

# L-134 Static Timing

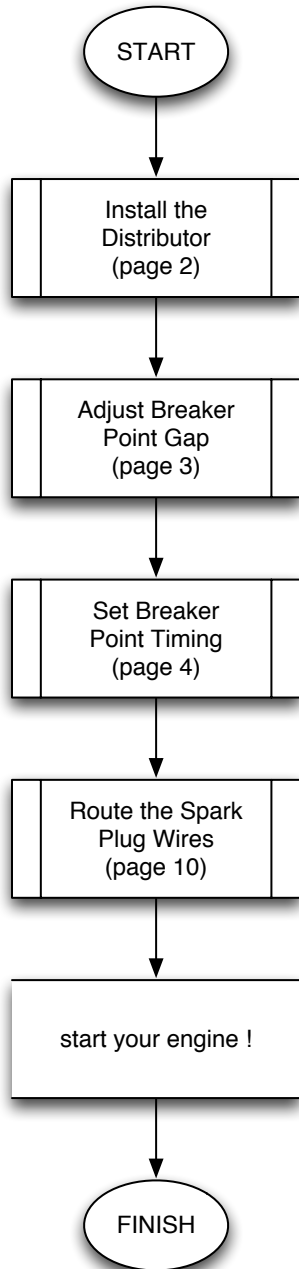
"Timing" the L-134 is frequently an issue. More often than not, it is because the flywheel and/or oil pump have been installed incorrectly (see "Technical Details", page 16).

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.



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## Install the distributor



IN

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.

Look down the distributor hole. Note the position of 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.

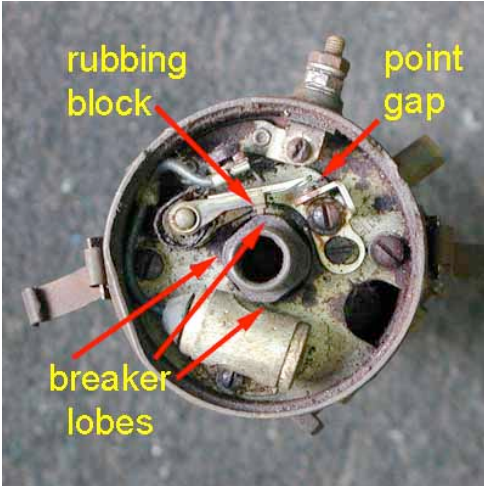
Seat the distributor body flush to the block mating surface.

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

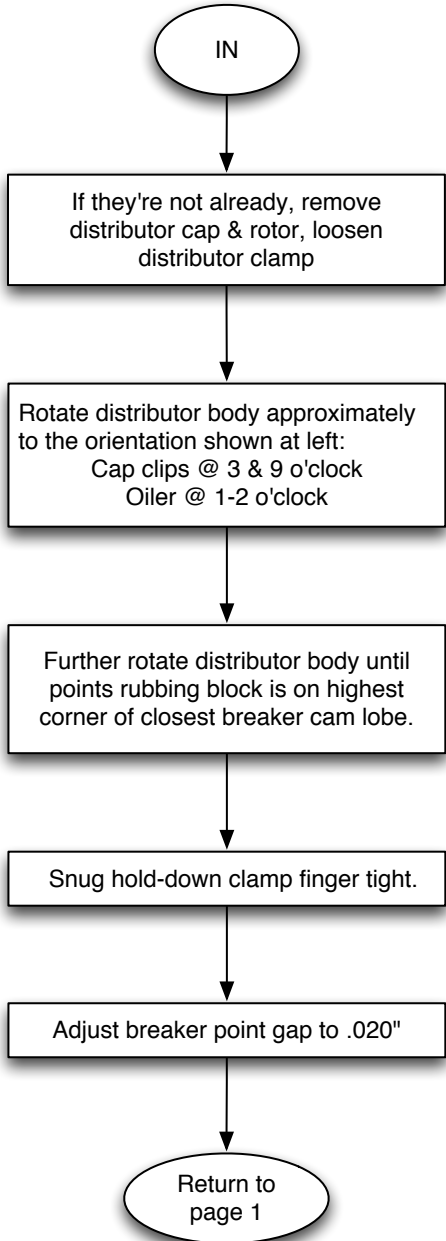
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## Adjust breaker point gap

