

# **ROCKY-ICHIMARU**

Tire Curing Press Valves



## 2/3-way Piston Valves TPC Series

These piston valves use a single spring-return air cylinder to drive pneumatic pressure, and are offered as 2-way valves for open-close functions and 3-way valves for path switching functions. 2-way valves can be provided in two types: Normally Open (NO) where the port 1-2 path is open when the air supply is off, and Normally Closed (NC) where the port 1-2 path is closed when the air supply is off. For 3-way valves, the port 1-2 path is closed and the port 2-3 path open when the air supply is off, and the port 1-2 path is open and the port 2-3 path closed when the air supply is on.

A long-term high-quality seal is maintained under the high temperature, high pressure environment of a tire curing press by specifying the use of a specialized fiber (carbon fiber PTFE) for the stem which connects to the valve seat of the valve body. They are also designed to allow easy maintenance, such as disassembly and assembly for parts replacement. The valves are for use in the internal or external pressure systems, water hydraulic systems and air systems of tire curing presses.

### Main Specifications

Fluid	Steam, N2 Gas, Air, Hot&Cold Water	
Maximum Working Pressure	3.2MPa*1	
Maximum Working Temperature	205° C (specialized option 240° C)	
Operating Air Pressure	0.25 to 0.35MPa	
End Connection	Pilot Port	Rc1/4, NPT1/4, G1/4
	Ports 1, 2 & 3	Threaded End (Rc, NPT)
		Flanged End (JIS 20K, ASME Class 300, DIN PN40)
Material of main parts *2	Body:	SCS13
	Flange:	SUS304 or S25C
	Lower Seat Flange:	SCS13 or S25C with SUS304 build-up welded valve seat
	Stem:	SUS403 with hard chrome plating

\*1. The maximum working pressure is limited for each port. See page 23 for details.

\*2. See valve assembly drawings for details.



## Features

Features of TPC valves are as follows (Figure 2).

### ① Simple assembly

Care has been taken on every detail to enable simple assembly, such as the bayonet-type cylinder attachment, the tension bolt which does not require a specialized jig, or the use of locknuts to fix the disc.

### Pilot air supply port

(Air pressure :  
0.25~0.35MPa)

### ② Long life cylinder

The cylinder uses an original designed PTFE seal (\*) with springs, giving excellent heat resistance and long life without air lubrication devices.

\*TPC(NO)-DN50 uses an O-ring (FKM).

### Air controlled actuator (Single-acting cylinder type)

### ③ Specialized long-term leak free gland structure

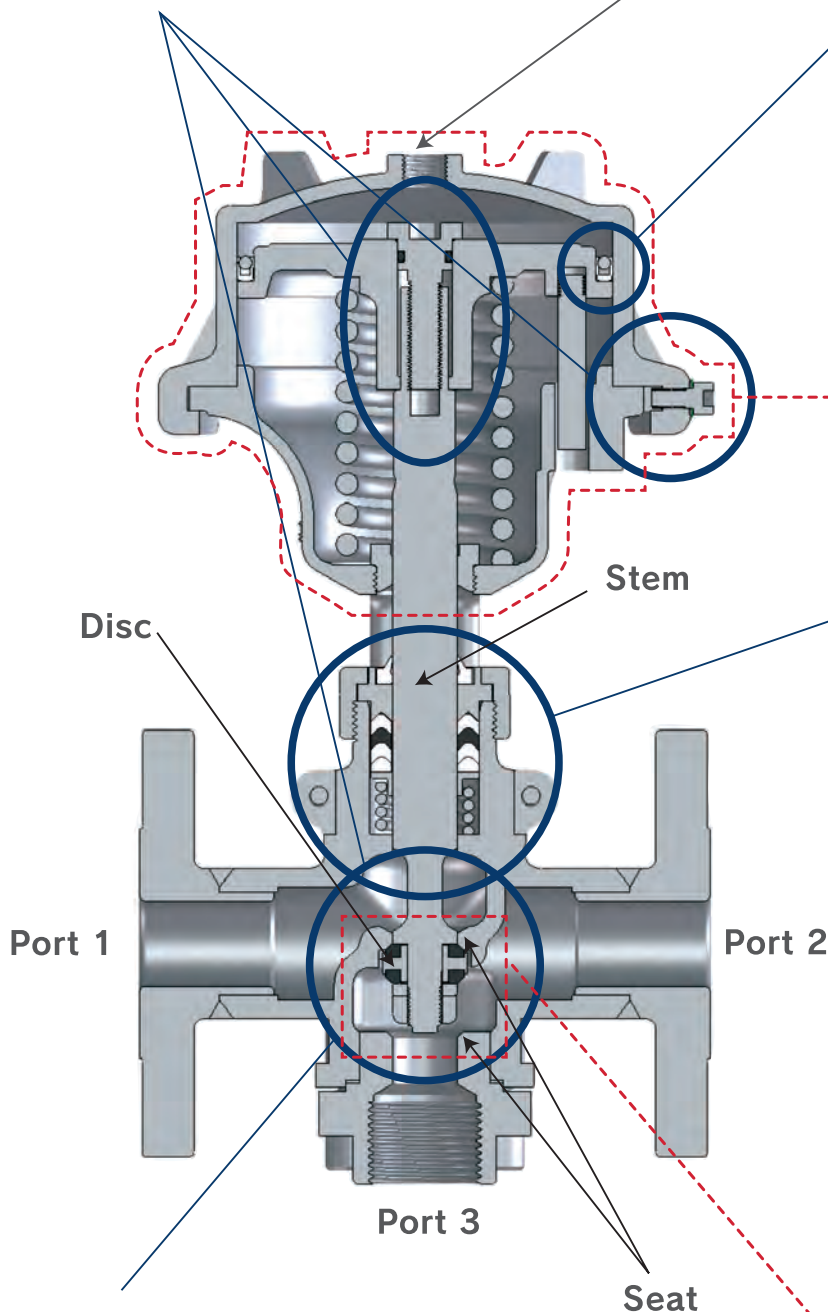
The gland packing comprises 2 pcs. of PTFE V-packing and 1 pcs. of carbon graphite reinforced PTFE V-packing which has medium-term wear resistance. The gland packing is also automatically tightened using the coil spring below, meaning the gland will not require additional tightening to maintain long term leakage free condition.

Moreover, dust seal is provided above and a ring washer below the gland packing to prevent foreign particles reaching the gland packing there by extending its lifespan.

### ④ Outstanding seal performance

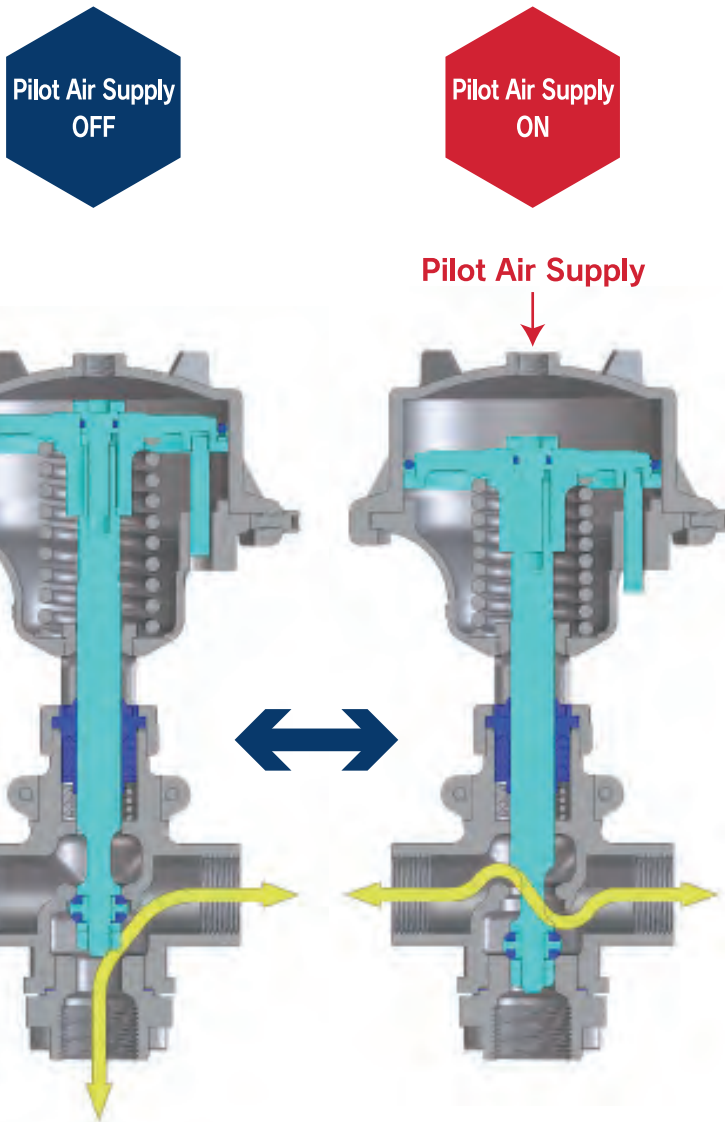
The valve seal uses high compression strength carbon fiber reinforced PTFE, enabling a high-quality seal to be maintained when used with high temperature and pressure fluids.

