

Installation Instructions
Transpak for
Turbo Hydro 350
1968 - 1981

(see www.bmracing.com for latest product information and applications)

Part Number 30228

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Congratulations. You have just purchased the most complete and versatile transmission recalibration kit available. We feel that the installation instructions on the following pages are as complete and clear as possible. Installation of your Transpak 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 read it again.

NOTE: The Transpak is not a cure-all for ailing transmissions. If your transmission is slipping or in poor general shape, the installation of a Transpak kit may worsen these conditions. However, on a good operating transmission in average condition the Transpak kit will provide the kind of transmission performance that 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 7. A minimum of tools are required.

This kit will not fit a TH-350C transmission. Use #30235 for 1980-86 TH-350C. TH-350C transmissions can be identified by an electrical connector on the driver side of the transmission above the pan gasket.

TH 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 any of two levels of performance depending on intended use:

1. **Heavy Duty:** Towing, campers, motorhomes, police, taxi, on and off road desert vehicles and 4 wheelers.
2. **Street:** Dual purpose performance vehicles. Street and strip high-performance cars.

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 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 in.

DISSASSEMBLY

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 back oil pan bolts and work towards the front slowly. (Note: Some vehicles will require removal of the crossmember 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. 1) Manual linkage, detent spring and roller, s-link or offset link, detent control valve link and lever, and support plate.

STEP 4. Remove pivot clip holding detent control valve lever in place. (See Fig. 2) Remove the lever also and set them in the tray. Remove 18 valve body attaching bolts. (See Fig. 3) Leave the drain pan positioned as there is still oil between the valve body and separator plate. Remove the valve body by pulling straight down and disengaging the manual valve and link from the manual lever. (Do not let the manual valve fall out of the valve body.) Put the valve body in the oil pan.

STEP 5. Remove support plate bolts and support plate. (See Fig. 1) Remove separator plate, gaskets and four plastic check balls. Leave the drain pan positioned as there is still oil between the separator plate and the case. The check balls are between the plate and the case. If the front servo assembly falls out, install it back in position with grease to retain it. Order of assembly is: Spring, spring seat, pin, washer and piston. (See Fig. 7A)

STEP 6. Valve Body: Place the valve body on the bench with the channel side up. (See Fig. 4) Note the roll pin locations. Remove the roll pin holding the 2-3 shift control valve sleeve in place. (To remove the roll pin, push on the end of the sleeve until you notice the pin move slightly. Turn the valve body over and let the pin drop out of the

