

Insertion Turbine Flowmeter Series 5000

The Series 5000 flowmeters are designed for applications where installation and removal from the pipeline without interruption to flow is important.

The 5000 series are ideally suited for large pipelines where the cost of in-line meters would be prohibitive. They are available with interchangeable turbine assemblies.

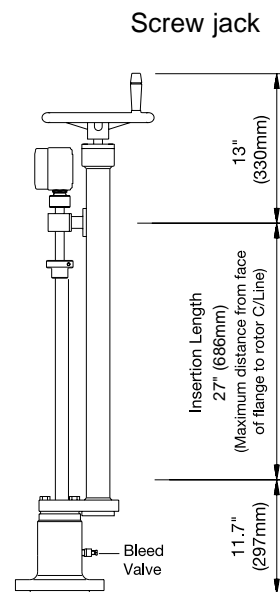
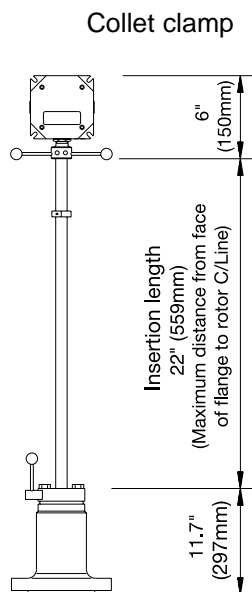
Features

- ➊ may be inserted into, or retracted from, the flow whilst the line is operational
- ➋ highly cost-effective
- ➌ interchangeable rotor type and insertion mechanism
- ➍ wide range of meter sizes
- ➎ linear frequency output
- ➏ wide rangeability
- ➐ negligible pressure drop
- ➑ options to suit gas, liquid and steam applications
- ➒ able to be mounted on live line via hot tap method

Applications

oil, gas and steam • petrochemical
• aerospace • automotive • power

Dimensional drawing



Detailed specification and ordering information: see next page
Thermo Measurement reserves the right to alter specifications without notice

Specification

Flowmeter:

Linearity:	(Liquids) $\pm 2\%$ of reading over 10 -1 range (Gases) $\pm 2\%$ of reading at specified gas pressures
Repeatability:	(Liquids) $\pm 0.2\%$ 95% confidence level
Pressure drop:	Negligible
Process temperature:	(Liquids) -300 to +840°F (Gases) -300 to +530°F (Steam) 0 to +450°F
Maximum pressure:	Collet clamp assembly: 275psiG above which the screw clamp assembly should be used Screw jack: max 2900psiG
Materials of construction:	Seal housing/flange: BS3100 A1 cast carbon steel (or stainless steel to order) Collet clamp: ANSI 304 stainless steel Screw jack assembly: carbon steel, nickel plated Insertion stem: ANSI 316 stainless steel (or other material to order) Sleeve bearings: tungsten carbide shaft / Stellite sleeve Ball bearings: stainless steel ANSI 440C Turbine rotor: stainless steel to ANSI 430, BS3146, ANC21 or Sanvik 1802, dependent on rotor design

General:

Hazardous area certification:	FM approved enclosure, Class 1, Div 1, Groups B, C, D
Weight:	Collet clamp minimum 31lb Screw jack minimum 62lb
Installation:	At any attitude but always at right angles to the direction of flow

Outputs:

Standard:	mV pulse typically 100mV peak-to-peak at 3ft/s
Pre-amplifiers:	See Accessory Kits on back page 4-20mA analog SQ2 pulse pre-amplifier

Electrical:

Power supply:	Not required for mV pulse 24Vdc loop for FDC 1100 5-24Vdc on 3 wire system for SQ2
Termination:	2 pin Cannon as standard Terminal block housed in conduit box Screw terminals on pre-amplifiers
Cable entry:	NPT if used with junction box

