



Rotating Vane Flow Meter/ Monitor for low Viscous Liquids



measuring
•
monitoring
•
analysing

DOW



- Measuring range: 1.0 ... 70 L/min
- Viscosity range: low viscous
- Accuracy: ± 1.5 % of reading
- p_{\max} : 10 bar; t_{\max} : +90 °C
- Material: Brass
- Connection: R $\frac{3}{4}$, $\frac{3}{4}$ " NPT
- Output:
Pulses, LCD-display, 4 ... 20 mA, batching



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Overview

The DOW series flowmeter is specifically engineered for most common liquid transfer applications within industrial plants, mining sites, automotive service centres and refuelling installations.

Monitoring or controlling the movements of small to medium volumes of water, diesel fuels and other low viscosity liquids under pumped or gravity conditions in small pipe sizes is widespread. The DOW flowmeter provides a cost effective solution to the measurement or traceability of disbursed liquids.

Principle of operation

A single impeller is rotated by the flow, magnets within the impeller activate the electronic outputs (reed switch and solid state Hall Effect).

The meter has integral flow conditioning ports, combined with integral strainer, flow conditioning base plate and diaphragm to direct fluid flow onto the impeller, which eliminates the requirement for straight pipe runs, allowing the meter to be located in restricted piping arrangements.

The DOW meter is not limited to clean liquids, the impeller concept will tolerate liquids bearing a degree of suspended particles which may pass the strainer. Larger particles can be cleaned from the inlet strainer screen at periodic intervals.

The DOW is available as a "blind" flowmeter (pulse output only) or can be supplied fitted with the self powered ZOD-Z1 dual totaliser, ZOD-Z3 or ZOD-Z5 flow rate totaliser or ZOD-B1 electronic batch controller.

The ZOD-Z1 series provides accumulative & resettable total, and externally powered can be programmed to provide scaleable or non-scaleable pulse outputs.


The ZOD-Z3 series provides instantaneous readings of flow rate, accumulative total & a resettable total. When powered from an external supply the ZOD-Z3 will provide 4~20mA output, high & low flow alarms and a scaleable pulse output.

Applications

The applications include water, gasoline, diesel fuel, kerosene, anti freeze mixtures, alcohols, selected solvents, insecticides, flavourings, dyes, automotive workshops, food processing plants, fuel depots, mobile service vehicles, portable tests metering and many small liquid handling facilities.

Technical details

Materials

Wetted parts:	
Housing (inner part):	Brass
Impeller:	Polypropylene
Inlet strainer:	Polypropylene
Flow Conditioning Base Plate:	Polyphenylene Oxide
Diaphragm (Pressure Plate):	Polyphenylene Oxide
Magnet Housing Support:	PTFE
Bearing Bush:	Polyamide
Impeller shaft (centre pin):	Stainless steel
O-ring/ Coupling gasket:	NBR
Flow range:	1.0... 70 L/min
Accuracy:	±1.5 % of reading
Repeatability:	± 0.3%
Max. Pressure:	10 bar
Max. Temperature:	+90 °C for Blind Pulse meter only, +80 °C with meter mount ZOD-Z1, ZOD-Z3 or ZOD-B1 instruments
Protection class:	IP66
Pressure drop:	Maximum 1 bar at maximum flow rate 70 L/min
ATEX-approval (Option Z4):	 II 2G EEx ia IIB T4 (-20 °C ≤ Ta ≤ +60 °C)

Pulse Output

Reed switch pulse output

The reed switch output is a two wire normally open SPST voltage free contact ideal for installations without power or for use in hazardous area locations when Intrinsically Safe (I.S.) philosophy is adopted.

Note: when using the reed switch output the liquid temperature must not change at a rate greater than 10 °C per minute. In general the reed switch life will exceed 2 billion actuations when switching less than 5 V_{DC}/10 mA.

Power supply: max. 30 V_{DC}, max. 200 mA

Hall Effect sensor pulse output

The hall effect sensor is a high resolution solid state 3 wire device providing an un-sourced, open collector, NPN transistor output. The term “un-sourced” means that no voltage is applied to the output from within the flowmeter, it must be

pulled to a “high” or “on” state by between 4–24 V_{DC} supplied from an external source, typically the receiving instrument.

