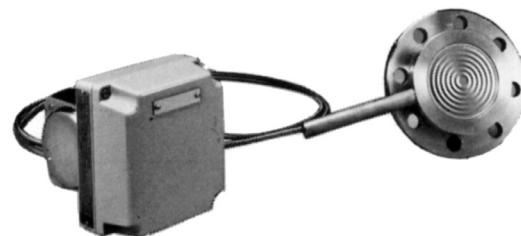


# Pneumatic Pressure Transmitter (Remote Seal Diaphragm Type)

Model KKP71/72/73/74/75/76

## OVERVIEW

Model KKP 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	Specifications											
	Basic model No.											
Measuring range (continuously variable)	KKP71	0–5 to 0–70 MPa										
	KKP72	0–1.25 to 0–25 MPa										
	KKP73	0–0.35 to 0–7 MPa										
	KKP74	0–0.175 to 0–3.5 MPa										
	KKP75	0–0.035 to 0–0.686 MPa										
	KKP76	0–0.01 to 0–0.196 MPa										
Operating pressure (refer to Figure 1 to 11)	Operating pressure (up to 120 °C)				Overload resistance							
					Up to 120 °C		Normal temperature					
	KKP71	–0.05 MPa to +70 MPa				–0.05 MPa, 70 MPa						
	KKP72	–0.05 MPa to +30 MPa				–0.05 MPa, 32 MPa						
	KKP73	–0.05 MPa to +10.5 MPa				–0.05 MPa, 14 MPa						
	KKP74	–0.05 MPa to +5.25 MPa				–0.05 MPa, 7 MPa						
		–0.05 MPa to +5.1 MPa				–0.05 MPa, 5.1 MPa						
		–0.05 MPa to +3.82 MPa				–0.05 MPa, 3.82 MPa						
	KKP75	–0.05 MPa to +1.05 MPa				–0.05 MPa, 1.4 MPa						
	KKP76	–0.05 MPa to +0.3 MPa				–0.05 MPa, 0.4 MPa						
Process connection	Screw		Flange connection									
	G 1-1/2 (φ 34 button diaphragm)	2in. (RF) Wafer	Flush diaphragm type (RF)				Extended diaphragm type (RF)					
			80A- JIS10K	80A- JIS30K	3in.- ANSI150	3in.- ANSI300	100A- JIS10K	100A- JIS30K	4in.- ANSI150	4in.- ANSI300		
	KKP71	✓										
	KKP72	✓	✓									
	KKP73		✓									
	KKP74		✓		✓		✓	✓	✓			
	KKP75			✓		✓	✓		✓			
	KKP76			✓		✓	✓		✓			
Capillary tube length	2, 3, or 5 m											
Sealed liquid	Silicone oil for general use (specific gravity: 0.935 at 25 °C)											
Air supply connection	Rc 1/4 or 1/4NPT 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 <sup>3</sup> 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)											

Item		Specifications
	Basic model No.	
Accuracy	KKP71	±1 % FS (span 5 to less than 10 MPa), ±0.5 % FS (span 10 MPa or more)
	KKP72	±1 % FS (span 1.25 to less than 2.5 MPa), ±0.5 % FS (span 2.5 MPa or more)
	KKP73	±1 % FS (span 0.35 to less than 0.7 MPa), ±0.5 % FS (span 0.7 MPa or more)
	KKP74	±1 % FS (span 0.175 to less than 0.35 MPa), ±0.5 % FS (span 0.35 MPa or more)
	KKP75	±0.1 % FS (span 0.035 to less than 0.07 MPa), ±0.5 % FS (span 0.07 MPa or more)
	KKP76	±0.1 % FS (span 0.01 to less than 0.02 MPa), ±0.5 % FS (span 0.02 MPa or more)
Deadband		0.1 % FS
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
Structure	Dust-proof and waterproof	Satisfies IEC IP54, NEMA TYPE 3R, JIS C0920 rainproof
Material	Process connecting flange	SUS304
	Wetted parts	SUS316 <sup>*1</sup> , SUS316L, nickel copper alloy, tantalum
	Transmitter case	Aluminum alloy
Finish		Baked acrylic finish. Color: light beige (Munsell 4Y7.2/1.3)
Mounting		Direct mounting on the process-side flange <sup>*2</sup>
Flange standard (and year)		JIS: JIS B 2220 (1984) ANSI: ANSI B16.5-88 JPI: JPI-7S-15-93
Mass		Approx.12.5 kg (for 80A-JIS10K flange model. Add 0.6 kg for model with Pressure Regulator with air filter (RA1B))

