



INSTALLATION & OPERATION MANUAL
1200
Turbine Flow Meter
Rev. E

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GENERAL DESCRIPTION:

The Blancett Model 1200 turbine flow meter provides industry with a high accuracy, high pressure, economically priced fluid flow meter. The meter is designed with minimal moving, wear resistant parts, thereby providing trouble-free operation with long service life. The meter housing is made from stainless steel. Internal parts are constructed of stainless steel alloy and tungsten carbide.

Fluid moving through the turbine flow meter causes the rotor to rotate at a speed proportional to the fluid velocity. As rotor blades pass the RF pick-up, it detects the shift in the carrier frequency, and then generates a square wave output signal that is proportional to the rotation of the rotor. This signal is used to represent flow rate and totalization of fluid passing through the turbine flow meter.

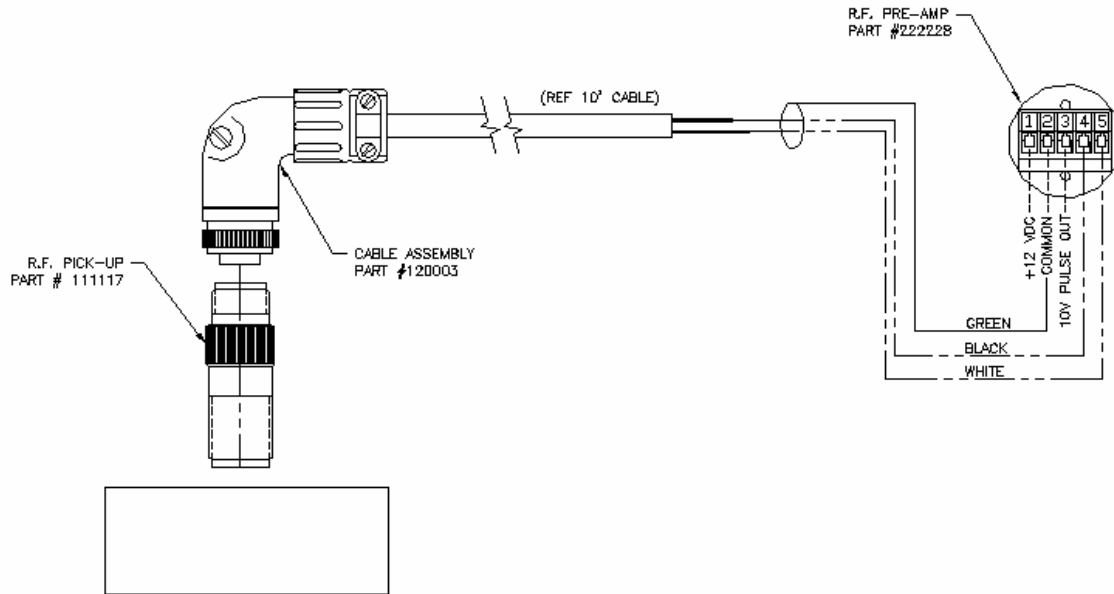


Figure 1 Wiring Diagram with RF Pickup, Cable Assembly, and Pre-Amplifier

WIRING INSTRUCTIONS:

Terminal	Description	Notes
1	Power	Part No. 222228: + 12 V DC \pm 1 V DC Part No. 222229: +24 v DC \pm 1 V DC
2	Common	Power Return
3	Output Signal	10 V Square Wave
4	Input	1 mil Henry R.F. Pick-Up
5	Input	1 mil Henry R.F. Pick-Up

INSTALLATION INSTRUCTIONS:

Before installation, the flow meter should be checked internally for foreign material and be sure that the rotor spins freely. Also, the flow lines should be purged of all debris.

The flow meter must be installed with the flow 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 orientation.

