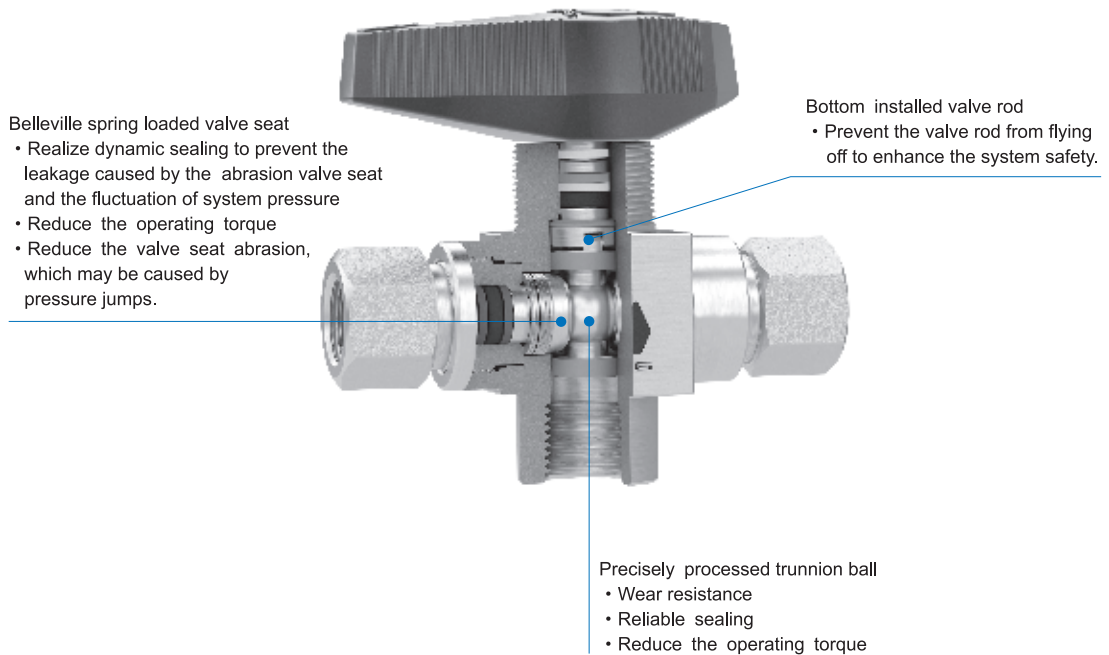


Structural features

Trunnion ball valve is a fixed-axis type ball valve. The trunnion ball is installed from the bottom of valve body. There is a bearing between the trunnion and valve body. While opening and closing, the trunnion ball will rotate around the trunnion axis to realize the cut-off or switch of flow. The medium pressure is undertaken by the trunnion bearing, which can bear max. 70MPa working pressure.

- Compact structure
- Low operating torque
- With panel mounting
- Full-aperture design
- High working pressure
- 2-channel or 3-channel flow path

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Technical parameters

Valve seat material	Temperature rated value °C(°F)	Pressure rated value MPa(psi) while at 37°C(100° F)	Flow coefficient (Cv)
BT series			
PCTFE, reinforced nylon	-17 121 0 250	42.0(6090)	Two-way valve—1.0 to 1.6, up to the connector form; Three-way valve—0.75
PEEK	-17 232 0 450	42.0(6090)	
PTFE		10.3(1500)	
BTH series			
PEEK	-17 232 0 450	42.0~70.0 (6090~10150) Up to the connector form	Two-way valve—1.0 to 1.6, up to the connector form; Three-way valve—0.75

Test

Before leaving the factory, each trunnion ball valve has passed the 7MPa nitrogen pressure test. There is no bubble producing in the shell and valve seats within 1min.

1. The ball valve is designed to apply to full-open or full-closing position.
2. With respect to the valve which hasn't been open or closed for a long time, the initial torque will increase.