<sup>\*1</sup>. Diaphragm: SUS316L<sup>\*2</sup>. Mount the main unit of the transmitter on a vertical or horizontal 2-inch pipe using the mounting bracket.

## Additional specifications

Item		Specifications					
	Basic model No.	Span	Suppression (max.)	Elevation, spring A (max.)	High elevation, spring B	Maximum operating pressure	
Suppression and elevation* (Unit: MPa)	KKP71	5 to 70	-0.05	65	—	70	
	KKP72	1.25 to 25		22.5	22.5 to 28.75	30	
	KKP73	0.35 to 7		6	6 to 10.15	10.5	
	KKP74	2in.-ANSI wafer		3	3 to 5.075	5.25	
		80A-JIS30K / 100A-JIS30K			3 to 4.925	4.51 (carbon steel) / 4.12 (SUS304)	
		3in.-ANSI300 / 4in.-ANSI300			3 to 3.525	3.82	
	KKP75	0.035 to 0.686		0.6	0.6 to 1.015	1.05	
	KKP76	0.01 to 0.196		0.18	0.18 to 0.29	0.3	
Pressure Regulator with air filter (RA1B)	Primary pressure	200 kPa to 1035 MPa					
	Secondary pressure	140 kPa					
	Filter mesh diameter	5 µm					
	Connection	Rc 1/4 or 1/4NPT female thread					

\* Elevation + Span ≤ Maximum operating pressure

**Optional specifications**

Item	Specifications		
For vacuum	Y23	Cannot be combined with 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) (See fig. 4 or figs. 6-11)
For high temperature and vacuum	Y62 + Y23	Cannot be combined with 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
<i>Note: Silver finish should not be used in alkaline gases.</i>			
For oxygen	Y182	Wetted parts material	SUS316 or SUS316L
		Sealed liquid	Fluorine oil (specific gravity: 1.92 at 25 °C)
		Operating temperature range (fluid and ambient)	-10 to +60 °C
		Wetted parts degreased (see fig. 2 or figs. 6-10)	
For chlorine (applicable for Model KKP74/75/76)	Y183	Wetted parts material	Tantalum
		Sealed liquid	Fluorine oil (specific gravity: 1.92 at 25 °C)
		Operating temperature range (fluid and ambient)	-10 to +80 °C
		Wetted parts degreased (see Fig. 2 or Figs. 6 to 10)	
Output indicator	Y185	With φ100 gauge	
High vibration resistance	Y188	High vibration-resistance model with a dashpot	

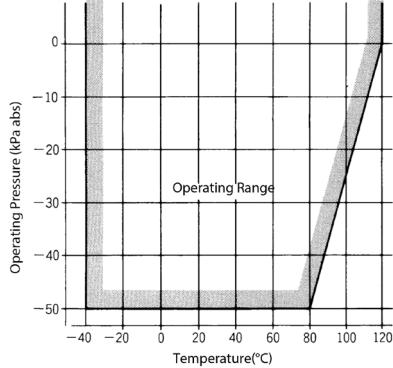


Figure 1. Operating pressure and temperature of wetted parts

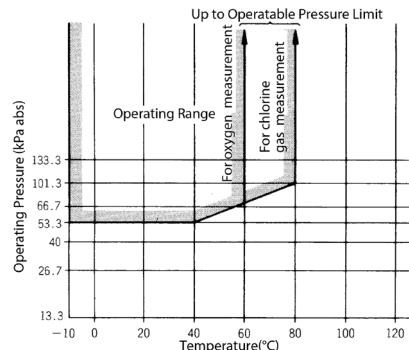


Figure 2. Operating pressure and temperature of wetted parts for oxygen and chlorine use

