

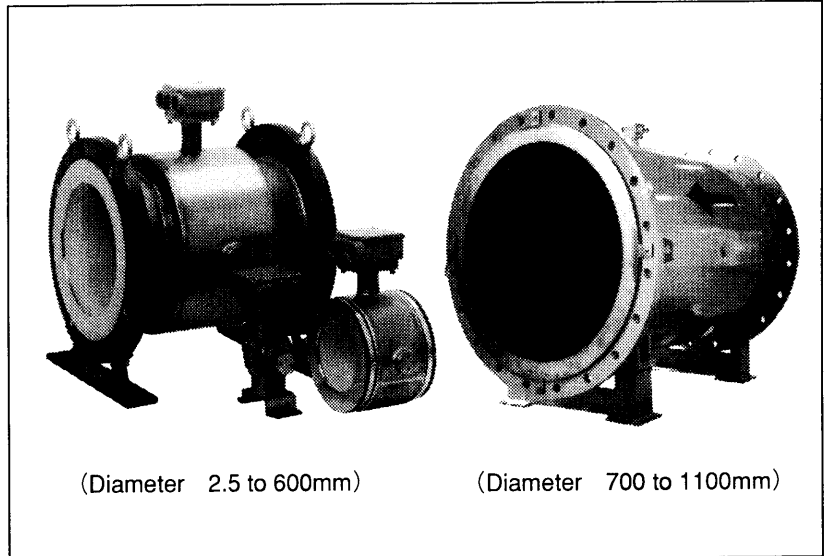
# MagneW 3000 FLEX Smart Electromagnetic Flowmeter Detector (General Model)

## MGG11 (Watertight model, Integral/Remote)

## MGG12 (Submersible model, Remote )

### Introduction

The MagneW 3000 FLEX electromagnetic flowmeter detector is a high performance, highly reliable flowmeter developed with Yamatake Corporation's proven MagneW 3000 flow measurement technologies. MGG11 and MGG12 models for watertight and submerged use offer superior flowrate and process measurement when couple a with one of our MagneW 3000 FLEX converters.



### Special features

- (1) High performance lining
  - A new, exclusive high quality lining technology and a special, mirror-finish PFA lining offer higher antiadhesive properties than existing models.
  - The specular 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 2.5mm to 600mm available, making selection of the best lining easy for a wide variety of applications.
- (2) Replacement interfacing detector (optional)
  - This detector can replace the detector interfaces of our existing models and those of other manufacturers. Please consult your Yamatake Corporation representative for details.
- (3) Rugged detector structure
  - A stainless steel case has been adopted for diameters of 2.5mm to 200mm.
  - A watertight structure effective for environments where moisture condensation tends to occur is used for the water-tight model (MGG11).
- (4) A wide variety of piping connections
  - A hose or union joint or clamp can be selected for very small diameter models (diameters of 2.5 to 15mm).
  - A flange structure is used for all diameters (diameters of 2.5 to 1100mm).
  - A wafer construction can be also selected (diameters of 2.5 to 200mm).
  - Diameters of 65 and 125mm have been added to our existing product lineup.
- (5) Compatibility
  - Remote model converters can be used in combination with our conventional converters. Please consult your Yamatake Corporation representative for details.

## Wide variety of 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:

Alumina 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.

## Detector Specifications (standard)

### Equipment specifications

#### Structure:

**MGG11:** JIS C 0920 water-tight model  
NEMA ICS6-110 TYPE4X  
IEC PUBL 529 IP67

**MGG12:** JIS C 0920 submersible model  
NEMA ICS6-110 TYPE6  
IEC PUBL 529 IP68

#### Finish:

**MGG11:** Corrosion-preventive acrylic resin  
(remote model, diameter 2.5 to 200mm, terminal box only)  
Corrosion-preventive polyurethane resin  
(diameter 250 to 600mm, terminal box of remote model and case of remote/integral model)  
Corrosion-preventive acrylic resin  
(diameter 700 to 1100mm, terminal box and case of remote/integral model)

**MGG12:** Corrosion-preventive tar epoxy (diameter 15 to 200mm, terminal box only; and diameter: 250 to 600mm, terminal box and case)

#### Color:

**MGG11:** Light beige (Munsell 4Y7.2/1.3)

**MGG12:** Black

#### Main body material:

**Measuring pipe materials:** SUS304 stainless steel

**Flange:**SUS304 stainless steel

(diameter: 2.5 to 65mm)

Carbon steel + corrosion-preventive coating  
(diameter 80 to 600mm)

Carbon steel

(diameter 700 to 1100mm)

**Case:** SCS13 stainless steel

(diameter 2.5 to 15mm)

SUS304 stainless steel

(diameter 25 to 200mm)

SS400 carbon steel (diameter 250 to 1100mm)

**Terminal box:** Aluminum alloy (remote model)

#### Material of parts in contact with liquid:

**Lining:** PFA (diameter: 2.5 to 600mm)

ETFE (diameter: 80 to 600mm)

Polyurethane rubber

(diameter 25 to 200mm)

Chloroprene rubber

(diameter 250 to 1100mm)

**Electrode:** SUS316L, Hastelloy C, titanium, zirconium, tantalum, tungsten-carbide, platinum/iridium

**Ground ring:**SUS316, Hastelloy C, titanium, zirconium, tantalum, platinum

**Union joint:** SUS316 (diameter 2.5 to 15mm)

**Hose:** SUS316 (diameter 2.5 to 15mm)

**IDF Clamp :** SUS316

**Tri Clamp :** SUS316

#### Material of parts in contact with liquid:

**Gasket:** PTFE

(if the grounding ring is not made of SUS316)

**O-ring:** Viton rubber (with union joints)

#### Structure of electrode:

**MGG11:** External insertion

(electrode can be removed)

**MGG12:** External insertion

(electrode cannot be removed)

### Installation specifications

#### Ambient temperature:

-25 to +60°C (integral model)

-30 to +80°C (remote model, PFA lining)

-30 to +60°C (remote model, polyurethane rubber lining/  
chloroprene rubber lining)

#### Ambient humidity : 5 to 100% RH

#### Cable connection port:

**Integral model;** Connected to converter

**Remote model;**

G1/2 (PF1/2) internal thread, 1/2 NPT internal thread, CM20 internal thread, Pg 13.5 internal thread

**Pipe connection;**

Wafer (models 2.5 to 200mm in diameter)

Flange (models 2.5 to 1100mm in diameter)

Union (models 2.5 to 15mm in diameter)

Hose (models 2.5 to 15mm in diameter)

IDF Clamp(models 2.5 to 15mm in diameter)

Tri Clamp(models 2.5 to 15mm in diameter)

**Nuts and bolts (for models of wafer construction):**  
S20C carbon steel, SUS304 stainless steel

**Flange rating:**

JIS10K, JIS20K, JIS30K,  
JPI150, JPI300, ANSI150, ANSI300,  
DIN PN10, DIN PN16, DIN PN25,  
DIN PN40 (diameter 2.5 to 50mm)

JIS10K, JIS20K, JIS30K,  
JPI150, JPI300, ANSI150, ANSI300,  
DIN PN10, DIN PN16, DIN PN25,  
DIN PN40, JIS G3451 F12  
(diameter 80 to 200mm)

JIS10K, JIS20K, JPI150, JPI300,  
ANSI150, ANSI300, DIN PN10,  
DIN PN16, DIN PN25, JIS G3451 F12  
(diameter 250 to 600mm, PFA/ETFE lining)

JIS10K, JPI150, ANSI150, DIN PN10  
JIS G3451 F12(diameter 250 to 1100mm,  
chloroprene rubber lining)

**Grounding:** Category D  
(Grounding resistance: lower than 100 Ω )

**Mounting :** Horizontally-mounted electrode

**Length of straight pipe:**

**Upstream side;**

Five (5) times or longer than the diameter. However, 10 times or longer than the diameter if a diffuser, valve, pump, etc., are installed.

