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Installation Instructions

# Shift Improver Kit

*Part No. 30262*

**1968-1981**

**TurboHydramatic 350**

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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 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 read 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 will provide the kind of transmission shift feel you're looking for.

Before beginning, check the parts list on Page 8 of these instructions to make sure you have all the necessary parts. Also check the tool list on Page 5. A minimum of tools are required.

This kit will not fit a TH-350C transmission. Use Transpak part number 30235 for 1980-86 TH-350C

## TURBO HYDRO 350 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:

1. **Heavy Duty:** Towing, campers, motorhomes, police, taxi, etc.
2. **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° 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 the vehicle is firmly supported!! Try to raise it 1-2 feet so you have plenty of room to work easily. Have a box or pan handy to put small parts in so they won't be lost. Also have a drain pan to catch oil.

### DISASSEMBLY

**STEP 1.** Some Turbo 350 transmissions do not have drain plugs. You may want to install a B&M Pan Drain Plug Kit #80250 at this time. Drain the oil by removing the rear oil pan bolts and work towards the front slowly. (Note: Some vehicles will require removal of the cross member to remove the pan. Make sure you support the back of the transmission so you don't damage the distributor.) Do not remove the front two pan bolts yet. If the pan sticks to the gasket, insert a screwdriver between the pan and case and pry the pan down slightly to break it loose. Now remove the two front bolts slowly. This will lower the pan to allow the rest of the fluid to drain. Lower the pan and set it aside. Put the pan bolts in your tray.

**STEP 2.** Use a screwdriver to remove two screws and remove the oil filter and filter gasket. Put them in the oil pan. (See Fig. 1)

**STEP 3.** Observe the location of the following: (See Fig. 2) Manual linkage, detent spring and roller, S-link or offset link, detent control valve wire and lever, and support plate.

**STEP 4.** Remove pivot clip holding detent control valve lever in place. (See Fig. 3) Remove lever also and set them in the tray. Remove eighteen valve body attaching bolts. (See Fig. 2) Leave drain pan positioned as there is still oil between valve body and separator plate. Remove

