



Servo-controlled Microflow Meter Hi SHOT SERVO 1

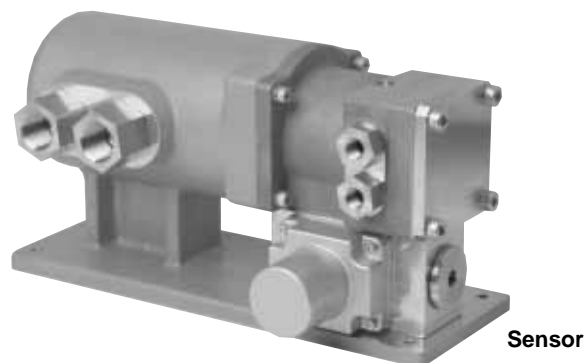
GENERAL SPECIFICATION
GS.No.GBB701E-2

■ GENERAL

A servo controlled flowmeter for extralow flows "Hi Shot Servo 1" is the ripe fruitage of the specialized PD meter manufacturing experience and advanced know-how the OVAL has acquired over many years. By maintaining a zero pressure differential across the meter, accurate measurement over a wide flow range with fast speed of response time has successfully been achieved. This system consists of a basic meter and a controller with a display to show measured variables and control state. When used in combination with a PC, the operator can reconfigure parameters to best suit his specific process requirements. Typical applications include measurement of injected fluid quantity of the injector, playing the role of the master in extremely low flow measurement, and elsewhere where accurate flowmetering and control are required.

■ FEATURES

1. Ensures accurate flowmetering by maintaining pressure differential across the meter at zero.
2. A wide flow range (1:300) with high meter accuracy and fast response.
3. A magnetic coupling used between the servomotor and rotors serves to improve sealing performance and endurance even in low flow ranges.
4. A filter built in the meter body affords protection against a fault in external filters.
5. Reconfiguring control parameters and setting individual meter factors to suit your specific process is simple on the controller via a PC.
6. The controller display provides the operator with quick grasp of flow signals and operating status, simplifying his maintenance management.
7. For ease of maintenance, unitized components facilitate prompt parts replacement without sacrificing performance.
8. Explosionproof models are also available.



■ GENERAL SPECIFICATIONS

● Flowmeter body (sensor)

Item	Description
Flow range	030 060
Process connection	Rc 1/4
Acceptable fluids	Light oil (for gasoline, kerosene, and others, consult factory.)
Flowrate	0.1 to 30 L/h 0.2 to 60 L/h
Ambient operating temp.	-10 to +60°C
Operating fluid temp. range	-10 to +80°C
Max. operating press.	1MPa
Meter accuracy	Reproducibility
	Repeatability
Materials	Meter body
	Rotors
	Bearing
	Shafts
Flow direction	Reverse flow is unacceptable for measurement.
Construction	Non-explosionproof or TIIS Flameproof configuration (Exd II BT4)
Protection class	IP67
Approx. weight	Approx.17 kg
Power source	Supplied from the controller

