MICHIGAN MOTORZ

INSTALLATION & TIMING PROCEDURES

DELCO E.S.T. DISTRIBUTORS

REVISION | 04162024.1

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INSTALLATION INSTRUCTIONS

Please visit: http://www.youtube.com/michiganmotorz2008 and click on the "**EST IGNITION TIMING 3.0L MERCRUISER**" video to see an overview of the Delco Distributor Kit timing procedure.

The Delco Voyager distributor is a fully self-contained marine ignition system. Installation is not complicated, but the timing setup must be exact. After proper installation of the distributor and mounting of the coil, plug one end of the **thick black sheathing wrapped wire** into the distributor and the other end into the coil. Next, connect the "pigtail" plug that has a **GREY** and **PURPLE** wire into the ignition coil. The **GREY** wire is your tachometer gauge lead; it must go to the existing **GREY** wire(s) in your engine harness. The **PURPLE** wire is the 12 volt + lead. This wire connects to your existing 12 volt + purple wire, which supplies the coil and distributor power.

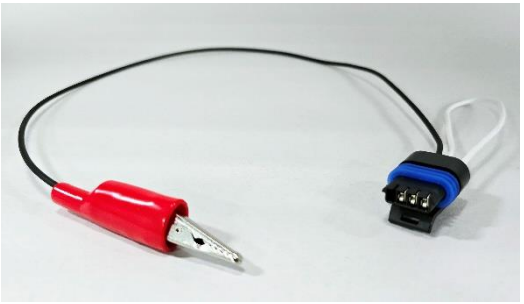
Depending on the year of your original engine and the engine wiring harness, there may be a voltage resistor or a resistor wire in the wiring harness to check for. Generally speaking, this resistor was used with points-based ignition systems. To check, simply place a voltmeter **RED** lead to the **PURPLE** lead on the engine harness, and the **BLACK** lead to a good ground. You should have 12 Volts, battery voltage - about 12.5 volts is a fully charged battery. If your voltage reading is 10.9 volts or lower, you may have an in-line resistor*. ***BYPASS*** this resistor by cutting it out of the harness. If the resistor wire is difficult to access, just use a new wire altogether to bypass this resistor wire.

Now, recheck the voltage, it should be 12 volts or equivalent to your battery voltage. If you do not have 12 volts, the ICM (Ignition Control Module) will not function correctly and can be damaged from low voltage operation while the engine is running. Connect **PURPLE** lead on engine harness to **PURPLE** lead on the coil. Now you are ready to start the engine and set the BASE timing.

* Older engines using a points-based ignition system used a *lower* voltage to run the coil and the other ignition system components. This helped eliminate burnt-out points that would arc-out from higher voltages (battery voltage).

INITIAL TIMING PROCEDURES

The **TIMING SHUNT** is a timing tool used to set initial (base) timing of your Delco EST System. The timing shunt is a 4 prong plug (3 prongs used) with white looped wire and a single black wire.



TIMING SHUNT

AFTER THE ENGINE IS RUNNING AND HAS WARMED UP TO NORMAL OPERATING TEMPERATURE AT IDLE, connect the timing shunt black wire lead to 12 Volts ***POSITIVE*****,** preferably to the battery ***POSITIVE*** post (or the back of either post on your 50A engine circuit breaker), and plug the timing shunt into the 4-prong slot on the distributor. This will lock the timing in BASE TIMING MODE with NO timing advance at any engine speed. Your engine will also run at slightly lower than normal IDLE speed and will run a bit rough. This is NORMAL.

Now, using a timing light, set BASE timing to EST specifications on Page 4. MAKE SURE IT IS SET **EXACT**. If timing is lower than specifications, horsepower will be lower. If timing is set higher than specifications, pre-ignition melt down, blown head gaskets, and detonation will occur and WARANTY WILL BE VOID. Now remove the **TIMING SHUNT.** Timing is now set. Check total timing with advance at best boat trim on plane and at max RPM.

