MERCURY Diesel

Service Bulletin

Bulletin No. smc-13-73
OEM No. 2013-71

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

3000 Series Zeus Pod—Red MerCathode Controller (with LED Light) Troubleshooting Guide

Models Affected

Models Covered
All Zeus 3000 Series KH Model Pods

Scope

Worldwide

Part Number

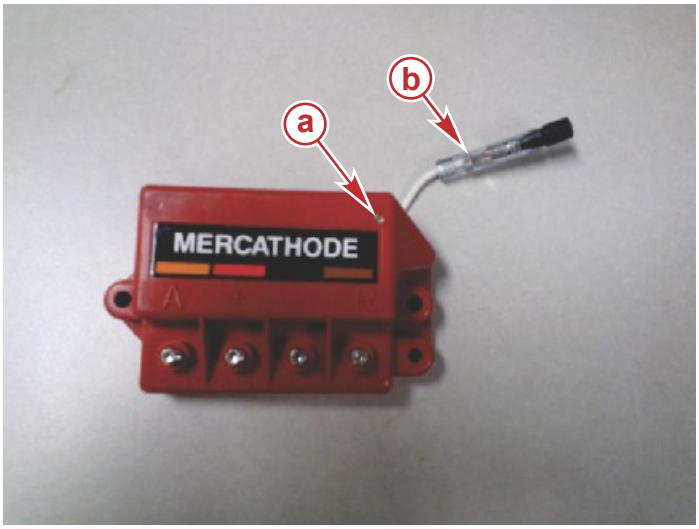
Qty.	Description	Part Number
1	Red MerCathode Controller	8M0082462

Situation

The red MerCathode controller, which contains an LED light and pigtail for checking system functionality, is installed on all KH model Zeus pods. This controller is also the service part replacement for the red controller on previous built Zeus pods.

The diagnostic pigtail allows for measuring the reference electrode input. To measure this voltage, place a multimeter between the pigtail and the "–" terminal on the controller while it is in operation, taking care not to short "–" to "+." Photo of the new controller is shown below.

NOTE: *Do not measure the reference electrode voltage directly from the "R" terminal to the "–" terminal, as this reading will not be accurate.*



54227

a - LED light
b - Diagnostic pigtail

THE INFORMATION IN THIS DOCUMENT IS CONFIDENTIAL AND PROTECTED BY COPYRIGHT AND IS THE PROPERTY OF MERCURY MARINE.

This document is provided for the sole and exclusive use of the original recipient as prescribed by Mercury Marine and may not be distributed or copied, digitally or otherwise, without the prior written consent of Mercury Marine.

The following chart describes the light functionality, and provides troubleshooting steps for the various LED light conditions:

MerCathode LED	Definition	Possible Causes	Summary of Fault Correction Possibilities
Solid green	No fault - controller working properly. Hull potential is between 0.84 and 1.04 V	N/A	No action necessary - this is normal LED light indication for properly functioning MerCathode system.

1 flash per 0.5 second	Reference voltage is below 0.84 V	• Loss of continuity between pod and ground.
		• MerCathode reference wire or anode painted over.
		• Poor connection at the "R" and "A" controller terminal.
		• Stagnant water near reference electrode.
		• Sacrificial anodes more than 50% consumed.
			• Hull potential slightly below the 0.84 volt reading can be common. Monitor over time.
			• If the flashing sequence continues over time, then perform the following:
			  • Measure hull potential by connecting the positive lead of the multimeter to the controller pigtail, and the negative lead to the "–" post of the controller.
			  • Above reading can be verified by measuring the hull potential with the service probe.
			  • Check continuity connections between the trim tab and midsection plate.
			  • Check continuity connections between the pod and vessel.
			  • Verify antifouling paint is not on the anode or reference electrode.
			  • Operate engine for a few minutes. Then turn off. Check if reference voltage increases.
			• Replace sacrificial anodes if more than 50% consumed.
			• Consult Mercury Technical Service if further review is necessary.

1 flash per 4 seconds	Reference voltage is above 1.04 V	• Stray current present. • Poor connection at the "R" controller terminal.	• Disconnect shore power and other electrical components one at a time and verify if reading decreases. • Check connection at the "R" terminal. • Measure hull potential by connecting positive lead of multimeter with controller pigtail, and negative lead to "–" of controller. • Measure hull potential with service probe and compare with controller reading above. If these differ significantly, then replace controller. • Consult Mercury Technical Service if further review is necessary.
1 long flash per 10 seconds	Shorted or open reference terminal	Reference electrode wires pinched or cut, electrode damaged.	Identify where the wires may be compromised. Replace anode and reference electrode assembly if necessary.
2 long flashes per 10 seconds	Shorted or open anode terminal	Anode wires pinched or cut, anode assembly damaged.	Identify where the wires may be compromised. Replace anode and reference electrode assembly if necessary.

THE INFORMATION IN THIS DOCUMENT IS CONFIDENTIAL AND PROTECTED BY COPYRIGHT AND IS THE PROPERTY OF MERCURY MARINE.

This document is provided for the sole and exclusive use of the original recipient as prescribed by Mercury Marine and may not be distributed or copied, digitally or otherwise, without the prior written consent of Mercury Marine.

MerCathode LED	Definition	Possible Causes	Summary of Fault Correction Possibilities
1 long flash per 60 seconds	Open anode and reference terminals - Boat out of water/dry dock condition	• Boat out of water/dry dock condition. • Both anode and reference electrode circuits are open.	• No action necessary, if boat is out of the water - this is normal LED flash sequence. • If boat is in the water, then identify the open circuit issue with both the anode and electrode assembly. Replace if necessary.
LED light not on	Green light not on.	• Battery connection bad. • Battery dead. • Controller faulty.	• Check battery voltage. Must be 12.6 V or higher. • Check 5 A fuse in wire harness to controller. • Controller may have shutdown due to thermo limit of 100° C. Wait for controller to cool down, and see if it turns back on. • If no other issue is found, then replace the controller.

This information is provided for informational purposes only, as an aid in servicing our product.

THE INFORMATION IN THIS DOCUMENT IS CONFIDENTIAL AND PROTECTED BY COPYRIGHT AND IS THE PROPERTY OF MERCURY MARINE.

This document is provided for the sole and exclusive use of the original recipient as prescribed by Mercury Marine and may not be distributed or copied, digitally or otherwise, without the prior written consent of Mercury Marine.