

HUDSON MOTOR CAR COMPANY

MECHANICAL AND TECHNICAL BULLETINS

1937 SERIES

Maintenance Procedures - 1931-1937
Carburetor Maintenance Notes - 1931-1937

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No. 37-1

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Form 8102

Valve Guides

1933-37 - Use a special valve stem guide remover to drive the guides out. When replacing the guides use a special valve stem replacer. This tool is especially designed to drive the guides so that the top, in the six-cylinder engines, is 1-1/16" below the top of the cylinder block and in the eight-cylinder engines, 15/16". This position of the guide must be accurately maintained. After the guides are replaced they should be reamed .002" larger than the valve stem.

MAINTENANCE
PROCEDURES -

1931-1937 -
HUDSON, ESSEX
& TERRAPLANE

II. Tappets

1933-37- The tappet and guide assemblies can be removed without removing the cylinder head as follows: Remove the tappet chamber from the right side of the engine. Remove the valve spring seat retainer spring seats, spring dampener, and spring. Remove the tappet adjusting screw and replace by a short screw with a thin head. Remove the tappet guide clamp screw and clamp. The tappet and guide assembly can then be lifted out. If the complete set is to be replaced, remove cylinder head and valves and then remove tappet assemblies

III. Valve Timing

1931-32 Essex - The peep hole is on the right front side of the flywheel housing. Remove No. 6 spark plug and crank the engine until No. 6 piston is coming up on the compression stroke. Crank until piston passes TDC and the line 10 on the flywheel registers with the pointer on the peep hole. At this point No. 1 intake valve tappet should be tight and the valve about to open. To set the sprockets, remove the chain case cover# the sprockets each have a punch mark. When Nos. 1 and 6 pistons are at TDC there should be 21 links between the marks on the sprocket, with pins Nos. 1 and 2 in the teeth with the marks.

1931-33 Hudson - Same as 1931-32 Essex, only remove No. 8 spark plug.

1933 Terraplane & 1934-37 all - Correct timing is obtained by meshing the punch marked tooth of the crankshaft gear between the two punch marked teeth of the camshaft gear.

IV. Pistons and Rods.

1930-31 - Hudson 8 - Move assembly upward until pin is exposed and remove pin. Remove piston from top; rod from bottom.

1931 Essex, 1932-37 all - The piston and rod assemblies are removed from above after removing the cylinder head. Be sure to mark the assemblies so that they will be returned to the bore from which they were removed.

V. Pistons, Renew

1934-37 - The code letters stamped on the cylinder block along the lower flange of the valve chamber designate the original size of each cylinder. The piston size, code letter, and weight in ounces and quarter ounces stamped on the head of the piston will help in selecting pistons correctly from stock. In addition to size and weight marks all original piston installations are numbered to indicate the cylinder block number and the number of the cylinder in which the piston is fitted. Use 1935 type piston with one ring below pin, in 1934 cars.

Where a single piston is selected it should be of the same weight as the piston removed. Complete sets of new pistons should always carry the same weight stamp on all pistons. Unequal piston weight will cause rough engine operation.

After selecting a piston by the code letters, place it in the cylinder in which it is to be used with a .0015" feeler directly opposite the skirt slot. The position of the feeler is important due to the cam grinding of the skirt. If the piston is the correct size, the feeler can be removed by exerting from 3 to 4 pounds

The table (below) gives the cylinder bore sizes from standard to .020" oversize for which pistons are available. Opposite each cylinder size is given the cylinder code (if any), the code letter of the correct piston size, and piston ring size.

It will be noted that the same ring size may be designated for more than one piston size. It is advisable to hone the cylinder to the smallest dimension for which a given ring is recommended. This gives a minimum piston ring gap. Always check rings to see that the gap is not less than .005".

