

And it offers an underhood appearance likewise unmatched by any of them.

This article is being presented to help make the preservation job easier. It is based upon the stepdown models, but will be found applicable to all at many points.

14. IF SYSTEM "HUNTS" INY NEUTRAL GEAR--that is, if the linkage sometimes quivers or "chugs" rapidly back and forth around the neutral position, instead of coming immediately to rest there, when hand lever is shifted into neutral--the "neutral switch," a part of large transmission-switch assembly, requires attention. This neutral switch is operated by the broad slotted lever at side of case, linked to vacuum gearshift piston so that it moves with each automatic shift. The connecting link has a bent offset shape (slightly relocated on '50-'51'S), AND IS THREADED ON ONE END, WITH A SWIVEL BLOCK AND TWO LOCKNUTS, FOR ADJUSTMENT.

Some cases of "hunting" can be cured simply by following the exact neutral-switch adjustment procedure outlined in manual; but when switch parts are some what worn this may not be enough. Fortunately there are several other corrections possible short of replacing the entire transmission switch as demanded in book.

"Hunting" ususally occurs if the neutral switch can be freely shaken by every back-and-forth twitch of the vacuum linkage. For this reason there are felt friction washers on switch shaft; and heavy oiling, though good for much of Drive-Master linkage, should be avoided at this point. A few squirts of solvent to clean felt (or perhaps 1-2 drops thin oil) are OK; but some friction here is necessary.

On other hand, the connecting link to switch should be allowed to have a bit of extra play or looseness. Both ends should be merely cotter-pinned in place without the small conical-spring tighteners used elsewhere on linkage. Finally, loosen the locknuts on each side of swivel block about one turn so that block will have a small amount of free play. The nuts will stay in position if 2 are installed on each side (4 in all). The exact amount of looseness required for best results can only be found by experiment. At the same time, check to be sure that vacuum shifts into neutral still stop directly in the center between high and second gears--hot off to one side. If they usually do stop to one side of center, the entire adjustment--all 4 nuts--will have to be moved slightly along rod one way or the other until centering is correct. This can be checked by looking at transfer key and cluster of 3 levers at transfer hub. When in neutral, all of them should line up in such a way that transfer key can snap from "automatic" to "manual" shift position and back again without causing any one of the three to move a bit.

Third in a series of four parts...

MAKING DRIVEMASTER WORK

by George A. Schmidt

"NO OTHER WAY OF DRIVING, we're sure you'll agree" (said a 1942 ad), "is so simple, so smooth, or does so much to make motoring safer. No other car has anything like Drive-Master. By all means try it soon."

Today the system is worth preserving because, unlike overdrive or vacuum clutch or even other vacuum gearshifts (Electric Hand preselector type or not), Drive-Master is indeed exclusive with Hudson, also, especially in its premium form--the Super-Matic or overdrive combination---it is indeed pleasant to drive, offering (when it works) a flexibility of operation unmatched by either a plain stickshift or a full automatic---or by any other semiautomatic to date.

Occasionally, however, the neutral switch shaft may have so little friction that "hunting" continues even after the above minor linkage alteration has been made. When this happens, one quick temporary fix is to take strong cotton string or coarse thread and wrap it tightly round and round switch shaft beside each felt washer in such a way that friction will be increased as much as possible. Tie string ends securely. Another method is to make a small thin U-shaped washer--or even a loop of wire--of proper size to be forced behind cotter pin in outer switch shaft, thus compressing the felt a bit more.

Later, as wear increases, switch can be taken apart for new packing. Remove from car and open rear cover. It will be seen that the neutral-switch lever and cam, when moved far to either side, also operate "limit" switch contacts which serve to stop the Drive-Master as soon as a shift into second or high gear has been completed. These "limit" contacts, except for their wider spacing, resemble those for the neutral switch--but they almost never give trouble.

Also, since the neutral-switch shaft is hollow, there is a "quill" shaft running inside it (much like the minute-hand shaft on a clock) for still another switch: the manual selector switch, which has a plain straight external arm linked to the hand gearshift lever. This quill shaft turns a flat bakelite contact disc at the far end; and before taking apart it is well to mark both shaft end and disc so that they can later be reassembled correctly instead of 180 deg. out of phase. Aside from this chance of wrong reassembly, however (perhaps made more confusing because selector switch arm must operate pointing UPWARD on stepdown models, but downward on the earlier cars), this switch is quite trouble-free.

