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trouble shooting tips

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No. 1 Gilbarco Pump Error Codes

This first of our "trouble shooting tips" was originally published in 1988 and since that time we have discovered some errors that we made, plus we have learned of some new codes which have been added since that time, therefore we are now updating and reissuing the "tip".

It should be noted to avoid any confusion this bulletin is a summary of all the various codes that we at ERI are aware of, and are our interpretation of those codes.

While we are going to summarize the Codes in this bulletin along with the causes of the Errors, we will be dealing with some of these in greater detail in future "trouble shooting tips".

There are three basic generations of logic development in Gilbarco pumps and we will detail each generation in succession in this "tips".

IT SHOULD BE NOTED THAT THESE ERROR CODES SHOW UP ON THE PRICE PER UNIT DISPLAY OF THE PUMP ITSELF! They do not show up on the Console except for the Transac 12G.

IT SHOULD ALSO BE NOTED THAT THE "ERROR CODE" WILL BE FLASHING BACK AND FORTH WITH THE PRICE SET ON THE PUMP.

All of the "Error Codes" will stop the pump from operating and some will result in loss of communication with the older Consoles. i.e. When the operator selects the pump on the Console
it will not be there!

IMPORTANT!!!!!! - TURN OFF POWER TO THE PUMP (AFTER ISOLATING IT ON SELF SERVE SYSTEMS) BEFORE CHANGING ANY COMPONENTS IN THE PUMP

You should carry out trouble shooting in the order that we detail it, from "over the phone to highest number. In other words easiest and most likely to most difficult & least likely.

FIRST GENERATION: 8080 LOGIC BUILT FROM DAY 1 TO FALL OF 1985 IN HIGHLINE 111B AND TO FALL OF 1987 IN MULTI PRODUCT. (DOES NOT APPEAR IN SALESMAKER 4) IN ALL RETROPAC COMPUTERS.

This generation only had two (2) "error codes".

1. ***FLASHING "PRICE" THEN "BLANK" (DISPLAY GOES OUT) THEN THE "PRICE" AGAIN, AND SO ON.***

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DESCRIPTION OF PROBLEM: A Pulsing System failure. It can happen on only one hose or on all hoses on a pump. It is important to find out "over the phone" if it is occurring on one hose only, or on all hoses.

CAUSES: ONE HOSE ONLY
- A power spike.
- A bad plug connection or moisture on a connection.
- A faulty Pulser.
- A faulty Barrier.
- A break in wiring to the Pulser.

CAUSES: ALL HOSES (Multi Product Pumps it may be only all the hoses on one side, all the time.)
- Faulty Power
- Faulty Regulator/Interface Board. (These are separate boards on a Multi Product.)

CURES: OVER THE PHONE
1. Have the operator turn off "Control" power to the pump (after isolating it at a self serve). Check with operator to make sure the displays on the pump have gone out, then have them turn power back on. (put back on console at Self Serve)
2. Have them try operating the pump again. (You may have to do this a number of times on a Multi Product with each hose to determine if any hose on the side ever functions)
3. If the "error code" occurs again you must go to site.

CURES: ON SITE - ONE HOSE
4. Check all exposed wires to pulsers and check all plug connections for security and moisture.
5. Swap the Pulser with a known good Pulser (The one on the next hose for example). Try unit again. If it works replace pulser.
6. Swap the Barrier with a known good Barrier. Try unit again. If it works change Barrier.
7. Check wiring in pump column, conduit and all plug connections in the head of the pump.
8. Swap Regulator/Interface with know good boards.

2. FLASHING "PRICE" THEN "888.8" THEN "PRICE" AGAIN, AND SO ON (COMMONLY CALLED FLASHING EIGHTS)

DESCRIPTION OF PROBLEM: This problem is referred to as "Logic Lock Up", or in newer books as "Non Existent Memory" which is actually what it is. Technically what happens is that a voltage spike is induced on the Logic Board causing a Non Existent memory location to be received by the Microprocessor. It then refuses to do anything else until it finds that location. If left alone it will eventually blow its own memory. **This means the flashing eights may no longer be happening when you get the service call, the pump may just appear to have lost memory.** Memory loss on its own is extremely rare!

