

PRODUCT OVERVIEW

Meters & Accessories for the LP Gas Market



Liquid Controls Features

ABSOLUTE ACCOUNTABILITY™

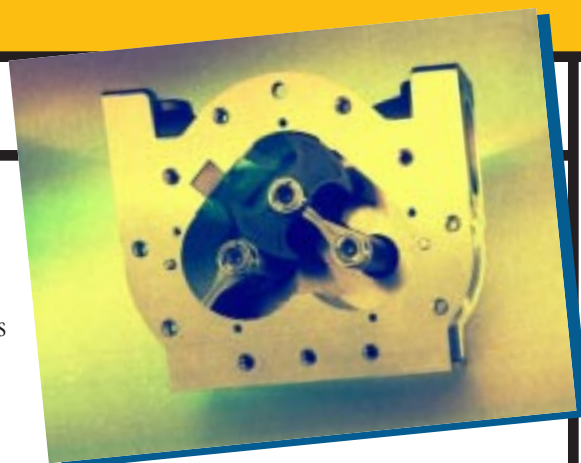
Because accurate and reliable metering is essential to efficient and profitable operation in the LP Gas industry, it makes sense to look to Liquid Controls for meters that deliver precise, volumetric, positive displacement liquid measurement with minimum intrusion to the liquid flow.

Liquid Controls— The Standard in LP Gas Measurement

- **No Metal-to-Metal Contact Within Measuring Chamber** assures sustained accuracy over service life.
- **Carbon Insert Bearings** reduce friction and wear for extended service life.
- **Low Pressure Drop** increases maximum flow rate of system.
- **No Planned Obsolescence** means you can rebuild rather than replace.
- **Synchronized Rotary Measurement Principle** offers the longest service life in the industry.
- **Precision Machined Parts** produce unequalled accuracy and are totally interchangeable.
- **Ratio Gear Train Located in Base of Counter** where the lack of product lubricity doesn't affect gear train wear for meters with mechanical registers). LC meters with LectroCount Electronic Registers do not have a gear train, as illustrated in the photo to the right.

Whatever your LP Gas requirement, Liquid Controls has a meter for the job—Fleet Fueling, Bulk Truck, Terminal, Pipeline, and Refinery applications.

All meters meet the accuracy requirements of the National Institute of Standards Technology (NIST) and numerous International Weights & Measures specifications. Specific models also comply with the safety standards established by UL, TUV and KHK.



MA-7-GY-10-LCR



LPG Meter Proving Cart

LC's portable meter cart provides for a quick/easy method to check the accuracy of your LP Gas Meters from a flow range of 5 to 200 GPM.

- **No Down Time**—Simply connect the reference meter inline during normal operation or by recirculating back into the supply tank (Bobtail).
- **Portable**—Can be handled and operated by one person and easily transported from one location to another.
- **Accurate**—Reference meter is calibrated and sealed conforming to NIST standards. Can be used to check any LPG meter regardless of manufacturer.
- **System includes:**
Operator's Manual, LC Model MA-4, MA-5, or MA-7 LPG Reference Meter, Portable Cart, Hoses and Fittings, and Certified Test Report.
- **Multi-point Calibration and Temperature Compensation to API Table**—optionally available using LCR electronic registration systems.

MA & MS Meter Series

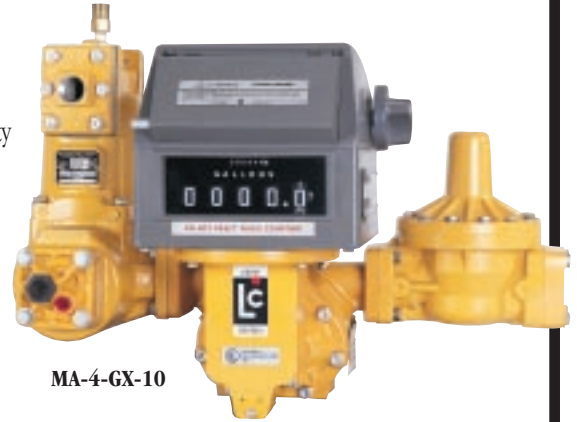
MA Series

For operation at any non-shock working pressure up to 350 PSI (25 bar) . . . and at ambient temperatures up to 160°F (71°C):

- Size for size, LC MA Series Meters are lighter and provide greater mounting flexibility than other meter designs.
- Accessories may be rotated 180 degrees and strainer cover swapped to reverse direction of flow from L to R or R to L. No additional parts or special tools required.

