



# ***Bennett 4000 Series***

## ***Remote and Self Contained Dispensers***

### ***with 819 and 619 Electronics***



## ***Operators Manual***

**126601 Revision C 10/11/16**

**Only Trained Personnel May Work on This Equipment**

**READ THIS MANUAL**

This manual has important information for safe installation and operation of this equipment. Read and understand this manual before applying power. Keep this manual and tell all service personnel to read this manual. If you do not follow the instructions, you can cause bodily injury, death, or damage to the equipment.



The material included in this installation manual is accurate at the date of publication. The intent of this manual is to assist. If further assistance is required, please contact the Bennett Technical Service Department at 1-800-423-6638.

Bennett Marketing Services can be contacted by mail, facsimile, telephone or e-mail at the locations specified below:

Bennett Pump Company  
Marketing Services  
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Spring Lake, MI 49456

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Website: [www.bennettpump.com](http://www.bennettpump.com)

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#### IMPORTANT

**Examine the shipment immediately upon arrival to make certain there has been no damage or loss in transit. Bennett Pump Company, as shipper, is not liable for the hazards of transportation. Please make damage claims directly to the truck line.**

**NOTICE: This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interface, and (2) this device must accept interference received, including interference that may cause undesired operation.**

**Not all equipment covered in this manual is listed by Underwriters Laboratories.**

#### Revision History:

Revision	Date	Description
A		Original Document
B	9/2/16	Added Mode 77
C	10/11/16	Added Mode 35

## Bennett International Limited Warranty for Dispensers and Pumps

Bennett Pump Company guarantees new Service Station Equipment manufactured by Bennett against defects in material or workmanship during the warranty period in accordance with the provisions stated below:

- The Site Audit Report issued with all equipment must be completed and returned at time of installation to Bennett Pump Company, Spring Lake, MI to initiate warranty.
- Warranty service must be performed by the nearest Bennett Authorized Service Representative qualified to perform service on the defective equipment. Only Authorized and Certified Service Representatives are allowed to perform warranty service. Use of service personnel other than qualified Bennett Service Representatives without prior approval by Bennett Pump Company will void payment of any warranty claims.
- Labor and travel costs incurred while servicing Bennett equipment is not covered under this limited warranty.
- Bennett equipment has been installed according to the manufacturer's instructions and diagrams.
- During the warranty period, Bennett Pump Company will, at its option, repair or replace defective parts returned to its factory, transportation charges prepaid.
- The manufacturer reserves the right to make changes in the design or to make additions

### Dispensers (Remote and Self-contained styles) (excluding Natural Gas, Hydrogen and Hydraulic-less Dispensers)

The Warranty will cover repair or replacement, at Bennett's option, of the parts only that are deemed to be defective in material or workmanship at Bennett's discretion, for a period of 12 months from date of installation or 18 months from date of Bennett's original invoice, whichever comes first.

Warranty excludes nozzles, hoses and fittings, hose retractor, filters, belt adjustments, paper jams, light bulbs, or any leaks after the installation start-up and audit. Minor adjustments such as meter calibration, pulser adjustments, and handle switch adjustments, customer specified items manufactured by others, and customer requested reprogramming of equipment are not covered by warranty.

### Field Retrofit Card Readers, Payment Modules, Cash Acceptors, and all other field retrofit Accessories

The field retrofit assembly is warranted for parts only for 12 months from date of installation or 18 months from date of original invoice, whichever comes first, except the receipt printer and driver board which is warranted for parts for ninety (90) days from the date of installation or 180 days from original invoice, whichever comes first.

**Consumable Items** such as receipt paper are not warranted. The use of receipt paper not specified by Bennett will void the printer assembly warranty.

### Model 515 Pump Controller, 621 Module, Fan Out Boxes

Warranty on parts only is 12 months from the date of installation or 18 months from the date of original invoice, whichever comes first.

### Software

Bennett Pump Company warrants Bennett products and software packages, whose operation is controlled by Bennett designed and developed software, shall be free of material defects and conform to current Bennett specifications for a period of ninety (90) days from the date of original invoice. Bennett shall use its best effort to correct such defects and to supply to purchaser at Bennett's expense, a corrected version within a reasonable time after purchaser notifies Bennett in writing of any defects and provides the programs and instructions required to reproduce the claimed defect.

Warranty does not cover any modification to the program, the Bennett product, and/or connection to unapproved equipment made by any person or any defect caused by such modifications/connections.

### Upgrade Kits

Bennett offers kits which are installed as an option to enhance operating features of an existing Bennett product are warranted for parts only for ninety (90) days from date of installation or 12 months from date of original invoice, whichever comes first. Upgrade Kit warranty applies to kit components only. Warranty status of the remainder of the product remains unchanged.

### Spare Parts

For equipment under warranty: The warranty period for all spare parts replaced is the remainder of the original warranty. Spare Parts are warranted for the value of the parts only (no labor, mileage, or other charges).

For equipment not under warranty: The warranty period is 90 days from the date of invoice to the end user, or 12 months from the date of original invoice, whichever comes first. Spare Parts are warranted for the value of the parts only (no labor, mileage, or other charges).

### General Exclusions

1. Warranty does not apply to any product which has been altered, subjected to unusual physical or electrical stress, an Act of God, damaged by accident, tampered with, or subjected to misuse or abuse including substituting parts or accessories from other manufacturers without the written consent of Bennett Pump Company. The above warranties shall not exist if the original identification marks have been removed or altered.
2. Bennett makes no warranty with respect to the Bennett equipment or Bennett's performance of services under this agreement, express or implied, and Bennett hereby disclaims the implied warranties of merchantability and fitness for a particular purpose.
3. In no event shall Bennett be liable for any loss of profits, loss of use, interruption of business or indirect, special, incidental or consequential damages of any kind in connection with or arising out of the furnishing, performance, use or failure of the Bennett equipment, software or services acquired from Bennett, the distributor or the user, whether alleged as a breach of contract or tortious conduct, including negligence. Bennett's liability hereunder for damages shall not, in any event, exceed the amounts paid by the buyer to Bennett for equipment, software or services as to which the claim arose.
4. No action arising out of any claimed breach of the Warranty Agreement or transaction under this Warranty Agreement may be brought by either party more than two (2) years after the cause of action has accrued.
5. Use of non-Bennett replacement parts, unless specified by Bennett, will void the equipment warranty.
6. This warranty only applies to Bennett equipment installed outside the United States of America and is non-transferable.
7. Failure to pay the Bennett invoice within stated invoice terms, covering the respective Bennett equipment purchased under this limited warranty may, at Bennett's discretion, void this limited product warranty.

THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING, WITHOUT LIMITATION, THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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PCI SSC's approval only applies to PEDs that are identical to the PED tested by a PCI Security Standards Council recognized laboratory. If any aspect of the PED is different from that which was tested by the laboratory - even if the PED conforms to the basic product description contained the letter, then the PED model should not be considered approved, nor promoted as approved. For example, if a PED contains firmware, software, or physical construction that has the same name or model number as those tested by the laboratory, but in fact are not identical to those PED samples tested by the laboratory, then the PED should not be considered or promoted as approved.

No vendor or other third party may refer to a PED as "PCI Approved" nor otherwise state or imply that PCI SSC has, in whole or part, approved any aspect of a vendor or its PEDs, except to the extent and subject to the terms and restrictions expressly set forth in a written agreement with PCI SSC, or in an approval letter. All other references to PCI SSC's approval are strictly and actively prohibited by PCI SSC.

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## Safety Instructions

For safe installation of this equipment, read and understand all dangers, warnings, and cautionary information. Save this safety information in a readily accessible location. Look for the following warnings throughout the manual:



Red and White “**DANGER**” means: If you do not follow the instructions, severe injury or death will occur.



Orange and Black “**WARNING**” means: If you do not follow the instructions, severe injury or death can occur.



Yellow and Black “**CAUTION**” means: If you do not follow the instructions, damage can occur to the dispenser.

### DANGER

### PELIGRO

### DANGER



- **FIRE, EXPLOSION, INJURY, OR DEATH WILL OCCUR IF FUEL FILTERS ARE CHANGED BY UNTRAINED PERSONNEL. MAKE SURE, ONLY TRAINED PERSONNEL CHANGE FILTERS.**
- **TO PREVENT INJURY TO YOU FROM VEHICLES AND ONLOOKERS, ALWAYS PLACE A BARRIER AROUND THIS EQUIPMENT BEFORE PERFORMING SERVICE OR MAINTENANCE.**
- **GASOLINE IS FLAMMABLE. NO SMOKING OR OPEN FLAME.**
- **DISCONNECT ALL POWER, RELIEVE PRESSURE TO THIS EQUIPMENT, AND ASSOCIATED COMPRESSOR DURING INSTALLATION, SERVICE, OR ANY MAINTENANCE I.E., CHANGING FILTERS.**

### WARNING

### ADVERTENCIA

### MISE EN GARDE



- You must have training in the installation, service, or maintenance of this equipment (dispenser, pump, console, control box, or submerged pump) before working on it. Maintenance repairs must be done by authorized personnel only. Warranty work may only be performed by Bennett Certified Technicians.
- To prevent electric shock, keep the electrical parts of the dispenser dry.
- Electronic components are static sensitive. Use proper static precautions (e.g. static straps) before working on the equipment.
- The emergency shut-off valve (also called the fire valve, shear valve, or impact valve) must be closed when service or maintenance is performed on this equipment.
- You must have training in the operation and programming of this dispenser before using it. **READ THE OPERATORS MANUAL.**
- Make sure this equipment is correctly grounded. Failure to do will cause injury or damage equipment or improper operation. Improper grounding voids the warranty.
- When anchoring the dispenser, always level the dispenser with shims before bolting to the island. **DO NOT** shim the middle of base rails to bolt down the dispenser.
- If the breakaway is not provided then one must be installed that will disengage at 150lbs.

### CAUTION

### PRECAUCIÓN

### MISE EN GARDE



- Do not drill holes in fuel dispensers. Holes can cause failure of the electronic equipment. **THE WARRANTY WILL BECOME VOID.** Use only adhesive backed sign mounting brackets.

**!! READ AND UNDERSTAND ALL WARNING LABELS ATTACHED TO THE DISPENSER !!**

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# Introduction

This manual contains the operation instructions used for the 4000 Series Dispenser. Included are descriptions of various control devices, how to operate the dispenser, programming, troubleshooting, and maintenance information. Please refer to any original equipment manufacturer’s operating instructions for proper operation.

## Related Documents

- Bennett 515 Pump Controller Installation & Service Manual ----- Part # 105022
- Bennett 4000 Series Installation Manual ----- Part # 126869

## Features and Capabilities

All 4K dispensers can be operated in the stand-alone mode meaning no control console or with a control console system such as the 515 in conjunction with a third party Point of Sale (POS) system.

1. A self-monitoring pulser will prevent product flow in the event of a malfunction.
2. A diagnostic software system is built-in to aid in troubleshooting.
3. A Manager’s access code prevents unauthorized changes.
4. 5” Money and Volume LCD displays and .4” PPV LCD displays that are lit from the back with high efficiency, low power LED’s for easier viewing.
5. An allocation limit can be set from 1 to 999 gallons or 9,999 liters at the dispenser.
6. Maximum display values for Menu Code 8, option 0 are shown in the table below. Refer to [Menu Code 8 How to Change the Decimal Point Locations](#) for more information.

	<b>Each Sale</b>	<b>Totals</b>
<b>Dollars</b>	9999.99	9,999,999.99
<b>Gallons</b>	999.999	9,999,999.999
<b>Liters</b>	9999.99	99,999,999.99
<b>Price Per Volume</b>	99.999	

7. A Magnetic Reed Switch is provided for recalling display information during a power failure. Refer to the [Control Devices](#) section for more information.
8. Two battery back-up systems are provided:
  - A +12 volt DC sealed lead acid battery works in conjunction with the totals display recall switch to display the last sale data or pump totals when AC power is interrupted. The battery will allow the displays to be viewed in 30-second intervals for a total of up to 20 minutes.
  - A +3.6 volt DC NiMH (Nickel Metal Hydride) battery is used by the MCU (Microcontroller Unit) to save data to the EEPROM (Electrically Erasable Programmable Read-Only Memory) before disconnecting both batteries. The EEPROM has a data retention life of 200 years.
9. All units have conformal coated electronic boards to help protect them from moisture or foreign material damage. All major electronic board assemblies are environmentally tested and temperature cycled.
10. All major low voltage connectors incorporate gold on gold contacts to prevent oxidation and promote reliability.
11. The dispenser meets or exceeds FCC Emission Standards and UL specifications.
12. Dispenser programming is performed from the Manager’s Keypad or the Local Preset Keypad. The Manager’s keypad is located inside the electronics head behind the side 1 electronics door

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# Control Devices

## Manager's Keypad

The Manager's Keypad as shown in *Figure A.1* allows the dispenser to be programmed. When the keypad is plugged into the dispenser receptacle, the dispenser automatically enters Managers Mode, which contains programmable Menu Codes. This mode allows access to the dispenser totals, pricing information, diagnostic information, and programming. The manager keypad is located in the electronics head behind the side 1 electronics door.

See the *How to Operate* section for instructions on how to connect the Manager's Keypad and how to use the keypad to view totals. See the *Diagnostics* section for instructions on how to use the keypad to read error codes.



Figure A.1 - Managers Keypad

## Power Switch



**WARNING:** To prevent electric shock, make sure the current is off at the circuit breaker(s) and the breaker is locked out before doing any repairs or maintenance to the dispenser.

**Note:** When the power switch is turned off, the displays in the dispenser remain illuminated for 30 seconds with power from the 12-volt battery. To turn off the battery power press the battery disconnect switch as seen in *Figure A.2*.

The power switch is located on the power supply board, which is accessed on side 1 of the dispenser, behind the electronic door. When the switch is in the off position, main power is removed from the electronic circuit boards. Service can be performed only on the circuit boards with the switch in the off position and the battery disconnected. To totally disconnect power from the dispenser remove the terminal strips from the dispenser or turn off the main breakers.



Figure A.2 - Switches

## Error Messages

When an error message appears, there is a fault condition in the dispenser as shown in *Figure A.3*. Use the dispenser diagnostics to determine the problem. Refer to the *Diagnostics* section for more information. **Note:** The dispenser can be reset by turning any pump handle on and off.



Figure A.3 - Error Messages

## AC OFF Message

The **AC OFF** message occurs whenever the power has been interrupted or turned off to the dispenser as shown in *Figure A.4*. If the power is turned off and the **AC OFF** message does not appear, the charge is low on the 12-volt battery. Recharge or replace the battery. Failure to replace the battery could result in loss of dispenser electronic totals and stand-alone operating data.



Figure A.4 - Power Failure

## Control Devices

### Total Switch

The totals switch is a magnetic reed switch. The switch is located directly behind the volume display on the main display area as shown in *Figure A.6*.

To enter the Totals Mode, follow this procedure:

1. Hold the black Access Magnet as shown in *Figure A.5* over the left side of the volume display. Refer *Figure A.6* for location. After a few seconds, **Prev Sale** will be displayed on the Price Per Volume (PPV) display.
2. Remove the magnet. This displays the transaction (previous sale) that occurred prior to the transaction that appears on the display while idle
3. To view the totals tap the magnet over the Totals Reed Switch until *Figure A.6* is displayed on the PPV display. When the first money totals appear, remove the magnet. The PPV display indicates the first money total for product 1.
4. Tap the magnet over the Totals Reed Switch to view all totals from Mode 1 Hose Totals, Mode 2 Totalizer Totals, and Mode 26 Shift Totals.

To obtain Audit Trail information, follow this procedure:

1. Place the magnet over the left side of the volume display.
2. Hold the magnet over the Totals Reed Switch for a longer period of time after the Totals Mode is displayed.
3. Once the data scrolls past the Totals Mode the Audit Trail information will appear.
  - a. E-Cal changes for Side 1 meters.
  - b. E-Cal changes for Side 2 meters.
  - c. Blend Ratio Changes.
  - d. Volume Unit Changes (gallons to liters to imperial gallons).
  - e. Volume resolution changes (0.001 or 0.01).



Figure A.5 - Access Magnet

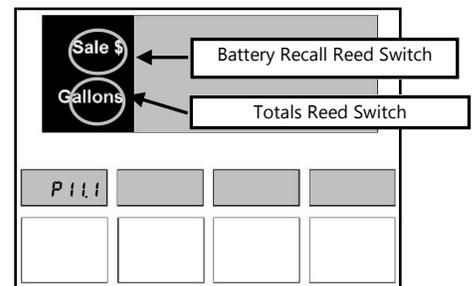


Figure A.6 - Reed Switches

### Recall Switch

The Recall Switch is similar to the Totals Switch except it is placed to the left side of the **SALE \$** print. If power to the dispenser is interrupted, the money and volume totals can be accessed, as well as the current sale information.

**Note:** If a pump handle is turned on during this operation, the display returns to idle.

1. Hold the black Access Magnet over the left side of the **SALE \$** print for approximately 2 seconds as shown in *Figure A.6* and the last sale in progress will display for 30 seconds. Holding the magnet over the left side of the **MONEY DISPLAY** continuously will bring up the last sale information every 60 seconds.

## Control Devices

### Door Key Locks

The Key Locks for the upper door are located on the left side of the door as shown in *Figure A.7*. The Key Locks for the lower door of the 4000 Series are located on the top of the door.

1. To lock the upper door, insert the key in one of the locks and turn clockwise until it stops.
2. Repeat this step for the lower lock on the electronic door.
3. To lock the lower door, turn the key clockwise until it stops in one of the locks.
4. Repeat this step for the other lock.
5. To unlock either door, turn the key counterclockwise until it stops.

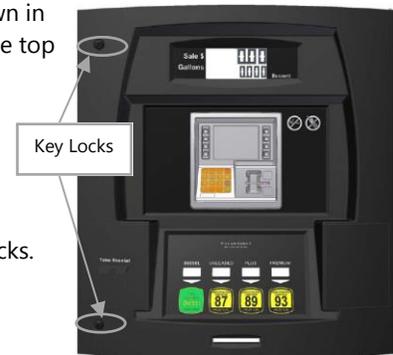


Figure A.7 - Door Locks

### Electro-Mechanical Totalizers

The electro-mechanical totalizers are located below the product select buttons on each side of the dispenser as shown in *Figure A.8*. The total is cumulative and reads in whole unit in gallon or liter increments.



Figure A.8 - Totalizers

### Pump Handle

The pump handles are located on the front of the dispenser. Refer to *Figure A.9*.

To operate the dispenser, follow this procedure:

1. Remove the nozzle from the holder and lift the pump handle up for the on position.
2. Push the pump handle down for the off position. These are referred to as lift to start nozzle boots.



