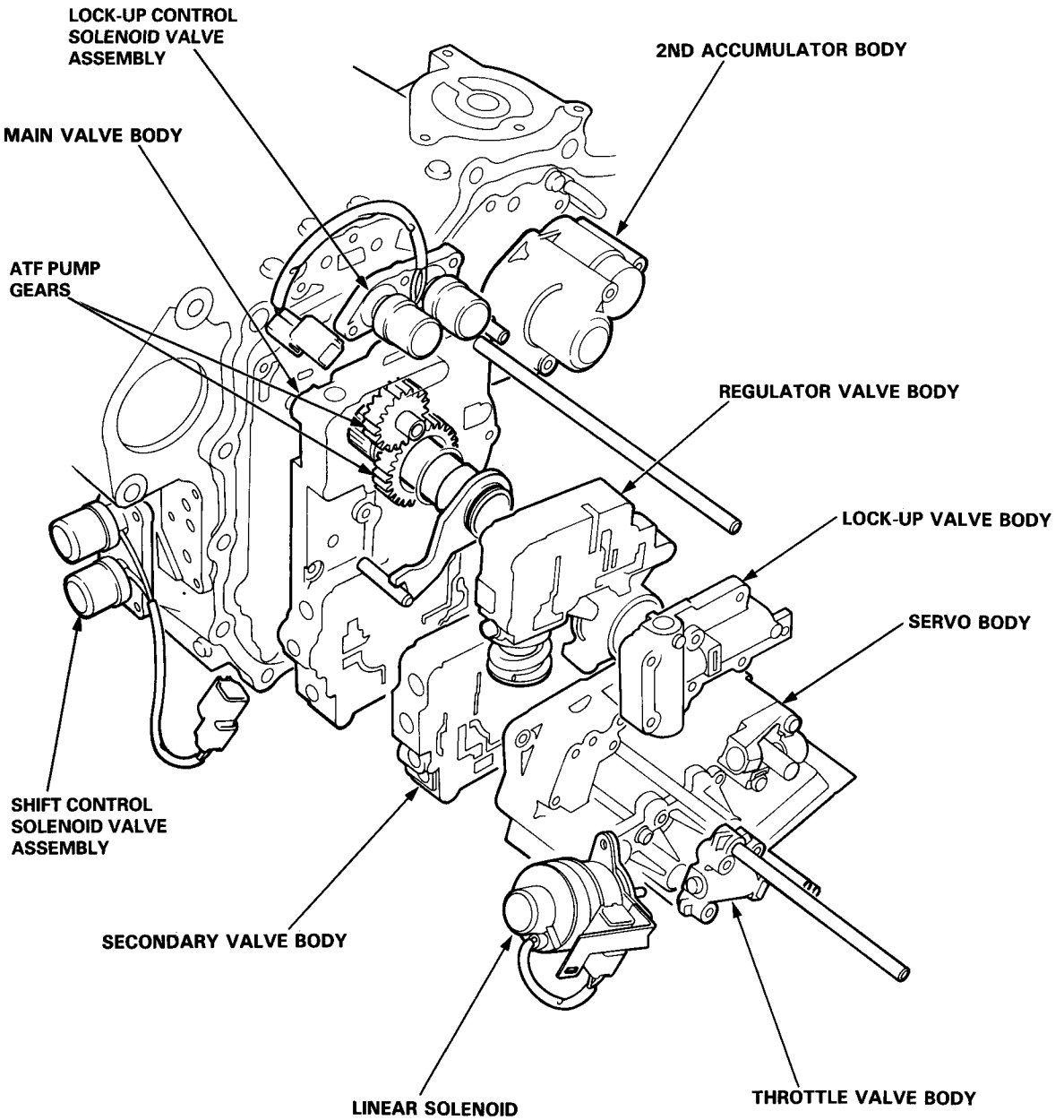
Description

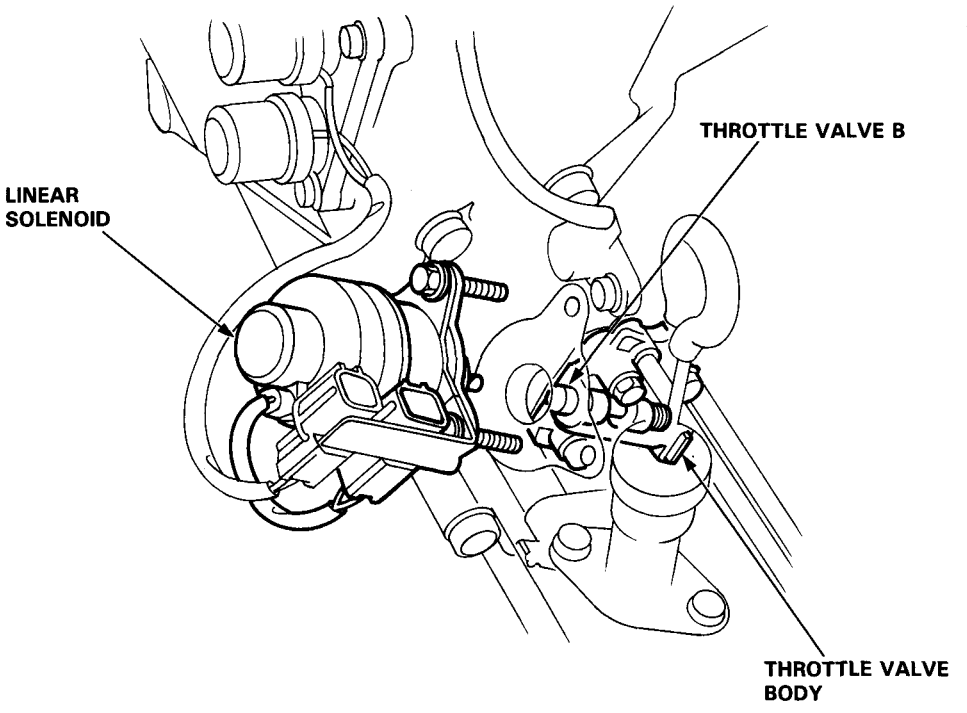
Hydraulic Control

The valve bodies include the main valve body, the regulator valve body, the lock-up valve body, the secondary valve body, the servo body, the throttle valve body and the 2nd accumulator body.
The ATF pump is driven by splines on the left end of the torque converter which is attached to the engine. Fluid flows through the regulator valve to maintain specified pressure through the main valve body to the manual valve directing pressure to each of the clutches.
The shift control solenoid valve assembly, the lock-up control solenoid valve assembly and the linear solenoid are bolted on the outside of the transmission.



