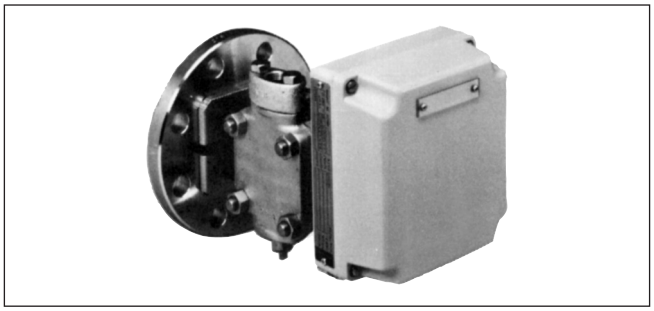
Pneumatic Differential Pressure Transmitter

(Flange Type)

Model KDP61/62

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.	
		KDP61	KDP62
Measuring range (continuously variable)		From 0–25 to 0–500 kPa	From 0–2.5 to 0–53.9 kPa
Process connection	Measuring (liquid level) side	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	
	Reference side	Rc ½ or NPT ½ female thread	
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 cm^3 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	
Damping adjustment		Always 2 seconds max. (see the optional specifications for variable adjustment)	
Operating pressure		−50 kPa to the maximum flange rated pressure*1	
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	Connecting flange	Carbon steel (SF440A), SUSF304 (Wetted parts: SUS316, SUS316L, nickel copper alloy–clad, tantalum-clad)	
	Reference pressure chamber cover	Carbon steel (SF440A), SUSF316, nickel copper alloy, PVC (with SUS304 reinforcing plate)*2	
	Wetted parts	SUS316*3, SUS316L, nickel copper alloy, tantalum	
	Reference pressure chamber gasket	PTFE	
	Transmitter case	Aluminum alloy	
Finish		Baked acrylic finish. Color: light beige (Munsell 4Y7.2/1.3)	
Mounting		Direct mounting on the process-side flange	
Flange standard (and year)		JIS: JIS B 2220 (1984) ANSI: ANSI B16.5-88 JPI: JPI-7S-15-93	
Mass		Approx.13 kg (for 80A-JIS10K flange model. Add +0.6 kg for model with Pressure Regulator with air filter (RA1B))	

**1. It varies depending on the cover material. (See fig. 1 and figs. 4–11.)*
**2. Operating pressure: −0.01 to +1.5 MPa, operating temperature: 0 to 55 °C*
**3. Diaphragm: SUS316L*

Additional specifications

Item		Model KDP61	Model KDP62
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 and figs. 4–11)	
SUS304 bolt for meter body cover	Y66	Maximum operating pressure	For carbon steel, SUSF316, or nickel copper alloy cover: 6 MPa For PVC cover: 1.5 MPa
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	Y169	Time constant (continuously variable)	Minimum: 3 seconds or less, maximum: 15 seconds or more
		Note for model KDP61: When this option is used in combination with Y182 or Y183, the minimum is 0.5 seconds or less and the maximum is 3 seconds or more.	
For oxygen	Y182	Wetted parts material	SUS316 or SUS316L
		Sealed liquid	Fluorine oil
		Operating temperature (fluid and ambient)	−10 to +60 °C
		Wetted parts degreased (see fig. 2 and figs. 4–11)	
For chlorine	Y183	Wetted parts material	Tantalum
		Sealed liquid	Fluorine oil
		Operating temperature (fluid and ambient)	−10 to +80 °C
		Wetted parts degreased (see fig. 2 and figs. 4–11)	
Output indicator	Y185	With φ100 gauge	
High vibration resistance	Y188	High vibration-resistance model with a dashpot	

