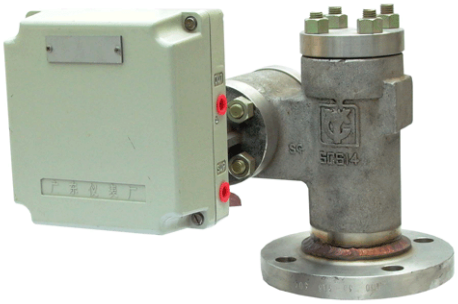

PREX3000 VECTOR INVOLUTE TYPE PNEUMATIC DIFFERENTIAL PRESSURE TRANSMITTERS

MODEL: KQP

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

<table>
<tr><th colspan="2">Item</th><th colspan="10">Specification</th></tr>
<tr><td rowspan="4">Detector Section</td><td>Measuring range</td><td colspan="10">0-300, 0-500, 0-700, 0-1000, 0-1500, 0-2000, 0-2500, 0-3000mm</td></tr>
<tr><td>Specific-gravity</td><td colspan="10">0.05~1.6 (for details, see the following table.)
<table>
<tr><td colspan="2">Pressure rating / Specific gravity range</td><td colspan="5">General type</td><td colspan="3">Corrosion resistant type (major component: hastelloy C)</td></tr>
<tr><td colspan="2"></td><td colspan="4">JIS 10K,30K, ANSI/JPI 150,300</td><td>JIS 63K, ANSI/JPI 600</td><td colspan="3">JIS 10K,30K ANSI/JPI 150,300</td></tr>
<tr><td rowspan="2">Medium Sp.-gr.</td><td>0.2~1.6</td><td colspan="8">Applicable to all ranges except 300mm range.</td></tr>
<tr><td>0.3~1.6</td><td colspan="8">Applicable to 300mm range only.</td></tr>
<tr><td rowspan="3">Low Sp.-gr.</td><td>0.05~0.4</td><td colspan="4">Applicable to all ranges except 300 and 500mm ranges. (applicable to JIS 10k and ANSI/JPI 150)</td><td>-</td><td colspan="3">-</td></tr>
<tr><td>0.08~0.4</td><td colspan="4">Applicable to 500mm range, only</td><td>-</td><td colspan="3">-</td></tr>
<tr><td>0.1~0.6</td><td colspan="4">Applicable to 300mm range, only</td><td>-</td><td colspan="3">-</td></tr>
</table></td></tr>
<tr><td>Process connections</td><td colspan="10">Flange connections
External chamber type: Connecting method: Side-side flanged, side-bottom flanged, Top-side flanged, Top-bottom flanged
Flange size: 2" or 1½" RF, 2" or 1½" RTJ for ANSI 600
Internal float type: Connecting method: Top flanged, side flanged
Flange size: 4" RF, 4" RTJ for ANSI 600</td></tr>
<tr><td>Operating pressure and temperature range</td><td colspan="10">
<table>
<tr><td>Type of detector</td><td>Pressure and temperature range</td></tr>
<tr><td>High damping type (model 310 or 320)</td><td>From – 1.0 kgf/cm^2 to respective pressure ratings, 0 to 200℃</td></tr>
<tr><td>Torque tube type (model 210 or 220)</td><td>From – 1.033 kgf/cm^2 to respective pressure ratings, -196 to +400℃</td></tr>
</table></td></tr>
<tr><td rowspan="2">Detector Section</td><td>Materials (table 1)</td><td colspan="10">
<table>
<tr><td colspan="2">Torque tube / Major components</td><td>V</td><td colspan="2">H</td><td colspan="2">N</td><td>C</td><td colspan="2">L</td></tr>
<tr><td colspan="2"></td><td>(350~400℃)</td><td>(200~250℃)</td><td>(200~350℃)</td><td>(0~200℃)</td><td>(0~200℃)</td><td>(-40~+200℃)</td><td>(-196~0℃)</td><td>(-40~0℃)</td></tr>
<tr><td colspan="2">Torque tube</td><td>Inconel</td><td>--</td><td>Inconel</td><td>--</td><td>SUS316L</td><td>--</td><td>SUS316L</td><td>--</td></tr>
<tr><td colspan="2">Seal diaphragm</td><td>--</td><td>SUS316L</td><td>--</td><td>SUS316L</td><td>--</td><td>Hastelloy C</td><td>--</td><td>SUS316L</td></tr>
<tr><td colspan="2">Bonnet</td><td colspan="8" rowspan="2">Carbon steel (SF45A) , SUS304, SUS316, SUS316L, (Standard use of carbon steel is at temperature higher than 0℃, Please contact us for operating –196 to 0℃ temp. range)</td></tr>
<tr><td colspan="2">Chamber</td></tr>
<tr><td colspan="2">Float</td><td colspan="6">SUS316L</td><td>Hastelloy C</td><td colspan="2">SUS316L</td></tr>
<tr><td colspan="2">Bolts</td><td colspan="6">Chromium-molybdenum steel (SNB7)</td><td colspan="3">SUS304</td></tr>
<tr><td rowspan="2">Gasket</td><td>JIS 10K 30K, ANSI / JPI 150 300</td><td colspan="3" rowspan="2">Semi-metallic (filler material: asbestos)</td><td colspan="2">Asbestos sheet</td><td colspan="3">Teflon sheet (ceramic reinforced)</td></tr>
<tr><td>ANSI / JPI 600, JIS 63K</td><td colspan="2">Semi-metallic (filler material, asbestos)</td><td>--</td><td colspan="2">Semi-metallic (filler material, teflon)</td></tr>
<tr><td colspan="2">Radiating fins</td><td>Provideed</td><td>Not provided</td><td>Provided</td><td colspan="5">Not provided</td></tr>
<tr><td colspan="2">Sealing liquid</td><td>--</td><td>B</td><td>--</td><td>A</td><td>--</td><td>A</td><td>--</td><td>A</td></tr>
</table></td></tr>
<tr><td>Performance</td><td>Accuracy repeatability, And dead band</td><td colspan="10">
<table>
<tr><td colspan="2">Specific-gravity range</td><td colspan="2">Accuracy (carbon with weight)</td><td rowspan="2">Repeatability</td><td rowspan="2">Dead band</td></tr>
<tr><td>Medium sp. – gr.</td><td>Low sp. – gr.</td><td>Transmission</td><td>Indication</td></tr>
<tr><td>Less than 0.4</td><td>Less than 0.1</td><td>±1.0% FS</td><td>±1.5% FS</td><td>0.6% FS</td><td>0.2% FS</td></tr>
<tr><td>0.4 or over</td><td>0.1 or over</td><td>±0.5% FS</td><td>±1.0% FS</td><td>0.3% FS</td><td>0.1% FS</td></tr>
</table></td></tr>
<tr><td></td><td>Damping adjustment</td><td colspan="10">Adjustable range: Approx, 100:1 or more (time constant is 20 sec. Or more at maximum damping) (applicable to type 31 or 32 detector)</td></tr>
</table>

