



PD meter dedicated for gas measurement

## GAS OVAL

MODELS : GAL50, 52, 53, 55, 56

GENERAL SPECIFICATION  
GS.No.GBB318E-7

### ■ GENERAL

As a precision flowmeter for gas measurement, this meter has the same construction of the OVAL general-purpose PD flowmeter for liquids, field proven for accuracy and performance.

Specifically designed and built for gas service, it has a precision-machined measuring chamber.

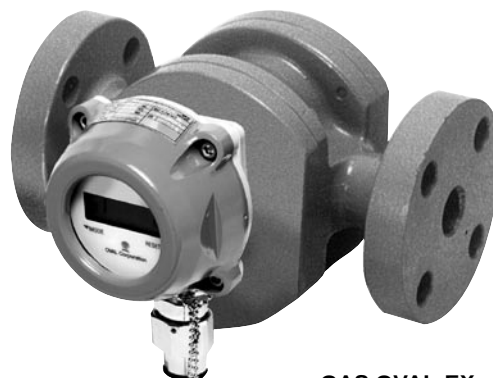
Ideally suited for metering gases in general, including air, CO<sub>2</sub>, and nitrogen.

### ■ FEATURES

1. A high degree of accuracy, thanks to its PD design with oval rotors.
2. With ball bearings that provide support for the rotors, it can measure with low pressure differential.
3. Equipped with a multifunction electronic register (with LCD display), it comes in battery powered (dedicated to local indication), externally powered (pulse generator built in), explosionproof and non-explosionproof type, etc.
4. By selecting the right electronic register with a pulse generator, you can build a telemetering system that best meets your needs.
5. To ensure safety in telemetering, flameproof generators are available.
6. When combined with OVAL flow computer, continuous density meter or other associated equipment, mass flow measurement of gases or equivalent flowrate measurement under standard conditions can also be achieved.



GAS OVAL-EG



GAS OVAL-EX  
(Flameproof generators)

### ■ METER BODY SPECIFICATIONS

Item	Description
Nominal Size	15, 20, 25, 40mm
Metered fluids	Air, Nitrogen, CO <sub>2</sub> , City Gas, LPG, etc. ※
Linearity	± 1% of RD or ± 1% of FS
Max. operating pressure	0.97MPa
Hydrostatic test pressure	1.47MPa
Operating temp. range	- 10 to + 60°C (Explosionproof model : - 10 to + 50°C) Display operating range : - 10 to + 60°C
Process connection	Flanged connections (Flange Rating JIS 10K FF)
Material	Body
	Rotors
Finish	Meter body : 2.5G 8/2

※ : Not serviceable for gases that come under high pressure gas safety law, corrosive gas, and oxygen.

### ■ APPLICABLE EN DIRECTIVES

Applicable EU Directive	Electro-Magnetic Compatibility Directive : 2004/108/EC ATEX Directive : 94/9/EC
Applicable EN standards, etc.	For Electro-Magnetic Compatibility Directive EN55011 : 1998/A1 : 1999, Group 1, Class B EN61000-6-2 : 2001 ATEX Directive : EN 60079-0:2006 (2009)    EN 60079-1:2007    EN 60079-11:2007

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## ELECTRONIC REGISTER SPECIFICATIONS

