FORD CD4E

PREMATURE BUSHING FAILURE AND/OR NO FORWARD OR REVERSE

COMPLAINT: Before or after overhaul, vehicles equipped with CD4E transaxles may exhibit premature Reverse Input Clutch Housing bushing failure, repeated Forward Clutch snap ring groove blow out or breakage of the Low Reverse Clutch snap ring lugs located in the case.

CAUSE: The cause may be,

(1) ***Reverse Input Clutch bushing failure:***

A. Mis-alignment of the Reverse Input Clutch Hub to the Forward/Coast/Direct drum splines, as shown in Figure 1. When this mis-alignment occurs the lube holes in the drum and the slots in the hub are not lined up causing a loss of lube to the bushing.

B. Poor connections of ground straps causing Electralisis through bushings. ***NOTE: Adding an extra ground strap from the firewall to the bellhousing or the starter area of the transmission is always a good practice for extra insurance.***

C. A mis-aligned pump cover to pump body causing the drum to be off center.

D. A worn Pressure Regulator Bore in the valve body, as shown in Figure 3, causing line pressure to be over the maximum amount which in turn causes convertor charge and cooler pressure to be minimal.

E. A worn Bypass Clutch Control Valve sleeve, as shown in Figure 4, causing a loss of convertor regulator valve oil feeding front and differential lube.

(2) ***Forward Clutch Snap ring or Low Reverse Clutch snap ring lug blow-out:***

A. A worn Pressure Regulator Bore in the valve body, as shown in Figure 3, causing line pressure to be in excess of 500psi. which in turn breaks parts!

CORRECTION: To correct these conditions, follow the steps listed below:

(1) ***Reverse Input Clutch bushing failure:***

A. Refer to Figure 1 for the correct alignment of the Reverse Input Clutch Hub and Forward/Coast/Direct drum splines.

B. Check and clean main ground cables from the battery to the engine block. Add an extra ground strap from the firewall to the bellhousing of the transmission.

C. Align the pump cover, plate and pump body with pump alignment pins to ensure perfect alignment. The Ford pins are part no. T94P-77000-P or use 2 E40D valve body to case alignment studs as shown in Figure 2.

D. Refer to Figures 5 and 6 to check for bore wear. Remove the Pressure Regulator valve and inspect it for wear which normally shows up as brown lines. Re-install the Pressure Regulator valve back into its bore and check for wobble from side to side. Fill the cavity shown in Figure 6 with ATF. Place a suitable block over the passage shown in Figure 6 and torque the hold down bolt too 8ft. lbs. Apply 70psi. of air pressure to the hole in the block so the cavity is full and ensure there is no leakage between the block and the valve body. There should be no leakage between the first land of the Pressure Regulator Valve and the wall shown in Figure 6 for approximately 25-30 seconds. A new valve body will hold air pressure for 45-50 seconds. If the valve body in question leaks at 25 seconds or less, the bore is worn and the valve body will require replacement or Sonnax part no. 73840-RK regulating valve kit installed. ***Note: requires reamer Sonnax part no. 73840-RTL.***

CORRECTION: (Cont'd)

E. Remove and inspect the Bypass Clutch Control Valve Sleeve as shown in Figure 5. If the sleeve is worn the valve body will require replacement as the sleeve is not available from Ford seperately, or Sonnax Part no. 73840-BK Bypass Clutch Control Valve Kit installed to renew the sleeve and valve bore. ***Note: Requires Sonnax 73840-BTL reamer.***

(2) ***Forward Clutch Snap ring or Low Reverse Clutch snap ring lug blow-out:***

A. Refer to Figures 5 and 6 to check for bore wear. Remove the Pressure Regulator valve and inspect it for wear which normally shows up as brown lines. Re-install the Pressure Regulator valve back into its bore and check for wobble from side to side. Fill the cavity shown in Figure 6 with ATF. Place a suitable block over the passage shown in Figure 6 and torque the hold down bolt too 8ft. lbs. Apply 70psi. of air pressure to the hole in the block so the cavity is full and ensure there is no leakage between the block and the valve body. There should be no leakage between the first land of the Pressure Regulator Valve and the wall shown in Figure 6 for approximately 25-30 seconds. A new valve body will hold air pressure for 45-50 seconds. If the valve body in question leaks at 25 seconds or less, the bore is worn and the valve body will require replacement or Sonnax part no. 73840-RK regulating valve kit installed. ***Note: requires reamer Sonnax part no. 73840-RTL.***

