MagneW 3000
Electromagnetic Flowmeter Detectors (Remote Type)
Model KID10B/11B/12B (General Use)

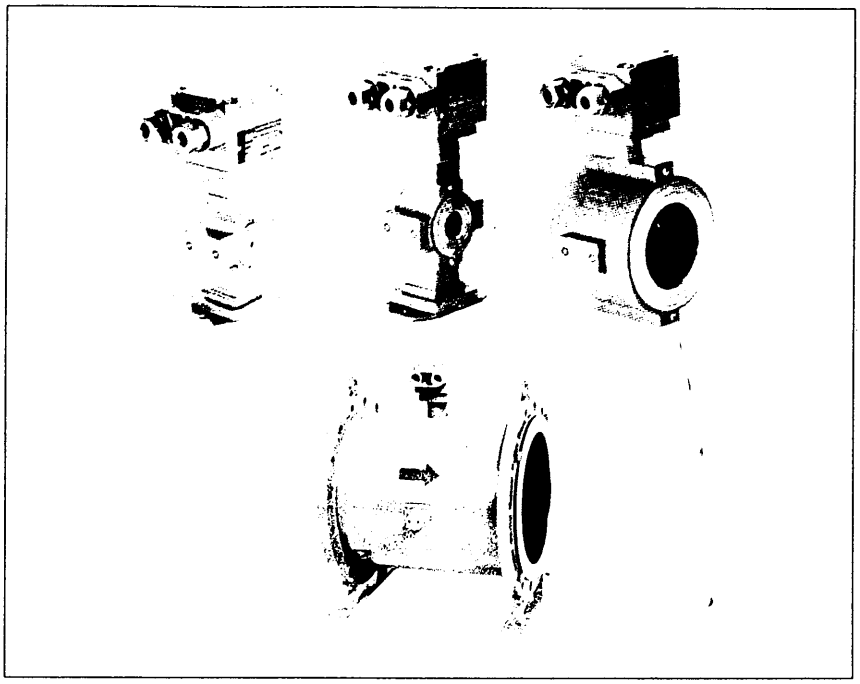
Introduction

The MagneW3000 Electromagnetic Flowmeters are extremely compact and light, and can lay claim to being a new generation instrument. They render high measuring accuracy and stability.

Features of Electromagnetic Flowmeters

The features of electromagnetic flowmeters in general (quoted from JIS Z8764) are as follows:

1) Volumetric measurement of a liquid flow can be done without being influenced by changes in temperature, pressure, density, or viscosity of the liquid being measured.
2) Measurement is not affected by conductivity change, provided that conductivity is above a minimum level. Therefore, irrespective of the type of liquid measured, calibration can be done with the actual flow of water at normal temperature.
3) Liquids which contain solid suspensions can also be measured.
4) Pressure loss caused by measurement is practically zero.
5) The output signal is linearly proportional to the actual flow, starting from zero flow.
6) Only a short length of straight pipe is required at the upstream side of the detector as compared with those required by other types of flowmeters.
7) Structure without moving parts assures fast response.



Features of the MagneW3000

The outstanding features of the MagneW3000 are as follows:

1) The MagneW3000 employs a square-wave excitation system, thereby providing excellent zero-point stability and eliminating zero-point shift that could be caused by stain of electrodes.
2) The accuracy is ±0.5% of rate.
3) The detectors are extremely compact and light, and provide a very high magnetizing efficiency—all products of their design which employs a Finite Element Method magnetic field analysis (concentrated magnetic field system).
4) The compact and light detectors are very convenient for installation and maintenance.
5) The MagneW3000 is available either in an integral type or remote type. Conversion between the two is possible.
6) The lining is made of Teflon PFA and embedded with an integral punched plate structure (patent No. 129514), making the MagneW3000 highly resistant to sharp changes in heat, stream, and vacuum pressures.

Measurable Liquids

Any liquids, provided that their electrical conductivity is 3μS/cm or higher, can be measured irrespective of their properties or states (viscosity, temperature, pressure, or slurry).

Water:	Potable, sewage, industrial, irrigation, sea, or drain water
Chemical:	Acidic, alkaline, or corrosive fluids
Slurries:	Cement, lime, alumina, latex, and other slurries
Suspensions:	Pulp, drain, mud, or filthy liquids
Foods:	Beer, milk, juice, and sauce
Viscous liquids:	Jam, paste, etc.

