"Timing" the L-134 is frequently an issue. More often than not, it is because the flywheel and/or oil pump have been installed incorrectly (see "Technical Details", page 16).

When installed incorrectly, the "factory" procedures/instructions for timing are INVALID. Not to worry, the engine can still be "timed", and will run fine. This document will get you through the process.

The procedures here are independent of each other, but must be done in the order shown. ie., skip over those you're already familiar with, or have already accomplished.

The first three are relatively simple. Only the "Spark Plug Wires" step requires much mental effort or manual dexterity.

Additional descriptions/explanations are at the end of the document, referenced from w/in the flow charts.

start your engine!
The end of the oil pump shaft has an offset slot. The end of the distributor shaft has an offset tab to match the oil pump offset slot.

Remove the distributor cap.

Hold the distributor so the offset tab is aligned approximately the same as the oil pump slot.

Install the distributor in the block. Turn the distributor shaft slightly back-and-forth until the offset tab drops into the oil pump slot.

Seat the distributor body flush to the block mating surface.

Return to page 1

Crankshaft position is IRRELEVANT for this step. The distributor will ONLY fit in ONE WAY. (see "Technical Details" page 16)
Adjust breaker point gap

If they're not already, remove distributor cap & rotor, loosen distributor clamp.

Rotate distributor body approximately to the orientation shown at left:
- Cap clips @ 3 & 9 o'clock
- Oiler @ 1-2 o'clock

Further rotate distributor body until points rubbing block is on highest corner of closest breaker cam lobe.

Snug hold-down clamp finger tight.

Adjust breaker point gap to .020"

Return to page 1

This page applies ONLY to OEM distributors with mechanical breaker points.

If you have an "electronic" distributor (Pertronix Ignitor, Crown distributor, etc.) SKIP THIS PAGE.
L-134 Static Timing

Set breaker point timing

- Align "IGN" or "5°" flywheel timing mark in engine plate timing window
- Rotate distributor body to approximately the correct orientation:
  - oiler @ 1-2 o'clock
  - cap clips @ 3 & 9 o'clock
  (see photo on page 3 for example)

- If they're not already, remove distributor cap & rotor, loosen hold-down clamp
- If they're not already, remove distributor cap & rotor, loosen hold-down clamp
- Tighten distributor hold-down clamp
- Return to page 1

There are many ways to perform this - see "When do Points Open" (page 5)

are points closed?

No

rotate distributor body **Counter Clock Wise** until points are closed

Yes

rotate distributor body **Clock Wise** until points **just barely** open.

It DOES NOT MATTER which cylinder is at the "IGN" point here. It is **irrelevant**.
L-134 Static Timing

When do the Points Open?

IN

Pick a method

- Using an Ohm Meter
  - go to page 6

- Using a Feeler Gauge
  - go to page 7

- Using Breaker Points Arc
  - go to page 8

- Using a Plug Spark
  - go to page 9
Using an Ohm Meter

Use an ohm meter, either on the lowest "ohms" scale, or the "continuity" setting. A meter with an "audible" continuity alarm works best. Use leads w/alligator clips if you have them.

TURN IGNITION OFF!
(or disconnect cable from battery)

Disconnect the condenser
(if it won't change the point gap)

Clip one meter lead to the distributor input terminal
Clip the other meter lead to to distributor body (bare metal)

meter reading ZERO?

No

Rotate distributor body **Counter Clock Wise** until meter reads ZERO ohms, or "audible" signal sounds off.

Yes

Rotate distributor body **Clock Wise** until meter just reads INFINITE ohms, or "audible" signal goes silent.

Return to page 4
L-134 Static Timing

Using a Feeler Gauge

IN

Use a very thin feeler gauge: .001, .002, .003" max. If you don't have feeler
gauges, use a narrow strip of very thin plastic or paper
(cheapo "generic" sandwich baggies are only .001-.002" thick. Cigarette pack
wrap is also very thin)

TURN IGNITION OFF!
(or disconnect cable from battery)

are points
closed?