**Downstream side;**

Not required. However, 2 times or longer than the diameter if influence exists from drift current of such equipment as a valve.

**Cable (between remote detector and converter):**

Maximum length: 300m  
(depending on fluid conductivity)  
Outer diameter: 10 to 12 mm  
Signal cable: Dedicated cable  
(11.4mm, 0.75mm<sup>2</sup> diameter)  
or equivalent (CVVS, CEEV, etc.)  
Excitation cable: Dedicated cable (10.5mm, 2mm<sup>2</sup>  
diameter) or equivalent (CVV  
and others)

**Additional specifications (optional)**

**Test report:**

Test result based on repair of electromagnetic flowmeter for actual flow.

**Certification of traceability:**

From 3 sources: configuration of measuring management system for electromagnetic flowmeter, repair certification, and test report.

**Mill sheet:**

Data sheet describing materials and charge numbers of electrodes and grounding rings.

**Moisture treatment:**

When shipped, condensation is removed from wetted surfaces.

**Oil removal treatment:**

When shipped, oil is removed from wetted surfaces.

**Gasket for resin pipe (for general use):**

When installing the detector on a resin pipe, attach this gasket between the lining and the grounding ring, and between the grounding ring and the pipe flange.

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

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

**Attaching the tag number on the neck section:**

Mark the tag number specified and attach it to the neck section of the detector. The maximum number of characters in the tag number is 16.

For additional specifications, please contact your Yamatake Corporation representative.

## Performance (standard)

### Accuracy (in combination with the MGG10C converter)

Table 1

< diameter 2.5 to 15mm >		Upper limit value of Vs=set velocity range	
Vs(m/s)	Velocity during measurement $\geq$ Vs $\times$ 40%	Velocity during measurement $\leq$ Vs $\times$ 40%	
$1.0 \leq Vs \leq 10$	$\pm 0.5\%$ of indicated value	$\pm 0.2\%$ of Vs	
$0.1 \leq Vs \leq 1.0$	$\pm(0.1/Vs+0.4)\%$ of the indicated value	$\pm 0.4(0.1/Vs+0.4)\%$ of Vs	

< diameter 25 to 600mm >		Upper limit value of Vs=set velocity range	
Vs(m/s)	Velocity during measurement $\geq$ Vs $\times$ 20%	Velocity during measurement $\leq$ Vs $\times$ 20%	
$1.0 \leq Vs \leq 10$	$\pm 0.5\%$ of indicated value	$\pm 0.1\%$ of Vs	
$0.1 \leq Vs \leq 1.0$	$\pm(0.1/Vs+0.4)\%$ of the indicated value	$\pm 0.2(0.1/Vs+0.4)\%$ of Vs	

< diameter 700 to 1100mm >		Upper limit value of Vs=set velocity range	
Vs(m/s)	Velocity during measurement $\geq$ Vs $\times$ 50%	Velocity during measurement $\leq$ Vs $\times$ 50%	
$1.0 \leq Vs \leq 10$	$\pm 1.0\%$ of indicated value	$\pm 0.5\%$ of Vs	
$0.1 \leq Vs \leq 1.0$	$\pm(0.2/Vs+0.8)\%$ of the indicated value	$(0.1/Vs+0.4)\%$ of Vs	

### Liquid to be measured/temperature range:

#### PFA lining

Diameter (mm)	Temperature of the liquid to be measured (°C)	
	Integral model	Remote model
2.5 to 10	-40 to +100	-40 to +100
15 to 200	-40 to +120	-40 to +160
250 to 600	-40 to +120	-40 to +120

#### ETFE lining

Diameter (mm)	Temperature of the liquid to be measured (°C)	
	Integral model	Remote model
80 to 200	-40 to +120	-40 to +120
250 to 600	-40 to +120	-40 to +120

#### Polyurethane rubber lining

Diameter (mm)	Temperature of the liquid to be measured (°C)	
	Integral /Remote model	
25 to 200	-40 to +50	

#### Chloroprene rubber lining

Diameter (mm)	Temperature of the liquid to be measured (°C)	
	Integral /Remote model	
250 to 1100	-10 to +70	

### Measurable electrical conductivity:

Combined with MGG10C converter

$3\mu\text{S/cm}$  or more (consult your Yamatake Corporation engineer when conditions are  $3\mu\text{S/cm}$  or less)

### Measurement flow range:

Refer to the minimum/maximum set ranges shown in Table 2.

**Measurement flow range:** 0m/s to 10m/s

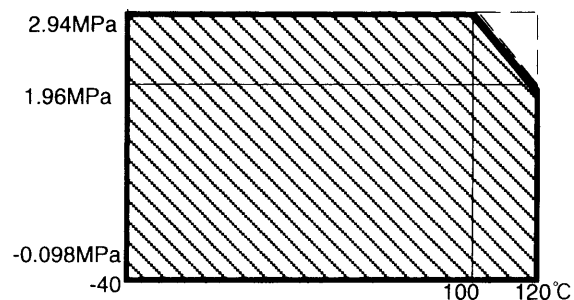
### Measurable flow pressure:

PFA/ETFE lining; -0.098 to +2.94MPa

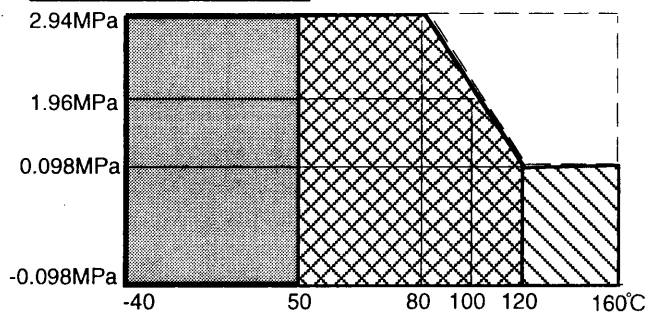
Polyurethane rubber lining ; -0.098 to +2.94MPa

Chloroprene rubber lining ; -0.098 to +0.98MPa

Diameter 2.5 to 10mm



Diameter 15 to 200mm



Diameter 250 to 1100mm

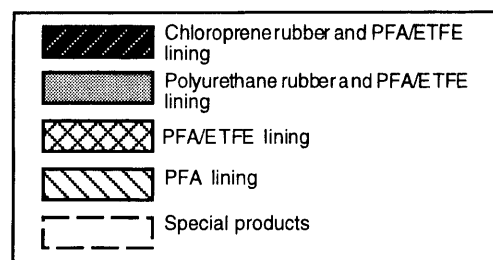
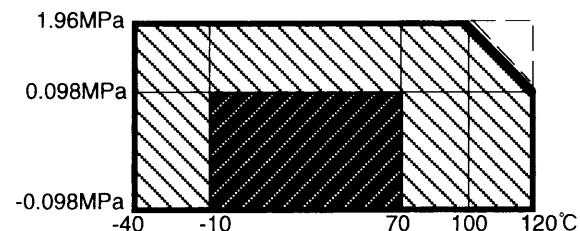


