

R-700 Series

Glass tube flowmeter with alarm contact

OUTLINE

R-700 series is a glass tube area flowmeter with alarm contact(s). In addition to local flow rate indication by the position of float, reed switch alarm contact(s) are actuated at set flow rate.

R-700 is useful and effective for prevention of flow cut-off for cooling water system efc.

STANDARD SPECFICATION

Available sizes :

a. General version R-7□□

65,80 and 100mm

(With float guiding road)

b. Ribbed tapered tube version R-7□□-R

10,15,20,25,40 and 50mm

c. Wide designed tapered tube version R-7□□-E

25,40,50,65,80 and 100mm (With float guiding road)

Measuring object: Liquids and gases

Operating pressure:

Meter size	Max.O.P. Press MPa						
(mm)	R-7□□	R-7□□-R	R-7□□-E				
10	-	1.2	_				
15	ı	1	_				
20	_	0.8	_				
25	-	0.8	0.8				
40	-	0.6	0.6				
50	-	0.6	0.6				
65	0.6	_	0.6				
80	0.4	_	0.4				
100	0.4	_	0.4				

Operating temperature :

Max.120°C (Allowable thermal shock:80°C)

*: It is general data, and the maximum temperature may change

by terms of use and environment.

NB.1) upto 80°C for NBR gasket version

2) up to 60°C for PVC body version

Indication accuracy : std. $\pm 1.5\%$ (F.S)*

*±2.5% (F.S) for resin float version

Range ability: 10:1

Material:

Tapered tube : Heat-resistant glass

Float : Standard For liquids SUS304

For gases Aluminum

Option SUS316, SUS316L, PTFE

Packing : Standard NBR

Option FPM, other



Body: Standard FC200*, SCS13, SCS14

Option PVC

*SS400/SGP for R-7□□-E

Process connection: Through flanges

Rating; Standard JIS10KFF

Option JIS10KRF, JIS5KFF (RF)

ANSI#150class flanges

Flow direction;

Standard Bottom \rightarrow Top (R-7 \square 1- \square)

Option Bottom→Top side (R-7□-2-□)

Bottom side \rightarrow Top side (R-7 \square 3- \square)

Bottom rear→Top rear (R-7□5-□)

No.of alarm point :

Meter	Possible Alarm point					
size (mm)	R-7□□	R-7□□-R	R-7□□-E			
10	_	1×Low + 1×High	-			
15	_	1×Low + 1×High	-			
20	_	1×Low + 1×High	-			
25	_	1×Low + 1×High	1×Low			
40	-	1×Low + 1×High	1×Low			
50	-	1×Low + 1×High	1×Low			
65	1×Low	_	1×Low			
80	1×Low	_	1×Low			
100	1×Low	_	1×Low			

Alarm Contact :

1) Reed Switch(R-75 □-□)

2) Optical Switch(R-76 □-□)

Refer to separate explanation for details

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TG-F772-3E DEC. 2007K

TG-F772-6E MAY. 2013K

MODEL CODE

Model code					Description	
R-	R- 7					Description
Type of contr	a o t	5				Reed switch
Type of conta	aCl	6				Optical switch
1			1			Bottom → Top
Flow directs	2					Bottom→Top side
riow direction	Flow direciton 3		3			Bottom side → Top side
			5			Bottom rear →Top rear
Type of tapered tube			_		General purpose	
			_	R	Rib guided	
				_	Ε	Wide designed

FLOW RATE

1) For Liquid measurement

			Liquid flow rate							
Mete		R-7□□ General type			□□-R uided	R-7□□-E Wide designed				
(mn	n)	m³/h	Press Loss (kPa)	m³/h	Press Loss (kPa)	m³/h	Press Loss (kPa)			
10)	-	-	- 0.065 to 0.1		-	-			
15	;	_	_	0.4	0.4 2.5		_			
20)	-	- - 1.0 3		3.5	-	_			
25	;	-	-	1.65	5	3 to 6.5	12			
40-	В	_	_	2.5	4	13	10			
	Α			4.3	4	13	10			
50)	_	-	6.7	4	24	12			
65	;	9 to 12	5	_	_	37	18			
80)	21	9	_	-	50	18			
100	0	50	19	_	_	80	15			

General type (R-7 \(\subseteq \)) and Wide designed type (R-7 \(\subseteq \)) are suitable only for Water or water equivalent liquid having 1.0 mPa-s viscosity.

