



ARMORED FLOWMETERS 618

Metallic Meter Tube / Variable Area Type SERIES

FEATURES

- SUITABLE FOR LIQUID, STEAM OR GASES
- RIGID AND DURABLE BODY
- HIGH SAFETY AND RELIABILITY
- EASILY READABLE LARGE INDICATING SCALE
- DISCAL DAMPER (OPTIONAL)
- VARIOUS CONNECTIONS & FLOW DIRECTIONS OF YOUR CHOICES



GENERAL SPECIFICATIONS

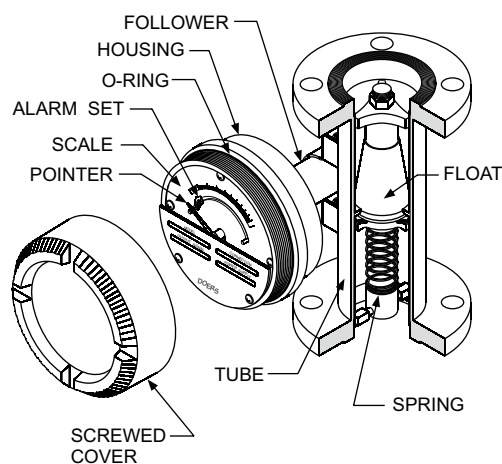
INDICATOR PORTION

Scale length : 100 mm (arch)
 Flowrate unit : M³/H or specified
 Metering range : 1 : 10
 Accuracy : ±2.0% F.S. (Standard) / ±1.0% F.S. (Option)
 Repeatability : ±0.8% F.S.
 Max. Pressure drop : 0.04~0.2 kg/cm²G
 Damper : Optional damper are used if the measure system under unstable situation; normally 618 Series itself have provided with the function of stabilize indicator
 Material : Follower / 304SS
 Housing / Aluminum alloy w/epoxy coating or 316SS
 Sight window / Safety glass Housing seal / Buna-N
 Damper : Discal / gas damper
 Enclosure : IP67 or Ex-version specified
 Ambient temperature : -20 to +60°C

MEASURING TUBE PORTION

Pressure rating : ≤10 kg/cm²G (Standard) / ≤100 kg/cm²G (Options)
 Operating temp. : -20 to +120°C (Standard) / ≤400°C (Options)
 Material : 304SS, 316SS, 316LSS or PVDF lining

STRUCTURE & PRINCIPLE



ALARM DEVICE

ITEMS	SPECIFICATIONS			
	1	2	5	6
FUNCTION CODE				
DETECTING MODE	Inductive Proximity Switch		Micro switch	Reed switch
CONTACT FORM	Transistor PNP - NO	NAMUR NC (Inductive Proximity Switch)	SPDT	SPDT
POWER SUPPLY	10~30V DC	8V Nor. (5~25V DC)	—	—
OPERATING CURRENT OR CONTACT RATING	100mA max.	8mA	5A 125/250V AC 5A 30V DC	1A 220V AC/DC
NO-LOAD SUPPLY / CURRENT CONSUMPTION	≤15mA	≤1mA at detecting ≥3mA at No-detecting	—	—
ELECTRIC PROTECTION	With short-circuit & reverse-polarity protection.	PTB NO.99 ATEX 2219X II 1/2G EEx ia IIC T6	—	—
EMC DESIGN & TESTING	According to EN 60947-5-2	According to EN 60947-5-2 & DIN EN 60947-5-6 (NAMUR)	—	—
ENCLOSURE CLASS	IP67			
SETTING RANGE	10~100% adjustable from target on the scale			
SWITCHING ACCURACY	±1.0% F.S.		±10% F.S.	±2% F.S.
HYSTERESIS (DEADBAND)	±0.5% F.S.		±5~10% F.S.	5±1.0% F.S.
H-L SETTING GAP	10~15% F.S.		30~40% F.S.	10~25% F.S.
AMBIENT TEMP.	-25~+70°C			
ACCESSORIES (OPTIONAL)	Relay unit	Safety Barrier KFD2(DC)/KFA5(126VAC)/KFA6(250VAC) or MTL5011B/5018 DC system (Prox input / Relay output)	—	—