Figure A.9 - Pump Handle

### Local Preset Option

The 4000 Series dispenser can be ordered with the Local Preset Option that allows the customer or operator the ability to select volume or currency and preset the amount of fuel to be purchased as shown in *Figure A.10*. When the preselected amount (volume or currency) is reached, the dispenser will automatically stop. A fill up feature is also present.

See the [How to Operate](#) section for instructions on how to use the keypad to view totals. See the [How to use the Local Preset Keypad for Programming](#) section for instructions on how to use the keypad and the [Error Codes](#) section to read error codes.



Figure A.10 - Local Preset

## Control Devices

### SSP (Simply Secure Payment) Option

**Note:** The Local Preset option and the SSP option are mutually exclusive. A dispenser may have either option, but cannot have both.

The SSP option allows the customer to pay for fuel with a credit card or debit card and receive a receipt. The dispenser is connected to a financial network through a POS system to allow approval of the cards at the time they are inserted into the dispenser. Refer to *Figure A.11*.



Figure A.11 – Card Reader

## How to Operate the Dispenser

The explanations given in the menus listed in this section are intended for use by the operator, manager, or service technician.

### How to Dispense Fuel

**Note:** If the dispenser stops during the delivery of fuel, check the display for an error code. If one is present, refer [Diagnostics](#) section.

**Note:** Be sure the pump is authorized by the console or is in stand-alone mode.

To dispense fuel, follow this procedure:

1. Remove the nozzle from the holder.
2. Lift the handle to the on position
3. Wait for the displays to go to all 8's and then all 0's.
4. Squeeze the nozzle trigger to dispense fuel into the vehicle or approved container.
5. Release the nozzle trigger when the desired amount of fuel has been dispensed.
6. Lower the handle to the off position.
7. Put the nozzle in the holder.



Figure B.1 - Lift Lever

### How to Dispense Fuel with the Local Preset Option

**Note:** If the dispenser stops during the delivery of fuel, check the display for an error code. If an error code is present, refer to the [Diagnostics](#) section.

**Note:** Be sure the pump is authorized by the console or is in stand-alone mode.

**Note:** If an error is discovered at this point, the preset amount can be changed before the flow of fuel. The preset amount cannot be changed once flow begins.

To dispense fuel, follow this procedure:

1. Press the **Money** button to change to money preset or the **Volume** button to change to volume preset as shown in [Figure B.2](#).
2. Using the zero through nine buttons on the preset keypad, enter an amount. If an error is made, press the **Cancel** button and start over.
3. Remove the nozzle from the holder.
4. Lift the handle to the on position.
5. Squeeze the nozzle trigger to dispense fuel into the vehicle or approved container.
6. Release the nozzle trigger when the dispenser stops the flow of fuel.
7. Lower the handle to the off position.
8. Put the nozzle in the holder.

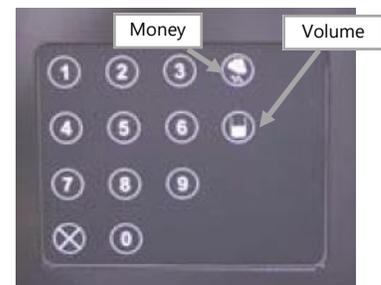


Figure B.2 – Preset Keypad

# How to Operate the Dispenser

## How to Read the Electro-Mechanical Totalizer

**Note:** Because of rounding methods used and the nature of electronic totals versus an analog device such as an electro-mechanical totalizer. Electronic totals and electro-mechanical totals will rarely match exactly.

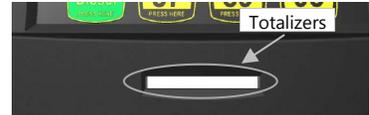


Figure B.3 - Totalizers

The dispenser is equipped with an electro-mechanical totalizer for each hose that records the volume dispensed for each sale. The volume recorded is an accumulative total that cannot be reset. The electro-mechanical totalizers are located below the product select buttons on each side of the dispenser. The total is cumulative and reads in whole unit in gallon or liter increments.

## Connecting a Manager's Keypad for Dispenser Programming

**Note:** The keypad must be plugged into Side 1 of the Dispenser. Plugging the keypad into Side 2 will not gain access to Menu Code.

**Note:** All nozzles must be hung up in their boots prior to programming. If any nozzle from either side of the dispenser is lifted, access to Menu Code will be restricted.

Programming is done from the manager's keypad located inside the electronics compartment behind the side 1 electronics door.

To enable the dispenser for programming, follow this procedure:

1. Remove the keyboard from the plastic bag located on the inside of the lower door.
2. Locate the keyboard receptacle located on the Product Select Backlight Auxiliary Display Board (J4), which is located on the backside of side 1 electronic door as shown in Figure C.1.
3. Plug the manager's keyboard into the receptacle observing the plug polarity.
4. When the Manager's Keypad is properly connected. The dispenser will automatically enter the managers programming mode. The dispenser's display will read **Enter side 1**. The dispenser's side 2 will read **OFFLINE**.

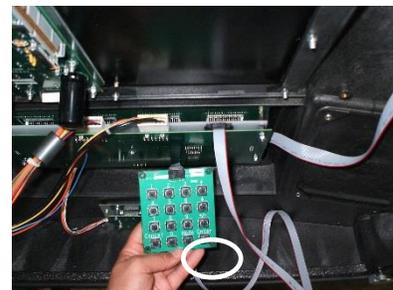


Figure C.1 - Keypad Receptacle

**Note:** The display will not show **OFFLINE** if the dispenser is not communicating to the POS.

5. Press the **Enter** button to enter Manager's Mode. The display appears as shown in Figure C.2. Programming can now be started and each menu code can be programmed individually.
6. Buttons **1** through **9** on the manager's keypad shown in Figure C.3 are used to select the desired menu code option. Press the **Mode** button on the keypad to enter the code. **Note:** Refer to the [Programming](#) section for more information.
7. When the programming session is complete. Remove the keypad from the receptacle and restore the keypad to its holder for future programming sessions. When the Manager's Keypad is removed from the receptacle, the dispenser will automatically enter the operating mode.

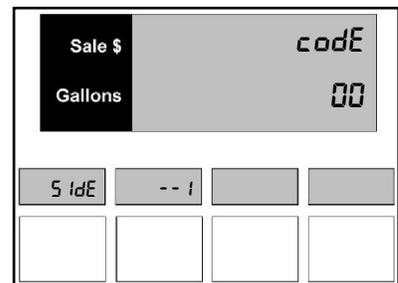


Figure C.2 – Manager's Mode

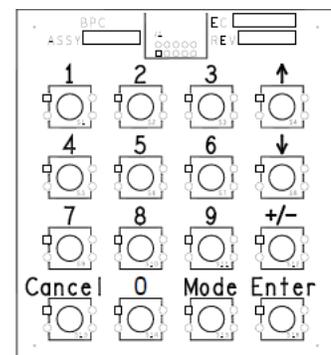


Figure C.3 – Manager's Keypad

# How to Operate the Dispenser

## How to Use the Local Preset Keypad for Dispenser Programming

**Note:** All nozzles must be hung up in their boots prior to programming. If any nozzle from either side of the dispenser is lifted, access to Menu Code will be restricted.

**Note:** The Local Preset Keypad does not have the **Mode**, **Enter**, and **+/-** buttons shown on the overlay. The **Mode**, **Enter**, and **+/-** buttons are available for your use however they are hidden and can be felt through the overlay. The **Mode** button is located to the right of the **0** button and below the **9** button. The **Enter** button is located to the right of the **Mode** button and two spots down from the **Volume Preset** button. The **Money Preset** button is used as the Up Arrow (↑) and the **Volume Preset** button is used as the Down Arrow (↓). Refer to *Figure C.4* for button locations.

The Local Preset keypad takes the place of the Manager Keypad and is used to program the dispenser. The programming of the dispenser remains the same as any other dispenser. There are no extra modes to program for the Local Preset option.

1. Once you are in the Manager Mode, you can program the dispenser. The display appears as shown in *Figure C.2*. Programming can now be started and each menu code can be programmed individually.
2. Buttons **1** through **9** on the local preset keypad shown in *Figure C.4* are used to select the desired menu code option. Press the hidden **Mode** button on the keypad to enter the code. **Note:** Refer to the [Programming](#) section for more information.
3. To exit the Manager Mode, press and hold the **Cancel** and **Enter** buttons together until the display returns to the normal sales display.

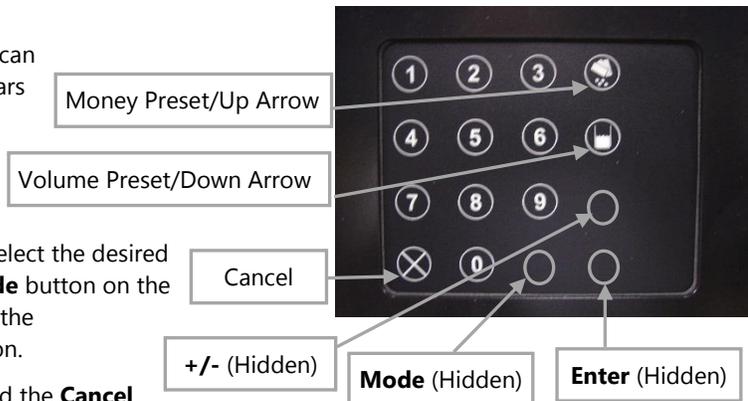


Figure C.4 – Local Preset Keypad

# How to Operate the Dispenser

## Menu Code 1 – How to Read Electronic Totals

Menu Code 1 allows the manager to read the electronic non-resettable hose totals that accumulate in the dispenser for money, volume, number of sales, and number of price changes.

**Note:** For instructions on operator / attendant access to electronic totals, see [How to Read Electronic Totals with the Magnetic Reed Switch](#) on the following page.

To read the money totals on the dispenser, follow this procedure:

1. Press the number **1** button and then the **Mode** button on the Manager's or Local Preset Keypad. The main display shows the total money amount. For example, if the total money amount for the dispenser is \$1,234,567.89 as shown in *Figure 1.1*. The PPV display reads **P1 1.1** for Product 1, Money Total, and Menu Code 1.
2. To read the money totals for Hose 2 and the remaining hoses, press the **Enter** button or the number button for the hose (1, 2, 3, 4). The PPV display reads **P2 1.1** for Product 2, Money Total, and Menu Code 1 as shown in *Figure 1.2*.

To read the volume totals on the dispenser, follow this procedure:

1. Press the ↓ button as shown in *Figure 1.3* or as shown in *Figure 2.4*. The money and volume displays indicates Hose A volume totals as shown in *Figure 1.4*. The main display shows the total volume amount. For example, see *Figure 1.4* if the total volume amount for the dispenser is 234,567.890 gallons/liters. These totals are accumulative and cannot be changed. The dispenser can carry the volume amount to three decimal places for gallons and two decimal places for liters.
2. Press the **Enter** button or the number button for the hose on the keypad to view remaining hose positions.

**Note:** To return to the money totals, press the ↑ button on the keypad. Press the ↓ button to return to the volume totals.

To read the total number of sales and total number of price changes, follow this procedure:

1. Press the +/- button as shown in *Figure 1.3* or as shown in *Figure 2.4*. The main display indicates Product 1 counter totals as shown in *Figure 1.5* located on the next page. The top line of the display shows the number of sales for Product 1. The sales counter is incremented each time a sale is ran on that nozzle. The bottom line of the display shows the number of price changes for Product 1. The price change counter is incremented each time a price is changed for that nozzle.
2. To read the counter totals for the remaining hoses, press the **Enter** button or the number buttons (1, 2, 3, 4).
3. Press the **Cancel** button to exit this menu.

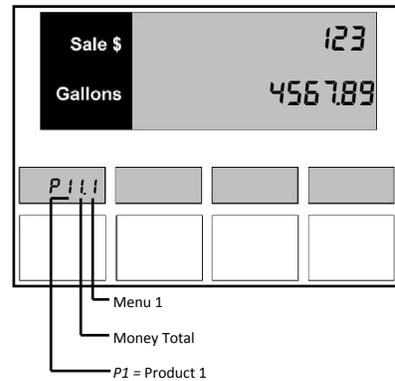


Figure 1.1 – Total Amount

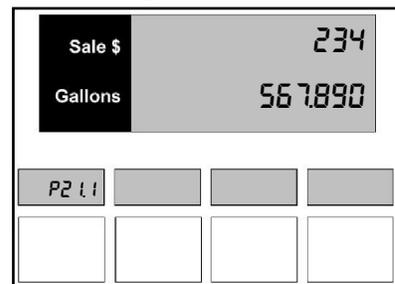


Figure 1.2 – Hose Totals

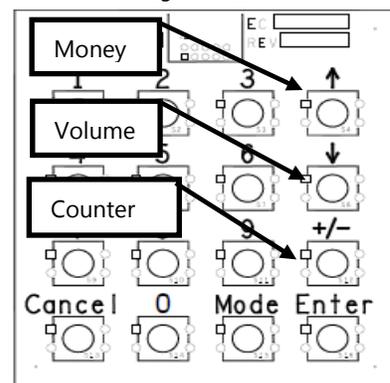


Figure 1.3 – Manager's Keypad

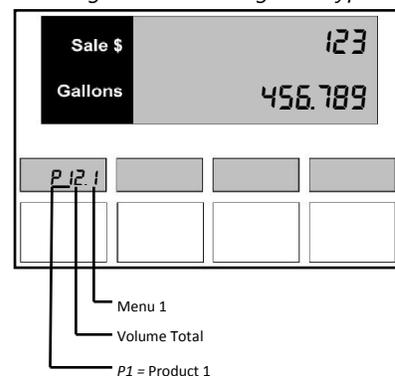


Figure 1.4 – Volume Totals

# How to Operate the Dispenser

## How to Read Electronic Totals with the Magnetic Reed Switch

The operator and/or attendant can use this method to read daily or weekly electronic totals without opening the electronic head of the dispenser.

To read the Menu Code 1 totals with the Magnetic Reed Switch, follow this procedure:

1. To enter the totals mode, hold the black Access Magnet over the left side of the volume display print beside the main display. When **Prev Sale** displays on the PPV display then remove the magnet. Next, tap the magnet over the Reed Switch again and **P11.1** will be displayed in the PPV display to indicate the first Money Total for Product 1 as shown in *Figure 1.1* located on the previous page.

**Note:** If the magnet does not get tapped over the left side of the volume display print for 30 seconds, the display returns to the idle screen and the sequence must be started over.

2. Tap the magnet over the left side of the volume display print again to read the Volume Totals for Product 1. **P12.1** is displayed in the PPV display to indicate the first Volume Total for Product 1 as shown in *Figure 1.4* located on the previous page.

3. Tap the magnet over the left side of the volume display print again to read the Counters Totals, which is the Number of Sales and Number of Price Changes for Product 1. **P13.1** is displayed in the PPV display to indicate the first Counter Totals for Product 1 as shown in *Figure 1.5*.

**Note:** If Electronic Totalizer Totals (Menu Code 5) are being read or the Shift Totals (Menu Code 26), continue to Step 4. If not, wait 30 seconds for the displays to return to idle mode or lift a pump handle to the ON position to return to idle mode.

4. Tap the magnet over the left side of the volume display print again and the Money Totals for Product 2 appear as shown in *Figure 1.1* located on the previous page. Repeat steps 2 and 3 for the Product 2 totals and the remaining hoses on this side of the dispenser.

5. If all Menu Code 1 totals have been displayed, tap the magnet over the left side of the volume display print again to view the Menu Code 5 (Electronic Totalizer Totals) for Product 1 as shown in *Figure 1.6*.

By successively tapping the magnet over the left side of the volume display, print the dispenser moves through the Electronic Totalizer Totals for each hose.

6. If all Menu Code 5 totals have been displayed, tap the magnet over the left side of the volume display print again to view Menu Code 26 (Shift Totals) for Product 1 as shown in *Figure 1.7*.

**Note:** These menu codes can be matched up in Menu Code 5 for the Electro-Mechanical Totals.

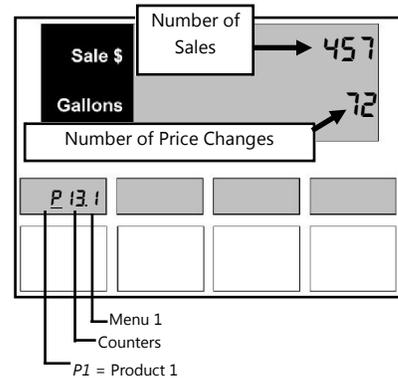


Figure 1.5 – Counters Totals

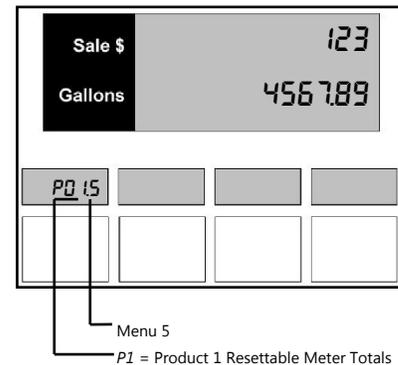


Figure 1.6 – Electronic Totalizer Totals

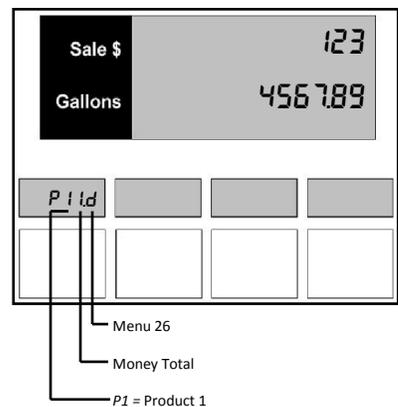


Figure 1.7 – Shift Totals

# How to Operate the Dispenser

## Menu Code 2- How to Read Electronic Totalizer Totals

Menu Code 2 allows the operator and/or manager read the Electronic Totalizer Totals. If the operator or manager did not enter a different value in Menu Code 5, this total should be the same as the dispenser electronic totals.

To read the Electronic Totalizer Totals, follow this procedure:

1. Press the **2** button and then the **Mode** button on the keypad.
  - a. The main display shows the electro-mechanical total as shown in *Figure 2.1*.
  - b. The total number is carried to three decimal places.
  - c. The PPV display reads **P1.2** for Product 1 Electro-Mechanical Totalizer, Menu Code 2.
2. To read the totals for the remaining electronic totalizers, press the **ENTER** button.
3. Press the **Enter** button to see the Electronic Totalizer Total for Product 2.
4. Pressing the **Enter** button again displays the Electronic Totalizer Total for Product 3.

**Note:** See [How to Read Electronic Totals with a Magnetic Reed Switch](#) for instructions on reading Menu Code 2 totals.

