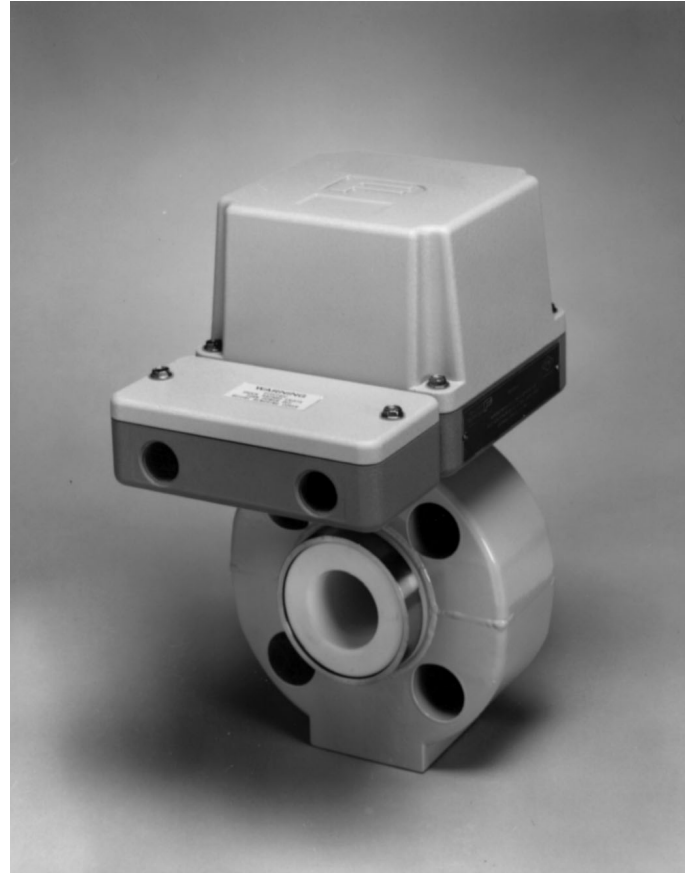


- Minimum Liquid Conductivity 0.05 $\mu$ S/cm. Allows many new harsh process liquids to be measured with a magnetic flowmeter. For conductivities below 0.1 $\mu$ S/cm and viscosities below 100 centistokes consult factory.
- No Wetted Electrodes. Eliminates the possibility of electrode leaks or process/electrode incompatibility.
- Immune to hard slurry noise. No wetted electrodes means electrodes cannot be impinged upon by process solids. This also allows dc coil excitation to be used without noise reduction algorithms.
- Immune to most coating buildup. Ideal for heavy coating processes such as grease, latex, clays and sludge.
- The ceramic liner is abrasive resistant and suitable for sanitary applications.
- Wafer design body mounts between ANSI Class 150 or 300 flanges, DIN or BS flanges.
- Electronics completely interchangeable without regard to size and without calibration.
- Separate customer connection box isolates electronics compartment and protects electronics from the environment.
- Volumetric flow rate measurement independent of fluid viscosity, density and temperature.
- No additional pressure drop when the meter tube and pipe diameter are equal.



***Magnetic Flowmeter  
Series 10D1477***

## ELECTRODELESS MAGNETIC FLOWMETER (MICROPROCESSOR BASED)

The Series 10D1477 Magnetic Flowmeter is a smart pulsed dc type volumetric, liquid flowrate detector. It utilizes the properties of a conductive fluid to generate an induced voltage when flowing through a magnetic field. The amplitude of the voltage, thus produced, is directly proportional to the flowrate of the metered liquid.

The meter's magnet coils are powered by a magnet driver unit. This unique method of magnet coil drive, provides total zero point stability. The flow signal developed by this magnetic flowmeter is processed by Signal Converter Model 50XM1000 which can be mounted remotely on a wall or 2 inch pipe.

This flowmeter is similar to the Series 10D1476 K-Mag Magnetic Flowmeter with the exception that the 10D1477 Flowmeter does not have electrodes wetted by the process. The Flowmeter is available in sizes 1" to 4".

### Engineering Specifications

**Minimum Liquid Conductivity:** 0.05  $\mu$ S/cm.

Note: For conductivities below 0.1  $\mu$ S/cm and viscosities below 100 centistokes consult factory.