### Fluid path switching portion



The relationship between the path and the air supply status is shown below for a typical valve model.

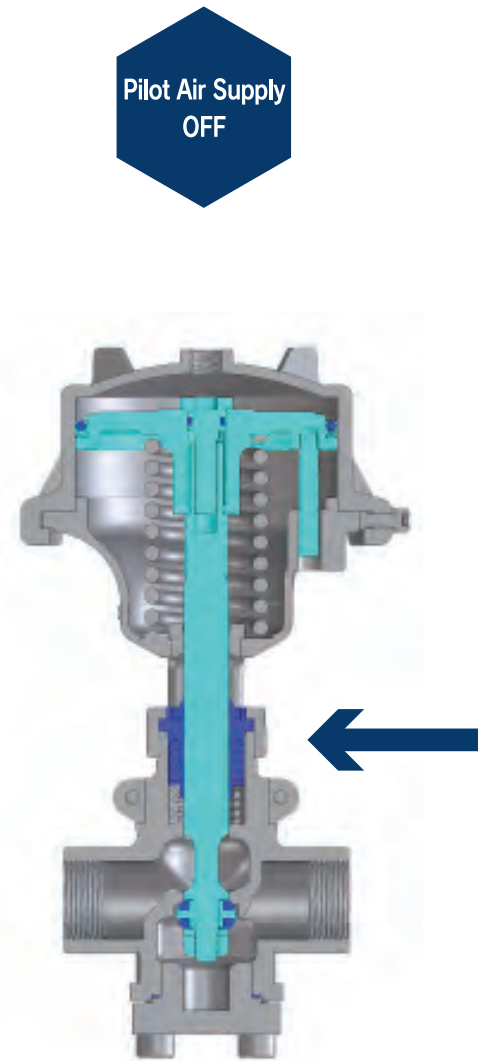
## 3-way valve (e.g. TPC2311)



The stem which is coupled to the piston is pushed upwards by the power of the spring so that a barrier forms between ports 1 and 2. In this state, ports 2 and 3 connect.

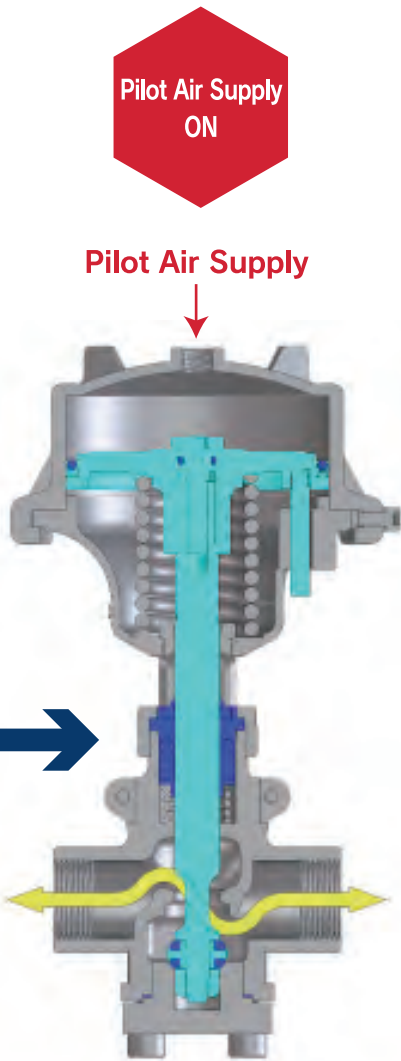
The stem which is coupled to the piston is pushed downwards by air pressure resisting against the power of the spring so that a barrier forms between ports 2 and 3. In this state, ports 1 and 2 connect.

## 2-way valve



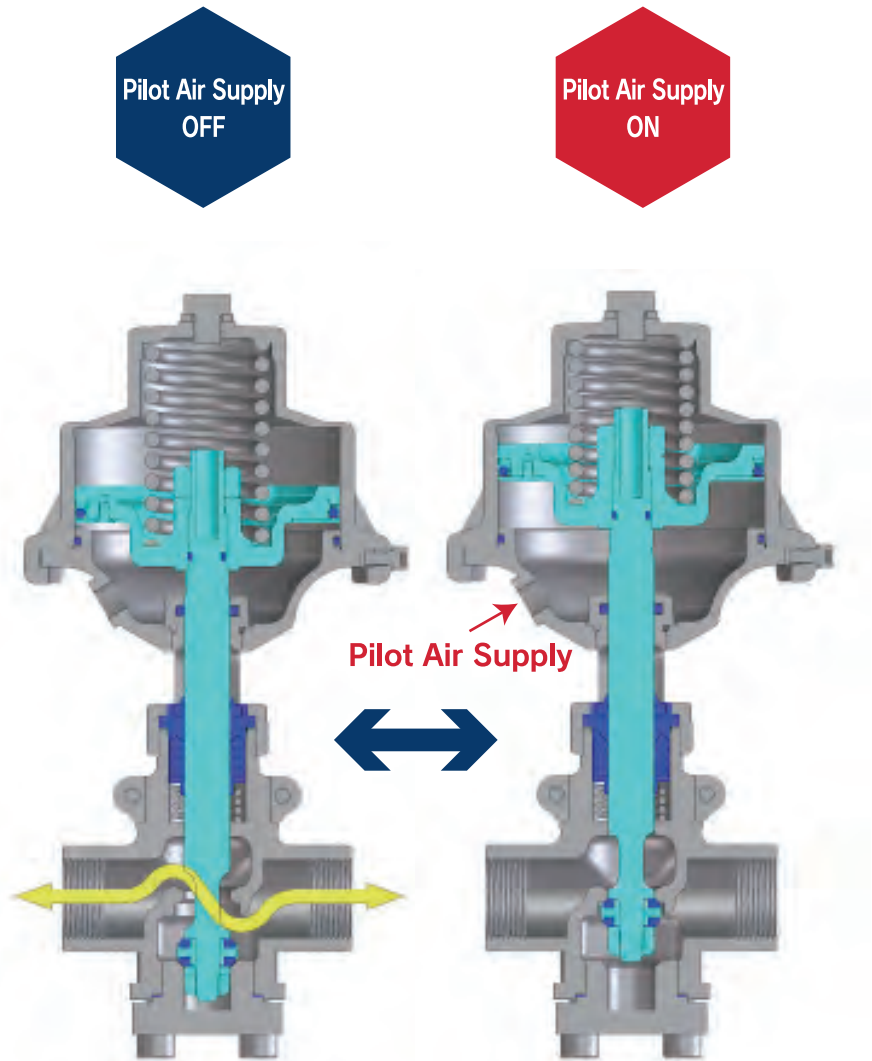
The stem which is coupled to the piston is pushed upwards by the power of the spring so that a barrier forms between ports 1 and 2.

## NC (e.g. TPC2211-□□C)






The stem which is coupled to the piston is pushed downwards by air pressure resisting against the power of the spring so that ports 1 and 2 connect.

## 2-way valve NO (e.g. TPC2221-□□C)



The stem which is coupled to the piston is pushed downwards by the power of the spring so that ports 1 and 2 connect.

