RD-173—2-36
10M—APC.

DATE January 29, 1936 **NUMBER** 8

SUBJECT: CORD DRIVING UNIT CONTROL ASSEMBLY - MODEL 810.

To fully understand the maintenance problems involved in properly servicing this assembly, it is necessary to be familiar with the mechanical actions which occur when the shift is completed. For this purpose the accompanying diagrams show very clearly the lay-out of the transmission control.

The parts primarily concerned in the operation of the transmission control installation are designated on the accompanying diagram (Fig. 1) as follows:

D Cross shift diaphragm
F Diaphragm return spring - right
G Diaphragm return spring - left
H Stop plate - right
J Stop plate - left
K Stop ring - right
L Stop ring - left
M Neutral switch breaker contact
N Neutral switch breaker contact
P Neutral switch breaker contact
Q Neutral switch operating lever
R Transmission cross shaft
S Transmission operating lever

The selector switch (1 Fig. 2) is mounted on the steering column below the steering wheel. The selector switch as shown in the right hand top corner of Fig. 1 is primarily a control by which the driver shifts to the desired transmission gear.

This selector switch assembly enables the operator to select first, second, third speed or reverse by moving the selector lever over the same path you would employ with the conventional shifting lever which it replaces. The fourth speed is engaged by moving the lever to the extreme right and forward as shown in Fig. 1.

The possibility of an unintentional shift into reverse is eliminated as it is necessary to left or pull out the selector lever against spring pressure before the shift can be made into reverse.

With the selector lever in the neutral position, all of the movable parts of the selector control mechanism are in the positions indicated in Fig. 1.

If the selector lever is shifted to the left and back to the first speed position, with the engine running and the clutch disengaged, the current from the battery flows through contact sleeve 11 and cables 5 and 6. Cable 5 is connected to solenoid 3, so that it becomes energized and lifts the valve attached to it, cutting off tube "C" from communication with the atmosphere and connecting it instead to the vacuum line from the intake manifold. Diaphragm "D" of the diaphragm cylinder is now exposed to atmospheric pressure on the right side (top) through tube "E" and to the manifold vacuum on the left side (bottom) through tube "C". This action will cause the diaphragm to move to the left, carrying with it cross shaft "R" and lever "S".

When the selector lever is moved to the first speed position, terminal

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6 is also connected to the battery through sleeve 11 so that electric current is carried to contact 18 of the interlock switch. When diaphragm "D" moves to the left, the interlock switch is rotated, completing a circuit from 18 to 22, the current travels from 22 back to the selector switch and from there through cable 14 to solenoid 1. When solenoid 1 becomes energized, it raises the valve which opens tube "A" to intake manifold vacuum. The piston in the shift cylinder is now exposed to atmospheric pressure through tube B which will cause the shift cylinder piston to move forward, shifting the transmission into low gear.

With the vacuum control it is possible to move the selector lever to any position at any time, but no movement of the transmission gears occurs until the clutch pedal is depressed, as the main circuit for the operation of the entire control is led through the clutch cutout switch (2 Fig. 2), and the circuit through this switch is completed only when the clutch is disengaged. Thus it is possible to move the selector lever from "first" to "third", for example, while the clutch is engaged and the car in motion, without causing an actual change of gears to take place. When the clutch pedal is depressed after this "selection" has been made, the transmission control automatically performs three successive operations: First, the shift-cylinder piston moves toward the rear to mid-position, (neutral as shown in Fig. 1), so that lever "S" can move; and finally the shift-cylinder piston moves forward to the end of its stroke, carrying lever "S" forward and engaging third speed. It is the function of the interlock switch (13 Fig. 2) to insure that these three operations take place automatically and successively as required.

As previously described, the shift cylinder moves the operating lever "S" backward and forward. Vacuum applied to the forward end of the cylinder causes the piston to move forward to engage either the first or the third gear, while vacuum applied to the rear of the cylinder causes the piston to move toward the rear to engage either reverse or the second or fourth forward speed. To insure that the piston will stop in the exact center of the cylinder when the selector lever is moved to "neutral", a switch is placed in the shift cylinder which is controlled by the lever "Q".

To be able to shift into either second or third speed it is equally important that the diaphragm "D" attached to the cross shaft "R" be exactly in mid-position, and this is assured by the stop rings "K" and "L" which limit the travel of springs "F" and "G" respectively.

It will be clear from this outline of the operation of the transmission control that a gear shift can be made only when the ignition switch is on, the engine running and the clutch pedal depressed.

Fig. 2 shows in detail the location of all units of the driving unit control assembly and each part is designated as follows:

1. Selector Switch.
2. Clutch Cut-Out Switch.
3. Slip Terminal Junction.
4. Wiring Harness
5. Cross Shaft Diaphragm.
6. Diaphragm Return Spring - Right.
7. Diaphragm Return Spring - Left.
8. Neutral Switch Breaker Contact.
9. Solenoid Assembly.
10. Atmospheric Pressure Line.
11. Vacuum Line to Intake Manifold.
12. Piston Rod.
13. Interlock Switch.
14. Operating Lever.

Should difficulty develop with the clutch cut-out switch, the solenoid assembly or the interlock switch, do not attempt repairs but install a complete new unit.

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To check the operation of the control unit, the splash shield covering the driving unit should be removed and the front wheels raised from the floor. With the front wheels raised the car can be operated and the operation of each unit observed.

SERVICE ADJUSTMENTS

CLUTCH CUT-OUT SWITCH ADJUSTMENT

With the clutch pedal fully depressed and the motor running, the electrical circuit should be completed. Adjustment should be made by removing the clevis pin from the rod connecting the clutch cut-out switch to the clutch pedal. Allow the clutch to be released gradually until the clutch plate starts dragging on the flywheel, as this clutch engagement begins allow the clutch to be released 1/8" to 1/4" more and the clevis should then be adjusted so that the circuit is broken with the clutch in this position.

SHIFT CYLINDER ADJUSTMENT

With the motor in operation and the transmission and selector switch in neutral, remove the clevis pin which connects the operating lever to the piston rod. Depress the clutch to the floor board and adjust the clevis on the end of the piston rod so that the pin will slip through the clevis and operating lever without friction. With the pin in place it should be possible to move the operating lever approximately the same distance forward and rearward before the piston rod is caused to exert considerable pressure against the operating lever in an effort to return the piston to its neutral position.

INTERLOCKING SWITCH ADJUSTMENT

In order to check this adjustment, a test light should be grounded on the transmission and connected with the green wire with red tracer which should be removed from the interlocking switch. With the motor in operation and the clutch depressed and the car in neutral position as shown in Fig. 1, move the operating lever by hand to the extreme left position and allow it to move slowly back toward the center or neutral position until the test light comes on, noting the distance of the operating lever from neutral position when the light comes on. Repeat this same operation by moving the operating lever by hand to the extreme right and allowing it to return slowly until the light comes on. Should the light come on further out of the neutral position on one side than the other, adjustment is completed by loosening the four screws that hold the interlocking switch to the diaphragm housing and moving the interlocking switch side ways so that the light comes on at approximately the center position on both the right and the left side of the operating lever. Ordinarily this test light should come on at approximately 1/8" to 3/16" from the neutral position of the operating lever.

Very truly yours,

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FIG. 1 NEUTRAL