INNOVA 5568 DIGITAL TIMING LIGHT

** If the timing shunt is connected to 12+ volts while attempting to start the engine, the ICM (Ignition Control Module) in the distributor may be damaged and is not covered under warranty. If the engine needs to be restarted while the timing shunt is installed and connected, DISCONNECT the timing shunt before restarting to avoid ICM damage.

OMC SHIFT INTERRUPT SWITCH CONNECTIONS

***** NOTE: See "*OMC Shift Interrupt Wiring*" on Page 10. *****

Before starting, please note the old OMC ESA ignition module and overstroke switch are **NO LONGER USED**. The Delco EST system has its own built-in ignition module located under the distributor cap. Because of this, there is no need to reuse the ESA module. You can cut it out of the system and unbolt it from the engine.

Remember to safely tape back any remaining wiring which will no longer be used.

1. Locate the shift interrupt switch on top of the engine.
2. Cut the **BLUE** wire on both sides of the shift switch, leaving a few inches of wire hanging off the switch to splice into next.
3. Connect one of the **BLUE** wires to any keyed 12 volt source, such as the purple coil wire, using an IN-LINE fuse holder. Connect the remaining **BLUE** wire to the SINGLE **BLACK** wire with the plug end which was supplied with the ignition wiring kit.
4. Plug the **SINGLE BLACK** wire in the distributor.
5. The shift interrupt hookup is complete. You can test the button function by simply starting the engine and tapping the button with your finger. If the engine momentarily hesitates, the switch is functioning normally. If you hold the button down for too long, it WILL stall the motor. This is normal.

NOTE: Make sure that the travel on the switch is adjusted so it snaps back to the OFF position. You may need to adjust the shift cables so this switch operates properly and doesn't "hang up". Refer to an OMC service manual for your engine model to correctly adjust your shift cable linkage.

NOTE: Many older OMC engines used in-line voltage resistors that lower voltage for the ESA module. Check the purple wire going to the coil for AT LEAST 12V+ to 14V+ DC. Any less than 12 volts will be insufficient for the distributor module to function properly. YOU MUST REMOVE THE IN-LINE RESISTOR. If you have difficulty setting timing or achieving FULL spark advance, you can always test/verify proper operation with a good 12V+ source, DIRECTLY from your battery post. This will pinpoint a hidden in-line resistor within the primary engine wire harness or another electrical issue.

TIMING TABLE

ENGINE TYPE	SIZE	CARB/EFI	INITIAL (BASE) TIMING	TOTAL (MAX) TIMING	W.O.T. RPM (WIDE OPEN THROTTLE)
4 CYL	3.0L 181ci (ALL YEARS)	2V CARB	-1	23	4400
V6 6 CYL	4.3L 262ci (12 Bolt Intake)	2 / 4 V CARB	-4	20	4600
V6 6 CYL	4.3L 262ci (8 Bolt Intake)	2 / 4 V CARB	2	26	4800
V6 6 CYL	4.3L 262ci (8 Bolt Intake)	EFI	10*	ECM-CONTROLLED	4600
V8 8 CYL	5.0L 305ci (ALL YEARS)	2 / 4 V CARB	10	28	4800
V8 8 CYL	5.7L 350ci (ALL YEARS)	2 / 4 V CARB	8	26	4800
V8 8 CYL	7.4L 454ci (ALL YEARS) (Standard & High-Output)	2 / 4 V CARB	12	32	4800
V8 8 CYL	7.4L 454ci High Output	EFI	8*	ECM-CONTROLLED	5200
V8 8 CYL	8.2L 502ci (High Output)	2 / 4 V CARB	12	32	4800
V8 8 CYL	8.2L 502ci (High Output)	EFI	12*	ECM-CONTROLLED	5200

* Some engine manufacturers use different BASE timing for fuel-injected models. See your marine engine manufacturers' service manual if you are unsure of factory-recommended base timing.

It is ALWAYS the customers and/or installers responsibility to verify the CORRECT timing.

