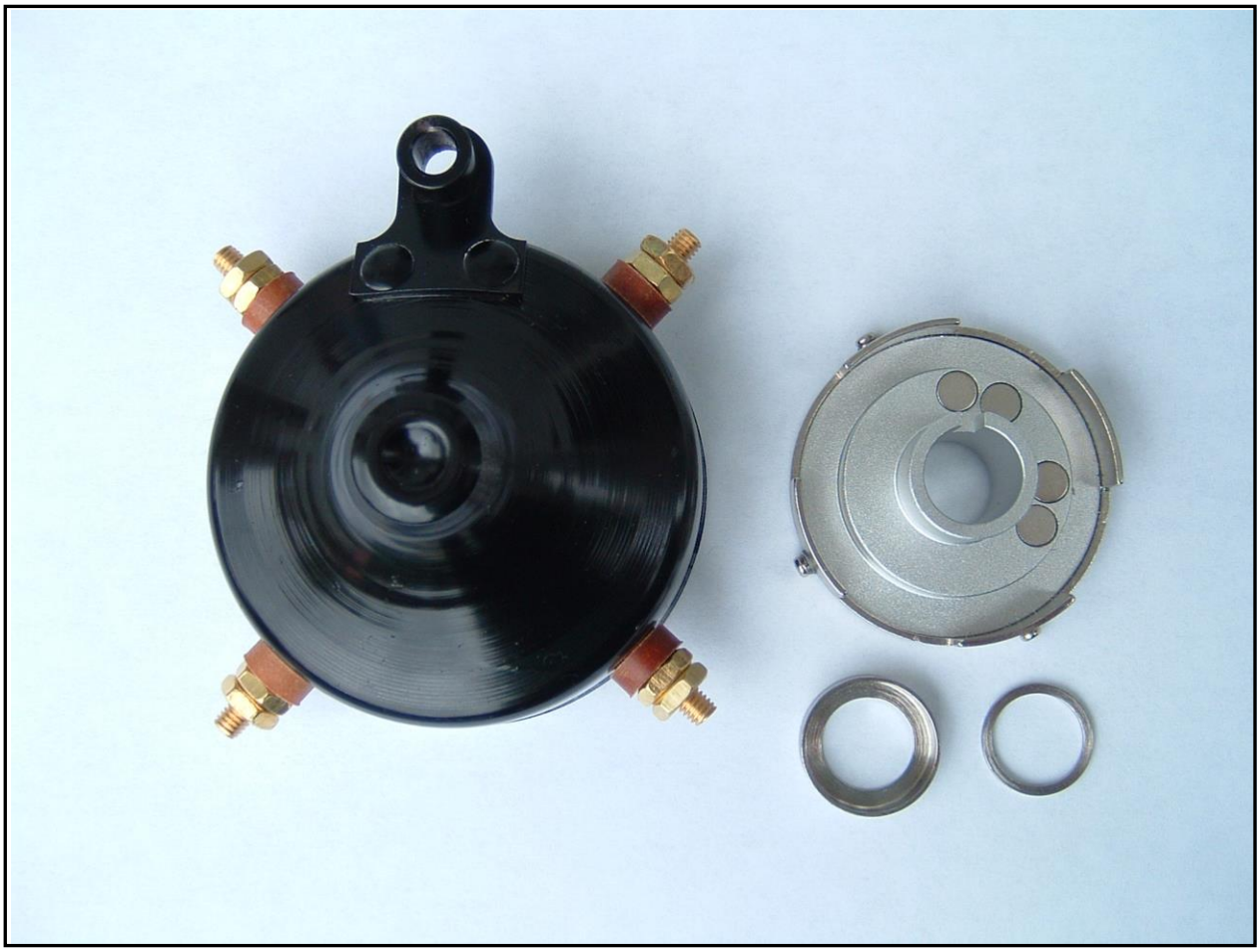
Model T

I Timer™

Installation and Operation Manual



Designed, Manufactured and Sold by:

