

# Micro Differential Pressure Switch

WO81

WO70

FR51A

MS30

MS61A

MS65

EB3C

EMD8

EMD7

EMT6

EMT1

EMTGP1

EMT1H

EMP5

EMA3

EMRT1

HWS15

Combination of Manosys

Accessories

Application Cautions for use Maintenance

## Manostar Switch MS65 General purpose type Differential Pressure Switch

RoHS compliant

Utility model registration No.840091

- The setting of activating pressure is simply by turning set dial with scale
- Broad line-up of piping connector, it is easy to replace another type from vinyl or plastic tube type to metal tube type and so on.
- High durability and strength polyester film subjected special treatment can keeps high-accuracy of repeatability for long period in the model of main pressure range.
- Built-in micro switch has high reliability and high electrical rating of contact.
- Even when the pressure becomes excessive, the original mechanism avoid damage to the moving parts.
- Small hysteresis is realized by the silicone rubber diaphragm.
- High-performance air filter prevent the incorrect action of the contact under severe condition. (MS65F type)



MS65



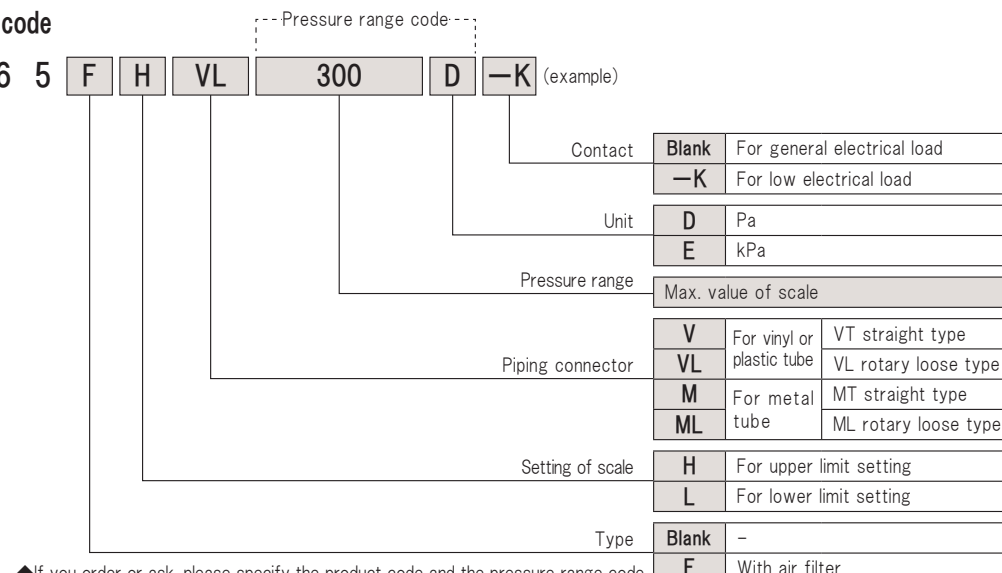
MS65F  
(with air filter)

### Product code

M S 6 5 F H VL 300 D -K (example)

**<Example of main use field>**  
 Nuclear facilities  
 Air conditioning control system of the food factories  
 Air conditioning control system of the high-rise buildings  
 Hospital and medical facilities  
 Production lines of the car and the semi-conductor  
 Exhaust gas pressure control of coffee-roaster machines

**<Example of use>**  
 Measuring the inside pressure of clean rooms  
 Detection of the pressure loss of an air filter  
 Measuring air volume and velocity in a ventilator and an exhauster.



\* (refer to p.93)

◆ If you order or ask, please specify the product code and the pressure range code.

