



Installation Instructions

***Shift Improver Kit for
TorqueFlite 1966-'70
A-727 & 1966-'77 A-904
with 6 Cylinder***

Part Number 10226

© 1997 B&M Racing & Performance Products

Congratulations. You have just purchased the most complete and versatile Shift Improver Kit available. We feel that the installation instructions on the following pages are as complete and as clear as possible. Installation of your Shift Improver Kit is a job that can be handled by anyone with a minimum of mechanical experience. It is important to closely follow the instructions. Read each step and if you don't understand, go back and repeat it again.

Note: The Shift Improver Kit is not a cure-all for ailing transmissions.

If your transmission is slipping or in poor general shape, the installation of a Shift Improver Kit may worsen the condition. However, on a good operating transmission in average condition, the Shift Improver Kit will provide the kind of transmission performance you're looking for.

Before beginning, check the parts list on page 7 of these instructions to make sure you have all the necessary parts. Also check the tool list on page 6. A minimum of tools are required.

TORQUEFLITE

INTRODUCTION

This kit can be installed in a few hours by carefully following directions. Read all instructions first to familiarize yourself with the parts and procedures. Work slowly and do not force any parts. Transmission components and valves are precision fit parts. Burrs and dirt are the number one enemies of an automatic transmission. Cleanliness is very important, so a clean work area or bench is necessary. We suggest a clean work bench top from which oil can easily be cleaned or a large piece of cardboard.

This kit contains all parts necessary to obtain two levels of performance depending on intended use:

Heavy Duty: Towing, campers, motorhomes, police, taxi, etc.

Street/Strip: Dual purpose performance vehicles. Street and strip high performance cars, on and off-road desert vehicles and 4-wheelers.

Automatic transmissions operate at temperatures between 150°F and 250°F. It is suggested that the vehicle be allowed to cool for a few hours to avoid burns from hot oil and parts. The vehicle should be off the ground for ease of installation. Jack stands, wheel ramps, or a hoist will work fine. **Make sure vehicle is firmly supported!!** Try to raise it 1-2 feet so you have plenty of room to work easily. Also, have a small box or pan handy to put bolts in so they won't be lost, and a drain pan to catch oil.

STEP 1. Drain oil pan. Some model Torqueflites have drain plugs. If yours has a drain plug, remove it and allow the fluid to drain, then install drain plug back into pan. If you do not have a drain plug you should consider installing a B&M pan Drain Plug Kit, #80250, at this time. To drain oil remove each pan bolt one at a time, working toward the front of the transmission. Remove the last two bolts slowly and the pan will tilt down to allow the last of the fluid to drain. If the pan sticks to the old gasket, pry it down slightly with a screwdriver **before** removing the last two bolts to break the seal. After the last bolt is removed the pan can be lowered and set aside.

STEP 2. The valve body will now be exposed. (See Fig. 1) It is held in place by ten 1/4-20 bolts. Before the valve body can be removed you must disconnect shift and throttle linkage. (See Fig. 2) Throttle linkage is located on the left (driver) side of the case just above the valve body. The lever is attached to the throttle shaft and held in place with a pinch bolt. Use a 7/16" wrench or socket and loosen the bolt but do not remove it. Use screwdriver to pry the lever up and off the shaft. Place transmission shift lever in low gear. Loosen the pinch bolt and pry the selector lever off the larger manual lever shaft. Let the two levers hang free.

STEP 3. Remove the valve body by removing the ten bolts with a 7/16" wrench or socket. There is a spring between the valve body and the case so remove the last bolt slowly. This

