



Installation Instructions

Ford C-4 Shift Improver Kit

1970-1982

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This **B&M Ford C-4 Shift Improver Kit** has been designed to work on all **1970 thru 1982** Ford C-4 transmissions.

WARNING: Incorrect checkball placement can result in serious transmission damage. Be sure to follow the instructions carefully.

We recommend that you read through the instructions completely before beginning the installation, so you can familiarize yourself with the installation procedure and tools required. Check the tool list at the end of these instructions for the tools required to install your **B&M Ford C-4 Shift Improver Kit**.

Installation of the **B&M Ford C-4 Shift Improver Kit** can be accomplished by anyone with minimum mechanical experience. It is however, important to closely follow the instructions.

NOTE: The **B&M Ford C-4 Shift Im-**

prover Kit is not a cure-all for an ailing transmission. If your transmission is slipping or in poor general shape, the installation of this Shift Improver Kit may worsen the condition. However on a properly operating transmission in average condition, the Shift Improver Kit will provide the kind of transmission performance your looking for.

When installing your Shift Improver Kit there are several other **B&M** products you may wish to consider:

Transmission Oil Cooler We feel that it is very important that every vehicle used in a heavy duty application (racing, towing, RV, etc.) should have an oil cooler. Heat is the major cause of transmission failures, and an oil cooler is an inexpensive safeguard against overheating and failure. **B&M** offers a wide range of transmission coolers to suit every need, which are

available at your **B&M** dealer.

Trick Shift Performance ATF Trick Shift performance automatic transmission fluid is the industry's leading performance **ATF**. A specially blended oil with foam inhibitors, extreme pressure agents and shift improvers, this fluid assures protection while delivering the fastest possible shifts. You literally "Pour in performance." Available at your **B&M** dealer.

TEMPERATURE GAGE KIT 80212 Most transmission and converter failures can be traced directly to excessive heat. The **B&M** transmission temperature gage can save you a costly repair bill by warning you ahead of time of an overheated transmission. The **B&M** temperature gauge is extremely accurate and dependable, it comes with all necessary hardware and is easy to install.

C-4 '70 AND LATER 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°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 small box or pan handy to put small parts in so they won't be lost. Also have a drain pan to catch oil in.

DISASSEMBLY

STEP 1. C-4's do not have a drain plug. You may want to install a B&M Pan Drain Plug Kit at this time, Part #80250. Drain the oil by removing the back oil pan bolts and work towards the front slowly. (Some vehicles have the dipstick tube attached to the oil pan. This can be removed first to drain some oil.) Do not remove the front bolts yet. If the pan sticks to the gasket, insert a screwdriver between the pan and the 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. Manually operate the kickdown lever on the transmission with the gas pedal depressed half way. Note how it moves freely with no bind. Observe how the internal linkage engages the valve body. Note position of detent roller spring. (See Fig. 1)

STEP 3. Remove the eight or nine valve body attaching bolts (See Fig. 1) and remove the valve body by pulling straight down. Put the valve body in the oil pan. Pinto models have a check valve next to the filter. (See Fig. 1A) Note: Detent roller spring comes out with valve body. (See Fig. 1)

STEP 4. Lay the valve body on the bench with the filter

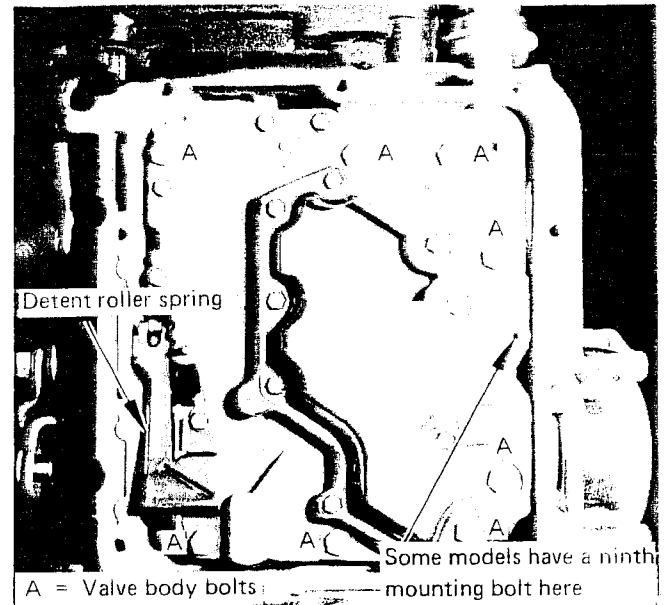


FIGURE 1 (ALL EXCEPT PINTO)

