

# InFLOW, INC.

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## ***INSERTION TURBINE METER***

*Model ITM200*

For high pressure / high temperature applications, InFLOW, INC. offers the model *ITM200* Insertion Turbine Meter. Based on our proven *ITM100* meter, this model offers additional versatility for more demanding applications in larger pipe lines. The meter is 'Hot Tappable', and includes as standard a field replaceable 'Turbine Rotor Module' making for easier and faster maintenance and/or flow range changes. Three versions are available for liquids, gases, and steam. In addition, the *ITM200* offers options for onboard computer performance enhancement, pressure &/or temperature compensation, and industry standard serial interface options.



### **FEATURES:**

- Cost effective design for liquids, gases, and steam**
- Light weight turbine for enhanced performance**
- Carbide/jewel bearings for low friction and long life**
- Standard 'Hot Tap' design fits in 1½" or 2" pipe fitting**
- Wide variety of electronic enhancements**
- All units are factory wet calibrated**
- Made in USA**

### **APPLICATIONS:**

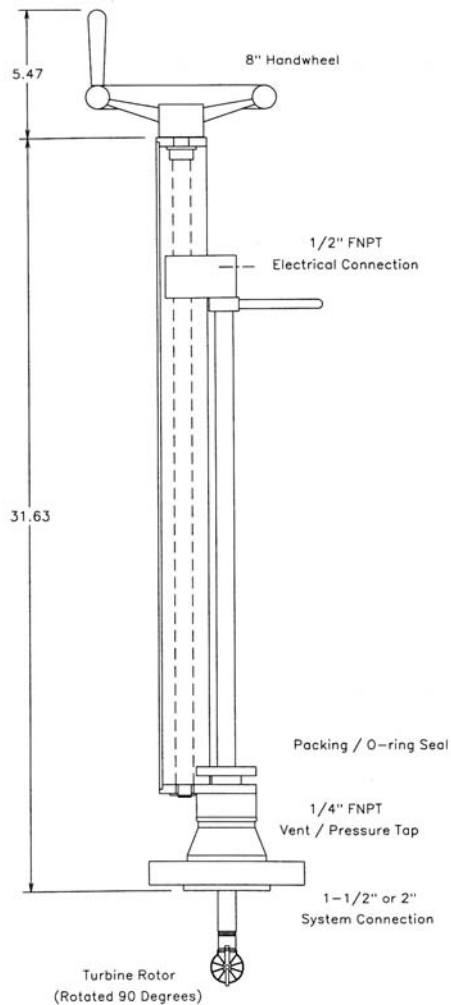
- Liquids such as chilled / hot water, brine, glycol to 1500 psiG
- Gases such as natural gas, propane, nitrogen, air
- Steam to 750 F
- 1½" to 46" and larger line sizes

The **Model ITM200** includes a stainless steel jack screw to insert and remove the turbine sensor with over 22.5" (572mm) of total travel. The standard retractor housing is SS with bronze bushings to minimize lubrication requirements. Packing or double o-ring seals are used for positive sealing. A vent valve is included for pressure release if the unit is to be removed. A variety of mounting options are available including 1½" or 2" MNPT or RF ANSI 150 to ANSI 600 class.

The stainless steel turbine sensor uses the latest manufacturing technology to achieve light weight with precision geometry. A number of blade angles are available to cover a wide range of flow rates. A variety of bearing types are used to handle liquid, gas, and steam services.

Pressure and temperature sensor options are available to allow 'one hole' measurement of these parameters, in addition to flow rate. Onboard and/or remote mounted electronics are available with such features as; enhanced performance & range, pressure &/or temperature compensation, BTU (energy) measurement, rate & total display, and industry standard serial interface. All outputs can be ordered in a NEMA weatherproof, NEMA 4X, or NEMA XP enclosures.

## GENERAL SPECIFICATIONS:



Fluids: Clean liquids (<5cP), gases, and steam compatible with SS  
Liquid performance (line velocity):

Typical Flow range: 0.6-22.5 Ft/sec (0.2-6.9 M/sec)

Maximum allowable: 20% intermittent over range

Gas / Steam performance (line velocity):

Typical flow range: Code -3: 2.8-46.9 Ft/sec (0.9-14.3 M/sec)

Code -25: 3.4-60.0 Ft/sec (1.0-18.3 M/sec)

Code -2: 4.8-74.3 Ft/sec (1.5-22.6 M/sec)

Code -15: 5.8-101.0 Ft/sec (1.8-30.8 M/sec)

Code -1: 8.2-153.5 Ft/sec (2.5-46.8 M/sec)

Minimum useable: Dependent on gas density (CF for details)

Maximum allowable: 20% intermittent over range

Linearity, all: Preamp output dependent (CF for details)

Repeatability, all: +/-0.25% Reading typical

Bearings: Liquid: WC / man made sapphire journal

Gas: WC / man made sapphire vee jewel

Steam: WC / WC vee jewel

Sensor materials: SS, WC, man made sapphire

Retractor materials: SS, Brass/bronze, Al, elastomer (service dependent)

System pressure: to 1500 psiG (103.4 BarG) system connection

dependent (CF for details)

System temperature: Standard: to 400 F (204 C)

Optional: to 750 F (399 C)

Ambient temperature: -40 to 140 F (60 C)

Retractor travel: 22.5" (572mm) nominal

Mounting: Standard: 1 1/2" or 2" MNPT

Optional: ANSI RF 150 to 600 Class

Line Size: 1 1/2" to 56" (CF for details)

Straight run required: 10D upstream / 5D downstream typical,

application dependent (CF for details)

Base output: TTL compatible or 10v P-P pulse

Output options: Linearized pulse, engineered pulse, analog,

industry standard serial interface, rate / totalizer

Enclosure: NEMA 4 standard, 4X, XP available

## DESCRIPTION:

Flow meter shall be an InFLOW, INC. model **ITM200** or equivalent. Meter shall be insertion type turbine with integral retractor assembly, which can be installed using the hot tap procedure. The meter shall require no larger than a 1 1/2" system opening for installation. The meter shall utilize a light weight (low mass style) turbine element for flow rate sensing. Turbine element parts shall be from stainless steel, tungsten carbide, or man made sapphire. Meter shall be constructed such that minimal pressure drop is realized even at maximum flow rates. Each individual unit shall be wet calibrated to assure performance. Where required by the application, integral pressure &/or temperature sensors shall utilize the same mounting point. Where required by the application electronic outputs shall include; TTL compatible pulse, analog, and industry standard interface such as MODBUS<sup>™</sup>, Ethernet, etc.