Table 2

Diameter (mm)	Minimum set range(m <sup>3</sup> /h) (Minimum constant flow speed of 0 to 0.1m/s)	Maximum set range(m <sup>3</sup> /h) (Maximum constant flow speed of 0 to 10m/s)	Flow conversion factor K
2.5	0 to 0.00177	0 to 0.177	56.59
5	0 to 0.00707	0 to 0.707	14.15
10	0 to 0.0283	0 to 2.83	3.537
15	0 to 0.0636	0 to 6.36	1.572
25	0 to 0.177	0 to 17.7	0.5659
40	0 to 0.452	0 to 45.2	0.2210
50	0 to 0.707	0 to 70.7	0.1415
65	0 to 1.19	0 to 119	0.08375
80	0 to 1.81	0 to 181	0.05526
100	0 to 2.83	0 to 283	0.03537
125	0 to 4.42	0 to 442	0.02264
150	0 to 6.36	0 to 636	0.01572
200	0 to 11.31	0 to 1,131	0.008842
250	0 to 17.67	0 to 1,767	0.005659
300	0 to 25.45	0 to 2,545	0.003930
350	0 to 34.64	0 to 3,464	0.002887
400	0 to 45.24	0 to 4,524	0.002210
450	0 to 57.26	0 to 5,726	0.001747
500	0 to 70.70	0 to 7,070	0.001415
600	0 to 101.79	0 to 10,179	0.0009824
700	0 to 138.54	0 to 13,854	0.0007221
800	0 to 180.96	0 to 18,096	0.0005529
900	0 to 229.02	0 to 22,902	0.0004368
1000	0 to 282.74	0 to 28,274	0.0003538
1100	0 to 311.02	0 to 31,102	0.0002924

Flow conversion : Velocity V(m/s)=K × Q


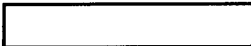
$$K = \text{Flow conversion factor} = \frac{1}{3600} \times \frac{4}{\pi D^2}$$

Q=Flow rate (m<sup>3</sup>/h)

### Contents of Model Number Tables

Detector(General Model)

Structure/Basic Model No.	Lining	Pipe connection	Diameter(mm)	Ref. page
Watertight model MGG11U	PFA	Union/Hose/Clamp	2.5 to 15	6
Watertight model MGG11D	PFA	Wafer	2.5 to 10	7
Watertight model MGG11D	PFA/ETFE	Wafer	15 to 200	8
Watertight model MGG11F	PFA	Flange	2.5 to 10	9
Watertight model MGG11F	PFA/ETFE	Flange	15 to 200	10
Watertight model MGG11F	PFA/ETFE	Flange	250 to 600	11
Watertight model MGG11D	Polyurethane rubber	Wafer	25 to 200	12
Watertight model MGG11F	Polyurethane rubber	Flange	25 to 200	13
Watertight model MGG11F	Chloroprene rubber	Flange	250 to 600	14
Watertight model MGG11F	Chloroprene rubber	Flange	700 to 1100	15
Submersible mode MGG12U	PFA	Union/Hose/Clamp	15	16
Submersible mode MGG12D	PFA/ETFE	Wafer	15 to 200	17
Submersible mode MGG12F	PFA/ETFE	Flange	15 to 200	18
Submersible mode MGG12F	PFA/ETFE	Flange	250 to 600	19
Submersible model MGG12D	Polyurethane rubber	Wafer	25 to 200	20
Submersible model MGG12F	Polyurethane rubber	Flange	25 to 200	21
Submersible model MGG12F	Chloroprene rubber	Flange	250 to 600	22

	PFA/ETFE lining
	Rubber lining

MagneW3000 FLEX (General Model)(Union/Hose/Clamp assemblies 2.5 to15mm) PFA lining

Basic Model No.

**MGG11U**

Selections

Optional selections Options

Diameter	2.5mm	002									
	5mm	005									
	10mm	010									
	15mm	015									
Lining	PFA		P								
Pipe 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								
Others			<input type="checkbox"/>								
Electrodes	SUS316L		L								
	Hastelloy C		C								
	Titanium		K								
	Zirconium		H								
	Tungsten carbide		W								
	Others			<input type="checkbox"/>							
Union / Hose / Clamp material	SUS316		S								
			S								
Wiring connection/ Watertight gland	Integral model		1								
		G1/2 internal thread/Without watertight gland	2								
	Remote model	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								
		Pg13.5 internal thread/Without watertight gland	7								
		Others		<input type="checkbox"/>							
Face to face	Standard		A								
Installation/ Wiring direction	Integral model		H								
		Upstream side	A								
	Remote model	Downstream side	B								
		Horizontal piping mounting/Left side viewed from upstream	C								
		Horizontal piping mounting/Right side viewed from upstream	D								
Calibration/ Approval	Standard calibration		A								
	Others		<input type="checkbox"/>								

<input checked="" type="checkbox"/>	No option	
<input type="checkbox"/>	Test report	
<input type="checkbox"/>	Certification of traceability	
<input type="checkbox"/>	Mill sheet	
<input type="checkbox"/>	Moisture treatment	
<input type="checkbox"/>	Oil removal treatment	
<input type="checkbox"/>	Attaching the TAG number plate to the terminal box (remote detector)	
<input type="checkbox"/>	Attaching the TAG number plate to the neck section	
<input type="checkbox"/>	Others	
<input checked="" type="checkbox"/>	Finish	Standard
<input type="checkbox"/>	1	Corrosion-resistant finish
<input type="checkbox"/>	2	Corrosion-proof finish



Basic Model No.

**MGG11D**

Selections

Optional selections

Options

Diameter	15mm	015										
	25mm	025										
	40mm	040										
	50mm	050										
	65mm	065										
	80mm	080										
	100mm	100										
	125mm	125										
	150mm	150										
	200mm	200										
Lining	PFA		P									
	ETFE (Diameter 80mm to 200mm)		E									
Pipe connection	Wafer JIS10K			11								
	Wafer JIS20K			12								
	Wafer JIS30K			13								
	Wafer ANSI150			21								
	Wafer ANSI300			22								
	Wafer JIS G3451 F12 (Diameter 80mm or more)			31								
	Wafer DIN PN10			41								
	Wafer DIN PN16			42								
	Wafer DIN PN25			43								
	Wafer DIN PN40			44								
	Wafer JPI150			61								
	Wafer JPI300			62								
Electrodes	SUS316L							L				
	Hastelloy C							C				
	Titanium							K				
	Zirconium							H				
	Tantalum							T				
	Tungsten carbide							W				
	Platinum iridium							P				
	Others							<input type="checkbox"/>				
Grounding ring	SUS316							S				
	Hastelloy C							C				
	Titanium							K				
	Zirconium							H				
	Tantalum							T				
	Platinum							P				
	Others							<input type="checkbox"/>				
Wiring connection/ Watertight gland	Integral model								1			
	Remote model	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		
		Pg13.5 internal thread/Without watertight gland								7		
		Others								<input type="checkbox"/>		
Face to face	Standard									A		
	Others								<input type="checkbox"/>			
Installation/ Wiring direction	Integral model										H	
	Remote model	Upstream side										A
		Downstream side										B
		Horizontal piping mounting/Left side viewed from upstream										C
		Horizontal piping mounting/Right side viewed from upstream										D
Calibration/ Approval	Standard calibration										A	
	Others								<input type="checkbox"/>			

<input checked="" type="checkbox"/>	No option
<input type="checkbox"/>	Test report
<input type="checkbox"/>	Certification of traceability
<input type="checkbox"/>	Mill sheet
<input type="checkbox"/>	Moisture treatment
<input type="checkbox"/>	Oil removal treatment
<input type="checkbox"/>	Gasket for resin pipe (for general purposes)
<input type="checkbox"/>	Attaching the TAG number plate to the terminal box (remote detector)
<input type="checkbox"/>	Attaching the TAG number plate to the neck section
<input type="checkbox"/>	Others

<input checked="" type="checkbox"/>	Finish	Standard
1		Corrosion-resistant finish
2		Corrosion-proof finish

<input checked="" type="checkbox"/>	Bolt/nuts	None
1		Carbon steel
2		SUS304



Basic Model No.

