

## AS-1000 series

### SLURRY FLOWMETERS

#### GENERAL

AS-1000 Series are the metal tube flowmeters, and these series have been mainly developed for the purpose of slurry measurement. The structure of float and float part have the feature to make the solid passed easily. Accordingly, it is most suitable to make measurement of the liquid containing the fibrous tissue, granular foreign substance etc.

Moreover, in addition to the standard stainless steel, PVC material is also available, which is suitable to the high corrosive plating drainage and so on.

And the highly reliable local indicators, pneumatic transmitters, electric transmitters, integrator with scaled pulse output as well as alarm contact output versions are also provided to comply with any applications.



#### STANDARD SPECIFICATION

- Measuring liquid : Slurry
- Available size : Standard 15mm(1/2") to 150mm(6")
- Functions

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

- Material : Standard Carbon steel, SUS304, SUS316, SUS316L and PVC  
On request Other metallic material
- Pressure rating : Standard 150lbs (JIS10K) class, 300lbs (JIS20K) class  
On request For high pressure (Consult factory for details)
- Connection : Standard Flange connection  
On request Screw connection (Consult factory for details)

|                       |                            |  |
|-----------------------|----------------------------|--|
| General purpose       | AS-1□□□□ (Std.) JIS10KFF   | ANSI and DIN flange are also available |
| Medium pressure class | AS-1□□□□-M (Std.) JIS20KRF |  |
| High pressure class   | AS-1□□□□-H                 | Consult factory for details            |

- Operating pressure (Except PVC material)

|               | °C  | General purpose<br>150lbs (10K) class<br>AS-1□□□□ |      |      | Medium pressure<br>300lbs (20K) class<br>AS-1□□□□-M |      |      |      |      |
|---------------|-----|---|------|------|---|------|------|------|------|
|               |     | -120  | -220 | -300 | -20   | -220 | -300 | -350 | -400 |
| Fluid temp.   | °C  | -120  | -220 | -300 | -20   | -220 | -300 | -350 | -400 |
| Max. op Press | MPa | 1.37  | 1.18 | 0.98 | 3.33  | 3.04 | 2.84 | 2.55 | 2.26 |

Consult factory for High pressure version

- Fluid temperature : (With a transmitter, when ambient temperature exceeds a specified value, take a heat insulation etc.)

| Model                     | AS-1□□□1            | AS-1□□□2 | AS-1□□□2-F          |
|---------------------------|---------------------|----------|---------------------|
| Max.Op.temp <sup>*3</sup> | 200°C <sup>*1</sup> | 150°C    | 400°C <sup>*2</sup> |

\*1 Up to 250°C possible on request

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

\*3 Except PVC material

- Size limit of solid contained in measuring fluid

| Connection (mm) | 15   | 20   | 25  | 40  | 50  | 65  | 80  | 100 | 125 | 150 |
|-----------------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|
| Size Ø          | 0.01 | 0.15 | 0.2 | 0.3 | 0.5 | 0.8 | 1.0 | 1.0 | 1.0 | 1.0 |

- Flow direction : Bottom to Top, Bottom to Top side
- Accuracy : Standard ±1.5% F.S.  
(±3% F.S. for PVC material version)  
On request Consult factory for details
- Standard scale length : 75mm
- Range ability : 10:2
- Indicator construction : Dust and water proof (IP54 equ.)
- Painting : Standard : Munsell 7.5BG4/1.5 (Metal part)  
Consult factory for other colors

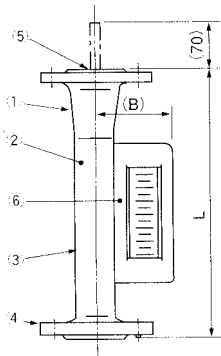
MODEL CODE

|                 |       |    |  |  |  |  |  |  |  |   |
|-----------------|-------|----|--|--|--|--|--|--|--|---|
|                 | -AS-1 |    |  |  |  |  |  |  |  | Description   |
| Construction *1 |       |    |  |  |  |  |  |  |  | Water proof   |
|                 | EP    |    |  |  |  |  |  |  |  | Pressure tight explosion proof                      |
|                 | IS    |    |  |  |  |  |  |  |  | Intrinscally safe                                   |
| 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 to Top                                       |
|                 |       | 2  |  |  |  |  |  |  |  | Bottom to Top side                                  |
| Jacket          |       |    |  |  |  |  |  |  |  | Without jacket                                      |
|                 |       | JS |  |  |  |  |  |  |  | Semi jacket   |
|                 |       | JF |  |  |  |  |  |  |  | Full jacket   |
| Pressure rating |       |    |  |  |  |  |  |  |  | General purpose 150lbs (10K) class                  |
|                 |       | M  |  |  |  |  |  |  |  | Medium purpose 300lbs (20K) class                   |
|                 |       | H  |  |  |  |  |  |  |  | High pressure                                       |

\*1 : Intrinsically safe version is not available for AS-1600 (Integrator / Pulse output) version.

