AW-LAKE
PROCESS FLOW MEASUREMENT

TURBINE **FLOW METERS**
INSTRUMENTATION

TRG SERIES - STANDARD TURBINE FLOW METER

Ideal turbine flow meter for monitoring solvents and other lower viscosity fluids, such as antifreeze and fuel measurement.

TECHNICAL SPECIFICATIONS

Measuring Accuracy
± 1.0% of reading or better

Repeatability
± 0.1%

Flow Measuring Range
.08 to 200 GPM (gal/min)

Turn Down Ratio
10:1

Maximum Operating Pressure*
Working pressure up to 5,000 psi

Maximum Operating Temperature
Fluid temperature of -150° to 450°F

Standard Calibration Media
Tap water @ 70°F Temperature

End Connections
NPT

** Electronic sensor dependent.*

BENEFITS

Rugged & Cost-Effective
The sturdy construction of this turbine flow meter means high performance and longer service life at an affordable price.

Industry Standard
The TRG Series flow meter comes with a standard NPT end connection for universal applications.

Versatile
This meter is capable of measuring flow in line sizes from 1/2" to 2".

Electronic Integration
This meter can provide displayed flow rate, totalization, current or voltage outputs through a variety of compatible electronics.

Simplified Maintenance
The TRG Series was designed with only one moving part for easy cleaning and maintenance.

Explosion Proof (EX) Options Available

MATERIALS OF CONSTRUCTION

Rotor Support	303 Stainless Steel
Body	316L Stainless Steel
Rotor Shaft	Tungsten Carbide
Impeller	420 Stainless Steel

RECOMMENDED SENSORS

Model	Sensor Type	Temp (°F)
MAG-PB	Pulse Sensor - *No Amplifier Required*	-40 to 185
FIP-4HS	4-20 mA Output Sensor	-40 to 185
Meter Mounted Displays:		
Non EX Meters		
RT-10A	Battery-Powered monitor	0 to 140
RT-30 SD	24 VDC Powered monitor	0 to 140
EX Meters		
HUB-40EX	Hazardous area rated sensor	-40 to 140
RT-30EX	Hazardous area rated local flow rate transmitter	-6 to 140

** For additional sensors available, contact factory. Other outputs available upon request.*

AW-LAKE
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2440 W. Corporate Preserve Dr. #600, Oak Creek, WI 53154 | www.aw-lake.com

TRG SERIES - STANDARD TURBINE FLOW METER

Ideal turbine flow meter for monitoring solvents and other lower viscosity fluids, such as antifreeze and fuel measurement.

METER SPECIFICATIONS

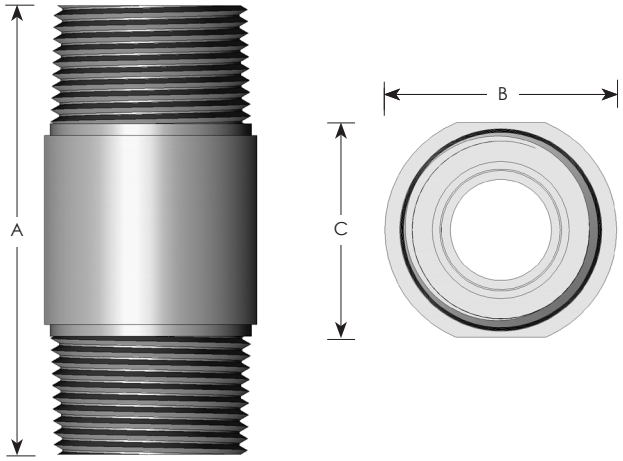
Part Number	Flow Range (gal/min)	K-Factor* (pulses/gal)	Porting	Filtration (micron)	Pressure Rating (psi)	Weight (lbs)
TRG-11.250-5 (EX2)[1]	0.08 to 0.4	125,000	1/2" Male NPT	100	5,000	0.75
TRG-11.300-5 (EX2)[1]	0.13 to 1.06	91,500	1/2" Male NPT	100	5,000	0.75
TRG-11.375-5 (EX2)[1]	0.3 to 3	48,000	1/2" Male NPT	100	5,000	0.75
TRG-11.500-5 (EX2)[1]	0.9 to 9	15,000	1/2" Male NPT	100	5,000	0.75
TRG-11.750-5 (EX2)[1]	1.6 to 16	10,500	1/2" Male NPT	300	5,000	0.75
TRG-11.750 (EX2)[1]	1.6 to 16	10,500	1" Male NPT	300	5,000	1.25
TRG-11.880** (EX2)[1]	3.2 to 32	2,900	1" Male NPT	300	5,000	1.50
TRG-1110 (EX2)[1]	5.3 to 53	800	1-1/2" Male NPT	300	5,000	2.50
TRG-1120L (EX2)[1]	13 to 200	400	2" Male NPT	300	5,000	3.25

**K-Factors given are averaged. A calibration sheet accompanies every meter sold. **This is a direct replacement for the TRG-11.875 and has a doubled K-Factor.*
[1]EX2 versions available.