Item	Description	
	GAS OVAL-EX	GAS OVAL-EG
Menu items	① Accumulated total flow (8-digit) ② Instantaneous flowrate, L/h (mode: b1) and L/min (mode: b2) ③ Resettable total flow (zero start/zero resettable, mode: C) ④ Low battery alarm (Low battery indicator " " blinks below 3.0V battery voltage.) ⑤ Factored pulse and unfactored pulse output (pulse generator equipped model)	
Display	7-segment, 8-digit LCD. Characters 10mm high. Total flow units L (std.), kL, m <sup>3</sup>	
Register accuracy	Total flow : $\pm 0.0\% \pm 1$ count Instantaneous flowrate : $\pm 1\%$ of full scale	
Display orientation	Rotatable in 90° steps	Rotatable in 90° steps and adjustable to an upward, horizontal, downward or 180° position
Output pulse	Type Open collector pulse Capacity Max. : 20mADC/30V Kind Unfactored, Factored Factored pulse width : 1ms, 50ms, 100ms, 250ms Unfactored pulse width : 2ms (fixed) Pressure-resistant packing or conduit connection for the cable Cable 1 m long furnished (4-conductor vinyl-insulated, shielded wire)	
Transmission length	Max. 1km (CVVS : 1.25 to 2.0mm <sup>2</sup> ) Finished cable O.D. 12 mm max.	
Power source	Dedicated battery pack built in. Good for 8 years approx. (With external power source, 12 to 50VDC $\pm 10\%$ )	
Operating temp. range	- 10 to + 60°C	
Material	AC2A-T6	Polycarbonate
Finish	Housing: 2.5G8/2 Cover: 2.5BG5/6	Blue
Explosionproof configuration	TIIS Battery powered: Intrinsic safety Exia IIB T4 External power: Flameproof or intrinsic safety. Exd IIB T4/Exia IIB T4 (※ 1) NEPSI External power: Exd IIB T4 ATEX Battery powered: Intrinsic safety. II 2G Exib IIB T4 Gb External power: Flameproof. II 2G Exd IIB T4	CE non-explosionproof
Enclosure protection class	IP66	IP53 (Avoid locations exposed to the sunshine.)

※ 1 : Flameproof rating while powered by an external source; intrinsic safety rating when power is switched from an external source to the internal supply.

## FACTORED PULSE WIDTH SELECTOR TABLES

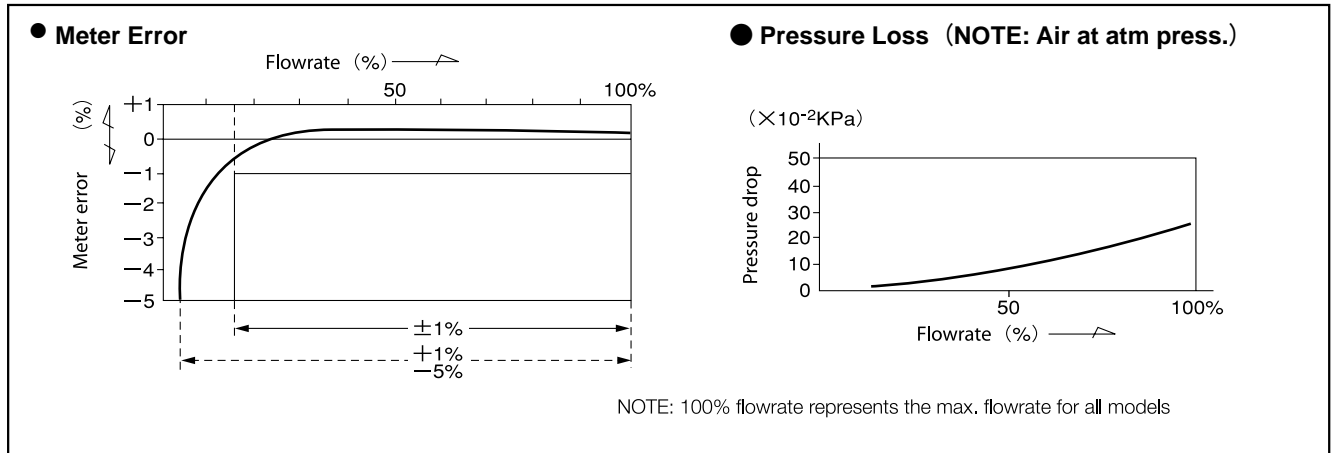
Model	Totalizer Units L (m <sup>3</sup> )	Factored Pulse		Factored Pulse Width				Unfactored Output Pulse		Max. Flowrate m <sup>3</sup> /h
		Unit L (mL)	Max. frequency Hz	1ms	50ms	100ms	200ms	Nom. Meter Factor mL/P	Max. frequency Hz	
50	0.01	(10)	33.3	○	—	—	—	7.908	42.15	1.2
	0.1	(100)	3.33	○	○	○	—			
	1	1	0.333	○	○	○	○			
52	0.1	(100)	8.3	○	○	—	—	19.328	43.12	3
	1	1	0.83	○	○	○	○			
	(0.01)	10	0.083	○	○	○	○			
53	0.1	(100)	15.3	○	—	—	—	35.03	43.61	5.5
	1	1	1.53	○	○	○	○			
	(0.01)	10	0.153	○	○	○	○			
55	0.1	(100)	27.8	○	—	—	—	69.21	40.14	10
	1	1	2.78	○	○	○	—			
	(0.01)	10	0.278	○	○	○	○			
56	1	1	5.6	○	○	—	—	149.31	37.21	20
	(0.01)	10	0.56	○	○	○	○			
	(0.1)	100	0.056	○	○	○	○			

