

## MagneW3000 PLUS

# Smart Electromagnetic Flowmeter Detector (General, FM/CSA Nonincendive Approval)

Model MGG18, MGG19, MGG11

### OVERVIEW

The MagneW3000 PLUS electromagnetic flowmeter detector is a high performance, highly reliable flowmeter developed with Azbil Corporation's proven MagneW3000 flow measurement technologies. Model MGG18 (watertight model) and model MGG19 (submersible model) offer superior process flowrate measurement and couple with a wide range of MagneW3000 PLUS converters.

### FEATURES

#### High performance lining

- A new, exclusive high quality lining technology and a special mirror-finish PFA lining offers higher anti-adhesive properties than existing models.
- The mirror-finish PFA lining is particularly applicable for measurement of sticky pulp and gypsum slurries.
- Only pure white PFA with no additives is used to make new linings.
- The successful embedded punch plate that offers proven performance under conditions such as rapid thermal change and negative pressure. PFA linings with diameter ranges from 2.5 mm to 600 mm (0.1 to 24 inches) are available, making selection of the best lining easy for a wide variety of applications.

#### Replacement interfacing detector (optional)

- This detector can replace the detector interfaces of our existing models and those of other manufacturers. Please consult an Azbil Corp. representative for details.

#### Rugged detector structure

- A stainless steel case has been adopted for sizes of 2.5 mm to 200 mm (0.1 to 8 inches).
- A watertight structure effective for environments where moisture and condensation tends to occur is used for the water-tight model (model MGG18).

#### A wide variety of piping connections

- A hose or union joint or clamp can be selected for very small size models (diameters of 2.5 to 15 mm (0.1 to 1/2 inches)).
- A flange structure is available for all sizes (sizes of 2.5 to 1100 mm (0.1 to 44 inches)).
- A wafer construction can be also selected (sizes of 2.5 to 200 mm (0.1 to 8 inches)).
- Sizes of 65 and 125 mm (2½ and 5 inches) have been added to our existing product lineup.



Size 2.5 to 600 mm (0.1 to 24 inches)

Size 700 to 1100 mm (28 to 44 inches)

#### Compatibility

- Remote model converters can be used in combination with our conventional converters. Please consult an Azbil Corp. representative for details.

#### Type of protection

Model MGG 18/19 are suitable for use in FM/CSA Nonincendive Class I, Division 2, Groups A, B, C and D; Class II, Division 2, Groups F and G; Class III, Division 2.

#### Improved Accuracy Specification

The standard accuracy is +/- 0.5 % of rate. Also available is an optional high accuracy calibration rated at +/- 0.35 % of rate (sizes of 40 mm to 350 mm (1½ to 14 inches), combined with MGG14C).

**APPLICATIONS****Pulp and paper**

Pulp liquids, chemicals, corrosive liquids, industrial water, wastewater, etc.

**Petroleum/petrochemical/chemicals**

Corrosive liquids, dyestuffs, chemicals, industrial water, waste water, etc.

**Public utilities**

Water supply systems, sewage systems, community drainage, human waste, sludge, sediment slurry, regulation of total effluent, etc.

**Food**

Potable water, light, medium and high density fluids, industrial water, waste water, etc.

**Steel/nonferrous metals/ceramics**

Aluminum slurry, cooling water, industrial water, corrosive liquids, wastewater, etc.

**Machinery/equipment/electric machinery**

Corrosive liquids, cooking water, circulating water, industrial water, wastewater, etc.

**Construction**

Building material slurry, sediment slurry, cement slurry, industrial water, etc.

**Shipbuilding**

Sediment slurry etc.

**Electric power**

Corrosive liquids, cooling water, industrial water, wastewater, etc.

**Gas**

Circulating water for air conditioning, etc.

**FUNCTIONAL SPECIFICATIONS****Type of protection****Model MGG18, MGG11**

JIS C 0920 watertight model  
NEMA TYPE4X, IEC IP67

**Model MGG19**

JIS C 0920 submersible model  
NEMA TYPE6P, IEC IP68

**FM approval for MGG18 and MGG19**

Nonincendive for Class I, Division 2, Groups A, B, C and D

Suitable for Class II, Division 2, Groups F and G  
Suitable for Class III, Division 2, indoor and outdoor (type 4X) hazardous locations.

**CSA approval for MGG18 and MGG19**

Nonincendive for Class I, Division 2, Groups A, B, C, and D

For Class II, Division 2, Groups E, F and G

For Class III for used with non-flammable process fluids.

**Ship Classification**

Approved by NK (Nippon Kaiji Kyokai)

Approval No.: 11A008

*Note: The MGG18/19/11 cannot be installed on the bridge or deck of the ship.*

*In the case of a remote model, the cables between the converter and detector must be covered with a flexible metal conduit.*

**Line size**

2.5, 5, 10, 15, 25, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000, 1100 mm

(0.1, 0.2, 3/8, 1/2, 1, 1½, 2, 2½, 3, 4, 5, 6, 8, 10, 12, 14, 16, 18, 20, 24, 28, 32, 36, 40, 44 inches)

**Flange rating**

JIS 10K, JIS 16K, JIS 20K, JIS 30K,  
JPI 150, JPI 300, ANSI 150, ANSI 300,  
DIN PN10, DIN PN16, DIN PN25, DIN PN40  
(Size 2.5 to 65 mm (0.1 to 2.5 inches))

JIS 10K, JIS 16K, JIS 20K, JIS 30K, JIS G3443-2 F12  
JPI 150, JPI 300, ANSI 150, ANSI 300,  
DIN PN10, DIN PN16, DIN PN25, DIN PN40  
(Size 80 to 200 mm (3 to 8 inches))

JIS 10K, JIS 16K, JIS 20K, JIS G3443-2 F12  
JPI 150, JPI 300, ANSI 150, ANSI 300,  
DIN PN10, DIN PN16, DIN PN25  
(Size 250 to 600 mm (10 to 24 inches), PFA/ETFE lining)

JIS 10K, JIS G3443-2 F12,  
JPI 150, ANSI 150, DIN PN10  
(Size 700 to 1100 mm (28 to 44 inches), chloroprene rubber lining)

**Reference flange standard**

JIS B 2210 (1984)

ANSI B16.5 (1988)

JPI-7S-15-93

**Measurement flow range**

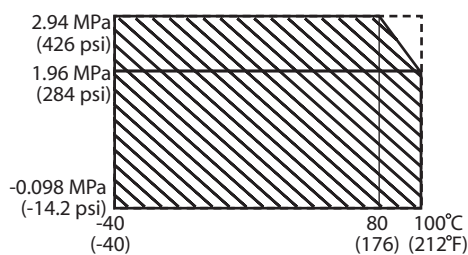
Refer to the minimum/maximum set ranges shown in the table below

Size		Minimum flow velocity range is 0 to 0.1 m/s (0 to 0.33 ft/s)		Maximum flow velocity range is 0 to 10 m/s (0 to 32.8 ft/s)		Conversion factor K
		Minimum range		Maximum range		
mm	inch	m <sup>3</sup> /h	GPM	m <sup>3</sup> /h	GPM	
2.5	0.1	0 to 0.001768	0 to 0.007782	0 to 0.1767	0 to 0.7781	56.59
5	0.2	0 to 0.007069	0 to 0.03113	0 to 0.7068	0 to 3.112	14.15
10	3/8	0 to 0.02828	0 to 0.1246	0 to 2.827	0 to 12.45	3.537
15	1/2	0 to 0.06362	0 to 0.2802	0 to 6.361	0 to 28.01	1.572
25	1	0 to 0.1768	0 to 0.7782	0 to 17.67	0 to 77.81	0.5659
40	1½	0 to 0.4524	0 to 1.993	0 to 45.23	0 to 199.2	0.2210
50	2	0 to 0.7069	0 to 3.113	0 to 70.68	0 to 311.2	0.1415
65	2½	0 to 1.195	0 to 5.261	0 to 119.4	0 to 526.0	0.08371
80	3	0 to 1.810	0 to 7.969	0 to 180.9	0 to 796.8	0.05526
100	4	0 to 2.828	0 to 12.46	0 to 282.7	0 to 1245	0.03537
125	5	0 to 4.418	0 to 19.46	0 to 441.7	0 to 1945	0.02264
150	6	0 to 6.362	0 to 28.02	0 to 636.1	0 to 2801	0.01572
200	8	0 to 11.31	0 to 49.81	0 to 1130	0 to 4980	0.008842
250	10	0 to 17.68	0 to 77.82	0 to 1767	0 to 7781	0.005659
300	12	0 to 25.45	0 to 112.1	0 to 2544	0 to 11205	0.003930
350	14	0 to 34.64	0 to 152.6	0 to 3463	0 to 15251	0.002887
400	16	0 to 45.24	0 to 199.3	0 to 4523	0 to 19920	0.002210
450	18	0 to 57.26	0 to 252.2	0 to 5725	0 to 25211	0.001747
500	20	0 to 70.69	0 to 311.3	0 to 7068	0 to 31125	0.001415
600	24	0 to 101.8	0 to 448.3	0 to 10178	0 to 44820	0.0009824
700	28	0 to 138.6	0 to 610.1	0 to 13854	0 to 61005	0.0007218
800	32	0 to 181.0	0 to 796.9	0 to 18095	0 to 79680	0.0005526
900	36	0 to 229.1	0 to 1009	0 to 22902	0 to 100846	0.0004366
1000	40	0 to 282.8	0 to 1246	0 to 28274	0 to 124501	0.0003537
1100	44	0 to 342.2	0 to 1507	0 to 34211	0 to 150646	0.0002923

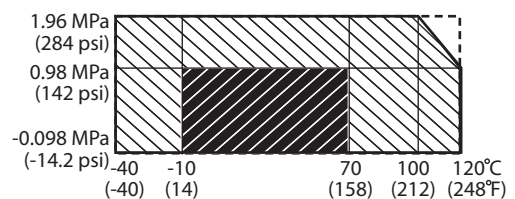
Flow conversion Velocity  $V(m/s) = K \times Q$        $K = \text{Flow conversion factor} = \frac{1}{3600} \times \frac{4}{\pi D^2}$   
 $Q = \text{Flow rate (m}^3/\text{h)}$

**Temperature range and pressure range of process fluid**

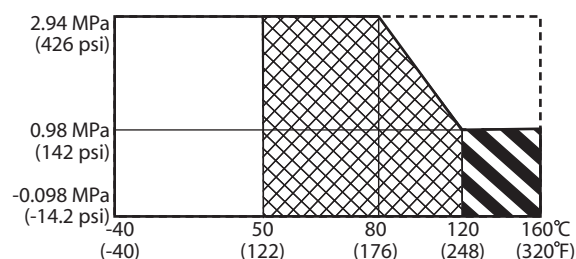
Size 2.5 to 10 mm (0.1 to 3/8 inch)



Size 250 to 1100 mm (10 to 44 inches)



Size 15 to 200 mm (1/2 to 8 inches)



- Chloroprene rubber and PFA / ETFE lining
- Polyurethane rubber and PFA / ETFE lining
- PFA/ETFE lining
- PFA lining
- PFA lining (Remote model only)
- Special products

*Note: The maximum measurable process fluid temperature of the submersible model MGG19 is 120°C (248°F)*

**Ambient temperature limits**

-25 to +60°C (-13 to +140°F) (integral model)  
 -30 to +80°C (-22 to +176°F) (remote model, PFA lining)  
 30 to +60°C (-22 to +140°F) (remote model, polyurethane rubber lining/chloroprene rubber lining)

**Ambient humidity limits**

5 to 100 % RH

**Measurable electrical conductivity**

Combined with model MGG14C converter  
 3 μS/cm or more

**Vibration effect**

Integral style: 4.9 m/s<sup>2</sup>(0.5 G) max.  
 Remote style converter: 4.9 m/s<sup>2</sup>(0.5 G) max.  
 Remote style detector: 19.6 m/s<sup>2</sup>(2 G) max.

**Optional specifications**

**Test report**

Calibration certificate, withstand voltage test, insulation resistant, hydrostatic pressure test, physical inspection are included.

