

# **AUTOMATIC CLUTCH**

**1940 Models**

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## AUTOMATIC CLUTCH — 1940 MODELS

The automatic clutch installation and adjustment procedure for the 1940 Hudson models in the main is the same as for the 1938 and 1939 models. There are, however, some differences in the adjustment and the instructions given in this article should be followed when servicing the automatic clutch unit on all 1940 Hudson cars.

On certain of the earlier production jobs some variation in the operation of the automatic clutch has been experienced which was due to a difference in the distance between the accelerator pedal bell crank on the transmission opening cover and the threaded sleeve rod bell crank located on the toe board or dash. In order to compensate for this condition cars now being built with automatic clutch are fitted with a rod connecting these two bell cranks which is provided with a clevis to permit adjustment in length. The 3/8" clearance called for between the dash and the threaded sleeve bell crank under "Linkage Adjustments" is very important and is secured by adjusting the length of this rod.

Another change has been incorporated in the automatic clutch unit to obviate any possibility of the clutch refusing to engage when the accelerator pedal is depressed after shifting into low gear. This difficulty was caused by the valve plunger projecting beyond the end of the piston rod when the piston is in the released position or at the forward end of the cylinder which caused it to bind in the side of the recess in the cylinder where the mounting trunnion is spun over. A stop collar on the valve rod is now being used in production which limits the forward travel of the valve rod.

A field correction to take care of this condition on cars in service can easily be applied by adding an extra 10-24 nut which is run up to the end of the thread at the end of the valve rod as shown at "L" in Figure 2. To install this nut it is necessary to remove the trunnion from the rear end of this valve rod, turn the present nut up to the end of the thread, add the extra nut and replace the trunnion.

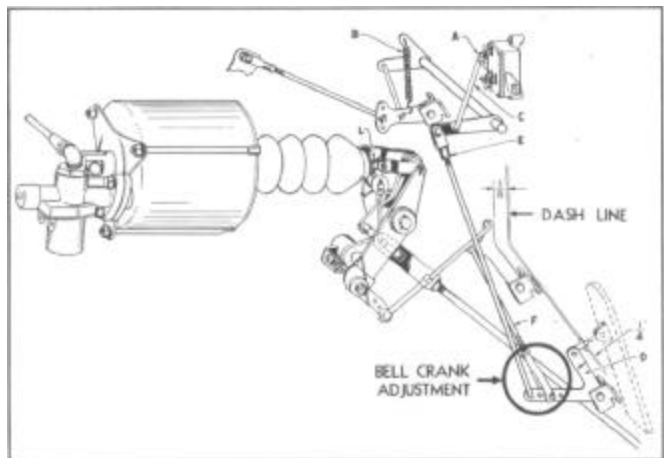


Figure 2

### ADJUSTMENT

#### Engine Operation

Smooth clutch engagement cannot be obtained either with the manual or automatic control unless the engine is properly tuned and warmed up so that it idles smoothly.

Before attempting any adjustment to the automatic clutch control, warm the engine to normal running temperature and check the engine idle. The engine should idle smoothly and show a steady vacuum gauge reading of 18 to 21 inches of mercury. The car should be driven sufficiently to bring the clutch units to a normal operating temperature.

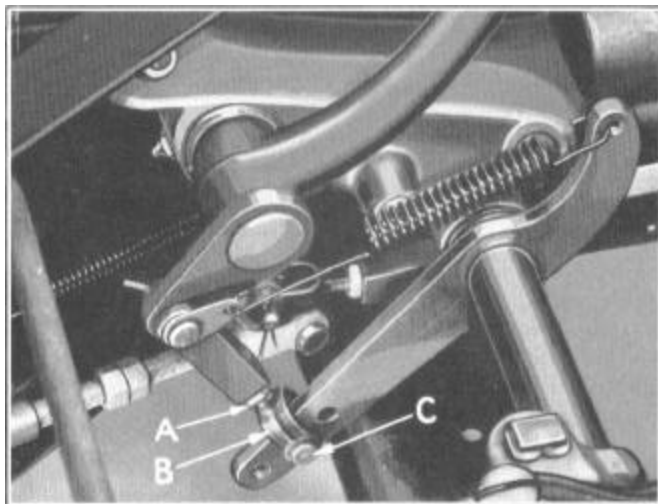


Figure 1

#### Clutch Pedal Adjustment

Adjust the clutch pedal by removing clevis pin (C) (Figure 1), loosening nut (A) and turning yoke (B) so that the center of the pedal shank clamp bolt is 1-1/2" from the toe board when the clutch is fully engaged.

