



# Installation and Troubleshooting Guide

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**CDI P/N: 114-9052**

This switch Box replaces these P/N's: 19052A1, 19052A2, 19052A3, 19052A5, 19052A6 and 19052A8.

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:** Connect a DC volt meter between the kill wires and engine ground. Turn the ignition switch on and off several times. If, at any time, you see DC voltage on the kill wires, there is a problem with the harness or ignition switch. Battery voltage on the kill circuit will destroy most ADI type switch boxes.

## Installation

1. Disconnect the positive battery cable.
2. Check and clean all battery terminals and engine grounds.
3. Remove the wires from the switch box.
4. Unbolt and remove the old switch box, saving the original bolts and nuts.
5. Install the new switch box using the original bolts and nuts.
6. Connect the black ground wire to engine ground.
7. Connect the wires to the new switch box as they were on the old switch box (IF THE OLD SWITCH BOX DID NOT HAVE ANY WIRES CONNECTED TO THE RED TERMINAL, DO NOT CONNECT ANY WIRE TO THE RED TERMINAL ON THE NEW SWITCH BOX). The second black/yellow wire is for use with the rev limiter (if equipped).
8. Connect the ignition coil ground wire to the extra stud in the new switch box if the engine originally had the coil ground wires connected to the side of the switch box.
9. Reconnect battery cable.

## Troubleshooting

### NO SPARK:

1. Disconnect stop wire AT THE PACK. If spark returns, there is a problem in the Kill circuit. Check the Stop/Kill switch and engine harness. Remember, some engines have a RPM limiter that will stop the engine from firing.
2. Disconnect the rectifier. If the engine has spark, replace the rectifier.
3. Check for broken or bare wires on the unit, stator and trigger.
4. Check the stator resistance and DVA output as given below:

#### Black Stator using Flywheel with Bolted-in Magnets

WIRE	READ TO	OEM OHMS	CDI OHMS	DVA (Connected)	DVA (Disconnected)
Blue	Engine GND	5800-7000	2200-2400	180-400 V	180-400 V (*)
Red	Engine GND	135-165	45-55	25-100 V	25-100 V (*)

#### Black Stator using Flywheel with Glued-in Magnets

WIRE	READ TO	OEM OHMS	CDI OHMS	DVA (Connected)	DVA (Disconnected)
Blue	Engine GND	3250-3650	500-600	180-400 V	180-400 V (*)
Red	Engine GND	75-90	28-32	25-100 V	25-100 V (*)

#### Red Stator Kit

WIRE	READ TO	OEM OHMS	CDI OHMS	DVA (Connected)	DVA (Disconnected)
White/Green	Green/White	500-700	500-600	180-400 V	180-400 V (*)
Blue	Engine GND	OPEN	OPEN	180-400 V	180-400 V (*)

(\*) This reading can be used to determine if a stator or pack has a problem. For instance, if you have no spark on any cylinder and the stator's DVA reading is low – disconnect the stator wires and recheck the DVA output. If the reading stays low – the stator is bad. If the reading is now within spec – the pack is bad.

5. Check the trigger resistance and DVA output as given below:

WIRE	READ TO	OHMS	DVA (Connected)	DVA (Disconnected)
Brown	White/Black (or Black)	800-1400	4 V +	4 V or more (#)
White	White/Black (or Black)	800-1400	4 V +	4 V or more (#)
Purple	White/Black (or Black)	800-1400	4 V +	4 V or more (#)
Brown	Engine GND	Open	1 V +	N/A
White	Engine GND	Open	1 V +	N/A
Purple	Engine GND	Open	1 V +	N/A

(#) This reading can be used to determine if a pack has a problem in the triggering circuit. For instance, if you have no spark on one cylinder and the trigger's DVA reading for that cylinder is low – disconnect the trigger wires and recheck the DVA output. If the reading stays low – the trigger is bad. If the reading is now within spec – the pack is bad.