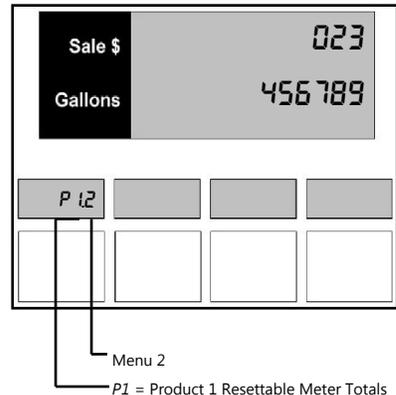


Figure 2.1 – Electro-Mechanical Total

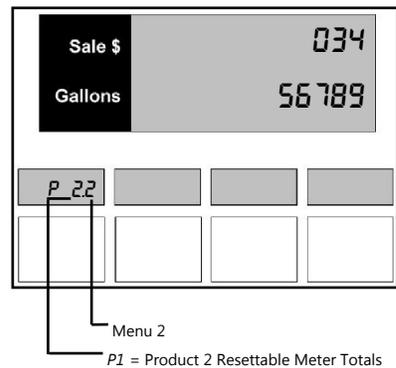


Figure 2.2 – Product 2 Electro-Mechanical Total

## How to Select the Dispenser Type for Programming

Programming is done from the Manager’s Keypad located inside the electronics compartment behind the side 1 electronics door or by using the Local Preset Option. The Manager’s Keypad and Local Preset Keypad allows the programmer to select the dispenser type. **Note:** Make sure the dispenser type is programmed before testing any dispenser operations. Failure to do so may lead to difficulty getting the dispenser to operate properly.

To select the Dispenser Type for Programming using the Manager’s Keypad, follow this procedure:

1. Using the keypad seen in *Figure 2.3*. Press the **+/-** button five times to cycle through the dispenser types.
  - **PAC4** for Pacific 4 products.
  - **PAC5** for Pacific 5 products.
  - **HRN4** for Horizon2 4 products.
2. Stop at the desired dispenser type and press the **Enter** button.
3. If the wrong selection is made after pressing **Enter**. Press the **Cancel** button to select a different dispenser type and follow steps 1 and 2.
4. When the dispenser type is selected, press the **Cancel** button to exit.

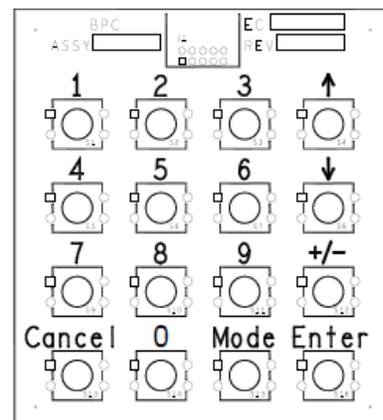


Figure 2.3 – Manager’s Keypad

# How to Operate the Dispenser

To select the Dispenser Type for Programming using the Local Preset Keypad, follow this procedure:

1. Using the keypad seen in *Figure 2.4*. Press the hidden +/- button five times to cycle through the dispenser types.
  - **PAC4** for Pacific 4 products.
  - **PAC5** for Pacific 5 products.
  - **HRN4** for Horizon2 4 products.
2. Stop at the desired dispenser type and press the hidden **Enter** button.
3. If the wrong selection is made after pressing the hidden **Enter**. Press the **Cancel** button to select a different dispenser type and follow steps 1 and 2.
4. When the dispenser type is selected, press the **Cancel** button to exit.

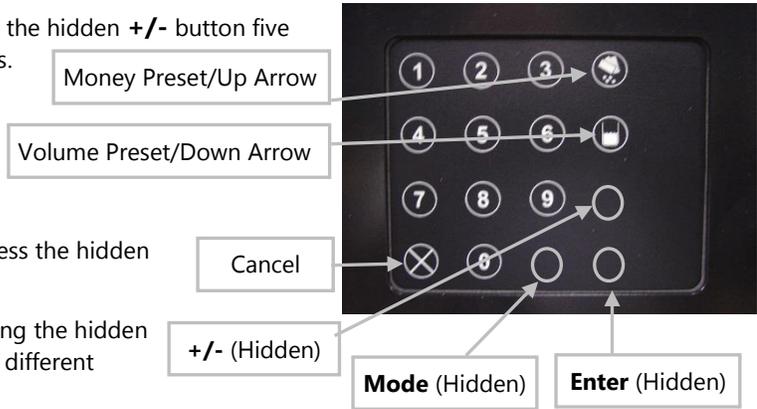


Figure 2.4 – Local Preset Keypad

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## Programming

The dispenser has a variety of Menu Codes that are accessed by using the Manager's Keypad or the Local Preset Keypad. Menu Codes 0, 1, and 2 are accessed by the attendant or the manager to read diagnostic error codes or totals. The remaining menu codes are used by first entering an access code in Menu Code 3 that can be found on page 17 of this manual. Without the correct access code, the remaining Menu Codes are hidden. Please read the description for each Menu Code in the table below for complete information on these options.

Menu Code	Name	Description
0	Diagnostics	Diagnostic Tests
1	Hose Totals	Reading Money, Volume, Number of Sales, Number of Price Changes.
2	Totalizer Totals	Reading electronic totalizer totals only.
3	Manager Access	Entering a four-digit code to access remaining Menu Codes.
4	Pricing	Program to set price per volume for each hose and one or two tier pricing.
5	Totalizer Value	Entering a value for each electronic totalizer (volume total).
6	Programming	Reviewing programming selections or speed programming dispenser.
7	Pump Type	Program to set the number of sides and number of grades and hoses.
8	Decimal Location	Program to change decimal placement for other than U.S. standard.
9	No Flow Time Out	Program to set a time for the dispenser to turn off after flow stops.
10	Slow Flow Amount	Program to control the slowdown limit of a prepay sale.
11	Volume Allocation	Program to control maximum volume of a single sale at one pump.
12	Pre-Charge Time	Program to set the submerged pump pre-charge time.
13	Beeper	Program to set beeper tone options.
14	Price Display	Program to set the way price displays operate.
15	Fleet Option	Program to set the fleet system interface compatibility.
18	Money Totals	Program to set the money totals calculation method.
21	Communication Type	Program to set the dispenser in stand-alone or console modes.
22	Dispenser Address	Program to set the dispenser address.
23	Push-to-Start	Program to push the start button.
26	Shift Totals	Program to reset shift totals
27	Electronic Calibration	Program to Electronically Calibrate the dispenser.
28	Rounding	Program to set either rounding or truncating the sale amount.
29	Resettable Totals	Entering a value for each meter on the dispenser (volume total).
30	Real Time Clock	Entering the Real Time Clock
35	MD5 Checksum	Reading the MD5 Checksum only.
77	Vapor Recovery	Program vapor recovery handle support.
99	Unit of Measure	Program to set the dispenser at Gallon, Liter or British Imperial Gallon operation.

## Programming

### Default Settings

The software program for each new dispenser shipped from the factory is preprogrammed with default settings in some of the Menu Codes. Some menu codes must be changed immediately to make the dispenser operational. The default listings are noted below:

Menu Code	Description	Default
3	Managers Access	2218
7	Pump Type	2 = Sides, 3 = Grades
8	Decimal Location	0 = U.S.A.
9	No Flow Time Out	--- = Infinite Time
10	Slow Flow Amount	0.100 Volume Unit
11	Volume Allocation	0999 Volume Units
12	Prestart Time	2 seconds
13	Beeper Tone	3 = Combination of option 1 and 2 (Audio Tones)
14	Price display	1 = Flashing, 0 = Blanks
15	Fleet Option	1 = Enabled
18	Money Totals	0 = Cash Drawer method
21	Stand Alone	0 = Console Mode
22	Dispenser Address	0 = Only one dispenser on the communications loop
28	Rounding or Truncating Sale Amount	1 = Rounding the Sale Amount
99	Unit of Measure/Dispenser Model	1 = Gallons, 1 – Decimal position 3 places

### Suggested Setup Sequence

To program the dispenser's memory for the first time or following a RAM memory clear follow the menu codes in order as they are listed in the Initial Setup sequence below. Each menu code can be programmed individually. However, in order for the dispenser to operate properly, the initial setup programming sequence **must be followed**. If not, the dispenser may not operate properly because of default settings or no data programmed. Make sure the initial setup of the menu codes are programmed before testing any dispenser operations. Failure to do so may lead to difficulty getting the dispenser to operate properly. See Initial Setup Sequence below.

Menu Code No.	Initial Setup
3	Managers Access Code
99	Unit of Measurement
7	Pump Type
4	Pricing – for each hose and on or two tier pricing
9	No Flow Time Out
11	Volume Allocation for a sale at a pump
21	Stand Alone or Console Mode
28	Rounding or Truncating the Sale Amount

Menu Code No.	Remaining Dispenser Setup
5	Meter Value – amount for each meter
6	Programming selections viewer
8	Decimal Location – For other than U.S. standard
10	Slow Flow Amount – Control for prepay sales
12	Precharge Time – For submerged pump
14	Price display – Control operation
15	Fleet System – Interface compatibility
18	Money Totals – Calculation Method
22	Dispenser Address
26	Resettable Shift Totals
29	Resettable Meter Totals
30	Real Time Clock (YYMMDDHHMM)
77	Vapor Recovery

**Note:** Menu Codes 3 through 99 are presented in numerical order on the following pages.

# Programming

## Menu Code 3 - Manager's Access Code Entry

**Note:** Manager's Mode access is canceled when the Manager's Keypad is unplugged from the dispenser or when the hidden +/- and **Enter** buttons on the Local Preset keypad are pressed simultaneously until the display returns to the normal sales display. If the Manager's Keypad is removed, you must re-enter the Menu Code 3 manager's access code to regain programming access. Some Menu Codes must be programmed on both Side 1 and Side 2. When programming is completed for Side 1, be sure to program Side 2.

Access to Menu Codes 4 through 99 is gained by entering a four-digit access code. The software is set with an access code at the factory of **2218**. All dispensers covered in this manual are shipped with this code. Menu Code 3 must be used each time the manager wishes to access or program Menu Codes 4 through 99.

To access the Menu Code, follow this procedure:

1. Press the **3** button and then the **Mode** button on the Manager's Keypad or Press the **3** button and then the hidden **Enter** button on the Local Preset Keypad. The display shown in *Figure 3.1* appears.
2. Enter the default number 2218. Four dashes appear in the display.
3. Press the **Enter** button. When access is gained, the dashes disappear and the PPV display appears as in *Figure 3.2*. If the dashes do not appear, the access code entered did not match the code stored in memory. Press the **Cancel** button and repeat steps 1, 2, and 3.
4. When access is gained, press the **Cancel** button to exit. It is necessary to exit Menu Code 3 before the remaining protected menus can be accessed. The display shown in *Figure 3.3* appears when the cancel button is pressed.

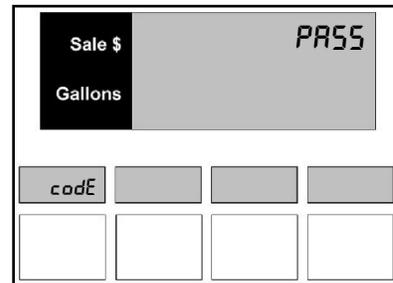


Figure 3.1 – Access Code Entry

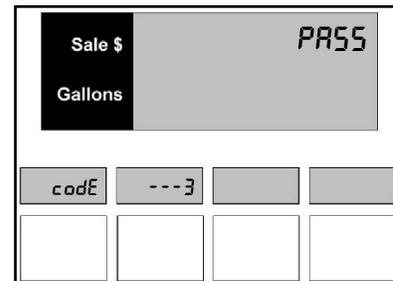


Figure 3.2 – Access Code Entry

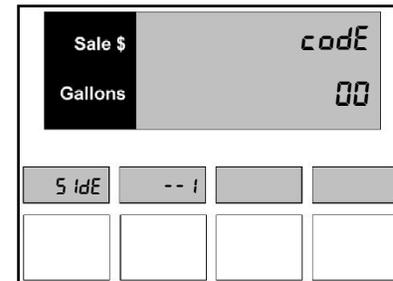


Figure 3.3 – Access Code Gained

### How to Change the 4-digit Manager's Access Code

**CAUTION:** To avoid having to zero the memory on the CPU. Make sure you record the new access code exactly as it is programmed into the dispenser.

A new access code can be assigned in Menu Code 3.

To assign a new access code, follow this procedure:

1. Press the **3** button and then the **Mode** button on the keypad.
2. Press the default number **2218** or the previously stored access code. Four dashes appear in the volume display.
3. Press the **Enter** button. If access is gained, the four dashes disappear and the PPV display appears as in *Figure 3.2*. If the dashes do not move, an error was made entering the access code. Repeat steps 2, 3, and 4. **Note:** Do not press enter. If enter is pressed the new access code will be set to 0000.

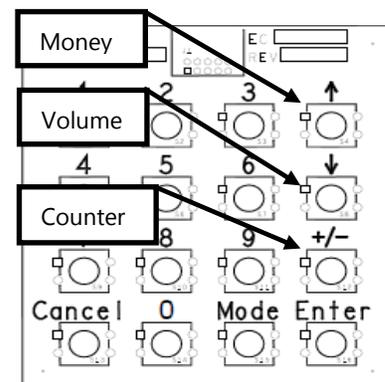


Figure 3.4 – Manager's Keypad

# Programming

4. Press the ↑ button as shown in *Figure 3.4* or as shown in *Figure 3.5*. The display shows all zeros as seen in *Figure 3.6*.
5. Enter a new four-digit number on the keypad. The number appears in the volume display. Make sure the number displayed is correct. Record the number chosen as the access code.
6. Press the **Enter** button to save the new access code.
7. Test the new access code.

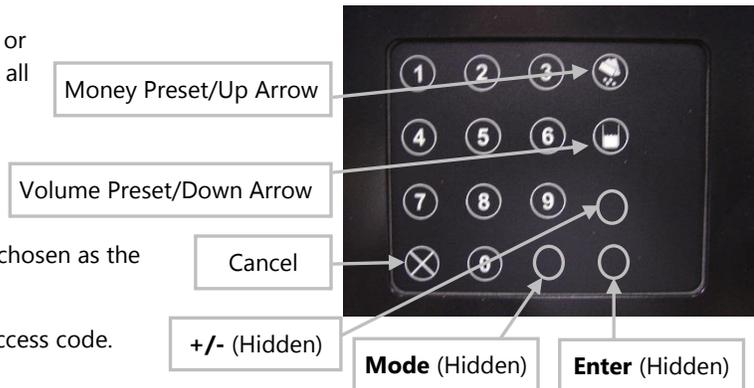


Figure 3.5 – New Access Code Entry

To test the access code, follow this procedure:

1. Put the dispenser in the **OPERATE** mode by pressing the ↑, ↓ and +/- buttons and unplug the Manager’s Keypad from the dispenser.
2. Re-enter the **ATTENDANT** mode by plugging the keyboard back in and pressing the ↑, ↓ and +/- buttons.
3. Press **Enter** for Side 1.
4. Press the **3** button and then the **Mode** button on the keypad.
5. Press the new four-digit access number. Four dashes appear in the volume display.
6. Press the **Enter** button. If access is gained, the four dashes disappear and the PPV display appears as in *Figure 3.2* shown on the previous page. **Note:** If the dashes do not appear, an error was made. Repeat Steps 1 through 4.

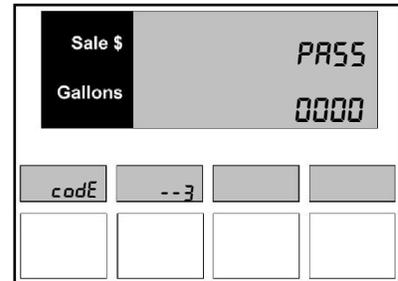


Figure 3.6 – New Access Code Entry

**Note:** If you make a mistake or lose your new passcode, the pump main memory will have to be zeroed to regain access to totals information and programming menus. Please call your Bennett authorized service technician to zero the dispensers main menu and return the passcode to 2218. This is **NOT** a warranty paid service call.

## Programming

### Menu Code 4 - How to Program Price Per Volume

**Note:** Access code (Menu Code 3) must be entered into the pump and the PPV display must indicate dashes before this mode may be entered.

To program price per volume data, follow this procedure:

1. Press the **4** button and then the **Mode** button on the keypad. The individual PPV display for Product 1 appears as shown in *Figure 4.1*. The main display shows that Product 1, Tier 1 in Code 4 is active.
2. Use the **0** through **9** buttons on the keypad to enter the price for Product 1, Tier 1.
3. When the first digit of the new price is entered. The main display will show zeros and indicates the new digit in the right most digit. The PPV display continues to flash the old price. When the correct price appears in main display, press the **Enter** button. The PPV display now contains the new price as shown in *Figure 4.2*. **Note:** If an error is made, press the **0** through **9** buttons on the keypad until the correct price appears in the PPV display.
4. Repeat steps 2 and 3 for the remaining prices to be set. The dispenser only displays the number of hoses selected in Menu Code 7.
5. Press the **Cancel** button to exit this Menu Code.
6. If initial programming of a dispenser with two fueling positions is being performed, be sure to program side 2.

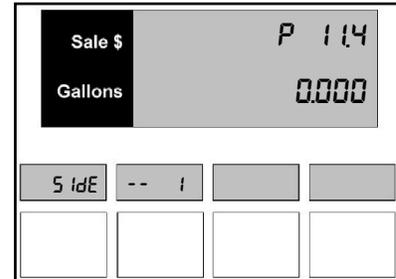


Figure 4.1 – Program PPV

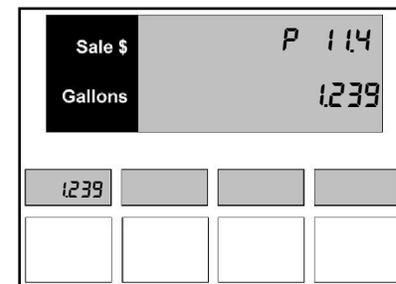


Figure 4.2 – New Product Price

## Programming

### Menu Code 5 - How to Enter the Electronic Totalizer Values

The dispenser can accumulate and store a value for the volume passing through the mechanical totalizer. A beginning value for the electronic totalizer is required for a starting point (from the mechanical totalizers). Use this menu code to enter a new meter total value. This value can be reset at any time.

