

STANDARD BULK TRUCK SYSTEM OWNER'S MANUAL

LectroCount³ On-Board Truck Computer



Model E4030-1 Lap Pad



Model E2530-1 Supervisory Control Module with
Model E4310-1 RAM Module



Model E-2604-41 Remote Electronic Counter And Remote
Supervisory Control Box



Model E4900-1 Printer

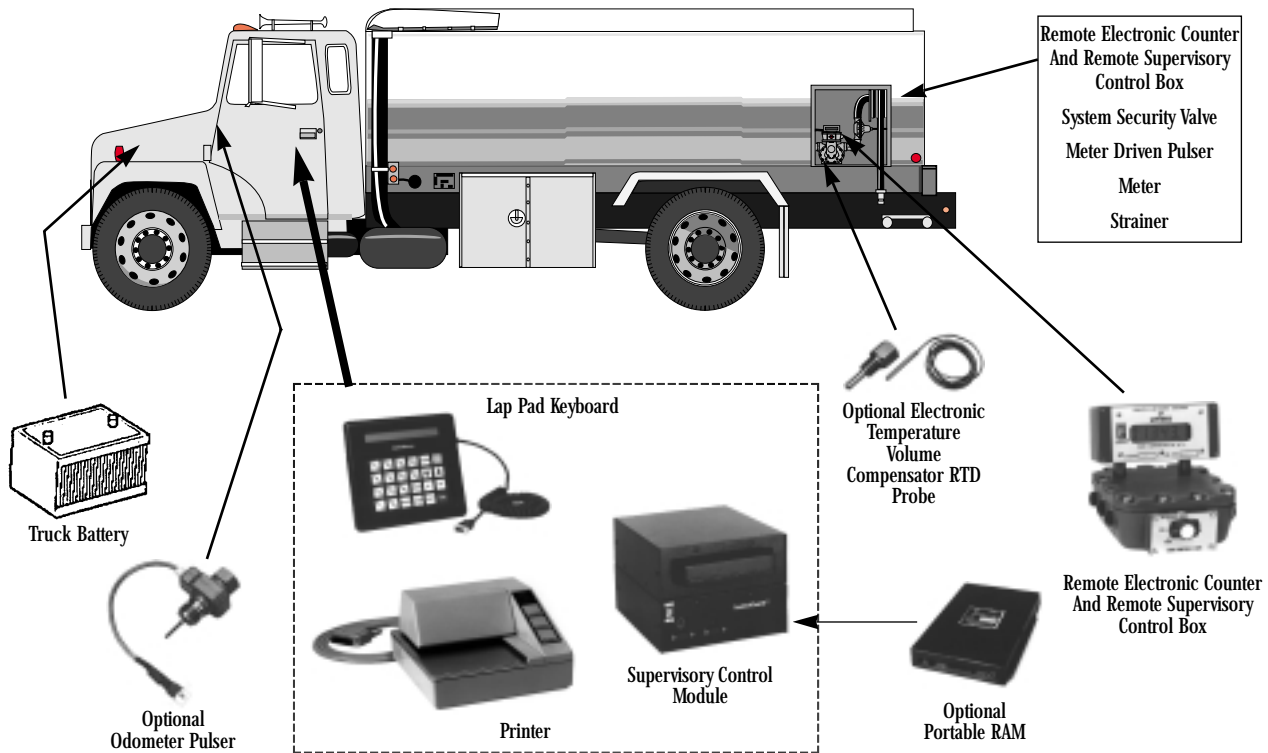
Introduction

LectroCount's Standard Bulk Truck System consists of software (modes) and hardware components working in conjunction. The system performs the following functions: Product delivery, volume

temperature correction, invoice production, discount schedules, transaction data storage, and records miles traveled during and between deliveries.

Table of Contents

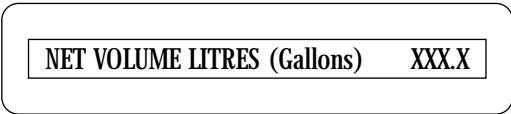
General Information	2	Calibration Procedure (Prover Mode)	13
Fundamental Software Description	3	Procedure for Uploading to the RAM card	16
Basic Mode Description	3	Procedure for Downloading to the RAM card	16
LectroCount [®] Lap Pad Function	5	Procedure for Delivery without an Initialized RAM card	17
Programming LectroCount [®] for the Specific Application	5	Procedure for Delivery with an Initialized RAM card	18



General Information

1. The LectroCount[®] display indicates GROSS VOLUME or NET VOLUME based on the owner's preference, optional hardware or Weights and Measures requirements.
 - a. Display indicates GROSS VOLUME when system has no temperature compensation.
 - b. Display indicates NET VOLUME when the system is equipped with electronic temperature compensation.
2. The display indicates volume in a unit of measure. The unit of measure can be gallons, litres, dekalitres, etc.
3. If you try to access a specific line label and it does not appear on the display:
 - a. Your system does not include that function, or:
 - b. That line label was disabled in Mode 5.

4. If you try to access a mode that is not a part of your system, or is secured (without entering the correct key code); the system automatically returns to Mode 1. The prompting display will read:



5. The line labels are listed in the order they appear when pushing the key. To quickly access line labels at the end of the list, use the key which scrolls through the list in reverse order.
6. After keying data in you must push the key (e.g., if you want to enter the number 23, push the key sequence , ,).

Fundamental Software Description

Access software modes through the keyboard on the Lap Pad (keyboard/display unit) by pushing the **[M#]** key and the number key(s) of the mode. The default mode is always Mode 1 - DELIVERY MODE.

Operation always begins in Mode 1. If someone attempts to enter a mode improperly the system will automatically return to Mode 1. Mode 1 can also be accessed by pushing the M1 key.

To provide security, certain modes are only accessible through field programmable "keys". The owner/manager of the system programs custom security codes into the system. A key code can be any number up to ten digits in length.

Basic Mode Description

Refer to the section, **Programming LectroCount³ for the Specific Application**, for detailed information on each mode.

MODE 0 NOT SECURED

By keying in **[M#]**, **[0]**, the LectroCount³ will display a list of available modes in the system starting with M1-DELIVERY MODE. Pushing the **[↓]** key will show you the next mode available on your system (e.g., M2-DELIVERY PRICE AND TAX). To enter into the mode the display is showing, simply push ENTER.

MODE 1 NOT SECURED

M1 is the delivery mode. The operator has access to Mode 1 during normal operation. It is also the default and start up mode. The software will automatically return to Mode 1 if an error is committed in trying to access a secured mode. The prompting display in Mode 1 will display:

NET VOLUME LITRES (Gallons) X.XX

For complete details on operating the LectroCount³ in Mode 1-Delivery Mode, see LectroCount³ Operators Manual, Bulletin #49143.

MODE 2 SECURED BY KEY CODE

M2-DELIVERY PRICE AND TAX

In Mode 2, the operator can modify, *for the next delivery only*, the price and/or taxes from the base (master) price and/or taxes that are set into Mode 12. The operator has access to the following information: Product code, price/unit volume, tax categories, volume discounts, cash discounts, and end use code. Mode 2 is not available on 24 product code software.

MODE 3 SECURED BY KEY CODE

M3-TOTALIZER/KEYS

In Mode 3, the owner/manager is able to view or clear totalizer readings. Also in Mode 3, the owner/manager is able to establish:

1. Security key codes for Modes 2, 3, 4, 5, 6, 9, 12, 13, 14, 17, 18, 21, 22, and 27.
2. The number of decimal places of resolution in the volume readouts (e.g., 1/10 or whole gallons or whole litres).
3. The number of decimal places in the price.
4. The maximum price/unit volume including tax.

MODE 4 SECURED BY KEY CODE

M4-VALVE RELATED

Valve operation is controlled in Mode 4, including maximum preset quantity, first stage closure point, and maximum pulser reversals allowed. Optional LectroCount³ control valve operation includes maximum preset, first stage closure, minimum and maximum flow rates, valve delay times, solenoid times, dead band, and maximum pulser reversals allowed.

MODE 5 SECURED BY KEY CODE

M5-ENABLES

In Mode 5 the owner/manager can instruct the system whether or not to print a ticket header, set the number of blank lines at the top of the ticket, enable net/gross/price or multiple deliveries per site, enable end of delivery prompt, such as tank percent full, enable account set-up mode, and enable miscellaneous transactions for a delivery ticket.

MODE 6 SECURED BY KEY CODE

M6-REAL TIME CLOCK

In Mode 6 the owner/manager can set the system clock and calendar and can select the number of days until the customer's payment is due.

MODE 7 NOT SECURED

M7-DIAGNOSTICS

Mode 7 contains general information useful in troubleshooting the system such as: Actual temperature, temperature coefficient, temperature offset, pulses per unit volume, odometer pulses per mile, number of pulser reversals, maximum pulser reversals, trip odometer reading, total miles and the reason that the last delivery was stopped. In Mode 7 you can also program and test the number rounding feature of the LectroCount³.

Basic Mode Description con't.