REVERSE INPUT CLUTCH HUB ALIGNMENT

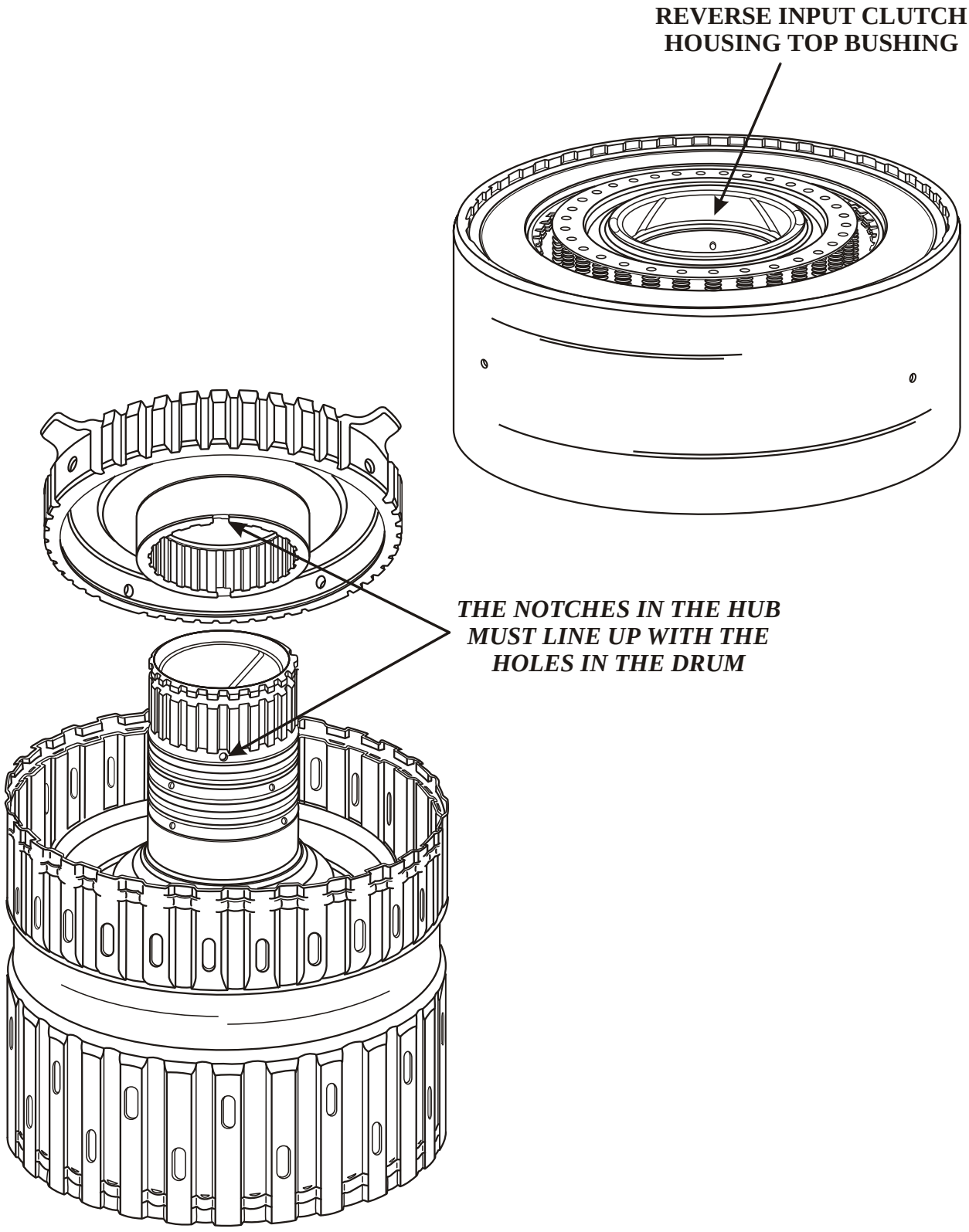