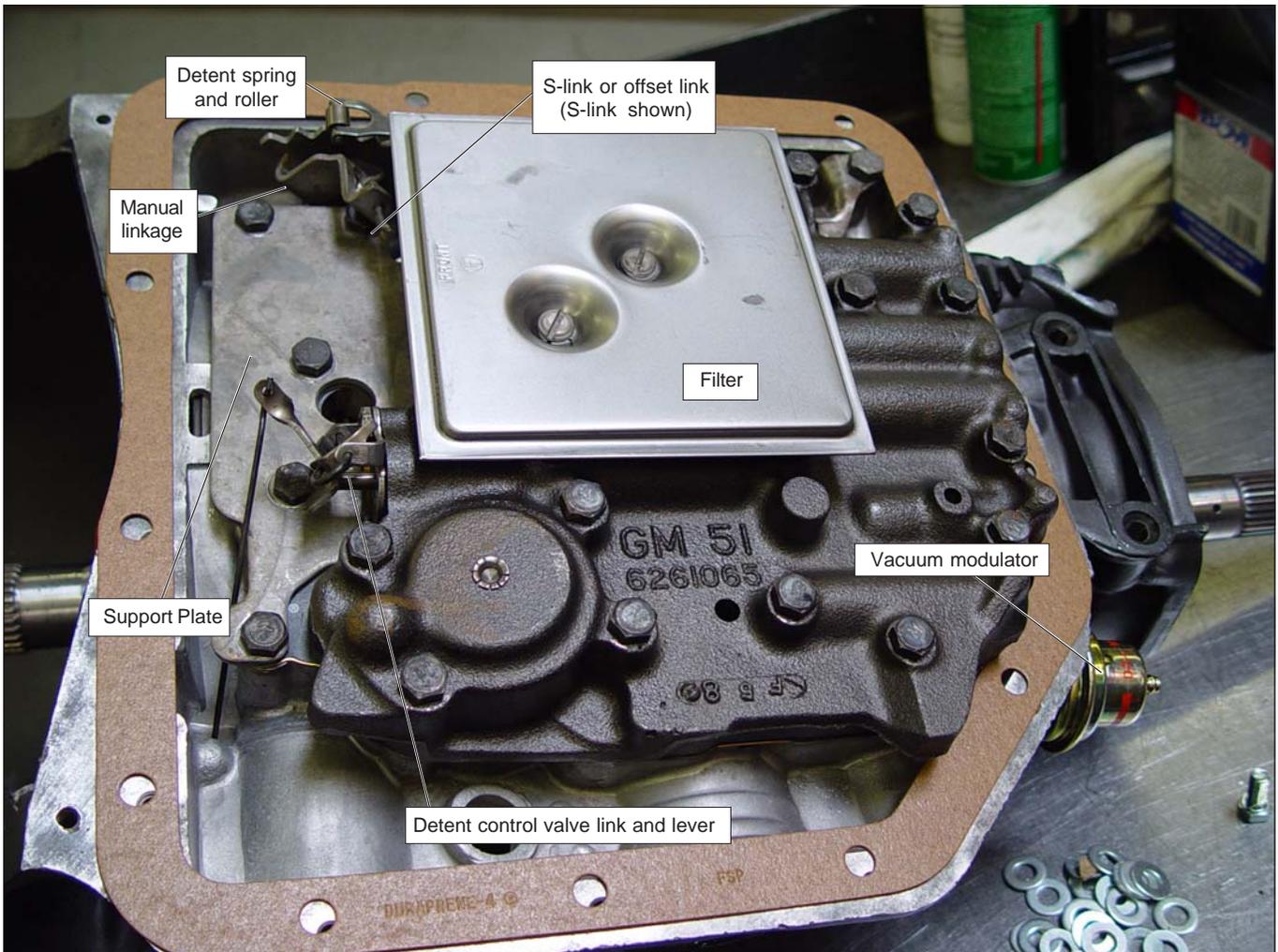


Figure 1

valve body. If the pin doesn't drop out, rotate the sleeve as you push it in. You may need to tap the valve body on the bench lightly if the pin doesn't fall out. Be careful not to damage the sealing surface of the valve body if this step is necessary.) Remove the sleeve carefully. This may require a little prying with a small screwdriver. Try not to raise any burrs during removal. Next remove the 2-3 shift valve spring. Do not install this spring and replace it with the white spring supplied with the kit.

Note: The small tapered end goes in first. Install the 2-3 shift control sleeve assembly as removed. Align sleeve and install the retaining roll pin.

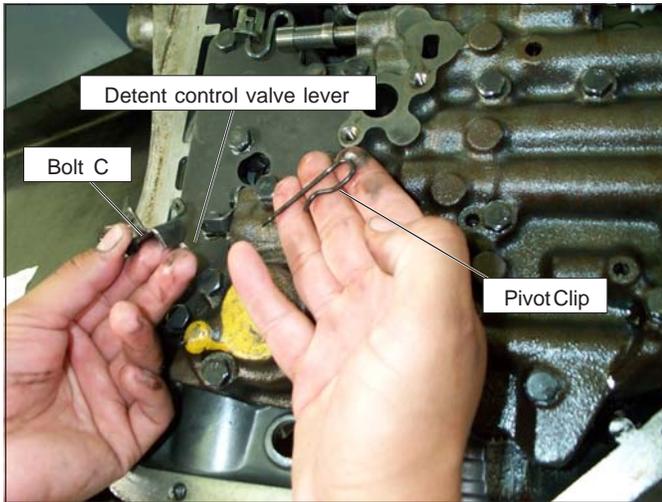


Figure 2

STEP 7. Remove the roll pin holding the boost valve sleeve in place. Remove the sleeve carefully. Again, this may require a little prying with a small screwdriver. Remove the pressure regulator spring and discard it. Replace it with the orange spring supplied with the kit. Note: The small tapered end goes in first. Replace the sleeve assembly and roll pin.

STEP 8. Remove the roll pin that holds the manual low control plug in place. Remove the plug and the manual low control spring. Discard the spring and install the special sleeve supplied in its place. Install the plug and pin as removed. (Note: If the sleeve is too long to allow the plug to install properly, grind a small amount off the end of the sleeve.)