The stem which is coupled to the piston is pushed upwards by air pressure resisting against the power of the spring so that a barrier forms between ports 1 and 2.

		<b>3-way Valves</b>			
Appearance	<b>DN8~DN40</b>			<b>DN8~DN40</b>	
					
Model Number		TPC2311-□□	TPC2312-□□	TPC2313-□□	TPC2211-□□C
End Connection	Ports 1 & 2	Threaded	Flanged	Flanged	Threaded
	Port 3	Threaded	Threaded	Flanged	Lower Cover
Appearance	<b>DN50~DN80</b>			<b>DN50~DN80</b>	
					
Model Number			TPC1312-□□	TPC1313-50□	
End Connection	Ports 1 & 2		Flanged	Flanged	
	Port 3		Threaded	Flanged	

\*Please contact us for a model where the path reverses when the air supply is switched on and off (TPC2321, TPC2322, TPC1322).

## 2-way Valves Normally Closed (NC)

## 2-way Valves Normally Open (NO)



DN8~DN40



TPC2211-□□T	TPC2212-□□C	TPC2212-□□T	TPC2221-□□C	TPC2222-□□C
Threaded	Flanged	Flanged	Threaded	Flanged
Plugged Lower Seat Flange	Lower Cover	Plugged Lower Seat Flange	Lower Cover	Lower Cover

DN50



	TPC1212-□□C	TPC1212-□□T		TPC1222-50□C
	Flanged	Flanged		Flanged
	Lower Cover	Plugged Lower Seat Flange		Lower Cover

\*There are two types of 2-way valve, due to the 3-port specification.

- With a cover with no connection to port 3 (lower cover)  
This design has no screw hole, helping to prevent gas leaks
- With a plug in the connection to port 3 (lower seat flange)  
Removing the plug allows access to port 3

\*Contact us about 2-way NO valves with port 3 plugged and a lower seat flange (TPC2221-□□T, TPC2222-□□T, TPC1222-50□T).

## Product Coding

TPC 

N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11
2	2	1	2	25	J	P	X	Y	T	Z10

Symbol	Meaning of symbol	Code	Meaning of code	Remarks
N1	Model	1	1st Model	1st Model ... DN50~DN80
		2	2nd Model	2nd Generation ... DN8~DN40 * Cylinder and yoke stand fixing method differs (see note on port sizes).
N2	Number of Ports	2	2-way type	Lower Cover: "C" is used in N10. Lower Seat Flange + Plug: "T" is used in N10.
		3	3-way type	
N3	Function	1	2-way Normally Closed (NC) or 3-way	
		2	2-way Normally Open (NO)	
N4	End Connection	1	Ports 1 & 2: Threaded	For 3-way valves, port 3 is threaded.
		2	Ports 1 & 2: Flanged	
		3	Ports 1, 2 & 3: Flanged	Only for 3-way type with nominal sizes DN 15 to 50
N5	Nominal Size	08	DN8	2nd Model: Cylinder attached to yoke stand using bayonet system
		10	DN10	
		15	DN15	
		20	DN20	
		25	DN25	
		32	DN32	
		40	DN40	1st Model: Cylinder attached to yoke stand using bolt
		50	DN50	
		65	DN65	
N6	End connection Flange Type	Nil	-	No code is specified if all connections are threaded end (if N4 is "1").
		J	JIS 20K	Indicates the specification of the flanged end.
		A	ASME Class 300	
		D	DIN PN40	
N7	End connection Body Port/ Pilot Port Thread Type	P	Rc / Rc	Indicates connection / pilot port is threaded. For "B", the connection is a flange or Rc type and pilot port is a G type. Thread size on pilot port is 1/4 inch (Rc1/4, NPT1/4, G1/4).
		N	NPT / NPT	
		B	Rc / G	
N8	Lower Seat Flange/ Lower Cover Material (Port 3)	Nil	Lower Seat Flange Steel (S25C)	Selectable only when 3 ports of nominal sizes DN15 to 40 are flanged (N4: "3") or when nominal sizes DN50 to 80 are flanged. Valve seat material is SUS304.
		X	Lower Cover Steel (S25C)	Only nominal sizes DN50 to 80 are available for selection.
			Lower Seat Flange SUS304	
N9	End connection Flange Material (Ports 1 & 2)	Nil	Steel (S25C)	
		Y	SUS304	



Symbol	Meaning of symbol	Code	Meaning of code	Remarks
N10	2-way type Port 3 Specification	Nil	-	No code is used for 3-way type.
		C	Lower Cover	A cover without a pipe connection is attached to the 3-port section. Basically, the material is SUS304, but steel (S25C) is also available for DN50 to 80. Example 1. TPC2212-25JPXC: Lower Cover Material SUS304 Example 2. TPC1212-50JPC: Lower Cover Material Steel (S25C)
		T	Plugged Lower Seat Flange	A plug is attached to the pipe connection (threaded type) of the 3-port section. The material of the plug is the same as the material of the lower seat flange. Please specify the material of the lower seat flange with N8. Example: TPC2212-25JPXT Plug material: SUS304 Please refer to the following examples of specialized specifications.
N11	Specialized Code	Z□□	Specialized Specification	Bespoke code (e.g. Z1) is used for specialized options.

### Specialized Specifications (Example)

• Change the plug material of the lower seat flange with plug for DN8 to DN40 to steel (specialized code: Z69)

Example: TPC2212-25JPXTZ69 Lower seat flange material: SUS304 + plug material: steel

• Measures to extend the life of leakage from the gland (Specialized Codes: Z13, Z14, Z49, Z51)

This is a special specification to extend the life of leakage from the gland in valves that open and close in cycles of several seconds or in long-term use environments. • Valve open sensor (Specialized Code: Z39)

A sensor is provided to detect a pin gauge which protrudes when the valve (NC) is open.

• Limit switch (Specialized Codes: Z24 (Normal), Z25 (Anti-shattering spec) A limit switch is provided to check whether the valve is on or off.

• Handling of a maximum spec pressure of 2.8MPa in a size DN40, DN50 2-way valve NO (Specialized Code: Z50) See p23 for details.

• Handling of high temperature fluids exceeding standard maximum usage temperature (Specialized Codes: Z10, Z54)

Gland packing is capable of handling high temperatures up to 240° C. See p23 for details.

• High Pressure Gas certification (Specialized Codes: Z11, Z12) • CRN compliance (Specialized Code: Z98)

### Warnings

• If the lower seat flange with plug is used in a high-temperature, high-pressure environment, leakage may occur from plug mounting area. In this case, please retighten the plug or rewrap the sealing tape. To avoid leakage, please select Lower Cover type which does not have plug mounting area.

• If a flanged valve is installed on the exhaust side of the internal line of the tire curing press, stainless steel is recommended as the flange material. If a flange made of steel is selected, water droplets from condensate are carried at high speed and erode the inside of the steel flange, causing "droplet impact erosion", which may lead to leakage from the flange.

• To maintain a high-quality seal the operating air pressure should be regulated to a standard of 0.3MPa (\*). Abnormally high operating air pressure may cause damage to the valve's soft seat and not only lead to early leaks of the valve seat but also risks damage to the valve element. Abnormally low operating air pressure may not provide sufficient pressure to seal the soft seat and may cause internal leaks.

• The valve body is embossed with markings (Fig. 4). When installing piping on-site, be sure to check the schematics carefully so as not to mix up the connection ports. • A jig (available separately) is required to remove and attach the 2-way valve NO cylinder.

\* Check page 23 when routing a high supply pressure to port 3, and use an appropriate operating air pressure.