General Specifications	Signal pressure	0.2-1.0 kgf/cm^2 or 3-15 PSI, 0 or 1.4 kgf/cm^2 (on-off, different gap)
	Minimum load	I.D. 4mm × 3m + 20cm^3
	Air supply pressure	1.4±0.14 kgf/cm^2
	Air consumption (50% output balanced)	Indicating and transmission：9N ℓ /min Only indicating：5N ℓ /min Indicating and control：9N ℓ /min Manual control：+3N ℓ /min Indicating, control, and pneumatic pressure transmission：9N ℓ /min
	Saturated air supply capacity	Pneumatic transmission：40 N ℓ /min Output：40 N ℓ /min Manual pneumatic pressure：30 N ℓ /min
	Air piping connections	PT ¼ or ¼ NPT internal thread
	Operating temperature	Controller (ambient): -30 to +80℃
	Relative humidity	10-90% RH
	Case, Door	Enclosure：Rain-tight and dust-tight, meets JIS F8001 Class 3 splash-proof, NEMA3, IEC IP54 Materials：Case……..Aluminum die-cast Door……..Polyester with fiberglass Door-glass…….Reinforced glass (3mm thick) Case finish：Acryl baking finish Color of finish：Dark beige
	Installation	Direct mount to the process with flanges.
	Weight	Approx. 4.2kg (when model KQP210-11N4103A4-X)

Optional Specifications

Item	Specification
(1) Elevation and suppression (applicable to type 310 or 320)	(1) Elevation：Use for an input range the low limit of which is higher than zero. Suppression：Reverse of elevation. Used primarily for measurement of levels of low specific-gravity liquids.
	(2) Float weight adjustment mechanism. (applicable also to floats which are not of standard types) Use this mechanism to satisfy the following condition: ● WA – W = We We: Elevation weight ≦ 1.2kg W : Float weight WA: Basic weight for adjustment
	(3) Zero elevation mechanism (used for measuring range change by zero-point elevation) Use this mechanism to satisfy the following condition: ● $Fe = \pi d^2 / 4 * Le * p \leqslant 1.2kg$ Fe：Buoyancy corresponding to amount of zero elevation (kg) ● $F_R + Fe = \pi d^2 / 4 * (L_R + Le) * p \leqslant 1.6kg$ FR：Buoyancy at measuring range (kg) ● $(L_R + Le) / L \leqslant 1$ d：Diameter float (m) ℓ：Total length of float before zero-elevation (m) ● $F_R = \pi d^2 / 4 * L_R * p \geqslant 0.4kg$ ℓR：Measuring range after zero-elevation (m) ℓe：Zero-elevation range (m) ρ：Density of measured liquid (kg/cm^2)
(2) Air set	Pressure regulator with filter plus Φ40mm pressure gauge. (supply pressure: 2-9.9 kgf/cm^2, output: 1.4 kgf/cm^2, pressure gauge: 0-2 kgf/cm^2)

