



# Installation and Troubleshooting Guide



NOTE: This installation is to be completed by an Authorized Dealer or Professional Service Technician. For questions regarding installation or warranty, call CDI Tech Support at 866-423-4832. **Do not return to the Dealer or Distributor where the part was purchased. Contact CDI Electronics Directly for Return Material Authorization.**

## CDI P/N: 114-4952A30 Switch Box 2 Cylinder

NOTE: This unit replaces the 18495A 9, A14, A16, A20, A21 and A30 switch boxes.

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

SERVICE NOTE: Check for DC voltage on the kill (stop) wires (usually Black/Yellow) with the key-switch in the on and off position. At no time should you see over 2 volts DC on this wire as severe damage to the power pack can occur.

**PLEASE USE THE OEM RECOMMENDED SPARKPLUG NGK BPZ8H-N-10.**

### INSTALLATION

1. Disconnect and clean all engine and battery ground wires.
2. Disconnect all wires connected to the switch box and remove the green coil wires from the coils.
3. Unbolt and remove the old 18495A30 switch box.
4. Bolt the new switch box on, using the original bolts.
5. It is recommended that dielectric grease (i.e. CDI 991-9705) be used in the bullet nose connectors to help prevent corrosion.
6. Connect the Brown/Yellow and Brown/White wire to the trigger, matching wire colors.
7. Connect the 3 pin connector to the stator plug.
8. Connect the Green/Yellow wire to the #1 (Top) ignition coil.
9. Connect the Green/White wire to the #2 (Bottom) ignition coil.
10. Connect the Black ground wire to a clean engine ground.
11. Connect the Black/Yellow kill wire to the Black/Yellow kill wire from the harness.

### TROUBLESHOOTING

#### NO SPARK ON EITHER CYLINDER:

1. Visually inspect the stator for cracks or varnish leakage. If found, replace the stator.
2. Disconnect the Black/Yellow kill wire FROM THE SWITCHBOX. If spark returns, the Kill circuit has a fault.
3. Check for broken or bare wires on the unit, stator and trigger.
4. Check the stator and trigger as follows:

Read from	Read to	OEM Ohms	CDI Ohms	DVA Connected	Disconnected
Blue Stator wire	Black Stator wire	2900-3500	2300-2750	180V or more	180V or more
Red Stator wire	Black Stator wire	100-180	200-250	25 V or more	25 V or more
Black Stator wire	Engine Ground	--	--	5 V	< 1 volt
Brown/White	Brown/Yellow	650-750	850-1050	4V or more	4V or more
Brown/White	Eng Gnd	OPEN	OPEN	< 1 volt	< 1 volt
Brown/Yellow	Eng Gnd	OPEN	OPEN	< 1 volt	< 1 volt

#### NO SPARK OR INTERMITTANT SPARK ON ONE CYLINDER:

1. Inspect the flywheel to see if one of the magnets has broken loose and shifted around to where it is touching the other magnet.
2. Connect a spark tester to the ignition coils and swap the Green wires on the switchbox to the ignition coils. If the problem moves, check the trigger wires for continuity. If OK, replace the switchbox. If the problem did not move, replace the ignition coil.
3. Verify the correct spark plugs are installed. OEM calls for a BP8H-N-10 or BPZ8H-N-10 (use the BPZ8H-N-10 if the engine has a miss-fire).

#### ENGINE WILL NOT SHUT OFF:

Check the kill circuit in the pack by using a jumper wire connected to the Black/Yellow wire coming out of the pack and shorting it to ground. If this kills the engine, the kill circuit in the harness or on the boat is defective, possibly the ignition switch.

#### HIGH SPEED MISS:

1. Check the DVA voltage of the stator from the Red wire to the Black wire while running the engine. It should show a smooth climb on the voltage. NOTICE: Use caution when doing this and do not exceed the rated voltage range of your meter. If there is a sudden or fast drop in voltage right before the miss becomes apparent, the stator is usually at fault.
2. Verify the correct spark plugs are installed. OEM calls for a BP8H-N-10 or BPZ8H-N-10. If the BP8H-N-10 spark plugs are installed, try the BPZ8H-N-10 spark plugs.
3. If there is no indication of the problem, it could be a small water leak in one or both cylinders.

#### BOTH CYLINDERS HAVE SPARK BUT THE ENGINE WILL NOT RUN:

1. Check the flywheel shear key.
2. Index the flywheel and check timing on both cylinders. If the timing is off, check the trigger and flywheel. NOTE: If one of the trigger wires is shorted, the timing may not advance on ONE cylinder, but the other cylinder will advance.
3. If no other fault is found, replace the switch box.

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## **ENGINE LOW ON POWER OR TIMING WILL NOT ADVANCE WITH ENGINE RPM:**

1. Verify the ignition timing is advancing from about 5 degrees BTDC at idle to approximately 28 degrees BTDC at 3000 RPM.  
NOTE: The timing will retard slightly from 28 degrees BTDC at 3000 RPM to 25 degrees BTDC at 5500 RPM, dropping down to 15 Degrees BTDC between 5800 to 6200 RPM.
2. Index the flywheel and check timing on both cylinders. If the timing is off, check the trigger and flywheel. NOTE: If one of the trigger wires is shorted, the timing may not advance on ONE cylinder, but the other cylinder will advance.

## **SWITCH BOX OR TRIGGER REPEATEDLY BLOWS ON SAME CYLINDER:**

1. Check the trigger wires for shorts to engine ground as a shorted trigger wire can destroy a SCR inside the switch box.
2. In contrast, a shorted SCR inside the switch box can destroy a trigger coil. Check the trigger resistance and DVA output (see NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER above).
3. Replace the ignition coil on the cylinder dropping spark.

## **WILL NOT ACCELERATE BEYOND 3000-4000 RPM:**

1. Disconnect the Yellow wires from the stator to the rectifier and retest. If the engine now has good spark, replace the rectifier.
2. Connect a DVA meter between the stator's Blue and Black wires. Run the engine up to the RPM where the problem is occurring. DVA voltage should increase with RPM. A sharp drop in DVA right before the problem occurs usually indicates a bad stator.
3. Connect a DVA meter between the stator's Red and Black wires. The DVA voltage should show a smooth climb in voltage and remain high through the RPM range. A reading lower than on the Blue wire reading usually indicates a bad stator.
4. Connect an inductive tachometer to each cylinder in turn and try to isolate the problem. A single cylinder dropping spark will likely be a bad switch box or ignition coil. All cylinders not sparking properly usually indicates a bad stator.
5. 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.
6. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

## **MISS AT ANY RPM:**

1. In the water or on a Dynameters, check the DVA output on the Green wires from the switch box while connected to the ignition coils. You should have a reading of at least 150V DVA or more, increasing with engine RPM until it reaches 300-400V DVA maximum. 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 switch box or trigger.
2. 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 switch box or ignition coil. Occasionally a trigger will cause this same problem. Check the trigger DVA voltage (see NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER above).
3. 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.
4. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.