

TOKICO

Positive Displacement Oil Flowmeters (Mechanical Indicator Type)

Overview

TOKICO has a long history of producing high quality flow meters since 1950 in the fuel measurement field. Our flowmeters are used in a wide variety of applications including measuring of boiler fuel oil and diesel oil, as well as for transactions for kerosene, light oil and heavy oil. We have been serving numerous customers with accurate, compact, and excellent durability flowmeters.

Features

- High accuracy
Accuracy is within $\pm 0.5\%$
Fluid is directly measured by gear or roots, enabling accurate measuring.
- Compact design
The flowmeter is compactly designed, yet the indicator is easy to read.
- Excellent durability
Simple structure enables long term durability with virtually no degradation of accuracy.



FGB Type

Size : 15mm (1/2B) ~ 25mm (1B)

- Suitable for small volume flow between 40 ~ 3000L/h
- Employs gear-type rotors made of resin



FRO Type

Size : 40mm (1 1/2B) ~ 50mm (2B)

- Suitable for medium volume flow between 0.8 ~ 15 m³/h (800 ~ 15,000L/h)
- Employs roots rotors made of aluminum alloy
- Roots rotors rotate without physical contact
⇒ Extremely low pressure loss
⇒ Accuracy remains unchanged over a long period of time



FRP Type

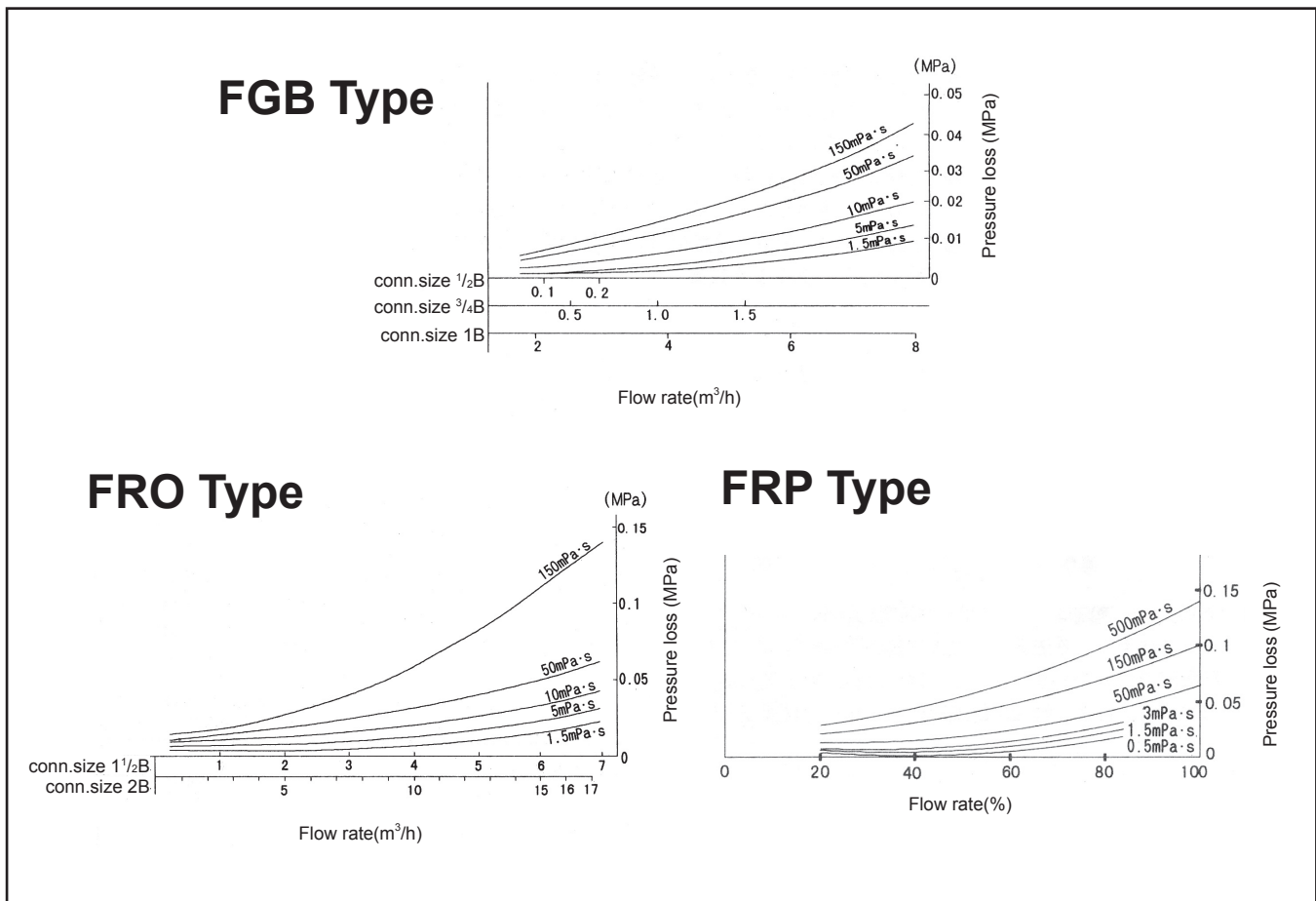
Size : 80mm (3B) ~ 100mm (4B)