## Specification

Types	Standard type		With air filter	
	MS65		MS65F	
Pressure units	Pa, kPa			
Pressure measuring method	Measuring differential pressure			
Pressure receiving element	Diaphragm			
Gas to be measured	Air, non-corrosive and non-combustible gases (not liquid)			
Pressure setting method	Dial with scale			
Standard installation position	Installation position from upward horizontal to vertical is available (refer to p.37)			
Medium and ambient temperature	- 10 to + 50 °C (no freezing)			
Ambient humidity	90 % RH or less (no dewing)			
Withstanding pressure of instrument body	200 kPa (refer to p.104)			
Withstanding pressure of receiving element	40 kPa (refer to p.104)			
Material of the outer case	Phenol resin and aluminum die cast			
Withstanding vibration	5 to 10 Hz Amplitude : 10 mm, 10 to 50 Hz Acceleration : 39 m/s <sup>2</sup> (each two hours on triaxial directions)			
Withstanding impact	100 m/s <sup>2</sup> (each six times on triaxial direction)			
Insulation resistance	Between each terminal and case 20 MΩ or more (500 V DC megger)			
Withstand voltage	Between each terminal and case 1500 V AC 50 / 60 Hz, for one minute			
Applicable piping	1. Vinyl, plastic or rubber tube (I.D. 6) ... piping applicable model attached with connector for vinyl or plastic tube 2. Metal tube (O.D. 6 ± 0.1) ... piping applicable model attached with connector for metal tube 3. Hard plastic tube (O.D. 6 × I.D. 4) ... Inner sleeve set (XIN 6 × 4) is needed separately for type attached with piping connector for metal tube. (refer to p.92)			
Piping connector polarity	The part of connector piping is marking "H" on high pressure side and "L" on low pressure side.			
Air filter	-		Polyvinyl pholmor porous sheet	
Mass	Approximately 380 g		Approximately 550 g	
Pressure range codes	Pressure ranges	Accuracy of switching point (at 20 °C)	Max. switching difference pressures	Materials of pressure receiving element
60 D	10 ~ 60 Pa	± 2.0 Pa	15.0 Pa	Polyester film
120 D	20 ~ 120 Pa	± 4.0 Pa	20.0 Pa	
300 D	50 ~ 300 Pa	± 8.0 Pa	40.0 Pa	
600 D	100 ~ 600 Pa	± 15 Pa	60 Pa	
1.2 E	0.2 ~ 1.2 kPa	±0.030 kPa	0.120 kPa	
3 E	0.5 ~ 3 kPa	±0.080 kPa	0.400 kPa	Silicone rubber
6 E	1 ~ 6 kPa	± 0.15 kPa	0.60 kPa	
12 E	2 ~ 12 kPa	± 0.30 kPa	1.20 kPa	
30 E	5 ~ 30 kPa	± 0.75 kPa	4.00 kPa	

- ◆In ordering out of above mentioned installation position, please order us or our agency beforehand. It must be adjusted before the factory shipment.
- ◆In case of mesuring combustible gas and using in combustible gas area, specify the product for low electrical load and combine contact signal transducer. Use with intrinsically safe apparatus construction.

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# Micro Differential Pressure Switch

## Manostar Switch MS65

### Contact rating

Contact types	Specifications	Rated voltages	Resistive loads	Inductive loads	Loads on motor
For general electrical load	Contact composition SPDT (Single pole double throw type) Electrical life 100,000 switching cycles Contact material Silver (round rivets point)	30 V DC	3 A	2 A (time constant 7 ms)	—
		125 V AC	5 A	3 A (Power factor 0.4)	1 A
		250 V AC	5 A	3 A (Power factor 0.4)	0.5 A
For low electrical load	Contact composition SPDT (Single pole double throw type) Electrical life 100,000 switching cycles Contact material Gold alloy(cross point)	30 V DC	0.1 A	—	—
		125 V AC	0.1 A	—	—

- ◆ In case of low current or voltage, use the low electrical load type. The general electrical load type is decreased contact reliability. (refer to p.100)
- ◆ In case of driving an inductive load such as relay, contact trouble may be happened due to counter electromotive force and rush current, therefore insert the protective circuit for absorbing surge by using diode or varistor. (refer to p.32).

