

# **LIQUID CONTROLS GROUP**



## **Turbine Meters for Custody Transfer Flow Measurement of Petroleum Products**

**Loading Terminal, Offshore,  
and Pipeline Applications**

**IDEX**<sup>®</sup>  
IDEX CORPORATION

Product Overview: IN100-10

[www.lcmeter.com](http://www.lcmeter.com)



## Premier products, premier performance

### Applications

#### Loading terminal, offshore, and pipeline metering

- Crude petroleum products
- Refined petroleum products
- Industrial chemicals/solvents
- Custody transfer applications

The Liquid Controls Group Sponsler brand is a world recognized supplier of reliable, high-accuracy, precision turbine metering systems\*. Whether your application requires flow measurement for custody transfer, process control, or batching and blending, with a Sponsler brand turbine meter at your facility, you'll get years of consistently accurate, trouble-free service. And, because of the ease of installation, minimal maintenance, and few replacement parts, you'll appreciate the low cost of owning and operating your Sponsler brand turbine meter.

\*Turbine meters manufactured by Sponsler, Inc., A Unit of IDEX Corporation.

### Features and benefits

The Sponsler brand Turbine Flowmeter measures volume by means of a precision-crafted, hydraulically balanced rotor mounted in the liquid flow stream. The meter's AC sine wave signal output is detected by a transducer and displayed by various electronic devices used for flow rate indication and totalization. Sponsler Precision Turbine Flowmeters are engineered and manufactured to provide accurate flow measurement over a broad range of products, pressures, and flow rates. The compact, rugged design has established a new standard for flow measurement by exceeding the expectations of the industry for higher accuracy and reliability under varied operating conditions.

LCG Sponsler Precision Turbine Flowmeters are offered in 300 series stainless steel with other construction materials available upon request. The turbine rotor is hydraulically balanced and supported by precision bearings for long life and sustained high accuracy.

Liquid Controls Group engineers design flow systems to meet the needs of each customer's application. These processes can be automatic, semi-automatic, or manual. Standard or custom electronic instrumentation is available for a wide range of applications. At the Liquid Controls Group, we believe that no matter what the application, our commitment to quality and service is second to none.

### Weights & Measures Approvals

NIST and Measurement Canada approved models are available for Custody Transfer applications measuring low to moderate viscosity products including solvents, fuel oil, diesel, and gasoline.



# Meter construction

## Materials of Construction:

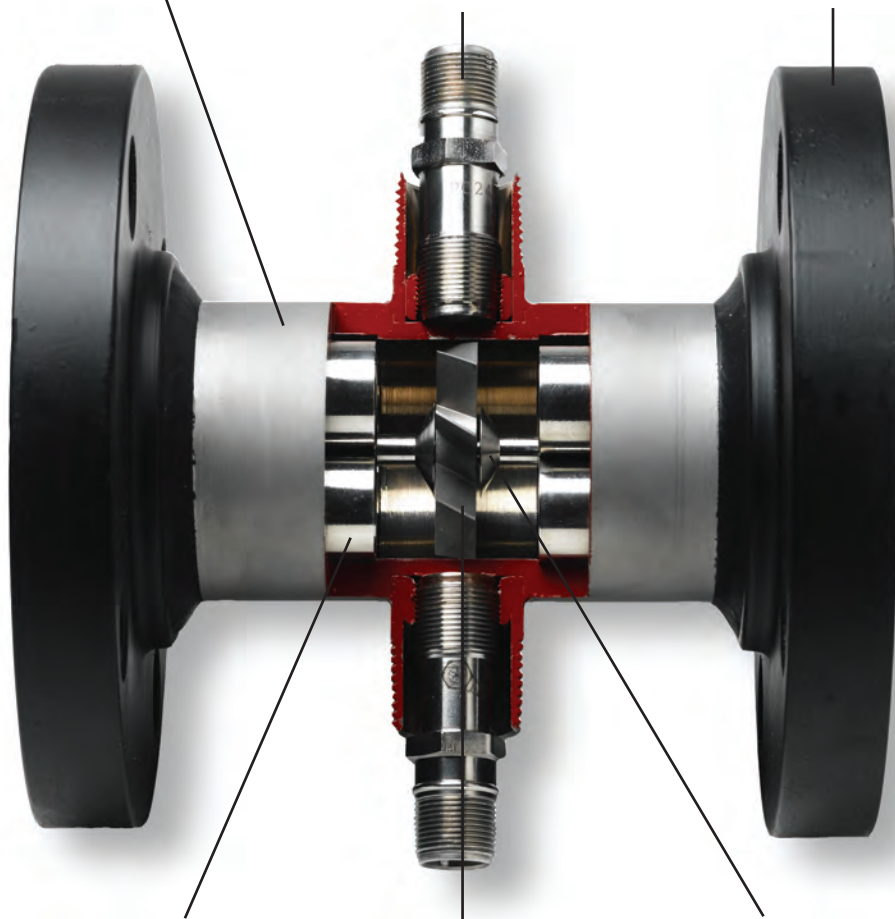
300 Series Stainless Steel  
(Others available on request.)