MODE 8

NOT SECURED

****M8-IDENTIFICATION****

Mode 8 identifies the software version (for factory service purposes and Weights and Measures verification). Mode 8 also displays the serial number, unit number, meter number and truck number.

MODE 9

SECURED BY KEY CODE

****M9-ODOMETER****

Mode 9 is initially used to calibrate the odometer pulser to the truck. It can also be accessed to read the trip miles, total miles and pulses per mile.

MODE 10

NOT SECURED

****M10-PRINT END OF SHIFT TICKET ****

Mode 10 provides shift information such as time/date of start of shift and end of shift, unit number, operator number, truck number, product code, inventory total, sale number, odometer reading at the start and end of shift, shift totals, etc.

MODE 12

SECURED BY KEY CODE

****M12-PRICE AND TAX****

Mode 12 is where the owner/manager programs the base (master) price and tax information used in preparing tickets (invoices) for customers.

MODE 13

SECURED BY KEY CODE

****M13-TOTALIZERS****

Mode 13 allows product totalizers used for inventory control to be viewed and printed. Adjustments can not, however, be made in Mode 13 totalizer.

MODE 14

SECURED BY KEY CODE

****M14-DISCOUNTS****

Mode 14 provides the discount structure for the customer invoicing. Available discounts include discounts by volume and discounts for early payment.

MODE 17

SECURED BY KEY CODE

****M17-PRODUCT SET-UP****

If the system is equipped with multi-product software, Mode 17 allows the owner/manager to set up product codes and descriptions for up to eight (8) or twenty-four (24) different products. If the system is equipped with two flow meters, Mode 17 must be entered by the operator to select Meter #1 or Meter #2 on 8 product software. On 24 product software the meter is selected in Mode 21.

MODE 18

SECURED BY KEY CODE

****M18-CUSTOMIZED LABELS****

Mode 18 is used to input customized labels that are printed on the delivery ticket and/or appear on the prompting display such as ticket headers, tax descriptions and ticket footnotes.

MODE 21

SECURED BY KEY CODE

****M21-CALIBRATION SET-UP****

Mode 21 maps each of the four calibrations to a meter in the system on 24 product software only.

Modes 22 and 27 are for special miscellaneous changes, taxes, codes and names. These modes are not available on all versions of software.

****M33-VCF CALCULATOR****

OPTIONAL-Mode 33 for units set up for Temperature Compensation using Density Tables such as the Canadian Program, This is a calculator function that allows the operator to input Temperature and Gross Volume to calculate Net Volume.

CALIBRATION MODE (PROVER MODE)

SECURED BY WIRE SEAL

The Calibration Mode can only be entered by breaking the lead-wire seal on the Remote Supervisory Control Box and rotating the Prover Switch to the prover position. Therefore, it has no mode number. In Calibration Mode, the pulse output scaling of the flowmeter can be adjusted to meet Weights and Measures accuracy requirements. Also included in this mode is a temperature offset adjustment to calibrate the temperature probe and circuit to agree with the Weights & Measures standard thermometer.

LectroCount³ Lap Pad Function

Numbers 0-9 – Allows the operator to input numeric data (e.g., preset amounts, price/litre, etc.).

Decimal Point (.) – Used with numbers 0-9 when entering data.

ALPHA (Shift) Keys – Allows the operator to enter Alphabetic characters. First push and release the appropriate Alpha key, then press and release the appropriate character key.

ENTER – Allows the system to accept the data entered, then advances the display to the next line label.

CLEAR – Allows the operator to remove a keying error and start over with the data entry.

START – Starts a delivery cycle.

BACKLIGHT – Alpha **ALPHA** and **↑** keys turn on backlight...

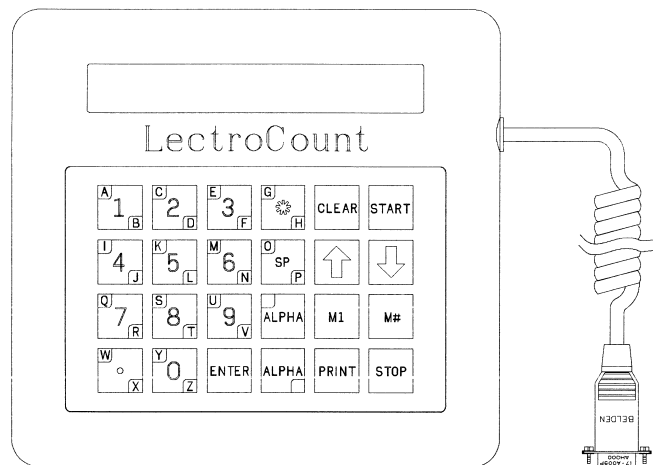
Alpha **ALPHA** and **↓** keys turn off backlight.

SPACE KEY – Used in alpha/numeric Modes 17 and 18 allowing entry of a space between words.

Down Arrow – The display goes to the next line item in the menu.

Up Arrow – The display goes to the previous line item in the menu. Special function used to enter a negative sign when allowed by software such as Negative Tax AFFB and Temperature Offset.

M1 – Allows the operator immediate access to Mode 1.



M# – Allows the operator to directly access the mode by keying in its number and pushing **ENTER**. (**Note: If the mode is secured, the display will prompt for a [KEY?].**)

STOP – Causes the flow control valve to close, stopping the product delivery.

PRINT – In Mode 1- DELIVERY MODE, the **PRINT** key causes the flow control valve to close (if not already closed) and initiates the printing of a delivery ticket. In other modes various information can be printed (e.g., in Mode 10 a shift ticket is printed).

Programming LectroCount³ for the Specific Application

LectroCount³ Systems are factory programmed to default values. The unit must be set up for the specific application by programming values into various mode line items. The following is a list of these items:

Mode 0 – No programmable parameters. This is only a directory of available modes.

Mode 1 – DELIVERY MODE not secured

NET VOLUME LITRES (Gallons) X.XX

ACCESS NUMBER-SCHEDULED – On RAM equipped units this number corresponds to a unique dispatch order

ACCESS NUMBER-UNSCHEDULED – For RAM Systems this number entered will print out on the ticket and will be stored on the RAM Card as a scheduled delivery. The driver will enter this number to allow the delivery to occur.

ACCESS NUMBER – On Non-RAM equipped units any number can be entered to begin a delivery

PRODUCT CODE – Enter a number that corresponds to a specific product. This number will print on the delivery ticket with the label "Product Code".

PRESET NET – (If enabled in Mode 5) This preset delivery amount is temperature compensated volume.

PRESET GROSS – (If enabled in Mode 5) This preset delivery amount is not volume temperature compensated.

PRESET PRICE – (If enabled in Mode 5) This preset delivery amount is controlled by the number of dollars requested.

SELECT MULTIPLE DELIVERY TICKET – (if enabled in Mode 5) Allows multiple deliveries on one ticket and will print out that information on the bottom of the ticket.

INVENTORY – Enter up to ten (10) digits representing the volume on board. This number decrements by the delivery amount on each delivery.

DRIVER NUMBER – Enter a unique number assigned to each driver.

MISC. TRANSACTION ACCESS # – Enter a number that initiates a miscellaneous transaction (i.e., something not measured by the flowmeter).

M2-DELIVERY PRICE AND TAX

NOTE: For the next delivery only, any of these items can be reprogrammed if set-up mode is enabled in Mode 5.

Programming LectroCount³ for the Specific Application

PRODUCT CODE..... ENTER #
 PRICE/GALLON \$..... ENTER #
 % TAX CAT 1..... ENTER #
 TAX/UNIT CAT 1 \$..... ENTER #
 % TAX CAT 2..... ENTER #
 TAX/UNIT CAT 2 \$..... ENTER #
 % TAX ON SUBTL + TAX CAT 1 & 2..... ENTER #
 % TAX CAT 3..... ENTER #
 TAX/UNIT CAT 3 \$..... ENTER #
 % TAX CAT 4..... ENTER #
 TAX/UNIT CAT 4 \$..... ENTER #
 ENABLE VOLUME DISCOUNT..... ENTER 0 OR 1
 SELECT CASH DISCOUNT CATEGORY..... ENTER 1 - 3
 MISC. CHARGE - NON-TAXABLE \$..... ENTER #
 PRODUCT CODE..... ENTER #
 END USE CODE..... ENTER #

M3-TOTALIZERS/KEYS

PRODUCT CODE..... ENTER #
 TICKET NUMBER..... ENTER #
 SALE NUMBER..... ENTER #
 MISC. TRANSACTION NUMBER..... ENTER #
 TOTAL NET VOLUME..... ENTER #
 TOTAL GROSS VOLUME..... ENTER #
 TOTAL SALES/NO TAX..... ENTER #
 CUM TAX % CAT 1..... ENTER #
 CUM TAX UNIT 1..... ENTER #
 CUM TAX % CAT 2..... ENTER #
 CUM TAX UNIT 2..... ENTER #
 CUM TAX ON SUB + CAT 1 & 2..... ENTER #
 CUM TAX % CAT 3..... ENTER #
 CUM TAX UNIT CAT 3..... ENTER #
 CUM TAX % CAT 4..... ENTER #
 CUM TAX UNIT CAT 4..... ENTER #

