

Wallace & Tiernan® Flow Measurement Equipment

Direct-View Flowmeter

SIEMENS

The Wallace & Tiernan® Series 55-100 Direct View Flowmeters are designed for accurate flow indication of mildly corrosive liquids or gases. The simple and direct operational design provides performance and reliability in a high capacity, low cost meter. With the optional flow switch, this meter is capable of high and/or low flow-rate switching.

Features

Low Cost

The plug-and-orifice design, overall simplicity, and minimum parts add up to an economical meter.

Glass Tube Helps Readability

Readout is direct and clear, even with opaque fluids (the float guide readout actually touches the inside of the tube).

Reliable Gas Measurement

A special polypropylene float gives high stability. Readings steady out quickly. The lightweight float minimizes violent reactions to flow surges, especially at start-up.

Flow Switch

This compact option gives reliable high and/or low flow switching. It contains a powerful rotating magnet which responds linearly to float position, gives a dependable magnetic coupling. The switch is mounted on the side of the frame opposite the scale. Available factory installed or clamp-on for easy field conversion. Available in a general purpose and a UL Listed hazardous location arrangement.

Higher Capacities

Size for size, Wallace & Tiernan® Direct-View Flowmeters give higher capacities: The plug-and-orifice concept yields capacities often double that of other designs.

Engineered For Easy Maintenance

The tube and float can be easily removed without disturbing the piping. The meter is designed for easy surface or flush-panel mounting. Front and rear tube shields of tough, clear polycarbonate are standard. The high parts interchangeability extends the versatile capabilities of these meters. Easy breakdown and reassembly simplifies servicing.

Direct-View Flowmeters



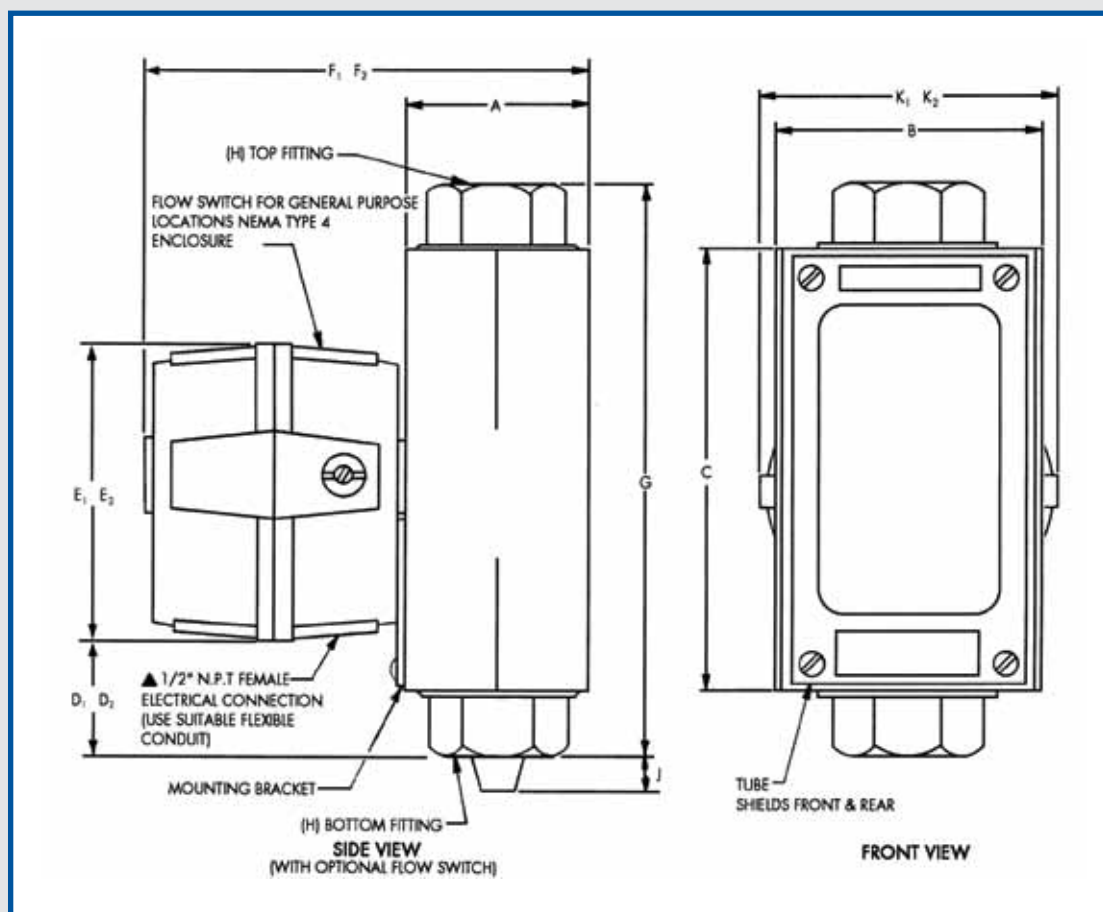
Key Benefits:

- Rigid cast aluminum frame allows direct in-line mounting
- Simple design reduces cost
- Unrestricted flow design minimizes maintenance
- Open guide design prevents fouling
- Optional high/low switch

Design and Operation

The frame is cast aluminum with a special corrosion-resistant finish. 316 stainless or brass female-threaded end fittings are permanently staked. Other parts: 316 stainless or brass orifice brushings; borosilicate glass tube; knurled plastic tube retaining nut; front and rear polycarbonate tube shields; three same-size O-rings; and a self-guiding float. The float has a tapered body, a circular guide, and an encapsulated weight. The weight is replaced by an alnico magnet for flow switching.

Unlike tapered-tube rotameters, the tapered float varies the metering area. As flow rate increases, the float rises to a level of dynamic equilibrium (where float weight equals fluid force). Here the float indicates flow rate on the scale. Due to its taper, the float demonstrates a decreasing cross-sectional support area as it rises. This requires greater force (increased flow rate) to act upon the diminishing area and carry the float to a new equilibrium position - a new reading of flow rate.



Tube Size	A	B	C	D ₁	D ₂	E ₁	E ₂	F ₁	F ₂	G	H	J	K ₁	K ₂
1/2"	5 (127)	4 (102)	6 5/8 (168)	6 1/8 (156)	1 5/8 (41)	5 (127)	4 (102)	6 5/8 (168)	6 1/8 (156)	6 15/16 (176)	1/2" NPT	-	5 1/2 (140)	4 1/2 (114)
1"	5 (127)	4 (102)	7 3/8 (187)	6 7/8 (175)	1 7/8 (48)	5 (127)	4 (102)	7 3/8 (187)	6 7/8 (175)	8 15/16 (227)	1" NPT	5/16 (8)	5 1/2 (140)	4 1/2 (114)
1 1/2"	5 (127)	4 (102)	8 9/16 (217)	8 1/16 (205)	2 3/16 (56)	5 (127)	4 (102)	8 9/16 (217)	8 1/16 (205)	10 15/16 (278)	1 1/2" NPT	1 (25)	5 1/2 (140)	4 15/16 (125)
2"	5 (127)	4 (102)	9 7/8 (251)	9 3/8 (238)	2 3/8 (60)	5 (127)	4 (102)	9 7/8 (251)	9 3/8 (238)	12 1/4 (311)	2" NPT	1 3/8 (35)	6 3/16 (157)	6 3/16 (157)

D₁, E₁, and F₁ = Hazardous Location Flow Switch
 D₂, E₂, and F₂ = General Purpose Flow Switch