### Characteristics of built-in air filter

Material	Average collection rate
Polyvinyl pholmor porous sheet (t = 2 mm)	97.1 % (ratio in terms of weight)
	Retaining capacity 300 g/m <sup>2</sup>

### Name plate

Name plate for upper limit setting type



Name plate for lower limit setting type



Rated contact  
Low electrical load type label

微小電圧・電流用  
FOR LOW CURRENT AND VOLTAGE

Pasting this label on the top of instrument body discriminate low electrical load type and general electrical load type.

### Setting scale table (actual size)



Pressure range	Min. scale
10 ~ 60 Pa	5 Pa



Pressure range	Min. scale
20 ~ 120 Pa	5 Pa



Pressure range	Min. scale
50 ~ 300 Pa	10 Pa



Pressure range	Min. scale
100 ~ 600 Pa	50 Pa



Pressure range	Min. scale
0.2 ~ 1.2 kPa	0.05 kPa



Pressure range	Min. scale
0.5 ~ 3 kPa	0.1 kPa



Pressure range	Min. scale
1 ~ 6 kPa	0.5 kPa



Pressure range	Min. scale
2 ~ 12 kPa	0.5 kPa



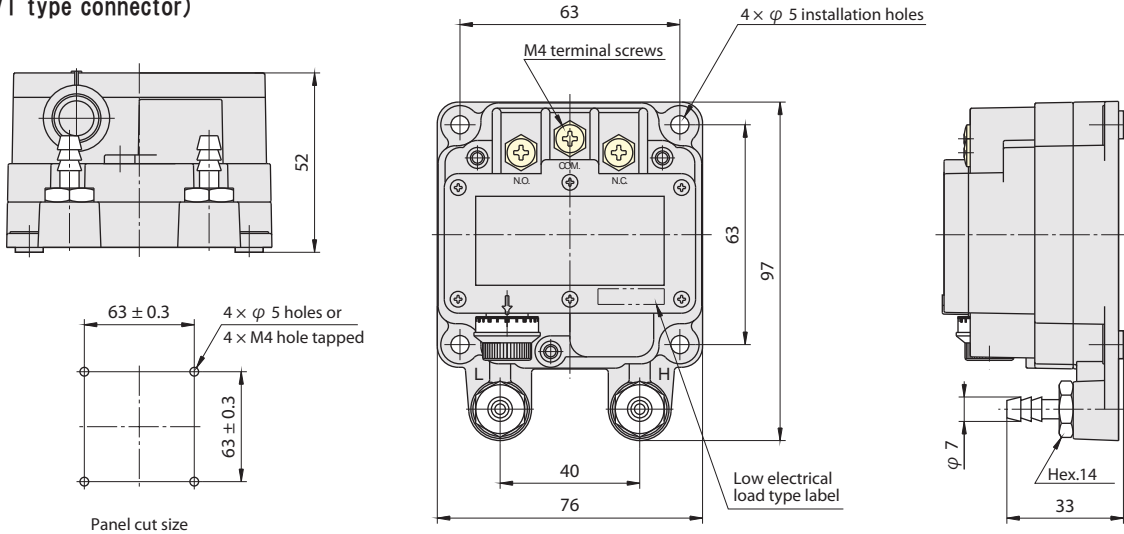
Pressure range	Min. scale
5 ~ 30 kPa	1 kPa