METER DIMENSIONS

Part Number	A	B	C
TRG-11.250-5 (EX2)[1]	3.00"	1.35"	1.20"
TRG-11.300-5 (EX2)[1]	3.00"	1.35"	1.20"
TRG-11.375-5 (EX2)[1]	3.00"	1.35"	1.20"
TRG-11.500-5 (EX2)[1]	3.00"	1.35"	1.20"
TRG-11.750-5 (EX2)[1]	3.00"	1.35"	1.20"
TRG-11.750 (EX2)[1]	3.00"	1.55"	1.40"
TRG-11.880 (EX2)[1]	3.00"	1.55"	1.40
TRG-1110 (EX2)[1]	3.00"	2.15"	1.95"
TRG-1120L (EX2)[1]	4.00"	2.70"	2.55"

[1]EX2 versions available.



Products may be subject to change without notice - Contact factory for the most up-to-date product information.

AW-LAKE
PROCESS FLOW MEASUREMENT

2440 W. Corporate Preserve Dr. #600, Oak Creek, WI 53154 | www.aw-lake.com

HM-AC SERIES - HIGH PRESSURE TURBINE FLOW METER

Ideal when measuring the flow of fluids under high pressures, such as in hydraulic testing. It is also ideal for chemical injection systems.

APPLICATIONS:

- Dosing
- Mixing
- Process Monitoring
- Inhibitors
- Emulsions
- Water
- Methanol

TECHNICAL SPECIFICATIONS

Measuring Accuracy
± 1.0% of reading or better

Repeatability
± 0.05%

Flow Measuring Range
.08 to 32 GPM (gal/min)

Turn Down Ratio
10:1 (Extended on request)

Maximum Operating Pressure
Working pressure up to 20,000 psi

Maximum Operating Temperature
Depends on sensor used

Calibration
Default is water (1cst), custom calibrations available for added cost

Filtration Requirement
300 microns

Process Connections
Medium pressure AutoClave

BENEFITS

Industry Standard
Standard end connections are AutoClave®, (also available in Grayloc® and Techlok®.)

High Pressure Suitable
The HM Series of turbine flow meters can handle low viscosity fluids flowing under extremely high pressures, such as hydraulic and fuel systems and offshore chemical injection systems.

Hazardous Area Approved Sensors
A complete line of hazardous area approved sensors and displays are available for the HM Series meters.

Durable & Cost-Effective
This meter's rugged stainless steel construction provides a durable and economic flow metering solution to sanitary environments.

Explosion Proof (EX) Options Available

MATERIALS OF CONSTRUCTION

Body	1.3980 Stainless Steel
Rotor Support	316 Ti Stainless Steel
Rotor	329 Stainless Steel
Bearings/Shaft	Tungsten Carbide

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HM-AC SERIES - HIGH PRESSURE TURBINE FLOW METER

Ideal when measuring the flow of fluids under high pressures, such as in hydraulic testing. It is also ideal for chemical injection systems.

METER SPECIFICATIONS

Part Number	Range (gal/min)	Medium Pressure AutoClave	K-Factor (Pulses/ gal)	Max. Frequency (0-max. Hz)	Pressure Rating (psi)	Weight (lbs)
HM 003/AC	0.08 to 0.4	9/16”	123,000	1,100	20,000*	4.2
HM 004/AC	0.13 to 1.05	9/16”	94,600	1,700	20,000*	4.4
HM 005/AC	0.2 to 1.6	3/4”	67,400	1,750	20,000*	4.8
HM 006/AC	0.3 to 2.6	3/4”	45,400	2,100	20,000*	4.8
HM 007/AC	0.5 to 5	1”	19,000	1,650	20,000*	5.1
HM 009/AC	0.9 to 9	1”	19,000	2,750	20,000*	5.3
HM 011/AC	1.6 to 16	1”	5,000	1,350	20,000*	5.3
HM 013/AC	2.25 to 22.5	1-1/2”	3,500	1,300	15,000	12.1
HM 017/AC	3.2 to 32	1-1/2”	1,440	840	15,000	12.1

**Pressure rating drops to 15,000 psi if used with RT-30EX or HUB-40EX sensors.*

RECOMMENDED SENSORS*

Model	Sensor Type	Temp (°F)
EX Meters		
RT-30EX	Hazardous area rated local flow rate transmitter	-6 to 140
HUB-40EX	Hazardous area rated sensor	-40 to 140
Non EX Meters		
RT-30SD	Local flow rate transmitter	-40 to 140
VTE 02	Pulse output sensor	-40 to 248
VTE 02-EX	Intrinsic safe pulse output sensor	-40 to 185

