

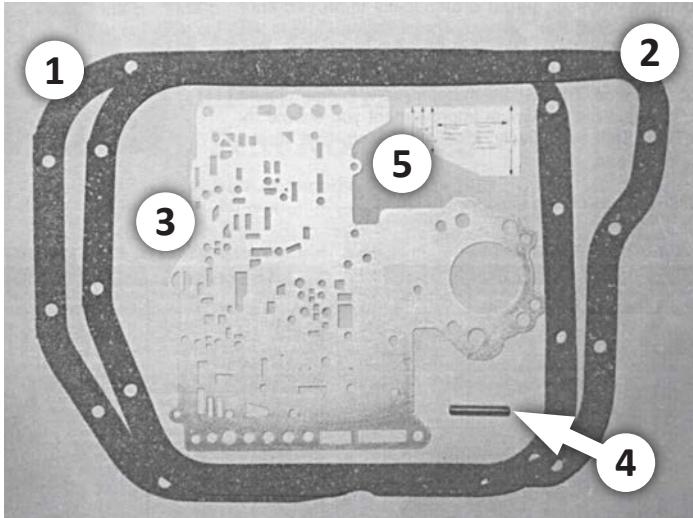


INSTALLATION INSTRUCTIONS

Part No. 10226

**SHIFT IMPROVER KIT for
MOPAR TRANSMISSIONS:**

**1966-70 A727 (6-cyl & V8);
1966-77 A904 (6-cyl); and 1968-70 A904 (V8)**



ITEM	DESCRIPTION
1	PAN GASKET (A904)
2	PAN GASKET (A727)
3	SEPARATOR PLATE
4	THROTTLE PLUG BLOCKER ROD
5	ADJUSTMENT GAUGE

INTRODUCTION

This Shift Improver Kit fits the following Mopar TorqueFlite transmissions:

- 1966-70 A727 (6-cylinder & V8)
- 1966-77 A904 (6-cylinder)
- 1968-70 A904 (V8)

This kit contains everything necessary to modify your transmission for two levels of performance, depending on intended use:

Heavy Duty: Passenger cars, street rods, towing, campers, motor homes, police, and taxis. Improved transmission performance without harsh shift feel.

Street/Strip: Dual-purpose performance vehicles, both street and track/off-road. Firmer, more positive shift feel, yet still suitable for daily driving.

The B&M Shift Improver Kit is not a cure-all for ailing transmissions. If your transmission is slipping or in poor general shape, installation of this Shift Improver Kit may make these conditions worse. However, on a properly operating

transmission in average condition, the Shift Improver Kit will provide the enhanced transmission performance you're looking for.

Before starting, take the time to read and understand these instructions.

Also, use the parts list to verify your kit's contents. In the unlikely event that any parts are missing, please contact **B&M Technical Support** for replacements.

We recommend that you retain all factory parts.

NOTES

- Installation of this B&M Shift Improver Kit requires moderate mechanical skill. If this job is beyond your abilities, seek the services of a qualified technician.
- Transmission components and valves are precision-fit parts. Burrs and dirt are your biggest concern, so a clean work area is absolutely necessary.
- When disassembling the valve body, note the following:
 - A. The **length and location of all fasteners.**
 - B. The **location and size of all check balls** in the valve body casting.

CAUTION: Incorrect check ball placement can result in serious transmission damage.

- Place all removed parts into a tray or other suitable container.
- If you do not understand any part of these instructions, please call **B&M Technical Support** for assistance.

SAFETY

- **WORK SAFELY! Park the vehicle on a clean, level surface.**
- **AVOID SERIOUS INJURY OR DEATH BY CRUSHING! Securely support the vehicle on a lift or jack stands. Use a lift, or jack and jack stands, to raise the vehicle to the height necessary to remove the oil pan and valve body.**

WARNING: NEVER work under a vehicle that is supported only by jacks!