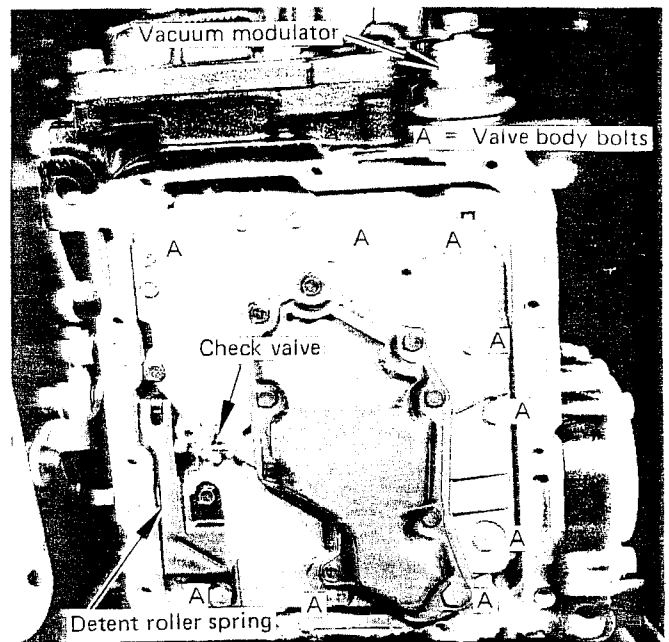


FIGURE 1A (PINTO ONLY)

side down. Remove the two upper 1/4" bolts with a 7/16" wrench. (See Fig. 2)

STEP 5. Turn the valve body over and remove the filter screws. (See Fig. 3 or 3A) Remove filter and set it aside. Note: These screws are long. All except Pinto will have a check valve and spring under a tab in the corner of the filter. Remove the valve and spring and set them aside. (See Fig. 4)

STEP 6. Remove the remaining valve body screws and detent roller spring. There are nine of these screws and they are medium length. The valve body consists of three main components. The main housing with the valve is called a casting. The thinner aluminum casting that the filter is attached to is called the **transfer plate**. The thin steel plate with all the holes is called a **separator plate**.

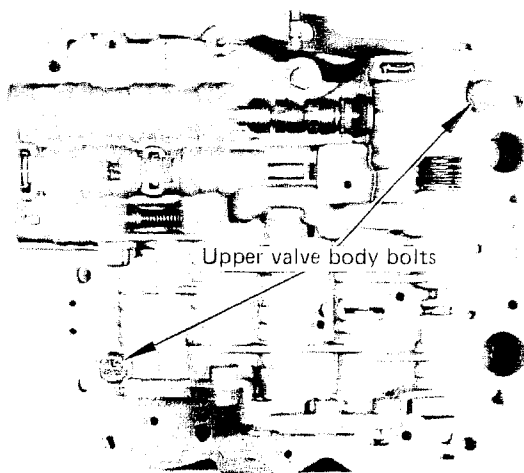


FIGURE 2

Check valve and spring under this tab

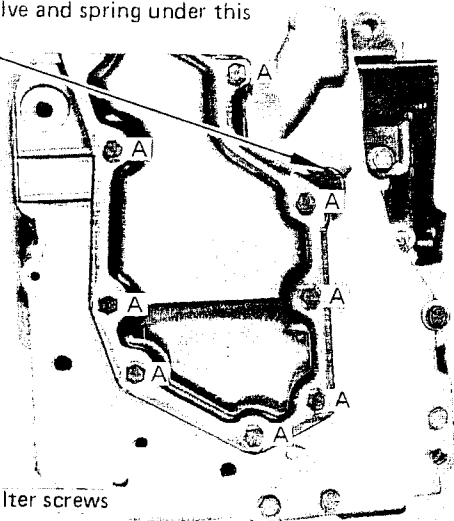


FIGURE 3 (ALL EXCEPT PINTO)

