

# PREX3000 Vector Involute Type

## Pneumatic Differential Pressure Transmitters

### Model KDP 81/82 (High Static Pressure Type)



The PREX3000 instruments are pneumatic type transmitters which employ a combination of vector balance mechanism and involute mechanism.

The instruments are featured by high resistance against adverse environments, high turn-down ratio, high accuracy, and ease of maintenance.

#### Standard Specifications

| Item                                                | Specifications                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Measuring range</b><br>(continuously adjustable) | KDP 81: 0–25 to 0–500 kPa {0–2,500 to 0–50,000 mmH <sub>2</sub> O}<br>KDP 82: 0–2.5 to 0–53.9 kPa {0–250 to 0–5,500 mmH <sub>2</sub> O}                                                                                                                                                                                                                                               |
| <b>Process connection</b>                           | Rc 1/4 or 1/4 NPT internal thread                                                                                                                                                                                                                                                                                                                                                     |
| <b>Air supply connection</b>                        | Rc 1/4 or 1/4 NPT internal thread                                                                                                                                                                                                                                                                                                                                                     |
| <b>Air supply pressure</b>                          | 140±14 kPa {1.4±0.14 kgf/cm <sup>2</sup> }                                                                                                                                                                                                                                                                                                                                            |
| <b>Output</b>                                       | 20–100 kPa {0.2–1.0 kgf/cm <sup>2</sup> }                                                                                                                                                                                                                                                                                                                                             |
| <b>External load</b>                                | ID 4 mm × Length 3 m + 20 cm <sup>3</sup> or over                                                                                                                                                                                                                                                                                                                                     |
| <b>Air supply capacity</b>                          | 20 Nℓ/minute or over, with 6.7 kPa {50 mmHg} change                                                                                                                                                                                                                                                                                                                                   |
| <b>Air consumption</b>                              | 5 Nℓ/minute or less (when balanced at output 100%)                                                                                                                                                                                                                                                                                                                                    |
| <b>Accuracy</b>                                     | KDP 81: ±0.5% FS (for spans 0–50 to 0–500 kPa {0–5,000 to 0–50,000 mmH <sub>2</sub> O})<br>±1.0% FS (for spans 0–25 to 0–less than 50 kPa {0–2,500 to 0–Less than 5,000 mmH <sub>2</sub> O})<br>KDP 82: ±0.5% FS (for spans 0–5 to 0–53.9 kPa {0–500 to 0–5,500 mmH <sub>2</sub> O})<br>±1.0% FS (for spans 0–2.5 to 0–less than 5 kPa {0–250 to 0–Less than 500 mmH <sub>2</sub> O}) |
| <b>Dead band</b>                                    | 0.1%FS                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Working pressure</b>                             | –50 kPa to +42 MPa {–0.5 to +420 kgf/cm <sup>2</sup> } [refer to Fig. 1]                                                                                                                                                                                                                                                                                                              |
| <b>Operating temperature</b>                        | Meter body (process fluid): –40 to +120°C<br>Transmitter (ambient): –30 to + 80°C [refer to Fig. 1]                                                                                                                                                                                                                                                                                   |
| <b>Operating humidity</b>                           | 10 to 90% RH                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Overload protection</b>                          | Up to 42 MPa {420 kgf/cm <sup>2</sup> } in either direction                                                                                                                                                                                                                                                                                                                           |
| <b>Construction</b>                                 | Dustproof and waterproof, meets IEC IP54, NEMA Type 3R,<br>JIS F8001 Class 3 splashproof, JIS C0920 rainproof                                                                                                                                                                                                                                                                         |
| <b>Materials</b>                                    | Center body: SUS304<br>Wetted parts of center body: SUS316 (diaphragm: SUS316L),<br>SUS316L, Monel, Tantalum<br>Meter body cover (differential pressure chambers): Carbon steel (SF45A), SUS316<br>Wetted parts gasket: Teflon<br>Transmitter case: Aluminium alloy                                                                                                                   |
| <b>Finish</b>                                       | Acryl baking finish Color: Light beige (munsell 4Y7.2/1.3)                                                                                                                                                                                                                                                                                                                            |
| <b>Mounting</b>                                     | On vertical or horizontal 2-inch pipe                                                                                                                                                                                                                                                                                                                                                 |
| <b>Net weight</b>                                   | Approx. 15 kg (add 0.8 kg for air-set)                                                                                                                                                                                                                                                                                                                                                |