DIMENSIONS, MATERIAL, PRESS.DROP AND FLOW RATE

AS-1□□1 (Flow direction : Bottom to Top, Material : Metal, Without jacket)



| Meter size (mm) | Flow rate (m³/h) | dP (kPa) | 150lbs (10K) class AS-1□□□□□ |       |          | 300lbs (20K) class AS-1□□□□□ |       |          |
|-----------------|------------------|----------|------------------------------|-------|----------|------------------------------|-------|----------|
|                 |                  |          | L(mm)                        | B(mm) | Mass(kg) | L(mm)                        | B(mm) | Mass(kg) |
| 15              | 0.1-0.7 (0.7)    | 6.5      | 350                          | 89    | 5        | 350                          | 89    | 5        |
| 20              | 1.5 (1.5)        | 6.0      | 350                          | 89    | 5        | 400                          | 89    | 6        |
| 25              | 3.9 (3.6)        | 7.3      | 350                          | 92    | 6        | 400                          | 92    | 7        |
| 40              | 7.5 (6.8)        | 9.0      | 400                          | 99    | 8        | 400                          | 99    | 9        |
| 50              | 15.1 (13.5)      | 6.3      | 400                          | 105   | 10       | 450                          | 105   | 12       |
| 65              | 27.5 (26.5)      | 7.8      | 450                          | 113   | 13       | 500                          | 113   | 18       |
| 80              | 42 (37.5)        | 9.1      | 450                          | 120   | 15       | 500                          | 120   | 20       |
| 100             | 75 (65)          | 12.0     | 450                          | 132   | 20       | 500                          | 132   | 28       |
| 125             | 110 (-)          | 14.0     | 500                          | 145   | 32       | -                            | -     | -        |
| 150             | 150 (-)          | 18.0     | 500                          | 158   | 50       | -                            | -     | -        |

\*Inside of ( ) is the flow rate as 20K class

Note

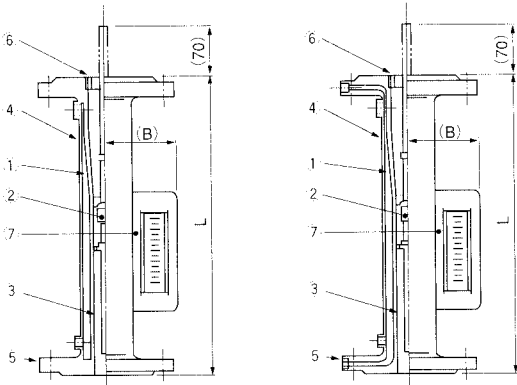
Float rod comes out by 70mm during operation in metersizes 20mm to 100mm.

- Connection size is the same as meter size, or +1 size up.

| No. | Description | Class 1 | Class 2 | Class 3 | Class 4 |
|-----|-------------|---------|---------|---------|---------|
| 1   | Taperd 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

AS-1□□1-JS, AS-1□□1-JF (Material: Metal, With jacket)



| Meter size (mm) | Flow rate (m³/h) | ΔP (kPa) | 150lbs (10K) class AS-1□□□□□ |       |          | 300lbs (20K) class AS-1□□□□□-M |       |          |
|-----------------|------------------|----------|------------------------------|-------|----------|--------------------------------|-------|----------|
|                 |                  |          | L(mm)                        | B(mm) | Mass(kg) | L(mm)                          | B(mm) | Mass(kg) |
| 15              | 0.1-0.7          | 6.5      | 350                          | 93    | 6        | 350                            | 93    | 6        |
| 20              | 1.5              | 6.0      | 400                          | 93    | 6        | 400                            | 93    | 7        |
| 25              | 3.6              | 7.3      | 400                          | 96    | 7        | 400                            | 96    | 8        |
| 40              | 6.8              | 9.0      | 400                          | 103   | 10       | 400                            | 103   | 11       |
| 50              | 13.5             | 6.3      | 450                          | 113   | 12       | 450                            | 113   | 14       |
| 65              | 27.5             | 7.8      | 500                          | 120   | 16       | 500                            | 120   | 21       |
| 80              | 37.5             | 9.1      | 500                          | 126   | 18       | 500                            | 126   | 13       |
| 100             | 65               | 12.0     | 500                          | 145   | 25       | 500                            | 145   | 33       |
| 125             | 100              | 14.0     | 500                          | 158   | 38       | -                              | -     | -        |
| 150             | 140              | 18.0     | 500                          | 171   | 60       | -                              | -     | -        |

