Distributor Centrifugal Advance Test

PREPARATION: Connect as in Fig. 1. Test Selector Switch to TACH position. Engine running.

1. Run engine at approx. 500 RPM (double 8 cyl. readings for 4 cyl. engines).
2. Turn the distributor body until the maximum RPM reading is obtained on the Tach Scale (top).
3. With distributor in the maximum RPM position, increase engine speed to approx. 1000 RPM and try to increase speed still further by advancing or retarding distributor. Do not change throttle opening.

• If engine speed can be increased more than 100 RPM above previous reading by advancing or retarding distributor, then the centrifugal advance mechanism is not operating correctly and the distributor should be repaired.

4. Re-time the ignition system to manufacturer's specifications.

Cylinder Balance Test

A test for weak cylinders, valves or faulty plugs.
PREPARATION: Connect as in Fig. 1. Test Selector Switch to TACH position. Engine running.

1. Maintain an engine speed of approx. 900 RPM.
2. Short out each plug individually and note the decrease in RPM as each plug is shorted.

• Cylinders operating with below normal efficiency will not cause as great an RPM drop as normally-operating cylinders when plug is shorted.

• Where a weak cylinder is indicated, further testing with a Vacuum and/or Compression Tester is recommended. A weak cylinder may be caused by defective rings, valves, pistons, gaskets or plugs.

Air-Fuel Ratio Test

To determine quality of air-fuel mixture.
PREPARATION: Connect as in Fig. 1. Test Selector Switch in TACH Position. Air cleaner removed, engine running.

1. Maintain an engine speed of 750 RPM.
2. Watching tester, slide a flat plate slowly over air horn of carburetor to partially block off intake of air.

• An increase in RPM as air is blocked indicates a LEAN mixture.

• A decrease in RPM indicates a RICH mixture.

• Little change until air horn is almost completely blocked indicates an acceptable air-fuel ratio.

Air Filter Capacity Test

1. Complete AIR-FUEL RATIO TEST.
2. Replace Air Cleaner with engine running at 750 RPM. Note reading.

• A reduction in RPM as Cleaner is replaced indicates dirty or damaged Air Cleaner.

Carburetor Adjustment

Proper carburetor adjustment cannot be made if engine performance is otherwise faulty.

1. Adjust idle speed screw on carburetor to give RPM as specified by engine manufacturer.
2. Adjust idle mixture screw to obtain highest possible RPM. (If equipped with more than one mixture screw, adjust alternately to get highest RPM).
3. If the engine speed increased above specified RPM, reset idle speed to specification and recheck idle mixture adjustment. Continue adjustment until highest RPM mixture adjustment and idle adjustment match at the specified idle speed.

OPERATING INSTRUCTIONS

TACH-DWELL-POINTS TESTER

THE INSTRUMENT

Three important instruments combined in one easy-to-use, ruggedly-constructed unit. Saves time when measuring engine RPM and when checking primary ignition system and adjusting distributor cam angle. Highly-readable, large, wide angle dial displays 4 functions: low RPM Tach, high RPM Tach, cam dwell, and points condition. Separate graduations for 6 & 8 cylinder engines color-coded GREEN for 6 cylinder and black for 8 cylinder (double 8 cylinder readings for 4 cylinder engines). Can be used with 4, 6, or 8 cylinder, four-cycle engines with 6 or 12 volt, negative or positive ground systems.

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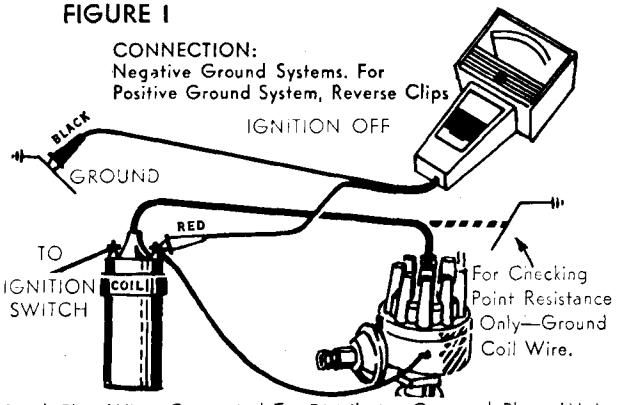
FIGURE 1



Spark Plug Wires Connected To Distributor Cap and Plugs (Not Shown in Illustration)

Distributor Test Sequence

By following this step-by-step procedure, a comprehensive check can be made of the Distributor and Primary Ignition circuit in the minimum of time. If desired, individual unit tests can be made by referring to the specific headings below. (However, excessive point resistance will reduce the accuracy of other readings taken. Therefore, test the points and make adjustments as required before making any other test).