#### Electrical Power Requirements:

120 Vac,  $\pm 10\%$ , 50/60 Hz,  $\pm 5\%$

**Optional Power:** 220 Vac,  $\pm 10\%$ , 50/60 Hz,  $\pm 5\%$   
or 240 Vac  $\pm 10\%$ , 50/50 Hz,  $\pm 5\%$

**Power Consumption:** Less than 30 W (30 VA)

**Pressure Limits:** At 38°C (100°F)

Sizes	Pressure	ANSI Rating
1" thru 3"	5.10 MPa (740 PSI)	Class 300
4"	2.00 MPa (285 PSI)	Class 150

**Vacuum Limit:** Full vacuum at 120°C (248°F)

#### Temperature Limit:

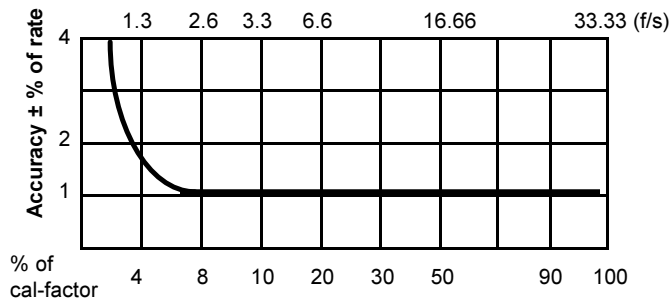
Process Liquid: To 120°C (248°F)

Ambient: -40° to +65°C (-40° to 105°F)

Note 1: Differences between ceramic and process or cleaning fluid temperatures in excess of 70°C (155°F) could cause the ceramic body to crack. Refer to instruction bulletin 10D1477 or consult factory for details.

**System Accuracy:** Range (span) can be set between 5% and 112% of cal. factor shown in Table 1 with remote mounted converter.

### CAL-FACTOR AT 33.33 FT/S



\*Add 0.1% of range setting for analog output

**Optional Accuracy:**  $\pm 0.5\%$  of rate available with system calibration.

**Zero Return:** Provides constant zero output signal during empty pipe and other conditions when false flow signals are possible. Activated by external non-powered contact.

**Display:** Back lighted liquid Crystal display contains two lines of 16 alpha numeric characters. Shows flowrate in either percent of flow or direct engineering units and totalization in direct engineering units. In addition, the display shows configuration data in error messages in plain language.

**Span:** Factory set full scale output signal as specified. Ranges can be set to any value between 5% and 112% of cal-factor shown in Table 1.

SIZE		CAL-FACTOR	FLOW RANGE: 0 TO VALUE			
			MINIMUM		USABLE MAXIMUM**	
MM	INCH	GPM*	GPM	LPM	GPM	LPM
25	1	53.7	6.0	20.0	60.0	200.0
40	1-1/2	161.1	18.0	60.0	180.0	600.0
50	2	268.4	30.0	114.0	300.0	1140.0
80	3	805.3	90.0	340.0	900.0	3400.0
100	4	1074.0	120.0	455.0	1200.0	4550.0

TABLE 1.

\*NOTE: FLOW VEL (ft/s) = (GPM x 32.8) / Cal-Factor

\*\*Useable maximum = 1.12 x Cal-Factor

**Standard Output:** Analog current is 4 to 20 mA dc into 0-750 ohm load.

**Optional Output:** 24 Vdc scaled pulse for load of 150 ohms or greater.

**Isolation:** Input and output signals are fully isolated 400 Vdc.

**Signal Cut-off:** Output signal will drop to 0% when the input signal drops below 1 to 10% of full scale range setting as configured by software.

**RFI Protection:** With RFI gaskets: equivalent to SAMA Class 2, a, b, c, 0.1% (10 v/m, 20-1000 mHz).

**Smoothing:** Full scale response time is 1 second to 99 seconds.

**Enclosure Classification:** NEMA 4X (IEC 529 IP65) suitable for indoor or outdoor installation. Optional accidental submergence 10 M (30 ft) for up to 48 hrs.

**Safety Classification:** FM Approved: Nonincendive for CI, I, Div. 2, Gr. A, B, C & D. Dust-Ignitionproof CI, II, Div. 1, Gr. E, F & G. Suitable for CI, III, Div. 1 Outdoor Hazardous Locations. For Converter Classification see Specification 50XM1000.

### Materials of Construction

**Meter Tube:** Ceramic 99.7% Alumina.

**Housing:** Electronics - Die Cast Aluminum  
Flowmeter - Welded Cast Steel

### Outline & Mounting Dimensions

See Figure 1 & 2.