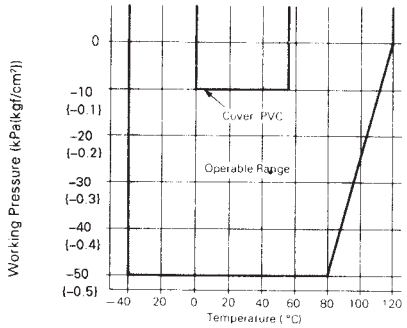


Figure 1. Operating pressure and temperature of wetted parts

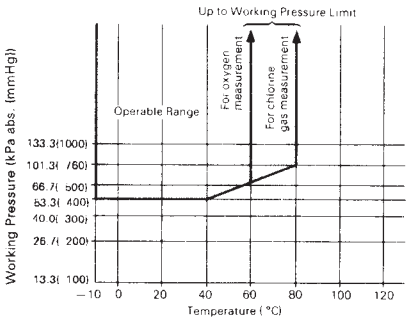


Figure 2. Operating pressure and temperature of wetted parts for oxygen and chlorine use

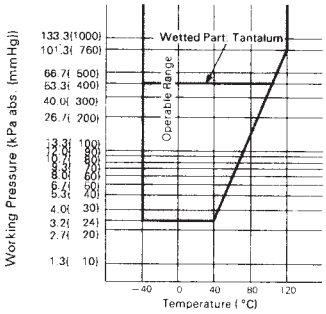


Figure 3. Operating pressure and temperature of wetted parts for vacuum use

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. 4–11.

Note: · The maximum operating pressure of flange type models (KDP61/62) is 1.05 MPa or the value in the graph, whichever is smaller.
· The operating temperature range depends on the specifications of the transmitter.