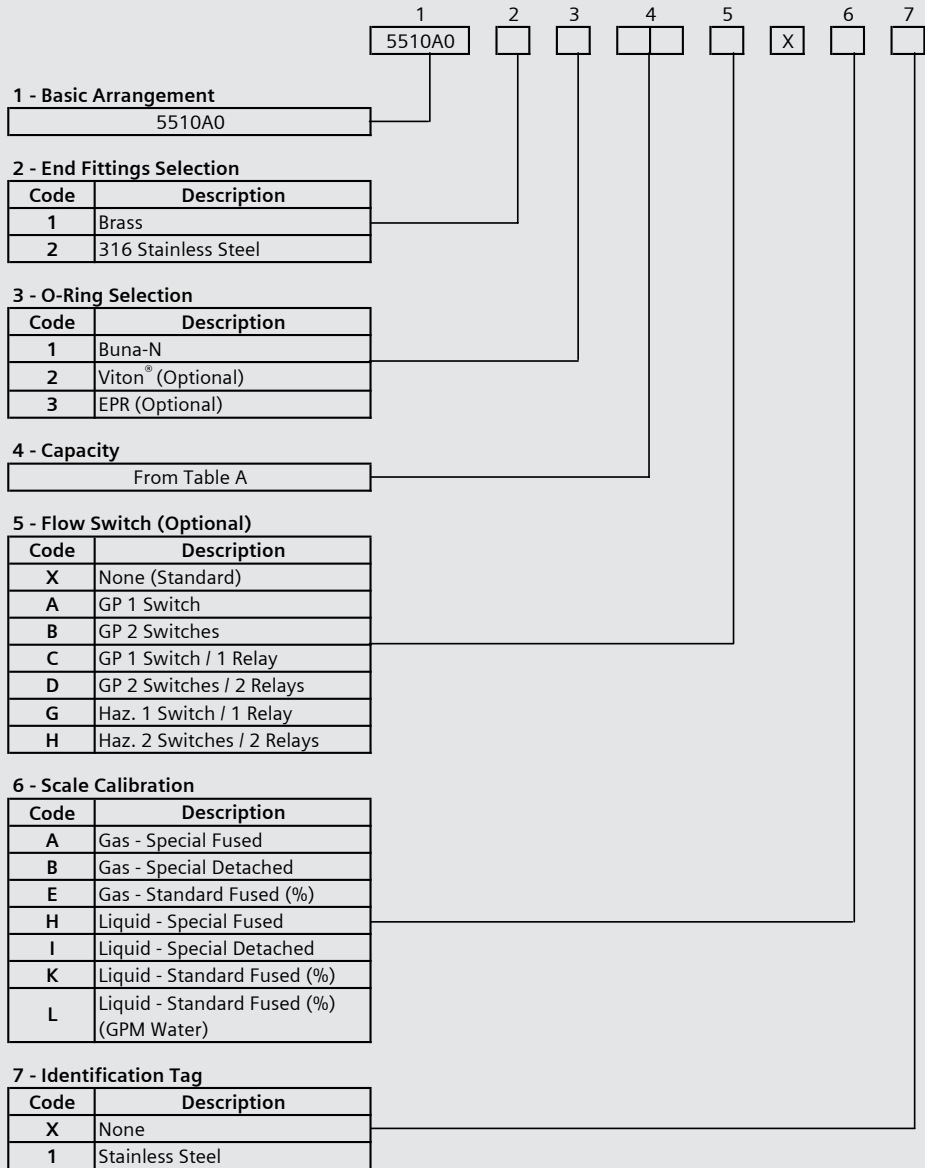
▲ 3/4" NPT (Hazardous Location)
 1/2" NPT (General Purpose)

Ordering Procedure

Example

To order a 1/2" flowmeter with 316 stainless steel fittings, Viton® O-rings, a capacity of 6.5 SCFM air, standard scale, and a general purpose flow switch with two switches and two relays, specify:

5510A0 2 2 05 D X E X



Selection Procedure

Determine the capacity range, temperature and pressure capability, materials of construction, and options required for each meter. (See Table A for pressure and temperature limits.)

Note: For fluids with SP.GR. other than 1.0 or viscosity over the viscosity ceiling in Table A consult your local Varea-Meter® Unit Distributor.