Throttle Valve Body

The throttle valve body is mounted on the servo valve body with the throttle valve built in.

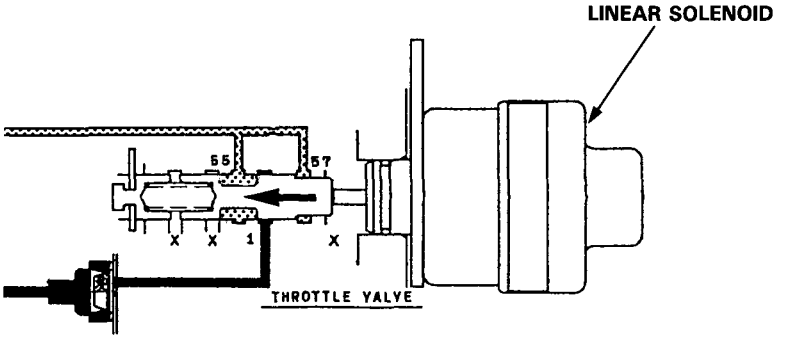


Throttle Valve B, Linear Solenoid

Throttle valve B converts changes in the throttle opening to changes in transmission hydraulic pressure, to determine transmission shift quality and lock-up operation. The throttle valve B also operates on accumulator back pressure to make smooth changes from one gear to another.

The end of the valve contacts the linear solenoid which is controlled by the TCM.

The throttle pedal load has been reduced by eliminating the cable.



(cont'd)