LC Model MA-4-GX-10 designed specifically for LPG motor fuel applications (UL listed):

- 5 to 30 GPM (20-115 L/min.) capacity range.
- Choice of 1-1/2" NPT standard or 2" optional companion flanges.*



MA-4-GX-10

LC Model MA-5-GY-10 designed for bulk delivery truck and high speed motor fuel applications (UL listed):

- 12 to 60 GPM (45-227 L/min.) capacity range.
- Choice of 1-1/2" NPT standard or 2" optional companion flanges.*

LC Model MA-7-GY-10 designed for bulk delivery truck and bulk loading applications (UL listed):

- 20 to 100 GPM (75-380 L/min.) capacity range.
- Choice of 2" NPT standard or 1 1/2" optional companion flanges.*

LC Model MA-15-GY-10 designed for bulk delivery truck and bulk loading applications (UL listed):

- 40 to 200 GPM (150-760 L/min.) capacity range with 2" differential valve.
- Supplied with 3" NPT inlet and 2" NPT outlet flanges.*

*BSPT or SLIP WELD Companion Flanges available as option.

MA-15-GY-10



MS Series

Two case, Spherical Steel Case Meters are available with a choice of 300 (21 bar), 720 (50 bar) and 1,440 (100 bar) PSI non-shock working pressures at ambient temperatures up to 160°F (71°C):

LC Model MSA-15-GY-10

- 40 to 200 GPM (150-760 L/min.) capacity range.
- Supplied with 3" ANSI flanged connections.

LC Model MSA-30-GY-10

- 70 to 350 GPM (265-1,325 L/min.) capacity range.
- Supplied with 3" ANSI flanged connections.

LC Model MSA-75-GY-10

- 140 to 700 GPM (530-2,650 L/min.) capacity range.
- Supplied with 4" ANSI flanged connections.

LC Model MSA-120-GY-10

- 200 to 1,000 GPM (760-3,785 L/min.) capacity range.
- Supplied with 6" ANSI flanged connections.



MSA-30-GY-10**

**Model shown includes: Strainer, Vapor Eliminator, Differential Valve, Temperature Volume Compensator, Net Counter and Printer.

NOTE: Net or gross preset and two-stage electrically controlled valve available for terminal loading systems. 100% gearing (no adjuster) and Variable Gravity Temperature Volume Compensator also recommended.

Electronic Registration & Control Systems

LCR System

Your Gateway to State of the Art Electronic Data Management



The ideal choice for both mobile and fixed flow measurement applications. The LectroCount LCR is an electronic register designed as an alternative to mechanical registration and calibration equipment. It features sophisticated electronics yet is simple to operate - just turn a switch from "Run" to "Print".

LCR features include:

- Ticket Printing: Delivery, Shift, Self Diagnostic and Prover/Calibration.
- Temperature Correction API tables or Coefficients of expansion.
- Operating Temperature Range from -40° to 185°F (-40° to 70°C).
- Weather-proof NEMA 4X enclosure.

LectroCount LCR comes standard with RS 232, RS 485 and/or calibrated pulse outputs which allow interfacing to an external computer at any time.



MA-7-GY-10-LCR

Printer

Lap Pad

POS “Point of Sale” System

The Ultimate Products Accountability System for Truck Applications

This electronic register also replaces the mechanical register, printer, calibration gears, adjuster mechanism and TVC (where used). This system utilizes Weights & Measures approved hardware and software, and gives you a **priced invoice** at the time of delivery. POS also gives you an operating starting report and ending shift report, that include totalizer and inventory reports by product or customer classification.



RAM System

A Quantum Leap in Absolute Accountability for Truck Applications

The RAM System takes all the advantages of POS a step further by including a random access memory card (RAM Card). The portable RAM Card **permits the entire customer database to be downloaded from your office computer** for a quantum leap forward in driver assisted delivery. Deliveries are automatically uploaded to the RAM Card, which virtually eliminates the inherent errors created by manual posting, invoicing and hand-written driver reports.