**MGG11F**

Selections

Optional selections

Options

Diameter	15mm	015									
	25mm	025									
	40mm	040									
	50mm	050									
	65mm	065									
	80mm	080									
	100mm	100									
	125mm	125									
	150mm	150									
200mm	200										
Lining	PFA		P								
	ETFE (Diameter 80mm to 200mm)		E								
Pipe connection	Flange JIS10K		J1								
	Flange JIS20K		J2								
	Flange JIS30K		J3								
	Flange ANSI150		A1								
	Flange ANSI300		A2								
	Flange JIS G3451 F12 (Diameter 80mm or more)		G1								
	Flange DIN PN10		D1								
	Flange DIN PN16		D2								
	Flange DIN PN25		D3								
	Flange DIN PN40		D4								
	Flange JPI150		P1								
	Flange JPI300		P2								
	Flange material	Standard		1							
Others											
Electrodes	SUS316L		L								
	Hastelloy C		C								
	Titanium		K								
	Zirconium		H								
	Tantalum		T								
	Tungsten carbide		W								
	Platinum iridium		P								
	Others										
Grounding ring	SUS316		S								
	Hastelloy C		C								
	Titanium		K								
	Zirconium		H								
	Tantalum		T								
	Platinum		P								
	Others										
Wiring connection/ Watertight gland	Integral model		1								
	Remote model	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							
		Pg13.5 internal thread/Without watertight gland		7							
		Others									
Face to face	Standard		A								
	Others										
Installation/ Wiring direction	Integral model		H								
	Remote model	Upstream side		A							
		Downstream side		B							
		Horizontal piping mounting/Left side viewed from upstream		C							
		Horizontal piping mounting/Right side viewed from upstream		D							
Calibration/ Approval	Standard calibration		A								
	Others										

<input checked="" type="checkbox"/>	No option
<input type="checkbox"/>	Test report
<input type="checkbox"/>	Certification of traceability
<input type="checkbox"/>	Mill sheet
<input type="checkbox"/>	Moisture treatment
<input type="checkbox"/>	Oil removal treatment
<input type="checkbox"/>	Gasket for resin pipe (for general purposes)
<input type="checkbox"/>	Attaching the TAG number plate to the terminal box (remote)
<input type="checkbox"/>	Attaching the TAG number plate to the neck section
<input type="checkbox"/>	Others

<input checked="" type="checkbox"/>	Finish	Standard
<input type="checkbox"/>	1	Corrosion-resistant finish
<input type="checkbox"/>	2	Corrosion-proof finish











Basic Model No.

**MGG12U**

Selections

Optional selections

Options

Diameter	15mm	015										
Lining	PFA		P									
Pipe 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								
Others			<input type="checkbox"/>									
Electrodes	SUS316L			L								
	Hastelloy C			C								
	Titanium			K								
	Zirconium			H								
	Tungsten carbide			W								
Others			<input type="checkbox"/>									
Union / Hose /Clamp material	SUS316				S							
Wiring connection/ Watertight gland	Remote model	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						
		Pg13.5 internal thread/Without watertight gland				7						
		Others			<input type="checkbox"/>							
Face to face	Standard								A			
Installation/ Wiring direction	Remote model	Upstream side								A		
		Downstream side								B		
		Horizontal piping mounting/Left side viewed from upstream									C	
		Horizontal piping mounting/Right side viewed from upstream									D	
Calibration/ Approval	Standard calibration									A		
Others			<input type="checkbox"/>									

<input checked="" type="checkbox"/>	X	No option
<input type="checkbox"/>	A	Test report
<input type="checkbox"/>	B	Certification of traceability
<input type="checkbox"/>	C	Mill sheet
<input type="checkbox"/>	E	Moisture treatment
<input type="checkbox"/>	F	Oil removal treatment
<input type="checkbox"/>	K	Attaching the TAG number plate to the terminal box (remote detector)
<input type="checkbox"/>	L	Attaching the TAG number plate to the neck section
<input type="checkbox"/>		Others

<input checked="" type="checkbox"/>	X	Finish	Standard
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Basic Model No.

**MGG12D**

Selections

Optional selections

Options

Diameter	15mm	015	
	25mm	025	
	40mm	040	
	50mm	050	
	65mm	065	
	80mm	080	
	100mm	100	
	125mm	125	
	150mm	150	
	200mm	200	
Lining	PFA	P	
	ETFE (Diameter 80mm to 200mm)	E	
Pipe connection	Wafer JIS10K	11	
	Wafer JIS20K	12	
	Wafer JIS30K	13	
	Wafer ANSI150	21	
	Wafer ANSI300	22	
	Wafer JIS G3451 F12 (Diameter 80mm or more)	31	
	Wafer DIN PN10	41	
	Wafer DIN PN16	42	
	Wafer DIN PN25	43	
	Wafer DIN PN40	44	
	Wafer JPI150	61	
	Wafer JPI300	62	
	Electrodes	SUS316L	L
Hastelloy C		C	
Titanium		K	
Zirconium		H	
Tantalum		T	
Tungsten carbide		W	
Platinum iridium		P	
Others		<input type="checkbox"/>	
Grounding ring	SUS316	S	
	Hastelloy C	C	
	Titanium	K	
	Zirconium	H	
	Tantalum	T	
	Platinum	P	
	Others	<input type="checkbox"/>	
Wiring connection/ Watertight gland	Remote model	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
		Pg13.5 internal thread/Without watertight gland	7
		Others	<input type="checkbox"/>
Face to face	Standard	A	
	Others	<input type="checkbox"/>	
Installation/ Wiring direction	Remote model	Upstream side	A
		Downstream side	B
		Horizontal piping mounting/Left side viewed from upstream	C
		Horizontal piping mounting/Right side viewed from upstream	D
Calibration/ Approval	Standard calibration	A	
	Others	<input type="checkbox"/>	

<input checked="" type="checkbox"/>	No option
<input type="checkbox"/>	Test report
<input type="checkbox"/>	Certification of traceability
<input type="checkbox"/>	Mill sheet
<input type="checkbox"/>	Moisture treatment
<input type="checkbox"/>	Oil removal treatment
<input type="checkbox"/>	Gasket for resin pipe (for general purposes)
<input type="checkbox"/>	Attaching the TAG number plate to the terminal box (remote detector)
<input type="checkbox"/>	Attaching the TAG number plate to the neck section
<input type="checkbox"/>	Others

<input checked="" type="checkbox"/>	Finish	Standard
-------------------------------------	--------	----------

<input checked="" type="checkbox"/>	Bolt/nuts	None
1		Carbon steel
2		SUS304



Basic Model No.

**MGG12F**

Selections

Optional selections

Options

Diameter	250mm	250										
	300mm	300										
	350mm	350										
	400mm	400										
	450mm	450										
	500mm	500										
	600mm	600										
	Lining	PFA		P								
ETFE			E									
Pipe connection	Flange JIS10K		J1									
	Flange JIS20K		J2									
	Flange ANSI150		A1									
	Flange ANSI300		A2									
	Flange JIS G3451 F12 (Diameter 80mm or more)		G1									
	Flange DIN PN10		D1									
	Flange DIN PN16		D2									
	Flange DIN PN25		D3									
	Flange JPI150		P1									
	Flange JPI300		P2									
Flange material	Standard		1									
	Others											
Electrodes	SUS316L		L									
	Hastelloy C		C									
	Titanium		K									
	Zirconium		H									
	Tantalum		T									
	Tungsten carbide		W									
	Platinum iridium		P									
	Others											
Grounding ring	SUS316		S									
	Hastelloy C		C									
	Titanium		K									
	Others											
Wiring connection/ Watertight gland	Remote model	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								
		Pg13.5 internal thread/Without watertight gland		7								
		Others										
Face to face	Standard								A			
	Others											
Installation/ Wiring direction	Remote model	Upstream side								A		
		Downstream side								B		
		Horizontal piping mounting/Left side viewed from upstream									C	
		Horizontal piping mounting/Right side viewed from upstream									D	
Calibration/ Approval	Standard calibration									A		
	Others											

