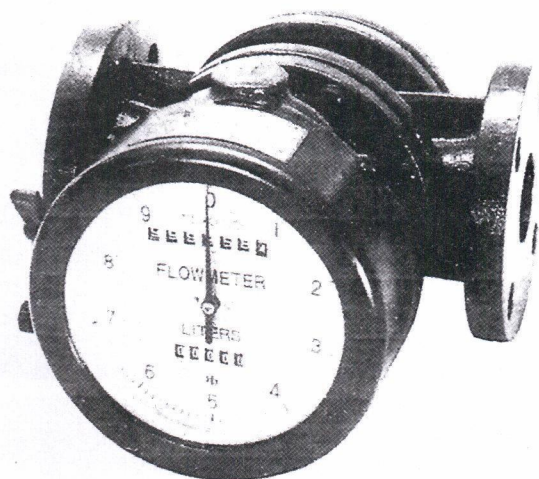


FGB type



FRO type

Tokico oil flowmeters are positive displacement type flow meter which 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.

FGB type

This flowmeter employs a gear-type rotor for small-volume flow of low-viscosity oil in heat control applications, etc. It can be used without modification to measure kerosene, light oil or heavy oil. Measuring accuracy is $\pm 0.5\%$.

Two types, namely FGB type (gear type) and FRO type (Roots type) are available to provide optimum performance in accordance with the particular application.

FRO type

This flowmeter is widely used for transaction and in other applications in which a Roots type flowmeter is most suitable.

The Roots rotor rotates without physical contact, resulting in extremely low pressure loss. In addition, its accuracy remain virtually unchanged over a long period of time.

Features

● Wide flow range and high accuracy

The accuracy of these flowmeters is within $\pm 0.5\%$ over a wide range of flow rates (max range of 1:150 for heavy oil).

● Small pressure loss.

Because the pressure loss of these meters is low, it is possible to perform accurate measuring at the suction side of a pump as well as accurate measurement of high viscosity fluids.

● Compact design.

A positive displacement type flowmeter can be used at

relatively high rotating speeds, making for compact design. In addition, the counter unit of these meters is compact yet easy-to-read, and construction is simple.

● Excellent durability

The simple construction of these meters makes for longterm durability with virtually no degradation of accuracy.

● An electrical transmitter unit attachable.

A microswitch or a reed switch type transmitter unit having simple construction and high reliability is available.

Flow Meter & Pump

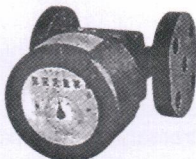


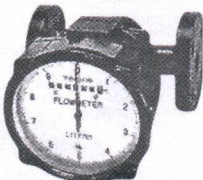
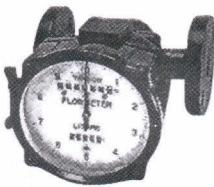

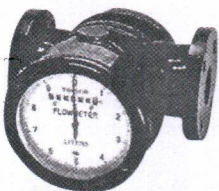
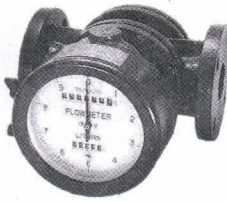
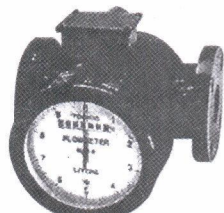
TOKICO

ROOTS AND CCG OIL FLOWMETERS

Specifications for each type

Model	Bore (mm)	Model No.			Pointer (°/rev)	Integrating counter	
		Direct-reading integrating type	Direct-reading integrating type with reset counter	Direct-reading integrating type with transmitter		Number of digits	Minimum Unit (L)
FGB type	15	FGBB423BAL-00X 02X	FGBB423BAL-04X	FGBB423BAL-02S 04S	1	7	1
	20	FGBB631BDL-00X 02X	FGBB631BDL-04X	FGBB631BDL-02S 04S			
	25	FGBB835BDL-00X 02X	FGBB835BDL-04X	FGBB835BDL-02S 04S	10	6 digits for (00X type)	10
FRO type	40	FR00438-02X (RO11AB-1-A4)	FR00438-04X (RO11AB-2-A4)	FR00438-02M 04M (RO11AB-1L 2L-A4)	10	7	10
	50	FR00541-02X (RO12-1-A4)	FR00541-04X (RO12-2-A4)	FR00541-02M 04M (RO12-1L 2L-A4)	10	7	10
	80	FR00845-02X (RO53-1-A4)	FR00845-04X (RO53-2-A4)	FR00845-02M 04M (RO53-1L 2L-A4)	100	7	100

Note: (1) Expect in the counter section 00X, an attachment which tilts the counter unit upwards 45° is available as option. (Model code example : FR00438-02M-T)
 (2) When choosing FCD400 (Ductile Iron) for FRO type body material, material code is "BDE" is added to Model No. (Model code example : FR00438BDE-02X)

Model	Bore (mm)	Direct-reading integrating type	Direct-reading integrating type with reset counter	Direct-reading integrating type with transmitter
FGB type	15 20 25	00X 		
	15 20 25	02X 	04X 	02S 
FRO type	40 50 80	02X 	04X 	02M 

