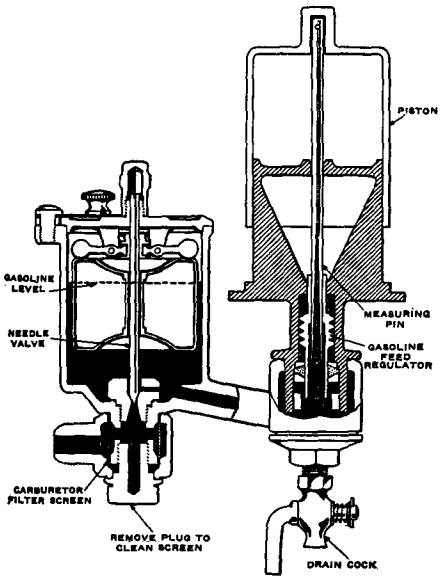
Hudsonotes

Column of Mechanical Miscellany
by George Schmidt
Mishicot, Wisc.

Hudson's Early Super-Six
(Part 2)

CARBURETION IS the next topic (after engine oiling) in the 1916 Hudson factory service manual. "It has been necessary to develop a special type of carburetor which can be depended upon to accurately proportion the mixture of gasoline and air at all speeds. . ." the book states. "This special type of carburetor may be said to be 'pneumatically controlled' since no action of the driver can possibly alter the proportioning of gasoline and air."

Two sectional views of the carburetor are shown. It is of single-barrel side-draft design, with the correct mixing of fuel and air controlled by a vacuum-operated vertical piston. Although equipped with a conventional float chamber and valve, in other respects it has little resemblance to most modern types, except perhaps the SU side-draft carburetors often found on Triumph and similar imported sports cars. (For picture of Hudson's 1921 version, see July/August '85 *WTN*, p. 24.)



Carburetor Gasoline Level

"The gasoline measured out by the metering pin [attached to vertical piston] may be varied by the gasoline feed regulator which is connected to the lever on the dash. In cold weather it is to be expected that a little richer mixture will be required. In warm weather, it may be set to a leaner mixture. For high altitudes, where air is at a lower atmospheric pressure proportionately less gasoline will be required. These adjustments are immediately accessible to the driver. There are no nozzles to change no matter what the conditions require . . . .

"It is obvious that if the maximum performance is needed, more fuel will be required to obain that performance. For the average user, or for the man who is interested in obtaining great economy, the mixture may be set to run as lean as the driver desires. Bear in mind however, that reducing the proportion of gasoline to air, gives a little less power and acceleration. Setting it to the right proportion (which must be found by adjustment, according to climatic conditions) results in maximum power, and consequently a little higher fuel consumption than some owners wish to tolerate.

"Aside from the periodical cleaning out of the screen at the base of the float chamber and draining off any water or sediment which may have accumulated below the regulator, there is absolutely no maintenance or intricate adjustment necesary."

A final illustration shows correct installation of the vacuum piston and its grooved needle (which today would be called a metering rod or pin). Groove faces toward engine, as does arrow on air bell.

VALVE TIMING of the engine is the next subject discussed in manual. The camshaft was gear-driven, but it appears that these early Super Sixes did not have cam timing marks on the gear teeth. They did have an "EC" (exhaust closing?) mark on flywheel, placed about 5/16 inch after the top dead center (DC) mark; and it was necessary to synchronize this carefully with the #1 (or #6) exhaust valve when reinstalling camshaft gear after engine disassembly. Procedure is described in book.

Also, the opening and closing points for exhaust and intake valves are shown on a circular diagram, but this may be somewhat confusing since the specifications are given in inches laid out on the circumference of a 13¾-inch diameter circle (the size of flywheel, no doubt), rather than being listed conventionally in degrees. Another diagram shows valve opening and closing points in relation to up and down movement of the piston.

Regarding correct valve tappet adjustment, the manual says:

"As the demand for motor silence is becoming more and more pronounced and there is a tendency for mechanics to heed owners in their demands for this extreme silence, the question of proper adjustment of tappets becomes important. This does not refer to instances where any one particular tappet is noisy to an unusual extent, but to instances where the general tappet noise of a motor is greater, in the opinion of the new owner, than that in some other motors he may have noticed.