<input checked="" type="checkbox"/>	No option
<input type="checkbox"/>	Test report
<input type="checkbox"/>	Certification of traceability
<input type="checkbox"/>	Mill sheet
<input type="checkbox"/>	Moisture treatment
<input type="checkbox"/>	Oil removal treatment
<input type="checkbox"/>	Gasket for resin pipe (for general purposes)
<input type="checkbox"/>	Attaching the TAG number plate to the terminal box (remote)
<input type="checkbox"/>	Attaching the TAG number plate to the neck section
<input type="checkbox"/>	Others

<input checked="" type="checkbox"/>	Finish	Standard
-------------------------------------	--------	----------



Basic Model No.		Selections				Optional selections		Options
<b>MGG12F</b>								
Diameter	25mm	025						<input checked="" type="checkbox"/> No option
	40mm	040						<input type="checkbox"/> Test report
	50mm	050						<input type="checkbox"/> Certification of traceability
	65mm	065						<input type="checkbox"/> Mill sheet
	80mm	080						<input type="checkbox"/> Moisture treatment
	100mm	100						<input type="checkbox"/> Oil removal treatment
	125mm	125						<input type="checkbox"/> Gasket for resin pipe (for general purposes)
	150mm	150						<input type="checkbox"/> Attaching the TAG number plate to the terminal box (remote)
	200mm	200						<input type="checkbox"/> Attaching the TAG number plate to the neck section
Lining	Polyurethane rubber		<input checked="" type="checkbox"/> Q					<input type="checkbox"/> Others
Pipe connection	Flange JIS10K			<input type="checkbox"/> J1				
	Flange JIS20K			<input type="checkbox"/> J2				
	Flange JIS30K			<input type="checkbox"/> J3				
	Flange ANSI150			<input type="checkbox"/> A1				
	Flange ANSI300			<input type="checkbox"/> A2				
	Flange JIS G3451 F12 (Diameter 80mm or more)			<input type="checkbox"/> G1				
	Flange DIN PN10			<input type="checkbox"/> D1				
	Flange DIN PN16			<input type="checkbox"/> D2				
	Flange DIN PN25			<input type="checkbox"/> D3				
	Flange DIN PN40			<input type="checkbox"/> D4				
	Flange JPI150			<input type="checkbox"/> P1				
Flange JPI300			<input type="checkbox"/> P2					
Flange material	Standard			<input checked="" type="checkbox"/> 1				
	Others			<input type="checkbox"/>				
Electrodes	SUS316L			<input type="checkbox"/> L				
	Titanium			<input type="checkbox"/> K				
	Tungsten carbide			<input type="checkbox"/> W				
	Others			<input type="checkbox"/>				
Grounding ring	SUS316			<input type="checkbox"/> S				
	Titanium			<input type="checkbox"/> K				
	Others			<input type="checkbox"/>				
Wiring connection/ Watertight gland	Remote model	G1/2 internal thread/Without watertight gland			<input type="checkbox"/> 2			
		G1/2 internal thread/With brass (Ni-plated) watertight gland			<input type="checkbox"/> 3			
		G1/2 internal thread/With plastic watertight gland			<input type="checkbox"/> 4			
		1/2NPT internal thread/Without watertight gland			<input type="checkbox"/> 5			
		CM20 internal thread/Without watertight gland			<input type="checkbox"/> 6			
		Pg13.5 internal thread/Without watertight gland			<input type="checkbox"/> 7			
		Others			<input type="checkbox"/>			
Face to face	Standard			<input type="checkbox"/> A				
Installation/ Wiring direction	Remote model	Upstream side			<input type="checkbox"/> A			
		Downstream side			<input type="checkbox"/> B			
		Horizontal piping mounting/Left side viewed from upstream			<input type="checkbox"/> C			
		Horizontal piping mounting/Right side viewed from upstream			<input type="checkbox"/> D			
Calibration/ Approval	Standard calibration			<input type="checkbox"/> A				
	Others			<input type="checkbox"/>				
					<input checked="" type="checkbox"/> X	Finish	Standard	

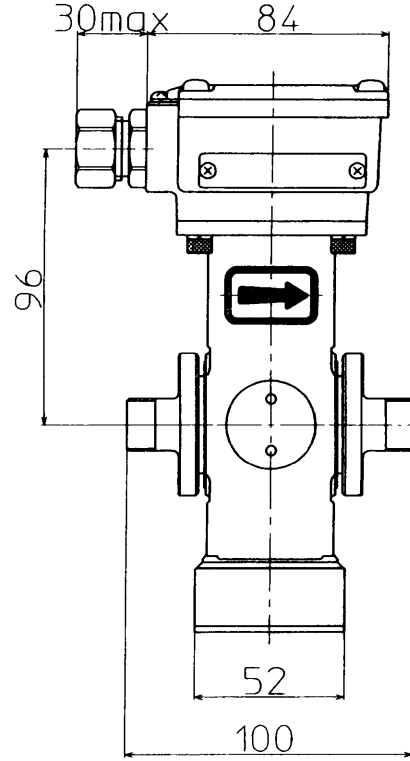
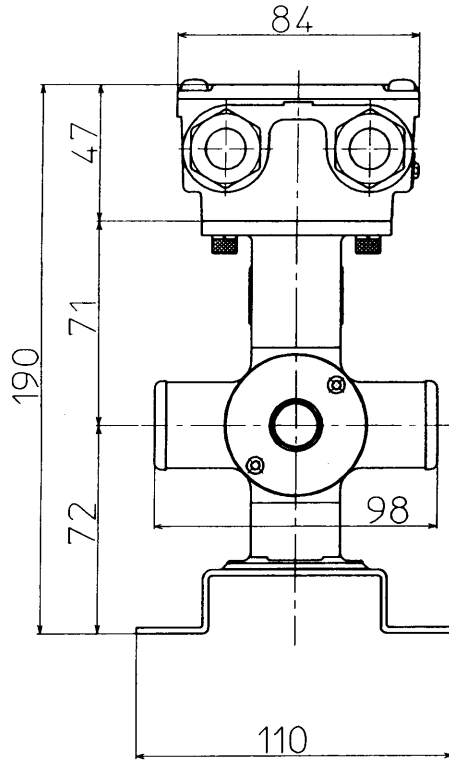
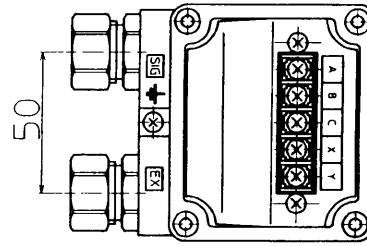


## Dimension and terminal connection drawings

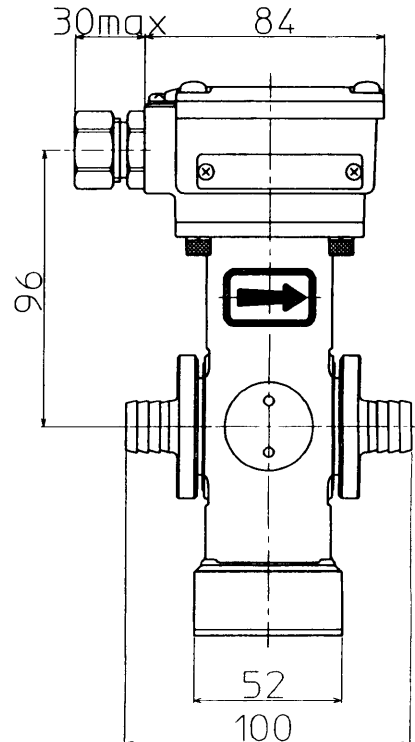
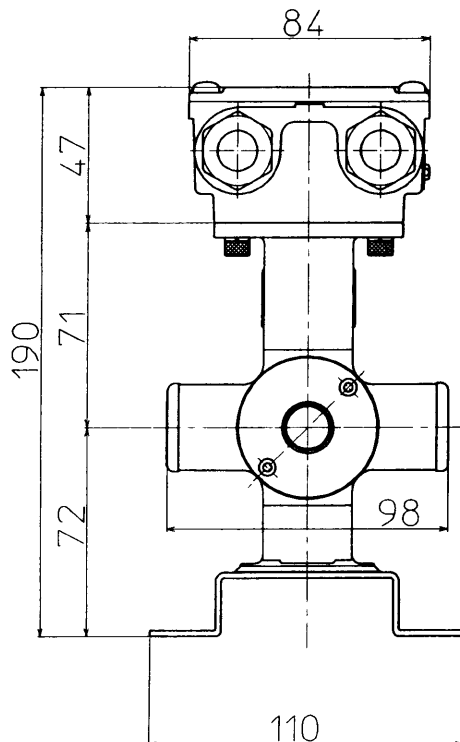
### Union Joint (Meter size 2.5 to 15mm)