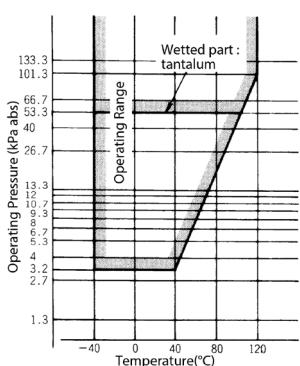


Figure 3. Operating pressure and temperature of wetted parts for vacuum use

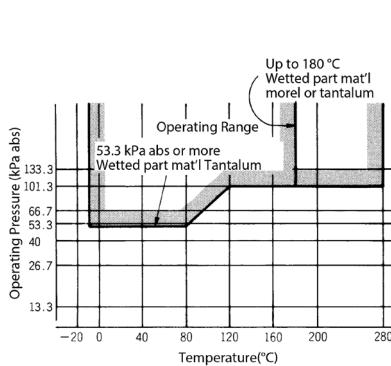


Figure 4. Operating pressure and temperature of wetted parts for high temperature use

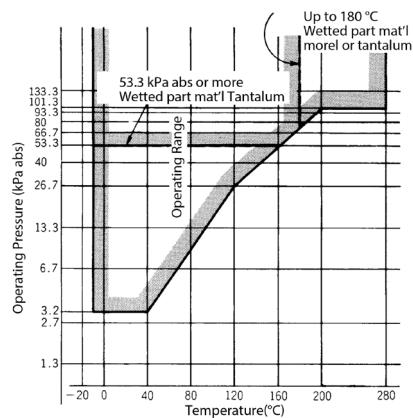


Figure 5. Operating pressure and temperature of wetted parts for high temperature and vacuum use

## 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 Figure 6 to 11.

*Note:* · The maximum operating pressure of the KKP75 is 1.05 MPa or the value in the graph, whichever is smaller.

· The operating temperature range depends on the specifications of the transmitter.