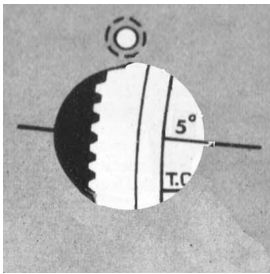
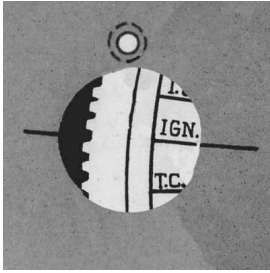


This page applies ONLY to OEM distributors with mechanical breaker points.

If you have an "electronic" distributor (Pertronix Ignitor, Crown distributor, etc.) SKIP THIS PAGE



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## Set breaker point timing

IN

If they're not already, remove distributor cap & rotor, loosen hold-down clamp

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)

*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

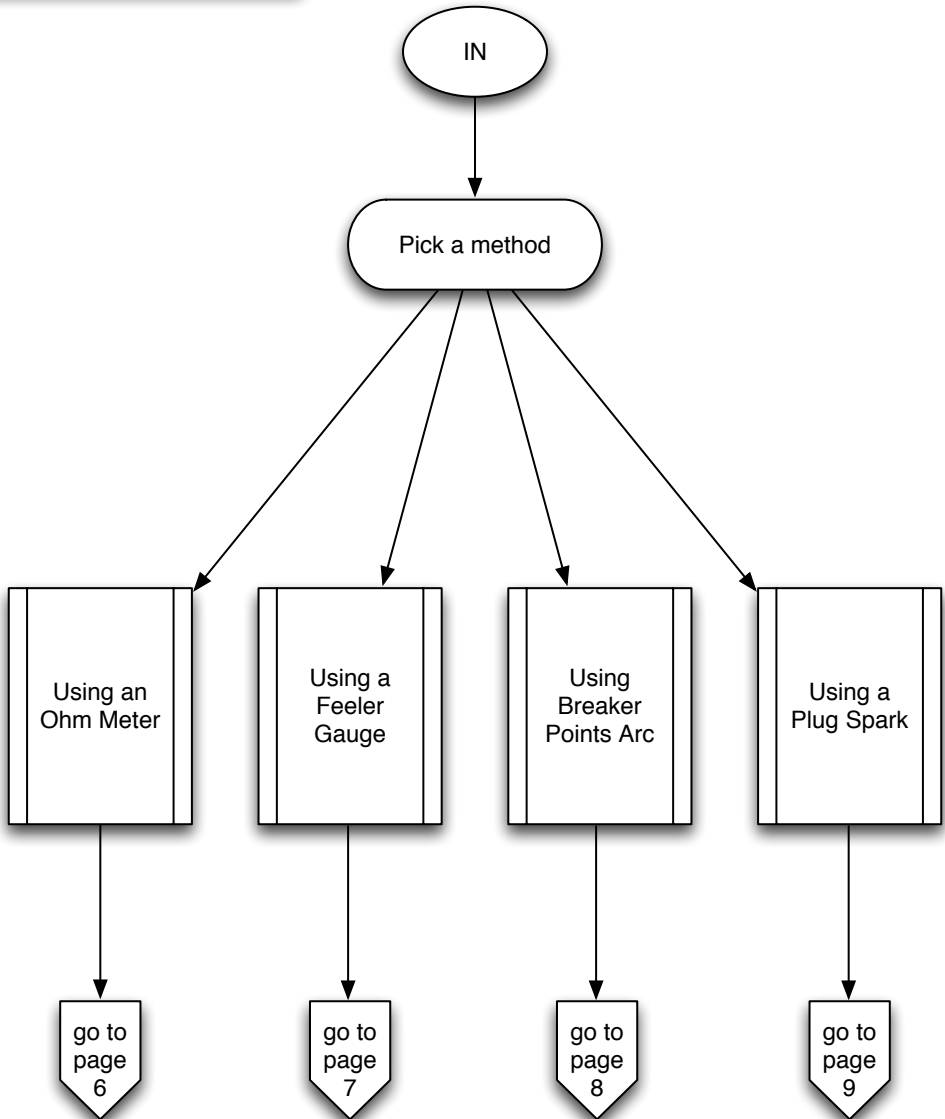
Yes

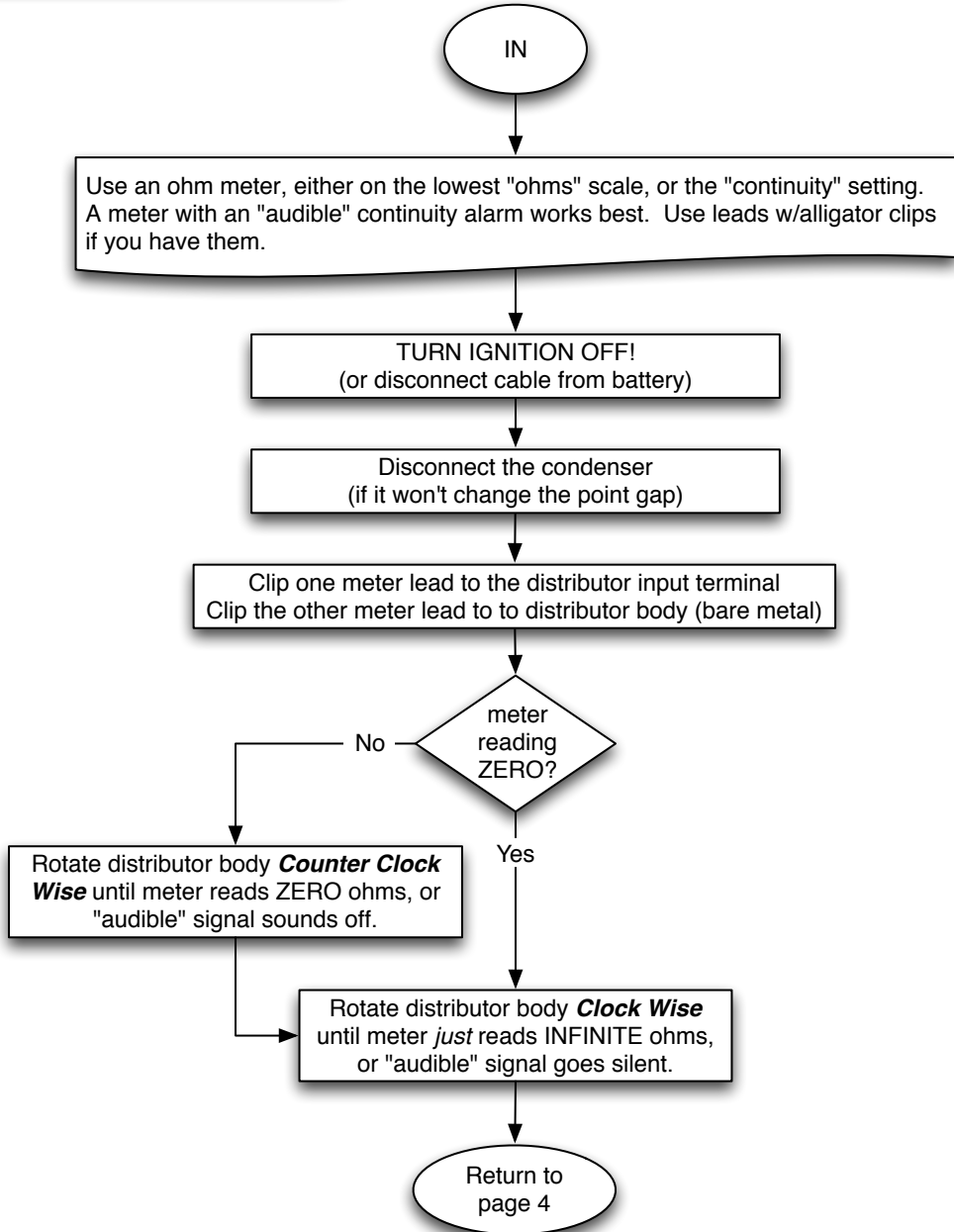
rotate distributor body **Clock Wise** until points **just barely** open.