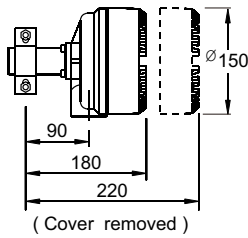
MODEL SELECTION

6 FLOW

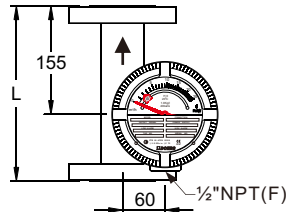
ITEMS	CODE	SPECIFICATIONS			
① MODEL	618A	Bottom to top flow direction			
	618B	Top to bottom flow direction			
	618C	Left to right flow direction			
	618D	Right to left flow direction			
	618E	Horizontal flow direction for casting version			
	618F	Horizontal flow direction with liquid damper for casting version			
	618G	Bottom to top side flow direction			
	618H	Sideways flow direction			
	618K	Sideways flow direction with liquid damper			
	618S	Special specified versions			
② ALARM DEVICE	-0	Not required (Indicator only)			
	-1	Transistor PNP-NO output (without relay unit)			
	-2	NAMUR without safety barrier			
	-3	NAMUR with DC safety barrier			
	-4	NAMUR with AC safety barrier			
	-5	Micro switch			
	-6	Reed switch SPST-A/B (Alternative)			
	-7	To be specified			
③ ALARM POINTS	0	Indicator without alarm device	2	With 2 points alarm device	
	1	With 1 point alarm device	3	To be specified	
④ CONNECTION	0	ANSI 150 ^{lb} Flange	2	DIN 2632 / 2633 Flange (PN10/16)	
	1	JIS 10K Flange	3	To be specified	
⑤ MATERIAL OF WETTED PARTS	CODE	FLANGE	MEASURING TUBE	FLOAT / DAMPER	INDICATOR HOUSING
	0	304SS (1.4301)	304SS (1.4301)	304SS (1.4301)	Aluminum alloy with epoxy coating
	1	316SS (1.4571)	316SS (1.4571)	316SS (1.4571)	
	2	316LSS	316LSS	316LSS	
	3	PVDF / PTFE Lining	PVDF / PTFE Lining	PVDF / PTFE	316SS
	4	304SS (1.4301)	304SS (1.4301)	304SS (1.4301)	
	5	316SS (1.4571)	316SS (1.4571)	316SS (1.4571)	
	6	316LSS	316LSS	316LSS	
	7	PVDF / PTFE Lining	PVDF / PTFE Lining	PVDF / PTFE	
	8	To be specified			
⑥ INSTALLATION LENGTH	-A	Standard design			
	-B	To be specified			
⑦ OPTIONAL COOLING PARTS	A	Not required (-20 to +120°C)	C	Cooling fin (≤400°C)	
	B	Extended follower (≤300°C)	D	To be specified	
⑧ OPTIONAL JACKET PARTS	A	Not required	C	Full Jacket	
	B	Semi-Jacket	D	To be specified	
⑨ OPTIONAL ACCESSORIES	A	Not required	C	Magnetic filter	
	B	Flow adjusting valve	D	Damper (Assemble on inner of indicator housing)	
	E	To be specified			
⑩ METER SIZE	-015	15A (1/2")			
	-100	100A (4")			
	-xxx	To be specified			
⑪ EXTRA TREATMENT	A	Not required (For General purpose)	E	Explosion proof housing (Exd IIB T4,IP67)	
	B	High purity cleaning (HPC)	F	Square / rectangular housing (IP65)	
	C	Electro-polishing (EP)	G	Compact small housing (φ90 / IP67)	
	D	Special finished (Painting or Coating)	S	To be specified	

DIMENSIONS (m / m)

