

DESCRIPTION AND OPERATING INSTRUCTIONS

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GENERAL DESCRIPTION

The Hydra-Matic Drive is an automatic means of transmitting the engine power to the vehicle propeller shaft, after which it is directed to the rear axle and the rear wheels in the conventional manner.

The Hydra-Matic Drive consists of a fluid coupling, which replaces the conventional clutch, combined with a hydraulically-controlled automatic transmission having four speeds forward and one reverse.

With the Hydra-Matic Drive, clutch pedal operation and conventional gearshifting are eliminated. The gear ratio in which the car is operating at any time is selected automatically in accordance with car performance demanded by road conditions and the car driver. The control lever position can be selected to provide the maximum efficiency under any combination of conditions.

OPERATING THE HYDRA-MATIC

STARTING ENGINE

1. Place control lever in "N" position (Fig. 1). Starter is inoperative in any other position.
2. Open the throttle about half-way.
3. Turn ignition switch key to right to engage starter, release as soon as engine starts.

Should the engine flood, depress the accelerator to the floor which opens the choke while starting. Do not pump accelerator at any time. Avoid racing the engine during the warm up period.

COLD WEATHER

In cold weather (0° F. and colder) the engine must idle with the control lever in the N position until engine and transmission are warmed up. When engine is cold and running at fast idle, the car will tend to



Fig. 1 Indicator Segment

creep when the control lever is moved to a driving position. A slight application of the foot brake or hand brake will hold the car until motion is desired.

OPERATING IN DRIVE RANGE

The position marked by the left-hand arrow in DR position is the four speed range and is provided for all normal forward driving; it reduces engine speed, provides better driving comfort and improves fuel economy. The position indicated by the right-hand arrow in DR position is a three speed range. At very high car speed, however, transmission will upshift to fourth and then downshift to third as car speed is reduced. This range is provided for better performance when driving in congested traffic and is also effective when climbing or descending long mountain grades. The control lever can be moved from one position to the other in DR range when driving at any car speed on dry roads.

The right-hand arrow position in DR range is also recommended when starting out with a hot engine after parking or idling for an extended period during extremely hot weather. Under these conditions the transmission assists in eliminating vapor in the fuel system. After a short distance the control lever can be placed in the left-hand arrow position if desired.

ACCELERATION

The shift from first speed to second, second speed to third, and third speed to fourth (direct drive) will occur at progressively higher speed ranges depending upon the amount of pressure on the accelerator pedal. With slight accelerator pedal pressure, the shifts will occur at lower speeds. As accelerator pressure is increased, the shifts will occur at higher car speeds.

FORCED DOWNSHIFT

Extra performance is obtainable in either of the two DR ranges or in LO range simply by depressing the accelerator pedal. The transmission will then shift down to a lower speed for faster acceleration and will return to a higher speed automatically as car speed increases or pressure on the accelerator pedal is released. Car speed and the range in which the transmission is operating determine how far the accelerator pedal must be depressed to cause the transmission to downshift. The downshifts occur as follows:

1. When driving in the left DR position in fourth speed at about 27 MPH or less, partially depressing the accelerator pedal will cause the transmission to downshift into third speed. At speeds from 28 MPH to 60 MPH it is necessary to completely depress the accelerator pedal to cause this shift.

2. When driving at a speed below approximately 20 MPH in either DR range the transmission will downshift to second speed when the accelerator pedal is fully depressed.

3. When driving in either of the DR positions or LO at speed less than approximately 10 MPH, the transmission will downshift to first speed when the accelerator is fully depressed. **CAUTION AGAINST COASTING IN NEUTRAL:** *Do not coast with the control lever in N (neutral) position. This procedure is unlawful in many states and under some conditions is harmful to the transmission.*

STOPPING THE CAR

To stop the car, release the pressure on the accelerator pedal. Leave the control lever in the driving position; the engine will then give additional braking to help slow down the car. For further retarding effort apply the brakes in the conventional manner. **CAUTION:** *Under no circumstances should the control lever remain in any other position except N when the driver leaves car with the engine still running. For additional safety, apply parking brake when*

opening garage doors or removing mail from rural mail box, etc. This precaution prevents movement of the vehicle, should the accelerator pedal be accidentally depressed by a passenger.