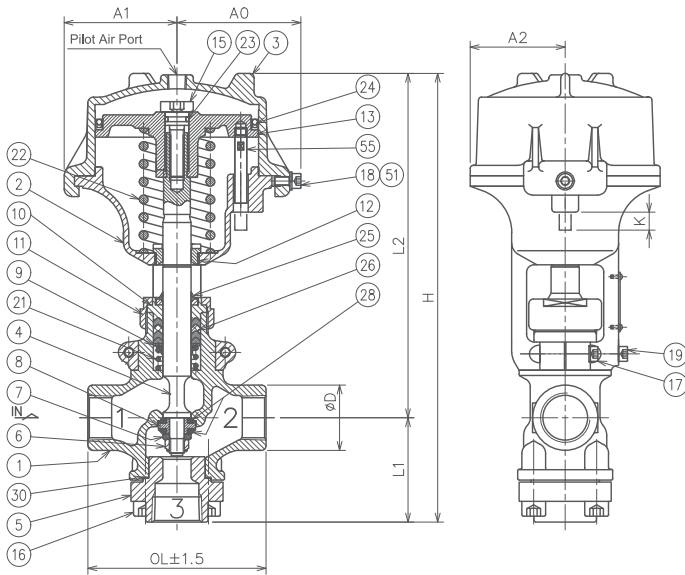
Image 4. Embossed markings on valve body (port numbers)

### 3-way Valve

TPC2311-□□

Ports 1,2&3

Threaded



☆:Recommended Spare Parts

55	Pin Gauge
51	Spring Lock Washer
30	Lower Seat Gasket
☆	28 Disc Ring
☆	26 Gland Packing
☆	25 Dust Seal
☆	24 Piston Ring
☆	23 O-Ring
22	Spring
21	Packing Spring
19	Socket Cap Screw
18	Socket Cap Screw
17	Socket Cap Screw
16	Socket Cap Screw
15	Tension Bolt
13	Piston
12	Guide Bush
11	Gland Nut
10	Gland
9	Ring Washer
8	Disc Adapter
7	Guide Washer
6	Lock Nut
5	Lower Seat Flange
4	Stem
3	Cylinder
2	Yoke Stand
1	Body

Nominal Size		Dimensions (mm)										Weight (kg)
mm	inch	φD	OL	L1	L2	H	A0	A1	A2	K		
8	1/4	30	85	48.5	163.5	212	59	53	42	6	2.7	
10	3/8	30	85	48.5	163.5	212	59	53	42	6	2.7	
15	1/2	30	85	48.5	163.5	212	59	53	42	6	2.7	
20	3/4	38	110	66.5	193	259.5	69	61	50	7	4.2	
25	1	44	120	70.5	232	302.5	84	76	64	12	7.0	
32	1-1/4	55	145	92	250	342	92	84	71	10	9.6	
40	1-1/2	62	150	91.5	302	393.5	107	97	85	8	15.3	

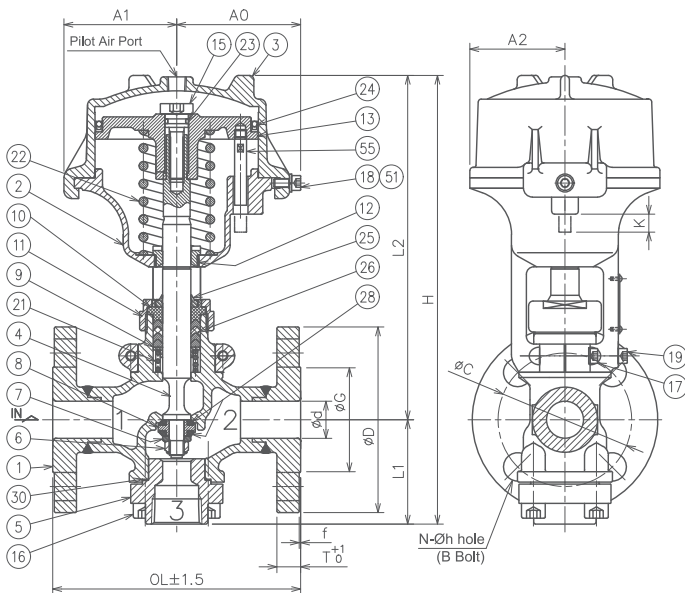
TPC2312-□□

Ports 1&2

Flanged

Port3

Threaded



☆:Recommended Spare Parts

55	Pin Gauge
51	Spring Lock Washer
30	Lower Seat Gasket
☆	28 Disc Ring
☆	26 Gland Packing
☆	25 Dust Seal
☆	24 Piston Ring
☆	23 O-Ring
22	Spring
21	Packing Spring
19	Socket Cap Screw
18	Socket Cap Screw
17	Socket Cap Screw
16	Socket Cap Screw
15	Tension Bolt
13	Piston
12	Guide Bush
11	Gland Nut
10	Gland
9	Ring Washer
8	Disc Adapter
7	Guide Washer
6	Lock Nut
5	Lower Seat Flange
4	Stem
3	Cylinder
2	Yoke Stand
1	Body & Flange

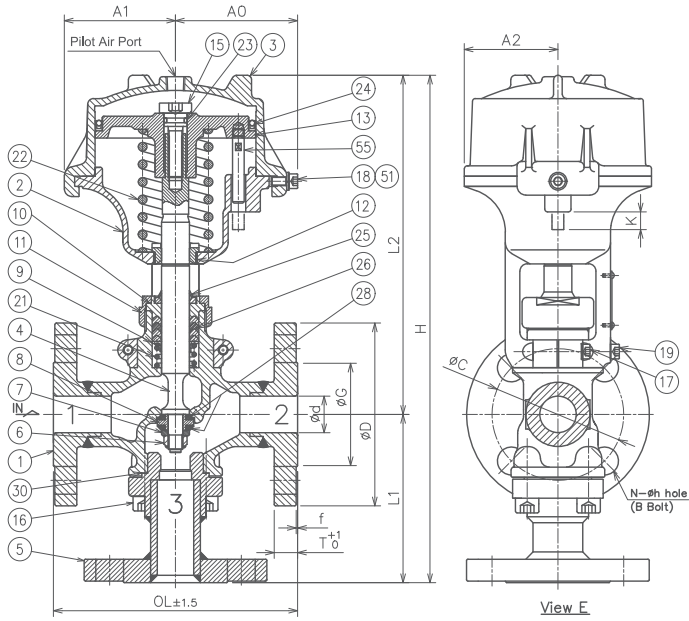
Nominal Size		Dimensions (mm)											Weight (kg)		
mm	inch	φd	OL			L1	L2	H	A0	A1	A2	K	Weight (kg)		
			JIS	ASME	DIN								JIS	ASME	DIN
15	1/2	13	146	140	130	48.5	163.5	212	59	53	42	6	4.3	4.1	4.3
20	3/4	19	146	150	150	66.5	193	259.5	69	61	50	7	6.0	6.8	6.4
25	1	25	167	170	160	70.5	232	302.5	84	76	64	12	9.7	9.9	9.5
32	1-1/4	32	190	190	180	92	250	342	92	84	71	10	13.7	13.9	13.9
40	1-1/2	40	190	200	200	91.5	302	393.5	107	97	85	8	18.8	20.6	19.4

\*For flange dimensions, please refer to the appendix on page 50.

TPC2313-□□

Ports 1,2&3

Flanged



☆: Recommended Spare Parts

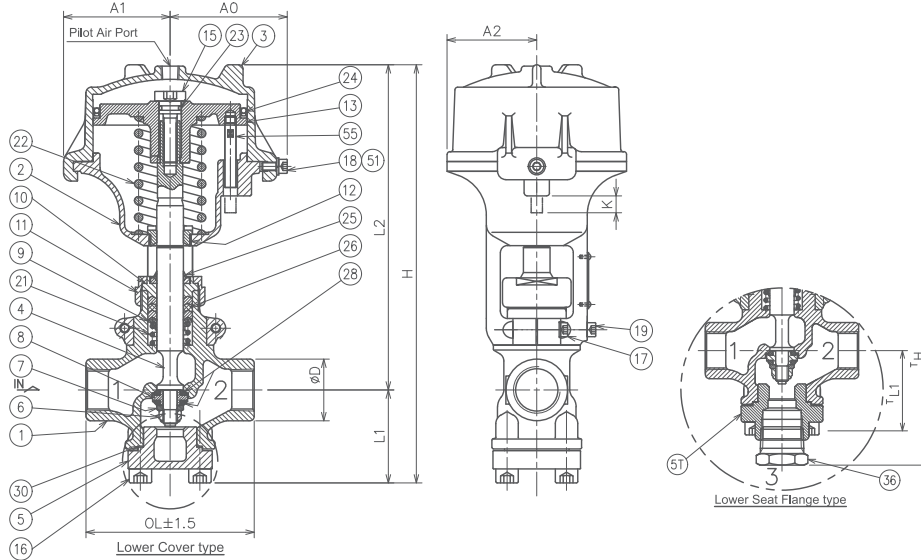
☆	55	Pin Gauge
☆	51	Spring Lock Washer
☆	30	Lower Seat Gasket
☆	28	Disc Ring
☆	26	Gland Packing
☆	25	Dust Seal
☆	24	Piston Ring
☆	23	O-Ring
☆	22	Spring
	21	Packing Spring
	19	Socket Cap Screw
	18	Socket Cap Screw
	17	Socket Cap Screw
	16	Socket Cap Screw
	15	Tension Bolt
	13	Piston
	12	Guide Bush
	11	Gland Nut
	10	Gland
	9	Ring Washer
	8	Disc Adapter
	7	Guide Washer
	6	Lock Nut
	5	Lower Seat Flange
	4	Stem
	3	Cylinder
	2	Yoke Stand
	1	Body & Flange