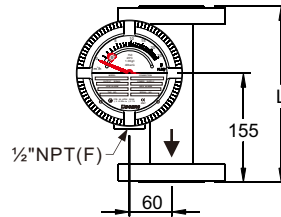
■ SPIRAL HOUSING



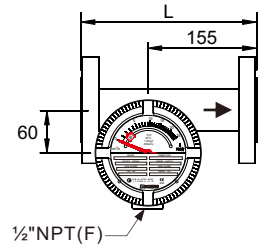
■ 618A



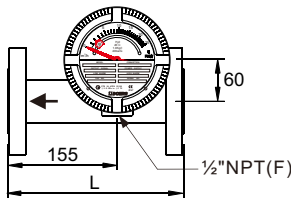
■ 618B



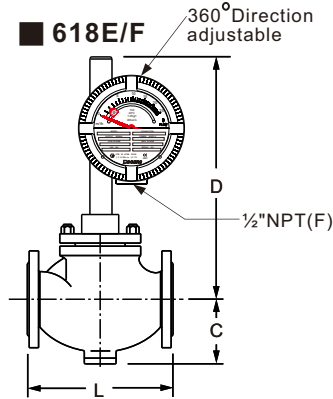
■ 618C



■ 618D



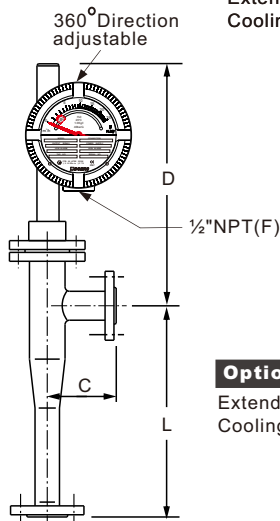
■ 618E/F



Options

Extended follower
Cooling Fin (code item 7)

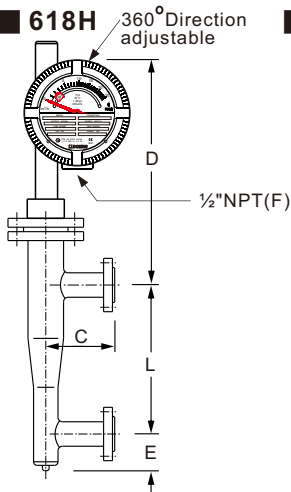
■ 618G



Options

Extended follower
Cooling Fin (code item 7)

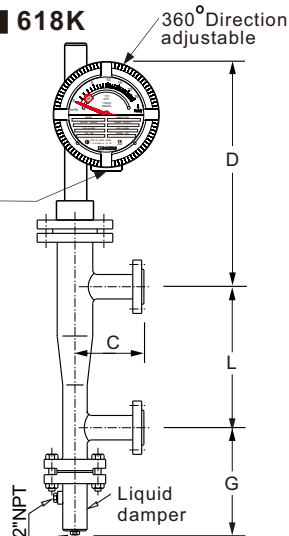
■ 618H



Options

Extended follower
Cooling Fin (code item 7)

■ 618K



Options

Extended follower
Cooling Fin (code item 7)

■ 618A / B / C / D

METER SIZE		WATER MAX.		Air @1 atm 0°C		⑤ INSTALLATION
mm	inch	M ³ /H	ΔP mmH ₂ O	NM ³ /H	ΔP mmH ₂ O	L mm
15	1/2	2.0	650	30	1000	250
20	3/4	2.5	650	50	1000	250
25	1	4.0	700	100	1000	250
40	1-1/2	8.0	900	200	1000	250
50	2	15.0	600	400	1000	250
65	2-1/2	25.0	700	500	1000	250
80	3	40.0	900	800	1500	300
100	4	60.0	1100	1000	1800	300
125	5	100.0	1400	1200	2000	400
150	6	150.0	1800	1400	2300	400

■ 618E/F

METER SIZE		WATER MAX.		Air @1 atm 0°C		⑤ INSTALLATION		
mm	inch	M ³ /H	ΔP mmH ₂ O	NM ³ /H	ΔP mmH ₂ O	L mm	C mm	D mm
15	1/2	1.5	800	18	1000	160	55	300
20	3/4	2.0	800	50	1000	160	55	300
25	1	4.0	900	100	1100	160	62	310
40	1-1/2	7.0	900	200	1200	198	75	320
50	2	15.0	1000	400	1400	228	85	340
65	2-1/2	25.0	1000	500	1500	288	118	350
80	3	35.0	1200	800	1700	320	135	370
100	4	60.0	1400	1200	2000	360	155	390