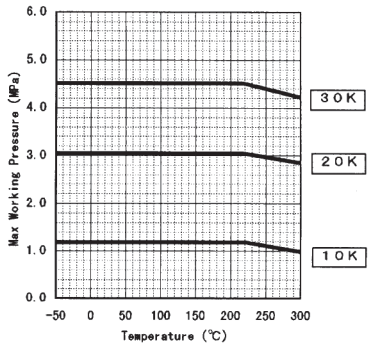


Figure 4. Carbon steel & JIS

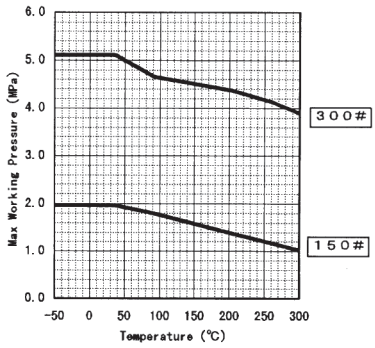


Figure 5. Carbon steel & JPI/ANSI

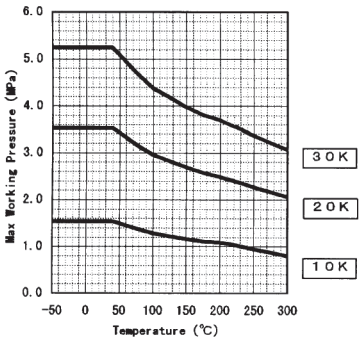


Figure 6. SUS304 & JIS

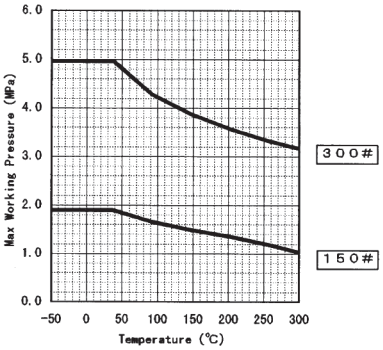


Figure 7. SUS304 & JPI/ANSI

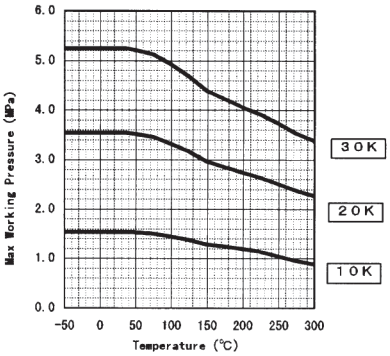


Figure 8. SUS316 & JIS

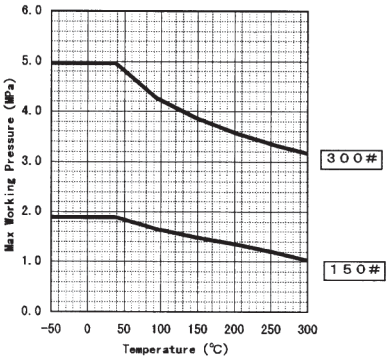


Figure 9. SUS316 & JPI/ANSI

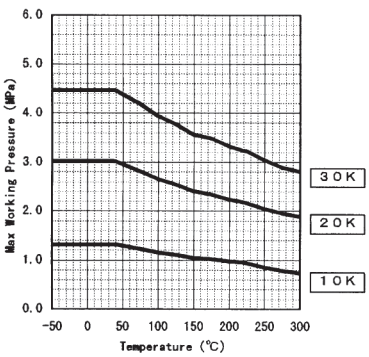


Figure 10. SUS316L & JIS

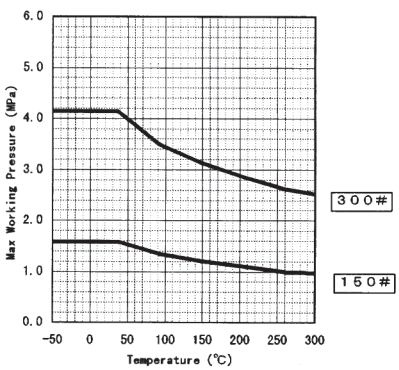


Figure 11. SUS316L & JPI/ANSI

Model selection table

Basic model No.		Optional spec.									–	Add'l spec.

Measuring span	High differential pressure model: from 0–25 to 0–500 kPa	KDP61
	Medium differential pressure model: from 0–2.5 to 0–53.9 kPa	KDP62

Material*1 *2	Flange cover material		Wetted parts material		–					
	High pressure side	Low pressure side	High pressure–receiving part	Low pressure–receiving part						
	SUS304	SUS316	SUS316	SUS316		7	2	2	2	
	SUS304	SUS316	Nickel copper alloy	Nickel copper alloy		7	2	3	3	
	SUS304	SUS316	Tantalum	Tantalum		7	2	4	4	
	SUS304	Nickel copper alloy	Nickel copper alloy	Nickel copper alloy		7	3	3	3	
	SUS304	PVC	Nickel copper alloy	Nickel copper alloy		7	5	3	3	
	SUS304	PVC	Tantalum	Tantalum		7	5	4	4	

Flange rating	Flush diaphragm type	80A JIS10K & JIS	1			
		80A JIS30K (RF)	2			
		3B ANSI150 (RF)	3			
		3B ANSI300 (RF)	4			
	Extended diaphragm type	100A JIS10K (RF)	5			
		100A JIS30K (RF)	6			
		4B ANSI150 (RF)	7			
		4B ANSI300 (RF)	8			
Flange extension length	None (flush diaphragm type flange)			0	0	
	100 mm			1	0	
	150 mm			1	5	
Air supply connection	Rc ¼					A
	NPT ¼ female thread					B
Pressure unit / signal air pressure	kgf/cm²: 0.2 to 1.0 kgf/cm² *3					1
	psi: 3 to 15 psi*3					2
	bar: 0.2 to 1.0 bar*3					3
	Pa: 20 to 100 kPa					4
	Pa: 19.6 to 98.1 kPa (0.2 to 1.0 kgf /cm² 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