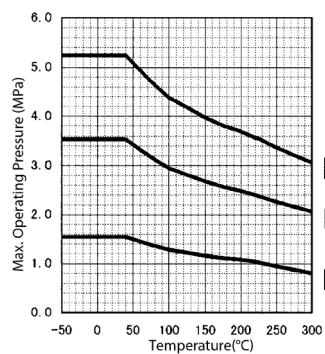


Figure 6. SUS304 & JIS

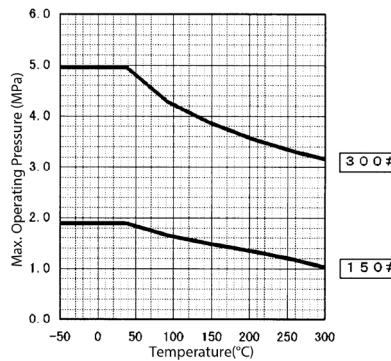


Figure 7. SUS304 & JPI/ANSI

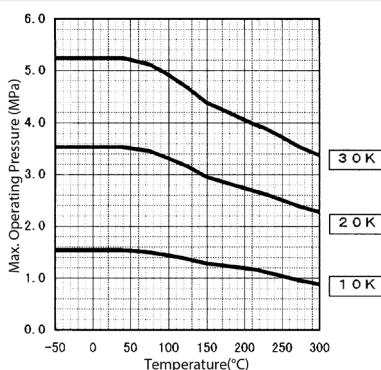


Figure 8. SUS316 & JIS

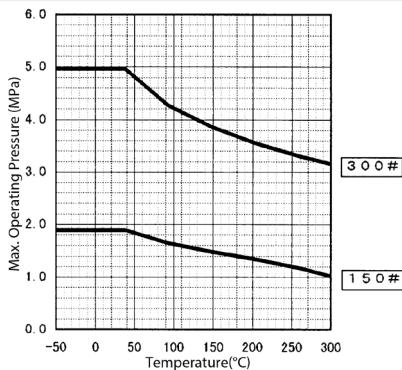


Figure 9. SUS316 & JPI/ANSI

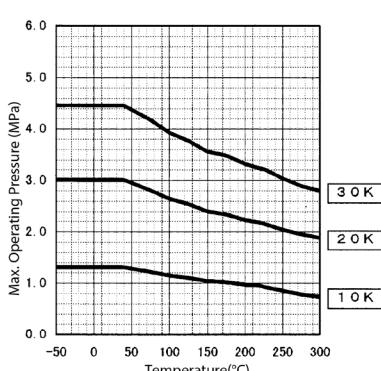


Figure 10. SUS316L & JIS

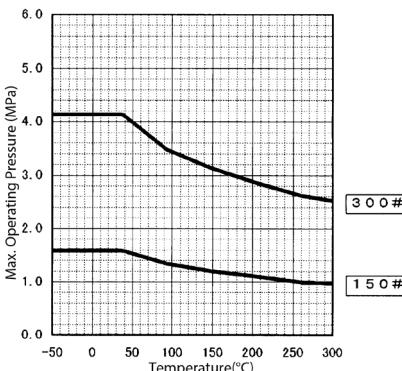


Figure 11. SUS316L & JPI/ANSI

## MODEL SELECTION TABLE

	Basic model No.	Optional spec.								Add'l spec.
Measurement range (MPa)										
0-5 to 0-70	KKP71									
0-1.25 to 0-25	KKP72									
0-0.35 to 0-7	KKP73									
0-0.175 to 0-3.5	KKP74									
0-0.035 to 0-0.686	KKP75									
0-0.01 to 0-0.196	KKP76									
Cover material/element material										
SUS316/SUS316 *2		2	2							
SUS304/SUS316 *1 *3 *4		7	2							
SUS304/Nickel copper alloy		7	3							
SUS304/tantalum *3		7	4							
SUS304/SUS316L *1 *3 *4		7	8							
SUS316L/SUS316L *2		8	8							
Process connection										
Flush diaphragm type, 80A JIS10K (RF)		0	1							
Flush diaphragm type, 80A JIS30K (RF)		0	2							
Flush diaphragm type, 3in. ANSI150 (RF)		0	3							
Flush diaphragm type, 3in. ANSI300 (RF)		0	4							
Extended diaphragm type, 100A JIS10K (RF)		0	5							
Extended diaphragm type, 100A JIS30K (RF)		0	6							
Extended diaphragm type, 4in. ANSI150 (RF)		0	7							
Extended diaphragm type, 4in. ANSI300 (RF)		0	8							
Wafer type, 2in. ANSI (RF)		0	9							
G 11/2 button diaphragm screw		1	1							
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
1/4NPT female thread										B
Signal air pressure										
kgf/cm <sup>2</sup> : 0.2 to 1.0 kgf/cm <sup>2</sup> *5										1
psi: 3 to 15 psi *5										2
bar: 0.2 to 1.0 bar *5										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. Selectable for button diaphragm screw connection.

\*2. Selectable for wafer flange connection.

