W Series 4" - 6" Standard Style Liquid Turbine Meter

Bulletin SSIN025 Issue/Rev. 0.1 (7/19)

INVALCO has a proven 35 year record in the design and manufacture of quality Liquid Turbine Meters and was a pioneer in the use of Tungsten Carbide as a bearing material for the stringent demands of the petroleum industry.

INVALCO's **W Series Meter** utilizes the typical three-piece rotor/stator design found throughout the industry. The double sleeve Tungsten Carbide bearing and flow through design provide excellent performance and unsurpassed mean-time-between failure (MTBF) rates in the non-lubricating and solids-contaiminated fluids. In clean liquid applications, service life is superior to any other turbine flowmeter available today.

Features and Benefits

- **Rotor Supports –** Up and downstream flow straightening vanes to enhance accuracy.
- **Helical Cast Rotor –** Heavy-duty stainless steel (CD4MCu) design for durability and long service life.
- **Journal Bearings and Thrust Balls –** Tungsten Carbide and provide long service life in severe applications.
- **Stainless Steel Body and Wetted Parts –** Provide years of corrosion-free service.

Options

- **Rulon Bearings** for highly acidic or caustic solutions.
- **Extended Temperature Range** from -200ºF to 800ºF (130ºC to 426ºC)
- **Process connections available** include Flanged and Wafer.

General Specifications

Linearity[1]
±0.5% over-stated range

Repeatability[1]
±0.05%

Maximum Overrange
125% of flow rate for intermittent periods.

Response Time
4" to 6" Meter: 10-25 milliseconds for step change in flowrate.

Frequency Output
4" to 6" - 50 Hz to 500 Hz.

Voltage Output
Approx. 100mV @ 100 Hz to 1.5 V (RMS) @ 1,000 Hz.

Pressure Rating[2]

ANSI Raised Face / RTJ:

Class 150	275 (1,896)
Class 300	720 (4,964)
Class 600	1,440 (9,929)
Class 900	2,160 (14,893)
Class 1,500	3,600 (24,821)

Installation
Vertical or horizontal (any direction)

Notes:
1. With adequate flow conditioning.
2. Maximum non-shock service pressure at 100°F.

General Specifications – continued

Materials of Construction

Body: 316L Stainless Steel

Flanges: Carbon Steel / 316 Stainless Steel 4"- 6"

Rotor CD4MCu

Rotor Shaft/Bearings

Standard: Tungsten Carbide[3]/Tungsten Carbide
Optional: 316 Stainless Steel/Rulon[4].

Rotor Supports: 316 Stainless Steel

Rotor Retainer: 316 Stainless Steel

Temperature Range

Magnetic Pick-Up Coils (Order Separately):

Standard: -40°F to 228°F (-40°C to 109°C)

Optional: Hi/Low Temperature -450°F to 450°F (267°C to 232°C)

Preamp/Magnetic Pick-Up Coils

-40°F to 185°F (-40°C to 85°)

Meter with Bearing Structure of:

Standard: Tungsten Carbide -20°F to 300°F (-29°C to 149°C)

High Temperature: -200°F to 800°F (-130°C to 426°C)

Optional: Rulon -20°F to 250°F (-29°C to 121°C)

Pickup Coil (Order Separately)

DC Resistance: 975Ω

Inductance: 400 mH

Mating Connector: 10SL-4S or Wire Leads

Preamp Magnetic Pick-up (Order Separately)

Body: 316L Stainless Steel

Housing: Stainless Steel

Power Requirement:

Supply voltage: +4.5 to 28 Vdc

Current: ≤5 mA @ 12 Vdc

Output Signal:

Square wave:

0 to supply voltage, 5 Hz to 12 kHz

30% to 70% Duty cycle

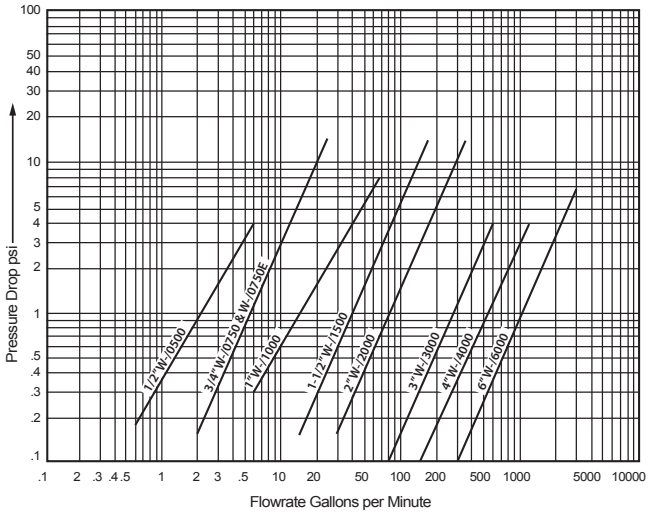
NPN with 10KΩ pull-up to supply voltage.