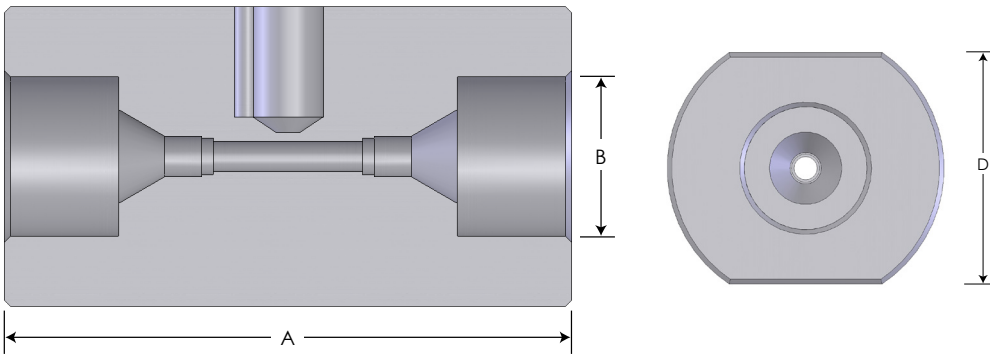
**For additional sensors such as extended temperature range, contact factory.*

METER DIMENSIONS

Part Number	A	B	D
HM 003/AC	3.54”	13/16”	1.97”
HM 004/AC	3.54”	13/16”	1.97”
HM 005/AC	4.13”	3/4”	1.97”
HM 006/AC	4.13”	3/4”	1.97”
HM 007/AC	5.31”	1-3/8”	1.97”
HM 009/AC	5.31”	1-3/8”	1.97”
HM 011/AC	5.51”	1-3/8”	1.97”
HM 013/AC	6.89”	1-7/8”	2.76”
HM 017/AC	7.01”	1-7/8”	2.76”

ORDERING

Cotact factory for Part Number Configuration



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AW-LAKE
PROCESS FLOW MEASUREMENT

2440 W. Corporate Preserve Dr. #600, Oak Creek, WI 53154 | www.aw-lake.com

TA3 SERIES - SANITARY TURBINE FLOW METER

Ideal for use in industries including dairy, brewing, wine production, food processing and pharmaceuticals.

TECHNICAL SPECIFICATIONS

Measuring Accuracy
± 1.0% of reading or better
(±1% of reading over the upper 70% of the measuring range for 3/8, 1/2 and 3/4 in. meters)

Repeatability
± 0.1%

Flow Measuring Range
0.6 to 400 GPM (gal/min)

Turn Down Ratio
10:1

Maximum Operating Pressure*
Working pressure up to 1,000 psi

Temperature Range**
Fluid temperature up to 300°F

Electrical Connection
NEMA 6 Connector

Port Connection
Tri-clamp

** Depends on connection size & clamp. Note: .COP (Clean-Out-of-Place) **Sensor & seal dependent.*

MATERIALS OF CONSTRUCTION

Body & Rotor Support	316L Stainless Steel
Rotor	Nickel Plated Stainless Steel
Bearings	Nickel Bindery Tungsten Carbide

BENEFITS

Durable & Cost Effective
This meter's rugged 316 stainless steel construction provides a durable and economic flow metering solution to sanitary environments.

Excellent Accuracy
The TA3 sanitary turbine flow meter can achieve a flow accuracy up to 1.0% of reading and is repeatable up to 0.1%.

Federal Compliance
The most up-to-date polishing technology is utilized during manufacturing on all internal components. and all TA3 models are 3A authorized.

Flexible
This meter is available in nine different flow ranges, covering flows from 0.6 GPM up to 400 GPM.

Versatile
This flow meter provides local flow rate and volume totalization and will interface with most displays, controllers and computers.

ELECTRONICS*

Model	Sensor Type	Temp (°F)
RT-10R	Battery-Powered Monitor	0 to 140
RT-30SD	15-24 VDC Powered Monitor	0 to 140
MAG-INVA	Amplified Pulse Output	0 to 140
MG-300	Non-Amplified (external amplifer needed)	0 to 300
MG-450	Non-Amplified (external amplifer needed)	0 to 450

**Contact factory for additional sensor options.*

AW-LAKE
PROCESS FLOW MEASUREMENT

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TA3 SERIES - SANITARY TURBINE FLOW METER

Ideal for use in industries including dairy, brewing, wine production, food processing and pharmaceuticals.

