



Professional Timing Light Instruction Manual



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MADE IN TAIWAN



Professional Timing Light

Instruction Manual



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Instructions

Proper ignition timing is critical in order to optimize the engine performance and to ensure maximum fuel economy. This Timing Light is used for most 12-volt negative-ground vehicles with gasoline engines, especially 4-stroke engines. The Timing Light may also be used on vehicles equipped with DIS (distributorless ignition system). Refer to the vehicle service manual or the Vehicle Emission Control Label or talk to a licensed mechanic before using this product.

Note:

- Modern cars with computerized ignition do not need to have their timing adjusted.
- If the Timing Light readout becomes inoperative or locks up during use, disconnect and reconnect the Timing Light's positive battery clip from the battery to reset the unit.
- Some aftermarket ignition systems and/or specialty spark plug wires (solid core wires, racing wires, off-road wires) radiate above normal Electro-Magnetic Interference (EMI) and Radio Frequency Interference (RFI) which can cause improper operation of testing equipment. Please contact these manufacturers for instructions on how to use an inductive pickup with their systems.
- It may be necessary to replace the number one cylinder spark plug cable with the originally equipped style during testing.

General Safety Warnings

- Turn off ignition before connecting or disconnecting any testing equipment.
- Always wear safety eye protection and keep your hands a safe distance from a working engine.
- DO NOT wear loose clothing, watches, rings or other jewelry when working on a vehicle.
- Put transmission in "park" or "neutral" gear. Set parking brake. Put blocks on drive wheels.
- Avoid hot engine parts and surfaces.
- The vehicle battery produces explosive gases. DO NOT smoke or allow spark or flame near the battery.
- Clean and store indoors, out of reach of children.
- Keep this manual for future reference.
- Dirt or grease on the inside surfaces of the Inductive Pickup Clip can result in erratic flashing or poor operation of the timing light. Periodically clean Inductive Pickup Clip with a soft cloth.
- DO NOT use on engines over 16 volt. The Timing Light will be burned and damaged.

- With Timing Light directing at timing marks, press Cylinder/Advance Increment Switch as needed to re-align timing marks to initial timing or as instructed by manufacturer's specifications. Note degrees advance on LCD display and compare with manufacturer's specifications.
- Turn off ignition and disconnect Timing Light from the engine.

Vacuum Advance

- Make sure Timing Light is properly connected as described in Timing Light Connection (Page 4).
- Make sure initial timing is correct. If necessary, prepare engine for advance timing check as directed by manufacturer's instructions.

NOTE: A vacuum pump equipped with a vacuum gauge is needed to check vacuum advance.

- With engine off, disconnect vacuum hose from distributor's vacuum advance port; plug vacuum hose.
- Connect vacuum pump to distributor's vacuum advance port.
- Start and run engine until it reaches normal operating temperature.
- Press Function (F) Switch as needed to select Advance Mode. The Advance Indicator and Advance Degree Symbol will display when Advance Mode is selected. The LCD Display will show "0" degree advance and engine RPM.
- With Timing Light directed at timing marks, note position of rotating timing mark in relation to reference pointer. Reading should indicate initial timing in accordance with manufacturer's specifications.
- Using vacuum pump, apply specified amount of vacuum to distributor's vacuum port.
- With timing light directed at timing marks, press Cylinder/Advance Increment switch as needed to re-align timing marks to initial timing. Note degrees advance on LCD display and compare with manufacturer's specifications.
- Turn off ignition and disconnect Timing Light from engine. Unplug and re-connect vacuum hose to distributor's vacuum port.

Electronic Advance/Retard

Refer to manufacturer's instructions for procedures to check electronic advance/retard. For some systems, it may be necessary to set the Timing Light's advance display to "0" and to read timing from the vehicle's timing marks.

Adjusting Timing

Refer to the vehicle's service manual for procedures to adjust timing.

DO NOT ATTEMPT TO ADJUST TIMING WITHOUT MANUFACTURER'S SPECIFICATIONS.

Trouble-shooting

NOTE: If the Timing Light readout becomes inoperative or locks up during use, disconnect and reconnect the Timing Light's red positive battery clip from the battery to reset the unit.

If the Timing Light fails to operate, make the following checks:

- Make sure the battery clips are firmly connected to the correct battery terminals.
- Make sure the upper and lower ferrite cores (the contact surface inside) of the Inductive Pickup Clip are clean. Clean the Inductive Pickup Clip if necessary.
- Make sure the Inductive Pickup Clip is properly connected to the number one cylinder spark plug cable.
- Make sure the number one cylinder spark plug is working properly:
 - Connect the Inductive Pickup Clip to another spark plug cable.
 - If the Timing Light flashes, service the number one cylinder spark plug before continuing.
- Replace with a new set of the detachable lead and re-connect to operate.

