

## 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 Pembina Controls 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 Pembina Controls 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.

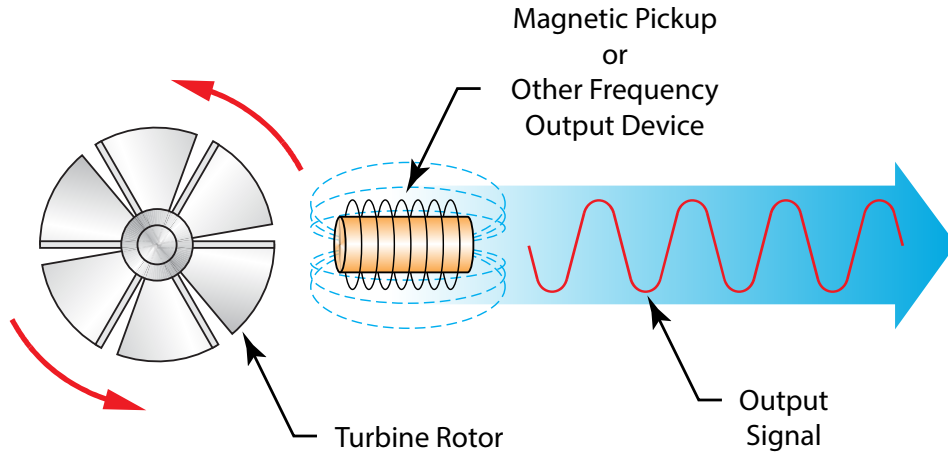


Figure 1: Schematic illustration of electric signal generated by rotor movement

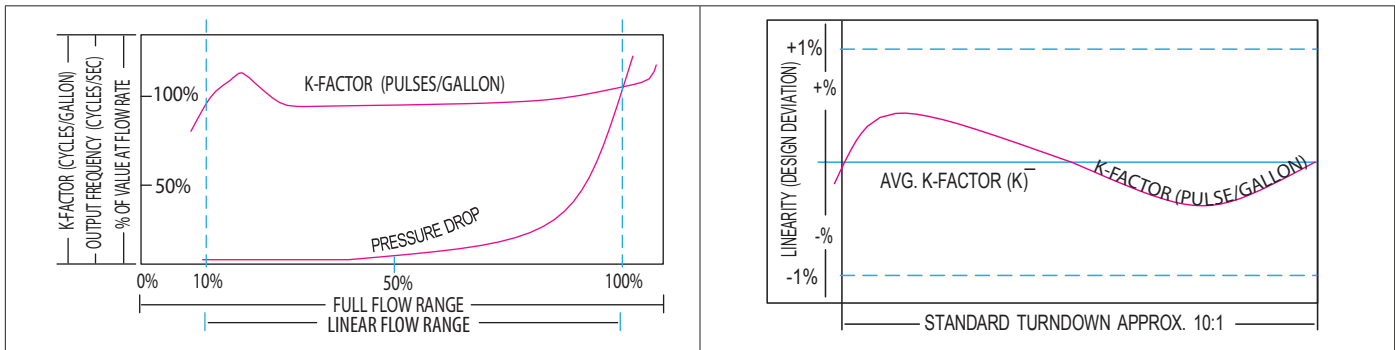
## K-FACTOR

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

<b>Materials of Construction</b>	<b>Body</b>	316L stainless steel
	<b>Rotor</b>	CD4MCU stainless steel
	<b>Bearings</b>	Tungsten carbide
	<b>Rotor Shaft</b>	Tungsten carbide
	<b>Rotor Support</b>	—
<b>Operating Temperature</b>	-150...350° F (-101...177° C) standard Temperatures to 450° F (232° C) with high-temp pickup, consult factory for details	
<b>Pressure Rating</b>	See pressure rating table below	
<b>End Connections</b>	Wafer-style ASME/ANSI B16.5-1996	
<b>Turndown Ratio</b>	—	
<b>Accuracy</b>	±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	
<b>Repeatability</b>	±0.1%	
<b>Calibration</b>	Water; NIST Traceable Calibration Certificate available, consult factory for details	
<b>Pickup</b>	B111109, B220111, B220210, B220243, B111126	
<b>Certification</b>	For Explosion proof models only: Class I Div 1 Groups C,D; Complies to UL 1203 and CSA 22.2 No. 30 Met Labs File No. E112860	