- **AVOID BURNS! Automatic transmissions typically operate at 150–200°F. Allow the transmission to cool down sufficiently before starting work.**

RELATED B&M PRODUCTS

When installing your Shift Improver Kit, please consider these additional B&M products:

SuperCooler Transmission Oil Cooler: Any vehicle used in a performance application should have a transmission oil cooler. Heat is the major cause of transmission failures, and B&M SuperCoolers are an effective safeguard against overheating. See our web page or your B&M dealer for a wide range of SuperCoolers to suit every need.

Transmission Temperature Gauge Kit (PN 80212): The B&M transmission temp gauge can help you avoid costly repairs with advance warning of transmission overheat. Accurate and dependable, this kit is easy to install and includes all the necessary hardware.

Universal Transmission Drain Plug Kit (PN 80250): Few stock transmission pans feature a drain plug. Our plug allows quicker, cleaner fluid changes.

Trick Shift Performance Automatic Transmission Fluid: B&M Trick Shift is the industry's leading performance ATF. A specially blended oil with foam inhibitors, extreme pressure agents and shift improvers, TrickShift assures protection while delivering the fastest possible shifts. *Pour in the performance!*

INSTALLATION

- 1. Drain the oil pan.** If your transmission has a drain plug, remove it and allow the fluid to drain. If not, loosen and remove the oil pan screws one at a time, working rear-to-front. If the pan sticks to the gasket, gently break the seal with a screwdriver before loosening the last two screws. Remove the screws slowly, allowing the pan to tilt down to drain the remaining fluid. After the pan is removed, set it aside.
- 2. Disconnect the throttle pressure and shift linkages (Fig 1).** First loosen the throttle pressure lever pinch bolt, remove the lever from its shaft, and carefully move the lever and rod aside, allowing them to hang free.

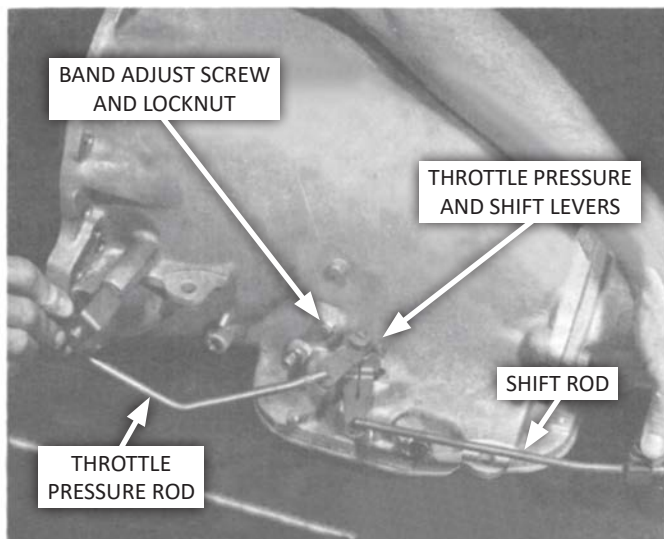


FIG. 1

Then loosen the shift lever pinch bolt, **move the vehicle's shifter to LOW (to make removal and installation of the park rod easier)**, remove the lever from its shaft, and carefully move the lever and rod aside, allowing them to hang free.

- 3. Remove the valve body from the transmission (10 hex screws "A", Fig. 2).**

CAUTION: The valve body is under pressure from the accumulator spring. Loosen and remove the last 4 screws slowly, while holding the valve body against the transmission.