The pulse output between signal and -0V is a voltage square wave with the high level being the DC voltage available at the open collector and the low level being -0V.

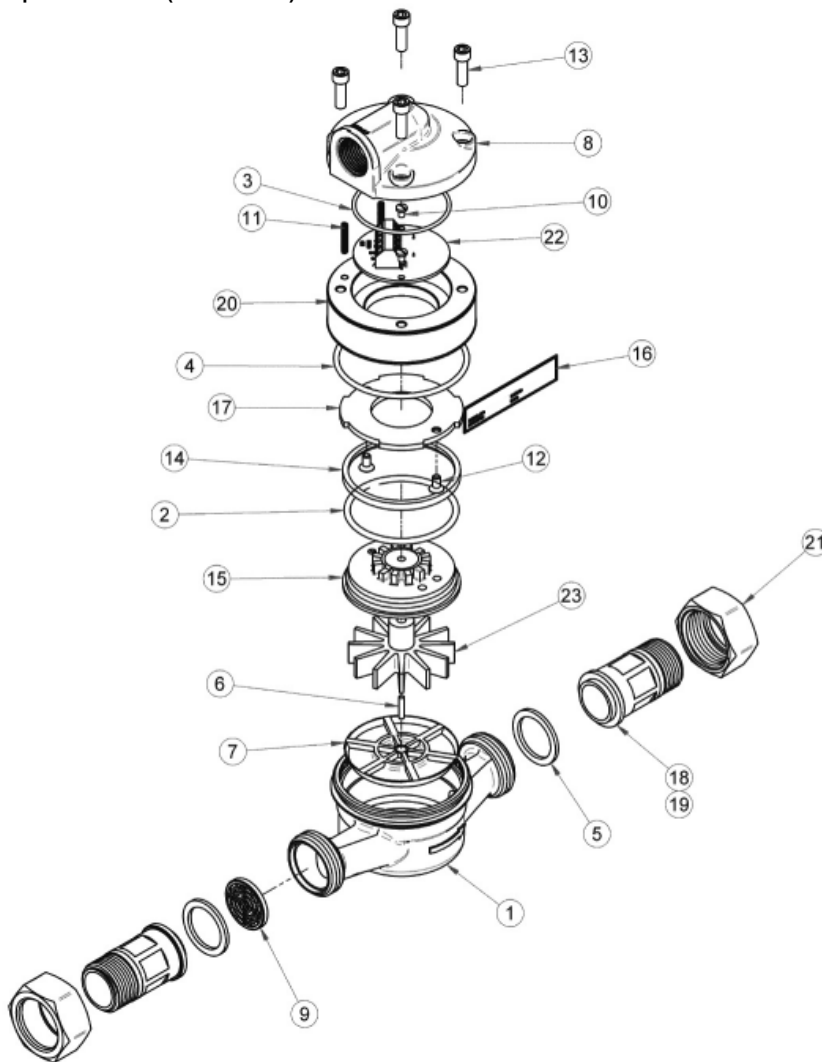
The receiving instrument must incorporate a pull up resistor (typically greater than 10 kΩ in most instruments) which ties the open collector to the available DC voltage level when the Hall sensor is not energized. When energized the open collector output is pulled to ground through the emitter (-0V).

Power supply: max. 5-24 V_{DC}, max. 20 mA

Output pulse resolution: Reed switch & Hall sensor Nominal 20 PPL

Electronic features: see respective data sheets for ZOD-Z1/Z3/Z5/B1

Exploded View (flow Meter)