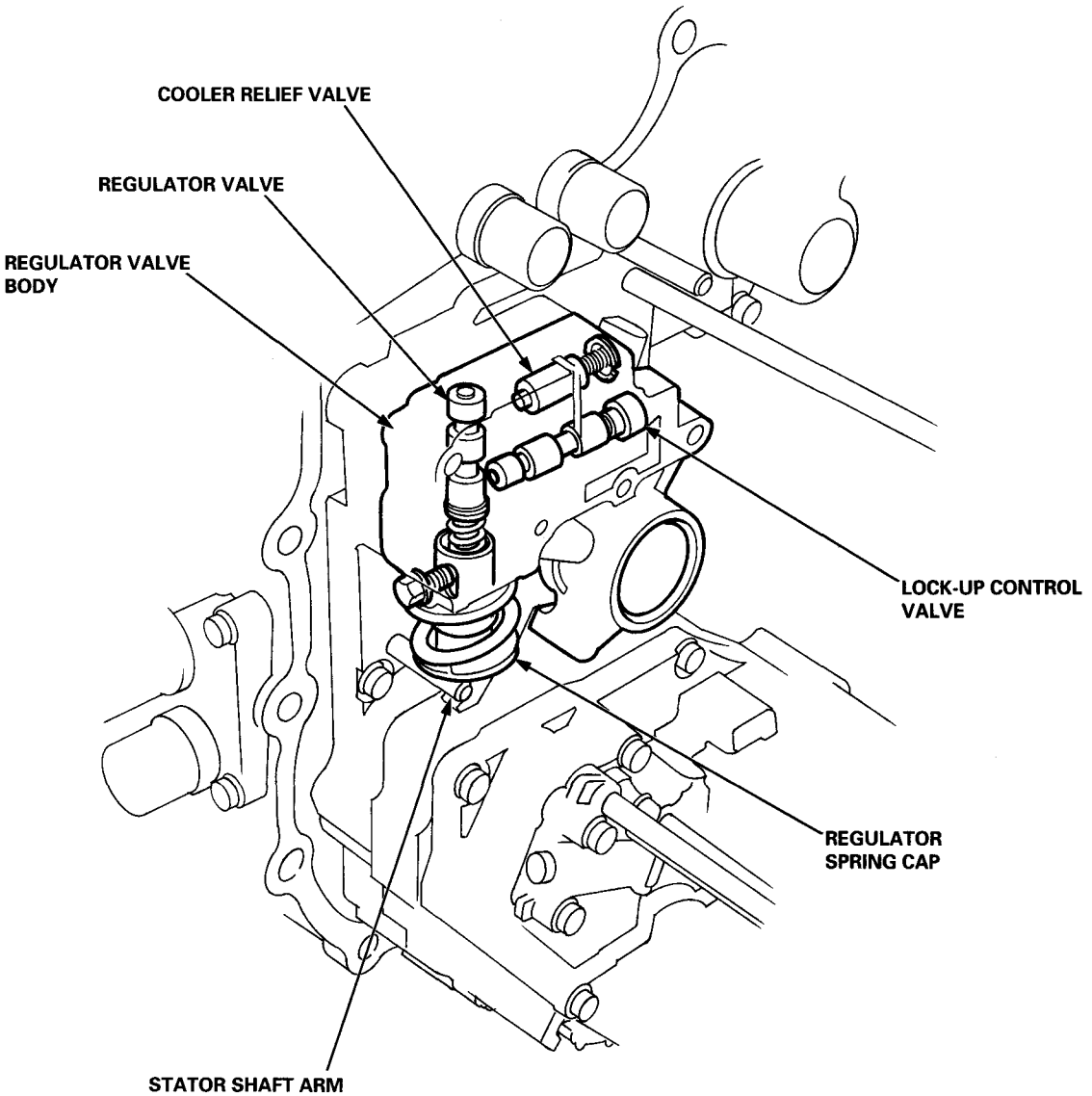
Description

Hydraulic Control (cont'd)

Regulator Valve Body

The regulator valve body is mounted on the main valve body with the regulator valve, the lock-up control valve and the cooler relief valve built in. The stator shaft arm contacts the regulator valve spring cap.

The hydraulic pressure (line pressure) is controlled by the regulator valve.

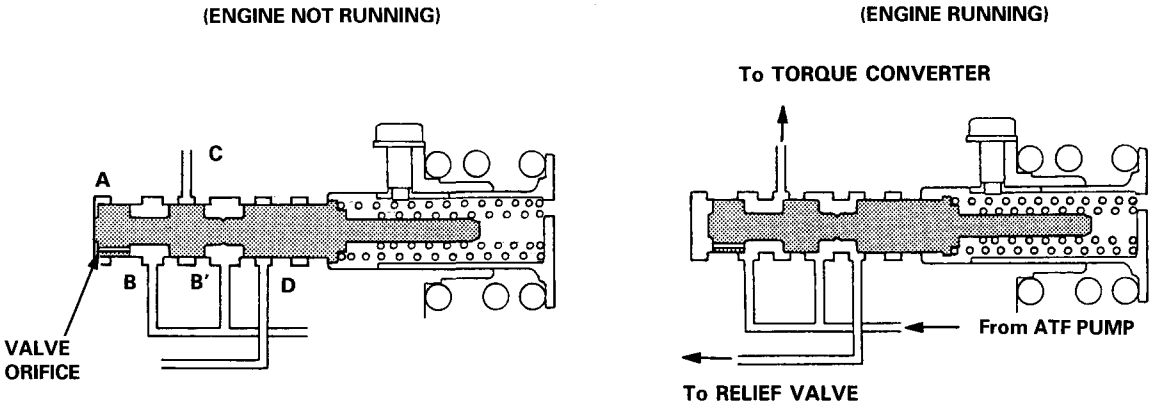


Regulator Valve

The regulator valve maintains a constant hydraulic pressure from the ATF pump to the hydraulic control system, while also furnishing fluid to the lubricating system and the torque converter.