**Electrical Connections:** 1/2-inch NPT.

**Paint:** Epoxy

### TABLE 2. METER WEIGHT

METER SIZE		METER WEIGHT	
MM	INCH	POUNDS	KILOGRAMS
25	1	11.5	5.2
40	1-1/2	16.5	7.5
50	2	13	5.9
80	3	21	9.5
100	4	32	14.5

### Ordering Information

- Specify Model 10D1477 and flowmeter size (usually same as pipe size).
- Type and class of flange being used.
- Remote mounted converter.
- Power source.
- Output signal and maximum flow rate.
- Liquid or slurry (by name, concentration, conductivity, viscosity, operating temperature and pressure).
- Environment temperature (maximum) and hazardous classification.

### Sample Specification

The magnetic flowmeter shall be of the low frequency electromagnetic induction type and shall produce a DC pulse signal directly proportional and linear to the liquid flowrate. The meter shall be designed for operation with a power consumption less than 30 watts. The magnetic flowmeter shall be Series 10D1477.

The body shall be made of ceramic and not have electrodes wetted by the process. The meter shall have the ability to measure liquids with a conductivity as low as 0.05  $\mu\text{S}/\text{cm}$ . The meter shall be resistant to effects of insulating type coating processes and hard slurry noise.

The electronics portion of the magnetic flowmeter shall include both a magnet driver to power the magnet coils and a signal converter. The signal converter shall be remote mounted, and shall be Series 50XM1000.

The meter shall be hydraulically calibrated at a facility located in the United States and the calibration shall be traceable to the National Institute of Standards and Technology. The accuracy of the metering system shall be 1% or rate for flow velocities of 2.6 to 37 feet per second.

The meter sizes shall be from 1" to 4".

Complete zero stability shall be an inherent characteristic of the meter system to eliminate the need to zero adjust the system with a full pipe at zero flow.

The meter housing shall be NEMA 4X splash-proof and weather resistant design. As an option, the meter shall be capable of submergence in up to 30 feet of water for up to 48 hours without damage to the electronics.

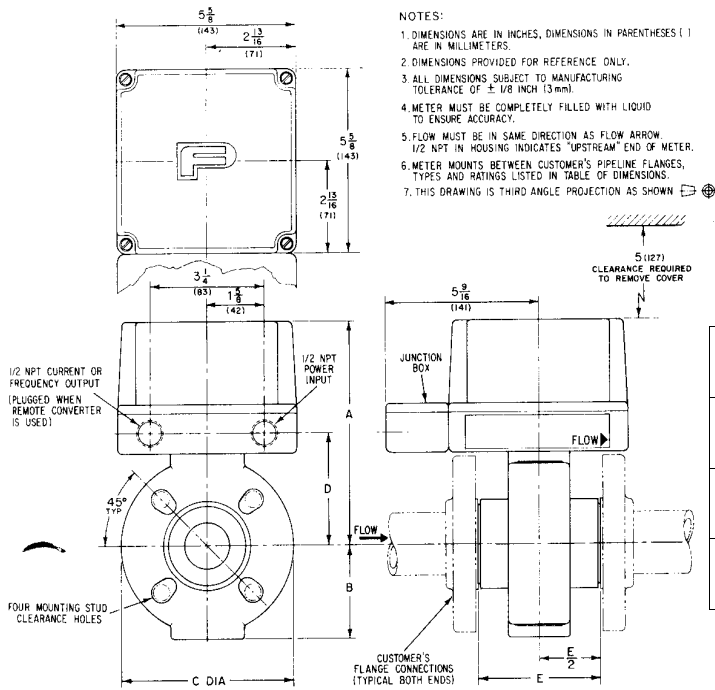
## Model Number Designation for the 10D1477