**Traceability certificate**

The following three documents are included.

- Traceability System Chart
- Traceability Certificate
- Test Report

**Material certificate**

Material certificate for electrode/grounding ring

**Gasket for plastic piping**

When the detector is being mounted on plastic pipe, attach this gasket between the lining and the grounding ring, and between the grounding ring and the plastic pipe flange.

**Attaching the tag number to the terminal box**

Stamp the tag with the specified number and attach to the terminal box. The maximum number of characters of the tag number is 8.

**Attaching the tag number to the neck section**

Stamp the tag with the specified number and attach to the neck section of the detector with stainless wire. The maximum number of characters of the tag number is 16.

**PERFORMANCE SPECIFICATIONS**

**Accuracy**

(in combination with the model MGG14C converter)  
 <Size 2.5 to 15 mm (0.1 to 1/2 inch)>

Vs = Velocity of setting range

Vs (m/s)	Velocity during measurement ≥ Vs × 40 %	Velocity during measurement ≤ Vs × 40 %
1.0 ≤ Vs ≤ 10	±0.5 % of rate	±0.2 % of Vs
0.1 ≤ Vs ≤ 1.0	±(0.1/Vs+0.4)% of rate	±0.4(0.1/Vs+0.4)% of Vs

<Size 25 to 600 mm (1 to 24 inches)>

Vs = Velocity of setting range

Vs (m/s)	Velocity during measurement ≥ Vs × 40 %	
	Standard Accuracy (Calibration Code A)	*)High Accuracy (Calibration Code U)
1.0 ≤ Vs ≤ 10	±0.5 % of rate	±0.35 % of rate
0.1 ≤ Vs ≤ 1.0	±(0.1/Vs+0.4)% of rate	±(0.1/Vs+0.25)% of rate

Vs (m/s)	Velocity during measurement ≤ Vs × 40 %	
	Standard Accuracy (Calibration Code A)	*)High Accuracy (Calibration Code U)
1.0 ≤ Vs ≤ 10	±0.1 % of Vs	±0.07 % of Vs
0.1 ≤ Vs ≤ 1.0	±0.2(0.1/Vs+0.4)% of Vs	±0.2(0.1/Vs+0.25)% of Vs

\*)High accuracy calibration is available for sizes of 40 to 350mm (1½ to 14 inches).

Reference Conditions for high accuracy calibration:

- Fluid: Tap water
- Fluid temperature: 15 to 30°C
- Ambient temperature: 15 to 30°C
- Ambient humidity: 30 to 70 %
- Length of straight pipe:  
 Upstream > 20 × DN  
 Downstream > 5 × DN  
 (DN: Pipe diameter nominal)
- Properly grounded
- Properly centered

Accuracy is guaranteed by the totalized flow volume under the condition of continuous flow measurement for 30 seconds or longer.

<Size 700 to 1100 mm (28 to 44 inches)>

$V_s$  = Velocity of setting range

$V_s$ (m/s)	Velocity during measurement $\geq V_s \times 50\%$	Velocity during measurement $\leq V_s \times 50\%$
$1.0 \leq V_s \leq 10$	$\pm 1.0\%$ of rate	$\pm 0.5\%$ of $V_s$
$0.1 \leq V_s \leq 1.0$	$\pm(0.2/V_s+0.8)\%$ of rate	$(0.1/V_s+0.4)\%$ of $V_s$

## PHYSICAL SPECIFICATIONS

### Main body material

#### Measuring pipe materials

SUS304 stainless steel

#### Flange

SUS304 stainless steel (size 2.5 to 65 mm (0.1 to 2½ inches))

Carbon steel + corrosion-preventive coating (size 80 to 600 mm (3 to 24 inches))

#### Case

SCS13 stainless steel (size 2.5 to 15 mm (0.1 to 1/2 inch))

SUS304 stainless steel (size 25 to 200 mm (1 to 8 inches))

SS400 carbon steel (size 250 to 1100 mm (10 to 44 inches))

#### Terminal box

Aluminum alloy (remote model) finish

### Paint

#### Standard

Terminal box

Baked acrylic paint

Detector case (size 250 to 1100 mm (10 to 44 inches))

Epoxy paint

#### Corrosion-resistant paint

Terminal box

Baked acrylic paint

Detector case (size 250 to 1100 mm (10 to 44 inches))

Epoxy paint

#### Corrosion-proof paint

Terminal box

Baked acrylic paint

Detector case (size 250 to 1100 mm (10 to 44 inches))

Epoxy paint

### Process wetted material

#### Lining

PFA (size 2.5 to 600 mm (0.1 to 24 inches))

ETFE (size 80 to 600 mm (3 to 24 inches))

Polyurethane rubber (size 25 to 200 mm (1 to 8 inches))

Chloroprene rubber (size 250 to 1100 mm (10 to 44 inches))

#### Electrode

SUS316L, ASTM B574 (Hastelloy C-276 equivalent), titanium, zirconium, tantalum, tungsten-carbide, platinum/iridium

#### Grounding ring

SUS316, ASTM B575 (Hastelloy C-276 equivalent), titanium, zirconium, tantalum, platinum

#### Union joint

SUS316 (size 2.5 to 15mm (0.1 to 1/2 inch))

#### Hose

SUS316 (size 2.5 to 15mm (0.1 to 1/2 inch))

#### ISO Clamp

SUS316 (size 2.5 to 15mm (0.1 to 1/2 inch))

#### Tri Clamp

SUS316 (size 2.5 to 15mm (0.1 to 1/2 inch))

#### Gasket

PTFE (if the grounding ring is not made of SUS316)

#### O-ring

Viton rubber (with union joints)

## INSTALLATION

### Electrical connection

#### Integral model

Connected to converter

#### Remote model

##### General model

G1/2 (PF1/2) internal thread, CM20 internal thread, Pg 13.5 internal thread.

##### FM/CSA Nonincendive model

1/2NPT internal thread for model MGG18  
Watertight gland for model MGG19

### Pipe connection

Wafer (size 2.5 to 200 mm (0.1 to 8 inches))  
Flange (size 2.5 to 1100 mm (0.1 to 44 inches))  
Union (size 2.5 to 15 mm (0.1 to 1/2 inch))  
Hose (size 2.5 to 15 mm (0.1 to 1/2 inch))  
ISO Clamp (size 2.5 to 15 mm (0.1 to 1/2 inch))  
Tri Clamp (size 2.5 to 15 mm (0.1 to 1/2 inch))

### Nuts and bolts (for wafer models)

S20C carbon steel, SUS304 stainless steel

### Grounding

Resistance less than 100 Ω

### Length of straight pipe

#### Upstream side

A minimum five straight pipe diameters  
A minimum 10 straight pipe diameters is required if a diffuser/valve/pump is installed upstream side.

#### Downstream side

Two straight pipe diameters is recommended.

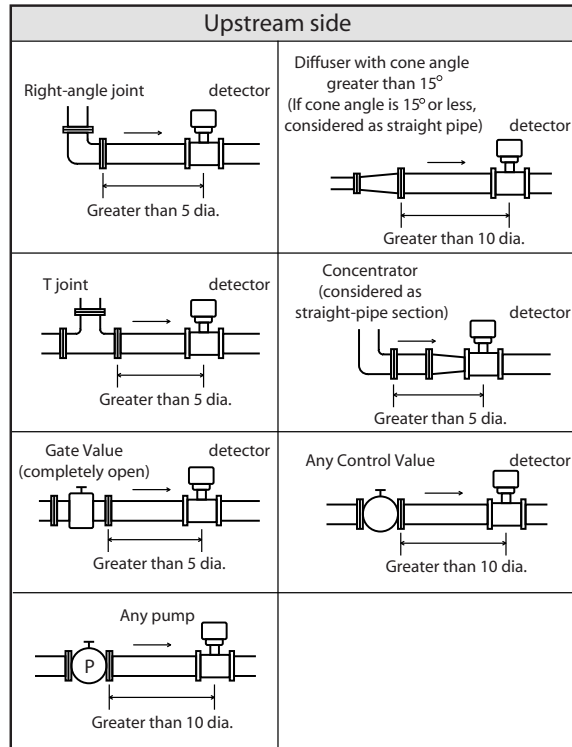


Figure 1

### Cable (between remote detector and converter)

Maximum length 300 m (984 ft)  
(depends on fluid conductivity)  
Outer diameter 10 to 12 mm (0.4 to 0.47 inch)

#### Signal cable

Dedicated cable: MGA12W  
(O.D. 11.4 mm, 0.75 mm<sup>2</sup>) or equivalent (CVVS, CEEV etc.)

#### Excitation cable

Dedicated cable: MGA12W  
(O.D. 10.5 mm, 2 mm<sup>2</sup>) or equivalent (CVV and others)

### Maximum cable length of MGA12W cable

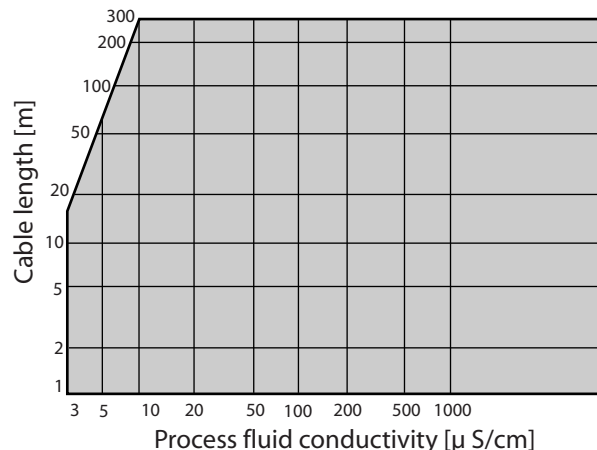


Figure 2 Maximum cable length of MGA12W cable

## **Notice for installation**

To fully enjoy the performance of the device, please choose an appropriate location according to the following.

### **Notice after installation**

#### **WARNING**

When removing the device from the piping, make sure that there is no line pressure or process fluid inside of the device. Removing the device before depressurizing may result in serious injury.

#### **CAUTION**

Do not use the device as a foothold. It may cause injury or damage of the device.

### **Notice for environment**

- Install the flowmeter in a location with an ambient temperature of -25°C to 60°C (-13°F to 140°F) and an ambient humidity of 5 to 100 %RH to prevent equipment malfunction or output errors.
- Do not install the flowmeter near high-current power lines, motors or transformers to prevent damage from electromagnetic induction, which can cause equipment malfunction or output errors.
- Do not install the flowmeter in a location subject to severe vibration or in a highly corrosive atmosphere. The converter and detector can be damaged.
- When install some electromagnetic flowmeters in closer location, keep minimum 500 mm (20

inch) space from each flowmeter. Closer electromagnetic flowmeter installation may cause magnetic interference each other and results in output errors.

### **Notice for application**

- Electrochemically homogeneous fluid  
Install the device where the process fluid is electrochemically homogeneous. If two kind of process fluids are mixed at the upstream side, the process fluid must be uniformly mixed.
- The application which the electric conductivity changes or non-homogeneous fluid  
Do not use the device for the following fluid conditions even if the electric conductivity, temperature, and pressure are within the device specifications. Those fluid may cause of inaccurate flow measurement.
  - Fluids that have sufficient conductivity at high temperature but do not meet the conductivity requirement at room temperature (about 20°C (68°F)).  
(e.g. fatty acids and soap)
  - Some fluids contain surfactant  
(e.g. rinse, shampoo and CWM (coal water mixture))
  - Insulating adhesive materials  
(eg. kaolinite, kaolin, calcium stearate)
- The following fluids will permeate the PFA liner. The vent hole option is recommended for the following fluids.
  - Nitric acid
  - Aqueous ammonia
  - High temperature sodium hydrate

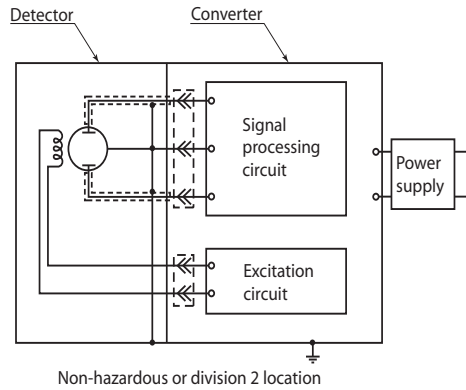
**For FM/CSA Nonincendive model**

This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D, Class II, Division 2, Groups F and G; Class III, Division 2.

