

# Pneumatic Differential Pressure Transmitter

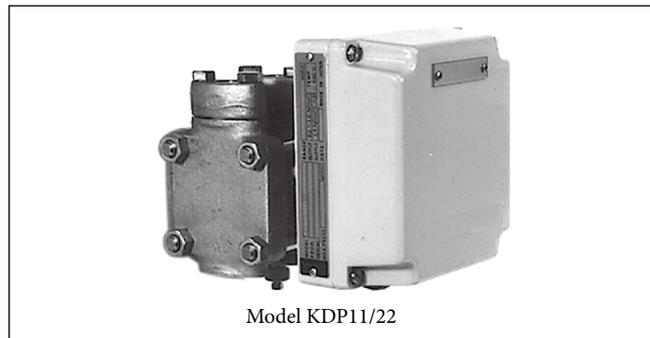
Model KDP11/22/33/44/81/82

## 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.						
	KDP11 (high differential pressure)	KDP22 (medium differential pressure)	KDP33 (low differential pressure)	KDP44 (very low differential pressure)	KDP81 (high-pressure resistant, high differential pressure)	KDP82 (high-pressure resistant, medium differential pressure)	
Measuring range (continuously variable)	From 0–25 to 0–500 kPa	From 0–2.5 to 0–53.9 kPa	From 0–0.5 to 0–6 kPa	From 0–0.1 to 0–1.2 kPa	From 0–25 to 0–500 kPa	From 0–2.5 to 0–53.9 kPa	
Process connection	Rc 1/2 or NPT 1/2 female thread						
Air supply connection	Rc 1/4 or NPT 1/4 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), ±0.75 % FS (span 25 to < 50 kPa)	±0.5 % FS (span 5 to 53.9 kPa), ±0.75 % FS (span 2.5 to < 5 Pa)	±0.5 % FS (span 1 to 6 kPa), ±1.0 % FS (span 0.5 to < 1 kPa)	±0.5 % FS (span 0.2 to 1.2 kPa), ±1.0 % FS (span 0.1 to < 0.2 kPa)	±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	See Y169 in the optional specifications table.			Minimum: 2 seconds or less, maximum: 15 seconds or more	Always 0.5 seconds max. (see the optional specifications for variable adjustment)		
Operating pressure	–50 kPa to +10 MPa *1		–50 kPa to +3.5 MPa *1	–1.5 kPa to +0.5 MPa	–50 kPa to +42 MPa		
Operating temperature	Meter body (process fluid): –40 to +120 °C Transmitter (ambient): –30 to +80 °C (see fig. 1, 2, or 3)						
Operating humidity	10 to 90 % RH						
Overload resistance	10 MPa in either direction		3.5 MPa in either direction	0.5 MPa in either direction	42 MPa in either direction		
Structure	Dust-proof and waterproof: Satisfies IEC IP54, NEMA TYPE 3R, JIS C0920 rainproof						
Material	Meter body cover (differential pressure chamber)	Carbon steel (SF440A), SUSF316, nickel copper alloy, PVC (with SUS304 reinforcing plate) *2		Carbon steel (SF440A), SUSF316, nickel copper alloy, PVC (with SUS304 reinforcing plate) *3	Carbon steel (SF440A), SUSF316		
	Wetted parts	SUS316 *4, SUS316L, nickel copper alloy, tantalum			SUS316	SUS316 *4, SUS316L, nickel copper alloy, tantalum	
	Wetted parts gasket	FEP		PTFE			
	Transmitter case	Aluminum alloy					
	Sealed liquid	Silicone oil					
Main unit	SUS304			-	SUS304		
Finish	Baked acrylic finish. Color: light beige (Munsell 4Y7.2/1.3)						
Mounting	On vertical or horizontal 2-inch pipe		On horizontal 2-inch pipe				
Mass	Approx. 9 kg *5		Approx. 16 kg *5	Approx. 16 kg *5	Approx. 16 kg *5		