Now, if palnut and setscrew on black neutral-switch cam are loosened, the two shafts can be drawn out of case together. They can be separated by removing one C-shaped clip. Inspect what is left of felt rings and find or cut out suitable replacements. New felt, if used, should be of good (piano-grade) quality; but sometimes leather, if not too hard or smooth, can be substituted--or used with the felt for extra tightness. It's also well to include 1 or 2 spare thin flat metal washers, placed on quill shaft first of all (before cotter pin, and thus on wrong side of it), so that they merely hang loose. These are reserves which can later be added externally to the friction pack behind cotter pin for extra pressure when it becomes necessary. While switch is apart, be sure to clean any contacts which need it, and perhaps also grease the three switch cams (neutral, transfer, & clutch) lightly.

At this point the reader may possibly decide that it would be far, far simpler to continue shifting this Hudson strictly by hand from now on. True as this is, it does nothing to further the historical preservation of

uniquely designed optional equipment for which Hudson was famous.

In other words, the thing's got to be put back together. Reassembly may be a bit tricky due to coil spring on quill shaft (essential for good contact at selector switch); but eventually the setscrew on switch cam will find its proper hole and can be tightened. Try moving each lever by hand; then close case and reinstall on car. Start engine and recheck adjustment of the neutral-switch link.

Now (with car warmed up; Drive-Master "on"), check to be sure "hunting" is eliminated. Try shifting from each of the other gear positions into neutral. Repeat on road with car in motion (remember vacuum clutch does not work for shifts out of high gear when car is above "overdrive speed"---25 mph. or so---and clutch pedal must be used).

15. IF THROTTLE LOCK DOESN'T respond quickly enough, it is not of much practical use. This lock, with its own diaphragm and valve, should work (usually just a brief twitch) with every vacuum-powered shift. It is primarily a safety device... the system will operate without it, but lock is there to prevent driver from engaging throttle and clutch before a shift is quite completed; it thus protects against accidental overrevving and/or damage to gear teeth. This is important in cold weather or when ever shifts may be slow for any other reason.

The seat of this valve has a rather small hole; it need not pass much air, but should open a bit more readily than the others (even against vacuum pull). Factory recommended no internal work on this valve, but it is built like the rest, and if sluggish can be treated the same way, using extra care (see vacuum-clutch article). The little valve spring in this instance should be only just a stiff enough to hold valve shut when standing upright---no more. As an added touch, some of the holes in brass fittings and steel mounting plate which seem to be restricted (but not the valve seat) can be drilled out slightly for quicker passage of air. Most can be enlarged to practically 3/16 inch, and this should be considered, especially if restricted passages to vacuum gearshift cylinder have also been enlarged for quicker shifts (see last month's WTN). Sometimes, too, the return spring inside shell with rubber diaphragm, though it is weaker than the one used with "transfer" diaphragm, is still unnecessarily stiff and could be shortened by one turn and replaced.

Check likewise for resistance (corrosion, etc.) at terminal rivets & plug or clips; also for poor ground connection. The electrical layout is such that this one solenoid has two separate windings--one used with upshifts, the other with downshifts. Test individually, using jumper wire and preferably only 4-4 1/2 volts (2 battery cells or 3 dry ones).

The two short hose pieces must be snug, and not kinked in middle (wiper hose will fit here). Finally, be sure cable is adjusted tight enough.

16. IF THROTTLE LOCK CHECKS out perfectly and yet somehow permits an occasional shift to go uncompleted, with resultant gear clash or unexpected going only halfway to hang up in neutral, the usual cause is a partial-or intermittent-electrical break elsewhere in system. Although this trouble may be in wires, connectors, clutch switch, etc., it is most often located in GOVERNOR, where the gearshift contacts are probably burnt, or oily, or have enough pivot friction so that they at times can "hang up" somewhere in a mid-position without instantly snapping over to contact one side or the other.