STEP 9. 2-3 Accumulator:

Heavy Duty: No modification is necessary for this application.

Street: Carefully clamp the valve body in a vise or c-clamp to compress the accumulator spring. (See Fig. 5) Compress the piston just enough to remove the E-clip. Remove the valve body from the vise and remove the piston and spring. Discard the spring and install the accumulator piston as removed. Install the

E-clip as removed. Be careful not to damage the sealing ring during installation.

STEP 10. Scrape off any excess gasket material that may be stuck to the casting surface. This is very important as stray gasket material can cause leaks. Wash valve body in solvent or gasoline to remove residue. Be careful not to lose the roll pins that hold the sleeves in place.

STEP 11. Clamp the spacer support plate in a vise and run a file across the surface that will contact the separator plate. (See Fig. 6) The spacer support plate must be flat. If your support plate is bent or excessively warped, it should be replaced (Chevrolet Part #338905).

STEP 12. Scrape off any excess gasket material that may be stuck to the case surface. This is very important since stray gasket material can cause leaks.

STEP 13. Separator plate modification:

Heavy Duty: Use the 3/16" drill supplied with the kit and drill one hole in the B&M plate as shown in Figure 7. Use your stock plate as a guide. Deburr the hole with a file or sandpaper after drilling.

Street: No modifications to separator plate are necessary.