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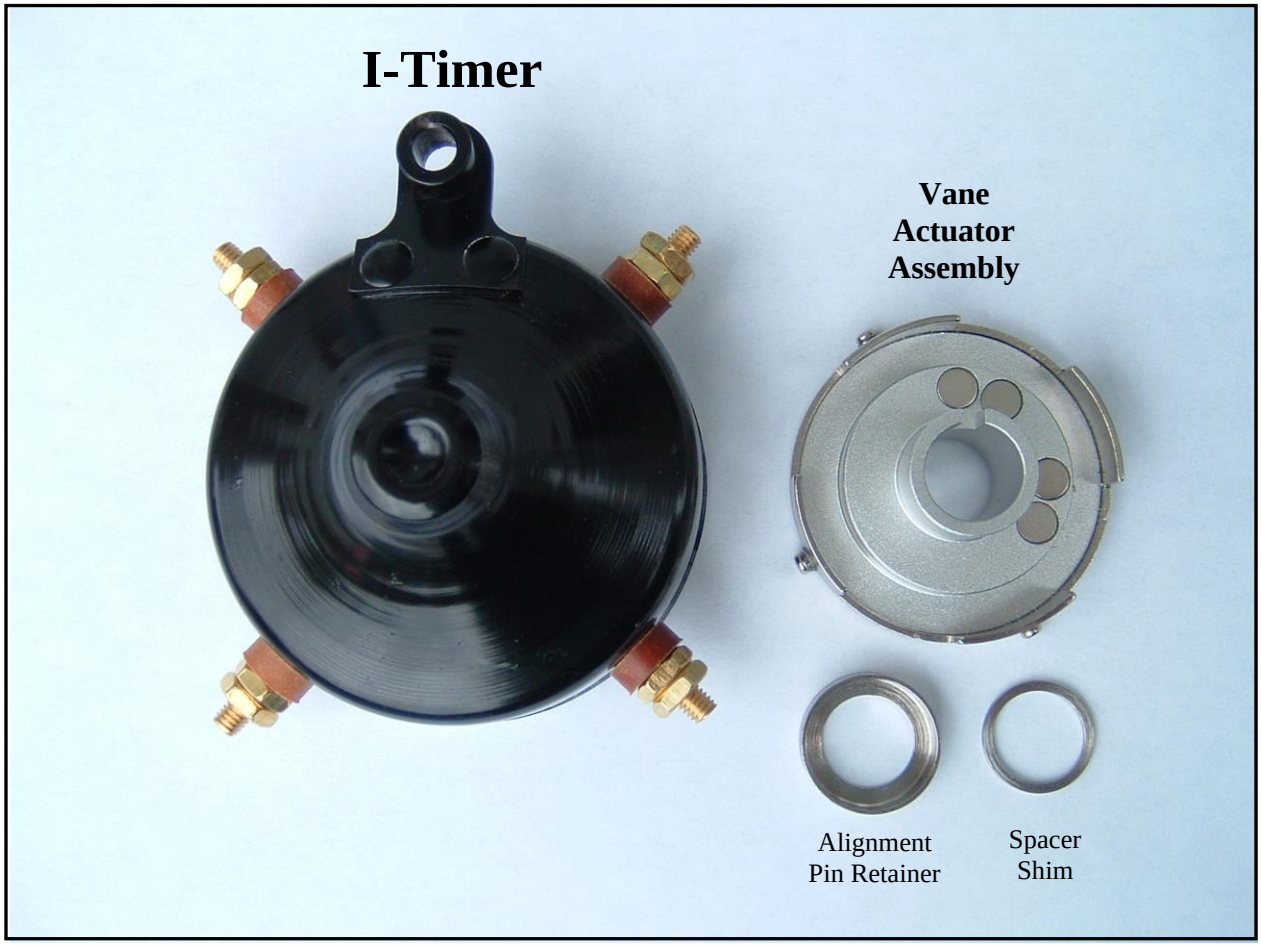
I - Timer Conversion Kit Contents

The Electronic Timer conversion kit contains the following items:

Quantity	Description
1	Electronic Timer (I-timer)
1	Vane Actuator Assembly (Replaces Roller)
1	Alignment Pin Retainer ("brush cap")
1	0.05" Spacer Shim (**Not used in all installations**)



I-Timer Conversion Kit

I -Timer Patented: 8,662,058

The **I-Timer** is a direct replacement for the stock Model T mechanical timer that provides precise coil activation and **never needs maintenance**. Start on battery and **run on Magneto** or battery as usual. The **I-Timer** is immune to timing cover misalignment and provides precise and uniform ignition coil activation without contact wiper bounce, skip, wear, arcing or other flaws associated with mechanical timers that require constant maintenance and periodic replacement.

