azbil

Specification

MagneW™ FLEX+ Electromagnetic Flowmeter Detector (TIIS Explosion-protected Apparatus)

Model MGG15

Introduction

The MagneW FLEX+ electromagnetic flowmeter detector is a high performance, highly reliable flowmeter developed with Azbil Corporation's proven MagneW 3000 flow measurement technologies. The model MGG15 for TIIS Explosion-proof offers superior process flowrate measurement, combined with MagneW FLEX+ converters.

Special features

(1) Maximum measurable process fluid temperature is 125°C.

(2) Provided with a built in zener barrier

(3) Ex de [ia] II CT4 approved explosion-proof structure.

(4) High performance lining

- Azbil Corporation's unique lining technology enables special mirror finish PFA lining which offers superior anti-adhesion lining surface and realizes longer cycle between maintenance.
- The PFA lining is particularly applicable for the measurement of sticky pulp and gypsum slurries.
- Pure white PFA with no additives forms new linings.
- The embedded punch plate offers proven performance under conditions such as frequent thermal change and negative pressure.

(5) Flexible face-to-face dimension (optional)

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

(6) All-welded stainless steel construction

- Corrosion-resistant all-welded stainless steel flowtube minimizes frequency of replacement.

(7) A wide variety of piping connections

- Remote type model MGG15 detectors can be combined with Azbil Corporation's conventional converters (model MG[ ] ,KIX, KIC). Please consult an Azbil Corp. representative for details.

Wafer type　　Flange type

(Diameter 2.5 to 300mm)

Table of a pass number in explosion-proof official examination

Nominal size(mm)	MGG15D/15F
2.5 - 15	TC19008
25	TC19009
40	TC19010
50	TC19011
65	TC19012
80	TC19013
100	TC19014
125	TC19015
150	TC19016
200	TC19017
250	TC19018
300	TC19019

Wide variety of applications

Petroleum/petrochemical/chemicals:

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

Electric power:

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

Gas:

Circulating water for air conditioning, etc.

Detector Specifications (standard)

Equipment specifications

Structure:

Explosion-proof structure; Ex de[ia] IICT4

Finish:

Corrosion-preventive acrylic resin
(model, diameter 2.5 to 200mm, terminal box only)
Corrosion-preventive polyurethane resin
(diameter 250 to 300mm, terminal box and case)

Color:

Light beige (Munsell 4Y7.2/1.3)

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 300mm)

Case: SCS13 stainless steel
(diameter 2.5 to 15mm)
SUS304 stainless steel
(diameter 25 to 200mm)
SS400 carbon steel
(diameter 250 to 300mm)

Terminal box:

Aluminum alloy (remote model)

Process wetted materials:

Lining: PFA (diameter: 2.5 to 300mm)

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

Ground ring:

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

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

Structure of electrode:

External insertion
(electrode can be removed)

Installation specifications

Ambient temperature:

-10 to +50°C

Ambient humidity:

5 to 100% RH

Cable connection port:

G1/2 (PF1/2) internal thread

Pipe connection:

Wafer (models 2.5 to 200mm in diameter)
Flange (models 2.5 to 300mm 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 (diameter 80 to 200mm)

JIS10K, JIS20K, JPI150, JPI300,
ANSI150, ANSI300, DIN PN10,
DIN PN16, DIN PN25 (diameter 250 to 300mm)

Flange standards:

JIS: JIS B 2210 (1984)
ANSI: ANSI B 16.5 (1988)
(Diameter 2.5 to 200mm)
ANSI B 16.5 (1981)
(Diameter 250 to 300mm)
JPI: JPI-7S-15-93

Grounding: Grounding resistance: lower than 100Ω

Mounting: Horizontally-mounted electrode

Straight pipe length:

Upstream side;

A minimum five straight pipe diameters.
A minimum 10 straight pipe diameter is required it a diffuser/valve/pump is installed.

Downstream side;

Two straight pipe diameters is recommended.

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^2 diameter) or equivalent (CVVS, CEEV, etc.)

Excitation cable:

Dedicated cable (10.5mm, 2mm^2 diameter) or equivalent (CVV and others)

Additional specifications (optional)

Certification of traceability:

The following three documents are included.

Traceability system chart
Traceability certificate
Test report

Material certificate:

Material certificate for electrode/grounding.

