

# LIQUID CONTROLS



## Industrial Metering Applications



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## Premier products, premier performance

The Liquid Controls Group (LCG) offers a broad selection of metering systems for industrial flow measurement applications including: positive displacement (PD), turbine (bladed-rotor and helical), ultrasonic, electromagnetic, and mass meters.

### Applications

- Sweeteners
- Water
- Solvents
- Acids
- Paints and Varnishes
- Chemicals
- Food and Beverages
- Bitumen/Asphalt
- Printing Ink
- Fertilizers
- Caustics

In addition to a comprehensive selection of flow meters, the Liquid Controls Group can provide complete metering systems for applications needing simple registration or applications where precise automated control and data management are required.

Liquid Controls Group metering systems are sold and serviced by a worldwide network of qualified distributors and OEMs. Our products are backed by our established reputation for accuracy and reliability. That's why the Liquid Controls Group leads the industry in metering solutions and that's why you'll want LCG's quality as part of your process applications.

### Positive Displacement Meters



The Liquid Controls Group's Positive Displacement Meters are exclusively engineered with no metal-to-metal contact inside the measuring chamber ensuring minimal wear and sustained accuracy. PD meters provide the necessary accuracy for batch processing, flow rate control, blending, and custody transfer of liquids across a broad range of products, viscosities, temperatures, pressures, and flow rates.

#### Common process meter model numbers

Application	Description	Model
Solvents	2", 100-GPM aluminum meter with counter	M-7-A-16
Ethanol	2", 100-GPM aluminum meter with counter	M-7-A-16
Liquid sweeteners	2", 100-GPM aluminum meter with counter	M-7-A-3
Water	2", 80-GPM brass meter with counter	M-7-A-20
Acids	2", 80-GPM 316 stainless steel meter with counter	M-7-A-8
Caustics	2", 100-GPM cast iron meter with counter	M-7-A-7





# Positive Displacement Meters

Size	Model#	Maximum Nominal Flow Rate	Maximum Non-Shock Working Pressure
1 1/2"	M-5	60 GPM	150 PSI
2"	M-7, MS-7	100 GPM	150 PSI
2"	MSAA-7	100 GPM	275 PSI
2"	MA-7, MSA-7	100 GPM	300 PSI
3"	M-15, MS-15	200 GPM	150 PSI
3"	MSAA-15	200 GPM	275 PSI
3"	MA-15, MSA-15	200 GPM	300 PSI
3"	M-30	350 GPM	150 PSI
3"	MSAA-30	350 GPM	275 PSI
3"	MSA-30	350 GPM	300 PSI
4", 6"	M-60	600 GPM	150 PSI
4"	MS-75	700 GPM	150 PSI
4"	MSA-75	700 GPM	300 PSI
4"	MSAA-75	700 GPM	275 PSI
6"	MS-120, MSAA-120	1,000 GPM	275 PSI
6"	MSA-120	1,000 GPM	300 PSI

Linearity	Repeatability	Range	Registration
± .22%	.02%	10:1	Mechanical
± .10%	.02%	10:1	Electronic



## Application class

Model	Metallurgy	(see table at bottom)
M-5, 7, 15, 30, 60	Aluminum	1, 2, 3, 12, 14, 15, 16
M-5, 7; MSAA-7, 15, 30, 120	Stainless steel	8
M-7, 30	Cast iron	7, 27, 37
M-7	Brass	20
MS/MSAA/MSA/MSB/MSC-7, 15, 30, 75, 120	Steel	1, 2, 10, 14, 16



## Construction/application classes

Class 1 Refined petroleum products	Class 8 Acid pH liquids including: nitric, phosphoric, glacial acetic acids, citric juices, vinegar	Class 20 Batch process water meter service
Class 2 Aviation and jet fuel	Class 10 Liquid petroleum gas (LPG)	Class 27 Alkaline pH liquids: latex products, adhesives, liquid fertilizers
Class 3 Variety of products including: liquid sugars, sweeteners, syrups, vegetable oils	Class 12 Anhydrous ammonia (NH <sub>3</sub> )	Class 30 Herbicides
Class 4 Treated waters and solvents where no red metals are allowed	Class 14 Crude oil	Class 37 Sodium hydroxide solutions, high sulfur crude oil, alkaline pH liquids
Class 7 Chlorinated solvents	Class 15 Oil- or water-based latex products, polyester resins, adhesives, herbicides, nitrogen fertilizers	Class 47 Mildly abrasive liquids
	Class 16 General solvents, 200 proof alcohol	

# Ultrasonic Meters

## Fluid Velocity Range

1 m/s to 10 m/s  
3.28 ft/s to 32.8 ft/s

## Working Pressure Rating

150 - 600 ANSI

## Connections

3" through 24"  
Flanged

## Accuracy

Capable of ±0.15% of rate over 10:1 range

## Repeatability

In compliance with API recommendations



## Materials of Construction

Carbon Steel, Low Temperature Steel, Austenitic Stainless Steel

The Liquid Controls Group's Faure Herman Ultrasonic Meter uses ultrasonic beams symmetrically angled across the product to provide a real-time, 3D view of the flow velocity profile. The angled beam configurations overcome viscosity changes and swirls to provide reliable, bi-directional measurement. Because Faure Herman Ultrasonic Meters do not require filters and cause no drop in line pressure, they can dramatically reduce maintenance costs at metering points and pumping stations.