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Instrument Specifications (Sizes 2.5 to 200mm)

Item		Specifications		
Size (Diameter)		2.5, 5, 10, 15, 25, 40, 50, 80, 100, 150, 200(mm)		
Materials		Case: Aluminum alloy (40mm and over), cast steel (25mm or less) Lining: Teflon PFA, polyurethane rubber (100mm and over) Electrodes: SUS316L, hastelloy B, hastelloy C, titanium, tantalum, platinum/iridium Ground ring: SUS316, hastelloy B, hastelloy C, titanium, tantalum, platinum		
Electrodes		Water-proof type: External insertion type (Detachable electrodes) Water-tight type, Submerged type: External insertion type (Non-detachable electrodes)		
Case	**Basic model no.**	KID 10 B	KID 11 B	KID 12 B
	Structure	NEMA4, IEC IP66 JIS C0920 Water-proof type equivalent	NEMA4, IEC IP67 JIS C0920 Water-tight type equivalent	NEMA6, IEC IP68 JIS C0920 Submerged type equivalent
	Finish	Acryl paint	Acryl paint	Tar epoxy paint
	Finish color	Dark beige (Munsell 10YR4.7/0.5)	Dark beige (Munsell 10YR4.7/0.5)	Black

Instrument Specifications (Sizes 250 to 600mm)

Size (Diameter)		250, 300, 350, 400, 500, 600(mm)		
Materials		Case: Carbon steel (SS 41) Flange: Carbon steel (SS 41) [ANSI 150...A105 (ASTM)] Lining: Teflon PFA, chloroprene rubber Electrodes: SUS316L, hastelloy C, titanium, platinum/iridium Ground ring: SUS316, hastelloy C, titanium		
Electrodes		Water-proof type, Water-tight type: External insertion type (Detachable electrodes) Submerged type: External insertion type (Non-detachable electrodes)		
Case	**Basic model no.**	KID 10 B	KID 11 B	KID 12 B
	Structure	NEMA4, IEC IP66 JIS C0920 Water-proof type equivalent	NEMA4, IEC IP67 JIS C0920 Water-tight type equivalent	NEMA6, IEC IP68 JIS C0920 Submerged type equivalent
	Finish	Polyurethane corrosion-proof paint	Polyurethane corrosion-proof paint	Tar epoxy paint
	Finish color	Dark beige (Munsell 10YR4.7/0.5)	Dark beige (Munsell 10YR4.7/0.5)	Black

Installation Specifications (Sizes 2.5 to 200mm)

Ambient temperature	–30 to +80°C (Teflon PFA), –30 to +50°C (polyurethane rubber)
Relative humidity	10 to 90%RH
Installation	Wafer type
Flange ratings	JIS 10K, JIS 20K, JIS 30K, JIS Water Service Class 2, ANSI 150, ANSI 300, DIN ND10, DIN ND40
Electrical conduit connection	G $^1/_2$, CM20, $^1/_2$ NPT internal thread
Cables (Between detector and converter)	Signal cable: 2-core individually double-shielded cable (Yamatake-Honeywell standard KIW, 0.75mm^2, outside dia. 11.4mm) or equivalent cable (CVVS, CEEV, etc.) Cable for excitation current: Chloroprene rubber cabtyre cable 2RNCT, JIS C3327 (2mm^2, outside dia. 11.4mm) or equivalent cable (Vinyl-sheathed cable CVV JIS C3401 etc.)
Cable length	Up to 300 meters (Cable length is limited by detector size and electrical conductivity of measured liquid. For details, refer to the specification sheet for the Yamatake-Honeywell standard KIW, "SS2-5662-0100".)
Mounting angle	Two electrodes to be in mutually horizontal position.
Ground	JIS Class 3 ground (Ground resistance not greater than 100 ohms)