Nominal Size		Dimensions (mm)															Weight (kg)		
		φd	OL			L1			L2	H			A0	A1	A2	K			
mm	inch		JIS	ASME	DIN	JIS	ASME	DIN		JIS	ASME	DIN							
15	1/2	13	146	140	130	85	105	140	163.5	248.5	268.5	303.5	59	53	42	6	5.3	5.1	5.3
20	3/4	19	146	150	150	100	110	140	193	293	303	333	69	61	50	7	7.3	8.1	7.7
25	1	25	167	170	160	115	135	140	232	347	367	372	84	76	64	12	11.3	11.5	11.1
32	1-1/4	32	190	190	180	130	145	140	250	380	395	390	92	84	71	10	15.8	16.0	16.0
40	1-1/2	40	190	200	200	145	150	175	302	447	452	477	107	97	85	8	21.7	23.5	22.3

\*For flange dimensions, please refer to the appendix on page 50.

## 2-way Valve Normally Closed (NC)

TPC2211-□□C	Ports1&2	Threaded	Port3	Lower Cover
TPC2211-□□T	Ports1&2	Threaded	Port3	Plugged Lower Seat Flange

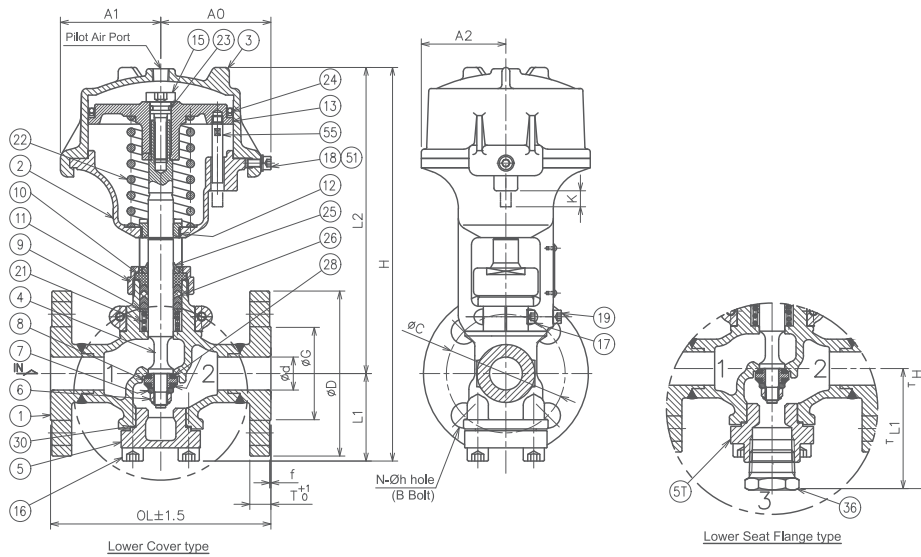


☆:Recommended Spare Parts

55	Pin Gauge
51	Spring Lock Washer
36	Plug
☆	30 Lower Seat Gasket
☆	28 Disc Ring
☆	26 Gland Packing
☆	25 Dust Seal
☆	24 Piston Ring
☆	23 O-Ring
22	Spring
21	Packing Spring
19	Socket Cap Screw
18	Socket Cap Screw
17	Socket Cap Screw
16	Socket Cap Screw
15	Tension Bolt
13	Piston
12	Guide Bush
11	Gland Nut
10	Gland
9	Ring Washer
8	Disc Adapter
7	Guide Washer
6	Lock Nut
5T	Lower Seat Flange
5	Lower Cover
4	Stem
3	Cylinder
2	Yoke Stand
1	Body

Nominal Size		Dimensions (mm)											Weight (kg)
mm	inch	φD	OL	L1	L2	H	TH	A0	A1	A2	K		
8	1/4	30	85	43.5	163.5	207	225	59	53	42	6	2.7	
10	3/8	30	85	43.5	163.5	207	227.5	59	53	42	6	2.7	
15	1/2	30	85	43.5	163.5	207	228.6	59	53	42	6	2.7	
20	3/4	38	110	54.5	193	247.5	277.5	69	61	50	7	4.2	
25	1	44	120	66.5	232	298.5	323	84	76	64	12	7.0	
32	1-1/4	55	145	74.5	250	324.5	362.5	92	84	71	10	9.6	
40	1-1/2	62	150	88.5	302	390.5	417.5	107	97	85	8	15.3	

TPC2212-□□C	Ports1&2	Flanged	Port3	Lower Cover
TPC2212-□□T	Ports1&2	Flanged	Port3	Plugged Lower Seat Flange



☆:Recommended Spare Parts

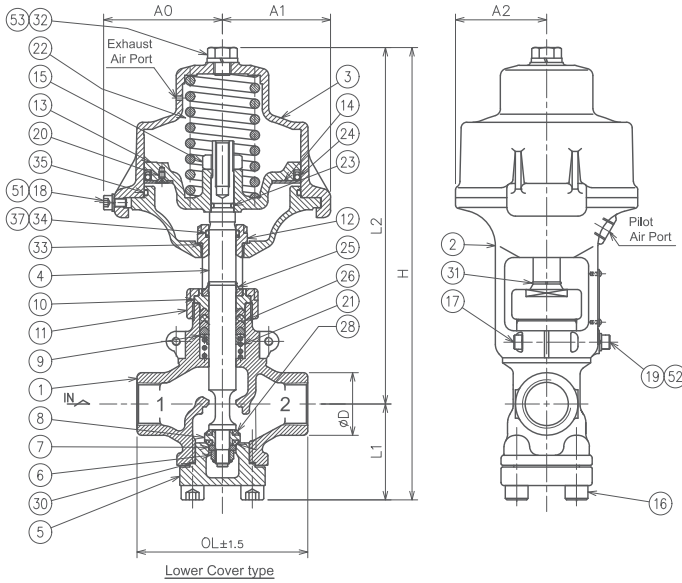
55	Pin Gauge
51	Spring Lock Washer
36	Plug
☆	30 Lower Seat Gasket
☆	28 Disc Ring
☆	26 Gland Packing
☆	25 Dust Seal
☆	24 Piston Ring
☆	23 O-Ring
22	Spring
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17	Socket Cap Screw
16	Socket Cap Screw
15	Tension Bolt
13	Piston
12	Guide Bush
11	Gland Nut
10	Gland
9	Ring Washer
8	Disc Adapter
7	Guide Washer
6	Lock Nut
5T	Lower Seat Flange
5	Lower Cover
4	Stem
3	Cylinder
2	Yoke Stand
1	Body & Flange

Nominal Size		φd	Dimensions (mm)						Weight (kg)								
mm	inch		JIS	ASME	DIN	L1	TL1	L2	H	TH	A0	A1	A2	K	JIS	ASME	DIN
15	1/2	13	146	140	130	43.5	65	163.5	207	228.5	59	53	42	6	4.3	4.1	4.3
20	3/4	19	146	150	150	54.5	85	193	247.5	278	69	61	50	7	6.0	6.8	6.4
25	1	25	167	170	160	66.5	91	232	298.5	323	84	76	64	12	9.7	9.9	9.5
32	1-1/4	32	190	190	180	74.5	112.5	250	324.5	362.5	92	84	71	10	13.7	13.9	13.9
40	1-1/2	40	190	200	200	88.5	115.5	302	390.5	417.5	107	97	85	8	18.8	20.6	19.4

\*For flange dimensions, please refer to the appendix on page 50.