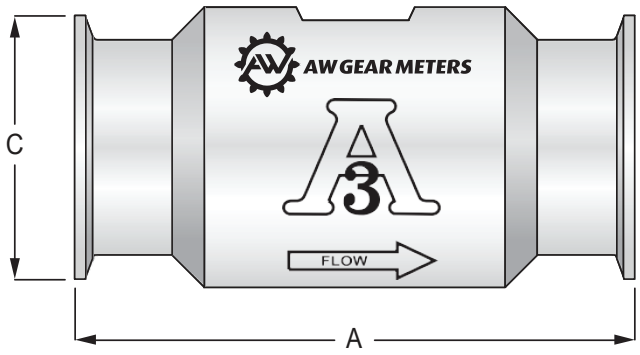
METER SPECIFICATIONS

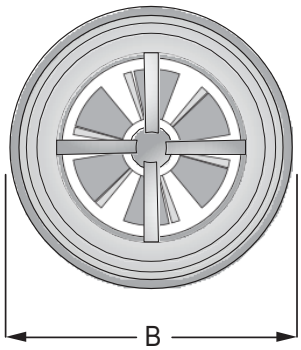
Part Number	Range (gal/min)	K-Factor * (Pulses/ gal)	Meter Size	Clamp Size	Weight (lbs)
TA3-75-375-1	0.6 to 3	20,000	3/8"	3/4"	1
TA3-75-500-1	0.75 to 7.5	13,000	1/2"	3/4"	1
TA3-75-750-1	2 to 15	2,750	1/2"	3/4"	1
TA3-150-500-1	0.75 to 7.5	13,000	1/2"	1-1/2"	3
TA3-150-750-1	2 to 15	2,750	1/2"	1-1/2"	3
TA3-150-875-1	3 to 30	2,600	7/8"	1-1/2"	3
TA3-150-100-1	5 to 50	870	1"	1-1/2"	3
TA3-150-150-1	15 to 180	330	1-1/2"	1-1/2"	5.5
TA3-250-200-1	40 to 400	50	2"	2-1/2"	8.5

** K-Factors given are averaged. A calibration sheet accompanies every meter sold.*

METER DIMENSIONS

Part Number	A	B	C
TA3-75-375-1	3"	1.5"	1"
TA3-75-500-1	3"	1.5"	1"
TA3-75-750-1	3"	1.5"	1"
TA3-150-500-1	4"	2.0"	2"
TA3-150-750-1	4"	2.0"	2"
TA3-150-875-1	4"	2.0"	2"
TA3-150-100-1	4"	2.0"	2"
TA3-150-150-1	6.25"	2.3"	2"
TA3-250-200-1	6.5"	2.3"	3"





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AW-LAKE
PROCESS FLOW MEASUREMENT

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TW SERIES - OIL & GAS TURBINE FLOW METER

Ideal to withstand the demands of the most rigorous flow measurement applications and is an ideal meter for liquid flow measurement on or off the oilfield.

TECHNICAL SPECIFICATIONS

Flow Ranges
0.6 - 5000 GPM (gal/min)

Pressure
Working pressure up to 5,000 psi

Accuracy
±1% of reading or better
(±1% of reading over the upper 70% of the measuring range for 3/8, 1/2 and 3/4 in. meters)

Repeatability
±0.1%

Temperature
Fluid temperature of -150° to 300°F

Turndown Ratio
10:1

Calibration
Water (NIST traceable calibration)

End Connections
NPT and Victaulic®

BENEFITS

Accurate & Reliable
The TW Series turbine meter is accurate to ±1% of reading with repeatability of better than ±0.1%.

Rugged & Cost-Effective
All stainless steel construction and tight machining tolerances make for excellent durability/long life.

Port Connections
This flow meter comes with standard NPT or Victaulic® end connections for universal applications.

Versatile
The meter or just the meter internals are perfect drop-in replacements for Kimray NuFlo/Haliburton/Cameron and Blancett turbine flow meters.

Electronic Integration
This meter can accept a variety of existing electronics, such as the SignalFire Flow Totalizer.

Simplified Maintenance
Maintenance is easy with the rotor replacement kit. Rotor can be replaced in just 2-3 minutes.

MATERIALS OF CONSTRUCTION

Body	316 Stainless Steel
Rotor	CD4MCU Stainless Steel
Rotor Shaft	Tungsten Carbide
Rotor Support	316 Stainless Steel

ELECTRONICS

Included Sensor:	Sensor Type:	Output:
MG-300	Magnetic Pick-up	Pulse
Optional Local Display:	**Description:**	
SFTotalizer-1BIS	Intrinsically Safe Wireless Flow Totalizer with LCD Display	

**Contact factory for additional sensor options.*

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TW SERIES - OIL & GAS TURBINE FLOW METER

Ideal to withstand the demands of the most rigorous flow measurement applications and is an ideal meter for liquid flow measurement on or off the oilfield.