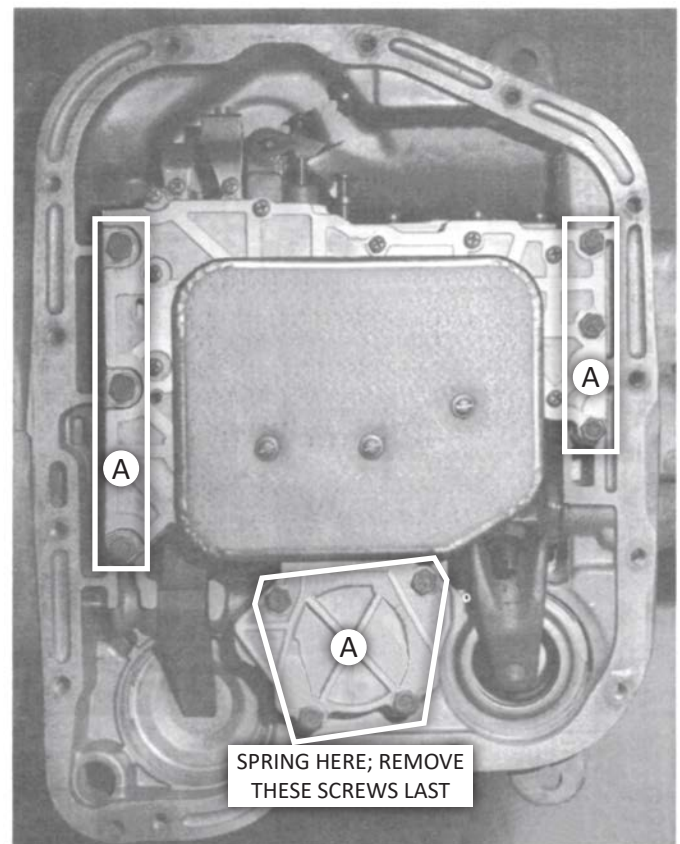


FIG. 2

Carefully remove the valve body from the transmission (Fig. 3). When the selector shaft is clear of the case, move the valve body forward to pull the park rod past the park pawl in the tail housing. Move the valve body to a clean work surface, then remove and inspect the filter (3 screws "A", Fig. 3). If the filter has varnish on it, or if the transmission has more than 20,000 miles since its last service, replace the filter (B&M PN 10288).

NOTE: If the park rod is stuck behind the park pawl, rotate the output shaft counter-clockwise (viewed from the rear). The pawl will fall into its notch on the park gear, and release the park rod.

Remove the accumulator spring and piston (Fig. 3), and discard the spring.

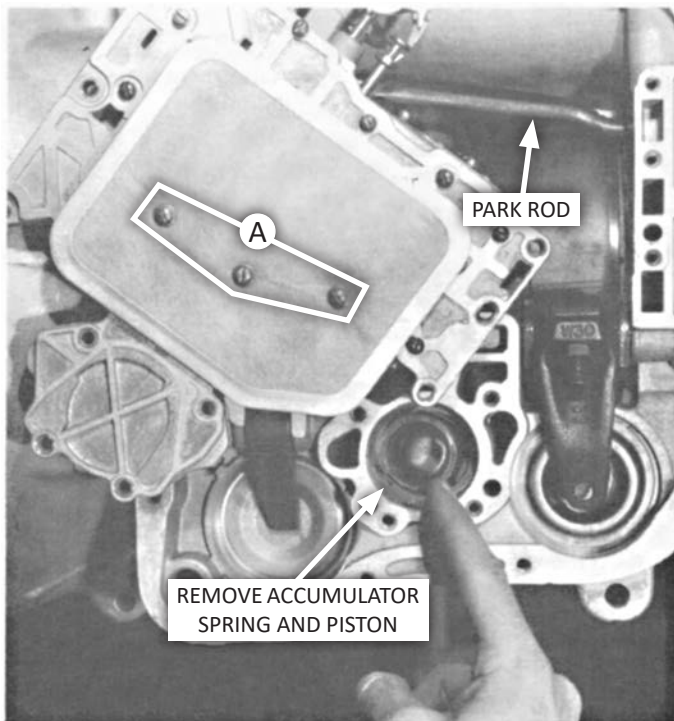


FIG. 3

4. **Adjust the front band.** Loosen the band adjustment locknut (Fig. 1). Tighten the adjusting screw to **72 in-lbs** (snug), then back off the adjusting screw 2 full turns. Hold the band adjusting screw, and tighten the jam nut securely.