Data on flows (20°C)

BT SERIES				
Pressure drop relative to atmosphere (Δp) KPa(psi)	Air mass flow std L/min		Water flow L/min	
	Two-way (Aperture 4.7mm,Cv1.2)	Three-way (Aperture 4.7mm,Cv0.75)	Two-way (Aperture 4.7mm,Cv1.2)	Three-way (Aperture 4.7mm,Cv0.75)
69(10)	390	220	14	9.0
340(50)	1000	650	32	20
690(100)	1800	1100	45	28

BTH SERIES				
Pressure drop relative to atmosphere (Δp) KPa(psi)	Air mass flow std L/min		Water flow L/min	
	Two-way (Aperture 4.7mm,Cv1.2)	Three-way (Aperture 4.7mm,Cv0.75)	Two-way (Aperture 4.7mm,Cv1.2)	Three-way (Aperture 4.7mm,Cv0.75)
1030(150)	2600	1600	56	34
4200(600)	9600	5900	100	68
6900(1000)	16100	9900	140	90

Pressure-temperature rated value

Pressure-temperature rated value of BT series valve

Based on the listed valve seat material, fluorocarbon FKM, O-ring and PTFE check ring

Valve seat material	PCTFE, nylon	PTFE	PEEK
Temperature °C(°F)	Working pressure MPa(psi)		
-17(0) to 37(100)	42.0(6090)	10.3(1500)	42.0(6090)
121(250)	6.89(1000)	4.3(625)	28.2(4100)
148(300)	-	3.44(500)	22.0(3200)
232(450)	-	0.86(125)	3.44(500)

Based on the listed PEEK valve seat material, fluorocarbon FKM, O-ring and PTFE check ring

Valve seat material	316SS				
End joint	F2, F4, K4, K6mm	K10mm	K6, K8mm	K8	K12mm
Temperature °C(°F)	Working pressure MPa(psi)				
-17(0) to 37(100)	70.0(10150)	57.8(8400)	51.6(7500)	46.1(6700)	45.4(6600)
93(200)	34.4(5000)	34.4(5000)	34.4(5000)	34.4(5000)	34.4(5000)
148(300)	22.0(3200)	22.0(3200)	22.0(3200)	22.0(3200)	22.0(3200)
232(450)	3.44(500)	3.44(500)	3.44(500)	3.44(500)	3.44(500)

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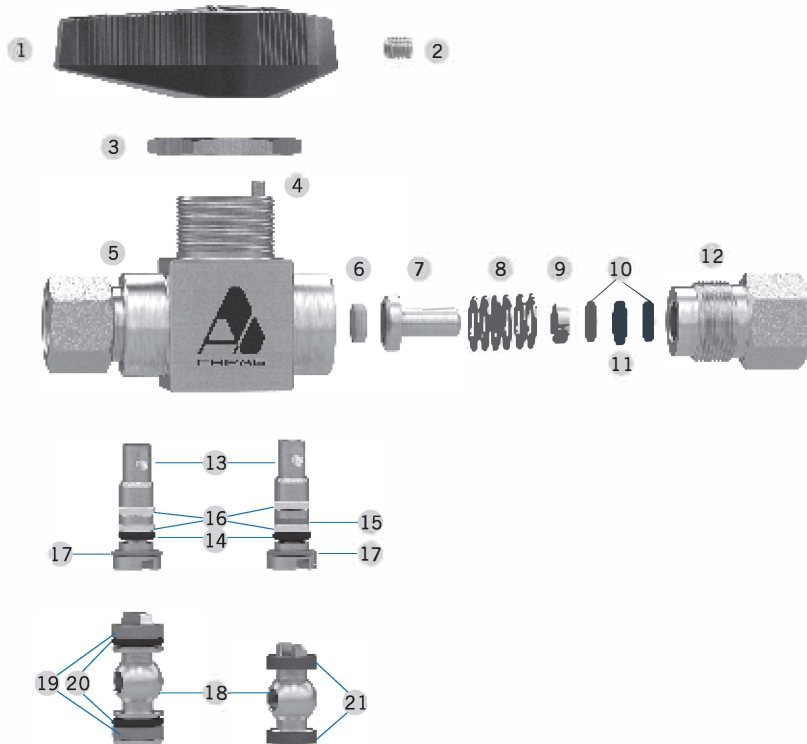
Parts details

BT series

Parts details	Material/ASTM standard	
	Two-way	Three-way
1 Handle	Phenolic resin with brass insertion piece	
2 Set screw	316 SS / A276	
3 Extra-thin nut	316 SS / B783	
4 Shotpin	316 SS / A276	
5 Valve body	316 SS/A479	
6 Valve seat	PCTFE/AMS 3650, PTFE / D1710, Strengthened nylon or PEEK	
7 Valve seat bracket	316 SS / A479	
8 Valve seat spring	Alloy X-750 / AMS 5542	
9 Valve seat bracket guider	316 SS / A276	
10 Valve seat bracket check ring	PTFE / D1710	

Parts details	Material/ASTM standard	
	Two-way	Three-way
11 Valve seat bracket O ring	Fluorocarbon FKM	
12 End joint	316 SS / A479	
13 Valve rod	316 SS / A479	
14 Valve rod O ring	Fluorocarbon FKM	
15 Valve rod support ring	-	PEEK
16 Valve rod check ring	PTFE / D1710	
17 Valve rod bearing	PEEK	
18 Trunnion ball	316SS / A479	
19 Trunnion bearing	PEEK	-
20 Trunnion O-ring	Fluorocarbon FKM	-
21 Trunnion bearing	-	PEEK

Note: Other structural materials can be customized.