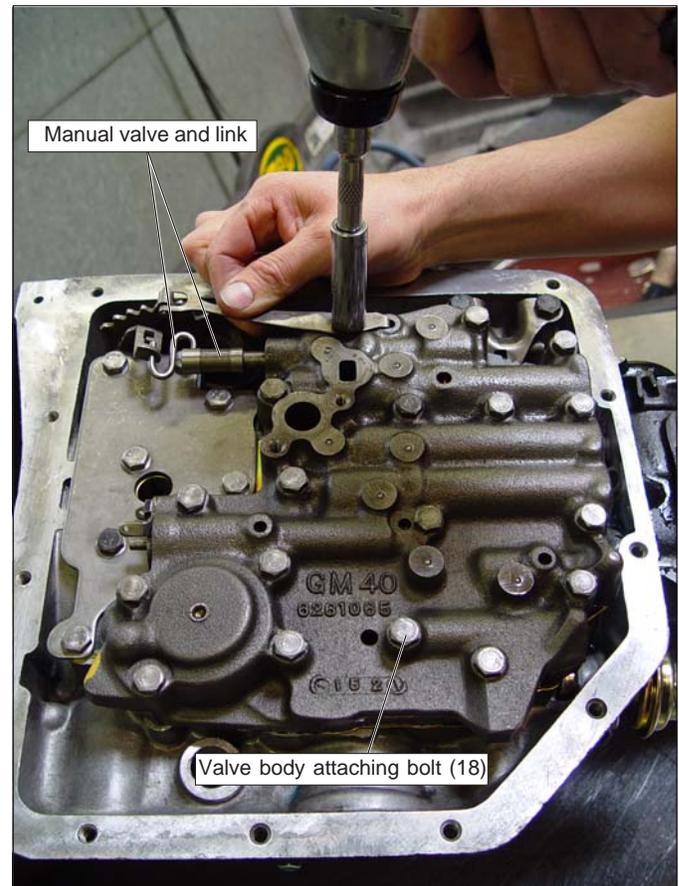


Figure 3

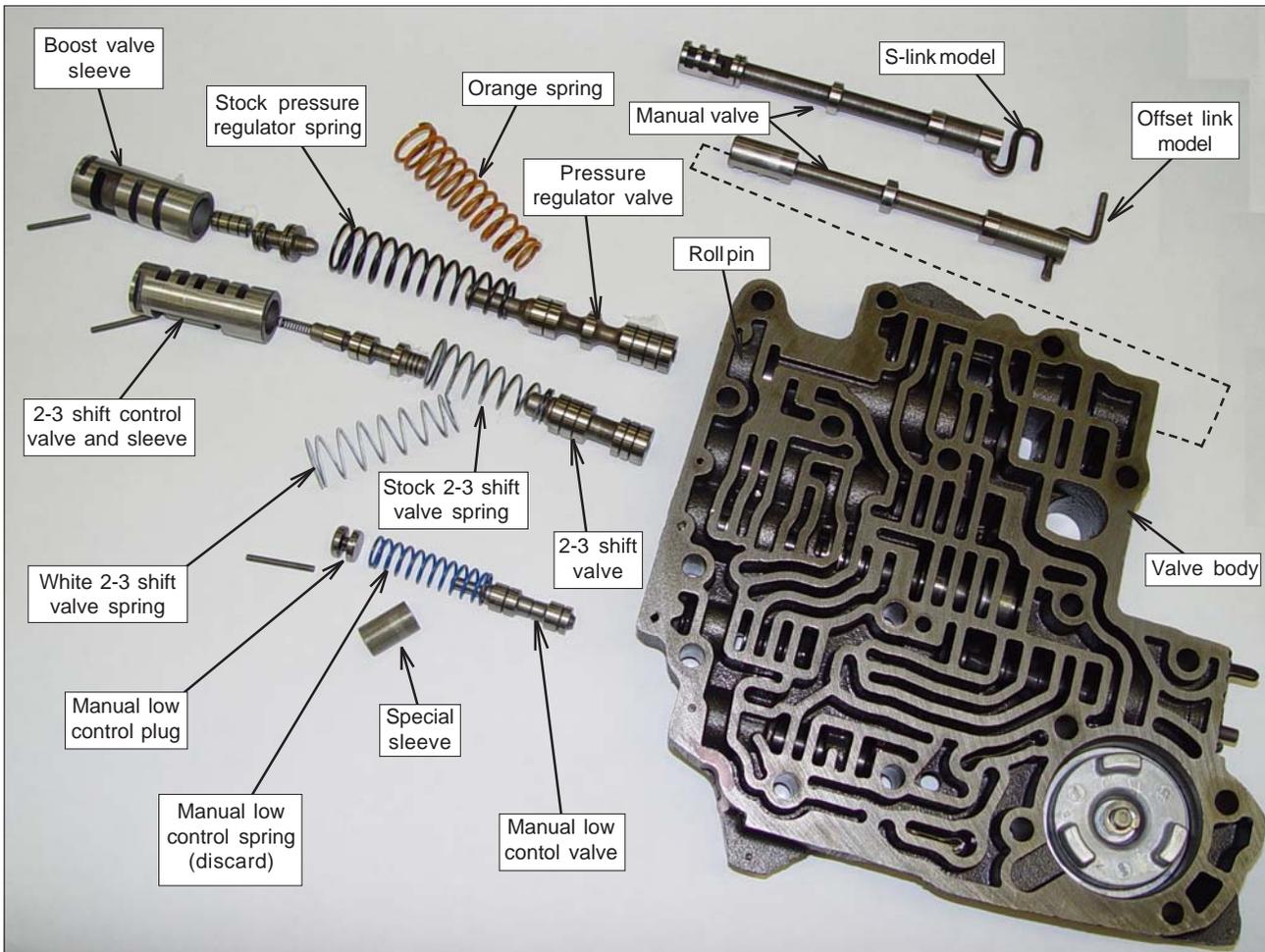


Figure 4



Figure 5

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

Check ball positioning:

Heavy Duty: Two 1/4" check balls, one each in locations one and two. (See Fig.8)

Street: One 1/4" check ball in location one.

Install each checkball in place using grease to hold it in position. Do not install remaining checkballs. Install gasket/separator plate assembly in position and use a pan bolt finger tight in the middle to hold the assembly in place. (see Fig. 9)

STEP 14. Install B&M middle support plate (silver color) in position against separator plate gasket at front of transmission. (See Fig. 9). On top of middle support plate (gold color). Note that the two (2) holes in the middle support plate and slot in the oil transfer plate line up with the two holes in the separator plate and plate gasket. On top of oil transfer plate install your stock spacer support plate. (The order of the plates must be correct!). Install the support plate bolts finger tight. Align separator plate bolts with transmission case bolt holes. Holding separator plate in position, tighten the seven (7) support plate bolts to 100 in. lbs.

