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SHOP TALKS

for

INTERNATIONAL TRUCK SERVICEMEN



INTERNATIONAL HARVESTER COMPANY
(INCORPORATED)

180 North Michigan Ave.

CHICAGO, ILLINOIS

TUNING-UP the HD ENGINE

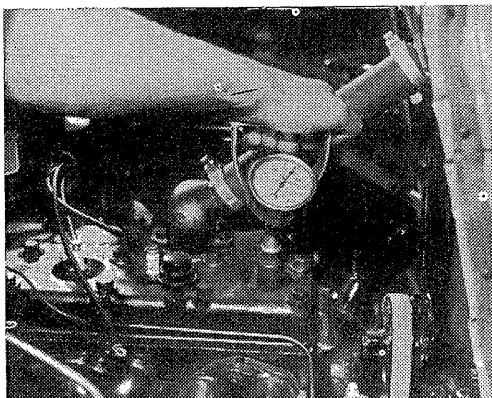
By H. L. CARR
Service Manager, Motor Trucks

In previous issues we have dealt with repair operations on HD Engines as used in International motor trucks. Little has been said about the fuel and electrical sections of the engine.

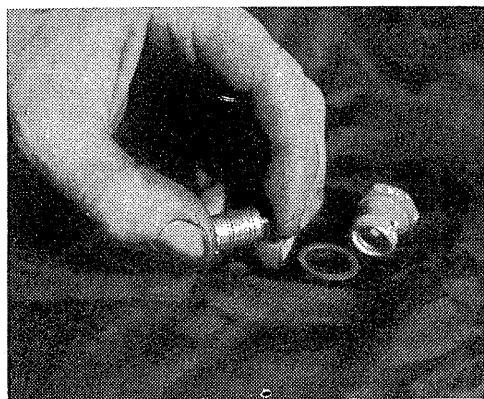
Complaints of poor fuel economy, hard starting, and general unsatisfactory performance of the truck are often traceable to carburetion, to the electrical circuit, or both.

Equipment illustrated in the following discussion and shown under the various SE Numbers is available to International motor truck dealers to assist them in prompt and proper service.

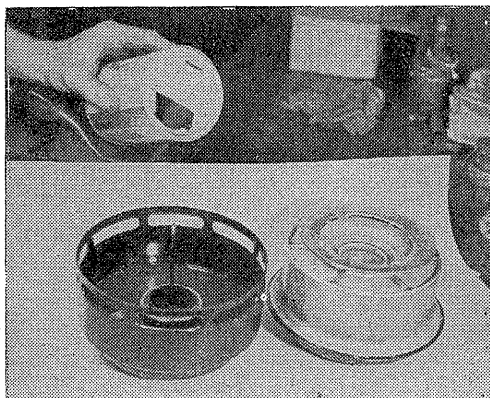
Let us follow through with the mechanic who has been assigned a tune-up operation.



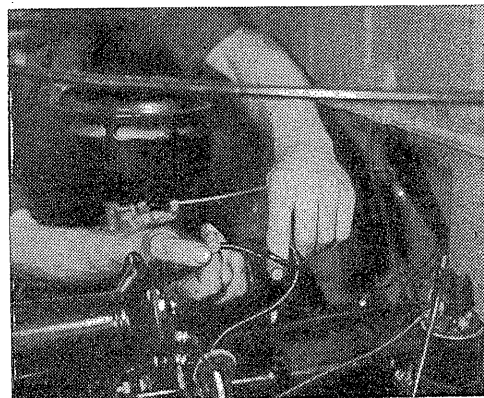
1. A tune-up will be of little value if the valves are in poor condition resulting in low and unequal compression in the cylinders. A compression test should be made to establish that compressions of the cylinders are equal to within ten pounds of each other. The mechanic is shown using a Compression Tester SE-834.



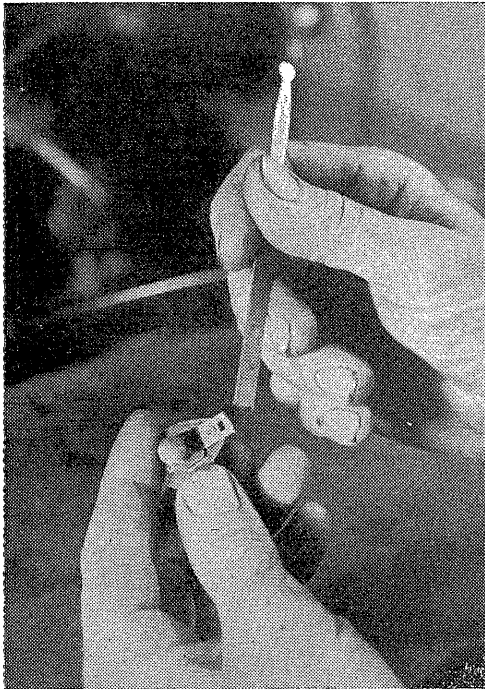
3. Carburetors having a filter element incorporated should have the element removed and cleaned. Remove the fuel pump bowl and clean or replace the screen. If filter element is in fuel pump, it should be cleaned. Clean bowl and reinstall.