Mating Connector: 10SL-3P or Wire Leads

RF Nonmagnetic Pickup (Order Separately)

Consult Factory for Details.

∆Pressure Drop Chart



Notes:

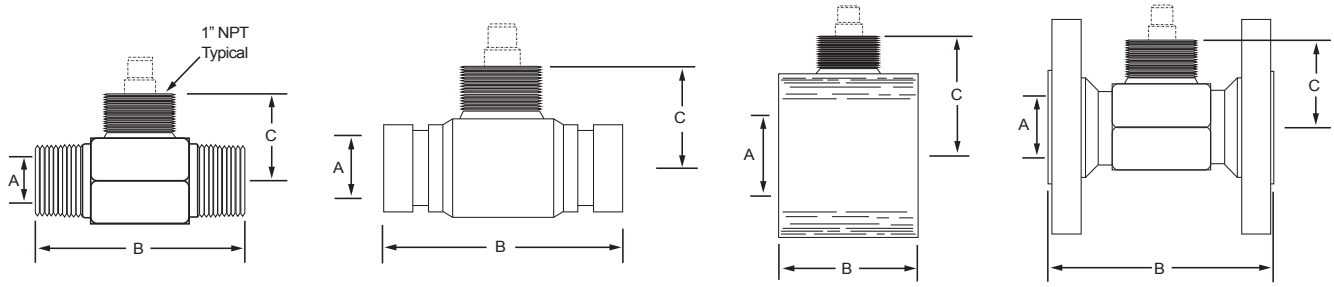
For estimating pressure drop on liquid other than water, use the following formula: ∆P = (VISC [CPS])1/4 x [S.G.]3/4 x [PH2O].

Notes:

3. GE883 or equivalent 6% type.
4. Virgin PTFE and fillers.

Capacity Table

Flow Range			Nominal K-Factor		
Size	**GPM**	**LPM**	**P/GAL**	**P/L**	**P/BBL**
4"	110 - 1,100	410 - 4,100	28	8	1,176.00
6"	300 - 3,000	1,110 - 11,100	10	2.7	420.00



Dimensions – Inches (mm)

								ANSI Flanged - Class				
	BORE	**NPT**		**Wafer**		**Grooved**		**150**	**300**	**600**	**1,500**	
	A	**B**	**C**	**B**	**C**	**B**	**C**	**B**	**B**	**B**	**B**	**C**
4"	4.0 (101)	N/A	N/A	3.3" (84)	4.3" (109)	12.0" (304)	4.3" (109)	12.0" (304)	12.0" (304)	12.0" (304)	12.0" (304)	4.5" (114)
6"	6.0 (152)	N/A	N/A	N/A	N/A	N/A	N/A	14.0" (355)	14.0" (355)	14.0" (355)	14.0" (355)	5.5 (139)

Dimensions – Inches to the nearest tenth (millimeters to the nearest whole mm), each independently dimensioned from engineering drawings.

Ordering Information

W	Tungsten Carbide Sleeve Bearings				
WFP	Rulon Bearing Meters				
|	CODE	BODY STYLE			
|	3	Male NPT			
|	4	Flanged - ANSI Raised Face			
|	4R	Flanged - ANSI RTJ			
|	6	Grooved (Victaulic)[5]			
|	9	Wafer (No Flanges)			
|	|	CODE	METER SIZE AND FLOW RANGE		
|	|	4	4" - 110 to 1,110 GPM		
|	|	6	6" - 300 to 3,000 GPM		
|	|	|	CODE	SPECIFIC CONNECTION
|	|	|	02	150# Flange
|	|	|	07	300# Flange
|	|	|	14	600# Flange
|	|	|	36	1500# Flange
|	|	|	|	CODE SPECIAL FEATURES
|	|	|	|	HT High Temperature (Silver Solder)
Example:		|	|	|	
W	**4**	**3**	**02**		**W4/302**

Choose one code selection from each option group to build model number.

Notes:

1. 4" and 6" Wafer Meters are Not Available with Rulon Bearings.
2. Order pick-up coils, cable and electronics separately.
3. RF (Zero Drag) pick-up is required to meet stated accuracy within flow range.
4. Grooved available in 4" and 6" only.

N/A = Not Available.

Revisions included in SSIN025 Issue/Rev. 0.1 (7/19):
Sizes other than 4" and 6" are no longer available and have been removed from the specification document.

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