

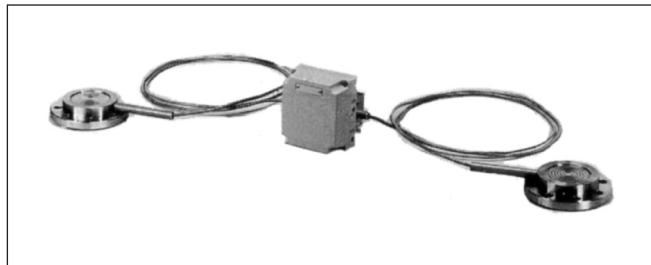
# Pneumatic Differential Pressure Transmitter

## (Remote Seal Diaphragm Type)

### Model KDP71/72

#### Overview

Model KDP is a pneumatic transmitter which employs a combination of a vector balance mechanism and an involute mechanism. Its wide variety of features include high resistance against adverse environments, high turn-down ratio, and easy maintenance.



#### Specifications

##### Standard specifications

Item	Basic model No.	
	KDP71	KDP72
Measuring range (continuously variable)	From 0–25 to 0–500 kPa	From 0–2.5 to 0–53.9 kPa
Process connection	Flange (for both high and low pressure sides)	Flush diaphragm type : 80A-JIS10K, 30K (RF) or the equivalent flange 3B-ANSI150, 300 (RF) or the equivalent flange Extended diaphragm type : 100A-JIS10K, 30K (RF) or the equivalent flange 4B-ANSI150, 300 (RF) or the equivalent flange
Capillary tube length	2, 3, 5 m	
Sealed liquid	Silicone oil for general use (specific gravity: 0.935 at 25 °C)	
Air supply connection	Rc ¼ or NPT ¼ female thread	
Supply air pressure	140 ±14 kPa	
Output	20 to 100 kPa (see the model number selection for other outputs)	
External load	I.D. 4 mm × Length 3 m + 20 cm³ or more	
Air supply capacity	20 L/min (normal) or more at 6.7 kPa	
Air consumption	5 L/min (normal) or less (when balanced at 100 % output)	
Accuracy	±0.5 % FS (span 50 to 500 kPa), ±1.0 % FS (span 25 to < 50 kPa)	±0.5 % FS (span 5 to 53.9 kPa), ±1.0 % FS (span 2.5 to < 5 kPa)
Deadband	0.1 % FS	
Operating pressure	–50 kPa to the maximum flange rated pressure (see fig. 1 and figs. 6–11)	
Operating temperature	Meter body (process fluid): –40 to +120 °C Transmitter (ambient): –30 to +80 °C (see figure 1)	
Operating humidity	10 to 90 % RH	
Overload resistance	Up to the maximum flange rated pressure in either direction	
Structure	Dust-proof and waterproof	Satisfies IEC IP54, NEMA TYPE 3R, JIS C0920 rainproof
Material	High/low pressure process connecting flange	SUSF304 (wetted parts: SUS316*1, nickel copper alloy-clad, tantalum-clad)
	Wetted parts	SUS316*1, SUS316L, nickel copper alloy, tantalum
	Capillary tube	SUS316
	Armored tube	SUS304
	Transmitter case	Aluminum alloy
Finish	Baked acrylic finish. Color: light beige (Munsell 4Y7.2/1.3)	
Mounting	Direct mounting on the process-side flange*2	
Flange standard (and year)	JIS: JIS B 2220 (1984) ANSI: ANSI B16.5-88 JPI: JPI-7S-15-93	
Mass	Approx.19 kg (for 80A-JIS10K flange model. Add +0.6 kg for model with Pressure Regulator with air filter (RA1B))	

\*1. Diaphragm: SUS316L

\*2. Mount the main unit of the transmitter on a vertical or horizontal 2-inch pipe using the mounting bracket.