Checking Initial Timing (Idle)

- ALWAYS refer to the manufacturer's test procedures and specifications when performing timing check. Timing procedures vary from vehicle to vehicle. Refer to the Vehicle Emission Control Label or service manual for the vehicle under test.
- NOTE:** Some vehicles equipped with computerized engine control systems may be designated as "NON-ADJUSTABLE".
- Make sure Timing Light is properly connected as described in Timing Light Connection (Page 4).
- MAKE SURE the proper operating mode is selected, ie 2-cycle (DIS) or 4-cycle.
- If vehicle is equipped with distributor points, check dwell as described in Checking Dwell Angle and adjust if necessary BEFORE performing timing check.

- Start and run engine until it reaches normal operating temperature.
- The Flash Indicator will blink to indicate the timing light is operating.
- Press both ignition system selection switches SIMULTANEOUSLY to select either 2-cycle (DIS) or 4-cycle Mode. The Ignition Mode Symbol will display the selected mode.
- Press Function (F) Switch as needed to select Voltage/RPM Mode. The RPM Indicator will display when Voltage/RPM Mode is selected. The LCD Display will show engine RPM. Adjust engine RPM as necessary.
- Adjust timing light barrel, as needed, to ensure proper illumination of timing marks.
- Refer to the vehicle's service manual to check and to adjust timing. OBSERVE ALL SAFETY PRECAUTIONS.
- Press Flash Switch to stop the Timing Light from flashing.
- Turn ignition off and disconnect Timing Light from engine.

Checking Advance and Retard Timings

Advance and retard timing controls ensure that ignition occurs at the proper time during the compression stroke. These timing controls include mechanical advance, vacuum advance, vacuum retard, electronic advance, electronic retard, and electronic advance/retard. Depending on make and model, a vehicle may be equipped with a single timing control device, or two or more devices may be used in combination.

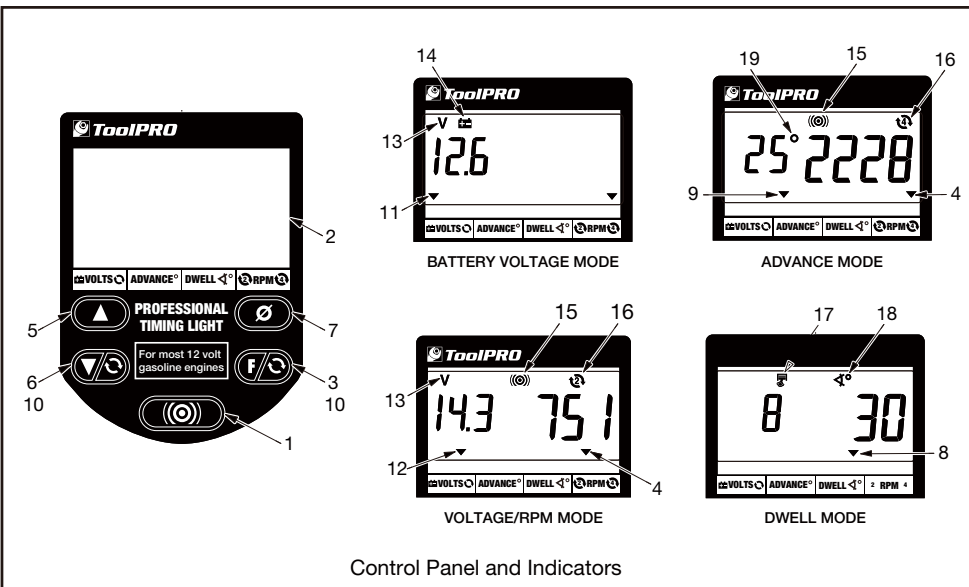
NOTE:

Advance and retard timing test procedures vary widely from vehicle to vehicle. The following paragraphs provide general test procedures for checking mechanical advance, mechanical/vacuum advance, and vacuum retard. ALWAYS make sure initial timing and dwell are correct before checking advance/retard timing. ALWAYS refer to the service manual for the vehicle under test to obtain the proper timing procedures and specifications. OBSERVE ALL SAFETY PRECAUTIONS.

Centrifugal and Mechanical Advance

- Make sure Timing Light is properly connected as described in Timing Light Connection (Page 4).
- Make sure initial timing is correct. If necessary, prepare engine for advance timing check as directed by manufacturer's instructions.

- With Timing Light directing at timing marks, note position of rotating timing mark in relation to reference pointer. Reading should indicate initial timing in accordance with manufacturer's specifications.
- Adjust engine speed to the specified RPM for advance test.
- Press Function (F) Switch as needed to select Advance Mode. The Advance Indicator and Advance Degree Symbol will display when Advance Mode is selected. The LCD Display will show "0" degrees advance and engine RPM.