6. Check the center hub triggering magnet in the flywheel. A loose magnet can cause this problem.
7. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

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## ENGINE WILL NOT STOP RUNNING:

Check stop/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 stops the engine, the stop/kill circuit in the harness or on the boat is bad, possibly the ignition switch.

## HIGH SPEED MISS (OVER 2700 RPM):

1. Disconnect the rectifier and retest. If miss is gone, the rectifier is usually at fault.
2. Check DVA voltage on the red wire of the stator to engine ground at high speed. **NOTICE:** Use caution when doing this and do not exceed the rated voltage range of your meter. The readings should show a smooth climb in voltage. If there is a sudden or fast drop in voltage right before the miss becomes apparent, the stator is usually at fault. If there is no indication of the problem, it could be mechanical problem.

## COILS ONLY HAVE SPARK WHEN THE SPARK PLUGS ARE OUT:

1. Check for dragging starter or low battery causing slow cranking speed. DVA test stator and trigger.
2. Disconnect rectifier, regulator and retest. If the problem goes away, replace the rectifier and/or regulator.

## INTERMITTANT SPARK ON ONE OR MORE CYLINDERS:

1. Check for low voltage from the stator and trigger. Inspect the flywheel magnets for damage.
2. Disconnect the rectifier and retest. If the problem disappears, replace the rectifier.
3. If the cylinders are only acting up above an idle, connect an inductive Tachometer in turn to all cylinders and try to isolate the problem cylinders when the problem is occurring.
4. Check the DVA Voltage on the Green wires going to the ignition coils. It should be fairly equal.
5. Check the trigger resistance and DVA output as given below:

WIRE	READ TO	OHMS	DVA (Connected)	DVA (Disconnected)
Brown	White/Black (or Black)	800-1400	4 V +	4 V or more (#)
White	White/Black (or Black)	800-1400	4 V +	4 V or more (#)
Purple	White/Black (or Black)	800-1400	4 V +	4 V or more (#)
Brown	Engine GND	Open	1 V +	N/A
White	Engine GND	Open	1 V +	N/A
Purple	Engine GND	Open	1 V +	N/A

(#) This reading can be used to determine if a pack has a problem in the triggering circuit. For instance, if you have no spark on one cylinder and the trigger's DVA reading for that cylinder is low – disconnect the trigger wires and recheck the DVA output. If the reading stays low – the trigger is bad. If the reading is now within spec – the pack is bad.

## ALL CYLINDERS HAVE SPARK BUT ENGINE WILL NOT RUN:

1. Disconnect the White/Black wire from the switchbox and check the bias circuit resistance of the White/Black wire from the switchbox, reference to engine ground. Readings should be approximately 13-15,000Ω. A shorted bias circuit can advance the ignition timing as high as 40 degrees above the set point.
2. If the bias readings are correct on the pack, check the trigger resistance and DVA output as given below:

WIRE	READ TO	OHMS	DVA (Connected)	DVA (Disconnected)
Brown	White/Black (or Black)	800-1400	4 V +	4 V or more
White	White/Black (or Black)	800-1400	4 V +	4 V or more
Purple	White/Black (or Black)	800-1400	4 V +	4 V or more
Brown	Engine GND	Open	1 V +	N/A
White	Engine GND	Open	1 V +	N/A
Purple	Engine GND	Open	1 V +	N/A

3. If the bias readings are correct on the pack and the trigger readings are correct, index the flywheel and check timing on all individual cylinders. If the timing varies, replace the pack.
4. Check the firing order. Remember there are at least 4 different firing orders for these engines. Connect the Green wires to the ignition coils to match the firing order.