#### Linkage Adjustment

In order for the automatic clutch to work properly when disengaging takes place, it is necessary that all automatic clutch control and throttle linkages work freely and without binding. The accelerator switch arm (A) (Figure 2) must rest securely against its stop on side of switch by the action of the throttle return spring (B) acting through the accelerator switch operating rod (C). Set accelerator pedal bell crank arm (D) to stop within 1/4" of toe board by adjusting the throttle rod clevis (E). Threaded sleeve rod bell crank operating rod (F) must be in third hole from end in lower arm of bell crank (D). Adjust rod (F) to give 3/8" clearance at dash, as shown, with motor idling and vacuum clutch.

Cars not factory equipped with automatic clutch control have a rubber bumper on the accelerator pedal rod to act as a stop for the bell crank arm (D). Be sure this is removed on all cars which are equipped with automatic clutch as the accelerator switch arm (A) must act as a stop for the throttle linkage.

#### Bell Crank Yoke Adjustment

To obtain the maximum work from the power cylinder piston travel, it is necessary that nearly all play be removed between this unit and the clutch operating lever. At the smile-time all pressure must be removed from the throwout bearing while the clutch is engaged.

With engine not running and the power cylinder piston in its extreme rearward position, remove valve lever (C) (Figure 3).

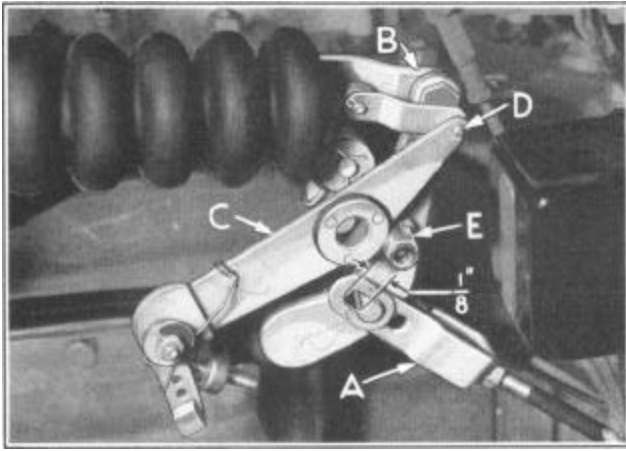


Figure 3

This is done by removing the cotter pin at (E) and the hairpin (D) at the valve rod to valve lever link. This renders the bell crank operating rod yoke accessible for adjustment. Adjust the clearance between front edge of clevis pin and front end of slot in yoke to NY.

#### ***Piston Travel Adjustment***

With guide block (A) (Figure 4) in the rear hole of cam lever (B), adjust valve lever cam threaded sleeve (C) to give maximum disengagement travel to the piston. With the engine running, clutch disengaged, and compensator pin (D) in its extreme rearward position, screw the threaded sleeve (C) toward dash until piston rod (E) just reaches its extreme forward position. Then screw threaded sleeve (C) away from dash until the piston moves rearward f. This gives the proper adjustment for the forward travel of the piston.

The preceding adjustments are concerned with clutch adjustments, throttle linkages and operating rods in establishing operating limits and standards. The first basic adjustment of the automatic clutch is the determining of the cushion point. This adjustment, in connection with the proper amount of lost motion in the throttle linkage, makes all the difference between a good and a poor clutch.

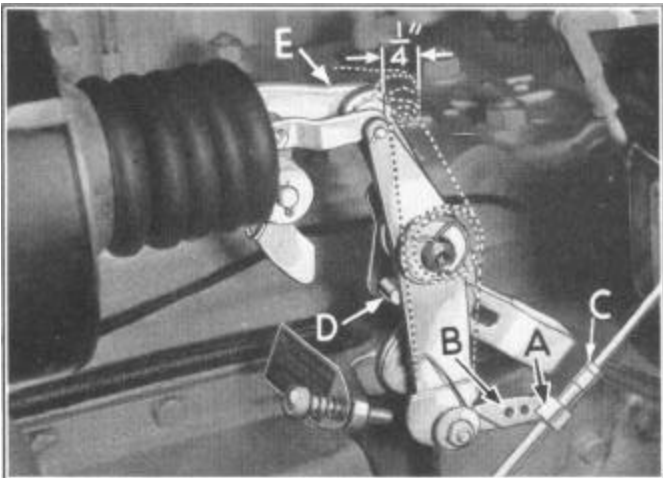


Figure 4

Securely block the wheels and start the engine. (Do not set the brakes.) Accelerate the engine several times while manually engaging and disengaging the clutch. This action tends to dry the clutch disc. Swing the compensator pin (A) (Figure 5) rearward and turn the cushion point stop screw (B) clockwise (in) until it meets the cam (C). With the transmission in low gear, hold cam (C) against stop screw (B) by pressing forward at point (D). At the same time slowly turn stop screw counter-clockwise (out) until the car shows a distinct tendency to move forward. This gives the cushion point or point where the clutch disc begins to "drag" against the flywheel.