To enter a new value for the meter totals, follow this procedure:

1. Press the **5** button and then the **Mode** button on the keypad. A volume amount appears in the sales/volume display as shown in *Figure 5.1*. The **t1** stands for the totalizer one total. The **.5** means the dispenser is in Menu Code 5.
2. Use the **0** through **9** buttons on the keypad to enter the new meter volume value from the mechanical totalizers. When the first new number is pressed the volume displays zeros and begins rotating the new total into the display.
3. Press the **Enter** button to save the new value. The main display moves to the next meter total and the PPV display moves to totalizer two meter totals as shown in *Figure 5.2*. Repeat this sequence for any remaining products. Use the **Enter** button to advance or review the meter totals.
4. Press the **Cancel** button to exit this Menu Code.
5. If initial programming of a dispenser with two fueling positions is being performed, be sure to program the side 2.

Menu Code 5 can be used to verify totals on the mechanical totalizer. If the mechanical totalizer is disconnected for any reason or becomes inoperable, Menu Code 5 will still record meter volume totals.

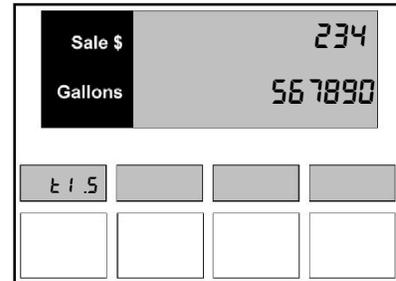


Figure 5.1 – Volume Amount

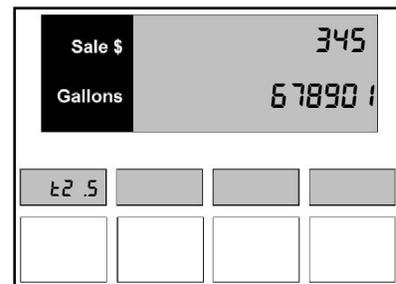


Figure 5.2 – Totalizer 2 Volume Amount

### How to enter monthly, weekly, or daily totals

If monthly, weekly, or daily totals are required, enter Menu Code 5 (press the **5** button and then the **Mode** button on the keypad) and zero the total by pressing the **0** button until all meter totals are zero. At the end of the period that has been selected for gathering totals, record the total value and zero the totals again.

# Programming

## Menu Code 6 – How to Read Settings or Speed Program the Dispenser

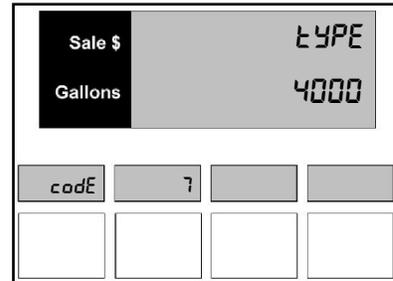
When all programming for the dispenser is completed, Menu Code 6 is a quick way to review the more common settings. Menu Code 6 can be used to program all the settings for the dispenser without having to enter each menu.

To review or speed program the menu code settings, follow this procedure:

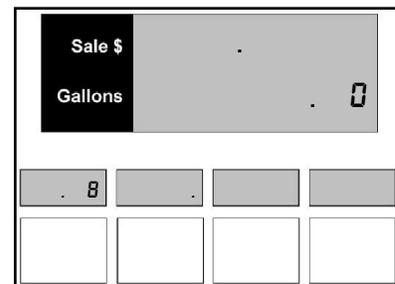
1. Press the **6** button and then the **Mode** button on the keypad. The main display shows the first setting, which is the Type of dispenser being used and all other settings in Menu Code 7 as shown in *Figure 6.1*.
2. Press **Enter** again and the display will cycle through Menu Code 7 available options based on your dispenser.
3. Press **Enter** a few more times and the display moves to Menu Code 8, decimal settings. The remaining codes are displayed by continuing to press **Enter**. Refer to the List of Menu Codes available in Mode 6 below. These codes can be displayed or programmed in this Menu Code.
4. Press the **Cancel** button to exit this menu code.

**List of Menu Codes available in Mode 6:**

Menu Code No.	Available Modes
7	Pump Type (Type, Sides, Grades, Hoses)
8	Decimal Location
9	No Flow Time Out
10	Slow Flow Amount
11	Volume Allocation
12	Pre-charge Time, Last Sale, Idle Timer
14	Price display (Flash, Dash, Flip)
15	Fleet Option
18	Money Totals
21	Stand Alone or Console Mode
28	Rounding or Truncating the Sale Amount



*Figure 6.1 – Menu Code 7*



*Figure 6.2 – Menu Code 8*

# Programming

## Menu Code 7 - How to Enter the Type of Dispenser

**Note:** THIS MENU CODE MUST BE PROGRAMMED FOR ALL DISPENSERS.

Determine the dispenser’s model number from the serial tag located on side 1 inside of the unit on the deck. Under each section, select the desired check box. Use this as a guide for dispenser programming.

To prepare the dispenser for operation, the following information must be programmed:

### Type of Dispenser

<input type="checkbox"/>	1 = 1000 (Pacific)
<input type="checkbox"/>	4 = 4000 (4K)

### Number of Sides

<input type="checkbox"/>	1 = 1 Side
<input type="checkbox"/>	2 = 2 Sides

### Number of Grades (Products)

<input type="checkbox"/>	1 = 1 Grades
<input type="checkbox"/>	2 = 2 Grades
<input type="checkbox"/>	3 = 3 Grades
<input type="checkbox"/>	4 = 4 Grades

### Number of Hoses

<input type="checkbox"/>	1 = 1 Hose
<input type="checkbox"/>	2 = 2 Hoses
<input type="checkbox"/>	3 = 3 Hoses
<input type="checkbox"/>	4 = 4 Hoses

To enter new information, follow this procedure:

**Note:** The access code (Menu Code 3) must be entered into the pump and the PPV display must indicate dashes before this mode may be entered.

1. Press the **7** button and then the **Mode** button on the keypad. The number 7 appears in the PPV display and the type appears in the main display. The default setting is for 1000 as shown in *Figure 7.1*.
2. To change from a type 1000 (Pacific) dispenser to a type 4000 (4k) dispenser. Press the **1** button for the Pacific dispenser or the **4** button on the keypad for the 4k dispenser. This option will only accept a 1 or a 4.

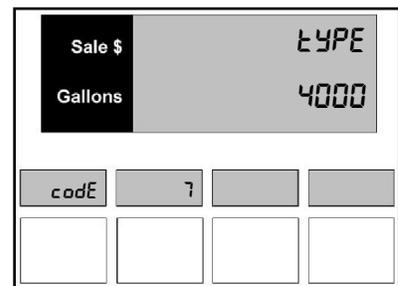


Figure 7.1 - Type

# Programming

3. Press the **Enter** button to save the new setting.
  4. Once **Enter** has been pressed, the number of sides appear in the main display. The default setting is for 2 sides as shown in *Figure 7.2*.
  5. Once **Enter** has been pressed, the number of grades appears in the main display. The default setting is for 3 grades per side of the dispenser as shown in *Figure 7.3*. **Note:** Remember when setting the number of grades that this is per side of the dispenser.
  6. To change the setting from 1 to 4 grades. Press the **1, 2, 3,** or **4** button on the keypad.
  7. Press the **Enter** button to save the new setting.
  8. Once **Enter** has been pressed, the number of hoses appears in the main display. The default setting is for 1 hose per side of the dispenser as shown in *Figure 7.4*. **Note:** When setting the number of hoses this is per side of the dispenser.
  9. To change the setting from the default setting, press the **1, 2, 3,** or **4** button on the keypad.
  10. Press the **Enter** button to save the new setting.
- Note:** To review or change the settings in Menu Code 7. Press the Enter button on the keypad. Each time you press the Enter button the display cycles through the options in Menu Code 7.
11. Press the **Cancel** button to exit mode 7.
  12. If this is a two-sided dispenser, changing one side will automatically change the second side to the same value as the first.

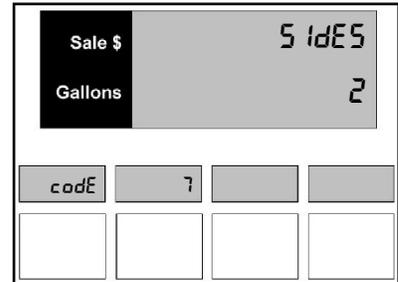


Figure 7.2 - Sides

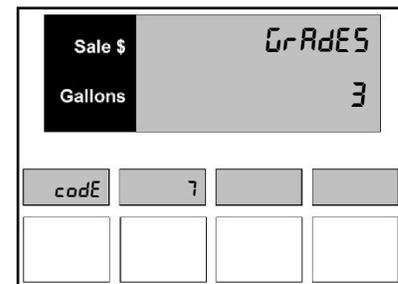


Figure 7.3 - Grades

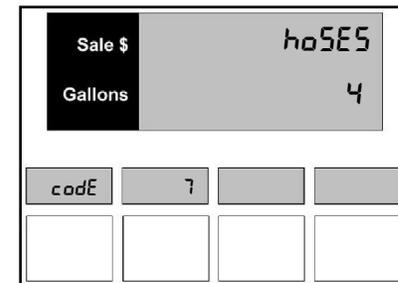


Figure 7.4 - Hoses

# Programming

## Menu Code 8 - How to Change the Decimal Point Locations

The decimal point in the money display, volume display and the PPV display can be changed. Contact an authorized service technician to change from gallons to liters. The dispenser is shipped from the factory set for the monetary system in the United States.

**Note:** If the dispenser is to be operated in U.S. dollars, do **NOT** enter this Menu Code!

To change the decimal placement, follow this procedure:

1. Press the **8** button and then the **Mode** button on the keypad. The United States standard decimal placement appears in the main displays and PPV display. The number 0 appears in the main display to show the dispenser is set for U.S. Standard.

**Note:** There are seven decimal selections available. See Figure 8.1 for a sample of the decimal display for each selection. The price in Selection 0 is in dollars. The price in Selection 6 is in cents.

DECIMAL PLACEMENT SELECTIONS				
	MONEY DISPLAY	VOLUME DISPLAY	PPV DISPLAY	
		Volume		
Selection	Money	Gallons /	Liters	Price
0	[ 1.23]	[1.234]	[ 1.23]	[1.234]
1	[ 1.23]	[1.234]	[ 1.23]	[12.34]
2	[ 1.2]	[1.234]	[ 1.23]	[12.34]
3	[ 1.2]	[1.234]	[ 1.23]	[123.4]
4	[ 12]	[1.234]	[ 1.23]	[123.4]
5	[ 123]	[1.234]	[ 1.23]	[1234.]
6	[ 1.23]	[1.234]	[ 1.23]	[123.4]

Figure 8.1 –Decimal Placement

To select a new decimal placement value, follow this procedure:

- Use the **0** through **6** buttons on the keypad to enter a new selection.
  - Press the **Enter** button. The new decimal placement appears in the displays as shown in Figure 8.2.
  - If an error is made, repeat steps 1 and 2 until the correct decimal placement selection appears.
2. When the correct decimal selection is made, press the **Enter** button to save the selection.
  3. Press the **Cancel** button to exit this Menu Code.
  4. If this is a two-sided dispenser, changing one side will automatically change the second side to the same value as the first.

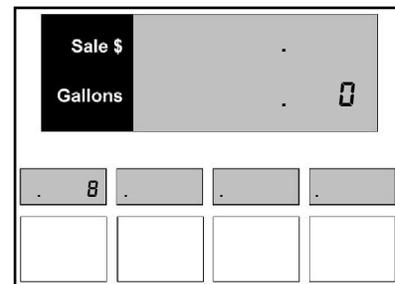


Figure 8.2 – New Decimal Value

# Programming

## Menu Code 9 - How to Set a No Flow Time Out

As a security feature, the dispenser can be programmed to turn off if no flow occurs within a specific amount of time. If the pump handle is turned on and flow occurs but is stopped, the No Flow Time Out feature prevents delivery after the period of time programmed has elapsed.

The No Flow Time Out feature is programmable from 0 seconds to 999 seconds (16.6 minutes) or an infinite amount of time represented by- - -. The dispenser is shipped from the factory with Menu Code 9 disabled (infinite time).

**THE DISPENSER WILL NOT OPERATE IF ZERO SECONDS (MINUTES) ARE SET!**

To program the period of time before the No Flow Time Out turns off the dispenser or to disable Menu Code 9, follow this procedure:

1. After the Menu Code has been accessed, press the **9** button and then the **Mode** button on the keypad. The main display on an un-programmed dispenser will appear as in *Figure 9.1*. This is the default. The PPV display shows the dispenser is in Menu Code 9.

The three dashes indicate the No Flow Time Out amount is an infinite amount or that Menu Code 9 is disabled. With this setting, the dispenser's valves will remain on indefinitely after the pump handle lever is put in the ON position and the dispenser is authorized.

2. Use the **0** through **9** buttons on the keypad to enter a Flow Time Out value in seconds. For example, if a 20-second delay is entered, the volume display window looks like *Figure 9.2*.

**Note:** If an error is made, press the 0 button until all three digits are zeros and enter a new number or push the number buttons until the correct number of seconds appears in the volume display.

3. When the correct value appears in the volume display, press the **Enter** button to save the selection.
4. To disable Menu Code 9, press the **↑** button on the keypad and press the **Enter** button as shown in *Figure 9.3* and *Figure 9.4*. The volume display returns to three dashes.
5. Press the **Cancel** button to exit this Menu Code.
6. If this is a two-sided dispenser, changing one side will automatically change the second side to the same value as the first.

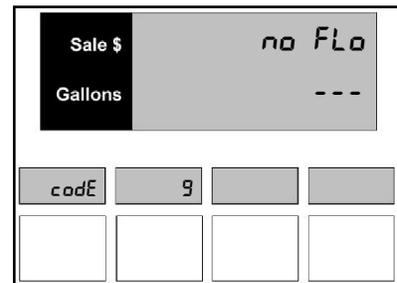


Figure 9.1 – Default No Flow Time Out

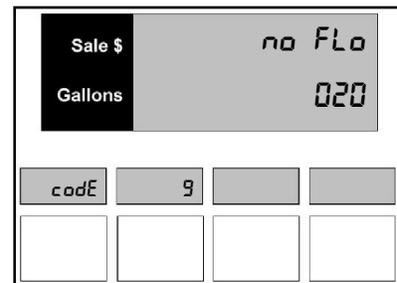


Figure 9.2 – No Flow Time Out

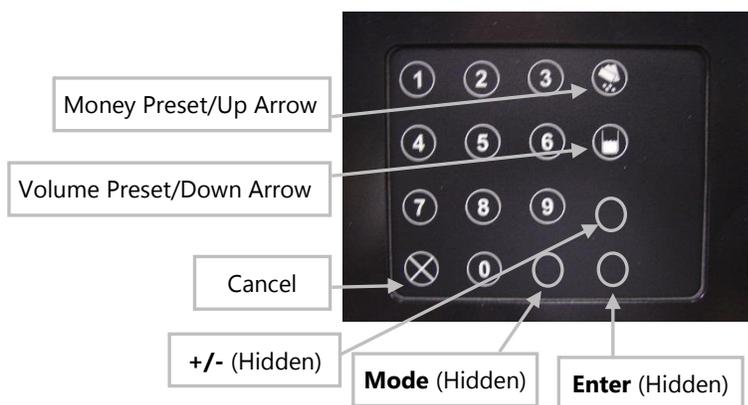


Figure 9.4 – Local Preset Keypad

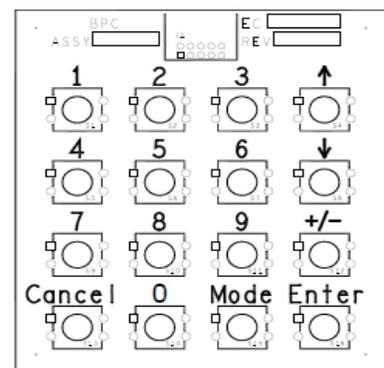
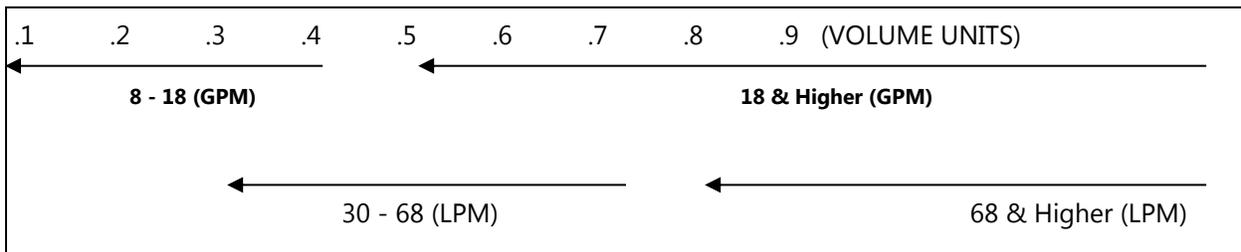


Figure 9.3 – Manager's Keypad

# Programming

## Menu Code 10 - How to Set a Slow Flow Amount

This code applies to console prepay sales or optional local preset sales only. In both cases, the flow of fuel is stopped at a pre-selected amount. At fast flow rates, the proportional valve may not be able to react fast enough to stop at the exact pre-selected amount. A proportional valve is used so the fast flow stage of the valve is closed when a selected unit of volume remains to be dispensed and allows the slow flow stage of the valve to complete the sale. Dispensers with higher flow rates require a longer period of time to react and shutdown the valve. For example, at a setting of 0.200 (default), the proportional valve will go into slow flow stage when there is 2/10 (two tenth) of a unit remaining to be delivered to reach the pre-selected amount. The minimum volume that can be selected is 0.1 and the maximum volume that can be selected is 9.9.



To select a slow flow amount in gallons or liters, follow this procedure:

1. Press the number **1** and **0**, then the **Mode** button on the keypad. If the dispenser has not been programmed since it came from the factory, the number 0.100 appears in the main display. This is the default setting for a volume of 0.1 units. The PPV display shows the dispenser is in Menu Code 10 as shown in *Figure 10.1*.
2. To change the setting, use the **0** through **9** buttons on the keypad to enter a new volume amount. The software allows a maximum value of 9.9 gallons or liters. The suggested setting for the dispenser is 1.000 or lower. See suggested settings above. **Note:** If an error is made, press the correct number. The new number replaces the error.

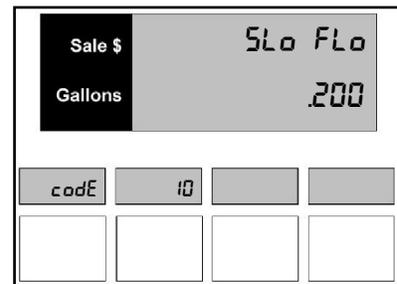


Figure 10.1 – Slow Flow Amount

3. When the correct setting appears in the volume display, press the **Enter** button to save the selection.
4. Press the **Cancel** button to exit this Menu Code.
5. If this is a two-sided dispenser, changing one side will automatically change the second side to the same value as the first.