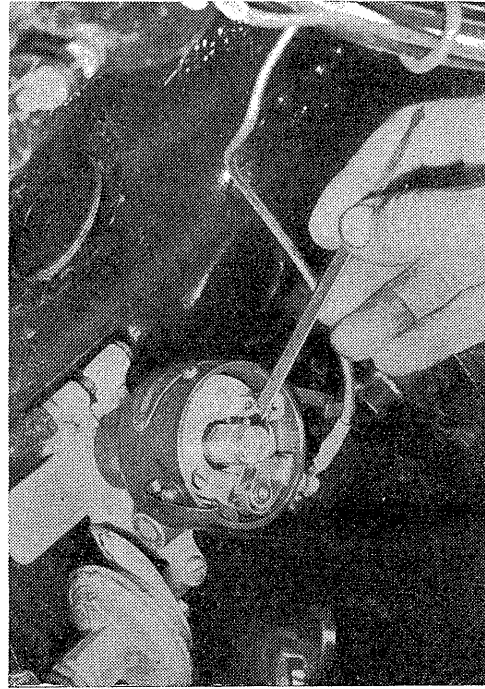
2. Remove air cleaner, dismantle, and clean in a Stoddard Solvent solution. Refill oil base to the marked level with new oil. Reinstall air cleaner. Make sure that all connections including manifold studs, are tight and dust free.



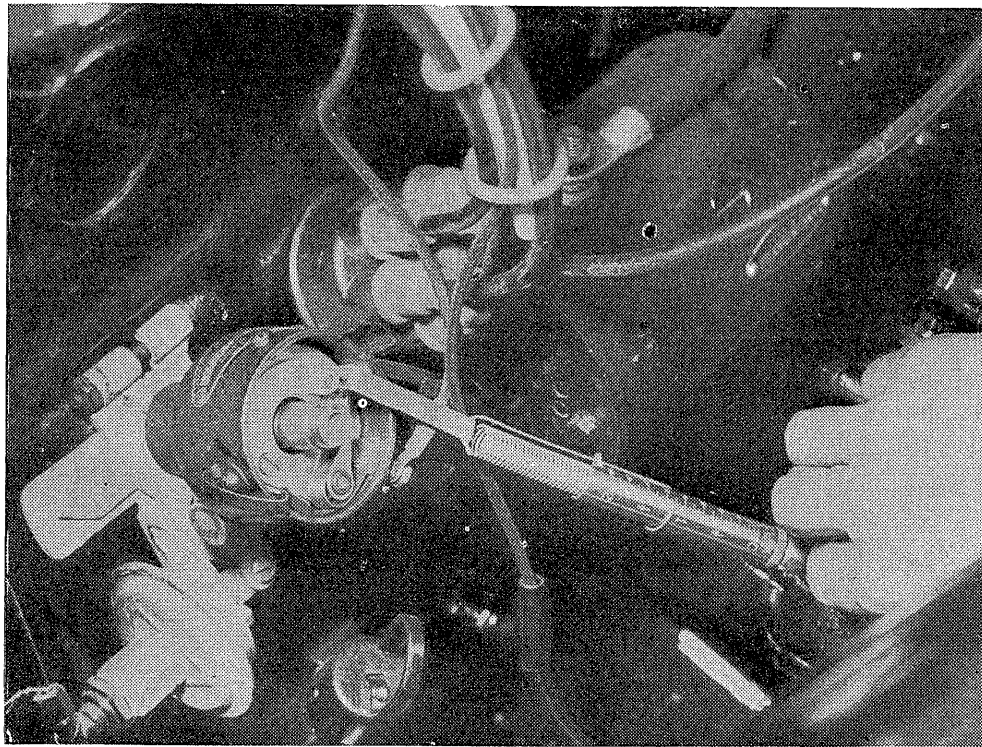
4. Check the high tension (spark plug) wires for faulty insulation and for faulty terminals. Faulty insulation will appear brittle and will crack easily when wrapped around the finger. Test as shown and replace wires if cracks appear, for otherwise current loss will result. Replace terminals if necessary.