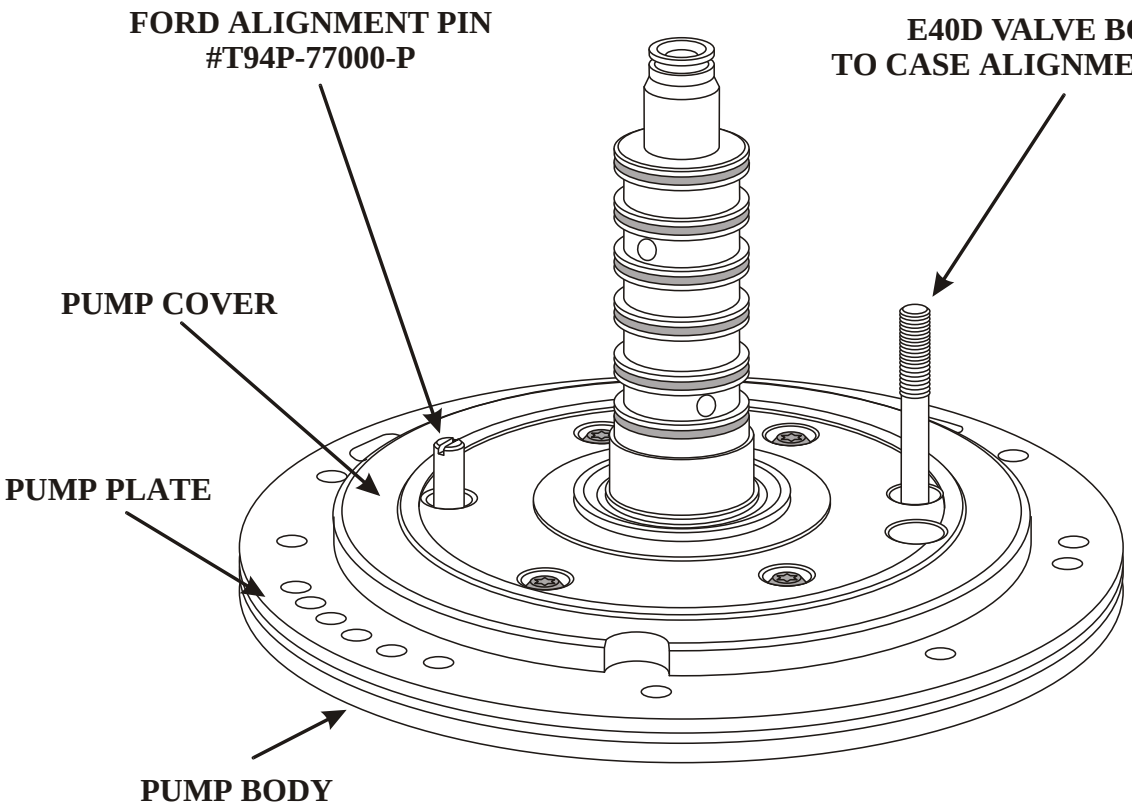


