

**▲ WARNING:** This product and its packaging contain a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm.

**▲ 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. Read and understand all of the instructions provided in the instruction manual of this product, as well as, any other tool(s) used with this product.

## LIMITED WARRANTY

PERFORMANCE TOOL extends only the following warranties, and only to original retail purchasers. These warranties give specific legal rights. Except where prohibited by local law, the law of the State of Washington governs all warranties and all exclusions and limitations of warranties and remedies. There may be other rights which vary from state to state.

PERFORMANCE TOOL warrants the product to be free from defects in materials and workmanship under normal use and service. A defective product may be returned for a free replacement within 90 days from the date of purchase, provided that product is returned to place of purchase immediately after discovery of defect. After 90 days and up to 1 year from date of purchase, PERFORMANCE TOOL will replace at no charge any parts which our examination shall disclose to be defective and under warranty. These warranties shall be valid only when a sales receipt showing the date of purchase accompanies the defective product or defective part(s) being returned. For part(s) after 90 days, please remit your request, postage prepaid to:

PERFORMANCE TOOL, P.O. Box 88259 Tukwila, WA 98138

These warranties exclude blades, bits, punches, dies, bulbs, fuses, and other consumables which must be replaced under normal use and service. These warranties shall not apply to any product or part which is used for a purpose for which it is not design or which has been repaired or altered in any way so as to affect adversely its performance or reliability, nor shall these warranties apply to any product or part which has been subject to misuse, neglect, accident or wear and tear incident to normal use and service.

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# SELF POWERED TIMING LIGHT

Item Number W80578

## OWNER'S MANUAL



### ▲ WARNING:

*It is the owner and/or operators' responsibility to study all WARNINGS, operating, and maintenance instructions contained on the product label and instruction manual prior to operation of this product. The owner/operator shall retain product instructions for future reference.*

*The owner and/or operator are responsible for maintenance, maintaining all decals or warning labels and while in use, maintaining the unit in good working order. If the owner and/or operator are not fluent in English, the product warnings and instructions shall be read and discussed with the operators' native language by the purchaser/owner or his designee. Make sure that the operator comprehends its contents. Safety information shall be emphasized and understood prior to usage. The product shall be inspected per the operating instructions.*

*Users of this product must fully understand these instructions. Each person operating this product must also be of sound mind and body and must not be under the influence of any substance that might impair their vision, dexterity or judgment.*

*Protect yourself and others by observing all safety information.*

*Failure to comply with instructions could result in personal injury and/or property damage!*

*If you encounter any problems or difficulties, please contact our customer service department at: 1-800-426-1262 between 6:30 a.m. and 4:30 p.m. Pacific time.*

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Performance Tool®

## INTRODUCTION

Congratulations. You are now the owner of one of the finest timing lights on the market today. If you will take a few moments to read through the following information we are sure that you will enjoy many years of service from your timing light and through its use, increase the efficiency of your car's engine. The special "Xenon" bulb used in these lights will provide the ultra-bright flash needed to see engine timing marks under most bright lighting conditions, even during normal daylight. In several models the bulb can be replaced by the user when needed reducing the need to return the light to the factory for service.

## WHAT IS TIMING?

In order for an automobile engine to function, three things are necessary: air, fuel, and a spark to ignite the air/fuel mixture and create an explosion. The precise instant of that explosion must be such that the maximum power is delivered to the engine piston. This is "Timing." Each engine manufacturer determines at the factory the exact timing necessary for various engines so that each ounce of power is obtained from every gallon of fuel. Due to normal engine and ignition system wear, the timing can change and will reduce both power and mileage. With the Xenon timing light, the car owner can reset the timing to the new car standards and regain lost power and increase mileage. Timing is given in degrees Before Top Dead Center (BTDC) or After Top Dead Center (ATDC) in the manufacturer's specifications. In order to completely burn the air/fuel mixture in the car's engine cylinders, most timing is such that the spark occurs at a point several degrees before top dead center (for example, 4 BTDC) to assure that full power of the explosion is obtained. Two additional terms that manufacturers use when describing timing are; "Advanced" and "Retarded." When the timing is advanced, the spark will occur before the piston reaches the top of the engine cylinder (BTDC). On some late model cars equipped with various emission control devices, the timing is retarded so that the spark occurs after the piston has started down in the cylinder (ATDC). Engine timing is changed by adjustment of the ignition distributor.

