



Blancett[®]
Turbine Flow Meters

Turbine Flow Meter

Top Load 1 in. and 2 in. Meters

DESCRIPTION

The Top Load Turbine Flow Meter is designed to withstand the demands of the most rigorous flow measurement applications. Originally developed for the secondary oil recovery market, the Top Load Turbine Flow Meter is an ideal meter for liquid flow measurement on or off the oil field.

The meter features a rugged 316 stainless steel housing, rotor shaft and rotor support assemblies, C17-4 PH stainless steel rotor, and hybrid ceramic ball bearings. The meter maintains measurement accuracy and mechanical integrity in the corrosive and abrasive fluids commonly found in oil field water flood projects and many industrial applications.

When paired with a Blancett flow monitor, the meter meets a wide range of measurement requirements. This makes it ideal for applications such as pipelines, production and injection fields, mining operations, offshore facilities, and other industrial applications. For a full list of Blancett flow monitors, see www.badgermeter.com.

FEATURES

- Offers accurate and repeatable flow measurement in ranges from 5...225 gpm (18.9... 851.72 lpm)
- Cost-effective solution for turbine flow meter applications
- Rugged 316 stainless steel construction offers long service life in severe operating environments
- Available in NPT
- NIST-traceable calibration
- Installation in 1 in. and 2 in. pipe sizes
- Can integrate electronically with a Blancett flow monitor and K-factor Scaler, or the F-to-I/F-to-V Intelligent Converter
- Field replaceable repair kits allow for turbine replacement without loss of accuracy
- Can be repaired without removing the body from the line



INSTALLATION

The Top Load Turbine Flow Meter is simple to install and service. It operates in any orientation (horizontal to vertical) as long as the *flow direction* arrow is aligned in the same direction as the actual line flow. For optimum performance, the meter should be installed with a minimum of 10 diameters upstream straight pipe length and 5 diameters downstream straight pipe length.

REPAIR KITS

Designed for easy field service of a damaged turbine assembly, the repair kits replace only the internal parts, rather than replacing the entire meter.

Each repair kit assembly is factory calibrated to provide accuracy throughout the entire flow range. Each kit is complete and includes a new K-factor, which is the calibrated number of pulses generated by each gallon of liquid. Recalibration of the monitor or other electronics use the K-factor to provide accurate output data.



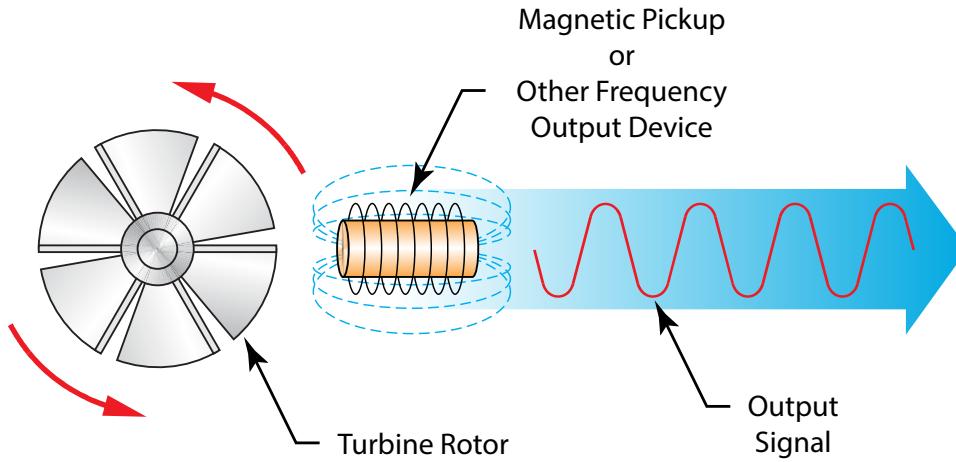
Badger Meter

TRB-DS-02470-EN-01 (September 2018)

Product Data Sheet

OPERATING PRINCIPLE

Fluid entering the meter passes through the inlet flow straightener which reduces its turbulent flow pattern and improves the fluid's velocity profile. Fluid then passes through the turbine, causing it to rotate at a speed proportional to fluid velocity. As each turbine blade passes through the magnetic field at the base of the transducer, an AC voltage pulse is generated in the pickup coil. These pulses produce an output frequency proportional to the volumetric flow through the meter.