- Suitable for large volume flow between 0.6 ~ 130m³/h
- Employs roots rotors made of cast iron
- Roots rotors rotate without physical contact
⇒ Extremely low pressure loss
⇒ Accuracy remains unchanged over a long period of time

Standard Specifications

| | | FGB type | FRO Type | FRP type |
|-----------------------------|-------------------|---|--|--|
| Accuracy | | ±0.5% | | |
| Flow range | | Refer to next page | | |
| Max. working pressure | | 1MPa | | |
| Hydraulic test pressure | | 2MPa | | |
| Max. working temperature | | Size 1/2B --Kerosene, diesel/light oil, A heavy oil : 80°C Size 3/4B & 1B : --Kerosene, diesel/light oil, : 80°C --A,B,C heavy oil : 120°C | Kerosene, diesel/light oil : 50°C A, B, C heavy oil : 100°C | Kerosene, diesel/light oil : 50°C A,B,C heavy oil : 100°C with fin : 150°C |
| Flange rating | | JIS10K FF | | |
| Material | Body | Size 1/2B : FC250 (Cast iron) Size 3/4B & 1B : FCD400 (Ductile iron) | FC 250 (Cast iron) | FC 250 (Cast iron) |
| | Rotor | Size 1/2B : Phenol resin Size 3/4B & 1B : PPS resin | ADC12 (Alluminum alloy die cast) | FC (Cast iron) |
| Counter unit | | 04X : Totalizing counter (7 digits), Reset counter (5 digits) 02X : Totalizing counter (7 digits) | | 04X2 : Totalizing counter (7 digits) Reset counter (5 digits) 02X2 : Totalizing counter (7 digits) |
| Electrical transmitter unit | Transmitter | Reed switch (02S, 04S) | Microswitch (02M, 04M) | <ul style="list-style-type: none"> • Non-contact type (F) • Reed switch type (S) (R) • Microswitch type (M) |
| | Output pulse | Max. 10Hz | Max. 5Hz | |
| | Contact life time | 10 million times | 5 million times | |
| | Cable | Double core shield cable | Double core shield cable | |
| Flow direction | | Right → Left (Standard) | | |
| Painting color | | Munsell 1.4PB 3.1/1.2 | | |

Pressure Loss Characteristics



Flow range

| Model | Condition | Flow range (L/h) | | | |
|------------|-----------|------------------------|-------------------------------|----------------------------|----------------------------------|
| | | Kerosene (1.5mPa·s) | Diesel, Light oil (5mPa·s) | A Heavy oil (10mPa·s ~) | B,C Heavy oil (50 ~ 300mPa·s) |
| FGBB423BAL | Standard | 70 ~ 200 | 40 ~ 200 | 20 ~ 200 | — |
| FGBB631BDL | Standard | 150 ~ 1250 | 120 ~ 1250 | 40 ~ 1250 | 20 ~ 1250 |
| FGBB835BDL | Standard | 150 ~ 3000 | 150 ~ 3000 | 100 ~ 3000 | 40 ~ 3000 |

| Model | Condition | Flow range (m ³ /h) | |
|---------|--------------|------------------------------------|--------------------------|
| | | Kerosene, Light oil (0.9 ~ 5mPa·s) | Heavy oil (5 ~ 300mPa·s) |
| FRO0438 | Intermittent | 0.8 ~ 7.0 | 0.1 ~ 7.0 |
| | Continuous | 0.8 ~ 4.5 | 0.1 ~ 6.0 |
| FRO0541 | Intermittent | 1.5 ~ 15.0 | 0.25 ~ 15.0 |
| | Continuous | 1.5 ~ 9.0 | 0.25 ~ 13.0 |