## Programming

### Menu Code 11 - How to Set a Volume Allocation Limit

The dispenser can be programmed to stop the flow of fuel at a volume you determine. The dispenser is programmed at the factory to stop the flow of fuel at 0999 volume units. This is the maximum volume limit that can be set for gallons. The maximum limit for liters is 9999 volume units. The minimum volume limit is 0001 unit. **THE DISPENSER WILL NOT OPERATE IF A ZERO LIMIT IS SET!**

**Note:** Some control consoles will overwrite the volume allocation limit.

To set a limit on the volume that can be pumped from the dispenser for each delivery, follow this procedure:

1. Press the number **1** and **1**, then the **Mode** button on the keypad. The PPV display shows the dispenser is in Menu Code 11. If the dispenser has not been programmed since it came from the factory, the number 0999 appears in the main display. This is the default setting as shown in *Figure 11.1*.
2. To change the setting, use the **0** through **9** buttons on the keypad to enter a new volume allocation limit. **Note:** If an error is made, press the 0 button until the PPV display shows all zeros. Enter a new number.

**Example:** If a volume allocation of 0050 has been set, the dispenser stops the flow of fuel at 50 volume units.

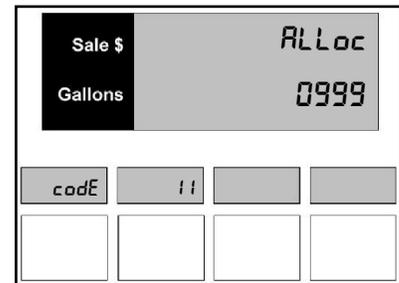


Figure 11.1 – Volume Allocation Limit

3. When the correct volume allocation appears in the main display, press the **Enter** button to save the selection.
4. Press the **Cancel** button to exit this Menu Code.
5. If this is a two-sided dispenser, changing one side will automatically change the second side to the same value as the first.

## Programming

### Menu Code 12 - How to Program the Submerged Pump Timer Options

The **Pre-Charge Time** allows the main control valves to be programmed to energize from 1 to 9 seconds after the start of the reset cycle. This allows the leak detector time to determine whether a leak is present. If no leaks are detected it will allow the flow of fuel. **Note:** The minimum time is 2 seconds and the maximum time is 9 seconds.

*To program the number of seconds between the time the submerged pump comes on and the main control valve turns on; follow this procedure:*

1. Press the number **1** and **2**, then the **Mode** button on the keypad. The PPV display shows the dispenser is in Menu Code 12 as shown in *Figure 12.1*. If the dispenser has not been programmed since it came from the factory, the number 2 appears in the main display. This is the two second default setting.
2. To change the setting, use the **0** through **9** buttons on the keypad to enter a time delay value in seconds. **Note:** If an error is made, press the correct number. The new number replaces the error.
3. When the correct number appears in the Volume display, press the **Enter** button to save the setting and to cycle to the next option.

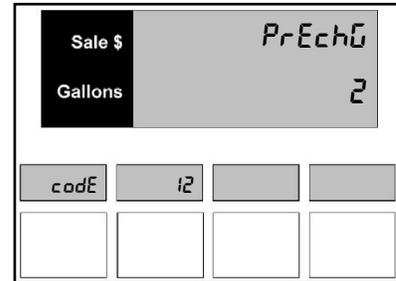


Figure 12.1 – Pre-Charge Time

*To program the amount of time that the last sale is shown on the main display, follow this procedure.*

The **Last Sale Timeout** is the amount of time that the last sale is shown on the main display before the dispenser returns to the idle state. The default timeout is 30 seconds and the maximum timeout is 99 seconds.

4. To change the setting, use the **0** through **9** buttons on the keypad to enter a value in seconds as shown in *Figure 12.2*. **Note:** If an error is made press the correct number. The new number replaces the error.
5. Press the **Enter** button to save the new setting and to cycle to the next option.

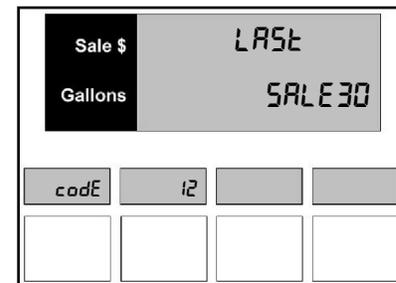


Figure 12.2 – Last Sale - Timeout

*To program the number of seconds between the time the dispenser comes on from an idle state and timeouts, follow this procedure:*

**Idle Timeout** is a programmable feature can be enabled when any activity (the handle is lifted, pressing a button, etc.) is detected at the dispenser from an idle state or if there is no activity at the dispenser detected for the time equal to the idle timeout the dispenser will return to its idle state.

6. To change the setting, use the **0** through **9** buttons on the keypad to enter a value in seconds as shown in *Figure 12.3*.
7. Press the **Enter** button to save the new setting.
8. Press the **Cancel** button to exit this Menu Code.
9. If this is a two-sided dispenser, changing one side will automatically change the second side to the same value as the first.

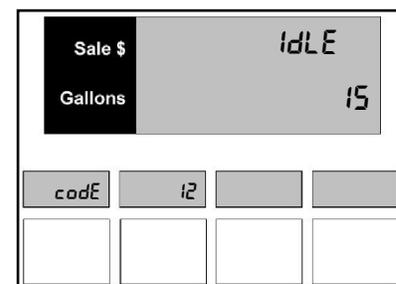


Figure 12.3 – Idle Timeout

## Programming

### Menu Code 13 – How to Select Audio Tone Options

The dispenser can be programmed to emit audio tones when certain buttons are pushed or a pump handle is turned on. The four options available are:

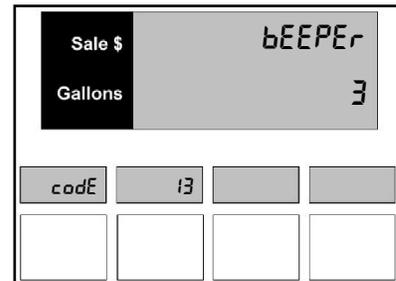
- 0 - No audio tones.
- 1 - Audio tone whenever a button on the keypad is pushed.
- 2 - Intermittent audio tone whenever an unauthorized pump handle is turned on. The tone stops when the dispenser is authorized. This option also emits four audio tones at the beginning of a prepaid sale.
- 3 – (Default) Combination of option 1 and 2.

To select one of the options in Menu Code 13, follow this procedure:

1. Press the number **1** and **3**, then the **Mode** button on the keypad. The price display shows the dispenser is in Menu Code 13.

If the dispenser has not been programmed since it came from the factory, the number 3 appears in the main display as shown in *Figure 13.1*. This is the default setting.

2. To change the setting, use the **0** through **3** buttons on the keypad to enter a new option. **Note:** If an error is made, press the correct number. The new number replaces the error.
3. When the correct option number appears in the main display, press the **Enter** button to save the selection.
4. Press the **Cancel** button to exit this menu code.



*Figure 13.1 – Audio Tone*

## Programming

### Menu Code 14 – How to Select PPV Display Options

The PPV display can be programmed to operate several ways. This Menu Code programs the operation of the PPV displays.

**Note:** The default setting for all dispensers is Flash set at 1, Dash set at 0, and Flip is set at 0. This setting allows the PPV displays to flash during the selection process and go blank when not selected.

The **Flash Option** allows the PPV display for the idle hose to be programmed to act in one of two different ways as shown in *Figure 14.1*. The choices are:

- 0 - The PPV displays are illuminated constantly in the idle mode.
- 1 - (Default) The PPV displays flash at 1 second intervals in the idle mode.

The **Dash Option** allows the PPV display for the unselected displays to be programmed two different ways as shown in *Figure 14.2*. The choices are:

- 0 - (Default) All unselected displays become blank after a hose is selected.
- 1 - All unselected displays show dashes after a hose is selected.

The **Flip Option** allows a two-tier price display to be inverted or flipped between the cash and credit price displays as shown in *Figure 14.3*. This option was added to support various POS systems that display prices opposite of a VeriFone Ruby. Example: TMS MPC. The choices for Flip are:

- 0 - (Default) The POS sends the credit price to the top display and cash price to the bottom display.
- 1 - The POS sends the credit price to the bottom display and cash to the top display requiring FLIP to be turned on.

To select different options in Menu Code 14, follow this procedure:

1. Press the number **1** and **4**, then the **Mode** button on the keypad. The PPV display show the dispenser is in Menu Code 14.

If the dispenser has not been programmed since it came from the factory, the display appears as in *Figure 14.1*. One is the default setting for the Flash option. Press **Enter** to see the Dash option as seen in *Figure 14.2*. Zero is the default setting for the Dash option. Press **Enter** to see the FLIP option as seen in *Figure 14.3*. Zero is the default setting for the FLIP option.

2. To change a setting, use the **0** and **1** buttons on the keypad to enter a new setting. **Note:** If an error is made, press the correct number. The new number replaces the error.
3. When the correct option numbers appear in the main display, press the **Enter** button to save the selections and then press the **Cancel** button to exit this menu code.
4. If this is a two-sided dispenser, changing one side will automatically change the second side to the same value as the first.

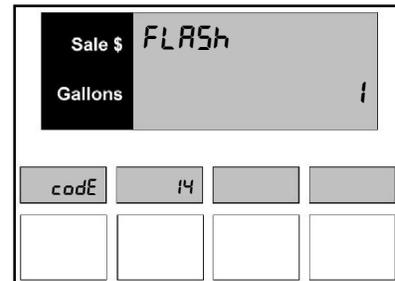


Figure 14.1 - Flash

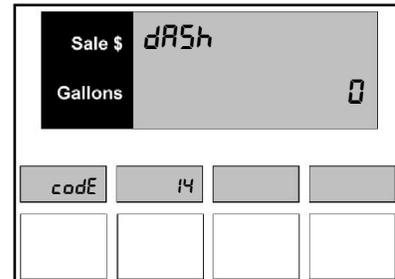


Figure 14.2 - Dash

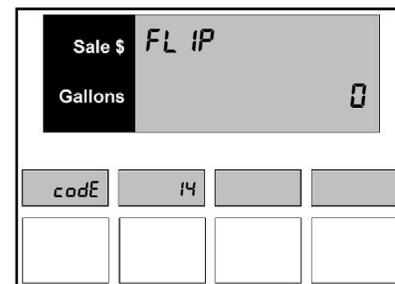


Figure 14.3 - Flip

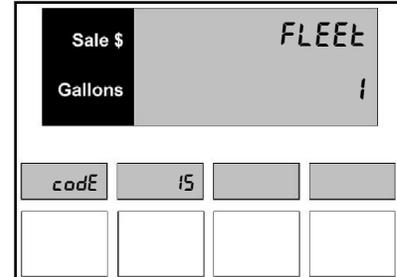
## Programming

### Menu Code 15 – How to Select the Fleet Option

**Note:** This Menu Code only applies to dispensers connected to a fleet system interface.

When menu code 15 is enabled, it will allow a product price change (Point of Purchase Discount) after the pump handle has been turned on. This allows the dispenser to be compatible with fleet systems for use in non-retail situations. If this menu code option is not enabled the dispenser may not be compatible with the fleet system interface thus, not applying the product price change (Point of Purchase Discount). The fleet option is set as enabled as a default as shown in *Figure 15.1*. The options are:

- 0 - The fleet option is disabled.
- 1 – (Default) The fleet option is enabled.



*Figure 15.1 - Fleet*

To select a different option in Menu Code 15, follow this procedure:

1. Press the number **1** and **5**, then the **Mode** button on the keypad. The PPV display shows the dispenser is in Menu Code 15.  
If the dispenser has not been programmed since it came from the factory, the number 1 appears in the main display as shown in *Figure 15.1*. This is the default setting.
2. To disable the fleet option, press the **0** button on the keypad press the **Enter** button. **Note:** If the fleet system is disabled the price change (Point of Purchase Discount) will not be applied to the current sale amount. If an error is made, press the correct number. The new number replaces the error.
3. When the correct option number appears in the main display, press the **Enter** button to save the selection.
4. Press the **Cancel** button to exit this menu code.
5. If this is a two-sided dispenser, changing one side will automatically change the second side to the same value as the first.

## Programming

### Menu Code 18 – How to Change the Money Totals Calculation Method

Menu Code 18 allows the manager to select the method for calculating money totals. The first method adds the value on the display to the Money Totals and stores the amount. This Money Total matches the cash drawer total.

The second method stores the Money Total as it was calculated at delivery. No rounding - Cross multiplication method (Volume x Price Per Volume). The Money Total is stored up to seven digits with five decimal places (only two are displayed). This method results in higher accuracy of Money Totals. The options are as follows:

- 0 – (Default) Sale money is rounded to nearest penny. Cash drawer method of calculation.
- 1 - No rounding. Cross multiplication method of calculation (Volume x PPV).

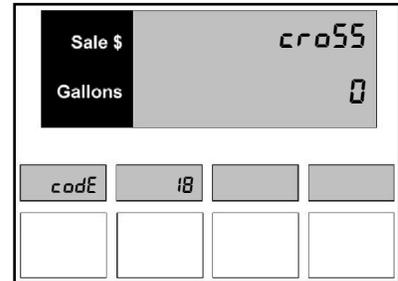


Figure 18.1 – Money Totals

To select a different option in Menu Code 18, follow this procedure:

1. Press the number **1** and **8**, then the **Mode** button on the keypad. The PPV display shows the dispenser is in Menu Code 18. If the dispenser has not been programmed since it came from the factory, the number 0 appears in the main display. This is the default setting as shown in *Figure 18.1*.
2. To change the setting, use the **0** or **1** button on the keypad to enter a new option. **Note:** If an error is made, press the correct number. The new number replaces the error.
3. When the correct option number appears in the main display, press the **Enter** button to save the selection.
4. Press the **Cancel** button to exit this menu code.
5. If this is a two-sided dispenser, changing one side will automatically change the second side to the same value as the first.

## Programming

### Menu Code 21 – How to Set the Communication Type

**Note:** The type of communication is determined by the type of Point of Sale (POS).

Menu Code 21 allows the manager to set the dispenser to communicate in three different ways or to automatically authorize at the end of each delivery without console intervention. The stand-alone option is set as disabled as a default. The options are:

- 0 – (Default) Current Loop
- 1 – Stand-Alone
- 2 - RS485
- 3 – Generic Current Loop

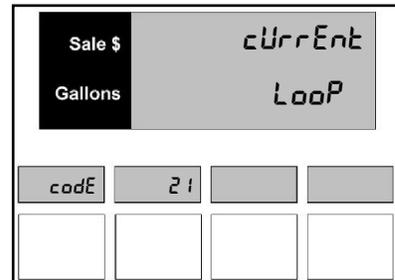


Figure 21.1 – Communication Type

To select a different option in Menu Code 21, follow this procedure:

1. Press the number **2** and **1**, then the **Mode** button on the keypad. The PPV display shows the dispenser is in Menu Code 21. If the dispenser has not been programmed since it came from the factory, the default setting is 0 for Current Loop as shown in *Figure 21.1*.
2. To change the setting, use the **0** through **3** buttons on the keypad to enter a new option. **Note:** If an error is made, press the correct number. The new number replaces the error.
3. When the correct option number appears in the main display, press the **Enter** button to save the selection.
4. Press the **Cancel** button to exit this menu code.
5. If initial programming of a dispenser with two fueling positions is being performed, program the other side.

## Programming

### Menu Code 22 – How to Set a Dispenser Address

Menu Code 22 allows the service technician to set a dispenser address for each dispenser when multiple dispensers are on the same communication loop. Normally, this setting will always be 0. However, if more than one dispenser is using the same communications loop (up to four dispensers), a value of 0 to 3 is available.

**Note:** If the dispenser is communicating with Bennett's 515 Interface Box then the address **MUST** be 0.

**Address Ranges:**

- Current Loop is 0 through 3.
- Generic Loop is 0 through 99.
- RS485 is 0 through 99.

To select a different option in Menu Code 22, follow this procedure:

1. Press the number **2** and **2**, then the **Mode** button on the keypad. The PPV display shows the dispenser in Menu Code 22. If the dispenser has not been programmed since it came from the factory, the number 1 appears in the main display. This is the default setting as shown in *Figure 22.1*.
2. To change the setting use the **0**, **1**, **2**, or **3** button on the keypad to enter a new address. **Note:** If an error is made, press the correct number. The new number replaces the error.
3. When the correct option number appears in the main display, press the **Enter** button to save the selection
4. Press the **Cancel** button to exit this menu code.
5. If initial programming of a dispenser with two fueling positions is being performed, program the other side.

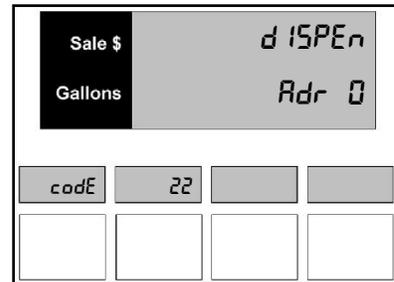


Figure 22.1 – Dispenser Address

## Programming

### Menu Code 23 – How to Setup Push-to-Start

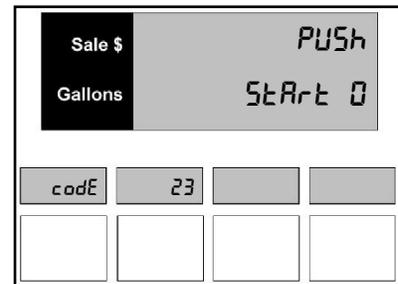
The Push to Start nozzle boots turn on the dispenser as soon as the nozzle is removed from the nozzle boot (also referred to as Auto-On). If Push-to-Start is active, the user will be prompted to select the desired product by pressing the appropriate product select switch. Once the product is selected, the PPV display will reset. The Push-to-Start option is set as disabled as a default as shown in *Figure 23.1*.

The options are:

- 0 - (Default) The Push-to-Start option is disabled.
- 1 –The Push-to-Start option is enabled.

To select a different option in Menu Code 23, follow this procedure:

1. Press the number **2** and **3**, then the **Mode** button on the keypad. The PPV display shows the dispenser is in Menu Code 23.
2. If the dispenser has not been programmed since it came from the factory, the number 0 appears in the main display as shown in *Figure 23.1*. This is the default setting.
3. To enable the Push-to-Start option, press the **1** button on the keypad to enter. **Note:** If an error is made, press the correct number. The new number replaces the error.
4. When the correct option number appears in the main display, press the **Enter** button to save the selection.
5. Press the **Cancel** button to exit this menu code.
6. If this is a two-sided dispenser, changing one side will automatically change the second side to the same value as the first.