## Additional specifications

Item		Model KDP71	Model KDP72
Suppression and elevation*	Span	25 to 500 kPa	2.5 to 53.9 kPa
	Suppression (max.)	500 kPa	53.9 kPa
	Elevation (max.)	47.5 kPa	51.4 kPa
Pressure Regulator with air filter (RA1B)	Primary pressure	200 to 1035 kPa	
	Secondary pressure	140 kPa	
	Filter mesh diameter	5 µm	
	Connection	Rc ¼ or NPT ¼ female thread	

\* Elevation + Span ≤ Maximum span

Suppression ≤ Maximum span

## Optional specifications

Item		Specifications	
For vacuum	Y23	Cannot be combined with Y169, Y182, or Y183 (see fig. 3 or figs. 6–11)	
For high temperature	Y62	Operating temperature	Fluid: -10 to +280 °C (up to 180 °C for nickel copper alloy or tantalum) Ambient: -10 to +80 °C
		Sealed liquid	Special silicone oil (specific gravity: 1.07 at 25 °C)
		Cannot be combined with Y169, Y182, or Y183 (see fig. 4 or figs. 6–11)	
For high temperature and vacuum	Y62 + Y23	Cannot be combined with Y169, Y182, or Y183 (see fig. 5 or figs. 6–11)	
Corrosion-resistant and silver finish	Y138	Corrosion-resistant (baked acrylic) finish (Y138A)	Resistance against corrosive gases
		Heavy corrosion-resistant (baked epoxy) finish (Y138B)	Resistance against corrosive liquids
		Silver-normal (baked acrylic) finish (Y138C)	Prevention of device temperature rise due to direct sunlight, radiant heat, etc.
		Silver-corrosion-resistant (baked acrylic) finish (Y138D)	Prevention of temperature rise as described above and resistance to corrosive gases
		Note: Silver finish should not be used in alkaline gases.	
Damping adjustment (for 5 m capillary tube)	Y169	Time constant (continuously variable)	KDP71 Minimum: 0.5 seconds or less, maximum: 10 seconds or more KDP72 Minimum: 8.0 seconds or less, maximum: 50 seconds or more
For oxygen	Y182	Wetted parts material	SUS316 or SUS316L
		Sealed liquid	Fluorine oil (specific gravity: 1.92 at 25 °C)
		Operating temperature (fluid and ambient)	-10 to +60 °C
		Wetted parts degreased (see fig. 2 or figs. 6–11)	
For chlorine	Y183	Wetted parts material	Tantalum
		Sealed liquid	Fluorine oil (specific gravity: 1.92 at 25 °C)
		Operating temperature (fluid and ambient)	-10 to +80 °C
		Wetted parts degreased (see fig. 2 or figs. 6–11)	
Output indicator	Y185	With φ100 gauge	
High vibration resistance	Y188	High vibration-resistance model with a dashpot	

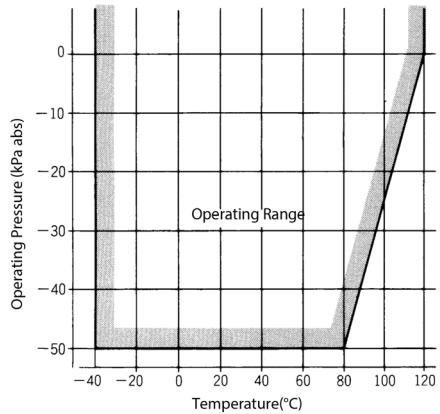


Figure 1. Operating pressure and temperature of wetted parts

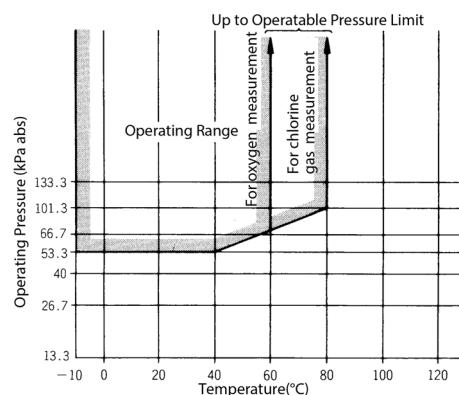


Figure 2. Operating pressure and temperature of wetted parts for oxygen and chlorine use

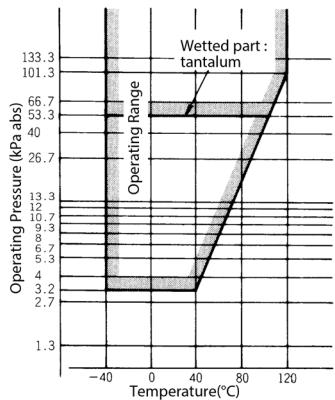


Figure 3. Operating pressure and temperature of wetted parts for vacuum use

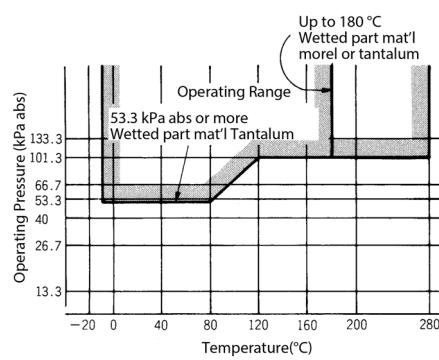


Figure 4. Operating pressure and temperature of wetted parts for high temperature use