Testing Point Resistance

PREPARATION: Connect as in Fig. 1. Test selector switch to dwell position. Remove high tension wire from distributor cap center terminal and connect to a good ground.

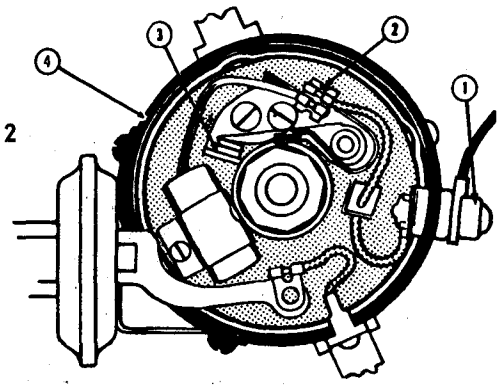
1. Turn ignition on.
2. If meter reading is 60° or 45° on the dwell scale, switch the Test Selector switch to Points Condition. If meter reading is in the green on bottom scale, the points are in good condition. Proceed to Cam-Dwell Angle Test.
3. If the Dwell reading is 0°, the points are open and must be closed to complete the test. Rotate the cam lobe by slowly cranking the engine with starter until the points close and a 60°/45° reading is obtained. (A Remote Starter Switch can save time and add convenience to this task). Now proceed as in Step #2.

• If low reading is still above the green, (a) Tester lead clips are not making a good connection or (b) there is excessive resistance in the breaker circuit. Check (a) by wiggling clips at point of contact and observing meter for changes in reading. To check for excessive resistance (b), follow the steps below.

Locating Point of Excessive Resistance

This is a step-by-step check of the distributor to determine which portion of the circuit is causing the trouble. Through a process of elimination, proceed through the steps until a reading in the GREEN is obtained. The step prior to the green reading will be the portion of circuitry needing attention.

FIGURE 2



1. Complete POINT RESISTANCE TEST above.
2. Be sure ignition is ON.
3. Move Tester lead ground (black) clip to body of distributor.
4. Move the ungrounded (red) Tester clip from coil to distributor terminal (as shown in Position 1, Fig. 2.) This checks the connections and wire between the coil and distributor.
5. Remove Distributor Cap and Rotor. Move clip from Pos. 1 to Pos. 2, checking pigtail and connections.
6. Move clip from Pos. 2 to Pos. 3, checking for poor connections at the spring support, rubbing block, rivet and breaker contacts. (NOTE: A reading in the green at this point generally indicates that the breaker points assembly should be replaced).
7. Move clip from Pos. 3 to Pos. 4, checking the ground pigtail and connections. An "O" reading at this point indicates good grounding of the breaker point assembly. After determining point of excessive resistance, repair, and retest for verification.

Cam Dwell Angle Test

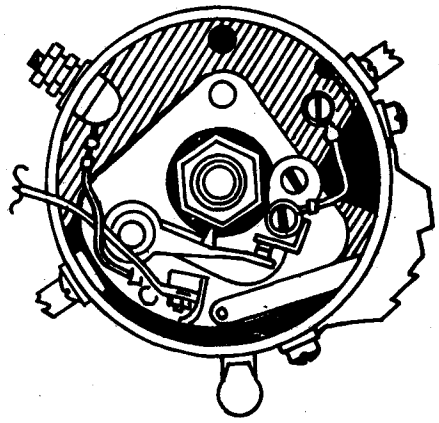
The Cam Angle should first be determined from engine manufacturer's specifications.

PREPARATION: Connect as in Fig. 1. Test Selector Switch to DWELL position.

1. With engine idling, observe reading on the DWELL Scale. Adjust points as required. Double 8-cylinder readings for 4-cylinder engines. (NOTE: Any adjustment of the cam dwell angle will normally require retiming of the ignition system).
2. Slowly increase engine speed and return to idle, watching meter. Repeat 2 or 3 times, checking for variation.
3. Increase speed suddenly 2 or 3 times to force vacuum advance unit into operation.

• In Steps 2 and 3, the dwell angle should have remained constant (within 2 or 3 degrees). A greater variation in cam angle indicates (a) a distributor with a pivoted type breaker plate (See Fig. 3 for comparison) or (b) a repair problem such as a worn distributor shaft, bushing or worn breaker plate.

FIGURE 3



PIVOTED BREAKER PLATE TYPE

This type of distributor is designed to change dwell with a change in RPM and on some models the reading will decrease as much as 12 degrees.