



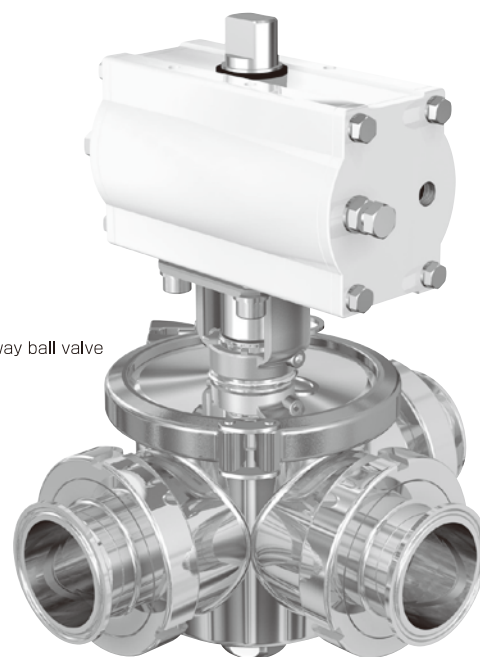
Hygienic
Ball Valves

► Two-way ball valve



Automatic two-way ball valve

► Three-way ball valve

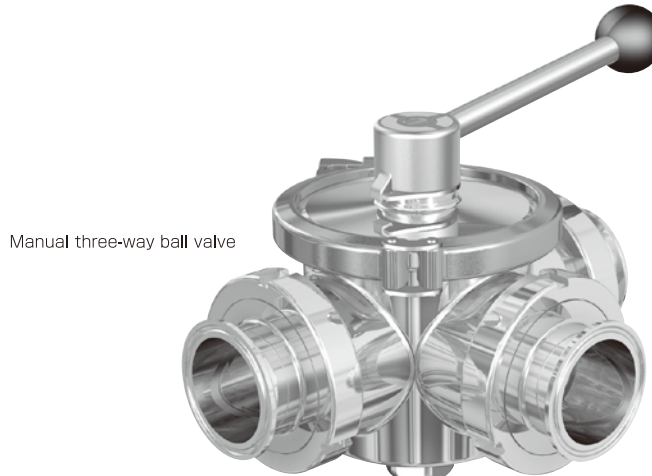


Automatic three-way ball valve

Wide-margin
products one step
ahead of competitors

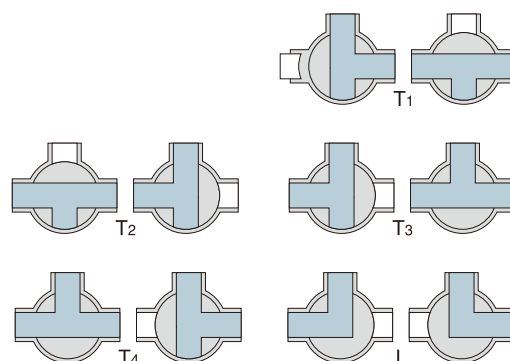
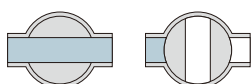


Manual two-way ball valve



Manual three-way ball valve

Flow channel diagram



► Easy to disassemble and assemble

- Use of clamp band for connecting to the valve body allows easy disassembly and assembly.
- The handle operation direction can be changed by 90° depending on the direction of the stopper ring.
- The main parts for manual and automatic type are compatible and changed easily.
- A drain release is provided to prevent a liquid pooling.
- The seat ring is made of PTFE.
- A rotary actuator is used as the air cylinder for automatic operation.

Material

SUS-316L (or equivalent)

Production standard

Surface finish	Internal: #320 to #400 buff polishing finish External: #180 hairline finish (two-way) #320 to #400 buff polishing finish (three-way)
Dimensional tolerance	Surface-to-surface dimension: $\pm 1.5\text{mm}$ Angular tolerance: $\pm 0.5^\circ$
Main body max pressure	1MPa (water pressure, normal temperature)
Valve seat max pressure	0.5MPa (water pressure, normal temperature) 2B/3B type: Leakage amount (0.2ml/min x bore/25.4) or less
Operating air pressure	0.4~0.7MPa
Operating air connection hole	Rc1/8
Heat resistance	100°C

► Valve selection

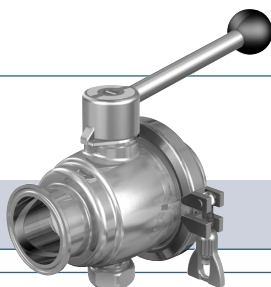
When using our valves, be sure to use them within the respective valve specifications. If valves will be used outside the scope of specifications, a design with higher safety taking into consideration various conditions is required. We would be pleased to offer consultation if you provide us with information.

