

Bennett Horizon 2 Series Electronic

with 708 Electronics

Operator's Manual

Only Trained Personnel May Work on This Equipment

Includes Instructions For:

Self Contained

Remote

High Hose

Low Hose

Single Sided

Dual Sided

Card Reader

Blender

Software Level 1.XX

For Horizon Dispensers Only

READ THIS BOOK

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

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<http://www.bennettpump.com>



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Safety Instructions


WARNING ADVERTISSEMENT ADVERTENCIA


For the safe installation of this equipment, read and understand all warning and cautions. Look for these warnings:


-  **“DANGER”** means: If you do not follow the instructions, severe injury or death will occur.
-  **“WARNING”** means: If you do not follow the instructions, severe injury or death can occur.
-  **“CAUTION”** means: If you do not follow the instructions, damage can occur to the equipment.


 **DANGER:** Fire, explosion, injury or death will occur if fuel filters are changed by untrained personnel. Make sure only trained personnel change filters.


 **DANGER:** To prevent injury to you from vehicles and onlookers, always place a barrier around this equipment before performing service or maintenance.


 **DANGER:** Gasoline is flammable.
NO SMOKING OR OPEN FLAME.


 **DANGER:** Disconnect all power to this equipment and associated submerged pump(s) during installation, service or any maintenance, i.e., changing filters.


 **WARNING:** 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.


 **WARNING:** To prevent electric shock, keep the electrical parts of the dispenser dry.


 **WARNING:** Electronic components are static sensitive. Use proper static precautions (static straps) before working on the equipment.

 **WARNING:** 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.

 **WARNING:** You must have training in the operation and programming of this dispenser before using it. READ THE OPERATORS MANUAL.

 **WARNING:** Make sure this equipment is correctly grounded. Failure to do will cause injury or damage equipment or improper operation. Improper grounding voids the warranty.

 **WARNING:** When anchoring the dispenser, always level the dispenser with shims before bolting to the island. DO NOT shim just the middle of the dispenser and bolt down.

 **CAUTION:** 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

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 interference, and (2) this device must accept interference received, including interference that may cause undesired operation.

Related Documents

Installation Manual: 105894

Service Manual: 106797

Parts Manual: 107042

Introduction

All of the dispensers shown in this book can be operated in the “Stand Alone” mode (no control console), or with a control console system such as: Bennett 405 or the 515 in conjunction with a 3rd party POS system.

The **2300 and 2400 Series** is available with 1 product to 4 products, self-contained or remote dispenser. The 2300 Series is available in High hose or Low hose. The 2400 Series is only available in High hose.

Features & Capabilities

1. A self-monitoring pulser will prevent product flow in the event of a malfunction.
2. Diagnostic software system built-in to aid in troubleshooting.
3. A Manager's access code prevents unauthorized changes of the price per volume settings.
4. 1" high LCD displays which are lighted 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:**

	Each Sale	Totals
Dollars	9999.99	9,999,999.99
Gallons	999.999	9,999,999.999
Liters	9999.99	99,999,999.99
Price Per Volume	9.999	

7. An external switch (Last Sale Recall) is provided for reading totals and recalling the display information during a power failure.
8. An external switch (Blank Display/Totals) is provided to give the appearance of power off to the dispenser by turning off the pump's displays. The switch also allows attendant to read daily totals from the pump face.
9. 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 nickel-cadmium battery retains totals and programmed information in the RAM memory during power failures for up to 10 days.
10. 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.
11. All major low voltage connectors incorporate gold on gold contacts to prevent oxidation and promote reliability.
12. The dispenser meets or exceeds FCC Emission Standards and UL specifications.
13. Dispenser programming is performed from the manager's keypad. The keypad is located Inside the electronics head behind side 1 electronics door.

The Pump Control Devices

The Manager's Keypad. See Figure 1.


The manager's keypad allows the dispenser to be programmed. When the keypad is plugged into the dispenser receptacle the dispenser automatically enters the attendant mode (sometimes referred to as "manager's mode"). The attendant mode allows access to the dispenser totals, pricing information and programming information. The manager keypad is located in the electronics head behind the side 1 door. See page 18 for instructions on how to connect the manager's keypad.

See the "How To Prepare The Dispenser For Operation" section for a complete description of keypad functions for programming the dispenser. See the "How To Operate The Dispenser" section for an explanation of keypad use to read totals. See the "How To Use Diagnostics" section for complete instructions for using the keypad to read error codes.

The Power Switch. See Figure 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.

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 and release the battery disconnect switch located on the power board.

 **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.

The Error Messages. See Figure 3.

When an error message appears, there is a fault condition in the dispenser. Use the dispenser diagnostics to determine the problem. Please refer to page 56 "How to Use Diagnostics".

NOTE: When an error message appears the dispenser can be reset by turning any pump handle on and back off.

The Power Failure Message. See Figure 4.

The Power Fail message occurs whenever the power has been interrupted or turned off to the dispenser. If the power is turned off and the P Fail 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.

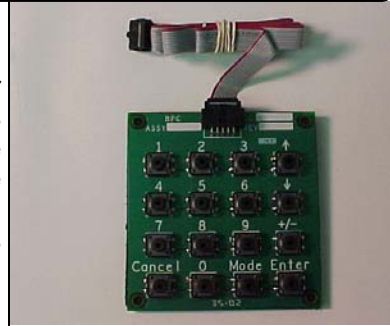
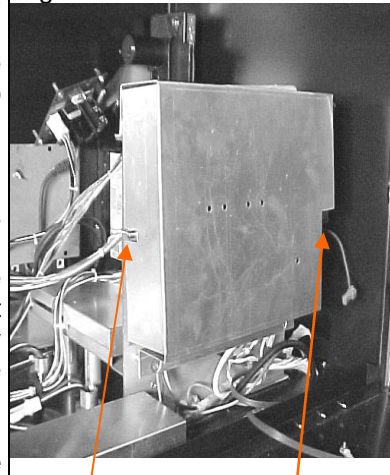


Figure 1



Power Switch Battery Switch

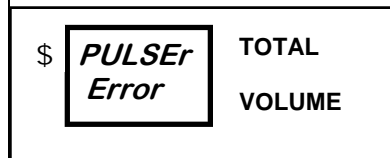


Figure 3

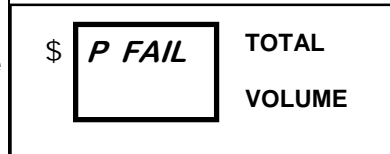


Figure 4

The Pump Control Devices

The Blank Display/Totals Switch. See Figure 5.

The Blank Display/Totals switch is hidden from the customer and located at position C on the product select keyboard. See Figure 5. Push the button to turn off the displays. It gives the appearance of power off to the dispenser during shutdown or when waiting for service.

To enter the totals mode press and hold the Blank Display switch until the totals display appears. This will display all Mode 1, Mode 2 and Mode 26 shift totals. Once the totals mode is entered, the next totals are displayed by pressing the hidden Blank Display/Totals button again. By successively pressing the button, all totals can be displayed. If the button is not pressed for 30 seconds, the display returns to idle. See Menu Code 1 and 26 for more information.

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

The Last Sale Recall Switch. See Figure 5.

The Last Sale Recall switch is hidden from the customer and located on the Product select keyboard in position D. If power to the dispenser is interrupted, the money and volume totals can be accessed, as well as the current sale information. Push the button. The last sale in progress will display for 20 seconds. The button may be pressed successively to bring up the last sale information every 20 seconds. For complete information, see "How to Read Electronic Totals During a Power Failure," Page 17.

The Electronic Door Key Locks. See Figure 6.

The key locks for the electronic door are located on either outside top edge of the door. The Key locks for the lower door of the Horizon Series are located on the left side (top and bottom) of the lower door panel. See Figure 6.

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

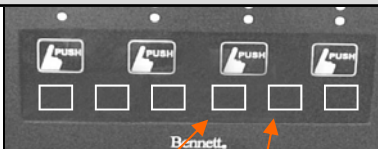
The Electro-Mechanical Totalizers. See Figure 7.

The electro-mechanical totalizers are located at the top of the main display aligned above each Individual Price Per Volume Display. The total is cumulative and reads in whole unit (gallon or liter) increments.

The Pump Handle. See Figure 8.

Lever Operation: The pump handles are located on the front of the dispenser. To operate the dispenser, remove the nozzle from the holder and lift the pump handle up for the **ON** position. Push the pump handle down for the **OFF** position. These are referred to as "lift to start nozzle" boots.

Push to Start Operation: The "Push to Start" nozzle boots turn on the dispenser as soon as the nozzle is removed from the nozzle boot. With this style of operation the customer is required to select the desired product by pressing the appropriate product select switch.



Recall Switch Blank Display

Figure 5



Figure 6

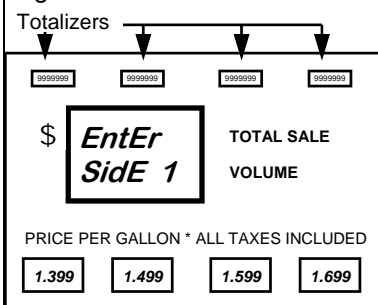


Figure 7



Figure 8

The Pump Control Devices

The Grade Select Buttons. See Figure 9.

When the dispenser is a single hose multi-product dispenser, the customer must select the grade to be pumped before the dispenser will operate. The grade select buttons are located below the main display.

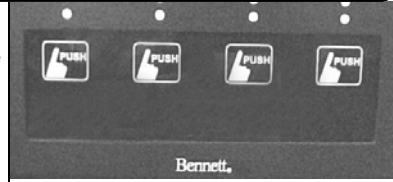


Figure 9

The Customer Preset Option. See Figure 10.

This option allows the customer or operator to pre-select the amount of fuel to be purchased. At the pre-selected amount the dispenser will automatically stop. A fill-up feature is also present.

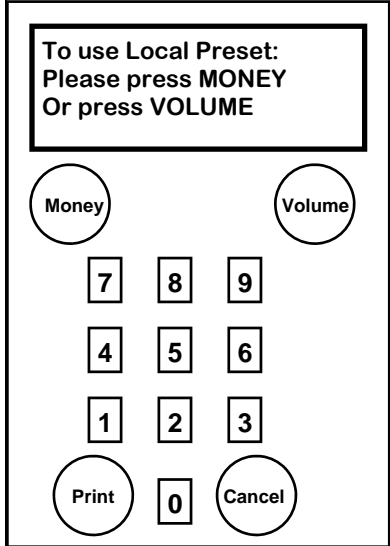


Figure 10

The Dispenser Card Terminal. See Figure 11.

This 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.

NOTE: The Local Preset option and the Dispenser Card Terminal option are mutually exclusive. A dispenser may have either option, but cannot have both options.



Figure 11

How to Operate 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

To dispense fuel, follow this procedure:

1. Remove the nozzle from the holder.
2. Lift the handle to the **ON** position. See Figure 1. Note: be sure the pump is authorized by the console or is in stand alone.
3. Wait for the displays to go to all 8's and then all 0's.

NOTE: If the dispenser is a single hose dispenser, a grade button must be pressed to start a sale.

If a Push to Start button is present, it must be pressed before a sale can start.

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.

If the dispenser stops during the delivery of fuel, check the display for an error code. If one is present, refer to the section in this manual entitled "How to Use Diagnostics," Page 56.

How to Dispense Fuel With The Local Preset Option

To dispense fuel with the local preset option, follow this procedure:

1. The idle mode on the display appears similar to Figure 2.

Press the "Money" button to change to Money preset or the "Volume" button to change to Volume preset. See Figure 4 for an example of Volume preset.

Using the 0 through 9 buttons on the preset keypad, enter an amount. If an error is made, press the **CANCEL** button and start over.

Example: If you have correctly entered a \$5.00 sale, the display reads as in Figure 3.

2. Remove the nozzle from the holder.
3. Lift the handle to the **ON** position. Note: be sure the pump is authorized by the console or is in stand alone.

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.

NOTE: If the dispenser is a single hose dispenser, a grade button must be pressed to start a sale.

4. Squeeze the nozzle trigger to dispense fuel into the vehicle or approved container.
5. Release the nozzle trigger when the dispenser stops the flow of fuel.
6. Lower the handle to the **OFF** position.
7. Put the nozzle in the holder.
8. If the dispenser stops during delivery of fuel, refer to the section in this manual entitled "How to Use Diagnostics", page 56.