CAUSES:
- A power spike or Static Electricity.
- Faulty Fluorescent Tubes or Ballast, either in the Pump itself or external Fluorescent or Mercury

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Vapor lights (Any that have a Ballast). (We will deal with this in more detail in an other "tips")
- Faulty Neutral wiring or Faulty grounding of the Pump.
- Faulty Logic Board (extremely unlikely, if it is the fault it is usually locked up to the point where it will not do anything including flash eights, reset, or allow you to blow its memory. Occurs, in our experience, less than 1 in 500 occurrences of Logic Lock Up.)

CURES: OVER THE PHONE

1. Have the operator turn off "Control" power to the pump (after isolating it at a self serve). Check with the operator to make sure the displays on the pump have gone out, then have them turn power back on. (put back on Console at Self Serves) The pump should now operate until whatever caused the Logic Lock up causes it again. **(Remember if the pump lost memory and has no price on it, it will not run until the operator sets the price again.)**
2. Have the operator check the fluorescent in the pump for flickering, darkened ends or totally out. If any are noted you will have to go the site to change them. **Make sure you use proper Tubes with grounds strips on them.** If the problem was a Voltage Spike it may never occur again (however a Voltage Spike usually locks all of the pumps up at the site and you usually recognize it from this, they also lock up the Consoles easier).

CURES: ON SITE

3. If after some time the "Lock Up" occurs again you must take some action. Change the Fluorescent Tubes in the pump first (even if they do not look bad). Let them run the pumps again, if the "lock up" does not occur again in roughly the same time as from their first call to the second call you have probably cured the problem.
4. If it occurs again check out all wiring to the pump. Pay particular attention to Neutral and Grounding.
5. If wiring checks O.K., then change the Ballast and also be suspicious of other lighting near the Pump. Have repaired any that looks suspicious. Have them run pumps again.
6. If problem occurs again, change Regulator Board. Have them run pumps again.
7. If problem occurs again, Change Logic Board.

SECOND GENERATION: Z80 LOGIC HIGHLINE 111B PUMPS FROM FALL OF 1985 AND ALL SALESMAKER 4 PUMPS TO THE FALL OF 1987. (NO MULTI PRODUCT).

1. FLASHING "PRICE" THEN "002.0" THEN "PRICE", AND SO ON (COMMONLY CALLED FLASHING 20)

This is the same problem as Problem 1. in the First Generation, a Pulsing System Failure. Description, Causes and Cures are exactly the same, so refer back to it.

2. FLASHING "PRICE" THEN "002.1" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 21)

This is the same problem as Problem 2. in the First Generation, a "Logic Lock Up". Description, Causes

and Cures are exactly the same, so refer back to it.

3. FLASHING "PRICE" THEN "002.2" THEN "PRICE", AND SO ON.

DESCRIPTION: This is a Volume/Money buffer failure. In other words the Microprocessor checks that the Volume amount times the Price should equal the Money amount but finds it does not, so it shuts the Pump down. (See Servicemen are not the only ones who make mistakes.)

CAUSES: - Power Spike
- Static Electricity
- Faulty Logic Board

CURES: OVER THE PHONE

1. Have the operator power the pump down and back up as in previous cures. Have them run the pump again. If the problem does not occur again assume the problem was a power spike or static and there is nothing wrong with the unit.

CURES: ON SITE

2. If it occurs again, check all wiring in the pump for proper Neutral and Grounding. Check the door to the operator panel on the pump to make sure no part of the door or its lock is touching the command module plug, allowing static to the Logic Board.
3. If all this checks O.K., then change the Logic Board.