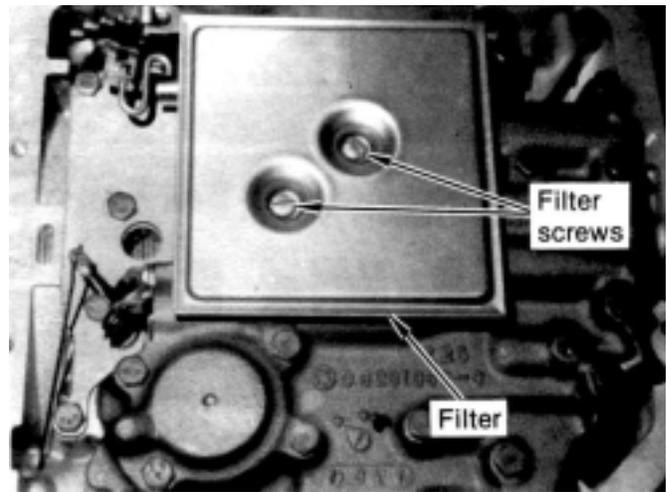


FIGURE 1

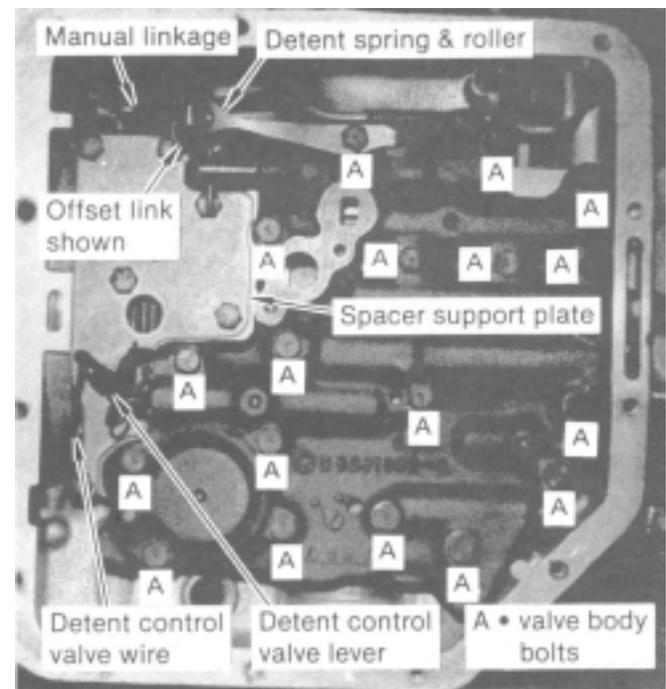
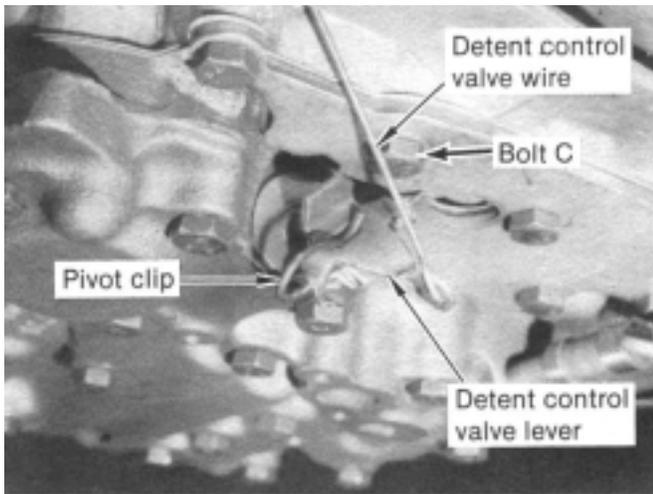


FIGURE 2

valve body by pulling straight down and disengaging manual valve and link from manual lever. (Do not let manual valve fall out of valve body.) Put the valve body in the oil pan.

**STEP 5.** Remove support plate bolts and support plate. (See Fig. 2) Remove stock separator plate, gaskets and four check balls. You will not reuse your stock separator plate. Leave drain pan positioned as there is still oil between separator plate and case. Check balls are between the plate and case. If front servo assembly falls out install it back in position with grease to retain it. Order of assembly is: spring, retainer, pin, washer and piston. See Fig. 5A,

**STEP 6.** Scrape off any excess gasket material that may be stuck to the valve body. This is very important as stray gasket material can cause leaks. Wash valve body in



**FIGURE 3**

solvent to remove residue. Be careful not to lose the roll pins that hold sleeves in place.

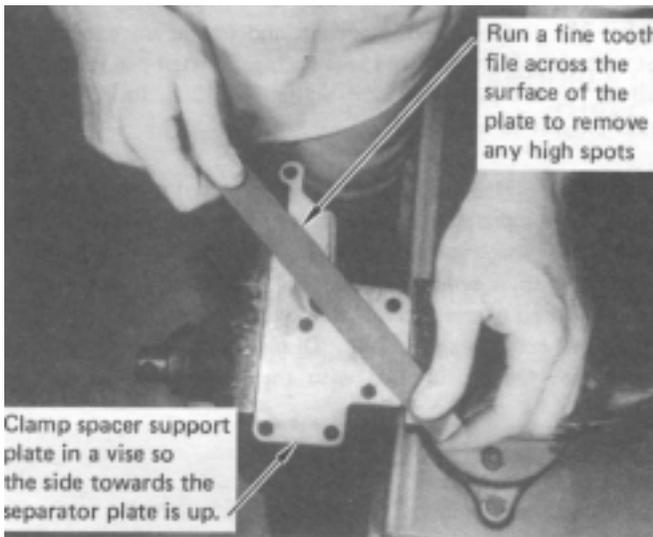
**STEP 7.** Clamp the spacer support plate in a vise and run a file across the surface that will contact the separator plate. (See Fig. 4) The Spacer support must be flat or it will leak. If your spacer support plate is bent or excessively warped, it should be replaced. (Chevrolet part # 338905)

**STEP 8.** Scrape off any excess gasket material that may be stuck to the case surface. This is very important as stray gasket material can cause leaks.