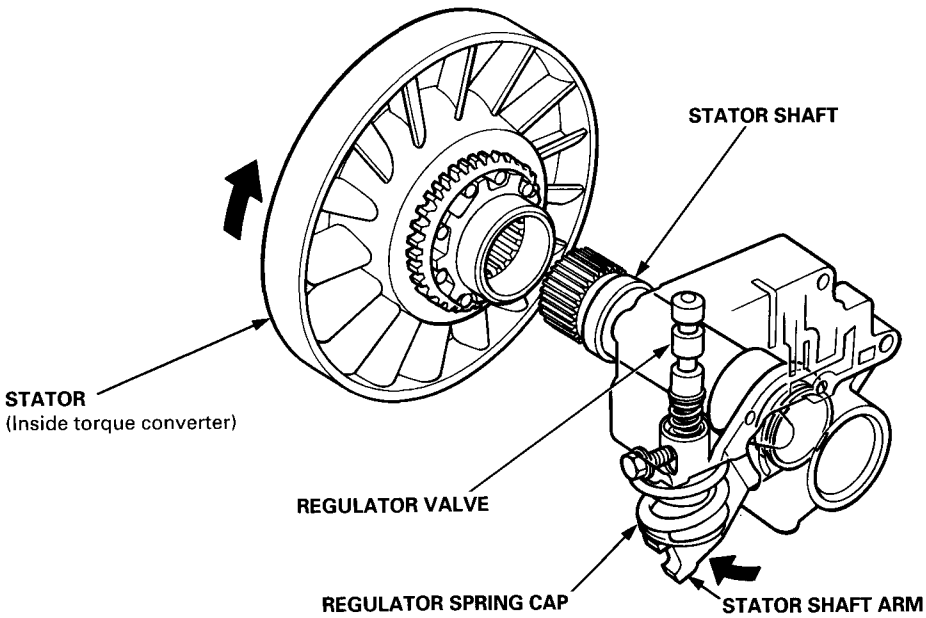
Fluid from the ATF pump flows through B and B'. The regulator valve has a valve orifice. The fluid entering from B flows through the orifice to the A cavity. This pressure of the A cavity pushes the regulator valve to the right side, and this movement of the regulator valve uncovers the fluid port to the torque converter and the relief valve. The fluid flows out to the torque converter. The relief valve and regulator valve move to the left side.

According to the level of the hydraulic pressure through B, the position of the regulator valve changes, and the amount of fluid from B' through D and C also changes. This operation is continued, maintaining line pressure.



Stator Reaction Hydraulic Pressure Control

Hydraulic pressure increases according to torque are performed by the regulator valve using stator torque reaction. The stator shaft is splined with the stator in the torque converter, and its arm end contacts the regulator spring cap. When the vehicle is accelerating or climbing (Torque Converter Range), stator torque reaction acts on the stator shaft, and the stator arm pushes the regulator spring cap in the → direction in proportion to the reaction. The stator reaction spring compresses, and the regulator valve moves to increase the line pressure which is regulated by the regulator valve. Line pressure reaches its maximum when stator torque reaction reaches its maximum.



(cont'd)

