

Description

Hydraulic Flow

General of Hydraulic Pressure

Oil Pump → Regulator Valve → { Line Pressure
Torque Converter Pressure
Lubrication Pressure

Distribution of Hydraulic Pressure

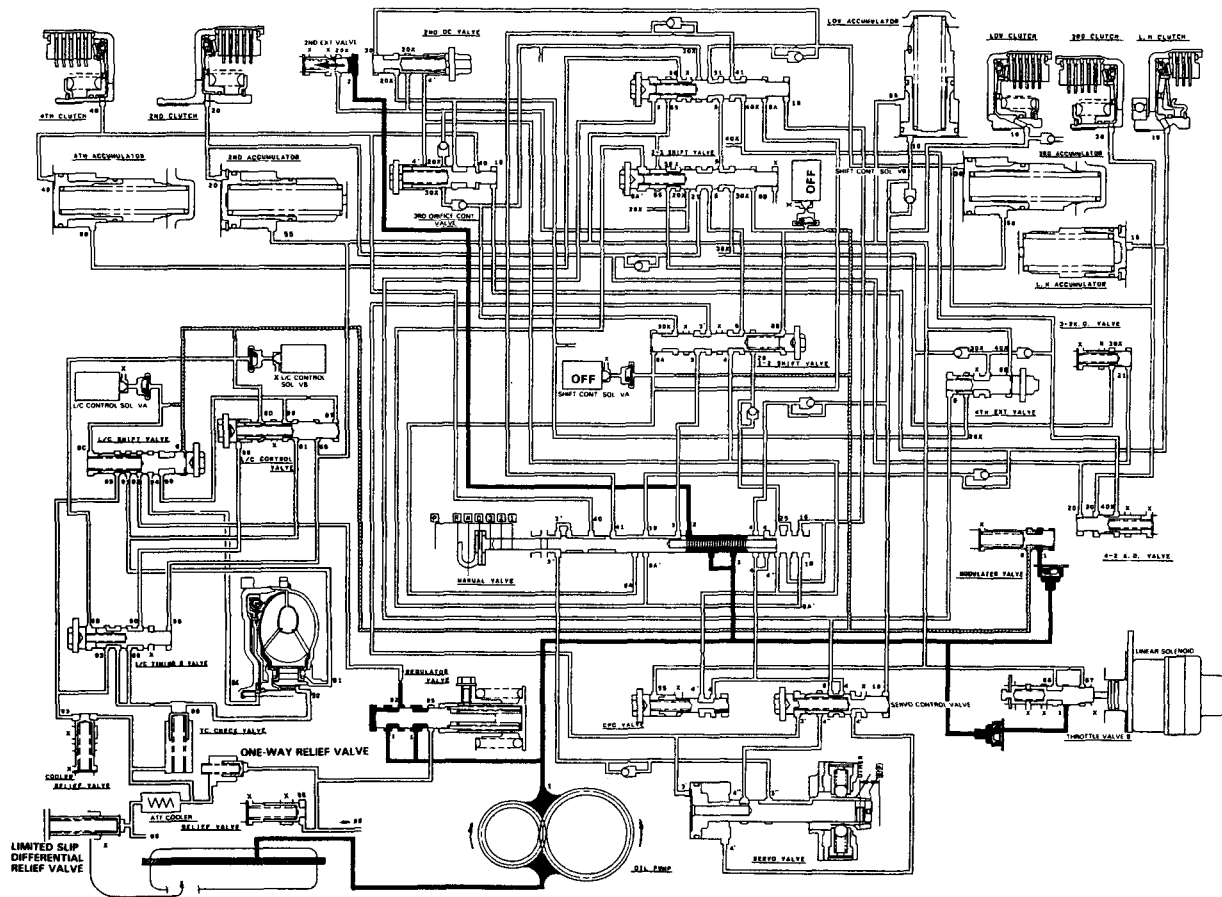
- Manual Valve → to select Line Pressure
- Throttle Valve B → Throttle B Pressure
- 1-2 Shift Valve } → Clutch Pressure
- 2-3 Shift Valve }
- 3-4 Shift Valve }
- Line Pressure → { Servo Valve
Throttle Valve

