

# A-6252 Timer Kit

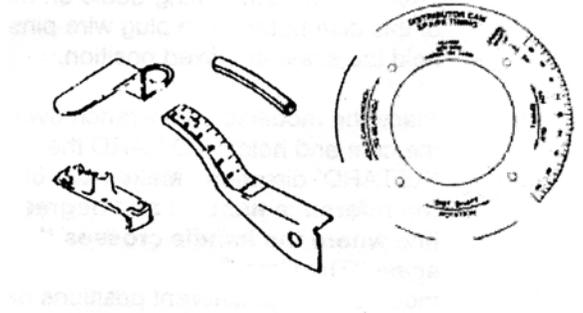
## IGNITION TIMING THE "A" NU-REX PRECISION TIMING KIT CRANKSHAFT DEGREE INDICATOR AND TOOLS

### Installation Instructions

In order to properly set the timing, it is necessary to accurately know when the spark occurs in relation to the piston/crankshaft position.

"Timing" or "strobe" lights produce a flash of light each time a spark "trigger" occurs. If the flash illuminates a reference dot on the crank pulley and a stationary degree indicator, the timing is then accurately and reproducibly known. This is the basic timing method.

Timing lights are obtainable at swap meets for 6-volt and plug power and through mail order and auto stores for 12-volt, plug, and 110V AC power.



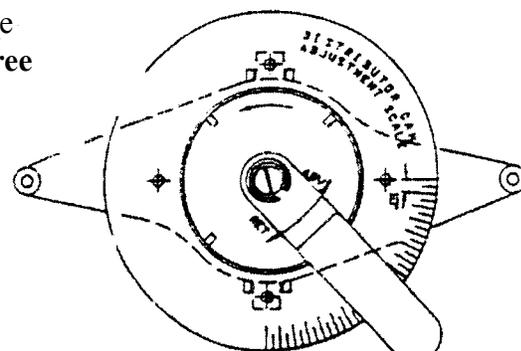
1. Remove the timing pin, reverse it, and reinsert it in its hole.
2. Pressing lightly on the pin, slowly hand crank the engine until the pin falls into the dimple on the camshaft timing gear.
3. Lightly clamp the permanent type crank degree scale in place with the passenger side engine mounting bolt. Align the scales to be parallel and just adjacent to the crankshaft pulley. ***It should NOT rub on the pulley.*** Then tighten the bolt for permanent mounting. A permanent white dot/line (or temporary chalk mark) is placed on the pulley opposite the 0° line of degree scale.

It is recommended that the TDC #1 piston position be confirmed by removal of the #1 spark plug and observation of the piston to determine that the timing pin and piston positions agree. Some gear dimples have been found not to be in agreement.

For accurate results, the 0° mark should be the #1 piston TDC position.

4. Temporarily replace the standard distributor cap with the cut-out one in the kit. This permits observation of the rotor, points, and distributor electro-mechanical actions while the engine is running.
5. The timing light trigger is initially taken from the #1 spark plug wire. If an inductive pickup is used, isolate it by slipping the insulated sleeving provided over the wire strap.
6. If a separate battery is used to power the strobe light ( 12-volt, 6-volt car), connect a ground lead from either battery terminal to the car's ground.
7. With the engine started and running, the pulley white dot shows the actual crankshaft degrees of spark advance/retard as the spark control is moved through its range. It shows what is actually occurring NOT what you believe you had set. You can now measure and record the timing accurately, reproducibly, and under the engine running conditions.

8. Wherever the engine has stopped, position the Cam Timing Scale on top of this distributor. The plug wire pins hold the scale in a fixed position.
9. Place the modified cam wrench over the cam and hold it TOWARD the “RETARD” direction. **Make note of the reference number and degree line where the handle crosses the scale.** The Cam Scale can be mounted in four different positions on the distributor so the handle will always cross the scale at some reference point
10. Hold the wrench TOWARD the “RETARD” direction to prevent cam turning; loosen the hold-down screw for slight drag on the cam as it is rotated.
11. Change the “timing” by the number of crankshaft degrees desired- always “turning” the cam in the “RETARD” direction to remove “lash.”
12. Holding the cam wrench firmly to prevent the cam from turning, tighten the hold-down screw **DO NOT OVERTIGHTEN.** The rubbing block forces tending to loosen the cam are very small.
13. Lightly hold the cam wrench in the “RETARD” direction and check the handle-degree reference number and line of Step 9 to be sure tightening in Step 12 did not change the desired setting.
14. Road test and repeat Steps 8 through 13 until the desired performance has been attained
15. Tests of several Model “A”s over periods of several thousands of miles’ use have suggested some initial timing values. The total range of steering column spark control is approximately 40° of crankshaft travel. One can set the time within this range as an example:



FOR SLOW IDLE    5° to 10° ATDC, full spark retard  
 FOR HIGH SPEED   30° to 35° BTDC, full spark advance

A road test with your driving habits should determine the timing settings that best fit your requirement needs.