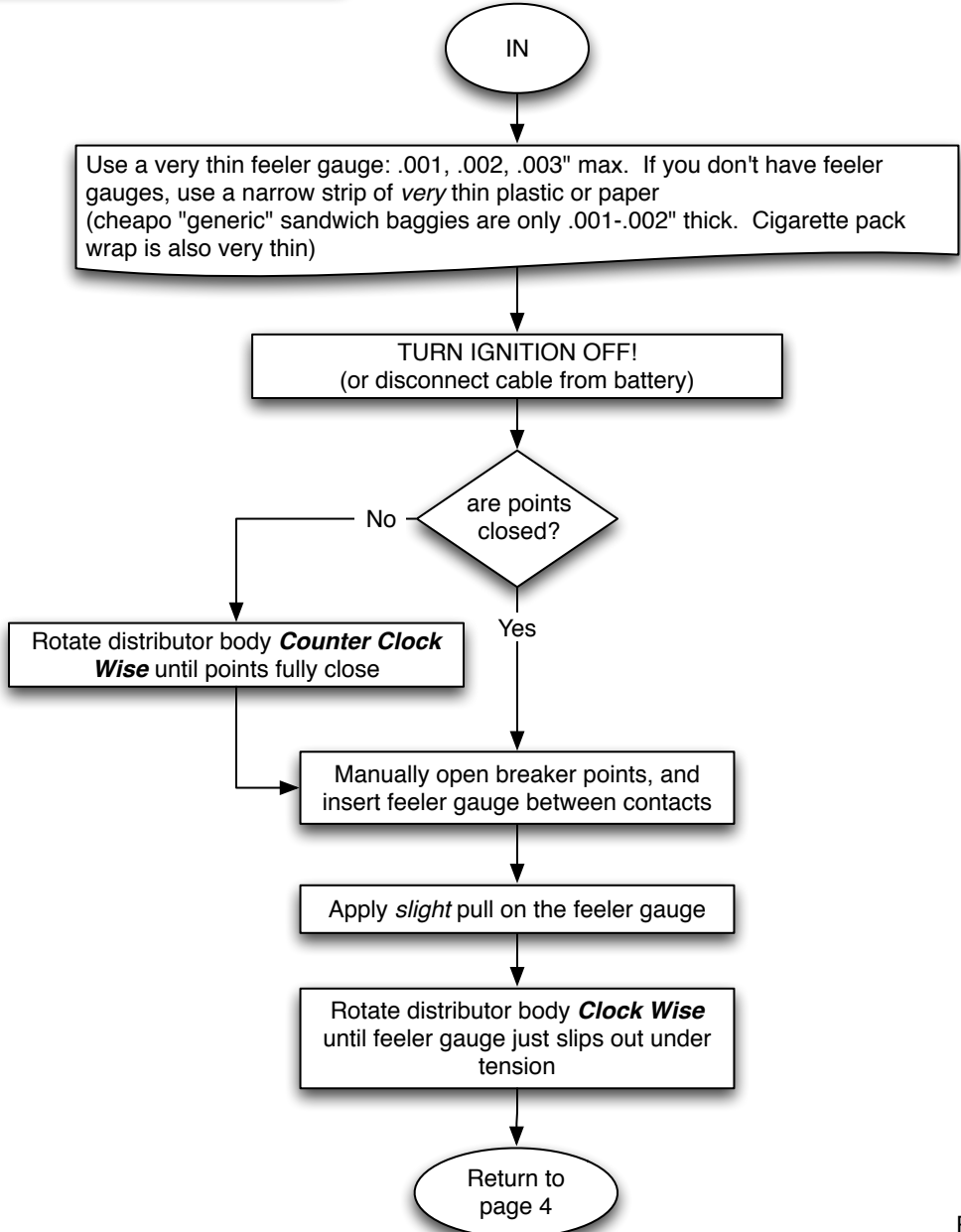
tighten distributor hold-down clamp

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It DOES NOT MATTER which cylinder is at the "IGN" point here. It is irrelevant.