► Ordering

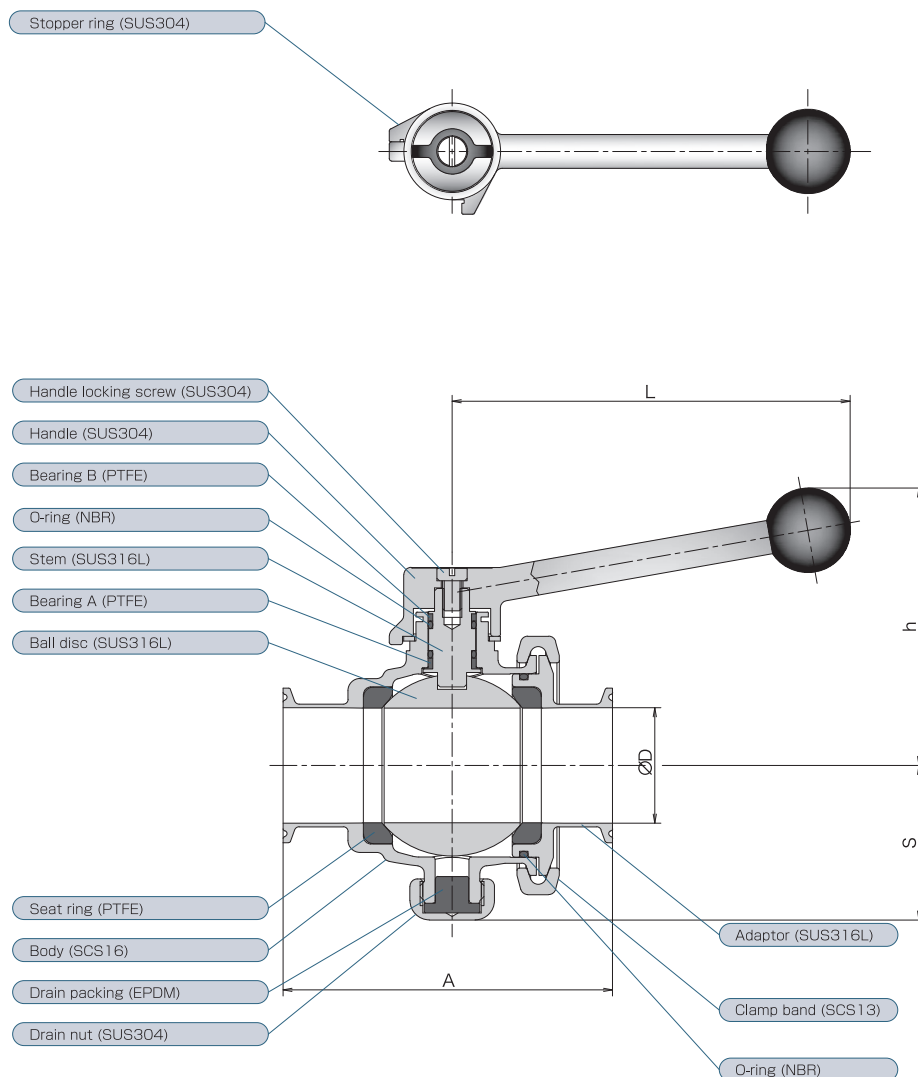
When ordering, inform us of the details by referring to the 6P ball valve type symbol table. If a specific finish roughness is required, specify the finish roughness of the interior and exterior.

Two-way ball valve

● Manual two-way ball valve



● Use this valve as a shut-off valve.

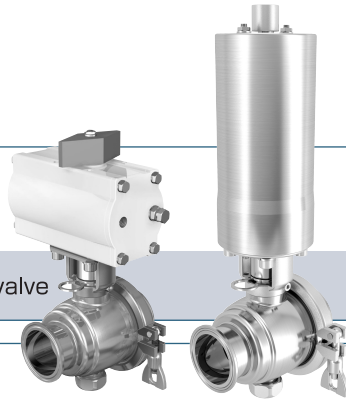


																			(mm)				(kg)			
SIZE	ϕ D	A (Dimension for different joint)					S	Manual		Automatic										Weight						
		M or C Male/clamp	N×M One-side nut	N×N Both-side nut	T Sanitary flange	10F JIS 10KF		h	L	Horizontal aluminum-made					Vertical SUS-made					Manual	Automatic					
										H	C	E	F	G	ϕ J		K				Horizontal aluminum-made	Vertical SUS-made				
															Double-action	Single-action	Double-action	Single-action	Double-action				Single-action			
1	23.0	120	130	140	240	240	51	101	165	188.5	57	75	132	70.4	67.0	91.2	262.3	298	1.9	3.4	3.5	5.9				
1½	35.7	125	135	145	240	240	57	107	165	194.5	57	75	132	70.4	67.0	91.2	268.3	304	2.1	3.7	3.7	6.1				
2	47.8	140	150	160	240	240	65	115	165	211.5	64.5	84.5	149	78.4	91.2	91.2	290.9	312	3.0	4.9	6.3	7.0				
2½	59.5	155	165	175	240	240	79	126	165	222.5	64.5	84.5	149	78.4	117.5	117.5	323.9	345	5.3	7.2	12.4	13.1				
3	72.3	170	180	190	240	240	88	136	165	231.5	64.5	84.5	149	78.4	117.5	117.5	334.4	354.5	7.6	9.5	14.5	15.4				

