

AUTOMOTIVE TIMING LIGHT - XENON

Model 03343

ASSEMBLY and OPERATING INSTRUCTIONS



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For technical questions and replacement parts, please call 1-800-444-3353

Specifications

Overall Dimensions	7.5" L x 2" Dia. and a 3.5" Handle Grip
Lead Length	4 Feet
Features: Xenon bulb, Clamp on inductive pick up, automatic reverse polarity, overload protection, trigger activated pistol grip	

Save This Manual

You will need the manual for the safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep the manual and invoice in a safe and dry place for future reference.

Safety Warnings and Precautions

WARNING: When using tool, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.

Read all instructions before using this tool!

1. **Keep work area clean.** Cluttered areas invite injuries.
2. **Observe work area conditions.** Do not use the timing light in damp or wet locations. Don't expose to rain. Keep work area well lighted. Do not use electrically powered tools in the presence of flammable gases or liquids.
3. **Keep children away.** Children must never be allowed in the work area. Do not let them handle the timing light.
4. **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.
5. **Use the right tool for the job.** Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. There are certain applications for which this tool was designed. It will do the job better and more safely at the rate for which it was intended. Do not modify this tool and do not use this tool for a purpose for which it was not intended.
6. **Dress properly.** Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective, electrically non-conductive clothes and non-skid footwear are recommended when working. Wear restrictive hair covering to contain long hair.
7. **Use eye and ear protection.** Always wear ANSI approved impact safety goggles.
8. **Do not overreach.** Keep proper footing and balance at all times. Do not reach over or across running machines.

WARNING!! Do not work in a closed garage. A vehicle's engine while running produces carbon monoxide. Work in a well ventilated area to avoid carbon monoxide poisoning. Carbon Monoxide is an odorless, colorless gas that can cause serious injury or death if inhaled.

9. **Maintain tools with care.** Keep tools clean for better and safer performance. Inspect tool cords periodically, and if damaged, have them repaired by an authorized technician. The handles must be kept clean, dry, and free from oil and grease at all times.
10. **Stay alert.** Watch what you are doing, use common sense. Do not operate any tool when you are tired.
11. **Check for damaged parts.** Before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the tool if the trigger does not turn On and Off properly.
12. **Guard against electric shock.** Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerator enclosures.
13. **Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts will void the warranty. Only use accessories intended for use with this tool. Approved accessories are available from Harbor Freight Tools.
14. **Do not operate tool is under the influence of alcohol or drugs.** Read warning labels if taking prescription medicine to determine if your judgement or reflexes are impaired while taking drugs. If there is any doubt, do not operate the Timing Light.
15. **Maintenance.** For your safety, maintenance should be performed regularly by a qualified technician.

Note: Performance of this tool (if powered by line voltage) may vary depending on variations in local line voltage. Extension cord usage may also affect tool performance.

Warning: The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

Do not use the Timing Light if any of the wires are frayed or torn.

Warning! Whenever using the Timing Light, make sure your vehicle is in gear or park, and the emergency brake is engaged. Park your vehicle on a flat, dry, level surface when doing any vehicle maintenance.

Unpacking

When unpacking, check to make sure the parts listed on page 7 are included. If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual as soon as possible.

Operation

Timing Light Basics

Automobile engines work by mixing air, fuel and a spark to ignite the fuel/air mixture, creating an explosion, that powers the vehicle. Maximum power from the explosion must be delivered to the engine at a precise instant. Attaining that precise instant is called "Timing". Timing is essential to fuel economy and power. Automobile engine manufacturers determine the exact timing necessary for every engine they build. Normal engine and ignition system wear causes the timing to change, reducing both fuel efficiency and power..