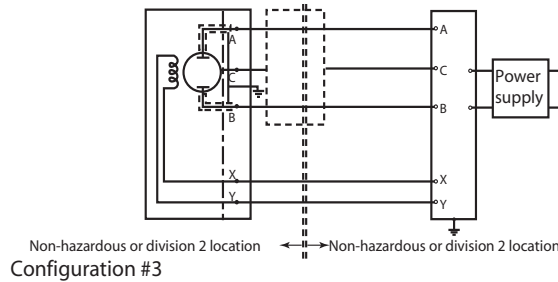
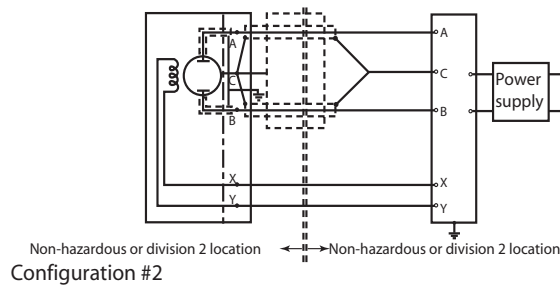
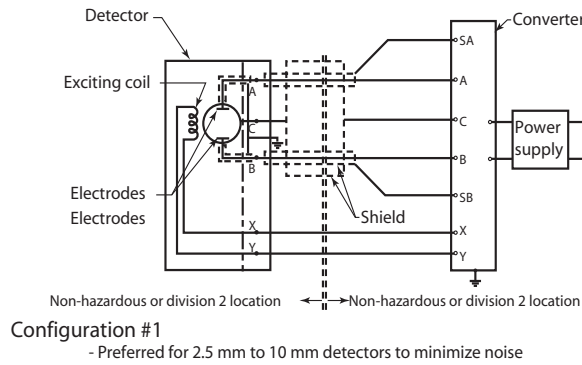
**⚠ CAUTION**

Power supply and internal voltage of ordinary equipment to the earth shall not exceed 250 V AC 50/60 Hz, 250 V DC in case of normal /fault conditions.

(Integral type)



(Remote type)





**MODEL SELECTION****Contents of model number table**

## Detector (General model)

Structure / Basic model no.	Lining	Pipe connection	Size	Ref. page
Watertight model MGG18U	PFA	Union / Hose / Clamp	2.5 to 15 mm (0.1 to 1/2 inch)	page 10
Watertight model MGG18D	PFA	Wafer	2.5 to 10 mm (0.1 to 3/8 inch)	page 11
Watertight model MGG18D	PFA / ETFE	Wafer	15 to 200 mm (1/2 to 8 inches)	page 12
Watertight model MGG18F	PFA / ETFE	Flange	15 to 200 mm (1/2 to 8 inches)	page 13
Watertight model MGG18F	PFA / ETFE	Flange	250 to 600 mm (10 to 24 inches)	page 14
Watertight model MGG18D	Polyurethane rubber	Wafer	25 to 200 mm (1 to 8 inches)	page 15
Watertight model MGG18F	Polyurethane rubber	Flange	25 to 200 mm (1 to 8 inches)	page 16
Watertight model MGG18F	Chloroprene rubber	Flange	250 to 600 mm (10 to 24 inches)	page 17
Watertight model MGG11F	Chloroprene rubber	Flange	700 to 1100 mm (28 to 44 inches)	page 18

## Detector (Submersible model)

Structure / Basic model no.	Lining	Pipe connection	Size	Ref. page
Submersible model MGG19D	PFA / ETFE	Wafer	15 to 200 mm (1/2 to 8 inches)	page 19
Submersible model MGG19F	PFA / ETFE	Flange	15 to 200 mm (1/2 to 8 inches)	page 20
Submersible model MGG19F	PFA / ETFE	Flange	250 to 600 mm (10 to 24 inches)	page 21
Submersible model MGG19D	Polyurethane rubber	Wafer	25 to 200 mm (1 to 8 inches)	page 22
Submersible model MGG19F	Polyurethane rubber	Flange	25 to 200 mm (1 to 8 inches)	page 23

*Note: All MGG19 models satisfy FM/CSA Nonincendive approval.*

	PFA / ETFE lining
	Rubber lining

**Union / Hose / Clamp type (2.5 to 15 mm (0.1 to 1/2 inch)) PFA lining**

Model MGG18U - I II III IV V VI VII VIII IX - X - Y / Options (some options can be selected per each model)

Basic model no.		Selections				Optional selections		
MGG18U								
I	Line size	2.5 mm (0.1 inch)	002					
		5 mm (0.2 inch)	005					
		10 mm (3/8 inch)	010					
		15 mm (1/2 inch)	015					
II	Lining	PFA	P					
III	Piping connection	Union joint R1/2 (PT1/2) external thread	U1					
		Union joint 1/2NPT external thread	U2					
		Union joint R1/2 (PT1/2) internal thread	U3					
		Union joint 1/2NPT internal thread	U4					
		Hose joint	H1					
		IDF clamp	C1					
		Tri clamp	C2					
IV	Electrode	SUS316L	L					
		ASTM B574 (Hastelloy C-276 equivalent)	C					
		Titanium	K					
		Zirconium	H					
		Tungsten carbide (only for size 10 mm or upper)	W					
	Others	<input type="checkbox"/>						
V	Grounding ring	SUS316		S				
VI	Electrical connection / watertight gland	Integral type			1			
		Remote type	G1/2 internal thread / without watertight gland			2		
			G1/2 internal thread / with brass (Ni-plated) watertight gland			3		
			G1/2 internal thread / with plastic watertight gland			4		
			1/2NPT internal thread / without watertight gland (Note 1)			5		
			CM20 internal thread / without watertight gland			6		
			Pg 13.5 internal thread / without watertight gland			7		
G1/2 internal thread / with SUS304 watertight gland			8					
VII	Face-to-face	Standard				A		
VIII	Installation / wiring direction	Integral type					H	
		Remote type	Upstream side (horizontal / vertical piping mounting)				A	
			Downstream side (horizontal / vertical piping mounting)				B	
			Horizontal piping mounting / left side viewed from upstream				C	
	Horizontal piping mounting / right side viewed from upstream				D			
IX	Calibration	Standard					A	
		Others					<input type="checkbox"/>	
X	Finish	Standard					X	
		Corrosion-resistant finish					1	
		Corrosion-proof finish					2	

Options		
	Azbil Corporation version (must be selected)	Y
	Traceability certificate for detector	B
	Material certificate (only for electrodes and ground rings)	C
	Attachment of the TAG number to the terminal box for detector (Note 2)	K

Note: 1. Must be selected for CSA/FM NI approval  
 2. Must be selected for Tag no. requirement

**Wafer type (2.5 to 10 mm (0.1 to 3/8 inch)) PFA lining**

Model MGG18D - I II III IV V VI VII VIII IX - X XI - Y / Options (some options can be selected per each model)

Basic model no.		Selections				Optional selections				
MGG18D										
I	Line size	2.5 mm (0.1 inch)	002							
		5 mm (0.2 inch)	005							
		10 mm (3/8 inch)	010							
II	Lining	PFA				P				
III	Piping connection	Wafer JIS 10K								
		Wafer JIS 20K								
		Wafer JIS 30K								
		Wafer JIS 10/20K for 10 mm flange								
		Wafer JIS 30K for 10 mm flange								
		Wafer ANSI 150								
		Wafer ANSI 300								
		Wafer DIN PN10								
		Wafer DIN PN16								
		Wafer DIN PN25								
		Wafer DIN PN40								
		Wafer DIN PN10/16/25/40 for 10 mm flange								
		Wafer JPI 150								
		Wafer JPI 300								
IV	Electrode	SUS316L						L		
		ASTM B574 (Hastelloy C-276 equivalent)						C		
		Titanium							K	
		Zirconium							H	
		Tantalum							T	
		Tungsten carbide (only for size 10 mm)							W	
		Platinum iridium							P	
		Others							<input type="checkbox"/>	
V	Grounding ring	SUS316						S		
		ASTM B575 (Hastelloy C-276 equivalent)						C		
		Titanium							K	
		Zirconium							H	
		Tantalum							T	
		Platinum							P	
		Others							<input type="checkbox"/>	
VI	Electrical connection / watertight gland	Integral type							1	
		Remote type	G1/2 internal thread / without watertight gland							2
			G1/2 internal thread / with brass (Ni-plated) watertight gland							3
			G1/2 internal thread / with plastic watertight gland							4
			1/2NPT internal thread / without watertight gland (Note 1)							5
			CM20 internal thread / without watertight gland							6
			Pg 13.5 internal thread / without watertight gland							7
			G1/2 internal thread / with SUS304 watertight gland							8
VII	Face-to-face dimensions	Standard							A	
		Others							<input type="checkbox"/>	
VIII	Installation / wiring direction	Integral type							H	
		Remote type	Upstream side (horizontal / vertical piping mounting)							A
			Downstream side (horizontal / vertical piping mounting)							B
			Horizontal piping mounting / left side viewed from upstream							C
			Horizontal piping mounting / right side viewed from upstream							D
IX	Calibration	Standard							A	
		Others							<input type="checkbox"/>	
X	Finish	Standard							X	
		Corrosion-resistant finish							1	
		Corrosion-proof finish							2	
XI	Bolt / nut	None							X	
		Carbon steel							1	
		SUS304							2	

Options		
	Azbil Corporation version (must be selected)	Y
	Traceability certificate for detector	B
	Material certificate (only for electrodes and ground rings)	C
	With gasket for plastic piping	J
	Attachment of the TAG number to the terminal box for detector (Note 2)	K

Note: 1. Must be selected for CSA/FM NI approval  
2. Must be selected for Tag no. requirement

**Wafer type (15 to 200 mm (1/2 to 8 inches)) PFA / ETFE lining**

Model MGG18D - I II III IV V VI VII VIII IX - X XI - Y / Options (some options can be selected per each model)

Basic model no.		Selections						Optional selections		
MGG18D										
I	Line size	15 mm (1/2 inch)	015							
		25 mm (1 inch)	025							
		40 mm (1½ inches)	040							
		50 mm (2 inches)	050							
		65 mm (2½ inches)	065							
		80 mm (3 inches)	080							
		100 mm (4 inches)	100							
		125 mm (5 inches)	125							
		150 mm (6 inches)	150							
	200 mm (8 inches)	200								
II	Lining	ETFE (Size 80 to 200 mm (3 to 8 inches))	E							
		PFA	P							
III	Piping connection	Wafer JIS 10K	11							
		Wafer JIS 20K	12							
		Wafer JIS 30K	13							
		Wafer ANSI 150	21							
		Wafer ANSI 300	22							
		Wafer JIS G3443-2 F12 (size 80 mm or larger)	31							
		Wafer DIN PN10	41							
		Wafer DIN PN16	42							
		Wafer DIN PN25	43							
		Wafer DIN PN40	44							
		Wafer JPI 150	61							
		Wafer JPI 300	62							
		IV	Electrode	SUS316L	L					
ASTM B574 (Hastelloy C-276 equivalent)	C									
Titanium	K									
Zirconium	H									
Tantalum	T									
Tungsten carbide	W									
Platinum iridium	P									
Others	<input type="checkbox"/>									
V	Grounding ring	SUS316	S							
		ASTM B575 (Hastelloy C-276 equivalent)	C							
		Titanium	K							
		Zirconium	H							
		Tantalum	T							
		Platinum	P							
Others	<input type="checkbox"/>									
VI	Electrical connection / watertight gland	Integral type	1							
		Remote type	G1/2 internal thread / without watertight gland	2						
			G1/2 internal thread / with brass (Ni-plated) watertight gland	3						
			G1/2 internal thread / with plastic watertight gland	4						
			1/2NPT internal thread / without watertight gland (Note 1)	5						
			CM20 internal thread / without watertight gland	6						
			Pg 13.5 internal thread / without watertight gland	7						
			G1/2 internal thread / with SUS304 watertight gland	8						
VII	Face-to-face dimensions	Standard	A							
		Others	<input type="checkbox"/>							
VIII	Installation / wiring direction	Integral type	H							
		Remote type	Upstream side (horizontal / vertical piping mounting)	A						
			Downstream side (horizontal / vertical piping mounting)	B						
			Horizontal piping mounting / left side viewed from upstream	C						
	Horizontal piping mounting / right side viewed from upstream	D								
IX	Calibration	Standard	A							
		+/- 0.35 % of rate calibration (Size 40 to 200 mm (1 1/2 to 8 inches))	U							
		Others	<input type="checkbox"/>							
X	Finish	Standard						X		
		Corrosion-resistant finish						1		
		Corrosion-proof finish						2		
XI	Bolt / nut	None							X	
		Carbon steel						1		
		SUS304						2		