Figure 1

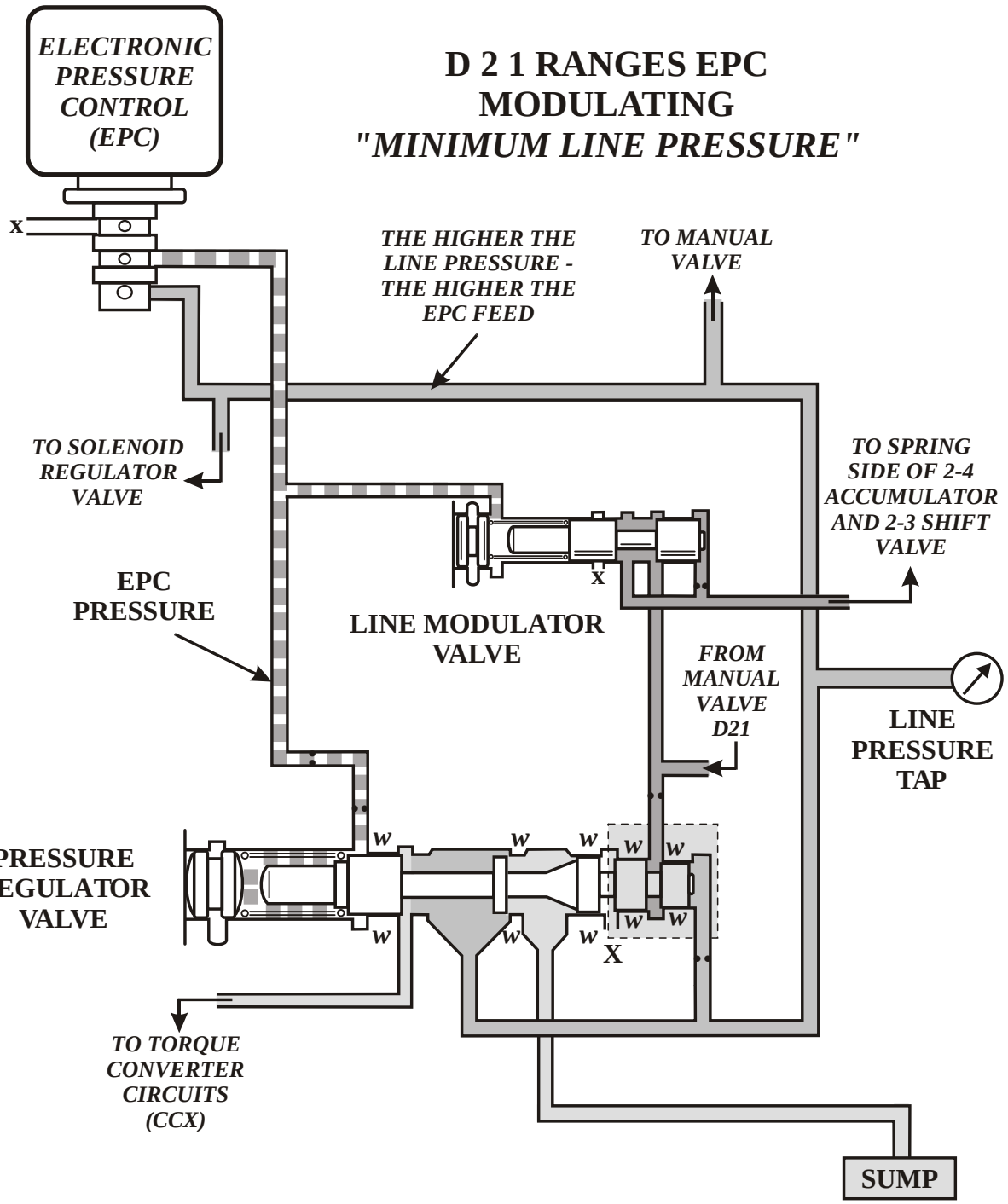
PUMP ALIGNMENT



TORQUE PUMP BOLTS TO 10ft. lbs.