NO.	DESCRIPTION OF PRESSURE	NO.	DESCRIPTION OF PRESSURE	NO.	DESCRIPTION OF PRESSURE
1	LINE	10	1ST CLUTCH	90	TORQUE CONVERTER
2	LINE	15	1ST-HOLD CLUTCH	91	TORQUE CONVERTER
3	LINE	16	1ST-HOLD CLUTCH	92	TORQUE CONVERTER
3'	LINE	18	LINE	93	OIL COOLER
3''	LINE	20	2ND CLUTCH	94	TORQUE CONVERTER
4	LINE	21	2ND CLUTCH	95	LUBRICATION
4'	CLUTCH PRESSURE CONTROL	25	LINE	96	TORQUE CONVERTER
5	CLUTCH PRESSURE CONTROL	30	3RD CLUTCH	97	TORQUE CONVERTER
6	MODULATOR	31	3RD CLUTCH	99	SUCTION
6A	MODULATOR (SHIFT SOL. V A)	40	4TH CLUTCH	X	BLEED
6B	MODULATOR (SHIFT SOL. V B)	41	4TH CLUTCH		
6C	MODULATOR (L/C SOL. V A)	55	THROTTLE B		
6D	MODULATOR (L/C SOL. V B)	56	THROTTLE B		
9	LINE	57	THROTTLE B		



N position

As the engine turns, the oil pump also starts to operate. Automatic transmission fluid (ATF) is drawn from (99) and discharged into (1). Then, ATF pressure is controlled by the regulator valve and becomes line pressure (1). The torque converter inlet pressure (92) enters (94) of torque converter through the orifice and discharges into (90). The torque converter check valve prevents the torque converter pressure from rising. Under this condition, the hydraulic pressure is not applied to the clutches.



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Description

Hydraulic Flow (cont'd)

1 Position

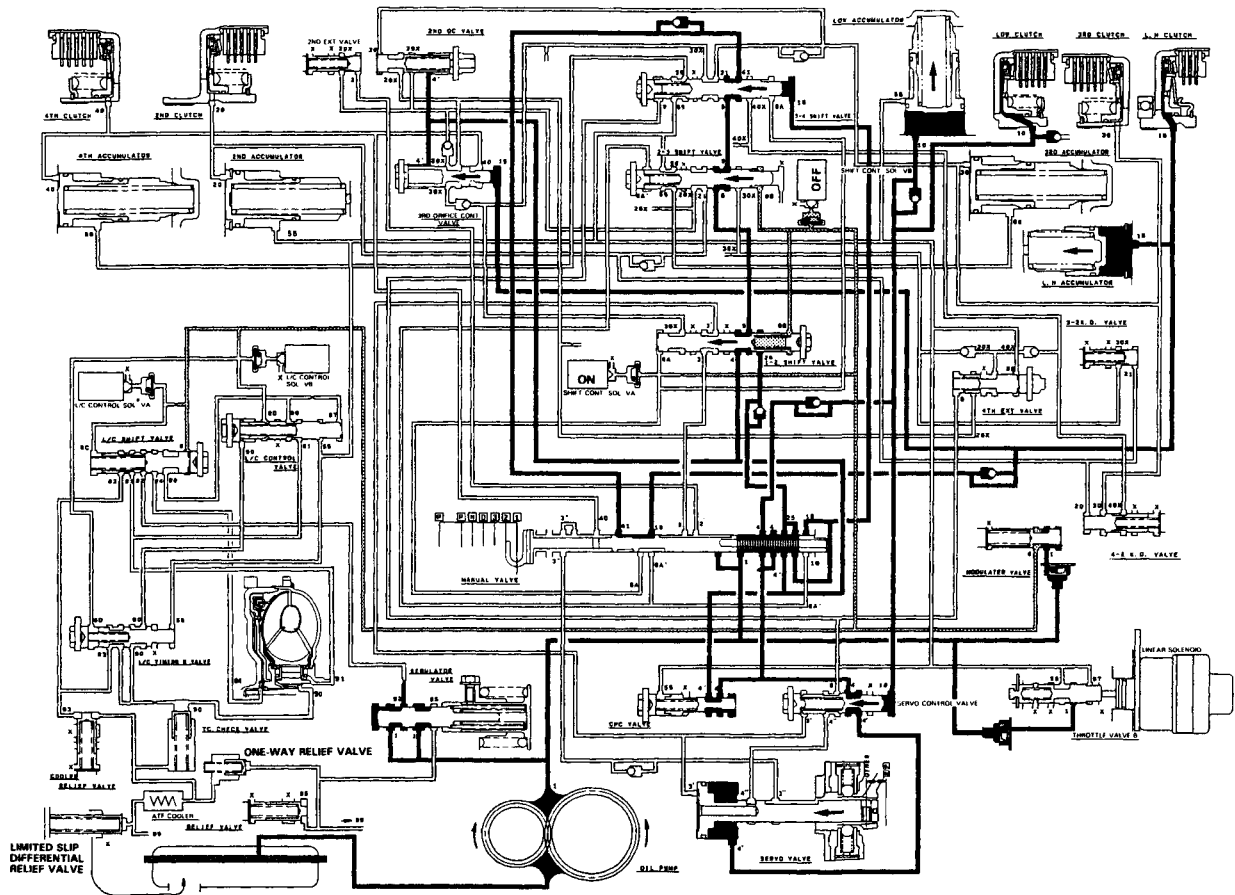
The line pressure (1) becomes the line pressure (4), (18), (25) as it passes through the manual valve. Also, the line pressure (1) goes to the modulator valve through the filter and becomes the modulator pressure (6). The modulator pressure (6) is supplied to the 1-2 shift valve and 2-3 shift valve.