| Model | Condition | Flow range (m ³ /h) | | | |
|------------|--------------|--------------------------------|---------------------------|---------------------------------|---------------------------------|
| | | Kerosene (0.9 ~ 2mPa·s) | Light oil (2 ~ 5mPa·s) | A,B Heavy oil (5 ~ 150mPa·s) | C Heavy oil (150 ~ 500mPa·s) |
| FRP0845BAA | Intermittent | 5 ~ 35 | 3.5 ~ 40 | 0.6 ~ 40 | 0.6 ~ 35 |
| | Continuous | 5 ~ 25 | 3.5 ~ 35 | 0.6 ~ 35 | 0.6 ~ 25 |
| FRP1051BAA | Intermittent | 16 ~ 120 | 12 ~ 130 | 4 ~ 130 | 4 ~ 120 |
| | Continuous | 16 ~ 85 | 12 ~ 120 | 4 ~ 120 | 4 ~ 85 |

Dimensions


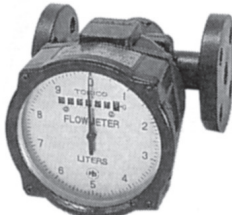

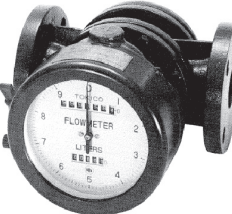

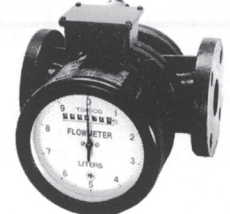



| | | | |
|--|--|--|--|
| FGBB631BDL FGBB835BDL (-02X, -04X) | | FRP0845BAA FRP1051BAA (-02X2-X) (-04X2-X) | |
| FRO0438 FRO0541 (-02X, -04X) | | | |

| Model | Model number | Size | | Dimensions (mm) | | | | Approx. weight (kg) |
|----------|-----------------------------|------|-------|-----------------|-----|-----|-----|---------------------|
| | | mm | inch | φ D | L | A1 | A2 | |
| FGB Type | FGBB423BAL - 02X, 04X | 15 | 1/2 | 95 | 130 | --- | 181 | 6 |
| | FGBB631BDL - 02X, 04X | 20 | 3/4 | 100 | 170 | | 122 | 7 |
| | FGBB835BDL - 02X, 04X | 25 | 1 | 125 | 200 | | 133 | 10 |
| FRO Type | FRO0438 - 02X, 04X | 40 | 1 1/2 | 140 | 200 | 77 | 177 | 17 |
| | FRO0541 - 02X, 04X | 50 | 2 | 155 | 250 | 99 | 190 | 20 |
| FRP Type | FRP0845BAA - 02X2-X, 04X2-X | 80 | 3 | 185 | 300 | 89 | 170 | 45 |
| | FRP1051BAA - 02X2-X, 04X2-X | 100 | 4 | 210 | 450 | 180 | 275 | 100 |

Specifications

| Model | Conn. size | | Model Number | | | | Pointer (/rev) | Indicator | | | | Transmitter | |
|----------|------------|--------|----------------------|----------------------------|----------------|--|----------------|-----------|------|-------------------|----------------------|------------------|-------------------------|
| | | | Base code | Standard (with zero reset) | Totalizer only | With pulse transmitter | | Totalizer | | Reset Counter | | Type | Transmission unit (L/P) |
| | (mm) | (inch) | | | | | | digits | unit | digits | unit | | |
| FGB Type | 15 | 1/2 | FGBB423BAL- □□□ | -04X | -02X | -02S -04S | 1L | 1L | 1L | Reed switch (S) | 0.1(std.) or 1 | | |
| | 20 | 3/4 | FGBB631BDL- □□□ | | | | | | | | | | |
| | 25 | 1 | FGBB835BDL- □□□ | | | | | | | | | | |
| FRO Type | 40 | 1 1/2 | FRO0438- □□□ | -04X | -02X | -02M -04M | 10L | 7 | 10L | 5 | 10L | Micro-switch (M) | 1(std.) or 10 |
| | 50 | 2 | FRO0541- □□□ | | | | | | | | | | |
| FRP Type | 80 | 3 | FRP0845BAA- □□□□ - X | -04X2-X | -02X2-X | -□□F□-X -□□R□-X -□□S□-X -□□M□-X | 100L | 100L | 100L | 4 types (F,R,S,M) | 0.1(F) 10 (R,S,M) | | |
| | 100 | 4 | FRP1051BAA □□□□ - X | | | | | | | | | | |