METER PART NUMBERS

Part Number	Range (gal/min)	Range (barrels/day)	K-Factor* (pulses/gal)	Porting	Strainer (mesh)	Pressure Rating (psi)	Meter Weight (lb)	Sensor Collar Size	Repair Kit Part Number**
TW-50M-100	0.6-3	20-100	18000	1/2” Male NPT	60	5000	1	1/2" HUB Connection	KIT-50M-100
TW-50M-250	0.75-7.5	25-250	13000	1/2” Male NPT	60	5000	1	1/2" HUB Connection	KIT-50M-250
TW-50M-515	2-15	68-515	3300	1/2” Male NPT	60	5000	1	1/2" HUB Connection	KIT-50M-515
TW-100M-100	0.6-3	20-100	18000	1” Male NPT	60	5000	2	1" HUB Connection	KIT-100M-100
TW-100M-250	0.75-7.5	25-250	13000	1” Male NPT	60	5000	2	1" HUB Connection	KIT-100M-250
TW-100M-515	2-15	68-515	3300	1” Male NPT	60	5000	2	1" HUB Connection	KIT-100M-515
TW-100M-1K	3-30	100-1,000	3100	1” Male NPT	60	5000	2	1" HUB Connection	KIT-100M-1K
TW-100M-2K	5-50	170-2,000	870	1” Male NPT	40	5000	2	1" HUB Connection	KIT-100M-2K
TW-150M-6K	15-180	515-6,000	330	1 1/2” Male NPT	20	5000	5	1" HUB Connection	KIT-150M-6K
TW-200M-6K	15-180	515-6,000	330	2” Male NPT	20	5000	6	1" HUB Connection	KIT-200M-6K
TW-200V-6K	15-180	515-6,000	330	2” Victaulic®	20	800	6	1" HUB Connection	KIT-200V-6K
TW-200F-13K	40-400	1,300-13,000	52	2” Female NPT	20	5000	14	1" HUB Connection	KIT-200F-13K
TW-300M-21K	60-600	2,100-21,000	57	3” Male NPT	10	800	15	1" HUB Connection	KIT-300M-21K
TW-300V-21K	60-600	2,100-21,000	57	3” Victaulic®	10	800	15	1" HUB Connection	KIT-300V-21K
TW-400M-41K	100-1200	3,400-41,000	29	4” Male NPT	10	800	20	1" Hub Connection	KIT-400M-41K
TW-400V-41K	100-1200	3,400-41,000	29	4” Victaulic®	10	800	20	1" Hub Connection	KIT-400V-41K
TW-600M-86K	200-2500	6,800-86,000	7	6” Male NPT	4	800	46	1" Hub Connection	KIT-600M-86K
TW-600V-86K	200-2500	6,800-86,000	7	6” Victaulic®	4	800	46	1" Hub Connection	KIT-600V-86K
TW-800V-120K	350-3500	12,000-120,000	3	8” Victaulic®	4	800	56	1" Hub Connection	KIT-800V-120K
TW-1000V-171K	500-5000	17,000-171,000	1.6	10” Victaulic®	4	800	80	1" Hub Connection	KIT-1000V-171K

**K-Factors given are averaged. A calibration sheet accompanies every meter sold. **Repair Kits include retaining rings, flow straightener and rotor assembly.*

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PROCESS FLOW MEASUREMENT

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HM-F SERIES - FLANGED TURBINE FLOW METER

Ideal for low viscosity fluids flowing under extremely high pressure, such as hydraulic and fuel systems and offshore chemical injection systems.

TECHNICAL SPECIFICATIONS

Measuring Accuracy
± 1.0% of reading or better

Repeatability
± 0.05%

Flow Measuring Range
.008 to 12,000 GPM (gal/min)

Turn Down Ratio
10:1

Maximum Operating Pressure
Working pressure is flange dependent

Maximum Operating Temperature
Fluid temperature of -384° to 662°F

Filtration Requirement
300 microns

End Connections
Equipped with flanges as per DIN or ANSI

MATERIALS OF CONSTRUCTION

Body	316 Stainless Steel Ti / 316L
Rotor Support	316 Stainless Steel Ti
Rotor	429 Stainless Steel / 329
Bearings	Tungsten Carbide with Nickel binder

BENEFITS

Fast Response Time & High Resolution
The Turbine wheel's low moment of inertia allows a fast acceleration from standstill up to full number of revolutions within 5 to 50 sec. For that reason, dynamic measurements can be made. The resolution can amount to as much as 35,000 pulses per liter.

Wide Temperature Range
Standard turbine: -4 up to 248°F
Special models for cryogenic liquids: -459°F
Special models w/ hi-temp pickups: up to 662°F.

Low Contamination Risk
The spacing of the turbine wheel and bearing mount is wide enough to protect against particles in fluid jamming the turbine wheel. And the Twist of flow in this area has a self-cleaning effect for the bearing.

SENSOR OPTIONS

Model	Sensor Type	Temp (°F)
VTEK/P	Pulse output sensor	-150 to 325
VTEK/P -EX	Pulse output sensor	-40 to 185
RT-30SD	Local flow rate transmitter	-40 to 140
RT-30EX	Hazardous area rated local flow rate transmitter	

** For additional sensors available, contact factory.*

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HM-F SERIES - FLANGED TURBINE FLOW METER

Ideal for low viscosity fluids flowing under extremely high pressure, such as hydraulic and fuel systems and offshore chemical injection systems.

METER SPECIFICATIONS

Part Number	Range (gal/min)	K-Factor (Pulses/ Gal)	Frequency (0-max. Hz)	
HM 9 EP	0.008 to 0.2	36,723	1970	
HM 3/1.5	0.08 to 0.4	8,454	1,000	1,000
HM 3/4	0.13 to 1.06	6,340	1,250	1,250
HM 5/6	0.2 to 1.6	4,703	1,740	1,780
HM 5/10	0.3 to 2.6	2,906	1,750	1,750
HM 7	0.5 to 5	1,374	1,800	1,800
HM 9	0.9 to 9	502	1,080	2,200
HM 11	1.6 to 16	343	1,350	2,700
HM 13	2.2 to 22	238	1,300	2,600
HM 17	3.2 to 32	100	800	1,650
HM 19	4 to 40	82	925	1,600
HM 22	5.3 to 53	57	800	1,600
HM 24	6.6 to 66	45	800	2,000
HM 28	7.9 to 95	41	960	2,000
HM 30	9.2 to 106	34	860	1,850
HM 36	10.6 to 132	16	600	1,200
HM 40	13.2 to 198	28	1,320	1,400
HM 50	18.5 to 317	17	1,400	
HM 65	26.4 to 528	6	850	
HM 80	42.8 to 845	3	615	
HM 100	66 to 1320	2	560	