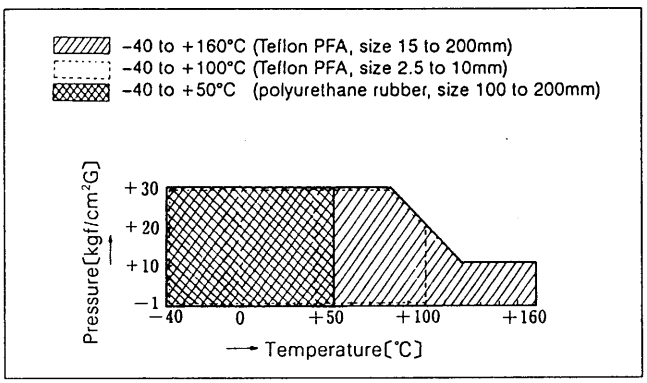
Installation Specifications (Sizes 250 to 600mm)

Item	Specifications
Ambient temperature	–30 to +80°C (Teflon PFA), –30 to +50°C (polyurethane rubber)
Relative humidity	10 to 90%RH
Flange ratings	JIS 10K, JIS 20K, JIS Water Service Class 2, ANSI 150, DIN ND10
Electrical conduit connection	G $^1/_2$, CM20, $^1/_2$ NPT internal thread
Cables (Between detector and converter)	Signal cable: 2-core individually double-shielded cable (Yamatake-Honeywell standard KIW, 0.75mm^2, outside dia. 11.4mm) or equivalent cable (CVVS, CEEV, etc.) Cable for excitation current: Chloroprene rubber cabtyre cable 2RNCT, JIS C3327 (2mm^2, outside dia. 11.4mm) or equivalent cable (vinyl-sheathed cable CVV JIS C3401 etc.)
Cable length	Up to 300 meters (Cable length is limited by detector size and electrical conductivity of measured liquid. For details, refer to the specification sheet for the Yamatake-Honeywell standard KIW, "SS2-5662-0100".)
Mounting angle	The two electrodes to be in mutually horizontal position.
Ground	JIS Class 3 ground (Ground resistance not greater than 100 ohms)

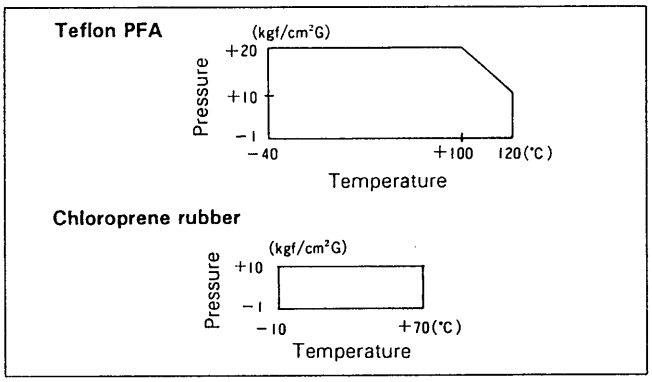
Liquid Flow Specifications (Sizes 2.5 to 600mm)

Flow velocity ranges	0 – 0.1m/s to 0 – 10m/s (combination with KIX), 0 – 0.3m/s to 0 – 9.999m/s (combination with KIC)
Electrical conductivity of liquid	3 μS/cm or over

Liquid Pressure and Temperature Ranges (Sizes 2.5 to 200mm)



Liquid Pressure and Temperature Ranges (Sizes 250 to 600mm)



Performance Specification (Sizes 2.5 to 600mm)

Accuracy	±0.5% of rate (For more information, please refer to the spec. sheets of the converter)

Semi-standard Specification (Sizes 2.5 to 200mm)

Corrosion-resistant finish (Y138A, B)	Corrosion-resistant finish (Y138A): Baked acryl finish Corrosion-proof finish (Y138B): Baked epoxy finish

Semi-standard Specification (Sizes 250 to 600mm)

Corrosion-resistant finish (Y138E, F)	Corrosion-resistant finish (Y138E): Resistance to corrosive ambiance Corrosion-proof finish (Y138F): Resistance to corrosive liquids

Flow Conversion Table

$V = K \times Q$

[V: Flow velocity (m/s); Q: Flow rate (m^3/h); K: Flow conversion factor $\frac{1}{3600} \times \frac{4}{\pi D^2}$]