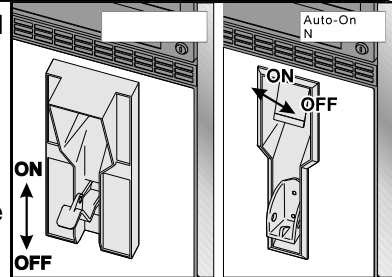


Figure 1

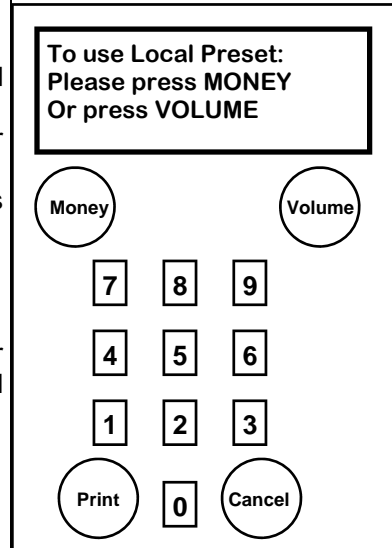


Figure 2

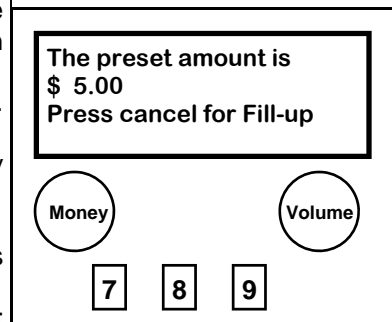


Figure 3

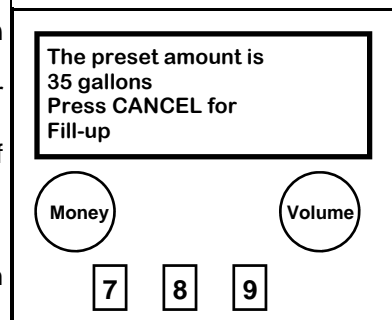


Figure 4

How to Operate Dispenser

How to Blank the Displays See Figure 5.

The dispenser is designed to operate with the power **ON** 365 days a year. Leave the power on all the time. This will result in fewer repairs and longer life. To give the appearance of power **OFF** to the dispenser, push the Blank Display/Totals switch located on the lower left hand side of the Product Select panel to the right of the Last Recall Switch.

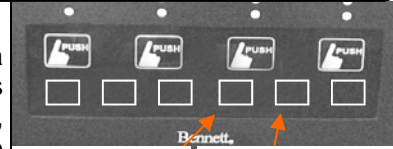
To prevent fuel theft during the time the site is closed, turn pump motor power and the dispenser power circuits **OFF**. The dispenser cannot dispense fuel without pump motor power.

If you are unable to turn the power off to the pump motor and leave the rest of the dispenser with power, the A.C. wiring to the dispenser is not correct. Have a proper connection made by a qualified electrician.

How to Read the Electro-mechanical Totalizer See Figure 6.

The dispenser is equipped with a Electro-mechanical totalizer for each hose which records the volume dispensed for each sale. The volume recorded is an accumulative total that cannot be reset. The electro-mechanical totalizers are located at the top of the main display aligned above each Individual Price Per Volume Display. The total is cumulative and reads in whole unit (gallon or liter) increments.

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.



Recall Switch Blank Display

Figure 5

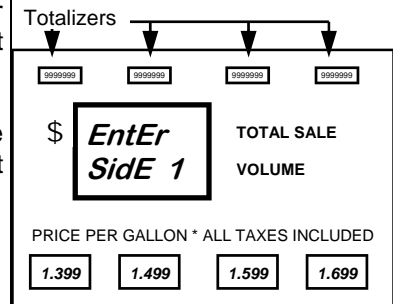


Figure 6

How to Operate Dispenser

How to Read Electronic Totals - Menu Code 1

This menu code 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 for operator/attendant access to electronic totals, see "How to Read Electronic Totals Using the Blank Display/Totals" 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 Keypad. The main sales display appears similar to Figure 1.

The main display shows the total money amount. For example: If the total money amount for the dispenser is \$461,007.88, the display appears as in Figure 1.

The price display window reads P 1 1.1 for Product 1, Money Total, 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 display reads P 2 1.1 for Product 2, Money Total, Menu Code 1. See Figure T-2.

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

1. Press the **↓** button. (See Figure 3.) The main display indicates Hose A volume totals. See Figure 4.

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 4. 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. (See Figure T-3.) The main sales display indicates Product 1 counter totals. See Figure T-5.

The top line of the display shows the number of sales for Product 1. The sales counter is incremented each time a sale is run 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.

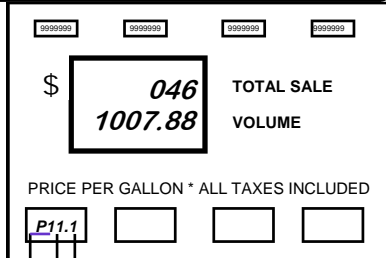


Figure 1

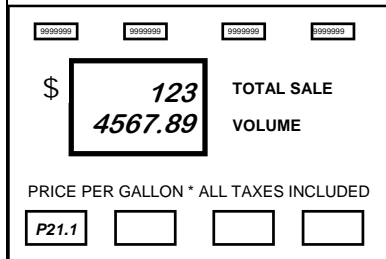


Figure 2

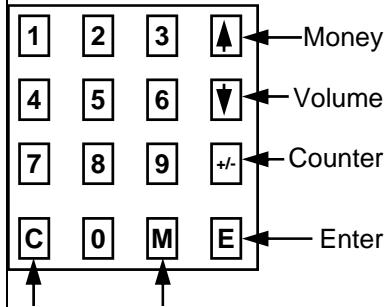


Figure 3

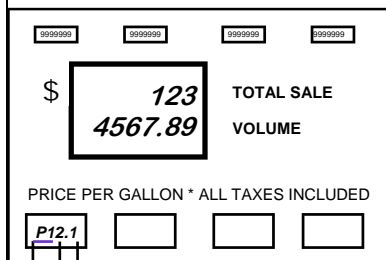


Figure 4

How to Operate Dispenser

How to Read Electronic Totals w/ the Blank Display/Totals Switch

The operator/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 Blank Display/Totals switch, follow this procedure:

1. Press and hold the hidden button Blank Display for five seconds. See Figure 6 for location. When the first Money totals appear release the button. The display appears as in Figure 1 with P11.1 showing in the price per gallon window to indicate the first Money total for Product 1.

NOTE: If the button is not pressed for 30 seconds, the display returns to the idle mode and the sequence must be started over.

2. Press the button again to read the Volume totals for Product 1. The displays appear as in Figure 4 with P12.1 showing in the price per gallon window to indicate the first Volume total for Product 1.
3. Press the button again to read the Counters Totals (Number of Sales and Number of Price Changes) for Product 1. The displays will appear as in Figure 5 with P13.1 showing in the price per gallon window to indicate the first Counter totals for Product 1.
4. Press the button again and the Money totals for Product 2 appear as in Figure 1. Repeat steps 2 and 3 for the Product 2 totals and the remaining hoses on this side of the dispenser.

NOTE: If the dispenser is a blender Series:

- The first hose represents an unblended Product
- The middle hose represents the blended total of the first unblended Product and the last unblended Product.
- The last hose represents the other unblended Product.

NOTE: If Menu Code 2 totals are being read or the re-settable meter totals, continue with Step 5. If not, wait 30 seconds for the displays to return to the idle mode, or lift a pump handle to the ON position to return to the idle mode.

5. If all Menu Code 1 totals have been displayed, press the button again to view the Menu Code 2 Meter Totals for Product 1. The display appears as in Figure 7 when the display is in Menu Code 2.

By successively pressing the button, the dispenser moves through the meter totals for each hose.

Another feature allows the Operator to also read and reset (if Local Preset option is installed) the resettable meter totals (per shift, daily, or whenever the site resets these totals). If no Local Preset option is installed, the operator cannot reset these totals without opening the electronic door.

6. If all Menu Code 2 totals have been displayed, press the button again to view Menu Code 26 Re-settable Meter Totals for Product 1. The display appears as in Figure 7.

If a Local Preset keypad is installed, the re-settable totals can be set to zero without opening the electronic head.

After these totals have been viewed or recorded, they can be reset to zero by pressing 0 and **ENTER**. THIS ACTION ONLY RESETS THE RESETTABLE TOTALS IN MENU CODE 26. ALL OTHER TOTALS ARE UNCHANGED.

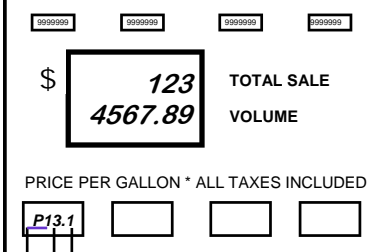
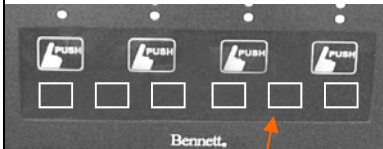


Figure 5



Blank Display

Figure 6

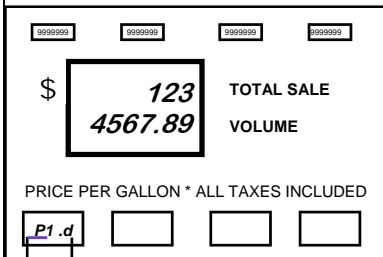


Figure 7

P1 = Product 1 Resettable Meter Totals

How to Operate Dispenser

How to Read Meter Volume Totals - Menu Code 2

This menu code allows the operator or manager to read the meter volume totals. If the 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 non-blender meter totals, follow this procedure:

1. Press the 2 button and then the **MODE** button on the keypad. The main display appears similar to Figure 8.

The main display shows the total meter volume. The volume number is carried to three decimal places. The price display reads P 1 .2 for Product 1 Meter Total, Menu Code 2.

2. To read the totals for the remaining hoses, press **ENTER** or the number keys (1,2,3,4).

NOTE: See pages 14 for instructions for reading Menu Code 2 totals with the Blank Display/Totals switch.

If the dispenser is a blender, follow this procedure:

1. Press the 2 button and then the **MODE** button on the keypad. The main sales display appears similar to Figure 9.

NOTE: The number displayed is a grand meter total for Product 1. Grand meter total = Product 1 from Hose A and blended Product 1 from Hose B. The grades are numbered starting with one.

2. Press the **ENTER** button to see the grand meter total for Product 3. Pressing the **ENTER** button again displays the grand meter total for Product 1 again.
3. To read the meter totals for the hoses, press the number keys (1, 2, and 3). To read the entire pump meter totals, press the number 0.

NOTE: The totals read at the individual hose numbers are different than the 0 position totals because they only reflect a component of Product 1 and Product 3 used to produce the product mix of Product B.

See the example in Figure 10.

If the blend ratio for a blended product is changed, the meter totals will be zeroed for that product

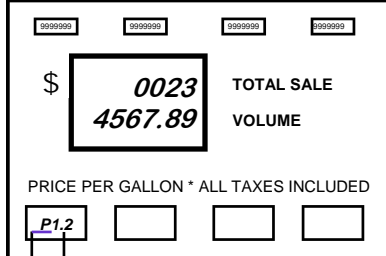


Figure 8
Menu 2
P1 = Product 1 Meter Totals

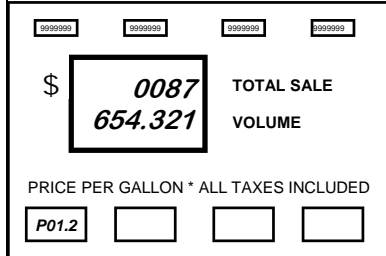


Figure 9

Figure 10 - Example of reading for a 3-product blender

PRODUCT:	A	B	C	
Amount Dispensed On each hose	10.000 Gallons	10.000 Gallons	10.000 Gallons	
Button 1	P11.2 10.000		P13.2 0.000	Total non-blended amount dispensed for product A.
Button 2	P21.2 5.000		P23.2 5.000	Total Blended amount dispensed for products A & C.
Button 3	P31.2 0.000		P33.2 10.000	Total non-blended amount dispensed for product C.
Button 0	P01.2 15.000		P03.2 15.000	Grand total amount dispensed for products A & C (Blended and non-blended).

How to Operate Dispenser

How to Read Electronic Totals During a Power Failure

If an A.C. power failure occurs, the dispenser can display the last sale in progress at the time of the failure as well as money and volume totals.

To read the last sale in progress, follow this procedure:

1. Push the Last Sale Recall switch. The switch is located on the lower left hand side of the Product select panel to the left of the Blank Display/Totals switch. See Figure 1

The last sale in progress is displayed for 30 seconds. Record the last sale information.

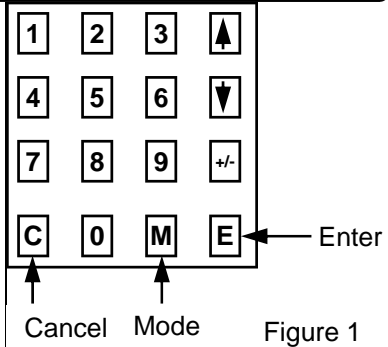
2. To redisplay the last sale information after the timer has turned the display off, push the Last Sale Recall switch again.