Shadowed areas : Standard

### FLOW RANGES

Model	Accuracy		+ 1 - 5 % of RD	± 1% of RD	± 1% of FS
	Nom. Size	mm			
GAL50	15		75 to 1200 L/h	180 to 1200 L/h	75 to 1200 L/h
GAL52	20		190 to 3000 L/h	450 to 3000 L/h	190 to 3000 L/h
GAL53	20		320 to 5500 L/h	750 to 5500 L/h	320 to 5500 L/h
GAL55	25		650 to 10000 L/h	1.5 to 10 m <sup>3</sup> /h	650 to 10000 L/h
GAL56	40		1.3 to 20 m <sup>3</sup> /h	3 to 20 m <sup>3</sup> /h	1.3 to 20 m <sup>3</sup> /h

### METER ERRORS AND PRESSURE LOSSES



### PRODUCT CODE EXPLANATION

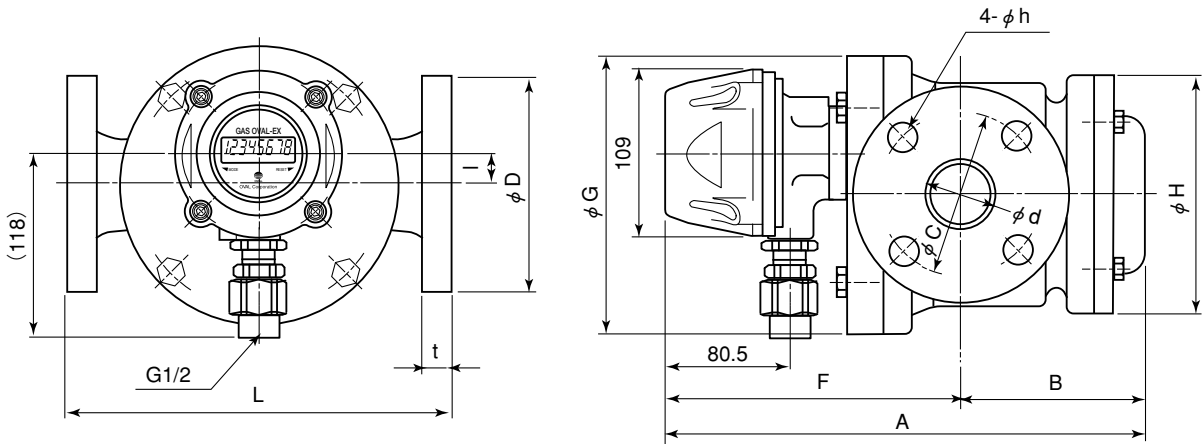
Item	Code No.												Description	
	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫		
Model	G	A	L										GAS OVAL	
Meter Size				5	0								Nominal size 15mm	
				5	2								Nominal size 20mm	
				5	3								Nominal size 20mm	
				5	5								Nominal size 25mm	
				5	6								Nominal size 40mm (※ 1)	
Material				L									Meter body: Aluminum alloy Rotors: Special resin	
Process connection							3	-					JIS 10K FF flanged	
Register													E X	GAS OVAL-EX (Explosionproof for outdoors)
													E G	GAS OVAL-EG (Non-explosionproof for indoors)
Explosionproof configuration													0	Non-explosionproof
													1	TIIS /Battery powered: Exia IIB T4, External power: Exd IIB T4 / Exia IIB T4
													2	ATEX/ Battery powered: II 2G Exib IIB T4, External power: II 2G Exd IIB T4
													7	NEPSI/ External power: Exd IIB T4
Pulse Generator													0 0	Less pulse generator
													3 0	Factored pulse width 1ms Unfactored pulse width 2ms
													5 0	Factored pulse width 50ms Unfactored pulse width 2ms
													6 0	Factored pulse width 100ms Unfactored pulse width 2ms
													7 0	Factored pulse width 250ms Unfactored pulse width 2ms