In order to allow setting and adjustment of the engine timing, special "Timing Marks" are provided on each engine during assembly. In most cases, these marks appear on the engine vibration damper or fan pulley at the lower front of the engine. On some early engines, this mark was shown at the rear of the engine on the flywheel.

## WHEN TO CHECK TIMING

The instance of spark plug firing is determined by the opening of the distributor ignition breaker points and will change any time the point gap or dwell angle is changed. In addition, normal wear on the breaker point rubbing block will change the dwell and affect the timing. While cars equipped with the new "breaker-less Electronic Ignition Systems" will not normally change timing since there are no breaker points, the timing light can still be used to note changes in timing caused by troubles in the ignition system as well as for resetting timing when components are changed.

## IMPORTANT SAFETY INFORMATION

1. Keep work area clean. Cluttered areas invite injuries.
2. Observe work area conditions. Keep work area well lighted. Do not use electrically powered tools in the presence of flammable gases or liquids. Do not bring combustible materials near the tools.
3. As with any tool, use common sense when operating. Do not wear loose clothing or jewelry that could become caught by moving parts, causing injury. Operate tool a safe distance from yourself and others in the work area.
4. Keep children away. Children must never be allowed in the work area. Do not let them handle machines, tools, hoses or extension cords.
5. Always wear approved eye protection when using tools.
6. Do not operate any tool if under the influence of alcohol or drugs. Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate any tool.

## OPERATION

Read the ENTIRE IMPORTANT SAFETY INFORMATION section at the beginning of this document including all text under subheadings therein before set up or use of this product. Note: These general instructions will not apply to all engine designs and/ or vehicles. Consult your engine manufacturer's service instructions which supersede these instructions.

**▲ WARNING!** Be careful working around a running engine. Moving belts and fans can cause severe injury if contacted. Metal engine parts are very hot. Do not contact any part of the engine. Take extreme caution to prevent the spark plug clamp and wire from touching moving or hot parts of the engine.

### Preparation:

1. Remove the battery cover in back and put Dry Battery SUM-1 or "D" size or Ni-Cr Battery x 2 pcs. Check batteries which are connected correctly to the strobe circuit.
2. As depressing the T/L switch, the indicator lamp lights ON, which means battery power is sufficient. If it fails to illuminate or is very weak, battery power is insufficient. Replace the battery in set. **NOTE:** Do not use a used battery with new one together!

### Operation for Timing:

1. Locate the engine's timing mark by referring to the vehicle's engine manual or contacting the manufacturer. Refer to the vehicle's manual or contact the manufacturer for the timing specifications of the engine being tested.
2. Start the engine and run for 5-15 minutes until normal operating temperature is reached.
3. Stop engine.
4. Be sure you have fresh D-cell battery's in the light.
5. If the 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. Note: The Spark Plug Clamp is fragile and may break if dropped or struck sharply.
6. Connect the Spark Plug Clamp to the Spark Plug Wire as shown. The spark plug clamp must be connected with the arrow on the clamp pointing towards the spark plug. Since this tool is self-powered the only connection is to hook up the spark plug clamp to the #1 Spark Plug.
7. Start the engine and operate at idle speed.
8. 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.

### Timing Adjustment:

1. With the Engine stopped, loosen the bolt that locks down the distributor, but do not fully remove it. It should be loose enough so that you can turn the distributor right and left. Do not over-loosen the bolt or allow the distributor to move on its own.
2. Start the engine and run until it reaches the standard operating temperature.
3. Direct the beam from the Timing Light at the timing marks and slowly rotate the distributor in very small increments. Turn the distributor either right or left until the timing line on the balance lines up with the pointer mounted to the block. Refer to the vehicle's manual for the proper advanced setting.
4. Stop the engine.
5. Tighten the distributor lock down bolt using care not to change the position of the distributor.
6. Start the engine and recheck the timing. If the timing is incorrect, the distributor may have moved while bolting it down. Reset the timing.
7. 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.