Model Number	10D1477													
Design Level	S													
Liner Material	H													
<b>Meter Size</b>														
1" (25mm)										09				
1-1/2" (40mm)											11			
2" (50mm)												12		
3" (80mm)													14	
4" (100mm)*														15
<b>Mating Flange</b>														
ANSI Class 150													P	
ANSI Class 300													Q	
DIN PIN 16													D	
DIN PIN 40													F	
Information Not Required													X	
<b>Electrode Material - None</b>													A	
<b>Electrode Type - None</b>													1	
<b>Flange Material - Flangeless Design</b>													9	
<b>Safety Classification</b>														
Unapproved Instruments - including 220/240 Vac													A	
FM Approved for Class I, Div. 2, Gr. A, B, C, & D;														
Class II, Div. 1, Gr E, F, & G; Class III, Div. 1													K	
<b>Electrical Requirements**</b>														
Remote Mounted Converter w/Separate Model No.													Y	
<b>Flowmeter Enclosure Rating</b>														
IEC 529 IP65, NEMA 4X													1	
IEC 520 IP67, Accidental Submergence in water to 30 ft. for 48 hrs.													5	
<b>Fluid Temperature Range</b>														
120°C (248°F)													2	
<b>Output Signal - (Remote converter required)</b>													A	
<b>Output Option - (Remote Converter)</b>													1	
<b>Communication Mode - (Remote Converter)</b>													1	
<b>Coil Drive Frequency - 15 Hz</b>													2	
<b>Additional Options</b>														
None													2	
<b>Mounting Hardware</b>														
Kilnger Sil Gaskets													C	
Gylon Gaskets													D	
Not Required													X	
<b>Converter</b>														
Required													1	
Not Required (Primary only)													2	

\* Not available with Mating Flange option Q or F

\*\*\* When the option is specified, mating flange must be 1 and mounting hardware must be X.

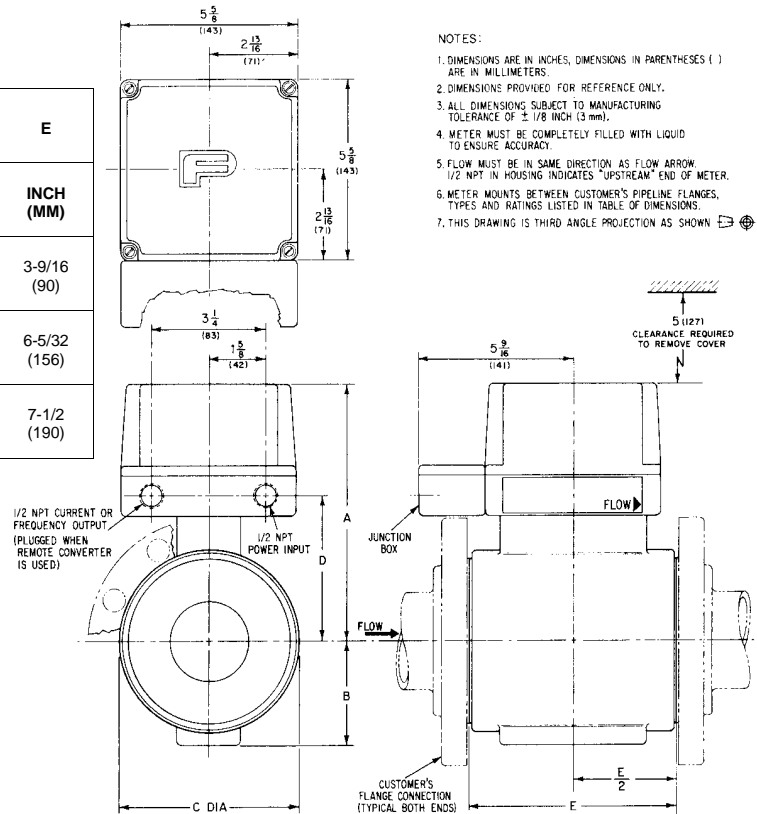
# OUTLINE DIMENSIONS



- NOTES:
1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN PARENTHESES ( ) ARE IN MILLIMETERS.
  2. DIMENSIONS PROVIDED FOR REFERENCE ONLY.
  3. ALL DIMENSIONS SUBJECT TO MANUFACTURING TOLERANCE OF ± 1/8 INCH (3 mm).
  4. METER MUST BE COMPLETELY FILLED WITH LIQUID TO ENSURE ACCURACY.
  5. FLOW MUST BE IN SAME DIRECTION AS FLOW ARROW. 1/2 NPT IN HOUSING INDICATES "UPSTREAM" END OF METER.
  6. METER MOUNTS BETWEEN CUSTOMER'S PIPELINE FLANGES, TYPES AND RATINGS LISTED IN TABLE OF DIMENSIONS.
  7. THIS DRAWING IS THIRD ANGLE PROJECTION AS SHOWN