Options		
Azbil Corporation version (must be selected)	Y	
Traceability certificate for detector	B	
Material certificate (only for electrodes and ground rings)	C	
With gasket for plastic piping	J	
Attachment of the TAG number to the terminal box for detector (Note 2)	K	

Note: 1. Must be selected for CSA/FM NI approval  
 2. Must be selected for Tag no. requirement

**Flange type (15 to 200 mm (1/2 to 8 inches)) PFA / ETFE lining**

Model MGG18F - I II III IV V VI VII VIII IX X - XI - Y / Options (some options can be selected per each model)

Basic model no.		Selections					Optional selections					
MGG18F												
I	Line size	15 mm (1/2 inch)	015									
		25 mm (1 inch)	025									
		40 mm (1½ inches)	040									
		50 mm (2 inches)	050									
		65 mm (2½ inches)	065									
		80 mm (3 inches)	080									
		100 mm (4 inches)	100									
		125 mm (5 inches)	125									
		150 mm (6 inches)	150									
200 mm (8 inches)	200											
II	Lining	ETFE (Size 80 to 200 mm (3 to 8 inches))	E									
		PFA	P									
III	Piping connection	Flange JIS 10K	J1									
		Flange JIS 20K	J2									
		Flange JIS 30K	J3									
		Flange ANSI 150	A1									
		Flange ANSI 300	A2									
		Flange JIS G3443-2 F12 (line size 80 mm or larger)	G1									
		Flange DIN PN10	D1									
		Flange DIN PN16	D2									
		Flange DIN PN25	D3									
		Flange DIN PN40	D4									
		Flange JPI 150	P1									
		Flange JPI 300	P2									
		IV	Flange material	Standard	1							
Others	<input type="checkbox"/>											
V	Electrode	SUS316L	L									
		ASTM B574 (Hastelloy C-276 equivalent)	C									
		Titanium	K									
		Zirconium	H									
		Tantalum	T									
		Tungsten carbide	W									
		Platinum iridium	P									
Others	<input type="checkbox"/>											
VI	Grounding ring	SUS316	S									
		ASTM B575 (Hastelloy C-276 equivalent)	C									
		Titanium	K									
		Zirconium	H									
		Tantalum	T									
		Platinum	P									
Others	<input type="checkbox"/>											
VII	Electrical connection / watertight gland	Integral type							1			
		Remote type	G1/2 internal thread / without watertight gland							2		
			G1/2 internal thread / with brass (Ni-plated) watertight gland							3		
			G1/2 internal thread / with plastic watertight gland							4		
			1/2NPT internal thread / without watertight gland (Note 1)							5		
			CM20 internal thread / without watertight gland							6		
			Pg 13.5 internal thread / without watertight gland							7		
			G1/2 internal thread / with SUS304 watertight gland							8		
VIII	Face-to-face dimensions	Standard								A		
		Others	<input type="checkbox"/>									
IX	Installation / wiring direction	Integral type									H	
		Remote type	Upstream side (horizontal / vertical piping mounting)									A
			Downstream side (horizontal / vertical piping mounting)									B
			Horizontal piping mounting / left side viewed from upstream									C
	Horizontal piping mounting / right side viewed from upstream									D		
X	Calibration	Standard									A	
		+/- 0.35 % of rate calibration (Size 40 to 200 mm (1 1/2 to 8 inches))										U
		Others	<input type="checkbox"/>									
XI	Finish	Standard									X	
		Corrosion-resistant finish										1
		Corrosion-proof finish										2

Options	Description	Code
	Azbil Corporation version (must be selected)	Y
	Traceability certificate for detector	B
	Material certificate (only for electrodes and ground rings)	C
	With gasket for plastic piping	J
	Attachment of the TAG number to the terminal box for detector (Note 2)	K

Note: 1. Must be selected for CSA/FM NI approval  
 2. Must be selected for Tag no. requirement

**Flange type (250 to 600 mm (10 to 24 inches)) PFA / ETFE lining**

Model MGG18F - I II III IV V VI VII VIII IX X - XI - Y / Options (some options can be selected per each model)

Basic model no.		Selections				Optional selections				
MGG18F										
I	Line size	250 mm (10 inches)	250							
		300 mm (12 inches)	300							
		350 mm (14 inches)	350							
		400 mm (16 inches)	400							
		450 mm (18 inches)	450							
		500 mm (20 inches)	500							
		600 mm (24 inches)	600							
II	Lining	ETFE	E							
		PFA	P							
III	Piping connection	Flange JIS 10K	J1							
		Flange JIS 20K	J2							
		Flange ANSI 150	A1							
		Flange ANSI 300 (Size 16 inches or smaller)	A2							
		Flange JIS G3443-2 F12	G1							
		Flange DIN PN10	D1							
		Flange DIN PN16	D2							
		Flange DIN PN25	D3							
		Flange JPI 150	P1							
		Flange JPI 300 (Size 400 mm or smaller)	P2							
IV	Flange material	Standard	1							
		Others	<input type="checkbox"/>							
V	Electrode	SUS316L	L							
		ASTM B574 (Hastelloy C-276 equivalent)	C							
		Titanium	K							
		Zirconium	H							
		Tantalum	T							
		Tungsten carbide	W							
		Platinum iridium	P							
Others	<input type="checkbox"/>									
VI	Grounding ring	SUS316	S							
		ASTM B575 (Hastelloy C-276 equivalent)	C							
		Titanium	K							
		Others	<input type="checkbox"/>							
VII	Electrical connection / watertight gland	Integral type						1		
		Remote type	G1/2 internal thread / without watertight gland						2	
			G1/2 internal thread / with brass (Ni-plated) watertight gland						3	
			G1/2 internal thread / with plastic watertight gland						4	
			1/2NPT internal thread / without watertight gland (Note 1)						5	
			CM20 internal thread / without watertight gland						6	
			Pg 13.5 internal thread / without watertight gland						7	
			G1/2 internal thread / with SUS304 watertight gland						8	
VIII	Face-to-face dimensions	Standard						A		
		Others	<input type="checkbox"/>							
IX	Installation / wiring direction	Integral type							H	
		Remote type	Upstream side (horizontal / vertical piping mounting)						A	
			Downstream side (horizontal / vertical piping mounting)						B	
			Horizontal piping mounting / left side viewed from upstream						C	
	Horizontal piping mounting / right side viewed from upstream						D			
X	Calibration	Standard							A	
		+/- 0.35 % of rate calibration (Size 250 to 350 mm (10 to 14 inches))							U	
		Others	<input type="checkbox"/>							
XI	Finish	Standard							X	
		Corrosion-resistant finish							1	
		Corrosion-proof finish							2	

Options		
	Azbil Corporation version (must be selected)	Y
	Traceability certificate for detector	B
	Material certificate (only for electrodes and ground rings)	C
	With gasket for plastic piping	J
	Attachment of the TAG number to the terminal box for detector (Note 2)	K

Note: 1. Must be selected for CSA/FM NI approval.  
2. Must be selected for Tag no. requirement.

**Wafer type (25 to 200 mm (1 to 8 inches)) Polyurethane rubber lining**

Model MGG18D - I II III IV V VI VII VIII IX - X XI - Y / Options (some options can be selected per each model)

Basic model no.		Selections				Optional selections		
MGG18D								
I	Line size	25 mm (1 inch)	025					
		40 mm (1½ inches)	040					
		50 mm (2 inches)	050					
		65 mm (2½ inches)	065					
		80 mm (3 inches)	080					
		100 mm (4 inches)	100					
		125 mm (5 inches)	125					
		150 mm (6 inches)	150					
	200 mm (8 inches)	200						
II	Lining	Polyurethane rubber		Q				
III	Piping connection	Wafer JIS 10K	11					
		Wafer JIS 20K	12					
		Wafer JIS 30K	13					
		Wafer ANSI 150	21					
		Wafer ANSI 300	22					
		Wafer JIS G3443-2 F12 (line size 80 mm or larger)	31					
		Wafer DIN PN10	41					
		Wafer DIN PN16	42					
		Wafer DIN PN25	43					
		Wafer DIN PN40	44					
		Wafer JPI 150	61					
		Wafer JPI 300	62					
IV	Electrode	SUS316L		L				
		Titanium		K				
		Tungsten carbide (only for size 10 mm)		W				
		Others		<input type="checkbox"/>				
V	Grounding ring	SUS316		S				
		Titanium		K				
		Others		<input type="checkbox"/>				
VI	Electrical connection / watertight gland	Integral type			1			
		Remote type	G1/2 internal thread / without watertight gland			2		
			G1/2 internal thread / with brass (Ni-plated) watertight gland			3		
			G1/2 internal thread / with plastic watertight gland			4		
			1/2NPT internal thread / without watertight gland (Note 1)			5		
			CM20 internal thread / without watertight gland			6		
			Pg 13.5 internal thread / without watertight gland			7		
G1/2 internal thread / with SUS304 watertight gland			8					
VII	Face-to-face dimensions	Standard			A			
VIII	Installation / wiring direction	Integral type				H		
		Remote type	Upstream side (horizontal / vertical piping mounting)				A	
			Downstream side (horizontal / vertical piping mounting)				B	
			Horizontal piping mounting / left side viewed from upstream				C	
Horizontal piping mounting / right side viewed from upstream				D				
IX	Calibration	Standard				A		
		+/- 0.35 % of rate calibration (Size 40 to 200 mm (1 1/2 to 8 inches))				U		
		Others				<input type="checkbox"/>		
X	Finish	Standard					X	
		Corrosion-resistant finish					1	
		Corrosion-proof finish					2	
XI	Bolt / nut	None					X	
		Carbon steel					1	
		SUS304					2	

Options		
	Azbil Corporation version (must be selected)	Y
	Traceability certificate for detector	B
	Material certificate (only for electrodes and ground rings)	C
	With gasket for plastic piping	J
	Attachment of the TAG number to the terminal box for detector (Note 2)	K

Note: 1. Must be selected for CSA/FM NI approval  
 2. Must be selected for Tag no. requirement

**Flange type (25 to 200 mm (1 to 8 inches)) Polyurethane rubber lining**

Model MGG18F - I II III IV V VI VII VIII IX X - XI - Y / Options (some options can be selected per each model)