See vacuum-clutch article in July-August '74 WTN for discussion of governor problems, and possible other causes of gear clash.

17. IF DRIVE-MASTER WON'T SHIFT AT PROPER CAR SPEED...for example, if it will not downshift automatically into second until car slows nearly to a walking pace; or on other hand if it will not go into high unless car is doing 25-30 mph. or more... trouble is again in governor (see clutch article). Some correction can often be made by changing governor drive pinions, as they were originally made (by Stewart-Warner) with 15, 16, 17, or 18 teeth, all interchangeable, and also fitting the overdrives used on Hudson and several Brand X's. To RAISE effective cut-in speed, use a pinion with MORE teeth.

However, if the delays or wrong shifting speeds are merely intermittent, look for dirty or sticking contact points in governor. These are also the first thing to be checked if system begins simply missing an occasional shift---up or down---apparently quite at random. If the system will downshift readily but not upshift (or vice versa), only one pair of contact points---or its connector prong or wire---is at fault.

Very seldom in such cases is the trouble elsewhere in the system, although this can be checked as follows: Move hand lever from second to neutral and back (engine idling; Drive-Master "on"). Vacuum shift should promptly follow hand movement in both directions. If it doesn't inspect plugs and wiring around shift solenoids and transmission-switch case. There may be a bent or corroded prong, or a wire simply broken off at plug. Also, with plug at triple solenoid removed (engine still idling---and brake set), touch each of the three prongs in turn with jumper wire from battery negative (hot) post. This should cause vacuum piston to move its full distance first one way and then the other; also, the transfer diaphragm and key should snap quickly to "automatic shift" position and back again. Contacts inside transmission switch can be checked, too, using chart in manual along with test lamp and prods, or even with the special "test harness" once available from factory. However, all of these things usually check out OK, since most intermittent shifting problems can be traced to the governor.

To remove governor from car without excessive oil loss, it is best to lift car from the rear into a somewhat nose-down position, and let it remain there until governor is replaced.

Sometimes the test of a suspected electric wire or connector plug is not of much value unless it can be done with the parts in their original position, undisturbed. In such cases, try raiding family pincushion for one or two sharp specimens which can be used to pierce wire insulation some distance from suspected spot. Make test by clipping jumper wire (with test socket & bulb) to pin head. Next, wiggle suspected plug or wire slightly to see whether this affects brightness of bulb. Polish, straighten, or replace defective connector as required.

While all of these tests can be made a bit more elaborately using an ohmmeter, the light bulb is generally sufficient. Factory recommended a "15 c.p." bulb for all Drive-Master testing; this would be an ordinary six-volt No. 87 (as in front dome light, etc.).

Often, too, it is revealing to check questionable contact points, connectors, etc. on half voltage (or less), since the dimming effect of any unwanted resistance will thus be doubled. Three volts (2 dry cells), plus appropriate lantern or flashlight bulb, work very well for this.

18. IF CONTACT POINTS arc and blacken prematurely...and new replacement ones are not to be had... it often helps to connect a small capacitor in parallel with (across) them. This can be a spare ignition condenser (a used one will do), or a slightly larger one like those used for radio noise suppression underhood, part no. 208592. While this is no substitute for good clean smooth contacts or proper point action, it does extend their useful lives somewhat. It can be used not only for the various Drive-Master and other contacts inside governor, but for assorted other troublesome ones on the car as well---the heavy points inside overdrive solenoid, for example, or the tiny ones in self-winding electric clock. Sometimes there is even a visibly smaller spark---or none at all---produced when condenser is in place.

19. IF LINKAGE IS NOT OILED occasionally, it may not work freely, and will certainly become more worn and loose much faster. Plain engine oil helps, but is somewhat thin. A mixture of 20-40% of a thickener such as STP with the oil is better. Apply a few drops of this to each linkage joint and support pivot (including the throttle and vacuum-clutch linkages) every 1000 miles (for hard use, or with long periods of idleness between times, make it 500 or at least every few months). Most catterpinned joints have enough clearance that a small thin homemade leather washer can be added to them; this serves both as a tightener and as an oil retainer.

NEXT MONTH: Sticky shifts.