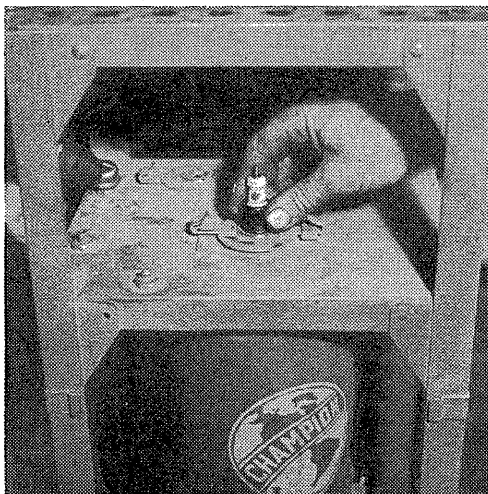
5. Clean and check distributor cap for cracks or corrosion. Corrosion causes current loss, and cracks cause misfiring. Inspect distributor rotor block. If contact is excessively burned, the rotor should be discarded. Otherwise it may be dressed with a point file as shown.



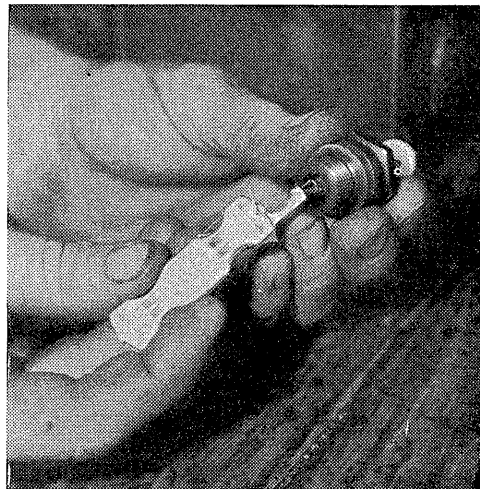
6. Clean and space distributor points to .018" to .024". A point file may be used to clean points. Do not file excessively. If a cam-dwell meter is used, the proper cam-dwell is 35, and points should be adjusted accordingly. Distributor points must seat squarely or pitting will result.



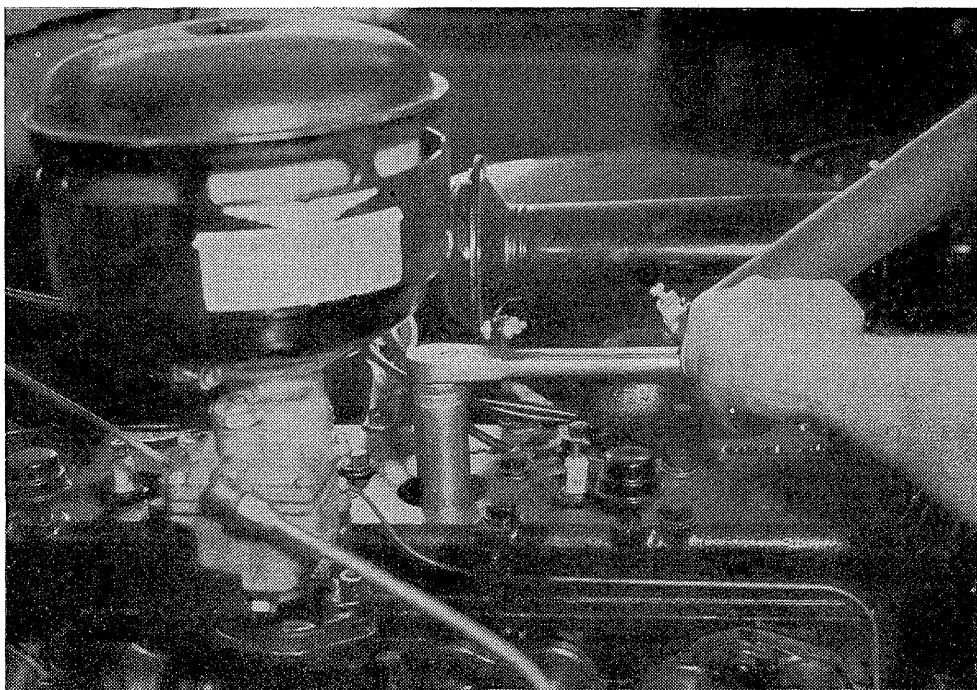
7. Distributor points are designed to operate under a tension of 19 to 23 ounces. The mechanic is testing the spring tension using an SE-1189 Spring Tension Scale. Tension may be increased or decreased as required by bending the point arm slightly. It will be necessary, then, to replace points. Reinstall distributor cap.



