

NUFLO™

1502 WECO® Union Liquid Turbine Flowmeter

The 1502 WECO® Union Liquid Turbine Flowmeter incorporates a tungsten-carbide shaft and bearings to withstand the rugged conditions of the oilfield environment. Over the years, this flowmeter has earned an unsurpassed reputation for with-standing severe punishment while maintaining operational and measurement integrity. WECO® union turbine flowmeters indicate flow rate and measure total throughput of a liquid line.



As liquid flows through the meter and over the rotor, the rotor turns at a speed that is directly proportional to the flow rate. A magnetic pickup senses the rotor blades as they pass and generates an electrical (sine wave) signal. Then, these electrical pulses are transmitted to the flow measurement readout equipment. Optional rotor configurations and/or finishes allow erosive or corrosive fluids such as mud or cement slurries and Hydrochloric acid to be pumped routinely.

Specifications

Accuracy:	± 1.0% Standard Grade
Repeatability:	± 0.05%
End Connections:	2-in. & 3-in. 1502 WECO® Union
Working Pressure:	10K sour, or 15K sweet service
Magnetic Pickups:	x 2, for local and remote monitoring
Temperature Range (magnetic pickup):	
Standard	-67 to 250°F (-55 to 121°C)
Medium	-67 to 450°F (-55 to 232°C)
	(requires high temperature magnetic pickup)
Mating Output Connection:	AN3106A-10SL-4S
Compliances:	
	CSA Certified Hazardous Locations Class I, Group A, B, C, D
	CE-marked for Pressure Equipment Directive (PED)

Applications

- High-pressure water injection trials
- Scale inhibitor treatments
- Well cleanouts with coil tubing
- Tubing valve opening/closing
- Mud/cementing operations (displacement volume monitoring)
- Flowback of treatment fluids

Materials of Construction

Meter body:	A286 stainless steel
Meter vanes:	316L stainless steel
Rotor shaft and bearings:	Tungsten carbide
Union nut:	Carbon steel
Magnetic pickup receptacle:	316L stainless steel

Meter Options

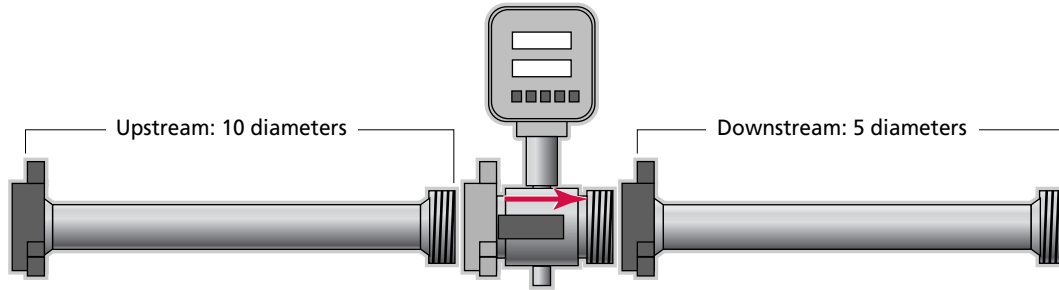
- Binderless carbide shaft for enhanced corrosion resistance to selected chemicals
- Silver brazed shaft to withstand temperatures to 450°F and chemicals that attack bearing bonding materials
- Nickel-plated rotors for enhanced corrosion resistance to selected chemicals (especially acids that corrode ferrous materials)
- Modified rotors for cement slurry or mud applications

Benefits

- Rugged enough to withstand continual rig up/down
- Accurate and repeatable measurement
- Economical solution for turbine flowmeter applications
- WECO® union for quick installation
- Minimum maintenance
- Long service life, even in severe applications

Installation

- The meter should be installed with the arrow on the meter body corresponding to flow direction of the line.
- A length of straight pipe – usually a “pup” joint of 2-in. or 3-in. 1502 treating iron – must be installed upstream and downstream of the flowmeter.
- Valves or chokes should be located downstream of the flowmeter.



Linear Flow Range ^(1, 2, 3)

Flowmeter Size (3)	GPM	m ³ /HR	BBI/min	Nominal (2,3) Calibration Factor		Maximum Output Frequency (Pulses/Sec)	ΔP at Maximum Flow (3)	
				Pulses Gallon	Pulses x BBI		psi	kPa
1-in. x 2-in.	5 - 50	1.14 - 11.36	0.12 - 1.18	900	37800 ⁽⁴⁾	750	20.0	138
1.5-in. x 2-in.	15 - 180	3.41 - 40.88	0.36 - 4.17	325	13650	975	16.0	110
2-in. x 2-in.	40 - 400	9.09 - 90.85	0.90 - 9.03	55	2310	365	22.0	152
3-in. x 3-in.	80 - 800	18.18 - 181.7	1.90 - 19.05	57	2394	760	20.0	138

1 The linear flow range of liquids with non-lubricating characteristics is limited to the upper 60% of rating.

2 Based on water.

3 Consult nearest Cameron (Measurement Systems division) representative for liquid applications with viscosity above 5 centistokes.

Note: The meter will remain accurate at flow rates higher than its rating, but bearing wear and pressure drop across the meter can shorten the life span of the meter. Flowmeters can be over-ranged by 10% for short periods without significant damage.

Traceability of pressure-containing components available on request.

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