- \*1. It varies depending on the cover material. (See fig. 1, 2, or 3.)
- \*2. Operating pressure: -10 to +1500 kPa, operating temperature: 0 to 55 °C
- \*3. Operating pressure: -10 kPa to +1 MPa, operating temperature: 0 to 55 °C
- \*4. Diaphragm: SUS316L
- \*5. Add +0.6 kg for model with Pressure Regulator with air filter (RA1B)

### Additional specifications

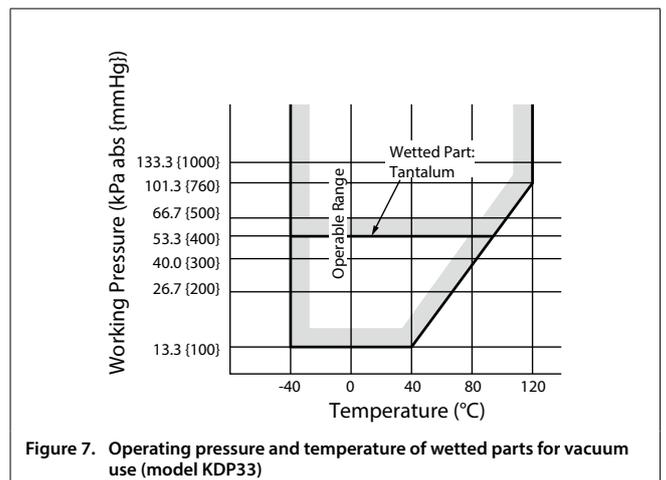
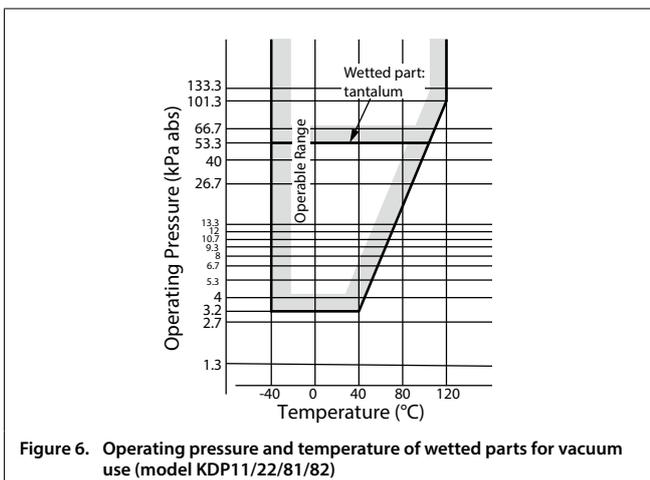
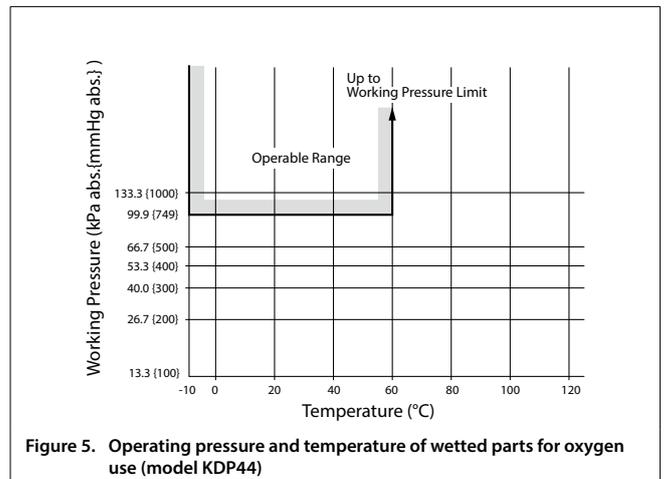
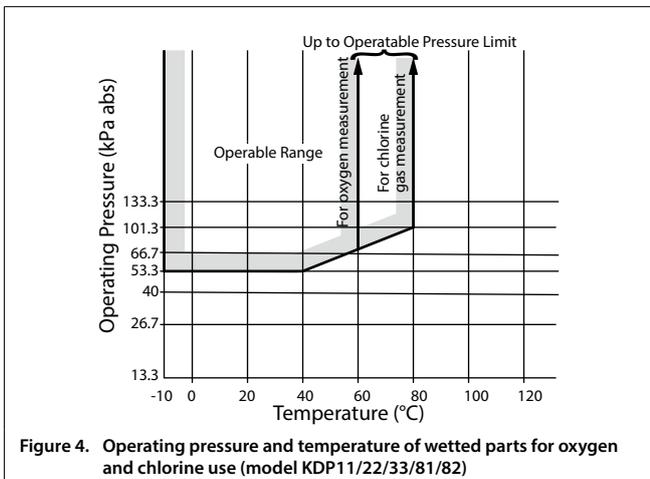
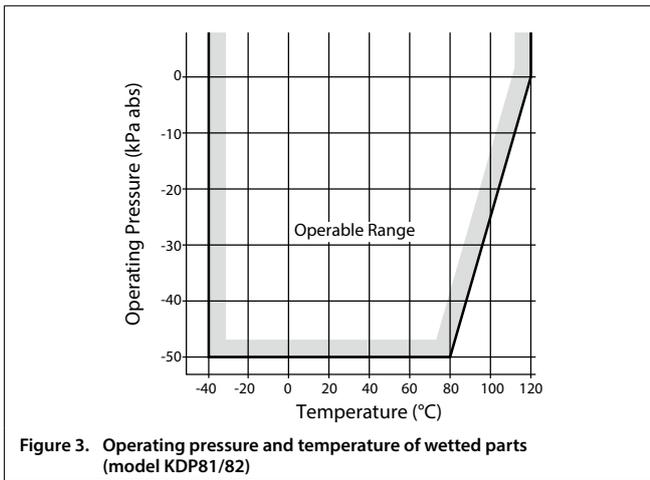
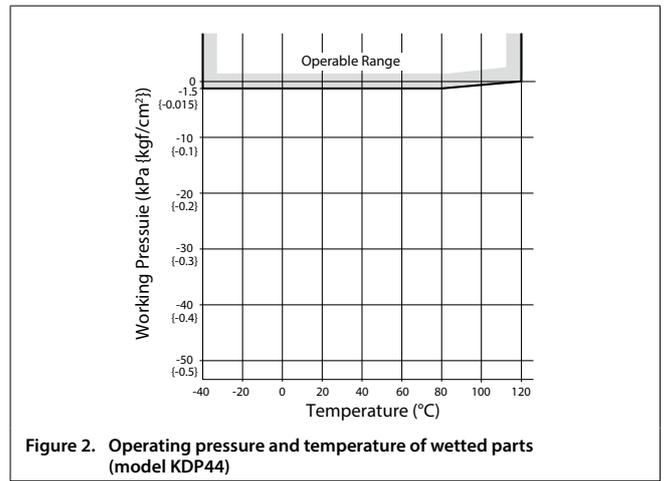
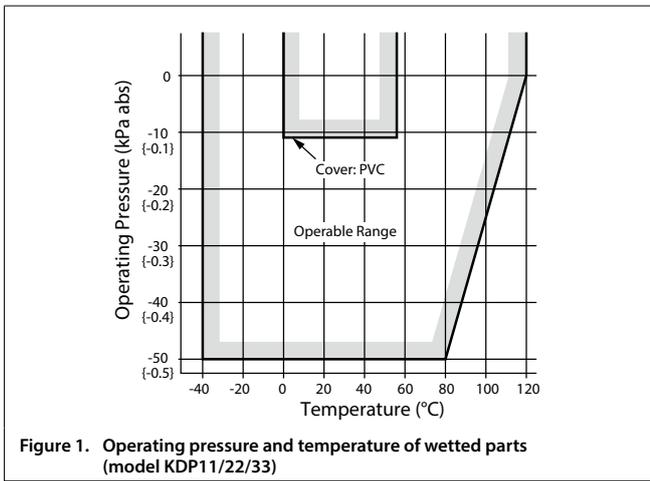
Item		Models KDP11 (HI df. pr.), KDP81 (HI-pr. resist., HI df. pr.)	Models KDP22 (MED. df. pr.), KDP82 (HI-pr. resist., MED. df. pr.)	Model KDP33 (LO df. pr.)	Model KDP44 (VERY LO df. pr.)
Suppression and elevation*	Span	25 to 500 kPa	2.5 to 53.9 kPa	0.5 to 6 kPa	0.1 to 1.2 kPa
	Suppression (max.)	500 kPa	53.9 kPa	6 kPa	1.2 kPa
	Elevation (max.)	475 kPa	51.4 kPa	5.5 kPa	1.1 kPa
Pressure Regulator with air filter (RA1B)	Primary pressure	200 to 1035 kPa			
	Secondary pressure	140 kPa			
	Filter mesh diameter	5 μm			
	connection	Rc 1/4 or NPT 1/4 female thread			
High-accuracy type	KDP11: ±0.25 % FS (span 50 to 500 kPa), ±0.5 % FS (span 25 to < 50 kPa)	KDP22: ±0.25 % FS (span 5 to 53.9 kPa), ±0.5 % FS (span 2.5 to < 5 kPa)			