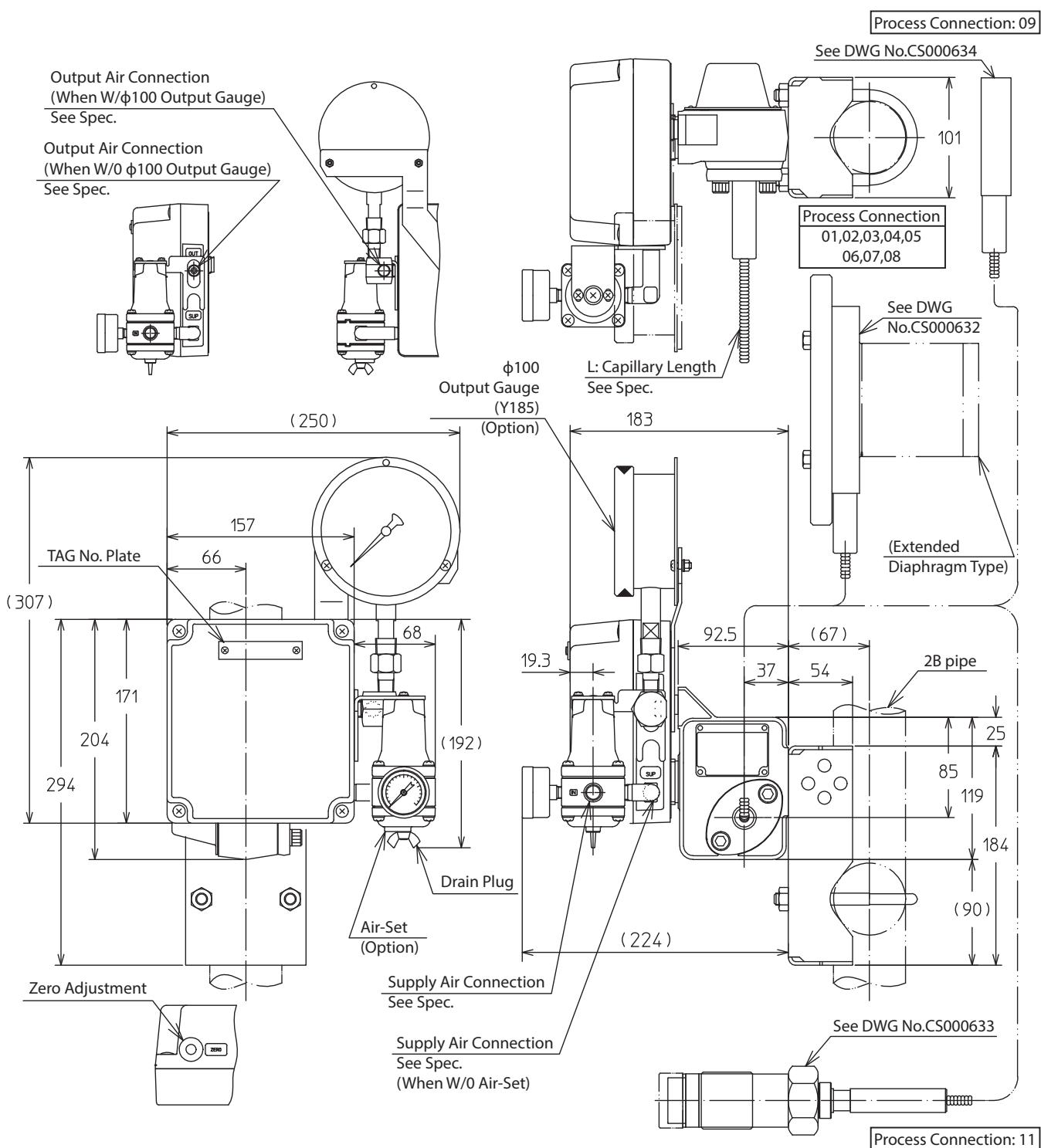
\*3. Selectable for flush diaphragm flange connection.

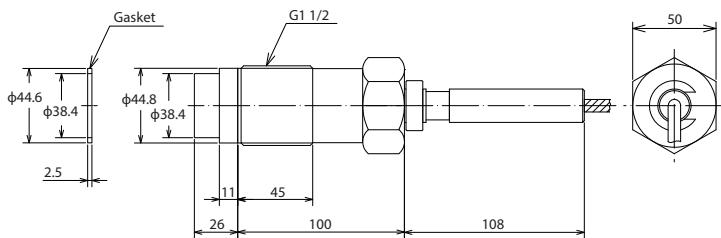
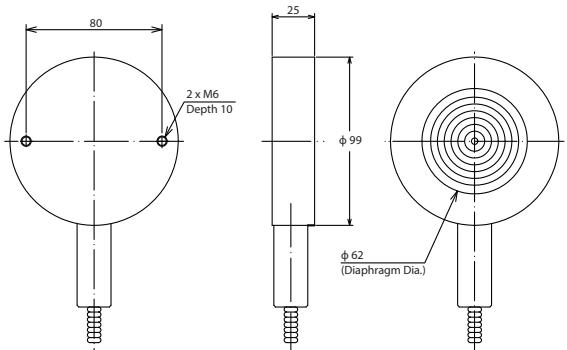
\*4. Selectable for extended diaphragm flange connection.

\*5 Non-SI units can only be used outside of Japan.

