

Turbine Flow Meter

StaTurb TF500 Series - High Performance

Introduction

The TF500 series turbine flow meter includes a rotor and a sensor. When fluid passes through TF500 and the revolving rotor passes the sensor, electrical pulses are produced in which frequency is proportional to the flow rate.

As a premium, high-performance turbine flow meter, the TF500 series features an extended turndown ratio, versatile bearing options (including journal or ball bearings) and a wide array of customized materials and process connections. This adaptable design makes it ideally suited for highly demanding applications that require premium accuracy, expanded flow ranges, and extensive customization - such as laboratory, test benches, aerospace, chemical injection, semiconductor fabrication and chemical processing.



Characteristics

- High pressure rating
- Low pressure drop
- Fast response
- High repeatability and accuracy
- High / low temperature
- Compact design

Applications

- Laboratory
- Aerospace
- Chemical injection
- Semiconductor fabrication
- Experimental equipment
- Test benches
- Chemical processing

Specifications

Flow range	See below flow range table for details.
Applicable medium	Low to medium viscosity Liquids
Accuracy	0.5%
Repeatability	<0.1%
Pressure rating	Standard 5000psi (Customization available)
Response time	2ms
Probe Operating Temperature	-40...210°F (-40...100°C)
	-40...300°F (-40...150°C)
	-40...450°F (-40...230°C)
Materials	Body: 316 stainless steel
	Rotor: 17-4 PH stainless steel
	Shaft: 316 stainless steel
	Bearing: stainless steel ball bearing / hybrid ceramic ball bearing
Process connection	MS male flare
	NPT male thread
	ASME B16.5 Flange

Flow Range - GPM

Part Code	Standard Flow Range (GPM)		Extended Flow Range (GPM)		Filtration (Micron)
	Magnetic Pickup	RF Pickup	Magnetic Pickup	RF Pickup	
R-02	0.13...1.3	0.13...1.3	0.11...1.45	0.01...1.45	10
R-04	0.32...3.2	0.27...3.2	0.11...3.4	0.03...3.4	10
R-06	0.53...5.3	0.5...5.3	0.13...6	0.06...6	10
R-08	0.87...8.7	0.74...8.7	0.16...10	0.1...10	10
R-10	1.6...16	1.2...16	0.3...19	0.2...20	10
R-12	2.4...24	2...24	0.5...25	0.3...25	10
R-16	5.8...58	5...58	1...65	0.65...65	20
R-20	10...100	9...100	1.6...130	1.3...130	20
R-24	18...180	15...180	2.6...210	2.1...210	50
R-32	30...300	21...300	3.5...350	2.7...350	50
R-40	40...400	35...400	5...450	4.5...450	50

Flow Range - LPM

Part Code	Standard Flow Range (LPM)		Extended Flow Range (LPM)		Filtration (Micron)
	Magnetic Pickup	RF Pickup	Magnetic Pickup	RF Pickup	
R-02	0.5...5	0.5...5	0.4...5.5	0.05...5.5	10
R-04	1.2...12	1...12	0.4...13	0.13...13	10
R-06	2.0...20	1.9...20	0.5...24	0.24...24	10
R-08	3.3...33	2.8...33	0.6...38	0.38...38	10
R-10	6...60	4.5...60	1.1...70	0.7...70	10
R-12	9...90	7.6...90	1.9...95	1.2...95	10
R-16	22...220	19...220	3.8...240	2.4...240	20
R-20	40...400	34...400	4.9...490	4.9...490	20
R-24	70...700	57...700	8.2...820	8.2...820	50
R-32	110...1100	83...1100	13...1300	10...1300	50
R-40	150...1500	150...1500	19...1700	17...1700	50

