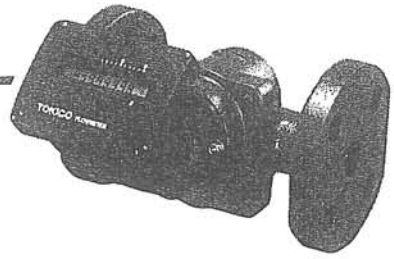
GENERAL SPECIFICATIONS

TOKICO GS-F1071E

CCG OIL FLOWMETER

(Drip-proof type)



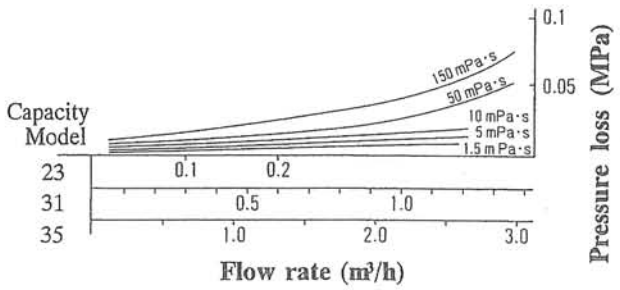
GENERAL

TOKICO CCG oil flowmeter is a oil-specific positive displacement flowmeter broadly used for boiler, diesel engine and fuel oils, and it is particularly suited for small-capacity and/or low-viscosity oil handling instrument.

FEATURES

- **Wide flow range and high accuracy**
  In the wide flow range, the measuring accuracy remains within ±0.5%.
  (Max.range for heavy oil 1:120.)
- **Easy-to-read digital display**
  The pushbutton-switch allows selection & display by the totalizing counter / reset counter / momentary flow rate as well as selectable display of per-hour & per-minute momentary flow rate.
- **Multi-function Indicator**
  The Indicator has many excellent capabilities including fine graduation display / normal and reverse flow detection / self-diagnosing / alarm of battery exhausion / etc. Besids, the indicator in-clinable to 45 and 90 degree angle.
- **Superb durability**
  The rotor adopts high-durable PPS-Resin while the indicator (being an electronic product therefore simple in construction) demonstrates its long service life and so its accuracy drop is least likely.
- **Remote-controllable Instrumentation**
  Output pluse sent proportionally to the rotor rotation, allows flow totalizing & display at remote point in addition to compensated and non-compensated pulse output capability.

PRESSURE LOSS COEFFICIENT



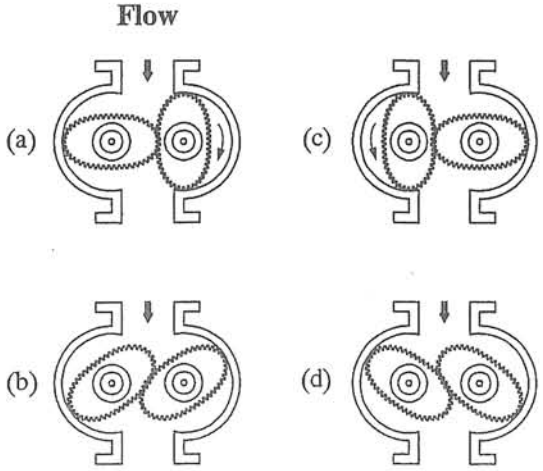
(Note) The flow rate at 100% indicates the maximum value of the largest flow rate in each capacity.

STANDARD SPECIFICATION

(MEASURING UNIT)

Applicable Fluid		Kerosene, Light oil Heavy oil, Lubricating oil
Accuracy		± 0.5%
Flow Rate Range		5 ~ 3000 L/h
Fluid Temperature		0 ~ 120°C (Max. 50°C : Conn.Size 15 mm)
Max. Working Pressure		Max. 0.98 MPa {10 kgf/cm² }
Fluid Viscosity		Max. 300 mPa·s {300 cP}
Connection Size		15 mm (1/2 inch)~25 mm (1 inch)
Flange Rating		JIS 10K FF
Material	Body / Front Cover	FC250 / AC4A (Conn.Size 15 mm)
		FCD400 / BC6 (Conn.Size 20 mm)
	Rotor	PPS Resin
	O-ring	Fluorine Rubber
Paint color		Munsell 2.5 PB 3.5/10

PRINCIPLE OF OPERATION



STANDARD SPECIFICATION (INDICATING UNIT)