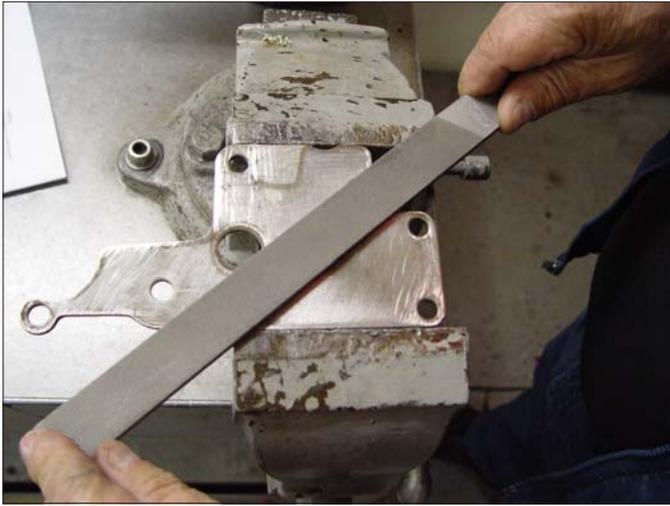


Figure 6

For "S" link model manual valve only (See Fig. 4): Rotate the range selector inner lever noting clearance with bolt 'A' (See Fig. 9). 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 & check clearance again. Failure to provide clearance may keep transmission shifter from fully shifting or locking up between drive & 2nd.

STEP 15. Remove center pan bolt. Guide valve body into position. Engage manual valve linkage in selector lever. The "S" link can only be installed one way. Offset linkage must be installed with the link in the forward position. (See Fig. 4). 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 linkage model"** manual valve only (See Fig. 4): 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. 9).

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

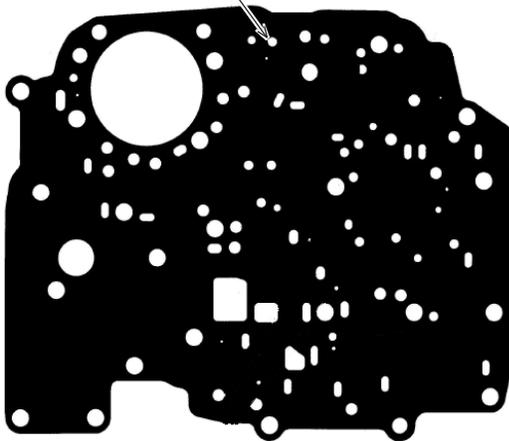


Figure 7

If bolt head 'B' prevents this action; rotate range selector inner lever out of the way. Remove bolt and grind or file a small amount off top of bolt head 'B'. Reinstall bolt 'B' and check again. Failure to provide detent roller engagement into range selector inner lever may result in transmission not shifting into park.