8. Remove and clean spark plugs. The mechanic is shown cleaning a spark plug in the SE-861 spark plug cleaner. Plugs having burned electrodes or broken porcelains should be discarded. Blistered porcelains indicate that the wrong type plug is being used and a change of heat range should be made.



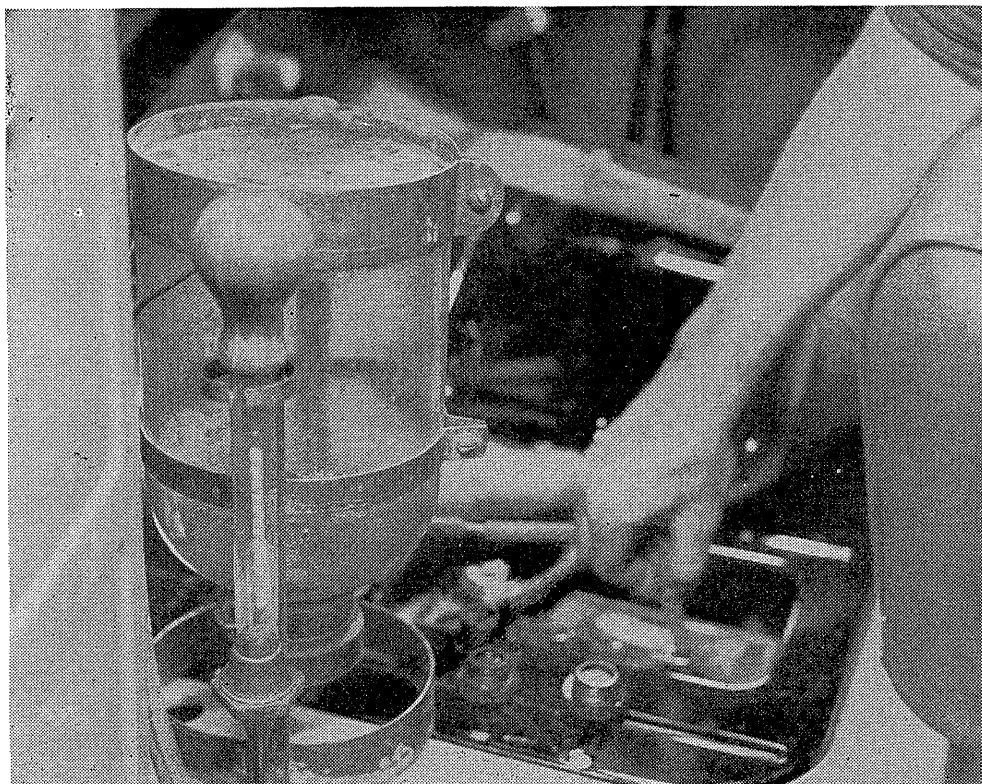
9. Regap spark plugs to .028" to .032" using a round-wire gap gauge. The gauge in use in the illustration is the SE-1152 Spark Plug Gap Gauge. Each mechanic should include a similar one in his tool kit. Flat gauges are inaccurate and impractical.



10. Reinstall spark plugs using new gaskets. Use a properly fitting socket wrench for an ill-fitting socket as an end-wrench may slip and damage the porcelains. Do not exert excess pressure in tightening plugs. Only sufficient pressure to compress the gasket is required. Connect spark plug wires.

