

### ■ GENERAL

**AM-1000** series are most well accepted metal tube flowmeters which have been developed based on the long time experience of **TOKYO KEISO** in the field of flow measurement.

In addition to highly reliable local indicators, Pneumatic transmitters, Electric transmitters, Integrator with scaled pulse output as well as Alarm contact output versions are ready to meet the requirements. Standard metallic materials and full line-up of lined materials cover almost all fluids even they are very corrosive.

**AM-1000** covers liquids, gases and steam measurement applications in various industrial fields.

*Current transmitter  
with Flame Proof  
for Hydrogen also!*



### ■ FEATURES

#### ● FULL LINE-UP TO MEET ALL POSSIBLE REQUIREMENTS!

All the necessary functions required for variable area flowmeters, i. e. local indication, pneumatic transmission, electric transmission, integration and alarm are now available from one line.

#### ● COMPACT DESIGN

Smaller and lighter . . . . To suit modern needs

#### ● WIDE PRESSURE RANGE

150 lbs and 300 lbs rating are available as standard and higher pressure versions are also available as option.

#### ● WIDE RANGE OF MATERIAL SELECTION

All possible metallic materials and a wide variety of lining materials are available even for corrosive fluids.

#### ● FOR HAZARDOUS AREA

Flame proof and Intrinsically safe version (AM-1700) are available to meet hazardous area applications.

Especially, the flame proof enclosure covering hydrogen atmosphere with analog output is available. It is classified as IIC T4 without barrier.

### ■ MODEL CODE

| MODEL CODE            |      |    |   |    |   |   | DESCRIPTION                                         |
|-----------------------|------|----|---|----|---|---|-----------------------------------------------------|
|                       | AM-1 | -  | - | -  | - | - | Weather proof (IP54)                                |
| Construction          | EP-  |    |   |    |   |   | Flame proof                                         |
|                       | IS-  |    |   |    |   |   | Intrinsically safe *1                               |
|                       |      |    |   |    |   |   |                                                     |
| Function              | 40   |    |   |    |   |   | Local indication                                    |
|                       | 31   |    |   |    |   |   | Local indication + Pneumatic transmission           |
|                       | 52   |    |   |    |   |   | Local indication + Electric transmission            |
|                       | 69   |    |   |    |   |   | Local indication + Local integration + Pulse output |
|                       | 74   |    |   |    |   |   | Local indication + Alarm output                     |
| Flow direction        | 1    | -  |   |    |   |   | Bottom-Top                                          |
|                       | 1-LB | -  |   |    |   |   | Bottom-Top, Long body design                        |
|                       | 2    | -  |   |    |   |   | Bottom-Top side                                     |
|                       | 3    | -  |   |    |   |   | Bottom side-Top side                                |
|                       | 6    | -  |   |    |   |   | Left-Right (Horizontal)                             |
|                       | 7    | -  |   |    |   |   | Right-Left (Horizontal)                             |
|                       |      |    |   |    |   |   |                                                     |
| Additional function 1 |      | D  |   |    |   |   | Liquid damper *2                                    |
|                       |      | DU |   |    |   |   | Gas damper                                          |
|                       |      | F  |   |    |   |   | Cooling fin                                         |
|                       |      | DF |   |    |   |   | Damper + fin *2                                     |
| Additional function 2 |      |    | - | JS |   |   | Semi Jacket                                         |
|                       |      |    | - | JF |   |   | Full Jacket                                         |
| Pressure rating       |      |    | - |    |   |   | General purpose 150 lbs (10K) class                 |
|                       |      |    | - | M  |   |   | Medium purpose 300 lbs (20K) class                  |
|                       |      |    | - | H  |   |   | High pressure                                       |

\*1: Intrinsically safe versions is available for IS-AM-174□ with alarm output.

\*2: Liquid damper is available for Bottom side-Top side version (AM-1□□□3), Left-Right version (AM-1□□□6) and Right - Left version (AM-1□□□7) only.

## ■ STANDARD SPECIFICATION

### ● FUNCTIONS

| AM-140□          | AM-131□                                    | AM-152□                                   | AM-169□                                               | AM-174□                          |
|------------------|--------------------------------------------|-------------------------------------------|-------------------------------------------------------|----------------------------------|
| Local indication | Local indication<br>Pneumatic transmission | Local indication<br>Electric transmission | Local indication<br>Local integration<br>Pulse output | Local indication<br>Alarm output |

|                   |            |                                                                                                                                                          |
|-------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| ● METER SIZE      | Standard   | 15mm (1/2") ~150mm (6")<br>(Please refer to M Series for more than 200 mm or 8 inch.)                                                                    |
| ● MATERIAL        | Standard   | Carbon steel, SUS304, SUS316, SUS316L<br>Rubber lining, Fluorocarbon resin lining, PVC lining and Glass lining                                           |
|                   | On request | Other metallic material                                                                                                                                  |
| ● PRESSURE RATING | Standard   | 150lbs (10K) class<br>300lbs (20K) class                                                                                                                 |
|                   | On request | Consult factory for higher pressure.<br>*Only 150 lbs (10K) class is available for full jacketed flowmeters (AM-1□□□-JF) and lining material flowmeters. |

### ● OPERATING PRESSURE

|              |     | General purpose<br>150lbs (10K) class<br>AM-1□□□-□ |      |      | Medium pressure<br>300lbs (20K) class<br>AM-1□□□-M |      |      |      |      |
|--------------|-----|----------------------------------------------------|------|------|----------------------------------------------------|------|------|------|------|
| Fluid Temp   | °C  | ~120                                               | ~220 | ~300 | ~120                                               | ~220 | ~300 | ~350 | ~400 |
|              | °F  | 248                                                | 428  | 527  | 248                                                | 428  | 527  | 662  | 752  |
| Max.Op.Press | MPa | 1.4                                                | 1.2  | 1.0  | 3.4                                                | 3.1  | 2.9  | 2.6  | 2.3  |

Consult factory for the specifications of higher pressure model, AM-1□□□-H.

|              |            |                                    |
|--------------|------------|------------------------------------|
| ● CONNECTION | Standard   | Flange connection                  |
|              | On request | Screw connection (Consult factory) |

|                            |                   |                                        |
|----------------------------|-------------------|----------------------------------------|
| Low pressure AM-1□□□-□     | Standard JIS10KFF | ANSI, DIN, Other type<br>are available |
| Middle pressure AM-1-□□□-M | Standard JIS20KRF |                                        |
| High pressure AM-1-□□□-H   | Consult factory   |                                        |

Only RF (Raised faced) flange is available for glass, PVC and fluorocarbon resin lined flowmeters. Only FF (Flat faced) flange is available for rubber lined flowmeters.

### ● FLUID TEMPERATURE

#### a) Metallic material

| Type        |    | AM-1□□□1          | AM-1□□□2/3 | AM-1□□□2/3-F      |
|-------------|----|-------------------|------------|-------------------|
| Max.Op.Temp | °C | 200 <sup>*1</sup> | 149        | 400 <sup>*2</sup> |
|             | °F | 392               | 302        | 752               |

\*1: Upto 250°C possible on request.

\*2: Max. 300°C for general purpose 150lbs (10K) class

#### b) Lining Material

| Lining Material |    | Rubber Lining | Fluorocarbon resin Lining | PVC Lining | Glass Lining         |
|-----------------|----|---------------|---------------------------|------------|----------------------|
| Op.Temp.Range   | °C | -10~80        | -10~80                    | 0~60       | -10~110 <sup>*</sup> |
|                 | °F | 14~176        | 14~176                    | 32~140     | 14~230               |

\*Max. 80°C for Fluorocarbon resin float

|                          |                              |                                              |
|--------------------------|------------------------------|----------------------------------------------|
| ● ACCURACY               | Standard                     | ± 1.5%F.S.*                                  |
| (LOCAL INDICATION)       | On request                   | ± 1.0%F.S., Consult factory                  |
|                          |                              | *± 2.0%F.S. for resin material float version |
| ● STANDARD SCALE LENGTH  | 75mm                         |                                              |
| ● RANGEABILITY           | 10 : 1                       |                                              |
| ● INDICATOR CONSTRUCTION | Weather proof (Equ. to IP54) |                                              |

REFER TO THE PAGES OF APPLICABLE MODEL CODES FOR THE DETAILS OF TRANSMITTER SPECIFICATION.

## ■ AM-1400 SERIES LOCAL INDICATOR

### ● Dimension of indicator

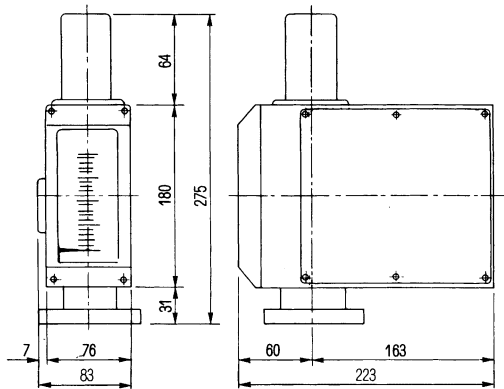


Fig. 1

Ambient Temp /  $-30\sim 80^{\circ}\text{C}$



## ■ AM-1310 SERIES LOCAL INDICATOR WITH PNEUMATIC TRANSMITTER

**AM-1310** indicates flow rate by pointer and scale plate, and outputs pneumatic signal which is proportional to flow rate. The indicating mechanism and pointer moves by the magnet coupling in response to the movement of the float.



### ● Specification of transmitter

- Air supply :  $0.14 \pm 0.01\text{MPa}$
- Outputs : Standard 20~100kPa (with output gauge)
- Air consumption : 14L/min(nor)
- Connection : Standard Rc 1/4
- On request NPT 1/4
- Output accuracy :  $\pm 1.0\%\text{F.S.}$
- Construction : Weather proof (Equ. to IP54)
- Ambient Temp :  $-20\sim 80^{\circ}\text{C}$
- Provide heat insulation if required.
- Accessory : Air set (On request)

### ● Dimension of indicator/transmitter

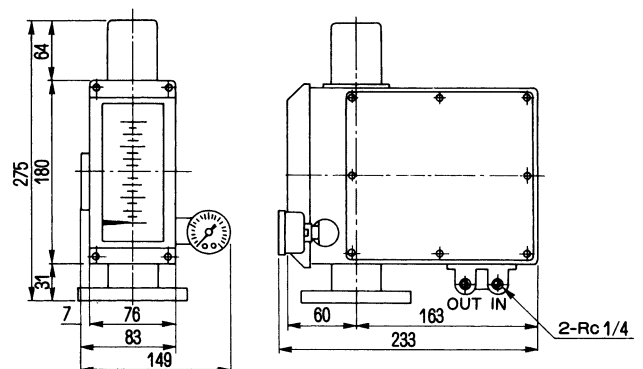


Fig. 2

## ■ AM-1520 SERIES LOCAL INDICATOR WITH ELECTRIC TRANSMITTER

**AM-1520** indicates flow rate by pointer and scale plate, and outputs electric (DC4~20mA) signal which is proportional to flow rate. Watertight, flame proof versions are available.

### ● DIMENSION OF INDICATOR/TRANSMITTER

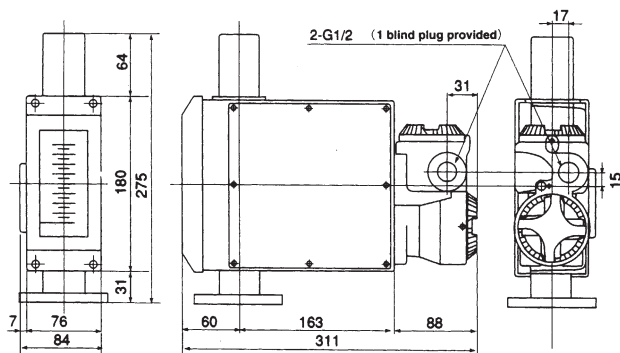


Fig. 3: Weather proof AM-152□ and Exd EP-AM-152□

### ● TERMINAL AND WIRING

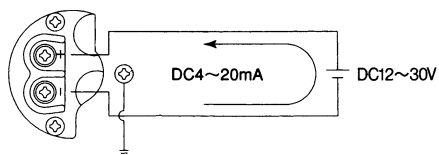


Fig. 4: Weather proof AM-152□ and Exd EP-AM-152□

### ● SPECIFICATION OF TRANSMITTER

|                      |                                                                                                                                                                                                                             |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power supply voltage | : Weather proof and flame proof<br>DC12~30V                                                                                                                                                                                 |
| Output               | : DC4~20mA                                                                                                                                                                                                                  |
| Max load             | : Weather proof and flame proof<br>600Ω (DC24V)                                                                                                                                                                             |
| Cable entry          | : Weather proof : 2xG1/2 or 2xNPT1/2<br>Flame proof : 2xG1/2 or 2xNPT1/2<br>Option : Packing type cable gland<br>Specified cable gland<br>(Type SXC-16B Shimada Electric Co.) to be used for flame proof construction work. |
| Output accuracy      | : ±1.0%F.S.                                                                                                                                                                                                                 |
| Construction         | : Weather proof ;<br>Equ. to IP54 AM-152□<br>Flame proof ;<br>Exd II BT4 EP-AM-152□<br>On request ;<br>Exd II CT4 EP-AM-152□                                                                                                |
| Ambient Temp         | : Weather proof ; -30 ~ +70°C<br>Flame proof ExdII BT4 ; -20 ~ +55°C<br>ExdII CT4 ; -20 ~ +55°C                                                                                                                             |

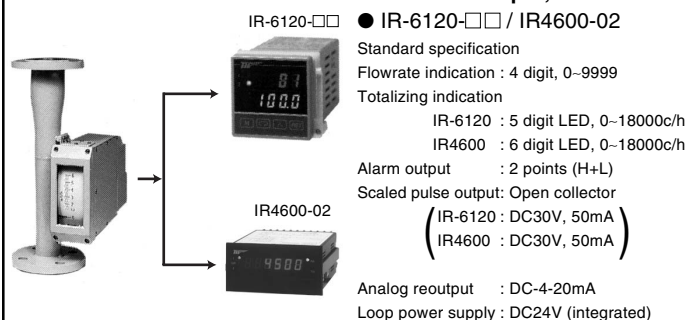


### OPTIONAL UNITS

## IR series universal totalizer

IR universal totalizer is an Indicator and Totalizer which is used in combination with AM series flowmeters having DC4~20mA or Pulse output for flow rate. Indication, Totalization, Alarm, DC4~20mA and Pulse re-output by one unit.