Water free treatment:

Condensation is removed from wetted surfaces.

Oil free treatment:

When removed from wetted surfaces.

Gasket for resin pipe (for general use):

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

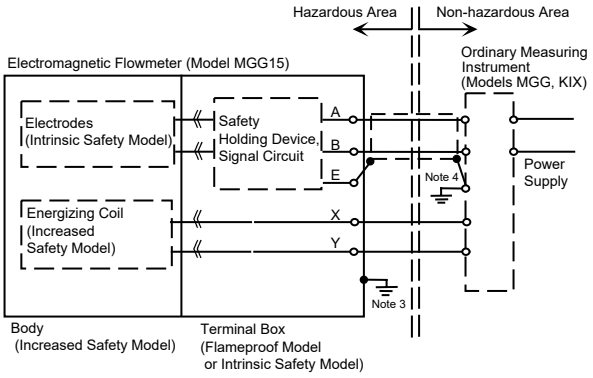
Attaching the tag number to the terminal box:

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

For additional specifications, please contact an Azbil Corp. representative.

Installation for Nonincendive model

This flowmeter is of flameproof structure and exhibits the specified explosion-proof capability only when it is used strictly in accordance with the following installation specifications:

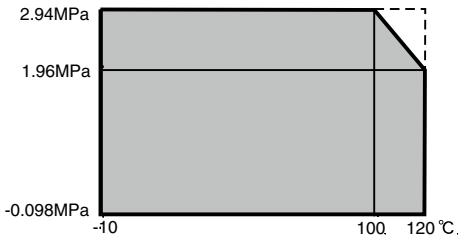


Note 1. Neither input power supply voltage to ground, nor voltage inside the ordinary measuring instruments should exceed 250V ac (50/60 Hz) or 250V dc during normal or abnormal operation.
The energizing voltage should not exceed 45V dc, and the energizing current should not exceed 200mA.

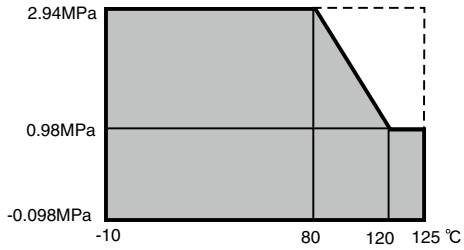
2. Ambient temperature for the flowmeter should be 50°C.
3. Category D Grounding should be employed.
4. Category A Grounding should be employed.

Temperature and pressure range of process fluid

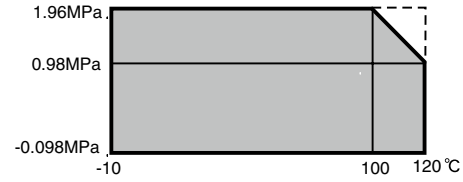
Size 2.5 to10mm,(0.1 to 3/8 inch)



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



Size 250 to 300mm (10 to 14 inches)



Performance (standard)

Accuracy (in combination with the MGG10C/MGG14C converter)

Table 1

Diameter 2.5 to 15mm — Upper limit value f Vs= set velocity range

Vs(m/s)	Velocity during measurement > Vs x 40 %	Velocity during measurement < Vs x 40 %
1.0 < Vs <10	±0.5% of indicated value	±0.2% of indicated value
0.1 < Vs <1.0	±(0.1/Vs+0.4%) of indicated value	±0.4(0.1/Vs+0.4%) of indicated value

Diameter 25 to 300mm — Upper limit value f Vs= set velocity range

Vs(m/s)	Velocity during measurement > Vs x 20 %	Velocity during measurement < Vs x 20 %
1.0 < Vs <10	±0.5% of indicated value	±0.1% of indicated value
0.1 < Vs <1.0	±(0.1/Vs+0.4%) of indicated value	±0.2(0.1/Vs+0.4%) of indicated value

Liquid to be measured/temperature range:
PFA lining

Diameter (mm)	Temperature of the liquid to be measured (℃) Remote model
2.5 to 10	-40 to +100
15 to 200	-40 to +160
250 to 400	-40 to +120

Measurable electrical conductivity:
Combined with MGG10C or MGG14C converter
3μS/cm or more

Measurement flow range:
Refer to the minimum/maximum set ranges shown in Table 2.