# 2-way Valve Normally Open (NO)

## TPC2221-□□C Ports1&2 Threaded Port3 Lower Cover

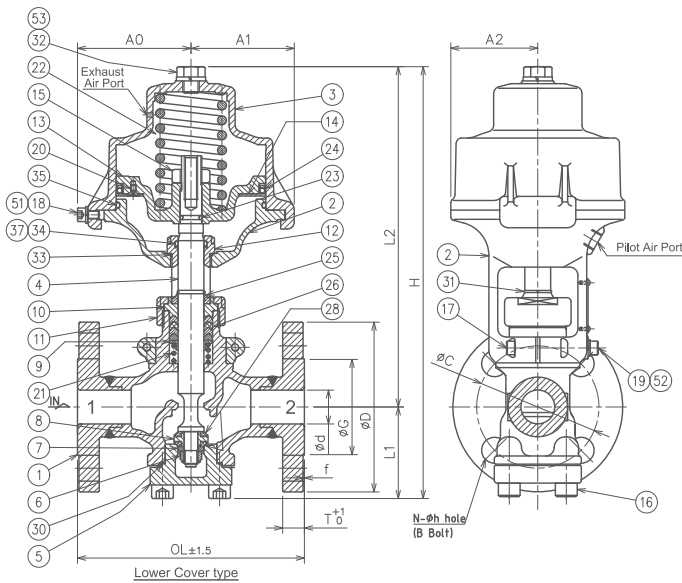


Nominal Size		Dimensions (mm)									Weight (kg)
mm	inch	∅D	OL	L1	L2	H	A0	A1	A2		
8	1/4	30	85	43.5	186	229.5	59	53	42	2.7	
10	3/8	30	85	43.5	186	229.5	59	53	42	2.7	
15	1/2	30	85	43.5	186	229.5	59	53	42	2.7	
20	3/4	38	110	54.5	220	274.5	69	61	50	4.2	
25	1	44	120	66.5	249	315.5	84	76	64	7.0	
40	1-1/2	62	150	88.5	330	418.5	107	97	85	15.3	

☆:Recommended Spare Parts

☆	37	Back Up Ring		
☆	35	O-Ring		
☆	34	O-Ring		
☆	33	O-Ring		
	32	Plug Bolt		
	31	Lift Ring Gauge		
☆	30	Lower Seat Gasket		
☆	28	Disc Ring		
☆	26	Gland Packing		
☆	25	Dust Seal		
☆	24	Piston Ring		
☆	23	O-Ring		
☆	22	Spring		
	21	Packing Spring		
	20	Flat Head Screw		
	19	Socket Cap Screw		
	18	Socket Cap Screw		
	17	Socket Cap Screw		
	16	Socket Cap Screw		
	15	Nut		
	14	Set Ring Plate		
	13	Piston		
	12	Guide Bush		
	11	Gland Nut		
	10	Gland		
	9	Ring Washer		
	8	Disc Adapter		
	7	Guide Washer		
	6	Lock Nut		
	5	Lower Cover		
	4	Stem		
	3	Cylinder	53	Spring Lock Washer
	2	Yoke Stand	52	Spring Lock Washer
	1	Body	51	Spring Lock Washer

## TPC2222-□□C Ports1&2 Flanged Port3 Lower Cover



Nominal Size		∅d	Dimensions (mm)						Weight (kg)					
mm	inch		OL			L1	L2	H	A0	A1	A2	JIS	ASME	DIN
15	1/2	13	146	140	130	43.5	186	229.5	59	53	42	4.3	4.1	4.3
20	3/4	19	146	150	150	54.5	220	274.5	69	61	50	6.0	6.8	6.4
25	1	25	167	170	160	66.5	249	315.5	84	76	64	9.7	9.9	9.5
40	1-1/2	40	190	200	200	88.5	330	418.5	107	97	85	18.8	20.6	19.4

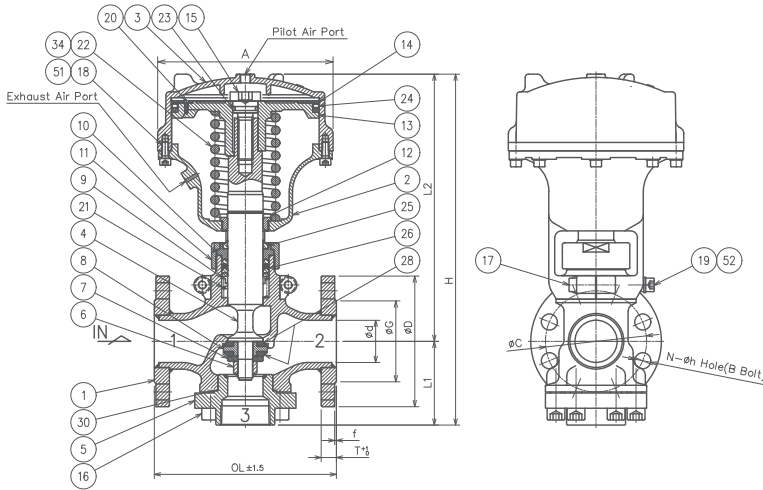
☆:Recommended Spare Parts

☆	35	O-Ring		
☆	34	O-Ring		
☆	33	O-Ring		
	32	Plug Bolt		
	31	Lift Ring Gauge		
☆	30	Lower Seat Gasket		
☆	28	Disc Ring		
☆	26	Gland Packing		
☆	25	Dust Seal		
☆	24	Piston Ring		
☆	23	O-Ring		
☆	22	Spring		
	21	Packing Spring		
	20	Flat Head Screw		
	19	Socket Cap Screw		
	18	Socket Cap Screw		
	17	Socket Cap Screw		
	16	Socket Cap Screw		
	15	Nut		
	14	Set Ring Plate		
	13	Piston		
	12	Guide Bush		
	11	Gland Nut		
	10	Gland		
	9	Ring Washer		
	8	Disc Adapter		
	7	Guide Washer		
	6	Lock Nut		
	5	Lower Cover		
	4	Stem	53	Spring Lock Washer
	3	Cylinder	52	Spring Lock Washer
	2	Yoke Stand	51	Spring Lock Washer
	1	1 Body & Flange	37	Back Up Ring

\*For flange dimensions, please refer to the appendix on page 50.

DN50~DN80

TPC1312-□□ Ports1&2 Flanged Port3 Threaded



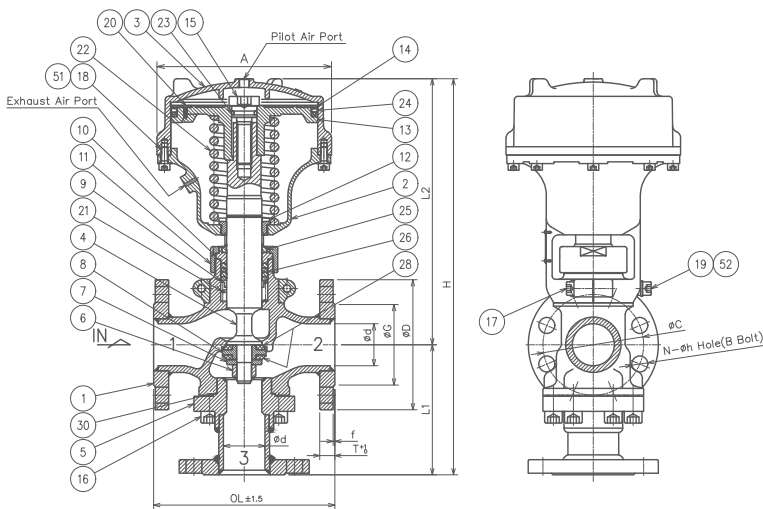
Nominal Size		Dimensions (mm)								Weight (kg)		
		∅d	OL			L1	L2	H	A	JIS	ASME	DIN
50	2	50	216	230	230	100	317	417	208	28.0	30.5	30.1
65	2-1/2	65	292	295	295	120	367	487	247	43.2	48.1	46.0
80	3	80	318	320	320	132	409	541	311	74.0	80.0	75.4

\*For flange dimensions, please refer to the appendix on page 50.