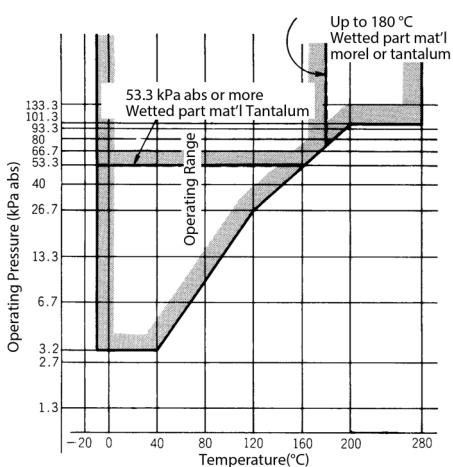


Figure 5. Operating pressure and temperature of wetted parts for high temperature and vacuum use

## Maximum operating pressure

The maximum operating pressure depends on the pressure rating and material of the flange and the operating temperature. See the graphs in figs. 6-11.

*Note:* · The maximum operating pressure of the remote seal diaphragm models (KDP71/72) is 4.0 MPa or the value in the graph, whichever is smaller.  
 · The operating temperature range depends on the specifications of the transmitter.

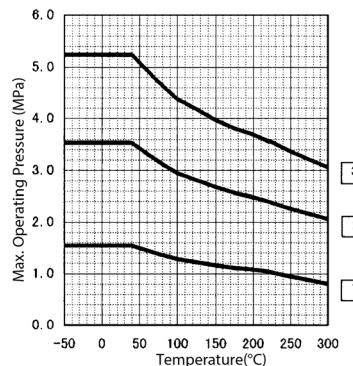


Figure 6. SUS304 & JIS

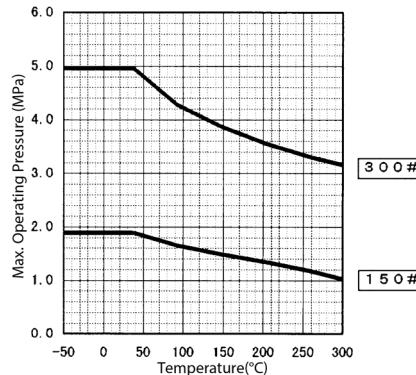


Figure 7. SUS304 & JPI/ANSI

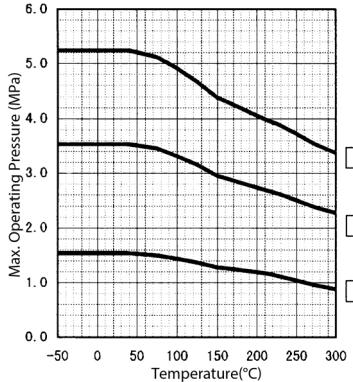


Figure 8. SUS316 & JIS

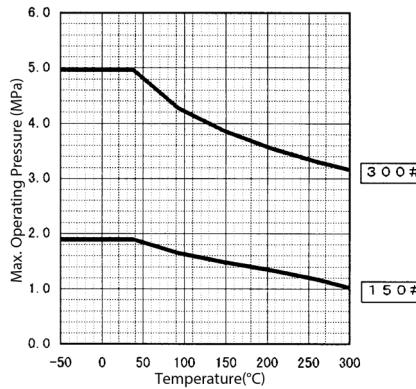


Figure 9. SUS316 & JPI/ANSI

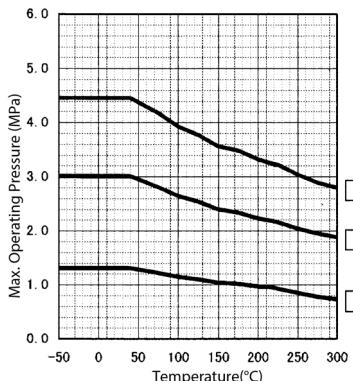


Figure 10. SUS316L & JIS

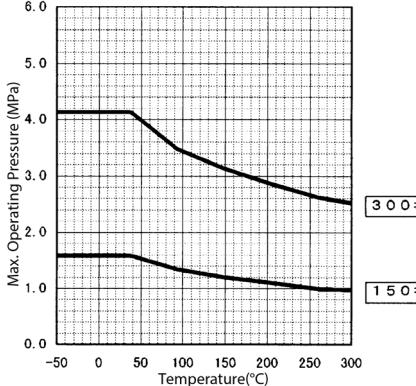


Figure 11. SUS316L & JPI/ANSI

## Model selection table

		Basic model No.		Optional spec.				Add'l spec.			
Measuring span	High differential pressure model: from 0–25 to 0–500 kPa	KDP71									
	Medium differential pressure model: from 0–2.5 to 0–53.9 kPa	KDP72									
Material <sup>*1 *2</sup>	Flange cover material	Wetted parts material									