\* Elevation + Span ≤ Maximum span  
 Suppression ≤ Maximum span

### Optional specifications

Item	Specifications		
For vacuum *1	Y23	Cannot be combined with Y169, Y182, or Y183 (see fig. 6 or 7)	
SUS304 bolt for meter body cover	Y66	Maximum operating pressure	KDP11/22/44 For SUSF316 or nickel copper alloy cover: 6 MPa G, For PVC cover: 1.5 MPa G KDP33 For SUSF316 or nickel copper alloy cover: 2.5 MPa G, For PVC cover: 1 MPa G KDP81/82 Maximum operating pressure: 23 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) KDP11/22/81/82 Minimum: 0.5 seconds or less, maximum: 15 seconds or more KDP33 Minimum: 3 seconds or less, maximum: 15 seconds or more Note for model KDP11: 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.
Process piping rear connection type *2	Y171	Applicable to carbon steel, SUSF316, and SUS316L covers (the transmitter can be installed on a horizontal 2-inch pipe only)	
For oxygen (See fig. 4 or 5.)	Y182	Wetted parts material	SUS316 or SUS316L
		Sealed liquid	Fluorine oil
		Operating temperature (fluid and ambient)	-10 to +60 °C
		Wetted parts degreased	
For chlorine *1 (See fig. 4.)	Y183	Wetted parts material	Tantalum
		Sealed liquid	Fluorine oil
		Operating temperature (fluid and ambient)	-10 to +80 °C
		Wetted parts degreased	
Output indicator	Y185	With φ100 gauge	
Low flow rate measurement transmitter *3	Y186		
High vibration resistance *4	Y188	High vibration-resistance model with a dashpot	

- \*1. This option cannot be selected for the KDP44.
- \*2. This option cannot be selected for the KDP33/44/81/82.
- \*3. This option cannot be selected for the KDP22/44/81.
- \*4. This option cannot be selected for the KDP33.



**Model selection table**

		Basic model No.	Optional spec.				Add'l spec.
Measuring span	High differential pressure model: from 0–25 to 0–500 kPa	KDP11					
	Medium differential pressure model: from 0–2.5 to 0–53.9 kPa	KDP22					
	Low differential pressure: from 0–0.5 to 0–6 kPa	KDP33					
	Very low differential pressure: from 0–0.1 to 0–1.2 kPa	KDP44					
	High-pressure resistant, high diff. pressure: from 0–25 to 0–500 kPa	KDP81					
	High-pressure resistant, medium diff. pressure: from 0–2.5 to 0–53.9 kPa	KDP82					
Material	Flange cover material		Wetted parts material				
	High pressure side	Low pressure side	High pressure-receiving part	Low pressure-receiving part			
	SF440A	SF440A	SUS316	SUS316	1	1	2
	*1 SF440A	SF440A	SUS316L	SUS316L	1	1	8
	SUS316	SUS316	SUS316	SUS316	2	2	2
	*1 SUS316	SUS316	Nickel copper alloy	Nickel copper alloy	2	2	3
	*1 SUS316	SUS316	Tantalum	Tantalum	2	2	4
	*1 SUS316	SUS316	SUS316L	SUS316L	2	2	8
	*2 Nickel copper alloy	Nickel copper alloy	Nickel copper alloy	Nickel copper alloy	3	3	3
	*2 PVC	PVC	Nickel copper alloy	Nickel copper alloy	5	5	3
	*2 PVC	PVC	Tantalum	Tantalum	5	5	4
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 *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/cm <sup>2</sup> or equivalent)						8
Additional specifications	None						X
	Elevation						5
	Suppression						6
	Pressure Regulator with air filter (RA1B)						R
	High-accuracy type *4						H

\*1. This option cannot be selected for the KDP44.