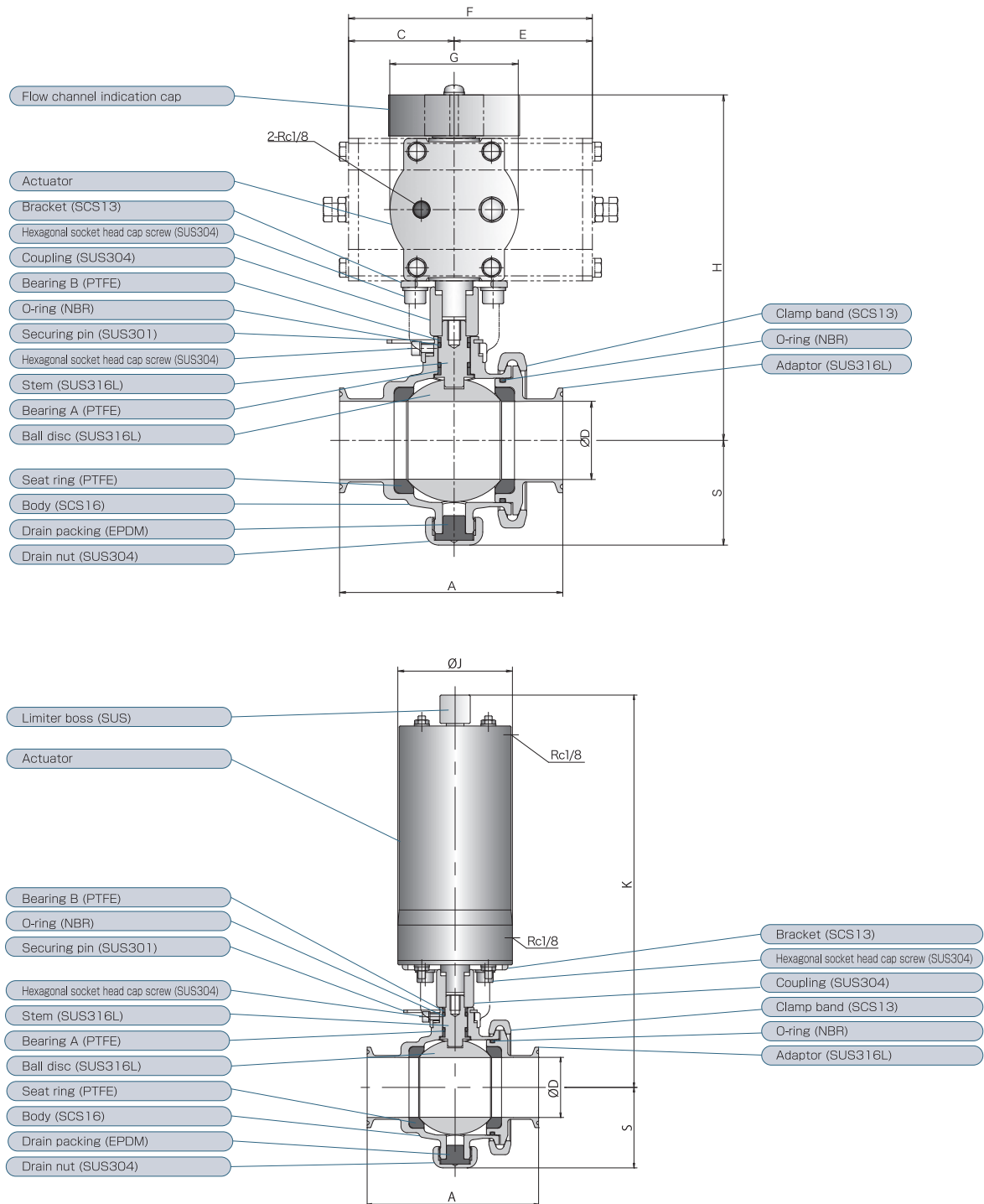
The vertical SUS external single-action actuators of the normally-closed type and the normally-open type are different.

Two-way ball valve

● Automatic two-way ball valve

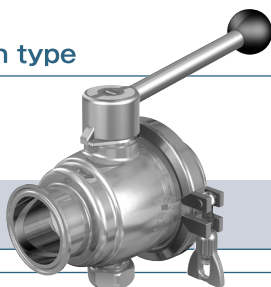


● Use this valve as a shut-off valve.