No

Rotate distributor body Counter Clock
Wise until points fully close

Yes

Manually open breaker points, and
insert feeler gauge between contacts

Apply slight pull on the feeler gauge

Rotate distributor body Clock Wise
until feeler gauge just slips out under
tension

Return to
page 4
In the absence of an ohm meter & feeler gauge, you can use the electrical system itself. You look and/or listen for an "arc" within the breaker contacts.

Disconnect the condenser (if it won't change the point gap).

Ensure a good ground path from distributor body to engine block (if grounds are in doubt - use a jumper wire from distributor body to a known good ground, or battery negative terminal).

Are points closed?

No: Rotate distributor body **Counter Clock Wise** until points are fully closed.

Yes: Rotate distributor body **Clock Wise** until you see or hear the points "arc".

Turn ignition off! Reconnect condenser.

Return to page 4.
Another way to use the electrical system itself: generate a real spark

Ensure a good ground path from distributor body to engine block (if grounds are in doubt - use a jumper wire on distributor body)

Insert a plug wire & spark plug into the COIL SECONDARY TERMINAL

Ensure the spark plug body is adequately grounded to conductive metal on the head, block, or some other convenient spot.

are points closed?

No

Rotate distributor body **Counter Clock Wise** until points are fully closed

Yes

TURN IGNITION ON!

Rotate distributor body **Clock Wise** until you SEE or HEAR a plug "spark"

TURN IGNITION OFF!

Return to page 4
IN

Pick a method

"Quick & Easy"

"Get it right the first time"

Go to page 11

Go to page 13

See "Who Needs This" (page 17)
L-134 Static Timing

Run plug wires
("Quick & Easy" method)

install rotor, distributor cap & spark plug wires. Begin with ANY distributor cap post, as long as firing order is correct: 1-3-4-2 Counter Clock Wise

eg.

does it start?

Yes

SUCCESS!

No

re-clock plug wires 90° CCW

No

tried it 4 times?

Yes

Other issues need resolved before timing

No

FAILED!

Stock

SUCCESS!

go to page 12
Alright! the engine runs!
Now to determine how the oil pump & flywheel are installed:

Draw a diagram of the distributor cap, and mark each post with the corresponding spark plug wire, **AS YOU HAVE INSTALLED THEM!**

If your plug wires aren't close to "stock" locations, the oil pump was indexed improperly. This is **NO BIG DEAL**, it runs fine any way, but **KEEP YOUR CAP DRAWING** for future reference.

Manually turn the crank over until the timing marks are aligned in the window

Remove the distributor cap. Using YOUR cap drawing, note which plug wire post the rotor is pointing at

**Flywheel is 180° off. Use #2 spark plug for future timing reference.**

**Flywheel is correct. Use #1 spark plug for future timing reference.**

Return to page 1
L-134 Static Timing

Run plug wires
("Right the 1st time" method)

Begin

Remove distributor cap, Install rotor
Remove #1 spark plug (or ALL plugs for easiest cranking)
Set both throttle & choke WIDE OPEN

rotate crankshaft until TDC flywheel mark is lined up

MAKE A DRAWING OF ROTOR POSITION!

put thumb or finger over #1 spark plug hole

quickly turn crankshaft about 90° clockwise (viewed from front)

feel suction?

Yes

Flywheel correct!

No

feel pressure?

Yes

Flywheel wrong (180° off)

No

tried twice?

Yes

Other issues need to be resolved first

FAILEDA!

No

goto page 14

Discard any previous rotor drawing!

Rotate the crankshaft the remaining 270° until TDC marks line up again.
You arrived here because you felt *suction* at the #1 spark plug hole.

That means **#1 cylinder is ON the **Power stroke**, and has *just gone past TDC on the Compression stroke*.

You had previously **MADE A DRAWING** of where the distributor rotor was pointing at the time. Now **MAKE A NOTE** on that drawing:

*That distributor cap location is where #1 spark plug wire goes!*

---

Install the distributor cap

---

Put #1 plug wire in the **POST POINTED AT BY YOUR ROTOR DRAWING**

---

Install the remaining plug wires 3-4-2 order Counter Clock Wise.

---

If your plug wires aren't close to "stock" locations, the oil pump was not indexed "according to the manual".