	High pressure side	Low pressure side	High pressure-receiving part	Low pressure-receiving part							
SUS304	SUS304	SUS316	SUS316		7	7	2	2			
SUS304	SUS304	Nickel copper alloy	Nickel copper alloy		7	7	3	3			
SUS304	SUS304	Tantalum	Tantalum		7	7	4	4			
SUS304	SUS304	SUS316L	SUS316L		7	7	8	8			
Flange rating	Flush diaphragm type	80A JIS10K (RF)							1		
		80A JIS30K (RF)							2		
		3B ANSI150 (RF)							3		
		3B ANSI300 (RF)							4		
	Extended dia-phragm type	100A JIS10K (RF)							5		
		100A JIS30K (RF)							6		
		4B ANSI150 (RF)							7		
		4B ANSI300 (RF)							8		
Capillary length	2 m							0	2		
	3 m							0	3		
	5 m							0	5		
Flange extension length	None (flush diaphragm type flange)							0	0		
	100 mm							1	0		
	150 mm							1	5		
Air supply connection	Rc 1/4							A			
	NPT 1/4 female thread							B			
Pressure unit / signal air pressure	kgf/cm <sup>2</sup> : 0.2 to 1.0 kgf/cm <sup>2</sup> *3									1	
	psi: 3 to 15 psi <sup>*3</sup>									2	
	bar: 0.2 to 1.0 bar <sup>*3</sup>									3	
	Pa: 20 to 100 kPa									4	
	Pa: 19.6 to 98.1 kPa (0.2 to 1.0 kgf/cm <sup>2</sup> or equivalent)									8	
Additional specifications	None							X			
	Elevation							5			
	Suppression							6			
	Pressure Regulator with air filter (RA1B)							R			