■ 618G

METER SIZE		WATER MAX.		Air @1 atm 0°C		⑤ INSTALLATION		
mm	inch	M ³ /H	ΔP mmH ₂ O	NM ³ /H	ΔP mmH ₂ O	L mm	C mm	D mm
15	1/2	2.0	600	30	400	250	100	270
20	3/4	2.5	600	50	400	250	100	270
25	1	4.0	700	80	400	250	100	300
40	1-1/2	8.0	700	130	400	250	130	320
50	2	15.0	800	300	400	250	130	320
65	2-1/2	25.0	800	600	500	350	150	320
80	3	40.0	1000	1000	500	350	180	340
100	4	70.0	1200	1800	600	350	180	340

■ 618H / K

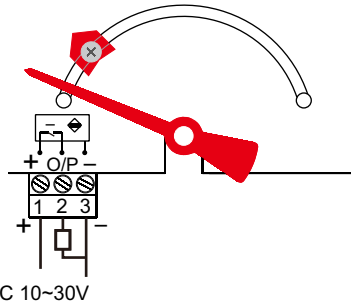
METER SIZE		STEAM @9Kg/cm ² G		Air @1 atm 0°C		⑤ INSTALLATION				
mm	inch	M ³ /H	ΔP mmH ₂ O	NM ³ /H	ΔP mmH ₂ O	L mm	C mm	D mm	E mm	G mm
15	1/2	30	800	30	600	250	100	270	45	190
20	3/4	40	900	50	600	250	100	270	45	190
25	1	60	1200	80	600	250	100	300	45	200
40	1-1/2	130	1300	130	600	250	130	320	55	210
50	2	250	1500	300	600	250	130	320	65	250
65	2-1/2	400	1700	600	700	350	150	320	75	250
80	3	600	1800	1000	700	350	180	340	90	260
100	4	1100	1800	1800	900	350	180	340	100	270

6 FLOW

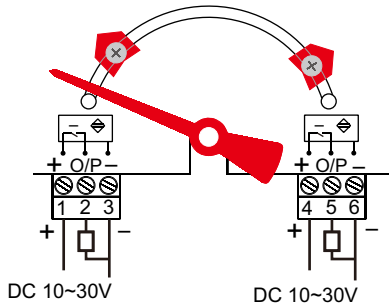
WIRING CONNECTION

■ FOR GENERAL PURPOSE (TRANSISTOR SENSOR)