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

Table 2

Diameter (mm)	Minimum set range (Minimum constant flow speed of 0 to 0.1m/s) m^3/h	Minimum set range (Minimum constant flow speed of 0 to 0.1m/s) l/min	Mixiumum set range (Miximum constant flow speed of 0 to 10m/s) m^3/h	Mixiumum set range (Miximum constant flow speed of 0 to 10m/s) l/min	Conversion factor K
2.5	0 to 0.00177	0 to 0.02946	0 to 0.17671	0 to 2.9452	56.59
5	0 to 0.00707	0 to 0.11781	0 to 0.70685	0 to 11.780	14.15
10	0 to 0.02828	0 to 0.47124	0 to 2.8274	0 to 47.123	3.537
15	0 to 0.06362	0 to 1.0603	0 to 6.3617	0 to 106.02	1.572
25	0 to 0.17671	0 to 2.9453	0 to 17.671	0 to 294.52	0.5659
40	0 to 0.45239	0 to 7.5400	0 to 45.238	0 to 753.98	0.2210
50	0 to 0.70690	0 to 11.781	0 to 70.685	0 to 1,178.0	0.1415
65	0 to 1.1946	0 to 19.910	0 to 119.45	0 to 1,990.9	0.08371
80	0 to 1.8096	0 to 30.160	0 to 180.95	0 to 3,015.9	0.05526
100	0 to 2.8275	0 to 47.124	0 to 282.74	0 to 4,712.3	0.03537
125	0 to 4.4179	0 to 73.632	0 to 441.78	0 to 7,363.1	0.02264
150	0 to 6.3618	0 to 106.03	0 to 636.17	0 to 10,602	0.01572
200	0 to 11.310	0 to 188.50	0 to 1,130.9	0 to 18,849	0.008842
250	0 to 17.672	0 to 294.53	0 to 1,767.1	0 to 29,452	0.005659
300	0 to 25.447	0 to 424.12	0 to 2,544.6	0 to 42,411	0.003930

Contents of Model Number Tables

MagneW FLEX+ (TIIS Explosion-proof Model) (Wafer detector 2.5 to 10mm)　　PFA lining

Basic Model No.		Selections												Optional selections		Options(Maximum selection:5)
MGG15D	-													-		-

Diameter	2.5mm	002	
	5mm	005	
	10mm	010	
Lining	PFA		P
Pipe connection	Wafer JIS10K for 15mm flange	11	
	Wafer JIS20K for 15mm flange	12	
	Wafer JIS30K for 15mm flange	13	
	Wafer JIS10/20K for 10mm flange	14	
	Wafer JIS30K for 10mm flange	15	
	Wafer ANSI150 for 15mm flange	21	
	Wafer ANSI300 for 15mm flange	22	
	Wafer DIN PN10 for 15mm flange	41	
	Wafer DIN PN16 for 15mm flange	42	
	Wafer DIN PN25 for 15mm flange	43	
	Wafer DIN PN40 for 15mm flange	44	
	Wafer DIN PN10/16/25/40 for 10mm flange	45	
	Wafer JPI150 for 15mm flange	61	
	Wafer JPI300 for 15mm flange	62	
Pipe combine	Wafer		X
Electrodes	SUS316L		L
	ASTM B574(Hastelloy C-276 equivalent)		C
	Titanium		K
	Zirconium		H
	Tantalum		T
	Tungsten carbide		W
	Platinum iridium		P
	Other		_
Grounding ring	SUS316		S
	ASTM B575(Hastelloy C-276 equivalent)		C
	Titanium		K
	Zirconium		H
	Tantalum		T
	Platinum		P
	Other		_
Wiring connection/ Cable adapter	G1/2 internal thread/With flame-proof cable gland		1
Face to face	Standard		A
	Other		_
Installation/ Wiring direction	Remote model: Upstream side		A
	Remote model: Downstream side		B
	Remote model: Horizontal piping mounting/Left side viewed from upstream		C
	Remote model: Horizontal piping mounting/Right side viewed from upstream		D
Calibration/ Approval	Standard calibration		A
	Other		_

X	No option	
B	Certification of traceability	
C	Mill sheet	
E	Moisture treatment	
F	Oil removal treatment	
J	Gasket for resin pipe (for general purposes)	
K	TAG number plate attached to the terminal box (remote detector)	
_	Other	