Figure 2

CD4E PRESSURE REGULATOR CIRCUIT *(PARTIAL)*

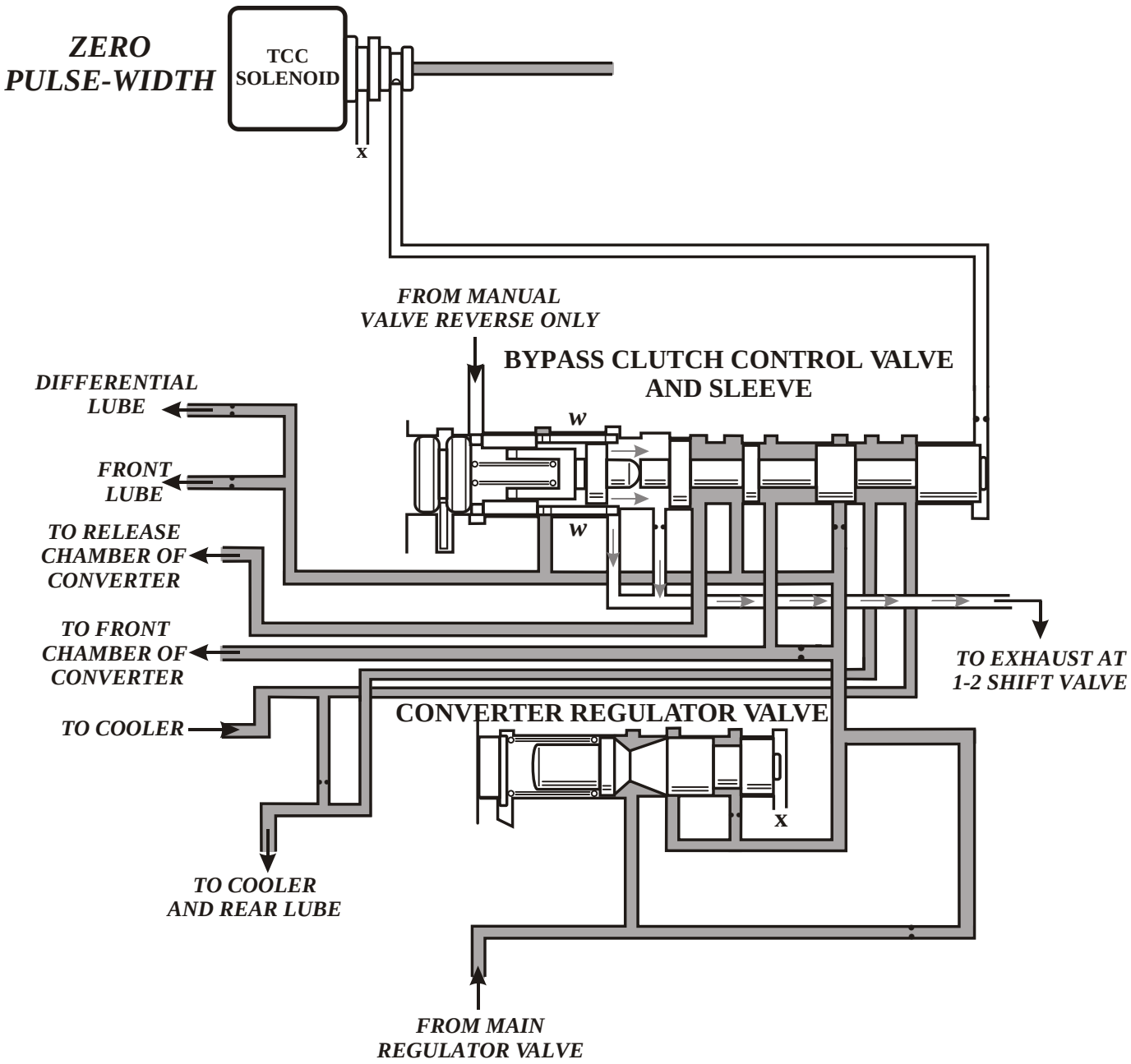


w = Wear areas in the valve body bore

Wear in the area highligted with the dotted line will create a loss of balance feed oil resulting in extremely High Line Pressure. Without balance feed, reducing line pressure, it will take very little EPC pressure to create 400-500 psi.

Figure 3

TORQUE CONVERTER CLUTCH "OFF" CIRCUIT *(PARTIAL)*

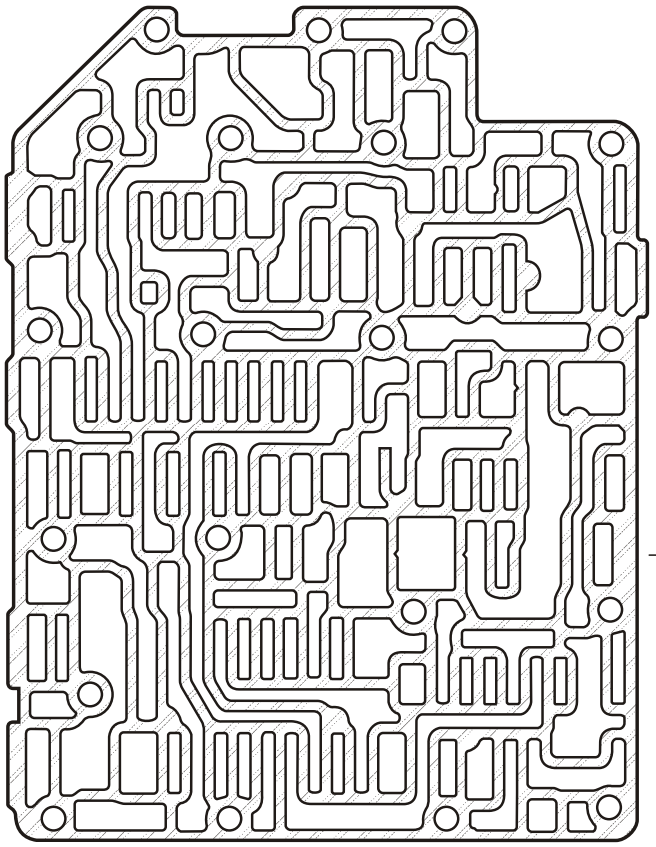


w = Wear areas in the sleeve bore

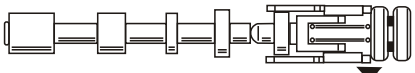
Wear in the areas of the sleeve can cause a loss of convertor regulator oil feeding front and differential lube