TOTAL TAX..... ENTER #
 TOTAL SALES INCL. TAX..... ENTER #
 TOTAL MISC. CHARGES..... ENTER #
 TOTAL PAYMENT RECEIVED..... ENTER #
 TOTAL UNMETERED TRANS-VOLUME..... ENTER #
 TOTAL GROSS NOT PRICED..... ENTER #
 TOTAL NET NOT PRICED..... ENTER #
 KEY FOR M2..... ENTER #
 KEY FOR M3..... ENTER #
 KEY FOR M4..... ENTER #
 KEY FOR M5..... ENTER #
 KEY FOR M6..... ENTER #
 KEY FOR M9..... ENTER #
 KEY FOR M12..... ENTER #
 KEY FOR M13..... ENTER #
 KEY FOR M14..... ENTER #
 KEY FOR M17..... ENTER #
 KEY FOR M18..... ENTER #
 KEY FOR M 21..... ENTER #
 KEY FOR M 22..... ENTER #
 KEY FOR M 27..... ENTER #
 KEY FOR M102..... ENTER #
 NO. OF DECIMAL PLACES VOLUME..... ENTER #
 NO. OF DECIMAL PLACES PRICE..... ENTER #
 MAX PRICE/UNIT INCL. TAX..... ENTER #
 SAVE CPU RAM TO RAM CARD..... ENTER 0 or 1
 RESTORE CPU RAM FROM RAM CARD..... ENTER 0 or 1

NOTE: The last two (2) Enables (CPU RAM upload/download) allow the owner/manager to duplicate a given LectroCount³ configuration into another LectroCount³ using the portable RAM as the transfer device. Prover memory is not able to be copied. Each LectroCount³ needs to be individually calibrated with its connected meter. See page 16.

M4 VALVE RELATED

Liquefied Petroleum Standard Valve Set-up

MAX PRESET – The maximum number of gross gallons that can be delivered in a single setting. This preset does not revert to zero after each delivery, and can be used as a repeating preset. This feature can be disabled by inserting zero in lieu of a preset quantity. Normally set to zero (0).

FIRST STAGE CLOSURE – The point at which the valve closes partially reducing the flow rate to dwell (amount yet to be delivered).
EXAMPLE: If FIRST STAGE CLOSURE is 5 gallons and the GROSS PRESET is 100 gallons, the valve will deliver the first 95 gallons at the standard flow rate. The last 5 gallons will be delivered while the valve closes.

THROTTLE CONTROL VOLUME – Throttle control output enables after the number of gallons set is reached after start and disables when the first stage closure volume is reached. If the delivery is not a preset, the output disables when the flow control valve is closed, (emergency stop, remote print, or print). A switch may be installed in series with the control output.

MAX PULSER REVERSALS – The maximum number of pulser reversals allowed before the system determines pulser failure and shuts down. Normally set to 255.

LectroCount³ Control Valve Set-up

1 PRODUCT CODE – Enter a number that corresponds to a specific product. This number will print on the delivery ticket with the label “Product Code”.

2 CALIBRATION NUMBER (1 THRU 4) – Enter a number that corresponds with one of four possible calibrations of the system.

MAX PRESET VOLUME – The maximum number of gross gallons that can be delivered in a single setting. This preset does not revert to zero after each delivery, and can be used as a repeating preset. This feature can be disabled by inserting zero in lieu of a preset quantity.

FIRST STAGE CLOSURE – The point at which the valve closes partially reducing the flow rate to dwell (amount yet to be delivered).
EXAMPLE: If FIRST STAGE CLOSURE is 5 gallons and the GROSS PRESET is 100 gallons, the control valve will allow delivery of the first 95 gallons at the MAX FLOW RATE, and the final 5 gallons at the MIN FLOW RATE.

VALVE TYPE, DIDDLE = 1, 1 or 2 STAGE = 0 – LectroCount supports two types of valves; a rate modulating valve (diddle) or an ON/OFF only valve (1 or 2 stage).

3 HIGH FLOW (UNITS/MIN) – Flow rate used by the system to deliver product until the FIRST STAGE CLOSURE is reached.

3 LOW FLOW (UNITS/MIN)* – Flow rate used by the system to deliver product from FIRST STAGE CLOSURE to final shut off.

3 VALVE OPENING DELAY* – The number used by the system at HIGH FLOW rates only. It is proportional to the amount of time the flow rate controller samples the flow rate before commanding the valve solenoids to open, close or lock. Factory Setting “1”.

3 VALVE CLOSING DELAY* – The number used by the flow rate controller at LOW FLOW rates only. It is proportional to the amount of time the flow rate controller samples the flow rate before commanding the valve solenoids to open, close or lock. Factory Setting “10”.

3 SOLENOID OPEN TIME* – The number used by the flow rate controller at all flow rates. This number is proportional to the amount of time the flow rate controller will command the solenoids to open the main valve. Factory Setting “4”

3 SOLENOID CLOSE TIME* – The number used by the flow rate controller at all flow rates. This number is proportional to the amount of time the flow rate controller will command the solenoids to close the main valve. Factory Setting “7”.

3 DEAD BAND* – The acceptable number of error pulses per sample interval. **EXAMPLE:** If the desired sample is 10 pulses and the DEAD BAND is 1 pulse, the valve controller will open the valve if the sample is less than 9, or close the valve if the sample is greater than 11. Factory Setting “2”.

***NOTE: For a three-way solenoid (on/off control) or single-stage block valve, the previous six parameters should be set to “0”. Maximum preset volume is 0, First Stage Closure is highest expected flow rate, and High-Flow is 2,000 litres (500 gal/min).**

¹ On 8 product software.

² On 24 product software.

³ Only used when diddle valve is selected.

3 BYPASS PULSE (8X MSEC) – This feature relieves hose pressure.

NO FLOW TIMEOUT (.1 SEC) – If no product flow is seen for this length of time, the valve will close. A ticket automatically prints if no flow timeout occurs.

UNIT ID NUMBER ENTER #

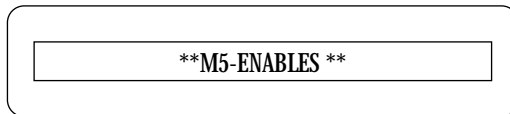
¹METER NUMBER ENTER #

TRUCK NUMBER ENTER #

VALVE CLOSE TIME (.1 SEC) – This is the delay time the LectroCount³ waits between closing the valve and printing a ticket to confirm that flow has reached zero.

THROTTLE CONTROL VOLUME – Throttle control output enables after the number of gallons set is reached after start and disables when the first stage closure volume is reached. If the delivery is not a preset, the output disables when the security valve is closed, (e.g., emergency stop, remote print, print). A switch may be installed in series with this control output.

MAX PULSER REVERSALS – The maximum number of pulser reversals allowed before the system determines pulser failure and shuts down. Normally set to 255.



NOTE: Enter 1 to enable, 0 to disable

- PRODUCT CODE ENTER #
- ENABLE NET PRESET ENTER 1 OR 0
- ENABLE GROSS PRESET ENTER 1 OR 0
- ENABLE PRICE PRESET ENTER 1 OR 0
- ENABLE MULTIPLE DELIVERIES PER SITE .. ENTER 1 OR 0
- ENABLE SET-UP MODE ENTER 1 OR 0
See Mode 2 Non-RAM Software
- ENABLE SCHEDULED ACCOUNT SETUP ENTER 1 OR 0
- ENABLE UNSCHEDULED ACCOUNT SETUP .. ENTER 1 OR 0
(RAM Software Only)
- ENABLE MISC. ACCOUNT SET-UP ENTER 1 OR 0
- ENABLE PAYMENT RECEIVED TICKET ENTER 1 OR 0
- SELECT TICKET HEADER ENTER 0 - 4, 0 = NONE
- ENABLE NET INVENTORY (0=Gross) ENTER 1 OR 0
- BLANKS ON TOP OF M1 TICKET ENTER 1 - 50
- DISABLE PRINTER ENTER 1 OR 0
(Not available in Canada, RAM software only)
- ENABLE END OF DELIVERY PROMPT ENTER 1 OR 0
- ENABLE TANK INDICATOR LINE ENTER 1 OR 0
- ENABLE MISC TRANS FOR M1 PRINT ENTER 1 OR 0
- ENABLE ERROR ON M1 TICKET ENTER 1 OR 0
- ENABLE RAM CARD DATA CLEAR ENTER 1 OR 0
- CASH DISCOUNT (0=AFTER, 1=BEFORE) .. ENTER 1 OR 0
- ENABLE CUSTOMER NAME/ADDR PRINTING .ENTER 1 OR 0

LectroCount³ Control Valve Set-up con't.