X	Finish	Standard
1		Corrosion-resistant finish
2		Corrosion-proof finish

X	Bolt/nuts	None
1		Carbon steel
2		SUS304

MagneW FLEX+ (TIIS Explosion-proof Model) (Wafer detector 15 to 200mm) PFA lining

Basic Model No.		Selections													Optional selections		Options(Maximum selection:5)
MGG15D	-												-		-		

Diameter	15mm	015
	25mm	025
	40mm	040
	50mm	050
	65mm	065
	80mm	080
	100mm	100
	125mm	125
	150mm	150
	200mm	200
Lining	PFA	P
Pipe connection	Wafer JIS10K	11
	Wafer JIS20K	12
	Wafer JIS30K	13
	Wafer ANSI150	21
	Wafer ANSI300	22
	Wafer DIN PN10	41
	Wafer DIN PN16	42
	Wafer DIN PN25	43
	Wafer DIN PN40	44
	Wafer JPI150	61
	Wafer JPI300	62
Pipe combine	Wafer	X
Electrodes	SUS316L	L
	ASTM B574(Hastelloy C-276 equivalent)	C
	Titanium	K
	Zirconium	H
	Tantalum	T
	Tungsten carbide	W
	Platinum iridium	P
	Other	_
Grounding ring	SUS316	S
	ASTM B575(Hastelloy C-276 equivalent)	C
	Titanium	K
	Zirconium	H
	Tantalum	T
	Platinum	P
	Other	_
Wiring connection/ Cable adapter	G1/2 internal thread/With flame-proof cable gland	1
Face to face	Standard	A
	Other	_
Installation/ Wiring direction	Remote model: Upstream side	A
	Remote model: Downstream side	B
	Remote model: Horizontal piping mounting/Left side viewed from upstream	C
	Remote model: Horizontal piping mounting/Right side viewed from upstream	D
Calibration/ Approval	Standard calibration	A
	Other	_

X	No option	
B	Certification of traceability	
C	Mill sheet	
E	Moisture treatment	
F	Oil removal treatment	
J	Gasket for resin pipe (for general purposes)	
K	TAG number plate attached to the terminal box (remote detector)	
_	Other	

X	Finish	Standard
1		Corrosion-resistant finish
2		Corrosion-proof finish

X	Bolt/nuts	None
1		Carbon steel
2		SUS304

MagneW FLEX+ (TIIS Explosion-proof Model) (Flange detector 2.5 to 10mm) PFA Lining

Basic Model No.	Selections												Optional selections		Options(Maximum selection:5)
MGG15F	-												-		-

Diameter	2.5mm	002	
	5mm	005	
	10mm	010	
Lining	PFA	P	
Pipe connection	Flange JIS10K for 15mm flange	J1	
	Flange JIS20K for 15mm flange	J2	
	Flange JIS30K for 15mm flange	J3	
	Flange ANSI150 for 15mm flange	A1	
	Flange ANSI300 for 15mm flange	A2	
	Flange DIN PN10 for 15mm flange	D1	
	Flange DIN PN16 for 15mm flange	D2	
	Flange DIN PN25 for 15mm flange	D3	
	Flange DIN PN40 for 15mm flange	D4	
	Flange DIN PN10/16 for 10mm flange	D5	
	Flange JPI150 for 15mm flange	P1	
	Flange JPI300 for 15mm flange	P2	
Pipe combine	Flange	1	
Electrodes	SUS316L	L	
	ASTM B574(Hastelloy C-276 equivalent)	C	
	Titanium	K	
	Zirconium	H	
	Tantalum	T	
	Tungsuten carbide	W	
	Platinum iridium	P	
	Other	_	
Grounding ring	SUS316	S	
	ASTM B575(Hastelloy C-276 equivalent)	C	
	Titanium	K	
	Zirconium	H	
	Tantalum	T	
	Platinum	P	
	Other	_	
Wiring connection/ Cable adapter	G1/2 internal thread/With flame-proof cable gland	1	
Face to face	Standard	A	
	Other	_	
Installation/ Wiring direction	Remote model: Upstream side	A	
	Remote model: Downstream side	B	
	Remote model: Horizontal piping mounting/Left side viewed from upstream	C	
	Remote model: Horizontal piping mounting/Right side viewed from upstream	D	
Calibration/ Approval	Standard calibration	A	
	Other	_	