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IMPORTANT! –It is the user's responsibility to verify proper ignition timing and ensure proper timing lever position before attempting to hand crank Model T engine with any model Timer including the I-Timer. Failure to verify proper ignition timing may result in serious personal injury. User assumes all risks and liabilities.

IMPORTANT! – The I-Timer should only be installed on Negative Ground Model T engines in good mechanical condition that run normally. The I-Timer will not fix engine problems due to carburetor issues, bad coils, incorrect wiring or lose electrical connections.

1 Installation Instructions

The **I-Timer** has been designed for installation on negative ground Model T engines in good mechanical condition operating from properly fused 6 to 12V battery **AND Magneto operation**. It is strongly recommended a 4A fuse be installed in series with the coil box power wire to protect against faulty coils or wiring. It is impossible to account for all possible mechanical alterations, mechanical wear or wiring changes that may have occurred over the years so these installation instructions include extra steps to verify proper mechanical fit and electrical performance to ensure trouble free installation and operation.

1. **Important!** Verify the ignition power is off.

2. Remove timer case spring that holds timer to front of motor then move the old timer out of the way. Do **NOT** remove any coil wires from the timer yet.

3. Remove roller/commutator nut, alignment pin retainer, alignment pin and old roller/brush from CAM shaft.

4. Inspect CAM shaft. Make sure it is clean and free from burrs around alignment pin hole. Inspect the timing cover where the timer rests. Make sure the contact area is clean and unpainted to provide good electrical contact to the I-Timer.

5. Verify modern oil seal is properly installed in timing cover. Verify the seal is in good condition and not leaking oil into timer compartment. The I-Timer should **NOT** be installed on engines equipped with original felt oil seals. Oil leakage into timer compartment could cause I-Timer malfunction.

6. Proper centering of the CAM with respect to the timer cover is recommend. Proper CAM alignment can be done using timing cover alignment tool (P/N: 3009) available from Model T parts suppliers.
7. Install Vane Actuator Assembly on CAM. Verify the Vane Actuator Assembly rests on the CAM stop as illustrated in Figure 1 and not the timer cover.

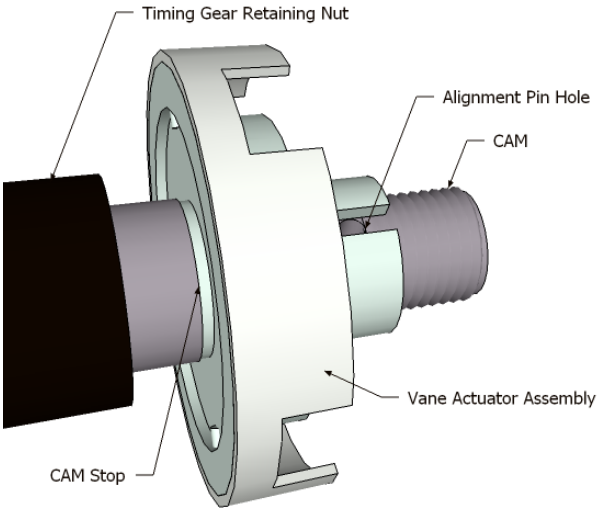


Figure 1. Vane Actuator Assembly Should Rest Against CAM Stop.

8. Turn the Vane Actuator Assembly back and forth while pushing it towards the engine to verify the Vane Assembly does not rub against the timing cover. **Important!** Install the 0.050" spacer shim if the Vane Actuator Assembly rubs against the timing gear cover, Figure 2. **Do NOT** install the spacer shim if the Vane Actuator Assembly does not contact timing cover!