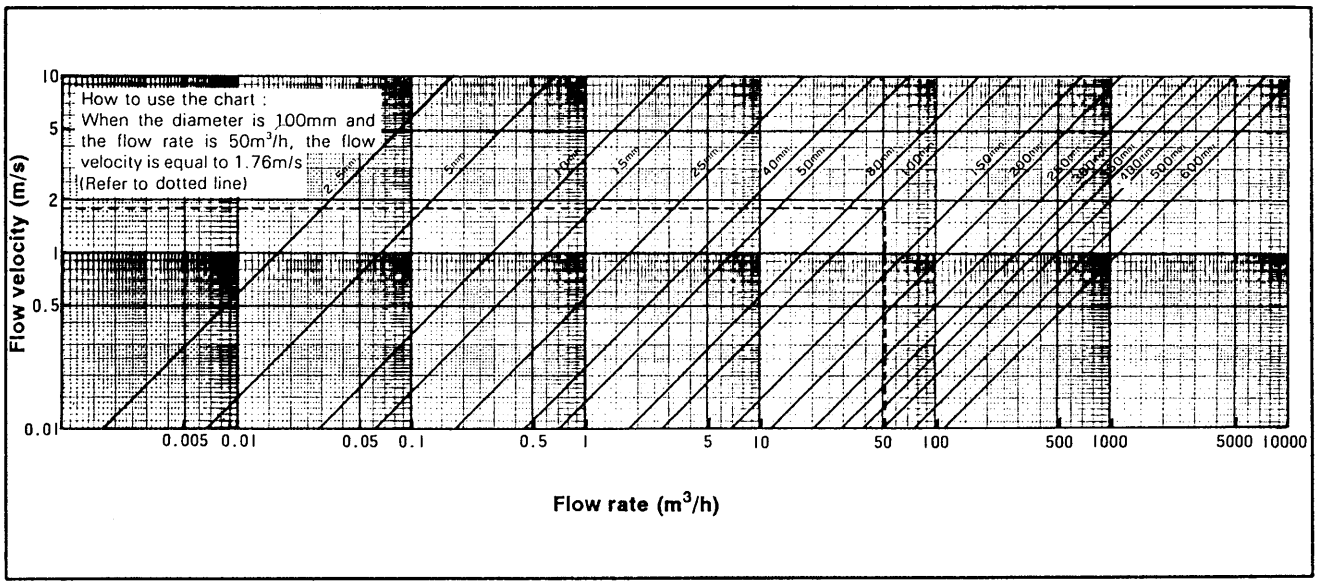
Example: When size is 50mm and flow rate is $20m^3/h$

$V = 0.1415 \times 20 = 2.830$ [m/s]

Size (mm)	Flow convertion factor K	Flow span (m^3/h) Q	Flow velocity (m/s) V
2.5	56.59	0.00177 to 0.177	0.1 to 10
5	14.15	0.00707 to 0.707	
10	3.537	0.0283 to 2.83	
15	1.572	0.0636 to 6.36	
25	0.5659	0.177 to 17.7	
40	0.2210	0.452 to 45.2	
50	0.1415	0.707 to 70.7	
80	0.05526	1.81 to 181	
100	0.03537	2.83 to 283	

Size (mm)	Flow convertion factor K	Flow span (m^3/h) Q	Flow velocity (m/s) V
150	0.01572	6.36 to 636	0.1 to 10
200	0.008842	11.31 to 1,131	
250	0.005659	17.67 to 1,767	
300	0.003930	25.45 to 2,545	
350	0.002887	34.64 to 3,464	
400	0.002210	45.24 to 4,524	
500	0.001415	70.70 to 7,070	
600	0.0009824	101.79 to 10,179	

Maximum Flow Velocity Conversion Chart



Model Number Table (Sizes 2.5 to 200mm)

