

# Hudsonotes

Column of Mechanical Miscellany  
by George Schmidt  
Mishicot, Wisc.

## THE EARLY SUPER-SIX

(Part 4 - Conclusion)

ALTHOUGH HUDSON'S SUPER-SIX engine was a new design for 1916, its famous multiple-disc cork clutch was not. "For the past seven seasons' models," says the 1916 manual, "the Hudson Company has retained the same design of clutch. It gives so little trouble that few have seen the inside of one.... Renewing the oil and lubricating the clutch throwout collar are practically the only attentions necessary from the owner.... Lubrication of the clutch throwout collar has been facilitated by providing a grease cup connection above the floor boards. This cup may be filled and screwed down without getting out of the driver's seat.... Turn down the grease cup every day [or] at least every 100 miles....

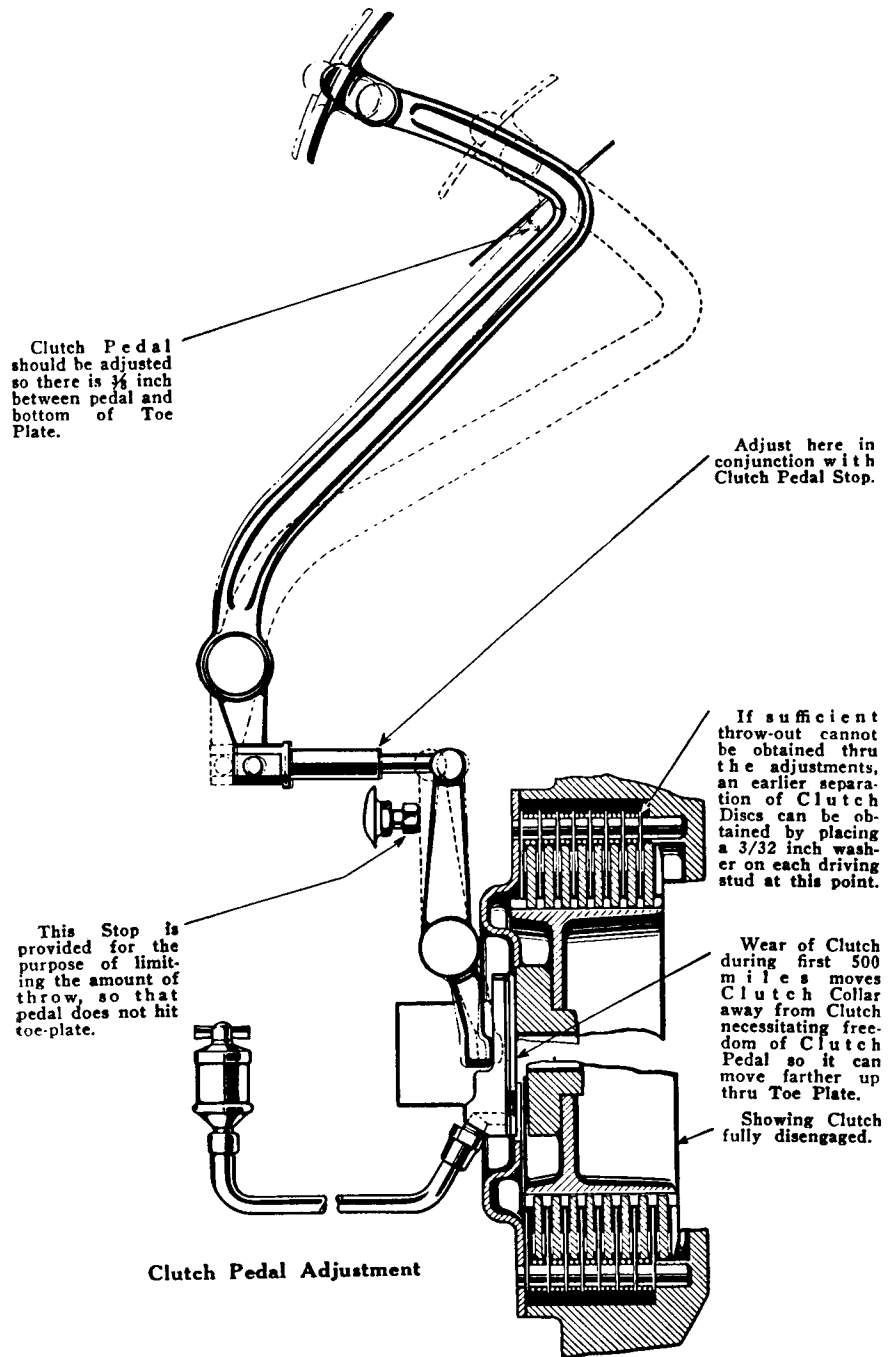
"The fact that the cork inserts become saturated with oil makes it comparatively difficult to abuse this clutch as compared with other types. However, its action will be affected if our instructions in regard to the quality and quantity of lubricant are not strictly adhered to. Never put more than half a pint of mixture in at one time. Always drain the clutch to remove the used oil before filling in any fresh oil. Do not try to experiment with the mixture. Half kerosene and half good motor oil is best....