Display	Totalizing counter		8 digits LCD (TOTAL mode)	model In case of indicator : 74
	Reset counter		8 digits LCD (R. COUNT mode)	
	momentary flow rate (L/h)		4 digits LCD (FLOW. Fh mode)	
	momentary flow rate (L/min)		4 digits LCD (FLOW. Fn mode)	
	Fractionized scale (min dight)		Equally divided into 10 parts	
Function	Normal / Reverse flow detection		Displays after having totalized value through addition / subtraction of normal / reverse flows	
	Self-diagnosis		Conducts self-diagnosis at power switch on	
	Battery exhaustion alarm		BATT is displayed when the battery runs short	
	Self-transmission (Transmits pulses for loop-cheks)		Output pulse : Open collector Pulse frequency : 5 Hz Pulse width : 0.5 ms	
Output Pulse	Both compensated and non-compensated pulses			
	Output signal		Open Collector	
	Capacity		Max. 30V DC 50 mA	
	Pulse width	Non-compensated	0.5 ms	
		Compensated	0.5 ms (Standard), 10 ms, 100 ms	
	Transmission cable		4 core vvs shielded cable 30 cm long (Outer dia. 6.7 mm, Core wire 0.5 mm^2)	
Power Supply	External Power Supply		12~24V DC	
	Power Consumption		30 mA	
	Lithium Battry Life	Main	Approx. 3 years	
		Sub	Approx. 0.5 years	
Structure			Drip-proof	
Totalizing unit mounting direction			Faced upward at 45 degrees angle (standard) Tiltable up and down by 45 deg. steps with an internal screw	
Ambient Temperature			−10~60 ℃	
Color			Black (resin color)	

(Note) In case of the reverse flow direction, flow volume is subtracted, and total-counter and reset-counter show its figures. And then after-compensation-pulse are not output. Microcomputer installed in the totalizing unit memorized the reverse flow volume.
After the flow turns to the normal direction, and its flow volume come to the same as the memorized reverse volume, after-compensation-pulse starts to be transmitted.

FLOW RATE RANGE

(Accuracy : ±0.5% Reading)

Capacity Model	Conn.Size		Flow rate range (L/h)		
	mm	inch	Kerosene, Light oil (1.2~3 mPa·s)	A Heavy oil (10 mPa·s ~)	B·C Heavy oil (50~300 mPa·s)
23	15	1/2	10~ 200	5~ 200	
31	20	3/4	40~1250	20~1250	10~1250
35	25	1	150~3000	50~3000	25~3000

PRESSURE LOSS COEFFICIENT

(Flow rate :Maximum)

Pressure loss (MPa)	
Kerosene (1.5 mPa·s)	Heavy oil (16 mPa·s)
0.002	0.008
0.008	0.018
0.008	0.018

(Note) 1 mPa·s = 1 cP、 0.98 mPa = 10 kgf/cm^2

COUNTING UNITS OF INDICATOR

▭ : Standard specification

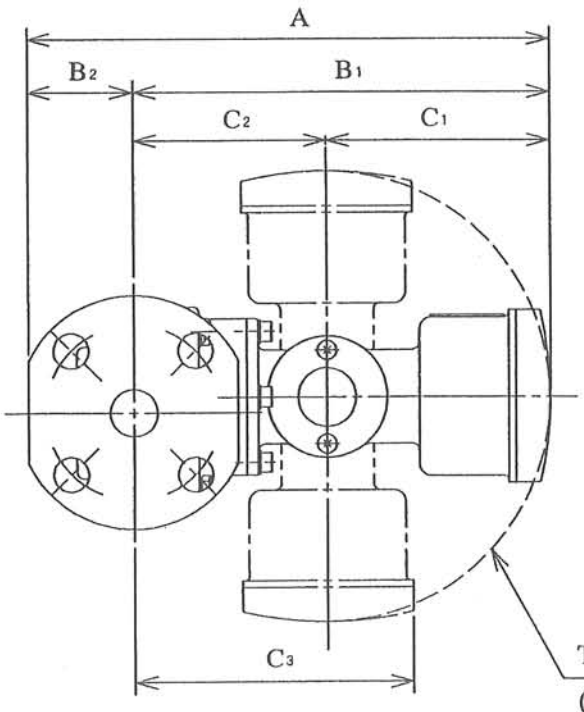
Capacity Model	Conn.Size		Max. Flow rate (L/h)	Indicator				Output pulse unit	
	mm	inch		Totalizing counter (8 digits L)	Reset counter (8 digits L)	Instantaneous flow rate unit (4 digits L/h)	Instantaneous flow rate unit (4 digits L/min)	Compensated (L/P)	Non-compensated (mL/P)
23	15	1/2	200	**0.01**	**0.01**	200.0	3.333	**0.01**	1.3
				0.1	0.1			0.1	
31	20	3/4	1250	0.01	0.01	1250	20.83	0.01	4.1
				0.1	**0.1**			**0.1**	
				1	1			1	
35	25	1	3000	0.01	0.01	3000	50.00	0.01	7.0
				0.1	**0.1**			**0.1**	
				1	1			1	