## Pickup Coils:

For hazardous areas, pickup coils supplied with explosion proof boss.  
(Option suffix "X".)

## End fittings:

ANSI Flanges: 150# to 900#  
Carbon or Stainless Steel  
(Other ratings available on request.)



## Flow Straighteners:

Upstream and downstream flow profiling for accurate flow measurement.

## Hydraulically Balanced Rotor:

17-4 PH Stainless Steel

## Bearings:

CB = Cryo Ball  
CS = Carbide Sleeve  
MB = Metal Ball

## Model Selection Guide

SP (size) - bearing - rotor - end fitting - materials - options				
Bearings:	Rotor:	End fittings:	Materials:	Options:
MB = Metal Ball CB = Cryo Ball† CS = Carbide Sleeve	PHL = 17-4 PH SS* 430L = 430 SS**	C = 150# CS D = 150# SS E = 300# CS F = 300# SS J = 600# CS K = 600# SS H = High Pressure Others Available	4 = 304 SS 6 = 316 SS*	HT = High Temperature FB = Mod. Carrier X = Mounting Boss Blank = No Option

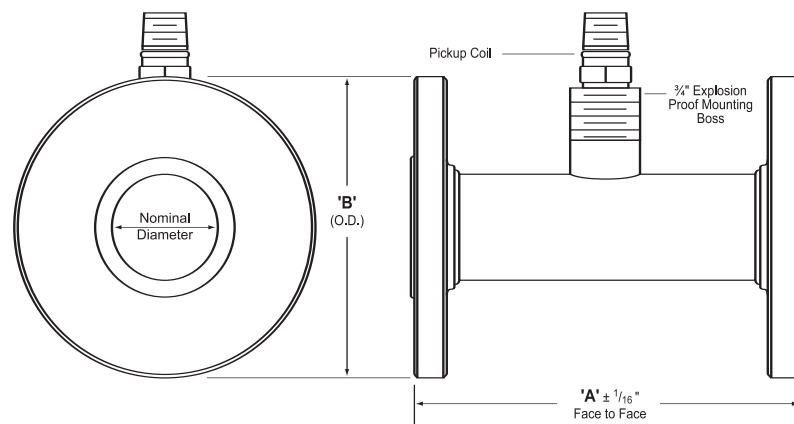
\*Recommended for petroleum applications.

\*\*Recommended for ethanol applications.

†Recommended for petroleum and ethanol applications.

# Meter dimensions

Line Size (N.D.)	150# ANSI		300# ANSI		600# ANSI		900# ANSI	
	A"	B"	A"	B"	A"	B"	A"	B"
1½"	6	5	6	6.125	6	6.125	6	6.125
2"	6.5	6	6.5	6.5	6.5	6.5	6.5	6.5
2½"	7	7	7	7.5	7	7.5	7	7.5
3"	10	7.5	10	8.25	10	8.25	10	8.25
4"	12	9	12	10	12	10	12	10.75
6"	14	11	14	12.5	14	12.5	14	14
8"	16	13.5	16	15	16	15	16	16.5
10"	20	16	20	17.5	20	17.5	20	20
12"	24	19	24	20.5	24	20.5	24	22



## Meter registration equipment

The Liquid Controls Group can package your meter with a selection of register and flow computer options manufactured by members of the Liquid Controls Group family or others. Engineered packages are available for high-end, automated batching and blending systems, as well as for basic electronic preset registration systems. Contact Liquid Controls for additional information.



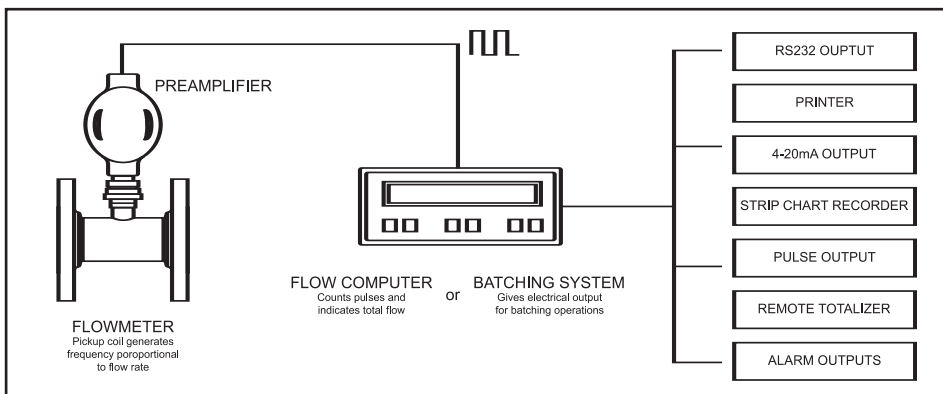
Sponsor Model IT-400 Rate/Totalizer



Sponsor amplifiers



ElectroCount LCR Electronic Register (Class I, Div 1, Groups C & D)



Toptech MultiLoad II

# Meter specifications

## Accuracy/Performance

**Repeatability:**  $\pm 0.02\%$

**Linearity:**  $\pm 0.15\%$

**Rangeability:** 10:1

**Temperature range:** -40°F to 450°F (-40°C to 232°C) standard. For higher temperature applications, consult factory.

**Flow ranges:** Refer to the table below.

**Materials:** Sponsler precision turbine flowmeters are constructed of 300 series stainless steel. Other materials are available to satisfy most applications.