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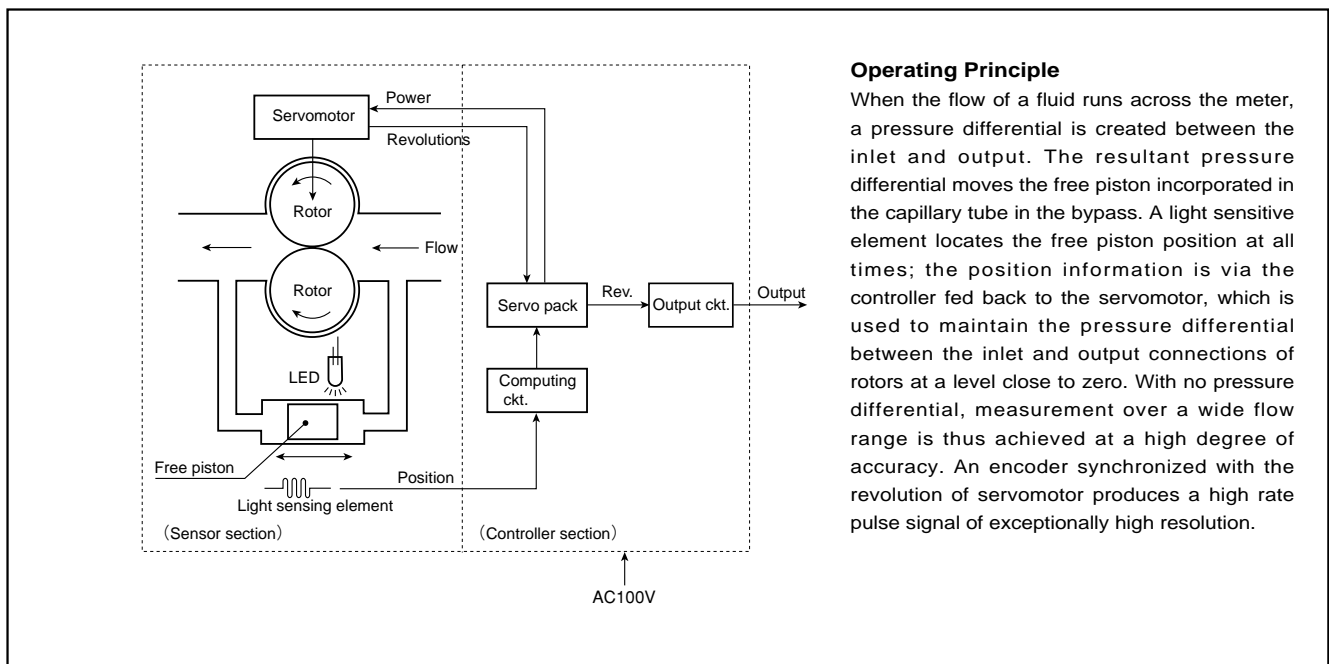
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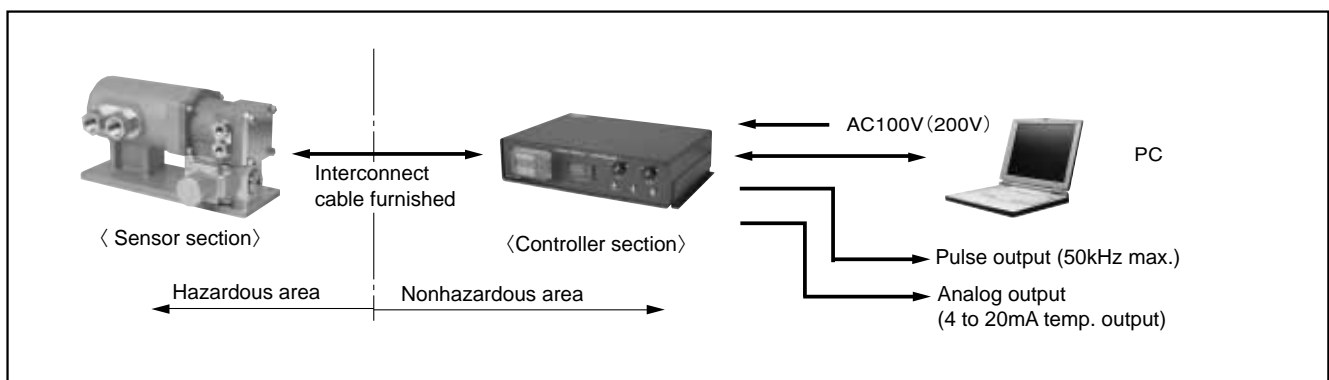
● Controller

Item		Description
Output signal	Total flow	Open collector (NPN Transistor, Capacity : 10 to 30VDC, 50mADC)
		Output frequency : Max. 50kHz, Factored / unfactored
		(Voltage pulse available as option. ("0" : 1V max., "1" : 5V min.))
	Temperature	4 to 20mADC (at 0 to 100°C), Max. load resistance : 500Ω
	Hardware error	Contact output ("b" contact) , Load resistance : 5A, Instruction load : 1A
Display	Type	7-segments, 8-digit LCD
	Menu items	Grand total, resettable total, Instant flowrate, fluid temp., error message, and measurement unit
	measurement unit	Grand total and resettable total: L (Reads in the same unit as output pulse) Instant flowrate: L/h Fluid temp.: °C
Flowrate factor		Full scale 30L/h model : 196nL/P, Full scale 60L/h model : 393nL/P (Output frequency variable up to 50kHz)
Ambient temp. range		0 to 50°C
Power supply		AC100V 50/60Hz (AC200V available)
Current		1.4A
Electricity		Approx. 80W
Apparent power		130VA
Transmission length		10 meters (between sensor and controller)
Construction		Non-explosionproof
Weight		Approx. 13 kg
Finish		Munsell N1.0