"The two most important instructions are: Don't slip your clutch more than is absolutely necessary, and then only when you **KNOW** it has sufficient lubricant to stand it. Don't drive with your foot resting heavily on the pedal. If you **MUST** do so owing to congested traffic or natural nervousness, remember that the throwout sleeve will need more frequent attention...."

"THE DRIVING DISCS, which are secured to the flywheel by four specially heat-treated studs, are stampings, carefully flattened and machined so as to slide freely on the studs. The driven discs are also stampings but are thicker and have numerous holes in them; into these holes the cork inserts are pressed.

"The corks are first soaked in warm water to make them pliable; then they are forced into the holes by a special machine. A considerable amount of cork is left projecting on either side of the disc and this is shaved off to leave about 1/32" after the corks have thoroughly dried out; then the corks are ground flat on a surface grinder.

"It is absolutely necessary that the corks be perfectly dry and show a full bearing surface. This latter point can only be ascertained by rubbing them flat on a surface that has been covered with Prussian blue or lamp black, using only a very thin coating. The greater the bearing surface obtained, the longer the corks will wear and the



Clutch Pedal Adjustment

"In making a replacement of corks in a repair shop not properly equipped, the surfacing of the corks is usually accomplished by rubbing the disc on a piece of sand paper. The result is seldom satisfactory, as the corks are not flat and even, and do not give the full bearing surface which is necessary in order to have the friction to hold....

less the spring tension necessary.

"The spring tension can be varied to suit the necessity by putting shims, about the size of a fifty-cent piece, at the back of the spring. This compresses it more, making it shorter when the clutch is engaged.

"The cork insert discs drive the clutch drum on which they slide, and this sliding or separating motion is facilitated and equalized by small coil springs interposed between the driving discs....

"The clutch pedal assembly should be adjusted so that when the clutch is engaged, the pedal is not striking the back of the toe plate. There should be a clearance of 3/8" between the underside of the toe plate and the clutch pedal."

Two cross-sectional views of the clutch show its construction, with eight cork-faced discs (and plain steel discs between them). The manual also includes instructions for rebuilding and installing this type of clutch, with particular suggestions for ensuring an oil-tight seal at the clutch cover gasket and bolts.

"THE TRANSMISSION REMAINS the same as in previous models," the 1916 manual states, "except for the use of higher grade materials and improved heat treatment. The roller bearings are extra large and provided with adjustment for end play. All bearings, including the thrust bearings, are provided with oil ducts to insure efficient lubrication.... The gear ratios have been developed with a view to affording the maximum engine efficiency at those speeds which will be used for climbing hills [1st - 3 to 1; 2nd - 1.4 to 1; 3rd - 1 to 1; with 4.45 to 1 rear axle].

"On no account should heavy grease, cork compounds, or any other lubricant excepting those of a liquid nature be used in the transmission case. Heavy lubricant holds chips and dirt in suspension... it blocks oil returns and totally fails... to circulate to the thrust bearings. Use a light grade of oil, even ordinary motor oil if none other is obtainable. We strongly recommend that you follow our Lubricating Charts, using Whitmore No. 7.... If it is impossible to obtain Whitmore Compound...use 600 W. Steam Cylinder Oil....

"The transmission should be drained off periodically.... After having drained the transmission, it is a good plan to fill in about a quart of kerosene. This should be done with the motor running slowly and the drain plug out, so that the kerosene will flush its way through. This washes out a great deal of sediment which would ordinarily adhere to the walls of the transmission case...."

The most important adjustments on this transmission were for correct end thrust or play of the shafts, particularly at mainshaft (.004" to .007"). Symptoms of excessive end clearance included chattering and jumping out of gear, especially in second gear under load. This adjustment and the similar one for countershaft could both be made externally, by removing or adding shims at the end retainers or caps for bearings. Manual also cautions against allowing too little end clearance or none (which would only damage the bearings and thrust washers). Shims were available in .003", .010", and .025" thicknesses.

Instructions for transmission removal include a reminder that (as on later vehicles), the transmission must be properly supported and then pulled straight rearward, to avoid damage to the clutch pilot shaft at front.

