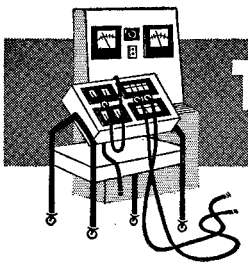

TUNE UP CLINIC

by Bill Corey

TUNING THE 190 SL

From Edward Jahns of Los Angeles comes some timely data about tuning the Mercedes-Benz 190SL. Mr. Jahns' thirst for factual knowledge has led him to peruse thoroughly the very complete owner's manual, to purchase a factory workshop manual, and to experiment on his own hook to arrive at a set of prime specifications for tuning. While we cannot vouch for his conclusions from personal experience, as the tuning procedure we use ignores almost all dogmas, Mr. Jahns states that these specifications transformed his 190. (So that our remarks about "dogmas" will not be misunderstood, we hasten to add that the use of complete instrumentation in tuning work usually makes it possible to ignore basic specifications and proceed on the basis of settings which are best for individual engines. As examples: coil saturation and discharge can be seen on the screen of the cathode ray oscilloscope. The dwell angle necessary to achieve maximum saturation, etc. may, or may not, coincide with the engine builder's specifications for distributor point gap, depending upon the variables in the individual ignition system of the car being tuned. By the same token, the manufacturer's specified static timing setting may, or may not, be correct for the particular car, depending upon the amount of carbon accumulation, fuel, etc. The chassis dynamometer is used to determine the best setting and, in some cases, the best advance curve for the particular set of circumstances.) From our parenthetical remarks, however, it can be realized that strict adherence to factory settings is best if expensive equipment and skilled operators are not available.

Step-by-step, Mr. Jahns' suggestions for tuning follow, with an occasional editorial remark or clarification from your author:

1. Use Champion N8B spark plugs, gapped at .022". These help cure "running-on" symptoms. (We concur.)

2. Set the breaker point gap at .014", or 52 to 55 degrees dwell.

3. Rotate the engine by hand until pointer on the flywheel housing coincides with the TDC marking on the flywheel with #1 piston just completing its compression stroke.

4. Since the 190 engine will not idle satisfactorily at a speed low enough for the centrifugal advance weights to be inoperative, it is necessary to set ignition timing with the engine *not running*. This can be accomplished with a conventional timing light, or by use of a light bulb in series with the points. Turn the instrument panel timing control to its extreme counter-clockwise position, then turn clockwise about fifteen degrees. Loosen the distributor clamp bolt, rotate distributor towards advance, turn on ignition switch, retard distributor until light just goes out. (If using a timing light, turn towards retard until light comes *on* or flashes.)

5. The static timing setting on all 190 distributors used to date (except VJ4BR11) is between 0 and 2 degrees BTDC. (Since it is not possible to set the timing this accurately, using the methods described by "the book," "which-distributor-is-which" is merely a matter of academic interest. Any minor changes can be made with the control on the instrument panel. This could also apply to distributor VJ4BR11, as the timing specified with it is 9 degrees BTDC, plus or minus 1 degree which is well within the range of the panel control. With this distributor, it is suggested, however, that the static setting be made as close to 9 degrees as possible.)

6. Set adjustment on lever controlling rear carburetor throat counter-weights so that no play exists when throttles are at idle.

7. Check idle jets in carburetors. Replace with #955 if not already installed. Replace mixing tubes with #43 if necessary. Replace calibrating sleeves with #000 071 03 40.

8. Proper accelerating pump stroke is evidenced by ejection of two to three cubic centimeters of fuel per *five* strokes. Measure with calibrated graduate and adjust as necessary with screw and lock nut on each lever. (Don't confuse emptying the float bowls of fuel with improper quantity. Prime carburetor as necessary with hand primer on fuel pump body.)

9. Turn secondary idling mixture adjustment screws on both carburetors lightly into seats. Turn primary screws lightly to seats, open each 1⅜ turns.

10. Set intake valve tappet clearance at .003", exhaust valves at .008", using the special Mercedes tappet tool. (Mr. Jahns will be surprised to learn that there is also an American wrench that fits these tappet screws better than the factory tool!) Specifications call for a dead cold engine, overnight cooling is best.

11. Engine is now ready to start, warm up by driving. Set idle adjustment screws (speed) to obtain 1200 rpm. On cars using distributor VJ4BR11 idle speed is 800 rpm. The throttle openings are synchronized by adjustment of the rod operating the rear carburetor throttle. (We suggest the use of a "Unisyn" or any other device measuring "above-throttle" vacuum for this operation. Recommended Mercedes procedure is, in our opinion, tedious and inaccurate as it depends upon the dubious acuity of human senses.)

12. Set idle mixture screws (primary) for highest steady rpm at the above throttle openings, reset and resynchronize idle speed screws for recommended speed of 1200 or 800 rpm.

13. Recheck secondary counterweights for no play at idle. Run engine at 2500 to 3000 rpm, block carburetor air intakes partially . . . secondary throttle should start to open at about 3000 to 3500 rpm. If not, check for clogged vacuum line in operating mechanism of secondaries.

ABOUT IGNITION COILS

The process of automotive ignition is so nebulous to the layman that he is fair prey for all the charlatans with trick intensifiers, "hot" coils, etc. Mr. Layman is not alone! Ignition and combustion are the two least understood processes among engineers, also. However, both John Q. and Mr. Scientist *should* be blessed with a modicum of common sense. Pick any car, for example, which has done well in the greatest endurance and speed contest of them all . . . Le Mans. The Jaguars which have won there at record speeds use the same coil as the XK, 2.4, or Mark VIII. In fact, here is a complete ignition system which duplicates the ones on normal British cars. Then there is Mercedes . . . cost no object, don't spare the luck or money. What do they use? Very conventional, just like any 300SL. What is the reason? These engineers have merely discovered that all *any* ignition system can do is to ignite the mixture. It doesn't matter how impressive the voltage is, or how pretty the blue of the spark, if the cylinder fires, that is that! May I suggest that you take a tip from some pretty successful people? The engineer doesn't recognize the words "hot," or "fat" spark, all he wants is combustion and he couldn't care less whether he gets it with one, or one million volts.

AND ABOUT RAPIERS

Our road test of the Sunbeam Rapier last month brings to mind that we recently performed some highly interesting modifications to a 1956 model of this car which created some new-found respect among the hard-noses in our shop. The Rapier engine, as any enthusiast knows, is simply a Hillman in wolf's clothing, which is quite a lot. Rootes did themselves proud when they designed this OHV square four and it responds remarkably well to modifications. It is nearly impossible to overstress, with an extremely robust crankshaft and generous bearing overlap. The combustion chamber design lends itself to quite sizeable increases in CR, and the valves are adequate for other than all-out racing. Our modifications consisted in transforming the eight-port head to accept four carburetors and a dual header exhaust system. Compression ratio was boosted to 9.5 to 1 by the use of special .080" oversize