## Optional Specifications

| Item                                                              | Specifications                   |                                          |                    |                  |
|-------------------------------------------------------------------|----------------------------------|------------------------------------------|--------------------|------------------|
| (1) Suppression and elevation                                     | (unit: kPa {mmH <sub>2</sub> O}) |                                          |                    |                  |
|                                                                   | Model No.                        | Span                                     | Suppression (max.) | Elevation (max.) |
|                                                                   | KDP 81                           | 25 to 500 {2,500–50,000}                 | 500 {50,000}       | 475 {47,500}     |
|                                                                   | KDP 82                           | 2.5 to 53.9 {250–5,500}                  | 53.9 {5,500}       | 51.4 {5,250}     |
| (note: elevation+span ≤ maximum span, suppression ≤ maximum span) |                                  |                                          |                    |                  |
| (2) Air-set (filter and pressure regulator)                       | Primary pressure:                | 200–990 kPa {2–9.9 kgf/cm <sup>2</sup> } |                    |                  |
|                                                                   | Secondary pressure:              | 140 kPa {1.4 kgf/cm <sup>2</sup> }       |                    |                  |
|                                                                   | Filter mesh diameter:            | 5 microns                                |                    |                  |
|                                                                   | Connections:                     | Rc1/4 or 1/4 NPT internal thread         |                    |                  |

## Optional Semi-standard Specifications

| Item                                                       | Specifications                                                                                                                                                                                                                                          |
|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) For vacuum use (Y23)                                   | Y169, Y182 and Y183 are not available for Y23. [refer to Fig. 3]                                                                                                                                                                                        |
| (2) SUS304 bolts for meter body clamping (Y66)             | Maximum working pressure: 23 MPa {230 kgf/cm <sup>2</sup> }                                                                                                                                                                                             |
| (3) Corrosion-resistant and silver finish (Y138)           | Corrosion resistant (acryl baking) finish (Y138A):<br>Resistant against corrosive gases.                                                                                                                                                                |
|                                                            | Corrosionproof (epoxy baking) finish (Y138B):<br>Resistant against corrosive liquids.                                                                                                                                                                   |
|                                                            | Silver-normal (acryl baking) finish (Y138C):<br>To prevent temperature rise of instrument caused by direct sunlight or radiation from other source of heat.                                                                                             |
|                                                            | Silver-corrosion-resistant (acryl baking) finish (Y138D):<br>To prevent temperature rise the same as above, plus resistance against corrosive gases.<br>(note: silver finish is not applicable for alkaline gases.)                                     |
| (4) Damping adjustment (Y169)<br>(continuously adjustable) | Time constant: Minimum 0.5 sec. or less, Maximum 15 sec. or over<br>(when KDP81 is incorporated with Y182 or Y183, the minimum time constant is 0.5 sec. or less and the maximum time constant is 3 sec. or more.)                                      |
| (5) For oxygen measurement (Y182)                          | Measuring element material: SUS316 or SUS316L<br>Liquid fill: Fluorine oil (specific gravity: 1.915 at 25°C)<br>Operating temperature (fluid and ambient temperature): –10 to +60°C<br>Wetted parts treatment: Treated for degreasing [refer to Fig. 2] |
| (6) For chlorine gas measurement (Y183)                    | Measuring element material: Tantalum<br>Liquid fill: Fluorine oil (specific gravity: 1.915 at 25°C)<br>Operating temperature (fluid and ambient temperature): –10 to +80°C<br>Wetted parts treatment: Treated for degreasing [refer to Fig. 2]          |
| (7) Output pressure gauge (Y185)                           | Pressure gauge (100 mm diameter)<br><br>                                                                                                                            |
| (8) High vibration resistant type (Y188)                   | High vibration resistant type with dashpot                                                                                                                                                                                                              |