### ■ Combination with AM-152□ / DC4~20mA output, 2 wire



Refer to Technical guidance of IR series for the details.

## ■ AM-1690 SERIES LOCAL INDICATOR WITH LOCAL INTEGRATOR AND PULSE TRANSMITTER

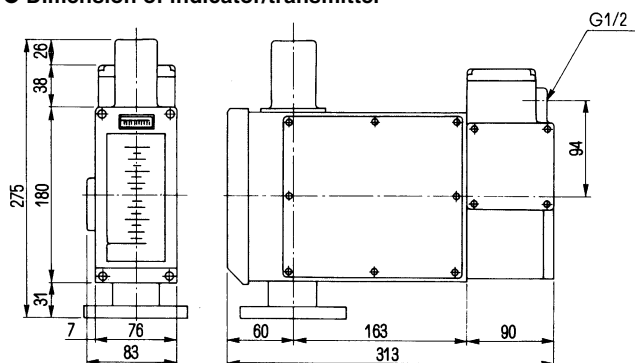
**AM-1690** indicates flow rate by pointer and scale plate and total flow by 6 digit mechanical counter locally. In addition, scaled pulse output is provided for remote totalization function. Watertight and flame proof construction is available.

### ● Specification of transmitter

|                      |                                                                                                                                                                       |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Integration          | : 6 digit with reset                                                                                                                                                  |
| Count rate           | : 50~2000c/h                                                                                                                                                          |
| Pulse output         | : Open collector output<br>Pulse width 100ms, Rating DC35V, 50mA<br>(Signal circuit and power supply circuit are isolated.)                                           |
| Integration accuracy | : $\pm 2.0\%$ F.S.                                                                                                                                                    |
| Power supply         | : AC100V, 50/60Hz as standard. AC110V, 50/60Hz is also available on your request except flame proof version.<br>A separate transformer is required for other voltage. |
| Power consumption    | : Max. 5VA                                                                                                                                                            |
| Cable entry :        |                                                                                                                                                                       |
| Standard             | : G1/2 with female screw<br>Cable gland with flameproof gasket available on request                                                                                   |
| On request           | : NPT1/2                                                                                                                                                              |
| Enclosure            | : Weather proof (Equ. to IP54)<br>type AM-169□<br>Flame proof (JISd2G4)<br>type EP-AM-169□                                                                            |
| Ambient temp         | : -20~80°C for type AM-169□<br>-10~60°C for type EP-AM-169□<br>Provide heat insulation if required                                                                    |



### ● Dimension of indicator/transmitter



AM-169, EP-AM-169□

Fig. 5

### ● Wiring diagram

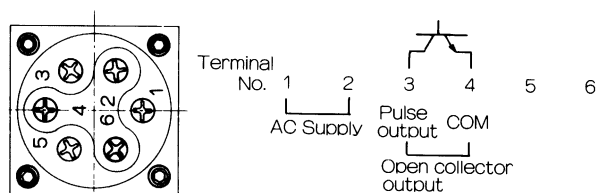


Fig. 6

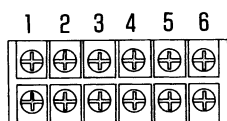
## ■ AM-1740 SERIES LOCAL INDICATOR WITH ALARM

**AM-1740** indicates flow rate by pointer and outputs SPDT contact at set point for flow alarm. Watertight, flame proof and intrinsically safe versions are available.

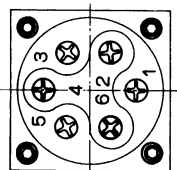
### ● Specification of transmitter

- Alarm point : 1 point high alarm or  
1 point low alarm or  
2 points high and low
- Switch : Micro switch SPDT
- Rating :
  - Standard : AC 125/250V, 5A
  - On request : DC 30V, 0.1A
- Reset span : Weather proof and Intrinsically safe within 20% (F.S.)  
Flame proof EP-AM-174□ within 30% (F.S.)
- Cable entry :
  - Standard : G1/2 with female screw  
Conduit connection is standard. Packing type cable gland is also available.
  - On request : NPT 1/2
- Enclosure : Weather proof (Equ. to IP54) type AM-174□  
Flame proof (JISd2G4) type EP-AM 174□  
Intrinsically safe (ExialICT6) type IS-AM-174□\*  
\* Supplied with safety barrier
- Ambient temp : -25~80°C for type AM-174□  
-10~60°C for type EP-AM-174□  
IS-AM-174□  
Provide heat insulation if required

### ● Wiring diagram



AM-174□ and IS-AM-174□



EP-AM-174□

Terminal No. 1 2 3 4 5 6  
COM. NC. NO. COM. NC. NO.  
High alarm Low alarm

\* Terminals 4, 5, 6 (1, 2, 3) are not used in case of one point alarm of high (Low).

Fig. 9

### ● Safety Relay

• 1 point

• 2 points

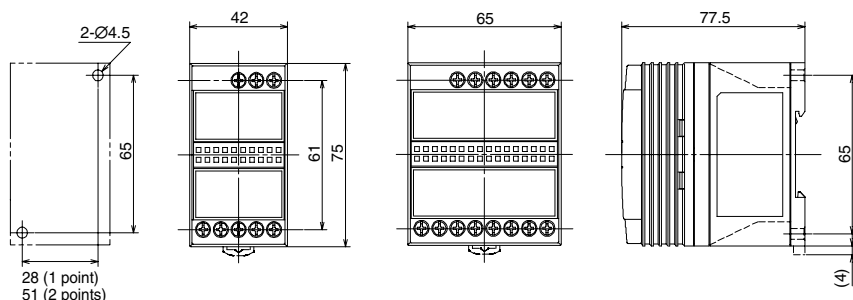
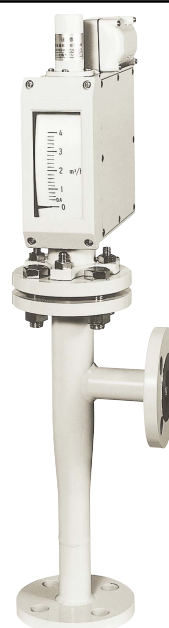
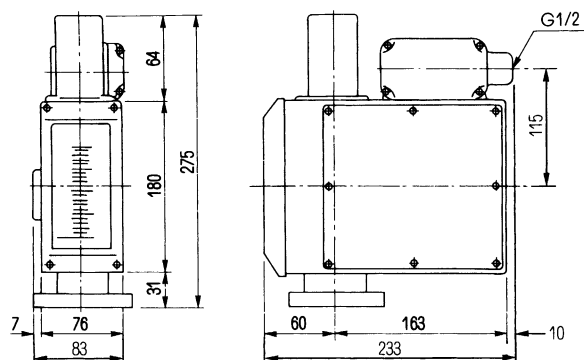


Fig. 10

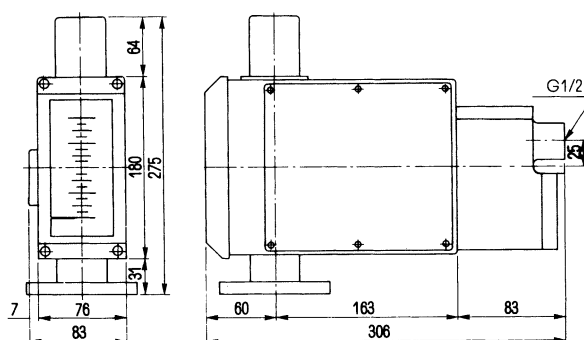
Another brand safety relay also available.



### ● Dimension of indicator / transmitter



AM-174□ and IS-AM-174□  
Fig. 7



EP-AM-174□  
Fig. 8

## ■ ADDITIONAL FUNCTIONS

### ● Liquid damper (Type AM-1□□□-D)

A damper is to be provided for steam and gas applications to prevent vibration of float. A damper pot is provided at the bottom of tube part in which damper liquid (silicon or diflon oil) is contained. The friction between damper liquid and damper makes the float movement smooth for stable indication and durability of moving part. Damper is also recommended for liquid application with heavy pulsation. Available types are AM-1□□3 (bottom side-top side), AM-1□□6 (left-right) and AM-1□□7 (right-left). (Refer to Fig. 11)

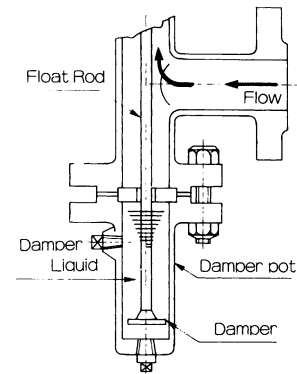


Fig. 11

### ● Cooling fin (Type AM-1□□□-F)

A cooling fin is to be provided between tube part and indicator housing to release fluid heat in case fluid temperature is more than 150°C. Cooling fin is available for models AM-1□□2 (bottom-top side), AM-1□□3 (bottom side-top side), AM-1□□6 (left-right) and AM-1□□7 (right-left), (Refer to Fig. 12)

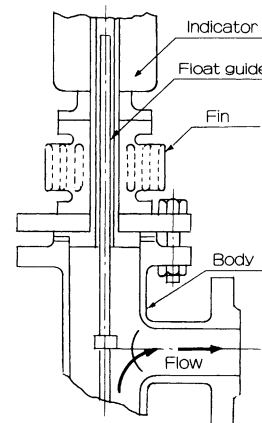


Fig. 12

### ● Gas damper (Type AM-1□□□-DU)

Gas damper is available for gas measurement application which does not require damper liquids. (Gas dampers are available for metallic flowmeters only.)

Mechanical damper is integrated at the part of float guide which consists of piston and cylinder. (Fig. 13) As it is not required to install liquid damper at the bottom of flowmeters, it contributes to increase the flexibility of piping design. Also it is not required to fill damper liquid that saves maintenance labour works.

Gas damper is applicable for gas measurement applications and not suitable for liquids and steam. Also chlorine gas (easy to form chemical compound) and gas containing rust, trash and oil may hinder the function of piston part. Consult factory for details. Available size is 20mm to 100mm (Not available for 15mm) and Only for metallic material (Not for lined material).

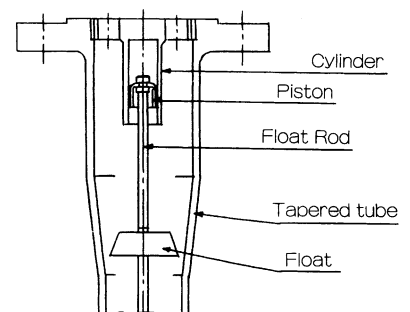


Fig. 13

### ● Steam jacket (Type AM-1□□□-JS; Semi jacket AM-1□□□-JF; Full jacket)

Heating jacket is available for the application of high viscosity and/or sticky fluids. Semi jacket covers tube part only and full jacket covers flanges as well. Steam inlet/outlet is screw connection (Rc or NPT).

Heating jacket is available for AM-1□□1 (bottom-top) and AM-1□□2 (bottom-top side). Only 150 lbs rating is available for full jacketed flowmeters (AM-1□□□-JF).

