INSTALLATION & OPERATION MANUAL

FloClean™

Sanitary Flow Meter

Rev. B

100 EAST FELIX STREET SOUTH, SUITE 190 • FORT WORTH, TX 76115-3548
1.800.235.1638 • (817) 920.9998 • FAX (817) 921.5282
WWW.BLANCETT.COM

OPERATING LIMITATIONS OF FLOW METERS

1. TEMPERATURE: Do not subject the meter to temperatures above 325° F (163° C), or below-150° F (-101° C) or the freezing point of the metered liquid. Higher temperatures will damage the pick-up, and lower temperatures will limit the rotation of the rotor.
2. PRESSURE: 1000 psi. (per Tri-Clamp Ratings)
WARNING: Pressure in excess of allowable rating may cause the housing to burst and cause serious personal injury.
3.CORROSION: The internal parts of the meter are constructed of stainless steel, Rulon (plastic) and ceramic material, be sure that the operating fluid is compatible with these materials. Incompatible fluids will deteriorate internal parts, and cause the meter to read inaccurately.
4.PULSATION: Severe pulsation will affect accuracy, and shorten the life of the meter.
5.VIBRATION AND SHOCK: Severe mechanical vibration may decrease service life of the meter.
6.FILTRATION: A strainer should be installed upstream of the if small particles are present (see Table 1 for infiltration requirements).

GENERAL DESCRIPTION: TURBINE FLOW METER

The FloClean™ turbine flow meter is designed with wear resistant moving parts to provide trouble free operation and long service life. The FloClean™ turbine meter repair kit is designed for easy field service of a damaged flow meter, rather than replacing the entire flow meter (see Appendix b for repair kit information). Repair parts are constructed of stainless steel alloy, Rulon (plastic) and ceramic material.

Fluid moving through the turbine flow meter causes the rotor to turn at a speed proportional to the flow rate. The rotor blade cuts the magnetic filed of the magnetic pick-up, which in turn generates a frequency output signal that is directly proportional to the speed. This signal is used to represent flow rate and/or totalization of fluid passing through the turbine flow meter and is always expressed as the number of electric pulses that the meter produces per US gallon. This is constant over each flow meter's range and is unique to the meter.

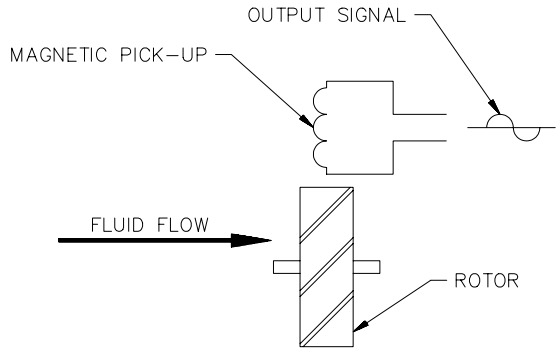

Fig. 1 Schematic illustration of electric signal generated by rotor movement.

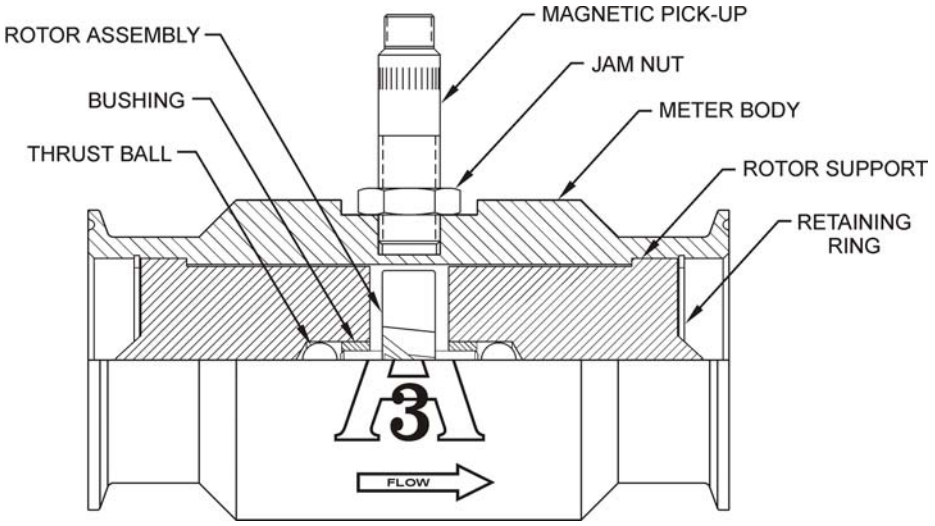

Fig. 2 Typical cross-section of FloClean™ turbine flow meter.