Control Panel and Indicators

- Flash Switch: Push to turn strobe light on. Push again to turn strobe light off.
- LCD Display: Provides a digital display of engine operating parameters including engine speed (RPM), advance (degrees), dwell angle (degrees), and battery and charging system voltage. Information displayed depends on operating mode selected. LCD Display is backlit in soft blue light for easy viewing in low-light areas.
- Function (F) Switch: Selects Timing Light operating mode (Voltage/RPM, Advance or Dwell).
- RPM Indicator: Displays when 2-cycle (DIS) or 4-cycle RPM Mode is selected.
- Cylinder/Advance Increment Switch
 - Dwell Mode: Increments through available cylinder settings for dwell check. Enabled when Dwell Mode is selected.
 - Advance Mode: Increments through degrees of advance. Enabled when Advance Mode is selected.
- Cylinder/Advance Decrement Switch
 - Dwell Mode: Decrements through available cylinder settings for dwell check. Enabled when Dwell Mode is selected.
 - Advance Mode: Decrements through degrees of advance. Enabled when Advance Mode is selected.
- Zeroing Switch: Returns LCD advance degrees to zero. Enabled when Advance Mode is selected.
- Dwell Indicator: Displays when Dwell Mode is selected. LCD Display shows dwell angle and number of cylinders.
- Advance Indicator: Displays when Advance Mode is selected. LCD Display shows advance degrees and engine RPM.
- Ignition System Selection: Selects the Timing Light operating mode, ie 2-cycle (DIS) or 4-cycle, by pressing BOTH the Function (F) Switch and the Cylinder/Advance Decrement Switch simultaneously.
- Battery VOLTS Indicator: Displays when Battery Voltage Mode is selected. LCD display shows battery voltage.
- Charging System Battery VOLTS Indicator: Displays when Voltage/RPM mode is selected. LCD Display shows charging system battery voltage and engine RPM.
- Volt Symbol: Displays when Voltage Mode is selected.
- Battery Symbol: Displays when Battery Voltage mode is selected.
- Flash Symbol: Blinks when strobe light is working.
- Ignition System Symbol: Displays when ignition system is selected.
- Cylinder Symbol: Displays when Dwell Mode is selected.
- Dwell Angle Symbol: Displays when Dwell Mode is selected.
- Advance Degree Symbol: Displays when Advance Mode is selected.

Operating Specifications

- Power Requirements: 10 to 16 volts DC
- Operating Temperature: 0 to 50°C
- Tachometer Range: 240 to 9,990 RPM
- Timing Advance Range: 0 to +90°

Timing Light Connection

WARNING: Always keep hands, Timing Light, lead wires and clips away from moving engine parts and hot surfaces. DO NOT SMOKE.

- Turn ignition off. DO NOT CONNECT TIMING LIGHT WHEN IGNITION IS ON OR ENGINE IS RUNNING.
- Clamp Inductive Pickup Clip around number one cylinder spark plug wire (arrow points toward the spark plug).
- Connect the green Dwell Clip to the negative (tach) side of the ignition coil (if applicable).
- Connect Battery Clips to battery:
 - Connect RED Battery Clip to battery positive (+) terminal.
 - Connect BLACK Battery Clip to battery negative (-) terminal or chassis ground.
- Attach Pickup Leads into bottom of Timing Light handle.

Checking Voltage

- Make sure Timing Light is properly connected as described in Timing Light Connection.
- ALWAYS check battery and charging system voltage before performing timing check to ensure reliable results.
- With Timing Light connected and engine off, Timing Light[®] in battery voltage mode; the Battery Volt indicator, VOLTS Symbol and Battery Symbol will display. The LCD display will show the battery voltage.
- When the engine is started, the Timing Light enters the Voltage/RPM Mode; the Charging System Battery VOLTS indicator, Volts symbol and Ignition Mode Symbol (either 2-cycle (DIS) or 4-cycle) will display. The LCD display will show charging system voltage and engine RPM.

Checking Dwell Angle

Dwell angle check is performed for vehicles equipped with conventional or electronic ignition systems.

- Make sure timing light is properly connected as described in Timing Light Connection.
- Start and run engine until it reaches normal operating temperature.
- Press Function (F) switch as needed to select dwell mode. The DWELL Indicator, Cylinder Symbol, and Dwell Angle Symbol will display when dwell mode is selected.
- Press Cylinder/Advance Increment and Decrement switches as needed to select appropriate number of cylinders for vehicle under test. The LCD display will show the number of cylinders selected and the dwell angle.
- Note dwell angle and compare to manufacturer's specifications.
- Refer to the vehicle's service manual for procedures to adjust dwell angle.
- Turn ignition off and disconnect timing light from engine.