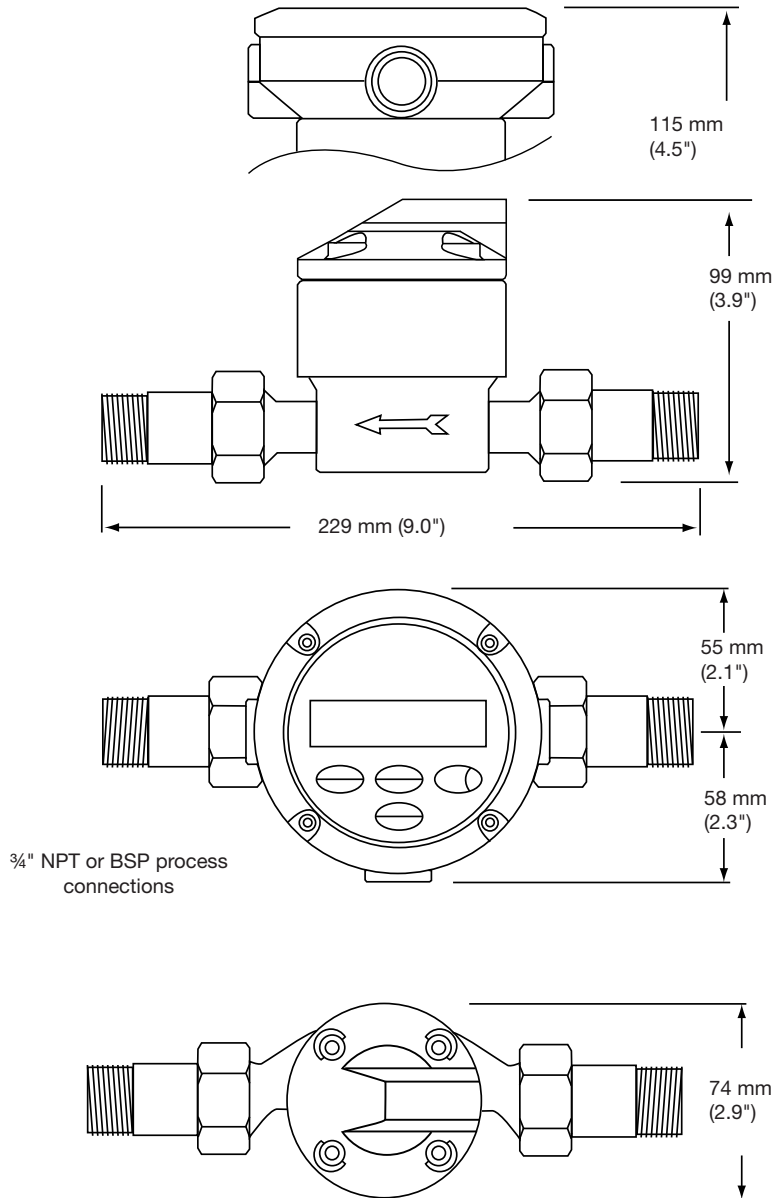
Spare parts:

- ① Meter Body
- ② O-Ring
- ③ O-Ring
- ④ O-ring
- ⑤ Coupling Gasket
- ⑥ Centre Pin
- ⑦ Flow Condition Base Plate
- ⑧ Cover
- ⑨ Inlet Strainer
- ⑩ Cheese Head Screw
- ⑪ Grub Screw
- ⑫ Countersunk Phillips Head Screw
- ⑬ Socket Head Cap Screw
- ⑭ Backing Ring
- ⑮ Diaphragm
- ⑯ Adhesive Label
- ⑰ Body Retaining Plate
- ⑱ Adaptor 3/4" BSP male
- ⑲ Adaptor 3/4" NPT male
- ⑳ Meter Adaptor
- ㉑ Adaptor Nut
- ㉒ Printed Circuit Board
- ㉓ Impeller Magnet Support Assembly



Rotating Vane Flow Meter/ Monitor Model DOW

Dimensions



Order details (Example: DOW-11F70H R5 Z3)

Model	Connection male	Electronic
DOW-11F70H (1 ... 70 L/min)	<p>R5 = R 3/4"</p> <p>N5 = 3/4" NPT</p>	<p>R0* = Reed switch, pulse output</p> <p>H0 = Reed switch, pulse output and NPN</p> <p>Z1 = dual LCD totaliser, model ZOD-Z1</p> <p>Z3 = LCD totaliser with rate, model ZOD-Z3</p> <p>Z4 = Electronic "Z3" + ATEX</p> <p>Z5 = dual LCD totaliser with rate/2-line display, model ZOD-Z5</p> <p>B1 = LCD batch controller, Model ZOD-B1</p>

* Should be chosen when using DOW in instrically safe circuits as "simple apparatus".