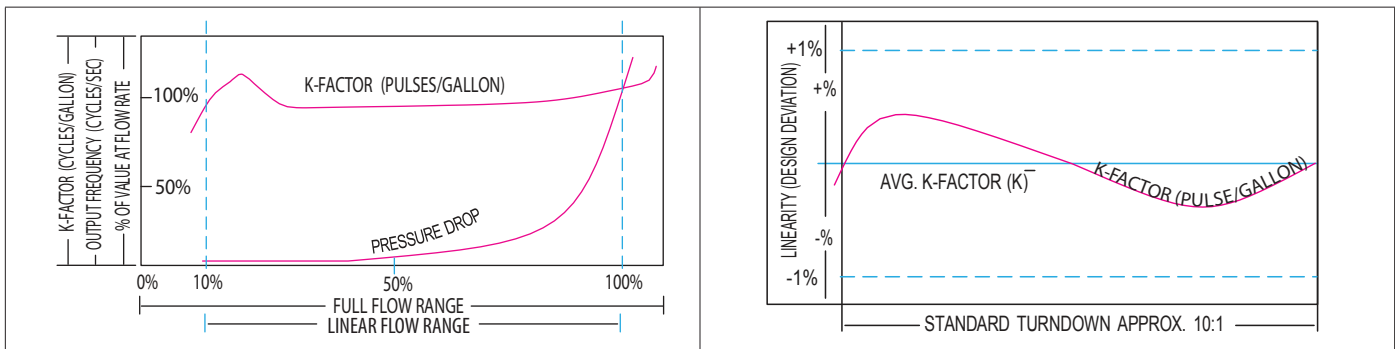
K-FACTOR

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 the turbine meters that retard the rotational movement of the turbine rotor. These frictional forces include: magnetic drag, created by electromagnetic forces of pickup transducers; mechanical drag, due to bearing friction; and viscous drag, produced by flowing fluid.

As flow increases, the frictional forces are minimized and the free-wheeling motion of the turbine rotor becomes more linear (proportional to flow). This is approximately a 15:1 turndown ratio from the maximum flow rate down to the minimum flow rate.

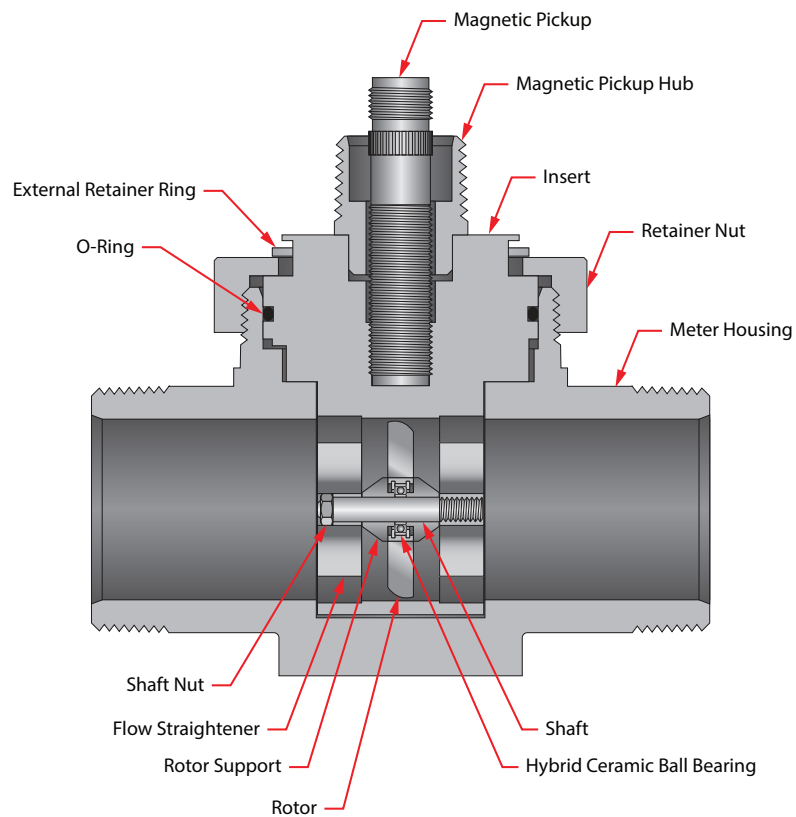
Typical K-factor Curve (Pulse per US Gallon)