LectroCount RAM gives you the tools to:

- Increase driver efficiency
- Reduce cost per mile per gallon delivered
- Improve cash flow
- Reduce clerical errors
- Eliminate the cost of preprinted tickets, postage and related expenses (Optional)



RF System

Absolute Accountability with “Real Time” Communication

The RF System operates with a hand held computer that monitors and controls your truck deliveries. **Real time dispatching** over wireless data communications network assures **increased efficiency, productivity and control** while maintaining all of the features and benefits of the LectroCount RAM System. By allowing the user to view operations as they occur, LectroCount RF permits the dispatcher at the home office to be more proactive and responsive to all conditions in the field.



Accessories & Options - Electronic



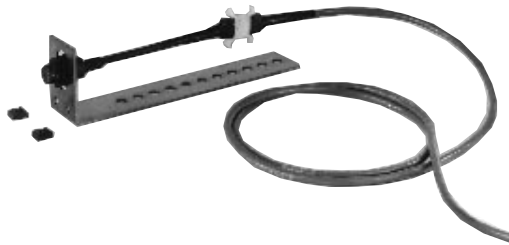
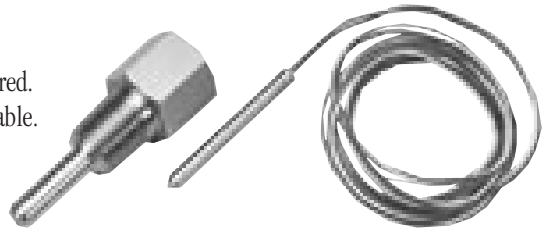
Dot Matrix Printer

- Offers both alpha and numeric output and gives you a point-of-sale invoice for improved efficiency and customer service.
- Industry standard printer's stand alone design allows for easy upgrade or replacement as advancements in technology dictate.

Electronic Temperature Volume Compensator

Virtually eliminates the effect of product temperature change on volume delivered.

- Field programmable for base temperature, coefficient of expansion, or API table.
- Platinum RTD probe is accurate to within 0.25°F (0.14°C).
- -40°F (-40°C) to 160°F (71°C) operating range.



Odometer Pulser

- Universally adaptable to any truck in your fleet.
- Detects all truck movements (forward and reverse) for accurate recording of all miles driven. Also detects ticket riding between deliveries.

Pulse Output Device Glandless Drive

- No dynamic seals to fail and leak.
- All wetted parts are 316 SS or equivalent.
- Meets Weights & Measures requirements.
- Weatherproof UL/CSA Type 4X and IP66 design.
- High resolution, square wave, dual channel pulse output.



Lap Pad Keyboard

Programs and displays all operational functions of LCR or supervisory control module.

- Large, tactile feel, easy to operate alpha/numeric keyboard.
- Dual-line prompting display (40 characters per line) is backlit for easy viewing.
- Umbilical cable permits operation within 9-ft. radius of unit.
- Standard component on LectroCount RAM and POS systems. Optional on LCR version.

Accessories & Options - Mechanical



Large Numerical Counter (Register) and Ticket Printer

Counter displays and totals the amount of LPG delivered:

- 5 - Digit, Large Numeral Display.
- 8 - Digit, Non-Resettable Totalizer.

Printer provides an imprinted ticket record of transaction:

- Prints on standard zero-start tickets.
- Magnetic lid with rubber seal.
- Right or optional left hand reset.
- Face down ticket style, standard; Face up style, optional.

Temperature Volume Compensator

Automatically corrects counter reading for product volume changes due to temperature.

Corrects to a net volume at 60°F (15°C).

- Heavy duty ratchet and pawl speed change mechanism provides longer service life.
- Thermal sensing system with ambient bellows offsets the effect of outside ambient temperature for increased accuracy.
- Operating range: -30°F (-34°C) to 120°F (49°C).
- Factory set for LPG at .505 specific gravity/non-linear which follows ASTM Table 24 expansion chart for LPG.
- Field repairable to minimize downtime.
- Conventional lock-out pin and graduated dial for fine adjustments.



Micrometer Adjuster

Provides a simple means of calibration. Linear non-cyclical and infinitely variable over a 5% range, the Adjuster is graduated in divisions of 1%, 0.1% and 0.02% for precise control.