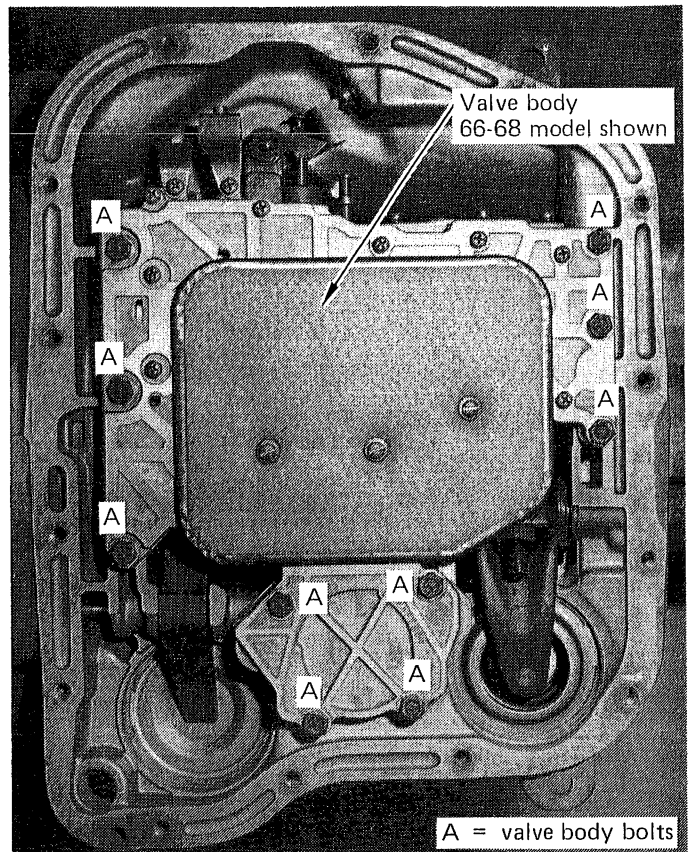


FIGURE 1

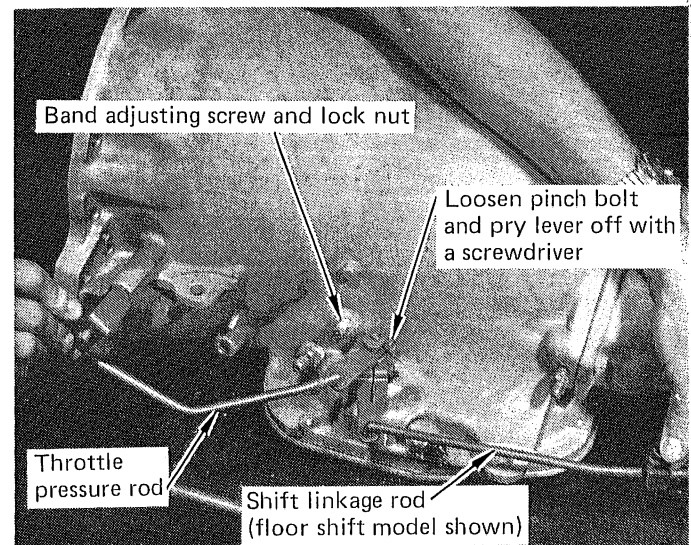


FIGURE 2

will also reduce the amount of oil splatter as the valve body is removed. Pull valve body down and forward to disengage park rod from back of case. It may be necessary to rotate driveshaft slightly to disengage the rod. There will be a spring (1-2 accumulator spring) between the valve body and case (See Fig. 3), remove and discard it. Place valve body in oil pan and set them on work bench.

STEP 4. Adjust front band. Loosen locknut. (See Fig. 2) Tighten band adjusting screw to 72-in. lbs. (snug). Then back off adjusting screw two full turns. Hold band adjusting screw and tighten 3/4" jam nut securely.