SPECIFICATIONS

Materials of Construction	Body	316 stainless steel
	Rotor	C17-4PH stainless steel
	Bearing	Hybrid ceramic ball bearing with AMS 5898 duplex stainless steel race and stainless steel retainer
	Rotor Shaft	316 stainless steel
	Rotor Support	316 stainless steel
	O-ring	Buna-N
Operating Temperature	-150...350° F (-101...177° C)	
Pressure Rating	1500 psi max.	
End Connections	NPT	
Turndown Ratio	15:1	
Accuracy	±1% of reading	
Repeatability	±0.1%	
Calibration	Water (NIST-traceable calibration)	
Pickup	B111129	
Certifications	—	

METER PARTS



PART NUMBER INFORMATION

Part Number	Bore Size	End Connections	Max. PSI	Flow Ranges			Strainer Mesh	Approx. K-factor Pulse/Gal	Meter Weight (lb)	End to End Length
				gpm (lpm)	bpd	m ³ /d				
B411-110	1 in. (25.4 mm)	1 in. male NPT	1500	5...75 (18.9...283.91)	171.43...2571.43	27.26...408.82	40	870	2	6 in. (152.4 mm)
B411-120	2 in. (50.8 mm)	2 in. male NPT	1500	15...225 (56.78...851.72)	514.29...7714.29	81.76...1226.47	20	52	14	6 in. (152.4 mm)

¹ Includes Low Drag 3 in. Mag Pickup, p/n B111129, -150...330° F (-101...165° C), suitable for all mounting styles

Control. Manage. Optimize.

Blancett is a registered trademark of Badger Meter, Inc. Other trademarks appearing in this document are the property of their respective entities. Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists. © 2018 Badger Meter, Inc. All rights reserved.

www.badgermeter.com

The Americas | Badger Meter | 4545 West Brown Deer Rd | PO Box 245036 | Milwaukee, WI 53224-9536 | 800-876-3837 | 414-355-0400
 México | Badger Meter de las Americas, S.A. de C.V. | Pedro Luis Ogazón N°32 | Esq. Angelina N°24 | Colonia Guadalupe Inn | CP 01050 | México, DF | México | +52-55-5662-0882
 Europe, Eastern Europe Branch Office (for Poland, Latvia, Lithuania, Estonia, Ukraine, Belarus) | Badger Meter Europe | ul. Korfantego 6 | 44-193 Knurów | Poland | +48-32-236-8787
 Europe, Middle East and Africa | Badger Meter Europa GmbH | Nurtinger Str 76 | 72639 Neuffen | Germany | +49-7025-9208-0
 Europe, Middle East Branch Office | Badger Meter Europe | PO Box 341442 | Dubai Silicon Oasis, Head Quarter Building, Wing C, Office #C209 | Dubai / UAE | +971-4-371 2503
 Slovakia | Badger Meter Slovakia s.r.o. | Racianska 109/B | 831 02 Bratislava, Slovakia | +421-2-44 63 83 01
 Asia Pacific | Badger Meter | 80 Marine Parade Rd | 21-06 Parkway Parade | Singapore 449269 | +65-63464836
 Switzerland | Badger Meter Swiss AG | Mittelholzerstrasse 8 | 3006 Bern | Switzerland | +41-31-932 01 11