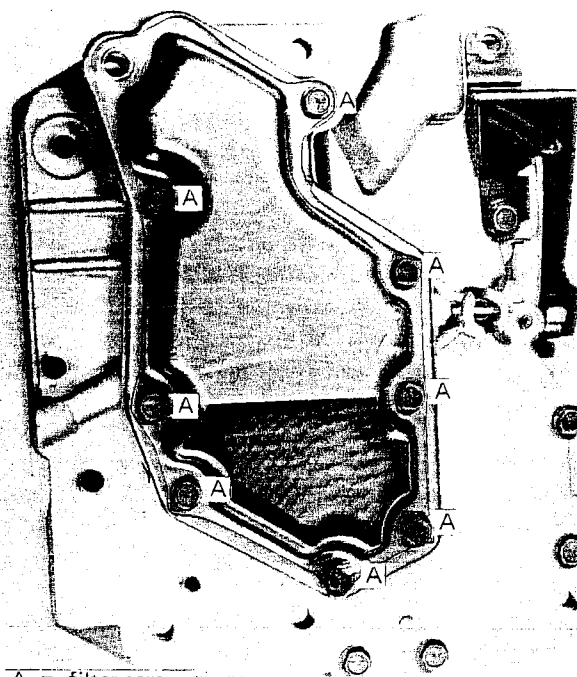


FIGURE 3A (PINTO ONLY)

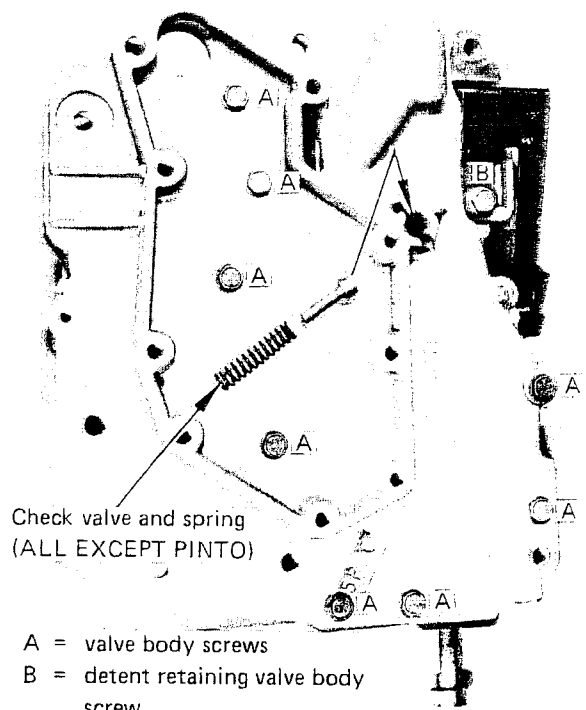


FIGURE 4

STEP 7. Lift the **transfer plate** assembly off the **casting**. There is one black plastic check ball (all except Pinto) or two check balls (Pinto only) and a flat black rubber disc in the **casting**. (See Fig. 5 or 5A) Remove these and set them aside. Set the **transfer plate** assembly aside.

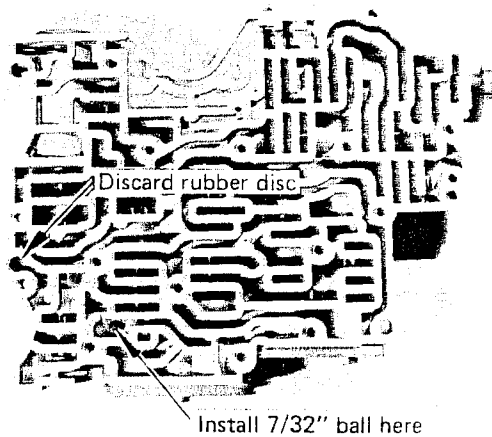


FIGURE 5 (ALL EXCEPT PINTO)

STEP 8. Remove the accumulator valve end plug. (See Fig. 6 or 6A) This plug is held in by a retaining pin. Push in on the plug to allow the pin to fall out. There is a spring underneath that will push the plug out. Remove the plug and the intermediate servo accumulator valve and spring. Now reinstall

accumulator valve but put accumulator valve into bore first and spring second. Install end plug as removed. Push in on plug until retaining pin can drop in place and install pin. Spring tension will hold pin in place.