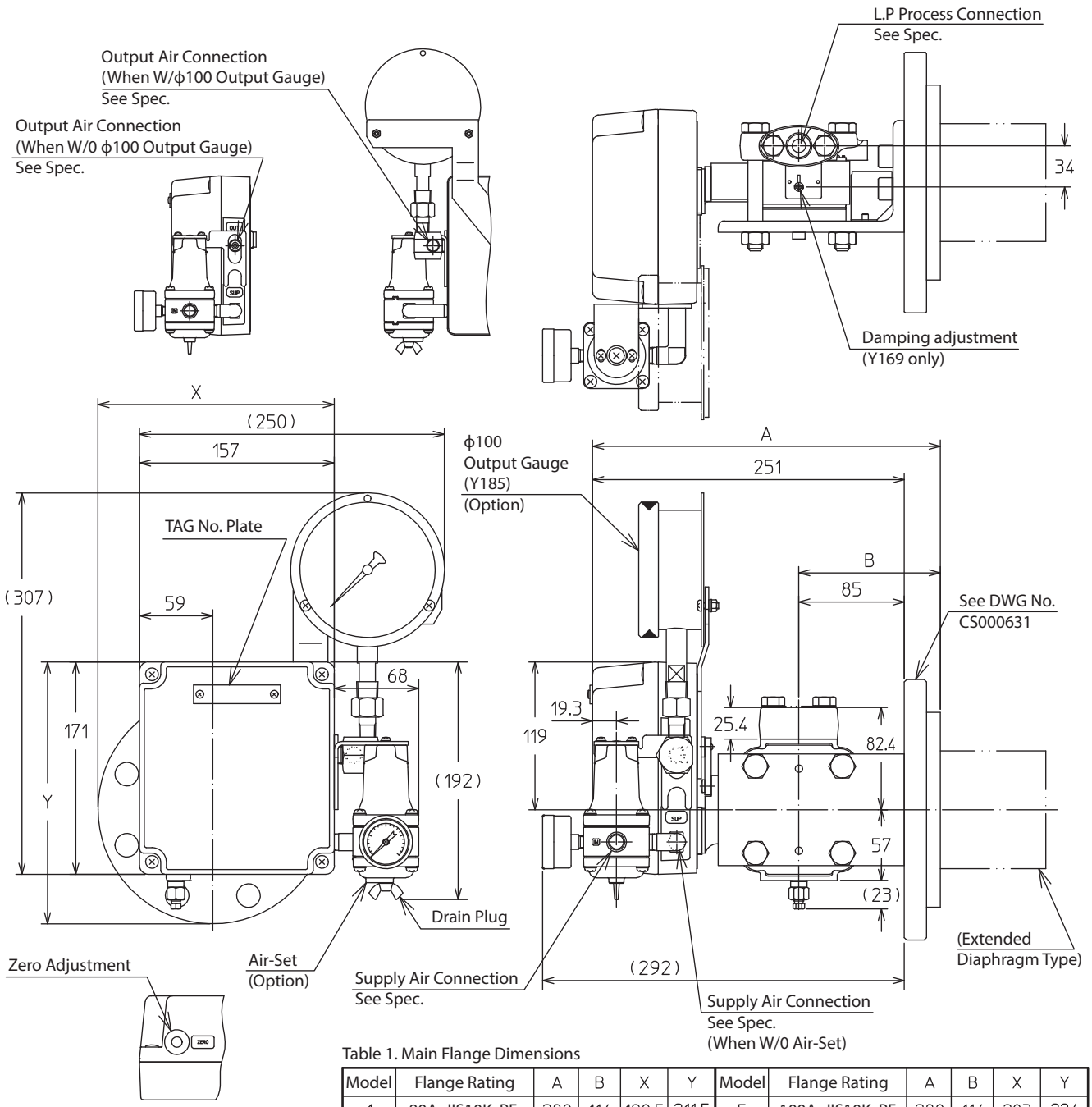


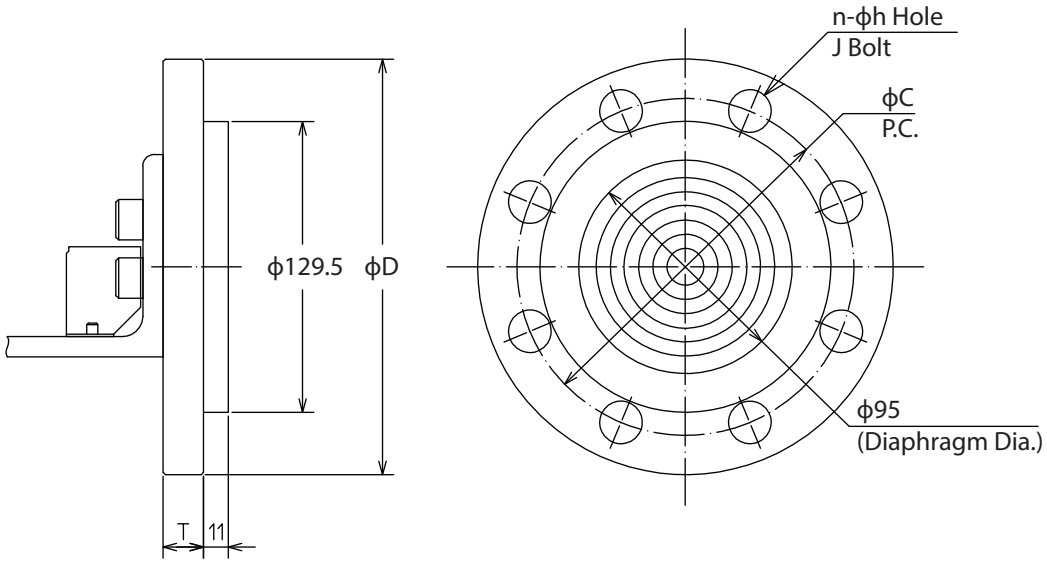
Table 1. Main Flange Dimensions

Model	Flange Rating	A	B	X	Y	Model	Flange Rating	A	B	X	Y
1	80A JIS10K RF	280	114	190.5	211.5	5	100A JIS10K RF	280	114	203	224
2	80A JIS30K RF	290	124	203	224	6	100A JIS30K RF	294	128	218	239
3	3B ANSI 150 RF	286	120	193	214	7	4B ANSI 150 RF	286	120	212.5	233.5
4	3B ANSI 300 RF	291	125	203	224	8	4B ANSI 300 RF	294	128	225	246
E	3B JPI 150 RF	286	120	193	214	M	4B JPI 150 RF	286	120	212.5	233.5
F	3B JPI 300 RF	291	125	203	224	N	4B JPI 300 RF	294	128	225	246