Engine manufacturers use two terms when describing timing, "advanced" and "retarded". Timing is advanced when the spark occurs before the piston reaches the top of a cylinder. Timing is retarded when the spark occurs after the piston has started down in the cylinder. Timing is changed by adjusting the ignition distributor. To set timing, the engine manufacturer provides "timing marks" on either the engines vibration damper, fan pulley, or on the engine flywheel. **Read your vehicle's manual or contact the manufacturer for the location of timing marks on your engine. Also, refer to your vehicle's manual or contact the manufacturer for the timing specifications for your particular engine.**

Preparation for timing

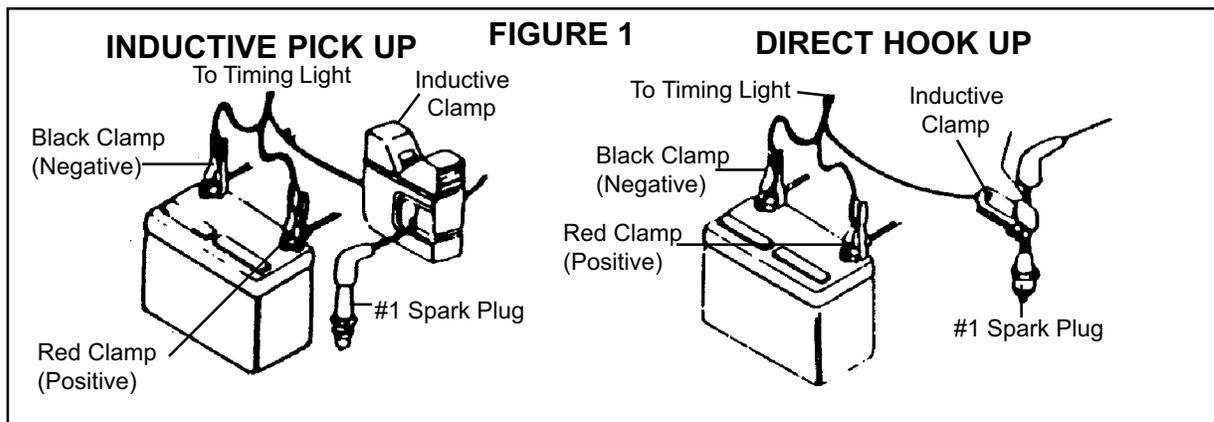
1. Locate your engine's timing mark by referring to the vehicle's engine manual or contacting the manufacturer.
2. Refer to your vehicle's manual or contact the manufacturer for the timing specifications for your particular engine.
3. Start the engine and run the engine until achieving normal operating temperature. This may take from 10-15 minutes. **Stop engine.**
4. If your vehicle specifications and instructions require it, locate the vacuum line that attaches to the ignition distributor vacuum advance and disconnect the line and plug the end of it. A golf tee or small pencil may be used to plug the line.
5. Connect the timing light by one of the two options below, as shown in **FIGURE 1**.

Note: The **Inductive Clamp (#4)** is used to pick up the spark through the wire or by clamping directly to the plug, as shown in **FIGURE 1**.

6. Start the engine and operate it at normal speed.

Warning! Be careful working around the engine while the engine is running. Moving belts and the fan can cause severe injury if contacted. Metal engine parts release tremendous heat. Do not come in contact with any part of the engine with your hands or body.

Note: The timing light must be connected to the spark plug for engine cylinder number 1. Refer to the manufacturer's specifications to determine the proper plug. **See FIGURE 4.**



Operation (continued)

7. Squeeze the trigger on the timing light and direct the flash onto the engine timing marks to obtain a reading. Compare the reading from the timing mark to the reading in the manufacturer's specifications. If the timing does not match with the timing listed in the manufacturer's specifications, adjust the timing.

Adjusting the timing.

1. Loosen the bolt that locks down the distributor, but do not fully remove it. It should be loose enough so that you can rotate the distributor back and forth. Do not over-loosen the bolt allowing the distributor to move on its own.
2. Start and run the engine up to temperature.
3. Direct the beam from the Timing Light at the timing marks and slowly rotate the distributor in very small increments. Rotate the distributor either right or left until the timing lines are lined up (in line with the pointer). See **FIGURE 2**. Stop the engine.
4. Tighten the distributor lock down bolt using care not to change the position of the distributor.
5. Start the engine and recheck the timing. If the timing is not right, you probably moved the distributor while bolting it back down. Reset the timing.