The 1-2 shift and 2-3 shift valves are moved to the left side because the shift control solenoid valve A is turned ON and B is OFF by the TCM.

The line pressure (18) is supplied to the 3-4 shift valve, and it is moved to the left side. The line pressure (4) is the 1st clutch pressure (10), then the 1st clutch is engaged.

The line pressure (4) becomes the 1st-hold clutch pressure (16) via the 1-2 shift valve, 2-3 shift valve, 3-4 shift valve and manual valve, then the 1st-hold clutch is engaged.

NOTE: When used, "left" or "right" indicates direction on the flowchart.





2 Position

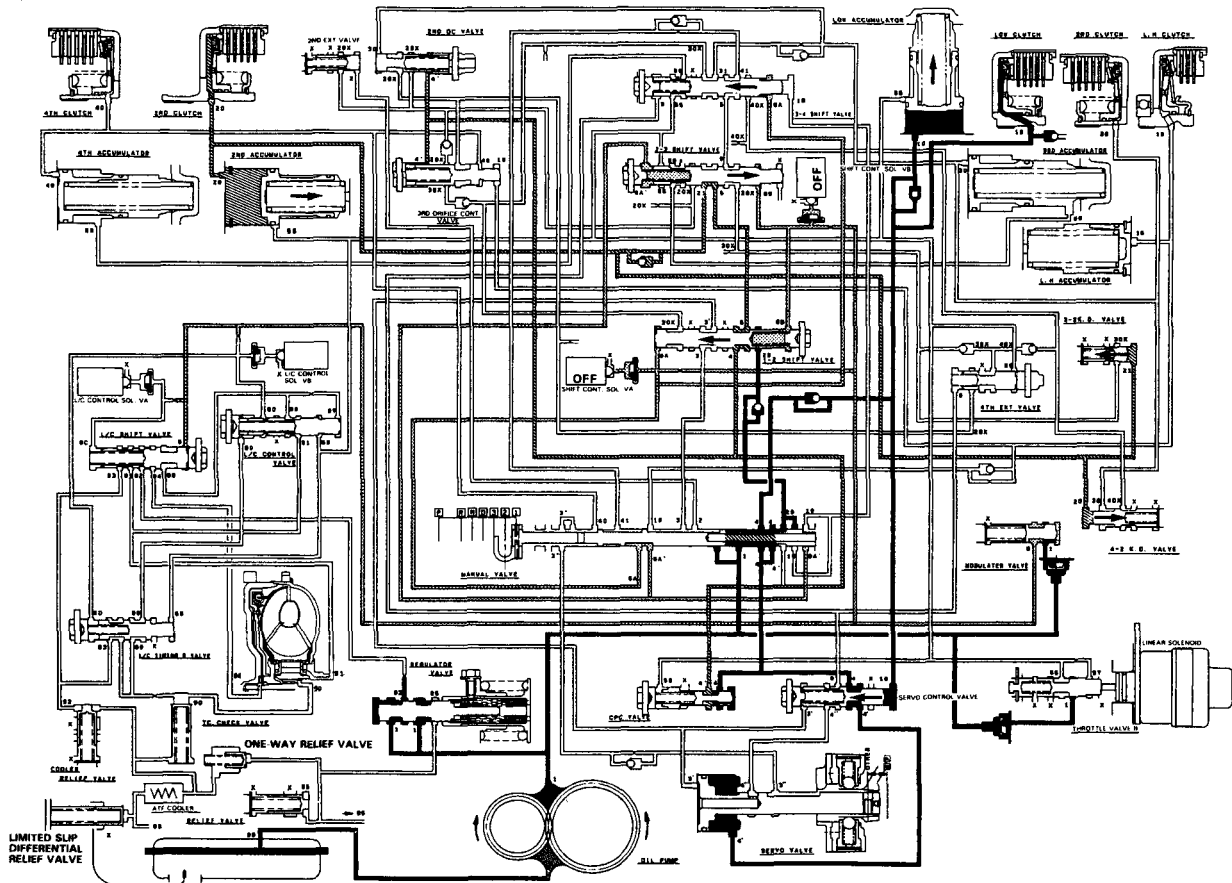
The line pressure (1) becomes the line pressure (4), (25) as it passes through the manual valve.