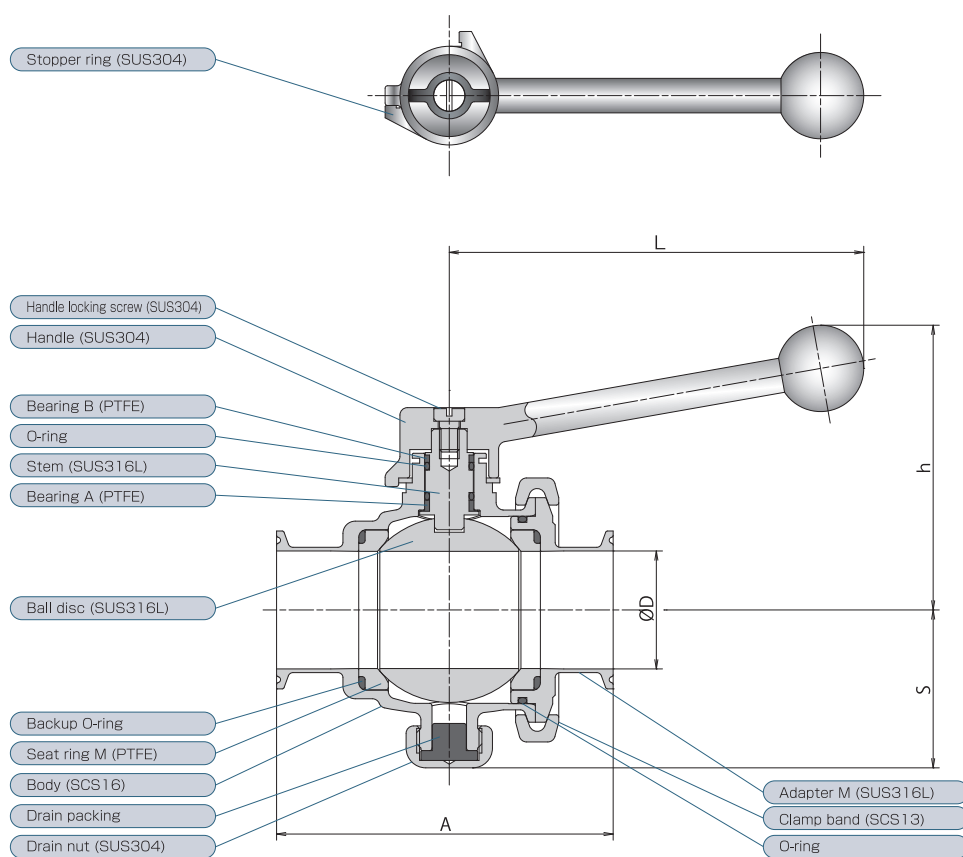


2M type Two-way ball valve metal touch type

● Manual two-way ball valve metal touch type



Metal touch structure eliminates the need for adjustment with a clamp band and reduces the effect on piping. Furthermore, the stable sealing performance can be maintained.

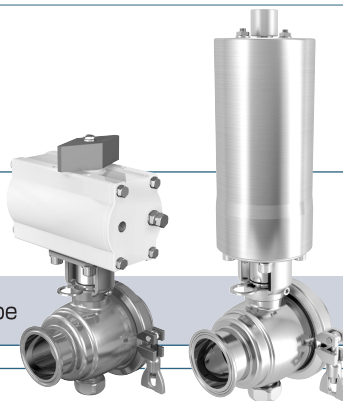


(mm)																			(kg)					
SIZE	ø D	A (Face to face dimension)					S	Manual		Automatic										Weight				
		M or C Male/clamp	N×M One-side nut	N×N Both-side nut	T Sanitary flange	10F JIS 10KF		h	L	Horizontal aluminum actuator					Vertical SUS actuator					Manual	Automatic			
										H	C	E	F	G	ø J		K				Horizontal aluminum actuator	Vertical SUS actuator	Double-action	Single-action
															Double-action	Single-action	Double-action	Single-action						
1	23.0	120	130	140	240	240	51	101	165	188.5	57	75	132	70.4	67.0	91.2	262.3	298	1.9	3.4	3.5	5.9		
1½	35.7	125	135	145	240	240	57	107	165	194.5	57	75	132	70.4	67.0	91.2	268.3	304	2.1	3.7	3.7	6.1		
2	47.8	140	150	160	240	240	65	115	165	211.5	64.5	84.5	149	78.4	91.2	91.2	290.9	312	3.0	4.9	6.3	7.0		
2½	59.5	155	165	175	240	240	79	126	165	222.5	64.5	84.5	149	78.4	117.5	117.5	323.9	345	5.3	7.2	12.4	13.1		
3	72.3	170	180	190	240	240	88	136	165	231.5	64.5	84.5	149	78.4	117.5	117.5	334.4	354.5	7.6	9.5	14.5	15.4		
4	97.6	230	240	250	300	300	109	157	165	267	73.5	93.5	167	88.4	117.5	117.5	351.5	393.5	16.5	19.0	21.5	23.0		

The vertical single action SUS actuators of the normally closed type and normally open type are different each action.