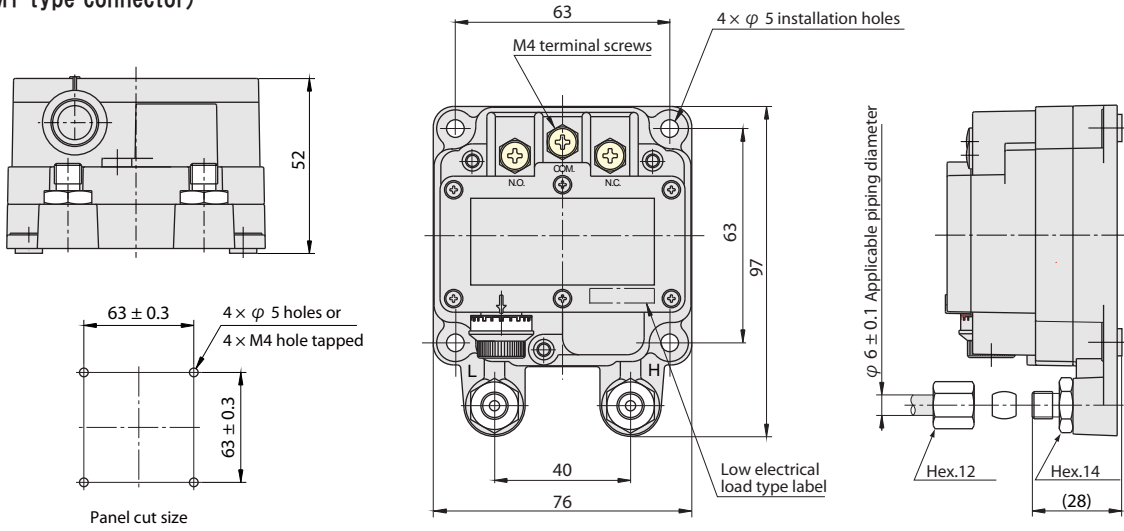
Do not apply excessive torque more than necessary, otherwise it will damage the instrument body.  
Clamp the screw of terminal with the torque from 1.0 to 1.3 N·m.

## Outline drawing

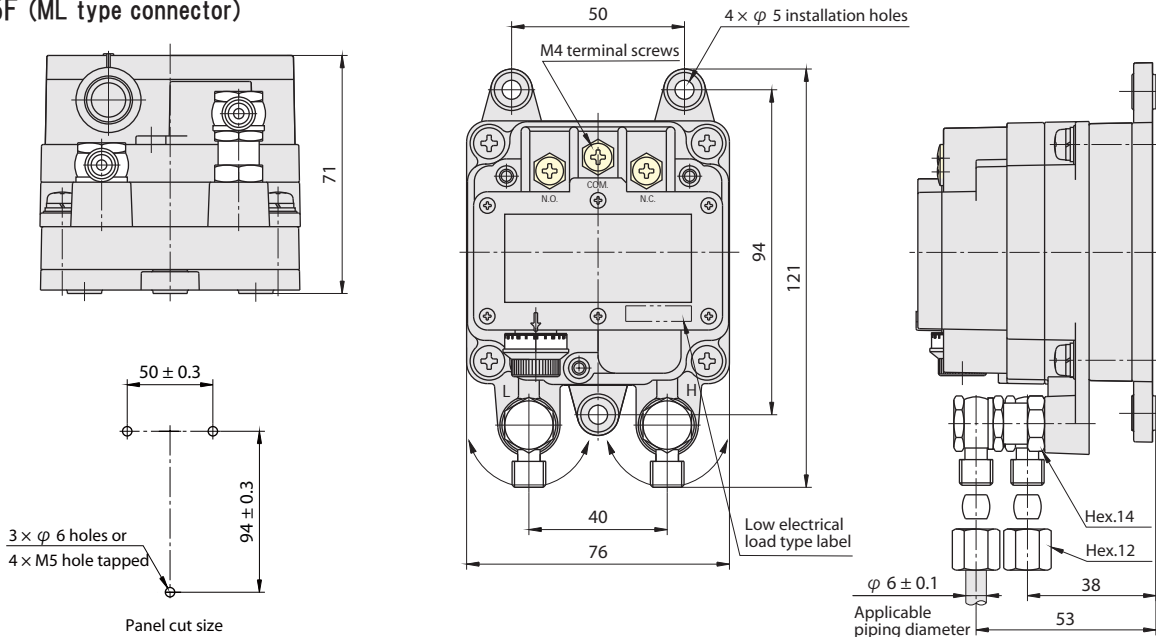
### MS65 (VT type connector)