# Turbine Meters

## Capacity (maximum nominal flow rate)

0.5 to 12,000 gpm

## Working Pressure Rating

150 - 2,500 ANSI

## Connections

¼" through 12"  
ANSI, NPT (¼" to 2"), Flare  
Tube, Wafer, Tri Clover

## Accuracy

Capable of  $\pm 0.25\%$  of rate  
over 10:1 range

## Repeatability

0.05% of reading over entire  
range



## Materials of Construction

**Body:** 304, 316, 316L SS

**Rotor:** 17-4 Ph SS

**Bearing:** Metal Ball, Carbide Sleeve, Cyro Ball,  
Fluorosint Sleeve, PTFE Sleeve

## Bladed Rotor

The Liquid Controls Group Sponsler Turbine Meter measures volume by means of a precision-crafted, hydraulically balanced rotor mounted in the liquid or gas flow stream. Sponsler Turbine Meters provide very accurate linear output and volumetric flow measurement for clean, low viscosity liquids and gases.

## Capacity (maximum nominal flow rate)

44 to 13200 gpm

## Working Pressure Rating

150 - 900 ANSI

## Connections

½" through 20"

## Accuracy

$\pm 0.15\%$  to  $\pm 0.50\%$  of rate  
over 10:1 range

## Repeatability

0.04% of reading over entire  
range



## Materials of Construction

**Body:** Stainless Steel (DN25 - DN50), Carbon  
Steel (DN80 - DN300)

**Rotor:** Aluminum or Titanium

**Bearing:** Tungsten Carbide

## Helical

The robust construction of Faure Herman's Helical Turbine Meters consistently stand up to corrosion, high pressures, and extreme temperatures. Their simple design maintains accuracy across density and viscosity changes. Faure Herman Helical Turbine Meters are the smart choice for accurate measurement of low to medium viscosity liquids.

# Mass Meters

## Capacity (maximum nominal flow rate)

0.00022 to 50,000 lbs/min  
0.1 g/min to 22,680 kg/min

## Working pressure rating

150 -2,500 ANSI

## Connections

1/4" through 12"  
ANSI Flanged, Threaded,  
Sanitary

## Accuracy

Capable of  $\pm 0.2\%$  of rate over  
20:1 range

## Repeatability

0.1% of flow rate



## Materials of Construction

316 Ti Stainless Steel (Hastelloy and Tantalum  
available on request)

Liquid Controls Group's LC Mass directly measures mass using Coriolis technology. The LC Mass meter is extremely accurate for variable density, multi-phase liquids and gases requiring measurement of mass flow.

# Mag Meters

## Capacity (maximum nominal flow rate)

0.05 to 500,000 gpm

## Working Pressure Rating

150 -300 ANSI

## Connections

1/8" through 80'  
Flanged, Wafer, Threaded, Tri  
Clover

## Accuracy

Capable of ±0.2% of rate over  
5:1 range for flow velocity  
between 6 to 33 feet per  
second range

## Repeatability

0.1% of full scale



Liquid Controls Group's LC Mag (electromagnetic) meters are an accurate and economical volumetric measurement of electrically conductive liquids (5µs/cm minimum). LC Mag meters are ideal for products that must be cleaned in place, have high suspended solids, or must be completely purged from the line on a regular basis.

## Materials of Construction

**Housing:** Carbon Steel - 304 SS  
**Electrodes:** 316 SS Hastelloy B, C & Titanium  
**Liner:** PTFE, Ebonite, EPDM & Polypropylene

## Meter Choice by Application Characteristic

LC METER TYPE	APPLICATION																		
	CLEAR-LOW VISCOSITY (30 SSU or less)	HIGH VISCOSITY	GRAVITY FLOW MEASUREMENT	VARIABLE TEMPERATURE, and/or VISCOSITY CONDITIONS	CONDUCTIVE	NON-CONDUCTIVE	CORROSIVE	GASES	LIQUID SWEETENERS, VEGETABLE OIL & OTHER EDIBLE PRODUCTS	3A DAIRY PRODUCTS	CLEAN-IN PLACE	PRESSURE EXTREMES	TEMPERATURE EXTREMES	SUSPENDED SOLIDS	NON-ABRASIVE SLURRIES	ABRASIVE SLURRIES	BATCH PROCESSING	MECHANICAL OUTPUT AVAILABLE - NO ELECTRICAL POWER REQUIRED	
PD	A	A	A	A	A	A	B	D	A	D	D	B	B	B	C	A	A		
MASS	A	C	D	B	A	A	A	B	B	A	B	A	A	A	B	B	D		
MAG	A	A	B	B	A	D	B	D	C	A	A	B	A	A	A	C	D		
Bladed Rotor - TURBINE	A	D	B	D	A	A	A	A	B	A	A	A	D	D	D	B	B		
Helical - TURBINE	A	A	B	A	A	A	B	D	B	D	D	C	A	C	B	D	B		
ULTRASONIC	A	A	B	A	A	A	C	D	B	D	D	C	B	A	A	C	D		