Transmitter			Flow range (ℓ / h) (Accuracy : ±0.5%)				
Type	Trasmission unit (ℓ / p)	Wiring connection fitting	Fluid		Kerosene Light oil	A heavy oil	B, C heavy oil
			Conditions	Viscosity	1.2 ~ 3cP	10cP ~	50 ~ 300cP
Reed switch	0.1, 1	Grand standard JIS20a (JIS F8801) or PF1.2 Female	Normal operation		10 ~ 200	5 ~ 200	——
					40 ~ 1,250	20 ~ 1,250	10 ~ 1,250
	1, 10				150 ~ 3,000	50 ~ 3,000	25 ~ 3,000
Micro-switch	1, 10	Same as above	Normal operation	Intermittent	800 ~ 6,000	100 ~ 7,000	50 ~ 7,000
				Continuous	800 ~ 4,500	100 ~ 6,000	50 ~ 6,000
			Max.		7,000	8,000	8,000
Micro-switch	1, 10	Same as above	Normal operation	Intermittent	1,500 ~ 13,000	250 ~ 15,000	100 ~ 15,000
				Continuous	1,500 ~ 9,000	250 ~ 19,000	100 ~ 19,000
			Max.		15,000	17,000	17,000
Micro-switch	10,000	Same as above	Normal operation	Intermittent	3,500 ~ 35,000	600 ~ 40,000	300 ~ 40,000
				Continuous	3,500 ~ 25,000	600 ~ 35,000	300 ~ 35,000
			Max.		45,000	45,000	45,000

Dimension drawing

FGB type	FGBB423BAL-00X FGBB631BDL-00X FGBB835BDL-00X	
	FGBB423BAL-02X/02S FGBB631BDL-02X/02S FGBB835BDL-02X/02S	
FRO type	FRO0438-02X/02M FRO0541-02X/02M FRO0845-02X/02M	

Dimension table

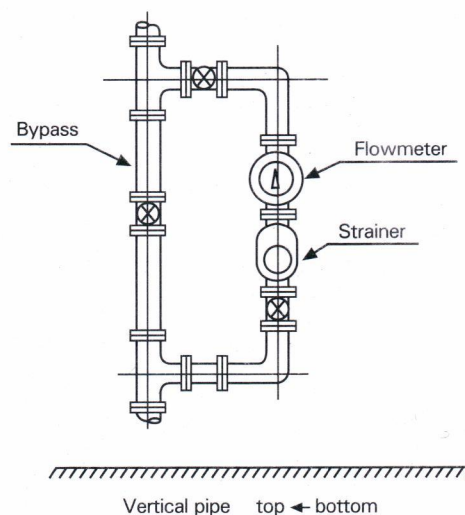
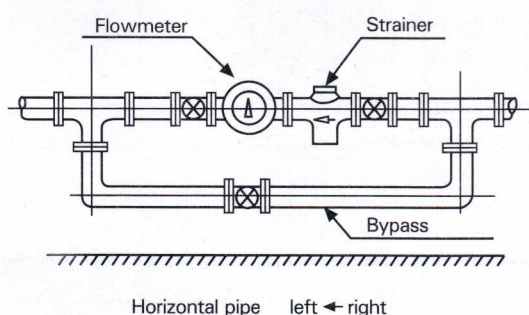
Model	Model No.	Dimensions (mm)	Flange dimensions (mm)				Approx. weight (kg)
			øD	L	A ₁	A ₂	
FGB type	FGBB423BAL-00X	15	95	130	—	112	3.3
	FGBB631BDL-00X	20	100	170	—	122	4.2
	FGBB835BDL-00X	25	125	200	—	133	7.5
	FGBB423BAL-02X/02S	15	95	130	—	181	6.0
	FGBB631BDL-02X/02S	20	100	170	—	176	7.0
	FGBB835BDL-02X/02S	25	125	200	—	187	10.0
FRO type	FRO0438-02X/02S	40	140	200	77	177	17
	FRO0541-02X/02S	50	155	250	99	190	20
	FRO0845-02X/02S	80	185	300	125	206	40

Standard specifications

Accuracy		± 0.5%
Flow range		See next page
Max. working pressure		10kgf/cm ²
Hydraulic test pressure		20kgf/cm ²
Max. working temperature		50°C for kerosene and light oil (100°C with the FGB type) 100°C for heavy oil (120°C with the FGB-00X and FGB-02X types)
Flange rating		JIS 10kgf/cm ² FF
Material	Body	Cast iron (FC25)
	Rotor	FGB type : Resin
		FRO type : Aluminium alloy casting
Counter unit		Integrating pointer and integrating counter (a reset counter is also available)
Electrical transmitter unit	Transmitter	FGB type : Reed switch (S) FRO type : Microswitch (M)
	Power supply	AC100V 50/60 Hz as standard
	Number of pulse	*0 ~ 5 PPS
	Output signal	ON-OFF contact
	Transmission cable	2-wire cable with cabtype
Flow direction		Right → left
Paint color		Munsell 1.4PB3.1/1.2

Precautions for piping and operation

- (1) Most of the causes for trouble are attributed to the dirt and foreign matter which enter the inside of the flow meter when piping is provided. Take care for the cleaning of the dirt and the foreign matter before measuring.
- (2) In the case of new piping, a lot of fine scale may exist in the piping. Before installing the flowmeter, pass the fluid through a bypass in order to flush out any scale.
- (3) When connecting the piping to a flowmeter, take care not to distort the body of the flowmeter or not to mistake flow direction of the flowmeter.
- (4) Be sure to fit a strainer directly in front of the inlet of the flowmeter as shown in the figure below.
- (5) Be sure to operate the flowmeter within the flow rate, pressure and temperature range embossed on the nameplate of the counter unit.



Instructions for making enquiries

- (1) When enquiring a flowmeter, be sure to indicate the type code (e.g. FRO0541-03X), fluid name, and transmission unit (in the case of a flowmeter with transmitter).
- (2) Specify the following only when they deviate from the standard specifications.
(flow direction, paint color, power supply, cable connect standards, attachment for tilting counter unit by 45°)