M6 - REAL TIME CLOCK

YEAR ENTER #
 MONTH ENTER #
 DAY ENTER #
 HOUR ENTER #
 MINUTES ENTER #
 SECONDS ENTER #
 DAYS UNTIL PAYMENT DUE ENTER #

If number of days is more than zero, then bottom of delivery ticket will read "PAYMENT DUE PRIOR TO: MM/DD/YY".

NOTE: MM/DD/YY or DD/MM/YY is selected in the system set-up mode (See Calibration Mode).

M7-DIAGNOSTICS

This mode displays or prints out a list of diagnostic messages.

One item, rounding, is programmable in this mode:

PLACES TO ROUND TO: ENTER #

To verify the rounding feature enter a decimal number in:

BEFORE ROUNDING ENTER #

View the result of the rounding in:

AFTER ROUNDXXX.XXXX

NOTE: If you are trouble shooting a system, select the last product code metered (if you know it) and print a M#7 Ticket. You'll see **M7-DIAGNOSTIC**. There is a line that tells you the reason for the last stop. Also, you can see the basic prover parameters.

M8-IDENTIFICATION

This mode helps the factory identify the type and version of software if service is required. It is also used by the Weights and Measures Inspector to verify that this software is approved. No items are programmable in Mode 8.

NOTE: When working on a system or proving a system, Print a **M8 IDENTIFICATION** ticket. This tells you the product code, names and Meter I.D. if you have a two meter system.

M9-ODOMETER

Mode 9 programs the trip odometer pulser option.

TRIP ODOMETER – The Odometer Pulser is calibrated by following this sequence:

1. Enter 0 initially. (Must set pulses/mile, then proceed)

2. Drive the vehicle a known distance (e.g., 1.0 miles).
 3. Enter the known distance driven.

After calibration, during normal operation, TRIP ODOMETER will record actual mileage between deliveries.

TOTAL MILES – Now enter in the truck's odometer reading. Actual miles driven both forward or reverse will increment this odometer.

PULSES/MILE – This number, if known, can be entered directly. If the calibration procedure is followed, this number will be calculated by the LectroCount³.

1. Enter 2000 initially.

Mode 10 – SHIFT TICKET

With Multi-Product Software, the unit will first prompt the user for Product Code.

M10-PRINT END OF SHIFT TICKET

SAMPLE START OF SHIFT TICKET

MODE 10 SHIFT TOTALS	
07/12/94	08:25:46
PRODUCT CODE	1.
DRIVER NUMBER	25.
UNIT ID NUMBER	123.
TRUCK NUMBER	789.
INVENTORY	5300.0
TICKET NUMBER	59.
SALE NUMBER	59.
MISC TRANSACTION NUMBER	0.
TOTAL NET VOLUME	0.0
TOTAL GROSS VOLUME	0.0
ODOMETER START OF SHIFT	0.0
ODOMETER END OF SHIFT	0.0
S* TOTAL MILES DRIVEN	0.0
S* NUMBER OF DELIVERIES	0.
S* TOTALIZER NET VOLUME	0.0
S* TOTALIZER GROSS VOLUME	0.0
S* TOTAL SALES NO TAX	\$ 0.00
S* TOTAL TAX % CAT 1	\$ 0.00
S* TOTAL TAX/UNIT CAT 1	\$ 0.00
S* TOTAL TAX % CAT 2	\$ 0.00
S* TOTAL TAX/UNIT CAT 2	\$ 0.00
S* TOT TAX ON SUB + 1&2	\$ 0.00
S* TOTAL TAX % CAT 3	\$ 0.00
S* TOTAL TAX/UNIT CAT 3	\$ 0.00
S* TOTAL TAX % CAT 4	\$ 0.00
S* TOTAL TAX/UNIT CAT 4	\$ 0.00
S* GRAND TOTAL TAX	\$ 0.00
S* TOTAL SALES INCL TAX	\$ 0.00
S* TOTAL MISC CHARGES	\$ 0.00
S* TOTAL PAYMENT RECEIVED	\$ 0.00
S* TOTAL UNMETERED TRANS - VOL	0.0
S* TOTAL GROSS VOL NOT PRICED	0.0
S* TOTAL NET VOL NOT PRICED	0.0

LectroCount³ Control Valve Set-up



SAMPLE END OF SHIFT TICKET

MODE 10 SHIFT TOTALS	
07/12/94	15:09:34
PRODUCT CODE	1.
DRIVER NUMBER	25.
UNIT ID NUMBER	123.
TRUCK NUMBER	789.
INVENTORY	3828.0
TICKET NUMBER	69.
SALE NUMBER	69.
MISC TRANSACTION NUMBER	0.
TOTAL NET VOLUME	1470.2
TOTAL GROSS VOLUME	1472.0
ODDOMETER START OF SHIFT	0.0
ODDOMETER END OF SHIFT	0.0
S* TOTAL MILES DRIVEN	0.0
S* NUMBER OF DELIVERIES	10.
S* TOTALIZER NET VOLUME	1470.2
S* TOTALIZER GROSS VOLUME	1472.0
S* TOTAL SALES NO TAX	\$ 965.02
S* TOTAL TAX % CAT 1	\$ 19.30
S* TOTAL TAX/UNIT CAT 1	\$ 0.00
S* TOTAL TAX % CAT 2	\$ 38.60
S* TOTAL TAX/UNIT CAT 2	\$ 32.53
S* TOT TAX ON SUB + 1&2	\$ 0.00
S* TOTAL TAX % CAT 3	\$ 0.00
S* TOTAL TAX/UNIT CAT 3	\$ 0.00
S* TOTAL TAX % CAT 4	\$ 0.00
S* TOTAL TAX/UNIT CAT 4	\$ 0.00
S* GRAND TOTAL TAX	\$ 90.43
S* TOTAL SALES INCL TAX	\$ 1055.45
S* TOTAL MISC CHARGES	\$ 125.00
S* TOTAL PAYMENT RECEIVED	\$ 139.65
S* TOTAL UNMETERED TRANS - VOL	0.0
S* TOTAL GROSS VOL NOT PRICED	386.5
S* TOTAL NET VOL NOT PRICED	385.9

If using Multi-Product Software, a "Shift Ticket" can be printed for each product.

****M12 - PRICE & TAX****

In Mode 12 the base (master) price and taxes are programmed. All deliveries will use the master price and taxes unless altered in Mode 2 for a specific delivery. The base (standard) price and tax information entered in Mode 12 is a repeating price and tax which can be used for all deliveries. If the customer receives a different price, the driver must enter the alternate price in ACCOUNT SETUP or Mode 2 (if account setup is not used), otherwise the system will use the base price and tax information entered in Mode 12. All information contained in Mode 12 will appear on a Mode 12 ticket. Using the arrow keys to scroll through Mode 12 the following line labels can be viewed:

NOTE: To enter a negative tax, use **TAX/UNIT CAT 4** only. First enter the numerical value, then press the  key. A minus sign will appear ahead of the number, Now press  key.

PRODUCT CODE (Multi-product software)	ENTER #
0 (PRICE/GAL)	ENTER #
1 % TAX CAT 1	ENTER #
2 TAX/UNIT CAT 1 \$	ENTER #
3 % TAX CAT 2	ENTER #
4 TAX/UNIT CAT 2 \$	ENTER #
5 % TAX ON SUBTOTAL + TAX CAT 1 & 2	ENTER #
6 % TAX CAT 3	ENTER #
7 TAX/UNIT CAT 3 \$	ENTER #
8 % TAX CAT 4	ENTER #
9 TAX/UNIT CAT 4 \$	ENTER #

****MODE 13 - TOTALIZERS****

In Mode 13 the totalizers can be display and/or printed to a ticket. There are no programmable items in Mode 13. All information contained in Mode 13 will appear on a Mode 13 ticket. Using the arrow keys to scroll through Mode 13 the following line labels can be viewed:

PRODUCT CODE – Multi-product software

DATE/TIME – Display indicates current date and time.

TRUCK NUMBER – Display indicates the last truck number entered.

UNIT ID NUMBER – Display indicates the last unit ID number entered.

TICKET NUMBER – Display indicates the last ticket number printed.

SALE NUMBER – Display indicates the last sale number.

MISC. TRANSACTION NUMBER – Display indicates how many miscellaneous transactions have been made.

TOTAL NET VOLUME – Display indicates the total net volume delivered.

TOTAL GROSS VOLUME – Display indicates the total gross volume delivered.

TOTAL SALES NO TAX – Display indicates the total amount of sales made, excluding taxes.

CUM TAX % CAT 1 – Display indicates the total tax % for category 1.

CUM TAX/UNIT CAT 1 – Display indicates the total tax per unit for category 1.

CUM TAX % CAT 2 – Display indicates the total tax % for category 2.

CUM TAX/UNIT CAT 2 – Display indicates the total tax per unit for category 2.

CUM TAX ON SUB + CAT 1 & 2 – Display indicates the tax on the subtotal plus categories 1 & 2.

CUM TAX % CAT 3 – Display indicates the total tax % for category 3.

CUM TAX/UNIT CAT 3 – Display indicates the total tax per unit for category 3.