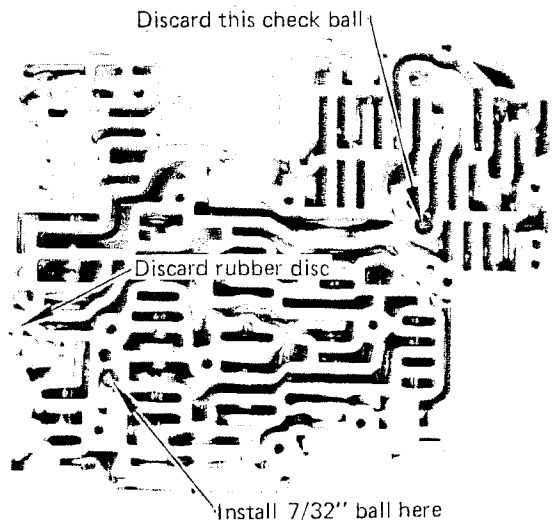


FIGURE 5A (PINTO ONLY)

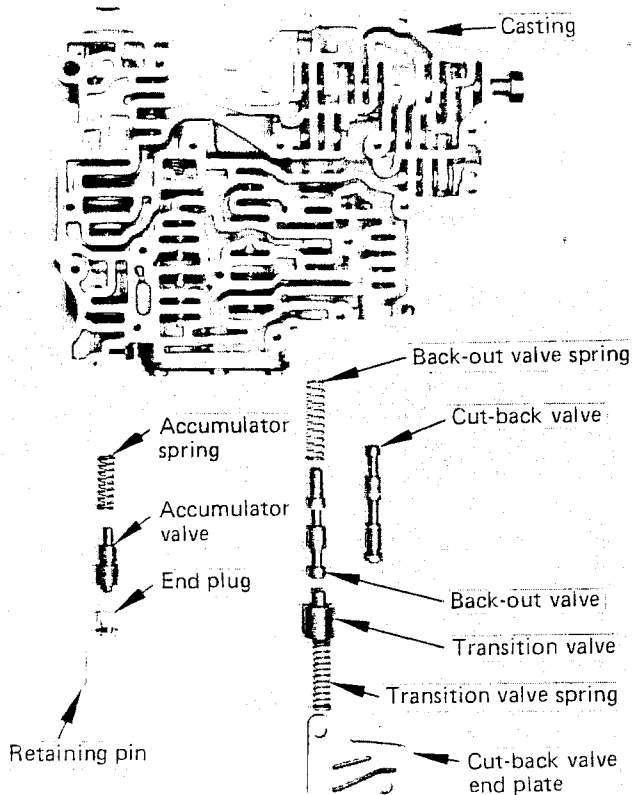


FIGURE 6 (PINTO ONLY)

STEP 9. Remove the cut-back valve end plate bolts and end plate.

Remove the transition spring and valve. Remove the 2-3 back-out valve and spring. Discard the springs. Install the 2-3 back-out valve plug into the bore. Install 2-3 back-out valve and transition valve as removed. Transition valve must be below the surface of the casting. If not, grind a sufficient amount off the small end of the transition valve.

Heavy Duty: No further modification necessary for this application.

Street/Strip: Remove the cut-back valve. Install the 7/32" diameter steel ball from the kit into the cut-back valve bore. Install the cut-back valve as removed. The end of the valve should be below the surface of the casting. If it is not, grind a sufficient amount off the small end of the valve.

Install the cut-back end plate as removed and install two bolts finger tight.