4. FLASHING "PRICE" THEN "002.3" THEN "PRICE, AND SO ON. (COMMONLY CALLED FLASHING 23)

DESCRIPTION OF PROBLEM: A Grade assignment has changed after the Pump was powered up last. The operator when calling in will probably complain the Pump has lost memory as their totals will have reset to zero. In fact the totals are still there it is just that the pump is now running on the totalizers for another Grade.

CAUSES: - A Jumper failure on the Logic Board.

CURES: ON SITE (NO OVER THE PHONE CURE, DO NOT LET THEM POWER THE UNIT DOWN AS IT WILL RUN ON THE WRONG GRADE.)

1. Check Jumpers for setting the Grades on the Logic Board and repair as necessary.
2. Make sure the Grades are set correctly before powering up the Pump.

5. FLASHING "PRICE" THEN "002.4" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 24)

DESCRIPTION OF PROBLEM: The Conversion Factor has changed after Power up. This means the pump is no longer calculating in Litres but may be U.S. or Imperial Gallons or something totally different.

CAUSES: - A Jumper failure on the Logic Board.

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CURES: ON SITE (NO OVER THE PHONE CURE, DO NOT LET THEM POWER THE PUMP DOWN AS IT WILL PUMP IN WRONG UNIT OF MEASURE WHEN POWERED UP.)
1. Check Jumpers for setting the Conversion Factor and repair as necessary.
2. Make sure the correct conversion factor is set before powering up the Pump.

6. FLASHING "PRICE" THEN "002.5" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 25)

DESCRIPTION OF PROBLEM: The "Two Wire" switch has changed after Power up of the Pump.

CAUSES: - A Customer in an attempt to steal Gas has opened the operator panel door on the Pump They all have common keys on each model of Pump) and switched the Pump "off Console". (This would only occur at self serves.)
- A faulty Two Wire Switch.

CURES: OVER THE PHONE
1. Have the Operator open the Operator Panel Door on the Pump and check to make sure switch is in the correct position ("On Console at a Self Serve). Even if it is the correct position have them move it to the other position and then back a few times just in case its is dirt in the switch. Then power the pump down and back up again and see if it now functions correctly. If it will not operate in self serve but operates on it own you will have to go to site.

CURES: ON SITE
2. Check the switch on the Display Board or Display Interface Board, if it is not functioning change the board.

7. FLASHING "PRICE" THEN "002.6" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 27)

DESCRIPTION OF PROBLEM: The Single/Dual Option setting has changed on the pump after power up of the Pump. This will usually only occur on a Dual, as you must set Jumper "on" to make a single pump a dual.

CAUSES: - A Jumper failure on the Logic Board.
- Faulty Logic Board.

CURES: ON SITE (NO OVER THE PHONE CURE, POWERING DOWN AND UP WILL ONLY GET ONE SIDE FUNCTIONING.)
1. Check the Single/Dual Option Jumper and repair as necessary.
2. If unable to repair or no fault found, change the Logic Board.

8. FLASHING "PRICE" THEN "002.7" THEN "PRICE", AND SO ON (COMMONLY CALLED FLASHING 27)

DESCRIPTION OF PROBLEM: The "A" side Pump I.D. Number has changed after power up of the Pump.

CAUSES: - The Pump Number setting Jumpers on the Logic Board have failed.
- Faulty Logic Board.

CURES: ON SITE (NO OVER THE PHONE CURE, POWERING DOWN AND UP WILL ONLY HAVE IT RUNNING ON THE WRONG PUMP NUMBER, WHICH WILL CONFUSE THE CONSOLE.)
1. Check the A side pump number Jumpers and repair as necessary.
2. If no fault can be found change the Logic Board.

9. FLASHING "PRICE" THEN "002.8" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 28)

DESCRIPTION OF PROBLEM: The "B" side Pump I.D. Number has changed after Power up of the Pump.