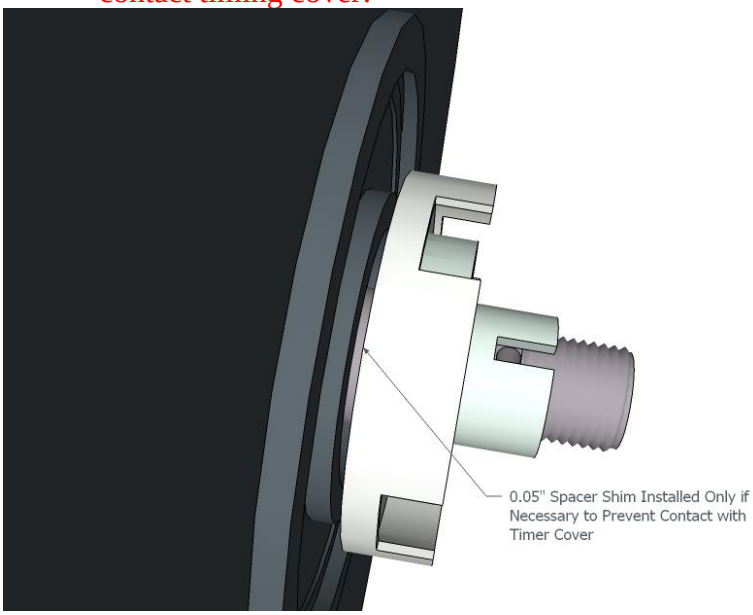


Figure 2. Only install shim if Vane Assembly contacts timing cover

9. Install alignment pin, pin retainer and retaining nut on CAM. Tighten retaining nut to 15 ft/lbs. Measure the distance from the timer contact surface to the edge of the Vane

Actuator Assembly as illustrated in Figure 3. Verify the distance does not exceed 0.7" Do NOT install or operate the I-Timer if the distance exceeds 0.7"

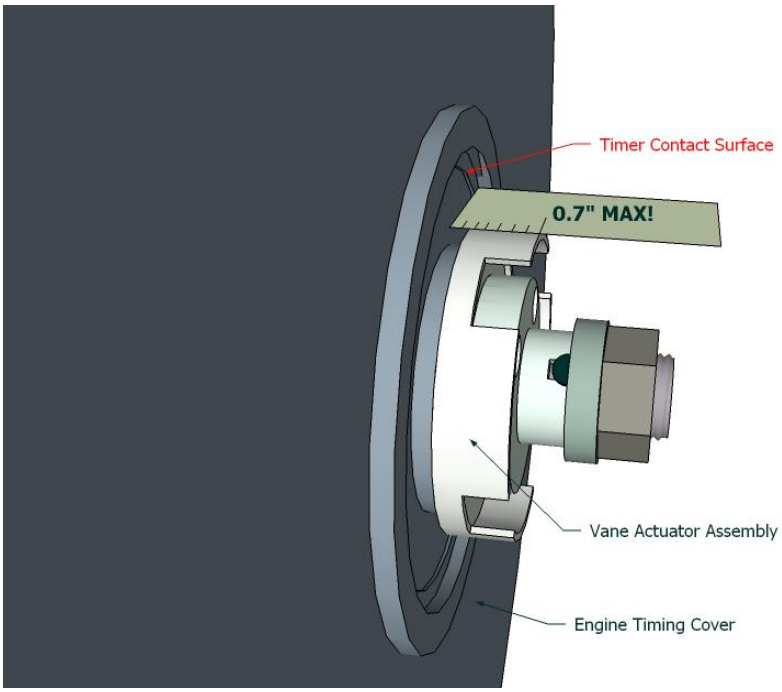


Figure 3. Maximum Distance From Timer Contact Surface to Edge of Vane is 0.7"

10. Transfer coil wires from original timer to the same terminals on the I-Timer one by one to avoid changing the firing order. Verify coil wires for cylinders 1, 2, 3 and 4 are properly connected to corresponding I-Timer coil terminals labeled on the I-Timer circuit board to ensure proper firing order. **IMPORTANT!** Inspect each coil wire as they are transferred to the I-Timer for loose or dirty connections. Replace solder-less crimp terminals with new ones if they are loose, broken or have frayed wires connecting to them. No timer will function properly with bad or intermittent electrical connections!

11. Position I-Timer on engine timing cover. Be careful when positioning I-Timer over Vane Actuator Assembly. Avoid excessive force on internal components of the I-Timer when positioning on engine. Install timer mounting spring and tighten mounting bolt. Turn the I-Timer gently clockwise and counter clockwise before connecting timer pull rod to verify it turns freely without contacting the Vane Actuator Assembly. **STOP** installation if there is any contact felt with the Vane Actuator Assembly and verify proper CAM centering with respect to the timing cover (Step 6) and that the Vane Actuator edge does not exceed 0.7" from the timer contact surface (Step 9).