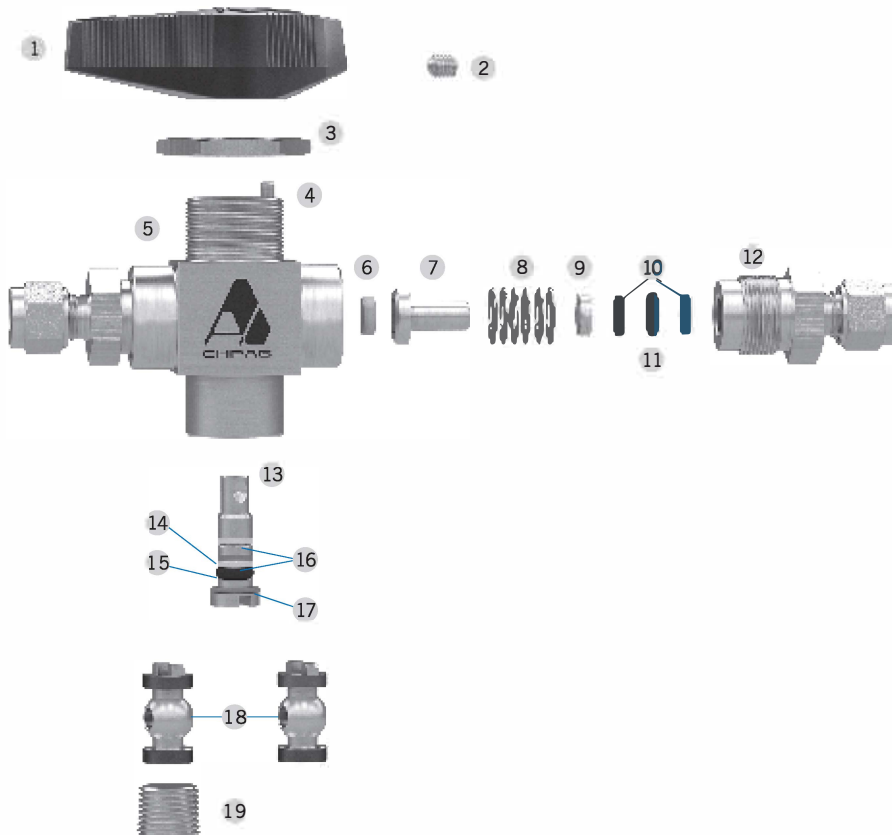


BTH series

Parts details	Material/ASTM standard	
	Two-way	Three-way
1 Handle	Phenolic resin with brass insertion piece	
2 Set screw	316 SS / A276	
3 Extra-thin nut	316 SS / B783	
4 Shotpin	316 SS / A276	
5 Valve body	316 SS / A479	
6 Valve seat	PEEK	
7 Valve seat bracket	316 SS / A479	
8 Valve seat spring	Alloy X-750 / AMS 5542	
9 Valve seat bracket guider	316 SS / A276	
10 Valve seat bracket check ring	PTFE / D1710	

Parts details	Material/ASTM standard	
	Two-way	Three-way
11 Valve seat bracket O ring	Fluorocarbon FKM	
12 End joint	316 SS / A479	
13 Valve rod	316 SS / A479	
14 Valve rod support ring	PEEK	
15 Valve rod O ring	Fluorocarbon FKM	
16 Valve rod check ring	PTFE / D1710	
17 Valve rod bearing	PEEK	
18 Trunnion ball	316 SS / A479	
19 Plug (only used in two-way valve)	316 SS / A479	-

Note: Other structural materials can be customized.



Trunnion ball valve

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Coding rule for item No.