X	No option	
B	Certification of traceability	
C	Mill sheet	
E	Moisture treatment	
F	Oil removal treatment	
J	Gasket for resin pipe (for general purposes)	
K	TAG number plate attached to the terminal box (remote detector)	
_	Other	

X	Finish	Standard
1		Corrosion-resistant finish
2		Corrosion-proof finish

X	Bolt/nuts	None

MagneW FLEX+ (TIIS Explosion-proof Model) (Flange detector 15 to 200mm) PFA Lining

Basic Model No.	Selections												Optional selections		Options(Maximum selection:5)
MGG15F	-												-		-

Diameter	15mm	015	
	25mm	025	
	40mm	040	
	50mm	050	
	65mm	065	
	80mm	080	
	100mm	100	
	125mm	125	
	150mm	150	
	200mm	200	
Lining	PFA		P
Pipe connection	Flange JIS10K		J1
	Flange JIS20K		J2
	Flange JIS30K		J3
	Flange ANSI150		A1
	Flange ANSI300		A2
	Flange DIN PN10		D1
	Flange DIN PN16		D2
	Flange DIN PN25		D3
	Flange DIN PN40		D4
	Flange JPI150		P1
	Flange JPI300		P2
Pipe combine	Flange		1
Electrodes	SUS316L		L
	ASTM B574(Hastelloy C-276 equivalent)		C
	Titanium		K
	Zirconium		H
	Tantalum		T
	Tungsuten carbide		W
	Platinum iridium		P
	Other		_
Grounding ring	SUS316		S
	ASTM B575(Hastelloy C-276 equivalent)		C
	Titanium		K
	Zirconium		H
	Tantalum		T
	Platinum		P
	Other		_
Wiring connection/ Cable adapter	G1/2 internal thread/With flame-proof cable gland		1
Face to face	Standard		A
	Other		_
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
	Other		_

X	No option	
B	Certification of traceability	
C	Mill sheet	
E	Moisture treatment	
F	Oil removal treatment	
J	Gasket for resin pipe (for general purposes)	
K	TAG number plate attached to the terminal box (remote detector)	
_	Other	

X	Finish	Standard
1		Corrosion-resistant finish
2		Corrosion-proof finish

X	Bolt/nuts	None

MagneW FLEX+ (TIIS Explosion-proof Model) (Flange detector 250 to 300mm) PFA Lining

Basic Model No.	Selections												Optional selections		Options(Maximum selection:5)
MGG15F	-												-		-

Diameter	250mm		250
	300mm		300
	350mm		350
Lining	PFA		P
Pipe connection	Flange JIS10K		J1
	Flange JIS20K		J2
	Flange ANSI150		A1
	Flange ANSI300		A2
	Flange DIN PN10		D1
	Flange DIN PN16		D2
	Flange DIN PN25		D3
	Flange JPI150		P1
	Flange JPI300		P2
Pipe combine	Flange		1
Electrodes	SUS316L		L
	ASTM B574(Hastelloy C-276 equivalent)		C
	Titanium		K
	Zirconium		H
	Tantalum		T
	Tungsuten carbide		W
	Platinum iridium		P
	Other		_
Grounding ring	SUS316		S
	ASTM B575(Hastelloy C-276 equivalent)		C
	Titanium		K
	Other		_
Wiring connection/ Cable adapter	G1/2 internal thread/With flame-proof cable gland		1
Face to face	Standard		A
	Other		_
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
	Other		_

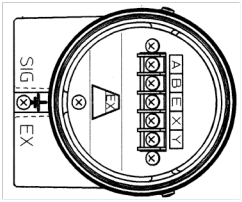
X	No option	
B	Certification of traceability	
C	Mill sheet	
E	Moisture treatment	
F	Oil removal treatment	
J	Gasket for resin pipe (for general purposes)	
K	TAG number plate attached to the terminal box (remote detector)	
_	Other	