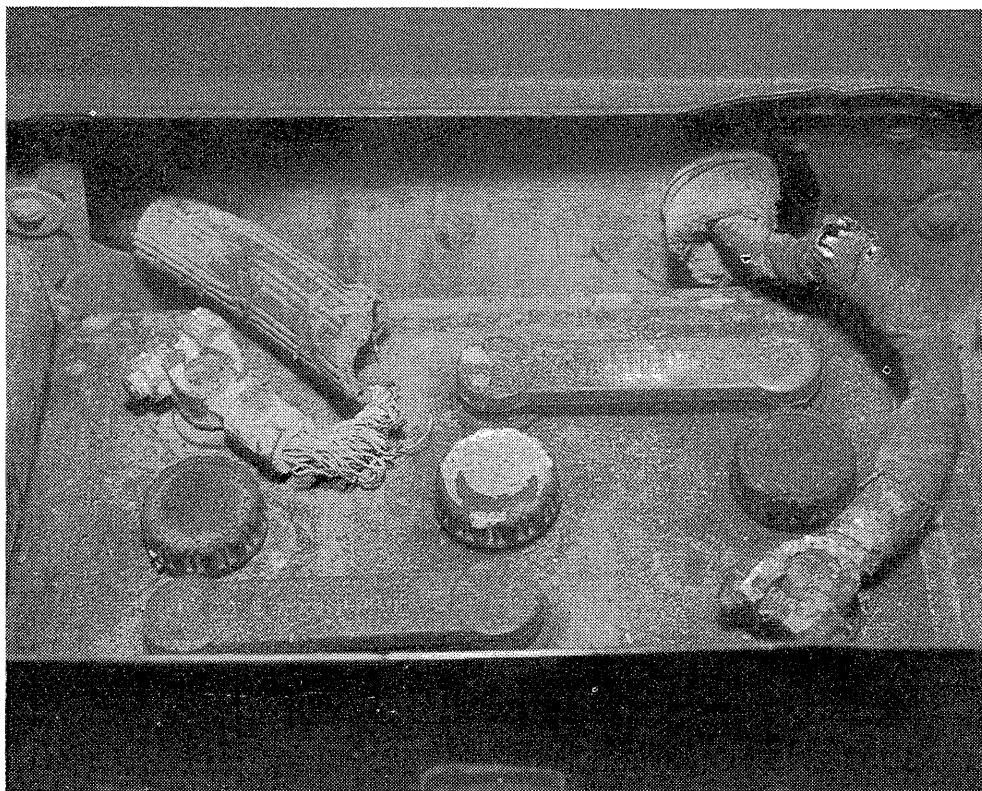


11. Specific gravity of each battery cell should be taken with a hydrometer similar to the SE-616 Battery Hydrometer shown in the illustration. Specific gravity readings of 1.225 or less indicate the need of a battery recharge.

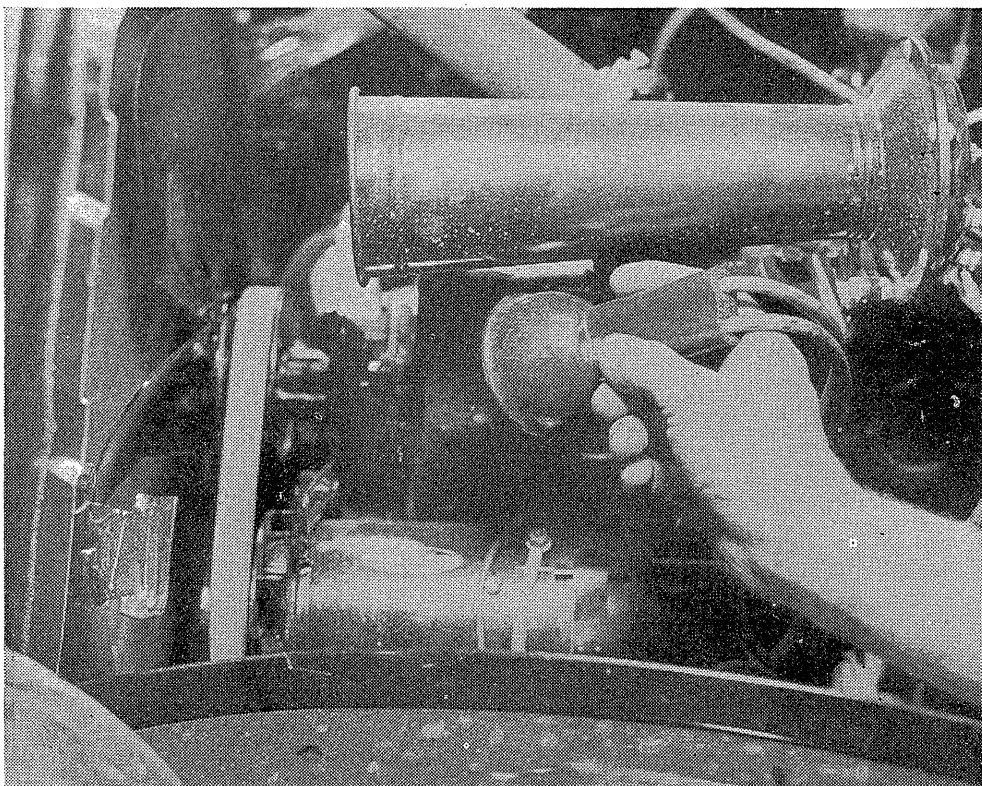


12. Water level should be corrected to $\frac{3}{8}$ " above the separator plates. Add only distilled water. The water filler bottle shown is the SE-617 Battery Water Filler. Reinstall vent caps after ascertaining that the vent holes are open. **CAUTION—Keep open flames away from storage batteries.**