**Terminal connection table**

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

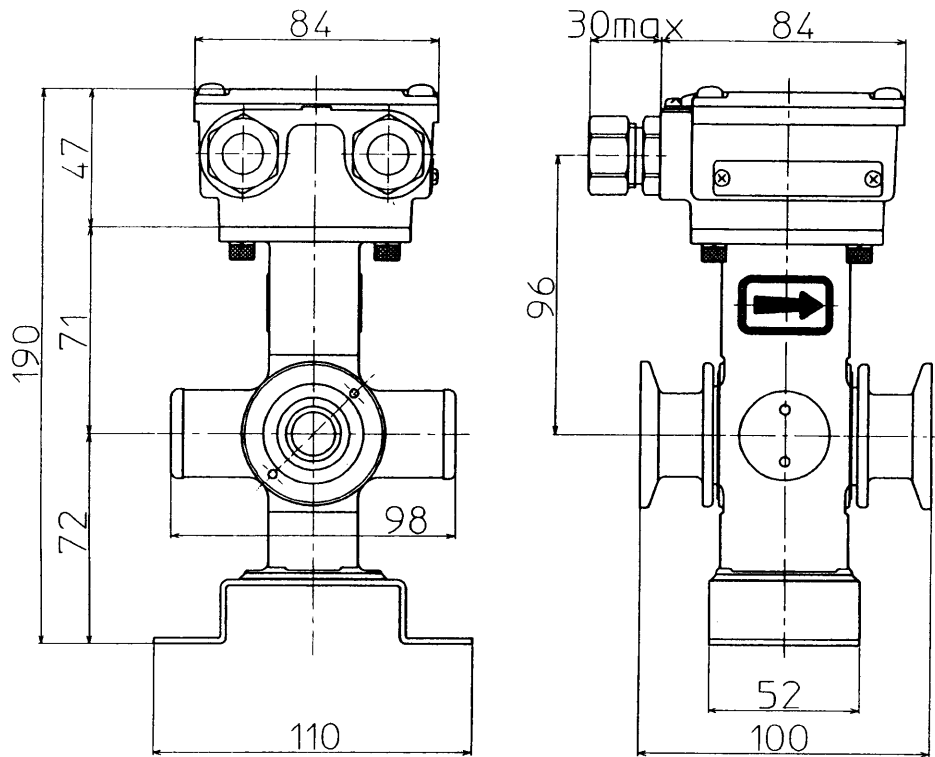


### Hose Joint (Meter size 2.5 to 15mm)



IDF/Tri Clamp  
(Meter size 2.5 to 15mm)

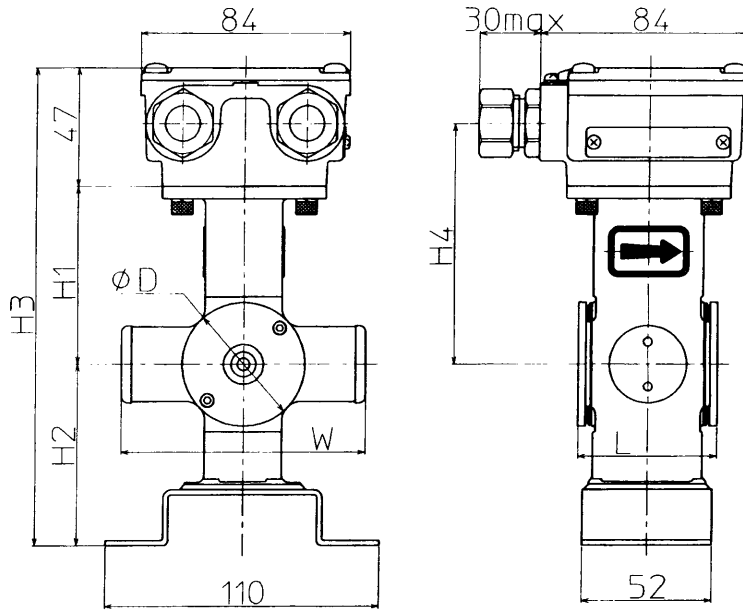
(Unit: mm)



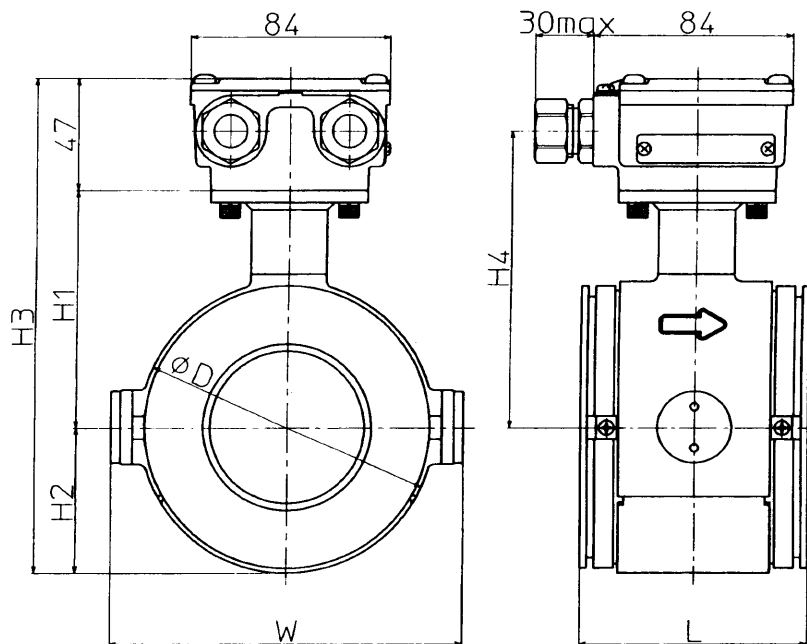
- Note: 1) An integral detector includes an integral converter instead of a terminal box.  
2) Clamp size : 1S

**Wafer**  
(Meter size 2.5 to 15mm)

(Unit: mm)