12. Connect timer pull rod to the I-Timer. Insert new cotter pin in pull rod to prevent disengagement of pull rod during operation.

2 Timer Pull Rod Adjustment

IMPORTANT!: Proper engine ignition timing must be verified before attempting to operate a Model T engine with the I-Timer **or any Timer**. **Failure to verify proper ignition timing and sequence may result in serious personal injury, engine or starter damage. User assumes all risks and liabilities.**

1. **Important!** Verify the ignition power is **OFF**.

2. Move the timing lever through its range of operation and verify it moves freely and that the coil wires connecting to the I-Timer do not catch on anything; preventing movement. Correct any interference problems before continuing.

3. Set the timing lever to full RETARD (all the way up).

4. Label spark plug wires 1, 2, 3 and 4. Remove all spark plugs. Make sure the area around the spark plugs is clean to prevent debris from falling into the engine when spark plugs are removed. Verify all spark plugs are clean and properly gapped to 0.025". Clean or replace all dirty/fouled spark plugs. Replace any lose, broken or frayed spark plug wire connectors.

5. Re-connect spark plugs to coil wires and lay down on top of cylinder head. **Do NOT reinstall spark plugs in engine yet.**

6. Hand crank engine to position cylinder 1 (closest the radiator) is at Top Dead Center (TDC) position of its compression stroke.

7. Mark the cylinder 1 TDC position on top (outer diameter) of the front crank shaft pulley with a fixed point on the engine timing gear cover. A thin strip of white masking tape works well. See figure 4.

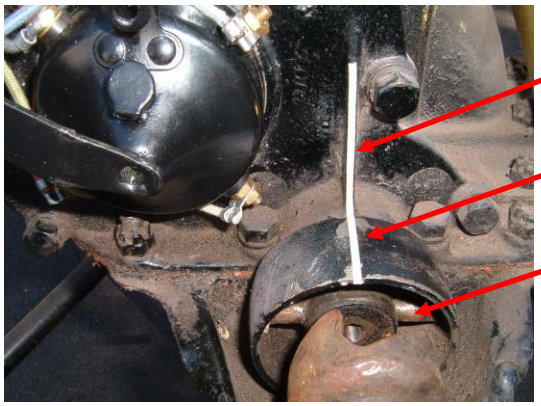
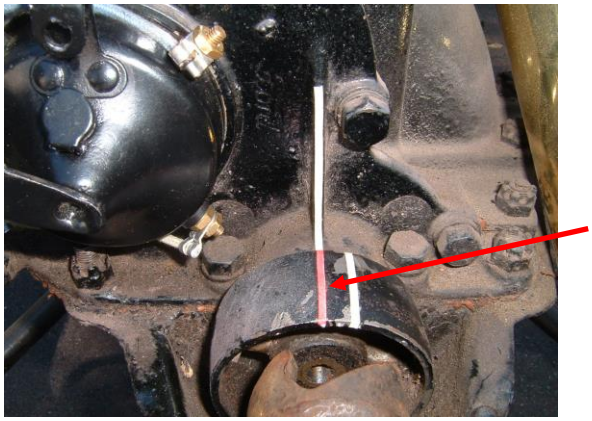


Figure 4. Mark position of cylinder 1 at TDC

8. Turn ignition power **ON**. Hand crank the engine slowly until cylinder 1 spark plug just fires. Do **NOT** crank engine past the firing point. **Important!** Repeat this step if you

crank past the firing point. It is very important to stop cranking immediately when cylinder 1 spark plug fires to determine cylinder 1 firing position. See Figure 5. **Important!** Do **not** let spark plugs fire more than 30 seconds to avoid stressing the coils.



Mark crank pulley position when **cylinder 1 just begins to fire** with tape that lines up with reference mark on timing gear cover.

Figure 5. Mark position of crank pulley when cylinder 1 fires

9. Verify cylinder 1 spark plug fires when crank shaft position is **AFTER** Top Dead Center. The timing mark indicating Top Dead Center (TDC) on the crank pulley should have turned **CLOCKWISE** of the TDC mark when cylinder 1 spark plug fires as viewed from the front of the engine. Firing must **not** occur before the cylinder reaches TDC!