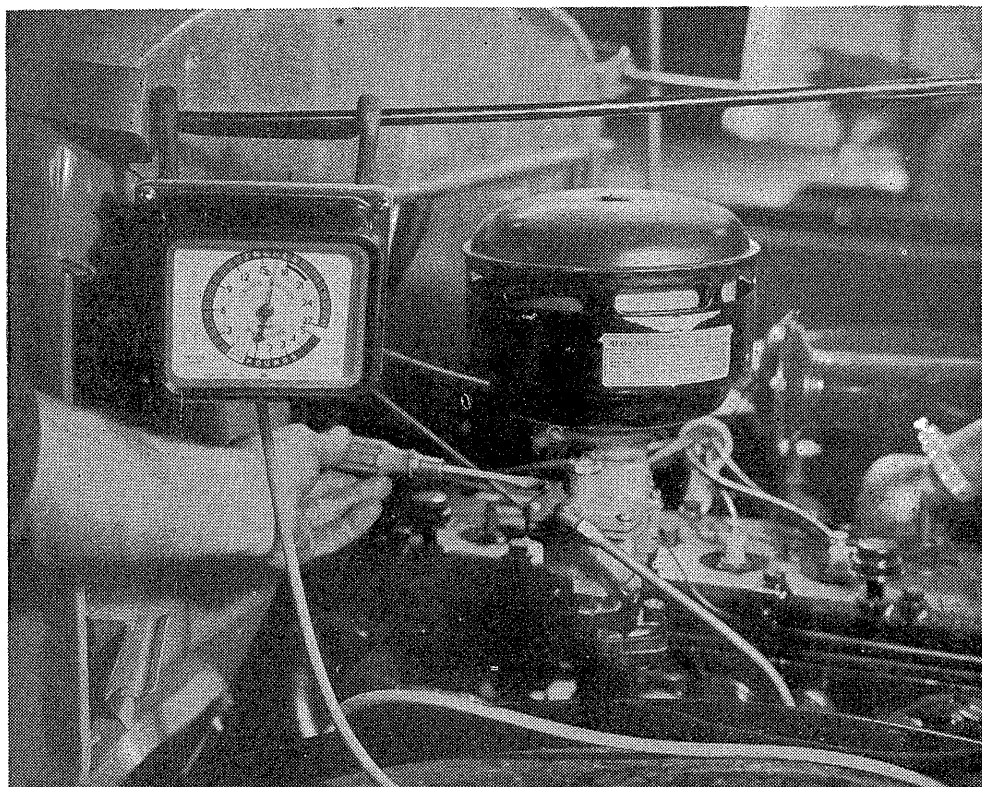
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13. Check battery cable connections and the condition of the cables themselves. Worn or frayed cables and connections as shown must be replaced for they affect a material current loss. The battery ground connection must be clean and tight. A poorly grounded terminal will cause hard starting and poor operation. Sulphated terminals can be easily cleaned with common soda and water.



14. Check ignition timing, using a synchroscope or timing light. An instrument similar to that shown is available under SE-939. A chalk mark on the crankshaft pulley notch will facilitate the synchronization operation. Engine speed should be at approximately 350 r.p.m.



15. Adjust carburetor idle speed to approximately 350 r.p.m. A vacuum gauge similar to the SE-1199 Vacuum Gauge shown should be attached to intake manifold and used, unless a combustion tester (exhaust gas analyzer) is available.

If a vacuum gauge is used in making the adjustment, the air should be adjusted to that point where the highest possible steady vacuum reading is obtained—generally found to be from 19 to 21 inches.



16. As an added service to your customer, make sure that there has been no grease left on the fenders, steering wheel, shift lever, etc. Wipe off the windshield and head lamps. This extra attention is due the customer, costs practically nothing, and will gain the appreciation of the driver of the truck.

Road test the truck and take the ~~customer~~ **customer** ~~with you~~ **with you**, if possible. A test run will give you assurance that the tune-up has been successful.

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