To read hose or meter totals, follow this procedure:

1. Plug in the Manager's Keypad to put the dispenser into manager's mode. See page 18 for instructions to use the manager's keypad.
2. Enter Menu Code 1 or 2 to access totals for money, volume or meter totals.

NOTE: The battery will display data for three minutes. To restart the three minute timer after the dispenser has turned off, press the Last Sale Recall Switch.

NOTE: When a control console is used, many of the functions can be programmed from the console.



How to Prepare the Dispenser for Programming

Connecting the Manager's keypad for dispenser programming.

Programming is done from the manager's keypad located inside the electronics compartment behind the side 1 electronics door. (See Figure 2).

To enable the dispenser for programming:

1. Remove the keyboard from the plastic bag located on the inside of the electronic enclosure (See Figure P2).
2. Locate the keyboard receptacle located on the product select keyboard, which is located on the backside of side 1 electronic door. The plug receptacle is labeled "Keyboard" and is located on the right side of the product select keyboard. (See Figure P3)
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".

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.

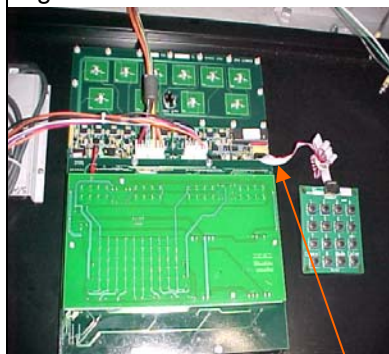
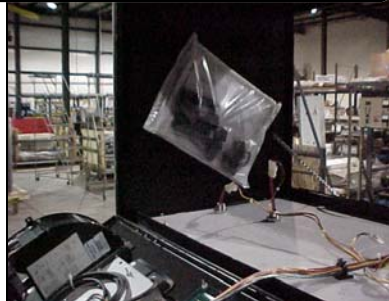


Figure 3

How to Prepare the Dispenser for Programming

The dispenser has a variety of Menu Codes that are accessed by using the manager's 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. Without the correct access code, the remaining Menu Codes are hidden. A description of each Menu Code is given below:

<u>Menu Code</u>	<u>Name</u>	<u>Description</u>
0	Diagnostics	Diagnostic tests
1	Hose Totals	Reading Money, Volume, Number of Sales, Number of Price Changes
2	Meter Totals	Reading Meter Volume 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 & one or two tier pricing
5	Meter Value	Entering a value for each meter on the dispenser (volume total)
6	Programming	Reviewing programming selections or speed programming dispenser
7	Pump Type	Program to set the - Number of Sides, how many Grades, how many Hoses, Blender present or not, Blend Ratio, Blended Octane Error Range
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 Amt	Program to control the slow down limit on 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 Tone	Program to set beeper tone options
14	Price Display	Program to set the way Price displays operate
15	Fleet Option	Program to set Fleet system interface compatibility
17	Local Preset/	Program to set the way the Local Preset option operates & how to select the Preset Language applicable language
18	Money Totals	Program to set the money totals calculation method
21	Stand Alone	Program to set the dispenser in stand alone or console mode
22	Dispenser Address	Program to set the dispenser address
23	Push to Start	Program to set automatic-on nozzles to work with a button requirement
26	Shift Totals	Program to reset shift totals
28	Rounding	Program to set either rounding or truncating the sale amount.
99	Unit of Measure/	Program to set the dispenser at gallon, liter or centiliter operation.

Please read the explanation for each menu code for complete information on these options.

How to Prepare the Dispenser for 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 in your situation. See Initial Setup Sequence below. For your convenience, the default listings are noted below:

Menu Code	Description	Default
3	Manager Access	2218
7	Pump Type	2 = Sides, 3 = Grades, 1 = Hoses, OFF = Blender, 1 = Tier
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
17	Local Preset	0 = Disabled
18	Money Totals	0 = Cash Drawer method
21	Stand Alone	0 = Console Mode
22	Dispenser Address	0 = only one dispenser on the communications loop
23	Push to Start	1 = Requires button to be pressed for flow
28	Rounding or Truncating Sale Amount	1 = Rounding the Sale Amount
99	Unit of Measure/Dispenser Model	1 = gallons, 1 - Decimal position 3 places, 1 - Horizon

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. However, the Menu Codes are explained in the operator's manual in numerical order. Make sure the initial setup menu codes are programmed before testing any dispenser operations. Failure to do so may lead to difficulty getting the dispenser to operate properly.

Menu Code No.	INITIAL SETUP
3	Manager Access Code
99	Unit of Measurement - Horizon or 92D dispenser option
7	Pump type
4	Pricing – for each hose & one or two tier pricing
9	No Flow Time out
11	Volume Allocation for a sale at a pump
21	Stand Alone or Console Mode
23	Push to Start - Requires button to be pressed for flow
28	Rounding or Truncating the Sale Amount

Menu Code No.	REMAINING DISPENSER SETUP
5	Meter Value - a volume amt 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
13	Beeper Tone - options for sound
14	Price Display - control operation
15	Fleet System - Interface compatibility
17	Local Preset - operation
18	Money Totals - calculation method
22	Dispenser Address
26	Resettable Shift Totals

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

How to Prepare the Dispenser for Operation

Manager's Access Code Entry - Menu 3

NOTE: Manager's Mode access is canceled when the Manager's keypad is un-plugged from the dispenser. If the Manager's keypad is removed you must re-enter the Menu Code 3 manager's access code to re-gain programming access.

NOTE: 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 Manager's Mode, follow this procedure:

1. Press the 3 button and then the **MODE** button on the Manager's 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 price 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.

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

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

To assign a new access code, follow this procedure:



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.

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.

DO NOT PRESS ENTER. IF ENTER IS PRESSED, THE NEW ACCESS CODE WILL BE 0000.

4. Press the **↑** button (see Figure 3.4). The display show all zeros. See Figure 3.5.
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.

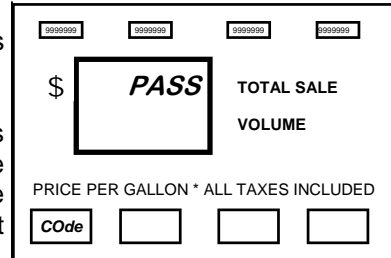


Figure 3.1

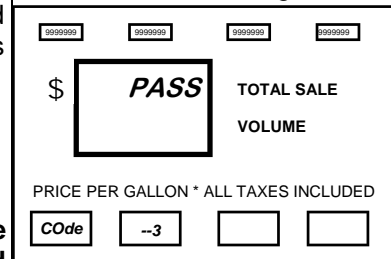


Figure 3.2

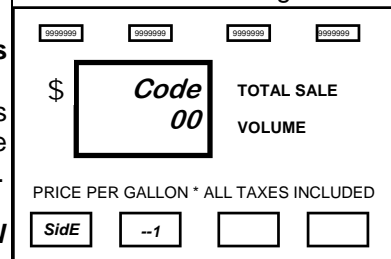


Figure 3.3

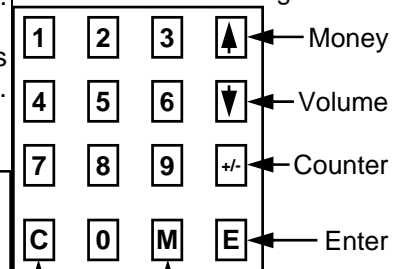


Figure 3.4

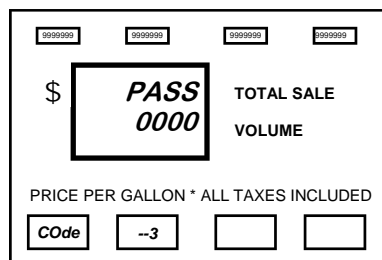


Figure 3.5

How to Prepare the Dispenser for Operation

To test the access code, follow this procedure:

1. Put the dispenser in the “**OPERATE**” mode by un-plugging the manager’s keypad from the dispenser. Then re-enter the “**ATTENDANT**” mode by plugging the keyboard back in.
2. Press **ENTER** for Side 1.
3. Press the 3 button and then the **MODE** button on the keypad.
4. Press the new four digit access number. Four dashes appear in the volume display.
5. Press the **ENTER** button. If access is gained, the four dashes disappear and the main price display appears as in Figure 3.2. If the dashes do not appear, an error was made. Repeat Steps 1 through 4.

Note: If you make a mistake or lose you new pass code the pumps main memory will have to be zeroed to regain access to totals information and programming menus. Please call you Bennett authorized service technician to zero the dispenser’s main menu and return the pass code to 2218. This is not a warranty paid service call.

How To Program Price Per Volume - Menu Code 4

NOTE: The information programmed in Menu Code 7 affects how Menu Code 4 operates. If Menu Code 7 was not changed from the default, the dispenser will accept a price for 3 grades and 1 tier. If this is not correct, press the CANCEL button and enter Menu Code 7 to set the correct number of hoses and pricing tiers before proceeding. The examples below are for pricing of a 1 hose with 3 grades.

To program price per volume data, follow this procedure:

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

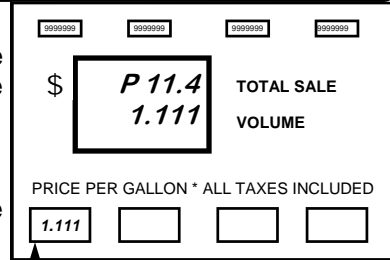
1. Press the 4 button and then the **MODE** button on the keypad. The individual Price display for Product 1, Tier 1 flashes. See Figure 4.1 for the location of Product 1 Price on the CPU side of the dispenser. The main display shows that Product 1, Tier 1 in Code 4 is active.
2. Use the 0 through 9 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 zeros and indicates the new digit in the right most digit. (The Price display continues to flash the old price.) When the correct price appears in Main Display, press the **ENTER** button. The Price display now contains the new price. See Figure 4.2.

NOTE: If an error is made, press the buttons on the keypad until the correct price appears in the main Price Per Volume display window.

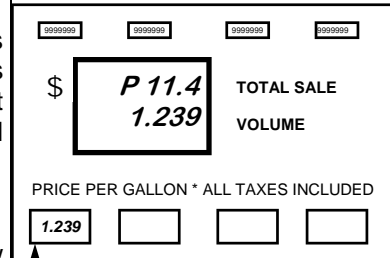
4. The main display appears as in Figure 4.3 and the next price displays a flashing price.

Repeat Steps 2 and 3 for the remaining prices to be set. The dispenser only displays the number of hoses and tiers selected in Menu 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.



Product 1 - Tier 1, Flashing
Figure 4.1



Flashing
Figure 4.2

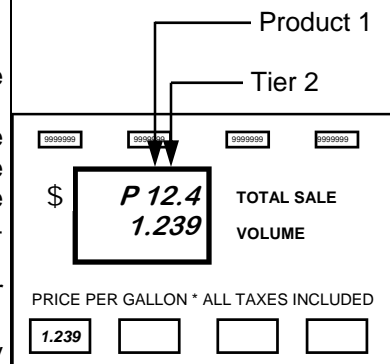


Figure 4.3

How to Prepare the Dispenser for Operation

How to Enter a New Meter Total Value - Menu Code 5

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.

If monthly, weekly, or daily totals are required, enter this menu code and zero the total by pressing the "0" button until all meter totals are zero. At the end of the period you have selected for gathering totals, record the total value and zero the totals again. Another use for this menu code is 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.

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

1. After the Manager's Mode has been accessed, press the 5 button and then the **MODE** button on the keypad.

A volume amount appears in the sales/volume display. (New dispensers show a volume amount as the result of factory testing.) The price display appears as in Figure 5.1. The P1 stands for the Product 1 meter 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 display zeros and begins rotating the new total into the display.

If the dispenser is a *blender*, the number that appears in the main display is the meter total for Product A. Meter total = Product A dispensed through Hose A and the amount of blended Product A for Hose B.

3. Press the **ENTER** button to save the new value. The main display moves to the next meter total (Product 2). The price display moves to Product 2 meter totals. See Figure 5.2. Repeat this sequence for remaining products. Use the **ENTER** button to advance or review the meter totals.

If the dispenser is a *blender*, the display sequences to the grand meter total for Product C.

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.

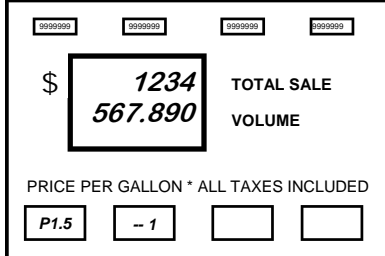


Figure 5.1

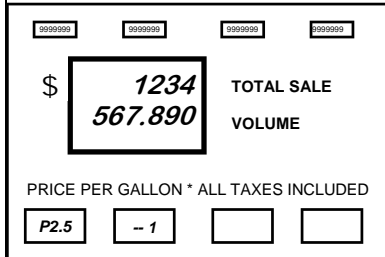


Figure 5.2

How to Prepare the Dispenser for Operation

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

When all programming for the dispenser is completed, a quick way to review the settings is available in Menu Code 6. After you become familiar with programming the dispenser, this Menu Code can also 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 how many Sides in Code 7. See Figure 6.1. Press **ENTER** and the display shows the number of grades that were set in Code 7. See Figure 6.2.