Ex: KID 10B-0050 PL11SV-1X

Basic Model No.	Selections: Flowmeter Size (I)	Lining (II)	Electrodes (III)	Flange Standards & Pressure Rating (IV)	Ground Ring (V)	Conduit Connection (VI)	Options I (VII)	Options II (VIII)	Applicable Sizes: 2.5mm	5mm	10mm	15mm	25mm	40mm	50mm	80mm	100mm	150mm	200mm	Description
KID 10B									○	○	○	○	○	○	○	○	○	○	○	Remote type (water-proof)
KID 11B									○	○	○	○	○	○	○	○	○	○	○	Remote type (water-tight)
KID 12B									○	○	○	○	○	○	○	○	○	○	○	Remote type (submerged type)
	−0002								○											2.5 mm
	−0005									○										5mm
	−0010										○									10mm
	−0015											○								15mm
	−0025												○							25mm
	−0040													○						40mm
	−0050														○					50mm
	−0080															○				80mm
	−0100																○			100mm
	−0150																	○		150mm
	−0200																		○	200mm
		P							○	○	○	○	○	○	○	○	○	○	○	Teflon PFA
		Q															○	○	○	Polyurethane rubber
			L						○	○	○	○	○	○	○	○	○	○	○	SUS 316L
			B						○	○	○	○	○	○	○	○	●	●	●	Hastelloy B
			C						○	○	○	○	○	○	○	○	●	●	●	Hastelloy C
			K						○	○	○	○	○	○	○	○	●	●	●	Titanium
			T						○	○	○	○	○	○	○	○	●	●	●	Tantalum
			P						○	○	○	○	○	○	○	○	●	●	●	Platinum / iridium
				11					◑	◑	◑	○	○	○	○	○	○	○	○	JIS 10K
				12					◑	◑	◑	○	○	○	○	○	○	○	○	JIS 20K
				13					◑	◑	◑	○	○	○	○	○	○	○	○	JIS 30K
				14					○	○	○									For JIS 10 / 20K, 10mm flanges
				15					○	○	○									For JIS 30K, 10mm flanges
				21					◑	◑	◑	○	○	○	○	○	○	○	○	ANSI 150
				22					◑	◑	◑	○	○	○	○	○	○	○	○	ANSI 300
				31												○	○	○	○	JIS Water Service Class 2
				41					◑	◑	◑	○	○	○	○	○	○	○	○	DIN ND10
				43					◑	◑	◑	○	○	○	○	○	○	○	○	DIN ND40
				44					○	○	○									For DIN ND10 / 40, 10mm flanges
					S				○	○	○	○	○	○	○	○	○	○	○	SUS 316
					B				○	○	○	○	○	○	○	○	●	●	●	Hastelloy B
					C				○	○	○	○	○	○	○	○	●	●	●	Hastelloy C
					K				○	○	○	○	○	○	○	○	●	●	●	Titanium
					T				○	○	○	○	○	○	○	○	●	●	●	Tantalum
					P				○	○	○	○	○	○	○	○	●			Platinum
						V			○	○	○	○	○	○	○	○	○	○	○	G ½
						W			○	○	○	○	○	○	○	○	○	○	○	CM20 internal thread
						Y			○	○	○	○	○	○	○	○	○	○	○	½ NPT internal thread
							−X		○	○	○	○	○	○	○	○	○	○	○	Without water-tight gland
							−1		○	○	○	○	○	○	○	○	○	○	○	With brass (plating Ni) water-tight gland
							−2		○	○	○	○	○	○	○	○	○	○	○	With plastic water-tight gland
								X	○	○	○	○	○	○	○	○	○	○	○	None
								A	○	○	○	○	○	○	○	○	○	○	○	SUS304 bolts and nuts
								B	○	○	○	○	○	○	○	○	○	○	○	Carbon steel bolts and nuts

Water-tight gland is not available.

Legends:

○···Applicable

●···Applicable to teflon lining. Not applicable to polyurethane rubber lining.

◑···Applicable when mating flanges are 15mm.

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Model Number Table (Sizes 250 to 600mm)