- A: Excellent meter choice for application
- B: Good meter choice for application
- C: Fair meter choice for application
- D: Do not use meter

# Registers

## Features

- Weights and Measures approved
- Operator-friendly controls
- High visibility displays



LectroCount Electronic Register



POD Pulsar



Sponsler Pulse Amplifier



IT 400 Electronic Register



Mechanical Register and Printer

Liquid Controls provides a choice of Weights and Measures-approved mechanical and electronic registration, ticket printing and control systems for truck-mounted or fixed-site meter applications. The Liquid Controls Group can package your meter with a selection of register and flow computer options. Engineered packages are available for high-end, automated batching and blending systems, as well as for basic electronic preset or mechanical registration systems.

# Valves

## Connections

2", 3", 4", 6", 7", 8"  
Flanged, Grooved

## Pressure Ratings

Ductile Iron 250-PSI Max.  
Cast Steel 285-PSI Max.  
Ductile Iron 400-PSI Max.  
Cast Steel 400-PSI Max.

## End Details

**Flanged:**  
Ductile Iron, 150 & 300 ANSI (B16.42)  
Cast Steel, 150 & 300 ANSI (B16.5)  
**Grooved:**  
Ductile Iron and Cast Steel



## Materials of Construction

Ductile Iron or Cast Steel

## Temperature Range

-40° to 180° F  
Light Petroleum Product

## Digital Control Valves

Liquid Control Group's Digital Control Valves are built for heavy use and harsh environments. Their design and construction assure a long life of dependable, trouble-free operation. They are diaphragm actuated and available in either globe or angle patterns.

## Pressure Ratings

150 PSI (10.3 BAR)  
300 PSI (20.7 BAR)

## End Details

To 1½", 2", 3" & 4" NPT, BSPT, slip weld

## Temperature Rating

-40° to 160° F



## Materials of Construction

Aluminum, Stainless Steel, Brass and Cast Iron

## V and VS Series Valves

V and VS Series Valves for industrial process applications are engineered to provide precise, controlled response and soft closure at shut off. The hydraulically balanced design ensures minimum head loss and maximum resistance to cavitation, regardless of system pressure and flow rate.

# Air Eliminators

## Working pressure rating

150 - 350 PSI

## Materials of Construction

Aluminum, Stainless Steel,  
Steel and Cast Iron



M Series Cast Iron



High Capacity Air Eliminator and Strainer



M Series Stainless Steel

A wide selection of air eliminators is available for Liquid Controls Positive Displacement meters. Air eliminators sense and eliminate air or vapor before it enters the system safeguarding accurate fluid measurement. Air eliminators are available as individual components or as an integrated assembly supplied with the meter.

# Strainers

## Working pressure rating

150 - 350 PSI

## Mesh

20, 40, 80, 100

## Materials of Construction

Aluminum, Stainless Steel,  
Steel and Cast Iron



F Series Strainer Housing



Strainer Basket



Bulk Plant Strainer and Air Eliminator

Strainers capture foreign particles and remove them from product flow in order to protect the metering system and extend system uptime. Strainers are available as individual components or as an integrated assembly supplied with the meter.



## The Liquid Controls Group

The Liquid Controls Group provides custody transfer solutions for the control and management of high-value fluids and gases. In 2001, IDEX united Corken, Liquid Controls and Sampi to form the Liquid Controls Group. Together, they used their combined resources to design valuable new products and offer cost-effective pump and meter solutions. The three flagship businesses laid the foundation for LCG's successful program of collaboration and innovation. With the additions of Liquid Controls Sponsler, Toptech Systems and Faure Herman, a total of six industry leading brands, LCG quickly became a dependable, single source provider, large enough to supply comprehensive solutions yet flexible enough to customize solutions for unique needs. Today, the Liquid Controls Group has a strong global presence with seven business units in five countries and over 500 distributors on six continents.

## Your Customers Are Our Customers

The Liquid Controls Group (LCG) is part of the IDEX Corporation, a diversified, engineered products company. IDEX leverages the resources of high quality, similar-profile businesses to innovate solutions that bring real and lasting value to you, our customer. At LCG and IDEX, the voice of our customers is our driving force. With your guidance, we can preserve quality and develop the products and services that best meet your customers' needs

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