Press **ENTER** a few more times and the display moves to Code 8, decimal settings.

The remaining codes are displayed by continuing to press **ENTER**. Code 7 through Code 26 can be displayed or programmed in this Menu Code.

2. Press the **CANCEL** button to exit this menu code.

How to Enter the Type of Dispenser - Number of Sides, How many Grades, How many Hoses, Blender Present or Not, Blend Ratio, Blended Octane Err Range for the Dispenser - Menu Code 7

NOTE: This Menu Code MUST BE PROGRAMMED FOR ALL DISPENSERS.

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

1. The number of sides (up to a maximum of 2).
2. The number of Grades (up to a maximum of 4 on each side of the dispenser).
3. The number of Hoses (up to a maximum of 4 on each side of the dispenser).
4. If the Dispenser is a Blender or not.

To enter new information, follow this procedure:

NOTE: Access code (Menu 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 price display and the number of Sides appear in the main display. The default setting is for 2 Sides. See Figure 7.1.

To change from a 2 sided dispenser to a one sided dispenser press the 1 button on the keypad. This option will only except a 1 or a 2.

2. Press the **ENTER** button to save the new setting.
3. 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. See Figure 7.2.

NOTE: When setting the number of grades remember this is per side of the dispenser.

To change the setting from 1-4 grades, press either 1, 2, 3 or 4 button on the keypad.

4. Press the **ENTER** button to save the new setting.

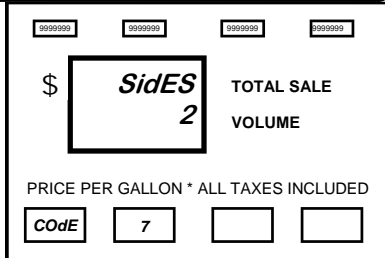


Figure 6.1

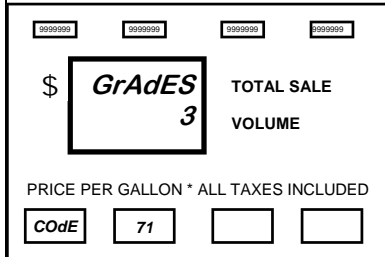


Figure 6.2

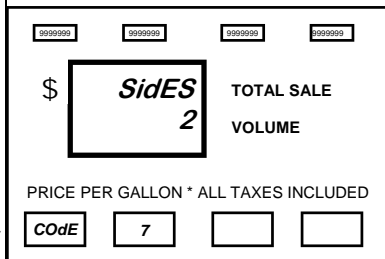


Figure 7.1

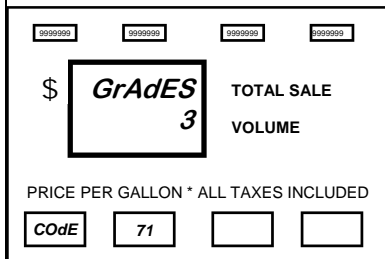


Figure 7.2

How to Prepare the Dispenser for Operation

- Once the **ENTER** button has been pressed, the number of Hoses appears in the main display. The default setting is for 1 hose per side of the dispenser. See Figure 7.3.

NOTE: When setting the number of hoses, remember, this number represents only one side of the dispenser.

To change the setting from 1-4 hoses press either 1, 2, 3 or 4 button on the keypad. Press the **ENTER** button to save the setting.

- Once the **ENTER** button has been pressed, the Blender option appears in the main display. The default setting is for no Blender. See Figure 7.4.
- To turn ON the Blender option, press the 1 button and the main display now appears like Figure 7.5. To change the setting back to no blender option, press the 0 button on the keypad.
- Press the **ENTER** button to save the setting.

If the blender was turned ON Figure 7.6 appears next. This allows the Manager to program the blend ratio of the center product position. The "A" product ratio is entered for the percentage of Product A to be blended. The dispenser calculates the percentage of product C to be blended but is not displayed.

NOTE: For purposes of clarification, a three product blender is identified as Hose A = Product A, Hose B = Product B (or the blended product), and Hose C = Product C.

If the dispenser has not been programmed since it came from the factory, the number 50 appears in the main display. This is the default setting. See Figure 7.6.

In addition to the standard 50:50 blend ratio, other blend ratios are programmable by qualified Bennett Service contractors from 20:80 to 80:20.

- To change the setting, use the 0 through 9 buttons on the keypad to enter a new blend ratio. For example:

To set a 40:60 blend ratio, enter 40
To set a 30:70 blend ratio, enter 30

NOTE: If an error is made, press the correct number. The new number replaces the error.

- When the correct option number appears in the main display, press the **ENTER** button to save the selection and Figure 7.7 appears.

If the dispenser has not been programmed since it came from the factory, the number 10 appears in the main display. This is the default setting. See Figure 7.7.

This allows the Manager to select an allowable range of octane rating for the blended product. Normal tolerance* requirements allow the blended product to be within half an octane rating of the posted blended octane. For instance, if the posted octane is 89 for the blended Product B, a test as low as 88.5 or as high as 89.5 could be within the tolerance requirement. This range of error is programmed in this menu code.

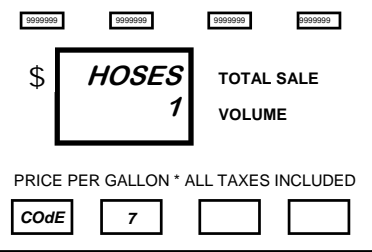


Figure 7.3

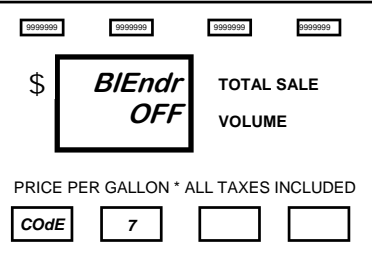


Figure 7.4

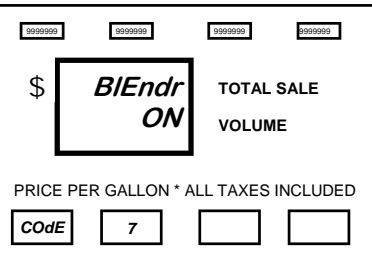


Figure 7.5

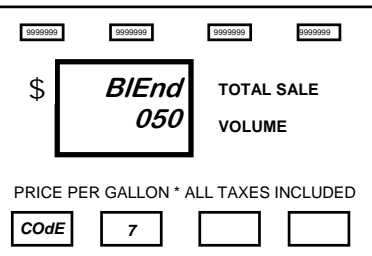


Figure 7.6

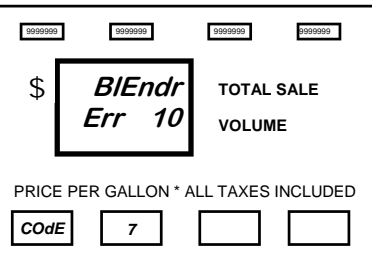


Figure 7.7

How to Prepare the Dispenser for Operation

If Product A is 87 octane and Product C is 92 octane, subtract Product A from Product C to find the range. In this case, the range is 5. Take .5 (the normal tolerance requirement) and divide it by 5. Multiply the result (.1) by 100 to find the percentage of error the dispenser must maintain to achieve the octane rating required for the blended product. See the calculations in Figure 7.8 to arrive at this number.

11. Use the information in the "How to Calculate Error Range" illustration to calculate a new blend error range percentage.
12. To change the setting, use the 0 through 9 buttons on the keypad to enter a new blend error range.

NOTE: If an error is made, press the correct number. The new number replaces the error.

13. When the correct number appears in the main display, press the **ENTER** button to save the selection.

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 moves through the displays in Menu Code 7.

14. Press the **CANCEL** button to exit this menu code.
15. If this is a two sided dispenser, changing one side will automatically change the second side to the same value as the first.

Figure 7.8

How to Calculate Error Range

Product C Product A	92 Octane 87 Octane 05 =range	Use the high and low octane ratings being used on the blender you are programming.
Normal tolerance of 1/2 an octane rating of the posted blend octane rating.	Divide .5 by 5 = .1 Multiply .1x 100%=10% Blend Error Range	

**Check with local jurisdiction for acceptable tolerance level.*

How to Prepare the Dispenser for Operation

How To Change the Decimal Point Locations For Other Than U.S. Standard - Menu Code 8

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.

The decimal in the top display (Money) and the bottom display (price per volume) can be changed. Contact an authorized service man to change from gallons to liters.

To change the decimal placement, follow this procedure:

1. After the Manager's Mode has been accessed, press the 8 button and then the **MODE** button on the keypad. The United States standard decimal placement appears in the main display and Price display. The number 0 appears in the main display to show the dispenser is set for U.S. Standard. See Figure 8.1.

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.

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. See 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.

DECIMAL PLACEMENT SELECTIONS				
	<u>MONEY</u> <u>DISPLAY</u>	<u>VOLUME</u> <u>DISPLAY</u>	<u>PPV</u> <u>DISPLAY</u>	
		Volume		
<u>Selection</u>	<u>Money</u>	<u>Gallons</u> / <u>Liters</u>	<u>Price</u>	
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

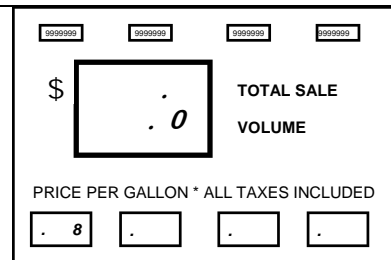


Figure 8.2

How to Prepare the Dispenser for Operation

How To Set a No Flow Time Out - Menu Code 9

As a safety 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, but no flow occurs, the No Flow Time Out feature prevents delivery after the time period you programmed expires. 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).

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 Manager's Mode 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 price 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 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 (See Figure 9-3) and press the **ENTER** button. 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.

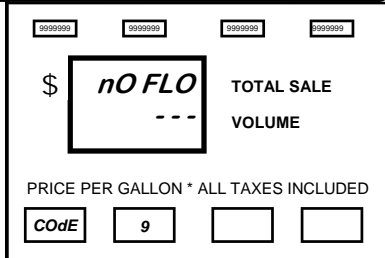


Figure 9.1

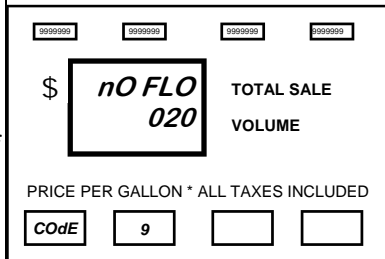


Figure 9.2

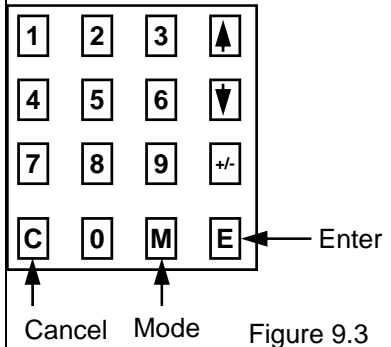


Figure 9.3

How to Prepare the Dispenser for Operation

How to Set a Slow Flow Amount - Menu Code 10

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 solenoid valve may not be able to react fast enough to stop at the exact pre-selected amount. A two stage solenoid valve is used so that 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 0.100 (default), the solenoid valve will go into *slow flow* stage when there is 1/10 (one 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.

Suggested Settings

.100	.200	.300	.400	.500	.600	.700	.800	.900	1.000	1.300
8-18 GPM						18 GPM or higher				
30 - 68 LPM							68 LPM or higher			

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

1. After the Manager's Mode has been accessed, 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 price display shows the dispenser is in Menu Code 10. See 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.

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.

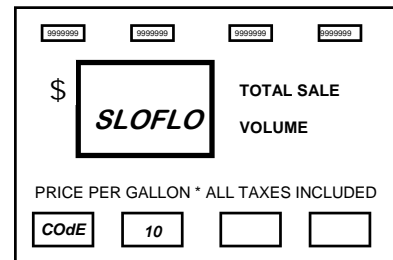


Figure 10.1

How to Prepare the Dispenser for Operation

How To Set A Volume Allocation Limit - Menu Code 11

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. After the Manager's Mode has been accessed, press the number 1 and 1, then the **MODE** button on the keypad. The price 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. See Figure 11-1.

2. To change the setting, use the 0 through 9 buttons on the keypad to enter a new volume allocation limit.

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

NOTE: If an error is made, press the 0 button until the volume display window shows all zeros. Enter a new number.

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.