**Wafer**  
(Meter size 25 to 200mm)



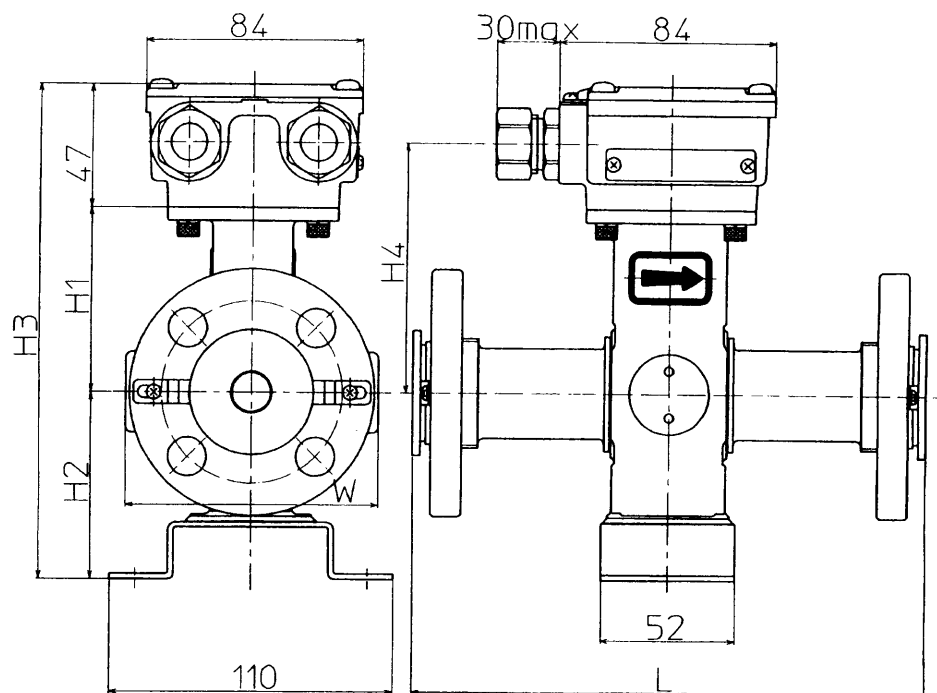
(Unit:mm)

Detector diameter		2.5	5	10	15	25	40	50	65	80	100	125	150	200
Face to face dimension	L	56	56	56	56	56	80	86	96	106	120	140	160	200
Height	H1	71	71	71	71	77	84	93	100	108	120.5	133	160	185
	H2	72	72	72	72	34	43.5	52	62	67	79.5	95	110	135
	H3	190	190	190	190	158	174.5	192	209	222	247	275	317	367
	H4	96	96	96	96	102	109	118	125	133	145.5	158	185	210
Width	W	98	98	98	98	106	125	135	148	164	189	214	240	290
Outer diameter	ø D	49.5	49.5	49.5	49.5	68	87	104	124	134	159	190	220	270
Mass(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

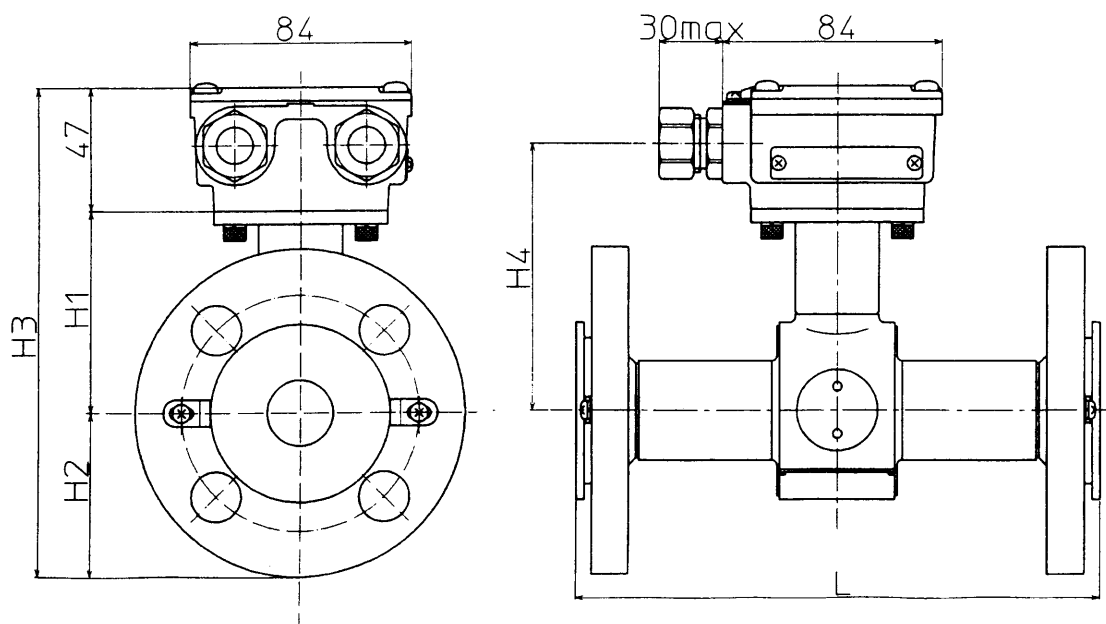
Note: 1) An integral detector includes an integral converter instead of a terminal box.

**Flange**  
(Meter size 2.5 to 15mm)

(Unit: mm)



**Flange**  
(Meter size 25mm)



(Unit:mm)

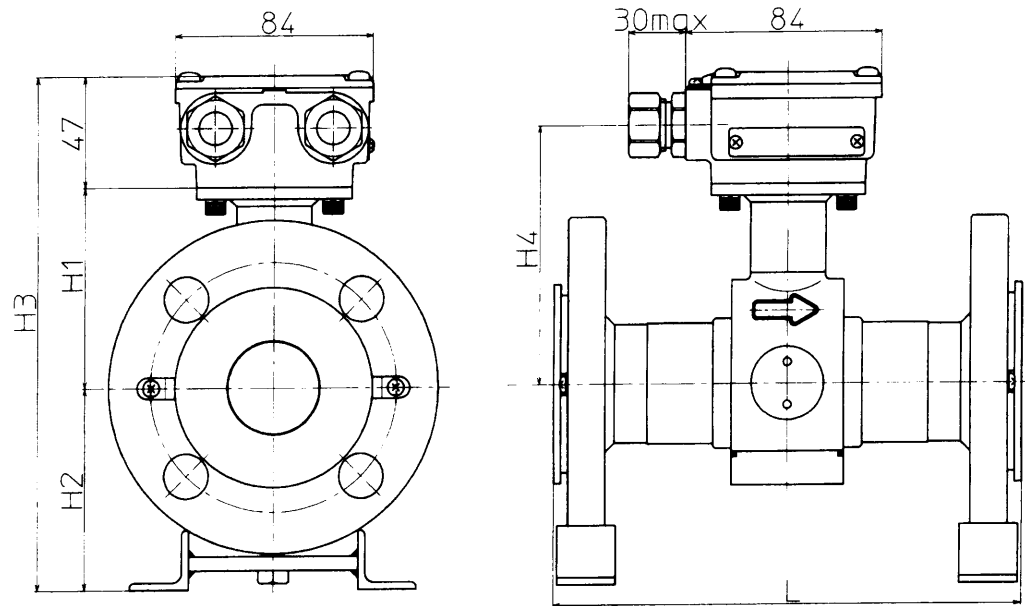
Detector diameter		2.5	5	10	15	25
Face to face dimension	L	160	160	160	200	200
	Height					
	H1	71	71	71	71	77
	H2	70	70	70	70	62.5
	H3	190	190	190	190	186.5
	H4	96	96	96	96	102
Width	W	98	98	98	98	106
Mass(kg)		5.0	5.0	5.0	5.0	5.5

Note: 1) This table is for remote detectors .