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

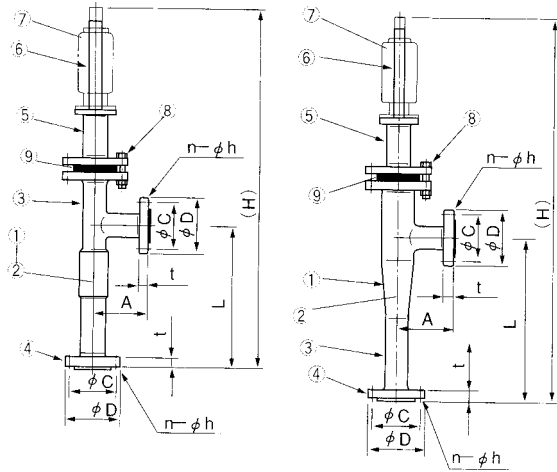
\*Other special metallic material available on request

Note

Float rod comes out by 70mm during operation in meter sizes 20mm to 100mm.

- Other special metallic material available on request

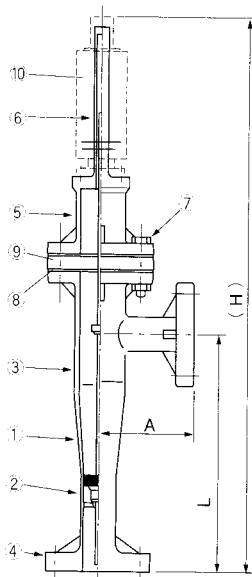
AS-1□□2 (Flow direction: Bottom to Top side, Material: Metal)



| Meter size (mm) | Flow rate (m <sup>3</sup> /h) | Size  |       |         | Mass (kg) | Fig. |
|-----------------|-------------------------------|-------|-------|---------|-----------|------|
|                 |                               | L(mm) | A(mm) | (H)(mm) |           |      |
| 15              | 0.1-0.75                      | 250   | 100   | 770     | 9         | A    |
| 20              | 1.7                           | 250   | 100   | 790     | 9         | B    |
| 25              | 4.2                           | 250   | 100   | 790     | 11        | B    |
| 40              | 7.5                           | 250   | 100   | 840     | 13        | B    |
| 50              | 15                            | 250   | 100   | 860     | 17        | B    |
| 65              | 29.5                          | 350   | 150   | 940     | 24        | B    |
| 80              | 40                            | 350   | 150   | 990     | 28        | B    |
| 100             | 67                            | 350   | 150   | 1010    | 46        | B    |
| 125             | 110                           | 370   | 250   | 1030    | 59        | B    |
| 150             | 150                           | 480   | 250   | 1140    | 80        | B    |

| No. | Description  | Class 1              | Class 2              | Class 3              |
|-----|--------------|----------------------|----------------------|----------------------|
| ①   | Taped tube   | SUS304               | SUS304               | SUS316               |
| ②   | Float ass'y  | SUS304               | SUS304               | SUS316               |
| ③   | Body         | SGP STPG370          | SUS304               | SUS316               |
| ④   | Flange       | SS 400               | SUS304               | SUS316               |
| ⑤   | Chamber      | SS 400/SGP           | SUS304               | SUS316               |
| ⑥   | Lead pipe    | SUS304               | SUS304               | SUS316               |
| ⑦   | Case         | ADC12                | ADC12                | ADC12                |
| ⑧   | Bolt and nut | SS 400<br>SUS304     | SS 400<br>SUS304     | SS 400<br>SUS304     |
| ⑨   | Packing      | Non-asbestos<br>PTFE | Non-asbestos<br>PTFE | Non-asbestos<br>PTFE |

AS-1□□2 (Flow direction: Bottom to Top side, Material: PVC)



| Meter size (mm) | Flow rate (m <sup>3</sup> /h)*1 | ΔP (kPa) | Con-<br>nection<br>size | Size (mm) |       |         | Mass (kg) |
|-----------------|---------------------------------|----------|-------------------------|-----------|-------|---------|-----------|
|                 |                                 |          |                         | L(mm)     | A(mm) | (H)(mm) |           |
| 15              | —                               | —        | —                       | —         | —     | —       | —         |
| 20              | —                               | —        | —                       | —         | —     | —       | —         |
| 25              | —                               | —        | —                       | —         | —     | —       | —         |
| 40              | 2-5                             | 7.5      | 25                      | 940       | 350   | 130     |           |
|                 |                                 |          | 40                      | 960       | 390   | 120     |           |
|                 |                                 |          | 50                      | 970       | 400   | 130     |           |
| 50              | 15                              | 15.0     | 40                      | 1070      | 450   | 150     |           |
|                 |                                 |          | 50                      | 1070      | 460   | 150     |           |
|                 |                                 |          | 65                      | 1070      | 460   | 150     |           |
| 65              | —                               | —        | —                       | —         | —     | —       | —         |
| 80              | 30                              | 12.0     | 65                      | 1170      | 500   | 200     |           |
|                 |                                 |          | 80                      | 1130      | 460   | 180     |           |
|                 |                                 |          | 100                     | 1170      | 500   | 220     |           |
| 100             | 40                              | 9.0      | 80                      | 1300      | 550   | 230     |           |
|                 |                                 |          | 100                     | 1300      | 550   | 250     |           |
|                 |                                 |          | 125                     | 1350      | 600   | 250     |           |
| 125             | —                               | —        | —                       | —         | —     | —       | —         |
| 150             | 70                              | 9.0      | 100                     | 1490      | 650   | 300     |           |
|                 |                                 |          | 125                     | 1490      | 650   | 300     |           |
|                 |                                 |          | 150                     | 1490      | 650   | 300     |           |