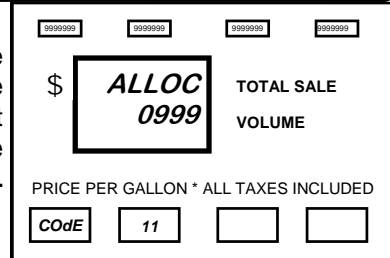


Figure 11.1

How to Prepare the Dispenser for Operation

How To Program Submerged Pump Precharge Time - Menu Code 12

The dispenser software is capable of programming the “time delay” circuits for the main control valves to prevent the leak detector from obtaining a false reading. The submerged pump is energized as soon as the pump handle is put in the **ON** position and the fueling position is authorized.

The main control valves can 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 or not a leak is present. If no leak is detected, it will allow the flow of fuel.

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. After the Manager’s Mode has been accessed, press the number 1 and 2, then the **MODE** button on the keypad. The price display shows the dispenser is in Menu Code 12. See 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 1 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.
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.

How to Select Audio Tone Options - Menu Code 13

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 - Combination of option 1 and 2. (This is the default setting.)

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

1. After the Manager’s Mode has been accessed, 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. See 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 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.

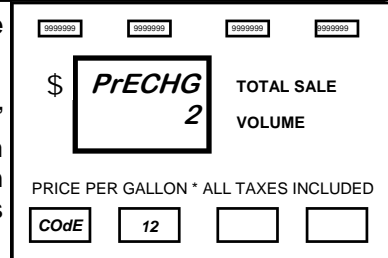


Figure 12.1

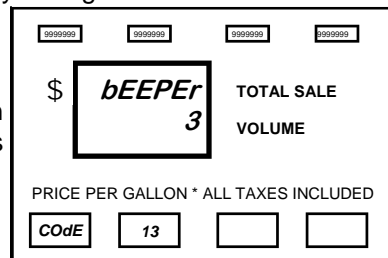


Figure 13.1

How to Prepare the Dispenser for Operation

How to Select Individual Price Per Volume Display Options - Menu Code 14

The individual price per volume (IPPV) displays (See Figure 14-3) can be programmed to operate several ways. This Menu Code programs the operation of the price displays.

The Flash Option allows the price display for the idle hose to be programmed to act in one of two different ways. The choices are:

- 0 - The price displays are illuminated constantly in the idle mode.
- 1 - The price displays flash at 1 second intervals in the idle mode.

The Dash option allows the price displays for the unselected displays to be programmed two different ways. The choices are:

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

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

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

1. After the Manager's Mode has been accessed, press the number 1 and 4, then the **MODE** button on the keypad. The price 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. This is the default setting for the Flash option. Press **ENTER** to see the Dash option. See Figure 14-2. Press **ENTER** again to toggle between the two options.

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.

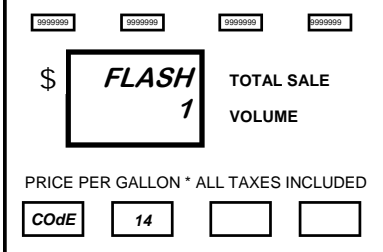


Figure 14.1

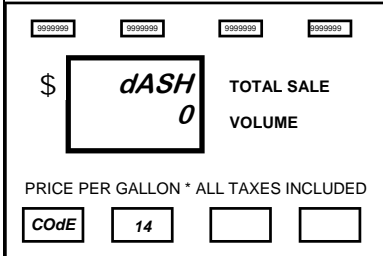
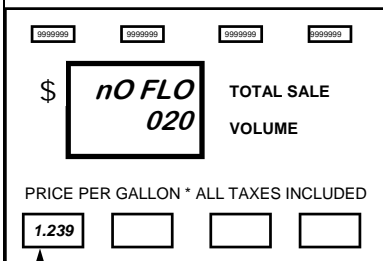


Figure 14.2



Individual Price Per Volume Display
Figure 14.3

How to Prepare the Dispenser for Operation

How To Select the Fleet Option - Menu Code 15

NOTE: This menu code only applies to dispensers connected to a fleet system interface.

This menu (when enabled) will allow a price change after the pump handle has been turned on. This allows the dispenser to be compatible with fleet systems for use in non-retail situations. The dispenser may not be compatible with the fleet system interface if this option is not enabled. The fleet option is set as enabled as a default. The options are:

- 0 - the fleet option is disabled
- 1 - the fleet option is enabled (this is the default)

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

1. After the Manager's Mode has been accessed, press the number 1 and 5, then the **MODE** button on the keypad. The price 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. See Figure 15-1. This is the default setting.

2. To disable the fleet option, press the 0 button on the keypad to enter.

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.

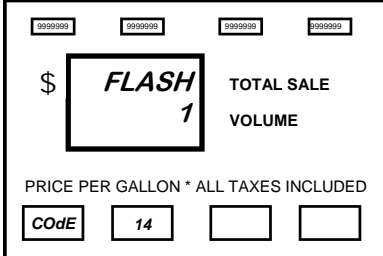


Figure 14.1

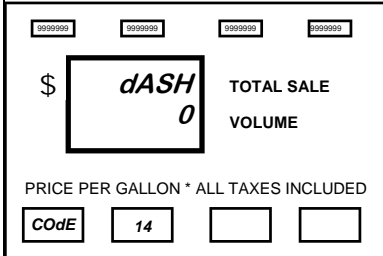
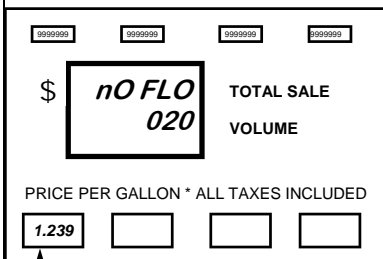


Figure 14.2



Individual Price Per Volume Display
Figure 14.3

How to Prepare the Dispenser for Operation

How to Program the Local Preset and Tax Receipt Printer

Horizon 2 is available with an optional Local Preset keypad that allows an attendant to preset a money or volume amount to be dispensed. The dispenser will stop the flow of fuel and complete the sale at that preset amount. The Local Preset keypad is an option to the standard Horizon 2 dispenser (See Figure 17-2). When the Local Preset option is purchased, customer may choose to also purchase an optional Tax Receipt Printer. The Tax Receipt Printer is available as an option ONLY when the Local Preset option is also purchased.

If the Local Preset option is present without the Tax Receipt Printer option, no programming is necessary to enable the keypad.

Programming the Tax Receipt Printer is done with the use of a standard PC keyboard with a PS2 connector.

Unlock and gently lower the electronic enclosure door allowing it to rest in the open position held by the restraint chain.

Plug in the keyboard connector to the PS2 connector on the top of the Local Preset Board. See Figure 17-1. Gently close the electronic enclosure door, and engage one of the two locks slightly to hold the door in place, so that you can see the display of the Local Preset.

As soon as a PC keyboard is plugged in, the Local Preset goes into programming mode.

For instructions to program the Tax Receipt Printer, refer to Manual #106752 708 Local Preset, Functional Specification X.X



Figure 17-1
Backside of Local Preset Board w/ PC Keyboard connected

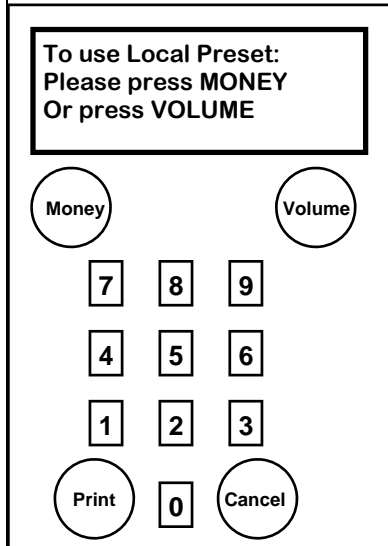


Figure 17-2
Example of Local Preset Keypad when the optional Tax Receipt Printer is purchased. If the optional Tax Receipt Printer is not purchased, the graphic overlay will not show a "PRINT" key.

How to Prepare the Dispenser for Operation

How To Change The Money Totals Calculation Method - Menu Code 18

This menu code allows the Manager to select the method for calculating totals. The first method adds the value on the display to the totals and stores the amount. This total matches the cash drawer total.

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

The options are:

- 0 - Sale is rounded to nearest penny. Cash drawer method of calculation (This is the default).
- 1 - No rounding. Cross multiplication method of calculation (volume x PPV).

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

1. After the Manager's Mode has been accessed, press the number 1 and 8, then the **MODE** button on the keypad. The price 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. See 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.

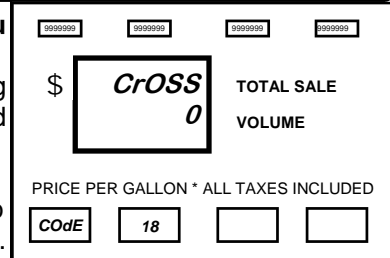


Figure 18.1

How To Set The Dispenser in Stand Alone Mode - Menu Code 21

This menu code allows the Manager to set the dispenser 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 - the console mode is active (this is the default)
- 1 - the stand alone option is active

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

1. After the Manager's Mode has been accessed, press the number 2 and 1, then the **MODE** button on the keypad. The price display shows the dispenser is in Menu Code 21.

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. See Figure 21-1.

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 initial programming of a dispenser with two fueling positions is being performed, program the other side.

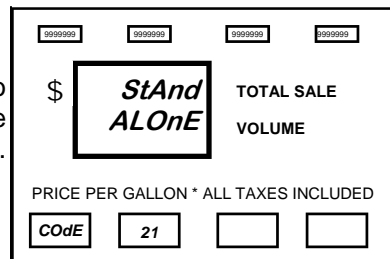


Figure 21.1

How to Prepare the Dispenser for Operation

How To Set A Dispenser Address - Menu Code 22

This menu code allows the Service Technician to set a dispenser address for each dispenser when multiple dispensers are on the same communications 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.

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

1. After the manager mode has been accessed, press the number 2 and 2, then the **MODE** button on the keypad. The PPV display shows the dispenser in **Menu Code 22**.

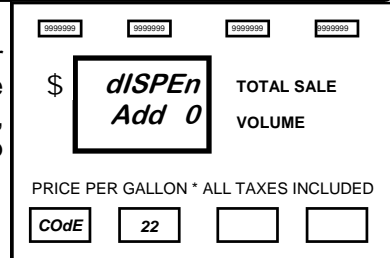


Figure 22.1

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. See 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.

How to Set a Dispenser with the Push to Start Option - Menu Code 23

This menu code is used for dispensers with nozzle boots designed with an *automatic on* mechanism. This menu code allows the manager to program the dispenser to wait for the customer to activate a button on the dispenser before fuel can be dispensed. The cash/credit buttons, product buttons or a "Push to Start" button, when equipped, can be programmed to satisfy this requirement. The options are:

- 0 - Valves actuate as soon as the nozzle is removed from the nozzle boot.
- 1 - Valves and motors remain off until a designated button is pushed, this is the default. This setting is required in the U.S.A.

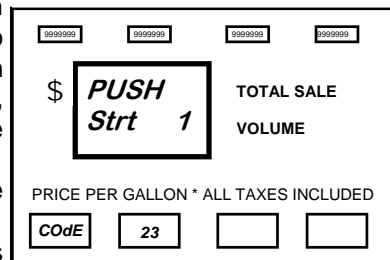


Figure 23.1

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

1. After the Manager's Mode has been accessed, press the number 2 and 3, then the **MODE** button on the keypad. The Price display shows the dispenser is in Menu Code 23.

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. See Figure 23-1.

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.

How to Prepare the Dispenser for Operation

How to Reset Totals - Menu Code 26

This menu code allows the manager or operator to read and reset the electronic re-settable 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. This resetting feature is accessed either through Menu Code 26 or the Total Recall switch. See Page 54 for an explanation of how to read or reset these totals with the Totals Display switch. The totals in Menu Code 1, however, 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. After the Manager's Mode has been accessed, press the number 2 and 6, then the **MODE** button on the keypad. The main sales display appears similar to Figure 26-1.

The main display shows the total money amount. For example: If the total money amount for the dispenser is \$461,007.88, the display appears as in Figure 26.1.

The price display window reads P11.d for Product 1, Money Total, Menu Code 26.

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 price display reads P 21.d for Product 2, Money Total, Menu Code 26. See Figure 26.2.

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

1. Press the ↓ button. The main display indicates Hose 1 volume totals. See Figure 26.3.

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 26.3.

2. To read the volume totals for Hose 2 and the remaining hoses, press the **ENTER** button or the number button for the hose (1,2,3,4).

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

1. Press the +/- button. The main sales display indicates Hose 1 counter totals. See Figure 26.4.

The top line of the display shows the number of sales for Hose 1. The second line shows the number of price changes for Hose 1.

2. To read the counters totals for Hose 2 and the remaining hoses, press the **ENTER** button or the number button for the hose (1,2,3,4).