EFI (ELECTRONIC FUEL INJECTED) ENGINES USING DELCO IGNITION REQUIRE THE USE OF A TECHMATE, CODEMATE, OR DIACOM SOFTWARE TO SET INITIAL (BASE) TIMING. FAILURE TO SET TIMING USING ONE OF THESE SCAN TOOLS ON FUEL-INJECTED ENGINES WILL RESULT IN A BLOWN ENGINE.

FIRING ORDERS

INLINE 4 = 1, 3, 4, 2 V6 = 1, 6, 5, 4, 3, 2 V8 = 1, 8, 4, 3, 6, 5, 7, 2 (STD Rotation)

SIMPLIFIED TIMING INSTRUCTIONS

Assuming the engine is already at TDC (Top Dead Center) - where the #1 cylinder is on the compression stroke, and that your distributor is dropped in so the ROTOR is pointed toward the #1 spark plug wire on the distributor cap, you can proceed to set initial timing on the engine.

1. Connect the inductive pickup of your timing light to the number one (1) spark plug wire. Connect the timing light power lead to a 12 volt power source (i.e. engine battery). **(DO NOT connect to 12 volts on the alternator, the voltage may fluctuate rapidly and cause inaccurate timing)**.

2. Loosen distributor clamp SLIGHTLY - just enough to allow minor rotation of the distributor.

3. Start engine and allow to warm to operating temperature. Bring engine to idle (650-800 RPM). You may need to rotate the distributor slightly left or right to maintain a smooth idle. This is normal until the engine is properly timed. There is no need to adjust your carburetor.

4. **WHILE THE ENGINE IS RUNNING** install the timing shunt tool (special plug with white looped wire and single black wire) into the terminal connector on the distributor. Do not install while off or damage to the ICM (Ignition Control Module) may occur and is NOT covered under warranty.

5. **Plug in your adjustable timing light (digital LCD display) to set initial and total timing. An adjustable timing light is REQUIRED. Old-school "strobe lights" are far too inaccurate. If you don't have one, AutoZone, O'Rileys, and many other local automotive parts stores have a tool rental department – many of which are FREE rentals and only require a temporary deposit.**

6. Connect the black wire of the timing shunt tool to a battery **POSITIVE** voltage. Engine RPM will drop when attached to 12V+. This indicates the engine is now in BASE TIMING MODE. You can now proceed with distributor timing.

7. Rotate distributor to set **initial BASE timing**. (For 5.7L Vortec marine engines, initial base timing is 8 degrees if using 87 octane gas). Refer to the timing chart on the previous page of this manual for timing specifications.

8. Tighten distributor clamp to hold distributor in position when **initial timing** is obtained.

9. Recheck timing to verify the distributor did not rotate slightly while tightening the clamp

10. Remove the timing shunt tool from the distributor.

11. Check **total timing** at 2000, 3000, and 4000 RPM. (For example, a 5.7L Vortec marine engine, total timing will be about 26 degrees).

12. Disconnect and remove timing light.

TROUBLESHOOTING

If you are having any ignition system issues, lack of full advance, etc., remember this is a very simple ignition system. If your old ignition system appeared to be having problems, always remember the root cause of the original ignition system MUST BE DETERMINED to avoid a repeat failure.

Often problems with faulty shift interrupt switches or shorted/failing engine tachometers are the cause of the problem, which are NOT part of this ignition kit.

If you are having **ANY** issues, simply disconnect your shift interrupt wire (the single black wire coming off the distributor) to isolate the ignition system to the distributor and coil only. If you are still having an issue, especially with weak spark or poor engine performance, disconnect your GRAY wire, which is your tachometer signal wire, to eliminate the chance that the tachometer is grounding your coil out. Old tachometers will start to flicker and are a sign of end-of-life. Disconnect the GRAY wire to eliminate this possible issue.

