

Turbine Flow Meter

QuikSert®

DESCRIPTION

The QuikSert in-line turbine flow meter was developed for liquid applications where accuracy and dependability are needed. QuikSert's stainless steel body incorporates a helical turbine with tungsten carbide shaft and bearing. It provides an efficient, long service life and a cost-effective solution for your measurement requirements.

Simple in design and construction, QuikSert uses modified upstream and downstream flow straighteners for a high degree of flow accuracy. Its between-the-flange design eliminates the need for mating flanges, requiring less space in the flow line, lowering costs for easy, one-man installation.

The meter produces a sine-wave signal proportional to its volumetric flow rate. With optional Blancett electronics, QuikSert provides local flow rate and volume totalization and interfaces with most instruments, PLCs and computers.

FEATURES

- Accurate and repeatable flow measurement from 0.6...3 gpm (20...100 bpd) to 500...5000 gpm (17,000...171,000 bpd).
- Unique between-the-flange design eliminates need for mating flanges.
- Superior materials of construction for high performance in aggressive environments.
- Wafer-style mounting configurations for limited space requirements.
- Modified flow straighteners for enhanced fluid dynamics.



INSTALLATION

The QuikSert turbine meter is simple to install and service. The meter should be installed with the "flow direction" arrow aligned with the direction of the line flow. For optimum performance, the flow meter should be installed with a minimum of 10 diameters upstream straight pipe length and 5 diameters downstream straight pipe length.

REPAIR KITS

Factory calibrated repair kits are available for field service. A repair kit contains six screws, two rotor supports, one rotor assembly, and a K-factor tag. The rotor support assembly is retained in proper position within the meter body by the support screws. These screws allow for quick and easy disassembly and replacement of the meter's internal components. QuikSert repair kits are designed and manufactured for use with Blancett turbines and other flow meters of similar design; contact the factory for further details.

OPERATING PRINCIPLE

Fluid entering the meter first passes through an inlet flow straightener that reduces its turbulent flow pattern. Fluid then passes through the turbine, causing the turbine to rotate at a speed proportional to fluid velocity. As each turbine blade passes through the magnetic field generated by the meter's magnetic pickup, an AC voltage pulse is generated. These pulses provide an output frequency that is proportional to volumetric flow.