LectroCount³ Control Valve Set-up con't.

CUM TAX % CAT 4 – Display indicates the total tax % for category 4.

CUM TAX/UNIT CAT 4 – Display indicates the total tax per unit for category 4.

TOTAL TAX – Display indicates the total tax (all categories combined).

TOTAL SALES INCL TAX – Display indicates the total sales including all tax categories.

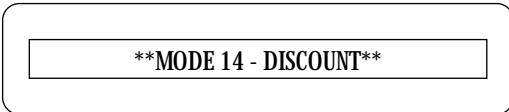
TOTAL MISC CHARGES – Display indicates the total of all miscellaneous charges.

TOTAL PAYMENT RECEIVED – Display indicates the total payments received from all transactions.

TOTAL UNMETERED TRANS-VOLUME – Display indicates the total unmetered transaction volume.

TOTAL GROSS NOT PRICED – Display indicates the total gross volume delivered but not priced.

TOTAL NET NOT PRICED – Display indicates the total net volume handled but not priced.



NOTE: The example below uses LITRES as the unit of measure. Gallons and DekaLitres are also available units of measure.

- VOLUME DISCOUNT LEVEL 1** ENTER # OF LITRES
- DISCOUNT LEVEL 1** ENTER \$/LITRE DISCOUNT
- VOLUME DISCOUNT LEVEL 2** ENTER # OF LITRES
- DISCOUNT LEVEL 2** ENTER \$/LITRE DISCOUNT
- VOLUME DISCOUNT LEVEL 3** ENTER # OF LITRES
- DISCOUNT LEVEL 3** ENTER \$/LITRE DISCOUNT
- CASH DISCOUNT INTERVAL 1** ENTER # OF DAYS
- DISCOUNT % CAT 1** ENTER % DISCOUNT
BEFORE TAX
- DISCOUNT/UNIT CAT 1** ENTER \$/LITRE DISCOUNT

NOTE: Either discount % CAT 1 or DISCOUNT/UNIT CAT 1 or both can be used.

- CASH DISCOUNT INTERVAL 2** ENTER # OF DAYS
- DISCOUNT % CAT 2** ENTER % DISCOUNT
BEFORE TAX
- DISCOUNT/UNIT CAT 2** ENTER \$/LITRE DISCOUNT

VOLUME DISCOUNT LEVEL 1 - Enter the volume amount at which the volume discount takes effect. **EXAMPLE:** Volume amount for discount level 1 is 100 litres (or whatever amount you desire). The customer receives 200 litres and therefore receives discount level 1 on the entire delivery.

When the customer receives only 99 litres, there is no discount.

DISCOUNT LEVEL 1 - Enter the price per litre discount for volume discount level 1. **EXAMPLE:** Volume discount level 1 is 100 litres and the discount is \$.03 /litre.

VOLUME DISCOUNT LEVEL 2 - Enter the volume amount at which the volume discount takes effect. **EXAMPLE:** Volume amount for discount level 2 is 200 litres (or whatever amount you desire). The customer receives 200 litres and therefore receives discount level 2 on the entire delivery.

When the customer receives only 150 litres, this discount will NOT apply.

DISCOUNT LEVEL 2 - Enter the price per litre discount for volume discount level 2. **EXAMPLE:** Volume discount level 2 is 200 litres and the discount is \$.04 /litre.

VOLUME DISCOUNT LEVEL 3 - Enter the volume amount at which the discount takes effect. **EXAMPLE:** Volume amount for discount level 3 is 300 litres. The customer receives 300 litres and therefore receives discount level 3 on the entire delivery.

When the customer receives only 250 litres, this discount will NOT apply.

DISCOUNT LEVEL 3 - Enter the price per litre discount for volume discount level 3. **EXAMPLE:** Volume discount level 3 is 300 litres and the discount is \$.05 /litre.

CASH DISCOUNT INTERVAL 1 - Enter the number of days the discount is to apply. **EXAMPLE:** Cash discount interval 1 is to apply for 10 days. If delivery is made 11/20/94, the ticket will read: "IF PAID BY 11/30/94 PAY \$000.00". Cash discount interval 1 can be calculated on a percent of sale, \$ per unit, or both basis. When entering figures you must determine which discount structure you want to use.

DISCOUNT % CAT 1 - Represents cash discount before taxes (subtotal). Enter the percent discount to be used in calculating cash discount interval 1. **EXAMPLE:** Dollar volume delivered is 100.00 and the discount is 2%. If the delivery is made 11/20/94, the ticket will read: "IF PAID BY 11/30/94 PAY \$98.00".

DISCOUNT/UNIT CAT 1 - Enter the discount per unit amount to be used in calculating cash discount interval 1.

CAUTION! If an entry is made in both **DISCOUNT % and DISCOUNT/UNIT CAT 1** the system will calculate each discount, combine the totals and deduct this combined total from the delivery subtotal.

CASH DISCOUNT INTERVAL 2 - Enter the number of days the discount is to apply. **EXAMPLE:** Cash discount interval 2 is to apply for 15 days. If delivery is made 11/20/94, the ticket will read: "IF PAID BY 12/05/94 PAY \$000.00". Cash discount interval 2 can be calculated on a percent of sale, \$ per unit, or both basis. When entering figures you must determine which discount structure you want to use.

DISCOUNT % CAT 2 - Represents cash discount before taxes. Enter the percent discount to be used in calculating cash discount interval 2. **EXAMPLE:** Dollar volume delivered is \$100.00 and discount is 2%. If the delivery is made 11/20/94, the ticket will read: "IF PAID BY 12/05/94 PAY \$98.00".

DISCOUNT/UNIT CAT 2 - Enter the discount per unit amount to be used in calculating cash discount interval 2.

LectroCount³ Control Valve Set-up

CAUTION ! If an entry is made in both DISCOUNT % and DISCOUNT/UNIT CAT 2 the system will calculate each discount, combine the totals and deduct this combined total from the delivery subtotal cost.

CASH DISCOUNT INTERVAL 3 – Enter the number of days the discount is to apply. **EXAMPLE:** Cash discount interval 3 is to apply for 20 days. If delivery is made 11/20/94, the ticket will read: "IF PAID BY 12/10/94 PAY \$000.00". Cash discount interval 3 can be calculated on a percent of sale, \$ per unit, or both basis. When entering figures you must determine which discount structure you want to use.

DISCOUNT % CAT 3 - Represents cash discount before taxes. Enter the percent discount to be used in calculating cash discount interval 3. **EXAMPLE:** Dollar volume delivered is \$100.00 and discount is 2%. If the delivery is made 11/20/94, the ticket will read: "IF PAID BY 12/10/94 PAY \$98.00".

DISCOUNT/UNIT CAT 3 - Enter the discount per unit amount to be used in calculating discount interval 3.

CAUTION ! If an entry is made in both DISCOUNT % and DISCOUNT/UNIT CAT 3 the system will calculate each discount, combine the totals and deduct this combined total from the delivery subtotal cost.

NOTE: The system automatically allows two (2) additional decimal places for tax/unit and % tax categories above the number of "DECIMAL PLACES PRICE" set in Mode 3.

CASH DISCOUNTS BY % OR BY UNIT

This discount is for early payment. An interval is entered in days in Mode 14 for 3 different categories. The interval may be the same in all categories, different in each category, or not used at all by entering a zero (press 0 and enter). A corresponding % or unit amount is entered for each category. The % or unit amount may vary from one category to another with the interval held constant. Mode 2 and/or account setup displays: "SELECT CASH DISCOUNT CATEGORY". The default value is zero (0). An entry of 1, 2, or 3 enables that category. The % or unit cash discount for the selected category is multiplied by the subtotal due. This amount is then subtracted from the grand total. The ticket print shows: "IF PAID BY 7/01/94, PAY \$53.25". If a 0 is left for the category selection, the program reverts to the STANDARD DUE DATE set in Mode 6.

VOLUME DISCOUNTS

Three (3) volume levels are provided for discounts. A price/unit is entered for each level. If "VOLUME DISCOUNT" is enabled in ACCOUNT SETUP or Mode 2, the discount price/unit for a given level will be multiplied by the quantity of product delivered and subtracted from the total price including tax, if that level is attained. Only one level can apply per delivery. The quantity of product delivered will determine the application level. If "VOLUME DISCOUNT" is not enabled for this delivery, the function will be skipped. Entering a zero in any discount level will disable that level.

MODE 17 - PRODUCT SET-UP

If the unit has multi-product (8 or 24) software, Mode 17 allows the operator/manager to program up to 8 or 24 product codes and name them.

PRODUCT CAT 1 CODE ENTER #(up to 10 digits)
PRODUCT CAT 1 NAME ENTER #(up to 15 characters)
¹PRODUCT CAT 1 METER ENTER 1 or 2 only
²METER CALIBRATION ENTER 1-4
PRODUCT CAT 2 CODE ENTER #(up to 10 digits)
PRODUCT CAT 2 NAME ENTER #(up to 15 characters)
¹PRODUCT CAT 2 METER ENTER 1 or 2 only
²METER CALIBRATION ENTER 1-4
.
.
.
.
.
.