Pulses/ m3			
Part Number	Range (gal/min)	K-Factor (Pulses/Gal)	Frequency (0-max. Hz)
HM 125	79 to 1744	1189	495
HM 150	94 to 2642	898	420
HM 200	114 to 3540	9	134
HM 250	219 to 6604	70	150
HM 300	423 to 12,680	36	110

VISCOSITY GROUPS

Turbine size	Viscosity	Viscosity Group #
HM 003	1 - 9 cST	15
HM 003	10 - 30 cST	57
HM 004	1 - 19 cST	27
HM 004	20 - 30 cST	77
HM 005	1 - 9 cST	15
HM 005	10 - 30 cST	57
HM 006	1 - 19 cST	27
HM 006	20 - 30 cST	77
HM 007	1 - 19 cST	27
HM 007	20 - 30 cST	77
HM 009	1 - 9 cST	15
HM 009	10 - 19 cST	52
HM 009	20 - 30 cST	77
HM 011	1 - 9 cST	15
HM 011	10 - 19 cST	52
HM 011	20 - 30 cST	77
HM 011	30 cST >	80
HM 013	1 - 7 cST	10
HM 013	8 - 14 cST	40
HM 013	15 - 19 cST	65
HM 013	19 - 29 cST	75
HM 013	30 cST >	80
HM 017	1 - 7 cST	10
HM 017	8 - 9 cST	35
HM 017	10 - 29 cST	55
HM 017	30 cST >	80
HM 019	1 - 7 cST	10
HM 019	8 - 9 cST	35
HM 019	10 - 14 cST	50
HM 019	15 - 19 cST	65

Turbine size	Viscosity	Viscosity Group #
HM 019	20 - 29 cST	75
HM 019	30 cST >	80
HM 022	1 - 7 cST	10
HM 022	8 - 9 cST	35
HM 022	10 - 29 cST	55
HM 022	30 cST >	80
HM 024	1 - 7 cST	10
HM 024	8 - 9 cST	35
HM 024	10 - 29 cST	55
HM 024	30 cST	80
HM 028	1 - 7 cST	10
HM 028	8 - 29 cST	45
HM 028	30 cST >	80
HM 030	1 - 7 cST	10
HM 030	8 - 29 cST	45
HM 030	30 cST >	80
HM 036	1 - 7 cST	10
HM 036	8 - 29 cST	45
HM 036	30 cST	80
HM 040	1 - 9 cST	15
HM 040	15 - 29 cSt	75
HM 040	30 cST >	80
HM 050	1 - 9 cST	15
HM 050	15 - 19 cSt	65
HM 050	20 - 29 cSt	75
HM 050	30 cST >	80
HM 065	1 - 7 cST	10
HM 065	8 - 14 cST	40
HM 065	15 - 29 cST	70
HM 065	30 cST >	80

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AW-LAKE
PROCESS FLOW MEASUREMENT

2440 W. Corporate Preserve Dr. #600, Oak Creek, WI 53154 | www.aw-lake.com

SUBSEA TURBINE FLOW METER

Ideal for Subsea Applications such as Valve Actuation & Testing on Subsea Equipment and ROVs.

TECHNICAL SPECIFICATIONS

Measuring Accuracy
± 1.0% of reading or better

Flow Measuring Range
Up to 16 GPM (gal/min)

External Pressure
Up to 7,200 psi

Maximum Operating Pressure
Up to 20,000 psi

Process Connection
Autoclave*

Temperature Range
-40° to 250°F (-40° to 121°C)

Electrical Connections
6-pin receptacle (or customer specified for custom meters).

Output
Amplified pulse or 4-20mA output.

**Contact factory for addional options.*

BENEFITS

Made for Subsea Environment
Designed to withstand the harsh subsea environment, there is no need for a pressurized container.

Sealed Electronic
Completely sealed electronics, there is no need for subsea electronics module canister space.

Versatile
Available in multiple flow ranges.

Customizable
Our engineers will work with you on customized materials or port configurations to meet your specific application requirements.

Rugged Construction
The sturdy construction of this turbine flow meter means high performance and longer service life.