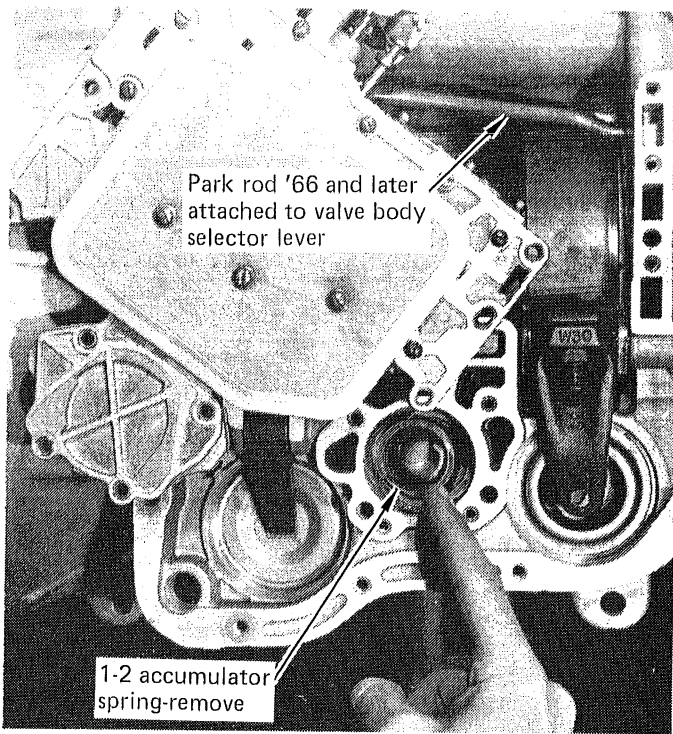


FIGURE 3

STEP 5. Your work bench should be clean as stressed in the beginning of the instructions. Place the valve body on the bench with the filter side up. Remove the three filter screws and remove the filter. Set the screws aside in a small tray, so they won't be lost. As you disassemble the valve body, when removing a valve and a spring, keep them together.

Now remove the pressure regulator spring retainer located next to the selector lever. (See Fig. 4) Remove three short screws to remove retainer.

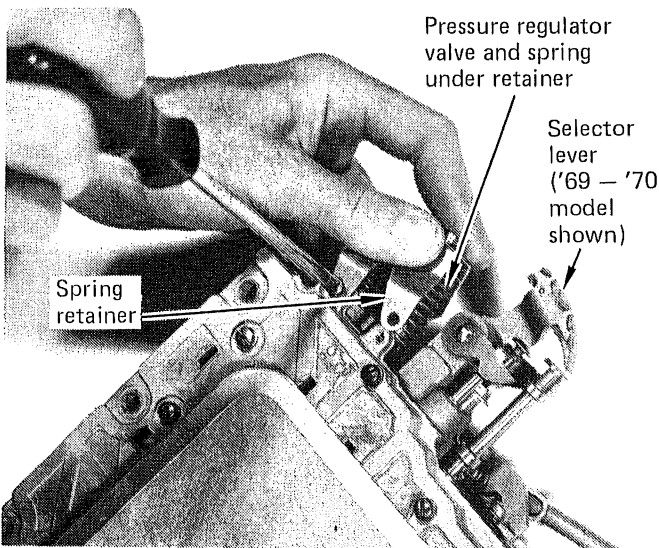


FIGURE 4

CAUTION: Hold your hand against the retainer while removing the screw (See Fig. 4) so the large pressure regulator spring does not fly out. Remove the retainer and adjustment plate, pressure regulator spring and converter valve spring and set them aside. Remove the regulator valve and converter valve and lay them next to their respective springs.

STEP 6. Set the valve body on the bench with the filter side up and the selector lever assembly in the top left corner. The valve body consists of: (1) thick casting containing the valve bores and will be referred to as the casting; (2) a thin stamped steel plate with numerous different shaped holes called a separator plate, and; (3) a thin aluminum casting that looks like a maze called a transfer plate.

STEP 7. Valve Body Disassembly: (See Fig. 5) Remove the valve body screws from transfer plate. There will be fourteen of them with either Phillips or slot heads. Hold the casting and transfer plate together with one hand while removing the last screw so you won't lose any internal parts. Carefully lift the transfer plate assembly off the casting to expose the oil passages. Turn the transfer plate assembly over so the separator plate is facing up and set it to your right. Inspect your casting for the following: (See Fig. 6)