¹Only on Dual Meter Systems with 8 product software.
²Only on 24 product software

MODE 18 - CUSTOMIZE LABELS

Mode 18 is used to input customized labels that are printed on the delivery ticket and/or appear on the prompting display such as ticket headers, tax descriptions, and ticket footnotes. The lower line of the display shows the current text of the label. Keying the data overwrites the character above the cursor.* Down arrow key moves cursor to the right. Up arrow key moves the cursor to the left. key enters a space character. Clear key blanks the label. Enter key saves the displayed label. When all label editing is complete press down arrow key. You can either save the edits or discard them and return to Mode 1. Pressing the down arrow key again will allow you to enable the default (factory) messages.

ENTER LABEL NUMBER ENTER# From table on page 12.

NOTE: Labels shown are the labels as shipped from the factory, unless otherwise specified by customer.

* To enter Alpha Shift keys refer to page 5.

LectroCount³ Control Valve Set-up con't.

#	DEFAULT	MAX NO. CHARACTERS	DISPLAY ONLY	PRINTER ONLY	BOTH DISPLAY & PRINTER
1	[% TAX CAT 1	0]	26		U
2	[TAX/UNIT CAT 1 \$	0]	26		U
3	[% TAX CAT 2	0]	26		U
4	[TAX/UNIT CAT 2 \$	0]	26		U
5	[% TAX ON SUBTL				
	+ TAX CAT 1 & 2	0]	26		U
6	[% TAX CAT 3	0]	26		U
7	[TAX/UNIT CAT 3 \$	0]	26		U
8	[% TAX CAT 4	0]	26		U
9	[TAX/UNIT CAT 4 \$	0]	26		U

HEADER 1 LABELS

10	[LIQUID CONTROLS]	39		U
11	[105 ALBRECHT DRIVE]	39		U
12	[LAKE BLUFE, IL 60044]	39		U
13	[BLANK SPACES]	39		U
14	[(708) 295-1050]	39		U

HEADER 2 LABELS

15	[LIQUID CONTROLS]	39		U
16	[105 ALBRECHT DRIVE]	39		U
17	[LAKE BLUFE, IL 60044]	39		U
18	[BLANK SPACES]	39		U
19	[(708) 295-1050]	39		U

HEADER 3 LABELS

20	[LIQUID CONTROLS]	39		U
21	[105 ALBRECHT DRIVE]	39		U
22	[LAKE BLUFE, IL 60044]	39		U
23	[BLANK SPACES]	39		U
24	[(708) 295-1050]	39		U

HEADER 4 LABELS

25	[LIQUID CONTROLS]	39		U
26	[105 ALBRECHT DRIVE]	39		U
27	[LAKE BLUFE, IL 60044]	39		U
28	[BLANK SPACES]	39		U
29	[(708) 295-1050]	39		U
30	[SUBTOTAL FIELD ON TICKET]			
	(Consult Factory)			
31	[ENTER PERCENT FULL			
	(0-100)]	35		U

Message programmed in Label 31 appears on the display at the end of a delivery ticket print cycle if enabled in Mode 5 [ENABLE END OF DELIVERY PROMPT]. Number entered when this prompt appears will be in each delivery record on the optional portable RAM card.

32	[-- TANK FULL --			
	TANK NOT FULL]	39		U

Message programmed in Label 32 appears on the last line of the delivery ticket if enabled in Mode 5 [ENABLE TANK INDICATOR LINE].

NOTE: When using default message put a checkmark after TANK FULL or TANK NOT FULL on the delivery ticket.

33	[CASH - 1 CHECK - 2			
	CREDIT CARD	3]	35	U

Message programmed in Label 33 appears as a prompt on miscellaneous transactions and [MISCELLANEOUS TRANSACTION FOR M1 PRINT]. The message and the number entered after the prompt will print on the delivery ticket.

1	Tax Not Used	
2	Prov. Fuel Tax	\$/L

CANADIAN DEFAULT LABELS

#		
3	Tax Not Used	
4	Excise Tax	\$/L
5	GST	%
6	PST	%
7	Tax Not Used	
8	PST	%
9*	AFFB	\$/L

* Negative tax capabilities. See note bottom of page 9.

****MODE 21 - CALIBRATION SET-UP****

Mode 21 is only present on 24 product software. Mode 21 maps each of the four calibrations to a meter. On a dual meter system numbers are 1 and 2. On single meter systems any number other than 1 or 2 can be used (e.g. meter serial number).

CALIBRATION NUMBER (1-4)ENTER 1-4
METER NUMBERENTER #

Calibration Mode (Prover Mode)

This mode is used for meter calibration. When proving the LectroCount® System, follow pre-test and inspection procedures established by Weights and Measures authorities. The primary indicating and recording element on a vehicle mounted LectroCount® is located on the Lap Pad in the truck cab. A remote 6-digit (meter mounted) liquid crystal display is provided for operator convenience and consumer verification.

Weights and Measures inspectors are responsible for determining if the truck metering and recording elements of the system are in tolerance. To make this determination, the system should be tested under normal operating conditions.

Access to the calibration mode is required only if the system is in excess of established tolerances or the W & M inspector elects to run special tests (i.e., establishing the accuracy of both the measuring element and the compensating elements of the system). To access the prover mode SELECT PRODUCT TO BE PROVED:

- 1.A. If the unit is equipped with 8 Product Software, enter Mode 1 by pushing **[MI]**. Scroll down to PRODUCT CODE and enter the code for the product being calibrated. Each product needs to be calibrated separately in the prover mode. See Mode 17 for product set-up.
- 1.B. If the unit is equipped with 24 product software, enter Mode 21 by pushing **[MF]**, 2, 1. Enter and select one of the four possible calibrations. Each calibration needs to be done separately in the prover mode.
2. Remove the lead seal and wire assembly from the Remote Supervisory Control Box.
3. Remove the four (4) fillister head screws securing the name plate of the red selector switch located on the Remote Supervisory Control Box.
4. Enter the calibration mode by turning the red switch to the PROVER position, full counterclockwise (6:00 o'clock position). The prover mode is used to change the calibration of the meter, electronic temperature compensator or both. When the switch is in the prover position, the prompting display will read: [INSERT TICKET AND PUSH ENTER OR PUSH STOP]. Insert a ticket and push **[ENTER]** to print the initial prover ticket. The prompting display will again read: [INSERT TICKET AND PUSH ENTER OR PUSH STOP]. Insert a second ticket and prepare to prove the system. When proving a truck meter, the truck compartment should be at least 70% full to avoid metering hot, foamy product and to ensure accurate proving. The meter should first be tested for accuracy without the intervening effect of temperature compensation.

GROSS VOLUME GALLONS (0.0) - This is the primary proving display.

CALIBRATION NUMBER (1 THRU 4) 1

On 24 product software this screen indicates which calibration number is to be proved.

PRODUCT CLASS - ENTER 1 TO CHANGE PRODUCT CLASS.

On 24 product, the product class is a label that is permanently tied to this calibration number and will print on all subsequent delivery tickets. Select one of the following: GASOLINE, DISTILLATE, AVIATION, METHANOL, AMMONIA, LPG. The label, UNIDENTIFIED, can be typed over to create product classes other than those listed.

SAMPLE INITIAL PROVER TICKET U.S. PROVER TICKET

Line #:		
1	DATE LAST PROVING	
2	02/28/94	10:33:22
3	INITIAL PROVER PRINT	5.
4	PRODUCT CODE	1.
5*	GROSS VOLUME GALLONS	23.000
6*	NET VOLUME GALLONS	22.973
7*	TEMP COEFFICIENT *F	.000450000
8*	BASE TEMP *F	60.0
9*	TEMP THIS DEL *F	62.6
10*	TEMP OFFSET-DEG *F	.4
11	UNIT ID NUMBER	123.
12	METER NUMBER	456.
13	TRUCK NUMBER	789.
14	MAX PRESET VOLUME	0.
15	FIRST STAGE CLOSURE	5.000
16	HIGH FLOW (UNITS/MIN)	150.000
17	LOW FLOW (UNITS/MIN)	10.000
18	VALVE OPENING DELAY	1.
19	VALVE CLOSING DELAY	10.
20	SOLENOID OPEN TIME	4.
21	SOLENOID CLOSE TIME	7.
22	DEAD BAND	2.
23	MAX FLOW RATE LAST PROVING	55.351
24	MAX PULSER REVERSALS	50.
25	METER FACTOR	1.0023
26*	PULSES/GALLON	1107.478260
27	NO FLOW TIMEOUT(.1 SEC)	200.
28	VALVE CLOSE TIME(.1 SEC)	1.

- DENSITY:**
- Is set up for refined products
 - API/ASTM/IP table 54B compensation
 - Density 653.0 to 1075.0 kg/m³

If a density initially entered in the prover mode is 730 gasoline, 800 aviation or 840 diesel it will take about 10 seconds to calculate the table. All other densities will initially take about 4 minutes and will display "wait" until the table is calculated. On 8 product software, the density entered will determine the product class that is subsequently printed on delivery tickets (ie. GASOLINE, AVIATION, DISTILLATE...)