5. **Carefully remove the spring retainer** (3 screws, Fig. 4).

CAUTION: The retainer is under pressure from the 2 springs. When removing the last screw, hold the retainer against the springs.

Remove the retainer and adjusting plate, pressure regulator spring, and converter valve spring, and set them aside.

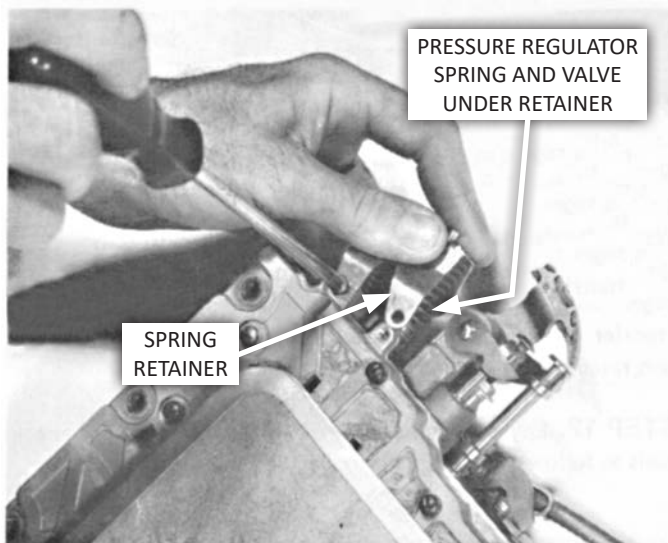


FIG. 4

Remove the pressure regulator and converter valves (Fig. 8), and lay them next to their respective springs.

6. **Set the valve body on the bench** with the bottom side up and the selector lever assembly in the top left corner (Fig. 5). Note the valve body's three main components:

Valve Body Casting: the thick (bottom) casting, containing the selector lever and valve bores.

Separator Plate: the thin steel plate sandwiched between the Valve Body and Transfer Plate castings (and attached to the Transfer Plate).

Transfer Plate: the thinner (top) casting, with the valve body screw heads.

7. **Remove the transfer plate** (14 screws, Fig. 5).

CAUTION: Avoid losing internal parts. When removing the last screw, hold the transfer plate down with one hand.

Carefully lift the transfer plate assembly off the valve body casting, and set it on the bench with the separator plate facing up (Fig. 9).

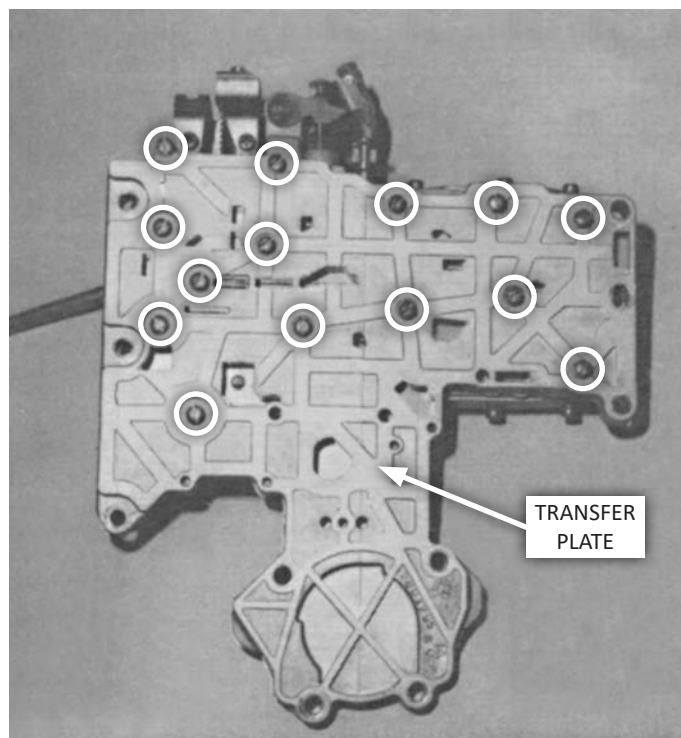


FIG. 5

8. **Note the locations and sizes of check balls** in your valve body casting (Fig. 6):

Some Models: Large check ball and spring at location 7. Remove and discard them.