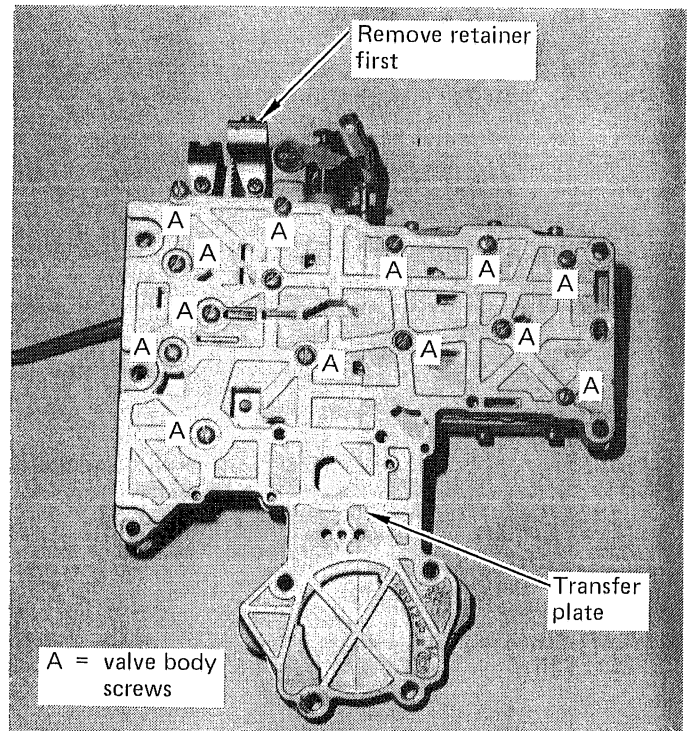


FIGURE 5

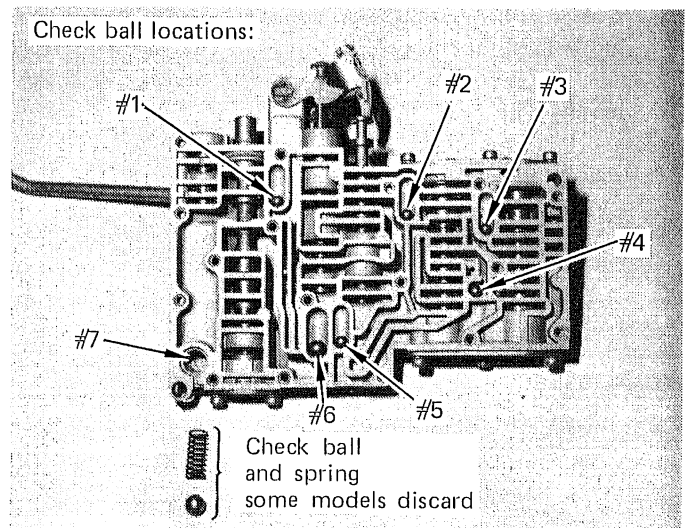


FIGURE 6

Some Models: Large steel ball on a stiff spring underneath at location 7. Remove the ball and spring and discard.

All valve bodies: There will also be five 1/4" diameter steel check balls in locations 1 thru 5 and one 11/32" diameter steel check ball in location 6. (See Fig. 6) Remove these and place them in the tray.

STEP 8.

Heavy Duty: Go to Step 10.

Street/Strip: Remove five short screws and remove the governor plug end plate. (See Fig. 7) Do not rotate the selector lever as you will disengage the detent ball allowing it to fly out of position. Remove the shuttle valve throttle plug. Remove and discard the shuttle valve throttle plug spring.

STEP 9. Install the shuttle valve throttle plug rod supplied with the kit into the valve bore. Install the shuttle valve throt-