CAUSES: - Same as Flashing 27 above.

CURES: - Same as Flashing 27 above.

10. FLASHING "PRICE" THEN "002.9" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 29)

DESCRIPTION OF PROBLEM: Only on Salesmaker 4, it is an invalid Grade assignment or configuration change.

CAUSES: - A Jumper failure on Logic Board.
- Faulty Logic Board.

CURES: ON SITE (NO OVER THE PHONE CURE)
1. Check Jumpers and repair as necessary.
2. Change Logic Board.

11. FLASHING "PRICE" THEN "003.0" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 30)

DESCRIPTION OF PROBLEM: Only on Highline 111B, is an invalid Grade Assignment or configuration change.

CAUSES: same as Flashing 29 above.

CURES: same as Flashing 29 above.

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THIRD GENERATION: MODULAR ELECTRONICS ALL UNITS FROM THE FALL OF 1987 AND SPRING OF 1988 ON.

FLASHING CODES 20 TO 28 ARE IDENTICAL TO FLASHING CODES 20 TO 28 IN THE SECOND GENERATION ABOVE, FOLLOW PROCEDURES FOR THESE.

1. FLASHING "PRICE" THEN "002.9" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 29)

DESCRIPTION OF PROBLEM: Pump Time-Out Error.

CAUSES: The unit has been inactive beyond the specified time limit. The transaction is stopped and it will be necessary to turn the pump handle off to clear the error (no power down is needed). Note! this only occurs with software version 50.2 or higher.

CURE OVER THE PHONE: - have the operator turn the pump handle off and back on. (Leave off if the hose is not being used)

CURE ON SITE: - It may be that the site is not supposed to have a "no flow time-out".
- In this case the pump configuration has changed and you will have to re configure the pump to "No pump Time-out" as per Function Code 12 of Command Code 10.

2. FLASHING "PRICE" THEN "003.0" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 30)

DESCRIPTION OF PROBLEM: Vapor Sense - unit is programmed for Vapor Sense and switch is not hooked up. (This should only occur with version V53.3 software).

CAUSES: Incorrect programing.

CURES ON SITE: Re program Command Code 10 Function Code 7 to "0" (No vapor sense)

3. ***FLASHING "PRICE" THEN "003.1" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 31)***

DESCRIPTION OF PROBLEM: Is a Totals Data Error. It means that the pump totals memory may be corrupted and should not be trusted.

CAUSES: - Voltage spike.
- Static Electricity.
- Faulty Controller Board.
- Dead Battery (or disconnected Battery) when unit powered down and Microprocessor does not go through normal shut down.
- Disconnecting plugs to boards without first powering the unit down and then turning of the Battery by pressing "Clear" and then "Enter" on the keypad.

CURES: OVER THE PHONE

1. Have the Operator Record the Pump Totals.
2. Have the Operator perform a Memory Reset as per Command Code 6 on page 19 of their MDE 2022 User Manual.
3. The Totals could be put back in by the Operator on a Multi Product or a Salesmaker 4 by performing Command Code 7 on page 21 of MDE 2022, however as this will not work on a Highline 111B unless both sides are Grade 1 or the unit is temporarily re configured to an MPD or Salesmaker 4 under Command Code 10 we do not recommend you even attempt to have the Operator do. Just have them do a shift end and tell them their pump totals for that pump are reset to zero.
4. Have the Operator set the prices on the pump in their normal fashion.

CURES: ON SITE

5. If this code persists in coming up change the Controller Board.

4. ***FLASHING "PRICE" THEN "003.2" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 32)***

DESCRIPTION OF PROBLEM: Pulser Count Failure (Do not confuse this with Pulser Failure). The Microprocessor has detected an error between the two pulses coming from the Pulser.

CAUSES: - Voltage Spike.
- Defective Pulser.
- Defective Interface Board.
- Defective Controller Board.