\*1 : Measurable flow rate range is indicated by flow rate of water. (Sp.Gr.1.0 and 1.0cP viscosity)

| No. | Description  | Material        |
|-----|--------------|-----------------|
| ①   | Taped tube   | PVC             |
| ②   | Float ass'y  | PVC             |
| ③   | Body         | PVC             |
| ④   | Flange       | PVC             |
| ⑤   | Chamber      | PVC             |
| ⑥   | Lead pipe    | PVC             |
| ⑦   | Bolt and nut | SS400 or SUS304 |
| ⑧   | Packing      | NBR or EPDM     |
| ⑨   | Cover board  | PVC             |
| ⑩   | Indicator    | ADC12           |

## SPECIFICATION OF TRANSMITTER

## AS-131-□ Local indication + Pneumatic output type

- Air supply : 1.4 ±0.1kgf/cm<sup>2</sup>G
- Outputs : Standard 0.2~1.0kgf/cm<sup>2</sup>G  
On request 3~15psiG  
0.2~1.0barG
- Air consumption : 14NL/min (Max.)
- Construction : Standard Rc 1/4 (=PT 1/4)  
On request NPT 1/4
- Output accuracy : ±1.0%F.S
- Construction : Dust and water proof (IP 54 equ.)
- Ambient temp : -20 ~ 80°C  
Provide heat insulation if required.
- Accessory : Air set (On request)

## AS-152□ Local indication + Electric output type

- Power supply : Water tight and pressure tight explosion proof versions  
: DC12-30V
- Outputs : DC4~20mA
- Max. load : Water tight and pressure tight explosion proof versions  
: 600Ω (at DC24V supply)
- Wiring : 2 wire system
- Cable entry : Standard : G 1/2 (=PF 1/2) with flame screw  
Cable gland with flame proof gasket available on request  
On request : NPT 1/2
- Output accuracy : ±1.0% (F.S.)
- Transmitter enclosure : Water tight version (AS-152□) IP54 equivalent  
Pressure tight explosion Proof version (EP-AS-152□) JIS d2G4
- Ambient temp : Water tight version : -30~70°C  
Pressure tight explosion proof version : Exd II BT4 -20~+55°C  
: Exd II CT4 -20~+55°C  
Provide heat insulation if required.

## AS-169□ Local indication + Totalization + Scaled Pulse output type

- Integration : 6 digit with reset
- Count rate : 50~2000c/h
- Pulse output : Open collector output  
Pulse width 100ms, Rating DC35V, 50mA  
(Signal circuit and power supply circuit are isolated.)
- Integration accuracy : ±2.0%F.S.
- Power supply : AC 100V, 50/60Hz  
Other voltage on request
- Power consumption : Max. 5VA
- Cable entry : Standard : G 1/2 (=PF 1/2) with flame screw  
Cable gland with flame proof gasket available on request  
On request : NPT 1/2
- Enclosure : Weather proof (IP 54 equ.) type AS-169□  
Explosion proof (JISd2G4) type EP-AS-169□
- Ambient temp : -20~80°C for type AS-169□  
-10~60°C for type EP-AS-169□  
Provide heat insulation if required

## AS-174□ Local indicator + Alarm Contact(s) type

- Alarm point : 1point high alarm or 1point low alarm or 2points high and low
- Switch : Micro switch SPDT
- Rating : Standard AC 250V, 5A  
On request DC 30V, 0.1A
- Reset span : Within 20% (F.S.)  
In case of Explosion proof version, within 30% (F.S.)
- Cable entry : Standard : G 1/2 (=PF 1/2) with flame screw  
Cable gland with flame proof gasket available on request  
On request : NPT 1/2
- Enclosure : Weather proof (IP 54 equ.) type AS-174□  
Explosion proof (JISd2G4) type EP-AS-174□  
Intrinsically safe (JIS i3nG5) type IS-AS-174□\*  
\*Supplied with safety barrier
- Ambient temp : -20~80°C for type AS-174□  
and IS-AS-174□  
-10~60°C for type EP-AS-174□  
Provide heat insulation if required

\* Specification subject to change without notice


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