**Electrical Output:** A minimum of 30 mV peak to peak at the minimum repeatable flow.

**Pressure drop:** 4 psi on water at maximum flow (typical). Actual pressure drop depends on product viscosity and flow rate.

**End fittings:** ANSI flanges. Others available upon request.

**Operating pressure:** Dependent on end fittings.

**Calibration:** Sponsler precision turbine flowmeters are furnished with standard water calibration. Special calibrations available.

**NOTE:** Meter must be calibrated in the field for the product being measured.

## Flow ranges

Size	Flow Range			Electrical Output Pulses/Gallon (avg. K factor)
	GPM	BBL/hr	m <sup>3</sup> /hr	
1½" <sup>a</sup>	15 to 150	21 to 210	3 to 30	200
2" <sup>a</sup>	25 to 250	35 to 350	6 to 60	150
2½" <sup>a, b</sup>	40 to 400	57 to 570	9 to 90	75
3" <sup>a, b</sup>	70 to 700	100 to 1000	16 to 160	47.6
4" <sup>b</sup>	120 to 1,200	171 to 1,710	27 to 270	20.7
6"	290 to 2,900	414 to 4,140	66 to 660	5.6
8"	520 to 5,200	743 to 7,430	118 to 1,180	4.3
10"	800 to 8,000	1,143 to 11,430	182 to 1,820	2.14
12"	1,200 to 12,000	1,714 to 17,140	273 to 2,730	1.29

a. Available with Measurement Canada approvals for solvent and gasoline.

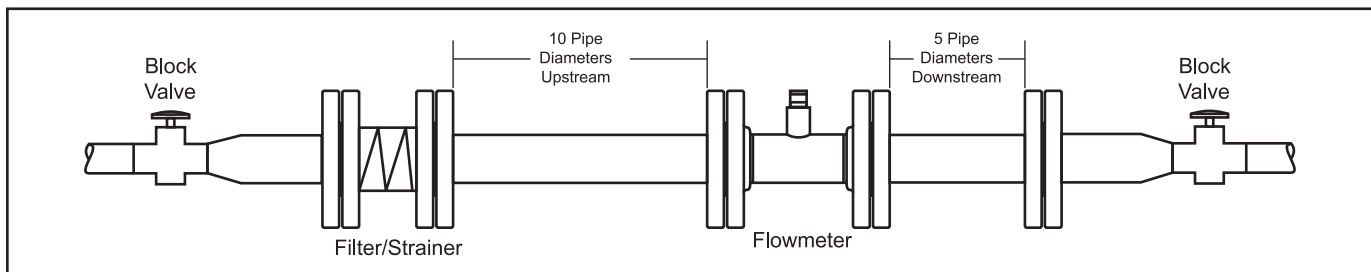
b. Available with US NIST approvals for solvent, gasoline, diesel fuel, and fuel oil.

c. Consult factory for ethanol approvals

## Flow conditioning plates

For flowmeter installations with less than ten pipe diameters of straight pipe upstream of the meter and five pipe diameters of straight pipe downstream of the meter (as shown below), the Liquid Controls Group recommends a flow conditioning plate.

Internal flow conditioning plates are standard for 2" thru 4" flowmeters, and external flow plates are available for other sizes.





## A tradition of excellence that benefits you

Over fifty years ago, Liquid Controls set a new standard of excellence in engineering building the finest flow meter products possible. Starting with metering aviation fuel for the United States Air Force, the Liquid Controls name became synonymous with dependability and accuracy. Because of constant innovation in flow meter technology, a worldwide distribution network and an ever-expanding industry base, Liquid Controls quickly became the premier name for controlling and measuring high-value liquids and gases.

In 2001, Liquid Controls joined the IDEX team of companies and became part of the Liquid Controls Group. The Liquid Controls Group is a collection of well respected companies brought together to assure custody control and precision management of high-value fluids and gases. IDEX is a leader in the manufacture of a broad range of pump products, dispensing equipment and other engineered technologies. Maintaining a theme of leadership, IDEX delivers Innovation, Diversity and EXcellence to thousands of valued customers around the world.

Our commitment to excellence will never change. The professionals at the Liquid Controls Group are driven to bring you products that perform efficiently and accurately, with minimum maintenance for years to come. Delivering everything you'd expect from the very best—that's our goal.

### **LIQUID CONTROLS GROUP**

A Unit of IDEX Corporation

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