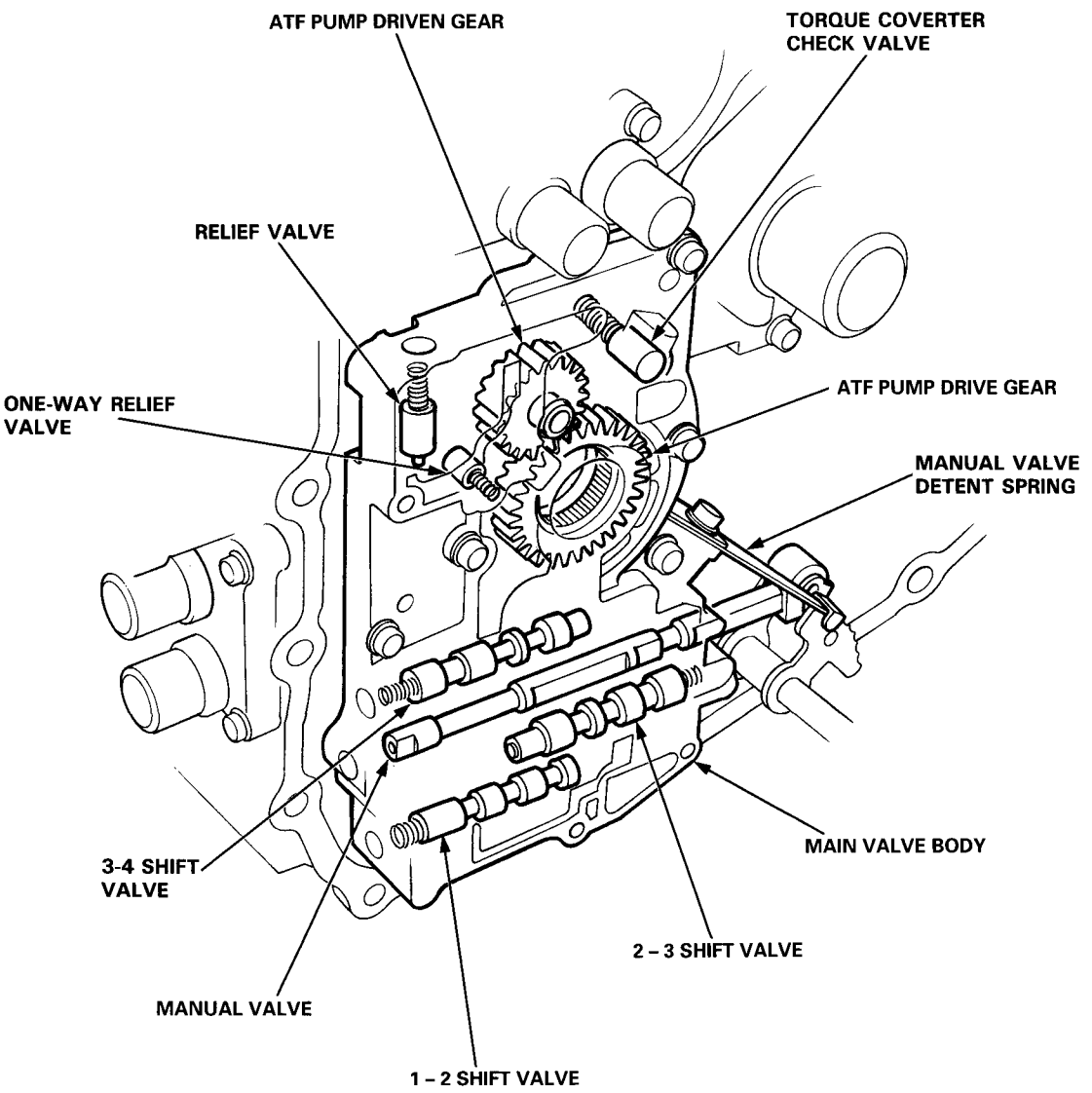
Description

Hydraulic Control (cont'd)

Main Valve Body

The main valve body is located on the torque converter housing. The main valve body houses the ATF pump gears, the torque converter check valve, the manual valve, the 1-2, 2-3, 3-4 shift valves, the relief valve and the one-way relief valve.

The primary functions of the main valve body are to switch on and off, and to control the hydraulic pressure going to the hydraulic control system.