■ SCHEMATIC DIAGRAM



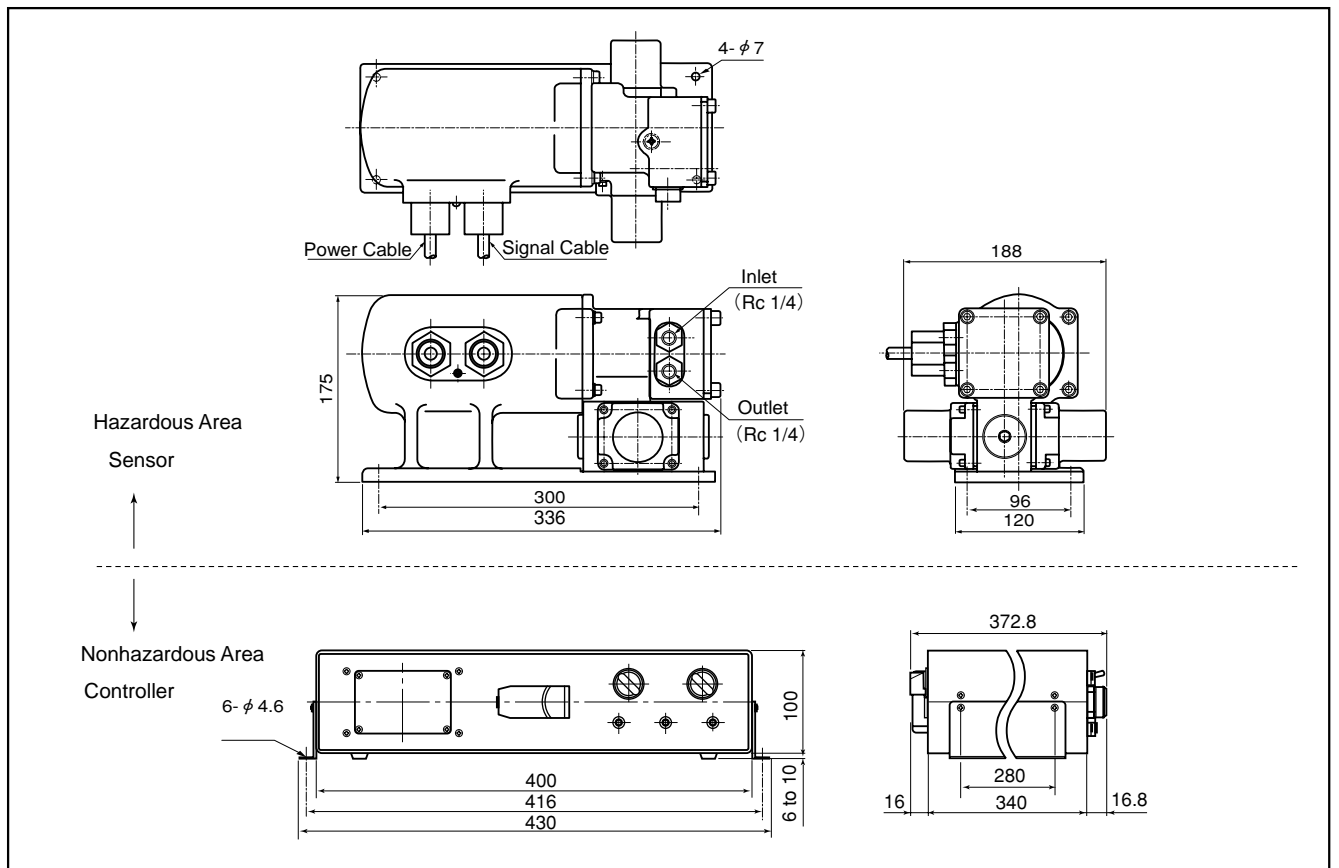
■ RECEIVING INSTRUMENTS HOOKUP DIAGRAM



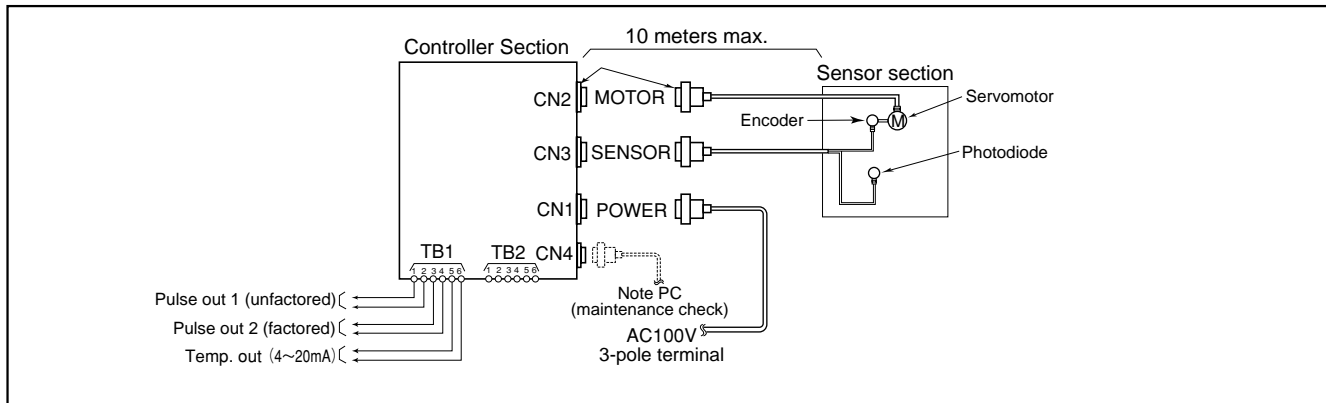
■ PRODUCT CODE EXPLANATION

Item	Product Code																	Description		
	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	—	⑮	⑯		⑰	
Model	L	H	S																Hi SHOT SERVO 1	
Construction				1															Remotely located controller	
Application category																			D	Light oil
																			G	Gasoline
																			Z	Others
Flow range																			0 3 0	0.1 to 30 L/h
																			0 6 0	0.2 to 60 L/h
Meter materials																			C	Stainless steel (standard)
																			Z	Others
Pressure rating																			S	1 MPa
																			H	12 MPa (in preparation)
Process connection																			1	Rc 1/4
Operating temp. range																			1	Standard (-10 to +80°C)
																			9	Others
Explosionproof																			0	Non-explosionproof
																			1	TIIS explosionproof
																			2	ATEX explosionproof (in preparation)
Reserved																			0 —	Always "0"
Power to the controller																			1	100VAC 50/60Hz
																			2	200VAC 50/60Hz
																			3	110/115VAC 50/60Hz
																			4	220/230VAC 50/60Hz
Controller output signals																			0	Output not provided
																			1	Pulse output 1 (unfactored)
																			2	Pulse output 1 (unfactored), 2 (factored)
																			3	Pulse output 1 (unfactored) +temp. out (4 to 20mA)
																			4	Pulse output 1 (unfactored), 2 (factored) +temp. out (4 to 20mA)
Reserved																			9	Other than above
																			0	Always "0"

■ OUTLINE DIMENSIONS [Unit in mm]



■ WIRING CONNECTIONS



■ FILTER

To safeguard the meter against foreign solids entrained in the process fluid, locate an external filter of the same mesh size. Or periodically replace the filter (furnished as standard accessory) installed at the outlet of the meter with new one.