Indicator

| Model | Conn. size | | Model Number | | |
|-------|------------|--------|---|--|---|
| | (mm) | (inch) | Standard (with zero reset) | Totalizer only | With pulse transmitter |
| FGB | 15 | 1/2 | 04X  | 02X  | 02S  |
| | 20 | 3/4 | | | |
| | 25 | 1 | | | |
| FRO | 40 | 1 1/2 | 04X  | 02X  | 02M  |
| | 50 | 2 | | | |
| FRP | 80 | 3 | 04X2-X  | 02X2-X  | 02F2  |
| | 100 | 4 | | | |

Strainer

Strainers must be used together with flowmeters.
We have various sizes to suit all flowmeters.

Model numbers

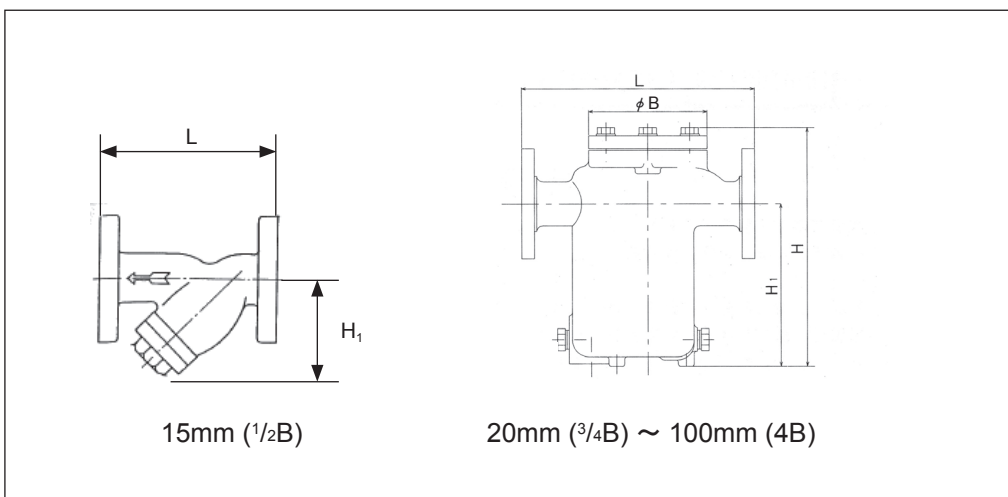
| Base code | Size (mm / inch) | | Max. Flowrate (m ³ / h) | Max. Pressure | Material |
|------------|------------------|-------|------------------------------------|---------------|-------------------------------|
| FSYB426BAP | 15 | 1/2 | 0.4 | 1MPa | Body: FC250 Screen: SUS304 |
| FSBB632BAP | 20 | 3/4 | 2 | | |
| FSBB839DAP | 25 | 1 | 10 | 2MPa | |
| FSB0439DAP | 40 | 1 1/2 | 10 | | |
| FSB0542BAP | 50 | 2 | 20 | 1MPa | |
| FSB0848BAP | 80 | 3 | 80 | | |
| FSB1051BAP | 100 | 4 | 150 | | |

Standard Specifications

| | | |
|-----------------------|----------|-----------------------------|
| Size | | 15mm (1/2 B) ~ 150mm (6B) |
| Max. working pressure | | BAP : 1Mpa, DAP : 2MPa |
| Flange rating | | BAP : JIS10K, DAP : JIS20K |
| Material | Body | FC250 or STPG370 |
| | Screen | SUS304 |
| | Gasket | Non-asbestos, teflon |
| Screen | 80 mesh | Viscosity less than 10mPa·s |
| | 40 mesh | Viscosity more than 10mPa·s |
| | 200 mesh | FSYB426BAP |