X	Finish	Standard
1		Corrosion-resistant finish
2		Corrosion-proof finish

X	Bolt/nuts	None

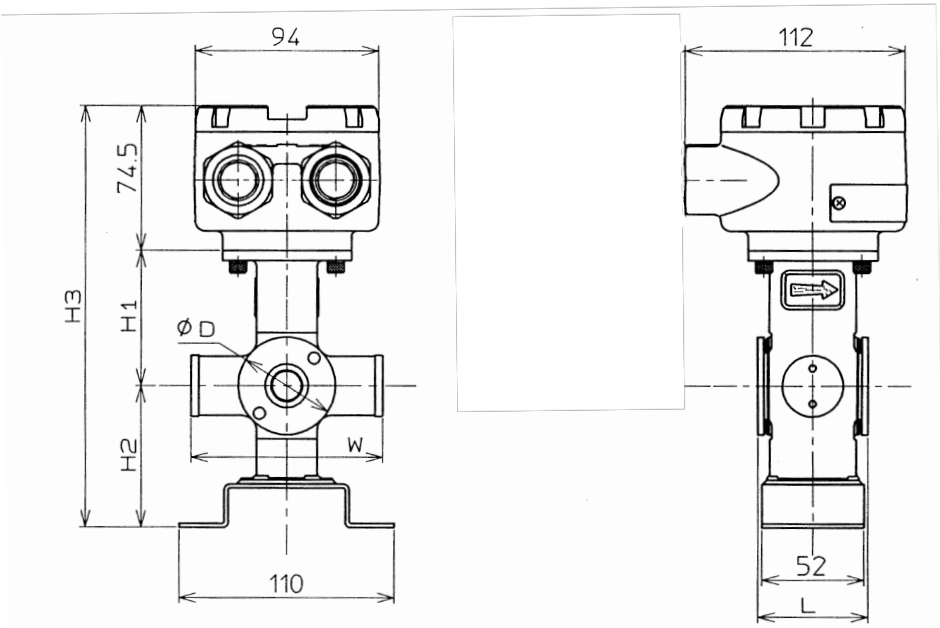
Dimension and terminal connection drawings

(Unit: mm)

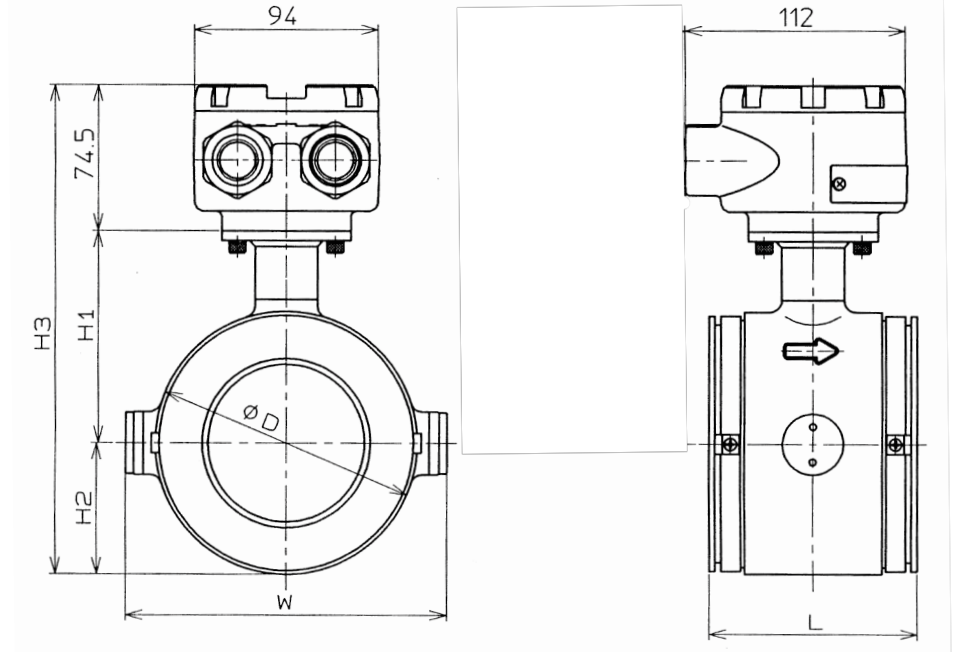


Wafer

2.5 to 15 mm



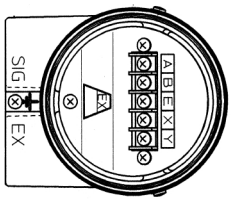
25 to 200 mm



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	217.5	217.5	217.5	217.5	185.5	202.0	219.5	236.5	249.5	274.5	302.5	344.5	394.5
Width	W	98	98	98	98	106	125	135	148	164	189	214	240	290
Outer diameter	φD	49.5	49.5	49.5	49.5	68	87	104	124	134	159	190	220	270
Mass (kg)		2.5	2.5	2.5	2.5	2.6	3.0	3.6	4.5	5.2	7.0	9.6	14.2	25.7