\*2. This option cannot be selected for the KDP44/81/82.

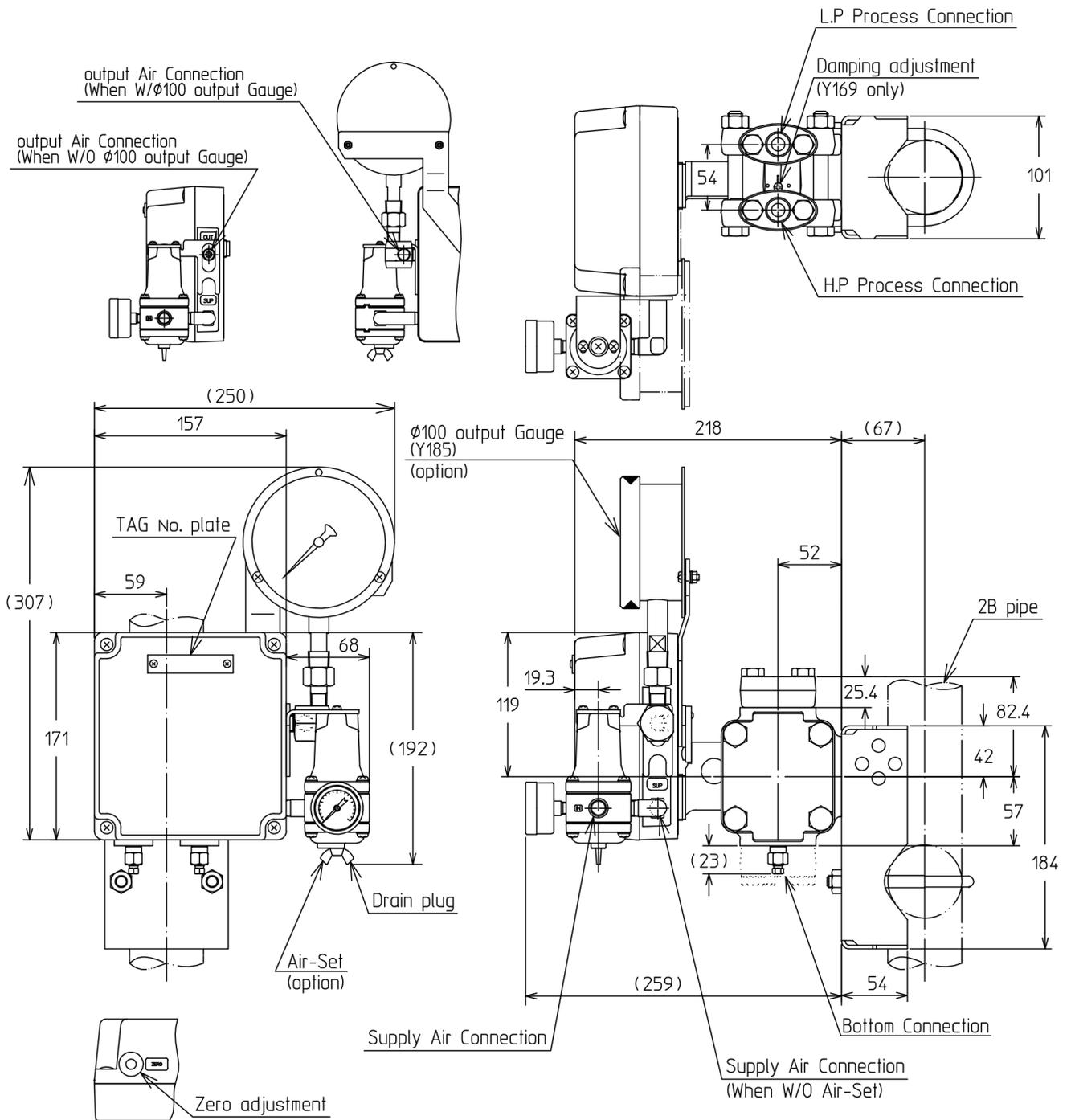
\*3. Non-SI units can only be used outside of Japan.

