

Turbine Flow Meter

StaTurb TF500 Series - High Performance

Introduction

StaTurb TF500 series column flow meter contains a magnetic detector and a magnetic turbine, which drives the turbine to rotate when the medium in the pipeline flows. The rotational speed of the turbine is directly proportional to the flow velocity of the medium. The magnetic detector detects the rotational speed of the rotor and converts it into a standard industrial electrical signal for output or display. It can be used for the measurement of medium and low viscosity media, such as water, solvent, hydraulic oil, lubricating oil, etc.



Characteristics

- High pressure resistance
- Low pressure loss
- Fast response
- High repeatability and accuracy
- High / low temperature
- Compact design

Applications

- Petrochemical/Energy industry
- Hydraulic/Lubrication system
- Water treatment
- Oil/Gas industry
- Experimental equipment
- Test systems
- Food/Medical equipment

Specifications

Measuring range	See below measuring range table for details.
Applicable medium	Liquids
Accuracy	0.5%
Repeatability	0.1%
Pressure rating	See dimension below for details
Response time	2ms (fastest)
Ambient Temperature	-40...185°F (-40...85°C)
Medium Temperature	-40...212°F (-40...100°C)
	-40...302°F (-40...150°C)
	-40...446°F (-40...230°C)
Materials	Body: 316 stainless steel Rotor: 17-4 PH stainless steel Rotor shaft: 316 stainless steel Bearing: stainless steel ball bearing / hybrid ceramic ball bearing
Process connection	AN male thread NPT male thread ASME B16.5 Flange

Measuring range

Measuring range - gal/min

Part Code	Standard Measuring Range		Extended Measuring Range		Filtration (Max. Micron)
	Magnetic Sensor	RF Sensor	Magnetic Sensor	RF Sensor	
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	0.32...3.2	0.11...3.4	0.03...3.4	10
R-06	0.52...5.2	0.5...5.2	0.13...6.3	0.06...6.3	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...18.5	0.18...18.5	10
R-12	2.4...24	2...24	0.5...31	0.32...31	10
R-16	5.8...58	5...58	1...63	0.63...63	20
R-20	10.5...105	9...105	1.6...129	1.3...129	20
R-24	18.5...185	15...185	2.7...216	2.2...216	50
R-32	29...290	22...290	3.5...343	2.65...343	50
R-40	40...396	40...396	5...445	4.5...450	50

Measuring range - L/min

Part Code	Standard Measuring Range		Extended Measuring Range		Filtration (Max. Micron)
	Magnetic Sensor	RF Sensor	Magnetic Sensor	RF Sensor	
R-02	0.5...5.0	0.5...5.0	0.4...5.5	0.05...5.5	10
R-04	1.2...12	1.2...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	6.0...60	4.5...60	1.1...70	0.7...70	10
R-12	9.0...90	7.6...90	1.9...120	1.2...120	10
R-16	22...220	19...220	3.8...240	2.4...240	20
R-20	40...400	34...400	6.0...490	4.9...490	20
R-24	70...700	57...700	10...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

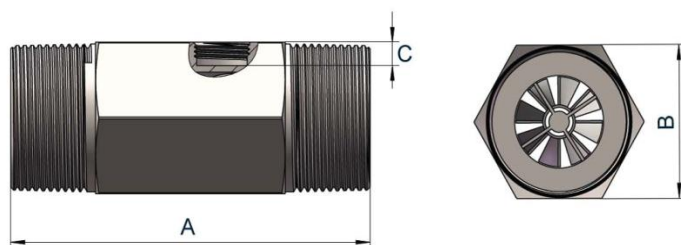
Dimensions in mm

AN Connection



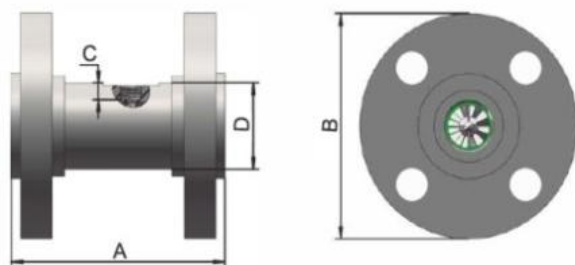
Part Code	End Fitting AN-Size (Tube)	A	B	C	Pressure	
					bar	psi
R-02	1/2"	62.2	23	6.72	345	5000
R-04	1/2"	62.2	23	6.72	345	5000
R-06	1/2"	62.2	23	5.83	310	4500
R-08	1/2"	62.2	23	5.45	310	4500
R-10	5/8"	69.2	32	8.65	310	4500
R-12	3/4"	83	32	7.86	310	4500
R-16	1"	90.5	36	5.8	250	3600
R-20	1-1/4"	103	41	6.5	190	2700
R-24	1-1/2"	116.5	50	6.82	165	2400
R-32	2"	154	65	8.76	120	1700

NPT Connection



Part Code	End Fitting NPT Male Thread	A	B	C	Pressure Rating	
					bar	psi
R-02	1/2"	68	23	6.72	400	5800
R-04	1/2"	68	23	6.72	400	5800
R-06	1/2"	68	23	5.83	300	4350
R-08	1/2"	68	23	5.45	300	4350
R-10	3/4"	69.2	32	8.65	285	4100
R-12	3/4"	82.8	32	7.86	285	4100
R-16	1"	90.5	36	5.8	270	3900
R-20	1-1/4"	103	46	6.5	320	4600
R-24	1-1/2"	117	50	6.82	290	4200
R-32	2"	155	65	8.76	250	3600

ASME B16.5 Class 150 Flange Connection



Part Code	A	B	C	D	Pressure Rating
R-02	/	/	/	/	ASME B16.5 Class 150
R-04	/	/	/	/	
R-06	107	98	10.83	33	
R-08	107	98	10.45	33	
R-10	110.8	98	11.65	38	
R-12	126.8	98	10.86	38	
R-16	135.5	108	11.3	47	
R-20	154	117	9.5	47	
R-24	152	127	11.82	60	
R-32	165	152	11.26	70	
R-40	229	178	13.15	89	

Pressure drop

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

Part Code	Pressure drop (% measuring range) bar (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)

Order Code

Example: TF500-R-10AS

1. Model

TF500- Highly Turndown Turbine Flow Meter

2. Part Code

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

Check dimensions for default end fittings.

3. End Fitting

A Male AN thread
 N Male NPT thread
 F150 ASME B16.5 Flange Class 150
 F300 ASME B16.5 Flange Class 300
 other end fittings on request

4. Bearing

S Stainless steel ball bearing
 C Hybrid ceramic ball bearing

Sensor Options

1. Model

S1000- For turbine flow meter

2. Pickup

M Magnetic (standard)
 H Hall effect
 R RF

3. Output

P1 Pulse output
 P2 Linearized pulse output
 A Analog output
 D Digital transmitter
 E Ex-proof transmitter

4. Temperature

T1 -40...212°F (-40...100°C)
 T2 -40...302°F (-40...150°C)
 T3 -40...446°F (-40...230°C)

See sensor's datasheet for details