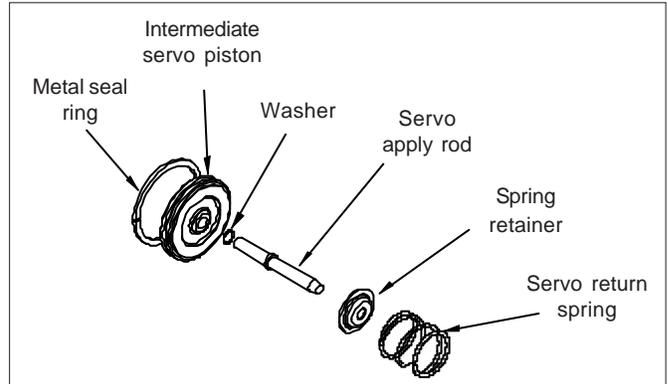


Figure 7A

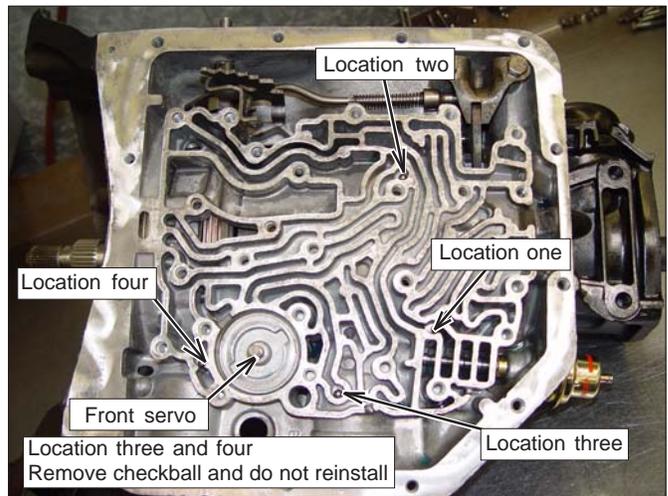


Figure 8

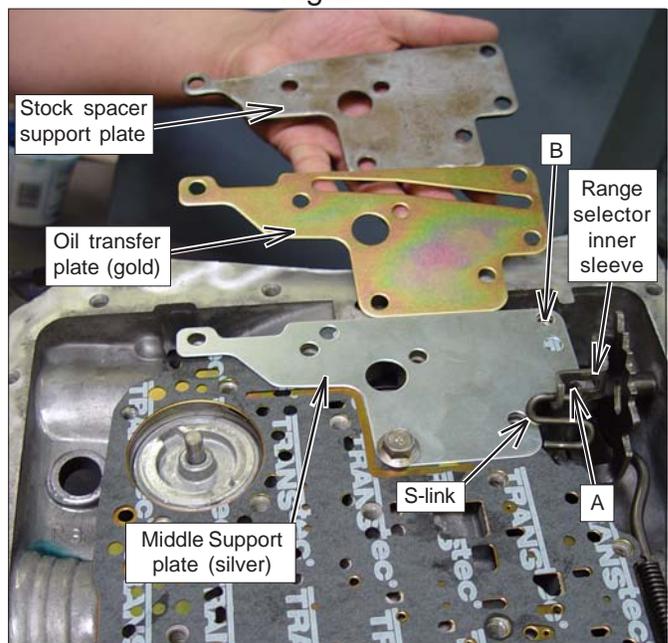


Figure 9

STEP 16. Connect detent control lever to detent control valve link. Position lever on valve body. Install pivot clip (See Fig. 2). If pivot clip contacts spacer support plate and does not fully seat into slot on detent control lever, trim pivot clip until it just clears support plate. If detent control valve lever contacts bolt 'C' (See Fig. 2), remove lever and file or grind clearance. Install new oil filter and gasket supplied. Tighten screws securely.

STEP 17. 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 18. 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 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.