Ex : KID 10B-0250 PL 11 SV-1X

Basic Model No.	Selections: Flowmeter Size (I)	Lining (II)	Electrodes (III)	Flange Standards & Pressure Rating (IV)	Ground Ring (V)	Conduit Connection (VI)	Options I (VII)	Option II (VIII)	Applicable Sizes: 250mm	300mm	350mm	400mm	500mm	600mm	Description
KID 10B									○	○	○	○	○	○	Remote type (water-proof)
KID 11B									○	○	○	○	○	○	Remote type (water-tight)
KID 12B									○	○	○	○	○	○	Remote type (submerged type)
	−0250								○						250mm
	−0300									○					300mm
	−0350										○				350mm
	−0400											○			400mm
	−0500												○		500mm
	−0600													○	600mm
		P							○	○	○	○			Teflon PFA
		R							○	○	○	○	○	○	Chloroprene rubber
			L						○	○	○	○	○	○	SUS 316 L
			C						●	●	●	●			Hastelloy C
			K						●	●	●	●			Titanium
			P						●	●	●	●			Platinum / iridium
				11					○	○	○	○	○	○	JIS 10K
				12					●	●					JIS 20K
				21					○	○	○	○	○	○	ANSI 150
				31					○	○	○	○	○	○	JIS Water Service Class 2
				41					○	○	○	○	○	○	DIN ND10
					S				○	○	○	○	○	○	SUS 316
					C				●	●	●	●			Hastelloy C
					K				●	●	●	●			Titanium
						V			○	○	○	○	○	○	G ½
						W			○	○	○	○	○	○	CM20 internal thread (Water-tight gland is not available.)
						Y			○	○	○	○	○	○	½ NPT internal thread (Water-tight gland is not available.)
							−X		○	○	○	○	○	○	Without water-tight gland
							−1		○	○	○	○	○	○	With brass (plating Ni) water-tight gland
							−2		○	○	○	○	○	○	With plastic water-tight gland
								X	○	○	○	○	○	○	None

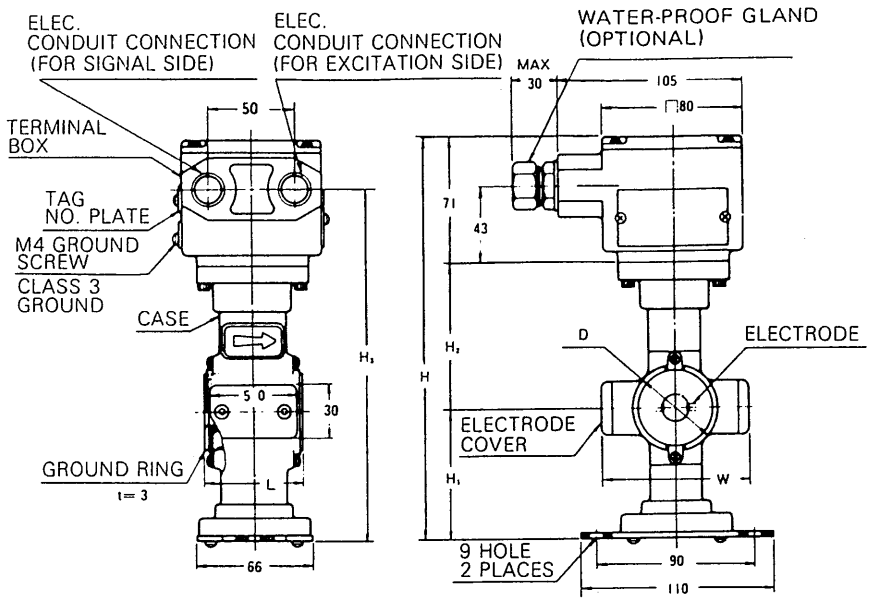
Legends:

○···Applicable

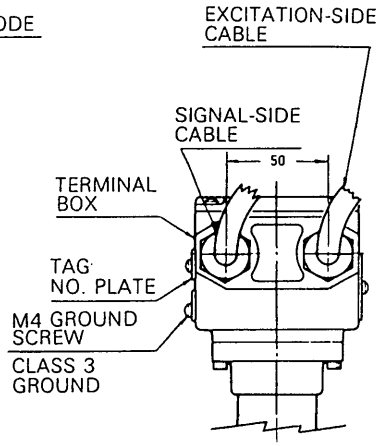
●···Applicable to teflon lining.
Not applicable to chloroprene rubber lining.