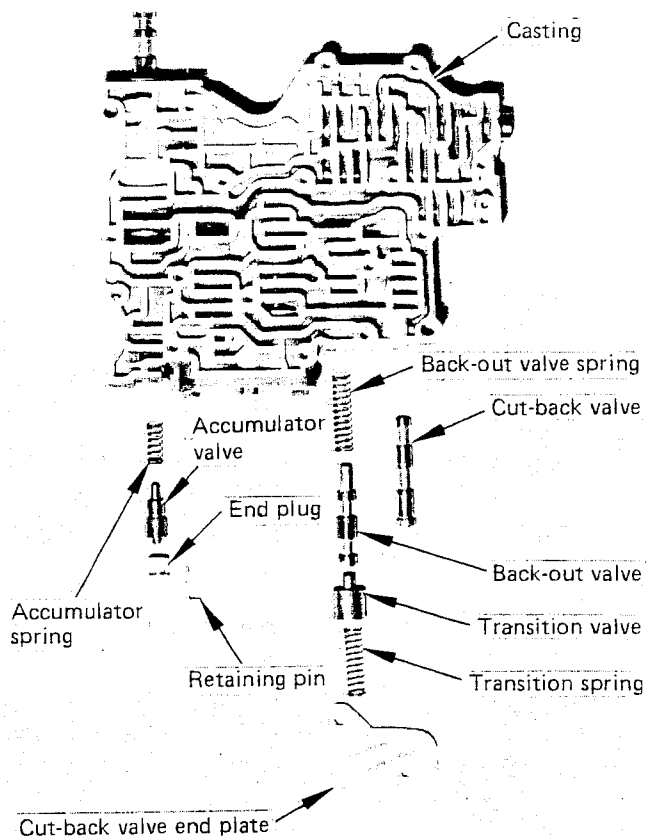


FIGURE 6A (ALL EXCEPT PINTO)

STEP 10. Lay casting on bench with passages facing up. Install one 7/32" plastic ball in passage indicated in Figure 5 or 5A. Set casting aside.

STEP 11. Place the transfer plate assembly in front of you with the separator plate up. (See Fig. 7) Note the position of the hold-down plates. Remove the hold-down plates and the separator plate. Pinto only: There will be a check valve and spring under the separator plate. Remove it and set it aside.

STEP 12. All except Pinto: Refer to Fig. 8 and note that your stock separator plate has a hole in the area shown. This hole will be round or oval. The furnished B&M plate does not have a hole in this area. Use your stock separator plate as a guide and drill a hole in the B&M plate in the same location using the 1/8" drill supplied with the kit. Where there was an oval hole in the stock plate, a round one will be sufficient in the B&M plate. After you drill the hole, deburr the plate with a file or sandpaper.

Street/Strip only: Use the 3/16" drill supplied with the

kit and drill out the two holes in the B&M plate as shown in Figure 8. Deburr the holes with a file or sandpaper after drilling.

Pinto only: Since Pinto valve bodies are different than passenger car valve bodies you will not be able to use the B&M separator plate supplied with the kit. Refer to Figure 8A and drill out the two holes indicated in your stock plate.

Heavy Duty: Use the 1/8" drill supplied with the kit and drill the two holes in Figure 8A.

Street/Strip: Use the 3/16" drill supplied with the kit and drill the two holes in Figure 8A.

Deburr the holes with a file or sandpaper after drilling.

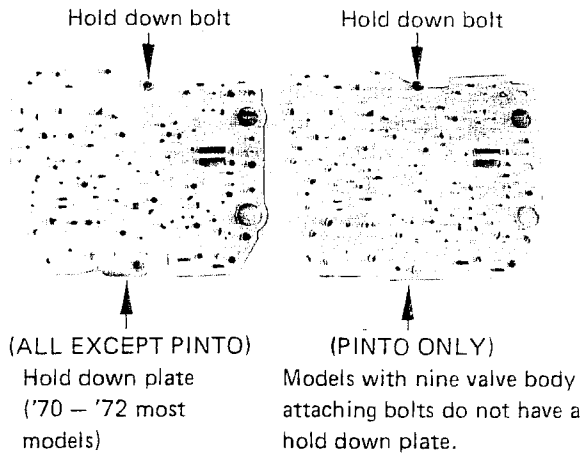


FIGURE 7

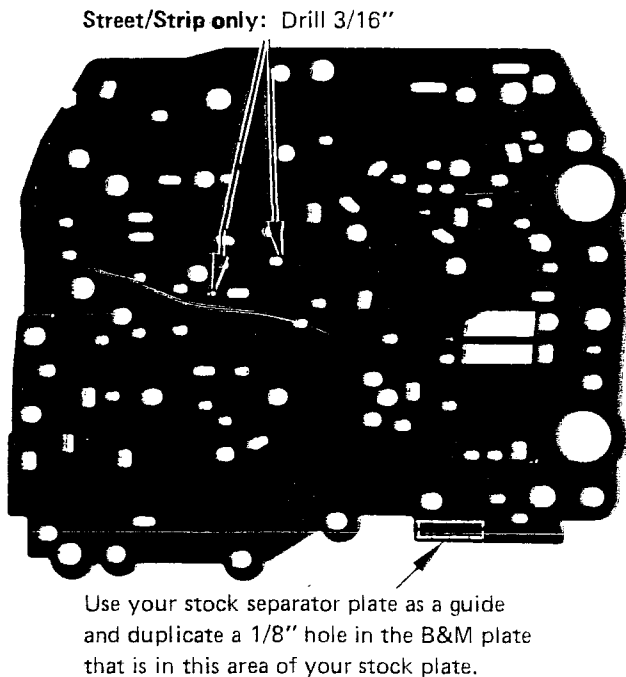


FIGURE 8 (ALL EXCEPT PINTO)

