

SAFETY PRECAUTIONS

—Read All Instructions Before Using The Analyzer—

Always wear eye protection when testing vehicles. Be extra careful near batteries and moving parts. Do not lay tools on a battery.

Battery gas is highly explosive.

If a battery explodes flush the acid away from skin with generous amounts of water. Follow up with a neutralizing solution of baking soda and then more water.

Never use a wrench on the ungrounded battery terminal until the grounded one has been disconnected. Contact between the vehicle body metal and the hot terminal can cause sparks to ignite gas or even weld tools into a battery short circuit.

Keep the space around a battery well ventilated.

Do not make sparks or allow flames near batteries.

Before working on a vehicle set the brakes and block the wheels. Beware of automatic parking brake releases.

Keep your work area well ventilated and free of exhaust.

Avoid electrical shocks caused by getting close to live ignition wires or touching the coil TACH terminal. A person's reaction near a live engine can be more damaging than the shock.

Keep spark producing devices at least 0.5m (18") above the floor to reduce the hazard of igniting gasoline vapor.

Do not let test leads wind up in a moving fan or pulley. Route leads away.

Remove finger rings and metal wrist bands. They can short terminals and become very hot from electric current.

Digital Tach-Advance Timing Light

88



Introduction

The Ferret 88 is a Dual Display Tach-Advance Timing Light. Both RPM and advance can be read at the same time. The Ferret 88 also includes a Strobe function which will allow you to measure the RPM of any rotating device.

Operating Specifications

Scale	Range	Resolution/Accuracy
Advance (400-5,000 RPM)	to 90 degrees	0.5 degree \pm 1 degree
Tachometer	400 to 9,990 rpm	10 rpm \pm 1 %
Strobe RPM	400 to 5,000 rpm	10 rpm \pm 1 %
Power Req.	10 to 16 Volts DC, 1.5 Amp	12 volt battery

Temperature

Operating	0° to 122° F	-18° to 50° C
Storage	-40° to 180° F	-40° to 80° C

Weights & Dimensions

Leads	5 feet	1.5 meter
Weight	1.7 pounds	770 gram
Size	12 inches tip to tip, 2.8 wide	30 x 7 cm

Timing-Advance Test Procedure

This light measures advance by delaying the flash so that it appears to align the crank shaft TDC mark to its pointer, and then displaying the degrees delayed. Note that on engines with ignition contact points, dwell affects timing and must be in calibration before timing is adjusted.

1. Connect the power leads: RED - positive, BLACK - negative. Push the Mode Select button to select 2 or 4 stroke operation. Place the Inductive Pickup around the #1 spark plug wire.
2. Prepare the engine for timing tests, such as: warming-up, disabling electric and vacuum control lines, and cleaning the wheel timing marks. Then run the engine. The light should begin flashing.
3. Read RPM, and set the engine speed to the test specification.
4. Point the light beam onto the degree marks at the engine damper wheel or flywheel, and move the apparent mark to the TDC position using the Timing Advance Control Buttons. Then read the timing advance on the display. NOTE: Align your eye squarely with the timing marks when viewing, to avoid parallax error.
5. Compare the measurement with the specification. Adjustments are made by turning the distributor slightly or by moving the ignition timing sensor.
6. Restore all engine parts to their normal arrangement.

FERRET BRAND LIMITED PRODUCT WARRANTY

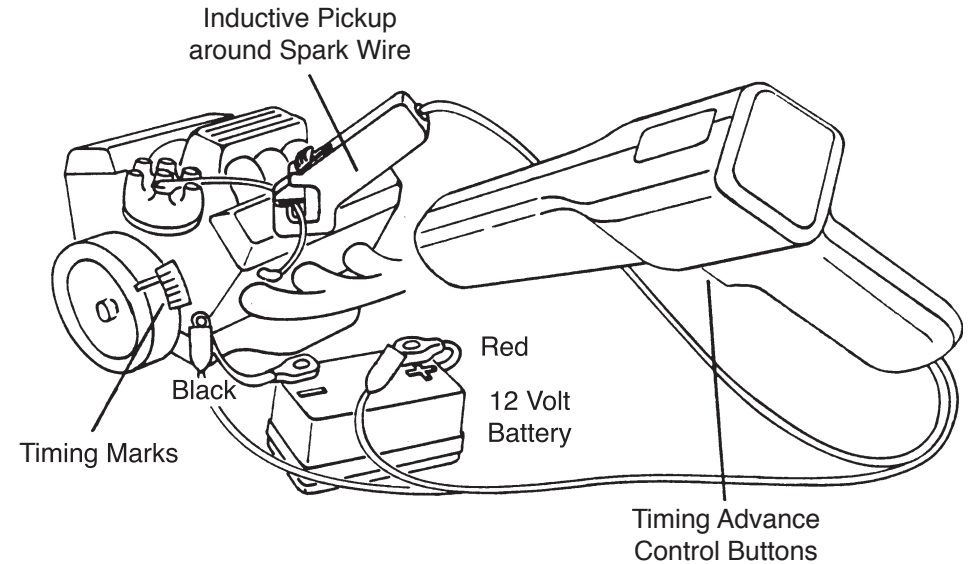
GxT, Inc. of Cheboygan Michigan, warrants to the original purchaser that FERRET brand products are free from defects in materials and workmanship for a period of two years from date of purchase. Our sole obligation for a product within the above warranties will be to repair or replace, at our option, any defective parts and return the product to the sender within the U.S.A., shipping prepaid, if it is sent to our Repair Department shipping prepaid and accompanied by proof of purchase.