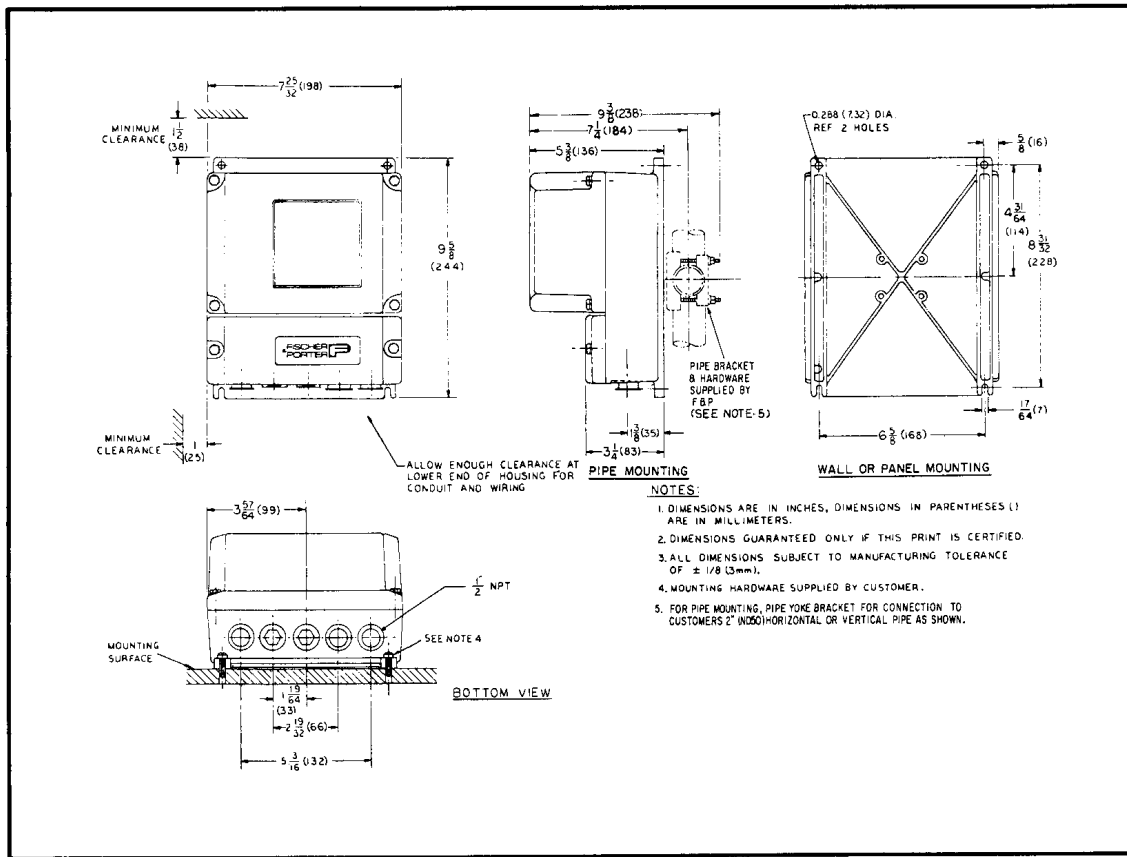
METER AND FLANGE SIZE	CUSTOMER FLANGE TYPE AND RATING	A	B	C DIA	D	E
INCH (MM)		INCH (MM)	INCH (MM)	INCH (MM)	INCH (MM)	INCH (MM)
1 (25)	ANSI CLASS 150 BS 10 TBL D & E DIN PN 16	6-13/16 (173)	2-19/32 (66)	4-7/8 (124)	3-1/8 (79)	3-9/16 (90)
1-1/2 (40)		7-1/2 (191)	3-9/32 (83)	6-1/8 (156)	3-13/16 (97)	4-1/16 (103)

METER AND FLANGE SIZE	CUSTOMER FLANGE TYPE AND RATING	A	B	C DIA	D	E
INCH (MM)		INCH (MM)	INCH (MM)	INCH (MM)	INCH (MM)	INCH (MM)
2 (50)	ANSI CLASS 150 BS 10 TBL D & E DIN PN 16	6-13/16 (173)	2-19/32 (66)	4-7/8 (124)	3-1/8 (79)	3-9/16 (90)
3 (80)		8-11/16 (221)	3-3/16 (81)	5-1/8 (130)	4-31/32 (126)	6-5/32 (156)
4 (100)		9-3/8 (238)	3-11/16 (94)	6-3/8 (162)	5-11/16 (144)	7-1/2 (190)



- NOTES:
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  7. THIS DRAWING IS THIRD ANGLE PROJECTION AS SHOWN

**FIGURE 2. OUTLINE DIMENSIONS OF REMOTE MOUNTED SIGNAL CONVERTER**



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