Model Number Table

Ex: KQP210-27N4230A4-7

Basic model no.	Selections									Options	Description
	Type of detector	Process connection	Mat'l of bonnet/ chamber	Mat'l of torque tube/ sea diaphragm	Pressure rating	Flange size	Measuring range	Air connection	Signal pressure		
KQP											Liquid level indicationg controller
	210										Torque tube type, { sp.-gr. 0.2-1.6, 0.3-1.6 (0-300mm range only) }
	220										Torque tube type, { sp.-gr. 0.05-0.4, 0.08-0.4 (0-500mm range only), 0.1-0.6 (0-300mm range only)}
	310										High damping type, { sp.-gr. 0.2-1.6, 0.3-1.6 (0-300mm range only) }
	320										High damping type, { sp.-gr. 0.05-0.4, 0.08-0.4 (0-500mm range only), 0.1-0.6 (0-300mm range only)
		-1									External chamber type, side-side flanged
		-2									External chamber type, side-bottom flanged
		-3									External chamber type, top-bottom flanged
		-4									External chamber type, top-side flanged
		-5									Internal float type, top flanged
		-6									Internal float type, side flanged
			0								None (applicable to type 310 or 320-6)
			1								Bonnet (side flanges) and chamber: Carbon steel
			2								Bonnet (side flanges) and chamber: SUS316
			7								Bonnet (side flanges) and chamber: SUS304
			8								Bonnet (side flanges) and chamber: SUS316L
				V							Torque tube: Inconnel (350-400℃) (applicable to type 21 or 22 detector.)
				H							Torque tube: Inconnel (200-350℃) (applicable to type 21 or 22 detector.)
											Seal diaphragm: SUS316L (200-250℃) (applicable to type 31 or 32 detector.)
				N							Torque tube: SUS316L (0-200℃) (applicable to type 21 or 22 detector.)
											Seal diaphragm: SUS316L (-40~+200℃) (applicable to type 31 or 32 detector.)
				C							Seal diaphragm: Hastelloy C (-40~+200℃) (applicable to the corrosion-proof of type 31 detector.)
				L							Torque tube: SUS316L (-196~0℃) (applicable to type 21 or 22 detector.)
											Seal diaphragm: SUS316L (-40~0℃) (applicable to type 31 or 32 detector.)
					1						JIS 10K (comply with 1984.)
					2						JIS 30K (comply with 1984.)
					3						ANSI 150 (comply with 1977.)
					4						ANSI 300 (comply with 1977.)
					5						ANSI 600 (comply with 1977.) (applicable to type 31 or 21 detector.)
					6						JIS 63K (comply with 1984.) (applicable to type 31 or 21 detector.)
						1					11/2" RF flanges (external chamber type only)
						2					2" RF flanges (external chamber type only)
						3					4" RF flanges (internal float type only)
						4					11/2" RTJ flanges (external chamber type only)
						5					2" RTJ flanges (external chamber type only)
						6					4" RTJ flanges (external chamber type only)
							03				0~300mm — Type 220 or 320 detector cannot be used for pressure ratings JIS63K, ANSI 600, and JPI 600
							05				0~500mm
							07				0~700mm — Type 220 or 320 detector can be used only for pressure ratings JIS10K, ANSI 150, and JPI 150
							10				0~1000mm
							15				0~1500mm
							20				0~2000mm
							25				0~2500mm
							30				0~3000mm
								A			PT ¼ internal thread (instruction plate: Japanese)
								B			¼ NPT internal thread (instruction plate: English)
									1		0.2~1.0 kgf/cm^2
									4		3~15 PSI (20-100 KPA)
										-X	No options
										-5	Elevation (applicable to type 310 or 320)
										-6	suppression (applicable to type 310 or 320)
										-7	With air-set

Notes:

1)Measurements of specific gravity or boundary surface.

For measurement of specific gravity or boundary surface, write suffix "Z" at the end of the basic model number. (For boundary surface measurement, mention the specific gravities of upper and lower liquids.)

2) RTJ connection

The process connection flanges alone are of a ring joint type. (Applicable to ANSI 600 only)