# L-134 Static Timing

## Using Breaker "Arc"

IN

In the absence of ohm meter & feeler gauge, you can use the electrical system itself. You look and/or listen for an "arc" w/in 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

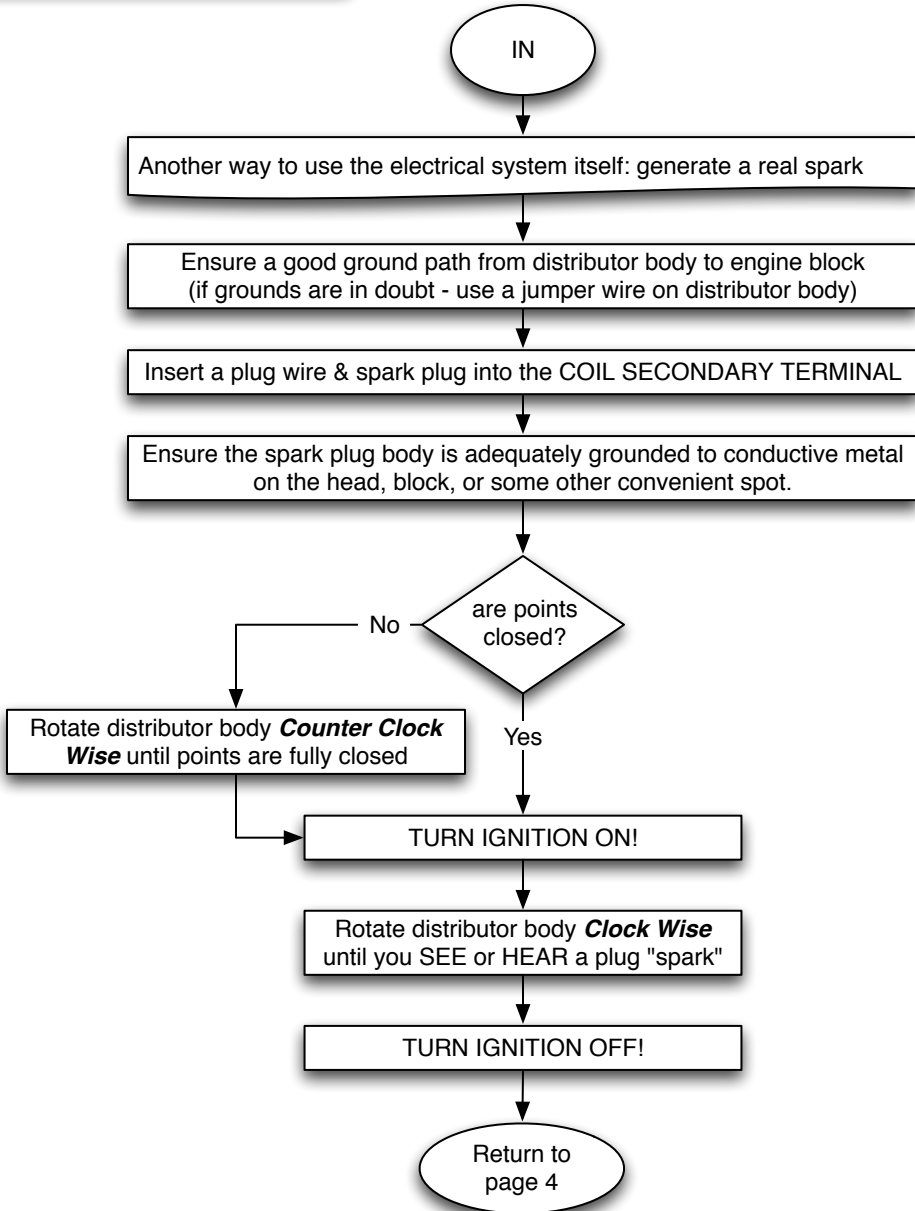
TURN IGNITION ON!