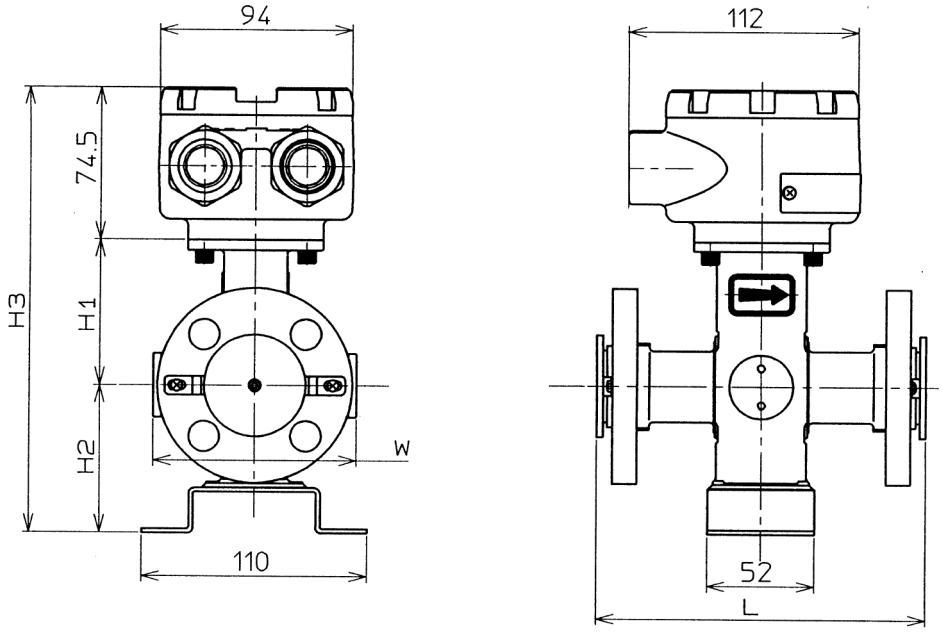
Note: Face to face dimension (L) indicates the dimension with SUS316 grounding rings without gaskets.
For other material grounding rings than SUS316 , gaskets are included. (Gasket thickness: 3 mm)

(Unit: mm)

