

ENGINE ADJUSTING PROCEDURE

In order to assure a properly adjusted/operating engine, the following procedure has been developed. It attempts to gather information from numerous sources into one comprehensive document. It should be noted here that this document encompasses only one way to perform the various operations. Others based on favorable experiences, hearsay or from other sources may have been found to be as satisfactory with regards to final results.

It is strongly recommended that each step of this procedure be performed in the order given. Doing just one portion of it will not give the desired results. Remember a mechanical or electrical part wears out and to reuse parts with what may seem to be "some useful life" may result in being stranded on the road somewhere with only somewhat more expensive alternatives to get back home or to your destination.

SO HERE GOES!!!

1. Run engine or drive car to get engine to normal operating temperature.
2. COMPRESSION CHECK
 1. Remove all plugs and rack in order (1, 2, 3, etc.).
 1. Inspect plug electrodes for corrosion, pitting, oil deposits, etc.
 2. Check porcelain for cracks.
 2. Check compression in each bore with a reliable compression gauge.
 1. Open throttle completely (tie or wire open).
 2. Record each compression reading.
 3. Note relationship of all readings.
 1. 120-150 psi is normal.
 2. Under 100 psi - there is a problem
 1. Rings worn or, broken.
 2. Valves or valve seats burned or broken.
 3. Head gasket damaged.
 3. Variation greater than 10% indicates a problem.
 1. Rings worn or broken.
 2. Blown head gasket.
 3. Valve or valve seat damaged.
 4. If compression is low, add $\frac{1}{2}$ to $\frac{3}{4}$ ounce 30 wt. oil to that cylinder.
 1. If compression reading comes up, rings are worn or broken.
 2. If compression does not come up, suspect valves.

3. If low compression is in adjacent cylinder, suspect head gasket.

3. DISTRIBUTOR

1. Remove distributor, cap and rotor, recording position of key or rotor during removal.
2. Remove ignition wires. Mark ignition cables with the cylinder number.' A permanent taped marking is desirable.
3. Inspect distributor cap, rotor and ignition wires.
 1. If cap electrodes are indented or burned then replace.
 2. If end of rotor contact is burned, corroded, rough, etc. then replace.
 3. Always replace cap and rotor as a set.
 4. If ignition wires show signs of cracking or fraying, then replace all wires including coil wire.

NOTE: Carbon wires produce less radio interference, but can only be used on SPRITES and six-cylinder big HEALEYS due to the method of securing to the distributor cap. The four cylinder 100 requires a solid core ignition cable.

5. Clean all dirt, oil and grease from all components, if they are to be reused.
4. Inspect points.
 1. Each contact should have at least 1/16" material with no pitting or material buildup.
 2. If points are beyond filling to meet this criteria-replace.
5. Inspect distributor.
 1. Inspect for cracks in the body of the distributor.
 2. Check distributor shaft for wobble. With point follower on a lobe and points just closing, move shaft back and _ forth. If points open 0.003" or more, shaft bushing is worn too much to hold a point setting. The only cure for this is to rebush the distributor.
 3. Move advance plate and let spring back to determine if the plate is free moving.
 4. Remove plate to see if springs are still intact. If removing springs and weights, record the installation positions.
6. Reassemble distributor.
 1. Install points and set at 0.014"-0.016".
NOTE: a matchbook cover is approximately 0.015" and is an acceptable "field fix".
 2. Always replace the rotor when replacing points.
 3. It is much simpler to set the point gap with the distributor out of the car.

4. Lubricate lobe cams and the point follower block.
7. Replace distributor to engine-recall your record of location of the distributor drive.
8. Seal wires and distributor cap with waterproofing spray (i.e. Silicone).

4. ADJUSTING VALVES

1. Remove valve cover and seal. Clean oil, etc. from cover and clean valve cover gasket sealing surface on both valve cover and cylinder head.
2. Inspect rocker shaft for excess wear.
 1. Release load on several rockers by loosening adjusting nut.
 2. Slide rockers away from its position.
 3. Note wear on shaft. If dark brown in color and scored, and there are signs of puddles of oil in top of cylinder head, you may have excessive wear.
 4. Other indications of a worn rocker shaft is an oil clogged rear air cleaner, excess oil in vent breather and burning oil with good compression.
 5. Inspect springs and washers on rocker shaft assembly for broken parts.
3. Adjust valves to 0.012" with the engine either cold or cool. If the engine is cold adjust to the high side of 0.012".
4. To adjust the valves using the "magic 9" or "magic 13" system.
 1. On four cylinder cars (magic 9).
 1. Turn engine until #1 rocker (at-front of engine) rocks in the valve open position.
 2. Loosen locking nut on rocker adjusting screw of valve #8 (#1 + #8 = 9).
 3. Insert feeler gage between valve stem and rocker.
 4. Tighten rocker adjusting screw until the two surfaces just drag on feeler gage.
 5. With screwdriver still in slot of adjusting screw, tighten locking nut.
 6. Turn engine until #2 rocker rocks in the open position (#2 + #7 = 9).
 7. Follow steps 4.4.1.2) through 4.4.1.5) and continue until all valves are adjusted.
 5. On six cylinder cars (magic 13), use same procedure as on four cylinder cars except that valve #1 + #12 = 13, hence "magic 13".
6. Replace valve cover and gasket (always replace with new valve cover gasket if gasket is compressed more than 1/8"). It is a good idea to use a non-hardening adhesive (i.e. Silastic) to secure the gasket to valve cover (not cylinder head). This helps to maintain the position of the gasket.

5. SPARK PLUGS

1. A spark plug is designed to operate at 95-100% efficiency for about 200 miles. The efficiency then drops quickly to a somewhat lower level for the rest of its life. Therefore, it doesn't pay to be economical when considering the replacement of plugs. At today's gasoline prices a \$5.00 to \$10.00 investment in new plugs can be made up in a season's driving and give you a much more reliable and smooth running engine.
2. Gap each plug to 0.025" (0.08 mm).
3. Use the recommended plugs for the various models:
4. When installing plugs, turn in finger tight, then tighten 1/6 turn (one flat of hex on plug), in no case more than 1/2 turn.

6. ADJUST TIMING

1. (See other paper on timing).

7. ADJUST CARBURETOR

1. This is the last step in the procedure.
2. The engine should be up to normal operating temperature, and unless all other parts of the system are properly adjusted, proper carburetor adjustment is a useless exercise.