◇ 1 POINT ALARM

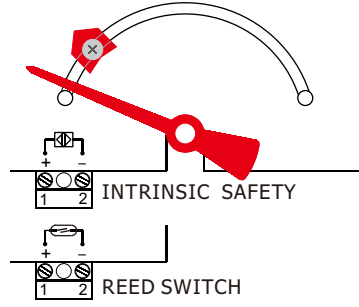


◇ 2 POINTS ALARM

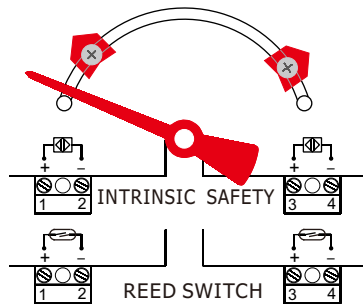


■ FOR INTRINSIC SAFETY SYSTEM OR REED SWITCH DEVICE

◇ 1 POINT ALARM

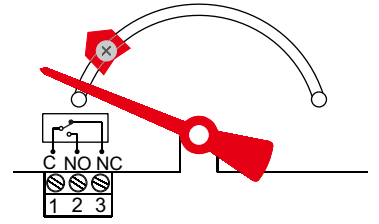


◇ 2 POINTS ALARM

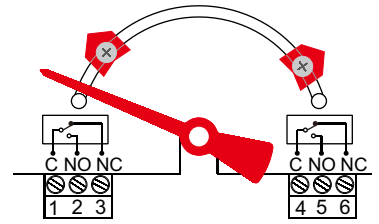


■ FOR MICRO SWITCH

◇ 1 POINT ALARM

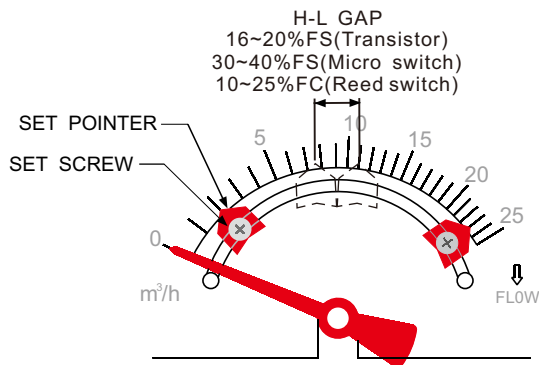


◇ 2 POINTS ALARM



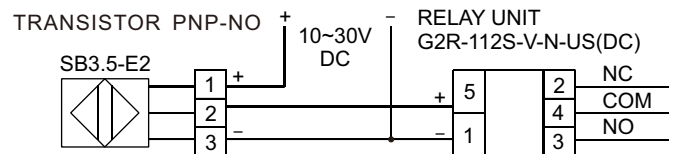
ALARM SETTING

The switch with a screw can be set on the slot of scale.

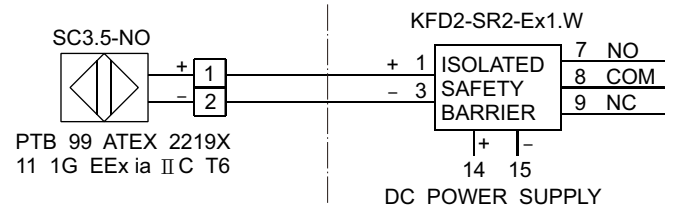


EXAMPLE OF SYSTEM CONFIGURATION

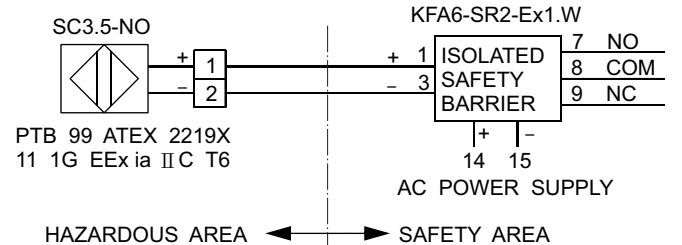
■ GENERAL PURPOSE FOR TRANSISTOR SENSOR



■ DC POWER SYSTEM FOR NAMUR (CODE 3)



■ AC POWER SYSTEM FOR NUMAR (CODE 4)



OPERATING SCHEMATICS OF REED SWITCH

■ SPST-A



Rising Flow: Contact closes when the indicating pointer passes set pointer.

Falling Flow: Contact opens when the indicating pointer passes set pointer.

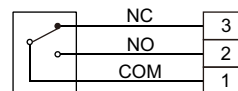
■ SPST-B



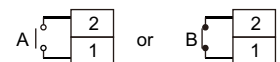
Rising Flow: Contact opens when the indicating pointer passes set pointer.

Falling Flow: Contact closes when the indicating pointer passes set pointer.

■ MICRO SWITCH (CODE 5)



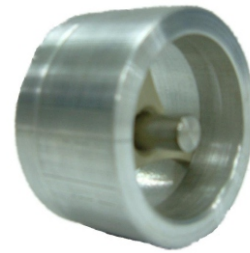
■ REED SWITCH (CODE 6)



APPLICATION

When the fluid contains foreign magnetite particles, the piping system must be flushed for the purpose of removing dirt and magnetite particles in order to keep the flowmeter free of magnetic element.

Filter series 061 can be installed between flanges in the upstream of flowmeter.