If the dispenser is a blender Series:

- The first hose represents an unblended Product.
- The middle hose represents the blended total of the first unblended Product and the last unblended Product.
- The last hose represents the other unblended Product.

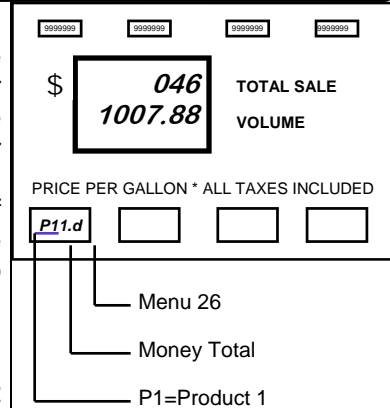


Figure 26.1

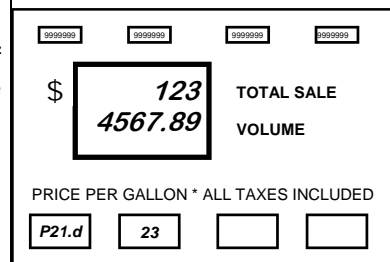


Figure 26.2

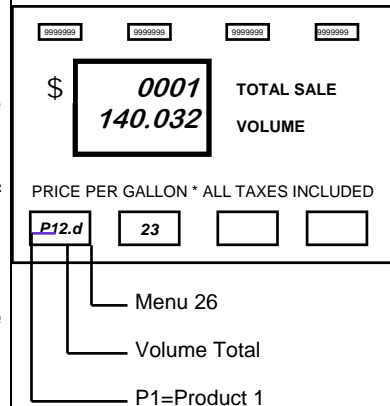


Figure 26.3

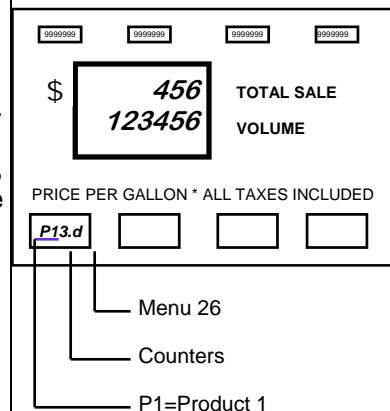


Figure 26.4

How to Prepare the Dispenser for Operation



WARNING: THE FOLLOWING PROCEDURE ZEROS ALL THE 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 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.

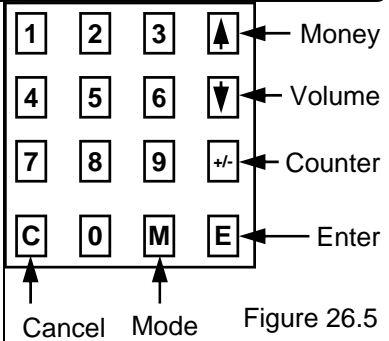


Figure 26.5

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

This menu code 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 - Rounding the Sale Amount (this is the default).

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

1. After the Manager's Mode has been access, press the number 2 and 8, then the **MODE** button on the keypad. The price 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. See 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.

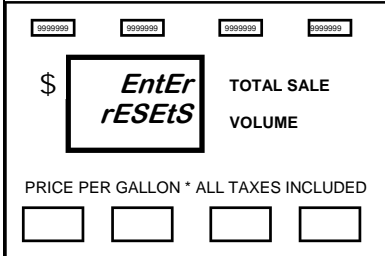


Figure 26.6

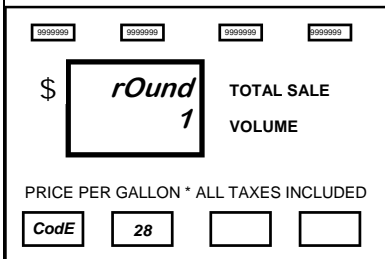


Figure 28.1

How to Prepare the Dispenser for Operation

How to Set Volume Units - Menu Code 99

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

C1 or Configuration 1 allows the technician to set the dispenser for the following options:

- 0 - liters
- 1 - gallons (this is the default)
- 2 - centiliter

C2 or Configuration 2 allows the option chosen in Configuration 1 to be set for two decimal places or three decimal places:

- 0 - Two decimal places
- 1 - Three decimal places (this is the default)

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

1. After the Manager's Mode has been accessed, press the number 9 and 9, then the **MODE** button on the keypad. The price display shows the dispenser is in Menu Code 99.

If the dispenser has not been programmed since it came from the factory, the number 1 appears in the top row of the main display. This is the default setting for gallons.

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. See Figure 99-1.

2. To change the setting, use the 0,1 or 2 button on the keypad to enter a new option. Press **ENTER**. The display moves to the Configuration 2 mode. See Figure 99-2. The choice is 0 for two decimal places or 1 for three decimal places. *This only affects a dispenser set for liters or centiliter.*

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.

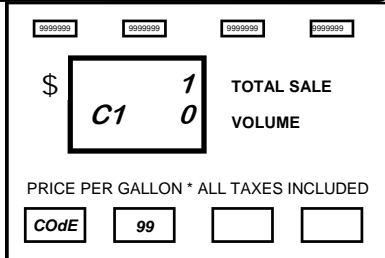


Figure 99.1

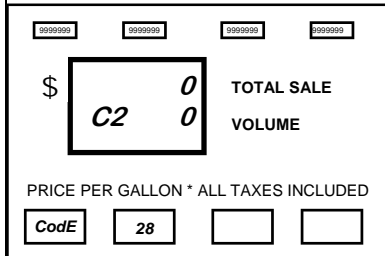


Figure 99.2

How to Prepare the Dispenser for Operation

Debit/Credit Terminal Option

Debit/Credit Terminal provides the Horizon 2300/2400 Series dispenser the ability to accept bank debit cards as well as credit cards. The Debit/Credit Terminal communicates directly with the VeriFone Ruby point-of-sale.

Operating Instructions

When the dispenser is first powered up the Debit/Credit Terminal will read "Out of Service". The Debit/Credit Terminals in the dispensers must be addressed as the fuel positions they represent. The Debit/Credit Terminal reader can be programmed to accept Debit cards and Credit cards or just Credit cards. If the site is running Debit cards the Debit/Credit Terminal reader must also be programmed with the type of encryption the Network Host is using. There are two types of encryption; Master Session and DUKPT. Master Session encryption requires the Bennett MSM Interconnection Box.

How to use the Key Pad:

Figure DC1 is a brief description of the keys the technician will need to use to program the various menus available.

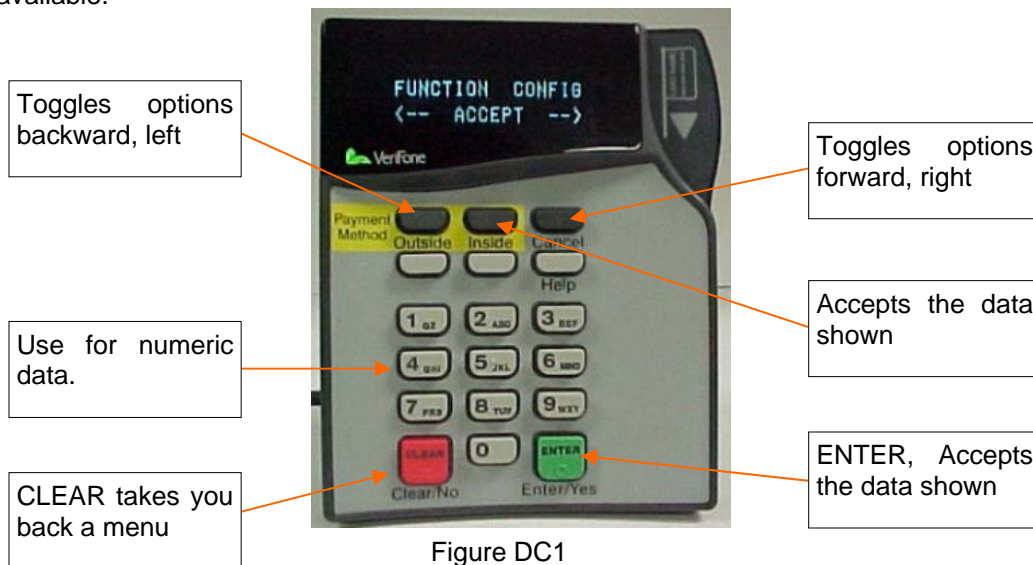


Figure DC1

Programming the Dispenser Debit/Credit Terminal for Operation:

Like the Dispenser, the Debit/Credit Terminal has a Manager's Mode to access programming and diagnostics. The following instructions explain how to get to Manager's Mode. These instructions will not be repeated.

1. Press the [1] key and the [ENTER] key at the same time on the Debit/Credit Terminal. Figure DC2 appears on the display.
2. Press the [1] key and the [ENTER] key at the same time again. Figure DC3 appears on the display.

Address Mode
Clear to exit

Figure DC2

FUNCTION CONFIG
<-- ACCEPT -->

Figure DC3

How to Prepare the Dispenser for Operation

Master Session Debit:

1. Enter Manager's Mode.
2. Press the key below ACCEPT to enter the configuration menu for the Debit/Credit Terminal. Figure DC4 appears on the display.
3. Press the key below ACCEPT to define what type, or mode, of operation the Debit/Credit Terminal will be performing. Figure DC5 appears on the display.
4. Press the left or right key (below the arrows) to see the options. The options are DEBIT, NO DEBIT, or MSM.
5. With Figure DC5 on the display press the key below ACCEPT to define the reader as a debit reader. Figure DC6 appears on the display briefly.
6. Press the **[CLEAR]** key. Figure DC7 appears on the display.
7. Press the key under the right arrow to move forward in the menus until the KEY TYPE menu is displayed. See Figure DC8.
8. Press the key under ACCEPT to enter the Key Type menu. Figure DC9 appears on the display.
9. Press the key under the right arrow, →, to move forward in the options until MASTER is displayed. See Figure DC10.
10. Press the key under ACCEPT to accept master encryption. Figure DC11 appears on the display briefly.
11. Press the **[CLEAR]** key to return to the Configuration menu. See Figure DC12
12. Press the key under the right arrow to move forward in the menus until the POLL menu is displayed. See Figure DC13.
13. Press the key under ACCEPT to enter the Poll menu. Figure DC14 appears on the display.
14. Press the key under ACCEPT to enter the MSM option. Figure DC15 appears on the display.
15. The MSM poll address is always 30. Press **[3]**, **[0]**, and **[ENTER]**. The display returns to Figure DC14.
16. Press the key under the right arrow to move forward in the options until CAT is displayed. See Figure DC16.
17. Press the key under ACCEPT to accept this option. Figure DC17 appears on the display.
18. Press the numeric keys to match the Fuel Position. If the Fuel Position is **[1]**, press **[0]** then 1. Press the **[ENTER]** key. The display returns to Figure DC16.
19. Press **[CLEAR]** 3 times to exit the Debit/Credit Terminal' menus.

```

CONFIG  TYPE
<-- ACCEPT -->
    
```

Figure DC4

```

TYPE  DEBIT
<-- ACCEPT -->
    
```

Figure DC5

```

DEBIT TYPE SET
    
```

Figure DC6

```

CONFIG  TYPE
<-- ACCEPT -->
    
```

Figure DC7

```

CONFIG KEY TYPE
<-- ACCEPT -->
    
```

Figure DC8

```

KEY TYPE DUKPT
<-- ACCEPT -->
    
```

Figure DC9

```

KEY TYPE MASTER
<-- ACCEPT -->
    
```

Figure DC10

```

MASTER KEY SET
    
```

Figure DC11

```

CONFIG KEY TYPE
<-- ACCEPT -->
    
```

Figure DC12

```

CONFIG  POLL
<-- ACCEPT -->
    
```

Figure DC13

```

POLL    MSM
<-- ACCEPT -->
    
```

Figure DC14

```

MSM poll Adr: 30
Enter to Accept
    
```

Figure DC15

```

POLL    CAT
<-- ACCEPT -->
    
```

Figure DC16

```

CAT poll Adr: 01
Enter to Accept
    
```

Figure DC17

How to Prepare the Dispenser for Operation

DUKPT Debit

1. Enter Manager's Mode.
2. Press the key below ACCEPT to enter the configuration menu for the Debit/Credit Terminal. Figure DC18 appears on the display.
3. Press the key below ACCEPT to define what type, or mode, of operation the Debit/Credit Terminal will be performing. Figure DC19 appears on the display.
4. Press the left or right key (below the arrows) to see the options. The options are DEBIT, NO DEBIT, or MSM.
5. With Figure DC19 on the display press the key below ACCEPT to define the reader as a debit reader. Figure DC20 appears on the display briefly.
6. Press the **[CLEAR]** key. Figure DC21 appears on the display.
7. Press the key under the right arrow to move forward in the menus until the KEY TYPE menu is displayed. See Figure DC22.
8. Press the key under ACCEPT to enter the Key Type menu. Figure DC23 appears on the display.
9. With Figure DC23 on the display press the key below ACCEPT to accept the DUKPT encryption. Figure DC24 appears on the display briefly.
10. Press the **[CLEAR]** key to return to the Configuration menu. See Figure DC25.
11. Press the key under the right arrow to move forward in the menus until the POLL menu is displayed. See Figure DC26.
12. Press the key under ACCEPT to enter the Poll menu. Figure DC27 appears on the display.
13. Press the key under the right arrow to move forward in the options until CAT is displayed. See Figure DC28.
14. Press the key under ACCEPT to accept this option. Figure DC29 appears on the display.
15. Press the numeric keys to match the Fuel Position. If the Fuel Position is 1, press **[0]** then **[1]**. Press the **[ENTER]** key. The display returns to Figure DC28.
16. Press **[CLEAR]** 3 times to exit the Debit/Credit Terminal' menus.

```

CONFIG  TYPE
<-- ACCEPT -->
    
```