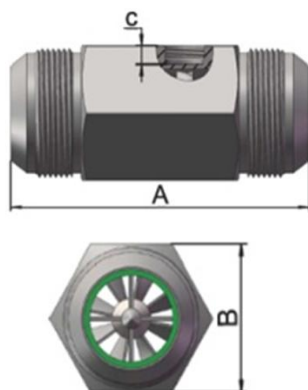
Pressure drop

Part Code	Pressure drop (% measuring range)						
	psi						
	10%	25%	40%	55%	70%	85%	100%
R-02	0 (0)	0.01 (0.15)	0.03 (0.44)	0.05 (0.73)	0.08 (1.16)	0.11 (1.6)	0.15 (2.18)
R-04	0.01 (0.15)	0.03 (0.44)	0.06 (0.87)	0.16 (2.32)	0.19 (2.76)	0.27 (3.92)	0.35 (5.08)
R-06	0.01 (0.15)	0.02 (0.29)	0.06 (0.87)	0.11 (1.6)	0.16 (2.32)	0.23 (3.34)	0.32 (4.64)
R-08	0.01 (0.15)	0.05 (0.73)	0.11 (1.6)	0.2 (2.9)	0.3 (4.35)	0.46 (6.67)	0.61 (8.85)
R-10	0.06 (0.87)	0.12 (1.74)	0.23 (3.34)	0.41 (5.95)	0.61 (8.85)	0.92 (13.34)	1.22 (17.69)
R-12	0.06 (0.87)	0.13 (1.89)	0.24 (3.48)	0.42 (6.09)	0.64 (9.28)	0.93 (13.49)	1.22 (17.69)
R-16	0.06 (0.87)	0.09 (1.31)	0.16 (2.32)	0.27 (3.92)	0.39 (5.66)	0.57 (8.27)	0.74 (10.73)
R-20	0.06 (0.87)	0.13 (1.89)	0.24 (3.48)	0.43 (6.24)	0.62 (8.99)	0.96 (13.92)	1.31 (19)
R-24	0.07 (1.02)	0.16 (2.32)	0.32 (4.64)	0.6 (8.7)	0.89 (12.91)	1.32 (19.15)	1.74 (25.24)
R-32	0.07 (1.02)	0.08 (1.16)	0.14 (2.03)	0.24 (3.48)	0.34 (4.93)	0.51 (7.4)	0.66 (9.57)
R-40	0.03 (0.44)	0.06 (0.87)	0.13 (1.89)	0.21 (3.05)	0.4 (5.8)	0.45 (6.53)	0.61 (8.85)

Following results were obtained by testing medium with a viscosity of 1.2mm²/s

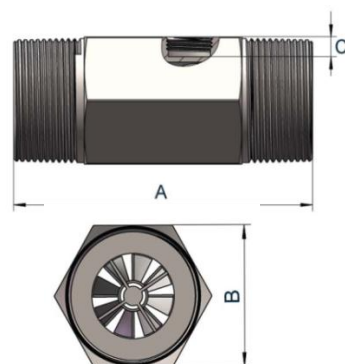
Dimensions in mm

MS Connection



Part Code	Flow Meter ID (inch)	End Fitting MS Male Flare (Tube Size)	A	B	C
R-02	0.3	1/2"	62.2	23	6.7
R-04	0.3	1/2"	62.2	23	6.7
R-06	0.37	1/2"	62.2	23	5.8
R-08	0.4	1/2"	62.2	23	5.5
R-10	0.5	5/8"	69.2	32	8.6
R-12	0.56	3/4"	83	32	7.9
R-16	0.86	1"	90.5	36	5.8
R-20	1	1-1/4"	103	41	6.5
R-24	1.31	1-1/2"	116.5	50	6.8
R-32	1.75	2"	154	65	8.8

NPT Connection



Part Code	Flow Meter ID (inch)	End Fitting NPT Male Thread	A	B	C
R-02	0.3	1/2"	68	23	6.7
R-04	0.3	1/2"	68	23	6.7
R-06	0.37	1/2"	68	23	5.8
R-08	0.4	1/2"	68	23	5.5
R-10	0.5	3/4"	69.2	32	8.6
R-12	0.56	3/4"	82.8	32	7.9
R-16	0.86	1"	90.5	36	5.8
R-20	1	1-1/4"	103	46	6.5
R-24	1.31	1-1/2"	117	50	6.8
R-32	1.75	2"	155	65	8.8

Order Code

Example: TF500-R-10AS

1. Model

TF500- High Performance Turbine Flow Meter

2. Part Code

R-10 Select a part code from flow range table above to determine flow range.

3. End Fitting

M 37° MS Male Flare
 N Male NPT Thread
 Fxxx ASME B16.5 Flange (xxx: Class#)
 E.g., F600 for ASME Flange Class 600
 Other end fittings on request

4. Bearing

S Stainless steel ball bearing
 C Hybrid ceramic ball bearing

Electronics Options

S1000 Pickup Coils / Transmitters

Amplified Pulse
 Linearized 4...20mA Output



DE500 Local Display

Local Display
 4...20mA + Alarms Output



SA500 Pickup Coils

Intrinsically Safe
 Amplified Pulse



SX500 Flow Transmitters

Explosion-Proof
 Modbus RS485



See electronics' datasheet for details.