Basic model no.		Selections				Optional selections			
MGG18F									
I	Line size	25 mm (1 inch)	025						
		40 mm (1½ inches)	040						
		50 mm (2 inches)	050						
		65 mm (2½ inches)	065						
		80 mm (3 inches)	080						
		100 mm (4 inches)	100						
		125 mm (5 inches)	125						
		150 mm (6 inches)	150						
		200 mm (8 inches)	200						
II	Lining	Polyurethane rubber				Q			
III	Piping connection	Flange JIS 10K		J1					
		Flange JIS 20K		J2					
		Flange JIS 30K		J3					
		Flange ANSI 150		A1					
		Flange ANSI 300		A2					
		Flange JIS G3443-2 F12 (line size 80 mm or larger)		G1					
		Flange DIN PN10		D1					
		Flange DIN PN16		D2					
		Flange DIN PN25		D3					
		Flange DIN PN40		D4					
		Flange JPI 150		P1					
		Flange JPI 300		P2					
		IV	Flange material	Standard		1			
Others				<input type="checkbox"/>					
V	Electrode	SUS316L		L					
		Titanium		K					
		Tungsten carbide (only for size 10 mm)		W					
		Others		<input type="checkbox"/>					
VI	Grounding ring	SUS316		S					
		Titanium		K					
		Others		<input type="checkbox"/>					
VII	Electrical connection / watertight gland	Integral type		1					
		Remote type	G1/2 internal thread / without watertight gland		2				
			G1/2 internal thread / with brass (Ni-plated) watertight gland		3				
			G1/2 internal thread / with plastic watertight gland		4				
			1/2NPT internal thread / without watertight gland (Note 1)		5				
			CM20 internal thread / without watertight gland		6				
			Pg 13.5 internal thread / without watertight gland		7				
			G1/2 internal thread / with SUS304 watertight gland		8				
VIII	Face-to-face dimensions	Standard		A					
IX	Installation / wiring direction	Integral type		H					
		Remote type	Upstream side (horizontal / vertical piping mounting)		A				
			Downstream side (horizontal / vertical piping mounting)		B				
			Horizontal piping mounting / left side viewed from upstream		C				
			Horizontal piping mounting / right side viewed from upstream		D				
X	Calibration	Standard		A					
		+/- 0.35 % of rate calibration (Size 40 to 200 mm (1 1/2 to 8 inches))		U					
		Others		<input type="checkbox"/>					
XI	Finish	Standard		X					
		Corrosion-resistant finish		1					
		Corrosion-proof finish		2					

Options		
	Azbil Corporation version (must be selected)	Y
	Traceability certificate for detector	B
	Material certificate (only for electrodes and ground rings)	C
	With gasket for plastic piping	J
	Attachment of the TAG number to the terminal box for detector (Note 2)	K

Note: 1. Must be selected for CSA/FM NI approval  
 2. Must be selected for Tag no. requirement



**Flange type (250 to 600 mm (10 to 24 inches)) Chloroprene rubber lining**

Model MGG18F - I II III IV V VI VII VIII IX X - XI - Y / Options (some options can be selected per each model)

Basic model no.		Selections						Optional selections				
MGG18F												
I	Line size	250 mm (10 inches)	250									
		300 mm (12 inches)	300									
		350 mm (14 inches)	350									
		400 mm (16 inches)	400									
		450 mm (18 inches)	450									
		500 mm (20 inches)	500									
		600 mm (24 inches)	600									
II	Lining	Chloroprene rubber				R						
III	Piping connection	Flange JIS 10K				J1						
		Flange ANSI 150				A1						
		Flange JIS G3443-2 F12				G1						
		Flange DIN PN10				D1						
		Flange JPI 150				P1						
IV	Flange material	Standard				1						
		Others				<input type="checkbox"/>						
V	Electrode	SUS316L				L						
		Titanium				K						
		Tungsten carbide				W						
		Others				<input type="checkbox"/>						
VI	Grounding ring	SUS316				S						
		Titanium				K						
		Others				<input type="checkbox"/>						
VII	Electrical connection / watertight gland	Integral type				1						
		Remote type	G1/2 internal thread / without watertight gland				2					
			G1/2 internal thread / with brass (Ni-plated) watertight gland				3					
			G1/2 internal thread / with plastic watertight gland				4					
			1/2NPT internal thread / without watertight gland (Note 1)				5					
			CM20 internal thread / without watertight gland				6					
			Pg 13.5 internal thread / without watertight gland				7					
			G1/2 internal thread / with SUS304 watertight gland				8					
VIII	Face-to-face dimensions	Standard				A						
		Others				<input type="checkbox"/>						
IX	Installation / wiring direction	Integral type				H						
		Remote type	Upstream side (horizontal / vertical piping mounting)				A					
			Downstream side (horizontal / vertical piping mounting)				B					
			Horizontal piping mounting / left side viewed from upstream				C					
			Horizontal piping mounting / right side viewed from upstream				D					
X	Calibration	Standard				A						
		+/- 0.35 % of rate calibration (Size 250 to 350 mm (10 to 14 inches))				U						
		Others				<input type="checkbox"/>						
XI	Finish	Standard				X						
		Corrosion-resistant finish				1						
		Corrosion-proof finish				2						

Options		
	Azbil Corporation version (must be selected)	Y
	Traceability certificate for detector	B
	Material certificate (only for electrodes and ground rings)	C
	With gasket for plastic piping	J
	Attachment of the TAG number to the terminal box for detector (Note 2)	K

Note: 1. Must be selected for CSA/FM NI approval  
 2. Must be selected for Tag no. requirement

**Flange type (700 to 1100 mm (28 to 44 inches)) Chloroprene rubber lining**

Model MGG11F - I II III IV V VI VII VIII IX X - XI - Y / Options (some options can be selected per each model)

Basic model no.		Selections				Optional selections			
MGG11F									
I	Line size	700 mm (28 inches)	700						
		800 mm (32 inches)	800						
		900 mm (36 inches)	900						
		1000 mm (40 inches)	10H						
		1100 mm (44 inches)	11H						
II	Lining	Chloroprene rubber	R						
III	Piping connection	Flange JIS 10K	J1						
		Flange ANSI 150	A1						
		Flange JIS G3443-2 F12	G1						
		Flange DIN PN10	D1						
		Flange JPI 150	P1						
IV	Flange material	Standard	1						
V	Electrode	SUS316L	L						
		Titanium	K						
		Tungsten carbide	W						
		Others	<input type="checkbox"/>						
VI	Grounding ring	SUS316	S						
		Others	<input type="checkbox"/>						
VII	Electrical connection / watertight gland	Integral type	1						
		Remote type	G1/2 internal thread / without watertight gland	2					
			G1/2 internal thread / with brass (Ni-plated) watertight gland	3					
			G1/2 internal thread / with plastic watertight gland	4					
			1/2NPT internal thread / without watertight gland	5					
			CM20 internal thread / without watertight gland	6					
			Pg 13.5 internal thread / without watertight gland	7					
			G1/2 internal thread / with SUS304 watertight gland	8					
VIII	Face-to-face dimensions	Standard	A						
		Others	<input type="checkbox"/>						
IX	Installation / wiring direction	Integral type	H						
		Remote type	Upstream side (horizontal / vertical piping mounting)	A					
			Downstream side (horizontal / vertical piping mounting)	B					
			Horizontal piping mounting / left side viewed from upstream	C					
			Horizontal piping mounting / right side viewed from upstream	D					
X	Calibration	Standard	A						
		Others	<input type="checkbox"/>						
XI	Finish	Standard	X						
		Corrosion-resistant finish	1						
		Corrosion-proof finish	2						

Options		
	Azbil Corporation version (must be selected)	Y
	Traceability certificate for detector	B
	Material certificate (only for electrodes and ground rings)	C
	Attachment of the TAG number to the terminal box for detector (Note 1)	K

Note: 1. Must be selected for Tag no. requirement

**Submersible detector with FM/CSA NI approval**  
**Wafer type (15 to 200 mm (1/2 to 8 inches)) PFA / ETFE lining**

Model MGG19D - I II III IV V VI VII VIII IX - X XI - Y / Options (some options can be selected per each model)

Basic model no.		MGG19D			Selections			Optional selections		
I	Line size	15 mm (1/2 inch)	015							
		25 mm (1 inch)	025							
		40 mm (1½ inches)	040							
		50 mm (2 inches)	050							
		65 mm (2½ inches)	065							
		80 mm (3 inches)	080							
		100 mm (4 inches)	100							
		125 mm (5 inches)	125							
		150 mm (6 inches)	150							
	200 mm (8 inches)	200								
II	Lining	ETFE (Size 80 to 200 mm (3 to 8 inches))	E							
		PFA	P							
III	Piping connection	Wafer JIS 10K	11							
		Wafer JIS 20K	12							
		Wafer JIS 30K	13							
		Wafer ANSI 150	21							
		Wafer ANSI 300	22							
		Wafer JIS G3443-2 F12 (line size 80 mm or larger)	31							
		Wafer DIN PN10	41							
		Wafer DIN PN16	42							
		Wafer DIN PN25	43							
		Wafer DIN PN40	44							
		Wafer JPI 150	61							
		Wafer JPI 300	62							
IV	Electrode	SUS316L	L							
		ASTM B574 (Hastelloy C-276 equivalent)	C							
		Titanium	K							
		Zirconium	H							
		Tantalum	T							
		Tungsten carbide	W							
		Platinum iridium	P							
		Others	<input type="checkbox"/>							
V	Grounding ring	SUS316	S							
		ASTM B575 (Hastelloy C-276 equivalent)	C							
		Titanium	K							
		Zirconium	H							
		Tantalum	T							
		Platinum	P							
		Others	<input type="checkbox"/>							
VI	Electrical connection / watertight gland	Remote type	G1/2 internal thread / with brass (Ni-plated) watertight gland	3						
		Standard	G1/2 internal thread / with SUS304 watertight gland	8						
VII	Face-to-face dimensions	Standard			A					
		Others			<input type="checkbox"/>					
VIII	Installation / wiring direction	Remote type	Upstream side (horizontal / vertical piping mounting)		A					
			Downstream side (horizontal / vertical piping mounting)		B					
			Horizontal piping mounting / left side viewed from upstream		C					
			Horizontal piping mounting / right side viewed from upstream		D					
IX	Calibration	Standard			A					
		+/- 0.35 % of rate calibration (Size 40 to 200 mm (1 1/2 to 8 inches))			U					
		Others			<input type="checkbox"/>					
X	Finish	Standard							X	
XI	Bolt / nut	None								X
		Carbon steel								1
		SUS304								2

Options	Description	Selection
	Azbil Corporation version (must be selected)	Y
	Traceability certificate for detector	B
	Material certificate (only for electrodes and ground rings)	C
	With gasket for plastic piping	J
	Attachment of the TAG number to the terminal box for detector (Note 1)	K

Note: 1. Must be selected for Tag no. requirement

**Submersible detector with FM/CSA NI approval**  
**Flange type (15 to 200 mm (1/2 to 8 inches)) PFA / ETFE lining**

Model MGG19F - I II III IV V VI VII VIII IX X - XI - Y / Options (some options can be selected per each model)

Basic model no.		MGG19F		Selections				Optional selections				
I	Line size	15 mm (1/2 inch)	015									
		25 mm (1 inch)	025									
		40 mm (1½ inches)	040									
		50 mm (2 inches)	050									
		65 mm (2½ inches)	065									
		80 mm (3 inches)	080									
		100 mm (4 inches)	100									
		125 mm (5 inches)	125									
		150 mm (6 inches)	150									
200 mm (8 inches)	200											
II	Lining	ETFE (Size 80 to 200 mm (3 to 8 inches))		E								
		PFA		P								
III	Piping connection	Flange JIS 10K		J1								
		Flange JIS 20K		J2								
		Flange JIS 30K		J3								
		Flange ANSI 150		A1								
		Flange ANSI 300		A2								
		Flange JIS G3443-2 F12 (line size 80 mm or larger)		G1								
		Flange DIN PN10		D1								
		Flange DIN PN16		D2								
		Flange DIN PN25		D3								
		Flange DIN PN40		D4								
		Flange JPI 150		P1								
		Flange JPI 300		P2								
		IV	Flange material	Standard								1
Others				<input type="checkbox"/>								
V	Electrode	SUS316L		L								
		ASTM B574 (Hastelloy C-276 equivalent)		C								
		Titanium		K								
		Zirconium		H								
		Tantalum		T								
		Tungsten carbide		W								
		Platinum iridium		P								
Others		<input type="checkbox"/>										
VI	Grounding ring	SUS316		S								
		ASTM B575 (Hastelloy C-276 equivalent)		C								
		Titanium		K								
		Zirconium		H								
		Tantalum		T								
		Platinum		P								
Others		<input type="checkbox"/>										
VII	Electrical connection / watertight gland	Remote type	G1/2 internal thread / with brass (Ni-plated) watertight gland		3							
			G1/2 internal thread / with SUS304 watertight gland		8							
VIII	Face-to-face dimensions	Standard		A								
		Others		<input type="checkbox"/>								
IX	Installation / wiring direction	Remote type	Upstream side (horizontal / vertical piping mounting)		A							
			Downstream side (horizontal / vertical piping mounting)		B							
			Horizontal piping mounting / left side viewed from upstream		C							
			Horizontal piping mounting / right side viewed from upstream		D							
X	Calibration	Standard		A								
		+/- 0.35 % of rate calibration (Size 40 to 200 mm (1 1/2 to 8 inches))		U								
		Others		<input type="checkbox"/>								
XI	Finish	Standard										X