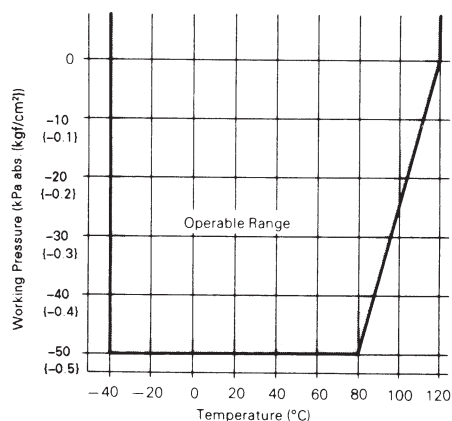
## Model Number Table

Ex: KDP82-2222A1-5, 7

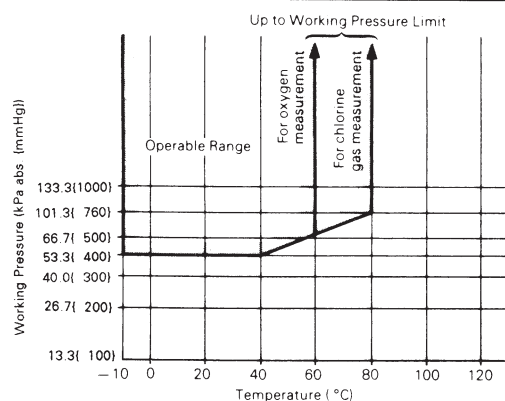
| Base Model No. | Cover Mat'l |    | Wetted Parts Mat'l |    | Air Piping Connections | Pressure unit / Output | Options | Description                                                                  |
|----------------|-------------|----|--------------------|----|------------------------|------------------------|---------|------------------------------------------------------------------------------|
|                | HP          | LP | HP                 | LP |                        |                        |         |                                                                              |
| KDP 81         |             |    |                    |    |                        |                        |         | 0-25 to 0-500 kPa {0-2,500 to 0-50,000 mmH <sub>2</sub> O}                   |
| KDP 82         |             |    |                    |    |                        |                        |         | 0-2.5 to 0-53.9 kPa {0-250 to 0-5,500 mmH <sub>2</sub> O}                    |
|                | -1          |    |                    |    |                        |                        |         | Carbon steel (SF45A)                                                         |
|                | -2          |    |                    |    |                        |                        |         | SUS316                                                                       |
|                |             | 1  |                    |    |                        |                        |         | Carbon steel (SF45A)                                                         |
|                |             | 2  |                    |    |                        |                        |         | SUS316                                                                       |
|                |             |    | 2                  |    |                        |                        |         | SUS316 (diaphragm: SUS316L)                                                  |
|                |             |    | 3                  |    |                        |                        |         | Monel                                                                        |
|                |             |    | 4                  |    |                        |                        |         | Tantalum                                                                     |
|                |             |    | 8                  |    |                        |                        |         | SUS316L                                                                      |
|                |             |    |                    | 2  |                        |                        |         | SUS316 (diaphragm: SUS316L)                                                  |
|                |             |    |                    | 3  |                        |                        |         | Monel                                                                        |
|                |             |    |                    | 4  |                        |                        |         | Tantalum                                                                     |
|                |             |    |                    | 8  |                        |                        |         | SUS316L                                                                      |
|                |             |    |                    |    | A                      |                        |         | Rc 1/4 internal thread                                                       |
|                |             |    |                    |    | B                      |                        |         | 1/4 NPT internal thread                                                      |
|                |             |    |                    |    |                        | 1                      |         | kgf/cm <sup>2</sup> (or mmH <sub>2</sub> O) / 0.2 to 1.0 kgf/cm <sup>2</sup> |
|                |             |    |                    |    |                        | 2                      |         | PSI / 3 to 15 PSI                                                            |
|                |             |    |                    |    |                        | 3                      |         | bar / 0.2 to 1.0 bar                                                         |
|                |             |    |                    |    |                        | 4                      |         | Pa / 20 to 100 kPa                                                           |
|                |             |    |                    |    |                        | 8                      |         | Pa / 19.6 to 98.1 kPa (equality to 0.2 to 1.0 kgf/cm <sup>2</sup> )          |
|                |             |    |                    |    |                        | -x                     |         | No option                                                                    |
|                |             |    |                    |    |                        | -5                     |         | Elevation                                                                    |
|                |             |    |                    |    |                        | -6                     |         | Suppression                                                                  |
|                |             |    |                    |    |                        | -7                     |         | Air-set                                                                      |

Note)

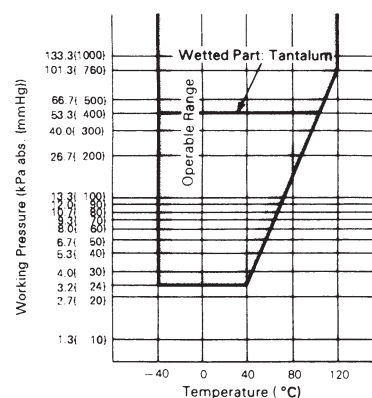
When ordering "Y" options, please write as:  
KDP82Y-2222A1-5,7 (Y □).



