# Service Bulletin

Bulletin No. 2017-01
OEM No. 2017-01

Circulate to: ☑ Sales Manager ☑ Accounting ☑ Service Manager ☑ Technician ☑ Parts Manager

# MerCruiser Guardian Low Water Pressure Fault

## Models Affected

| Models Covered | Serial Number Or Year |
|---|---|
| 4.3L MPI RWC EC Alpha models | 1A645142 and above |
| 4.5L MPI EC Alpha models | |
| 4.5L MPI Alpha models | |

## Scope

Worldwide

**NOTICE**

**The service technician performing the procedures described in the bulletin must read and understand the entire service bulletin before attempting a reflash procedure. Failure to follow all service bulletin instructions and the instruction shown in CDS G3 during the reflash process may lead to a reflash failure, resulting in an inoperable or disabled vessel.**

## Situation

This bulletin will aid the dealer in resolving **Guardian Low Water Pressure** faults occurring from 1700 to 3000 RPM on V6 Alpha engines with standard cooling.

This service bulletin also details an optional reflash calibration for **Guardian Low Water Pressure** fault threshold reductions. Boats with this calibration will have a lower pressure requirement to activate the **Guardian Low Water Pressure** fault. The reduction of this threshold makes the boat less likely to warn an operator of blockage of water passages prior to an exhaust manifold or engine overheat.

**NOTICE**

**Engine or exhaust manifold overheat can result in exhaust component or engine damage.**

**IMPORTANT: Before attempting the reflash procedure in CDS G3, the following repair actions are necessary to resolve the condition and prevent engine or exhaust manifold overheats.**

## Correction

**IMPORTANT: Perform ALL steps in the following correction list, even if an early step is found to match the fault condition described here. Failure to complete the entire list can result in the fault condition reoccurring.**

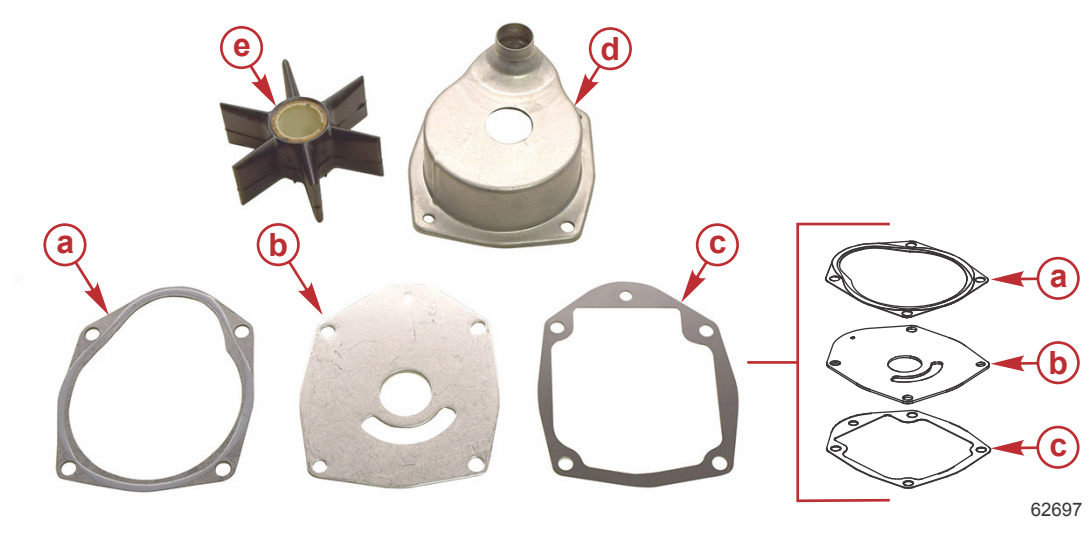
### Inspection and Replacement

***NOTE:*** *In some cases, an engine or exhaust manifold overheat may occur prior to the* ***Guardian Low Water Pressure*** *fault. This is caused by the cooling system accumulating sediment from shallow water operation. For these situations, a thorough engine cooling system flush and thermostat replacement is required. In some applications, occasional thermostat replacement may be required due to small sediment and rocks causing a repeat condition of the thermostat sticking.*