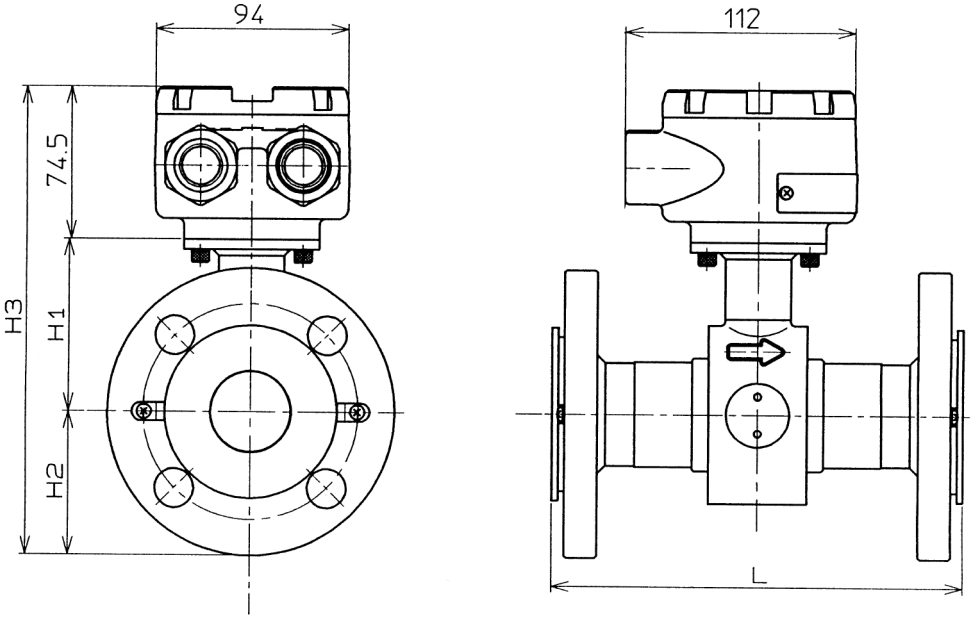


Flange

2.5 to 15 mm



25 to 150mm



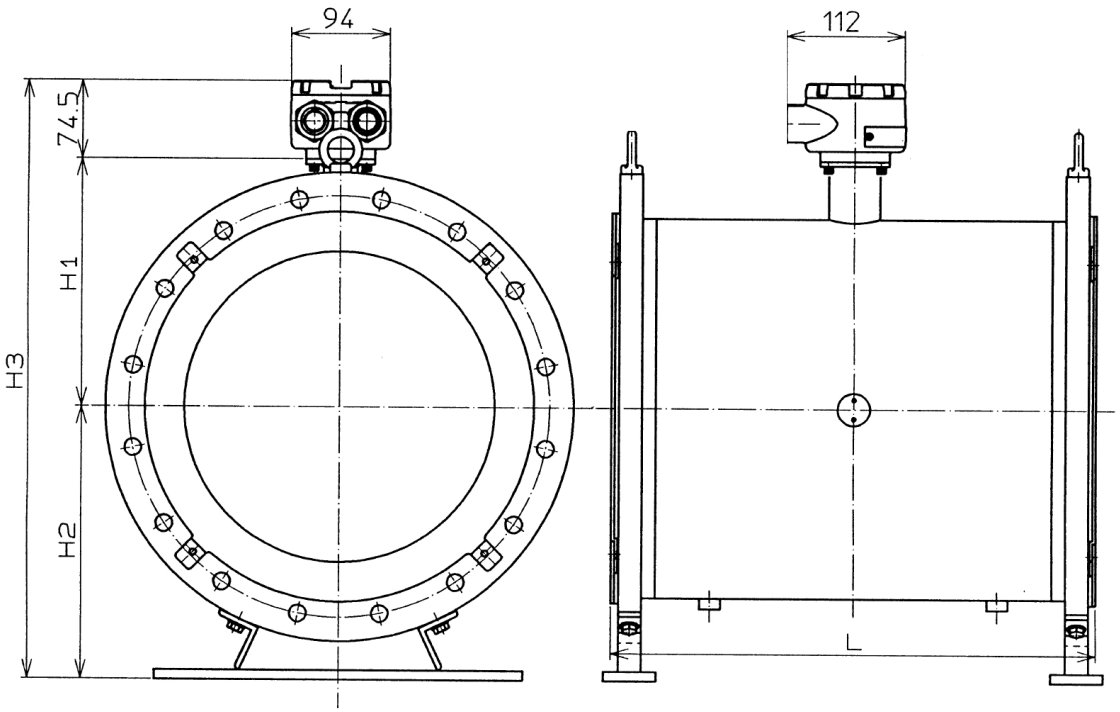
Detector diameter		2.5	5	10	15	25	40	50	65	80	100	125	150
Face to face dimension	L	160	160	160	200	200	200	200	200	200	250	250	300
Height	H1	71	71	71	71	77	84	93	100	108	121	133	160
	H2	72	72	72	72	63	70	77.5	87.5	92.5	105	125	140
	H3	217.5	217.5	217.5	217.5	214.5	228.5	245	262	275	300	332.5	374.5
Mass (kg)		5.0	5.0	5.0	5.0	7.4	6.5	10.1	12.1	12.6	18.4	26.0	30.6

Note: - The table indicates dimensions for ANSI 150 Flange.
- Face to face dimension (L) indicates the dimension with SUS316 grounding rings without gaskets. For other material grounding rings than SUS316 , gaskets are included. (Gasket thickness: 3 mm)

Flange

(Unit : mm)

200 to 300mm



Detector diameter		200	250	300
Face to face dimension	L	350	450	500
Height	H1	185	235	258
	H2	196	221	250
	H3	455.5	530.5	582.5
Mass (kg)		48.0	60.0	73.0

Note: - The table indicates dimensions for JIS 10K Flange.
- Face to face dimension (L) indicates the dimension with SUS316 grounding rings without gaskets. For other material grounding rings than SUS316 , gaskets are included. (Gasket thickness: 3mm)

Please read “Terms and Conditions” from the following URL before ordering and use.
https://www.azbil.com/products/factory/order.html

Specifications are subject to change without notice.

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