Above table shows maximum possible full scale for different meter sizes with stainless steel floats.

The figures are indicated by flow rate of Water having Density of 1.0g/cm³ and viscosity of 1.0 mPa·s In case actual operating condition is different from this, a conversion calculation is required. Consult factory for details. In case PTFE float is used, the figures are deducted by approx. 20%.

2) For Gas measurement

Meter size (mm)		Gas flow rate for R-7 □□-R (Ribbed tapered tube version)			
		m³/h (nor)	Press. Loss (kPa)		
10		2.1 to 3	3.5		
1	5	12.5	3.5		
20	0	20	2.5		
2	5	33	2.5		
40	В	52	3.5		
40	Α	95	3		
50		160	3		

Ribbed tapered tube version(R-7 \subseteq -R) is recommended for gas measurement. Available size is 10mm to 50mm

Above table shows maximum possible full scale for different meter sizes with aluminum float. (Stainless steel for 10mm and 15mm)

The figures are indicated by flow rate of Air under Normal condition

(Density 1.293kg/m³(nor),0°C,1atm). In case the fluid is different from air, and / or operating condition is not under Normal condition, a conversion calculation is required. Consult factory for details. In case PTFE float is used, the figures are deducted by approx. 20%.

ACCEPTABLE CONNECTION FLANGE SIZES

Possible connection flange sizes against selected meter size are shown in the following tables.

1)For R-7□□ (General type) 2)For R-7□□-E and R-7□□-R (Ribbed (Wide designed type) tapered tube type)

Body	Connec (again	tion flan	ge size size)	Body	Connection flange size (against meter size)			
material	-1	±0	+1	material	-1	±0	+1	
FC200	0	0	×	SS400/SGP	×	0	0	
SCS13,SCS14	0	0	0	SCS13,SCS14	×	0	0	
P* Mater size 20 mm	0	0	0	PVC	×	0	×	

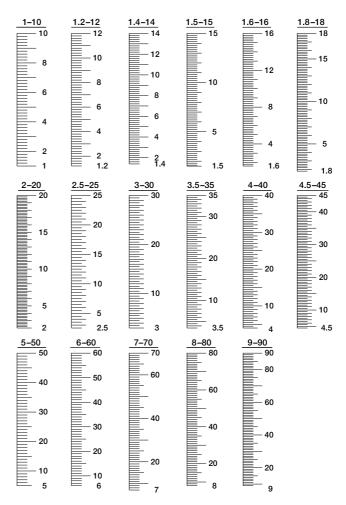
^{*}PVC material for more than 25mm in meter size is the PVC lining.

STANDARD GRADUATION

The follwing 17 different standard graduations are ready to choose.

Fix your full scale to meet the availability.

(Ex. In case full scale is $300Nm^3/h$, graduation will be 3 to $30\times10m^3/h$ (nor))

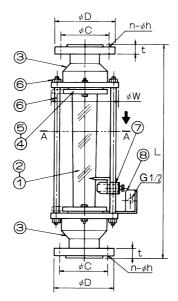


Graduation examples are for R-7 \square and R-7 \square -R, They may slightly differ for R-7 \square -E

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DIMENSIONS

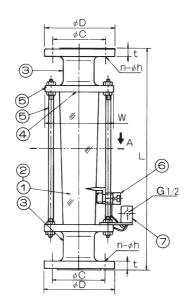
R-7 □ 1, R-7 □ 1-R



Front view

No.	Parts description	Material		
1	Tapered tube	Heat-resistant glass		
2	Float	SUS304, Aluminum, Others		
3	Body	FC200, SCS13, Others		
4	Packing follower	FC200		
5	Packing	NBR, FPM, Others		
6	Column and nut	SS400, SUS304		
7	Switch	Assembly		
8	Terminal Box	ADC12		