INSTALLATION INSTRUCTIONS: TURBINE FLOW METER

Before installation, the flow meter should be checked internally for foreign material and to be sure that the rotor spins freely. fluid lines should also be cleared of all debris. The flow meter must be installed with the indication arrow, etched on the exterior of the meter body, pointing in the correct direction of flow. The preferred mounting orientation is to have the meter installed in horizontal piping, with the pick-up facing upward. However, the meter will function in any position.

The liquid that is to be measured must be free from any large particles that may obstruct rotation of the rotor. If particles are present, a mesh strainer should be installed upstream before operation of the flow meter. (See Table 1)

TABLE 1

Part No.	Ferrule Size	Meter Size	Strainer Size	Clearance
B16A-003A-XXX	¾"	3/8"	60X60	.0092
B16A-005A-XXX	¾"	½"	60X60	.0092
B16A-007A-XXX	¾"	34"	60X60	.0092
B16A-105A-XXX	1-1/2"	½"	60X60	.0090
B16A-107A-XXX	1-1/2"	¾"	60X60	.0092
B16A-108A-XXX	1-1/2"	7/8"	60X60	.0092
B16A-110A-XXX	1-1/2	1"	60X60	.0092
B16A-115A-XXX	1-1/2"	1-1/2"	20X20	.0340
B16A-220A-XXX	2-21/2"	2"	10X10	.0650

The preferred plumbing setup is one containing a by-pass line (fig. 3) that allows meter inspection and repair without interrupting flow. If a by-pass line is not utilized, it is important that all control valves be located down-stream of the flow meter (Fig. 4)

CAUTION: Damage can be caused by striking an empty meter with a high velocity flow stream.

This is true with any restriction in the flow line that may cause the liquid to flash. If necessary, air eliminators should be installed to ensure that the meter is not incorrectly measuring entrained air or gas.

It is recommended that a minimum length, equal to ten (10) pipe diameters of straight pipe, be installed on the up-stream side and five (5) diameters on the down-stream side of the flow meter. Otherwise meter accuracy may be affected. Piping should be the same size as the meter bore or threaded port size.

Do not locate the flow meter or connection cable close to electric motors, transformers, sparking devices, high voltage lines, or place connecting cable in conduit with wires furnishing power for such devices. These devices can induce false signals in the flow meter coil or cable, causing the meter to read inaccurately.

If problems arise with the flow meter and monitor consult Appendix A (Trouble Shooting Guide). If further problems arise, consult the factory. turbine Meter Repair Kits also available, see Appendix B. If the internal components of the turbine flow meter are damaged beyond repair, these repair kits are available. Information pertaining the turbine meter repair kits are referenced in Appendix B.

Note: Typical wiring configuration for the standard magnetic pick-up and the pick- up with pre-amplifier can be found in Figure 5

OPERATIONAL START UP: TURBINE FLOW METER

The following practices should be observed when installing and starting the meter.

WARNING: Make sure that fluid flow has been shut off and pressure in the line released before attempting to install the meter in an existing system.

1.After meter installation, close the isolation valves, and open by-pass valve. Flow liquid through the by-pass valve for sufficient time to eliminate any air or gas in the flow line.

CAUTION: High velocity air or gas may damage the internal components of the meter.

2. Open up-stream isolating valve slowly to eliminate hydraulic shock while charging the meter with the liquid. Open the valve to full open.

3. Open down-stream isolating valve to permit meter to operate.

4. Close the by-pass valve to a full closed position.
5. Adjust the downstream valve to provide the required flow rate through the meter. Note: The downstream valve may be used as a control valve.