MATERIALS OF CONSTRUCTION

Body & Rotor Support	316 Ti
Rotor	329 Stainless Steel
Bearings	Tungsten Carbide

TRANSMITTER

Supply voltage	+7 up to 29 VDC
Quiescent Current	< 5 mA
Frequency Range	2 up to 2,000 Hz
Ambient Temperature	-40 to 250°F (-40 to 121°C)
Housing	316 Ti
Electrical Connection	6-pin receptacle no. 1370046-101*

**Other options available upon request.*

METER SPECIFICATIONS

Part Number	Range (gal/min)	Connections	Operating Pressure	Overall Length	Meter Dimensions
HM-003/AC-71-9/16"-C1-TC01-S01	0.08 to 0.4	9/16" Autoclave	20,000 PSI	3.5 Inch	2 in X 3.50 in
HM-009/AC-71-1"-C1-TC01-S01	0.87 to 8.72	1" Autoclave	20,000 PSI	5.3 Inch	2 in X 3.50 in
HM-011/AC-71-1"-C1-TC01-S01	1.5 to 15.8	1" Autoclave	10,000 PSI	5.5 Inch	2 in X 3.50 in

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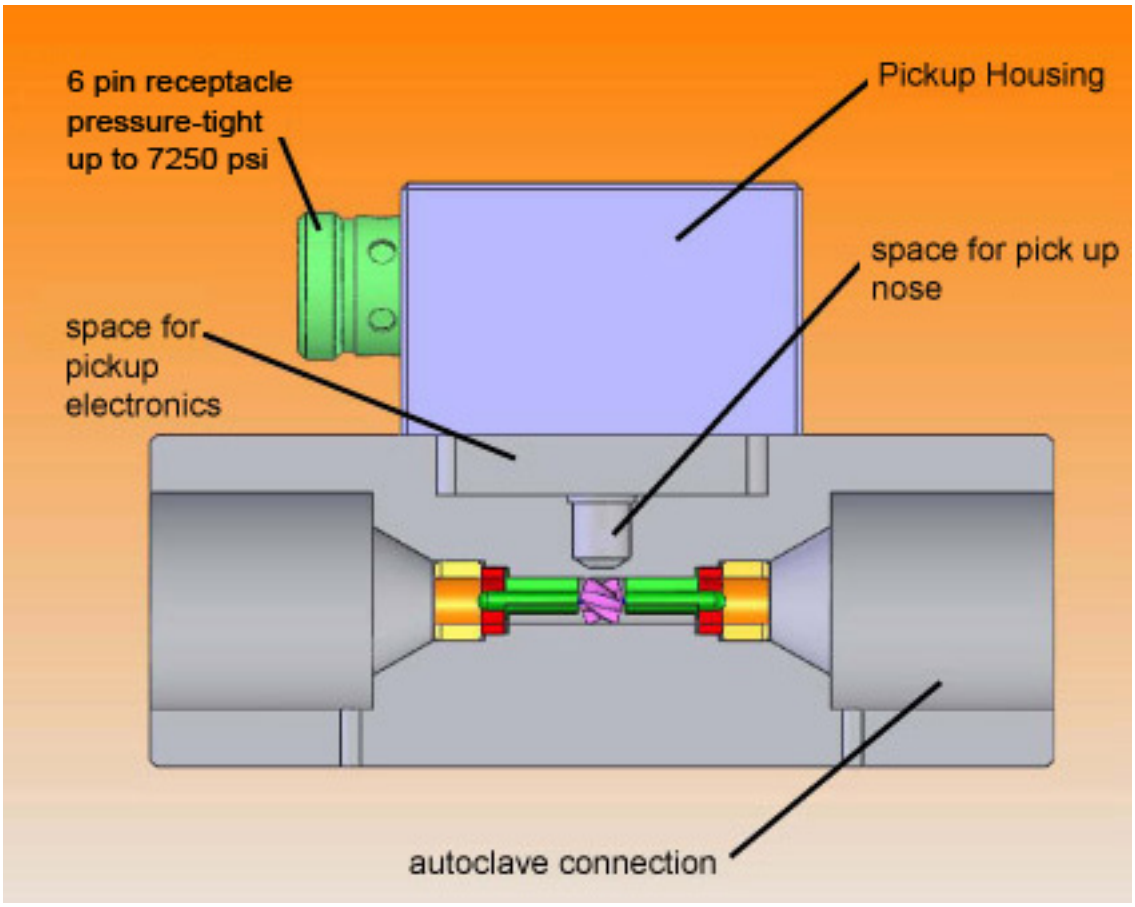
METER / SENSOR DETAILS



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TR-QS SERIES - TURBINE FLOW METER

Ideal for high performance flow measurement in aggressive environments, where space is limited and installation needs vary.

TECHNICAL SPECIFICATIONS

Measuring Accuracy
± 1.0% of reading or better

Repeatability
± 0.1%

Flow Measuring Range
5 to 5,000 GPM (gal/min)
(per flange rating of install kit)

Maximum Operating Pressure
Refer to ASME/ANSI B16.5-1996

Maximum Operating Temperature
Fluid temperature of -150° to 300°F

End Connections
Wafer-style ASME/ANSI B16.5-1996
- Threaded, Flange, Graloc & Victaulic

**Actual pressure rating depends on installtion connection.*

MATERIALS OF CONSTRUCTION

Body & Rotor Support	316 Stainless Steel
Bearings	Tungsten Carbide
Rotor	Stainless Steel
Rotor Shaft	Tungsten Carbide

BENEFITS

Accurate & Reaptable
The TR Series turbine meter is accurate to ±1% of reading with repeatability of better than ±0.1%.