This is **NO BIG DEAL**, it runs fine any way, but **KEEP A DRAWING OF YOUR CAP & WIRES** for future reference.
You arrived here because you felt pressure at the #1 spark plug hole.

That means #1 cylinder is ON the Compression stroke, and #2 cylinder has just gone past its own TDC compression (and is now on its power stroke)

You had previously MADE A DRAWING of where the distributor rotor was pointing at the time. Now MAKE A NOTE on that drawing:

That distributor cap location is where #2 spark plug wire goes!

Install the distributor cap

Put #2 plug wire in the POST POINTED AT BY YOUR ROTOR DRAWING

Install the remaining plug wires 1-3-4 order Counter Clock Wise.

If your plug wires aren't close to "stock" locations, the oil pump was not indexed "according to the manual".

This is NO BIG DEAL, it runs fine any way, but KEEP A DRAWING OF YOUR CAP & WIRES for future reference.
Unlike contemporary engines, the L-134 has two mechanical idiosyncracies that can cause confusion if parts are not installed "according to the manual" during engine rebuild or parts replacement.

**The timing marks are on the FLYWHEEL** (not the front pully as on most modern engines), so flywheel mounting determines which cylinder can be used with a timing light.

The flywheel can be mounted to the crankshaft in 2 opposite orientations:

1) Correctly (according to "factory" procedure) - In this case, the "TDC" timing marks apply to #1 & #4 cylinders as per the "factory manual".

2) Incorrectly (NOT according to "factory" procedure) - In this case, the "TDC" timing marks apply to #2 & #3 cylinders.

**The oil pump drives the DISTRIBUTOR** (in many modern engines it's the opposite: the distributor drives the oil pump).

The oil pump gear has 12 teeth, so it can mesh with the camshaft gear in ANY ONE of 12 positions. But due to an offset slot, the distributor ONLY FITS THE OIL PUMP ONE WAY!

When the oil pump is installed according to "factory" procedure, the #1 spark plug wire fits the distributor cap at about the 5 o'clock position.

When the oil pump is installed WITHOUT regard to the "factory" procedure, then the #1 spark plug wire can end up at ANY ONE OF THE OTHER 11 "WRONG" POSITIONS!

NEITHER OF THE ABOVE prevents the engine from running. If either flywheel or oil pump is installed off-spec, it simply means you CANNOT use the written procedures in the "factory" service manuals.

You just have to determine how your engine assembly differs from "factory standard", make a note of the difference, and keep it for future reference.
This document is intended for those situations when the flywheel and/or oil pump installation are UNKNOWN, SUSPECT or KNOWN TO BE WRONG.

If you KNOW FOR A FACT that your flywheel is been installed correctly, and your oil pump has been indexed correctly, this document is not needed. Just run your plug wires according to the service manual illustrations (#1 wire at 4-5 o'clock position, 1-3-4-2 CCW firing order).

If you KNOW or SUSPECT that either flywheel or oil pump are NOT correct, you have 2 choices:

- re-install them per the "factory" manual (labor intensive, and NOT necessary), or ...
- live with them as-is, just "do what it takes to get the engine running"

There are 2 ways to "do what it takes to get the engine running":

1) The "quick & easy" way: FIRST get it running, THEN figure out the "details":

This is a "Trial-and-Error" approach. The plug wires can only be installed 4 possible ways. ONE of them WILL be correct. You just have to try each possible orientation, in turn, until you hit upon the "correct" one.

You run the risk of having it wrong to begin with, and getting backfire, but ...

You DO NOT NEED TO KNOW:

- if the flywheel is on right or wrong
- if the oil pump has been indexed correctly
- what cylinder is "on the compression stroke"

2) the "get it right the first time" way: FIRST figure out the "details", THEN get it running

The "Get It Right The First Time" way is a methodical approach. It takes more time, but there's no "trial-and-error" involved, it is "right on" the first time.

You WILL first determine which cylinder is on a compression or power stroke

After using either method above, you'll have all the answers to the "Flywheel", "Oil Pump" and "Spark Plug Wiring" questions.