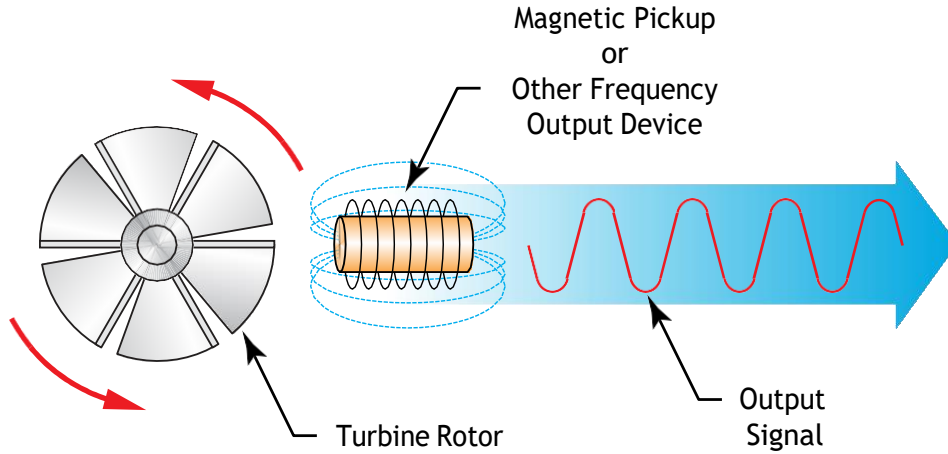


Figure 1: Schematic illustration of electric signal generated by rotor movement

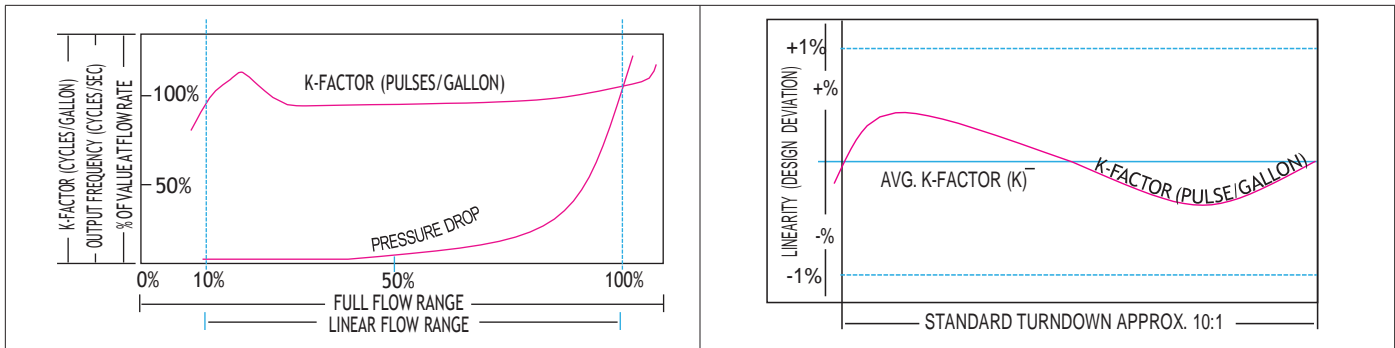
K-FACTOR

The K-factor represents the number of output pulses transmitted per gallon of fluid passing through the turbine meter. Each turbine has a unique K-factor. However, turbine meters are not functionally consistent throughout the full flow range of the meter.

There are several forms of friction inherent in turbine meters that slow down the rotational movement of the turbine rotor. These frictional forces include: magnetic drag, created by electromagnetic force of pickup transducers; mechanical drag, due to bearing friction; and viscous drag, produced by flowing fluid. See charts below.

As flow increases, the frictional forces are minimized and the free-wheeling motion of the turbine rotor becomes more linear (proportional to flow). The K-factor becomes relatively constant and linear throughout the balance of the linear flow range. This is approximately a 10:1 turndown ratio from the maximum flow rate down to the minimum flow rate.

Typical K-factor Curve (Pulse per US Gallon)



SPECIFICATIONS

Materials of Construction	Body	316/316L stainless steel
	Rotor	CD4MCu stainless steel
	Bearings	Tungsten carbide
	Rotor Shaft	Tungsten carbide
	Rotor Support	316L
Operating Temperature	-150...350° F (-101...177° C) standard Temperatures to 450° F (232° C) with high-temp pickup, consult factory for details	
Pressure Rating	See "Pressure Rating" below	
End Connections	Wafer-style ASME/ANSI B16.5-1996	
Turndown Ratio	—	
Accuracy	±1% of reading for 7/8 in. and larger meters ±1% of reading over the upper 70% of the measuring range for 3/8 in., 1/2 in. and 3/4 in. meters	
Repeatability	±0.1%	
Calibration	Water; NIST Traceable Calibration Certificate available, consult factory for details	
Pickup	B111109, B220111, B220210, B220243, B111126	
Conformance	NACE MR0175/ISO 15156	
Pressure Standards/ Approvals	Canadian Registration Number (CRN), PED 2014/68/EU, Group 1, Category II	
Pulsation and Vibration	Severe pulsation and mechanical vibration will affect accuracy and shorten the life of the meter.	

Pressure Rating

The pressure rating of the meter is dependent upon the class of ANSI flanges between which the meter is to be mounted. The pressure rating chart below is based on Carbon Steel at 100° F (37.8° C).