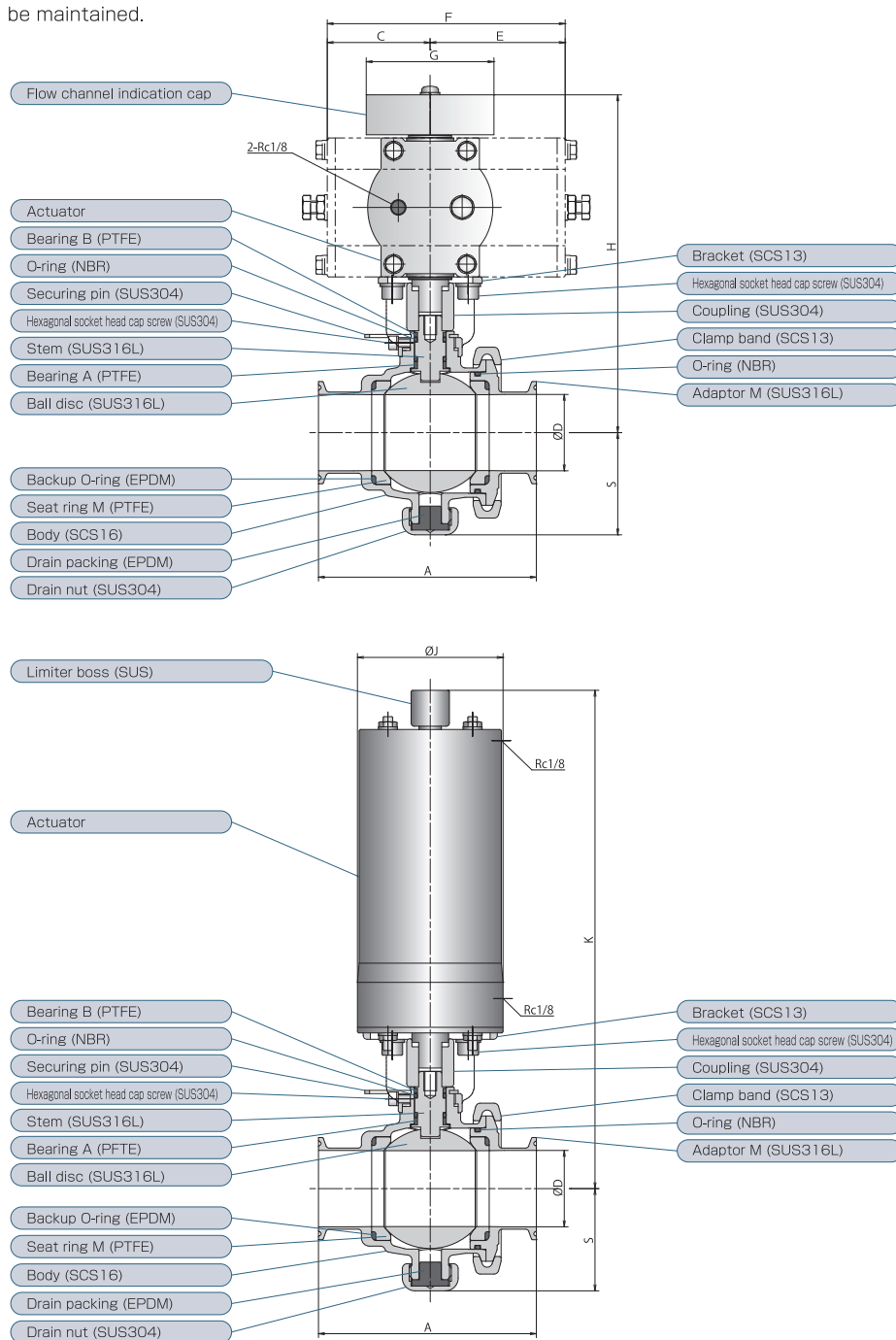
Two-way ball valve metal touch type

● Automatic two-way ball valve metal-touch type



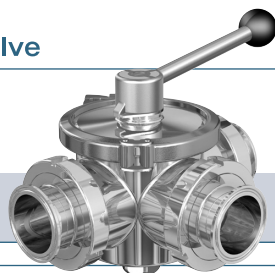
Adjustment of clamp band does not need for metal-touch assembly. Furthermore, the stable sealing performance can be maintained.

● Use this valve as a shut off valve.

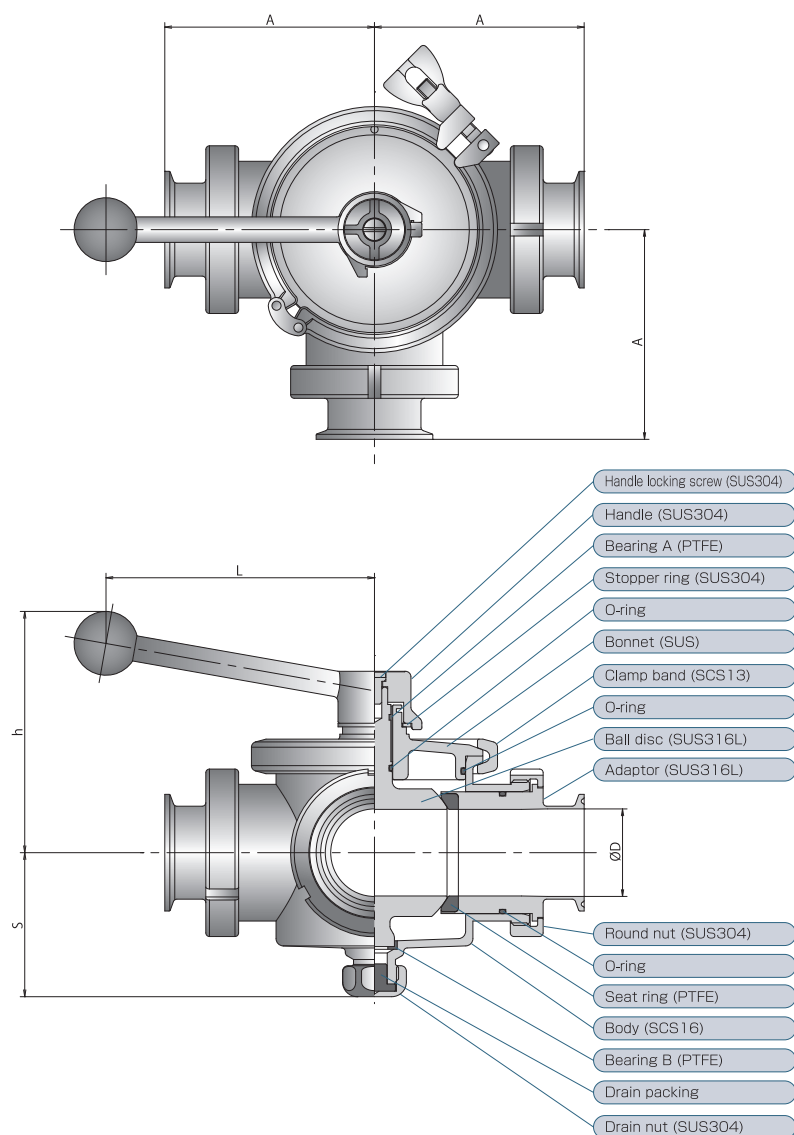


3B type Three-way ball valve

● Manual three-way ball valve



● Use this valve as flow change valve.