### MS65 (MT type connector)



### MS65F (ML type connector)



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## Manostar Switch MS65

WO70

### Main structure

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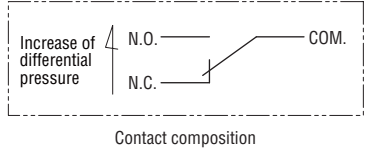
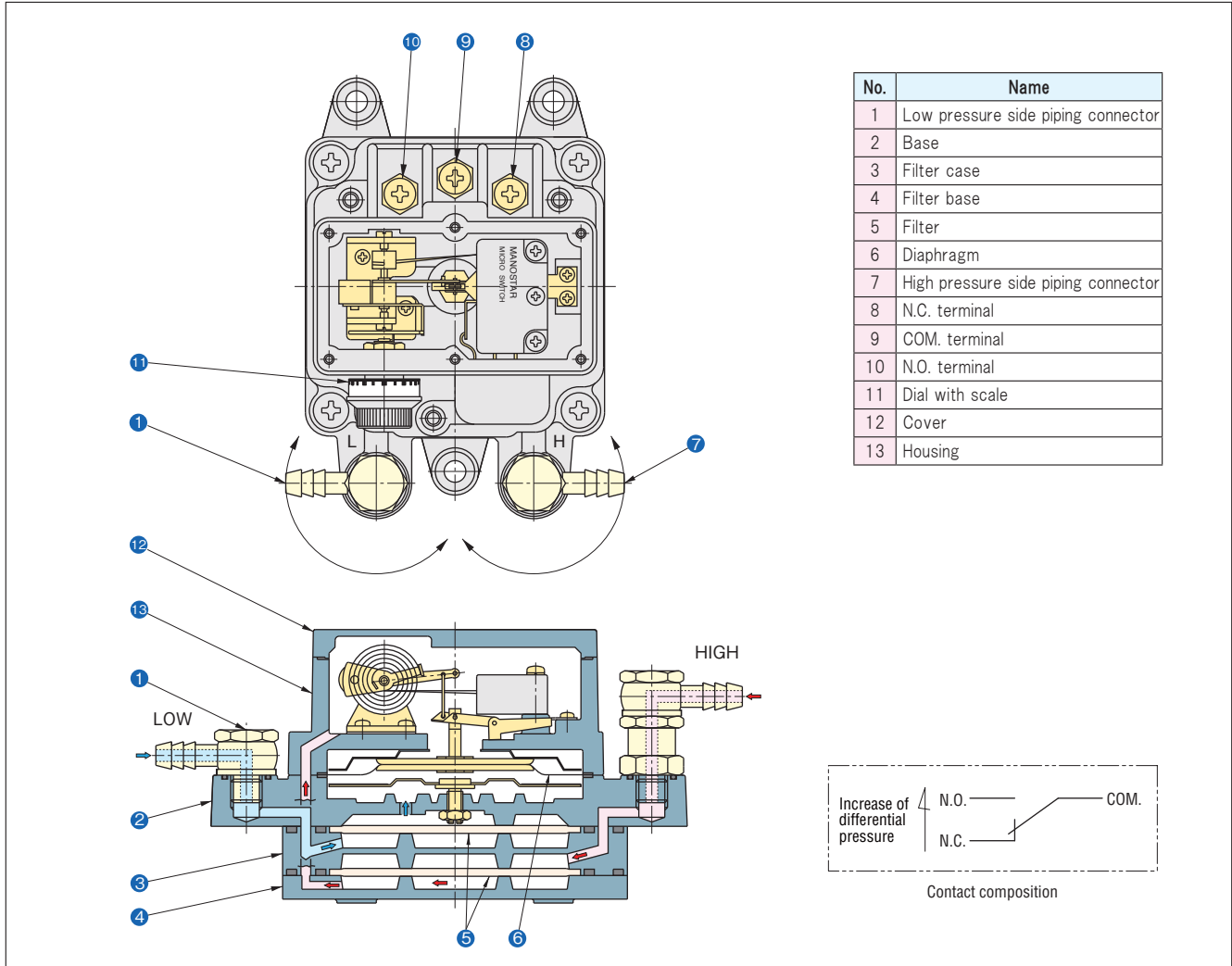
EMD7