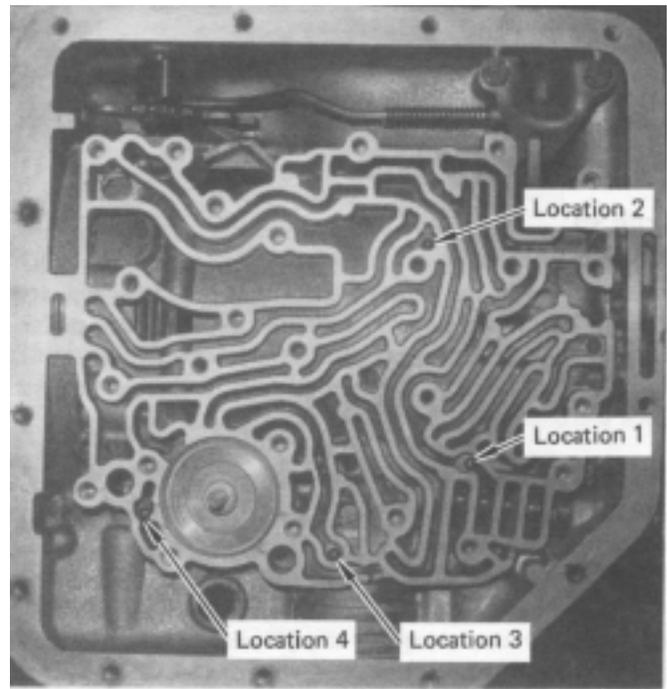
**STEP 9.** See Page 4 for B&M Separator plate modifications

**STEP 10.** Install upper valve body gasket in position on the transmission case side of the separator plate. Use a small amount of grease to hold it in place. Install the lower valve body gasket (identified by the Z-shaped slot) in position on the valve body side of the separator plate. Use a small amount of grease to hold it in place.

Check ball positioning: **Street:** Use only one check



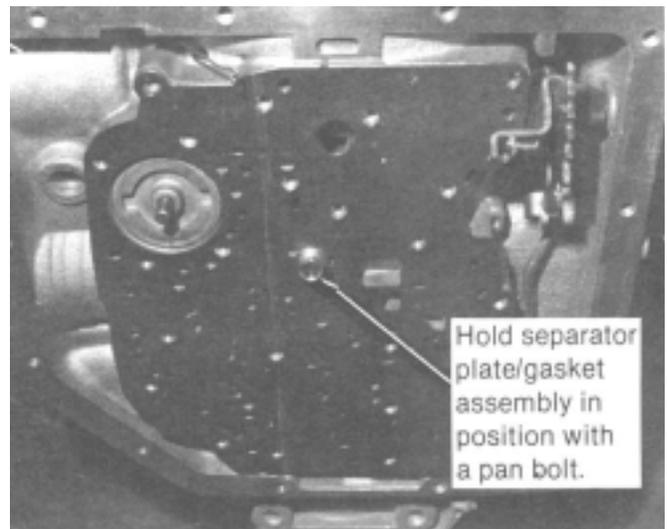
**FIGURE 4**



**FIGURE 6**

ball in location 1. (See Fig. 6) **Heavy Duty:** Use only two check balls, one in location 1 and one in location 2. (See Fig. 6) Use a small amount of grease to hold checkball(s) in position. Discard remaining check balls. Install separator plate/gasket assembly in position and use a pan bolt in the middle to hold the assembly in place (See Fig. 7). Make sure each check ball is in its proper location Separator plate check ball locations are **shown on Figure 5**, page 4.