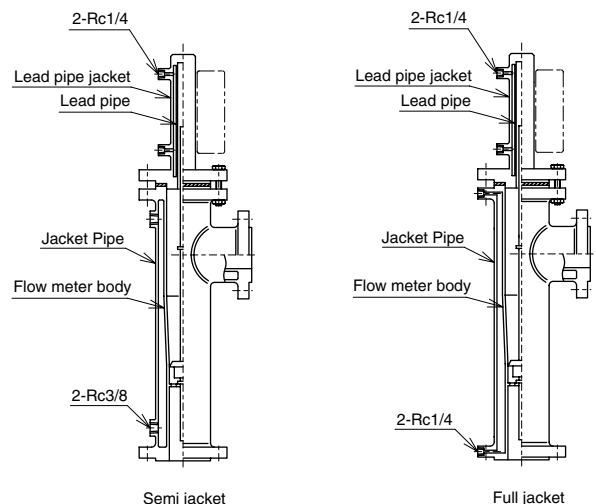


Fig. 14

## ■ DIMENSIONS, MATERIAL, PRESS. DROP, FLOW RATE TABLE

### [METALLIC MATERIAL]

#### ● Type AM-1□□□1 (Flow direction: Bottom-Top) For liquids

##### Type AM-1□□□1-LB (Bottom-Top, Long body design)

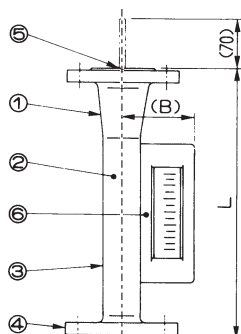


Fig. 15

\*1 Float rod comes out 70mm during operation in meter size 20mm~150mm. In case of AM-1□□□1-LB (Bottom-Top, Long body design) this coming out is avoided by extending the tube length. The extension length of body (L dimension) is 130mm for 10K (150lbs) version. Consult factory for length of 20K (300lbs) version.

■ Table 1

| Meter size<br>(mm) (inch) | Q <sub>water</sub><br>(m <sup>3</sup> /h) | Pressure<br>Loss<br>(kPa) | 10K Class AM-1□□□□      |             |              | 20K Class AM-1□□□□-M |             |              |
|---------------------------|-------------------------------------------|---------------------------|-------------------------|-------------|--------------|----------------------|-------------|--------------|
|                           |                                           |                           | L <sup>*1</sup><br>(mm) | (B)<br>(mm) | Mass<br>(kg) | L<br>(mm)            | (B)<br>(mm) | Mass<br>(kg) |
| 15                        | 1/2                                       | 0.1 to 0.75 (0.7)         | 350                     | 89          | 5            | 350                  | 89          | 5            |
| 20                        | 3/4                                       | 1.5 (1.5)                 | 350                     | 89          | 5            | 400                  | 89          | 6            |
| 25                        | 1                                         | 4.06 (3.8)                | 350                     | 92          | 6            | 400                  | 92          | 7            |
| 40                        | 1-1/2                                     | 7.15 (7.15)               | 400                     | 99          | 8            | 400                  | 99          | 9            |
| 50                        | 2                                         | 15.1 (15.1)               | 400                     | 105         | 10           | 450                  | 105         | 12           |
| 65                        | 2-1/2                                     | 27.5 (26.5)               | 450                     | 113         | 13           | 500                  | 113         | 18           |
| 80                        | 3                                         | 40.5 (39.5)               | 450                     | 120         | 15           | 500                  | 120         | 20           |
| 100                       | 4                                         | 71.9 (67.5)               | 450                     | 132         | 20           | 500                  | 132         | 28           |
| 125                       | 5                                         | 110 ( - )                 | 500                     | 145         | 32           | -                    | -           | -            |
| 150                       | 6                                         | 150 ( - )                 | 500                     | 158         | 50           | -                    | -           | -            |

Figures in ( ) are those of 20K class.

■ Table 2

| No. | Description  | Class 1 | Class 2 | Class 3 | Class 4 |
|-----|--------------|---------|---------|---------|---------|
| 1   | Tapered tube | SUS304  | SUS304  | SUS316  | SUS316L |
| 2   | Float ass'y  | SUS304  | SUS304  | SUS316  | SUS316L |
| 3   | Lower body   | SUS304  | SUS304  | SUS316  | SUS316L |
| 4   | Flange       | SS400   | SUS304  | SUS316  | SUS316L |
| 5   | Float guide  | SUS304  | SUS304  | SUS316  | SUS316L |
| 6   | Indicator    | ADC12   | ADC12   | ADC12   | ADC12   |

Other special metallic material available on request.

#### ● Type AM-1□□□1-DU (Flow direction : Bottom-Top with damper) For gases

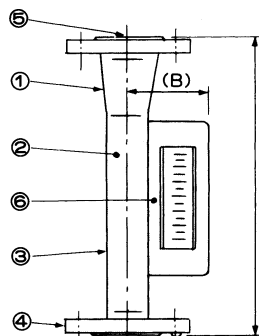


Fig. 16

■ Table 3

| Meter size<br>(mm) (inch) | Q <sub>air</sub><br>(m <sup>3</sup> /h (nor)) | Pressure<br>Loss<br>(kPa) | Size (mm) |     | Mass (kg)<br>JIS 10K |
|---------------------------|-----------------------------------------------|---------------------------|-----------|-----|----------------------|
|                           |                                               |                           | L         | (B) |                      |
| 20                        | 3/4                                           | 16 to 50                  | 500       | 89  | 5                    |
| 25                        | 1                                             | 120                       | 500       | 92  | 6                    |
| 40                        | 1-1/2                                         | 210                       | 500       | 99  | 8                    |
| 50                        | 2                                             | 420                       | 500       | 105 | 10                   |
| 65                        | 2-1/2                                         | 820                       | 600       | 113 | 13                   |
| 80                        | 3                                             | 1200                      | 600       | 120 | 15                   |
| 100                       | 4                                             | 2050                      | 600       | 132 | 20                   |

■ Table 4

| No. | Description  | Class 1 | Class 2 | Class 3 | Class 4 |
|-----|--------------|---------|---------|---------|---------|
| 1   | Tapered tube | SUS304  | SUS304  | SUS316  | SUS316L |
| 2   | Float ass'y  | SUS304  | SUS304  | SUS316  | SUS316L |
| 3   | Lower body   | SUS304  | SUS304  | SUS316  | SUS316L |
| 4   | Flange       | SS400   | SUS304  | SUS316  | SUS316L |
| 5   | Float guide  | SUS304  | SUS304  | SUS316  | SUS316L |
| 6   | Indicator    | ADC12   | ADC12   | ADC12   | ADC12   |

Other special metallic material available on request.

#### ● Type AM-1□□□2 (Flow direction : Bottom-Top side) For liquids

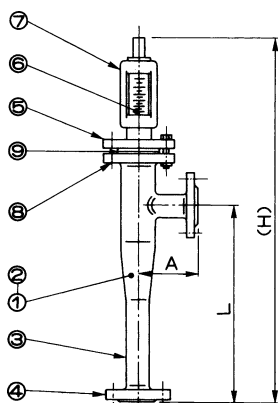


Fig. 17

■ Table 5

| Meter size<br>(mm) (inch) | Q <sub>water</sub><br>(m <sup>3</sup> /h) | Pressure<br>Loss<br>(kPa) | 10K Class AM-1□□□□ |           |           |              | 20K Class AM-1□□□□-M |           |           |              |
|---------------------------|-------------------------------------------|---------------------------|--------------------|-----------|-----------|--------------|----------------------|-----------|-----------|--------------|
|                           |                                           |                           | (H)<br>(mm)        | L<br>(mm) | A<br>(mm) | Mass<br>(kg) | (H)<br>(mm)          | L<br>(mm) | A<br>(mm) | Mass<br>(kg) |
| 15                        | 1/2                                       | 0.1 to 0.69 (0.69)        | 650                | 250       | 100       | 8            | 650                  | 250       | 100       | 10           |
| 20                        | 3/4                                       | 1.6 (1.6)                 | 650                | 250       | 100       | 8            | 660                  | 250       | 100       | 10           |
| 25                        | 1                                         | 4.19 (3.6)                | 650                | 250       | 100       | 10           | 670                  | 250       | 100       | 12           |
| 40                        | 1-1/2                                     | 7.73 (5.9)                | 670                | 250       | 100       | 12           | 680                  | 250       | 100       | 15           |
| 50                        | 2                                         | 15.1 (12.4)               | 680                | 250       | 100       | 15           | 720                  | 250       | 100       | 20           |
| 65                        | 2-1/2                                     | 29.3 (25.0)               | 780                | 350       | 150       | 22           | 810                  | 350       | 150       | 28           |
| 80                        | 3                                         | 40.8 (34.3)               | 820                | 350       | 150       | 25           | 840*1                | 350       | 180       | 35           |
| 100                       | 4                                         | 70.8 (55.0)               | 840*1              | 350       | 150       | 43           | 880*1                | 350       | 180       | 55           |
| 125                       | 5                                         | 110 ( - )                 | 860*1              | 370       | 250       | 55           | -                    | -         | -         | -            |
| 150                       | 6                                         | 150 ( - )                 | 970*1              | 480       | 250       | 75           | -                    | -         | -         | -            |

Figures in ( ) are those of 20K class.

■ Table 6

| No. | Description  | Class 1               | Class 2               | Class 3               | Class 4               |
|-----|--------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1   | Tapered tube | SUS304                | SUS304                | SUS316                | SUS316L               |
| 2   | Float ass'y  | SUS304                | SUS304                | SUS316                | SUS316L               |
| 3   | Body         | SGP*2                 | SUS304                | SUS316                | SUS316L               |
| 4   | Flange       | SS400                 | SUS304                | SUS316                | SUS316L               |
| 5   | Upper flange | SS400                 | SS400                 | SS400                 | SS400                 |
| 6   | Lead pipe    | SUS304                | SUS304                | SUS316                | SUS316L               |
| 7   | Indicator    | ADC12                 | ADC12                 | ADC12                 | ADC12                 |
| 8   | Bolt&nut     | SS400                 | SS400                 | SS400                 | SS400                 |
| 9   | Gasket       | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE |

"H" dimension will be extended by 130mm if a cooling fin is provided

\*1 "H" dimension will be extended by 30mm with pneumatic transmitter without fin.

\*2 STPG 370 for Medium press. 300 lbs (20K) class.

Other special metallic material available on request.

● Type AM-1□□2-DU (Flow direction : Bottom-Top side, with damper) For gases

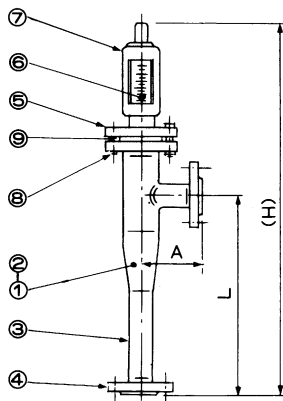


Fig. 18

■ Table 7

| Meter size<br>(mm) (inch) | Qair<br>m³/h(nor) | Pressure<br>Loss<br>(kPa) | Size(mm) |     |     | Mass (kg)<br>JIS 10K |
|---------------------------|-------------------|---------------------------|----------|-----|-----|----------------------|
|                           |                   |                           | (H)      | L   | A   |                      |
| 15 1/2                    | 2.92 to 17.1      | 2.8                       | 690      | 250 | 100 | 8                    |
| 20 3/4                    | 39.3              | 4.0                       | 690      | 250 | 100 | 8                    |
| 25 1                      | 77.7              | 2.7                       | 690      | 250 | 100 | 10                   |
| 40 1-1/2                  | 129.9             | 2.9                       | 690      | 250 | 100 | 12                   |
| 50 2                      | 254.7             | 3.4                       | 700      | 250 | 100 | 15                   |
| 65 2-1/2                  | 440.8             | 2.6                       | 800      | 350 | 150 | 22                   |
| 80 3                      | 630.6             | 4.0                       | 820      | 350 | 150 | 25                   |
| 100 4                     | 1233.8            | 5.5                       | 860*1    | 350 | 150 | 43                   |

■ Table 8

| No. | Description  | Class 1               | Class 2               | Class 3               | Class 4               |
|-----|--------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1   | Tapered tube | SUS304                | SUS304                | SUS316                | SUS316L               |
| 2   | Float ass'y  | SUS304                | SUS304                | SUS316                | SUS316L               |
| 3   | Body         | SGP*2                 | SUS304                | SUS316                | SUS316L               |
| 4   | Flange       | SS400                 | SUS304                | SUS316                | SUS316L               |
| 5   | Upper flange | SS400                 | SS400                 | SS400                 | SS400                 |
| 6   | Lead pipe    | SUS304                | SUS304                | SUS316                | SUS316L               |
| 7   | Indicator    | ADC12                 | ADC12                 | ADC12                 | ADC12                 |
| 8   | Bolt&nut     | SS400                 | SS400                 | SS400                 | SS400                 |
| 9   | Gasket       | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE |

\*1 "H" dimension will be extended by 30mm with pneumatic transmitter without fin.

\*2 STPG 370 for Medium press. 300 lbs (20K) class.

Other special metallic material available on request.