- No change gears required. . .simple self-contained adjustment.

UL Listed Recognized Component

LC-MA-4/MA-5 Meters now available with Neptune style elbows for easy, cost-effective total interchangeability with Neptune.

- Simple bolt-in replacement of Neptune 1 1/2" type 4D meter with an LC meter.
- No need to re-pipe or replace accessories.



Back Check Valve

Designed to prevent reverse flow:

- **Soft Seat** eliminates counter advancement when PTO is engaged.
- **Internal Relief** keeps meter, downstream piping and delivery hose packed to a set pressure.
- **Full Port/No Restriction** assures maximum system flow rate.



Strainer

Provides protection from foreign material entering measuring chamber:

- **Fine Mesh Inner Screen** extends measuring chamber life.
- **Outer Reinforced Screen** - prevents rupture.
- **Extra Large Screening Area** extends intervals between cleaning and keeps pressure loss to a minimum.
- **Two Thermowells** for accurate recording of product temperature at meter inlet. One for a thermometer used during proving and the other for the sensing bulb of the TVC.



Vapor Eliminator

Senses the presence of vapor in the liquid before it can enter the meter.

- **Float Operated Reed Valve Design** offers low maintenance with no complicated linkage. Closes differential valve and returns vapor to supply tank assuring accurate recording of volume delivered.
- **External Pressure Relief Valve** prevents over pressure of metering system.

Differential Valve

Provides a constant 15 PSI differential pressure and controls flow when vapor is sensed.

- **Basic Diaphragm Style Valve** provides long life with minimum maintenance.
- **Spring Loaded/Fail Closed Action** prevents measuring vapor.



Solenoid Block Valve

- Provides additional system security and prevents unauthorized operation.

SOLD AND SERVICED BY A NETWORK OF HIGHLY TRAINED FULL SERVICE DISTRIBUTORS

WARRANTY:

Liquid Controls, L.L.C. ("Seller") products are warranted against defects in material or workmanship for a period of one (1) year from date of installation, provided that the warranty shall not extend beyond twenty-four (24) months from the date of original shipment from Seller. Seller's obligations, set forth below, shall apply only to failure(s) to meet the foregoing obligations provided that Seller is given written notice within thirty (30) days of any occurrence from which a claim of defect arises. If a warranty dispute occurs, the Purchaser shall be required to provide Seller with proof of date of sale. The minimum requirement to establish date of sale shall be a copy of the Seller's invoice. In the event that a factory inspection by Seller or its designee(s) supports the validity of a claim, at the discretion of Seller, repair, replacement or refund shall be the sole remedy for defect and shall be made, free of charge, ex-works factory. In no event shall Seller be liable for any special, consequential,

incidental, indirect or exemplary damages arising out of warranty, contract, tort (including negligence) or otherwise, including but not limited to, loss of profit or revenue, loss of use of the product or any associated products and/or equipment, cost of substitute goods or services, downtime costs or claims of or by Purchaser's clients or customers. In any event, the total liability of Seller for any and all claims arising out of or resulting from the performance, non-performance or use of the product shall not exceed the purchase price of the individual product giving rise to the claim. All other guaranties, warranties, conditions and representations, either express or implied, whether arising under any statute, common law, commercial usage or otherwise are excluded. Electronic Products require installation, start-up and servicing by local factory-trained service representatives. In the absence of installation, start-up and servicing of Electronic Products by Seller trained service representatives, this warranty is null and void. Seller's

obligations as set forth above shall not apply to any product, or, or any component or part thereof, which is not properly installed, used, maintained or repaired, or which is modified other than pursuant to Seller's instructions or approval.

NOTE: The above warranty applies only to products manufactured by Liquid Controls, Lake Bluff, Illinois. Private label, OEM, and/or products manufactured by Liquid Controls licensee(s) are specifically excluded from the above warranty. Consult factory for all non-Liquid Controls manufacturers' warranties. NO IMPLIED OR STATUTORY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY.

*3 Year/3 Million Gallon Warranty applies to MA-7 metering chamber only, 3 Year/1.8 Million Gallon Warranty applies to MA-5 measuring chamber only, and both warranties apply only when the meter is installed on a bulk delivery truck which has been calibrated and sealed by an authorized third party and is operating in the United States or Canada.



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