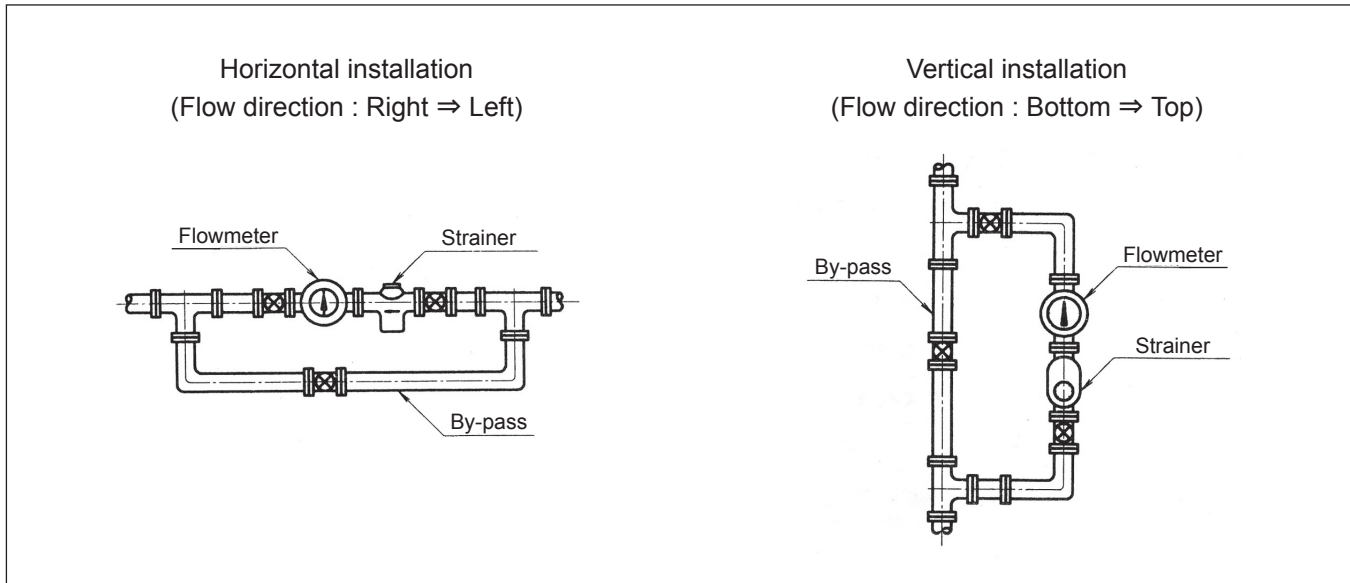
Dimensions

| Model number | Size | | Dimensions | | | | Approx. weight |
|--------------|------|--------|------------|-----|-----|-----|----------------|
| | (mm) | (inch) | L | H | H1 | φ B | |
| FSYB426BAP | 15 | 1/2 | 125 | --- | 70 | --- | 2 |
| FSBB632BAP | 20 | 3/4 | 180 | 147 | 110 | 62 | 7 |
| FSBB839DAP | 25 | 1 | 295 | 258 | 163 | 160 | 15 |
| FSB0439DAP | 40 | 1 1/2 | 295 | 258 | 163 | 160 | 16 |
| FSB0542BAP | 50 | 2 | 320 | 290 | 185 | 185 | 22 |
| FSB0848BAP | 80 | 3 | 395 | 373 | 252 | 230 | 41 |
| FSB1051BAP | 100 | 4 | 460 | 480 | 325 | 295 | 67 |



Precautions on piping and operation

- (1) Dirt and particles inside the piping cause problem to the flowmeter. Take special care when installing to new piping, since new piping may have welding debris.
- (2) A strainer must be installed at the up-stream of the flowmeter, as shown in below figure. This is to prevent the problem stated in (1) above. Also, prepare a by-pass line for the convenience of flowmeter disassembly and maintenance.
- (3) Indicator must be installed at eye level and must not face upwards.
- (4) Make sure to align actual flow direction with flowmeter's flow direction.
- (5) Use the flowmeter within the specification written on the name plate.



Inquiry

Please inform us the following when quotation is necessary.

| No. | Item | Contents |
|-----|--------------------------------|---|
| 1 | Application | Production control, transaction, receipt and shipment, etc. |
| 2 | Fluid | Name, composition, corrosive or not |
| 3 | Flow rate | Maximum, normal, minimum |
| 4 | Fluid temperature | Maximum, normal, minimum |
| 5 | Fluid pressure | Maximum, normal, minimum |
| 6 | Viscosity and specific gravity | Viscosity at °C , Specific gravity at °C |
| 7 | Connection rating | Connection size, flange standard, etc. |
| 8 | Flow direction | Left ⇒ Right, Right ⇒ Left, Bottom ⇒ Top, Top ⇒ Bottom |

* Dimensions and specifications on this catalog are subject to change without prior notice.

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