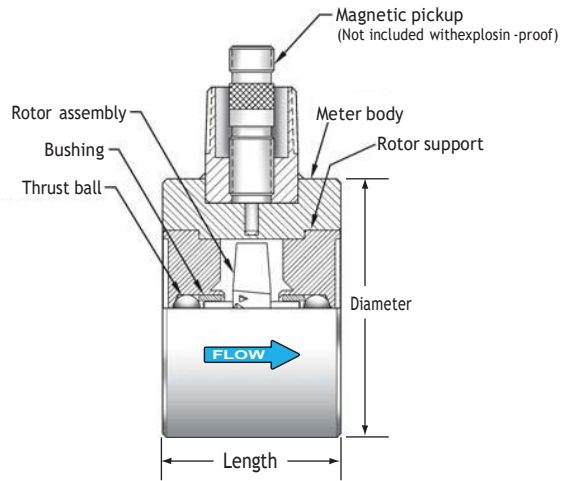
Flange Class (ANSI)	150#	300#	600#	900#	1 1500#
Working Pressure (psi)	285	740	1480	2220	3705
Working Pressure (bar)	20	51	102	153	256
Working Pressure (MPa)	1.97	5.10	10.20	15.31	25.55
2 Test Pressure (psi)	427.5	1110	2220	3330	5557.5
2 Test Pressure (MPa)	2.95	7.65	15.31	22.98	38.32

¹ For bore size 2 in. and less

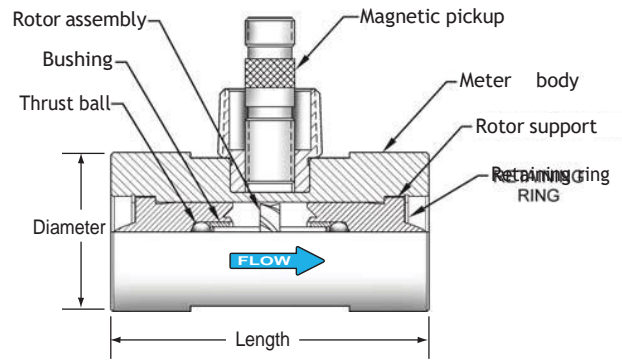
² Test pressure based on 1.5 safety factor

DIAGRAMS

Models B132-050...B139-900



Models B131-038...B131-100



PART NUMBER INFORMATION

Part Number	Meter Bore Size × Line Size (in.)	PED Compliant	Flow Range	Strainer Mesh	Approx. K-Factor pulses/US gal	Weight	Max. Pressure Drop (psi)
B131-038	3/8 × 1	Coming soon	See "Flow Range Chart"	60	18,000	—	3.75
B131-050	1/2 × 1	Coming soon		60	13,000	—	6.5
B131-075	3/4 × 1	Coming soon		60	3300	—	18
B131-088	7/8 × 1	Coming soon		60	3100	—	20
B131-100	1 × 1	Coming soon		60	870	—	20
B132-050	1/2 × 2	Coming soon		60	13,000	—	12
B132-075	3/4 × 2	Coming soon		60	3300	—	18
B132-088	7/8 × 2	Coming soon		60	3100	—	20
B132-100	1 × 2	Coming soon		40	870	—	20
B132-150	1-1/2 × 2	Coming soon		20	330	—	16
B132-200	2 × 2	Yes		20	52	—	9
B132-250	2 × 3	Yes		10	52	—	10
B133-300	3 × 3	Yes		10	57	—	10
B133-380	3 × 3	Yes		10	57	—	10
B134-400	4 × 4	Yes		10	29	—	10
B136-600	6 × 6	Coming soon		4	7	—	10
B138-800	8 × 8	Coming soon		4	3	—	10
B139-900	10 × 10	Coming soon		4	1.6	—	10