CURES: OVER THE PHONE

1. Have Operator Power the Pump Down and Back up. (No need to isolate with Modular)
2. Have them try the Pump again. If it occurs again, go to site.

CURES: ON SITE

3. Replace Pulser with known good unit and try the Pump again. If it occurs again go to 4.
4. Change Hydraulic Interface Board with known good one and try again.
5. Change Controller Board.

5. ***FLASHING "PRICE" THEN "003.3" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 33)***

DESCRIPTION OF PROBLEM: - The Heaters for the Displays are on at Power Up.

CAUSES: - The Displays in the Pump where too cold at Power up to Light and the Heaters have been turned on.
- Defective Heater.
- Bad Connection between Power Supply and Display (Trace as per appropriate schematic).
- Defective Power Supply

- Defective Controller Board.

CURES: OVER THE PHONE

1. Have the Operator wait until the displays warm up. If this does not occur within one hour of the Power being applied, go to site.

CURES: ON SITE

2. Check for Heater Power at appropriate place on Display Boards (Use appropriate schematic for type of Pump). If no Heater Power (24 VAC) at display trace back through wiring to find point you are loosing it. If no Power from Power Supply, replace it.
3. If there is Heater Power (24 VAC) to the Main Display, replace each Main Display with a known good one. Close Bezels to allow to warm up. Be aware that Displays that are cold make take up to an hour to get warm enough to light (at -30 Degrees Celcius this is about a 1/2 hour). If they still do not light after 1 hour go to 4.
4. Replace Controller Board.

NOTE! If the Display Power Supply is Defective the the displays will not flash Code 33.

6. ***FLASHING "PRICE" THEN "003.4" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 34)***

DESCRIPTION OF PROBLEM: A low Battery condition was detected during automatic Battery test. (Refer also to our "trouble shooting tip No.8)

CAUSES: - Defective Battery Fuse.
- Defective Battery.
- Bad Connection between Battery and Regulator Board.
- Defective Regulator board.
- Software older than version 53.4 on Controller Board.
- Defective Controller board.

CURES: OVER THE PHONE

1. Have operator perform Command Code 9, Function 1 as detailed on page 24 of MDE2022 User Manual. This will override the Error Code until the next Power Up. If it was just a low battery it may not occur again. If it does go to site.

CURES: ON SITE

2. Check the Battery Fuse and replace if necessary.
3. Replace Battery with known good unit.
4. Check wiring between Battery and Regulator Board.
5. Replace Regulator Board with known good one.
6. Replace Controller Board with known good one.

7. ***FLASHING "PRICE" THEN "003.5" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 35)***

DESCRIPTION OF PROBLEM: Configuration data error. The configuration data telling the Pump what

it is has changed.

CAUSES: - Voltage Spike.
- Operator Programming Error (They may have accessed Command Level 2).
- Faulty Controller Board.

CURES: ON SITE (NO OVER THE PHONE, MEMORY MUST BE RESET AND THE PUMP RE CONFIGURED).
1. Record the Pump Totals.
2. Perform Command Code 6 as per page 19 of MDE 2022 User Manual.
3. Re configure the Pump as per Command Codes 10 through 12 pages 2-1 to 2-17 of MDE2021 Service Manual.
4. You may now put the pump totals back in a Multi Product or a Salesmaker 4 by performing Command Code 7 on page 21 of MDE2022 User Manual, however on a Highline 111B that is not Grade 1 on both sides you must first temporarily re configure the pump as Salesmaker 4 or Multi Product as per Command Code 10, Function Code 1 on page 2-7 of MDE2021 Service Manual, then enter the totals as per Command Code 7 on page 21 MDE2022 User Manual, then re configure the pump back to be a Highline 111B as per Command Code 10, Function 1 page 2-7 MDE2021 Service Manual (as this can be difficult to accomplish properly we recommend having the operator do a shift cut and start the pump totals at zero for this pump).
5. Reset prices as per normal station procedure.