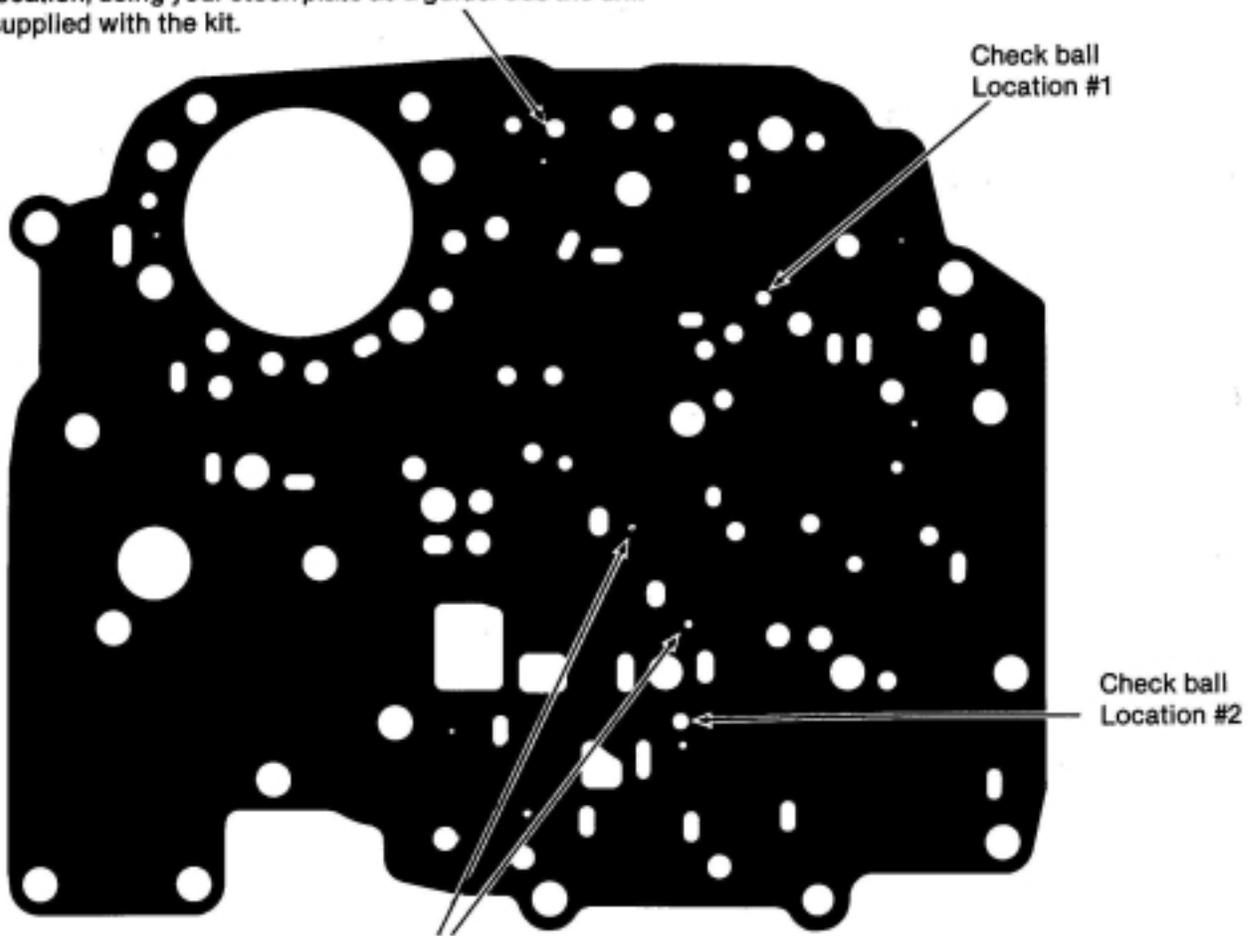
**STEP 11.** Install B&M middle support plate (silver color) in position against separator plate gasket at front of transmission. (See Fig. 8) On top of middle support plate install B&M oil transfer plate (gold color). Note that the two holes in the middle support plate and slot in the oil transfer plate line up with the two holes in the separator



**FIGURE 7**

### SEPARATOR PLATE MODIFICATION

**Heavy Duty:** Drill a 3/16" hole in the B&M plate in this location, using your stock plate as a guide. Use the drill supplied with the kit.



**Street and Strip:** Enlarge these two holes to 3/16" in the B&M plate. Use the drill supplied with the kit.

FIGURE 5

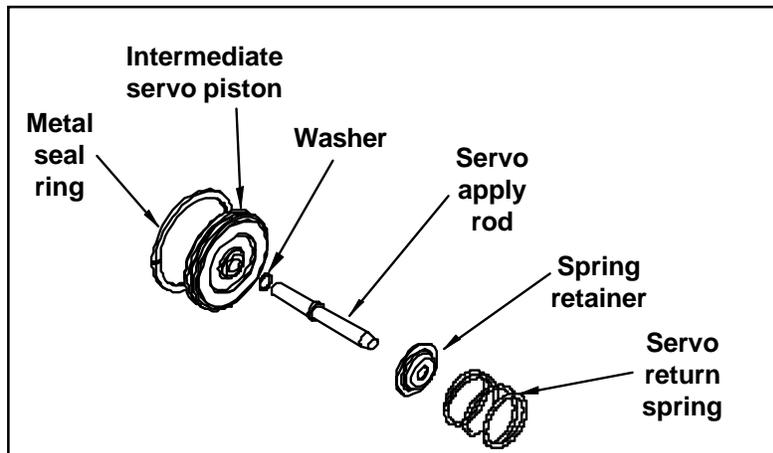
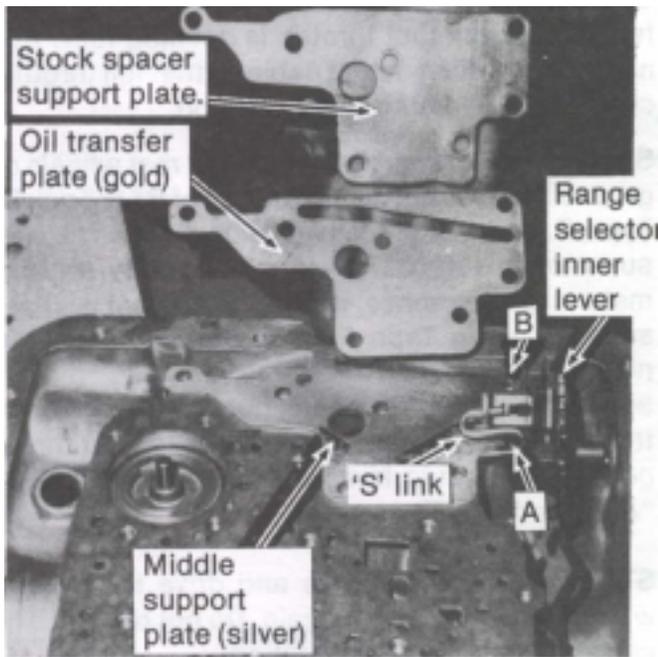