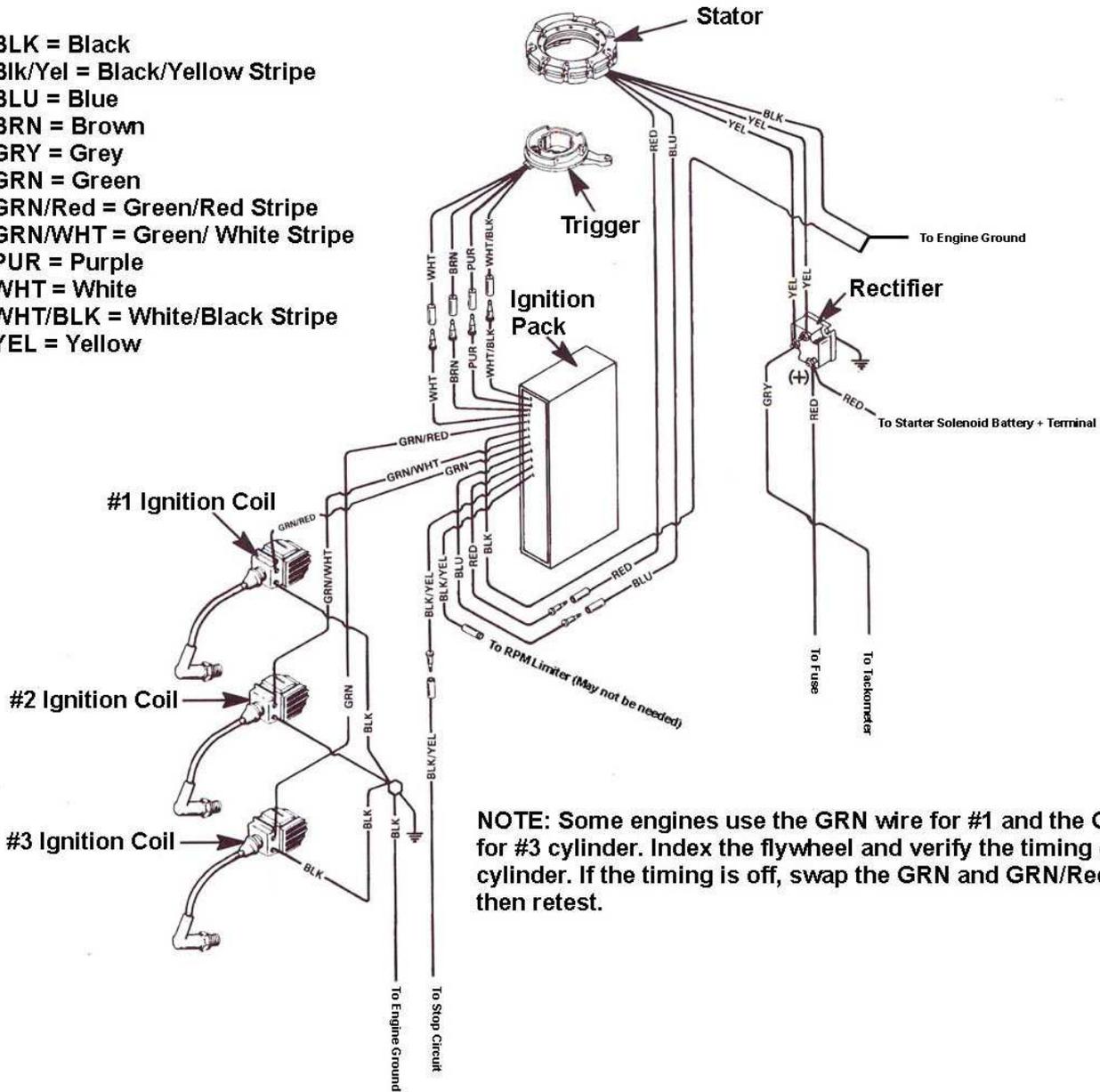
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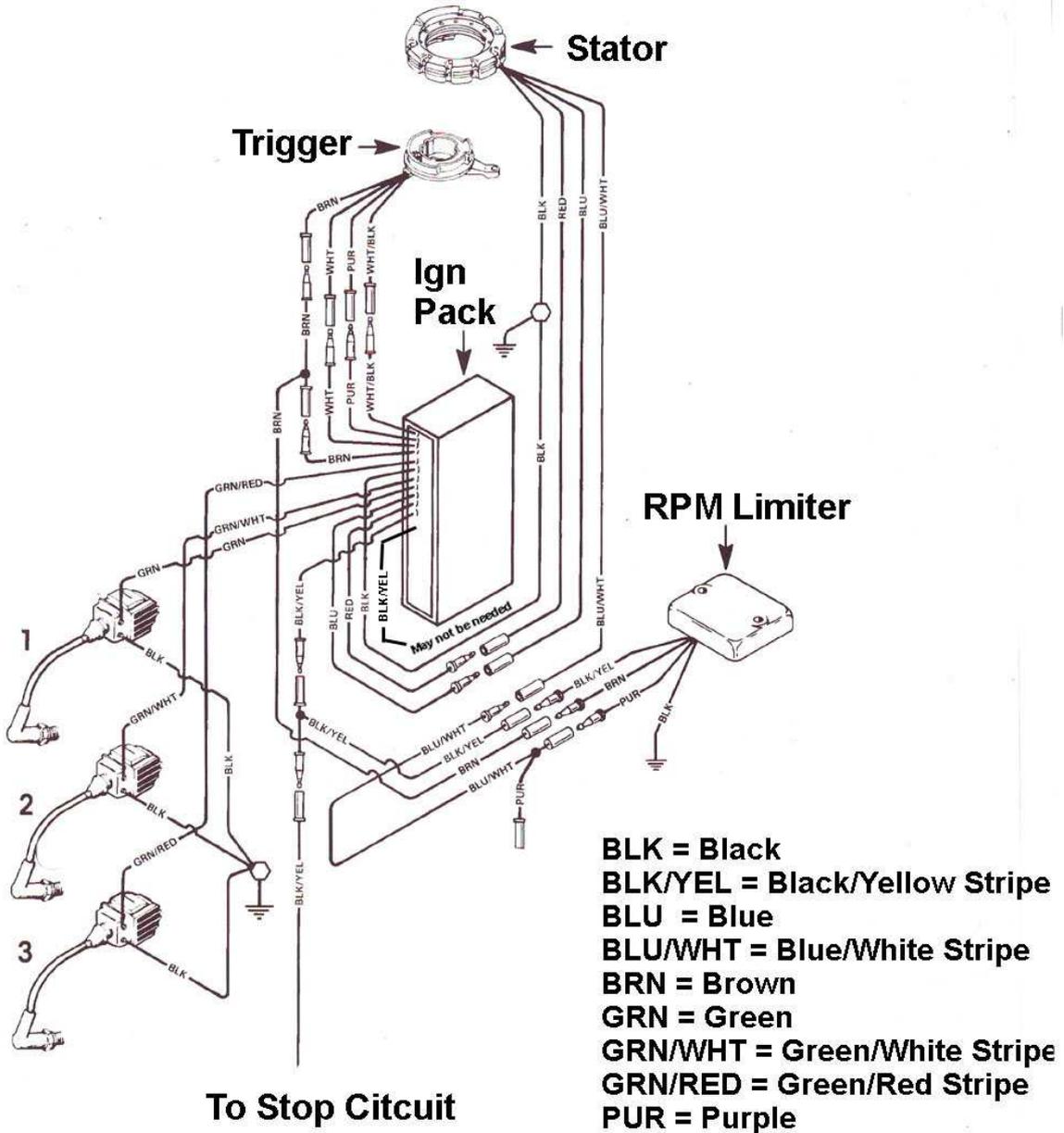
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## Electric Start Wiring Diagram

- BLK = Black
- Blk/Yel = Black/Yellow Stripe
- BLU = Blue
- BRN = Brown
- GRY = Grey
- GRN = Green
- GRN/Red = Green/Red Stripe
- GRN/WHT = Green/ White Stripe
- PUR = Purple
- WHT = White
- WHT/BLK = White/Black Stripe
- YEL = Yellow



## Manual Start Wiring Diagram



**NOTE: Some engines use GRN/RED for #1, GRN/WHT for #2 and GRN for #3 cylinder. If engine backfires or seems to be out of time, index the flywheel and verify timing on each cylinder. Adjust the Green wires to reflect the correct firing order for your engine.**