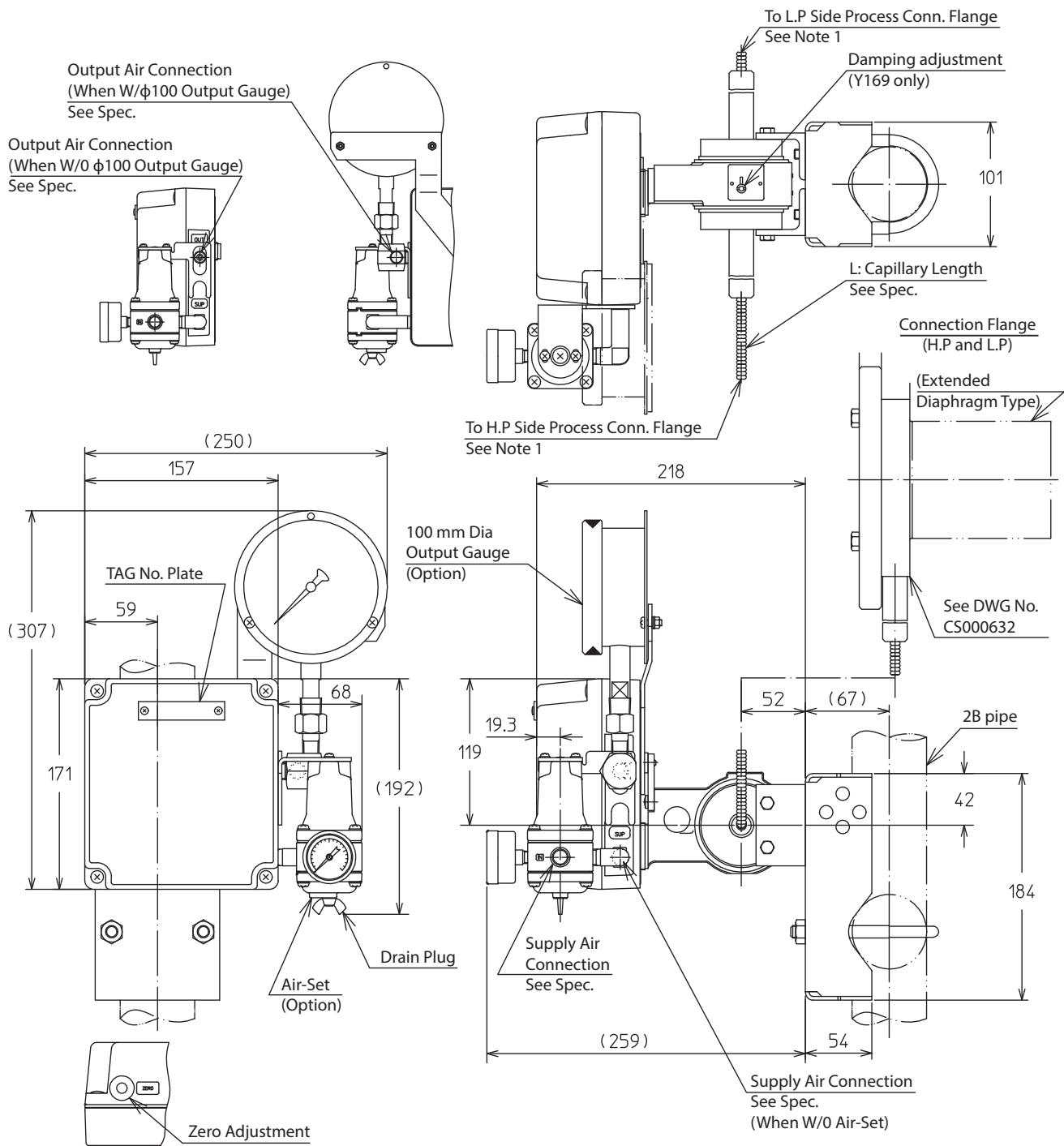
\*1. If SUS316 is selected, the diaphragm part will be SUS316L.

\*2. For the extended diaphragm type, nickel copper alloy or tantalum cannot be selected as the wetted parts material.

\*3. Non-SI units can only be used outside of Japan.

## Dimensions

unit: mm

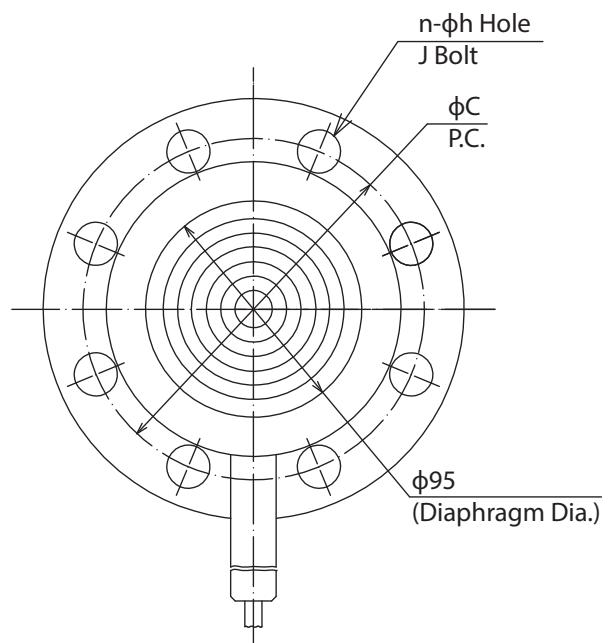
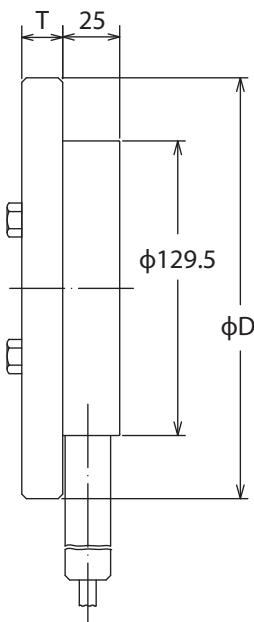


Note 1: The Gasket shall be such as will never touch the Diaphragm after Installed.