FIGURE 2

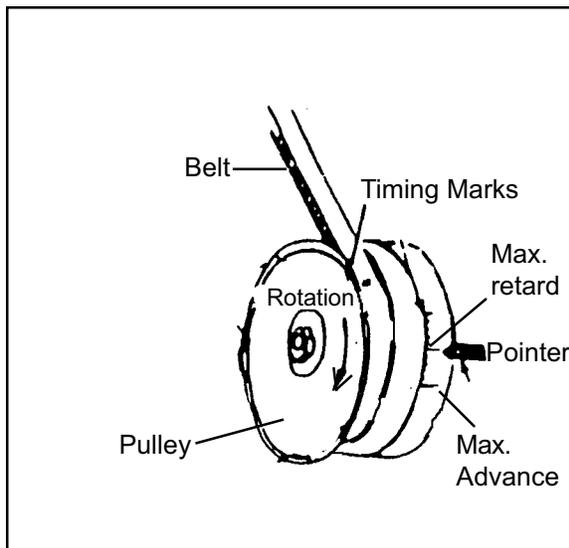
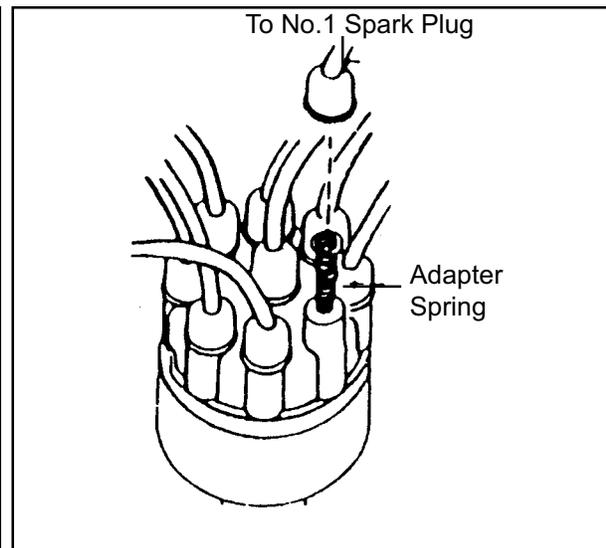


FIGURE 3



Note: In some cases, the ignition spark may jump to the baffle or the engine block. This usually occurs on late model 8 cylinders (Ford) because the timing light adaptor spring is too close to metal engine parts. To solve the problem, follow the wire from the spark to the distributor cap. Disconnect the wire at the cap and install an adapter spring (not included) as shown in **FIGURE 3**.

6. If you have no other tests to perform with the Timing Light, turn off the engine and reconnect the vacuum line. If you have further tests, first check to see if the vacuum line needs to be connected for those tests.

Operation (continued)

Testing Centrifugal Advance

1. With the timing light still connected and the vacuum line still not attached, speed the engine up slowly and watch the timing mark.
2. The timing mark should remain stationary until the engine reaches the manufacturer's specified speed. See **FIGURE 3**. Then the timing mark should move steadily, without jerking.
3. If the mark stays stationary or moves erratically, the Centrifugal Advance (or automatic advances) should be serviced by an authorized service technician.