### Pressure Rating

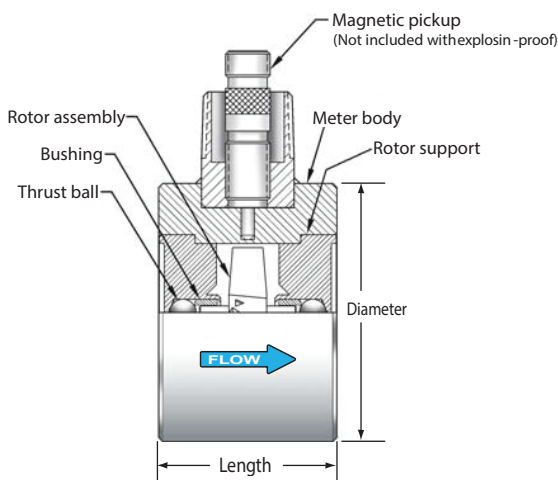
The pressure rating of the meter is dependent upon the class of ANSI flanges between which the meter is to be mounted. The pressure rating chart below is based on Carbon Steel at 100° F (37.8° C).

Flange Class (ANSI)	150	300	600	900
Working Pressure (psi)	285	740	1480	2220
Working Pressure (MPa)	1.97	5.10	10.20	15.31
* Test Pressure (psi)	427.5	1110	2220	3330
* Test Pressure (MPa)	2.95	7.65	15.31	22.98

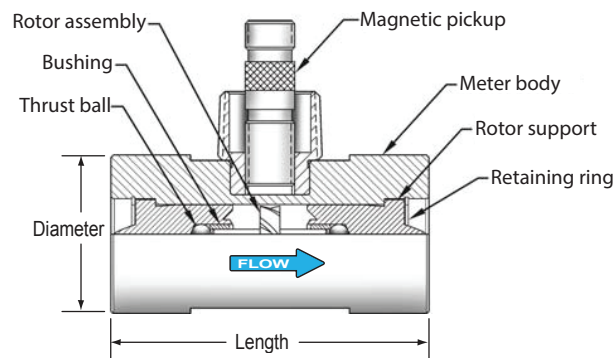
\* Test pressure based on 1.5 safety factor

## DIAGRAMS

Models BP132-050...BP139-900



Models BP131-038...BP131-100



## PART NUMBER INFORMATION

Part Number	Meter Bore Size × Line Size (in.)	End Connections	Max. PSI	Flow Ranges			Strainer Mesh	Approx. K-Factor pulses/US gal	Weight	Max. Pressure Drop (psi)
				gpm (lpm)	bpd	m <sup>3</sup> /d				
BP131-038	3/8 × 1	—	—	0.60...3.00 (2.27...11.36)	20...100	3.3...16	60	18,000	—	3.75
BP131-050	1/2 × 1	—	—	0.75...7.50 (2.84...28.39)	25...250	4.1...41	60	13,000	—	6.5
BP131-075	3/4 × 1	—	—	2.00...15.00 (7.57...56.78)	68...515	10.9...81.75	60	3300	—	18
BP131-088	7/8 × 1	—	—	3.00...30.00 (11.36...113.56)	100...1000	16...160	60	3100	—	20
BP131-100	1 × 1	—	—	5.00...50.00 (18.93...189.27)	170...1700	27.25...272.5	60	870	—	20
BP132-050	1/2 × 2	—	—	0.75...7.50 (2.84...28.39)	25...250	4.1...41	60	13,000	—	12
BP132-075	3/4 × 2	—	—	2.00...15.00 (7.57...56.78)	68...515	10.9...81.75	60	3300	—	18
BP132-088	7/8 × 2	—	—	3.00...30.00 (11.36...113.56)	100...1000	16...160	60	3100	—	20
BP132-100	1 × 2	—	—	5.00...50.00 (18.93...189.27)	170...1700	27.25...272.5	40	870	—	20
BP132-150	1-1/2 × 2	—	—	15.00...180.00 (56.78...681.37)	515...6000	82...981	20	330	—	16
BP132-200	2 × 2	—	—	40.00...400.00 (151.42...1514.16)	1300...13,000	218...2180	20	52	—	9
BP132-250	2 × 3	—	—	40.00...400.00 (151.42...1514.16)	1300...13,000	218...2180	20	52	—	10
BP133-300	3 × 3	—	—	60.00...600.00 (227.12...2271.25)	2100...21,000	327...3270	10	57	—	10
BP133-380	3 × 3	—	—	80.00...800.00 (302.833...3028.33)	2750...27,500	430...4300	10	57	—	10
BP134-400	4 × 4	—	—	100.00...1200.00 (378.54...4542.49)	3400...41,000	545...6540	10	29	—	10
BP136-600	6 × 6	—	—	200.00...2500.00 (757.08...9463.53)	6800...86,000	1,090...13,626	4	7	—	10
BP138-800	8 × 8	—	—	350.00...3500.00 (1324.89...13248.94)	12,000...120,000	1,363...19,076	4	3	—	10
BP139-900	10 × 10	—	—	500.00...5000.00 (1892.71...18927.06)	17,000...171,000	2,725...27,252	4	1.6	—	10

