

RealShear™ F-Series Wall Shear Stress Sensor

Lenterra's RealShear™ M-series Wall Shear Stress Sensors enable direct measurement of wall shear stress induced by fluids in mixers and pipes. The sensor is mounted flush with a pipe or vessel wall, or rotor/stator workhead, to provide in-line real-time measurement with no disruption of process flow. When paired with an LOI Optical Interrogator, the RealShear™ sensor provides fast and continuous measurements for a wide range of applications.

Probe features

- Stainless steel construction, sterilizable and chemically resistant
- Fiber optic sensing – no electromagnetic interference and no ignition hazard
- High measurement rate (500 per second)
- Simultaneous measurements of wall shear stress and temperature
- Directional measurement
- Turn-key operation when coupled with Lenterra Optical Interrogator (LOI)
- Wide range of sensitivities (model dependent)

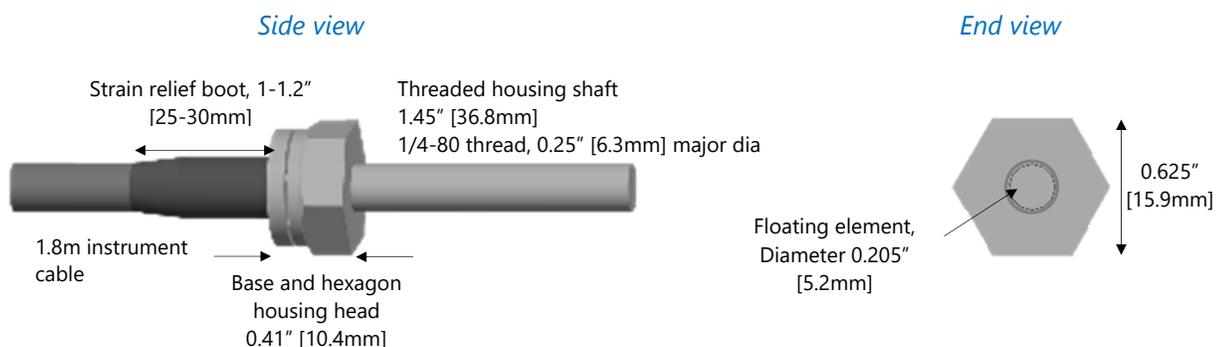
Models

Model number	Measurement range ¹ , Pa	Resolution, ^{2,3} Pa	Nominal Resonance Frequency, Hz
F-100	±100	0.2	80
F-400	±400	0.7	150
F-1K	±1,000	1.5	230
F-5K	±5,000	6	450
F-25K	±25,000	20	820

¹ Custom measurement ranges available

² When used with a Lenterra LOI interrogator

³ Corresponds to standard deviation of the zero wall shear stress noise



Optical wavelength

Operating temperature ⁴

Storage temperature

1556.5 nm

-10°C to 120°C (14°F to 248°F)

-10°C to 60°C (-14°F to 140°F)

⁴ Operating temperature is for the pin thermally insulated from the instrument cable

Specifications

Probe construction

Housing

Hollow stainless steel (316L) threaded (1/4-80 thread) shaft with 5/8" hexagon head. Fiber Bragg gratings adhered to the stainless steel (316L) lever inside housing.

Base

Material: SS 316L

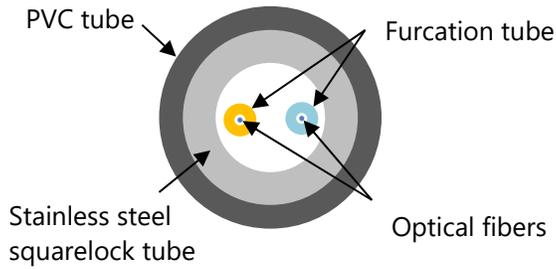
Floating element

Material: SS 316L

Strain relief boot

Material: Polyolefin Plastic

Instrument cable



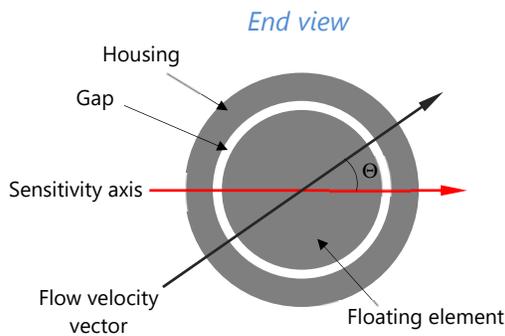
Material: SS squarelock tube covered with PVC tube
Outside diameter: 0.24" (6.1mm)
Length: 6.5 ft (2m)
Operating temperature: -10°C to 60°C (14°F to 140°F)

Fiber optic connector

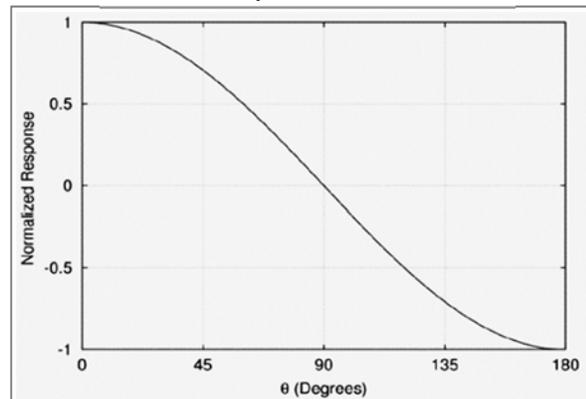


Type: Duplex LC/PC fiber connector
Ingress Protection: IP67 - Dust Tight, Waterproof
Operating temperature: -40°C to 85°C (-40°F to 180°F)

Directional response



Sensitivity vs. flow direction



Specifications are subject to change without notice