All Models: Five 1/4" check balls at locations 1-5, and one 11/32" check ball at location 6. Remove these and place them in a suitable container.

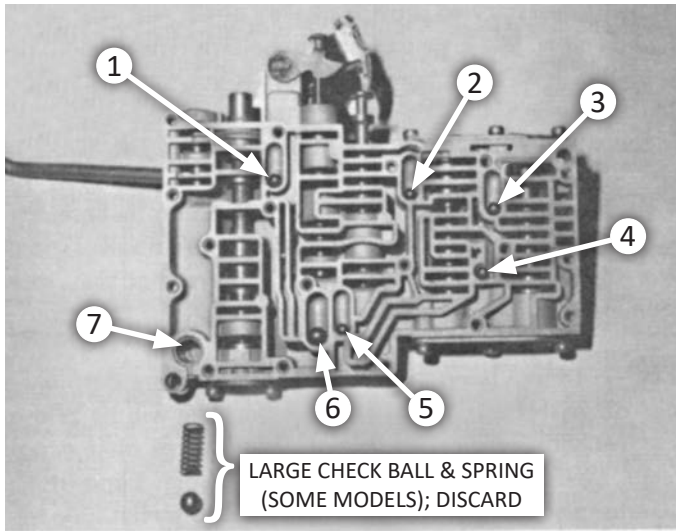


FIG. 6

9. Heavy Duty: Go to Step 11.

Street/Strip: Remove the governor plug end plate (5 screws, Fig. 7).

CAUTION: Avoid losing the selector lever detent ball and spring! Do not rotate the lever after removing the end plate. (It should still be in the LOW position from Step 2.)

Remove the shuttle valve throttle plug and spring. Discard the spring.

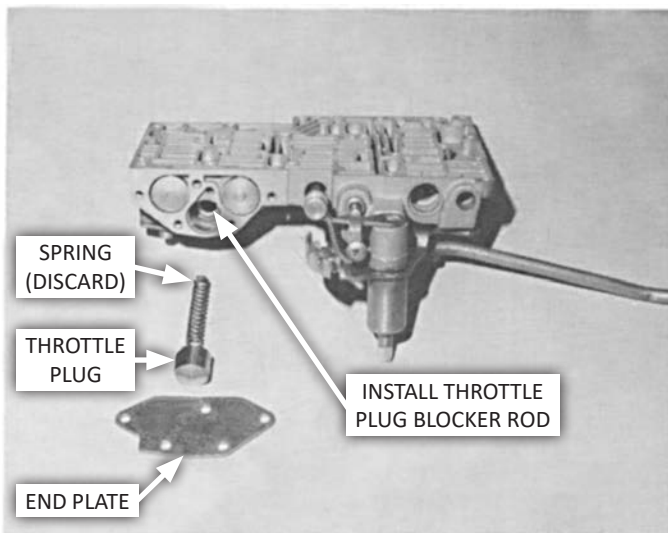


FIG. 7 (STREET/STRIP ONLY)

10. Install the B&M throttle plug blocker rod into the valve bore (Fig. 7), followed by the shuttle valve throttle plug. The plug must sit flush to, or slightly below, the surface of the casting to prevent leaks. Place the end plate against the casting. It should sit flat against the casting with thumb pressure only. If you cannot hold the plate flat against the slight spring tension of the shift valves, the blocker rod is too

long; grind it slightly as needed. Fasten the end plate with 5 screws, tightened to **35 in-lbs**.

11. Install the pressure regulator and converter valves into their bores (Fig. 8). Both valves should move freely in their bores. Remove any burrs that may cause the valves to stick or bind. Set the casting aside.