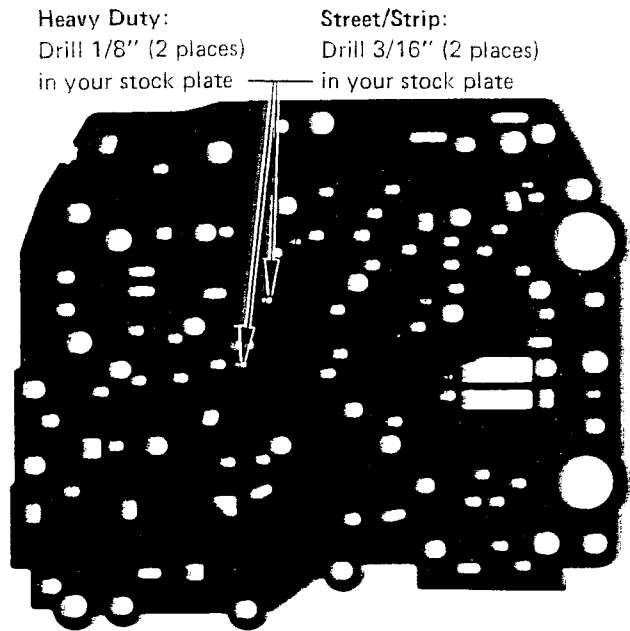


FIGURE 8A (PINTO ONLY)

STEP 13. Scrape off any excess gasket material from the separator plate and the transfer plate casting. Do not lose the rubber check balls in the transfer plate. Wash the transfer and separator plates in solvent or gasoline.

STEP 14. Lay the transfer plate in front of you with the passages up. Install one 7/32" diameter ball in position shown in Figure 9. Pinto only: Install check valve and spring as removed with face of valve against separator plate. (See Fig. 9A) Install separator plate in place on transfer plate. Do not use a gasket. Install hold-down plates in their proper positions. (See Fig. 7) Install bolts in place and tighten bolts finger tight.

STEP 15. Install transfer plate assembly onto casting. Make sure casting check ball is in place. (See Fig. 5 or 5A) Install eight medium length valve body bolts in place in position shown in Figure 4. Tighten finger tight. The casting and transfer plate should be flat against the separator plate. If it is not, there is an interference problem that must be corrected. Do not install detent roller spring yet.

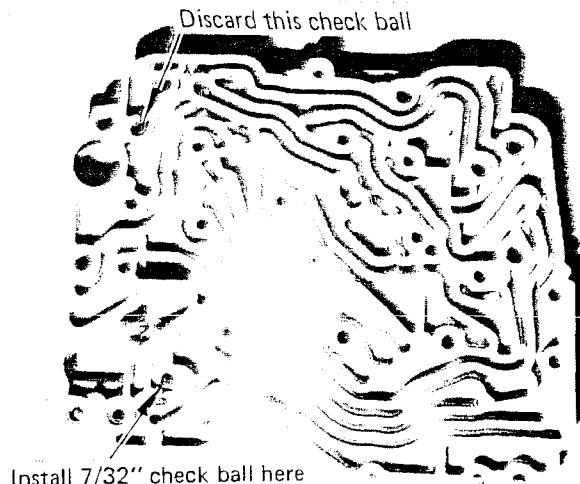


FIGURE 9 (ALL EXCEPT PINTO)

REASSEMBLY

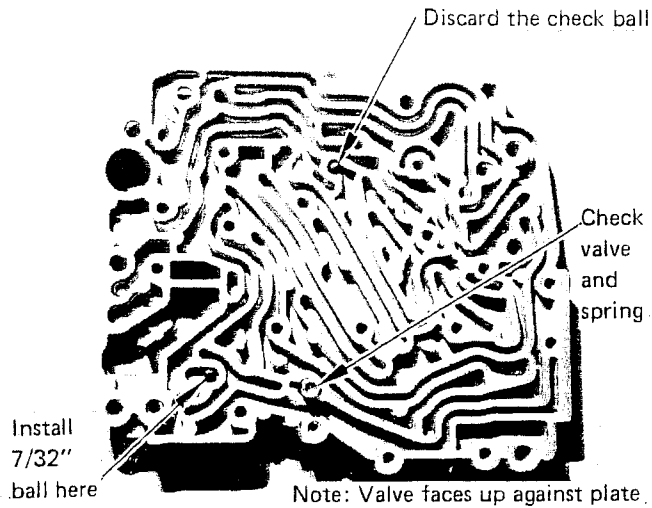


FIGURE 9A (PINTO ONLY)