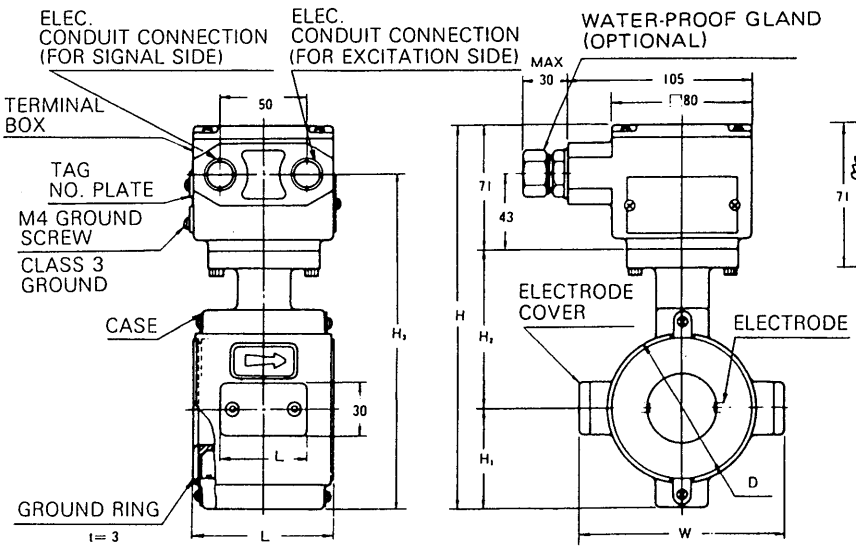
Dimension Drawings

(Unit: mm)

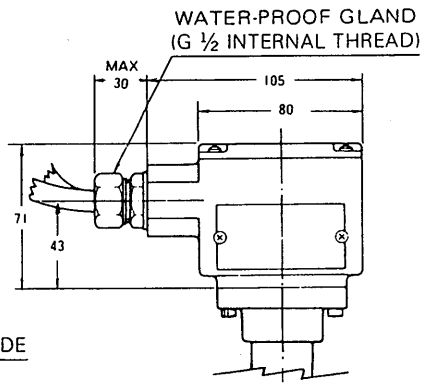


1) Sizes 2.5 to 25mm





2) Sizes 40 to 200mm



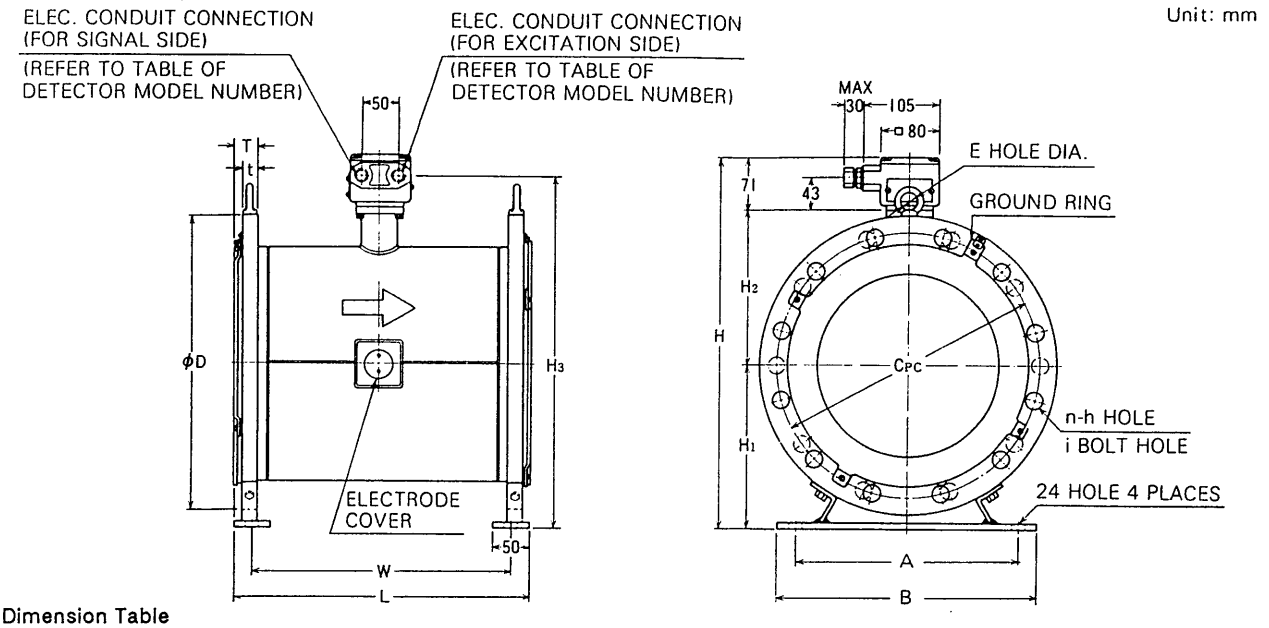
3) KID12B (Submerged type)