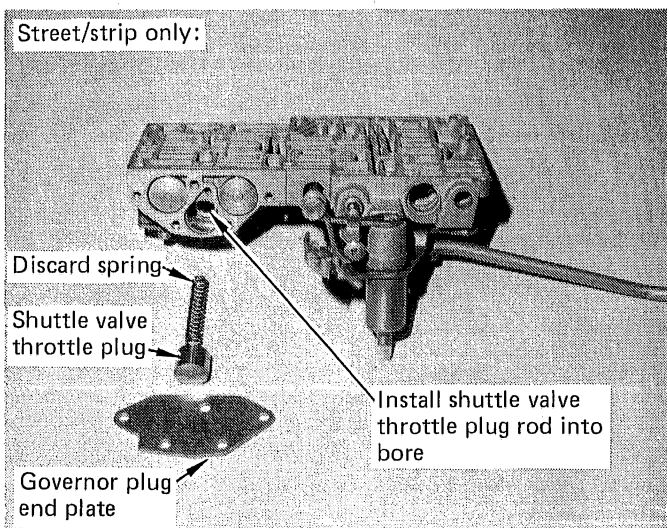


FIGURE 7

tle plug into its bore. The plug must be flush or slightly below the surface of the casting to prevent leaks. Grind the rod down slightly if necessary to provide clearance. Install the governor plug end plate. You should be able to hold the plate 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 rod is too long. Install five short screws finger tight only.

STEP 10. Install pressure regulator valve into its bore. (See Fig. 8) Install converter valve into its bore. Both valves should move freely and easily. Remove any burrs that may cause stickiness or binding. Set casting aside.

STEP 11. Place transfer plate and separator plate assembly in front of you. The thin metal separator plate will be held on with five short screws. Note how your stiffener plate is positioned. (See Fig. 9) Remove the retaining screws and lift the separator plate off. Some later models have a screen type filter or a check ball in the separator plate. Discard.

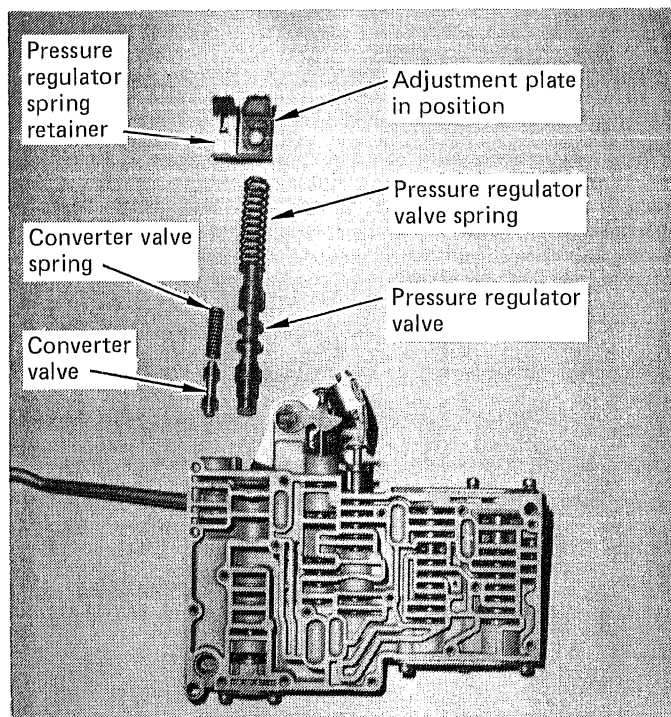


FIGURE 8

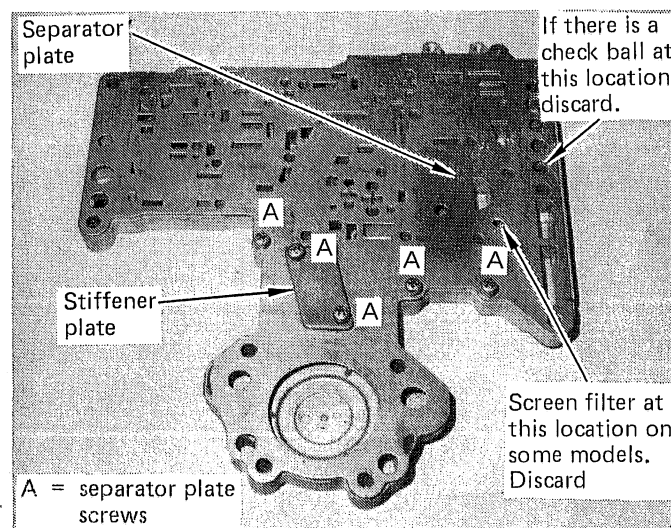


FIGURE 9

Wash the transfer plate in solvent or gasoline to remove any dirt. Lay the transfer plate down on the bench with the passages facing up. Lay B&M separator plate in position on top of transfer plate and align the screw holes. Install stiffener plate and retaining screws and tighten screws finger tight.