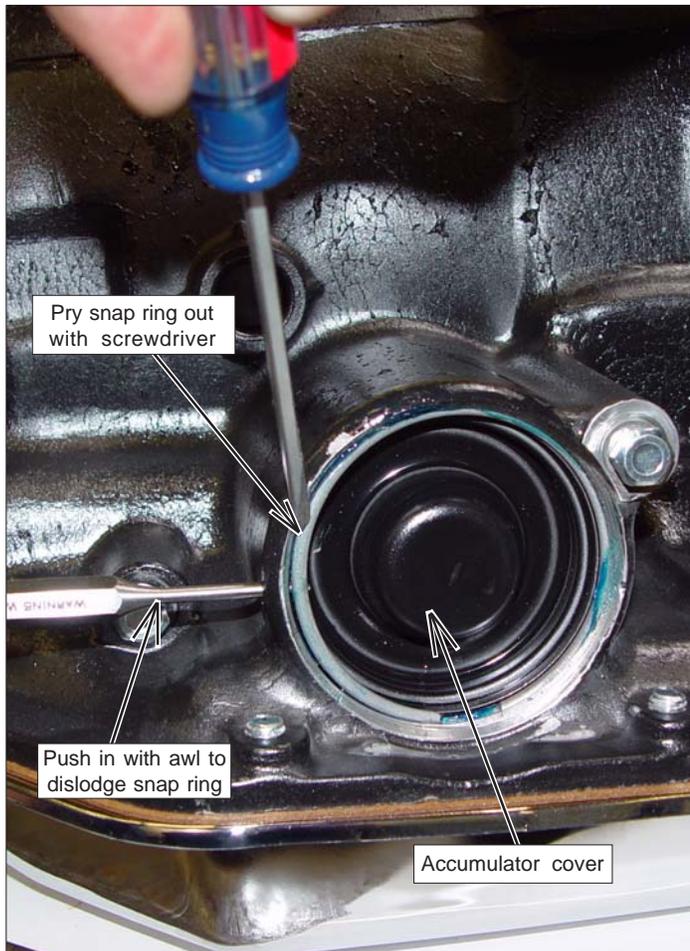


Figure 10

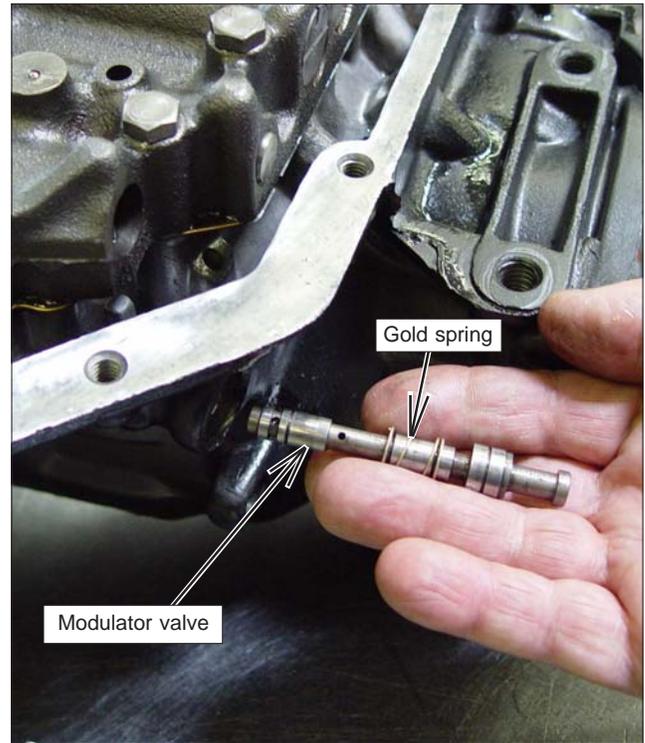


Figure 11

STEP 19. Check shifter adjustment. Place selector lever in each gear position making sure detents in transmission correspond exactly with selector lever detents. Adjustment can be made by loosening pinch bolt on rod or cable.

STEP 20. 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 21. Lower vehicle. Keep the rear wheels off the ground if possible. Add four quarts of B&M Trick Shift or type "F" ATF. B&M Trick Shift is superior in lubrication, heat capacity and friction material performance. If B&M Trick Shift is not available, we suggest using type "F" fluid until it can be replaced with B&M Trick Shift. Place transmission in neutral, start engine and fill to the "Add" marks. 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 22. Lower vehicle and drive for 1-2 miles to warm fluid. Check level again. Do not overfill. This can cause foaming and overheating.