Flow Range Chart

Part Number	Flow Ranges		
	gpm (lpm)	bpd	m ³ /d
B131-038	0.60...3.00 (2.27...11.36)	20...100	3.3...16
B131-050	0.75...7.50 (2.84...28.39)	25...250	4.1...41
B131-075	2.00...15.00 (7.57...56.78)	68...515	10.9...81.75
B131-088	3.00...30.00 (11.36...113.56)	100...1000	16...160
B131-100	5.00...50.00 (18.93...189.27)	170...1700	27.25...272.5
B132-050	0.75...7.50 (2.84...28.39)	25...250	4.1...41
B132-075	2.00...15.00 (7.57...56.78)	68...515	10.9...81.75
B132-088	3.00...30.00 (11.36...113.56)	100...1000	16...160
B132-100	5.00...50.00 (18.93...189.27)	170...1700	27.25...272.5
B132-150	15.00...180.00 (56.78...681.37)	515...6000	82...981
B132-200	40.00...400.00 (151.42...1514.16)	1300...13,000	218...2180
B132-250	40.00...400.00 (151.42...1514.16)	1300...13,000	218...2180
B133-300	60.00...600.00 (227.12...2271.25)	2100...21,000	327...3270
B133-380	80.00...800.00 (302...3028)	2750...27,500	430...4300
B134-400	100.00...1200.00 (378.54...4542.49)	3400...41,000	545...6540
B136-600	200.00...2500.00 (757.08...9463.53)	6800...86,000	1,090...13,626
B138-800	350.00...3500.00 (1324.89...13248.94)	12,000...120,000	1,363...19,076
B139-900	500.00...5000.00 (1892.71...18927.06)	17,000...171,000	2,725...27,252

DIMENSIONS TABLE


Part Number	Diameter	Length
B131-038 B131-050 B131-075 B131-088 B131-100	2 in.	4 in.
B132-050 B132-075 B132-088 B132-100 B132-150 B132-200	3.62 in.	2.5 in.
B132-250 B133-300 B133-380	5 in.	4.25 in.
B134-400	6.18 in.	5 in.
B136-600	8.5 in.	5.75 in.
B138-800	10.62 in.	6.25 in.
B139-900	12.75 in.	6.75 in.

INSTALLATION KITS

QuickSert Installation Kits are offered to make set up trouble-free and to ensure the proper fit. Each kit includes: studs, nuts, gaskets, and spacer rings. See table below for ordering information.

Size	150#	300#	600#	900#
1 in. (25.4 mm)	B253-1HK-150	B253-1HK-300	B253-1HK-600	B253-1HK-900
2 in. (50.8 mm)	B253-2HK-150	B253-2HK-300	B253-2HK-600	B253-2HK-900
3 in. (76.2 mm)	B253-3HK-150	B253-3HK-300	B253-3HK-600	B253-3HK-900
4 in. (101.6)	B253-4HK-150	B253-4HK-300	B253-4HK-600	B253-4HK-900
6 in. (152.4 mm)	B253-6HK-150	B253-6HK-300	B253-6HK-600	B253-6HK-900
8 in. (203.2 mm)	B253-8HK-150	B253-8HK-300	B253-8HK-600	B253-8HK-900
10 in. (254.0 mm)	B253-9HK-150	B253-9HK-300	B253-9HK-600	B253-9HK-900

PICKUP OPTIONS

Part Number	Magnetic Pickup	Temperature Range
B111109	Standard	-150...330° F (-101...165° C)
B220111	High temperature	-450...450° F (-26...232° C)
B220210	With preamplifier	-40...250° F (-40...121° C)
B220243	Intrinsically safe, FM rated	-40...250° F (-40...21° C)
B111126	ATEX  II 1G; EEx ia IIC T5	-58...248° F (-50...120° C)

REPAIR KITS

Part Number	Repair Kit Part Number
B131-038	B253-102
B131-050	B253-105
B131-075	B253-108
B131-088	B253-109
B131-100	B253-112
B132-050	B253-205
B132-075	B253-208
B132-088	B253-209
B132-100	B253-212
B132-150	B253-216
B132-200	B253-220
B132-250	B253-220
B133-300	B253-330
B133-380	B253-330
B134-400	B253-440
B136-600	B253-660
B138-800	B253-880
B139-900	B253-990