■ OPERATING PRECAUTIONS

- ① This meter is precisely adjusted for measuring extremely low flows; Use extra care when unpacking, installing in the pipeline, and commencing a test run.
- ② Never allow foreign solids to get into the measuring chamber.
- ③ Thoroughly flush the pipeline.
- ④ Never allow the rotors to spin too fast by directing compressed air, etc. or admitting an excessively high rate of flow.
- ⑤ For the built-in filter, use only OVAL dedicated filters.

■ WHEN YOU INQUIRE, PLEASE SUPPLY US WITH THE FOLLOWING INFORMATION

1. Meter type	LHS _____
2. Metered fluid	Name _____ Viscosity _____ mpa · s Sp. gr _____
3. Flow range (L/h)	Max. _____ Normal _____ Min _____
4. Fluid temp. (°C)	Max. _____ Normal _____ Min _____
5. Ambient temp. (°C)	Max. _____ Normal _____ Min _____
6. Pressure (MPa)	Max. _____ Normal _____ Min _____
7. Fluid flow direction	Bottom → top only
8. Pulse output	<input type="checkbox"/> Open collector <input type="checkbox"/> Voltage pulse (5VDC)
9. Explosionproof	<input type="checkbox"/> Req'd Type _____ <input type="checkbox"/> Not req'd
10. Req'd number of units	Accessories incl. _____
11. Application	(additive dosing, sampling, blending process, etc.) <input type="checkbox"/> Total flow <input type="checkbox"/> Volume display <input type="checkbox"/> Record <input type="checkbox"/> Flow control <input type="checkbox"/> Batch control <input type="checkbox"/> Hookup to a PC, etc. <input type="checkbox"/> Others _____
12. Receiving instrument	Type, manufacturer name, model, specifications (input / output, power, etc.)
13. Controller-receiver distance	10 meters max. (standard)

The specification as of April, 2009 is stated in this GS Sheet. Specifications and design are subject to change without notice.



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