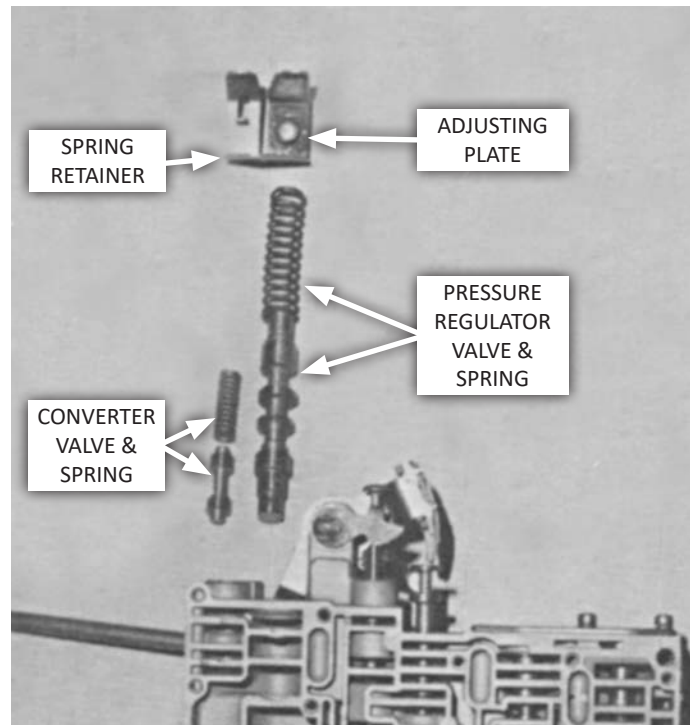


FIG. 8

12. On the transfer plate assembly (Fig. 9), note the shape and orientation of the stiffener plate. Remove the separator and stiffener plates (4-5 screws; varies by model). If there is a check ball and/or filter screen, discard them.

Clean the transfer plate with a suitable solvent, and allow it to dry. Lay the transfer plate on the bench, then lay the **B&M separator plate** on top of it, followed by the stiffener plate. Align all the screw holes, and hand start the 4-5 screws. Then tighten them to **35 in-lbs**, and set the assembly aside.

13. Lay the valve body casting in front of you and install the check balls as follows (Fig. 6):

All Models: Install one 11/32" check ball at location 6.

Heavy Duty: Install five 1/4" check balls at locations 1-5.

Street/Strip: Install four 1/4" check balls at locations 1, 2, 3, and 5.

14. Carefully lay the transfer plate assembly atop the valve body casting, and install the 14 valve body screws (Fig. 5). First run the screws down finger tight, then tighten to **35 in-lbs**. Install the pressure regulator and converter valve springs (Fig. 8).

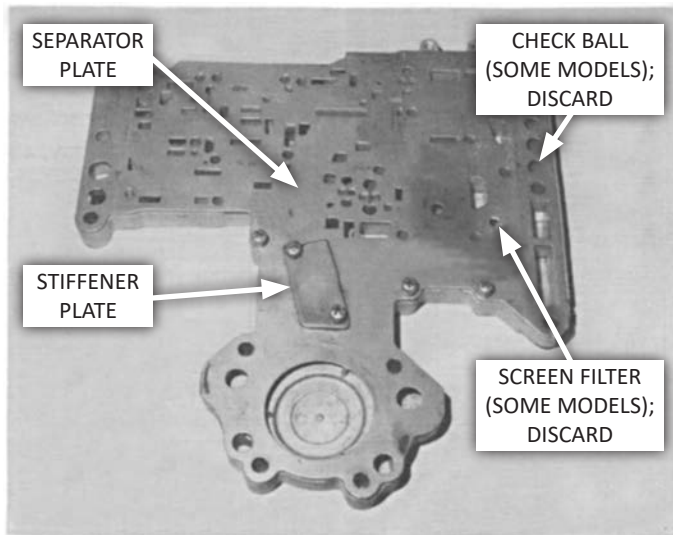


FIG. 9

15. Insert the pressure regulator adjusting screw and plate in the spring retainer. The edges of the plate fit close to the retainer when properly installed. Move the assembled retainer into place, engaging both springs. Push the retainer down against the springs, align the 3 screw holes, and hand start all 3 screws (Fig. 4). While continuing to hold the retainer against the springs, gradually run the screws down finger tight.