**Fig. 1 Working Pressure and Temperature of Wetted Parts**



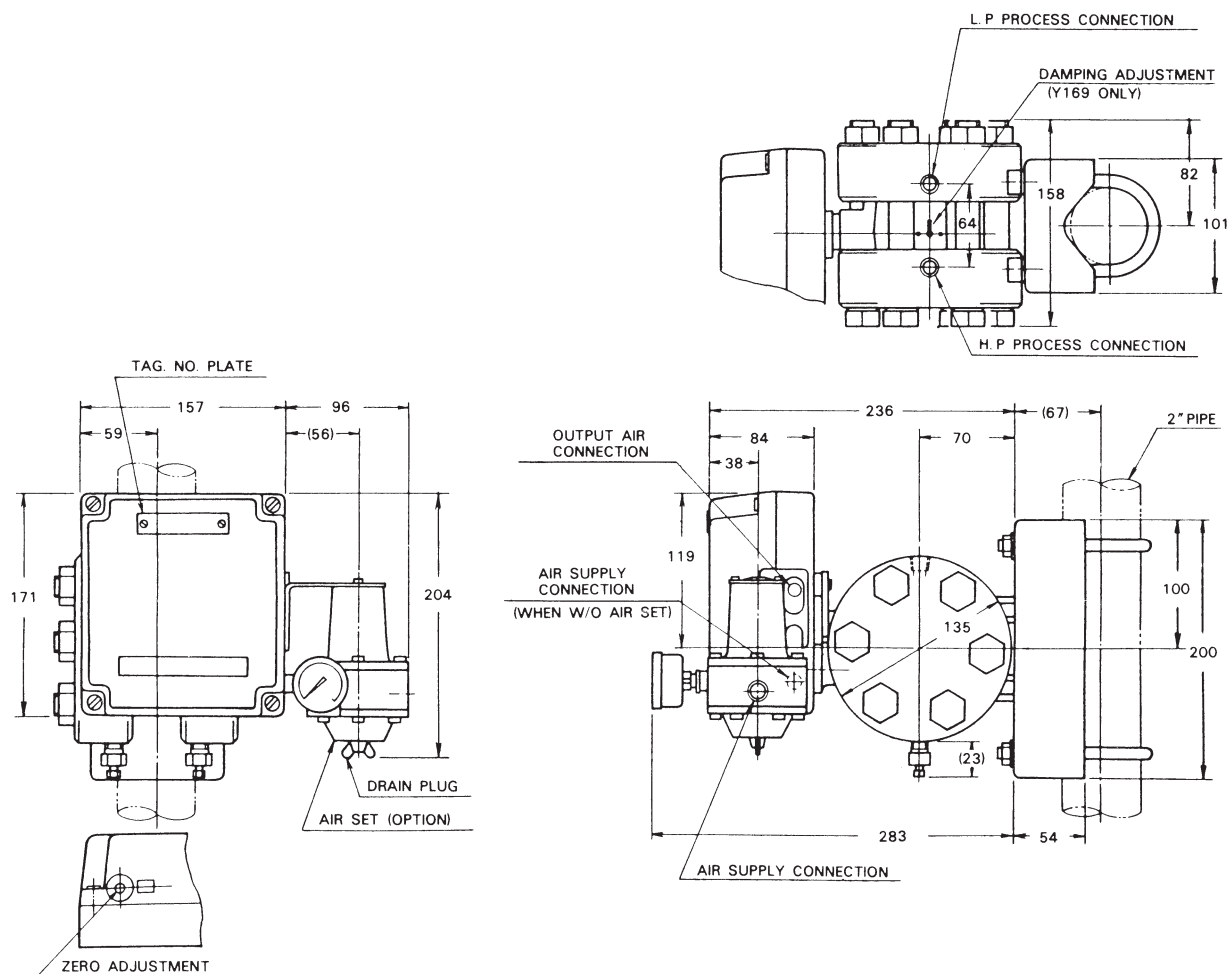
**Fig. 2 Working Pressure and Temperature of Wetted Parts for Oxygen or Chlorine Gas Measurement**



**Fig. 3 Working Pressure and Temperature of Wetted Parts for Vacuum Use**

## Dimensions

(Unit:mm)



### Ordering Information

When ordering, please specify:

1) Model No.

2) Measuring range

Note) PREX3000 Transmitter covers a wide measuring range. At a span close to the minimum range point, however, the instrument exhibits particular characteristics. When operating the instrument at this span, refer to Instrumentation Data Sheet ID2-522-002.

3) Optional specification

4) Optional semi-standard specification

Note) For any combination of two or more Y-specification items, please consult your Yamatake agent.

Reference instruction manual . . .

OM2-5220-0000/

OM2-5220-1100

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