*Figure 23.1 – Push to Start*

# Programming

## Menu Code 26 – How to Reset Shift Totals

Menu Code 26 allows the manager or operator to read and reset the electronic re-settable shift hose totals that accumulate in the dispenser for money, volume, number of sales, and number of price changes. The manager can reset after each shift, at the end of each day or any other period of time. The resetting feature is accessed through Menu Code 26. The totals in Menu Code 1 are not affected and will continue to accumulate totals until there is a RAM memory clear.

To read the money totals, follow this procedure:

1. Press the number **2** and **6**, then the **Mode** button on the keypad. The main display appears similar to *Figure 26.1*.
  - a. The main display shows the total money amount. For example, if the total money amount for the dispenser is \$7,890,123.45, the display appears as in *Figure 26.1*.
  - b. The PPV display window reads P1 1.d for Product 1, Money Total.
2. To read the money totals for Product 2 press the **Enter** button. The PPV display reads P2 1.d for Product 2, Money Total as shown in *Figure 26.2*.
3. Press the **Enter** button to cycle to product 3, product 4, or product 5.

To read the volume totals on the dispenser, follow this procedure:

1. Press the ↓ button. The main display indicates Hose 1 volume totals as shown in *Figure 26.3*.
  - a. The main display shows the total volume amount. For example, if the total volume amount for the dispenser were 901,234.567 gallons, the display would appear as in *Figure 26.3*.
2. To read the volume totals for Product 2 press the **Enter** button.

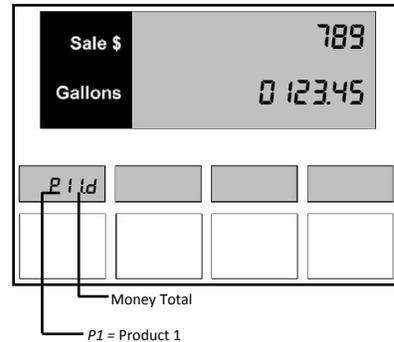


Figure 26.1 – Product 1 Money Total

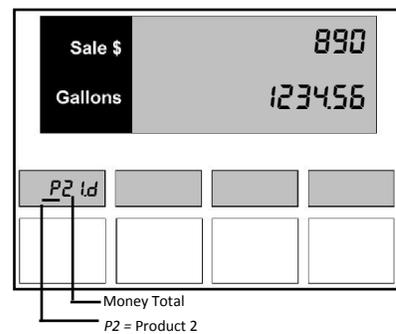


Figure 26.2 – Product 2 Money Total

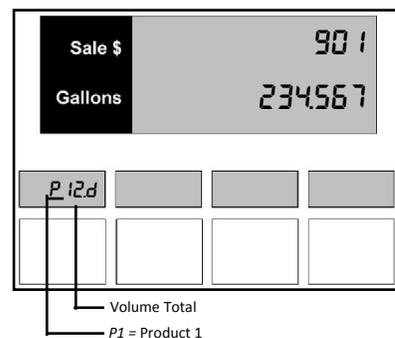


Figure 26.3 – Hose 1 Volume Total

# Programming

To read the total number of sales and total number of price changes, follow this procedure:

1. Press the +/- button. The main display indicates Product 1 counter totals, as shown in Figure 26.4.
  - a. The top line of the display shows the number of sales for Product 1. The second line shows the number of price changes for Product 1.
2. To read the counters totals for Product 2, 3, 4, and 5 press the **Enter** button.

**Note:** To move from money press the ↑ button, to volume press the ↓ button, to counter totals press the +/- button as shown in Figure 26.5. Remember, only the number of products selected in Menu Code 7 will be displayed.



**CAUTION: THE FOLLOWING PROCEDURE ZEROS ALL THE SHIFT MONEY, VOLUME, AND COUNTER TOTALS IN THIS MENU CODE. MAKE SURE ALL TOTALS ARE RECORDED BEFORE PROCEEDING WITH THE NEXT STEP. DATA CANNOT BE RETRIEVED.**

3. To reset the totals, press the 0 button. The screen will flash with the message in as shown in Figure 26.6.
4. Press **Enter** and the display returns to P11.d. ALL TOTALS IN MENU CODE 26 ARE RETURNED TO ZERO.
5. Press the **Cancel** button to exit this menu.

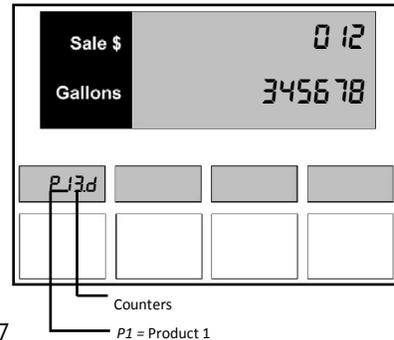


Figure 26.4 Counter Totals

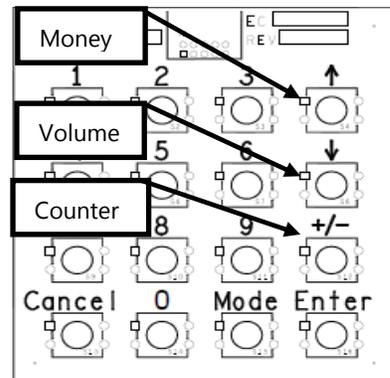


Figure 26.5 – Manager's Keypad

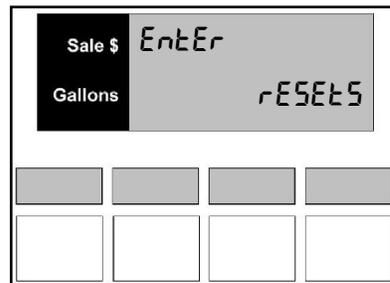


Figure 26.6 – Totals Reset

# Programming

## Menu Code 27 – How to Perform an Electronic Calibration

Menu Code 27 allows the technician to perform an electronic calibration procedure. These procedures include two different incremental calibration procedures and one overwrite calibration procedure. In an incremental calibration procedure is when the new entered value is added to the existing value. In an overwrite calibration procedure, the new entered value replaces the existing value.

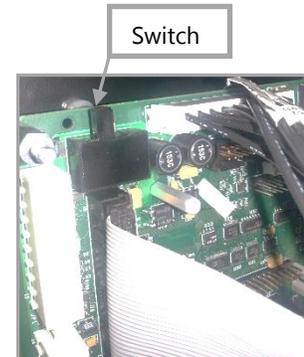
**⚠ WARNING** You must perform the E-Cal prior to dispensing fuel. If the E-Cal is not performed properly, the dispenser will produce a Calibration error.

Currently this switch is in Normal Operating Mode. Prior to entering E-Cal Mode, you must slide the switch to the right on the Upper CPU Board to gain access. If you attempt to dispense with this switch in E-Cal Mode, the dispenser will give you an **Error 74**. Refer to the [Diagnostics](#) section for the list of error codes.

**Note:** Before performing the calibration 50-100 gallons of fuel needs to be dispensed from each meter.

All programming must be performed including pricing.

The E-Cal switch must be in calibrate mode.



### The Basic Calibration Procedure

This procedure assumes that the test can sight glass is graduated in units of cubic inches or cubic centimeters (milliliters). If the sight glass is in test can percentage units, refer to [The Optional Calibration Procedure](#) section.

Prior to performing any E-Cal procedure, you must go to Mode 6 and make sure the dispenser configuration is correct. An incorrect configuration will prevent the use of un-configured meters. You also must make sure that every product has a price other than zero. A zero price will prevent the use of any configured meter.

To perform a basic calibration, follow this procedure:

1. Press the number **2** and **7**, then the **Mode** button on the keypad. The first display shows the current electronic calibration correction constant of the first configured meter as shown in *Figure 27.1*. Use the ↑ button or ↓ button to view the current electronic calibration correction constant for each configured meter. Once you are viewing the desired meter, press **Enter**.
2. The main display shows the test can size entry prompt as shown in *Figure 27.2*. Enter the test can size and press the **Enter** button. Once the test can size has been entered, the main display for the select dispenser side will show **READY** and the test can size will appear in the first PPV display. The second PPV display will show the volume unit of measure (USG for United States Gallon, LIT for liter or BIG for British Imperial Gallon) as shown in *Figure 27.3*.
3. At this point, you are ready to run a test can sale. Turn on the pump handle. If push-to-start is active, you will be prompted to push the start button. If the selected pump handle supports multiple products, you will be prompted to choose the desired product.

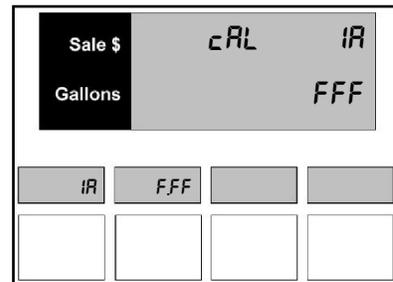


Figure 27.1 – Current E-Cal

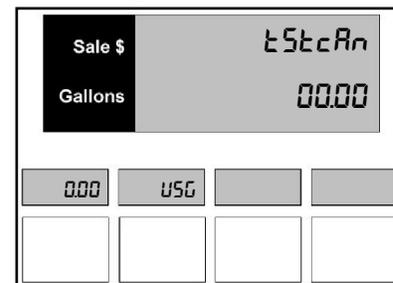


Figure 27.2 – Test Can Size Entry

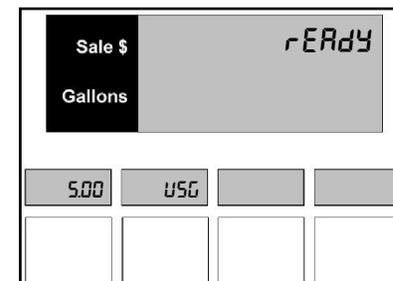


Figure 27.3 – Test Can Sale

# Programming

4. Once the product is selected, the main volume display will reset. The main money display will show the current electronic calibration correction constant for the selected meter. The volume display will show the current sale volume as shown in *Figure 27.4*.
5. Run a sale as close as possible to the test can size entered in step 2 and turn off the pump handle. The display will change to the error entry display as shown in *Figure 27.5*.
6. Depending on the volume unit of measure, the error display will either show **In Err** for cubic inches or **cc Err** for cubic centimeters (milliliters). Enter the amount of the error (positive or negative) and press the **Enter** button. You can only change the amount to a negative value after the entered amount is other than zero. Once the **Enter** key is pressed, the main display will show **READY**. Go to step 3 to run another test can or press **Cancel** to exit.

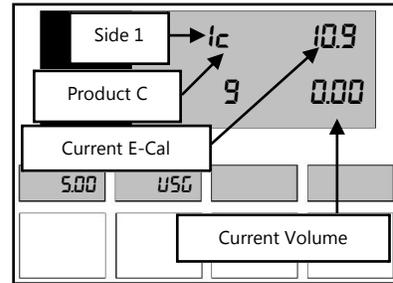


Figure 27.4 – E-Cal Reset

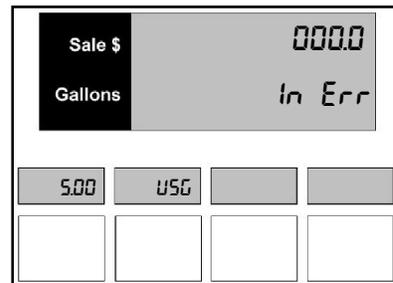


Figure 27.5 – Error Entry

## The Optional Calibration Procedure

This procedure assumes that the test can sight glass is graduated in test can percentage units rather than cubic inches or cubic centimeters (milliliters) as in the basic calibration procedure. If the sight glass is in cubic inches or cubic centimeters, refer to [The Basic Calibration Procedure](#) located on the previous page.

To perform the optional calibration, follow this procedure:

1. Repeat step one from the basic calibration procedure.
2. The main display now shows the test can size entry prompt. Press the **+/-** button to enter the test can size. This switches the error entry mode from cubic units to percentage units. The second PPV display will show **PER** to confirm the percentage unit mode as shown in *Figure 27.6*. Enter the test can size (still in gallons or liters) and press the **Enter** button. Once the test can size has been entered the main display for the select dispenser side will show **READY** and the test can size will appear in the first PPV display. The second PPV display will still show **PER** for the percentage unit mode for error entry.
3. Repeat steps 3 and 4 from the basic calibration procedure.
4. The error display will show **PC Err** for percent error as shown in *Figure 27.7*. Enter the amount of the error (positive or negative) and press the **Enter** button. You can only change the amount to a negative value after the entered amount is other than zero. Once the **Enter** key is pressed, the main display will show **READY**. Go to step 3 to run another test can or press **Cancel** to exit.

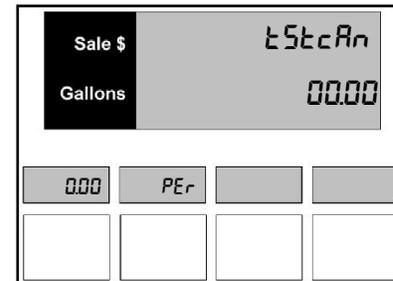


Figure 27.6 – Percentage Units

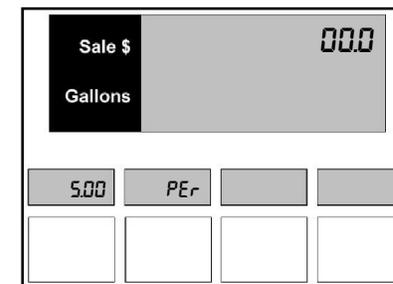


Figure 27.7 – Percent Error

## Programming

### The Direct Percentage Entry Procedure

The direct percentage entry procedure provides a way of zeroing or overwriting the electronic calibration correction constant. This procedure requires no test can.

To perform the direct percentage entry, follow this procedure:

1. Record the E-Cal value from Menu Code 99.
2. Repeat step one from the basic calibration procedure.
3. The main display now shows the test can size entry prompt. Press the ↑ button to bypass the test can prompt and access the direct percentage entry menu as shown in *Figure 27.8*.
4. The ↑ button or the ↓ button is used to select the meter. **Note:** Only the top PPV display will display the selected meter as you press these buttons.
5. As the new electronic calibration correction constant is entered, it will show up in the main volume display. When the **Enter** button is pressed, the entered electronic calibration correction constant is loaded into the current meter and appears in the second PPV display. Go to step 3 to update another meter or press the **Cancel** button to exit this menu code.

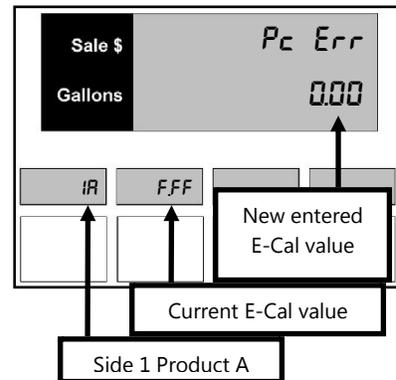


Figure 27.8 – Direct Percentage Entry

## Programming

### Menu Code 28 – How to Set Rounding or Truncating the Sale Amount

Menu Code 28 allows the manager or operator to set the dispenser for rounding or truncating the sale amount. The rounding option is set as the default.

- 0 - Truncating the Sale Amount
- 1 – (Default) Rounding the Sale Amount

To select a different option in Menu Code 28, follow this procedure:

1. Press the number **2** and **8**, then the **Mode** button on the keypad. The PPV display shows the dispenser is in Menu Code 28. If the dispenser has not been programmed since it came from the factory, the number 1 appears in the main display. This is the default setting as shown in *Figure 28.1*.
2. To change the setting, use **0** or **1** button on the keypad to enter a new option. **Note:** If an error is made, press the correct number. The new number will replace the error.
3. When the correct option number appears in the main display, press the **Enter** button to save the selection.
4. Press the **Cancel** button to exit this Menu Code.
5. If this is a two-sided dispenser, changing one side will automatically change the second side to the same value as the first.

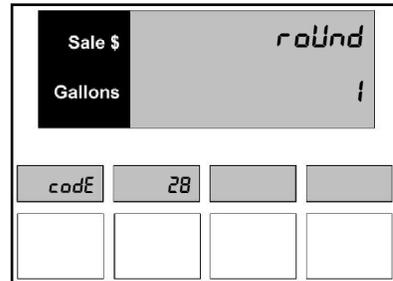


Figure 28.1 – Rounding Sale Amount.

## Programming

### Menu Code 29 – How to Reset Meter Totals

Menu Code 29 is used to reset the electronic resettable meter totals that accumulate in the dispenser every time a sale is completed. This resetting feature is accessed through Menu Code 29. Refer to the *How to Operate* section, [How to Read Electronic Totals with the Magnetic Reed Switch](#). The totals in Menu Code 1 are not affected by this mode and will continue to accumulate totals until there is a RAM memory clear.

To read the volume totals on the dispenser, follow this procedure:

1. Press the number **2** and **9**, then the **Mode** button on the keypad. The main display shows the total volume amount. For example, if the total volume amount for the dispenser were 1,140.032 gallons, the display would appear as in *Figure 29.1*.
2. To read the volume totals for the next meter as shown in *Figure 29.2*, press the **Enter** button to cycle through any remaining meters.
3. To reset the totals, select the desired total and press the **0** button.



**WARNING:** THE FOLLOWING PROCEDURE ZEROS ALL THE VOLUME TOTALS IN THIS MENU CODE. MAKE SURE ALL METER TOTALS ARE RECORDED BEFORE PROCEEDING WITH THE NEXT STEP. DATA CANNOT BE RETRIEVED.

4. Press the **Cancel** button to exit this menu code.

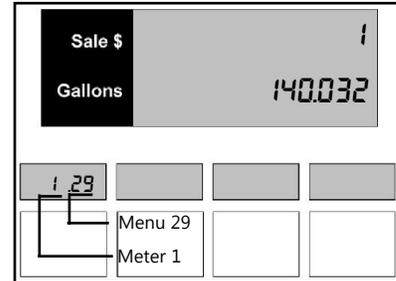


Figure 29.1 – Total Volume Amount

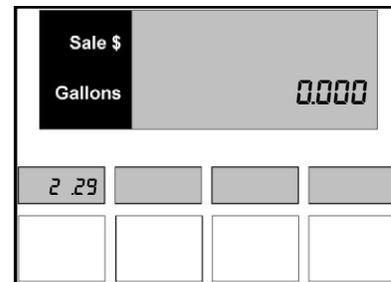


Figure 29.2 – Reset Volume Total

## Programming

### Menu Code 30 – How to Set the Real Time Clock

Menu Code 30 allows the manager or operator to set the real time clock on the dispenser. The real time clock keeps track of the current time and date.

- The current date in *Figure 30.1* is showing yy/mm/dd.
- The current time in *Figure 30.1* is showing hh:mm, which is military time.