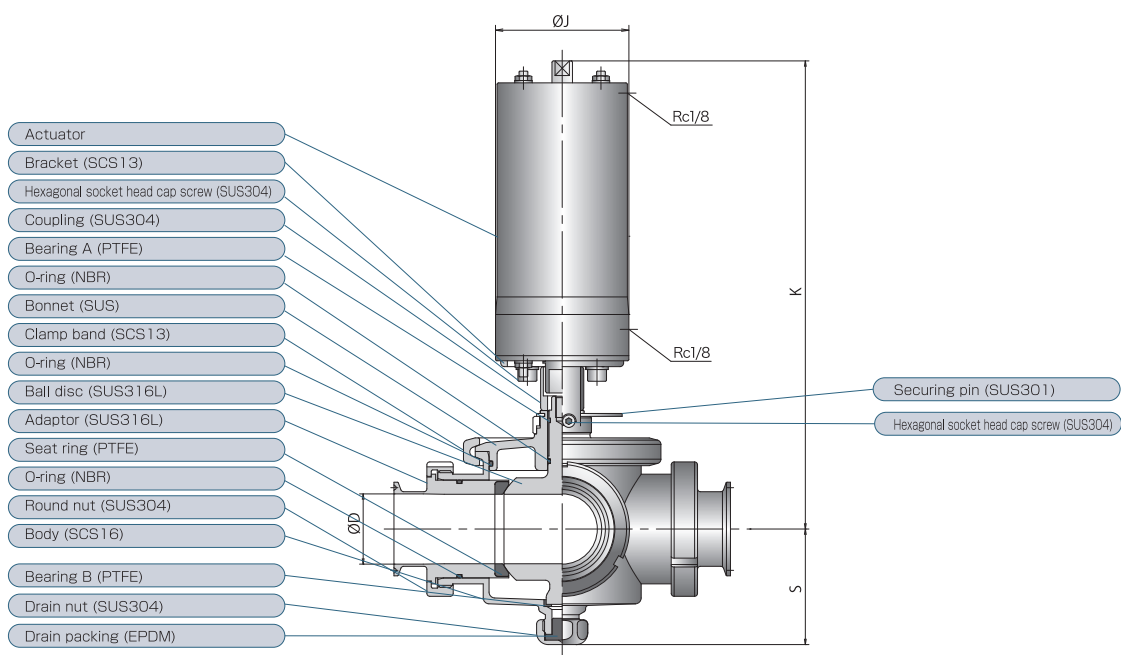
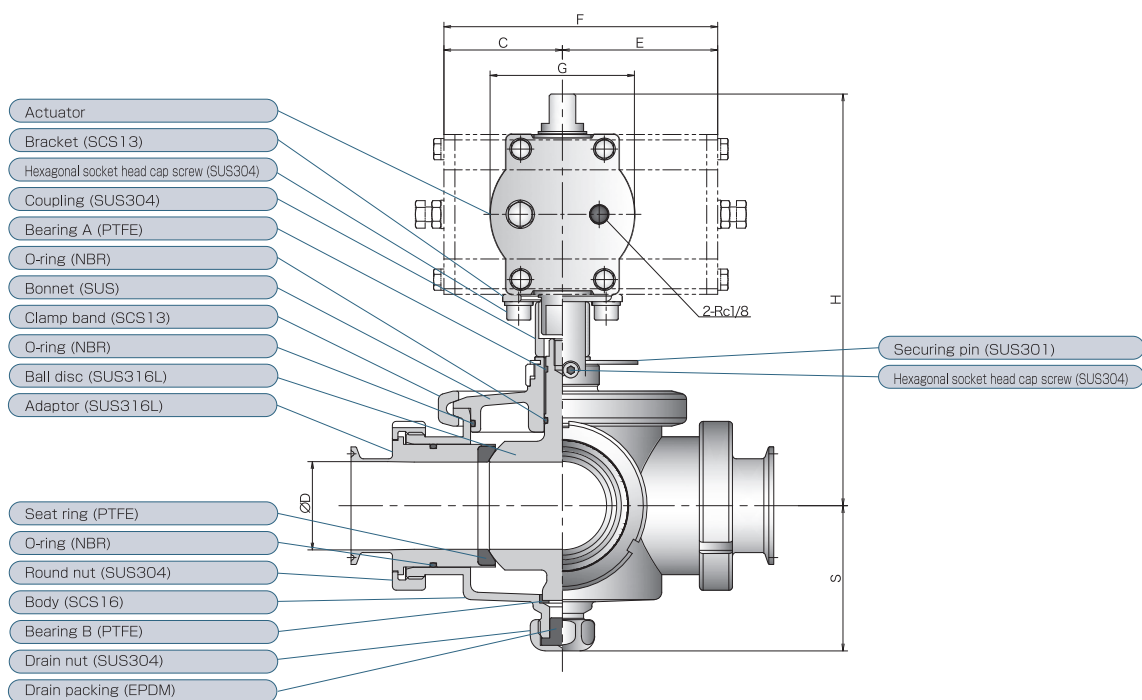
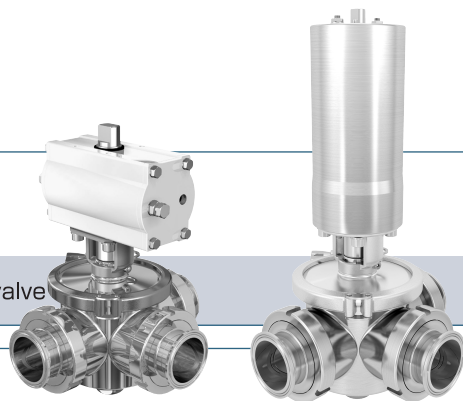