8. FLASHING "PRICE" THEN "003.6" THEN "PRICE, AND SO ON. (COMMONLY CALLED FLASHING 36)

DESCRIPTION OF PROBLEM: Unit "Type Code" has changed.

CAUSES: Unknown

CURES: ON SITE - Re configure "Unit Type" as per Function 1 of Command Code 10.
- If problem repeats, replace Controller board.

9. FLASHING "PRICE" THEN "003.7" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 37)

DESCRIPTION OF PROBLEM: "PIN" code 1 has changed. If what it has changed to is not known (and it probably is not) you can not access Command Level 1 or 2.

CAUSES: Unknown

CURES: ON SITE ONLY
- Record Pump Totalizers.
- Perform Master Reset (see our "trouble shooting tip No. 6")
- Re configure the pump and re enter totals if desired.

- If problem repeats change the Controller Board.

10. FLASHING "PRICE" THEN "003.8" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 38)

DESCRIPTION OF PROBLEM: "PIN" code 2 has changed. This will not allow access to Command Level 2.

CAUSES: Unknown

CURE: ON SITE ONLY - The Same as Flashing 37 in 9. above.

11. FLASHING "PRICE" THEN "003.9" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 39)

DESCRIPTION OF PROBLEM: "Cash/Credit" option has changed.

CAUSES: Unknown

CURES: ON SITE
- Re configure option as per Function Code 2 of Command Code 12.
- If problem keeps repeating replace Controller Board.

12. FLASHIN "PRICE" THEN "004.0" THEN "PRICE", AND SO ON (COMMONLY CALLED FLASHING 40).

DESCRIPTION OF PROBLEM: "Keylock" Option has changed. (Version V53.0 or higher software only)

CAUSES: Unknown

CURES: ON SITE - Reprogram Keylock Option Command Code 4, Function Code 2 (0 - no keylock, 1 - keylock), then power down, turn off battery and power up again.

12. FLASHING "PRICE" THEN "004.1" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 41)

DESCRIPTION OF PROBLEM: "Side Exists" option has changed.

CAUSES: Unknown

RES: ON SITE
- Re configure "Side Exists" option as per Function Code 3 of Command Code 12.

- If problem persists replace Controller Board.

13. FLASHING "PRICE" THEN "004.2" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 42)

DESCRIPTION OF PROBLEM: "Manual Mode" option has changed. (for use with Transac 11 Consoles only option)

CAUSES: Unknown

CURES: ON SITE
- Re configure the pump as per Function Code 4 of Command Code 12.
- if problem persists replace Controller Board.

14. FLASHING "PRICE" THEN "004.4" THEN "PRICE", AND SO ON. (COMMONLY CALLED FLASHING 44)

DESCRIPTION OF PROBLEM: The operating handle for the hose flashing is in the "on" position upon power up of the pump.

CAUSES: - The Operating Handle is up.
- The operating handle or its wiring is shorted. (Pump should have been "calling" in or running all the time before power down)

CURES: OVER THE PHONE - Have Operator check to see if handle is down. Have them lift it and put it down again to make sure it is all the way down. If this does not get rid of the Flashing 44, you must go to site.

CURES: ON SITE - Check to make sure switch is adjusted correctly.
- Disconnect switch if this cures, replace switch.
- Replace Operating Switch Barrier with known good one. If this cures replace Barrier.
- Trace all wiring from switch to the Hydraulic Interface look for shorts. Repair as necessary.
- Replace Hydraulic Interface with known good unit. If this cures replace.
- Replace Controller Board.

A Master Reset and/or replacement of the Controller Board should only be done as a last resort in each case after all else has failed. However if you do replace a Controller Board make sure you perform a Master Reset on it before configuring it to ensure it has not retained data from any previous test or use.

Good Luck and what ever you do not change everything at once, take it one step at a time.

Remember that we are only a phone call away (403-275-4990).