R-7 □ 1-E

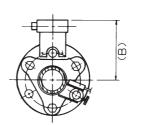


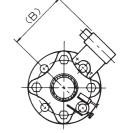
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Meter size 10mm to 40mm (B)

Meter size 40mm (A) to 100mm

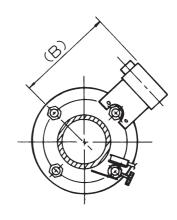




Top view

NA -t		Dimension (mm)						
Meter size	L	φW	E	3	Mass (Approx.)			
(mm)	L	ΨΨ	1 point alarm	2 point alarm	kg			
10	420	67	80 ^{*1}	115 ^{*1}	3.5			
15	420	88	90*1	125 ^{*1}	4.5			
20	430	98	95 ^{*1}	135 ^{*1}	5.5			
25	500	119	105	140	8.5			
40B	500	129	110	145	12			
40A	500	144	115	150	15			
50	530	171	130	165	18			
65	530	186	135	_	23			
80	570	206	145	_	30			
100	590	242	165	_	42			

^{*1:10}mm is added for SUS304, SUS316 and SUS316L material.



Top view

		Dimension (mm)						
Meter	L	-	φW		E	3	Mass	
size (mm)	Metal Body	PVC Body	Metal Body	PVC Body	Metal Body	PVC Body	(Approx.) kg	
25	320	360	110	135	100	105	6.5	
40	370	400	120	140	105	110	8	
50	370	400	144	155	115	115	12	
65	370	410	160	175	125	125	13	
80	400	410	180	185	130	130	17	
100	400	410	200	210	140	145	20	

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ALARM CONTACTS

Reed switch type (R-75□)

• Type of switch : Self holding type.

Normal open or Normal close

• Capacity : AC.DC,10W(Resistance load)

Max.voltage AC 120V, DC 170V Max.Current AC 0.25A, DC 0.25A

• Setting Accuracy : ± 2%

Reset span : ≤15% F.S.

• Enclosure : Watertight

Optical switch type (R-76□)

• Components : 1) Optical projector and receiver

(Provided onto flowmeter)

2) Amplifier unit

(Separate installation)

• Type of switch : In stantaneous transfer contact

(Holding circut to be arranged by customer)

Capacity : AC230V,1A(Resistance load)

Setting Accuracy : ±2% F.S.

● Amb.Temp : -10 to +40°C

• Amb.Hurnid : 45 to 85%RH

• En closure : Non-weather proof

● Power supply : AC 100/200V ±10%, 50/60Hz

• Consumption : ≦5VA

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● Cable : 1m cable provided (Max. 10m)

ORDERING INFORMATION

Model	
Q'ty	
Fluid name	
Density	
Viscosity	
Pressure	
Temperature	
Scale range	
Alarm setting point	□ LO □ HI
Action	LO
Cable Length (only for R-76□ - □)	□ 1m □ m
Material	Body Float Gasket
Special instruction	

Cautions on the use of glass tube variable area flowmeters

CAUTION

Avoid the use of glass tube variable area flowmeters for the following services.

- 1. Liquid services subject to impulse pressure in the process.
- 2. Secondary accidents might occur due to the breakage of glass in such services :
 - Toxic fluids such as poisons, stimulant and narcotics
 - Flammable fluids
 - Explosive fluids
- 3. Gas handling process where breakage of glass might result in gas leakage or scattering of glass fragments.
- The installation places of the flowmeters where breakage of glass might be caused by the accidents from the surrounding piping or equipment.
- On-off operation where breakage of glass might be caused by the collision of the float inside meter due to the abrupt change of flow.
- 6. Services where the heat shock by abrupt change of temperature is expected.

*Specification is subject to change without notice.



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