"The lashing up of tappets with a minimum clearance on new cars results in cut push rods and cams. If it were possible to get all Hudson owners to drive their cars with a .005" to .006"tappet clearance for the first 500 miles, the wearing of tappets and cams would be practically unknown. If owners could be made to appreciate what this means to them in the ultimate life and economy in operating the car, they would certainly be glad to drive their cars with a little more noise until the parts were worn in and could be tightened with safety. . . .

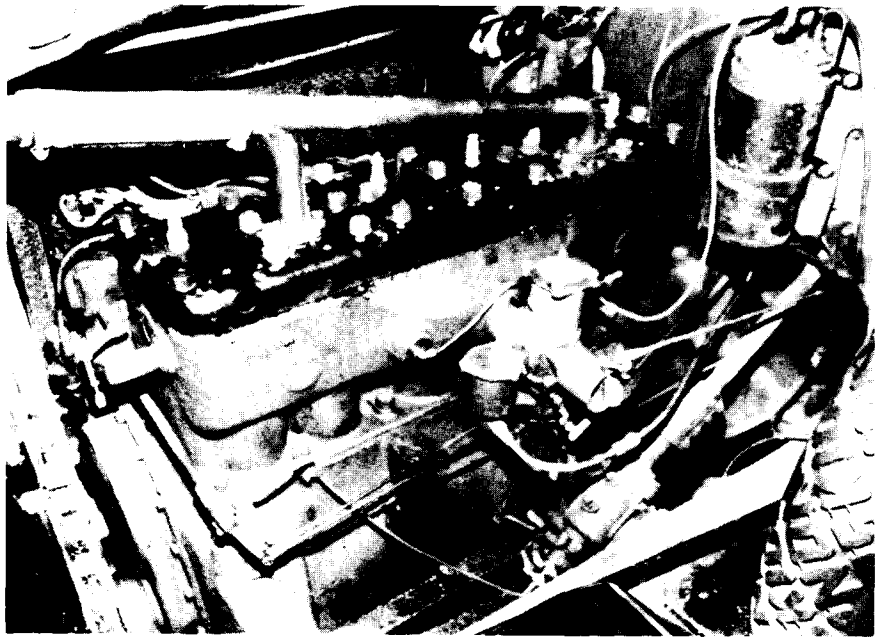
"If proper clearance is allowed. . . a film of oil will accumulate between cam and bottom of push rod at every revolution of cam shaft, preventing any chance of a cut tappet. It is not right to take the quietest tappet of the twelve and lash up the others to equal it. . . .

"The quality and amount of oil contained in the motor has also a great deal to do with valve tappet noises. . . .

"Clearance between end of valve stem and tappet adjusting screw should be no less than .004"— on the exhaust .005" to .006" is perferable. The paper on which [the 1916 manual] is printed measures approximately .004". You can obtain a cheap and accurate feeler gauge at any hardware store."

Although the manual does not state whether valve clearances are to be checked hot or cold, it is safer to assume that the figures given are for engine at operating temperature.

THE REMOVABLE CYLINDER HEAD was a new feature for Hudson in



1916, and hence the manual discusses this in some detail. It is interesting to note that while some designers believed that a removable head would necessarily result in less uniform engine cooling (because of the heat barrier introduced by head gasket), Hudson espouses an opposite view:

"The removable head is adopted on the Super-Six because of its greater thermal efficiency; in other words, it gives us a more perfectly formed and easier cooled combusiton chamber, the advantages of which are noticeable by the performance of the Super-Six motor.

"Were we to use the conventional type of block with its large volume of indifferently cooled metal, the portion of the cylinder head over the valves would be of a different temperature to that over the cylinders. The shape would not be as uniform, and there would be a greater tendency to collect carbon...

"There are no disadvantages whatever with the removable head, except perhaps that it sometimes becomes necessary to grind in only one valve, and when this happens there is an extra amount of work entailed in the removal of the complete head. However, by using Rich tungsten valves and by cooling them very much more efficiently, we believe we have eliminated the only disadvantage.

"Just the same as it was necessary to replace the gaskets on the port plugs and graphite their threads, so that they would not stick, so is it necessary to watch carefully the points enumerated below which refer to the removable head and its gasket....

"Compression leaks...may be due to the following causes....

"The gasket has been damaged by being dented from prying off the head. In using a screw driver to pry off head, always insert it at a point where it can do no damage, and never push it very far into the split.... One cannot exercise too much care in removing the head.