Meter and valve related set-up parameters follow the DENSITY screen. See Mode 4 for definitions.

STANDARD CANADIAN TICKET

NOTE THE CHANGES TO THE FOLLOWING LINES:

LINE #:	LABEL:
5	GROSS VOLUME LITRES
6	NET VOLUME LITRES
7	DENSITY (730 GAS, 840 DIESEL, ETC.)
8	MEAN VCF (AT 15°C 1.0000) (below 15°C a number greater than 1.0000, above 15°C a number less than 1.0000)
9	BASE TEMP * C 15°C
10	TEMP OFFSET-DEG *C (this is the net calibration and shows difference in LC probe to Weights and Measures - This matches up the temperature probe to Weights and Measures.)
26	PULSE/LITRE: THIS IS THE GROSS CALIBRATION K-FACTOR

Calibration Mode (Prover Mode) con't.

To prove meter GROSS VOLUME throughput:

1. Scroll through the prover mode items using the \downarrow key. Enter a value for PULSES/UNIT VOLUME. Base this value on the type/make/model of the meter, pulser or both. NOTE: If using the optional LectroCount³ 2-stage control valve.
2. Scroll to TEMP COEF or DENSITY screen and enter 0 to defeat temperature compensator if desired.
3. Push **[START]** and deliver a known volume to a reliable, accurate prover.
4. Push **[STOP]**. The prompting display will indicate GROSS VOLUME that the meter measured.

NOTE: The prover reading is gross but you must also include the provers correction factor. This correction factor takes into account the prover volume change with product temperature. When proving at temperatures less than 15°C, the prover tank has shrunk and the correction factor is a negative volume such as -.25 litres. When proving at temperatures above 15°C, the prover tank has expanded and the correction factor is a positive or increased volume such as +.30 litres. The prover readings for Gross Volume plus its correction factor is entered into the Lap Pad's display of Gross Volume Litres. The computer automatically recalculates Pulse/Litre.

SPECIAL NOTE: The display meter factor in the prover is really just the % of change. When proving, NEVER use the display to try to calibrate, this has nothing to do with actual calibration. This reverts to 1.0000 whenever a 5% change in PPL is entered.

5. Enter the volume reading shown on the prover. Never enter zero. This adjusts the pulses/unit to correct for any inaccuracy.

NOTE: Make a minimum of two prover runs to stabilize system product temperature and wet the prover walls to obtain better accuracy.

With the meter itself proved, the next step is to adjust the temperature compensation if necessary. Net volume is calculated from gross volume by considering the effects of temperature variations on the product.

To prove meter NET VOLUME throughput:

1. Enter temperature coefficient for the fluid or the standard density. If the unit has DENSITY software the LectroCount³ then calculates a correction table. During these calculations the unit is disabled for about 5 minutes. If the unit has TEMP COEF software enter BASE TEMP (usually 60° F or 15°C).
2. Deliver enough product to the prover to stabilize the liquid system temperature.
3. Push **[START]** and deliver a known volume to a reliable, accurate prover.
4. Record the thermometer reading from the Weights & Measures calibrated thermometer used for that prover run.
5. Scroll down through the prover mode line labels to TEMP THIS DEL F (C) compare the Weights and Measures thermometer reading to the temperature shown on the prompting display. If there is a discrepancy scroll down to CALIBRATED PROBE TEMPERATURE. Any change in the CALIBRATED PROBE TEMP. will cause a change in TEMP OFFSET - DEG F (C), resulting in a change in the net volume delivered on the next prover run.

EXAMPLE: Using a 1,000 gallon gross quantity:

Base temperature = 60° F

Temperature coefficient = 0.00045000000

Temperature this delivery = 65° F

Gross volume gallons = 1,000 gallons

The volume correction factor (VCF) is calculated by taking the temperature deviation multiplied by the temperature coefficient and subtracting from 1.

$$\text{VCF} = 1 - (\text{Temp Dev} \times \text{Temp Coef})$$

$$\text{VCF} = 1 - (5 \times 0.00045) = 0.99775$$

Temperature deviation is calculated by subtracting the base temperature from the temperature this delivery.

$$\text{Temp Dev} = \text{Temp This Del} - \text{Base Temp}$$

Since the product temperature is higher than the base temperature, the amount of product delivered is slightly less than it would be at the base temperature. The net volume is the gross volume times the volume correction factor.

$$\text{Net volume} = \text{gross volume} \times \text{volume correction factor (VCF)}$$

$$\text{Net volume} = 1,000 \times 0.99775 = 997.75$$

To exit the prover mode make sure the Stop button has been depressed after the last run.

1. Turn the prover switch to the run position. A final prover ticket will be printed. See sample prover ticket below:

NOTE: For the calibration changes to be saved a final prover ticket must be printed. CAUTION: If power is lost for any reason while in prover mode, all calibration changes will be lost.

Calibration Mode (Prover Mode) con't.

DATE THIS PROVING	07/12/94	15:09:45
FINAL PROVER PRINT		6.
PRODUCT CODE		1.
GROSS VOLUME GALLONS		100.421
NET VOLUME GALLONS		100.223
TEMP COEFFICIENT *F		.000450000
BASE TEMP *F		60.0
TEMP THIS DEL *F		64.4
TEMP OFFSET-DEG *F		.3
UNIT ID NUMBER		123.
METER NUMBER		456.
TRUCK NUMBER		789.
MAX PRESET VOLUME		0.
FIRST STAGE CLOSURE		5.000
HIGH FLOW (UNITS/MIN)		150.000
LOW FLOW (UNITS/MIN)		10.000
VALVE OPENING DELAY		1.
VALVE CLOSING DELAY		10.
SOLENOID OPEN TIME		4.
SOLENOID CLOSE TIME		7.
DEAD BAND		2.
MAX FLOW RATE LAST PROVING		34.705
METER PULSER REVERSALS		50.
METER FACTOR		1.0079
PULSES/GALLON		1101.283018
NO FLOW TIMEOUT(.1 SEC)		200.
VALVE CLOSE TIME(.1 SEC)		1.

SAMPLE U.S. FINAL PROVER TICKET

(The Canadian Ticket will have the same changes as shown on Page 13.)

NOTE: On all multi-product programs, each product code must be selected and entered into prover. This must be done to calibrate each product. Then the switch nameplate can be mounted and sealed.

2. Replace the switch nameplate and four (4) fillister head screws.
3. Re-seal prover switch plate.

System Set-up Mode

This mode is used to configure options relating to product flow, date display, and ticket print options. It is accessible only from CALIBRATION MODE by entering 1 at the "ENTER 1 FOR SYSTEM SETUP MODE" prompt. To return to CALIBRATION MODE, push the key.

INVERT FLOW DIRECTION (1 = YES)

If the LectroCount® registers negative volume during a prover run, use this option to setup what LectroCount® considers "forward" flow. Enter a 1 to reverse the flow direction, or if there is a 1, enter 0 to obtain positive registration.

NOTE: On start-up of a system, if the Lap Pad display and Remote Electronic Counter are both counting down showing reverse flow (since the pulser is a dual channel and can sense direction of flow) you can enter system set-up mode which is part of the prover mode. By entering a 1 for reverse flow, the software will then allow the Lap Pad (primary display) and the Remote Electronic Counter (secondary display) to both count up. If you have dual meter system you will reverse the counting of both meters. If meter 2 is not counting down, then you will have to refer to the wiring diagram for the Remote Supervisory Control Box and follow Orange and Black wires from the pulser.

**NOTE 6: TB3-3 Orange Wire Was Black
TB3-4 Black Wire Was Orange**

ENABLE EUROPEAN DATE FORMAT

LectroCount® normally displays date as MM/DD/YY. Entering a 1 at this prompt changes the date to display as DD/MM/YY.

ENABLE VOLUME COMPENSATION LINE

Entering a 1 at this prompt causes the line "VOLUME CORRECTED TO 60° F (15° C) to print on the delivery ticket if the product is being volume temperature compensated. NOTE: Required by Weights & Measures to be printed on the delivery ticket (many customers pre-print this information on their tickets). Standard Canadian programs using blank tickets require this to be enabled.

ENABLE AVERAGE DELIVERY TEMP. LINE

Entering a 1 at this prompt causes the average temperature of the delivery to be printed on the delivery ticket if the product is being volume temperature compensated.

ENABLE ODOMETER LINES ON TICKETS

Entering a 1 at this prompt causes odometer information to be printed on delivery and miscellaneous transaction ticket if your system is equipped with an odometer.


ENABLE PRINT BEYOND BOTTOM SENSOR

The Epson TM290II and TM295 Printers have a bottom of ticket sensor 27.3 mm below the print head. If you have programmed a large number of blank lines on the top of ticket and are printing near the bottom of ticket, LectroCount® will stop printing if the ticket leaves the sensor area. It is recommended that you enable this feature or use tickets with sufficient space below the last print line to insure complete tickets. Enable this feature only as a temporary solution for tickets not designed for use with LectroCount®. NOTE: The top of ticket sensor is always programmed to detect whether or not a ticket is present.