(Unit: mm)

Size (Diameter)		2.5	5	10	15	25	40	50	80	100	150	200
Face-to-face	L	56	56	56	56	56	80	86	106	120	160	200
Height	H	226	226	226	226	240	214	230	258	282	337	393
	H_1	73	73	73	73	80	55	64	78	90	120	150
	H_2	82	82	82	82	89	88	95	109	121	146	172
	H_3	198	198	198	198	212	186	202	230	254	309	365
Case width	W	84	84	84	84	94	116	132	161	185	230	292
Case OD	D	48.5	48.5	48.5	48.5	65	86	102	132	156	216	267
Weight (kg)	Water-proof type	3.2	3.2	3.2	2.9	3.2	2.8	3.4	5.2	6.7	13.6	22.0
	Water-tight type	3.4	3.4	3.4	3.1	4.3	3.9	4.5	6.3	8.0	15.0	24.0
	Submerged type *				3.3	4.5	4.1	4.7	6.5	8.2	15.2	24.2

* Excluding the weight of dedicated cable

Dimension Drawings



Dimension Table

Size (Dia.)	Flange Rating	D	t	T	C	n	h	i Bolt	E	L	W	H	H1	H2	H2	Weight (kg)	A	B
250mm (10")	JIS 10 K RF	400	24	32	355	12	25	M22	25	400	350	504	221	212	476	60	300	350
	JIS 20 K RF	430	34	42	380	12	27	M24				521	238		493	82		
	ANSI 150 RF	406	30.5	38.5	361.9	12	26	7/8"				507	224		479	68		
	JIS Water Service Class 2	410	24	32	360	8	23	M20				509	226		481	62		
	DIN ND 10	395	26	34	350	12	23	M20				501	218		473	60		
300mm (12")	JIS 10 K RF	445	24	32	400	16	25	M22	25	450	400	556	250	235	528	73	300	350
	JIS 20 K RF	480	36	44	430	16	27	M24				576	270		548	102		
	ANSI 150 RF	483	32	40	431.8	12	26	7/8"				577	271		549	97		
	JIS Water Service Class 2	464	26	34	414	10	23	M22				567	261		539	81		
	DIN ND 10	445	26	34	400	12	23	M20				556	250		528	75		
350mm (14")	JIS 10 K RF	490	26	34	445	16	25	M22	30	500	450	603	273	259	575	96	300	350
	ANSI 150 RF	535	35	43	476.2	12	29	1"				627	297		599	128		
	JIS Water Service Class 2	530	26	34	472	10	25	M22				625	295		597	109		
	DIN ND 10	505	26	34	460	16	23	M20				611	281		583	100		
400mm (16")	JIS 10 K RF	560	28	36	510	16	27	M24	30	550	500	679	321	287	653	128	350	400
	ANSI 150 RF	595	37	45	539.7	16	29	1"				699	341		673	163		
	JIS Water Service Class 2	582	26	34	524	12	25	M22				691	333		665	132		
	DIN ND 10	565	26	34	515	16	27	M24				682	324		656	126		
500mm (20")	JIS 10 K RF	675	30	38	620	20	27	M24	35	600	550	797	383	343	771	202	350	400
	ANSI 150 RF	700	43	51	635	20	32	1 1/8"				810	396		784	249		
	JIS Water Service Class 2	706	30	38	639	12	27	M24				813	399		788	218		
	DIN ND 10	670	28	36	620	20	27	M24				794	380		768	195		
600mm (24")	JIS 10 K RF	795	32	40	730	24	33	M30	35	650	600	909	446	392	883	272	350	400
	ANSI 150 RF	815	48	56	749.3	20	35	1 1/4"				918	455		892	339		
	JIS Water Service Class 2	810	33	41	743	16	27	M24				917	454		891	285		
	DIN ND 10	780	28	36	725	20	30	M27				904	441		875	255		

Ordering Information

When ordering, please specify:

1) Model number
2) Condition of fluid to be measured.
   - Name of fluid
   - Temperature range
   - Pressure range
   - Conductivity
3) Flow span
   - Flow velocity m/s or flow rate m^3/h

Specifications are subject to change without notice.