(mm)																		(kg)			
SIZE	ϕ D	A (Face to face dimension)				S	Manual		Automatic								Weight				
		M or C Male/clamp	N Nut	T Sanitary flange	10F JIS 10KF		h	L	Horizontal aluminum actuator					Vertical SUS actuator			Manual	Automatic			
									H	C	E	F	G	ϕ J		K		Horizontal aluminum actuator	Vertical SUS actuator	Double-action	Single-action
														Double-action	Single-action	Double-action					
1	23.0	100	110	135	135	67	128	165	230.0	64.5	84.5	149	78.4	91.2	91.2	303.9	325.0	6.4	8.3	10.0	10.7
1½	35.7	105	115	140	140	67	128	165	230.0	64.5	84.5	149	78.4	91.2	91.2	303.9	325.0	5.6	7.6	9.4	10.1
2	47.8	115	125	150	150	80	133	165	234.5	64.5	84.5	149	78.4	91.2	91.2	308.4	329.5	8.4	10.3	11.6	12.3
2½	59.5	130	140	155	155	95	151	165	266.3	73.5	93.5	167	88.4	117.5	117.5	348.4	387.5	12.3	14.6	19.0	19.5
3	72.3	150	160	175	175	104	169	165	284.5	73.5	93.5	167	88.4	117.5	117.5	366.4	405.5	18.7	21.3	25.7	26.2

The vertical single action SUS actuators of the normally closed type and normally open type are different each action.

Three-way ball valve

● Automatic three-way ball valve

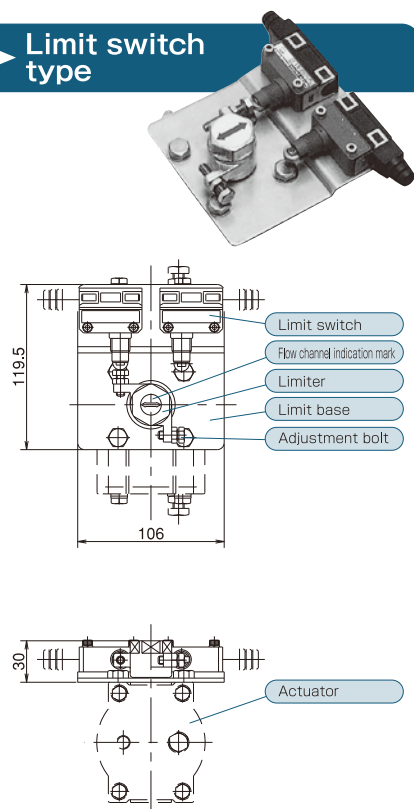


Option

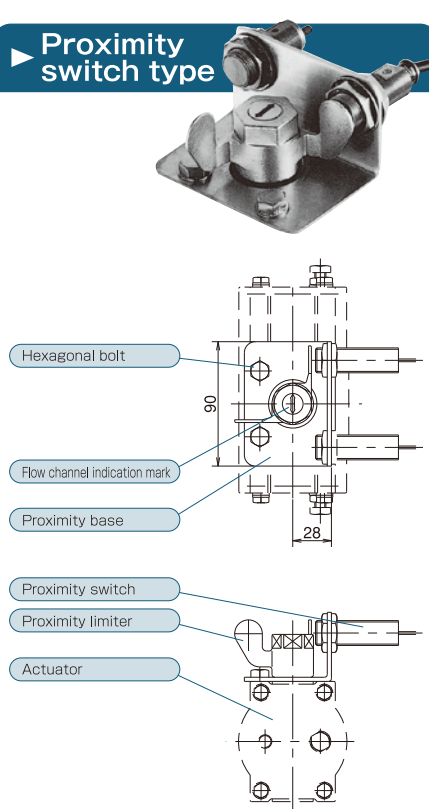
► Feedback switch assembly

► Converting an existing 2B type into metal-touch type

► Limit switch type

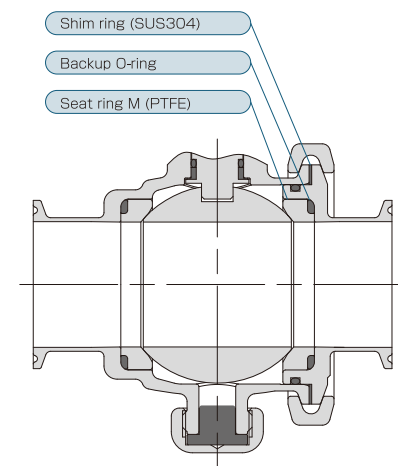


► Proximity switch type



► Shim ring type

It is possible to convert an existing 2B type into a metal-touch type without replacing the adaptor.



Technical material

► Cautions when mounting a ball valve

- For the ball valve, be sure to support the pipes before and after the valve main body and prevent heat thermal expansion of the pipes. If that process is insufficient, so it may cause the seat to be deformed, resulting in leakage.