#### ***Throttle Rod Clevis Adjustment***

Adjust the throttle rod at point (B) (Figure 6) as follows:

Cars with single carburetor—Bottom hole

6 cylinder cars with duplex carburetor—Top hole

8 cylinder cars with duplex carburetor—Center hole

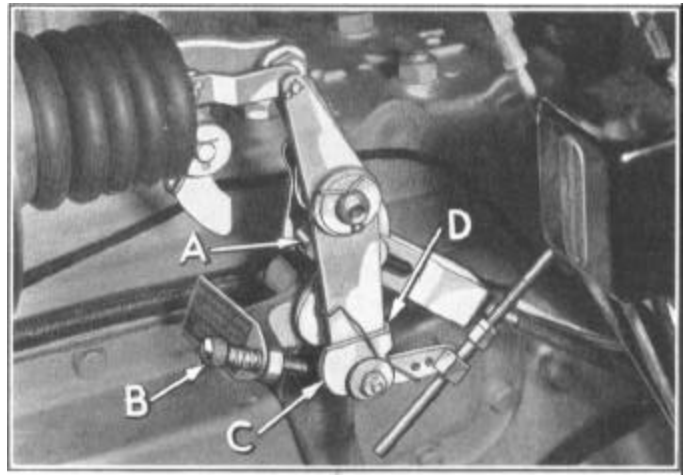


Figure 5

Hold the accelerator down until cam (C) (Figure 5) just touches the stop screw (B) as in previous operation. This can be done by wedging the accelerator bell crank away from the toe board by inserting a drift, screw driver or wooden wedge behind the upper arm of the bell crank. Do not attempt to open the throttle at any other point, because that would change the relationship between the throttle and clutch valve linkages.

Adjust the clevis at (A) (Figure 6) so that all lost motion is taken up; that is, any additional pedal travel will increase the engine speed. Remove the wedge.

NOTE—Always recheck this adjustment after removing the carburetor governor.

#### ***Lubricating Piston***

In order to keep the piston seal pliable and soft so as to obtain a good seal against the cylinder walls, it is necessary to remove the pipe plug in the cylinder end and inject one measured ounce of genuine Hudson shock absorber fluid every 15,000 miles. Remove the piston rod end to bell crank bolt and the valve rod to lever link. Then rotate the piston to distribute the oil over the entire piston and oil wick.

Two or three drops of oil in the bell crank bracket oil hole is also desirable every 1,000 miles.

### ***Final Adjustment***

For a final check of adjustments, shift transmission into second gear and gradually depress accelerator pedal with engine running. The cushion point stop screw and throttle should be so arranged that the car begins to move slightly upon initial opening of the throttle. If the clutch engagement is slow, accompanied by excessive motor speed, turn the cushion point stop screw outward (counter-clockwise); if too fast, thereby stalling engine, turn the screw inward (clockwise). Do not turn the screw more than turn at a time.

### ***Slow or Erratic Operation***

Inspect the unit for leaks, collapsed hose, excessive friction in throttle or valve linkage, or sticky solenoid plunger.

Checking for piston leaks:

Slide piston rod guard forward until the 4 circular ports are exposed in the piston rod. Start engine and let clutch remain automatically disengaged. Place thumbs and 2 fingers over the port holes. Any excessive leak in the piston seal can be felt as a suction action at the port holes.

Also check all gaskets, pipes and pipe fittings.

Excessive friction in the linkages will result in slow operation. Visual inspection while operating the accelerator by hand will usually show up these points.

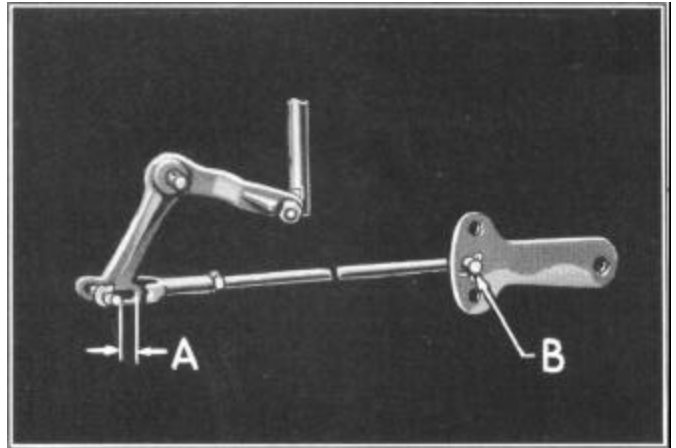


Figure 6