Figure DC18

```

TYPE    DEBIT
<-- ACCEPT -->
    
```

Figure DC19

```

DEBIT TYPE SET
    
```

Figure DC20

```

CONFIG  TYPE
<-- ACCEPT -->
    
```

Figure DC21

```

CONFIG  KEY TYPE
<-- ACCEPT -->
    
```

Figure DC22

```

KEY TYPE  DUKPT
<-- ACCEPT -->
    
```

Figure DC23

```

DUKPT KEY SET
    
```

Figure DC24

```

CONFIG  KEY TYPE
<-- ACCEPT -->
    
```

Figure DC25

```

CONFIG  POLL
<-- ACCEPT -->
    
```

Figure DC26

```

POLL    MSM
<-- ACCEPT -->
    
```

Figure DC27

```

POLL    CAT
<-- ACCEPT -->
    
```

Figure DC28

```

CAT poll Adr: 01
Enter to Accept
    
```

Figure DC29

How to Prepare the Dispenser for Operation

No Debit:

This configuration allows only credit cards. No encryption is needed.

1. Enter Manager's Mode.
2. Press the key below ACCEPT to enter the configuration menu for the Debit/Credit Terminal. Figure DC30 appears on the display.
3. Press the key below ACCEPT to define what type, or mode, of operation the Debit/Credit Terminal will be performing. Figure DC31 appears on the display.
4. Press the left or right key (below the arrows) to see the options. The options are DEBIT, NO DEBIT, or MSM.
5. Press the key under the right arrow to move forward in the options until NO DEBIT is displayed. See Figure DC32.
6. Press the key under ACCEPT to accept the No Debit option. Figure DC33 will appear on the display briefly.
7. Press the **[CLEAR]** key to return to the Configuration menu. See Figure DC30.
8. Press the key under the right arrow to move forward in the menus until the POLL menu is displayed. See Figure DC34.
9. Press the key under ACCEPT to enter the Poll menu. Figure DC35 appears on the display.
10. Press the key under the right arrow to move forward in the options until CAT is displayed. See Figure DC36.
11. Press the key under ACCEPT to accept this option. Figure DC37 appears on the display.
12. Press the numeric keys to match the Fuel Position. If the Fuel Position is 1, press **[0]** then **[1]**. Press the **[ENTER]** key. The display returns to Figure DC36.
13. Press **[CLEAR]** 3 times to exit the Debit/Credit Terminal' menus.

```
CONFIG  TYPE
<-- ACCEPT -->
```

Figure DC30

```
TYPE  DEBIT
<-- ACCEPT -->
```

Figure DC31

```
TYPE  DEBIT
<-- ACCEPT -->
```

Figure DC32

```
NO DEBIT SET
```

Figure DC33

```
CONFIG POLL
<-- ACCEPT -->
```

Figure DC34

```
POLL  MSM
<-- ACCEPT -->
```

Figure DC35

```
POLL  CAT
<-- ACCEPT -->
```

Figure DC36

```
CAT poll Adr: 01
Enter to Accept
```

Figure DC37

How to Prepare the Dispenser for Operation

Programming the VeriFone MSM Interconnection Box's Debit/Credit Terminal for Operation:

1. Press the **[1]** key and the **[ENTER]** key at the same time on the Debit/Credit Terminal. Figure DC38 appears on the display.
2. Press the **[1]** key and the **[ENTER]** key at the same time again. Figure DC39 appears on the display.
3. Press the key below ACCEPT to enter the configuration menu for the Debit/Credit Terminal. Figure DC40 appears on the display.
4. Press the key below ACCEPT to define what type, or mode, of operation the Debit/Credit Terminal will be performing. Figure DC41 appears on the display.
5. Press the left or right key (below the arrows) to see the options. The options are DEBIT, NO DEBIT, or MSM.
6. With Figure DC42 on the display press the key below ACCEPT to define the reader as the MSM (Master Session Module). Figure DC43 appears on the display briefly.
7. Press the **[CLEAR]** key. Figure DC44 appears on the display.
8. Press the key under the right arrow to move forward in the menus until the KEY TYPE menu is displayed. See Figure DC45.
9. Press the key under ACCEPT to enter the Key Type menu. Figure DC41 appears on the display.
10. Press the key under the right arrow, →, to move forward in the options until MASTER is displayed. See Figure DC47.
11. Press the key under ACCEPT to accept master encryption. Figure DC48 appears on the display briefly.
12. Press the **[CLEAR]** key to return to the Configuration menu. See Figure DC49.
13. Press the key under the right arrow to move forward in the menus until the POLL menu is displayed. See Figure DC50.
14. Press the key under ACCEPT to enter the Poll menu. Figure DC51 appears on the display.
15. Press the key under ACCEPT to enter the MSM option. Figure DC52 appears on the display.
16. The MSM poll address is always 30. Press **[3]**, **[0]**, and **[ENTER]**. The display returns to Figure DC51.
17. Press the key under the right arrow to move forward in the options until CAT is displayed. See Figure DC53.
18. Press the key under ACCEPT to accept this option. Figure DC54 appears on the display.
19. Verify that the CAT Poll address is set to 00.
20. Press **[CLEAR]** 3 times to exit the Debit/Credit Terminal' menus.

Address Mode
Clear to exit

Figure DC38

FUNCTION CONFIG
<-- ACCEPT -->

Figure DC39

CONFIG TYPE
<-- ACCEPT -->

Figure DC40

TYPE DEBIT
<-- ACCEPT -->

Figure DC41

TYPE MSM
<-- ACCEPT -->

Figure DC42

MSM TYPE SET

Figure DC43

CONFIG TYPE
<-- ACCEPT -->

Figure DC44

CONFIG KEY TYPE
<-- ACCEPT -->

Figure DC45

KEY TYPE DUKPT
<-- ACCEPT -->

Figure DC46

KEY TYPE MASTER
<-- ACCEPT -->

Figure DC47

MASTER KEY SET

Figure DC48

CONFIG KEY TYPE
<-- ACCEPT -->

Figure DC49

CONFIG POLL
<-- ACCEPT -->

Figure DC50

POLL MSM
<-- ACCEPT -->

Figure DC51

MSM poll Adr: 30
Enter to Accept

Figure DC52

POLL CAT
<-- ACCEPT -->

Figure DC53

CAT poll Adr: 00
Enter to Accept

Figure DC54

How to Prepare the Dispenser for Operation

How to Use Diagnostics - Menu Code 0

To enter Diagnostics the manager's keypad must be connected to the dispenser to place the dispenser into the manager's mode. See page 18 for instructions on how to attach the manager's keyboard. 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 Menu Code.

Diagnostic tests have been programmed into the dispenser software to help the operator and service technician 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 here are:

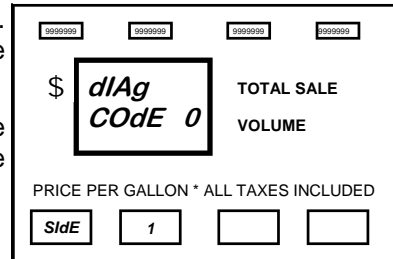
Diagnostic Code	Description	Diagnostic Code	Description
0	.1 - Design Type	4	RAM Test
	.2 - Software Release Number	5	Pump Handle Test
	.3 - Software I.D. Number (CKsum)	6	.1 Power Failure Counter
1	Display Segment Test		.2 Uart Failure counter
3	CPU Test (Error 99)	7	Keyboard/Switch/Beeper Test
		8	State Transition History

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.

To enter Diagnostics, follow this procedure:

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. The main display appears as in Figure D-1. The price shows the Side being read.

From this point, any test can be entered by pressing the number of the test and the **ENTER** button. To exit a diagnostic test, press the **CANCEL** button.



Diagnostic Code 0

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

Figure D-1 the 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 display shown in Figure D-2 appears. The price display shows the dispenser is in Diagnostics Level 0.1.

The number 6 is the default. It means the dispenser is a "708 CPU design" computer.

Press **ENTER** to move to the next level of Diagnostic Code 0.

How to Prepare the Dispenser for Operation

0.2 - Software Release Number. The display shown in Figure D-3 appears. The price display shows the dispenser is in Diagnostics Level 0.2.

The current level of software installed in the dispenser is displayed, which will change from version to version.

Press **ENTER** to move to the next level of Diagnostic Code 0.

0.3 - Software I.D. Number. The display shown in Figure D-4 appears. The price display shows the dispenser is in Diagnostics Level 0.3.

This field is a number that identifies the software revision level. This will change from software version to software version.

At this point, if **ENTER** is pressed, the Design Type is redisplayed. Continue to press **ENTER** to move from one level to another of Diagnostics Code 0.

Press the **CANCEL** button to exit this code. Press the **CANCEL** button twice to exit Diagnostics.

Diagnostic Code 1 - Display Segment Test

This test is used to identify failed segments in the main sales displays or the individual price per volume (IPPV) displays.

*To enter this test, enter diagnostics and press the 1 button on the keypad and the **ENTER** button.*

The main sales display window and the individual price per volume (IPPV) windows begin to flash all 8's. See Figure D-5. This allows a visual check of all displays. The displays flash until the **CANCEL** button is pushed to exit this code.

Press the **CANCEL** button to exit this code. Press the **CANCEL** button twice to exit Diagnostics.

Diagnostic Code 2 - Error History

The error log file provides 40 entries total. The latest 40 errors are included in the error log file. The errors are displayed for the selected side. If the latest 40 errors were all on side 2, then no errors would be displayed on side 1, and 40 errors would be displayed on side 2. Refer to Figure 5a.

*To enter this test, enter diagnostics and press the 1 button on the keypad and the **ENTER** button. Press the Enter button to view the data in descending chronological order.*

Press the **CANCEL** button to exit this code. Press the **CANCEL** button twice to exit Diagnostics.

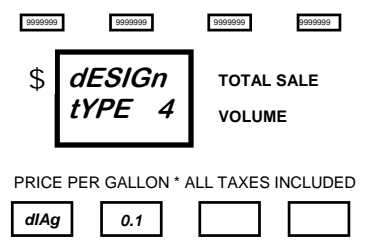


Figure D-2

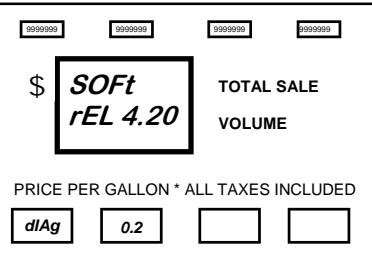


Figure D-3

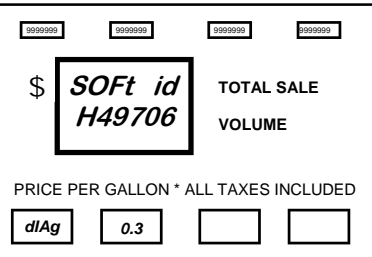


Figure D-4

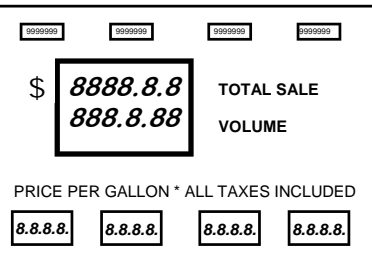


Figure D-5

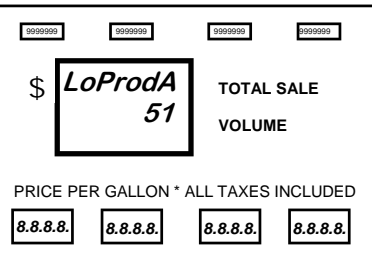


Figure D-5a

How to Prepare the Dispenser for Operation

Diagnostic Code 3 - CPU Test

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

To enter this test, enter diagnostics and press the 3 button on the keypad and the **ENTER** button.

A typical test appears as in Figure D-6

The 99 error will clear when the **CANCEL** button is pushed to exit Diagnostics.