STEP 16. Turn valve body over and install the two long $\frac{1}{4}$ " bolts. (See Fig. 2) Tighten to 80-120 in.-lbs. Also tighten all valve body and end plate bolts to 20-40 in.-lbs. in this sequence: One or two hold down bolts, eight valve body bolts, one end plate.

All except Pinto: Install check valve and spring. Face of valve goes into casting first with spring on top. Tab on filter will hold valve assembly in place. Some C-4 transmissions are factory equipped with an extension tube as part of the filter. Install tube onto screen. Align large hole in filter with casting and install filter bolts and tighten to 20-40 in.-lbs. The valve body is now assembled.

STEP 17. Install valve body into transmission carefully. You must engage selector lever into manual valve and align kickdown lever properly. Work kickdown lever with your hand slightly while installing valve body. You should be able to hold the valve body flat against the case without excessive force. The kickdown lever should move freely with no bind as it did before removal. Install valve body bolts finger tight. The long bolt goes thru the filter. Install detent roller spring in corner. (See Fig. 1) Again check for free operation of kickdown and shifter linkage. Tighten valve body bolts to 80-120 in. lbs. Tighten detent roller spring casting bolt to 20-40 in. lbs.

STEP 18. Clean pan and scrape any excess gasket material from pan and case surface. Install pan with new gasket and tighten pan bolts to 12-16 ft. lbs. Install dipstick tube into pan if your model was so equipped and tighten securely.

STEP 19. Lower vehicle. Try to keep the rear wheels off the ground if possible. Add three quarts of B&M Trick Shift or Type "F" automatic transmission fluid. While Trick Shift is superior in lubrication, heat capacity and friction material performance, we recommend Ford fluid over Dextron or Type "A". Start the engine and put the selector lever in neutral. Check the fluid level and add fluid until it is to the add mark. Shift the transmission into all gear positions. If the rear wheels are off the ground allow the unit to shift through all gears about 10 times. Lower vehicle and check fluid. It should be between the add and full mark. Drive the vehicle 1-2 miles to warm up fluid. Check fluid level and add to full mark. **DO NOT OVERFILL!!** This will cause foaming and overheating.