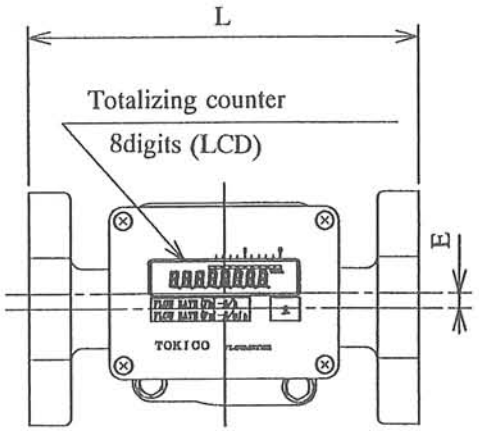
BASIC MODELS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	Contents			
F	G	B												CCG Oil Flowmeter			
Conn. Size			B	4										1/2 inch (15 mm)			
			B	6										3/4 inch (20 mm)			
			B	8										1 inch (25 mm)			
Capacity Model														Max. Flow Rate (Conn. Size)			
					2	3								200 L/h (15 mm)			
					3	1								1250 L/h (20 mm)			
					3	5								3000 L/h (25 mm)			
Max. Working Pressure														Nominal Working Press. {kgf/cm²}	Max. Working Press. MPa {kgf/cm²}	Hydraulic test pressure MPa {kgf/cm²}	Applicable Flange Rating JIS
							B							10	0.98 {10}	1.96 {20}	10 K
Material								A	L					Body	Front cover	Rotor	Conn. Size
								A	L					FC250	AC4A	PPS	1/2 inch
								D	L					FCD400	BC6	PPS	3/4 inch, 1 inch
										–							
Indicator											7	2		Drip-proof	With Totalizing counter		
											7	4			With Totalizing counter, reset counter and momentary flow rate		
Pulse Transmitter													P	With Pulse Transmitter			
													X	Without Pulse Transmitter			

DIMENSION DRAWING

Indicator Model : 74X





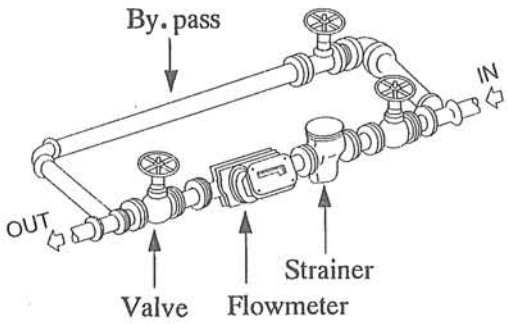
The indicator is tiltable up/down to 90° and 45° fixed positions.
(45° up position at the time of delivery)

Capacity Model	Conn.Size		Dimensions (mm)								Approx. Weight (kg)
	mm	inch	L	A	B1	B2	C1	C2	C3	E	
23	15	1/2	130	219	177	42	97	80	117	4	3
31	20	3/4	170	224	179	45	97	82	119	6	4
35	25	1	200	241	186	55	97	89	126	10	6

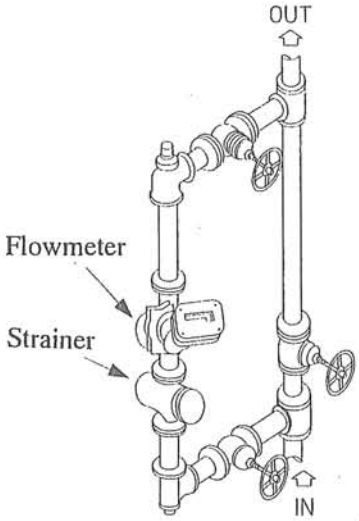
CAUTION FOR FLOWMETER PIPING INSTALLATION

- Be sure to operate the flowmeter within the specification stamped on the name plate.
- As shown below, install a strainer at the inlet of the flowmeter and provide a by-pass for the convenience of flowmeter disassembly and maintenance.
- Install the flowmeter so as to level its rotor shaft pose regardless of the mode (horizontal or vertical) of its associated pipes.
- The flowmeter should be installed on the by-pass side since the dirt in the outlet piping flows back when the flow direction is from bottom to top.
- After the alarm of battery exhaustion the meter could be operated for 0.5years by the sub battery.
  However, the battery should be replaced as early as possible.
  Note that, if the battery exhausts completely, the memorized counts are cleared.

Horizontal arrangement



Vertical arrangement



ORDERING INSTRUCTIONS

Specify the followings when ordering :

1. Applications
2. Applicable fluid name
3. Accuracy
4. Maximum, normal and minimum flow rate.
5. Maximum, normal and minimum operating temperatures.
6. Maximum, normal and minimum operating pressures.
7. Viscosity at normal operating conditions.
8. Piping connection size.
9. Flow Direction.
10. Minimum digit of Totalizing/reset counter.
11. Pulse unit of Pulse Transmitter.
12. Applicable Regulation.
13. Attached Accessories.
14. External Power Supply.

The information in this General Specification subject to change without prior notice.

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