Figure 4

CD4E VALVE BODY

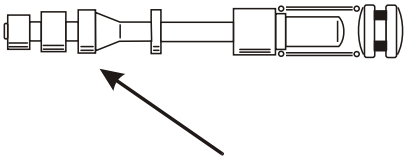


BYPASS CLUTCH CONTROL VALVE ASSEMBLY



CHECK THE INSIDE OF SLEEVE FOR SHINY AREAS

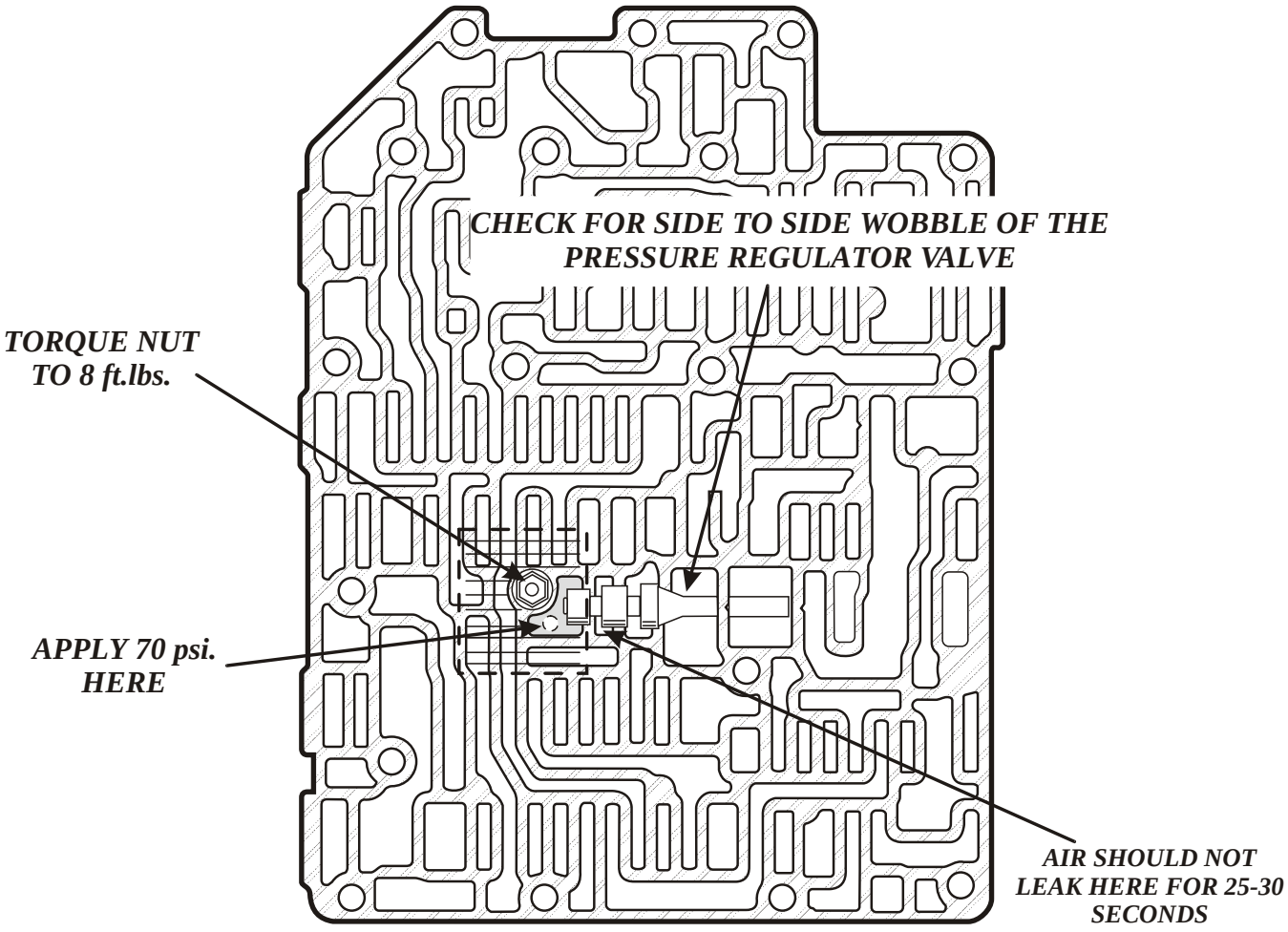
PRESSURE REGULATOR VALVE ASSEMBLY



CHECK THE SIDES OF THE VALVE FOR BROWN LINES OR SHINY AREAS

Figure 5

CD4E VALVE BODY



FILL THE AREA HIGHLITED IN GREY WITH ATF AND COVER WITH A SUITABLE PLATE AS OUTLINED WITH THE DOTTED LINE

APPLY 70 psi. OF AIR PRESSURE TO THE DOTTED HOLE IN THE PLATE. THE VALVE BODY BORE SHOULD HOLD THIS AIR PRESSURE FOR APPROXIMATELY 25-30 SECONDS OR THE BORE IS WORN.

Figure 6