## Flange Dimensions

unit: mm

Model KDP: 1,2,3,4,E,F



Model KDP: 5,6,7,8,M,N

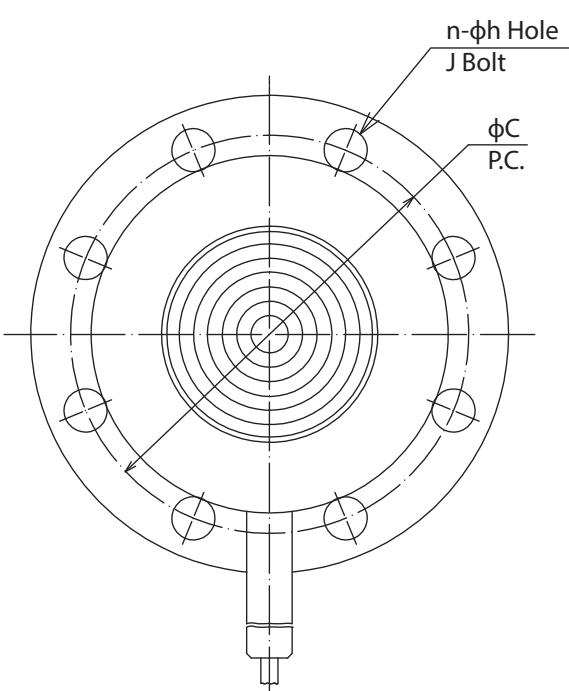
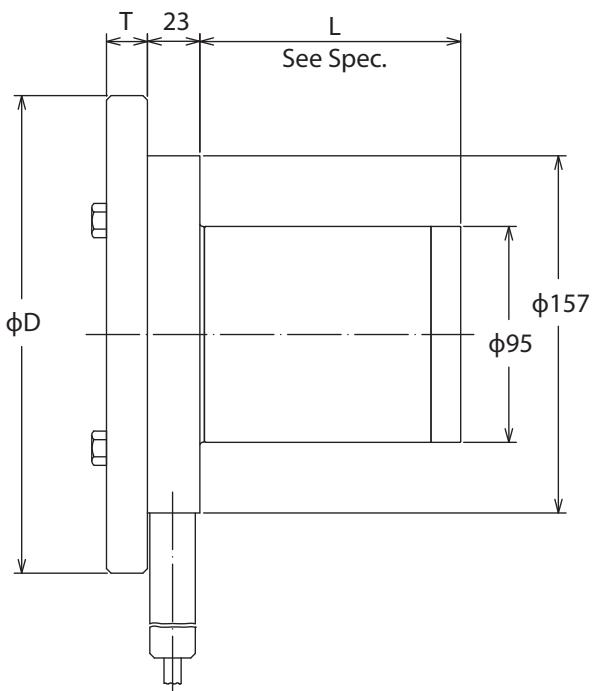


Table 1. Flange Dimensions

Model KDP	Flange Rating	φD	T	φC	n	φh	J Bolt
1	80A JIS10K RF	185	18	150	8	19	M16
2	80A JIS30K RF	210	28	170	8	23	M20
3	3B ANSI 150 RF	190	24	152.4	4	19	5/8
4	3B ANSI 300 RF	210	28.5	168.1	8	22	3/4
E	3B JPI 150 RF	190	24	152.4	4	19	5/8
F	3B JPI 300 RF	210	28.5	168.1	8	22	3/4
5	100A JIS10K RF	210	18	175	8	19	M16
6	100A JIS30K RF	240	32	195	8	25	M22
7	4B ANSI 150 RF	229	24	190.5	8	19	5/8
8	4B ANSI 300 RF	254	32	200.2	8	22	3/4
M	4B JPI 150 RF	229	24	190.5	8	19	5/8
N	4B JPI 300 RF	254	32	200.2	8	22	3/4