► List of consumable parts

Type	Two-way ball valve							Three-way ball valve						
Part name SIZE	Stem O-ring	Adaptor O-ring	Backup O-ring for 2M type	2B Ball seat 2M Ball seat M	Bearing A	Bearing B	Drain packing	Stem O-ring	Adaptor O-ring	Bonnet O-ring	Seat ring	Bearing A	Bearing B	Drain packing
1	P-16	G-45	P-34	10	10-30	10-30	10-30	P-16	G-50	G-70	10	10-15	10-15	10-30
1 1/2	P-16	G-55	P-44	15	10-30	10-30	10-30	P-16	G-50	G-70	15	10-15	10-15	10-30
2	P-16	G-70	AS568-228	20	10-30	10-30	10-30	P-16	G-60	G-95	20	20-30	20	10-30
2 1/2	P-16	G-95	AS568-235	25	10-30	10-30	10-30	P-16	G-75	G-115	25	20-30	25-30	10-30
3	P-16	G-110	AS568-239	30	10-30	10-30	10-30	P-16	G-90	G-140	30	20-30	25-30	10-30
4	P-16	AS568-258	AS568-247	40	10-30	10-30	10-30	—	—	—	—	—	—	—
Required quantity (per 1 unit)	2	1	2	2	1	1	1	1	3	1	3	1	1	1

Lubricant application specifications

Application specifications	Application range	Note
Standard	Rotary seal part Stationary seal part	—
Wetted surface lubrication prohibited area	No application	Be sure to make the sliding packing area smooth with fresh water, etc.
Lubricant	NOK Kluber PARALIQ GTE 703*1 (NSF category H1)	

Section for entry of special notes

- If using nonstandard specification except for lubricant application specifications, please designate them.
- If the specification is not specified, lubricant is applied as standard.
- Safety of lubricant to be applied :
 - NSF category H1
 - Conforming to the Food Sanitation Law

*1 Conforming to the Food Sanitation Law

Sanitary ball valve type symbol table

Name	JIS material classification	Finish classification	Pipe end classification	Size classification	Product name/type
Symbol	3 1 6 L	0 P · 2 P	M · C · W	X X	
	①	②	③	④	⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬

① Material classification (main body)

Category	Symbol	Material
Standard	316L	SUS 316L (or equivalent)

② Surface finish (main body)

Category	Symbol	Finish	
		Internal finish	External finish
Standard	0P	Pickling	Pickling or beads shot blast
	2P	#320 to #400 buff polishing	#180 Hairline
Option	ODP	Pickling	#180 Hairline
	EP(2P)	Electrolytic polishing	#180 Hairline
	EP(PN)	(PN) : Hardening treatment Ball seat material is Glass-filled PTFE	

③ Connection

Category	Symbol	Details
Standard	M	ISO male on both ends
	C	ISO clamp on both ends
Option	W	Weld
	N	ISO nut
	T	Sanitary flange (fixed)
	10F	JIS 10K flange
Special	X	—

④ Size classification

Symbol	Details
10	1S
15	1 1/2S
20	2S
25	2 1/2S
30	3S
40	4S

⑤ Valve type

Symbol	Details
2B	Two-way ball valve
2M	Two-way ball valve metal-touch type
3B	Three-way ball valve
(Note) 4S : 2M only	

⑥ Valve operation

Symbol	Details
A	Standard automatic (double-action)
M	Standard manual
C	Automatic spring return (NC)
O	Automatic spring return (NO)

⑦ Seat ring material

Category	Symbol	Material
Standard	T	PTFE
Option	G	Glass-filled PTFE
Special	X	—
(Note) 4S : T only		

⑧ O-ring material

Category	Symbol	Details
Standard	N	Nitrile rubber *1
	E	EPDM
	S	Silicone rubber
	V	Fluororubber
*1 : 2B, 3B : Selectable 2M : E.S.V only		

⑨ Horizontal aluminum torque actuator type

Symbol	Details	Applicable size	
		Two-way ball valve	Three-way ball valve
T20	T200 torque actuator	For 1S to 1.5S	—
T35	T350 torque actuator	For 2S to 3S	For 1S to 2S
T60	T600 torque actuator	For 4S	For 2.5S to 3S

⑨ Vertical SUS torque actuator type

Symbol	Details	Applicable size			
		Two-way ball valve		Three-way ball valve	
		Double-action	Single-action	Double-action	Single-action
V06	V06 torque actuator	For 1S to 1.5S	—	—	—
V08	V08 torque actuator	For 2S	For 1S to 2S	For 1S to 2S	For 1S to 2S
V11	V11 torque actuator	For 2.5S to 4S	For 2.5S to 4S	For 2.5S to 3S	For 2.5S to 3S

⑩ Feedback switches classification

Category	Symbol	Type/manufacturer	Usable power voltage range	Operation style	Type or attachment
Standard	0	No feedback switch	—	—	—
	S	SLI-AXG5 Limit switch made by Azbil	DC 14~250V AC125~250V	—	NO/NC
	W	WLD-2 Limit switch made by OMRON	DC 8~250V AC125~600V	—	NO/NC
	J	IGC2005-ARKG/UP Proximity switch made by Efecter	DC10~36V	100mA	NO NPN/PNP
	U	FL7M-7J6HD Proximity switch made by Azbil	DC10~30V	100mA	NO
	R	FL7M-7K6H Proximity switch made by Azbil	DC10~30V	100mA	NC
Special	L	Non-standard specification limit switch and/or supplied by customer.			
	P	Non-standard specification proximity switch and/or supplied by customer.			
	B	In case of Asi, uni-wire system, and solenoid valve : For the detail, please refer to catalog No.18 "Valve control head".			

(Note) In case of model change by switch manufacturer, the above parts may be changed to substitution or equivalent parts. Please select a standard model as much as possible.

⑪ Quantity of feedback switches used

Symbol	Details
0	No switch
1	One on closed side
2	Two on open and closed side
3	One on open side

⑫ Options

Symbol	Details
0	None
S	With 2 speed controllers
X	Other

⑬ Flow channel pattern (For three-way type only)

Symbol	Details
1	T1 port
2	T2 port
3	T3 port
4	T4 port
L	L port



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