Procedure for Uploading LectroCount³ Configuration to a RAM Card


This procedure can be used to copy the configuration programmed into an initialized LectroCount³ to an uninitialized LectroCount³ with similar software.

Warning: Use of this procedure will overwrite any scheduled accounts on the RAM card.

- | | |
|---|---|
| Step 1- From Mode 1, enter Mode 3 by pushing M#, 3, and ENTER. If Mode 3 is password protected, the display will respond “KEY?”, in which case the correct security key must be entered. | Step 4- Insert the RAM card into the RAM module. |
| Step 2- The display will read “**M-3 TOTALIZERS/KEYS**”. | Step 5- Push 1 and ENTER. The Lap Pad will briefly display “UPLOADING...”. |
| Step 3- Push the  key until the display reads “SAVE CPU RAM TO RAM CARD” | Step 6- Remove the RAM card. It now contains the information programmed into all LectroCount ³ modes. |

Procedure for Downloading LectroCount³ Set-up from a Portable RAM Card

This procedure can be used to quickly program (clone) a LectroCount³ by downloading the configuration information from a properly uploaded RAM card. This procedure does not alter any calibration data, customized labels in Mode 18, or system time.

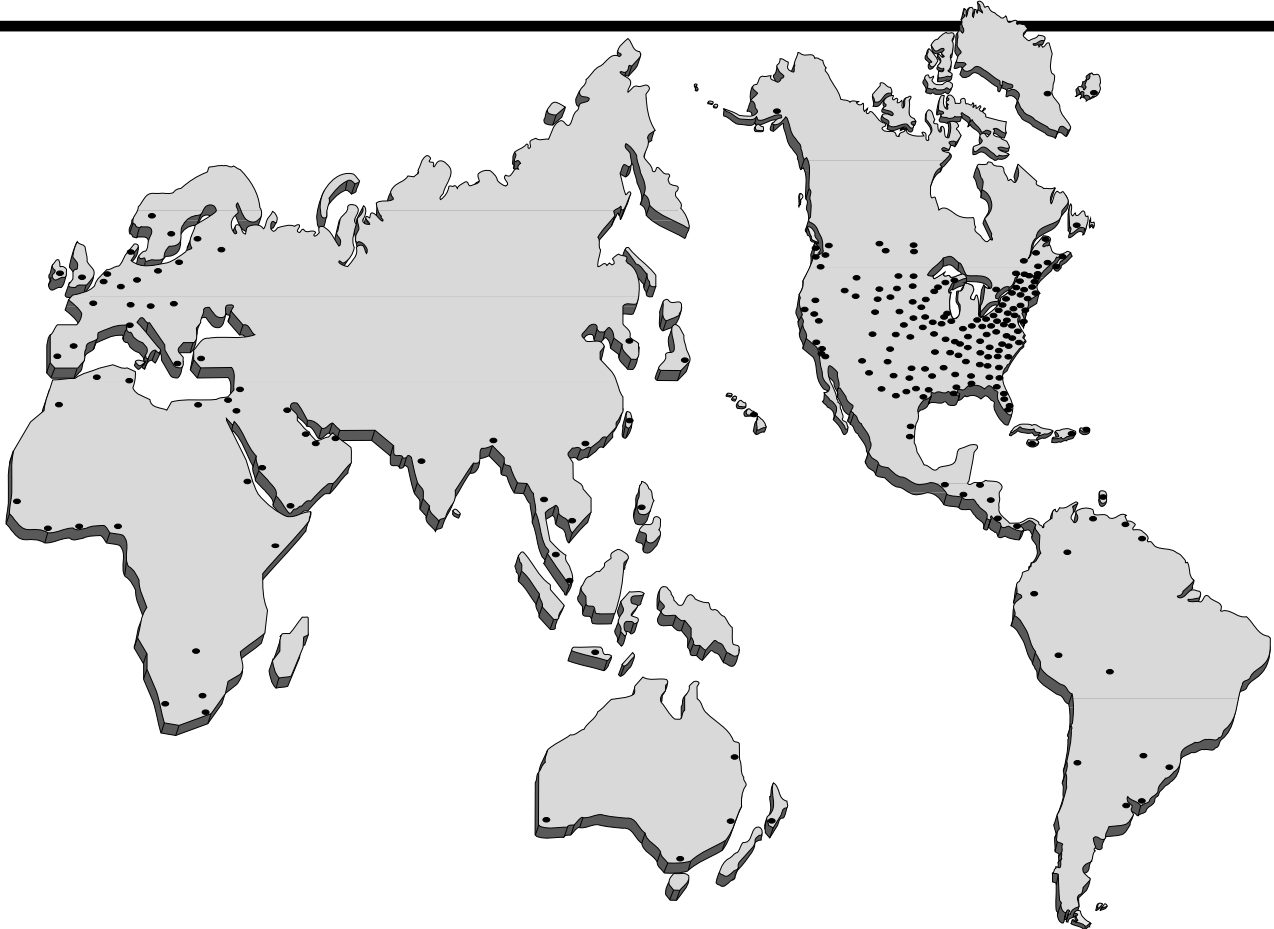
- | | |
|---|--|
| Step 1- From Mode 1, enter Mode 3 by pushing M#, 3, and ENTER. If Mode 3 is password protected, the display will respond “KEY?”, in which case the correct security key must be entered. | Step 5- Push 1 and ENTER. The Lap Pad will briefly display “DOWNLOADING...”. If the display reads “**PORTABLE RAM ERROR**”, no configuration was programmed into the LectroCount ³ because the RAM card was not properly uploaded (see above procedure). |
| Step 2- The display will read “**M-3 TOTALIZERS/KEYS**”. | Step 6- After a successful download, the unit will automatically reset and return to Mode 1. |
| Step 3- Push the  key until the display reads “RESTORE CPU RAM FROM RAM CARD” | Step 7- Remove the RAM card. The LectroCount ³ now contains the same information programmed as the LectroCount ³ used in the upload procedure. |
| Step 4- Insert a properly uploaded RAM card into the RAM module. | |

Procedure for Initializing a RAM Card Using LectroCount³

This procedure is used to clear all data on a portable RAM card and initialize it for doing unscheduled deliveries. The operation is normally done by the office computer; however, this procedure can be used if the office computer interface is not available.

- Step 1-** From the Mode 1 “NET VOLUME GALLONS” line, push the key.
- Step 2-** If the Lap Pad displays “INVALID RAM CARD STATUS-PUSH DOWN” on the first line, go to step 8.
- Step 3-** The RAM card status must be made invalid for delivery purposes. To accomplish this, enter Mode 3 by pushing M#, 3, and ENTER. If Mode 3 is password protected, the display will respond “KEY?”, in which case the correct security key must be entered.
- Step 4-** The display will read “**M-3 TOTALIZERS/KEYS**”.
- Step 5-** Push the key until the display reads “SAVE CPU RAM TO RAM CARD”.
- Step 6-** Push 1 and ENTER. The Lap Pad will briefly display “UPLOADING”.
- Step 7-** Push the M1 key and return to Mode 1. Then push the key. The Lap Pad should now display “INVALID RAM CARD STATUS-PUSH DOWN”.
- Step 8-** If the second line reads “OR PUSH CLEAR TO INITIALIZE CARD”, go to step 12.
- Step 9-** The LectroCount³ has not been programmed to allow clearing the RAM card. This feature must be enabled in Mode 5. To enter Mode 5, push M#, 5, and ENTER. If Mode 5 is password protected, the display will respond “KEY?”, in which case the correct security key must be entered.
- Step 10-** The display will read “**M5-ENABLES”. Push the key until the display reads “ENABLE RAM CARD DATA CLEAR”. Push 1 and ENTER.
- Step 11-** Push the M1 key followed by the key. The display will read “INVALID RAM CARD STATUS-PUSH DOWN, OR PUSH CLEAR TO INITIALIZE CARD”.
- Step 12-** Push the CLEAR key. The display will read “WARNING-ALL RAM CARD DATA WILL BE LOST!, PUSH CLEAR TO INT. OR DOWN TO EXIT”.
- Step 13-** Push CLEAR to initialize the RAM card, or the key to terminate the procedure.
- Step 14-** When the CLEAR key is pushed, the display will read “-----WAIT-----”. Clearing the card takes about 15 seconds for a 256K card, or over 2 minutes for a 2MB card.
- Step 15-** The LectroCount³ will return to the NET display in Mode 1. Enter Mode 10 by pushing M#, 10, and ENTER. The Lap Pad will briefly display “WAIT: VERIFY + COMPILE FAST SEARCH TABLE”.
- Step 16-** If the shift totalizers need to be zeroed, print end of shift tickets. Otherwise, return to Mode 1. The card is now ready for use with unscheduled deliveries.

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