A number of auxiliary diagnostic tests can be made. A smooth, strong running engine demands that spark occur at the same crank position for each cylinder at each firing time. The variations of these firing points can now be observed and measured; causes for the variations can be determined; and corrective action can be taken.

If the timing light trigger is taken from the coil-distributor wire, the flash occurs at each plug spark. The pulley dot is thus seen on #1 and #4 firings.

If they “dance about,” the points are not being opened each time at the same crankshaft position. This indicates that the cam is not uniform or proper, the distributor shaft wobbles in its bearings, or the points are not aligned or are making non-uniform contacts.

With the **second** dot (contrasting **orange or green color**) placed 180° from the white dot (#2 or #3 piston TDC), the flash now occurs at each cylinder firing. The dots are illuminated in sequence of firing order. 1-2-4-3. With a uniform cam, tight distributor shaft and bearings, and good points, the two dots should fall on top of each other (the same indicated crankshaft degree position) at all speeds.

If there is a constant degree separation of the dots but no “dancing about,” this indicates that the 180° marking is in error by the degrees of separation. “Dancing about” of the second dot alone can be observed by taking the “trigger” from the #2 or #3 spark wires.

At very low idle speed it is possible to see that the alternate dot colors-a missing one-indicate a misfire (no plug spark), which can help identify the misfiring cylinder.

Focusing the timing light on the kit distributor cap permits observation of the rotor, cam, points, and electro-mechanical operation under running conditions. This kit can identify arcing at advance and retard positions. The rotor brass contact positions and arcing can be seen at retard, intermediate, and full advance positions. There should be no rotor contact with the distributor contacts; motion to each side at the extremes of retard and advance should be equal.

Cam wobble and point motion can also be observed for uniformity of action. Internal arcing to ground or adjacent distributor contacts can also now be observed.

*If you follow these instructions and use these tools, you will have a "FINE TIME!"*

## **Timing the Ford Model 'B' Engine Using the NuRex Precision Timing Tools**

The 'B' engine timing gear cover offsets the timing pin in the advance direction so that it locates #1 piston at a crankshaft location 20 degrees Before Top Dead Center (BTDC).

True #1 TDC can be marked on the engine crank pulley by hand cranking the engine to let the pin fall into the timing gear dimple, then marking the true #1 TDC reference on the crank pulley with a paint dot at the advance 20 degree marking of the NuRex timing scale. The true #1 TDC position is now properly referenced.

The 'B' point plate has markings on its side arm at 0 degrees and plus/minus 5 degrees of point plate rotation. The resulting crankshaft timing change is then plus/minus 10 degrees around the 0 degree center marking.

The centrifugal advance of the 'B' distributor is a total of 14 to 15 degrees at the crankshaft.

### **To time the engine-**

- Hand crank to the ~ #1 TDC.
- Adjust the point plate to full retard position and lock with the screw.
- Rotate the loose distributor cam clockwise so the cam rotor cut-out notch is pointing toward the right fender and the points are rug about to open on the cam high point.
- Tighten the cam hold down screw not letting the cam change in rotation.

This timing procedure sets the spark at #1 TDC. The centrifugal 'B' advance will now 'advance' the timing by a maximum of 14-15 degrees BTDC at an engine speed of 1000 to 1100 rpm corresponding to 44-54 mph. If more advance or higher speed is desired the point plate must be moved in the advance rotation.

Movement will cause an 'advance timing' condition on engine start and idle- that is the compromise of the 'B' distributor.

An article on the NuRex Automatic Timing System with the necessary 30 degrees of advance is contained in the MODEL A TRADER winter 2000 / spring 2004 issue.

Reprints are available from MODEL A TRADER 1247 Argonne Rd., South Euclid, Ohio