10. Measure the distance the crank pulley travels clockwise from the cylinder 1 TDC mark edge to cylinder 1 firing mark edge with a caliper or rule. See figure 6.

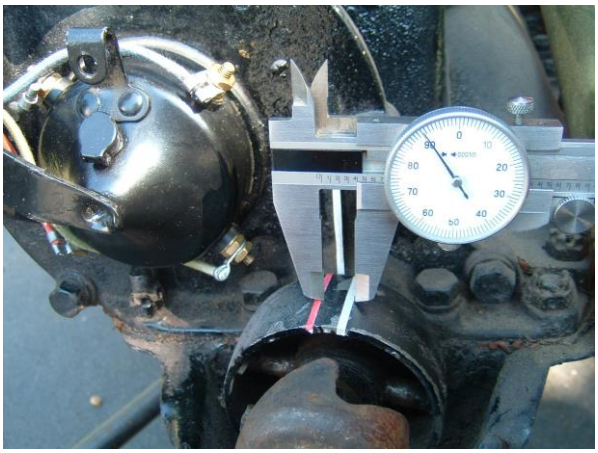


Figure 6. Measuring the crank travel between cylinder 1 TDC and cylinder 1 firing position.

11. Cylinder 1 should fire 15 degrees **AFTER** TDC with the timing lever fully **RETARDED** (all the way up). The distance the pulley turns past TDC position will vary depending upon its outside diameter of the crank pulley. Table 1 lists approximate travel distances past TDC for various pulley diameters. Adjust the timer pull rod so that cylinder 1 fires the specified distance past TDC for the front pulley outside diameter on your car.

Pulley Diameter	Distance Past TDC
2.75”	0.360”
3.00"	0.390"
3.25"	0.425"
3.50"	0.460"
3.75"	0.490"
4.00"	0.525"

Table 1. Pulley Travel Past TDC for Cylinder 1 Firing

12. Crank engine to verify firing order: Cylinder 1, 2, 4 and 3. This is also a good time to verify each coil is working properly. **Important!** Coil points MUST be properly adjusted for optimal engine operation. It is highly recommended coil points be adjusted for equal firing time. This can be done easily and accurately with the **Electronically Cranked Coil Tester (ECCT)**. Visit www.modeltecct.com for more information.

13. Turn ignition power **OFF**. Re-install all spark plugs in engine. Re-connect spark plug wires. Verify proper firing order of each spark plug matches the cylinder labels put on in step 4.

This completes I-Timer Installation.
Please refer to the next section for I-Timer operating instructions

3 I-Timer Operating Instructions

IMPORTANT! – It is the user's responsibility to verify proper ignition timing and ensure proper timing lever position before attempting to hand crank Model T engine with any model Timer including the I-Timer. Failure to verify proper ignition timing may result in serious personal injury, engine damage. User assumes all risks and liabilities.

The I-Timer operates the same familiar way mechanical timers operate.

1. **Always** fully retard ignition timing prior to starting engine.
2. Turn key to battery.
3. Crank engine while applying choke as necessary.
4. After starting; Leave on battery power OR switch to Magneto power.
5. Adjust spark lever for optimal engine performance.

IMPORTANT! – Do NOT electrically connect points of different coils while the engine is running or damage may occur. This can happen when opening or closing the coil box with a metal cover. **Do NOT** open or close metal coil box cover or interfere with coil point operation when the engine is running. Doing so may result in fail safe protection.

4 Maintenance

The I-Timer is completely maintenance free. **Do NOT** oil or grease the **I-Timer**!

5 Warranty

The **I-Timer** is warranted against defectives due to faulty workmanship or materials for a period of one year from the date of purchase. Units found to be defective during the warranty period will be repaired or replaced, at the discretion of the manufacturer, without charge. Proof of purchase and a Return Authorization are required.

6 Safety Warning

The **I-Timer** has been designed to be installed on Model T engines in good mechanical condition and in functional operation. It is the user's responsibility to verify proper ignition timing and ensure proper timing lever position before attempting to hand crank Model T engine with any model timer including the I-Timer. Failure to verify proper ignition timing may result in serious personal injury, engine or starter damage. User assumes all risks and liabilities.