LO RANGE POSITION

The LO range position is provided for pulling through deep sand or snow and ascending or descending steep grades where traffic signs call for placing the transmission in first or second gear. It is also best for getting the car in motion on icy roads, since the transmission starts in second gear in LO range.

The change from either of the two DR positions to LO is made by lifting the control lever and moving it to the LO position. This change can be made at any car speed; however, LO range will not engage until the car speed is reduced to below 50 MPH. Release the accelerator pedal when moving the selector lever from either of the two DR positions to LO. **CAUTION:** *The change from either of the two DR positions to LO should only be made on dry roads where traction is good. It is not recommended to change to LO on slippery roads since this change could induce a skid. On slippery roads, safety demands that the car speed be reduced by judicious use of brakes.*

In LO range the transmission starts normally in second speed. It is possible, however, to start in first speed by depressing the accelerator pedal to wide open throttle position. About 45 MPH the transmission will shift into fourth speed.

REVERSE

It is not necessary to bring the car to a complete stop before engaging reverse; simply raise the control lever and move it to the R position. Moving the lever between LO and R with light accelerator pressure permits rocking the car when required to get out of deep snow, mud or sand. Avoid engaging reverse at speeds above 5 MPH. **NOTE:** The control lever will stop at the left DR position when moved from reverse towards neutral with the lever raised. This prevents unwanted "over-selecting" into neutral.

PARKING

For additional safety while parking, turn off ignition key and move selector lever to R position. This permits engagement of transmission parts thereby

providing "in gear" parking ability. When parking on an incline, hold the car with foot brake a few seconds to permit engagement of transmission parts.

STARTING ENGINE BY PUSHING

If it becomes necessary to start engine by pushing the car for a short distance due to a low battery, move control lever to the N position. When a speed of approximately 25 MPH is attained, turn ignition switch on and move the control lever to either DR position.

TOWING THE CAR

If necessary to tow the car, use one of the following methods: (a) raise the rear wheels off the ground. (b) disconnect the propeller shaft at the rear universal joint and remove the propeller shaft from the car. If the front of the car is raised with the propeller shaft removed, use care to prevent Hydra-Matic fluid from leaking from the rear bearing retainer.

It is very important that the car be towed according to the above instructions in order to prevent damage to the transmission.

HYDRA-MATIC DRIVE FLUID

It is important to use only G.M. Hydra-Matic Fluid or Automatic Transmission Fluid (Type A) identified by Armour Institute Qualification Number "AQ-ATF...". This is an all-season fluid, ideal for

year-round operation. G.M. Hydra-Matic Fluid is available through all GMPD Warehouses. No special additives to these fluids are required or recommended. **NOTE:** In cases of emergency, when the specified fluid is not available, any good quality 20W engine oil will operate for a temporary period. When such oil is used, however, it should be removed as soon as possible and the transmission refilled with the recommended fluid.

MODEL IDENTIFICATION

It is extremely important that the model of the transmission be identified before any repair work is attempted.

The serial number plate is green in color and is attached to the left rear corner of each Hydra-Matic transmission case (Fig. 2). The Transmission Serial Number is preceded by the prefix D-56.

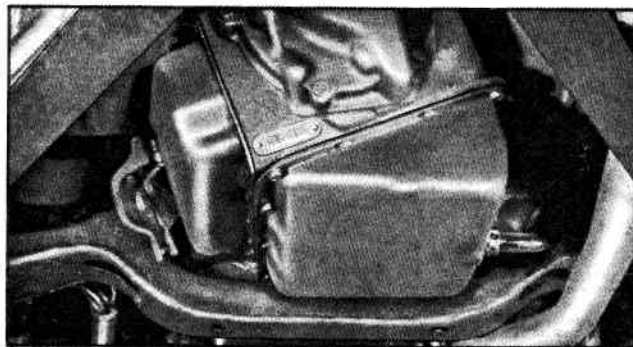


Fig. 2 Transmission Serial Number Plate