※ 1 : Ratings for Meter Size 56

When used for flammable gas in a European Union member nation, select Counter unit: EX ATEX explosionproof type regardless of whether explosionproof structure is required or not.

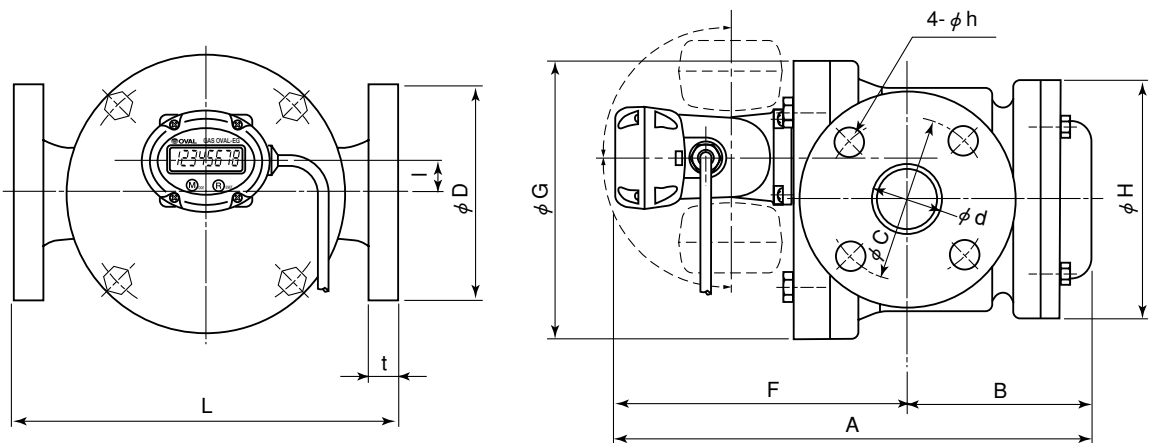
**OUTLINE DIMENSIONS (Unit in mm)**

**● GAS OVAL-EX**



Meter size	L	d	D	t	C	h	A	B	F	G	H	I	Approx. Weight (kg)
50	150	15	95	16	70	15	214.5	57	157.5	100	100	6.0	3.3
52	200	20	100	18	75	15	225.5	63	162.5	120	120	10.0	4.2
53	200	20	100	18	75	15	250.5	75.5	175	120	120	10.0	4.6
55	230	25	125	18	90	19	269.5	90	179.5	155	155	14.5	7.4
56	250	40	140	20	105	19	304.5	117	187.5	180	155	20.5	10.2