"...The head may be loosened by turning the motor over with the hand starting crank. Before doing this, a stud nut at the front and rear ends should be left on to prevent the possibility of lifting the head completely off. The compression will loosen the head...and it can then be pried off further with the aid of a screw driver or a blunt chisel. If it is necessary to strike the head with a hammer in order to ease it off the studs, use only a lead or a raw-hide hammer...."

This was the era before many specialized auto repair tools were in use (except perhaps for tire work). The manual includes directions for building a cylinder head puller, but this "would only be necessary in shops where cylinder head removals are frequent." Special tools, listed by factory with a convenient Kent Moore number for ordering, were still years in the future. Even a torque wrench was not a tool commonly encountered, as the following excerpt shows:

"How to apply the gasket.... Make sure that the gasket is in place with the lapped edge downward.... In this way the lap is squeezed up tight and the heat cannot enter the crack and destroy the gasket....

"The upper face of the cylinder head, while of very sturdy construction, may be damaged if the studs are not pulled up with an even tension when the head is being set in place.

"By applying all the tension to one particular stud, there is a tendency to buckle the upper surface of the cylinder bloc.... If the studs near the valves are strained in this manner, it is also possible to distort the surface to such an extent as to prevent the perfect seating of the valves. All cylinder studs must therefore be tightened up very carefully. Never use a wrench with more than a 9-inch handle on it, and pull the nuts down a little bit at a time, working over the twenty-five, one after another, so that one particular nut never gets excessive tension. After the motor has been running...and the head is heated up, give them a further tightening in the same manner.... If there is a leak at a point which would indicate that the nearest stud needs tightening, do not go after this one stud with full force. You are apt to throw up a burr and distort the cylinder head, and thus make conditions worse.... The best way is to remove the cylinder head and ascertain the cause of the leak.

"It will sometimes happen that there is a compression leak between the cylinders. ...To test for trouble of this nature, cover the surfaces of the head and the bloc with a thin layer of white lead. Fit the gasket, tighten it down, and run the motor...if possible, under load. Upon removal, the head will show leakage by black streaks at the points where the charge has been getting between the gasket and the machined surfaces. Trouble of this nature calls for a thorough examination of the head and the top of the cylinder bloc. Burred surfaces will usually be found [often around a stud]; or the gasket may have been damaged.

"If you do not have a gasket handy with which to make a replacement, remove the white lead and cover both gasket surfaces with a coat of thin, good shellac. Place the gasket on the cylinder bloc (to eliminate need of handling it again) and let it remain there until it has become tacky, then bolt on the cylinder head and run the motor until the head is thoroughly warm. Allow it to stand in this condition for fifteen or twenty minutes and then tighten it up again....

"Provided the workman is careful in

making a replacement, there is no reason why a good gasket cannot be retained for at least six head removals." (That's what the 1916 manual says!)

"The results of gasket leaks are numerous. The usual symptom is a failure to throttle down to low speed, and a tendency to buck badly on a pick-up from low speed. Sometimes the motor will not idle properly; but this would only be true in the case of a very bad compression leak....

"It is a good plan to have a compression gauge that can be screwed into the spark plug hole. This gauge should register about 80 to 85 pounds when the throttle piston is held wide open so as to give a full aperture, and the motor cranked by hand as fast as you can spin it. Such tests should always be made with a hot motor, never with a cold one." In a future issue: More about the 1916 Super-Six, including the electrical system.

HOW MANY OLD-CAR shows or meets did you attend in 1985? Your columnist attended just three this year (a record for him). All were relatively near home (Atlanta was out of the question), and none was an all-Hudson show, although the marque was represented at each. Two were sponsored by organizations locally, and the third was at Iola, July 13.

Since its beginning c. 1972, the two-day Iola meet, in central Wisconsin (Waupaca County), has grown to become the largest event of its kind in the state and in the Midwest. As a first-time spectator, I can confirm that it's big, and that (if one has durable eyes and feet) there are plenty of cars to see, both unusual and not-so-unusual. Though perhaps some of these were not quite as well organized as indicated on the published map, one eventually does manage to see them all.

One item, however, which I may possibly remember as long as any of the cars - except for Ken Buttolph's '15 Hudson Six-40 and George Nell's shiny black '52 Hornet, not to mention the mid-'30's Ford coupe which sported a Hudson inlaid-plastic gear-shift knob – was the apparent lack of drinking water anywhere on the grounds.

Soda was available for 75¢ per can.

BEST WISHES to all of our readers (and Hudsonophiles everywhere) for a happy holiday season, and good luck in 1986!