\*4. This option cannot be selected for the KDP33/44/81/82.

**Dimensions**

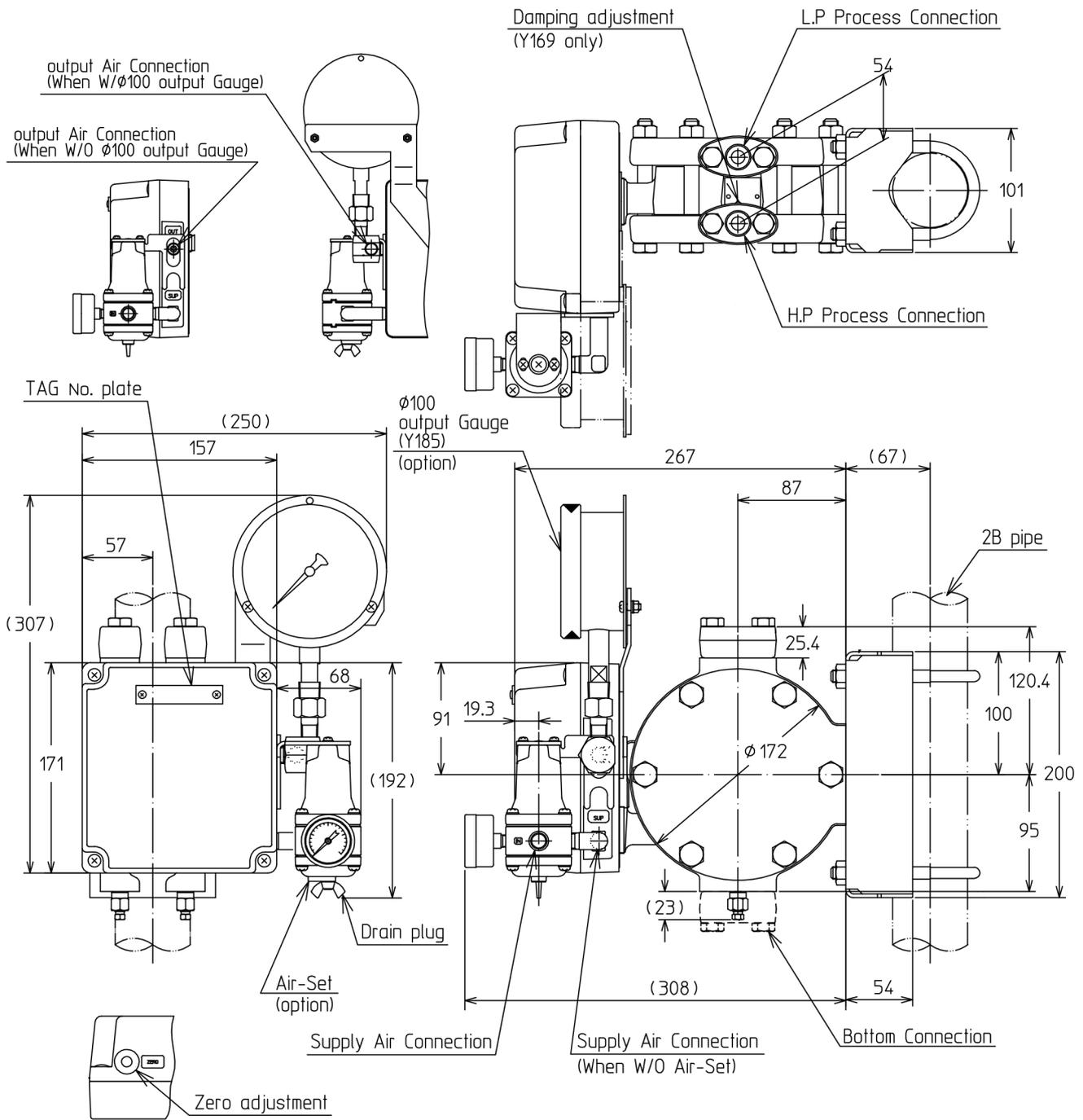
**Model KDP11/22**

(Unit: mm)