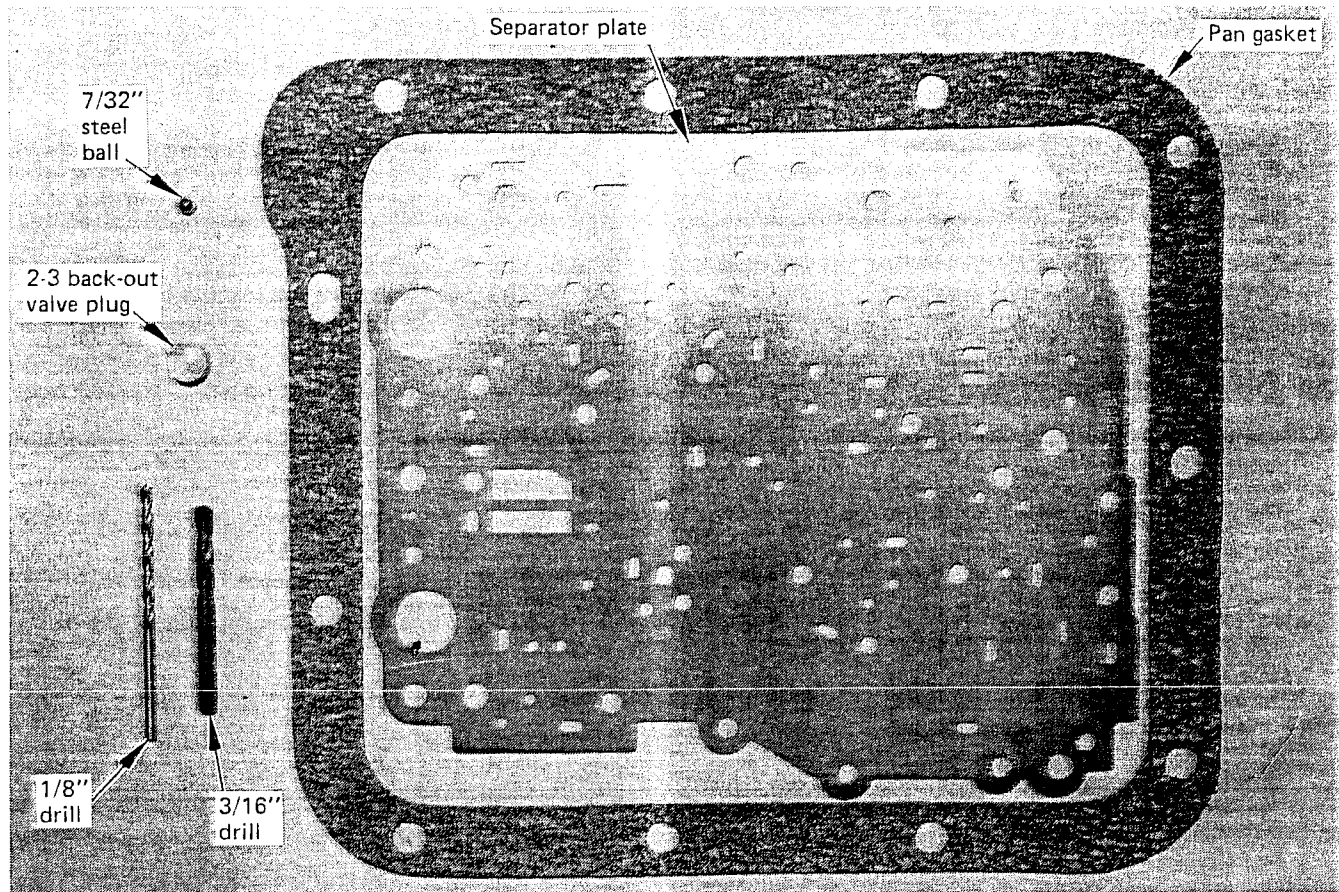
TOOLS REQUIRED FOR C-4 SHIFT IMPROVER KIT INSTALLATION

- 1 Speed Handle or Ratchet — $\frac{3}{8}$ " drive
- 1 $\frac{1}{2}$ " Socket — $\frac{3}{8}$ " drive
- 1 $\frac{7}{16}$ " Socket — $\frac{3}{8}$ " drive
- 1 $\frac{5}{16}$ " Socket — $\frac{3}{8}$ " drive

- 1 Small Screwdriver
- 1 Phillips Screwdriver
- 1 Small File
- 1 Drill motor

TROUBLE SHOOTING GUIDE FORD C-4

Malfunction	Probable Cause	Malfunction	Probable Cause
Slips	Low fluid level	Late Hard shifts	Valve body bolts loose
	Valve body or end plate bolts loose		End plate bolts loose
Overheating or foaming at dipstick tube or breather	High fluid level		Vacuum line cracked or leaking
	Cooler plugged	Modulator damaged	Modulator damaged
	Cooler insufficient		Kickdown linkage misadjusted
Erratic shifting	Shifter misadjusted	Will not shift	Valve body bolts loose
	Kickdown rod misadjusted		End plate bolts loose
	Low fluid level		Shifter not engaged properly
	High fluid level	One gear only	
	Vacuum line cracked or leaking		



PARTS LIST

Original Trick Shift™

Performance ATF

Trick Shift was originally developed by B&M for racing applications. It's become so successful that it's the most popular high performance fluid on the street also! Not an additive, this is the best performance ATF available! A scientific blend of foam inhibitors, pressure agents and shift modifiers that will provide extended transmission life and drastically improved shift feel. Trick Shift is the easiest way to measurably improve the transmission performance of your vehicle. Trick Shift works with all automatic transmissions* when a firmer shift is desired. 'Pour in Performance' is not just a catchy phrase - it's reality! It can be mixed with stock-type transmission fluids, however to attain maximum improvement you should use Trick Shift exclusively. Ideal for towing, light trucks and RV applications as well as racing.

*Not recommended for electronic controlled transmissions.

Trick Shift ATF - one US Quart80259



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