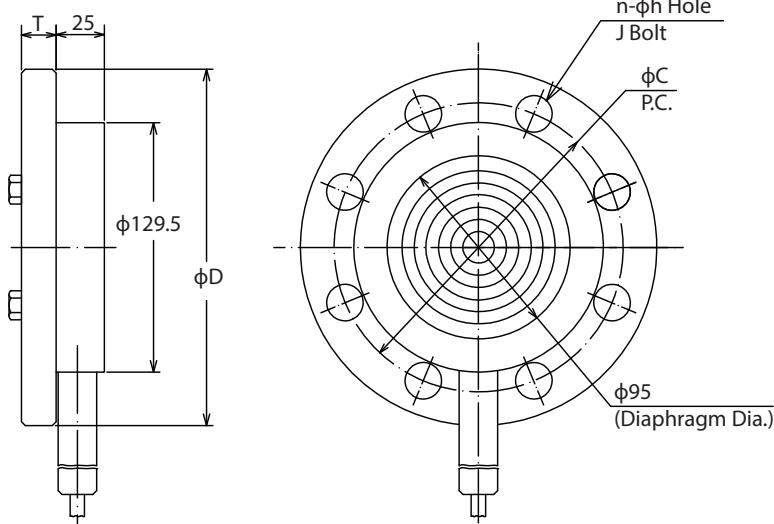
**DIMENSIONS****KKP71/72/73/74**

unit: mm



**Button Diaphragm (KKP71/72)****Wafer (KKP72/73/74)****Flush Diaphragm (KKP74/75/76)**

Model KKP: 01,02,03,04

**Extended Diaphragm (KKP74/75/76)**

Model KKP: 05,06,07,08

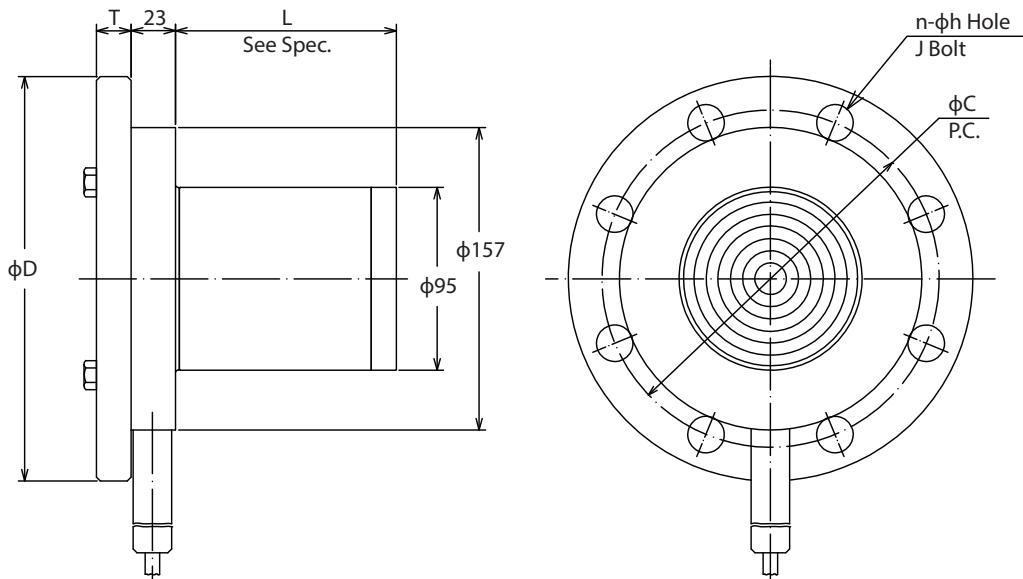


Table 1. Flange Dimensions

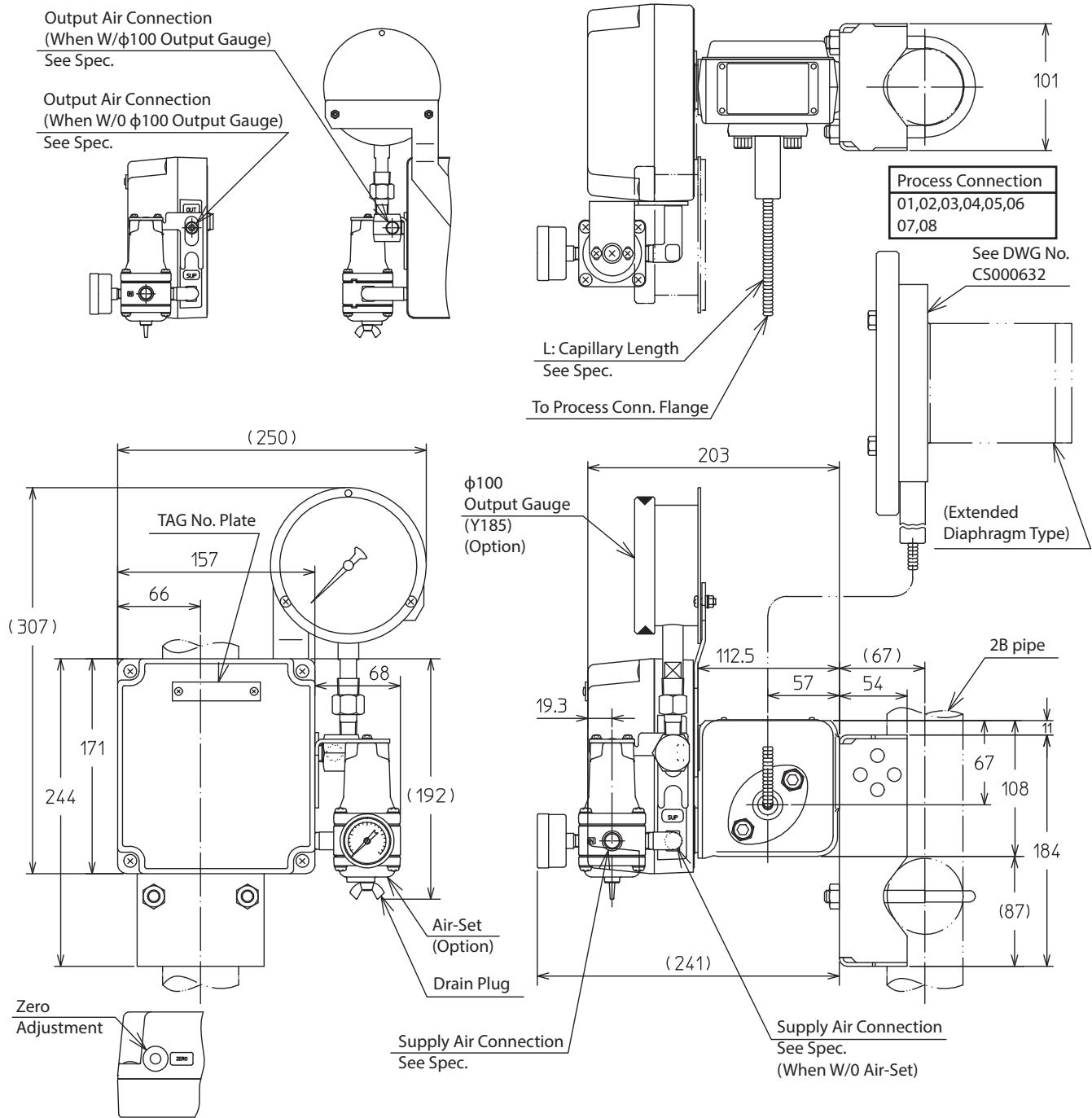
Model KKP	Flange Rating	$\phi D$	T	$\phi C$	n	$\phi h$	J Bolt
01	80A JIS10K RF	185	18	150	8	19	M16
02	80A JIS30K RF	210	28	170	8	23	M20
03	3B ANSI 150 RF	190	24	152.4	4	19	5/8
04	3B ANSI 300 RF	210	28.5	168.1	8	22	3/4
05	100A JIS10K RF	210	18	175	8	19	M16
06	100A JIS30K RF	240	32	195	8	25	M22
07	4B ANSI 150 RF	229	24	190.5	8	19	5/8
08	4B ANSI 300 RF	254	32	200.2	8	22	3/4

Table 2. Flange Extension Length

Model	L
00	None
10	100 mm
15	150 mm

KKP75/76

unit:mm



**Flushing Ring**

Model No.