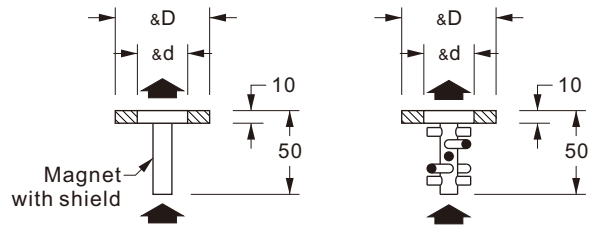


MODEL SELECTIONS

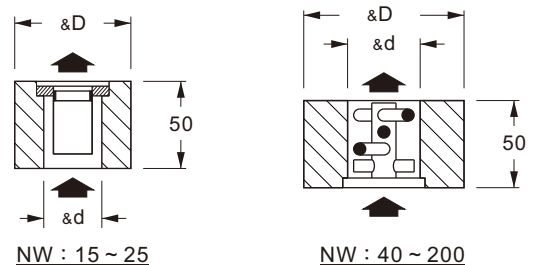
ITEMS	CODE	SPECIFICATIONS
① MODEL	061A	Flange fixture type
	061B	Armhole fixture type
	061C	To be specified
② MATERIAL OF BODY	-0	304SS
	-1	316SS
	-2	To be specified
③ MATERIAL OF MAGNET SHIELD	0	304SS
	1	316SS
	2	To be specified
④ PROCESS CONNECTION	0	ANSI 150 [#] Flange
	1	JIS 10K Flange
	2	To be specified
⑤ FLUID TEMPERATURE	-A	* 100°C
	-B] 101°C
⑥ OPERATING PRESSURE	A	* 1.0 Mpa
	B] 1.1 Mpa
⑦ INSTALLATION LENGTH	A	Standard
	B	To be specified
⑧ PIPELING SIZE	-015	15A
	-200	200A
	-XXX	To be specified
⑨ OPTIONAL	A	Not required (For general purpose)
	B	High purity cleaning (HPC)
	C	Electro-polishing (EP)
	D	To be specified

DIMENSIONS

● 061A



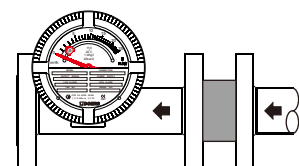
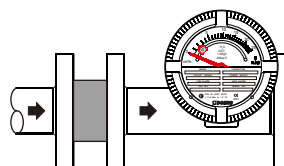
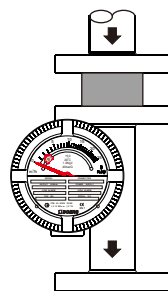
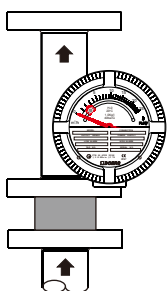
● 061B



Metering Size	&D (Raised Face Of Connecting Flange)							&d	
	NW	INCH	ANSI		JIS		DIN		
			150 [#]	300 [#]	10K	20K	2633		2635
15	1/2"	—	—	52	52	45	45	23	
20	3/4"	—	—	58	58	58	58	28	
25	1"	51	51	70	70	68	68	35	
32	1 1/4"	64	64	80	80	78	78	37	
40	1 1/2"	73	73	85	85	88	88	43	
50	2"	92	92	100	100	102	102	54	
65	2 1/2"	105	105	120	120	122	122	70	
80	3"	127	127	130	135	138	138	82	
100	4"	150	157	155	160	158	162	106	
125	5"	186	186	185	195	188	188	130	
150	6"	216	216	215	230	212	218	155	
200	8"	270	270	265	275	268	285	203	

INSTALLATION

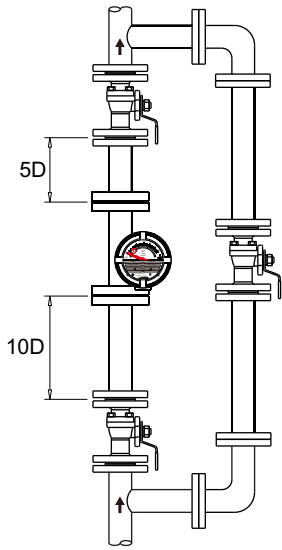
- Bottom to top
- Top to Bottom
- Left to right
- Right to left