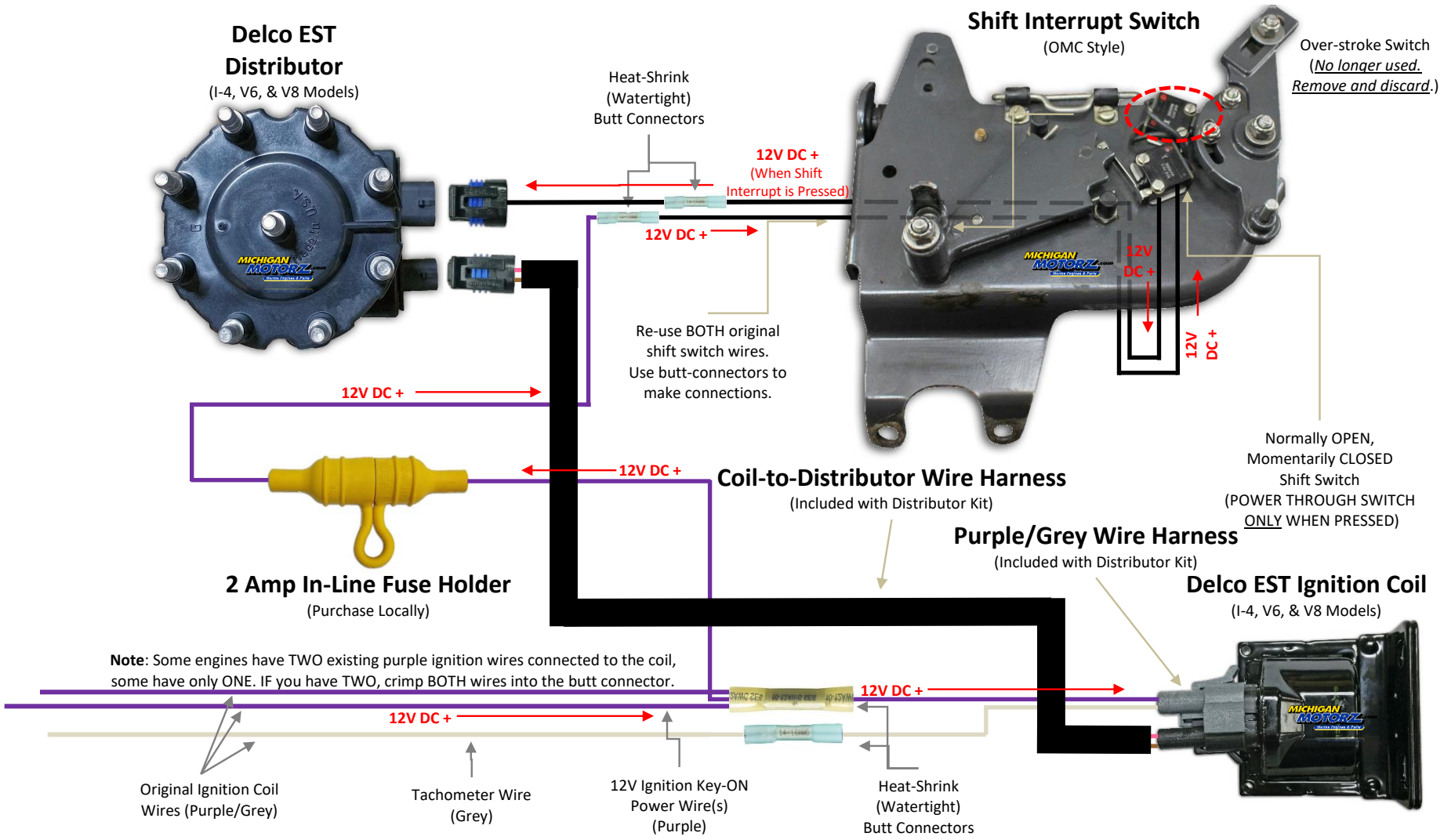
Tech Support:

1-877-MMOTORZ

Option 7, then Option 2

Have your Invoice/Order Number Ready

OMC SHIFT INTERRUPT WIRING



MERCRUISER SHIFT INTERRUPT WIRING