☆:Recommended Spare Parts

☆	52	Spring Lock Washer
☆	51	Spring Lock Washer
☆	34	Spring -B (DN80)
☆	30	Lower Seat Gasket
☆	28	Disc Ring
☆	26	Gland Packing
☆	25	Dust Seal
☆	24	Piston Ring
☆	23	O-Ring
☆	22	Spring -A
☆	21	Packing Spring
☆	20	Screw Bolt
☆	19	Socket Cap Screw
☆	18	Socket Cap Screw
☆	17	Socket Cap Screw
☆	16	Socket Cap Screw
☆	15	Tension Bolt
☆	14	Set Ring Plate
☆	13	Piston
☆	12	Guide Bush
☆	11	Gland Nut
☆	10	Gland
☆	9	Ring Washer
☆	8	Disc Adapter
☆	7	Guide Washer
☆	6	Lock Nut
☆	5	Lower Seat Flange
☆	4	Stem
☆	3	Cylinder
☆	2	Yoke Stand
☆	1	Body & Flange

TPC1313-□□ Ports1,2&3 Flanged



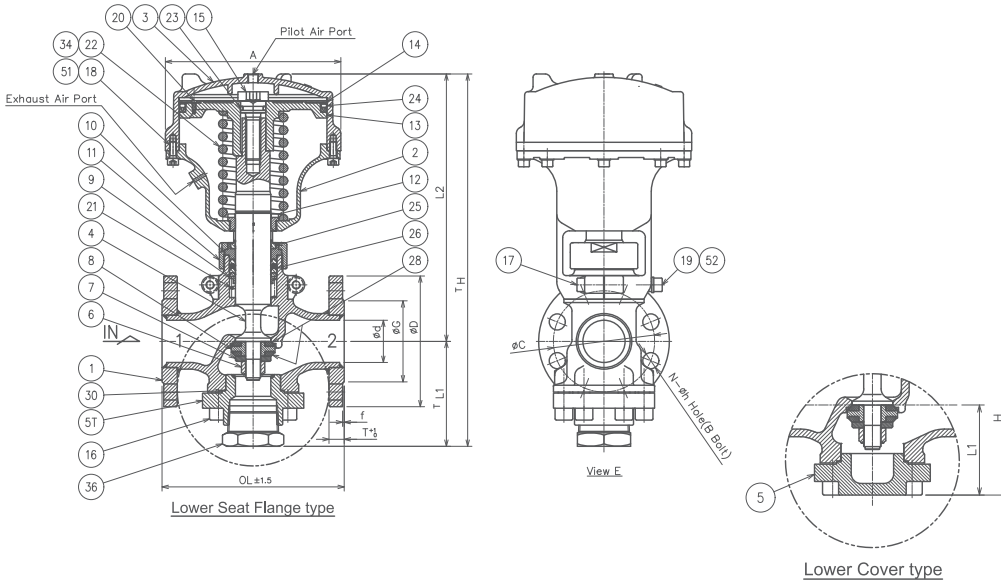
Nominal Size		Dimensions (mm)											Weight (kg)			
		∅d	OL			L1			L2	H			A	JIS	ASME	DIN
50	2	50	216	230	230	155	160	175	317	472	477	492	208	30.5	33.7	32.6

\*For flange dimensions, please refer to the appendix on page 50.

☆:Recommended Spare Parts

☆	52	Spring Lock Washer
☆	51	Spring Lock Washer
☆	30	Lower Seat Gasket
☆	28	Disc Ring
☆	26	Gland Packing
☆	25	Dust Seal
☆	24	Piston Ring
☆	23	O-Ring
☆	22	Spring
☆	21	Packing Spring
☆	20	Screw Bolt
☆	19	Socket Cap Screw
☆	18	Socket Cap Screw
☆	17	Socket Cap Screw
☆	16	Socket Cap Screw
☆	15	Tension Bolt
☆	14	Set Ring Plate
☆	13	Piston
☆	12	Guide Bush
☆	11	Gland Nut
☆	10	Gland
☆	9	Ring Washer
☆	8	Disc Adapter
☆	7	Guide Washer
☆	6	Lock Nut
☆	5	Lower Seat Flange
☆	4	Stem
☆	3	Cylinder
☆	2	Yoke Stand
☆	1	Body & Flange

TPC1212-□□C	Ports1&2	Flanged	Port3	Lower Cover
TPC1212-□□T	Ports1&2	Flanged	Port3	Plugged Lower Seat Flange



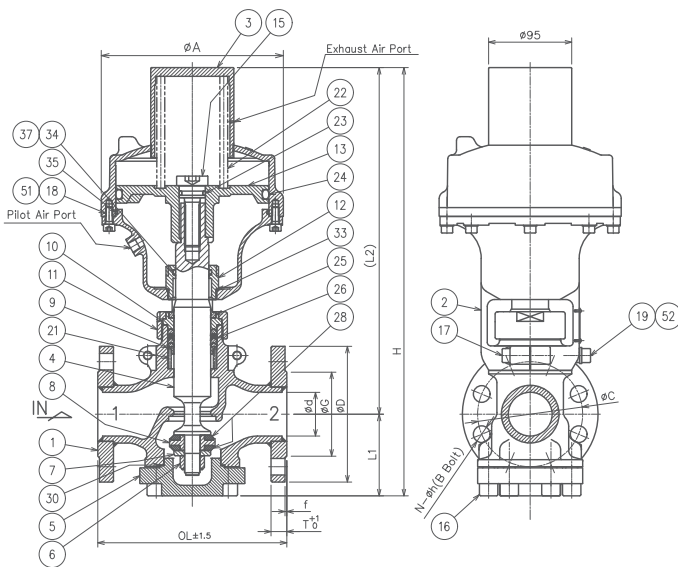
☆:Recommended Spare Parts

52	Spring Lock Washer
51	Spring Lock Washer
36	Plug
34	Spring -B (DN80)
☆	30 Lower Seat Gasket
☆	28 Disc Ring
☆	26 Gland Packing
☆	25 Dust Seal
☆	24 Piston Ring
☆	23 O-Ring
☆	22 Spring -A
☆	21 Packing Spring
☆	20 Screw Bolt
☆	19 Socket Cap Screw
☆	18 Socket Cap Screw
☆	17 Socket Cap Screw
☆	16 Socket Cap Screw
☆	15 Tension Bolt
☆	14 Set Ring Plate
☆	13 Piston
☆	12 Guide Bush
☆	11 Gland Nut
☆	10 Gland
☆	9 Ring Washer
☆	8 Disc Adapter
☆	7 Guide Washer
☆	6 Lock Nut
☆	5T Lower Seat Flange
☆	5 Lower Cover
☆	4 Stem
☆	3 Cylinder
☆	2 Yoke Stand
☆	1 Body & Flange

Nominal Size	Dimensions (mm)									Weight (kg)				
	mm	inch	φd	OL			L1	TL1	L2	H	TH	A	JIS	ASME
50	2	50	216	230	230	94	125	317	411	442	208	29.3	31.8	31.4
65	2-1/2	65	292	295	295	112	149	367	479	516	247	45.3	50.2	48.1
80	3	80	318	320	320	123	159	409	532	568	311	77.3	83.3	78.7

\*For flange dimensions, please refer to the appendix on page 50.