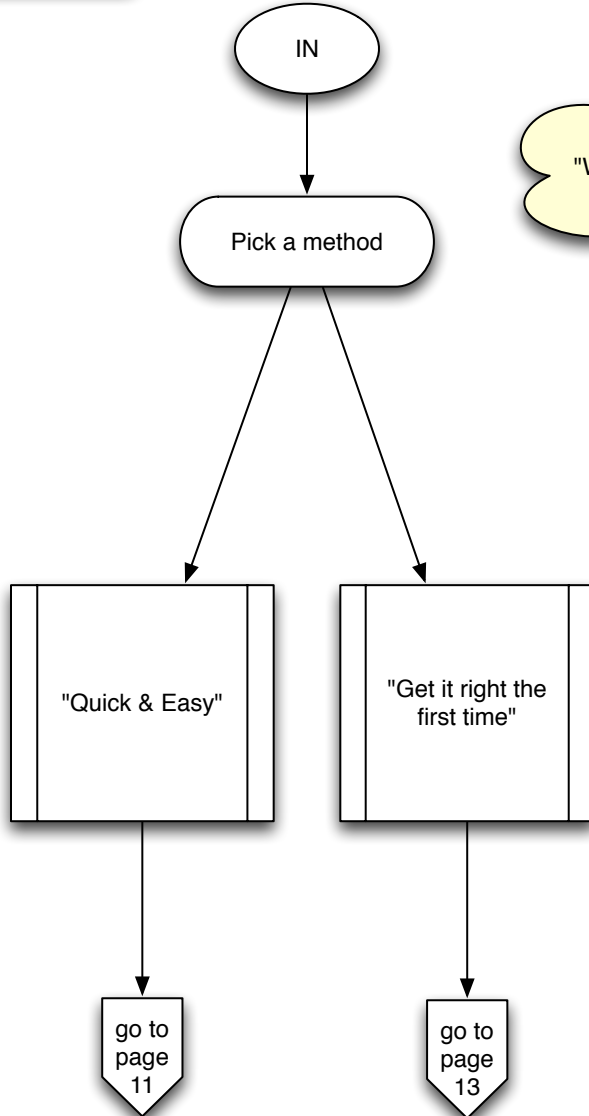
Rotate distributor body **Clock Wise**  
until you SEE or HEAR the points "arc"