To set the real time clock in Menu Code 30, follow this procedure:

1. Press the number **3** and **0**, then the **Mode** button on the keypad.
2. Enter the last two digits of the current year, month, and date (yy/mm/dd) as shown in *Figure 30.1*.
3. Enter two digits for the current hour and two digits for the current minute in military time (hh:mm) as shown in *Figure 30.1*.
4. Press the **Enter** button to save the new setting. **Note:** If an error is made, press the correct number. The new number will replace the error.
5. When the correct date and time appears in the main display, press the **Enter** button to save the selection.
6. Press the **Cancel** button to exit this Menu Code.

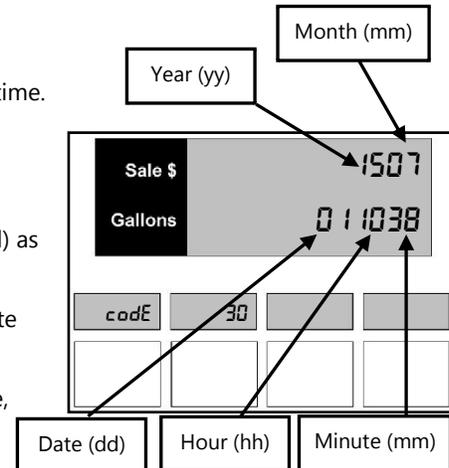


Figure 30.1 – Real Time Clock

# Programming

## Menu Code 35 – How to View the MD5 Checksum

Menu Code 35 is used to display the MD5 checksum of the 819 software installed in the dispenser in sets of 4 digits. There are 8 sets of four digits, totaling 32 digits. Two sets of four digits are displayed at one time - one in the money display and one in the volume display. **Note:** Each set of four digits includes a number to identify the set of four digits.

To view the MD5 Checksum, follow this procedure:

1. Press the number 3 and 5, then the **Mode** button on the keypad. The price display shows the dispenser is in Menu Code 35, and the current checksum will be shown in the main display, as shown in *Figure 35.1*.
2. Press the **Enter** button to view the next eight sets of four digits as shown in *Figure 35.2*.
3. Press the **Enter** button to view the next set of the checksum as shown in *Figure 35.3*.
4. Press the **Enter** button to cycle through the remaining sets.
5. Press the **Cancel** button to exit this Menu Code.

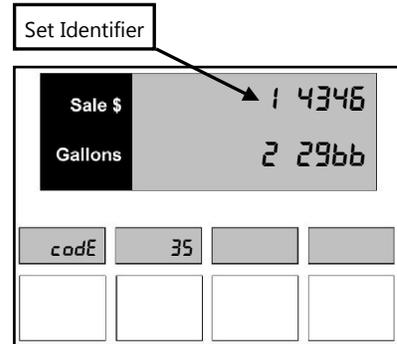


Figure 35.1 – Display 1

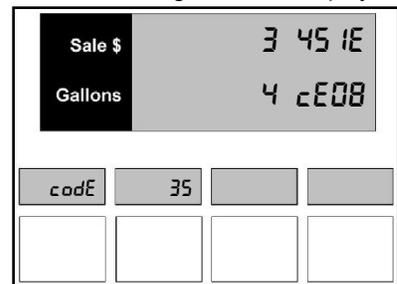


Figure 35.2 – Display 2

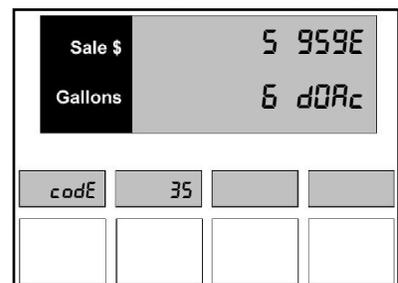


Figure 35.3 – Display 3

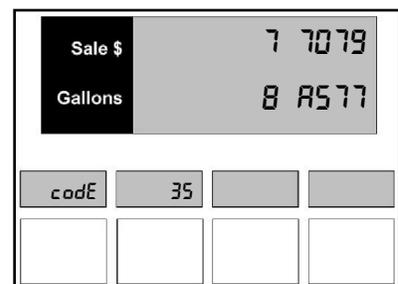


Figure 35.4 – Display 4

## Programming

### Menu Code 77 – How to Enable Vapor Recovery Pulses by Hose

The dispenser can be programmed to support a vapor recovery module, when selected pump handles are turned on. Up to four individual handles, depending on model configuration can be independently programmed.

To select which hoses support vapor recovery, follow this procedure:

1. Press the number **7** and **7**, then the **Mode** button on the keypad. The price display shows the dispenser is in Menu Code 77, and the current settings for vapor recovery will be shown in the lower half of the main display, as shown in *Figure 77.1*.
2. If the dispenser has not previously been programmed for vapor recovery, dashes will appear in all 4 positions. This indicates that vapor recovery is not supported for any handle.
3. To change the setting, use the **1** through **4** buttons on the keypad to toggle the setting for each handle A through D respectively. When the handle letter is displayed, Pulses are enabled for that handle.
  - 1 = Handle A
  - 2 = Handle B
  - 3 = Handle C
  - 4 = Handle D
4. When the correct configuration appears in the main display, press the **Enter** button to save the selection.
5. Press the **Cancel** button to exit this menu code.

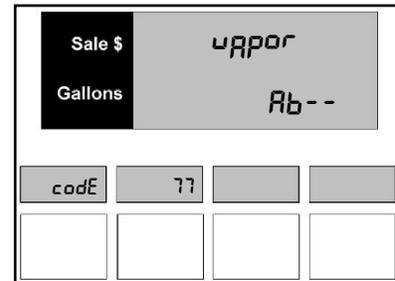


Figure 77.1 – Vapor Recovery

## Programming

### Menu Code 99 – How to Set Volume Units

This menu code sets the unit of measurement used in the country where the dispenser is located.

The first option allows the technician to set the dispenser for the following options:

- 1 – (Default) Gallons
- 2 - Liters
- 3 - British Imperial Gallons

The second option allows the technician to choose the setting for two decimal places or three decimal places.

- 1 - (Default) 1000th (volume resolution - gallons “.001”)
- 2 - 100th (volume resolution - liters “.01”)

The third option is for viewing the E-Cal settings.

To select a different option in Menu Code 99, follow this procedure:

1. After the Menu Code has been accessed, press the number **9** and **9**, then the **Mode** button on the keypad. The PPV display shows the dispenser is in Menu Code 99.
  - If the dispenser has not been programmed since it came from the factory then it will be set for the default.
  - The **0** (if new) or any other number that appears in the second row under the 1 is a counter. It tracks the number of times this setting has been changed as shown in *Figure 99.1*.
2. To change the decimal placement, use the 1, 2 or 3 button on the keypad to enter a new option. Press **Enter**. The display moves to the Decimal Place Configuration as shown in *Figure 99.2*.
  - The choice is 1 for three decimal places or 2 for two decimal places.  
**Note:** This only affects a dispenser set for gallons or liters.
  - The **0** (if new) or any other number, which appears in the second row under the **1**, is a counter. It tracks the number of times this setting has been changed.
3. After you press **Enter** then you will be able to view the E-Cal values for each product as shown in *Figure 99.3*.
4. Press the **Cancel** button to exit this menu code.

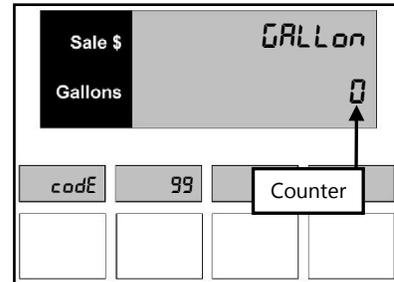


Figure 99.1 – Volume Counter

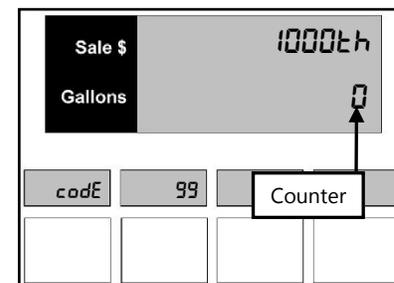


Figure 99.2 – Decimal Place Location

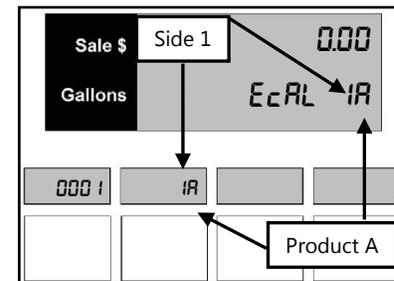


Figure 99.3 – E-Cal Values

# Diagnostics

## How to Use Diagnostics

To enter Diagnostics, the Manager's Keypad must be connected to the dispenser to place the dispenser into the Manager's Mode. Refer to the [How to Operate](#) section, [Connecting the Manager's Keypad for Dispenser Programming](#) or [How to Use the Local Preset Keypad for Dispenser Programming](#). Make sure the A.C. Reset switch is in the ON position, and the pump handles are all in the OFF position. These instructions will not be repeated for each Diagnostic Code.

Diagnostic tests have been programmed into the dispenser software to help the operator and service technician to troubleshoot failures of the dispenser. The dispenser can run several levels of self-diagnostic tests to determine where the failure has occurred. The levels that will be discussed are as follows:

- By performing a diagnostic test, the operator or manager can inform the service technician of the problem before coming to the site.
- The service technician can then anticipate which repair parts to bring to the site.

Diagnostic Code	Description
0	1 – Design Type 2 – Software Release Number 3 – 819 Software I.D. Number (CKsum) 4 – 619 Software I.D. Number
1	Display Segment Test
2	Error History
3	CPU Test (Error 99)
4	RAM Test
5	Pump Handle Test
6	.1 Power Failure Counter .2 Uart Failure Counter .3 Cold Start Counter .4 EEPROM .5 Software
7	Keyboard/Switch/Beeper Test
8	Last Sale Limit Type (Prepay Money, Prepay Volume, Allocation Limit, Preset Money, Preset Volume, Maximum Money, Wayne Delivery)
9	619IOB Diagnostic Loop Back Info

To enter Diagnostics, follow this procedure:

1. After the correct number (1 or 2) has been entered for the side to be viewed, press the **0** button and then the **Mode** button on the keypad as shown in *Figure D*. The PPV display shows the side being read.
2. From this point, any test can be entered by pressing the number of the test and the **Enter** button.
3. To exit a diagnostic test, press the **Cancel** button.

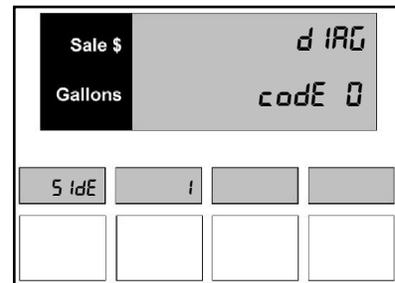


Figure D - Diagnostics

### Diagnostics Code 0

This test is used to display the design type, software revision level, and the software identification or checksum of this software.

To enter this test, enter diagnostics and press the **0** button on the keypad and the **Enter** button. If you have just entered diagnostics, press **Enter** to see the first level of Test 0.

#### 0.1 Design Type

The PPV display shows the dispenser is in Diagnostics Level 0.1 as shown in *Figure D.0.1*.

1. Design type 6 is the default. It means the dispenser is an "819 CPU design" computer.
2. Press **Enter** to move to the next level of Diagnostic Code 0.

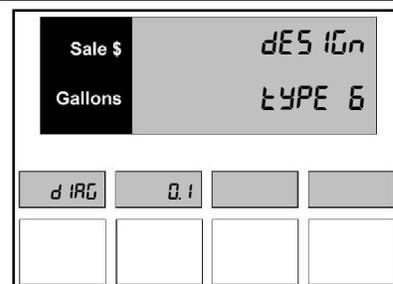


Figure D.0.1 – Design Type

## Diagnostics

### 0.2 Software Release Number

The software release number is the current level of software installed in the dispenser. The PPV display shows the dispenser is in Diagnostics Level 0.2.

1. After **Enter** was pressed in the previous level, the next level of Diagnostic Code 0 is displayed.
2. The current level of software installed in the dispenser will be displayed as shown in *Figure D.0.2*. **Note:** Software levels will change from version to version.
3. Press **Enter** to move to the next level of Diagnostic Code 0.
4. Press the **Cancel** button to exit this code.
5. Press the **Cancel** button twice to exit Diagnostics.

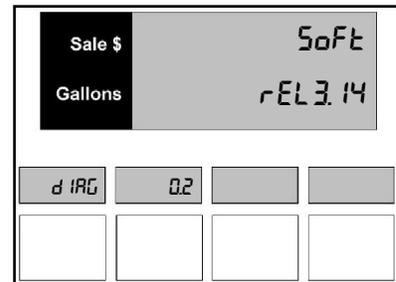


Figure D.0.2 – Software Release

### 0.3 819 Software I.D. Number

The software id number identifies the 819 software revision level installed in the dispenser. The PPV display shows the dispenser is in Diagnostics Level 0.3.

1. After **Enter** was pressed in the previous level, the next level of Diagnostic Code 0 is displayed.
2. The current level of the 819 software revision will be displayed as shown in *Figure D.0.3*. **Note:** This will change from software version to software version.
3. Press **Enter** to move from one level to another of Diagnostics Code 0.
4. Press the **Cancel** button to exit this code.
5. Press the **Cancel** button twice to exit Diagnostics.

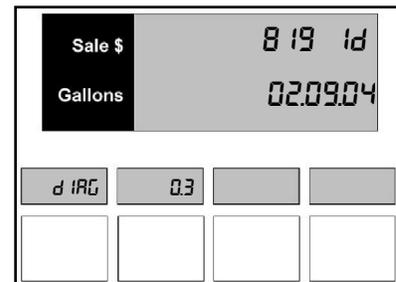


Figure D.0.3 – 819 Software ID

### 0.4 619 Software I.D. Number

This software id number identifies the 619 software revision level. The PPV display shows the dispenser is in Diagnostics Level 0.4.

1. If **Enter** was pressed in the previous level, the next level of Diagnostic Code 0 is displayed.
2. The current level of the 619 software revision will be displayed as shown in *Figure D.0.4*. **Note:** This will change from software version to software version.
3. Press **Enter** to move from one level to another of Diagnostics Code 0.
4. Press the **Cancel** button to exit this code.
5. Press the **Cancel** button twice to exit Diagnostics.

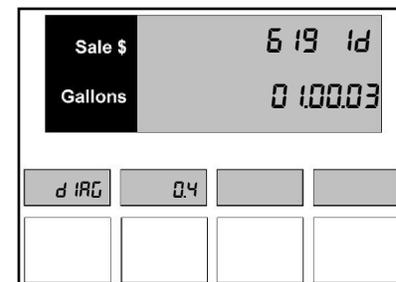


Figure D.0.4 – 619 Software ID

## Diagnostics

### Diagnostic's Code 1 – Display Segment Test

The display segment test is used to identify failed segments in the main displays or the individual PPV displays.

1. To enter the display segment test. Press the **1** button on the keypad and the **Enter** button.
  - The main sales display window will say, **PRESS ENTER** as shown in *Figure D.1*. Press the **Enter** button to begin.
  - The main display and the individual PPV displays begin to display all dashes as shown in *Figure D.1a*.
2. Each time the **Enter** button is selected a new set of segments will be displayed. The displays will flash until the **Cancel** button is pushed to exit this code.
3. Press the **Cancel** button to exit this code.
4. Press the **Cancel** button twice to exit Diagnostics.

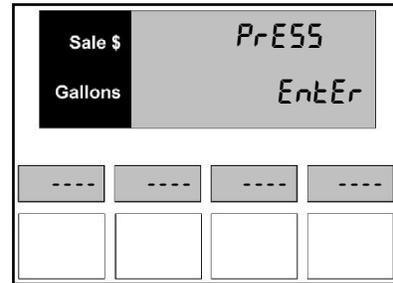


Figure D.1 – Display Segment

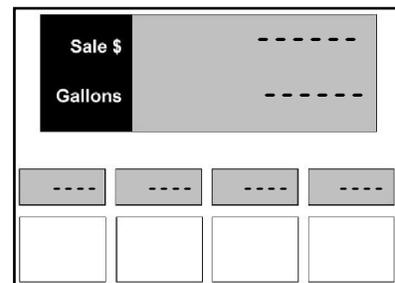


Figure D.1a – Dash Display Segment

### Diagnostic's Code 2 – Error History

The error log file displays the last 10 errors for each selected side that are included in the error log file. The errors are displayed for the selected side. If the latest 10 errors were all on side 1, then no errors would be displayed on side 1, and 10 errors would be displayed on side 2. Refer to *Figure D.2*.

1. Enter diagnostics and press the **2** button on the keypad and the **Enter** button.
2. Press the **Enter** button to view the data in descending chronological order.
3. Press the **Cancel** button to exit this code.
4. Press the **Cancel** button twice to exit Diagnostics.

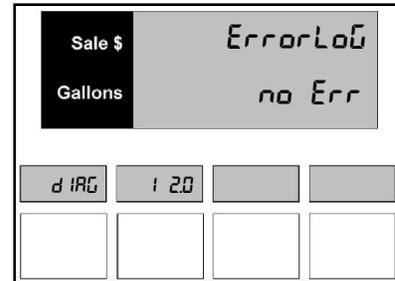


Figure D.2 – Error History

### Diagnostic's Code 3 – CPU Test

The CPU test deliberately introduces a fault into the arithmetic unit of the CPU. The display must then flash **ERROR 99** indicating the system has detected the fault. If the message is not displayed, the test has failed.

1. Enter diagnostics and press the **3** button on the keypad and the **Enter** button. A typical test appears as shown in *Figure D.3*.
2. The 99 error will clear when the **Cancel** button is pushed to exit Diagnostics.
3. Press the **Cancel** button to exit this test.
4. Press the **Cancel** button twice to exit Diagnostics.

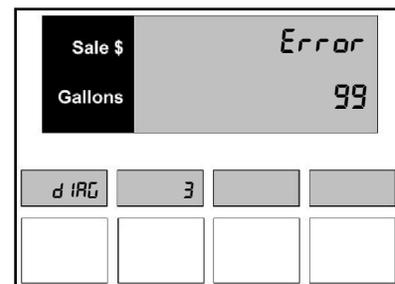


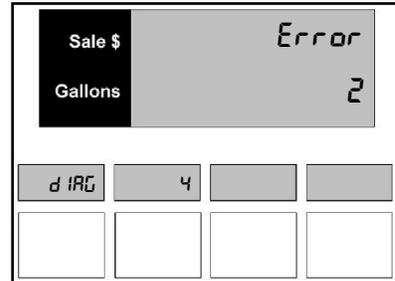
Figure D.3 CPU Test

# Diagnostics

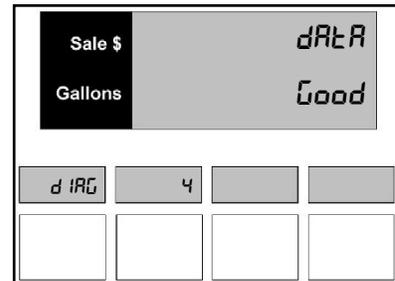
## ***Diagnostic's Code 4– RAM Test***

The RAM test is used to test the system RAM. The CPU performs a RAM test to determine if RAM is good or corrupted.