Ordering Information

Model code format					
5000	Insertion Turbine Flowmeter				
Fluid type					
G2	Gas				
L1	Liquid				
S0	Steam				
Flow range		(ft/s)	(m/s)	Application	
1	3 - 40	1 - 12	General liquid use, no filtration required		
2	2 - 100	0.6 - 12	Clean liquids with lubricating properties		
3	6 - 100	2 - 30	High pressure gas, >10bar		
4	3 - 150	4 - 45	High velocity, high pressure gas >10bar		
5	1 - 16	0.3 - 5	General liquid use, low velocity ranges		
6	2 - 20	0.6 - 6	Low pressure gas, low velocity ranges		
7	4 - 40	1.2 - 12	Low pressure gas, medium velocity ranges		
8	10 - 100	3 - 30	Low pressure gas, high velocity ranges		
9	16 - 170	5 - 50	Low pressure gas, very high velocity ranges		
10	6 - 100	2 - 30	Steam		
11	3 - 60	1 - 18	Steam		
12	20 - 200	6 - 60	Steam		
Body material					
0	304 stainless steel				
2	Carbon steel (standard)				
Temperature range					
T1	0 to +300°F (-20 to +150°C) (must be used for intrinsically safe operation)				
T2	-300 to +840°F (-200 to +450°C) liquid only (stainless steel only)				
T3	-300 to +530°F (-200 to +280°C) (stainless steel only)				
Process connection					
F1	3 inch ANSI 150lb carbon steel flange, slip on				
F2	3 inch ANSI 600lb carbon steel flange, slip on				
F3	3 inch ANSI 900lb carbon steel flange, slip on				
F4	3 inch ANSI 1500lb carbon steel flange, slip on				
F5	3 inch ANSI 150lb stainless steel flange, slip on				
F6	3 inch ANSI 600lb stainless steel flange, slip on				
F7	3 inch ANSI 900lb stainless steel flange, slip on				
F8	3 inch ANSI 1500lb stainless steel flange, slip on				
X	Special - consult factory				
Insertion length		inch	mm	Application	
M1	22	559	Collet clamp	Maximum line pressure = 275 psiG	
J1	27	686	Screw jack	Maximum line pressure = 2900psiG	
Termination					
00	Flying leads, suitable for local indicator				
12	2 pin Cannon connector				
38	Explosion proof enclosure				
Certification					
S	Non hazardous/safe area operation				
I	Intrinsically safe (consult factory)				
7	FM Class 1, Div 1, Groups B, C, D				

Example: 5000-G2-7-2-T1-F1-M1-12-S

5000 series insertion turbine flowmeter, low pressure gas application, 4 - 40ft/s flow range, carbon steel body, 0 to 300°F operation, 3" ANSI 150lb flange, 22" insertion length with Collet clamp, 2 pin Cannon connector, safe area operation.

NOTE: TURN TO BACK PAGE FOR ACCESSORY KIT TO COMPLETE YOUR ORDER

Turbine Accessory Kits

Thermo manufactures a large range of accessory kits for use with turbine meters.

A description of the interface electronics is shown below, together with ordering information and certification guide.

Select from the information below, as shown in the example.

Interface electronics	
Model	Description
FDC1100	4-20mA analog output
SQ2	5 volt pulse pre-amplifier

Ordering Information

Turbine Accessory Kits			
AKS	Insertion turbine accessory kit	Safe area operation	Explosion proof
Signal output			
100	Uncertified pickup with flying leads (see Note 2)	Yes	No
215	Local display with rate/totalizer indicator, battery powered (see Note 2)	Yes	No
216	Local display with rate/totalizer indicator, 4-20mA output, loop powered (see Note 2)	Yes	No
217	Local display with rate/totalizer with alarm, loop powered (see Note 2)	Yes	No
501	FM approved enclosure with terminal block	Yes	Yes
502	NPT stem with Cannon connector	Yes	No
503	FM approved enclosure with FDC1100 (see Note 1)	Yes	Yes
504	FM approved enclosure with SQ2 pre-amplifier (see Note 1)	Yes	Yes
505	FM approved enclosure with rate/totalizer (see Note 1)	Yes	Yes

Example: **AKS-215** Insertion turbine accessory kit, with local display with rate/totalizer indicator, battery powered

Note 1 - Use termination Code 38 on Ordering Information (p3)

Note 2 - Use Termination Code 00

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