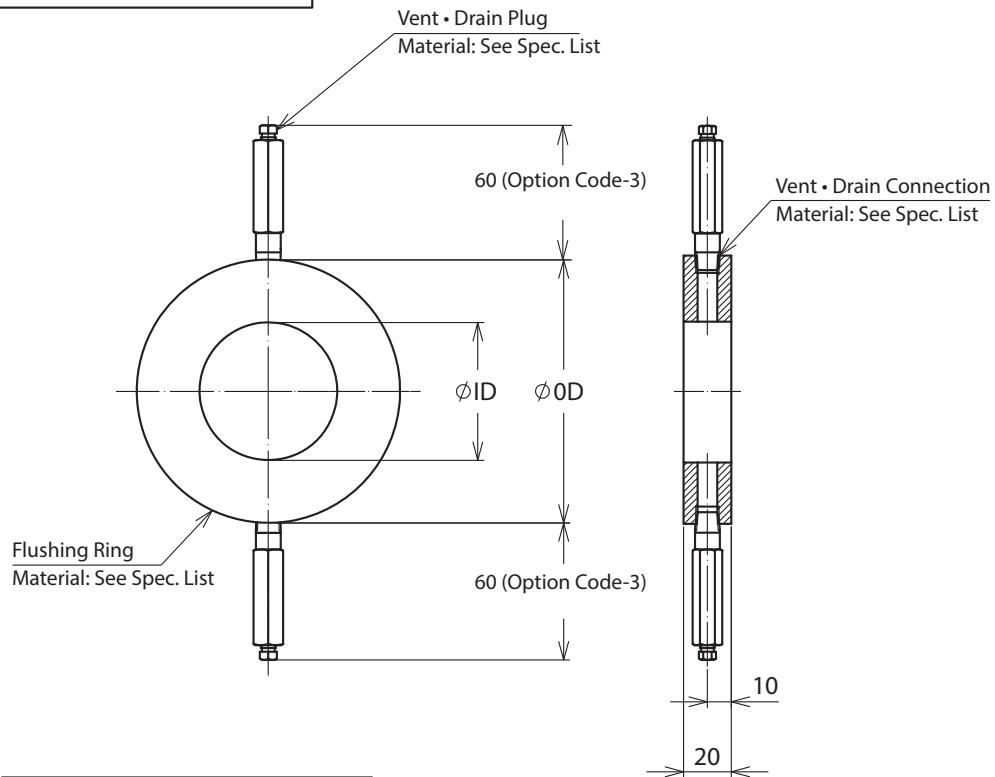
DV	—	I	II	III	IV	V	VI	—	VII
I	Flushing Ring quantity	For Flushing Ring 1 piece	H						
II	Ring material	316 SST		2					
		316L SST		8					
III	Flange rating	JIS10K		A					
		JIS20K		C					
		JIS30K		D					
		JIS63K		F					
		ANSI 150		G					
		ANSI 300		H					
		ANSI 600		J					
		JPI 150		N					
		JPI 300		P					
		JPI 600		Q					
IV	Flange size	3 in / 80A Ring type			B				
		2 in. / 50A Ring type			C				
V	Ring finish	None, Standard JISRa3.2 equivalent			X				
VI	Screw size	Rc1/4					1		
		1/4NPT					2		

VII	Options	Long Vent (60mm) <sup>*1</sup>	3
		Oil and water finish <sup>*2</sup>	5
		Oil free finish <sup>*2</sup>	6
		Mill certificate <sup>*2</sup>	7
		Strength calculation sheet <sup>*2</sup>	B
		Withstand pressure and air tight test (general-purpose use) <sup>*2</sup>	C
		Oil and water finish, high-grade <sup>*2</sup>	D

<sup>\*1</sup>. Code 3:Long Vent (60mm) of Options must be selected.<sup>\*2</sup>. 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			
50A 2"	C	JIS10K/20K ANSI/JPI 150#	A,C,G,N	104	65	0.9
		JIS30K	D	114		1.2
		JIS63K	F	125		1.5
		ANSI/JPI 300#/600#	H,J,P,Q	110		1.0
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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