STEP 12. Lay casting in front of you and install steel check balls as follows: (See Fig. 6)

All Models: One 11/32" dia. steel ball in location 6.

Heavy Duty: Five 1/4" steel balls in locations 1 thru 5.

Street/Strip: Four 1/4" steel balls in locations 1, 2, 3 and 5.

Align transfer plate assembly over casting and hold the two halves together with your hand. Install fourteen screws in place finger tight. (Note: Three long screws are for the filter.) Install pressure regulator spring and converter valve spring in place. (See Fig. 8) Insert pressure regulator adjusting plate into place in retaining cage. Adjusting plate is a close fit when properly installed inside the retainer. Engage pressure regulator spring with adjusting plate and engage converter valve spring with prong in retainer. Hold retainer against valve body, align screw holes and install three short screws finger tight. (See Fig. 4)

STEP 13. Tighten fourteen screws attaching transfer plate to casting on the bottom of the valve body to 30-in. lbs. Tighten all end plate screws to 35-in. lbs. Adjust pressure regulator spring retainer from side to side until the distance from the manual valve to the adjusting screw is 1-7/8". Use the gauge supplied to check this measurement. (See Fig. 10) Tighten three short retaining screws to 35-in. lbs. At this point all screws should be tight.

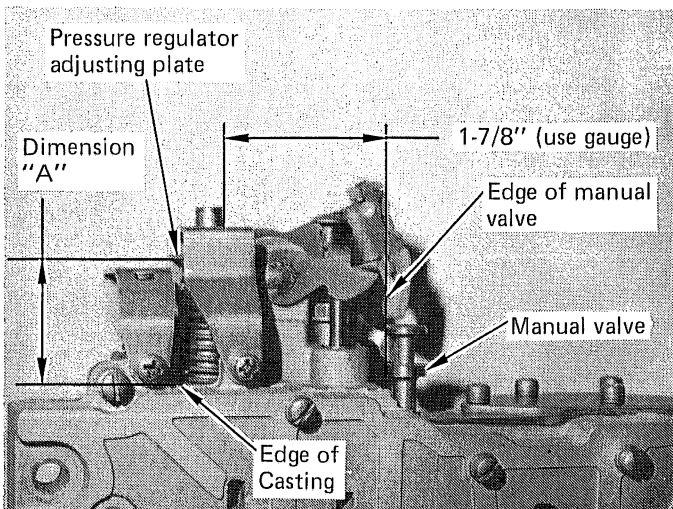


FIGURE 10

STEP 14. Pressure regulator adjustment: Use the gauge to adjust the distance from the casting face to the inside edge of the pressure regulator spring adjusting plate. (See Fig. 10) Use a 3/16" Allen wrench to adjust the plate to dimensions shown.

Heavy Duty: 1-1/4"	} Dimension "A"
Street/Strip: 1-3/16"	

STEP 15. Guide the valve body up into the transmission. Insert the park rod into the hole in the rear of the case first and rotate drive shaft until the rod engages the pawl. (See Fig. 11) Align valve body with case and install valve body against case. (Be careful not to damage neutral safety switch. A small screwdriver can be used to retract the switch out of the way during installation.)

STEP 16. Install shift lever over manual lever shaft and

tighten pinch bolt. Install throttle pressure lever over throttle pressure shaft and tighten pinch bolt securely.