16. Use the supplied gauge to set the distance between the manual valve and the adjusting screw to 1-7/8" (Fig. 10). When the dimension is correct, tighten the 3 retainer screws to 35 in-lbs.

17. Use the supplied gauge to set Dim. "A", the distance from the edge of the valve body casting to the lower face of the adjusting plate (Fig. 10). Adjust the plate as follows:

Heavy Duty: 1-1/4"

Street/Strip: 1-3/16"

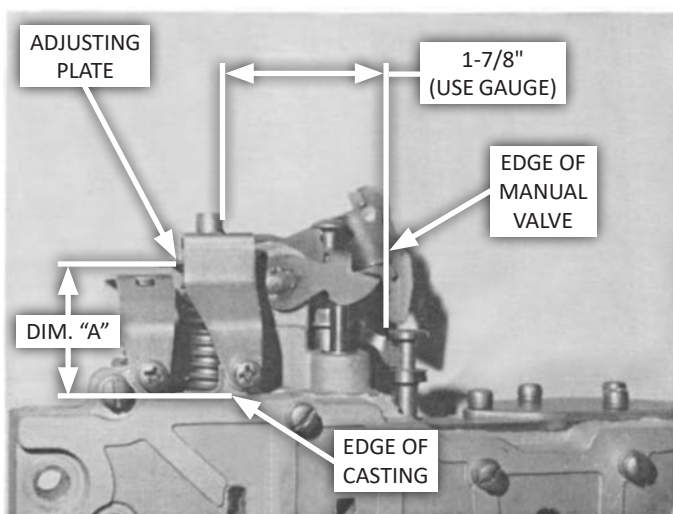


FIG. 10

18. Inspect the selector shaft seal (Fig. 11), and replace if necessary. Lubricate the seal and selector shaft with assembly grease or transmission fluid. With the selector lever still in LOW (for maximum extension of the park rod), carefully guide the valve body into the transmission, inserting the park rod into its hole in the case.

CAUTION: Avoid damaging the neutral safety switch. Use a small screwdriver to hold the tip of the switch in during valve body installation.

NOTE: If the transmission has not been rotated since removal of the valve body, the park rod should slip past the park pawl. If it doesn't, rotate the output shaft counter-clockwise (viewed from the rear) while pushing against the pawl with a screwdriver until you feel the pawl fall into its notch.

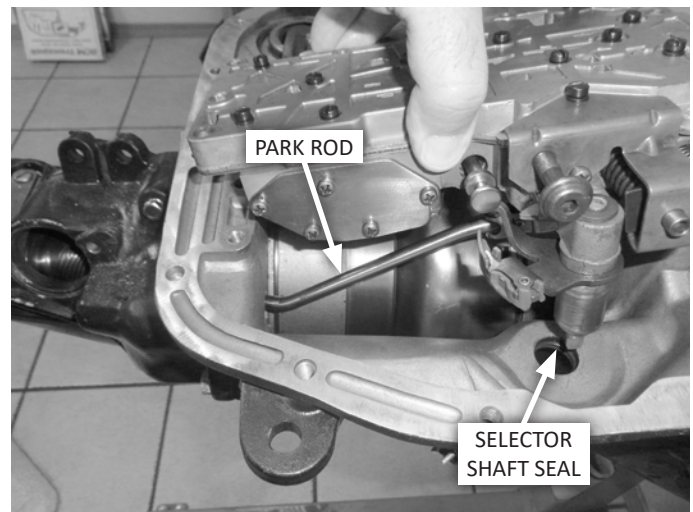


FIG. 11

19. Assemble the valve body to the transmission (10 screws, Fig. 2). First run the screws in finger-tight, and verify the valve body sits flat against the case.