1. Inspect the drive for restriction of inlets.

2. Inspect the water hoses inside and outside of the boat for kinking or obstruction.
3. Verify the sensor values that are causing the **Guardian Low Water Pressure** fault are accurate by replacing the water pressure sensor or by using a mechanical gauge.
4. Inspect the thermostat for a stuck open condition and replace the thermostat, thermostat housing gasket, and thermostat cork gasket. An engine that does not reach normal operating temperature, 54–66 ºC (130–150 ºF), is an indication of a stuck open thermostat.
5. Replace the engine oil in engines that have experienced a stuck open thermostat condition. A rich-running cold engine will result in oil that is contaminated with fuel.
6. Replace the sterndrive water pump components with an appropriate complete water pump kit. The rubber overmolded faceplate must be replaced with a metal faceplate without rubber. Refer to the illustration below for the proper installation sequence of the faceplate and gaskets.

   ***NOTE:*** *Ensure you have a current water pump kit without the overmolded faceplate. It is not acceptable to reinstall kits that contain an overmolded faceplate.*




**Current water pump kit**

- **a -** Fiber gasket with neoprene bead
- **b -** Faceplate
- **c -** Metal gasket
- **d -** Water pump cover
- **e -** Impeller

7. Inspect the circulation pump impeller for cracking. Refer to **MerCruiser Service Bulletin 2013-05** for inspection and correction information.


**Cracked circulation pump impeller**

8. Water test and make a recording if a low pressure event occurs.

   **IMPORTANT: NEVER stretch the poppet valve spring to attempt to increase water pump pressure while troubleshooting these, or any other issues. Replace the poppet valve spring if stretching is suspected.**

## New Water Pump Component Installation

When installing new water pump components, please note the following:

1. Before installing the face seal on top of the water pump, clean the driveshaft with ZeroTri® or other degreaser that will not leave residue or oil surface behind.
2. Installation of the new face seal requires that the driveshaft be pulled upward before the final height of the face seal is set using the tool that is supplied with the water pump kit.

## Checklist

- ☐ Inspect for obstructions on drive inlets.
- ☐ Inspect for obstructed, twisted, or kinked hoses, including the hose between the gimbal and bell housings.
- ☐ Verify the water pressure sensor is reading correctly and is not blocked.
- ☐ Inspect for debris, mud, or silt blocking the cooling system water passages.
- ☐ Inspect the thermostat for a stuck open condition and replace thermostat.
- ☐ Replace the overmolded faceplate with a water pump kit that has a separate faceplate and two gaskets.
- ☐ Inspect the circulation pump impeller for cracking.
- ☐ Set the proper face seal height.