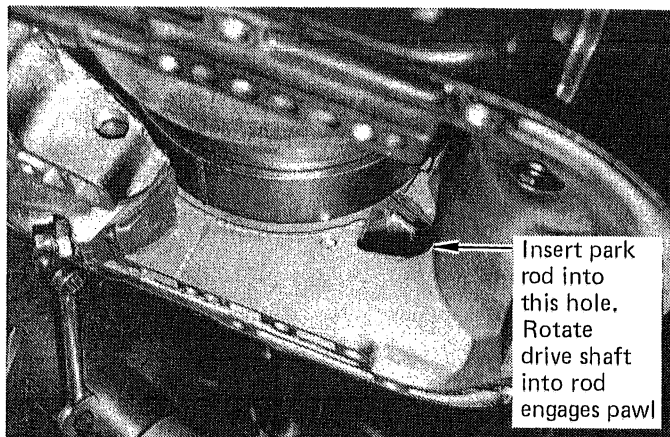


FIGURE 11

STEP 17. Clean oil pan and install in place with new gasket supplied with kit. Install pan bolts and tighten to 150-in. lbs. Check your drain plug if you have one and make sure it is tight!

STEP 18. Check shifter adjustment. Place shifter in park position. Loosen the pinch bolt on the shifter rod (which is located on the end of the rod away from transmission) and let the rod seek its own position. Tighten the pinch bolt and check the feel of the shifter. The detent position should be close enough to the gate stops in neutral and drive so that the shift selector lever will not remain out of detent position when placed against gate and released.

STEP 19. Throttle pressure adjustment: Make sure carburetor is off fast idle cam so throttle is in normal idle position. (Hot idle position) Have someone push the throttle lever on the transmission all the way forward. Adjust the throttle pressure rod so there is no back lash between the operating stud on the carburetor and the back of the slot on the throttle pressure linkage.

STEP 20. Lower the vehicle but keep the rear wheels off the ground if possible. Pour four quarts of B&M Trick Shift or Type "F" fluid into the transmission. While Trick Shift is superior in lubrication, heat capacity and friction material performance, we recommend Ford fluid over Dexron or Type "A". Start the engine and allow it to idle in neutral. Check the fluid level and fill to the "add" mark. Shift the transmission through all gear positions. If the rear wheels are off the ground, allow the transmission to shift through all three gears several times. Check the oil level and make sure it is at least at the "add" mark.

STEP 21. Drive the vehicle for one or two miles to thoroughly warm the fluid. Minor adjustments in shift points can be made at this time. Shortening the rod will lower shift points, lengthening the rod will raise shift points. **Note: All vehicles must have throttle pressure linkage regardless of intended use. Running this transmission without throttle pressure linkage will damage it.** Check fluid level with engine running and shifter in neutral and make sure the level is between the "add" and "full" marks. **Do not overfill!!!** This will cause foaming and overheating.

**TOOLS REQUIRED FOR TORQUEFLITE
SHIFT IMPROVER KIT INSTALLATION**

- 1 Speed Handle or Ratchet – 3/8" drive
- 1 1/2" Socket – 3/8" drive
- 1 7/16" Socket – 3/8" drive
- 1 3/8" 12-point Socket – 3/8" drive
- 1 3/4" Wrench
- 1 3/16" Allen Wrench

- 1 6" Flat Blade Screwdriver
- 1 Small Flat Blade Screwdriver
- 1 Phillips Blade Screwdriver
- 1 Torque Wrench 0–250–in. lbs
- 1 1/4" Drill Motor

**TROUBLE SHOOTING GUIDE
TORQUEFLITE**

<u>Malfunction</u>	<u>Probable Cause</u>	<u>Malfunction</u>	<u>Probable Cause</u>
Slips	Low fluid level	Late shifts	Throttle pressure linkage misadjusted
Overheating, foaming oil at dipstick or breather	High fluid level	Leaks	Clean transmission first and observe, check pan gasket and bolt torque
	Clogged or blocked cooler		
Erratic shifting	Throttle pressure linkage sloppy, loose or misadjusted	Will not up shift	Throttle pressure linkage too high
	Shifter misadjusted		Shift valves burred and sticking, loose bolts
	Low fluid level	Soft shifts under power	Throttle pressure linkage too high
	High fluid level		Low fluid level (starvation)
	Valve body bolts or end plate screws loose		High fluid level (foaming)
Early shifts	Throttle pressure linkage misadjusted	Engine revs on 2–3 shift	Pressure regulator valve stuck
			Check band adjustment

TORQUEFLITE PARTS LIST