● Type AM-1□□3 (Flow direction : Bottom side-Top side) For liquids

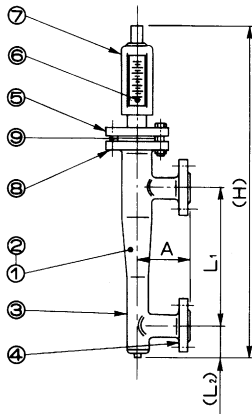


Fig. 19

● Table 9

| Meter size<br>(mm) (inch) | Qwater<br>(m³/h)   | Pressure<br>Loss<br>(kPa) | 10K Class AM-1□□□□□ |            |            |           |              | 20K Class AM-1□□□□□-M |            |            |           |              |
|---------------------------|--------------------|---------------------------|---------------------|------------|------------|-----------|--------------|-----------------------|------------|------------|-----------|--------------|
|                           |                    |                           | (H)<br>(mm)         | L1<br>(mm) | L2<br>(mm) | A<br>(mm) | Mass<br>(kg) | (H)<br>(mm)           | L1<br>(mm) | L2<br>(mm) | A<br>(mm) | Mass<br>(kg) |
| 15 1/2                    | 0.1 to 0.69 (0.69) | 8.5                       | 690                 | 250        | 40         | 100       | 8            | 690                   | 250        | 40         | 100       | 10           |
| 20 3/4                    | 1.6 (1.6)          | 9.1                       | 690                 | 250        | 40         | 100       | 8            | 700                   | 250        | 40         | 100       | 10           |
| 25 1                      | 4.19 (3.6)         | 6.0                       | 690                 | 250        | 45         | 100       | 10           | 720                   | 250        | 50         | 100       | 12           |
| 40 1-1/2                  | 7.73 (5.9)         | 5.0                       | 720                 | 250        | 55         | 100       | 12           | 740                   | 250        | 60         | 100       | 16           |
| 50 2                      | 15.1 (12.4)        | 8.0                       | 740                 | 250        | 65         | 100       | 16           | 790                   | 250        | 70         | 100       | 21           |
| 65 2-1/2                  | 29.3 (25.0)        | 6.5                       | 860                 | 350        | 75         | 150       | 23           | 900                   | 350        | 90         | 150       | 30           |
| 80 3                      | 40.8 (34.3)        | 12.7                      | 910                 | 350        | 90         | 150       | 26           | 950*1                 | 350        | 110        | 180       | 37           |
| 100 4                     | 70.8 (55.0)        | 13.6                      | 940*1               | 350        | 100        | 150       | 44           | 1000*1                | 350        | 120        | 180       | 58           |
| 125 5                     | 110 ( - )          | 16.0                      | 980*1               | 370        | 120        | 250       | 57           | -                     | -          | -          | -         | -            |
| 150 6                     | 150 ( - )          | 21.0                      | 1110*1              | 480        | 140        | 250       | 77           | -                     | -          | -          | -         | -            |

Figures in ( ) are those of 20K class.

● Table 10

| No. | Description  | Class 1               | Class 2               | Class 3               | Class 4               |
|-----|--------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1   | Tapered tube | SUS304                | SUS304                | SUS316                | SUS316L               |
| 2   | Float ass'y  | SUS304                | SUS304                | SUS316                | SUS316L               |
| 3   | Body         | SGP*2                 | SUS304                | SUS316                | SUS316L               |
| 4   | Flange       | SS400                 | SUS304                | SUS316                | SUS316L               |
| 5   | Upper flange | SS400                 | SS400                 | SS400                 | SS400                 |
| 6   | Lead pipe    | SUS304                | SUS304                | SUS316                | SUS316L               |
| 7   | Indicator    | ADC12                 | ADC12                 | ADC12                 | ADC12                 |
| 8   | Bolt&nut     | SS400                 | SS400                 | SS400                 | SS400                 |
| 9   | Gasket       | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE |

"H" dimension will be extended by 130mm if a cooling fin is provided

\*1 "H" dimension will be extended by 30mm with pneumatic transmitter without fin.

\*2 STPG 370 for Medium press. 300 lbs (20K) class.

Other special metallic material available on request.

● Type AM-1□□3-DU (Flow direction : Bottom side-Top side, with damper) For gases

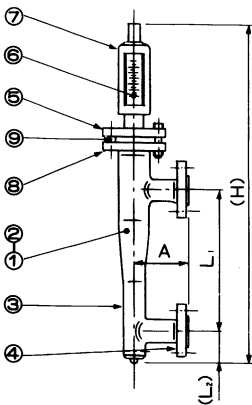


Fig. 20

● Table 11

| Meter size<br>(mm) (inch) | Qair<br>m³/h(nor) | Pressure<br>Loss<br>(kPa) | Size(mm) |     |      |     | Mass (kg)<br>JIS 10K |
|---------------------------|-------------------|---------------------------|----------|-----|------|-----|----------------------|
|                           |                   |                           | (H)      | L   | (L2) | A   |                      |
| 15 1/2                    | 2.92 to 17.1      | 2.8                       | 730      | 250 | 40   | 100 | 8                    |
| 20 3/4                    | 39.3              | 4.0                       | 730      | 250 | 40   | 100 | 8                    |
| 25 1                      | 77.7              | 2.7                       | 730      | 250 | 45   | 100 | 10                   |
| 40 1-1/2                  | 129.9             | 2.9                       | 730      | 250 | 55   | 100 | 12                   |
| 50 2                      | 254.7             | 3.4                       | 760      | 250 | 65   | 100 | 15                   |
| 65 2-1/2                  | 440.8             | 2.6                       | 880      | 350 | 75   | 150 | 22                   |
| 80 3                      | 630.6             | 4.0                       | 910      | 350 | 90   | 150 | 25                   |
| 100 4                     | 1233.8            | 5.5                       | 960*1    | 350 | 100  | 150 | 43                   |

● Table 12

| No. | Description  | Class 1               | Class 2               | Class 3               | Class 4               |
|-----|--------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1   | Tapered tube | SUS304                | SUS304                | SUS316                | SUS316L               |
| 2   | Float ass'y  | SUS304                | SUS304                | SUS316                | SUS316L               |
| 3   | Body         | SGP*2                 | SUS304                | SUS316                | SUS316L               |
| 4   | Flange       | SS400                 | SUS304                | SUS316                | SUS316L               |
| 5   | Upper flange | SS400                 | SS400                 | SS400                 | SS400                 |
| 6   | Lead pipe    | SUS304                | SUS304                | SUS316                | SUS316L               |
| 7   | Indicator    | ADC12                 | ADC12                 | ADC12                 | ADC12                 |
| 8   | Bolt&nut     | SS400                 | SS400                 | SS400                 | SS400                 |
| 9   | Gasket       | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE |

\*1 "H" dimension will be extended by 30mm with pneumatic transmitter without fin.

\*2 STPG 370 for Medium press. 300 lbs (20K) class.

Other special metallic material available on request.

● Type AM-1□□3-D For gases and steam  
(Flow direction : Bottom side-Top side,  
with damper)

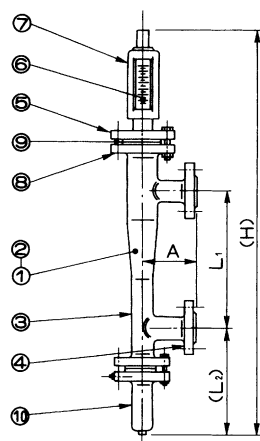


Fig. 21

● Type AM-1□□6, AM-1□□7  
(Flow direction : Left-Right, Right-Left)  
For liquids

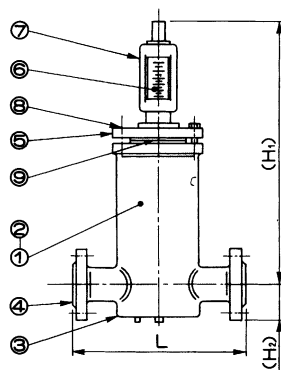


Fig. 22

● Type AM-1□□6-D, AM-1□□7-D  
(Flow direction : Left-Right, Right-Left,  
with damper) For gases and steam

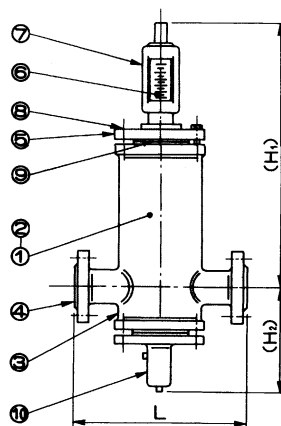


Fig. 23

■ Table 13

| Meter size<br>(mm) (inch) | Q               |                    | Pressure<br>Loss<br>(kPa) | 10K Class AM-1□□□□ |            |            |           |              | 20K Class AM-1□□□□-M |            |            |           |              |
|---------------------------|-----------------|--------------------|---------------------------|--------------------|------------|------------|-----------|--------------|----------------------|------------|------------|-----------|--------------|
|                           | Water<br>(m³/h) | Air<br>(m³/h)(nor) |                           | (H)<br>(mm)        | L1<br>(mm) | L2<br>(mm) | A<br>(mm) | Mass<br>(kg) | (H)<br>(mm)          | L1<br>(mm) | L2<br>(mm) | A<br>(mm) | Mass<br>(kg) |
| 15                        | 1/2             | 0.1 to 0.69 (0.69) | 10.0                      | 800                | 220        | 190        | 100       | 11           | 830                  | 220        | 210        | 100       | 13           |
| 20                        | 3/4             | 1.6 (1.6)          | 12.2                      | 810                | 220        | 190        | 100       | 11           | 850                  | 220        | 220        | 100       | 13           |
| 25                        | 1               | 4.19 (3.6)         | 17.7                      | 830                | 220        | 210        | 100       | 14           | 880                  | 220        | 240        | 100       | 17           |
| 40                        | 1-1/2           | 7.73 (5.9)         | 11.0                      | 860                | 220        | 220        | 100       | 18           | 930                  | 220        | 280        | 100       | 22           |
| 50                        | 2               | 15.1 (12.4)        | 15.8                      | 960                | 220        | 310        | 100       | 21           | 1050                 | 220        | 370        | 100       | 28           |
| 65                        | 2-1/2           | 29.3 (25.0)        | 19.5                      | 1080               | 350        | 300        | 150       | 29           | 1180                 | 350        | 370        | 150       | 38           |
| 80                        | 3               | 40.8 (34.3)        | 18.0                      | 1130               | 350        | 310        | 150       | 35           | 1220*1               | 350        | 380        | 180       | 46           |
| 100                       | 4               | 70.8 (55.0)        | 19.5                      | 1160*1             | 350        | 320        | 150       | 53           | 1280*1               | 350        | 400        | 180       | 70           |
| 125                       | 5               | 110 (-)            | 22.0                      | 1220*1             | 370        | 360        | 250       | 68           | -                    | -          | -          | -         | -            |
| 150                       | 6               | 150 (-)            | 27.0                      | 1330*1             | 480        | 360        | 250       | 90           | -                    | -          | -          | -         | -            |

Figures in ( ) are those of 20K class.

■ Table 14

| No. | Description  | Class 1               | Class 2               | Class 3               | Class 4               |
|-----|--------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1   | Tapered tube | SUS304                | SUS304                | SUS316                | SUS316L               |
| 2   | Float ass'y  | SUS304                | SUS304                | SUS316                | SUS316L               |
| 3   | Body         | SGP*2                 | SUS304                | SUS316                | SUS316L               |
| 4   | Flange       | SS400                 | SUS304                | SUS316                | SUS316L               |
| 5   | Upper flange | SS400                 | SS400                 | SS400                 | SS400                 |
| 6   | Lead pipe    | SUS304                | SUS304                | SUS316                | SUS316L               |
| 7   | Indicator    | ADC12                 | ADC12                 | ADC12                 | ADC12                 |
| 8   | Bolt&nut     | SS400                 | SS400                 | SS400                 | SS400                 |
| 9   | Gasket       | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE |
| 10  | Damper       | SUS304                | SUS304                | SUS316                | SUS316L               |

"H" dimension will be extended by 130mm if a cooling fin is provided

\*1 "H" dimension will be extended by 30mm with pneumatic transmitter without fin.

\*2 STPG 370 for Medium press. 300 lbs (20K) class.

Other special metallic material available on request.

■ Table 15

| Meter size<br>(mm) (inch) |       | Qwater<br>(m³/h) | Pressure<br>Loss<br>(kPa) | 10K Class AM-1□□□□ |              |           |              | 20K Class AM-1□□□□-M |              |           |              |
|---------------------------|-------|------------------|---------------------------|--------------------|--------------|-----------|--------------|----------------------|--------------|-----------|--------------|
|                           |       |                  |                           | (H1)<br>(mm)       | (H2)<br>(mm) | L<br>(mm) | Mass<br>(kg) | (H1)<br>(mm)         | (H2)<br>(mm) | L<br>(mm) | Mass<br>(kg) |
| 15                        | 1/2   | 0.1 to 0.6       | 11.0                      | 440                | 80           | 160       | 12           | 440                  | 100          | 160       | 14           |
| 20                        | 3/4   | 1.4              | 12.0                      | 470                | 70           | 160       | 12           | 500                  | 120          | 160       | 14           |
| 25                        | 1     | 3.1              | 10.0                      | 480                | 90           | 180       | 15           | 500                  | 120          | 180       | 17           |
| 40                        | 1-1/2 | 6.1              | 15.0                      | 510                | 80           | 240       | 18           | 520*1                | 120          | 240       | 21           |
| 50                        | 2     | 14               | 11.5                      | 540                | 80           | 260       | 24           | 550*1                | 100          | 260       | 28           |
| 65                        | 2-1/2 | 24               | 10.0                      | 570                | 80           | 340       | 35           | 580*1                | 100          | 340       | 42           |
| 80                        | 3     | 35               | 16.0                      | 610                | 80           | 360       | 40           | 620*1                | 110          | 360       | 50           |
| 100                       | 4     | 60               | 18.0                      | 650*1              | 90           | 360       | 60           | 660*1                | 130          | 360       | 75           |
| 125                       | 5     | 90               | 20.0                      | 670*1              | 110          | 440       | 90           | —                    | —            | —         | —            |
| 150                       | 6     | 155              | 25.0                      | 720*1              | 130          | 440       | 110          | —                    | —            | —         | —            |

■ Table 16

| No. | Description  | Class 1               | Class 2               | Class 3               | Class 4               |
|-----|--------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1   | Tapered tube | SUS304                | SUS304                | SUS316                | SUS316L               |
| 2   | Float ass'y  | SUS304                | SUS304                | SUS316                | SUS316L               |
| 3   | Body         | SGP*2                 | SUS304                | SUS316                | SUS316L               |
| 4   | Flange       | SS400                 | SUS304                | SUS316                | SUS316L               |
| 5   | Upper flange | SS400                 | SS400                 | SS400                 | SS400                 |
| 6   | Lead pipe    | SUS304                | SUS304                | SUS316                | SUS316L               |
| 7   | Indicator    | ADC12                 | ADC12                 | ADC12                 | ADC12                 |
| 8   | Bolt&nut     | SS400                 | SS400                 | SS400                 | SS400                 |
| 9   | Gasket       | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE |

"H" dimension will be extended by 130mm if a cooling fin is provided

\*1 "H" dimension will be extended by 30mm with pneumatic transmitter without fin.