<sup>1</sup> Part number includes turbine meter and standard magnetic pickup. For other pickup options, see "Pickup Options" on page 5. For larger sizes, consult factory. Note: Insert a "C" before dash for turbine meters with explosion proof rating. No pickup included. Example: B131C-100

**NOTE:** For PSI, see "Pressure Rating" on page 3.

**NOTE:** All models available as *Non-Calibrated* (NCC). NCC models have standard K-factors only and cannot be provided with a calibration report. If turbine calibration reports are required, the factory calibrated model must be ordered. To order, add "NCC" at the end of the part number. Example: BP132-050-NCC

## DIMENSIONS TABLE


Part Number	Diameter	Length
BP131-038 BP131-050 BP131-075 BP131-088 B13P1-100	2	4
BP132-050 BP132-075 BP132-088 BP132-100 BP132-150 BP132-200	3.62	2.5
BP132-250	3.62	4.25
BP133-300 BP133-380	5	4.25
BP134-400	6.18	5
BP136-600	8.5	5.75
BP138-800	10.62	6.25
BP139-900	12.75	6.75

## INSTALLATION KITS

QuikSert 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)	007-01-150	007-01-300	007-01-600	007-01-900
2 in. (50.8 mm)	007-02-150	007-02-300	007-02-600	007-02-900
3 in. (76.2 mm)	007-03-150	007-03-300	007-03-600	007-03-900
4 in. (101.6)	007-04-150	007-04-300	007-04-600	007-04-900
6 in. (152.4 mm)	007-06-150	007-06-300	007-06-600	007-06-900
8 in. (203.2 mm)	007-08-150	007-08-300	007-08-600	007-08-900
10 in. (254.0 mm)	007-10-150	007-10-300	007-10-600	007-10-900

## PICKUP OPTIONS

Part Number	Magnetic Pickup	Temperature Range
B111109	Standard	-150...330° F (-101...165° C)
BP220111	High temperature	-450...450° F (-26...232° C)
BP220210	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

<b>Part Number</b>	<b>Repair Kit Part Number</b>
<b>BP131-038</b>	BP253-102
<b>BP131-050</b>	BP253-105
<b>BP131-075</b>	BP253-108
<b>BP131-088</b>	BP253-109
<b>BP131-100</b>	BP253-112
<b>BP132-050</b>	BP253-205
<b>BP132-075</b>	BP253-208
<b>BP132-088</b>	BP253-209
<b>BP132-100</b>	BP253-212
<b>BP132-150</b>	BP253-216
<b>BP132-200</b>	BP253-220
<b>BP132-250</b>	BP253-220
<b>BP133-300</b>	BP253-330
<b>BP133-380</b>	BP253-330
<b>BP134-400</b>	BP253-440
<b>BP136-600</b>	BP253-660
<b>BP138-800</b>	BP253-880
<b>BP139-900</b>	BP253-990

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