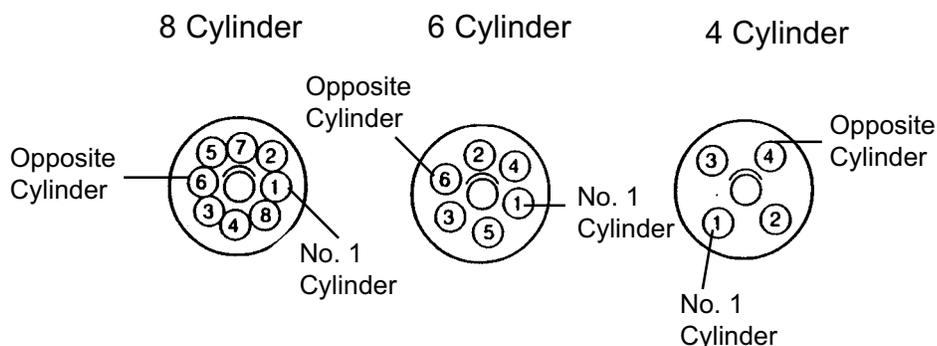
Testing Vacuum Advance

1. The vacuum line must be connected to the distributor for this test.
 2. Idle the engine (no more than 800 rpms) and attach the vacuum line to the distributor.
- Note:** If it is difficult to do, decrease the engine speed.
3. Aim the Timing Light and note the position of the timing mark.
 4. Disconnect the vacuum line.
 5. If the timing mark stays still, the trouble could be a plugged line or a leaky diaphragm, or a frozen distributor plate. See an authorized service technician if the timing mark doesn't move.

Checking Distributor Cam Wear

1. This test is done after the timing has been set and the timing light lines up with the reference pointer for cylinder number 1.
2. Connect the Timing Light to the wire directly opposite (180 degrees) from the number 1 cylinder on the distributor cap. See **FIGURE 4**.
3. Start the engine and aim the Timing Light towards the timing mark. The reading should be the same as when the Timing Light was hooked up to the number 1 cylinder. If not, the probable cause is a worn out distributor cam or bent distributor shaft. Contact an authorized service technician.

FIGURE 4



The opposite cylinder is always opposite the number 1 cylinder on the distributor cap.

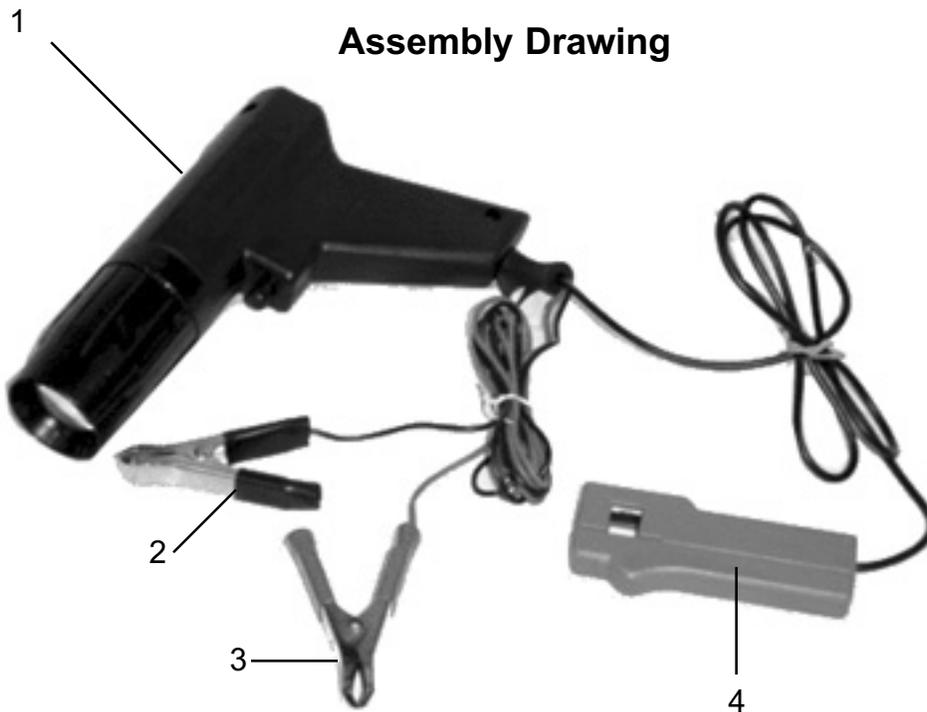
Maintenance

1. Keep the Timing Light clean by wiping it with a dry, lint free cloth.
2. Before and after each use, clean any dirt, grease, or debris off of the clamps.

Do not use the Timing Light if any of the wires are frayed or torn.

Parts List

Part No.	Description
1	Timing Light Body
2	Negative Clamp
3	Positive Clamp
4	Induction Clamp



PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER NOR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

NOTE: Some parts are listed and shown for illustration purposes only and are not available individually as replacement parts.