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

Table 1

MODEL NUMBER	SIZE	MESH	CLEARANCE
1225	1/4"	60x60	.0092
1250	1/2"	60x60	.0092
1275	3/4"	60x60	.0092

The Preferred plumbing setup is to use a by-pass line (Figure 2) to allow meter inspection and repair without interrupting the flow of liquid. If a by-pass line is not utilized, it is important that all control valves be located down-stream of the flow meter (Figure 3). CAUTION: Damage can be caused by striking an empty meter with a high velocity stream of flow. This is true with any restriction in the flow line which may cause the liquid to flash. If necessary, air eliminators should be installed to insure that the meter is not incorrectly measuring the 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 to assure the desired flow conditions. Piping should be the same size as the meter bore (size).

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

OPERATIONAL START UP:

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

1. After meter installation, close the isolation valves, and open the 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.
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 bypass 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.

OPERATIONAL LIMITATIONS:

1. TEMPERATURE: Do not subject the meter to temperatures above 170° F, or below 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: Do not exceed the recommended pressure rating of 4000 psi. Higher pressure will cause the meter to read inaccurately, or even burst.
3. CORROSION: The internal of the meter are constructed of stainless steel and tungsten carbide. Be sure that the operating fluid is compatible with these materials. Incompatible fluids will tend to deteriorate the internal parts, and cause the meter to read inaccurately.
4. PULSATION: Severe pulsation will effect 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 meter if small particles are present. (See Table 1 for filtration size).

SPECIFICATIONS FOR RF PREA-AMPLIFIER:

- Input Signal: 1 mil. Henry carrier pickup
- Output Signal: 10.0 Volts peak to peak square wave
- Temperature: Module: 20° F to +160° F
Pick-up: -150° F to +325° F
- Power Required: Part No. 222228: 12 Volts DC
Part No. 222229: 24 Volts DC
- Distance Specification: Between pick-up and R.F. pre-amplifier = 50 ft. max. (two wire no. 18, twisted shielded pair)
Between pre-amplifier and receiving unit = 1000ft. max. (two wire no. 18, twisted shielded pair)
- Electrical connection: Terminal Strip
- Housing: Epoxy encapsulated module
- Conduit Connection: (optional) Rigid 1" male NPT

TROUBLE-SHOOTING GUIDE:

TROUBLE	POSSIBLE CAUSE	REMEDY
Meter indicates higher than actual flow rate	Cavitation	Increases back pressure
Meter indicates higher than actual flow rate	Dirt blocking flow area rotor	Clean meter and add filter

Meter indicates lower than actual flow rate	Dirt dragging rotor	Clean meter and add filter
Meter indicates lower than actual flow rate	Worn bearing	Replace bearing and recalibrate when required
Meter indicates lower than actual flow rate	Viscosity higher than calibrated	Change temperature; change fluid; recalibrate meter
Erratic system indication, meter alone works well	Group loop in shielding	Ground shield one place only
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. Impact caused bearing separation	New bearing required. Move meter to position where full of fluid at startup
Erratic indication at low flow, good indication at high flow	Low instrument sensitivity. 10 mV rms turbine signal is being lowered by loading of electronics or instrumentation can't sense low level signals	Amplify signal
No flow indication	Faulty pick-up	Replace pick-up, recalibrate as necessary
System works perfect, except indicates lower flow over entire range	Bypass flow, leak	Eliminate bypass valves, leak. Faulty solenoid valves
Meter indicating high flow, upstream piping at meter smaller than meter	Fluid jet impingement on rotor, Critical in gas	Change piping
Opposite effects of above	Viscosity lower than calibrated	Change temperature; change fluid; recalibrate meter
Mass flow indication wrong.	Wrong fluid density. Critical in gas	Check fluid, electronics
Turbine meter is volumetric, density correction is electronic, must change with temperature		
Erratic or wrong indication of flow	Loose pick-up	Tighten pick-up
Does not repeat at low flows. Repeats at high flow	System resolution readability	Increase resolution, i.e., 1 out of 100= 1%