Table 2. Flange Extention Length

Model	L
00	None
10	100 mm
15	150 mm

**Flushing Ring**

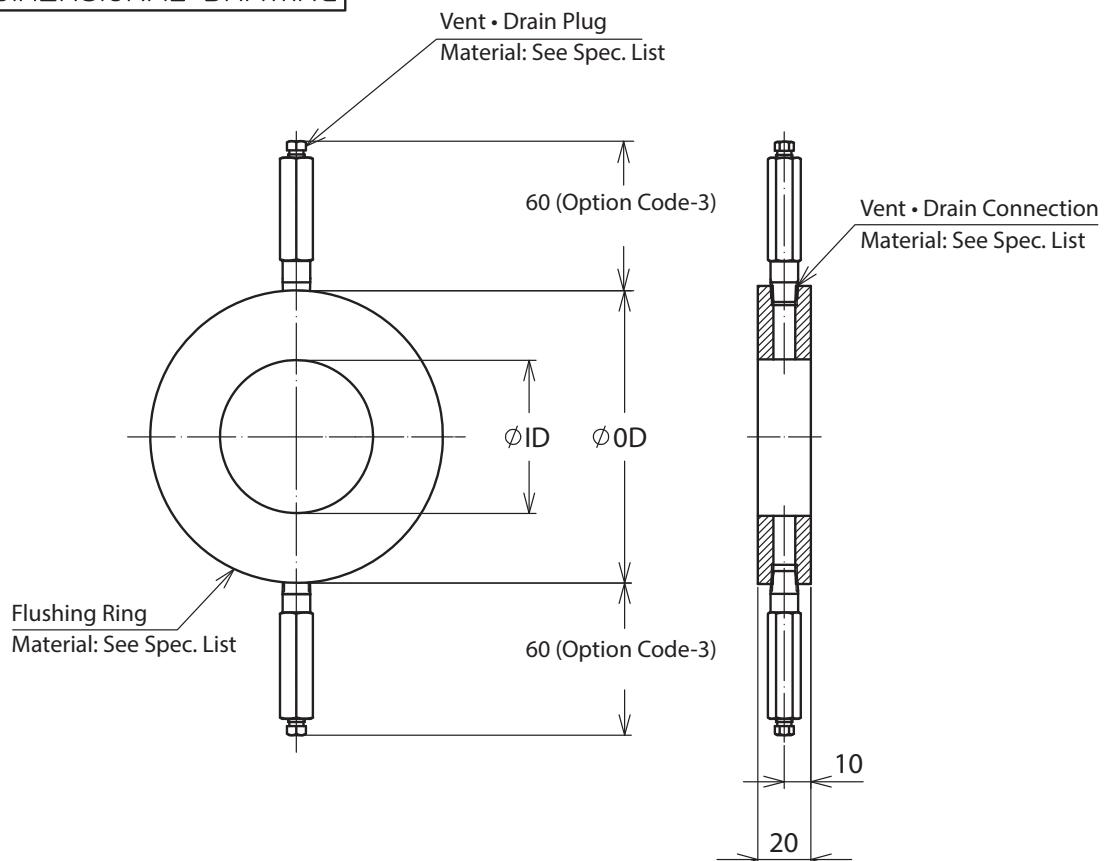
Model No.		DV -	I	II	III	IV	V	VI	-	VII
I	Flushing Ring quantity	For Flushing Ring 2 pieces	E							
II	Ring material	316 SST 316L SST		2 8						
III	Flange rating	JIS10K JIS20K JIS30K JIS63K ANSI 150 ANSI 300 ANSI 600 JPI 150 JPI 300 JPI 600			A C D F G H J N P Q					
IV	Flange size	3 in / 80A Ring type			B					
V	Ring finish	None, Standard JISRa3.2 equivalent				X				
VI	Screw size	Rc1/4 1/4NPT					1 2			
VII	Options	Long Vent (60mm)*1 Oil and water finish*2 Oil free finish*2 Mill certificate*2 Strength calculation sheet*2 Withstand pressure and air tight test (general-purpose use)*2 Oil and water finish, high-grade*2							3 5 6 7 B C D	

\*1. Code 3:Long Vent (60mm) of Options must be selected.

\*2. When this option is selected, the same option for transmitter must be selected.

## DIMENSIONAL DRAWING

unit: mm



## DIMENSIONS and WEIGHTS

Flange Size		Flange Type		OD	ID	Weight [kg]
Description	Code	Description	Code			
80A 3"	B	JIS10K ANSI/JPI 150#	A,G,N	135	100	1.1
		JIS20K	C	140		1.3
		JIS30K	D	150		1.6
		JIS63K	F	163		2.1
		ANSI/JPI 300#/600#	H,J,P,Q	148		1.5





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The logo for Azbil Corporation, featuring the word "azbil" in a bold, lowercase, sans-serif font.

## Azbil Corporation

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