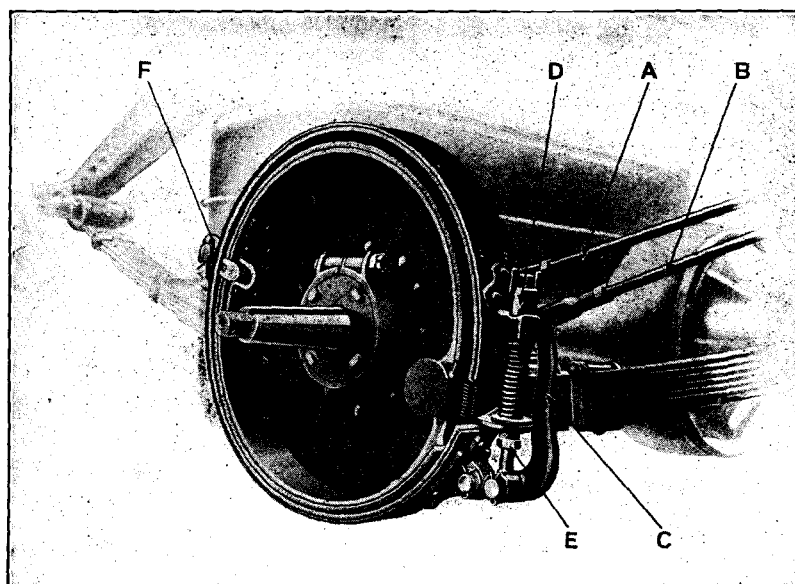
THE SERVICE BRAKES (pedal-operated) on these early Hudsons, as on many other cars of the time, were actuated by brake rods and a small lever at each brake band, and were of the external contracting type. This exposed them somewhat to weather and dirt, but did permit easy access for adjustment. Upper and lower ends of the brake band were to be adjusted separately (lower end first), with brake rod and clevis disconnected. Correct drum-to-lining clearance was specified as "the thickness of a visiting card" (about .010 inch).

shortening the brake rod at each rear wheel. For any other adjustments or repairs to this brake, removal of the wheel and drum was necessary.

Several corrections for squeaking brakes are listed. One is to remove dirt and glaze from lining surfaces (kerosene and a stiff brush are suggested for this). Another - as a last resort - is to remove a short piece of the lining, perhaps 2 or 3 inches long, from the center of the band, opposite the ends. Ends of brake lining should also be beveled so that no sharp edge is brought against the drum. In many instances, however, squeaks were caused merely by improper adjustment, or by excessive lining wear which allowed rivets to contact the brake drum.

RADIATOR DESIGN of the early Hudson Super Six, with its set of horizontal shutters, is familiar to all H-E-T members since it is pictured on the club logo. Of this design the 1916 manual explains:

"The gasoline burned in the cylinders... is the only source of heat. Unless we conserve this heat in cold weather, it is going to be consumed wastefully. So we have been in the habit of conserving it as much as possible with a quilted cover. On Super-Six cars this is now out of date! By the simple expedient of placing shutters of the Venetan blind type in front of the radiator and regulating these shutters by a handle on the



The hand or emergency brake was of the internally-expanding type (on the same drums), but this too used a band rather than a pair of brake shoes. It was cam-actuated and could be adjusted somewhat by lengthening or

dash the driver is able to control the temperature of his motor at will. The Boyce Motometer on the radiator filler cap shows the driver when to open the shutters-this is 130 deg. F., the bottom of the circular opening.... For the

motor to work at its highest efficiency, the liquid should be kept at summer average or at the line in the center of the circle just below 'Hot Motor'....

"A certain amount of caution must be exercised, however, never to allow the temperature to rise above 'Hot Motor,' as scored cylinders, wrist pins, and burned-out motor bearings are liable to result....

"Ninety per cent of missing and fouled spark plugs is caused by lack of heat above the piston head and not from the oil below it. Many articles now appearing in the current automobile journals confirm our views...."

However, proper conservation of engine heat was not left to the hand-operated shutters alone. Perhaps very surprisingly for 1916, the manual also states:

"A thermostat is located in the cooling system between the motor water outlet and the top of the radiator. This allows a very much quicker warming up of the motor as it shuts off water circulation between motor and radiator until the cooling medium of the water jacket has reached a temperature of approximately 120 degrees. At this point the thermostat opens a valve which allows a portion of the water to pass through the radiator, thus preventing overheating. A bypass pipe connects the thermostat with the radiator outlet, so arranged that pressure will not build up against the thermostatically controlled valve. This allows what might be called a short circuit for the water....

"In this way we have arranged practically as automatic cooling system, the only precaution necessary being to leave the shutters closed until the motometer registers approximately 130 degrees, and to take care that the shutters are closed in order to conserve the heat when the car is stopped."

READERS WHO ARE interested in early Hudsons, and who have questions which could perhaps be answered from the 1916 factory service manual, are welcome to write to this columnist, who will do his best to answer. Be sure to check also with several of the other H-E-T Tech Advisors (see inside back cover), and with the Club Library, for additional information about these early cars. Wish we had more of them in the Club!