EMT6

EMT1

EMTGPI

EMT1H



EMP5

### MS65 Installation position

EMA3

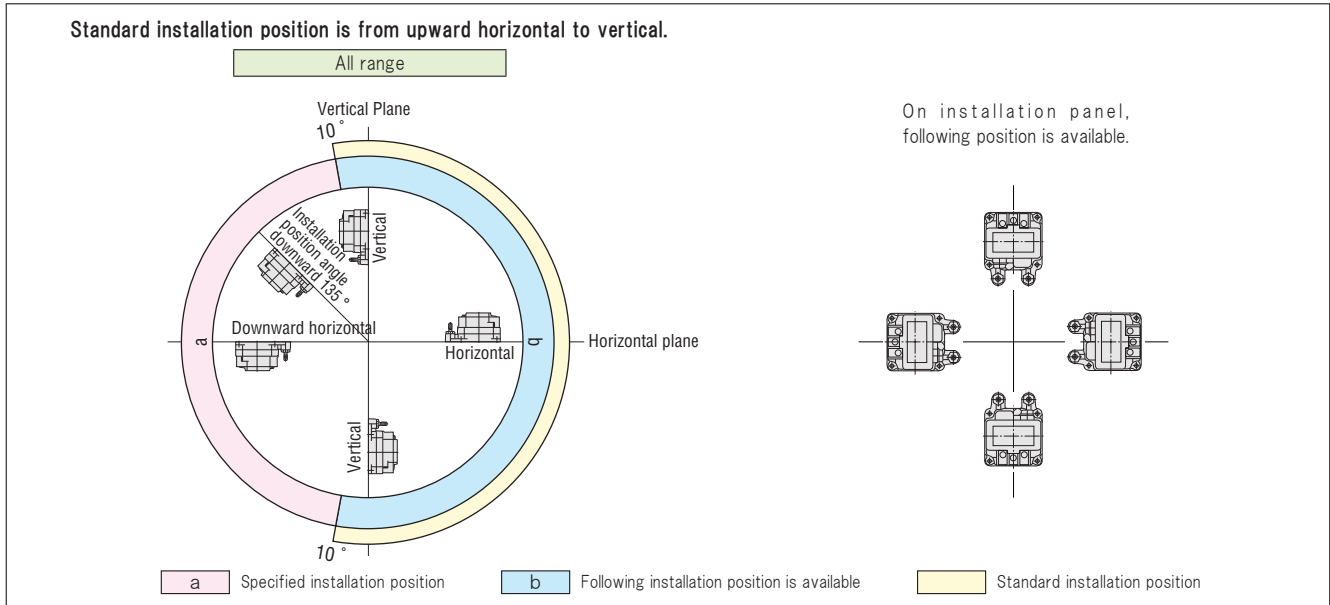
EMRT1

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- ◆ In ordering out of above mentioned installation position, please order us or our agency beforehand. It must be adjusted before the factory shipment.
- ◆ In case of ordering standard installation position, you do not specify installation position. Please specify pressure range code in the specification table.

## Accessory for MS65 RoHS compliant

<p><b>VT straight connector type</b></p> <p>Product code KGA65VT</p> 	<p><b>VL rotary loose connector type</b></p> <p>Product code KGA65VRL</p>  <p>This connector can be rotated freely after piping.</p>	<p><b>VK rotary lock connector type</b></p> <p>Product code KGA65VRK</p>  <p>This connector can be rotated freely and fixed at any position.</p>	<p><b>The adaptor of level difference connector for rotary type</b></p> <p>Product code KGA65ADPA</p>  <p>When the tube crosses this adaptor, it prevent the tube from interfering.</p>
<p><b>MT straight connector type</b></p> <p>Product code KGA65MT</p> 	<p><b>ML rotary loose connector type</b></p> <p>Product code KGA65MRL</p>  <p>This connector can be rotated freely after piping.</p>	<p><b>MK rotary lock connector type</b></p> <p>Product code KGA65MRK</p>  <p>This connector can be rotated freely and fixed at any position.</p>	<p><b>Terminal cover set</b></p> <p>Product code TCA-65</p> 
<p><b>MTW straight connector type (double ring joint)</b></p> <p>Product code KGA65MTW-S</p>  <p><b>For stainless tube made from stainless steel</b></p>	<p><b>Filter set</b></p> <p>Product code AFS65</p>  <p>Two sets of filter, Two sets of packing</p>	<p><b>Dial cover set</b></p> <p>Product code TCLAMPA-65</p>  <p>This cover avoids trouble that someone turn set dial carelessly.</p>	