Piston & Ring Fitting Table
1931-1937 Hudson

Cylinder		Piston Code	Piston Ring Size	Cylinder		Piston Code	Piston Ring Size
Size	Code			Size	Code		
3.000	A	B	3.000	3.0105	BO	BO	3.010
3.005	B	B	3.000	3.011	CO	DO	3.010
3.001	C	D	3.000	3.0115	DP	DO	3.010
3.0015	D	D	3.000	3.012	EO	FO	3.010
3.002	E	F	3.000	3.0125		FO	3.010
3.0025		F	3.000	3.015		LO	3.015
3.004		J	3.003	3.020		BB	3.020
3.005	AO	L	3.005	3.020		DD	3.020
3.010		BO	3.101	3.022		FF	3.020

VI. Pins, renew

1934-37 - Select the pin so that it can be pushed into the piston boss with the heel of the hand when the piston is heated to 200° F. Heat the piston in boiling water or in an electric furnace. Heating with a blow torch or other concentrated heat or driving the pin in or out of the bosses will distort the piston. After the proper sized pin is selected, replace the connecting rod upper bushing and ream or burnish to .0003" larger than the pin. If this fit is correct the connecting rod will just turn on the pin under its own weight. when the rod is held in a horizontal position.

VII. Rings, renew

1934-37 - When fitting the pinned type piston ring, the gap between the ends of the ring and the clearance between the pin and the ends of the ring are equally important. The rings are cut and matched to fit the pin so that the clearance at the pin is equal to the gap between the ends of the ring. In other words, if the ring is compressed so that the ends come together there will be no clearance on the pin. If the ends of the ring are filed in fitting it is necessary to file an equal amount in the pin notch to maintain pin clearance. Filing should, however, not be necessary.

Piston rings of the pinned type are supplied in exact sizes to give a minimum gap of .005" when installed in a cylinder of the size for which the ring is designated. When oversize pistons are being fitted, the bores should be brought to a stock ring oversize. For example, a cylinder may clean up at .009" oversize. However, since no ring is available in this size it is advisable to hone the cylinder to .010" oversize rather than file the gap of - 1 set of .010" oversize rings to permit their use in a .009" oversize cylinder.

VIII. Main Bearing Caps

1934-37 - Use a puller to remove the front and rear bearing caps as sufficient force must be applied to shear the packing in the horizontal groove. After the cap is removed the packing should be thoroughly cleaned from the groove in the case and cap. After the bearing caps have been replaced and the stud nuts tightened and keyed, the packing should be replaced. Drive cotton wicking into the vertical holes of both the front and rear bearing caps.

After the rear main bearing cap has been installed, the lower half of the oil retainer should be checked to see that it fits tightly against the upper half. A gap between the two halves of the retainer will permit loss of oil. The rear main

bearing oil return tube is soldered in the rear of the reservoir and registered with the rear main bearing drain hole. Be sure the gaskets used between the reservoir and dip trough tray, and also between the tray and crankcase have holes in line with the drain tube. If these holes are not open, oil will be lost out of the rear main bearing oil slinger. A flapper valve is located on the bottom of the oil return tube to prevent oil from being thrown up the tube and out of the rear main bearing. When the reservoir is level, this valve should be slightly open. check the valve to see that it moves freely against the end of the tube.

ELECTRIC SYSTEM

I. Ignition Timing

All sixes - With No. 1 piston near the end of the compression stroke, the breaker points should open when the DC 1-6 or UDC 1-6 mark on the flywheel lines up with the peephole pointer.

All eights - With No. 1 piston near the end of the compression stroke, the breaker points should open when the DC 1-8 or UDC 1-8 mark on the flywheel lines up with the peephole pointer.

If the car has two breaker points, the foregoing refers to the stationary points. To set the movable points, crank the engine a quarter turn until the DC 3-6 or UDC 3-6 line registers with the peephole pointer.

To synchronize the points with a gauge, set them to the correct gap and time the stationary points. Two timing lines will be found on top of the rotor. Place the gauge on the housing so that its pointer registers with the forward mark on the rotor. Then loosen the adjustable plate fastening screws and move the plate until the points just open.