This Warranty does not apply to products which have been altered outside the factory; or repaired by anyone other than the factory or its authorized service centers; or which have been damaged from accidents, negligence, or abuse; or have been used differently than described in the printed instructions. Please note that wear and tear on leads and replacement of consumable items such as: NOx Sensors, Oxygen Sensors, and paper, is not covered by warranty.

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Initial Timing Measurement

Follow the engine service manual procedure or the emission control label in the engine compartment. Not all engines can be adjusted. For engines with fixed timing, you can determine the operational status of the timing system.

Vacuum Advance or Retard Measurement

Vacuum actuators connected to the distributor or intake manifold sensors vary the timing according to engine vacuum. To measure, disconnect and plug the input hoses and then couple the input to a hand pump with gauge. Run the engine at idle to see the timing change with and without applied vacuum.

Centrifugal Advance Measurement

Mechanical ignition controls usually have a set of spinning weights in the distributor which advance the spark timing a certain number of degrees as RPM goes from idle to driving range. To see the centrifugal advance alone, vacuum actuators must be disabled. Besides the amount of change, it is important to see that the advance changes smoothly with slowly increasing RPM. Sticky weight pivots, rust, and bad retracting springs are the usual problems.

Total Advance Measurement

This is the advance at a specified RPM with the engine timing controls intact.

Coil Wire Timing

Use only when required by engine specifications. Be sure to set advance to zero, because the location of the mark will otherwise be affected by the number of cylinders.

Strobe Light Measurements

The Strobe function on the Ferret 88 does not require the use of the inductive spark pickup. You can use the strobe function to determine the RPM of any rotating device.

1. Connect the power leads: RED - positive, BLACK - negative. Push the Mode Select button to select strobe operation.
2. Point the light beam at a rotating device.
3. Use the trigger button to increase or decrease the rate of the strobe flash
4. Begin increasing the flash rate of the strobe until you see a stopped motion view of the rotating device.
5. Read the RPM of the rotating device on the back of the timing light.

Start at the lowest RPM available in the strobe function and increase the rate until you see a single image that has been "stopped" by the light.

For example, if you are flashing the strobe light at a device that has 3 distinct fan blades, you will see multiple blades stopped by the strobe. Continue increasing the rate of the strobe until you see just 3 blades. This will be your correct RPM.

Maintenance & Service

When cleaning the timing light, use a cloth dampened with waterless hand cleaner. DO NOT use solvents such as acetone and benzene which can be absorbed by and damage plastics. Promptly remove penetrating oils, gasoline, and battery acid.

The Inductive Spark Pickup is a plug-in replaceable lead. It can be repaired or replaced if damaged. **Leave the Pickup latch Open when not in use.** The magnetic cores are made of ferrite ceramic and, when kept apart, they are less likely to break if the pickup is dropped.

There are no user serviceable parts inside the timing light. Contact your tool dealer or consult other materials packed with the light for repair information.

Electrical Interference

In the event that the unit is subjected to extreme electromagnetic conditions the display may appear to lock up. Simply disconnect the power lead and reconnect to reset the unit.

Technical Support

Questions or inquiries about service can be answered by contacting GxT, Inc., at: Toll Free (800) 627-5655. Fax: (231) 627-2727, Toll Free (231) 782-0616, or repair@gxtauto.com. When sending an item to the factory address it to: GxT, Inc., 520 MM Riggs Drive., Cheboygan, MI 49721-1061

Include a note describing the problem.

Replacement Parts

X008-01	Inductive Spark Pickup
X006-81	Storage Case
E088-01	Instruction Manual

Optional Ferret 765 Diesel Pulse Adapter

PIEZO CLAMP

Clamps around a 1/4" (6.35mm) fuel line, senses the pulse of fuel to #1 Cylinder, and triggers the timing light or engine analyzer.

DIRECT CONNECTION

Eliminates confusion and increases accuracy by directly connecting to the test instrument in place of the Spark Pickup

INDICATOR LIGHT

Flashes when a signal is detected from the Piezo Clamp.

9V BATTERY POWERED

Internal 9 volt battery eliminates the need for power leads.

ENGINE COMPATIBILITY

Works on most Diesel engines with 1/4" external fuel lines.