Table A - Ordering Numbers for Meter Capacity for Water and Air

Pipe Conn. NPT	Scale Length	Capacity					Operating Limits*		Capacity Codes		
		Water GPM (LPH)	Press. Drop in H ₂ O	Air SCFM at STP (cm)	Press. Drop in H ₂ O	Viscosity Ceiling CSS	Temp. °F (°C)	Press. PSI (Bar)	Water 140° F (45° C) or Less	Water Over 140° F (45° C)	Air
1/2"	2"	0.5 (1.9)	23	1.2 (0.034)	9	3	200 (79)	200 (13.6)	32	02	01
		1.0 (3.8)	24	2.4 (0.068)	10	3			34	04	03
		2.4 (9.0)	30	6.5 (0.18)	13	4			36	06	05
		5.0 (18.9)	46	10.0 (0.28)	17	5			38	08	07
1"	2-1/2"	-	-	12 (0.34)	9	-	200 (79)	150 (10)	-	-	09
		12 (45)	35	24 (0.68)	11	10			42	12	11
		24 (91)	52	40 (1.13)	16	10			44	14	13
1-1/2"	3-1/2"	34 (129)	54	-	-	21	200 (79)	90 (6)	46	16	-
		75 (284)	85	76 (2.15)	15	18			48	18	17
2"	4"	130 (492)	100	150 (4.2)	18	65	200 (79)	90 (6)	52	22	21

***WARNING:** Pressure and Temperature Limits must not be exceeded under any conditions.

WARNING: Do not use Glass-Tube Meters for fluids which are toxic, hazardous or attack glass.

Technical Data

Accuracy

5% of full scale.

Operating Range

10 to 1.

Scales

Standard: For liquids, GPM and percent fused on tube; for gas, fused-on percent only.

Special: Other calibration units at extra cost. Scales are fused on tubes or detached aluminum.

Materials of Construction

Frame, cast aluminum; tube, borosilicate glass; tube shields, polycarbonate with or without stainless steel frames; end fittings and orifice bushing, brass or 316 stainless steel; knurled retaining nut, high-temperature-resistant plastic; O-rings, Buna-N standard with Viton® or EPR optional; float for liquids, 316 stainless with 301 stainless steel guide or brass with beryllium copper guide; float for gas, polypropylene with 301 stainless steel guide. The tube, orifice bushing, end fittings, O-rings and float are the wetted parts. Write for literature number WT.500.001.000.UA.CG, which is a detailed listing of meter compatibility with a wide range of fluids.

Over Viscosity Ceiling

For liquids, special calibration is required where the liquid's viscosity exceeds the viscosity ceilings listed in Table A.

Finish

Special corrosion-resistant baked-on vinyl melamine.

External general purpose flow switch



Shipping Weights

Meter Size	½"	1"	1 ½"	2"
Meter only	4.5	9	20	35
with general purpose flow switch*	7.5	12	23	38
with hazardous location flow switch*	8.5	13	24	39

*All measurement in lbs.

EXTERNAL FLOW SWITCH

The Wallace & Tiernan® External Flow Switch is a compact option that gives reliable high- and/or low-flow switching. The External Flow Switch contains a powerful rotating magnet that responds linearly to float position. Its switches are long life, hermetically sealed reed types. Almost frictionless rotation of the switch magnet and its powerful bond with the float magnet give a dependable magnetic coupling. Even under sudden flow surges, switching remains reliable.

Features

- Available in General Purpose arrangement or UL Listed Hazardous Location version.
- Easily retrofitted in the field with the meter in line.
- Switches can be set to open or close on increasing or decreasing flow.
- A simple adjustment sets each switch independently over 0 to 100% of the flow range.

Technical Data

Repeatability – 0.6% of full scale.

Electrical Ratings

- Series 5600 General Purpose: one or two switches rated 250 mA at 48 VDC or 120 VAC resistive or 50 mA at 48 VDC or 120 VAC inductive; one or two single-pole, double-throw relays rated 10 amperes at 28 VDC or 120 VAC; coil supply 120 VAC, 50/60 Hz.
- Series 5500 Hazardous Location: one or two single-pole, double-throw relays rated 10 amperes at 120 VAC; coil supply 120 VAC, 50/60 Hz.
UL Listed for Class I, Division 1 & 2 Groups C and D or Class II, Division 1 & 2 Groups C and D or Class II, Division 1 & 2 Group E, F, and G.

Temperature Limits – Ambient, -20° to 120° F.

Actuating Time – Reed switches open in one millisecond.

Enclosures – Heavy cast aluminum (NEMA 4) with corrosion resistant finish.

Dimensions – For complete dimensions, please refer to literature:

- WT.550.100.100.UA.CN
- WT.550.100.102.UA.CN
- WT.550.100.104.UA.CN
- WT.550.100.106.UA.CN

The information provided in this brochure contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

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