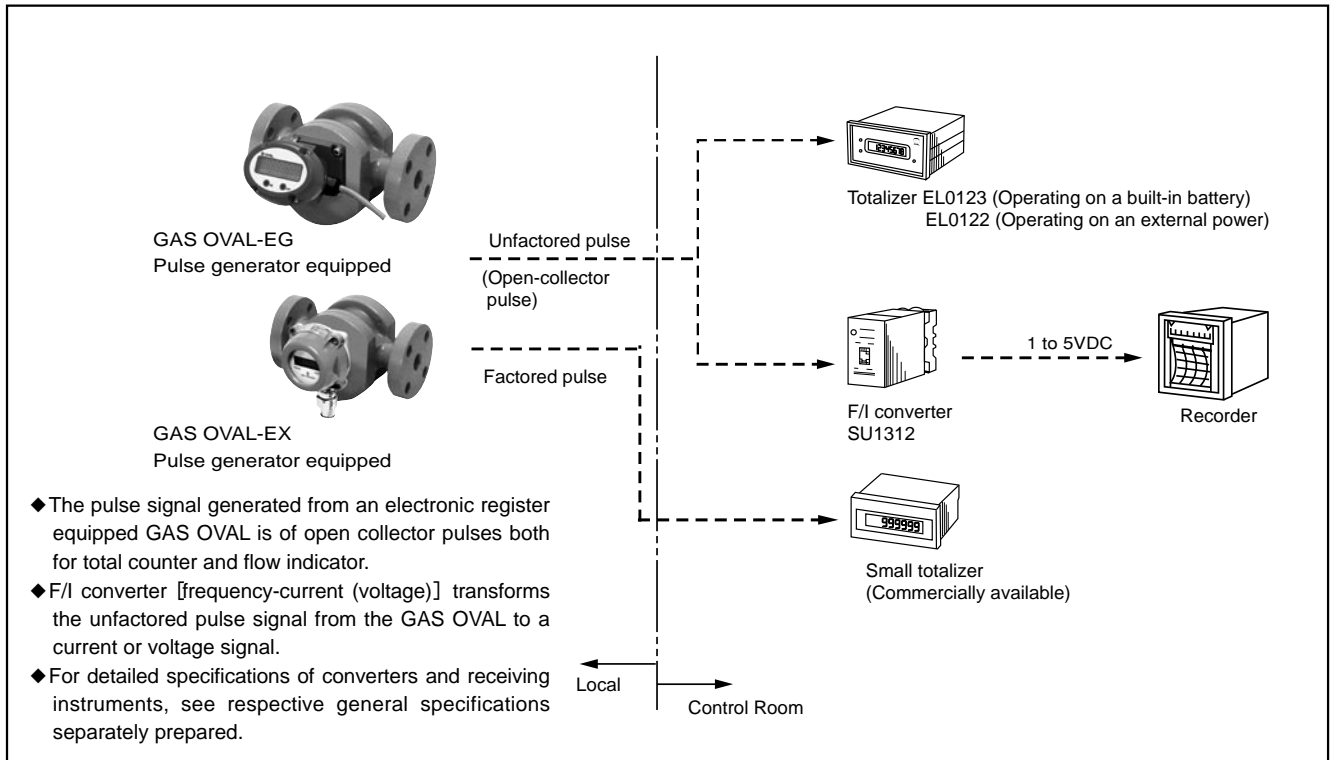
**● GAS OVAL-EG**



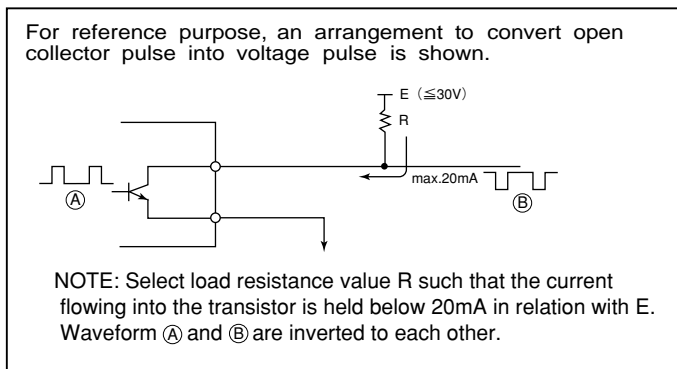
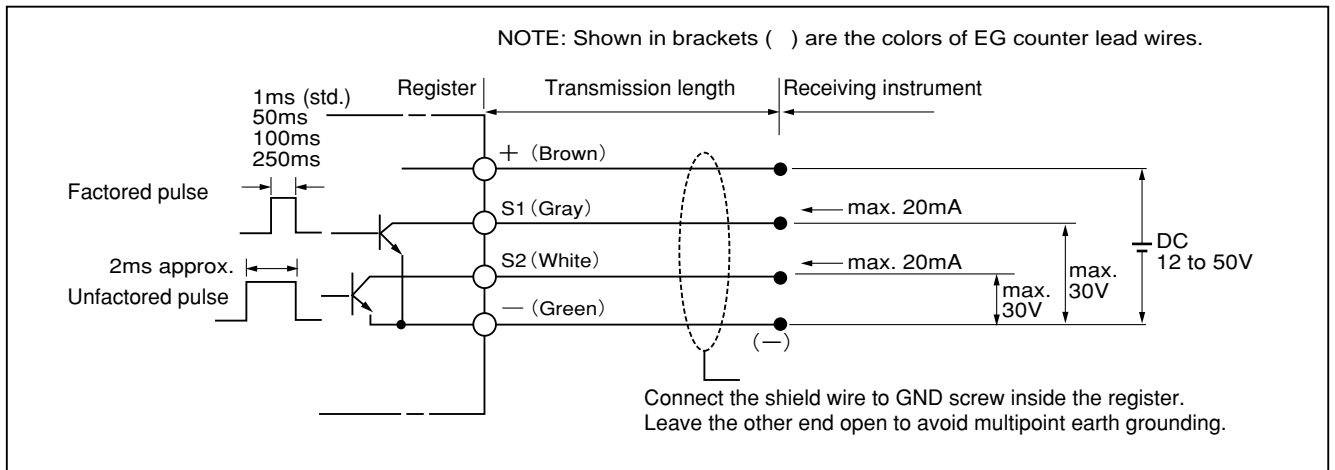
Meter size	L	d	D	t	C	h	A	B	F	G	H	I	Approx. Weight (kg)
50	150	15	95	16	70	15	211	57	154	100	100	6.0	2.1
52	200	20	100	18	75	15	222	63	159	120	120	10.0	3.0
53	200	20	100	18	75	15	247	75.5	171.5	120	120	10.0	3.4
55	230	25	125	18	90	19	266	90	178	155	155	14.5	6.2
56	250	40	140	20	105	19	301	117	184	180	155	20.5	9.0

### REMOTE FLOW MEASUREMENT WITH GAS OVAL

Pulse generator equipped GAS OVAL provides the operator with a quick indication of the process for absolute control of water or oil supply at a remote location.