Options	Description	Code
	Azbil Corporation version (must be selected)	Y
	Traceability certificate for detector	B
	Material certificate (only for electrodes and ground rings)	C
	With gasket for plastic piping	J
	Attachment of the TAG number to the terminal box for detector (Note 1)	K

Note: 1. Must be selected for Tag no. requirement

**Submersible detector with FM/CSA NI approval**

**Flange type (250 to 600 mm (10 to 24 inches)) PFA / ETFE lining**

Model MGG19F - I II III IV V VI VII VIII IX X - XI - Y / Options (some options can be selected per each model)

Basic model no.		Selections				Optional selections			
MGG19F									
I	Line size	250 mm (10 inches)	250						
		300 mm (12 inches)	300						
		350 mm (14 inches)	350						
		400 mm (16 inches)	400						
		450 mm (18 inches)	450						
		500 mm (20 inches)	500						
		600 mm (24 inches)	600						
II	Lining	ETFE	E						
		PFA	P						
III	Piping connection	Flange JIS 10K	J1						
		Flange JIS 20K	J2						
		Flange ANSI 150	A1						
		Flange ANSI 300 (Size 16 inches or smaller)	A2						
		Flange JIS G3443-2 F12	G1						
		Flange DIN PN10	D1						
		Flange DIN PN16	D2						
		Flange DIN PN25	D3						
		Flange JPI 150	P1						
		Flange JPI 300 (Size 400 mm or smaller)	P2						
IV	Flange material	Standard	1						
		Others	<input type="checkbox"/>						
V	Electrode	SUS316L	L						
		ASTM B574 (Hastelloy C-276 equivalent)	C						
		Titanium	K						
		Zirconium	H						
		Tantalum	T						
		Tungsten carbide	W						
		Platinum iridium	P						
Others	<input type="checkbox"/>								
VI	Grounding ring	SUS316	S						
		ASTM B575 (Hastelloy C-276 equivalent)	C						
		Titanium	K						
		Others	<input type="checkbox"/>						
VII	Electrical connection / watertight gland	Remote type	G1/2 internal thread / with brass (Ni-plated) watertight gland	3					
		G1/2 internal thread / with SUS304 watertight gland	8						
VIII	Face-to-face dimensions	Standard				A			
		Others	<input type="checkbox"/>						
IX	Installation / wiring direction	Remote type	Upstream side (horizontal / vertical piping mounting)				A		
			Downstream side (horizontal / vertical piping mounting)				B		
			Horizontal piping mounting / left side viewed from upstream				C		
			Horizontal piping mounting / right side viewed from upstream				D		
X	Calibration	Standard					A		
		+/- 0.35 % of rate calibration (Size 250 to 350 mm (10 to 14 inches))					U		
		Others	<input type="checkbox"/>						
XI	Finish	Standard						X	

Options	Description	Code
	Azbil Corporation version (must be selected)	Y
	Traceability certificate for detector	B
	Material certificate (only for electrodes and ground rings)	C
	With gasket for plastic piping	J
	Attachment of the TAG number to the terminal box for detector (Note 1)	K

Note: 1. Must be selected for Tag no. requirement

**Submersible detector with FM/CSA NI approval**  
**Wafer type (25 to 200 mm (1 to 8 inches)) Polyurethane rubber lining**

Model MGG19D - I II III IV V VI VII VIII IX - X XI - Y / Options (some options can be selected per each model)

Basic model no.		Selections				Optional selections			
MGG19D									
I	Line size	25 mm (1 inch)	025						
		40 mm (1½ inches)	040						
		50 mm (2 inches)	050						
		65 mm (2½ inches)	065						
		80 mm (3 inches)	080						
		100 mm (4 inches)	100						
		125 mm (5 inches)	125						
		150 mm (6 inches)	150						
		200 mm (8 inches)	200						
II	Lining	Polyurethane rubber			Q				
III	Piping connection	Wafer JIS 10K	11						
		Wafer JIS 20K	12						
		Wafer JIS 30K	13						
		Wafer ANSI 150	21						
		Wafer ANSI 300	22						
		Wafer JIS G3443-2 F12 (line size 80 mm or larger)	31						
		Wafer DIN PN10	41						
		Wafer DIN PN16	42						
		Wafer DIN PN25	43						
		Wafer DIN PN40	44						
		Wafer JPI 150	61						
		Wafer JPI 300	62						
		IV	Electrode	SUS316L	L				
Titanium	K								
Tungsten carbide (only for size 10 mm)	W								
Others	<input type="checkbox"/>								
V	Grounding ring	SUS316	S						
		Titanium	K						
		Others	<input type="checkbox"/>						
VI	Electrical connection / watertight gland	Remote type	G1/2 internal thread / with brass (Ni-plated) watertight gland	3					
			G1/2 internal thread / with SUS304 watertight gland	8					
VII	Face-to-face dimensions	Standard			A				
VIII	Installation / wiring direction	Remote type	Upstream side (horizontal / vertical piping mounting)		A				
			Downstream side (horizontal / vertical piping mounting)		B				
			Horizontal piping mounting / left side viewed from upstream		C				
			Horizontal piping mounting / right side viewed from upstream		D				
IX	Calibration	Standard			A				
			+/- 0.35 % of rate calibration (Size 40 to 200 mm (1 1/2 to 8 inches))		U				
			Others	<input type="checkbox"/>					
X	Finish	Standard					X		
XI	Bolt / nut	None					X		
		Carbon steel					1		
		SUS304					2		

Options		
	Azbil Corporation version (must be selected)	Y
	Traceability certificate for detector	B
	Material certificate (only for electrodes and ground rings)	C
	With gasket for plastic piping	J
	Attachment of the TAG number to the terminal box for detector (Note 1)	K

Note: 1. Must be selected for Tag no. requirement

**Submersible detector with FM/CSA NI approval****Flange type (25 to 200 mm (1 to 8 inches)) Polyurethane rubber lining**

Model MGG19F - I II III IV V VI VII VIII IX X - XI - Y / Options (some options can be selected per each model)

Basic model no.		MGG19F		-		Selections		Optional selections		-		-												
I	Line size	25 mm (1 inch)	025																					
		40 mm (1½ inches)	040																					
		50 mm (2 inches)	050																					
		65 mm (2½ inches)	065																					
		80 mm (3 inches)	080																					
		100 mm (4 inches)	100																					
		125 mm (5 inches)	125																					
		150 mm (6 inches)	150																					
		200 mm (8 inches)	200																					
II	Lining	Polyurethane rubber		Q																				
III	Piping connection	Flange JIS 10K		J1																				
		Flange JIS 20K		J2																				
		Flange JIS 30K		J3																				
		Flange ANSI 150		A1																				
		Flange ANSI 300		A2																				
		Flange JIS G3443-2F12 (line size 80 mm or larger)		G1																				
		Flange DIN PN10		D1																				
		Flange DIN PN16		D2																				
		Flange DIN PN25		D3																				
		Flange DIN PN40		D4																				
		Flange JPI 150		P1																				
		Flange JPI 300		P2																				
		IV	Flange material	Standard										I										
		V	Electrode	SUS316L										L										
Titanium				K																				
Tungsten carbide				W																				
Others				<input type="checkbox"/>																				
VI	Grounding ring	SUS316		S																				
		Titanium		K																				
		Others		<input type="checkbox"/>																				
VII	Electrical connection / watertight gland	Remote type	G1/2 internal thread / with brass (Ni-plated) watertight gland		3																			
			G1/2 internal thread / with SUS304 watertight gland		8																			
VIII	Face-to-face dimensions	Standard		A																				
IX	Installation / wiring direction	Remote type	Upstream side (horizontal / vertical piping mounting)		A																			
			Downstream side (horizontal / vertical piping mounting)		B																			
			Horizontal piping mounting / left side viewed from upstream		C																			
			Horizontal piping mounting / right side viewed from upstream		D																			
X	Calibration	Standard		A																				
		+/- 0.35 % of rate calibration (Size 40 to 200 mm (1 1/2 to 8 inches))		U																				
		Others		<input type="checkbox"/>																				
XI	Finish	Standard											X											

Options		
	Azbil Corporation version (must be selected)	Y
	Traceability certificate for detector	B
	Material certificate (only for electrodes and ground rings)	C
	With gasket for plastic piping	J
	Attachment of the TAG number to the terminal box for detector (Note 1)	K

Note: 1. Must be selected for Tag no. requirement

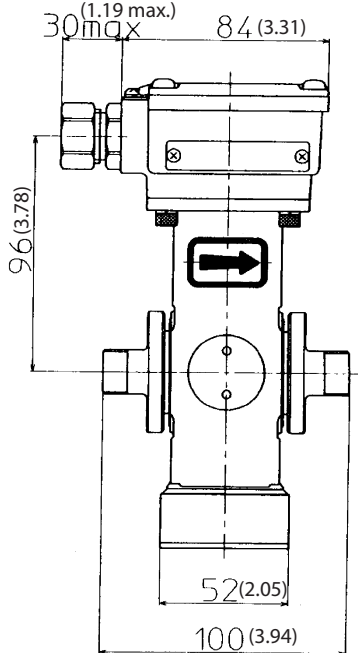
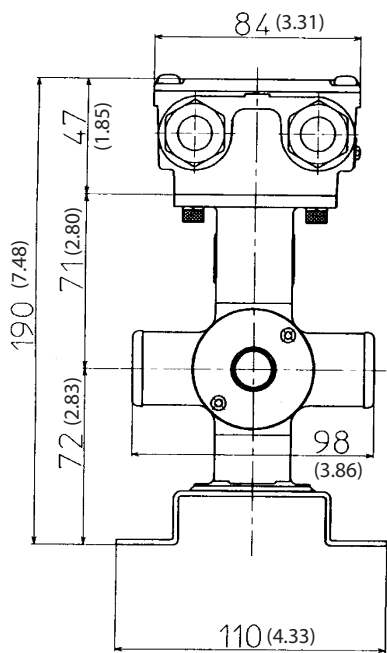
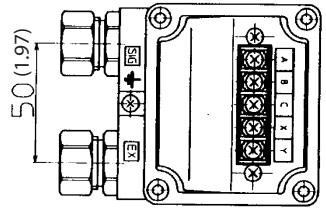
**DIMENSIONS**

(Unit : mm (inch))

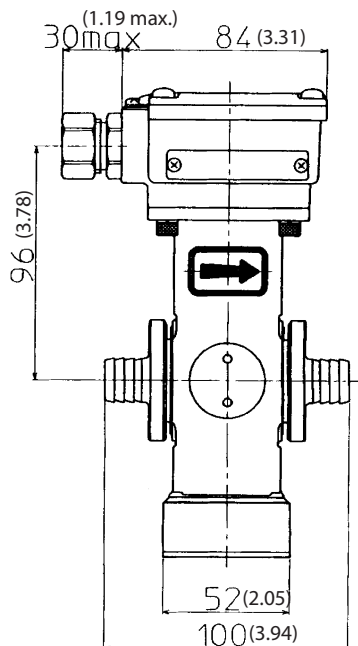
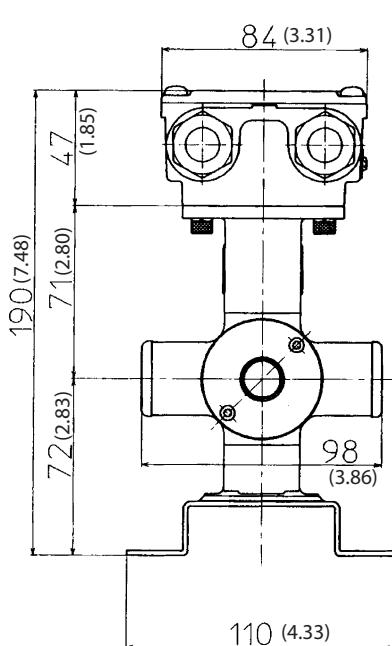
**Union joint (size 2.5 to 15 mm (0.1 to 1/2 inch))**