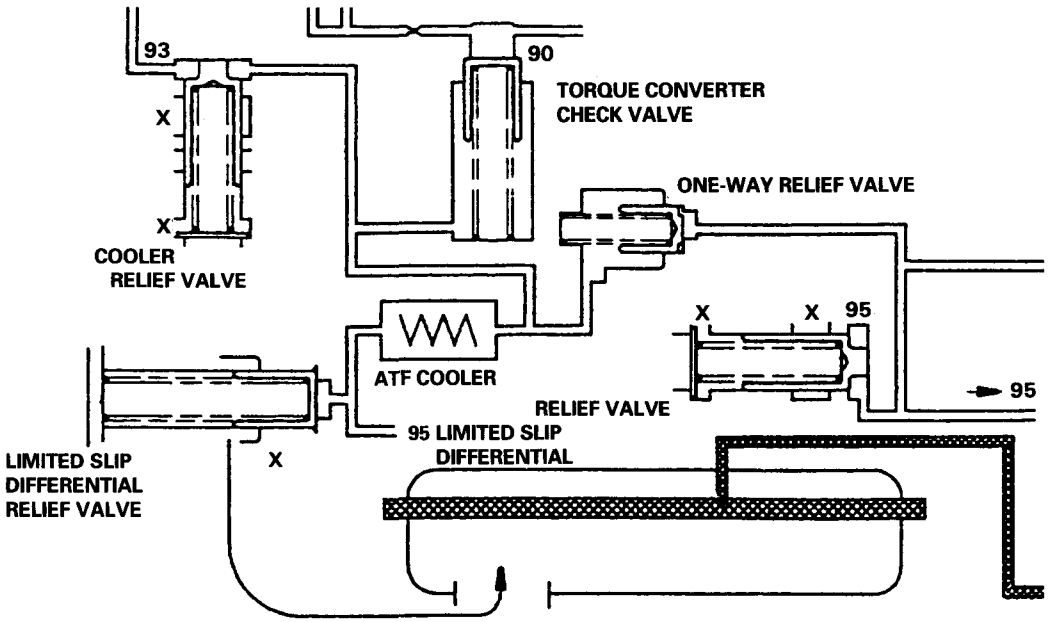


ATF Pump

The external tooth gear type ATF pump consists of a housing together with the main valve body, a pump drive gear, a pump driven gear, and a pump shaft. The ATF pump is installed on the torque converter housing. The pump's driving force is transmitted by the torque converter pump (directly connected to the engine) to the pump shaft. The intake and exhaust lines, and the torque converter line are incorporated in the housing.

One-way Relief Valve

The one-way relief valve is used during high speed or high temperature to send fluid to the ATF cooler for ATF cooling.



(cont'd)

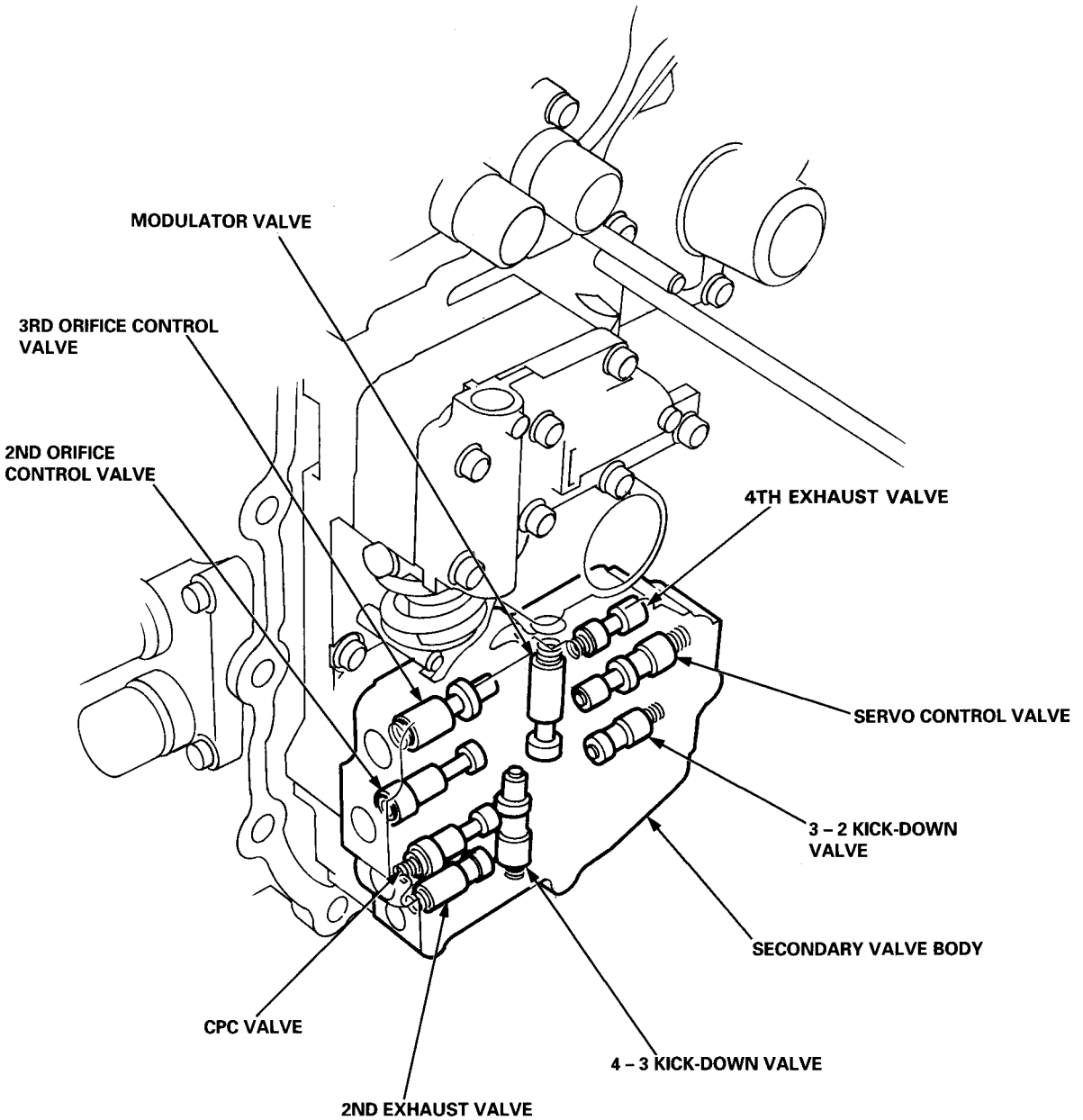
Description

Hydraulic Control (cont'd)