### WIRING DIAGRAM



### Precautions

1. Both factored pulse and unfactored pulse output is of open collector output. Use by connecting a load on the part of receiving instrument so as the rate to be held within 30VDC, 20mA max.
2. Exercise care to avoid exceeding the rating or incorrect wiring connections with regard to polarities that could result in damage to the register.
3. Depending on the type of cable, select either unfactored or factored pulses.

## ■ STRAINER

To prevent damage to the flowmeter from foreign solids and insure long life, use a strainer immediately upstream of the meter.

### ● Specification

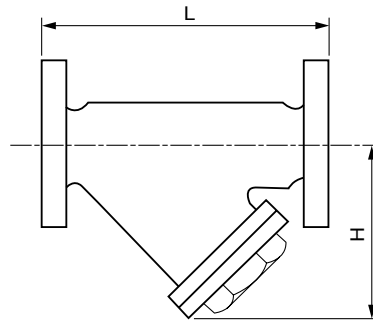
Item		Specification
Nominal Size		15, 20, 25, 40mm
Max. Operating Pres.		0.97MPa
Test Pressure		1.47MPa
Flange Type		JIS 10K FF
Materials	Body	Copper Alloy (BC6)
	Net	SUS 304 (Mesh 100 or 200)
Finish		Munsell 7.5G 7/2.5