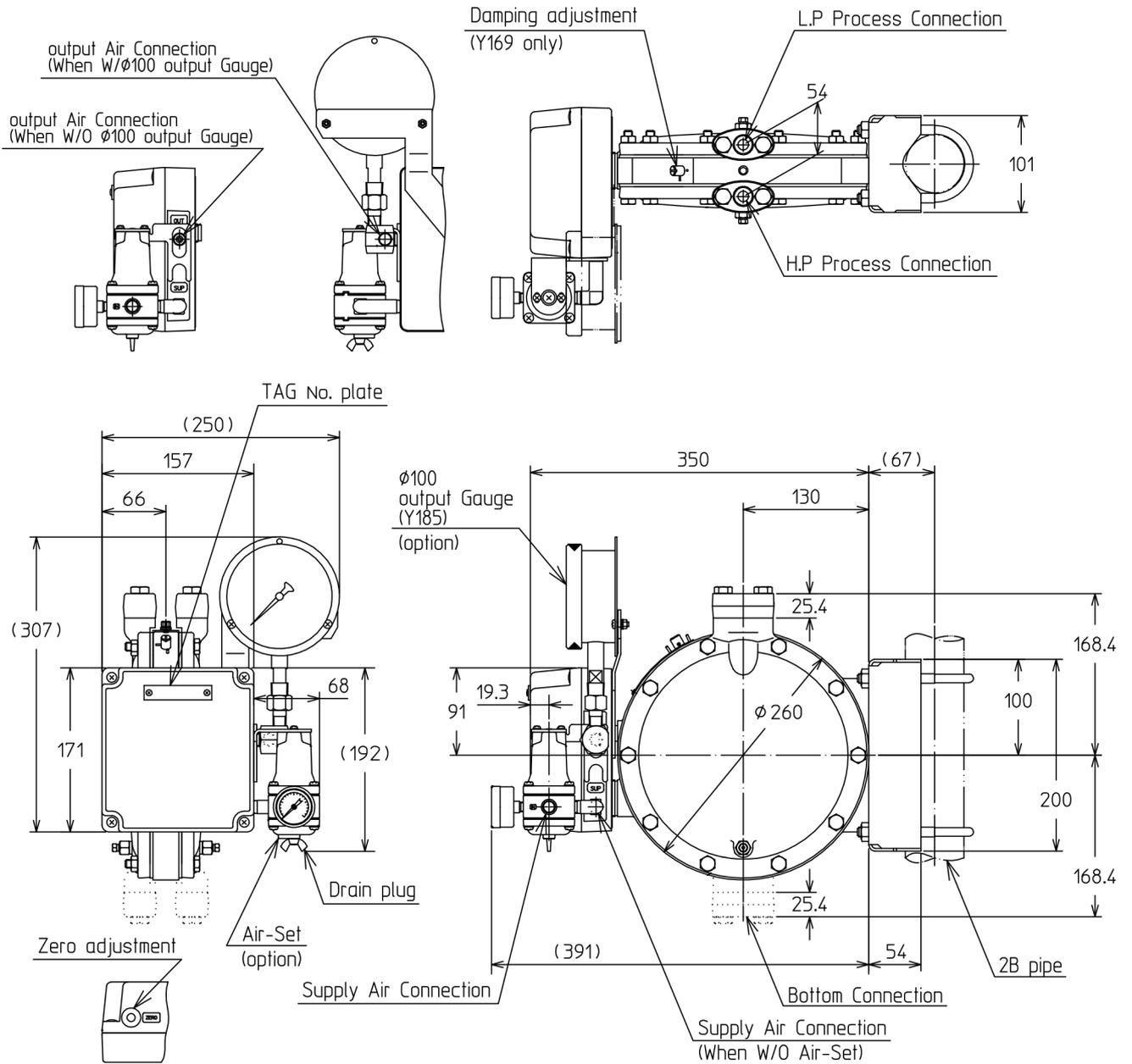
Model KDP33

(Unit: mm)