\*2 STPG 370 for Medium press. 300 lbs (20K) class.

Other special metallic material available on request.

■ Table 17

| Meter size<br>(mm) (inch) | Q               |                    | Pressure<br>Loss<br>(kPa) | 10K Class AM-1□□□□ |              |           |              | 20K Class AM-1□□□□-M |              |           |              |
|---------------------------|-----------------|--------------------|---------------------------|--------------------|--------------|-----------|--------------|----------------------|--------------|-----------|--------------|
|                           | Water<br>(m³/h) | Air<br>(m³/h)(nor) |                           | (H1)<br>(mm)       | (H2)<br>(mm) | L<br>(mm) | Mass<br>(kg) | (H1)<br>(mm)         | (H2)<br>(mm) | L<br>(mm) | Mass<br>(kg) |
| 15                        | 1/2             | 0.1 to 0.7         | 12.0                      | 440                | 200          | 160       | 15           | 440                  | 210          | 160       | 17           |
| 20                        | 3/4             | 1.6                | 14.8                      | 470                | 200          | 160       | 15           | 500                  | 210          | 160       | 17           |
| 25                        | 1               | 3.5                | 21.0                      | 480                | 210          | 180       | 19           | 500                  | 230          | 180       | 22           |
| 40                        | 1-1/2           | 6.5                | 15.5                      | 510                | 200          | 240       | 24           | 520*1                | 240          | 240       | 28           |
| 50                        | 2               | 13                 | 19.0                      | 540                | 270          | 260       | 30           | 550*1                | 290          | 260       | 36           |
| 65                        | 2-1/2           | 25                 | 22.1                      | 570                | 280          | 340       | 42           | 580*1                | 320          | 340       | 52           |
| 80                        | 3               | 35                 | 21.0                      | 610                | 290          | 360       | 50           | 620*1                | 330          | 360       | 62           |
| 100                       | 4               | 60                 | 24.0                      | 650*1              | 300          | 360       | 70           | 660*1                | 340          | 360       | 90           |
| 125                       | 5               | 90                 | 26.0                      | 670*1              | 320          | 440       | 105          | -                    | -            | -         | -            |
| 150                       | 6               | 155                | 31.5                      | 720*1              | 340          | 440       | 125          | -                    | -            | -         | -            |

■ Table 18

| No. | Description  | Class 1               | Class 2               | Class 3               | Class 4               |
|-----|--------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1   | Tapered tube | SUS304                | SUS304                | SUS316                | SUS316L               |
| 2   | Float ass'y  | SUS304                | SUS304                | SUS316                | SUS316L               |
| 3   | Body         | SGP*2                 | SUS304                | SUS316                | SUS316L               |
| 4   | Flange       | SS400                 | SUS304                | SUS316                | SUS316L               |
| 5   | Upper flange | SS400                 | SS400                 | SS400                 | SS400                 |
| 6   | Lead pipe    | SUS304                | SUS304                | SUS316                | SUS316L               |
| 7   | Indicator    | ADC12                 | ADC12                 | ADC12                 | ADC12                 |
| 8   | Bolt&nut     | SS400                 | SS400                 | SS400                 | SS400                 |
| 9   | Gasket       | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE |
| 10  | Damper       | SUS304                | SUS304                | SUS316                | SUS316L               |

"H" dimension will be extended by 130mm if a cooling fin is provided

\*1 "H" dimension will be extended by 30mm with pneumatic transmitter without fin.

\*2 STPG 370 for Medium press. 300 lbs (20K) class.

Other special metallic material available on request.

● Type AM-1□□1-JS, AM-1□□1-JF For liquids  
(Flow direction : Bottom-Top, with heating Jacket)

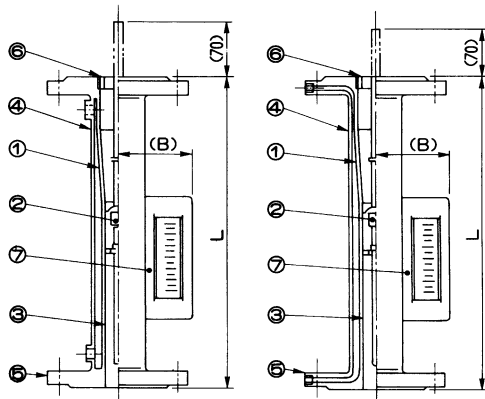


Fig. 24

Fig. 25

NB) Float rod comes out by 70mm during operation in meter sizes 20mm~100mm

■ Table 19

| Meter size<br>(mm) (inch) | Qwater<br>(m³/h) | Pressure<br>Loss<br>(kPa) | 10K Class AM-1□□□□ |             |              | 20K Class AM-1□□□□-M |             |              |
|---------------------------|------------------|---------------------------|--------------------|-------------|--------------|----------------------|-------------|--------------|
|                           |                  |                           | L<br>(mm)          | (B)<br>(mm) | Mass<br>(kg) | L<br>(mm)            | (B)<br>(mm) | Mass<br>(kg) |
| 15 1/2                    | 0.1 to 0.7       | 6.5                       | 350                | 93          | 6            | 350                  | 93          | 6            |
| 20 3/4                    | 1.5              | 6.0                       | 400                | 93          | 6            | 400                  | 93          | 7            |
| 25 1                      | 3.8              | 7.3                       | 400                | 96          | 7            | 400                  | 96          | 8            |
| 40 1-1/2                  | 7.15             | 9.0                       | 400                | 103         | 10           | 400                  | 103         | 11           |
| 50 2                      | 15.1             | 6.3                       | 450                | 113         | 12           | 450                  | 113         | 14           |
| 65 2-1/2                  | 26.5             | 7.8                       | 500                | 120         | 16           | 500                  | 120         | 21           |
| 80 3                      | 39.5             | 9.1                       | 500                | 126         | 18           | 500                  | 126         | 23           |
| 100 4                     | 67.5             | 12.0                      | 500                | 145         | 25           | 500                  | 145         | 33           |
| 125 5                     | 110              | 14.0                      | 500                | 158         | 38           | —                    | —           | —            |
| 150 6                     | 150              | 18.0                      | 500                | 171         | 60           | —                    | —           | —            |

■ Table 20

| No. | Description  | Class 1 | Class 2 | Class 3 | Class 4 |
|-----|--------------|---------|---------|---------|---------|
| 1   | Tapered tube | SUS304  | SUS304  | SUS316  | SUS316L |
| 2   | Float ass'y  | SUS304  | SUS304  | SUS316  | SUS316L |
| 3   | Body         | SUS304  | SUS304  | SUS316  | SUS316L |
| 4   | Jacket pipe  | SUS304  | SUS304  | SUS304  | SUS304  |
| 5   | Flange       | SS400   | SUS304  | SUS316  | SUS316L |
| 6   | Float guide  | SUS304  | SUS304  | SUS316  | SUS316L |
| 7   | Indicator    | ADC12   | ADC12   | ADC12   | ADC12   |

Other special metallic material available on request.

● Type AM-1□□2-JS, AM-1□□2-JF For liquids  
(Flow direction : Bottom-Top side, with heating Jacket)

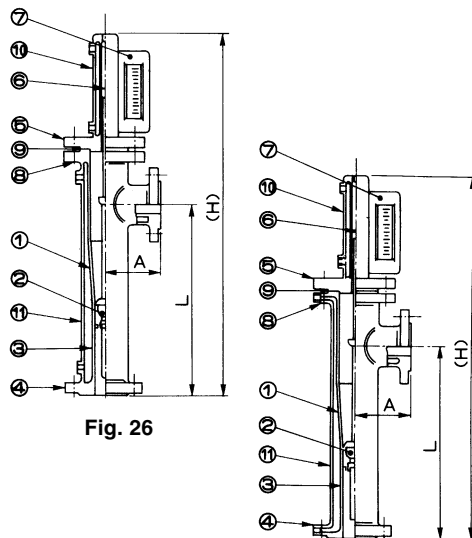


Fig. 26

Fig. 27

■ Table 21

| Meter size<br>(mm) (inch) | Qwater<br>(m³/h) | Pressure<br>Loss<br>(kPa) | 10K Class AM-1□□□□ |           |           |              | 20K Class AM-1□□□□-M |           |           |              |
|---------------------------|------------------|---------------------------|--------------------|-----------|-----------|--------------|----------------------|-----------|-----------|--------------|
|                           |                  |                           | (H)<br>(mm)        | L<br>(mm) | A<br>(mm) | Mass<br>(kg) | (H)<br>(mm)          | L<br>(mm) | A<br>(mm) | Mass<br>(kg) |
| 15 1/2                    | 0.1 to 0.69      | 8.5                       | 660                | 250       | 100       | 12           | 660                  | 250       | 100       | 14           |
| 20 3/4                    | 1.6              | 9.1                       | 680                | 250       | 100       | 12           | 680                  | 250       | 100       | 14           |
| 25 1                      | 3.6              | 6.0                       | 670                | 250       | 100       | 15           | 670                  | 250       | 100       | 17           |
| 40 1-1/2                  | 5.9              | 5.0                       | 680                | 250       | 130       | 18           | 690                  | 250       | 130       | 21           |
| 50 2                      | 12.4             | 8.0                       | 710                | 250       | 130       | 22           | 750                  | 250       | 130       | 27           |
| 65 2-1/2                  | 25               | 6.5                       | 820                | 350       | 150       | 30           | 850                  | 350       | 150       | 36           |
| 80 3                      | 34.3             | 12.7                      | 850                | 350       | 180       | 35           | 870                  | 350       | 180       | 55           |
| 100 4                     | 55.0             | 13.6                      | 900                | 350       | 180       | 58           | 940                  | 350       | 180       | 70           |
| 125 5                     | 110              | 16.0                      | 940                | 370       | 250       | 72           | —                    | —         | —         | —            |
| 150 6                     | 150              | 21.0                      | 1050               | 480       | 250       | 95           | —                    | —         | —         | —            |

■ Table 22

| No. | Description       | Class 1                                                | Class 2               | Class 3               | Class 4               |
|-----|-------------------|--------------------------------------------------------|-----------------------|-----------------------|-----------------------|
| 1   | Tapered tube      | SUS304                                                 | SUS304                | SUS316                | SUS316L               |
| 2   | Float ass'y       | SUS304                                                 | SUS304                | SUS316                | SUS316L               |
| 3   | Body              | SGP*                                                   | SUS304                | SUS316                | SUS316L               |
| 4   | Flange            | SS400                                                  | SUS304                | SUS316                | SUS316L               |
| 5   | Upper flange      | SS400                                                  | SUS304                | SUS316                | SUS316L               |
| 6   | Lead pipe         | SUS304                                                 | SUS304                | SUS316                | SUS316L               |
| 7   | Indicator         | ADC12                                                  | ADC12                 | ADC12                 | ADC12                 |
| 8   | Bolt&nut          | SS400                                                  | SS400                 | SS400                 | SS400                 |
| 9   | Gasket            | Non-asbestos/<br>PTFE                                  | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE | Non-asbestos/<br>PTFE |
| 10  | Upper jacket pipe | SUS304                                                 | SUS304                | SUS304                | SUS304                |
| 11  | Jacket pipe       | SGP or STPG 370<br>(Depending on jacket medium press.) |                       |                       |                       |

Only General purpose 150 lbs (10K) class is available for full Jacketed version (AM-1□□□-JF)

\*STPG 370 for Medium press.  
300 lbs (20K) class.

Other special metallic material available on request.