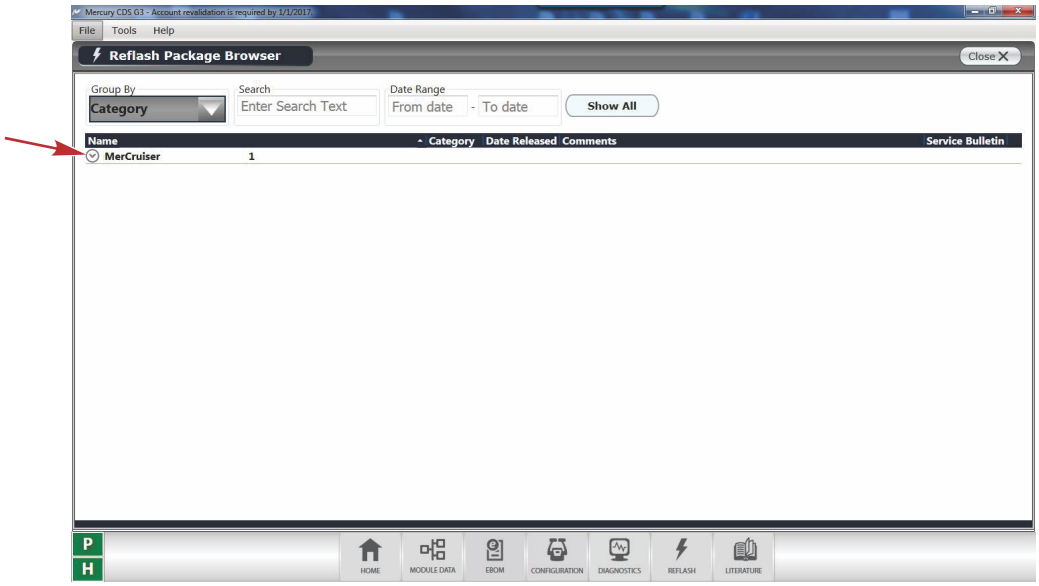
# Reflash

***NOTE:*** *The 4.3 engine reflash packages referenced in this bulletin also encompass the updates referenced in* ***MerCruiser Service Bulletin 2015-01R1****. Those improvements, carried over into the reflash package, include: shift strategy enhancement, battery voltage fault threshold improvements, low RPM block pressure strategy improvements, and warning horn strategy changes over earlier calibrations. Please provide the customer with a copy of the new audio warning system's functions by copying the last page of this bulletin. Customers should use this document to replace the audio warning system information in their 4.3 engine owner's manuals.*

Mercury MerCruiser has released an optional PCM calibration update for customers that repeatedly experience **Guardian Low Water Pressure** faults due to sediment ingestion, sticking thermostats, or aeration from maneuvers. This calibration will reduce the pressure at which the fault will occur. It will not correct the cause of the low water pressure. If the cause of the low water pressure is not addressed, the customer may experience an exhaust manifold overheat or an engine overheat fault following this update.

1. Connect CDS G3 version 1.7.8 or greater to the diagnostic port or junction box and turn all keys on. Do not start the engine.
2. Select **REFLASH**.
3. Select **MODULE REFLASH**. This will allow CDS G3 to query the PCM calibration and compare it to the loaded reflash packages.

4. If the reflash package is identified as shown below, select the drop-down arrow next to "MerCruiser," then click on the displayed reference package and acknowledge all requests to proceed with the reflash process.

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5. After performing the reflash, the boat must be water tested to ensure the fault has been eliminated and the engine or manifolds do not overheat.

# Audio Warning System

**IMPORTANT: The audio warning system alerts the operator that a problem has occurred. It does not protect the engine from damage.**

Most faults cause the warning horn circuit to activate. How the warning horn activates depends on the severity of the problem.

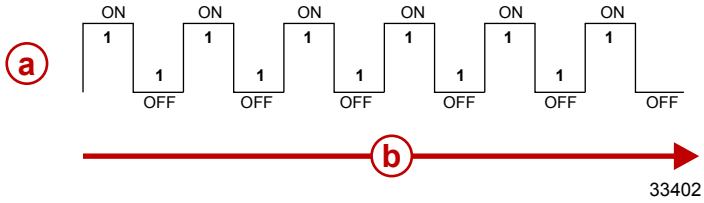
There are two warning horn states:

- Caution
- Critical

There is also an alarm that sounds if the helm has not been properly configured using the G3 service tool.

## Caution

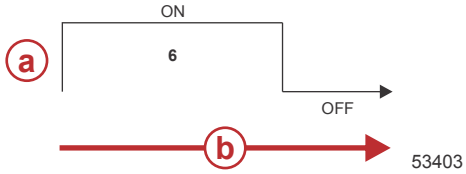
If a caution state is detected, the audio warning system will sound for six one-second intervals.




**a -** Horn (on or off)
**b -** Time (in seconds)

## Critical

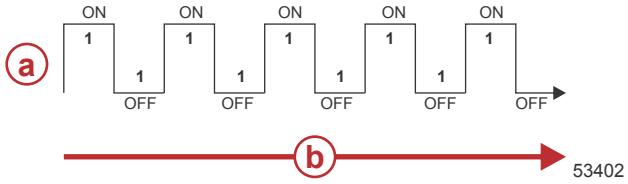
If a critical state is detected, the audio warning system sounds for six seconds and then turns off.




**a -** Horn (on or off)
**b -** Time (in seconds)

## Nonconfigured Alarm—DTS Only

If the helm has not been properly configured using the G3 service tool, the audio warning system will sound for five one-second intervals.




**a -** Horn (on or off)
**b -** Time (in seconds)

## Testing the Audio Warning System

1. Turn the key switch to the on position without cranking the engine.
2. Listen for the audio alarm. The alarm will sound if the system is functioning correctly.