\*Because of improvement of quality or any reason, some specifications are subject to change without notice.

### In case of ordering the rotary connector type with the adaptor of level difference connector

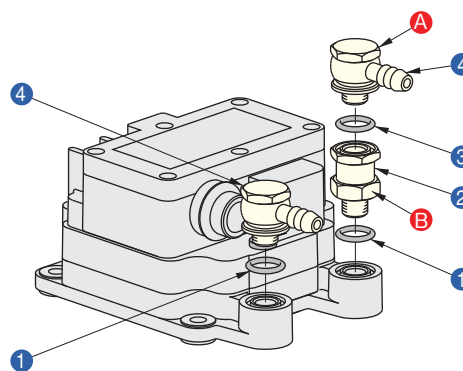
If you want to order rotary connector type with high-neck adaptor, specify the sign of “-ADP” after above mentioned Product code

(example) VL rotary loose connector type with the adaptor of level difference connector.

**KGA65VRL-ADP**

### Installation of rotary connector

- When you change piping connector from straight type to rotary loose or rotary lock type, refer to the assembly drawing on the right.
- After cleaning well around connector area, take off the straight type connector by the spanner. Because of preventing intrusion of dust in internal instrument at the time taking off.
- The O-ring ① of the assembly drawing has been installed already on the instrument body. The O-ring ③ has been installed on the adaptor of level difference connector ②.
- Install the adaptor of level difference connector to mainbody to tighten the part ⑥ by the spanner in advance. Then tighten ground ④ of level difference connector by spanner. Install the rotary connector to both instrument body and the level difference adaptor.
- After installing, make sure that connector part is turned. In case of lock type, make sure that connector part is not turned. However, in piping, loose the head and move the connector where it is desired to be located and should be tightened again to fix.



No.	Name
1	O-ring
2	Adaptor of level difference connector
3	O-ring
4	Rotary connector

Tighten the piping connectors with the torque of 1 N·m. Do not apply excessive torque more than necessary, otherwise it will damage the instrument body.

(Be sure to use a locking spanner at connectors to tighten the cap nuts of metal tube. Be careful not to let the tightening torque directly loaded to the main body of the instrument.)

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## Product Warranty

### Warranty Period

This product warranty is valid for one year from the date of delivery to a place specified by an ordering party who has transacted directly with Yamamoto Electric Works Co., Ltd.

### Coverage

If a product breaks down due to a reason for which we are responsible during the warranty period and you return the product to us, we will either repair or replace the product free of charge.

This warranty does not cover:

- (1) Usage of the product under any inappropriate conditions or environment contrary to what is described in our product catalog, specifications or manual.  
Handling or usage of the product other than as described in our product catalog, specifications or manual.
- (2) Breakdown due to a reason other than a fault within our product.
- (3) Any product that has been modified or repaired by a party other than us.
- (4) Any breakdown due to a reason that was not foreseeable based on scientific and technical standards applied at the time of shipment.
- (5) Any breakdown due to a reason not attributable to us such as a natural calamity or other disaster.

These terms of warranty represent our entire liability with respect to the product, and we shall have no liability for any other loss arising in connection with a breakdown of the product.

\*This product warranty is only valid within Japan.

This document is a translation from the original Japanese version, and the original Japanese version has priority over this translation.

Be sure to refer to the original Japanese for the details of this warranty.



Caution

The Japanese original document shall always take precedence over the translated versions.

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Sole Agent  **Manostar CO.,LTD.**

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