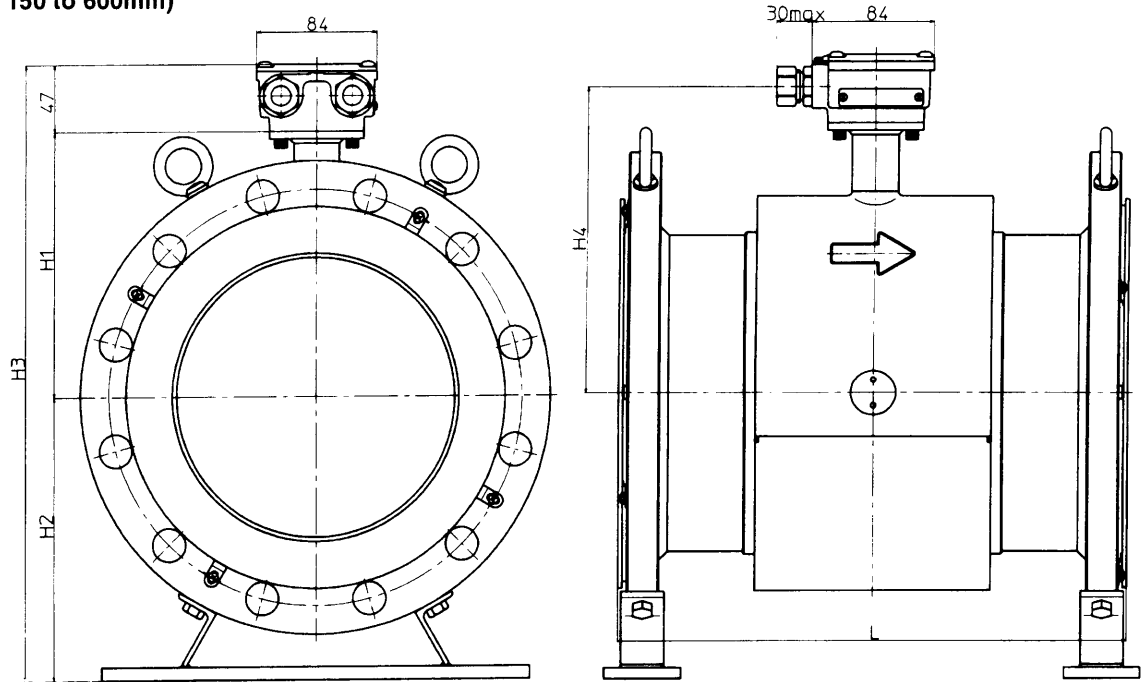
2) An integral detector includes an integral converter instead of a terminal box.

**Flange**  
(Meter size 40 to 100mm)

(Unit: mm)



**Flange**  
(Meter size 150 to 600mm)



(Unit:mm)

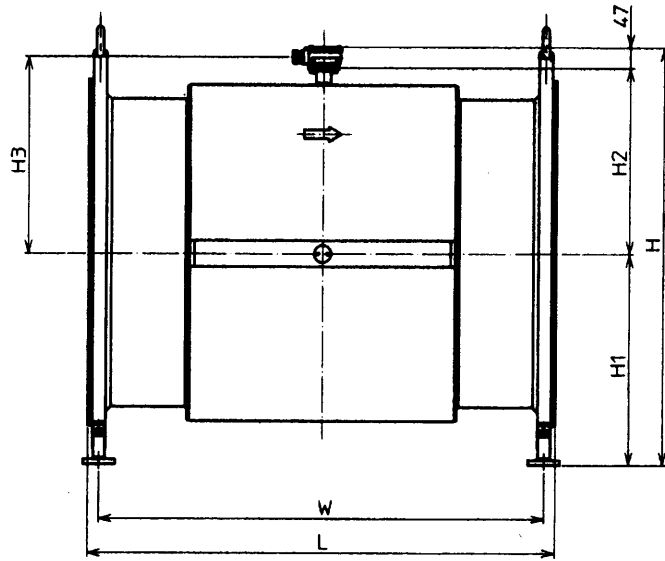
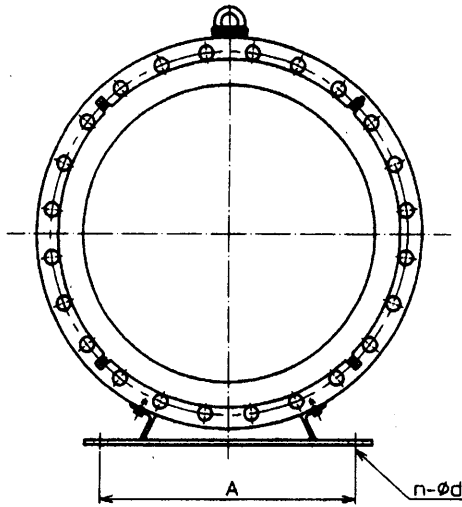
		40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
Face to face dimension	L	200	200	200	200	250	250	300	350	450	500	550	600	600	600	650
	Height															
Height	H1	84	93	100	108	120.5	133	160	185	235	258	282	310	339	366	415
	H2	85	90	102	110	120	143	175	197	221	250	273	321	353	383	446
	H3	216	230	249	265	287.5	323	382	429	503	555	602	678	739	796	908
	H4	109	118	125	133	145.5	158	185	210	260	283	307	335	364	391	440
Mass(kg)		6.5	8.5	10.0	12.6	18.4	26.0	32.6	48.0	60.0	73.0	96.0	128.0	168.0	202.0	272.0

Note: 1) This table is for the remote detector .

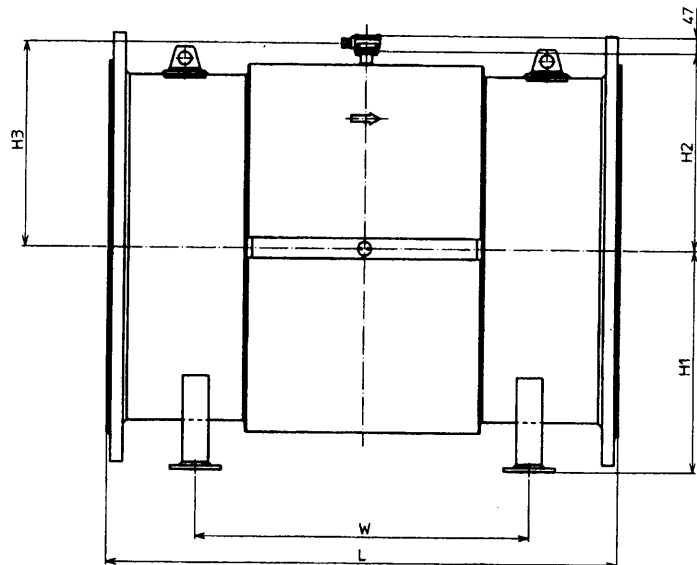
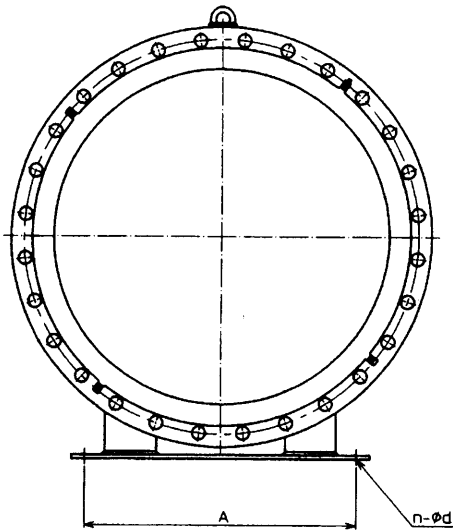
2) An integral detector includes an integral converter instead of a terminal box.

**Flange**  
(Meter size 700 to 900mm)

(Unit: mm)



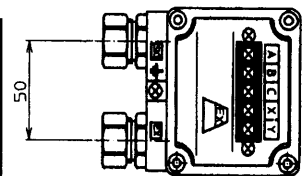
**Flange**  
(Meter size 1000 to 1100mm)



Detector diameter		700A	800A	900A	1000A	1100A
Face to face dimension	L	1100	1200	1300	1500	1500
Height	H	966	1080	1185	1278	1399
	H1	491	554	608	650	720
	H2	429	480	530	581	632
	H3	454	505	555	606	657
Feet length	W	1049	1147	1245	980	1000
Feet width	A	600	600	600	800	800
Feet halls*	n - φ d	4- φ 33	4- φ 33	4- φ 33	4- φ 33	4- φ 33
Mass(kg)		630.0	720.0	1060.0	1320.0	1540.0

Terminal connection table

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



\* : n = quantity、φ d = diameter

Specifications are subject to change without notice.

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