[RUBBER LINED AND ETFE LINED MATERIAL]

● Type AM-1□□1 (Flow direction : Bottom-Top) For liquids

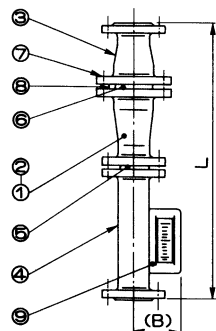


Fig. 28

■ Table 23

| Meter size<br>(mm) (inch) | Qwater<br>(m³/h) | Pressure<br>Loss (kPa) | L<br>(mm) | (B)<br>(mm) | Mass<br>(kg) |
|---------------------------|------------------|------------------------|-----------|-------------|--------------|
| 15 1/2                    | 0.1 to 0.65      | 5.0                    | 550       | 89          | 16           |
| 20 3/4                    | 1.2              | 6.0                    | 550       | 89          | 18           |
| 25 1                      | 2.8              | 6.0                    | 550       | 92          | 22           |
| 40 1-1/2                  | 6.5              | 9.0                    | 600       | 99          | 28           |
| 50 2                      | 11.5             | 6.0                    | 650       | 105         | 35           |
| 65 2-1/2                  | 17.0             | 8.0                    | 700       | 113         | 45           |
| 80 3                      | 34.0             | 9.0                    | 750       | 120         | 55           |
| 100 4                     | 60.0             | 11.0                   | 750       | 132         | 70           |
| 125 5                     | 90.0             | 13.0                   | 750       | 145         | 85           |
| 150 6                     | 140.0            | 17.0                   | 800       | 158         | 120          |

■ Table 24

| No. | Description    | Class 5      | Class 6      | Class 7      |
|-----|----------------|--------------|--------------|--------------|
| 1   | Tapered tube   | Rubber Lined | Rubber Lined | F.C.R. Lined |
| 2   | Float ass'y    | PVC*1        | F.C.R.*2     | F.C.R.*2     |
| 3   | Lower body     | Rubber Lined | Rubber Lined | F.C.R. Lined |
| 4   | Upper body     | Rubber Lined | Rubber Lined | F.C.R. Lined |
| 5   | Float guide(L) | PVC          | PVDF         | PVDF         |
| 6   | Float guide(U) | PVC          | PVDF         | PVDF         |
| 7   | Bolt&nut       | SS400        | SS400        | SS400        |
| 8   | Gasket         | EPDM         | EPDM         | PTFE         |
| 9   | Indicator      | ADC12        | ADC12        | ADC12        |

\*1 : Float rod material is ETFE lined SUS304 for meter size 15 and 20mm.  
\*2 : Float rod material is ETFE lined SUS304 for meter size 15, 20, 25 and 40mm.

F.C.R. means Fluorocarbon Resin

## ● Type AM-1□□2 (Flow direction : Bottom-Top side) For liquids

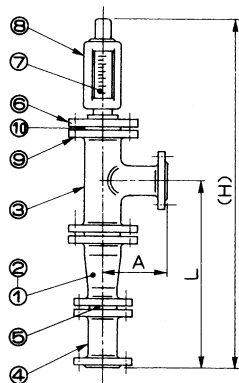


Fig. 29

■ Table 25

| Meter size<br>(mm) (inch) | Qwater<br>(m³/h) | Pressure<br>Loss (kPa) | H<br>(mm) | L<br>(mm) | (B)<br>(mm) | Mass<br>(kg) |
|---------------------------|------------------|------------------------|-----------|-----------|-------------|--------------|
| 15 1/2                    | Not available    |                        |           |           |             |              |
| 20 3/4                    | Not available    |                        |           |           |             |              |
| 25 1                      | 0.8 to 2.7       | 5.5                    | 700       | 320       | 120         | 17           |
| 40 1-1/2                  | 4.8              | 4.3                    | 730       | 350       | 130         | 22           |
| 50 2                      | 11.4             | 7.0                    | 780       | 380       | 130         | 24           |
| 65 2-1/2                  | 20.2             | 5.4                    | 810       | 400       | 150         | 28           |
| 80 3                      | 33.0             | 10.0                   | 870       | 440       | 150         | 34           |
| 100 4                     | 54.0             | 10.0                   | 1000      | 500       | 200         | 52           |
| 125 5                     | 88.0             | 14.0                   | 1020      | 500       | 200         | 65 *1        |
| 125 5                     | 88.0             | 14.0                   | 1140      | 550       | 220         | 70 *2        |
| 150 6                     | 140.0            | 20.0                   | 1150      | 600       | 220         | 95           |

\*1 : For material class 5,6

\*2 : For material class 7

■ Table 26

| No. | Description  | Class 5      | Class 6           | Class 7      |
|-----|--------------|--------------|-------------------|--------------|
| 1   | Tapered tube | Rubber Lined | Rubber Lined      | F.C.R. Lined |
| 2   | Float ass'y  | PVC*         | F.C.R.*           | F.C.R.*      |
| 3   | Upper body   | Rubber Lined | Rubber Lined      | F.C.R. Lined |
| 4   | Lower body   | Rubber Lined | Rubber Lined      | F.C.R. Lined |
| 5   | Float guide  | PVC          | PVDF              | PVDF         |
| 6   | Upper flange | SS400        | SS400             | SS400        |
| 7   | Lead pipe    | PVC          | FEP tubed SUS 304 |              |
| 8   | Indicator    | ADC12        | ADC12             | ADC12        |
| 9   | Bolt&nut     | SS400        | SS400             | SS400        |
| 10  | Gasket       | EPDM         | EPDM              | PTFE         |

\*: Float rod material is ETFE lined SUS304 for meter size 15,20 and 25mm.

F.C.R. means Fluorocarbon Resin

## [PVC LINED MATERIAL]

## ■ Type AM-1□□1 (Flow direction : Bottom-Top) For liquids

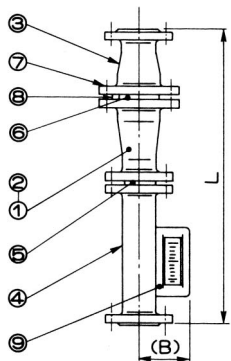


Fig. 30

■ Table 27

| Meter size<br>(mm) (inch) | Qwater<br>(m³/h) | Pressure<br>Loss (kPa) | L<br>(mm) | (B)<br>(mm) | Mass<br>(kg) |
|---------------------------|------------------|------------------------|-----------|-------------|--------------|
| 15 1/2                    | 0.1 to 0.65      | 5.0                    | 550       | 89          | 16           |
| 20 3/4                    | 1.1              | 5.0                    | 700       | 89          | 20           |
| 25 1                      | 2.1              | 5.5                    | 750       | 96          | 25           |
| 40 1-1/2                  | 2.7              | 8.0                    | 800       | 99          | 32           |
| 50 2                      | 6.5              | 5.5                    | 850       | 105         | 40           |
| 65 2-1/2                  | 12               | 7.0                    | 900       | 113         | 50           |
| 80 3                      | 17               | 8.0                    | 900       | 126         | 62           |
| 100 4                     | 35               | 10.0                   | 950       | 132         | 78           |
| 125 5                     | 48               | 12.0                   | 950       | 145         | 94           |
| 150 6                     | 66               | 16.0                   | 1000      | 158         | 130          |

■ Table 28

| No. | Description    | Class 8   |
|-----|----------------|-----------|
| 1   | Tapered tube   | PVC Lined |
| 2   | Float ass'y    | PVC*      |
| 3   | Upper body     | PVC Lined |
| 4   | Lower body     | PVC Lined |
| 5   | Float receiver | PVC       |
| 6   | Float guide    | PVC       |
| 7   | Bolt&nut       | SS400     |
| 8   | Gasket         | EPDM      |
| 9   | Indicator      | ADC12     |

\*: Float rod material is ETFE lined SUS304 for meter size 15 and 20mm.

## ● Type AM-1□□2 (Flow direction : Bottom-Top side) For liquids

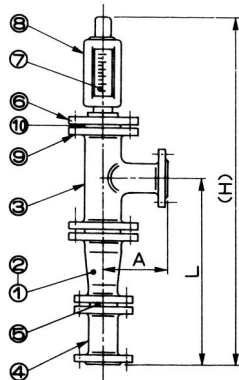


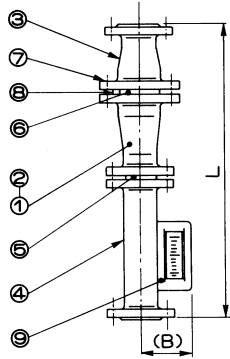
Fig. 31

■ Table 29

| Meter size<br>(mm) (inch) | Qwater<br>(m³/h) | Pressure<br>Loss (kPa) | Conn<br>Size | (H)<br>(mm) | L<br>(mm) | A<br>(mm) | Mass<br>(kg) |
|---------------------------|------------------|------------------------|--------------|-------------|-----------|-----------|--------------|
| 15 1/2                    | Not available    |                        |              |             |           |           |              |
| 20 3/4                    | Not available    |                        |              |             |           |           |              |
| 25                        | 1                | 0.6 to 1.9             | 5.0          | 20          | 850       | 420       | 70           |
|                           |                  |                        |              | 25          | 830       | 400       | 49           |
|                           |                  |                        |              | 40          | 830       | 400       | 61           |
| 40                        | 1-1/2            | 2.6                    | 3.8          | 25          | 850       | 420       | 54           |
|                           |                  |                        |              | 40          | 850       | 420       | 64           |
|                           |                  |                        |              | 50          | 850       | 420       | 67           |
| 50                        | 2                | 5.8                    | 6.0          | 40          | 930       | 480       | 70           |
|                           |                  |                        |              | 50          | 930       | 480       | 74           |
|                           |                  |                        |              | 65          | 930       | 480       | 80           |
| 65                        | 2-1/2            | 11                     | 4.8          | 50          | 980       | 520       | 80           |
|                           |                  |                        |              | 65          | 980       | 520       | 86           |
|                           |                  |                        |              | 80          | 980       | 520       | 90           |
| 80                        | 3                | 18                     | 8.5          | 65          | 1010      | 530       | 99           |
|                           |                  |                        |              | 80          | 1010      | 530       | 103          |
|                           |                  |                        |              | 100         | 1010      | 530       | 110          |
| 100                       | 4                | 29.5                   | 8.5          | 80          | 1050      | 553       | 128          |
|                           |                  |                        |              | 100         | 1050      | 553       | 135          |
|                           |                  |                        |              | 125         | 1050      | 553       | 141          |
| 125                       | 5                | 45                     | 12.0         | 100         | 1100      | 600       | 135          |
|                           |                  |                        |              | 125         | 1100      | 600       | 141          |
|                           |                  |                        |              | 150         | 1100      | 600       | 190          |
| 150                       | 6                | 76                     | 17.0         | 125         | 1140      | 641       | 167          |
|                           |                  |                        |              | 150         | 1150      | 650       | 210          |
|                           |                  |                        |              | 200         | 1150      | 650       | 220          |

■ Table 30

| No. | Description  | Class 9   |
|-----|--------------|-----------|
| 1   | Tapered tube | PVC Lined |
| 2   | Float ass'y  | PVC       |
| 3   | Upper body   | PVC Lined |
| 4   | Lower body   | PVC Lined |
| 5   | Float guide  | PVC       |
| 6   | Upper flange | SS400     |
| 7   | Lead pipe    | PVC       |
| 8   | Indicator    | ADC12     |
| 9   | Bolt&nut     | SS400     |
| 10  | Gasket       | EPDM      |

**[GLASS LINED MATERIAL]****● Type AM-1□□1 (Flow direction : Bottom-Top) For liquids****Fig. 32****■ Table 31**

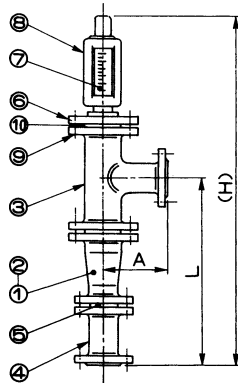
| Meter size<br>(mm) |   | F.C.R. FLOAT     |                        | MA276 FLOAT |                        | Conn<br>Size | L<br>(mm)   | (B)<br>(mm) | Mas<br>(kg) |
|--------------------|---|------------------|------------------------|-------------|------------------------|--------------|-------------|-------------|-------------|
|                    |   | Qwater<br>(m³/h) | Pressure<br>Loss (kPa) | Q<br>(m³/h) | Pressure<br>Loss (kPa) |              |             |             |             |
| 15                 |   | 0.1 to 0.4       | 6.0                    | 0.1 to 0.6  | 10.0                   | 20<br>25     | 570<br>552  | 92          | 18          |
| 20                 |   | Not available    |                        |             |                        |              |             |             |             |
| 25                 | 1 | 0.8              | 8.0                    | 1.0         | 10.0                   | 20           | 768         | 92          | 26          |
|                    |   |                  |                        |             |                        | 25           | 710         |             |             |
|                    |   |                  |                        |             |                        | 40           | 806         |             |             |
|                    | 2 | 1.3              | 6.0                    | 1.6         | 8.0                    | 20           | 781         | 92          | 25          |
|                    |   |                  |                        |             |                        | 25           | 688         |             |             |
|                    |   |                  |                        |             |                        | 40           | 840         |             |             |
| 40                 | 1 | 1.7              | 6.0                    | 2.5         | 8.0                    | 25           | 875         | 99          | 35          |
|                    |   |                  |                        |             |                        | 40           | 803         |             |             |
|                    |   |                  |                        |             |                        | 50           | 867         |             |             |
|                    | 2 | 3.2              | 6.0                    | 4.5         | 8.0                    | 40           | 750         | 99          | 33          |
|                    |   |                  |                        |             |                        | 50           | 903         |             |             |
|                    |   |                  |                        |             |                        | 80           | 790         |             |             |
| 50                 |   | 6.5              | 6.0                    | 8           | 8.0                    | 50<br>80     | 943         | 105         | 40          |
| 65                 |   | Not available    |                        |             |                        |              |             |             |             |
| 80                 |   | 17               | 9.0                    | 20          | 10.5                   | 80<br>100    | 835<br>987  | 120         | 55          |
| 100                |   | 35               | 9.0                    | 45          | 11.5                   | 100<br>150   | 870<br>1024 | 132         | 70          |
| 125                |   | Not available    |                        |             |                        |              |             |             |             |
| 150                |   | Not available    |                        |             |                        |              |             |             |             |

**■ Table 32**

| No. | Description    | Class 10    | Class 11    |
|-----|----------------|-------------|-------------|
| 1   | Tapered tube   | Glass Lined | Glass Lined |
| 2   | Float ass'y    | F.C.R.*     | MA276       |
| 3   | Upper body     | Glass Lined | Glass Lined |
| 4   | Lower body     | Glass Lined | Glass Lined |
| 5   | Float receiver | PVDF        | MA276       |
| 6   | Float guide    | PVDF        | MA276       |
| 7   | Bolt&nut       | SS400       | SS400       |
| 8   | Gasket         | PTFE        | PTFE        |
| 9   | Indicator      | ADC12       | ADC12       |

\*: Float rod material is ETFE lined SUS304 for meter size 15, 20, 25 and 40mm.