PIPELINE PLANNING

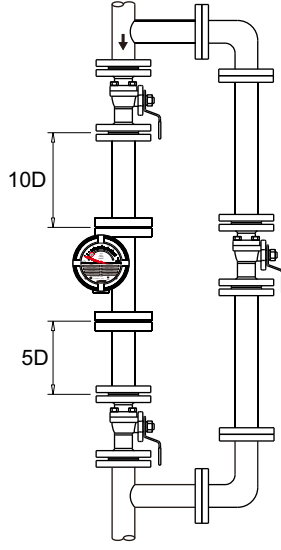
618A

Bottom to top flow direction



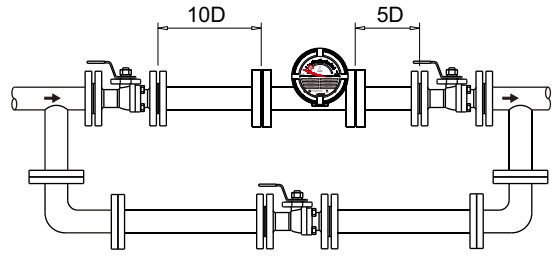
618B

Top to bottom flow direction



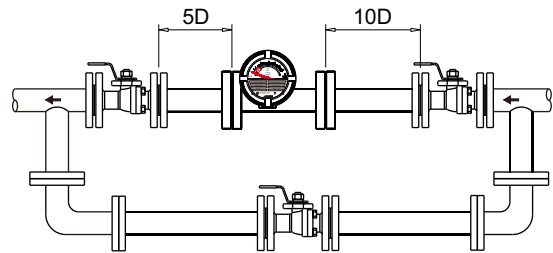
618C

Left to right flow direction

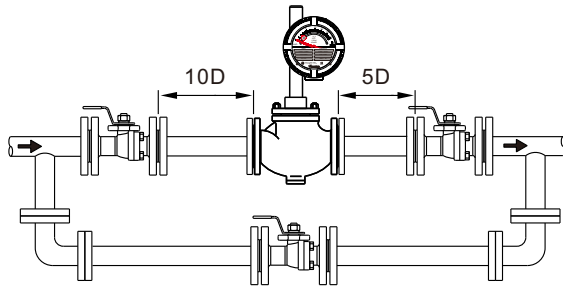


618D

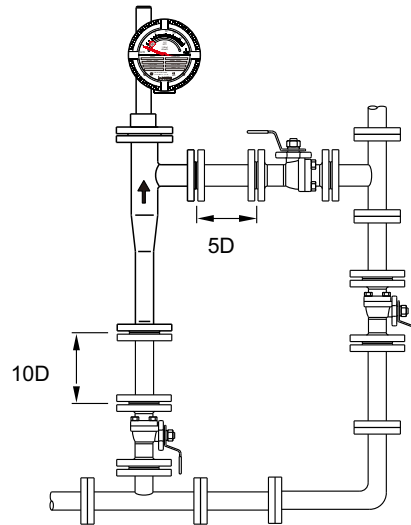
Right to left flow direction



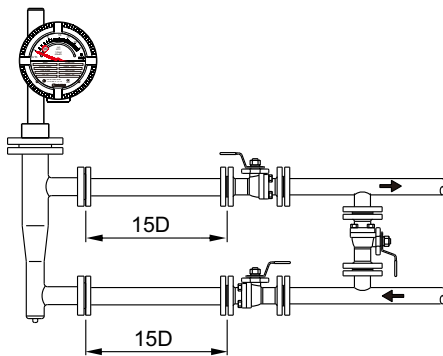
618E / F



618G



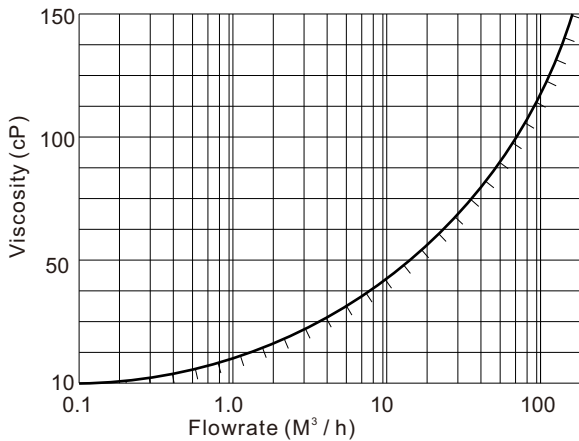
618E / F



6 FLOW

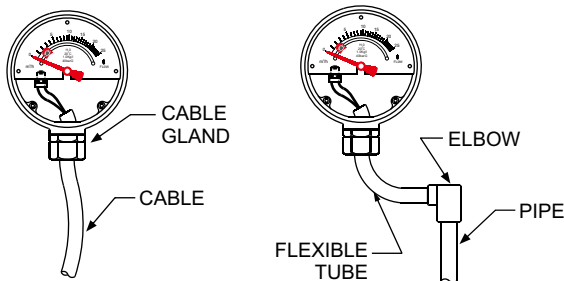
INSTRUCTIONS

SUITABLE RANGE FOR THE LIQUID VISCOSITY

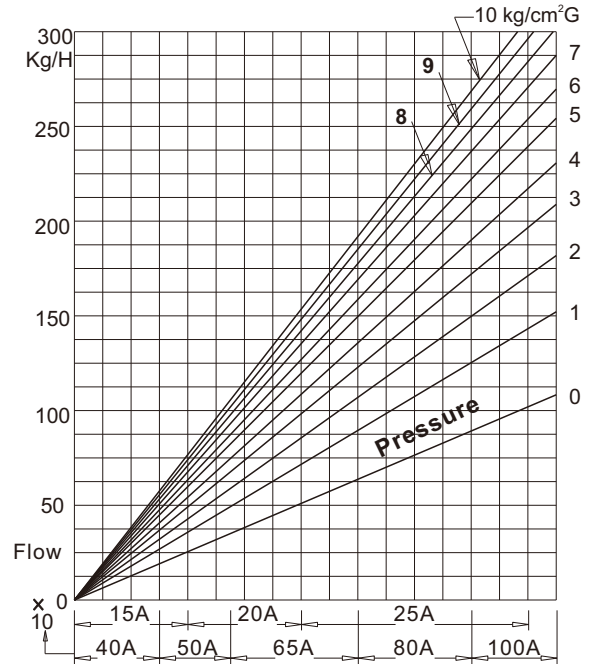


CABLING AND CONDUIT

CABLE GLAND ■ FLEXIBLE CONDUIT



PIPE SIZE OF STEAM FLOWS



GAS FLOW CALCULATION

When the gas flowmeter is different from the ordered specifications, errors in measurement may occur. In this case, further calculation is necessary. The formula is as follows:

$$Q_a = Q_g \times \sqrt{\frac{\gamma}{1.293}} \times \sqrt{\frac{1.033}{(1.033+P)}} \times \sqrt{\frac{(273+t)}{273}}$$

Q_a : Air flowrate for converted result (M³/H)

Q_g : Flowrate of the gas to be metered (M³/H)

γ : Density of the gas to be metered (kg/NM³)

P : Operating pressure (kg/cm²G)

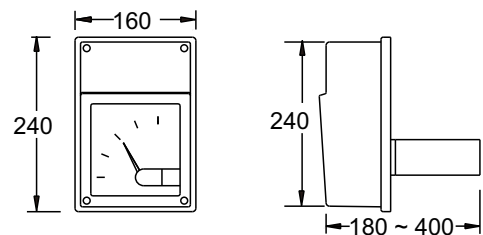
t : Operating temperature (°C)

SPECIAL INDICATOR HOUSINGS FOR OPTIONAL

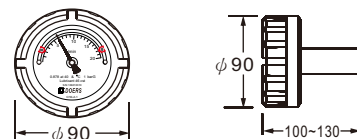
Unit m/m

ITEMS	CODE	F	G
SCALE LENGTH		120mm (arch)	80mm (arch)
METERING RANGE		1:10	1:10
ENCLOSURE		IP65	IP67
AMBIENT TEMP.		-10~60°C / 85% RH max.	
MATERIALS	FOLLOWER	304SS or special specified	
	FRAME / BRACKET	304SS or special specified	
	COVER OF HOUSING	ABS resin	ADC / 316SS (Option)
	BODY OF HOUSING	304SS / 316SS	ADC / 316SS (Option)
	SIGHT WINDOW	Safety Glass	

CODE : F (Square / Rectanglar Housing)



CODE : G (Compact small Housing)



The specifications are subject to change without prior notice.

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