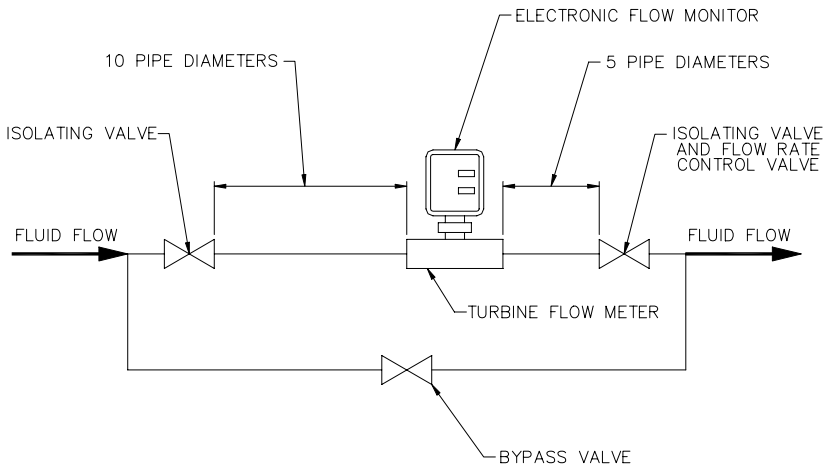

Fig. 3 Meter installation utilizing a bypass line

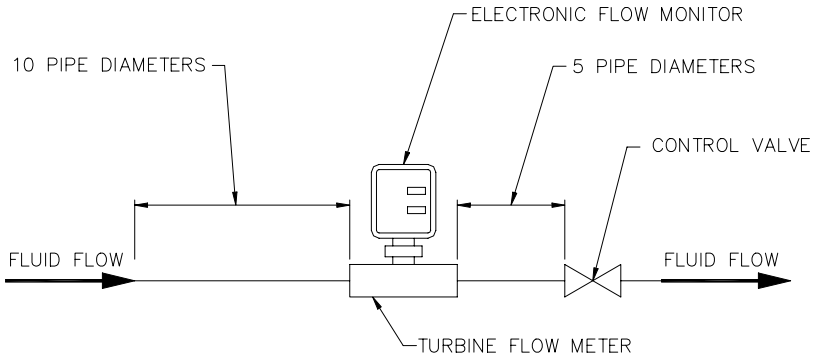

Fig. 4 Meter installation without utilizing a bypass line

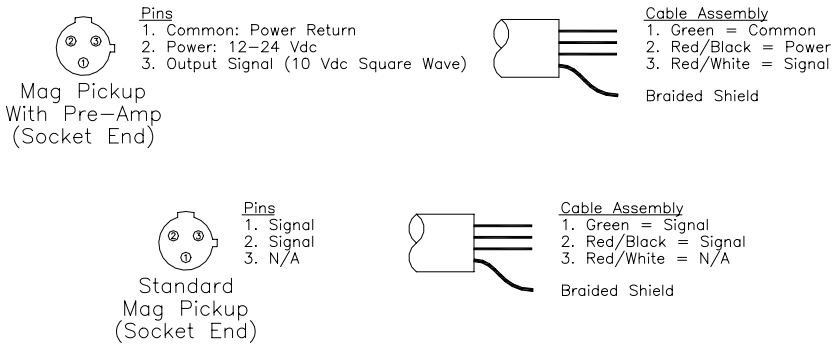

Fig. 5 Typical Wiring Configuration for magnetic pickups.

APPENDIX A
TROUBLE SHOOTING GUIDE

TROUBLE	POSSIBLE CAUSE	REMEDY
Meter indicates higher than actual flow rate	Cavitation Debris on rotor support Build up of foreign material on meter bore Gas in Liquid	Increase back pressure Clean meter Clean meter Install gas eliminator ahead of meter
Meter indicates lower than actual flow rate	Debris on rotor Worn bearing Viscosity higher than calibrated	Clean meter and add filter Clean meter and add filter Recalibrate monitor (appendix A)
Erratic system indication, meter alone works well (remote monitor application only)	Ground loop in shielding	Ground shield one place only. Look for internal electronic instrument ground. Reroute cables away from electrical noise
Indicator shows flow when shut off.	Mechanical vibration causes rotor to oscillate without turning	Isolate meter
No flow indication. Full or partial open position	Fluid shock, full flow into dry meter or impact caused bearing separation or broken rotor shaft.	Rebuild meter with repair kit and recalibrate monitor. Move to location where meter is full on start up or add downstream flow control valve.
Erratic indication at low flow, good indication at high flow	Rotor has foreign material wrapped around it.	clean meter and add filter
No flow indication	Faulty pick-up	Replace pick-up.
System works perfect, except indicates lower flow over entire range	Bypass flow, leak	Repair or replace bypass valves, or faulty solenoid valves.
Meter indicating high flow, upstream piping at meter smaller than meter bore	Fluid jet impingement on rotor	Change piping.
Opposite effects of above	Viscosity lower than calibrated	Change temperature, change fluid or recalibrate meter.

APPENDIX B
REPAIR KIT INFORMATION

Part No.	Ferrule Size	Meter Size	Repair Kit Part No.
B16A-003A-XXX	¾”	3/8”	B16A-K03A
B16A-005A-XXX	¾”	½”	B16A-K05A
B16A-007A-XXX	¾”	¾”	B16A-K07A
B16A-105A-XXX	1-1/2”	½”	B16A-K05A
B16A-107A-XXX	1-1/2”	¾”	B16A-K07A
B16A-108A-XXX	1-1/2”	7/8”	B16A-K08A
B16A-110A-XXX	1-1/2”	1”	B16A-K10A
B16A-115A-XXX	1-1/2”	1/1/2”	B16A-K15A
B16A-220A-XXX	2-1/2”	2”	B16A-K20A
NEMA 6 Magnetic Pick-up	All Meter Sizes	All Meter Sizes	B161109
NEMA 6 Magnetic Pick-up With Pre-Amplifier	All Meter Sizes	All Meter Sizes	B161210