F.C.R. means Fluorocarbon Resin

**● Type AM-1□□2 (Flow direction : Bottom-Top side) For liquids****Fig. 33****■ Table 34**

| No. | Description  | Class 10          | Class 11    |
|-----|--------------|-------------------|-------------|
| 1   | Tapered tube | Glass Lined       | Glass Lined |
| 2   | Float ass'y  | F.C.R.*           | MA276       |
| 3   | Upper body   | Glass Lined       | Glass Lined |
| 4   | Lower body   | Glass Lined       | Glass Lined |
| 5   | Float guide  | PVDF              | MA276       |
| 6   | Upper flange | SS400             | SS400       |
| 7   | Lead pipe    | FEP tubed SUS 304 |             |
| 8   | Indicator    | ADC12             | ADC12       |
| 9   | Bolt&nut     | SS400             | SS400       |
| 10  | Gasket       | PTFE              | PTFE        |

\*: Float rod material is ETFE lined SUS304 for meter size 15, 20, and 25mm.

F.C.R. means Fluorocarbon Resin

**■ Table 33**

| Meter size<br>(mm) |     | F.C.R. FLOAT     |                        | MA276 FLOAT |                        | Conn<br>Size | (H)<br>(mm) | L<br>(mm) | A<br>(mm) | Mass<br>(kg) |
|--------------------|-----|------------------|------------------------|-------------|------------------------|--------------|-------------|-----------|-----------|--------------|
|                    |     | Qwater<br>(m³/h) | Pressure<br>Loss (kPa) | Q<br>(m³/h) | Pressure<br>Loss (kPa) |              |             |           |           |              |
| 15                 |     | Not available    |                        |             |                        |              |             |           |           |              |
| 20                 |     | Not available    |                        |             |                        |              |             |           |           |              |
| 25                 | 1   | 0.3 to 0.79      | 8.0                    | 0.4 to 1.0  | 10.0                   | 20           | 740         | 362       | 78        | 27           |
|                    |     |                  |                        |             |                        | 25           | 850         | 470       |           |              |
|                    |     |                  |                        |             |                        | 40           | 760         | 380       |           |              |
|                    | 2   | 1.3              | 6.0                    | 1.6         | 8.0                    | 20           | 780         | 378       | 95        | 30           |
|                    |     |                  |                        |             |                        | 25           | 890         | 486       |           |              |
| 40                 | 1   | 2.1              | 7.0                    | 2.7         | 9.0                    | 40           | 800         | 398       | 95        | 33           |
|                    |     |                  |                        |             |                        | 25           | 830         | 422       |           |              |
|                    |     |                  |                        |             |                        | 40           | 920         | 512       |           |              |
|                    | 2   | 2.8              | 6.0                    | 3.6         | 8.0                    | 50           | 820         | 418       | 102       | 37           |
|                    |     |                  |                        |             |                        | 25           | 840         | 418       |           |              |
|                    |     |                  |                        |             |                        | 40           | 920         | 508       |           |              |
|                    |     |                  |                        |             |                        | 50           | 820         | 414       |           |              |
| 50                 | 7.8 | 7.0              | 10                     | 8.5         | 40                     | 900          | 450         | 126       | 47        |              |
|                    |     |                  |                        |             | 50                     | 980          | 544         |           |           |              |
|                    |     |                  |                        |             | 80                     | 910          | 474         |           |           |              |
| 65                 |     | Not available    |                        |             |                        |              |             |           |           |              |
| 80                 | 15  | 9.0              | 19                     | 10.5        | 50                     | 980          | 526         | 143       | 60        |              |
|                    |     |                  |                        |             | 80                     | 1050         | 596         |           |           |              |
|                    |     |                  |                        |             | 100                    | 980          | 526         |           |           |              |
| 100                | 34  | 9.0              | 44                     | 11.5        | 80                     | 1210         | 580         | 173       | 82        |              |
|                    |     |                  |                        |             | 100                    | 1280         | 650         |           |           |              |
|                    |     |                  |                        |             | 150                    | 1220         | 590         |           |           |              |
| 125                |     | Not available    |                        |             |                        |              |             |           |           |              |
| 150                |     | Not available    |                        |             |                        |              |             |           |           |              |

● Type AM-1□□3-D (Flow direction : Bottom side-Top side, with damper) For gases

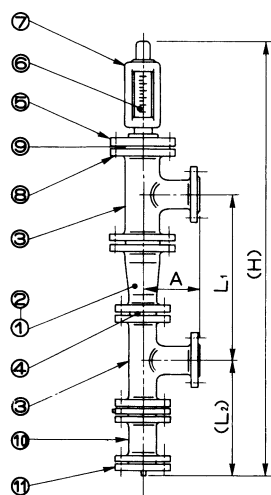


Fig. 34

■ Table 36

| No. | Description  | Class 10          | Class 11    |
|-----|--------------|-------------------|-------------|
| 1   | Tapered tube | Glass Lined       | Glass Lined |
| 2   | Float ass'y  | F.C.R.*           | MA276       |
| 3   | Body         | Glass Lined       | Glass Lined |
| 4   | Float guide  | PVDF              | MA276       |
| 5   | Upper flange | SS400             | SS400       |
| 6   | Lead pipe    | FEP tubed SUS 304 |             |
| 7   | Indicator    | ADC12             | ADC12       |
| 8   | Bolt&nut     | SS400             | SS400       |
| 9   | Gasket       | PTFE              | PTFE        |
| 10  | Damper       | Glass Lined       | Glass Lined |
| 11  | Blind flange | SS400/PTFE        | SS400/PTFE  |

※: Float rod material is ETFE lined  
SUS304 for meter size 15, 20 and 25mm.

F.C.R. means Fluorocarbon Resin

■ Table 35

| Meter size (mm) |      | F.C.R. FLOAT  |                     | MA276 FLOAT |                     | Conn Size | (H) (mm) | L1 (mm) | (L2) (mm) | A1 (mm) | A2 (mm) | Mass (kg) |
|-----------------|------|---------------|---------------------|-------------|---------------------|-----------|----------|---------|-----------|---------|---------|-----------|
|                 |      | Qwater (m³/h) | Pressure Loss (kPa) | Q (m³/h)    | Pressure Loss (kPa) |           |          |         |           |         |         |           |
| 15              |      | Not available |                     |             |                     |           |          |         |           |         |         |           |
| 20              |      | Not available |                     |             |                     |           |          |         |           |         |         |           |
| 25              | 1    | 10 to 26      | 9.0                 | 12 to 33    | 11.0                | 20        | 1010     | 348     | 280       | 78      | 78      | 33        |
|                 |      |               |                     |             |                     | 25        |          |         |           | 190     | 190     |           |
|                 |      |               |                     |             |                     | 40        |          |         |           |         |         |           |
|                 |      |               |                     |             |                     | 20        |          |         |           |         |         |           |
| 25              | 2    | 42            | 7.0                 | 54          | 9.5                 | 25        | 1050     | 365     | 280       | 95      | 78      | 37        |
|                 |      |               |                     |             |                     | 40        |          |         |           | 190     |         |           |
|                 |      |               |                     |             |                     | 20        |          |         |           |         |         |           |
|                 |      |               |                     |             |                     | 25        |          |         |           |         |         |           |
| 40              | 1    | 70            | 7.5                 | 90          | 10                  | 40        | 1110     | 406     | 300       | 95      | 95      | 40        |
|                 |      |               |                     |             |                     | 50        |          |         |           | 203     | 203     |           |
|                 |      |               |                     |             |                     | 25        |          |         |           |         |         |           |
|                 |      |               |                     |             |                     | 40        |          |         |           |         |         |           |
| 40              | 2    | 90            | 6.5                 | 115         | 9.0                 | 40        | 1120     | 404     | 300       | 102     | 95      | 45        |
|                 |      |               |                     |             |                     | 50        |          |         |           | 203     |         |           |
|                 |      |               |                     |             |                     | 25        |          |         |           |         |         |           |
|                 |      |               |                     |             |                     | 40        |          |         |           |         |         |           |
| 50              | 240  | 8.0           | 300                 | 9.0         | 40                  | 1190      | 446      | 310     | 126       | 102     | 60      |           |
|                 |      |               |                     |             | 50                  |           |          |         | 234       |         |         |           |
|                 |      |               |                     |             | 80                  |           |          |         |           |         |         |           |
|                 |      |               |                     |             | 40                  |           |          |         |           |         |         |           |
| 65              |      | Not available |                     |             |                     |           |          |         |           |         |         |           |
| 80              | 510  | 10.0          | 650                 | 11.5        | 50                  | 1300      | 521      | 330     | 143       | 126     | 75      |           |
|                 |      |               |                     |             | 80                  |           |          |         |           | 259     |         |           |
|                 |      |               |                     |             | 100                 |           |          |         |           |         |         |           |
|                 |      |               |                     |             | 80                  |           |          |         |           |         |         |           |
| 100             | 1140 | 12.0          | 1460                | 14.0        | 100                 | 1560      | 592      | 350     | 173       | 143     | 100     |           |
|                 |      |               |                     |             | 100                 |           |          |         |           | 285     |         |           |
|                 |      |               |                     |             | 150                 |           |          |         |           |         |         |           |
|                 |      |               |                     |             | 40                  |           |          |         |           |         |         |           |
| 125             |      | Not available |                     |             |                     |           |          |         |           |         |         |           |
| 150             |      | Not available |                     |             |                     |           |          |         |           |         |         |           |

## SELECTION OF FLOWMETER

### 1. Liquid application

#### a. Selection of meter size

Maximum possible flow rate for each meter size is shown in dimension tables from p. 8 to 14. These figures are based on water flow (Density 1.0g/cm³ and Viscosity 1.0mPa·s). If actual fluid condition is different from such figures, a conversion calculation is required as following formula:

$$QW = Q \times (2.59 / \sqrt{(7.7/\gamma) - 1})$$

Where Qw : Water converted flow rate (m³/h)

Q : Flow rate of actual fluid (m³/h)

γ : Density of actual fluid (g/cm³)

Example Fluid : Alcohol  
Density : 0.8g/cm³  
Flow rate : 50m³/h  
Flow meter to be used: AM-1□□1

$$\begin{aligned} QW &= 50 \times (2.59 / \sqrt{(7.7/0.8) - 1}) \\ &= 50 \times 0.882 \\ &= 44.1 (\text{m}^3/\text{h}) \end{aligned}$$

Referring to table 1 on p. 8, the required meter size is 100mm. For possible connection flange sizes, refer to Table 37.

#### b. Viscosity limit

In case the Viscosity of fluid is more than 1mPa·s, confirm the suitability by Fig. 35 below. Trace viscosity and flow rate and confirm the crossing point is below the curve. If the crossing point is above the curve, consult factory for detailed calculation by computer.

#### ■ Viscosity curve

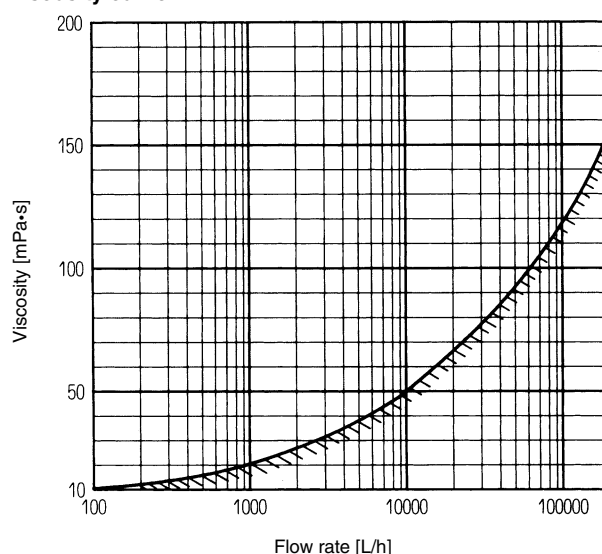


Fig. 35

### c. Slurry application

Consult factory if contaminations, sand, dirt and other solid particles are expected in fluid. AS-1000 series slurry flowmeter is available.