Press the **CANCEL** button to exit this test. Press the **CANCEL** button twice to exit Diagnostics.

Diagnostic Code 4 - RAM Test

To enter this test, enter diagnostics and press the 4 button on the keypad and the **ENTER** button.

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

If the RAM failure is detected by the RAM test, the displays flash the message in Figure D-7.

If a RAM failure is not detected by the RAM test, the displays flash the message in Figure D-8

Press the **CANCEL** button to exit this test. Press the **CANCEL** button twice to exit Diagnostics.

Diagnostic Code 5 - Pump Handle Test

To enter this test, enter diagnostics and press the 5 button on the keypad and the **ENTER** button.

This 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.

When all handles are off, the display appears as in Figure D-9. When a handle is turned on, an A, b, C or d appears. See Figure D-10 on the next page for an example of all pump handles on a Horizon 2300 or 2400.

Turn each pump handle on individually or all at once to test the status.

Press **CANCEL** button to exit this test. Press the **CANCEL** button twice to exit Diagnostics.

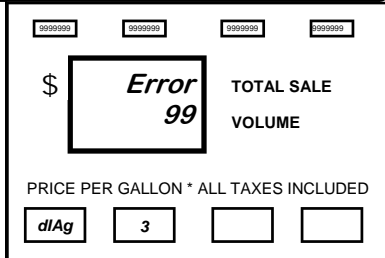


Figure D-6

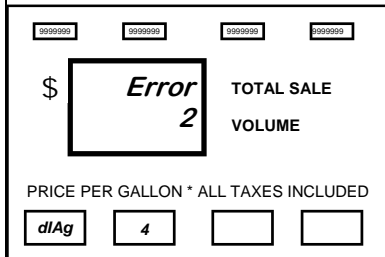


Figure D-7

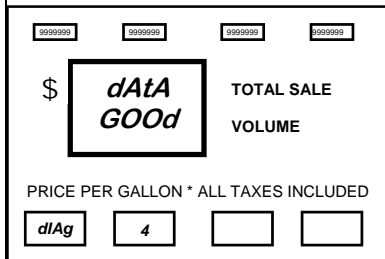


Figure D-8

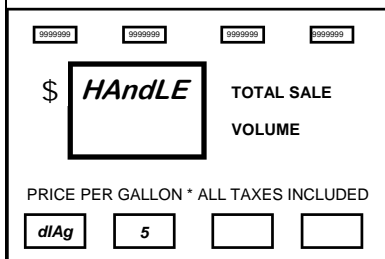


Figure D-9

How to Prepare the Dispenser for Operation

Diagnostic Code 6 - Power Failure Counter

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

To enter this test, enter diagnostics and press the 6 button on the keypad and the **ENTER** button.

6.1 - Pfails. The display shown in Figure D-11 appears. The Price display shows the dispenser is in Diagnostics Level 6.1.

The number of power failures that have occurred since the system was reset (cold start) appears on the second line of the main display.

The counter can be zeroed by pressing a sequence of keys while the counter is displayed. See Figure D-12.

To zero the counter, press the following buttons on the keypad in the sequence listed:

Press **↑**, Press **↓**, Press **+/-**

NOTE: After this three button sequence is entered, the counter displayed is cleared.

Press the **CANCEL** button to exit this test. Press the **CANCEL** button twice to exit Diagnostics.

Communications failure counter

This code is used to investigate intermittent problems with communications. The counters keep track of the number of times a communications (UART) failure occurs.

To enter this test, enter diagnostics and press the 6 button on the keypad and the **ENTER** button.

6.1 - Comm. The display shown in Figure D-13 appears. The Price display shows the dispenser is in Diagnostics Level 6.2.

The number of communications failures that have occurred since the system was reset (cold start) appears on the second line of the main display.

To zero the counter, press the following buttons on the keypad in the sequence listed: (See Figure D-12).

Press **↑**, Press **↓**, Press **+/-**

NOTE: After this three button sequence is entered, the counter displayed is cleared.

Press the **CANCEL** button to exit this test. Press the **CANCEL** button twice to exit Diagnostics.

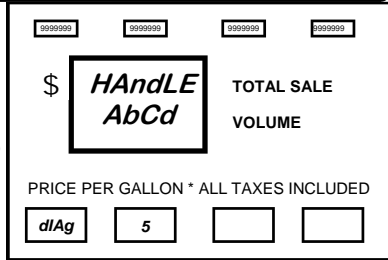


Figure D-10

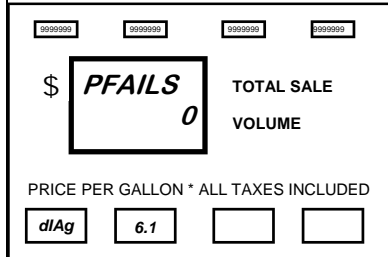


Figure D-11

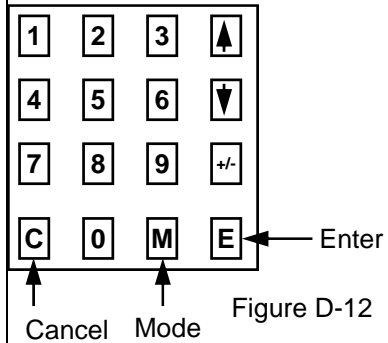


Figure D-12

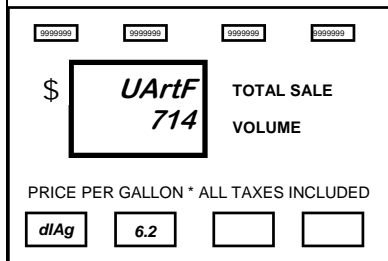


Figure D-13

How to Prepare the Dispenser for Operation

Diagnostic Code 7 - Keyboard, Switch and Beeper Test

To enter this test, enter diagnostics and press the 7 button on the keypad and the **ENTER** button. The display shown in Figure D-14 appears.

This code is used to test the switches for the product buttons, the totals / blank display buttons, last sale recall button, and the buttons on both the programming keypad and the DCA keypad.

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. DCA keypad gives row and column address.

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.

Press the **CANCEL** button twice to exit this test. Press the **CANCEL** three times to exit Diagnostics.

Diagnostic Code 8 - State Transition History

This test is used to view the state transition log maintained by the CPU board. It stores a history of all state transitions which occur during the operation of the dispenser. It is capable of storing the last 40 state transitions and events that have occurred since the last cold start (zeroing the RAM).

Enter this code to display the states that have been stored in the dispenser memory. If no changes in state have been recorded, the display flashes the message in Figure D-15.

To enter this test, enter diagnostics and press the 8 button and the **ENTER** button.

If there are states recorded, the display is read as in Figure D-16. See explanation below:

State Definitions

nnnnnn	Is the six character name of the state. See Table 1 for a list of all possible state names.
ee	Is the event code for the event that caused the state transition. See Table 1 for a list of all possible event codes.
xx	Is the next state code for the transition. See Table 1 for the list of all possible next state codes.
dddd	Is the number of elapsed days from cold start that the displayed state occurred. Push volume to see the seconds.
hh	Is the hours portion of the elapsed time since the displayed state occurred
mm	Is the minutes portion of the elapsed time since the displayed state occurred.

Press the **ENTER** button to view the next transition in the state transitions log. Each time the **ENTER** button is pressed the next logged transition is displayed.

The previous transition can be displayed by pressing the i button. Press the **ENTER** button to move forward through the log.

When all logged transitions have been viewed, the display flashes the message shown in Figure D-15.

Press the **CANCEL** button to exit this test. Press the **CANCEL** button twice to exit Diagnostics.

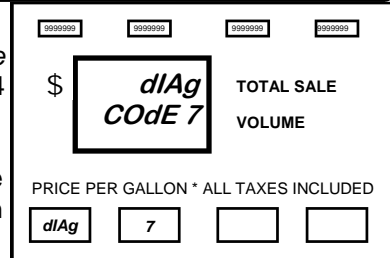


Figure D-14

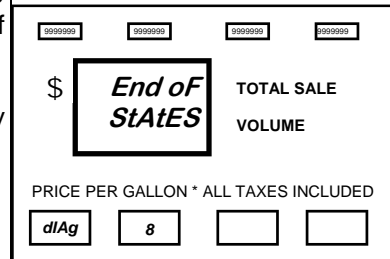


Figure D-15

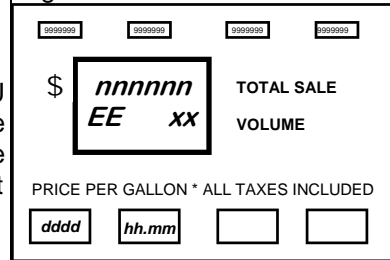


Figure D-16

How to Prepare the Dispenser for Operation

xx State Code	nnnnnn State Name	Description	ee Event Code	Event Name
00	IdLE	Idle	0	Handle Active
01	Auth	Arm	1	Handle Idle
02	HANdLE	Handle	2	Set Arm
03	rEAdy	Ready	3	Clear Arm
04	FLO	Flow	4	Flow Active
05	SUSPNd	Suspend	5	Set Paid
06	ColIcT	Collect	6	Attendant Key On
07	PENDNg	Pending	7	Attendant Key Off
08	AttNdt	Attendant	8	Blank Display
09	Error	Error	9	Fault
10	ErCLCt	Error Collect	10	Noflow Timeout
11	AtCLCt	Attendant Collect	11	Power Failure
12	totALS	Totals	12	Totals Active
13	bLANcd	Blanked	13	Totals Idle
14	FLOdNE	Flow Done	14	Sale Done
15	STANd	Stand Alone	15	Error Sale Done
			16	Warm Start
			17	Self Arm
			18	Setup Change
			19	Emergency stop Active
			20	Emergency stop Idle

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.

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

To clean painted surfaces, follow this procedure:

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.



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

To clean stainless steel, anodized aluminum or chrome plated panels, follow this procedure:

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.

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

PCI SSC - Legal Terms and Conditions

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.

When granted, an approval is provided by PCI SSC to ensure certain security and operational characteristics important to the achievement of PCI SSC's goals, but the approval does not under any circumstances include any endorsement or warranty regarding the functionality, quality, or performance of any particular product or service. PCI SSC does not warranty any products or services provided by third parties. Approval does not, under any circumstances, include or imply any product warranties from PCI SSC, including, without limitation, any implied warranties of merchantability, fitness for purpose or noninfringement, all of which are expressly disclaimed by PCI SSC. All rights and remedies regarding products and services, which have received an approval, shall be provided by the party providing such products or services, and not by PCI SSC or the payment brand participates.

Warranty Registration

The figure below is an example of an equipment Warranty Registration Card. Each piece of Bennett equipment is registered at the factory. This card assures the owner of complete WARRANTY STATUS registration.

Return the completed equipment Warranty Registration Card to BENNETT, 1218 Pontaluna Road, Spring Lake, MI 49456 within five (5) working days of installation.

If the equipment Warranty Registration Card is not received and recorded at BENNETT, Status of Warranty may be difficult to establish.

WARRANTY REGISTRATION CARD

A separate registration card must be filled out for each piece of equipment at the site including the I.C. box and the console.

Model No.: 9036 **Date of Installation:** 6/5/94
Equipment Serial No.: 12M1075432 **Hose Number(s):** 5 & 6
Bennett Invoice No.: 876543 **Bennett Invoice Date:** 5-28-94
Site Name: Convenient Mart **Site Phone:** (616) 555-1234
Site Address: 1234 Main Street
City: Muskegon **State:** MI **Zip** 49444
Owned by: Smith Oil Co.
Installed by: ABC Pump Co.
Sold By: XYZ Distributing
Serviced By: XYZ Distributing

**WARRANTY REGISTRATION must be completed and mailed to
BENNETT, Spring Lake, Michigan at time of installation**

The material included in this Operator's 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
1218 E. Pontaluna Road
Spring Lake, Michigan USA 49456

Telephone from USA: 800-235-7618
Telephone from outside the USA: 231-798-1310, Extension 287 or 269
Facsimile: 231-799-6200
E-mail: sales@bennettpump.com
WEB: <http://www.bennettpump.com>

Bennett Limited Warranty for Products Installed in the United States - Pacific & Horizon II

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 will be paid at previously contracted rates subject to published standard repair time allowances to qualified Bennett Service Representatives with travel cost limited to 200 miles. Travel cost shall be limited to 4 hours round trip.
- 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 – Pacific & Horizon 2 Series Dispensers (excluding Natural Gas, Hydrogen and Hydraulic-less Dispensers)

Warranty on parts, labor, and travel is 24 months from date of installation or 30 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, labor and travel 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 in the United States of America and Canada.
- 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.

BENNETT PUMP COMPANY

1218 E. Pontaluna Road
Spring Lake, MI 49456
Tel: 231-798-1310 Fax: 231-799-6202