**Terminal connection table**

Symbol	Description
X	Excitation current input
Y	
A	Flow rate signal output
B	
C	



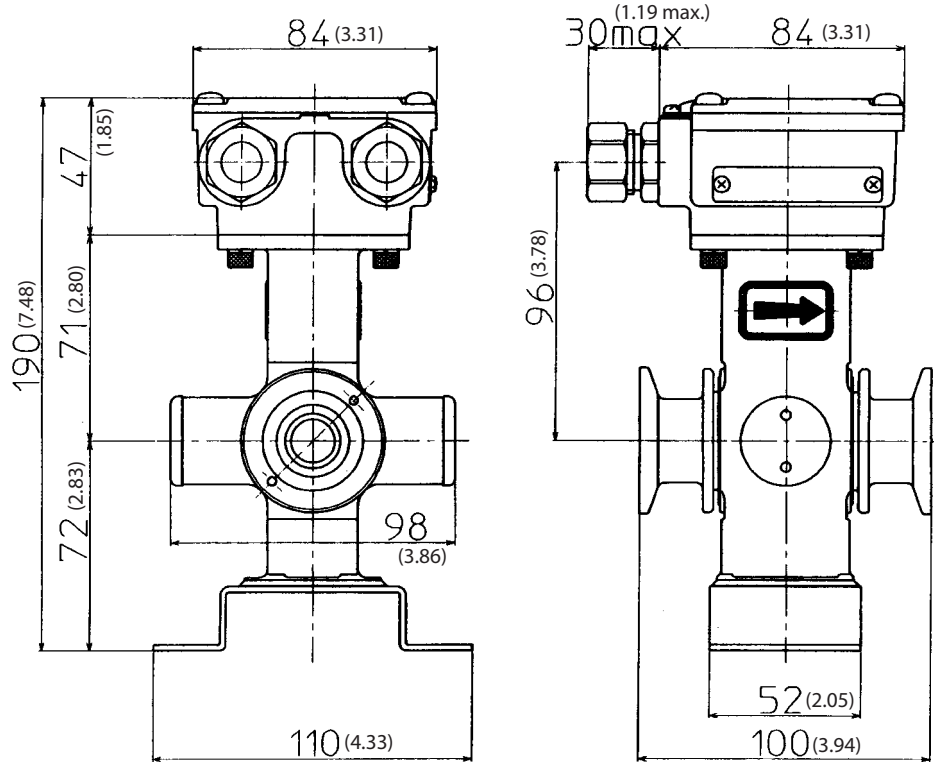
**Hose joint (size 2.5 to 15 mm (0.1 to 1/2 inch))**





## IDF / Tri clamp (size 2.5 to 15 mm (0.1 to 1/2 inch))

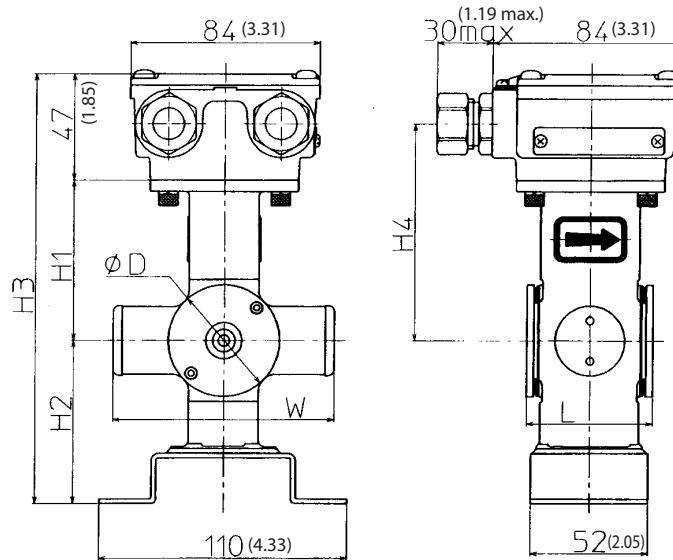
(Unit : mm (inch))



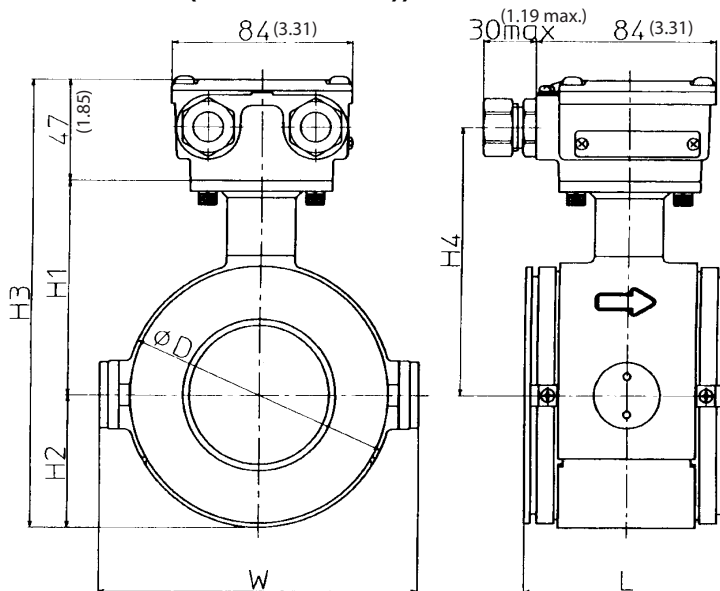
Note: 1. An integral detector includes an integral converter instead of a terminal box.  
2. Clamp size: 1S

Wafer type (size 2.5 to 15 mm (0.1 to 1/2 inch))

(Unit : mm (inch))



Wafer type (size 25 to 200 mm (1 to 8 inches))

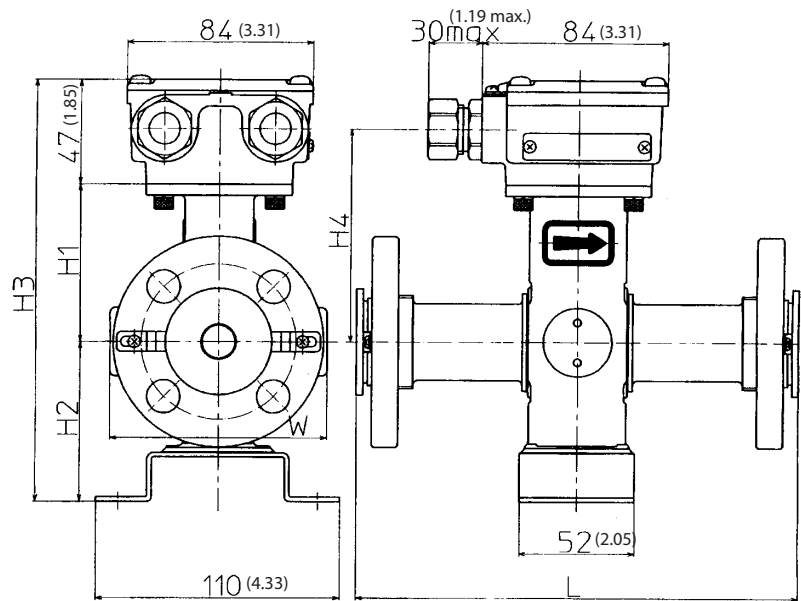


Size		mm	2.5	5	10	15	25	40	50	65	80	100	125	150	200
		(inches)	(0.1)	(0.2)	(3/8)	(1/2)	(1)	(1½)	(2)	(2½)	(3)	(4)	(5)	(6)	(8)
Face to face dimension	L	mm	56	56	56	56	56	80	86	96	106	120	140	160	200
		(inches)	(2.20)	(2.20)	(2.20)	(2.20)	(2.20)	(3.15)	(3.39)	(3.78)	(4.17)	(4.72)	(5.51)	(6.30)	(7.87)
Height	H1	mm	71	71	71	71	77	84	93	100	108	121	133	160	185
		(inches)	(2.80)	(2.80)	(2.80)	(2.80)	(3.03)	(3.31)	(3.66)	(3.94)	(4.25)	(4.76)	(5.24)	(6.30)	(7.28)
	H2	mm	72	72	72	72	34	43.5	52	62	67	79.5	95	110	135
		(inches)	(2.83)	(2.83)	(2.83)	(2.83)	(1.34)	(1.71)	(2.05)	(2.44)	(2.64)	(3.13)	(3.74)	(4.33)	(5.31)
	H3	mm	190	190	190	190	158	175	192	209	222	247	275	317	367
		(inches)	(7.48)	(7.48)	(7.48)	(7.48)	(6.22)	(6.89)	(7.56)	(8.23)	(8.74)	(9.72)	(10.83)	(12.48)	(14.45)
	H4	mm	96	96	96	96	102	109	118	125	133	146	158	185	210
		(inches)	(3.78)	(3.78)	(3.78)	(3.78)	(4.02)	(4.29)	(4.65)	(4.92)	(5.24)	(5.75)	(6.22)	(7.28)	(8.27)
Housing width	W	mm	98	98	98	98	106	125	135	148	164	189	214	240	290
		(inches)	(3.86)	(3.86)	(3.86)	(3.86)	(4.17)	(4.92)	(5.31)	(5.83)	(6.46)	(7.44)	(8.43)	(9.45)	(11.42)
Housing outer diameter	φD	mm	49.5	49.5	49.5	49.5	68	87	104	124	134	159	190	220	270
		(inches)	(1.95)	(1.95)	(1.95)	(1.95)	(2.68)	(3.43)	(4.09)	(4.88)	(5.28)	(6.26)	(7.48)	(8.66)	(10.63)
Weight		kg	2.6	2.6	2.6	2.3	2.6	2.8	3.4	4.5	5.2	6.7	10.0	13.6	22.0
		(lb)	(5.7)	(5.7)	(5.7)	(5.1)	(5.7)	(6.2)	(7.5)	(9.9)	(11.5)	(14.8)	(22.0)	(30.0)	(48.5)

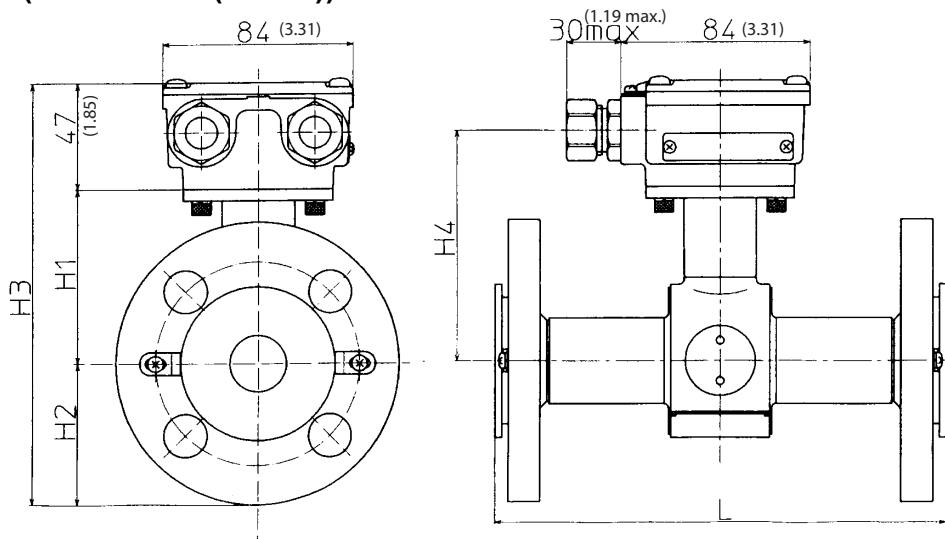
Note: 1. An integral detector includes an integral converter instead of a terminal box.