TURN IGNITION OFF!  
reconnect condenser

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page 4



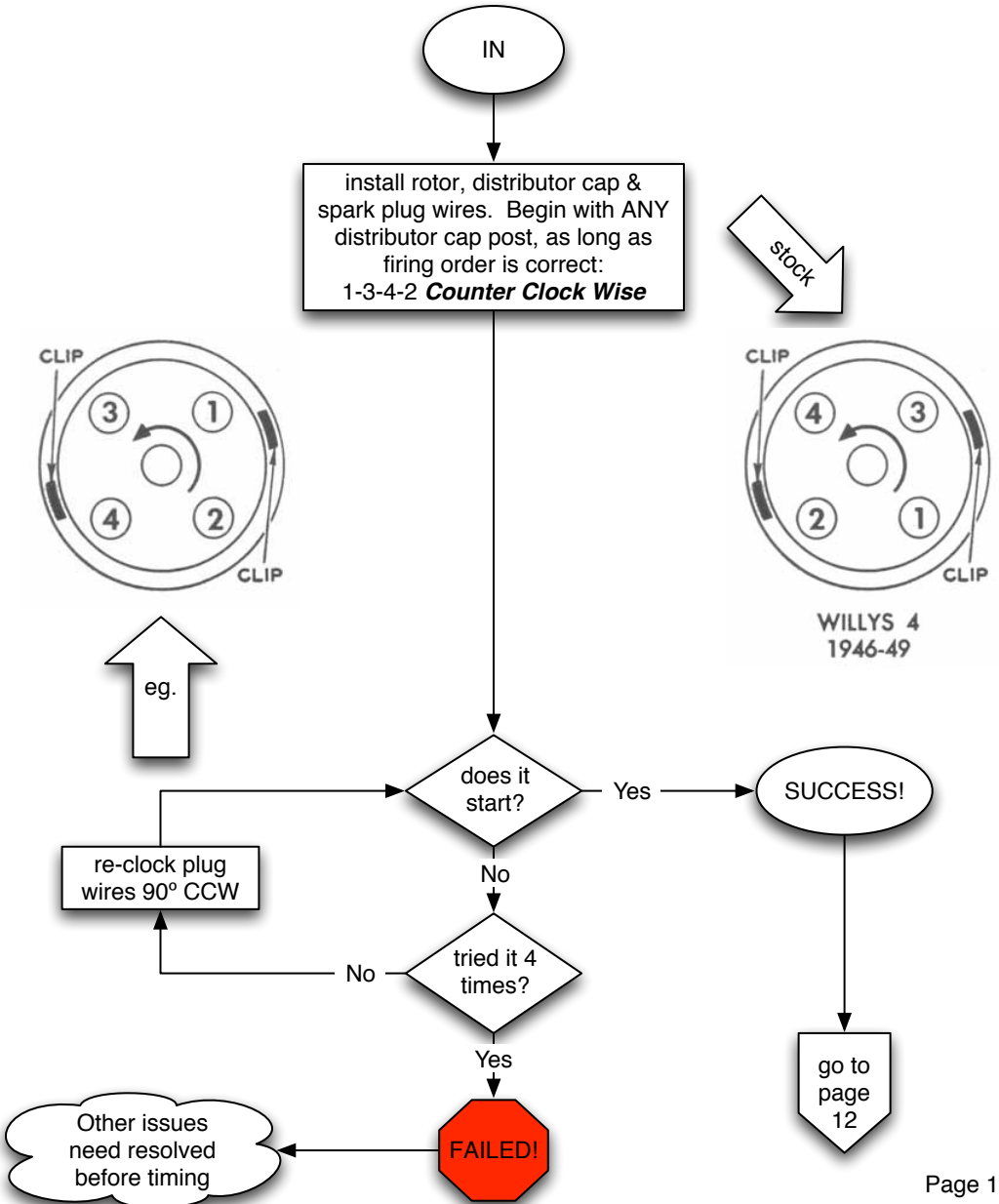




See  
"Who Needs This"  
(page 17)

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## Run plug wires ("Quick & Easy" method)



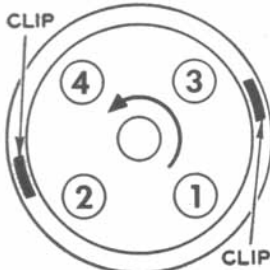
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page 11

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.



WILLYS 4  
1946-49



stock

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

pointing at #1  
or #4 plug?