FIGURE 5A



**FIGURE 8**

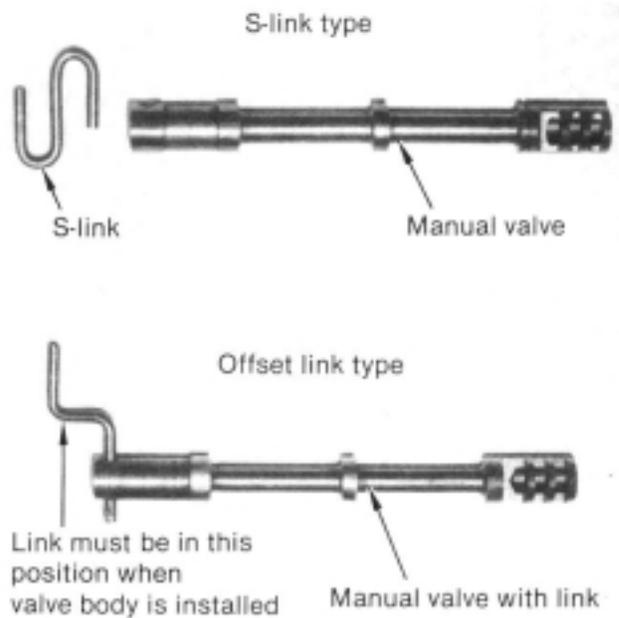
plate and plate gasket.

**STEP 12.** On top of oil transfer plate install your stock spacer support plate (The order of the plates must be correct!) Install the seven support plate bolts finger tight. Align separator plate bolts with transmission case bolt holes as well as possible. Tighten the seven support plate bolts to 100 in.-lbs.

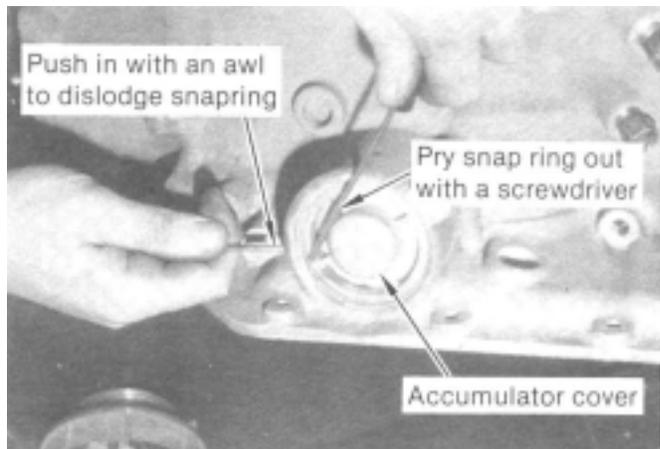
**“S” link model** (See Fig. 9): Rotate the range inner selector lever noting clearance with bolt ‘A’ (See Fig. 8) If range selector inner lever contacts bolt “A” head or there is not a 1/16" clearance between the two, mark that area of bolt head. Remove bolt & grind or file angle flat at that portion of bolt head. Reinstall bolt and check clearance again. Failure to provide detent roller engagement into range selector inner lever may prevent transmission from shifting into park.

**STEP 13.** Remove center pan bolt. Guide valve body into position. Engage manual valve linkage in selector lever. “S” link can only be installed one way. Offset linkage must be installed with the link in the forward position. (See Fig. 9) Install valve body bolts finger tight. Install detent roller spring so it engages range selector inner lever. Tighten valve body bolts to 100 in.-lbs. Make sure range selector inner lever operates freely at this point with positive indexing in each gear.