Secondary Valve Body

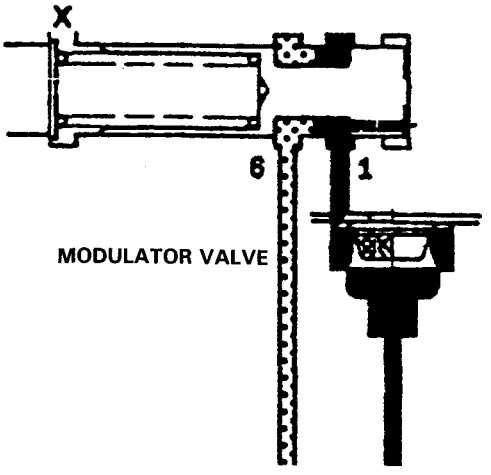
The secondary valve body is also mounted on the main valve body with the 3-2 kick-down valve, the CPC valve, the 2nd orifice control valve, the 3rd orifice control valve, the modulator valve, the 4th exhaust valve, the 2nd exhaust valve, the servo control valve and the 4-3 kick-down valve built in.

Primarily, it regulates shift valve operation timing and clutch pressure for shock reduction during shifting.



Modulator Valve

The modulator valve uses line pressure from the regulator (to shift control solenoid valves A/B) and the lock-up control solenoid valves A/B, to maintain accurate shift and lock-up characteristics.

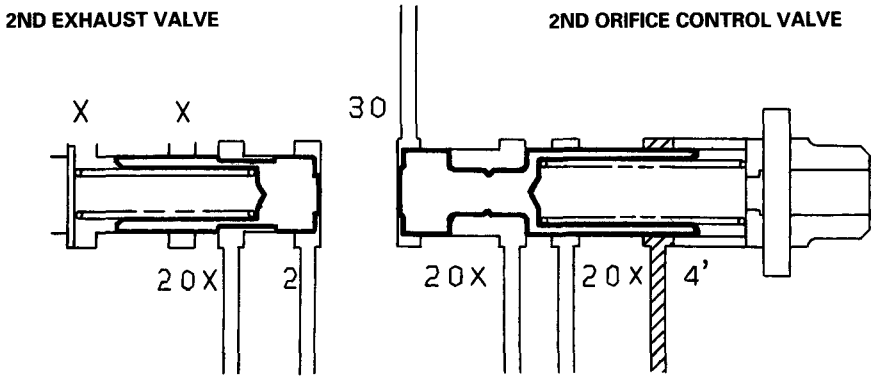


2nd Orifice Control Valve

For smooth shifting between the 2nd and 3rd gear, the open pressure on the 2nd gear side is relieved through a fixed orifice. The valve also moves to equalize pressure differences between the 2nd and 3rd gear.

2nd Exhaust Valve

The 2nd exhaust valve releases 2nd clutch pressure quickly when shifting from the range where hydraulic pressure is applied to the 2nd clutch in the [N] position.