CAUTION: Prevent valve body damage! It must sit flat against the case with no interference! Anything that prevents the valve body from making even contact with the case must be corrected.

Tighten the valve body screws in an alternating pattern to 100 in-lbs. Then install the oil filter (3 screws, 30 in-lbs).

20. Install the shift lever over its shaft and tighten the pinch bolt (Fig. 1). Then install the throttle pressure lever over its shaft and tighten the pinch bolt.

21. Install the oil pan and new gasket with the 14 pan screws, tightened in an alternating pattern to 150 in-lbs.

CAUTION: Prevent oil pan leaks! Do not over-tighten the pan screws.

If your oil pan has a drain plug, make sure it is tight.

22. Throttle pressure adjustment: Verify the carburetor is off the fast idle cam so that the throttle is in the normal (or hot) idle position. Have a helper push the throttle lever on the transmission all the way forward. Adjust the throttle pressure rod so there is no backlash between the operating stud on the carburetor and the back of the slot on the throttle pressure linkage.

CAUTION: All vehicles must have throttle pressure linkage regardless of intended use! Running the transmission without the throttle pressure linkage will damage it.

SERVICE TRANSMISSION WITH FLUID

CAUTION: Do not overfill! This will cause foaming and overheating.

- 1. With the vehicle sitting on level ground,** add 4 quarts of transmission fluid.
- 2. Start the engine,** and run the shifter slowly through the entire gear range and back. With the engine still running and the shifter in NEUTRAL, check the fluid level.
- 3. Each time you add fluid,** run the shifter slowly through the entire gear range, then recheck the fluid level in NEUTRAL.
- 4. Add fluid as needed** to bring the level to the COLD LOW mark on the dipstick.
- 5. Take the vehicle for a short drive** (5-10 mins.) to bring it up to operating temperature.
- 6. Stop the vehicle on level ground,** and run the shifter slowly through the entire gear range.
- 7. Fluid level should be** between the HOT LOW and HOT FULL marks with the transmission at operating temperature, the vehicle on level ground, and the shifter in NEUTRAL.
- 8. If not, gradually add fluid,** run the shifter through its range, and recheck until the fluid level is between the HOT LOW and HOT FULL marks.

Minor adjustments in shift points can be made once filling is complete. Shortening the throttle pressure rod will lower the shift points; lengthening the rod will raise them.

TROUBLESHOOTING GUIDE

- 1. Slipping (general)**
 - Low fluid level (starvation).
 - Valve body screws loose.
 - Check balls improperly installed.
 - Throttle pressure linkage disconnected or improperly adjusted.

- 2. Overheating, foaming oil at dipstick or bellhousing/breather**
 - High fluid level.
 - Clogged or blocked cooler.
 - Insufficient cooler capacity

-
- 3. Erratic shifting**
 - Low fluid level (starvation).
 - High fluid level (foaming).
 - Throttle pressure link sloppy, loose or misadjusted.
 - Shifter misadjusted.
 - Valve body screws or end plates loose.

-
- 4. Early or late shifts**
 - Throttle pressure linkage misadjusted.

-
- 5. Leaks**
 - Clean transmission first and observe; check pan gasket and screw torque.

-
- 6. No upshift**
 - Throttle pressure linkage adjusted too high.
 - Shift valves burred or sticking.
 - Loose valve body screws.

-
- 7. Soft shifts under power**
 - Throttle pressure linkage adjusted too high.
 - Low fluid level (starvation).
 - High fluid level (foaming).
 - Pressure regulator valve stuck.

-
- 8. Engine revs on 2-3 shift**
 - Check band adjustment.

Congratulations, your B&M Shift Improver Kit is now installed and ready to enjoy!

KEEP THESE INSTRUCTIONS FOR FUTURE REFERENCE

B&M Performance maintains a highly-trained technical service department to answer your technical questions, provide additional product information and offer various recommendations.