1. Enter diagnostics and press the **4** button on the keypad and the **Enter** button.
  - If the RAM failure is detected by the RAM test, the displays flash the message as shown in *Figure D.4a*
  - If a RAM failure is not detected by the RAM test, the displays flash the message as shown in *Figure D.4b*.
2. Press the **Cancel** button to exit this test.
3. Press the **Cancel** button twice to exit Diagnostics.



*Figure D.4a – RAM Test Failure*

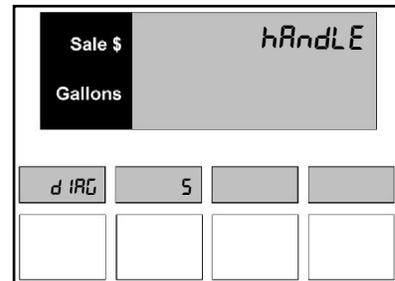


*Figure D.4b – RAM Test*

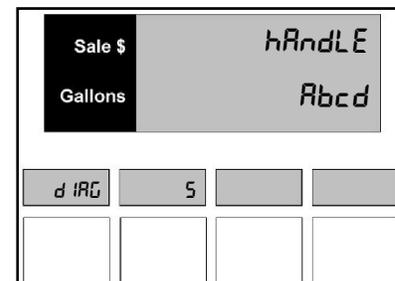
## ***Diagnostic's Code 5– Pump Handle Test***

The pump handle test checks the status of the pump handles on the dispenser. The CPU reads the pump handle switches and writes the status of each handle to the display.

1. Enter diagnostics and press the **5** button on the keypad and the **Enter** button.
  - When all handles are off, the display appears as shown in *Figure D.5a*.
  - When a handle is turned on, an A, B, C or D appears as shown in *Figure D.5b*.
2. Turn each pump handle on individually or all at once to test the status.
3. Press **Cancel** button to exit this test.
4. Press the **Cancel** button twice to exit Diagnostics.



*Figure D.5a – Pump Handle Test Off*



*Figure D.5b – Pump Handle Test On*

# Diagnostics

## Diagnostics Code 6 – Power Failure and Cold Start Counter

The power failure counter code is used to investigate intermittent problems with power. The counters keep track of the number of times a power failure occurs.

### 6.1 Power Failure Counter - Pfails

1. To enter this test, enter diagnostics and press the **6** button on the keypad and the **Enter** button.
  - a. The display shown in *Figure D.6.1* appears. The PPV display shows the dispenser is in Diagnostics Level 6.1.
  - b. The number of power failures that have occurred since the system was reset (cold start) appears on the second line of the main display.
2. The counter can be zeroed by pressing a sequence of keys while the counter is displayed.
  - a. To zero the counter, press the following buttons on the keypad shown in *Figure D.6.1a* in the sequence listed in step b.
  - b. Press ↑, Press ↓, Press +/- **Note:** After this three-button sequence is entered, the counter displayed is cleared.
3. Press **Enter** to advance to the next counter or press the **Cancel** button to exit this test.
4. Press the **Cancel** button twice to exit Diagnostics.

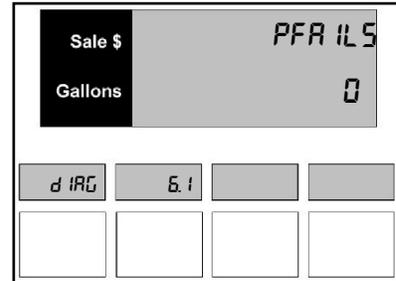


Figure D.6.1 – Power Failure Counter

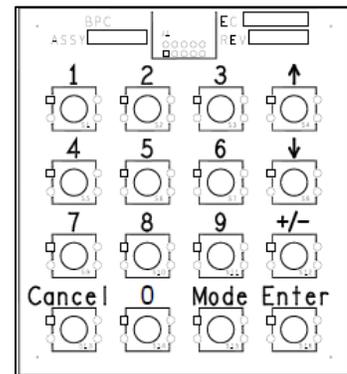


Figure D.6.1a – Manager's Keypad

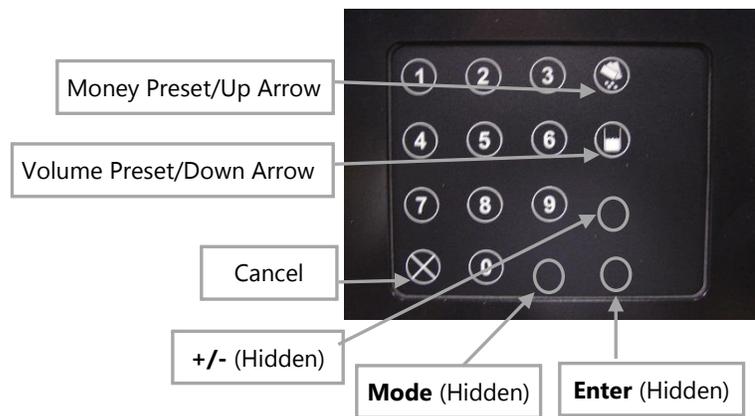


Figure D.6.1b – Local Preset Keypad

## Diagnostics

### 6.3 Cold Start Counter

This code is used to tell the technician how many times a Cold Start has been performed on the dispenser.

1. To enter this test, enter diagnostics and press the **6** button on the keypad and the **Enter** button.
  - The main display shown in *Figure D.6.3* appears. The PPV display shows the dispenser is in Diagnostics Level 6.3.
  - The number of Cold Starts that have occurred appears on the second line of the main display.
2. Press the **Cancel** button to exit this test.
3. Press the **Cancel** button twice to exit Diagnostics.

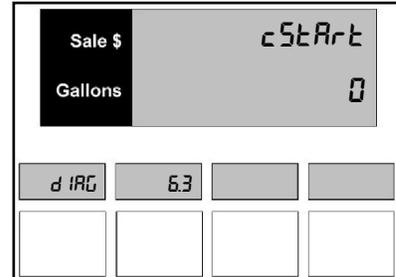


Figure D.6.3 – Cold Start Counter

### 6.4 EEPROM Checksum Fails

This code is used to tell the technician how many times the EEPROM checksum failed on the dispenser.

1. To enter this test, enter diagnostics and press the **6** button on the keypad and the **Enter** button.
  - The main display shown in *Figure D.6.4* appears. The PPV display shows the dispenser is in Diagnostics Level 6.4.
  - The number of EEPROM Checksum fails that have occurred appears on the second line of the main display.
2. Press the **Cancel** button to exit this test.
3. Press the **Cancel** button twice to exit Diagnostics.

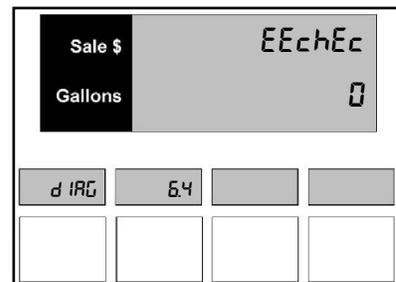


Figure D.6.4 – EEPROM Cksum Fails Counter

### 6.5 Software Restarts

This code is used to tell the technician how many times the software restarted on the dispenser..

1. To enter this test, enter diagnostics and press the **6** button on the keypad and the **Enter** button.
  - The main display shown in *Figure D.6.5* appears. The PPV display shows the dispenser is in Diagnostics Level 6.5.
  - The number of software restarts that have occurred appears on the second line of the main display.
2. Press the **Cancel** button to exit this test.
3. Press the **Cancel** button twice to exit Diagnostics.

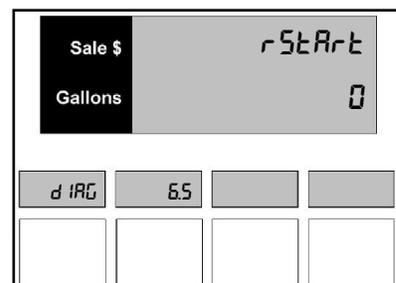


Figure D.6.5 – Software Restarts Counter

# Diagnostics

## 6.6 EEPROM Update Starts

This code is used to tell the technician how many times a reset occurred during an EEPROM update on the dispenser.

1. To enter this test, enter diagnostics and press the **6** button on the keypad and the **Enter** button.
  - The main display shown in *Figure D.6.6* appears. The PPV display shows the dispenser is in Diagnostics Level 6.6.
  - The number of resets occurred during an EEPROM update appears on the second line of the main display.
2. Press the **Cancel** button to exit this test.
3. Press the **Cancel** button twice to exit Diagnostics.

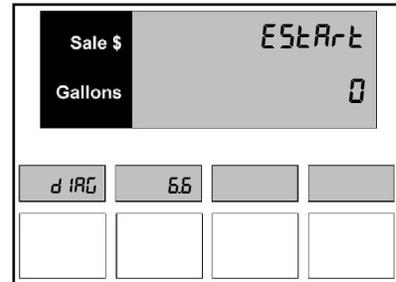


Figure D.6.6 – EEPROM Resets Counter

## Diagnostics Code 7 – Keyboard, Switch, and Beeper Test

This code is used to test the switches for the product buttons and the buttons on the programming keypad.

1. Enter diagnostics and press the **7** button on the keypad and the **Enter** button. The display shown in *Figure D.7* appears.
  - During this test, the dispenser emits a tone when each button on the keypad is pressed. The name of the button appears in the top line of the display.
  - If no tone is heard, the button or key failed the test. The main display shows the name of the last button pressed.

**Note:** Test the **Cancel** button last.

2. Press the **Cancel** button twice to exit this test.
3. Press the **Cancel** three times to exit Diagnostics.

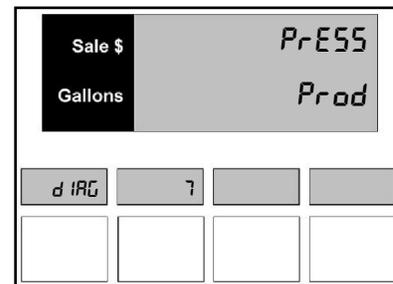


Figure D.7 - Audio Tone Test

## Diagnostics Code 8 – Last Sale Limit

This code is used to view the sale limit of the last ten sales. The last sale limit type and limit amount are displayed for the selected side as shown in *Figure D.8*. Money limits are shown with two decimal digits and volume limits are shown with three decimal digits. Diagnostic mode 8 is intended for decimal mode 0 and gallons.

**Limit Type:**

- 0 = Prepay Money
- 1 = Prepay Volume
- 2 = Allocation Limit
- 3 = Preset Money
- 4 = Preset Volume
- 5 = Maximum Money Limit
- 6 = Wayne Delivery Limit

1. Enter diagnostics and press the **8** button on the keypad and the **Enter** button.
2. Press the **Enter** button to view the number of sales in descending chronological order.
3. Press the **Cancel** button to exit this test.
4. Press the **Cancel** button twice to exit Diagnostics.

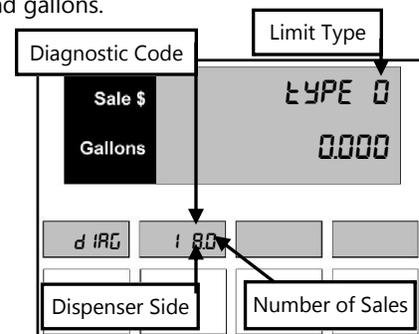


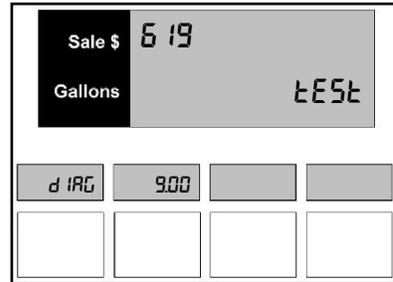
Figure D.8 – Last Sale Limit

# Diagnostics

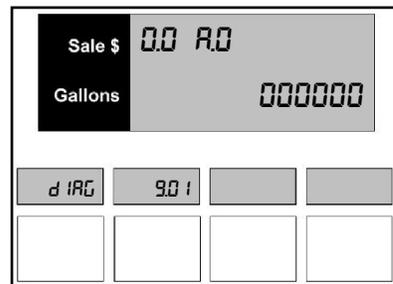
## ***Diagnostics Code 9 – 619IOB Loop Back Information***

This code is used to detect shorts, opens, and other board failures. It displays the 619IOB diagnostic loop back information. There are 46 output/input loop back pairs and 6 analog input half-scale measurements.

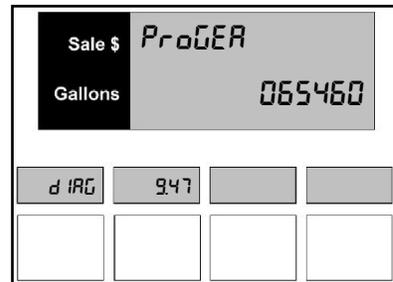
- 1 through 46 Diagnostic Counters
  - 47 through 50 Temp Comp A-D (Temperature Compensation)
  - 51 and 52 PT100RTD 1-2 (RTD Used to measure temperature)
6. Enter diagnostics and press the **9** button on the keypad and the **Enter** button.
  7. Press the **Enter** button to view 1 through 46 diagnostic error counters in descending chronological order as shown in *Figure D.9a*.
  8. Press the **Enter** button to view Temperature Probes A through D in descending chronological order as shown in *Figure D.9b*.
  9. Press the **Enter** button to view RTD Probe 1 and RTD Probe 2 in descending chronological order as shown in *Figure D.9c*.
  10. Press the **Cancel** button to exit this test.
  11. Press the **Cancel** button twice to exit Diagnostics.



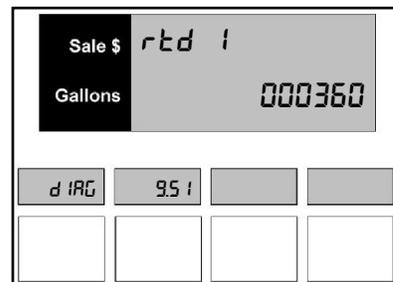
*Figure D.9 – 619 Test*



*Figure D.9a – Input/Output Error Counters*



*Figure D.9b – Temperature Probes*



*Figure D.9c – RTD Probes*

## Diagnostics

### Error Codes

Error codes are displayed when there is a fault condition in the dispenser. In the event of an error, a message will be displayed on the side of the dispenser where the error occurred. Any error message will shut down the sale but not disable the pump. To clear an error message simply lower the handle or put the nozzle back in the boot and remove the nozzle again. To view the error history log refer to Diagnostic Code 2 for more information. **Note:** Repair the problem that may have caused the error first and then clear the message. If an error message continues to be displayed, please contact Bennett Technical Support at 1-800-423-6638.

Error Code	Error Text	Description
00	NO ERR	No Error
02	DATA	Ram Error
05	REVFLO	Reverse Pulser – Inactive Pulser Turning Forward or Backwards
13	PLSRAS	Pulser A Error Same State Transition Limit Exceeded
14	PLSRAN	Pulser A Next State Transition Limit Exceeded
15	PLSRAR	Pulser A Reverse Flow
16	PLSRAD	Pulser A Lead Channel Failed
17	PLSRAG	Pulser A Lag Channel Failed
23	PLSRBS	Pulser B Same State Transition Limit Exceeded
24	PLSRBN	Pulser B Next State Transition Limit Exceeded
25	PLSRBR	Pulser B Reverse Flow
26	PLSRBD	Pulser B Lead Channel Failed
27	PLSRBG	Pulser B Lag Channel Failed
33	PLSRCS	Pulser C Same State Transition Limit Exceeded
34	PLSRCN	Pulser C Next State Transition Limit Exceeded
35	PLSRCR	Pulser C Reverse Flow
36	PLSRCD	Pulser C Lead Channel Failed
37	PLSRCG	Pulser C Lag Channel Failed
43	PLSRDS	Pulser D Same State Transition Limit Exceeded
44	PLSRDN	Pulser D Next State Transition Limit Exceeded
45	PLSRDR	Pulser D Reverse Flow
46	PLSRDD	Pulser D Lead Channel Failed
47	PLSRDG	Pulser D Lag Channel Failed
51	LOPRDA	Grade A Low
52	LOPRDB	Grade B Low
59	BLEND	Blend ratios sent from the console does not match the dispenser ratio.
60	POSTAL	Mailbox has exceeded its message limits.
70	NOECAL	Not Calibrated or Bad Checksum
71	RANGE	E-Cal Constant Out of Range Error
72	VINTER	Vapor Vacuum – Interlock Error
73	ETOTAL	One or more electromechanical totalizer output counters are corrupted.
74	UNSEAL	E-Cal Switch is in unsealed position and a normal sale started.
75	VSIDE1	Vapor Vacuum – Side 1 Error – Fast Flow or Over Current
76	VSIDE2	Vapor Vacuum – Side 2 Error – Fast Flow or Over Current
83	PLSRDC	Pulser Disconnected
93	PLSRCC	Pulser Circuitry Error
94	619DCN	Lower I/O is Not Responding
99	GENERL	CPU Failure – Addition Error
d5	DOORSS	Door is open sensor (DS)

## Maintenance



**WARNING:** Do not use a high-pressure washer to clean the dispenser. Liquid under pressure can enter the dispenser cabinet and damage electronic components.



**WARNING:** Do not use strong detergents, petroleum solvents, abrasive cleaners or steel wool to clean the dispenser.

**Note:** To remove tree resin or sap from dispensers, use turpentine.

Keep the dispenser clean and protected. It will keep a new pump appearance longer.

### ***Cleaning Painted Surfaces***

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1. Wash the dispenser in a solution of warm water and a mild detergent that removes grease and oil.
2. Rinse thoroughly with clean water.
3. Dry all surfaces with a clean cloth.
4. If the surface is dull due to oxidation, apply a cleaner specially formulated to remove oxidation to the clean surface. This will restore luster to the painted surface.

### ***Cleaning Stainless Steel, Anodized Aluminum or Chrome-Plated Panels***

---

1. Wash the dispenser in a solution of warm water and a mild detergent that removes grease and oil.
2. Rinse thoroughly with clean water.
3. Dry all surfaces with a clean cloth.
4. Apply a coat of non-abrasive paste wax to protect the panels from corrosion.

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