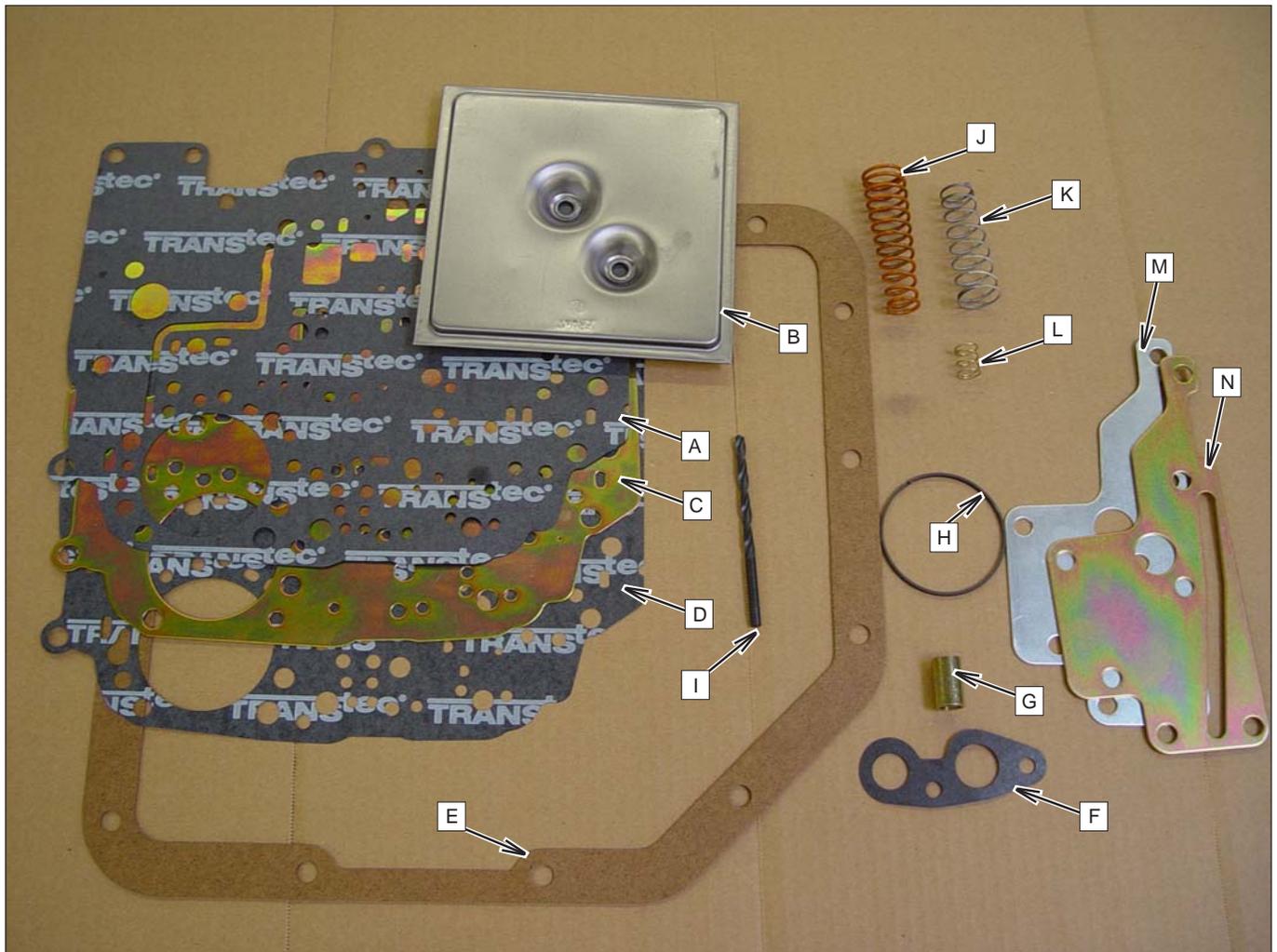
Heavy Duty: Part throttle shift points can be lowered 5-6 mph by installing the gold spring in back of the modulator valve. Remove modulator valve. (See Fig. 11) Insert spring over end of valve and install valve and modulator as removed. Reconnect vacuum line.

TOOLS REQUIRED FOR TURBO HYDRO 350 TRANSPAK INSTALLATION

Speed Handle or Ratchet - 3/8" drive	Torque Wrench 0-50 ft. lbs.
1/2" Socket - 3/8" drive	Torque Wrench 0-250 in. lbs.
Large Blade Screwdriver	File
Small Blade Screwdriver	Vise
Small Diameter Awl	Drill

TROUBLE SHOOTING GUIDE FOR TURBO HYDRO 350

<u>Malfunction</u>	<u>Probable Cause</u>
Slips	Low fluid level Pressure regulator valve assembly improperly installed Valve body bolts loose Support plate bolts loose
Overheating/foaming at dipstick tube or breather	High fluid level Cooler plugged Cooler insufficient
Late hard shifts	Vacuum line cracked or leaking Vacuum modulator is faulty
Will not shift	Valve body bolts loose 2-3 shift valve burred or sticking Kickdown cable misadjusted
Erratic shifting	Shifter misadjusted Kickdown cable misadjusted Low fluid level or high fluid level Vacuum line cracked or leaking Valve body bolts loose #1 check ball in wrong location Support plate gaskets reversed
Pump buzz or whine	Low fluid level Loose valve body support plate bolts
No third or reverse	Middle plate, transfer plate or support plate improperly installed



PARTS LIST FOR TURBO HYDRO 350 TRANSPAK

- | | | |
|---|---|---------------------------------|
| A | 1 | Valve body lower gasket |
| B | 1 | Filter |
| C | 1 | Separator plate |
| D | 1 | Valve body upper gasket |
| E | 1 | Pan gasket |
| F | 1 | Gasket filter |
| G | 1 | Manual low control valve sleeve |
| H | 1 | Accumulator cover o-ring |
| I | 1 | 3/16" drill bit |
| J | 1 | Pressure regulator spring |
| K | 1 | 2-3 shift valve spring |
| L | 1 | Modulator valve spring (gold) |
| M | 1 | Oil transfer plate (gold) |
| N | 1 | Middle support plate (silver) |

Inspect the contents of your Transpak kit carefully. If you are missing any of the parts shown above, do not proceed. Contact your B&M dealer.