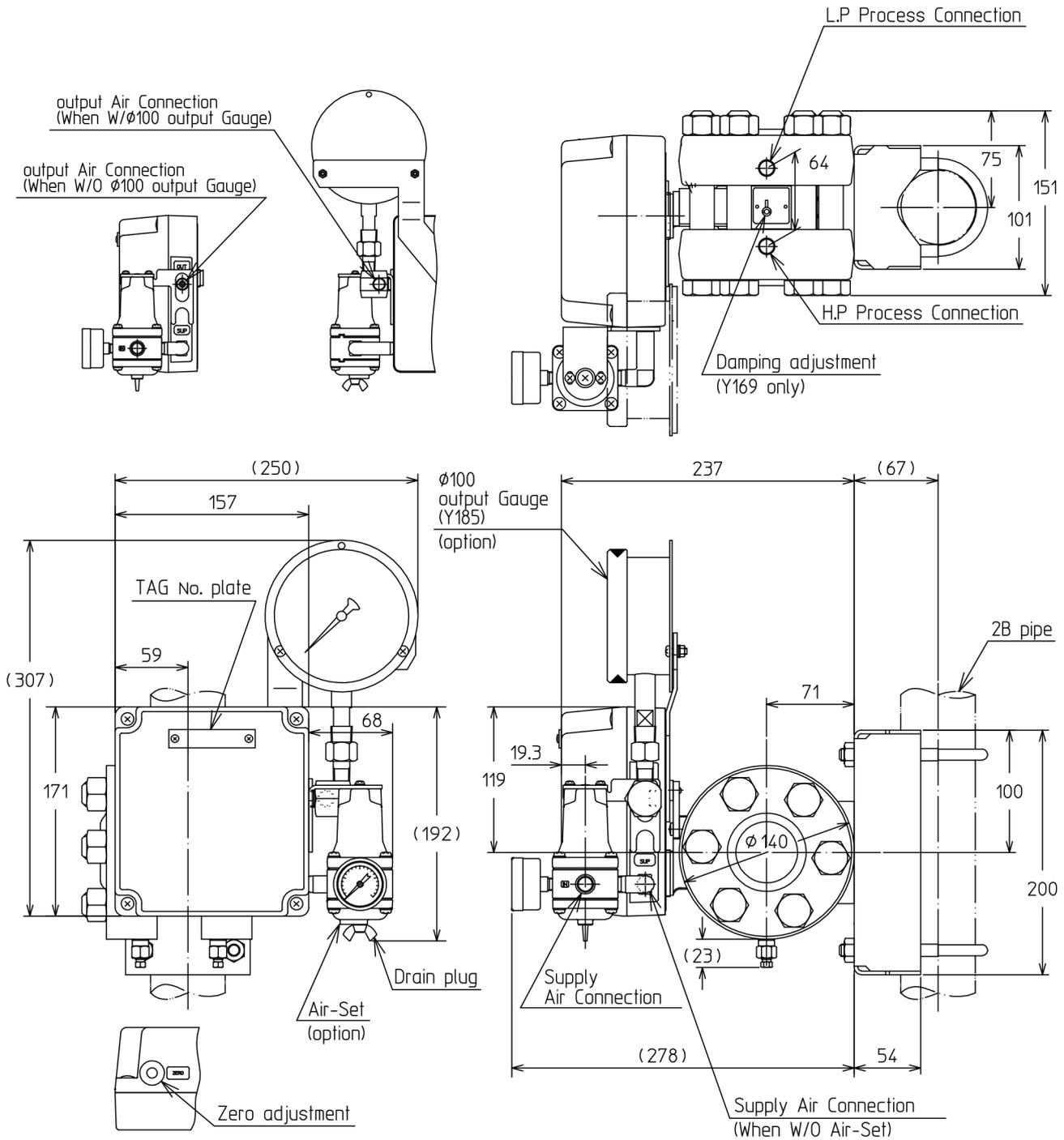
Model KDP44

(Unit: mm)



Model KDP81/82

(Unit: mm)



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1st edition: June 2022

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