### ● Outline Dimensions

#### Flange Type JIS 10K FF

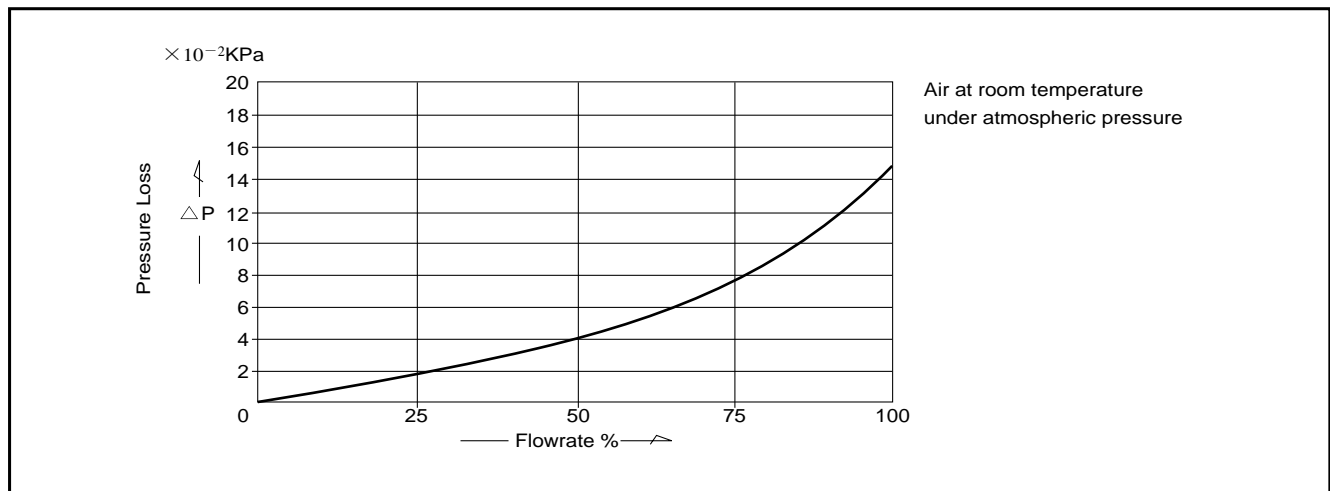
Nom. Size mm	Material		Weight kg	Net Mesh
	BC6	H (approx.) mm		
15	L	60	1.4	200
20	125	60	3.1	100
25	125	66	4.7	100
40	180	95	7.4	100

#### In case of BC6 material



Besides the strainers shown here, a temporary type for removing relatively large solids, etc. are also available. Consult the factory.

### ● Pressure Losses



● **Model Code Number**

Item	Code No.								Description	
	①	②	③	—	④	⑤	⑥	⑦		⑧
<b>Model</b>	Y	F	1	—						Strainer
<b>Application</b>				1						For GAS OVAL
<b>Nominal size</b>					0	3				15mm or Rc1/2 (Applicable to GAS OVAL Model 50)
					0	4				20mm or Rc3/4 (Applicable to GAS OVAL Models 52, 53)
					0	5				25mm or Rc1 (Applicable to GAS OVAL Model 55)
					0	7				40mm or Rc1/2 (Applicable to GAS OVAL Model 56)
<b>Material</b>								A		Body: Copper alloy (BC6), Net: Stainless steel (SUS304)
<b>Piping Connection</b>									1	Flange type, JIS 10KFF

■ **When making inquiries, please advise the following:**

- Applied Fluid: \_\_\_\_\_  
 Specific gravity; \_\_\_\_\_  
 Operating temperature (°C) \_\_\_\_\_ min. \_\_\_\_\_ normal \_\_\_\_\_ max.  
 Operating Pressure (MPa) \_\_\_\_\_ min. \_\_\_\_\_ normal \_\_\_\_\_ max.
- Flowrate: \_\_\_\_\_ min. \_\_\_\_\_ normal \_\_\_\_\_ max. L/h, m<sup>3</sup>/h
- Connection: Nom. size \_\_\_\_\_ mm
- Receiving Instrument Model, Spec., Power Supply, Input Spec., Output Spec., etc.
- Strainer  
 Connection: Nom. size \_\_\_\_\_ mm, Materials: BC6  
 Net Mesh: 100, 200

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The specification as of July, 2013 is stated in this GS Sheet. Specifications and design are subject to change without notice.

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