Flange type (size 2.5 to 15 mm (0.1 to 1/2 inch))

(Unit : mm (inch))



Flange type (size 25 mm (1 inch))

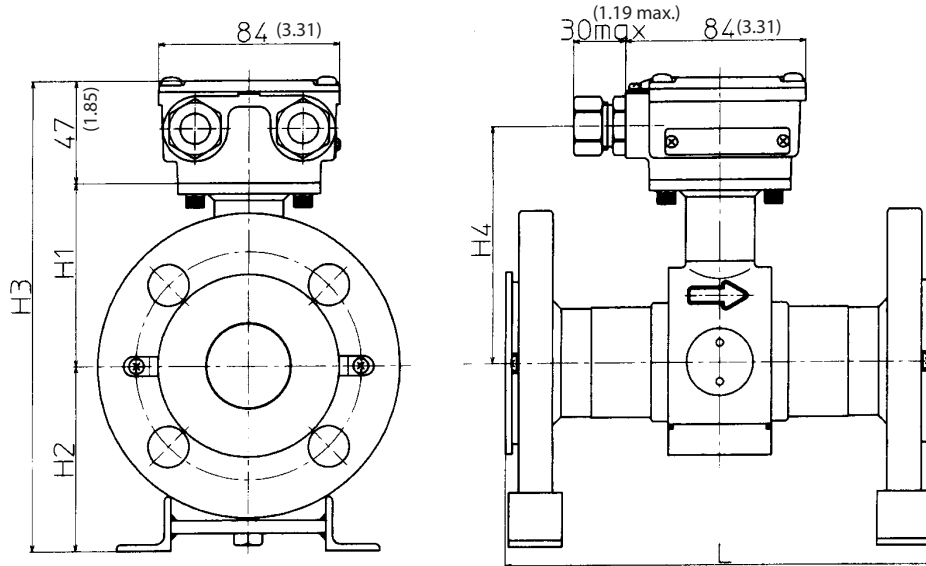


Size		mm	2.5	5	10	15	25
		(inches)	(0.1)	(0.2)	(3/8)	(1/2)	(1)
Face to face dimension	L	mm	160	160	160	200	200
		(inches)	(6.30)	(6.30)	(6.30)	(7.87)	(7.87)
Height	H1	mm	71	71	71	71	77
		(inches)	(2.80)	(2.80)	(2.80)	(2.80)	(3.03)
	H2	mm	72	72	72	72	54
		(inches)	(2.83)	(2.83)	(2.83)	(2.83)	(2.13)
	H3	mm	190	190	190	190	178
		(inches)	(7.48)	(7.48)	(7.48)	(7.48)	(7.01)
H4	mm	96	96	96	96	102	
	(inches)	(3.78)	(3.78)	(3.78)	(3.78)	(4.02)	
Width	W	mm	98	98	98	98	106
		(inches)	(3.86)	(3.86)	(3.86)	(3.86)	(4.17)
Weight		kg	5.0	5.0	5.0	5.0	6.6
		(lb)	(11.0)	(11.0)	(11.0)	(11.0)	(14.6)

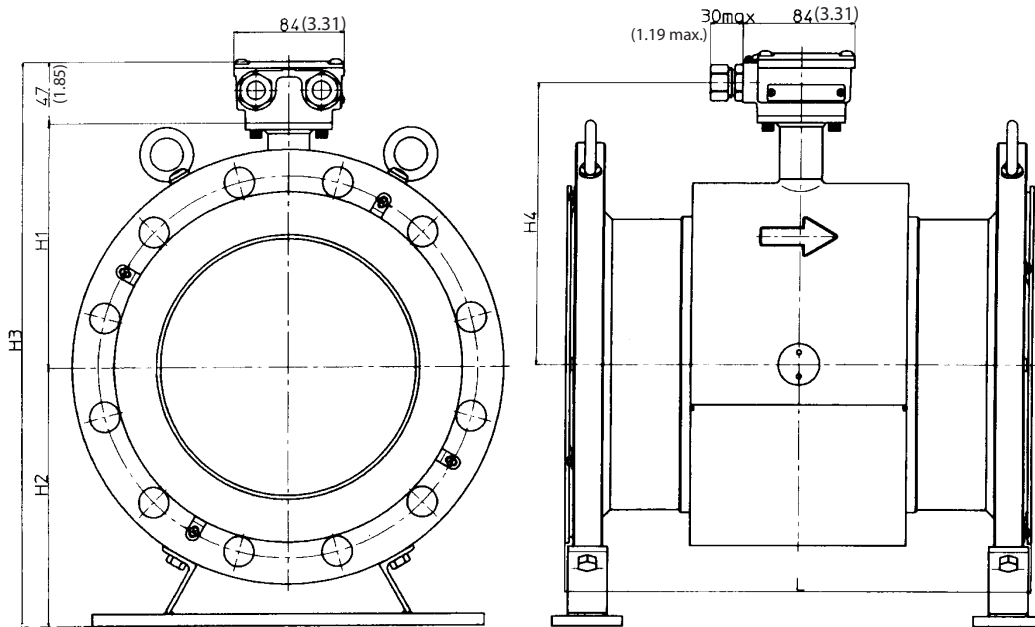
Note: 1. This table is for remote detectors.  
 2. An integral detector includes an integral converter instead of a terminal box.  
 3. The table indicates dimensions for ANSI 150 flange.

Flange type (size 40 to 100 mm (1½ to 4 inches))

(Unit : mm (inch))



Flange type (size 150 to 600 mm (6 to 24 inches))

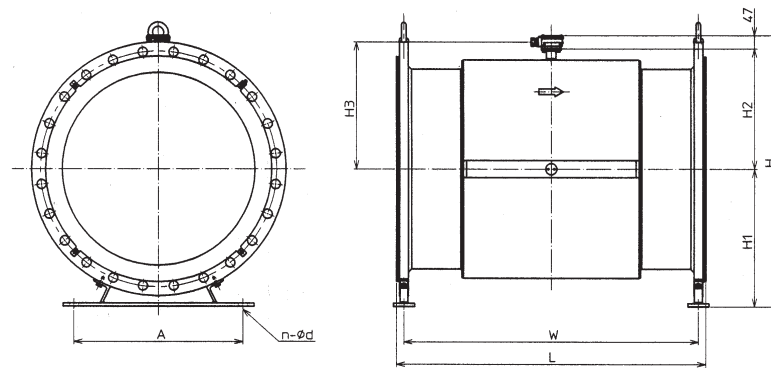


Size	mm																
	(inches)																
		40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
		(1½)	(2)	(2½)	(3)	(4)	(5)	(6)	(8)	(10)	(12)	(14)	(16)	(18)	(20)	(24)	
Face to face dimension	L	mm	200	200	200	200	250	250	300	350	450	500	550	600	600	600	650
		(inches)	(7.87)	(7.87)	(7.87)	(7.87)	(9.84)	(9.84)	(11.81)	(13.78)	(17.72)	(19.69)	(21.65)	(23.62)	(23.62)	(23.62)	(25.59)
Height	H1	mm	84	93	100	108	121	133	160	185	235	258	282	310	339	366	415
		(inches)	(3.31)	(3.66)	(3.94)	(4.25)	(4.76)	(5.24)	(6.30)	(7.28)	(9.25)	(10.16)	(11.10)	(12.20)	(13.35)	(14.41)	(16.34)
	H2	mm	77	88	103	113	131	145	174	204	224	271	297	340	364	396	456
		(inches)	(3.03)	(3.46)	(4.06)	(4.45)	(5.16)	(5.71)	(6.85)	(8.03)	(8.82)	(10.67)	(11.09)	(13.39)	(14.33)	(15.59)	(17.95)
	H3	mm	208	228	250	268	299	325	381	436	506	576	626	697	750	809	918
		(inches)	(8.19)	(8.98)	(9.84)	(10.55)	(11.77)	(12.80)	(15.0)	(17.17)	(19.92)	(22.68)	(24.65)	(27.44)	(29.53)	(31.85)	(36.14)
H4	mm	109	118	125	133	146	158	185	210	260	283	307	335	364	391	440	
	(inches)	(4.29)	(4.65)	(4.92)	(5.24)	(5.75)	(6.22)	(7.28)	(8.27)	(10.24)	(11.14)	(12.09)	(13.19)	(14.33)	(15.39)	(17.32)	
Weight (kg)	kg	6.0	10.5	12.5	15.5	23.3	32.0	35.4	60.0	68.0	97.0	128	163	213	249	339	
	(lb)	(13.2)	(23.1)	(27.6)	(34.2)	(51.4)	(70.5)	(78.0)	(132)	(150)	(214)	(282)	(359)	(470)	(549)	(747)	

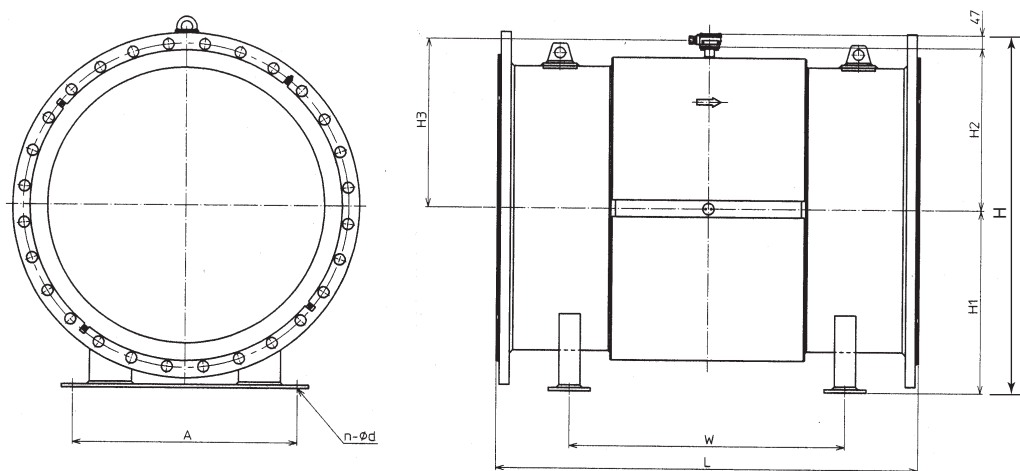
- Note: 1. This table is for remote detectors.  
 2. An integral detector includes an integral converter instead of a terminal box.  
 3. The table indicates dimensions for ANSI 150 flange.

Flange type (size 700 to 900 mm (28 to 36 inches))

(Unit : mm (inch))



Flange type (size 1000, 1100 mm (40, 44 inches))



Size		mm	700	800	900	1000	1100
		(inches)	(28)	(32)	(36)	(40)	(44)
Face to face dimension	L	mm	1100	1200	1300	1500	1500
		(inches)	(43.31)	(47.24)	(51.18)	(59.06)	(59.06)
Height	H	mm	979	1080	1211	1278	1399
		(inches)	(38.54)	(42.52)	(47.68)	(50.31)	(55.08)
	H1	mm	503	554	634	650	720
		(inches)	(19.80)	(21.81)	(24.96)	(25.59)	(28.35)
	H2	mm	429	480	530	581	632
		(inches)	(16.89)	(18.90)	(20.87)	(22.87)	(24.88)
H3	mm	454	505	555	606	657	
	(inches)	(17.87)	(19.88)	(21.85)	(23.86)	(25.87)	
Feet length	W	mm	1049	1145	1245	980	1000
		(inches)	(41.30)	(45.08)	(49.02)	(38.58)	(39.37)
Feet width	A	mm	600	600	600	800	800
		(inches)	(23.62)	(23.62)	(23.62)	(31.50)	(31.50)
Feet halls *	n-φd	mm	4-φ33	4-φ33	4-φ33	4-φ33	4-φ33
		(inches)	(1.30)	(1.30)	(1.30)	(1.30)	(1.30)
Weight		kg	630.0	720.0	1060.0	1320.0	1540.0
		(lb)	(1389)	(1587)	(2337)	(2910)	(3395)

Note: The table indicates dimensions for ANSI 150 flange.

\*: n = number, d = diameter

Note

Note

Please, read 'Terms and Conditions' from following URL before the order and use.

<http://www.azbil.com/products/bi/order.html>

*Specifications are subject to change without notice.*

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