Smart & Simple Design
Unique design eliminates the need for mating flanges, resulting in lower costs and simplifying installation.

Space-Saver
Wafer-style mounting configurations for limited space requirements.

High Performance
This flow meter is made from superior materials of construction for high performance in aggressive environments.

Improved Accuracy
The modiffied upstream and downstream flow straighteners allow for a higher accuracy and greater fluid dynamics.

INSTALLATION KITS

Each kit includes studs, nuts, gaskets and spacer rings.

Size	150#	300#	600#	900#	1500#
1”	TR-1110QS-150	TR-1110QS-300	TR-1110QS-600	TR-1110QS-900	TR-1110QS-1500
2”	TR-1120QS-150	TR-1120QS-300	TR-1120QS-600	TR-1120QS-900	TR-1120QS-1500
3”	TR-1130QS-150	TR-1130QS-300	TR-1130QS-600	TR-1130QS-900	TR-1130QS-1500
4”	TR-1140QS-150	TR-1140QS-300	TR-1140QS-600	TR-1140QS-900	TR-1140QS-1500
6”	TR-1160QS-150	TR-1160QS-300	TR-1160QS-600	TR-1160QS-900	TR-1160QS-1500
8”	TR-1180QS-150	TR-1180QS-300	TR-1180QS-600	TR-1180QS-900	TR-1180QS-1500
10”	TR-1190QS-150	TR-1190QS-300	TR-1190QS-600	TR-1190QS-900	TR-1190QS-1500

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PROCESS FLOW MEASUREMENT

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TR-QS SERIES - TURBINE FLOW METER

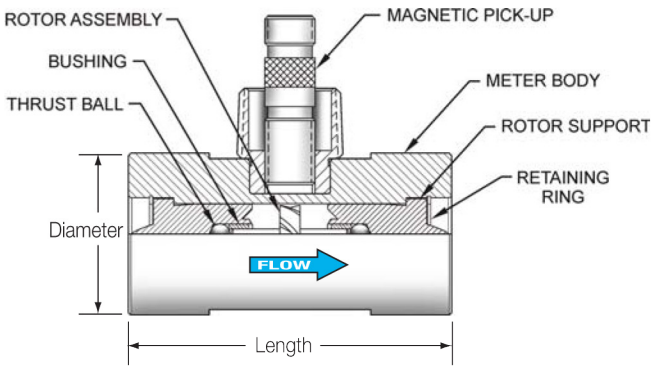
Ideal for high performance flow measurement in aggressive environments, where space is limited and installation needs vary.

METER SPECIFICATIONS

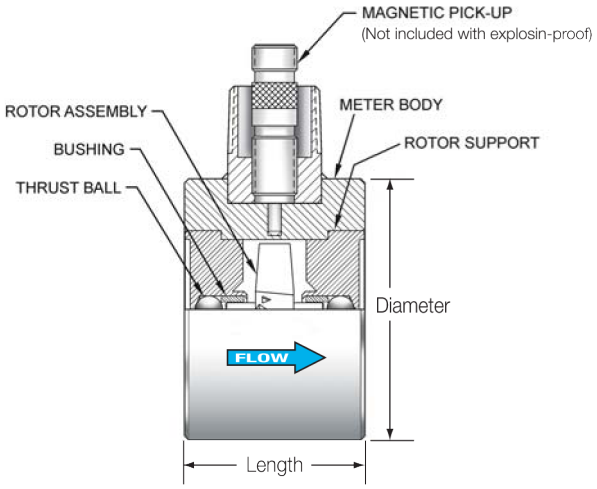
Part Number	Flow Range (Gal/min)	K-Factor * (Pulses/gal)	Bore Size x Line Size	Filtration (micron)	Dimensions (Diam x Lngth)	Repair Kit Part Number
TR-1110QS	5 - 50	870	1" x 1"	250	2" x 4"	TR-112QS
TR-1115QS	5 - 50	870	1" x 2"	250	2" x 4"	*consult factory*
TR-1118QS	15 - 180	330	1½" x 2"	840	3.62" x 2.5"	*consult factory*
TR-1120QS	40 - 400	52	2" x 2"	840	3.62" x 2.5"	TR-220QS
TR-1130QS	60 - 600	57	3" x 3"	2000	5" x 4.25"	TR-330QS
TR-1140QS	100 - 1200	29	4" x 4"	2000	6.18" x 5"	TR-440QS
TR-1160QS	200 - 2500	7	6" x 6"	4500	8.5" x 5.75"	TR-660QS
TR-1180QS	350 - 3500	3	8" x 8"	4500	10.62" x 6.25"	TR-880QS
TR-1190QS	500 - 5000	1.6	10" x 10"	4500	12.75" x 6.75"	TR-990QS

**K-Factors given are averaged. A calibration sheet accompanies every meter sold.*

Model TR1110QS only



Model TR1120QS through TR1190QS



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