SS
–
BT3
–
E
–
K
6mm

1
2
3
4
5

1	Material type
	SS — 316 stainless steel

2	Trunnion ball valve series
	BT2 — BT series two-way valve
	BT3 — BT series three-way valve
	BTH2 — BTH series two-way valve
	BTH3 — BTH series three-way valve

3	Valve seat material
	E — PCTFE
	N — Strengthened nylon
	T — PTFE
	P — PEEK

4	Connector type
	K — Bite type tube fittings
	F — NPT internal thread

5	connector size
	British system: size value (Unit: in ×16
	For example: 1/2×16=8, 1/2in.NPT internal
	thread is indicated by F8
	Metric system: size value (Unit: mm) + “mm”

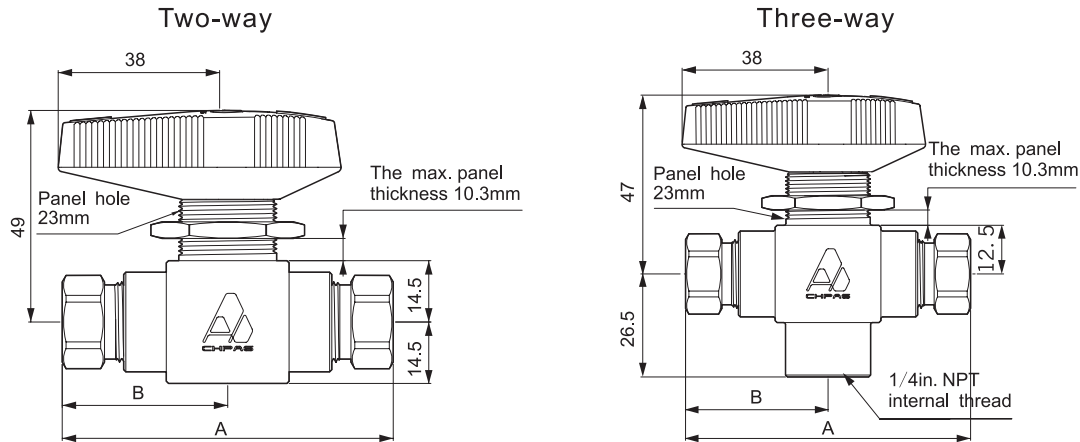
For example: SS - BT3 - E - K6mm

It means BT series three-way trunnion ball valve, whose structural material is 316SS. The valve seat material is PCTFE and the connector type is 6mm bite type tube fittings.

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Order info & size

The displayed sizes are the specifications when screwing up the nuts of bite type tube fitting (The sizes are only for reference.)



Connector		Cv	Item No.		Size (mm)	
Type	Size		BT SERIES ^①	BTH SERIES ^①	A	B
Two-way valve, aperture 4.7mm						
NPT internal thread	1/8in.	1.2	SS-BT2-E-F2	SS-BTH2-P-F2	74.5	37
	1/4in.	1.0	SS-BT2-E-F4	SS-BTH2-P-F4	74.5	37
	1/2in.	1.2	SS-BT2-E-F8	-	108	54
Bite type tube fittings	1/4in.	1.6	SS-BT2-E-K4	SS-BTH2-P-K4	105	52.5
	3/8in.	1.4	SS-BT2-E-K6	SS-BTH2-P-K6	112	56
	1/2in.	1.0	SS-BT2-E-K8	SS-BTH2-P-K8	117	58.5
	6mm	1.6	SS-BT2-E-K6mm	SS-BTH2-P-K6mm	105	52.5
	8mm	1.5	SS-BT2-E-K8mm	SS-BTH2-P-K8mm	105	52.5
	10mm	1.3	SS-BT2-E-K10mm	SS-BTH2-P-K10mm	112	56
	12mm	1.0	SS-BT2-E-K12mm	SS-BTH2-P-K12mm	117	58.5
Three-way valve, aperture 4.7mm ^②						
NPT internal thread	1/8in.	0.75	SS-BT3-E-F2	SS-BTH3-P-F2	74.5	37
	1/4in.		SS-BT3-E-F4	SS-BTH3-P-F4	74.5	37
Bite type tube fittings	1/4in.		SS-BT3-E-K4	SS-BTH3-P-K4	105	52.5
	3/8in.		SS-BT3-E-K6	SS-BTH3-P-K6	112	56
	1/2in.		SS-BT3-E-K8	SS-BTH3-P-K8	117	58.5
	6mm		SS-BT3-E-K6mm	SS-BTH3-P-K6mm	105	52.5
	8mm		SS-BT3-E-K8mm	SS-BTH3-P-K8mm	105	52.5
	10mm		SS-BT3-E-K10mm	SS-BTH3-P-K10mm	112	56
12mm	SS-BT3-E-K12mm		SS-BTH3-P-K12mm	117	58.5	

Note ①: While needing to order the valves of other valve seat materials, please use the corresponding valve seat material to replace E in the item No.

Note ②: The bottom connectors of all the three-way valves are 1/4 in. NPT internal thread.

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