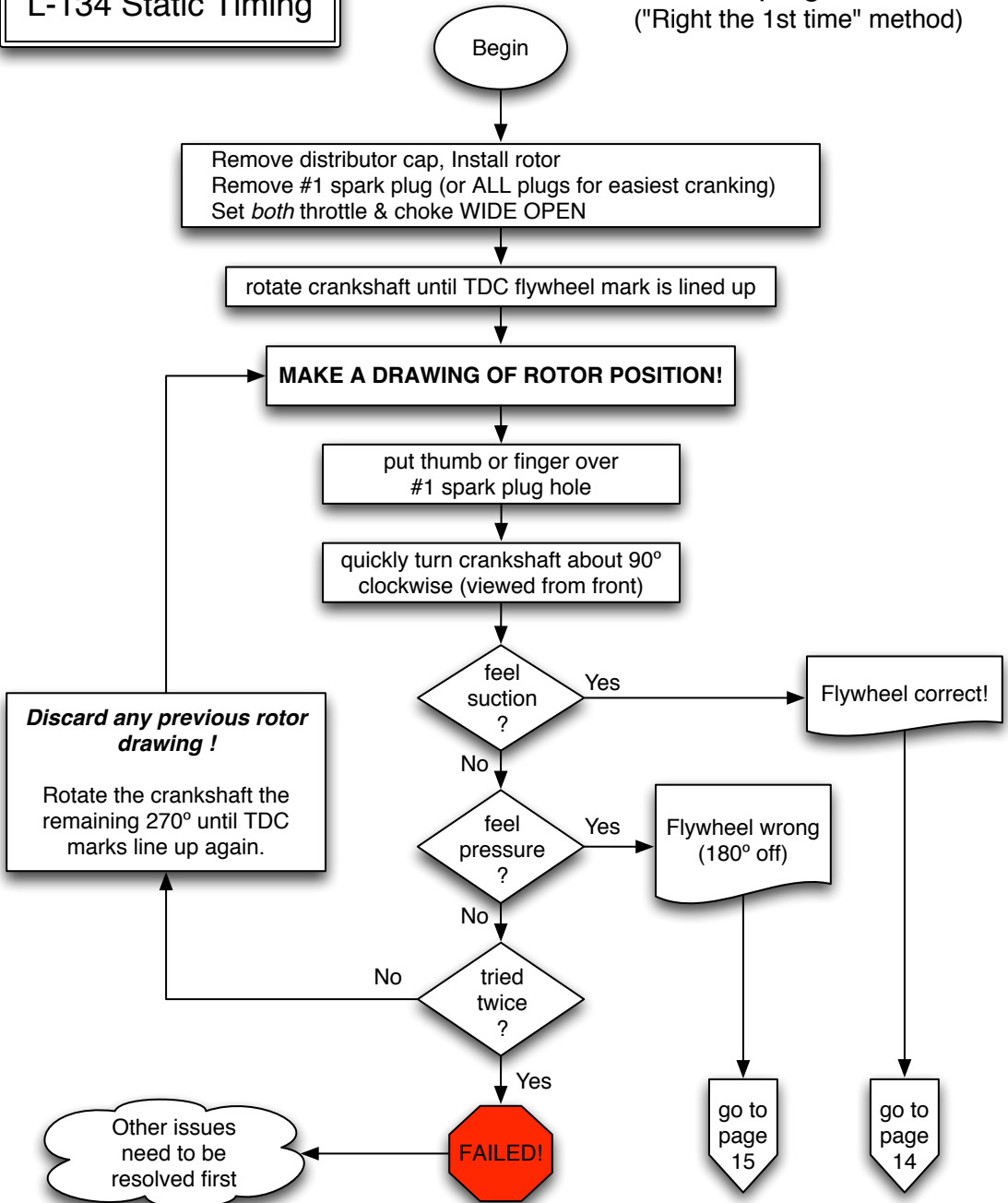
Flywheel is 180° off.  
Use #2 spark plug  
for future timing  
reference.

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

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



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from  
page 13

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.***

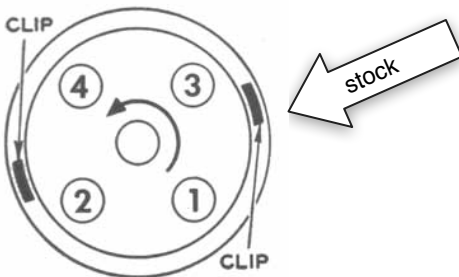
You had previously **MADE A DRAWING** of where the distributor rotor was pointing at the time. Now **MAKE A NOTE** on that drawing:

***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.



WILLYS 4  
1946-49

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.

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# L-134 Static Timing

from  
page 13

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)**

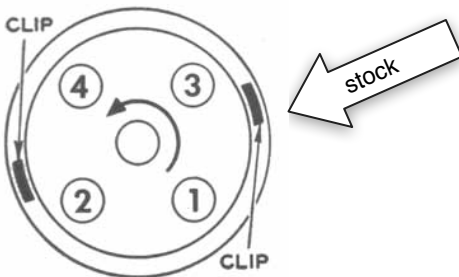
You had previously **MADE A DRAWING** of where the distributor rotor was pointing at the time. Now **MAKE A NOTE** on that drawing:

***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*.



WILLYS 4  
1946-49

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.

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page 1

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.

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**The timing marks are on the FLYWHEEL** (not the front pulley 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!**

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**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":

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**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

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