Installation and Troubleshooting Guide

This installation is to be completed by an Authorized Dealer or Professional Service Technician. For questions regarding installation or warranty, call Technical Support at (800) 648-3976. Do not return to the Dealer or Distributor where the part was purchased. Contact Sierra Directly for Return Goods Authorization.

SIERRA P/N: 18-99218

This unit replaces P/N's: 18-5788, 18-5789, 339-5287, 339-6222A1, A4, A 8, and A10.
This unit replaces CDI P/N: 114-6222

Warning! This product is designed for installation by a professional marine mechanic. Dometic cannot be held liable for injury or damage resulting from improper installation, abuse, neglect, or misuse of this product.

These engines require the Orange, Red, or Green Ignition coils. The Black or Blue Ignition coils use a common ground connection internally for the Primary and the Secondary side of the Ignition coils and will not work for this Ignition system. This Ignition system requires that the Primary and the Secondary side of the Ignition coils be separate as the Switchbox drives the Negative side of the Ignition coil to ground, causing the Ignition coil to generate spark on the Secondary side.

How to test the Engine Stop Circuit (Kill) for DC Voltage:

1. DC voltage present on the kill circuit of the Switchbox due to a faulty key switch, boat harness, or engine harness will severely damage the Switchbox's internal kill circuit**.** Connect a Digital Multi Meter to the Orange Ignition Stop wire AT THE SWITCHBOX while disconnected from the Switchbox in reference to a known good engine ground. Turn the Ignition switch on and off several times. If, at any time, you see over 2 VDC on the kill wire, there is a problem with one or both harnesses and/or the Ignition switch. The Ignition Stop wire should not be connected back to the new Switchbox at any point until the problem is corrected **OR DAMAGE TO THE SWITCHBOX WILL OCCUR**!

INSTALLATION

To replace the 18-5788, 18-5789, 339-5287 and 339-6222 with the 18-99218:

1. Disconnect the Negative battery cable.
2. Remove the old Switchbox and clean all ground wires and mounting plate.
3. Check the Trigger, Stator, and kill wires for breaks and broken insulation.
4. Install the new Switchbox using the original bolts or bolts supplied with the unit.
5. Connect the Orange wire from the Switchbox to the Stator terminal with the Yellow wire under the flywheel.
6. Connect the Brown and White Trigger wires to the Trigger.

   Some engines with the CDI P/N: 339-5287 Switchbox had 2 Brown Trigger wires and no White Trigger wire. In this case, connect the Brown wire from the Switchbox to one of the Brown wires from the Trigger and the White wire from the Switchbox to the other Brown wire from the Trigger. If the engine backfires when you attempt to start the engine, swap the connection from the White wire to the other Brown wire from the Trigger.
7. Connect the Green coil wire to the + terminal of the #1 Ignition coil and the Green/White wire to the – terminal of the #1 Ignition coil.
8. Connect the Blue coil wire to the + terminal of the #2 Ignition coil and the Blue/White wire to the – terminal of the #2 Ignition coil.
9. Reconnect the Negative battery cable.

TROUBLESHOOTING

NO SPARK ON ANY CYLINDER:

1. Disconnect the Orange stop wire AT THE SWITCHBOX and retest. If the engine's Ignition now has spark, the stop circuit has a fault. Check the key switch and wiring harness.
2. Disconnect the Yellow wires from the Stator to the Rectifier (if equipped) and retest. If the engine has spark, replace the Rectifier.
3. Check the cranking RPM. A low cranking speed may not allow the system to spark properly. This can be caused by a weak battery, dragging starter, bad battery cables, or a mechanical problem inside the engine.
4. Inspect and clean all engine and ignition ground connections.
5. Check the Stator and Trigger resistance and DVA:

Read from	Read to	Ohms	DVA Connected
Orange (Stator)	Engine Gnd	1600-1800 Ω (800-900 Ω per coil)	180-400 V
Brown (Trigger)	White (or Brown) (Trigger)	140-160 Ω	0.5 V Minimum

6. Inspect the Ignition coils. You should have either a Red, Orange, or Green Ignition coil with a bare braided ground wire coming out of the bottom side of the Ignition coil. This bare braided ground wire MUST be connected to a clean engine ground. You cannot use a Black or Blue Ignition coil as this will damage the Switchbox.

7. Check the Ignition coils as follows:

Read from	Read to	Ohms
Positive (+)	Negative (–)	0.2-1.0 Ω
Negative (–)	Engine Gnd	Open
High Tension Lead	Engine Gnd	800-1100 Ω

8. Check the Trigger and Charge coil flywheel magnets for cracked, broken, or loose magnets.

ENGINE HAS SPARK BUT WILL NOT RUN:

1. Index the flywheel and check the timing. If it is out by 180°, swap the Trigger wires to the Switchbox.
2. If the timing is off by any other amount, check the flywheel shear key.

NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER:

1. Check the DVA between the Green wire and Green/White wires from the Switchbox and between the Blue and Blue/White wires while connected to the Ignition coils. You should have a reading of 150 DVA minimum. If the DVA reading is low on one cylinder, disconnect the wires from the Ignition coil for that cylinder and reconnect them to a Pack Load resistor and retest. If the reading is now good, the Ignition coil is likely bad. A continued low reading indicates a possible defective Switchbox.
2. Connect an inductive tachometer to each cylinder and compare the RPM readings at the RPM where the problem is occurring. If only one cylinder is dropping out, swap the Ignition coil location and retest. If the problem follows an Ignition coil, replace the Ignition coil. If it stays on the same spark plug, replace the Switchbox.
3. Disconnect the Negative side of the Ignition coils. Connect a jumper wire to the Negative side of the Ignition coil and while the engine is turning over, tap the jumper wire to engine ground. If this causes the Ignition coil to have spark, the Ignition coil is likely ok. Test the Trigger (see **NO SPARK ON AN CYLINDER**)
4. Check the Trigger and Charge coil flywheel magnets for cracked, broken, or loose magnets.

ENGINE WILL NOT STOP (KILL):

1. Connect a jumper wire inline to the Orange stop wire from the Switchbox and short it to engine ground. If this stops the Switchbox from sparking, the stop circuit has a fault. Check the key switch and wiring harness. If this does not stop the Switchbox from sparking, replace the Switchbox.

MISS AT ANY RPM:

1. Disconnect the Yellow wires from the Stator to the Rectifier (if equipped) and retest. If the miss clears up, replace the Rectifier.
2. In the water or on a Dynamometer, check the DVA on the Green wires from the Switchbox while connected to the Ignition coils. You should have a reading of at least 150 DVA or more, increasing with engine RPM until the DVA levels off near WOT. A sharp drop in DVA right before the miss becomes apparent on all cylinders will normally be caused by a bad Stator. A sharp drop in DVA on less than all cylinders will normally be the Switchbox or Trigger.
3. Connect an inductive tachometer to each cylinder in turn and try to isolate the problem. A high variance in RPM on one cylinder usually indicates a problem in the Switchbox or Ignition coil. Occasionally, a Trigger will cause this same problem. Check the Trigger DVA (see **NO SPARK ON ANY CYLINDER**).
4. Perform a high-speed shutdown and read the spark plugs. Check for water. A crack in the block can cause a miss at high speed when the water pressure gets high, but a normal shutdown will mask the problem because the water will evaporate off the spark plug before you can identify it.
5. Check the Trigger and Stator coil flywheel magnets for cracked, broken, or loose magnets.