**“S” link model** (See Fig. 9): Rotate range selector inner lever all the way forward and check to see that bolt ‘B’ does not prevent range selector inner lever from going into last detent slot. (See Fig. 8) If bolt head ‘B’ prevents this action, rotate range selector inner lever out of the way. Remove bolt and grind or file a



**FIGURE 9**



**FIGURE 10**

small amount off top of bolt head ‘B’. Reinstall bolt ‘B’ and check again.

**STEP 14.** Connect detent control valve lever to detent cable wire. Position lever on body. Install pivot clip. (See Fig. 3) if pivot clip contacts spacer support plate and does not fully seat into slot on detent control lever, trim pivot clip until just clears support plate. Detent control lever must pivot freely for correct operation. If detent control valve lever contacts bolt ‘C’ (See Fig. 3), Remove lever and file or grind clearance. Tighten screws securely.

**STEP 15.** Clean pan in solvent and scrape any excess gasket material off the pan and case surface. Install pan with new gasket. Install pan bolts and tighten to 13 ft. lbs. Tighten drain plug, if so equipped.

**STEP 16.** Heavy Duty only: Use an awl or small screwdriver to dislodge the accumulator snap ring located on the right side of the transmission case. (See Fig. 10) Pry the snap ring out with a screwdriver. There is some spring loading

underneath so exercise care. Remove the accumulator cover, O-ring and accumulator spring. Discard the O-ring and spring. Install new O-ring supplied with the kit in position on the accumulator cover. Lubricate the O-ring with automatic transmission fluid and install cover and O-ring into case. Install snap ring making sure it is fully seated in its groove.

**STEP 17.** Check shifter adjustment. Place selector lever in each gear position making sure detents in transmission correspond exactly with selector lever detents. Adjustments can be made by loosening pinch bolt on rod or cable.

**STEP 18.** Detent cable: Depress accelerator pedal fully and check that throttle is opening fully. Adjust if

necessary. Adjust detent cable so that full throttle coincides with maximum cable position.

**STEP 19.** Lower vehicle. Keep the rear wheels off the ground if possible. Add five quarts of B&M Trick Shift or Type F Automatic Transmission Fluid. Trick Shift is superior in lubrication, heat capacity and friction material performance, if Trick Shift is not available we suggest using Type F fluid. Place transmission in neutral, start engine and fill to the "Add" mark. Place selector lever in all gear positions. If the wheels are off the ground, allow the transmission to shift through all gears. Check fluid level and make sure it is between "Add" and "Full".

**STEP 20.** Lower vehicle and drive for 1-2 miles to warm fluid. Check level again. **Do not overfill!** This can use foaming and overheating.

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### TOOLS REQUIRED FOR TURBO HYDRO 350 SHIFT IMPROVER KIT INSTALLATION

1	Speed Handle or Ratchet	1	Small Blade Screwdriver
1	Vise.	1	1/4" Drill Motor
1	1/2" Socket	1	Torque Wrench 0 to 50 ft.-lbs.
1	File	5 Qts.	B&M Trick Shift or Type F ATF
1	Large Blade Screwdriver	1	Drain pan
1	Awl	1 Gal.	Solvent

**TROUBLE SHOOTING GUIDE  
TURBO HYDRO 350**

<b>Malfunction</b>	<b>Probable Cause</b>	<b>Malfunction</b>	<b>Probable Cause</b>
Slips	Low fluid level	Late hard shifts	Vacuum line cracked or leaking
	Valve body bolts loose		Kickdown cable misadjusted
	Support plate bolts loose		
Overheating or foaming at dipstick tube or breather	High fluid level	Will not shift	Valve bolts loose
	Cooler plugged		Vacuum line cracked or leaking
	Cooler insufficient		Kickdown cable misadjusted,
Erratic shifting	Shifter misadjusted	Pump buzz or whine	Low fluid level
	Kickdown cable misadjusted		Loose valve body or support plate bolts
	Low fluid level		Middle support, transfer & spacer plate incorrectly installed
	High fluid level		
	Vacuum line cracked or leaking		
	Valve body bolts loose		
	Support plate bolts loose		No third or reverse

**TURBO HYDRO 350  
SHIFT IMPROVER KIT PARTS LIST**

Inspect the contents of your Shift Improver Kit care-fully. If you are missing any of the parts shown below, do not proceed. Contact your B&M dealer