### 2. Gas application

Generally, flowmeters with damper (type AM-1□□1-DU, AM-1□□2-DU, AM-1□□3-DU, AM-1□□3-D, AM-1□□6-D and AM-1□□7-D) are recommended for gas application to prevent float vibration.

#### a. Selection of meter size

Maximum possible flow rate for each meter size is shown in dimension tables of AM-1□□1-DU, AM-1□□2-DU, AM-1□□3-DU.

AM-1□□3-D, AM-1□□6-D and AM-1□□7-D flowmeters

If actual fluid condition is different from such figures, a conversion calculation is to be performed by the following formula:

$$QA = Q \times 0.0169 \times \sqrt{\gamma \times (273+t) / (0.1013+p)}$$

Where QA : Converted flow rate in air 0°C, 1atm (m³/h(nor))  
 Q : Flow rate of gas to be measured (m³/h(nor))  
 γ : Density of gas to be measured (kg/m³(nor))  
 t : Operating temperature (°C)  
 p : Operating pressure (MPa)

Example Gas to be measured Nitrogen (N₂)  
 Specific weight (γ) 1.251kg/m³(nor)  
 Operating pressure (p) 0.6MPa  
 Operating temperature (t) 20°C  
 Flowmeter to be used AM-1□□3-D

$$\begin{aligned} QA &= 300 \times 0.0169 \times \sqrt{1.251 \times (273+20) / (0.1013+0.6)} \\ &= 300 \times 0.0169 \times 22.86 \\ &= 115.9 \text{ [m³/h(nor)]} \end{aligned}$$

Referring to Table 13 on p. 10 the suitable meter size is 25mm. For possible connection flange sizes, refer to Table 37.

### 3. Steam application

Flowmeters with liquid damper (type AM-1□□3-D, AM-1□□6-D and AM-1□□7-D) are recommended for steam application to prevent float vibration. Also a cooling fin is normally needed because of high temperature.

#### a. Selection of meter size

Steam flow rate is to be converted into water flow rate by the following formula for size determination;

$$Qw = Qs \times 0.03 \times \sqrt{\gamma}$$

Where Qw : Water converted flow rate (m³/h)  
 Qs : Steam flow rate (m³/h)  
 γ : Density of steam (kg/m³)

Example Fluid Saturated Steam  
 Pressure 0.9MPa  
 Flow rate 1t/h  
 Flowmeter to be used AM-1□□6-D

First, density of the steam is to be obtained from "Steam graph" etc. In this application, density (γ) of 0.9MPa steam is 5.1kg/m³. Saturated steam curve (by temperature) is shown on Fig. 36 and Saturated steam curve (by pressure) is on Fig. 37 for reference. Normally, flow rate of steam is described in weight unit, which is to be converted to volume unit (Qs) as follows:

$$\begin{aligned} 1\text{t/h} &= 1000\text{kg/h} \\ Qs &= 1000\text{kg/h} / 5.1\text{kg/m}^3 \\ &= 196\text{m}^3/\text{h} \end{aligned}$$

Then, all these figures are to be put into the formula:

$$\begin{aligned} Qw &= 196 \times 0.03 \times \sqrt{5.1} \\ &= 13.3\text{m}^3/\text{h} \end{aligned}$$

Referring to Table 17 on p. 10, the suitable meter size is 65mm. For possible connection flange sizes, refer to Table 37.

#### ■ Density of saturated Steam

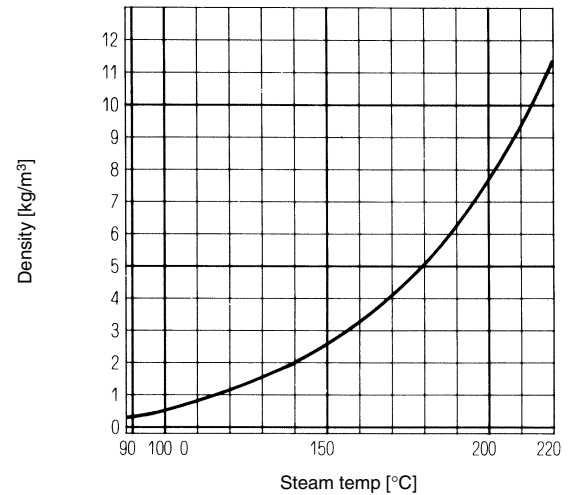


Fig. 36

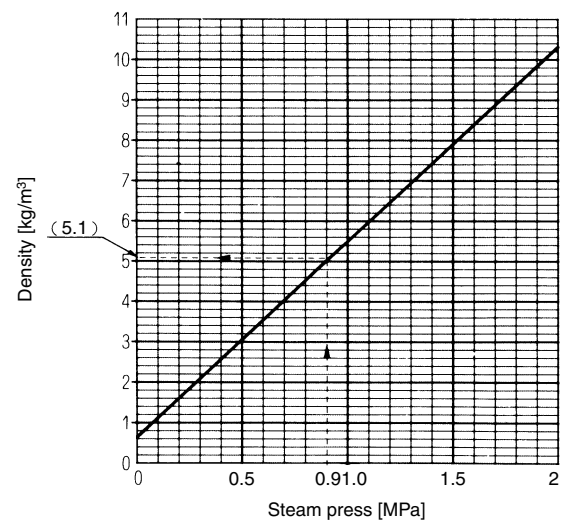


Fig. 37

### 4. Connection flanges

Table 37 shows possible connection flange sizes against selected meter sizes. The table is applicable for flowmeters with Metallic materials, Rubber lining, ETFE lining.

Only listed connection sizes in dimension tables are available for flowmeters with PVC lining and Glass lining.

■ Table 37

| Type          | Flow direction | Against meter size |         |         |
|---------------|----------------|--------------------|---------|---------|
|               |                | -1size             | ±0 size | +1 size |
| AM-1□□1       | B-T            | ×                  | ○       | ○       |
| AM-1□□1-JS/JF | B-T            | ×                  | ×       | ○       |
| AM-1□□2       | B-TS           | ○                  | ○       | ○       |
| AM-1□□2-JS/JF | B-TS           | ×                  | ○       | ○       |
| AM-1□□3       | BS-TS          | ○                  | ○       | ○       |
| AM-1□□6       | L-R            | ○                  | ○       | ○       |
| AM-1□□7       | R-L            | ○                  | ○       | ○       |

### 5. Scale graduation

Customer can select any one of the following 16 standard scale graduations if meter size and connection flange meet the specification.

Rangeability is 10:1.

Example If required scale range is 35-350m<sup>3</sup>/h(nor), the graduation on the flowmeter will be 3.5-35×10m<sup>3</sup>/h(nor)

#### ● Standard scale graduation

|                                                                            |                                                                                   |                                                                               |                                                                              |                                                                            |                                                                                 |
|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| <b>1-10</b><br>10<br>2DIV-2DIV<br>8<br>6<br>4<br>2<br>1<br>0.5/DIV<br>3-30 | <b>1.2-12</b><br>12<br>2DIV-2DIV<br>10<br>6<br>4<br>2<br>1.2<br>0.5/DIV<br>3.5-35 | <b>1.5-15</b><br>15<br>5DIV-2DIV<br>10<br>5<br>7DIV<br>1.5<br>0.5/DIV<br>4-40 | <b>1.6-16</b><br>16<br>5DIV<br>10<br>5<br>6.8DIV<br>1.6<br>0.5/DIV<br>4.5-45 | <b>2-20</b><br>20<br>5DIV-2DIV<br>15<br>10<br>5<br>3DIV<br>0.5/DIV<br>5-50 | <b>2.5-25</b><br>25<br>5DIV<br>20<br>15<br>10<br>5<br>2.5DIV<br>1.0/DIV<br>6-60 |
| <b>30</b><br>2DIV-5DIV<br>20<br>10<br>7DIV<br>3<br>1.0/DIV                 | <b>35</b><br>2DIV<br>30<br>20<br>10<br>3.25DIV<br>2.0/DIV                         | <b>40</b><br>5DIV<br>30<br>20<br>10<br>3DIV<br>2.0/DIV                        | <b>45</b><br>2.5DIV<br>40<br>5DIV<br>30<br>20<br>10<br>2.5DIV<br>2.0/DIV     | <b>50</b><br>5DIV<br>40<br>30<br>20<br>10<br>2.5DIV<br>2.0/DIV             | <b>60</b><br>5DIV<br>50<br>40<br>30<br>20<br>10<br>2DIV<br>2.0/DIV              |

|                                                                          |                                                                              |                                                                  |                                                                                |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------|
| <b>7-70</b><br>70<br>2DIV<br>60<br>2DIV-2DIV<br>40<br>20<br>7<br>5.0/DIV | <b>7.5-75</b><br>75<br>3DIV<br>60<br>2DIV-2DIV<br>40<br>20<br>7.5<br>5.0/DIV | <b>8-80</b><br>80<br>2DIV-2DIV<br>60<br>40<br>20<br>8<br>5.0/DIV | <b>9-90</b><br>90<br>2DIV<br>80<br>2DIV-2DIV<br>60<br>40<br>20<br>9<br>5.0/DIV |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------|

### 5. Special orders

#### a. Low pressure drop version

If standard pressure drop does not meet the requirement, "Low pressure drop version" is available on request. Consult factory for further details.

#### b. Low temperature application

If the fluid temperature is very low (i. e. liquified gas etc), Special arrangement to prevent frost is available. Consult factory for further details.

#### c. High pressure application

Up to 196MPa possible with experience.  
Consult factory for further details.

## ■ ORDERING FORM

|                                          |                                  |                                                                                    |                                                                                |                                                                                |                                                                                                                               |
|------------------------------------------|----------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| COMMON                                   | Model                            |                                                                                    |                                                                                |                                                                                |                                                                                                                               |
|                                          | Fluid name                       |                                                                                    |                                                                                |                                                                                |                                                                                                                               |
|                                          | Density                          |                                                                                    |                                                                                |                                                                                |                                                                                                                               |
|                                          | Viscosity                        |                                                                                    |                                                                                |                                                                                |                                                                                                                               |
|                                          | Pressure                         |                                                                                    |                                                                                |                                                                                |                                                                                                                               |
|                                          | Temperature                      |                                                                                    |                                                                                |                                                                                |                                                                                                                               |
|                                          | Scale range                      |                                                                                    |                                                                                |                                                                                |                                                                                                                               |
|                                          | Connection size                  |                                                                                    |                                                                                |                                                                                |                                                                                                                               |
|                                          | Flange rating                    |                                                                                    |                                                                                |                                                                                |                                                                                                                               |
| Material class                           |                                  |                                                                                    |                                                                                |                                                                                |                                                                                                                               |
| For Jacketed versions<br>(AM-1□□□-JS/JF) | Jacket fluid                     | <input type="checkbox"/> Hot water <input type="checkbox"/> Steam                  |                                                                                |                                                                                |                                                                                                                               |
|                                          | Temp.                            | _____°C                                                                            |                                                                                | Press.                                                                         | _____MPa                                                                                                                      |
|                                          | Connection                       | <input type="checkbox"/> Std. (Rc. 1/4, 3/8) <input type="checkbox"/> Others _____ |                                                                                |                                                                                |                                                                                                                               |
| TRANSMITTERS                             |                                  | AM-131□                                                                            | AM-152□                                                                        | AM-169□                                                                        | AM-174□                                                                                                                       |
|                                          | Connection                       | <input type="checkbox"/> Std. Rc. 1/4<br><input type="checkbox"/> Others _____     | <input type="checkbox"/> Std. G1/2<br><input type="checkbox"/> Others _____    | <input type="checkbox"/> Std. G1/2<br><input type="checkbox"/> Others _____    | <input type="checkbox"/> Std. G1/2<br><input type="checkbox"/> Others _____                                                   |
|                                          | Enclosure                        | <input type="checkbox"/> Weather proof                                             | <input type="checkbox"/> Weather proof<br><input type="checkbox"/> Flame proof | <input type="checkbox"/> Weather proof<br><input type="checkbox"/> Flame proof | <input type="checkbox"/> Weather proof<br><input type="checkbox"/> Flame proof<br><input type="checkbox"/> Intrinsically safe |
|                                          | Power supply                     | -                                                                                  | <input type="checkbox"/> DC24V -                                               | AC _____V _____HZ                                                              | -                                                                                                                             |
|                                          | Alarm point                      | -                                                                                  | -                                                                              | -                                                                              | <input type="checkbox"/> 1 <input type="checkbox"/> 2                                                                         |
|                                          | Alarm setting                    | -                                                                                  | -                                                                              | -                                                                              | H _____<br>L _____                                                                                                            |
|                                          | Count                            | -                                                                                  | -                                                                              | _____c/h                                                                       | -                                                                                                                             |
| Accessory                                | <input type="checkbox"/> Air set | <input type="checkbox"/> Cable gland                                               | <input type="checkbox"/> Cable gland                                           | <input type="checkbox"/> Cable gland<br><input type="checkbox"/> Safety relay  |                                                                                                                               |

\* Specification is subject to change without notice.

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