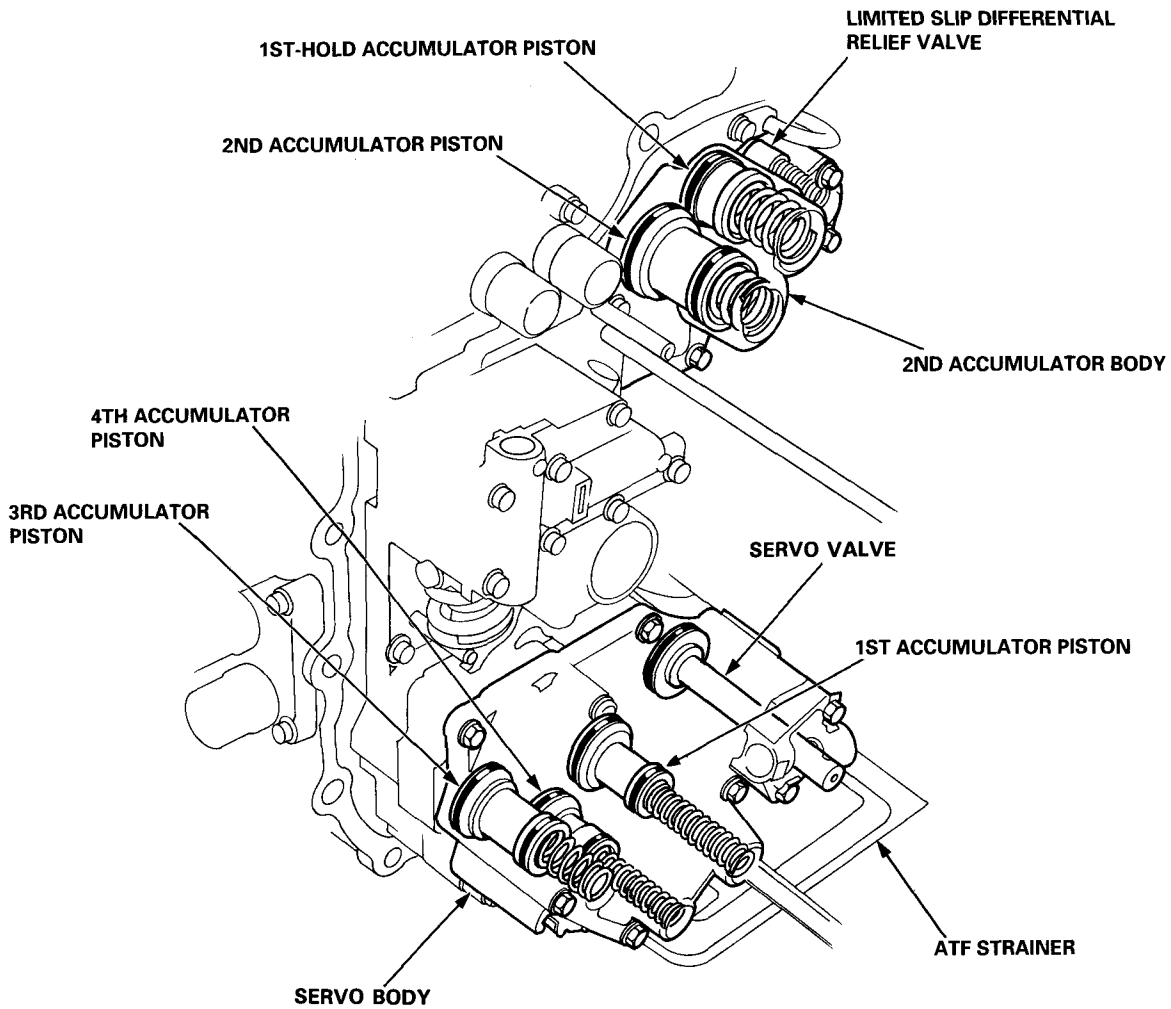
(cont'd)

Description

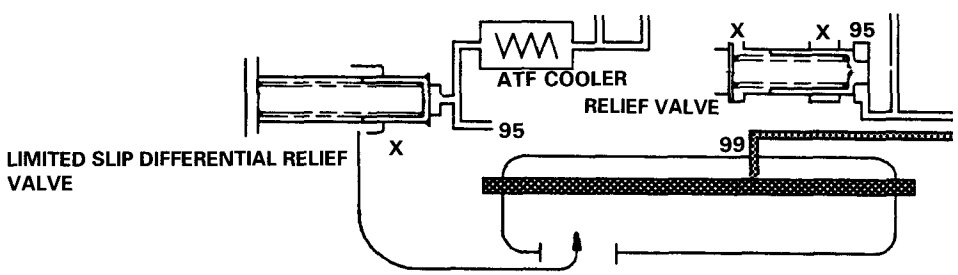
Hydraulic Control (cont'd)

Servo Body
The servo body is mounted on the secondary valve body with the servo valve, the 1st accumulator piston, the 3rd accumulator piston, and the 4th accumulator piston built in to it. The primary functions of the servo body are to switch the direction foward and reverse, and to control hydraulic pressure reduction for shifting shock.

2nd Accumulator Body
The 2nd accumulator body is mounted on the torque converter housing with the 1st-hold accumulator, the 2nd accumulator and the limited slip differential relief valve built in to it.



Limited Slip Differential Relief Valve
When the resistance of fluid flow inside the limited slip differential is high, the limited slip differential relief valve is opened, and fluid flows to the ATF cooler.



Lock-up Valve Body

The lock-up valve body is mounted on the regulator valve body with the lock-up shift valve and the lock-up timing B valve built in.

The capacity of the lock-up clutch is controlled by the lock-up shift valve and the lock-up timing B valve.