Flange Dimensions

unit: mm

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



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

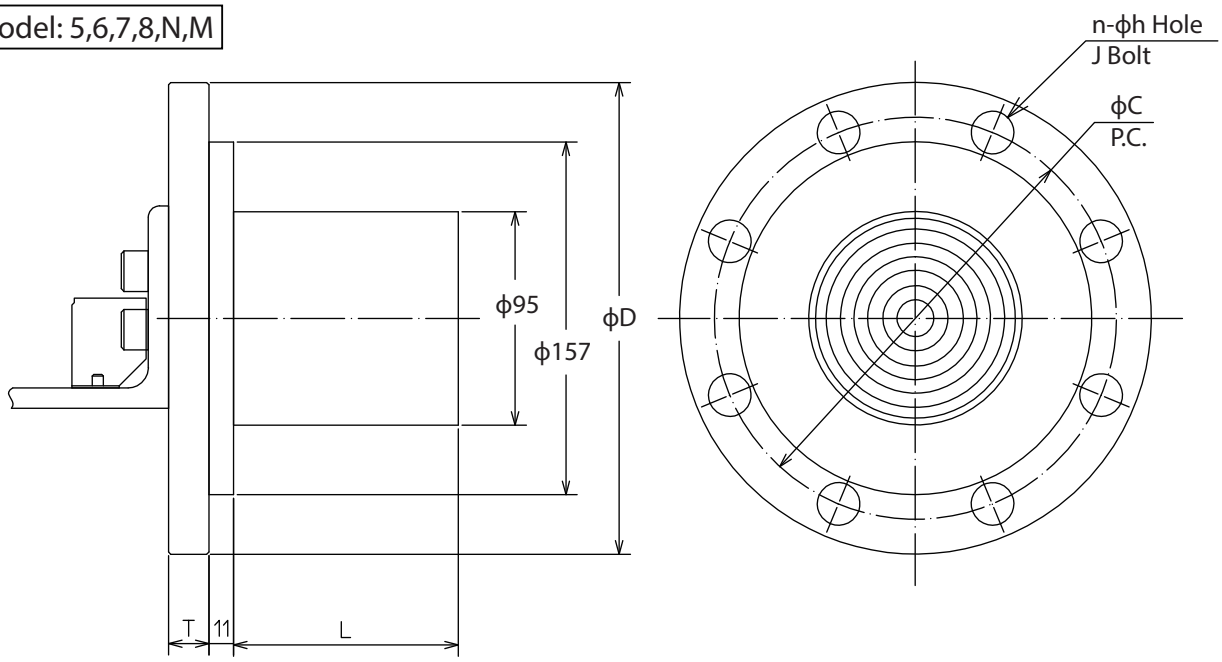


Table 1. Flange Dimensions

Model	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

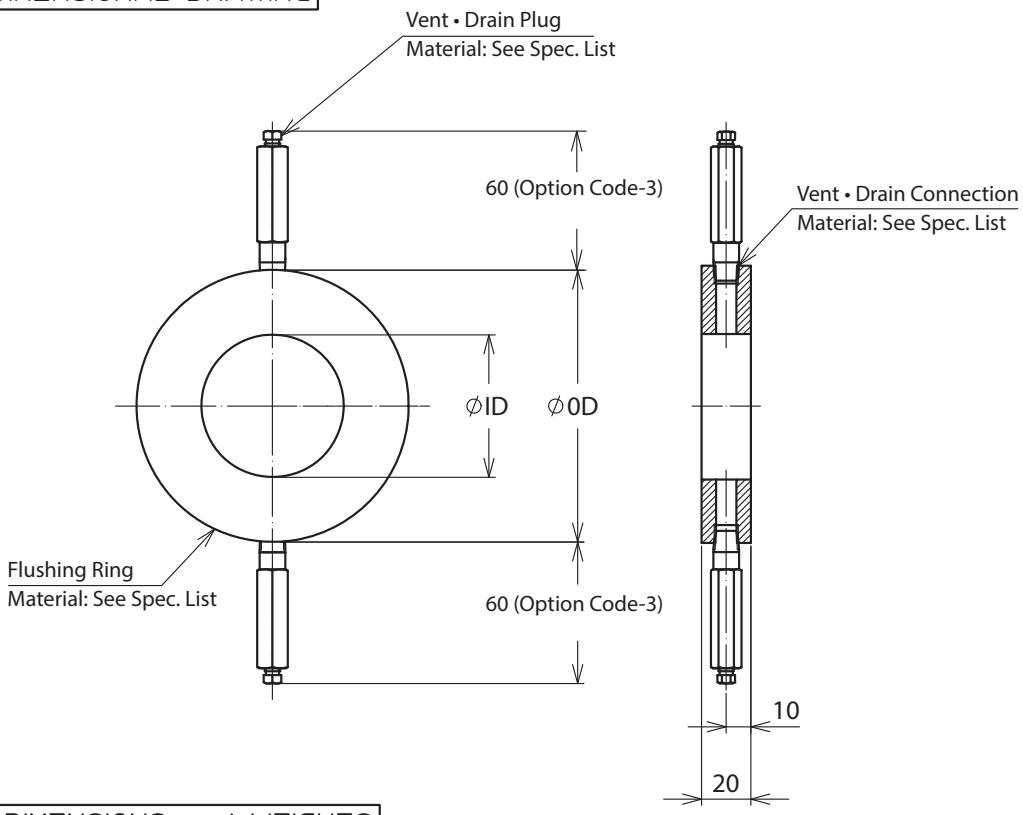
Flushing Ring

Model No.			DV —	I	II	III	IV	V	VI	—	VII
I	Flushing Ring quantity	For Flushing Ring 1 piece		H							
II	Ring material	316 SST			2						
		316L SST			8						
III	Flange rating	JIS10K				A					
		JIS20K				C					
		JIS30K				D					
		JIS63K				F					
		ANSI 150				G					
		ANSI 300				H					
		ANSI 600				J					
		JPI 150				N					
		JPI 300				P					
		JPI 600				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		
		1/4NPT							2		
										—	
VII	Options	Long Vent (60mm)*1									3
		Oil and water finish*2									5
		Oil free finish*2									6
		Mill certificate*2									7
		Strength calculation sheet*2									B
		Withstand pressure and air tight test (general-purpose use)*2									C
		Oil and water finish, high-grade*2									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		0D	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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Specifications are subject to change without notice.

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