1933-37 - After timing the ignition, adjust the octane selector as follows: When running about 8 mph in high gear open the throttle quickly and fully. If a slight ping is heard between 10 and 15 mph the setting is satisfactory but if there is no ping, advance the distributor one graduation at a time until a slight ping appears but never advance the unit beyond the 3/4" advance mark.

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Form 8102

Downdraft-single - Turning the idle mixture screw in gives a leaner mixture. If the engine stalls while idling, reset the idle adjusting screw and the throttle lever adjusting screw. The normal position for the idle adjusting screw is shown in the table. If a good idle cannot be obtained in this manner, remove the low speed jet tube and inspect for dirt on foreign matter under the idle adjusting screw. If the needle end of the screw is badly scored, inspect for a chip in the needle seat and replace the scored needle with a new part. Clean the tube and all idle passages with compressed air. See that the tube seats air tight in the body casting, top and bottom. If not, replace with a new tube of identical specifications. Never change a low speed jet from one carburetor to another.

**CARBURETOR
MAINTENANCE
NOTES:**

1931-1937
Hudson, Essex
& Terraplane

The accelerating pump arm is provided with three holes for the connector link, giving short, medium and long strokes. The medium stroke is correct for ordinary temperatures and standard gasoline. The short stroke should be used in extremely hot climates, high altitudes, or with high test fuel. To set the pump arm lever it is necessary to remove the cover from the top of the accelerating pump. It is important that the countershaft operating the accelerating pump be lubricated when the cover is removed and at least every 5,000 miles. To lubricate the shaft, remove the screw attaching the dust cover and fill the threaded hole with a good grade of graphite grease. Increased resistance on the accelerator pedal indicates a clogged pump jet or bent connector link. The pump jet and ball check strainer should be removed and cleaned with compressed air. All jets and ball checks must be seated gasoline tight. In all cases when the pump jet is found plugged the metering rod setting should be checked with a metering rod gauge to be sure that it is as specified in the table.

Poor accelerating, stumbling on jerking may be due to loose plunger, worn or damaged plunger leather, or sediment in the pump cylinder, dirt under the ball checks, or defective relief disc checks. If it is necessary to replace the plunger spring or leather, make certain that the nut inside the plunger cup is screwed down tight to avoid air leaks. If the pump leather is stiff and not sealing properly, correct it by flaring out the bottom edge. Before replacing the bowl cover, depress the pump plunger to check for fuel by-passing back into the bowl through the relief disc. Not more than three or four drops should escape past the disc check. Always use a loading tool when replacing the plunger in the cylinder to avoid damage to the leather.

If the carburetor loads up after considerable service, the float level should be checked. Wear on the lip of the float lever will raise the float level. To check the float level, remove the dust cover. Disconnect the metering rod, throttle connector rod and plunger shaft. Take off the float chamber cover and remove the cork gasket from the cover. Invert the cover, holding needle seat away and the float in a horizontal position. Place a steel scale on the metal rim which holds the pump gasket. Measure to the nearest point on the float. The correct distance is shown in the table. To reset the float, bend the lip of the float lever. A very slight bend is sufficient. Be sure that the lugs on the float lever permit the float to drop at least 1/8" from the specific level when the float bowl is empty. When replacing the float bowl cover, use a new gasket and be sure the gasket seals air tight against the body.

Correct setting of the metering rod is important. If the metering rod is set too high in the jet, the fuel economy will be poor. If the metering rod is set too low, operation at part throttle will be jerky and missing may occur. The metering rod position should be checked when carburetors are serviced or when other than standard rods are installed. A gauge is necessary for checking the setting of the metering.

Carburetor Maintenance

1933-1937 Hudson & Terraplane

The mixture quality is controlled by a metering rod which operates within the metering rod jet, and is operated by the throttle lever. There are two or three steps of different diameters on this metering rod. The larger diameter, or economy step, controls the fuel flow to about seven-eighths throttle, when the smaller diameter, or power step, becomes effective, giving full power for either high speed or hard low speed pulling.