TPC1222-50C	Ports1&2	Flanged	Port3	Lower Cover
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☆:Recommended Spare Parts

52	Spring Lock Washer
51	Spring Lock Washer
☆	37 Back Up Ring
☆	35 O-Ring
☆	34 O-Ring
☆	33 O-Ring
☆	30 Lower Seat Gasket
☆	28 Disc Ring
☆	26 Gland Packing
☆	25 Dust Seal
☆	24 O-Ring
☆	23 O-Ring
☆	22 Spring
☆	21 Packing Spring
☆	19 Socket Cap Screw
☆	18 Socket Cap Screw
☆	17 Socket Cap Screw
☆	16 Socket Cap Screw
☆	15 Tension Bolt
☆	13 Piston
☆	12 Guide Bush
☆	11 Gland Nut
☆	10 Gland
☆	9 Ring Washer
☆	8 Disc Adapter
☆	7 Guide Washer
☆	6 Lock Nut
☆	5 Lower Cover
☆	4 Stem
☆	3 Cylinder
☆	2 Yoke Stand
☆	1 Body & Flange

Nominal Size	Dimensions (mm)									Weight (kg)		
	mm	inch	φd	OL			L1	L2	H	A	JIS	ASME
50	2	50	216	230	230	94	396	490	208	30.3	32.8	32.4

\*For flange dimensions, please refer to the appendix on page 50.

# [Reference]

## TPC Valve Maximum Specification Pressure by Port

### Maximum Working Pressure for 2-way Valve NO Port 2

If the pressure at port 2 on a size DN40 or DN50 2-way valve is too high when the air inlet valve is closed, the valve will not open even if the operating air supply is turned off, due to the fluid pressure on the stem. A specialized specification (Z50) valve with a larger spring constant should be used in such a usage case.

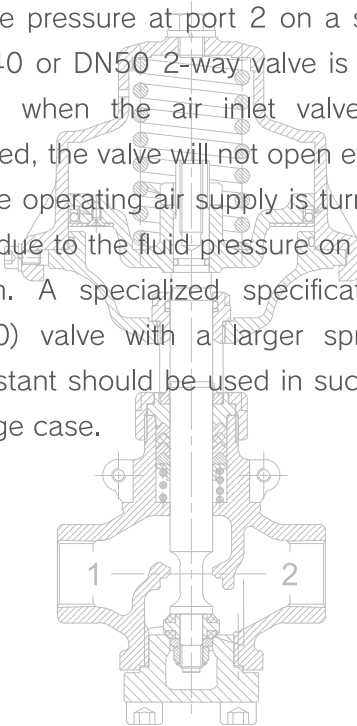


Table 1. Maximum working pressure for each port on a TPC 2-way valve

Units:MPa

Nominal Size	Port	Normally Closed (NC)		Normally Open (NO)			
		Standard Spec		Standard Spec		Specialized Spec (Z50)	
		Port 1	Port 2	Port 1	Port 2	Port 1	Port 2
DN08-15		3.2	3.2	3.2	3.2	—	—
DN20		3.2	3.2	3.2	3.2	—	—
DN25		3.2	3.2	3.2	3.2	—	—
DN32		3.2	3.2	—	—	—	—
DN40		3.2	3.2	3.2	2.0	2.8	2.8
DN50		3.2	3.2	3.2	1.2	2.8	2.5
DN65.80		3.2	3.2	—	—	—	—

\* The upper limit for the pressure required to fully open the valve when the air supply is switched from ON to OFF (for NO)

\* The specialized specification to Z50 for handling high temperatures (maximum working temperature 240° C) is Z54

\* The operating air pressure for the Z50 is 0.3 to 0.35MPa

### Maximum Working Pressure for 3-way Valve Port 3

The maximum usage pressure for port 3 on a TPC 3-way valve when the air supply is on (no flow between ports 2 & 3) is dependent on the operating air pressure. Set the operating air pressure with reference to the table below.

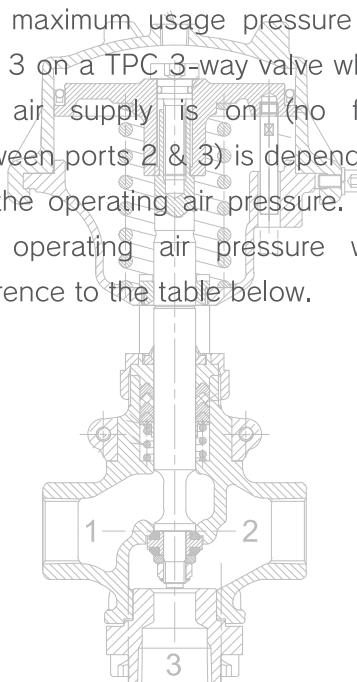


Table 2. Maximum Working Pressure for TPC 3-way Valve Port 3 with Operating Air Supply ON

Units:MPa

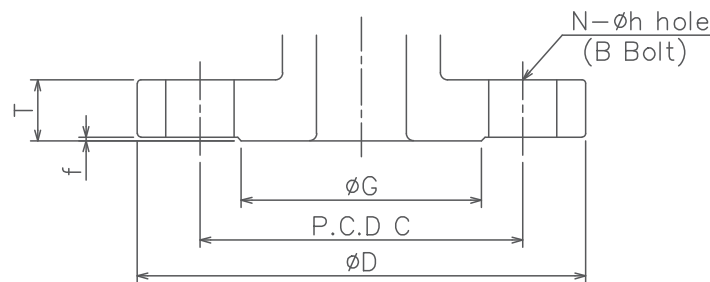
Nominal Size	Operating Air Pressure	0.25	0.3	0.35
DN08-15		0.3	1.7	3.1
DN20		1.1	2.7	3.2
DN25		1.8	3.2	3.2
DN32		0.6	1.8	2.9
DN40		0.8	1.8	2.7
DN50		1.1	2.0	2.9
DN65		0.9	1.7	2.4
DN80		1.6	2.3	3.0

\* The maximum working pressure for ports 1 & 2 is 3.2MPa



# Reference Materials

## JIS/ANSI/DIN Piping Flange Dimension List



※All of our valve flange surfaces have a smooth finish ( $Ra \leq 3.2$ ).

### JIS 20K Flange Dimensions

Unit: mm

Nominal Size		Dimensions of Flange Part				Bolt Holes			Bolt Size
		Flange Diameter	Thickness	RF Part		Pitch Circle Diameter	Number	Hole Diameter	
mm	inch			D	T				Raised Height
15	1/2	95	14	1	51	70	4	15	M12
20	3/4	100	16	1	56	75	4	15	M12
25	1	125	16	1	67	90	4	19	M16
32	1-1/4	135	18	2	76	100	4	19	M16
40	1-1/2	140	18	2	81	105	4	19	M16
50	2	155	18	2	96	120	8	19	M16
65	2-1/2	175	20	2	116	140	8	19	M16
80	3	200	22	2	132	160	8	23	M20

JIS B 2220: 2012

### ANSI/ASME Class 300 Flange Dimensions

Unit: mm

Nominal Size		Dimensions of Flange Part				Bolt Holes			Bolt Size
		Flange Diameter	Thickness	RF Part		Pitch Circle Diameter	Number	Hole Diameter	
mm	inch			D	T				Raised Height
15	1/2	95	14.5	1.6	35	66.5	4	15	1/2"
20	3/4	117	16	1.6	43	82.5	4	19	5/8"
25	1	124	18	1.6	51	89.0	4	19	5/8"
32	1-1/4	133	19.1	1.6	63.5	98.5	4	19	5/8"
40	1-1/2	156	21	1.6	73	114.5	4	22	3/4"
50	2	165	22.3	1.6	92	127.0	8	19	5/8"
65	2-1/2	190	25.5	1.6	104.6	149.4	8	22	3/4"
80	3	210	28.5	1.6	127	168.1	8	22	3/4"

ANSI/ASME B 16.5: 1996

### DIN PN40 Flange Dimensions

Unit: mm

Nominal Size		Dimensions of Flange Part				Bolt Holes			Bolt Size
		Flange Diameter	Thickness	RF Part		Pitch Circle Diameter	Number	Hole Diameter	
mm	inch			D	T				Raised Height
15	1/2	95	16	2	45	65	4	14	M12
20	3/4	105	18	2	58	75	4	14	M12
25	1	115	18	2	68	85	4	14	M12
32	1-1/4	140	18	2	78	100	4	18	M16
40	1-1/2	150	18	3	88	110	4	18	M16
50	2	165	20	3	102	125	4	18	M16
65	2-1/2	185	22	3	122	145	8	18	M16
80	3	200	24	3	138	160	8	18	M16

EN 1092-1: 2001

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