The line pressure (1) goes to the modulator valve and becomes the modulator pressure (6). The modulator pressure (6) is supplied to the 1-2 shift valve and 3-4 shift valve. The 1-2 shift and 3-4 shift valves are moved to the left side and the 2-3 shift valve is moved to the right side because the shift control solenoid valve A and B are turned OFF by the TCM.

The line pressure (4) goes through the 2nd clutch pressure (20) to the 2nd clutch, then the 2nd clutch is engaged.

The line pressure (4) passing through the orifice becomes the 1st clutch pressure (10) and flows to the 1st clutch. However no power is transmitted by means of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the flowchart.



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Description

Hydraulic Flow (cont'd)

3 Position

The line pressure (1) becomes the modulator pressure (6) as it passes the modulator valve.

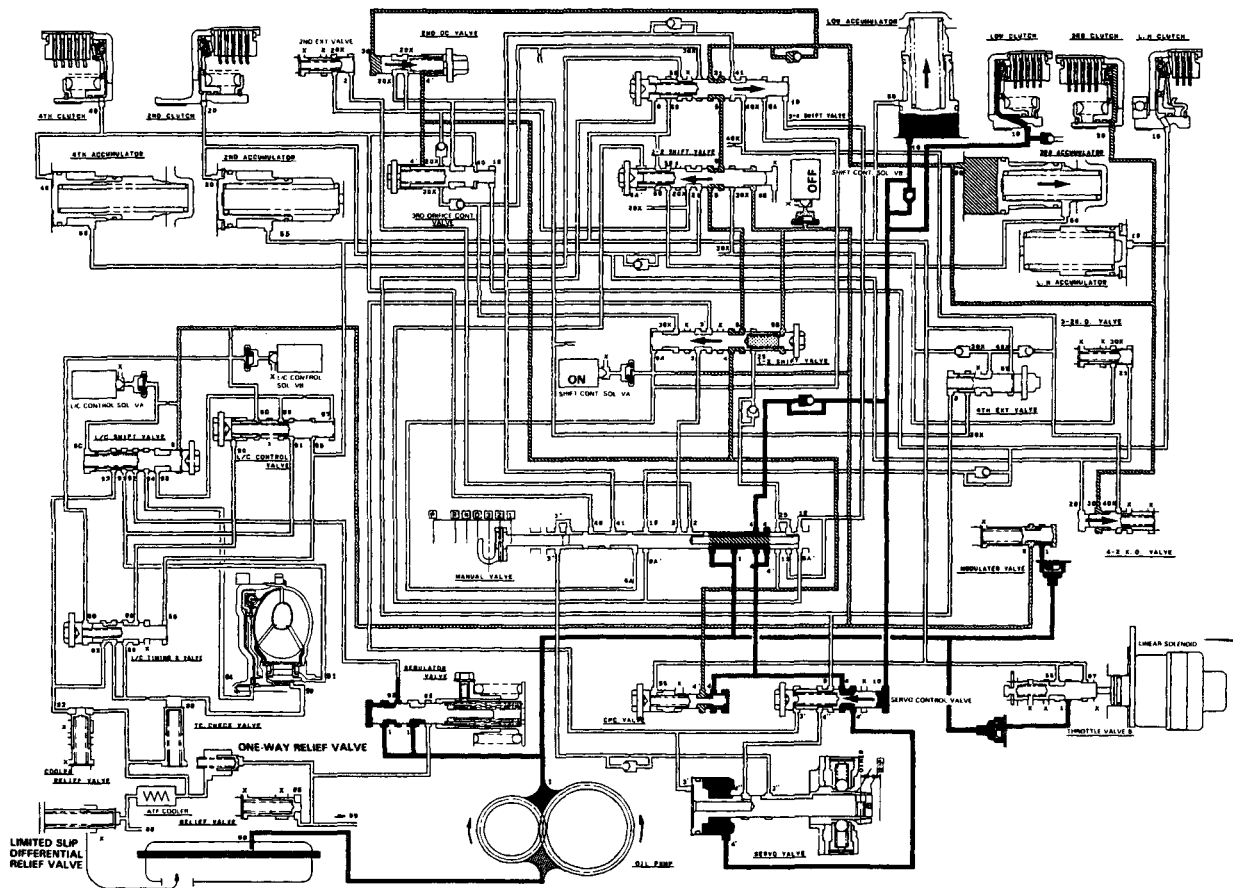
Also, the modulator pressure (6) is supplied to the 1-2 shift valve and 2-3 shift valve, and they are moved to the left side because the shift control solenoid A is turned ON and B is OFF by the TCM.

The line pressure (4) becomes the clutch pressure control (5) and the 3rd clutch pressure (31).

Then it goes to the 3rd clutch. The 3rd clutch is engaged.

The line pressure (4) passing through the orifice becomes the 1st clutch pressure (10) and flows to the 1st clutch. However no power is transmitted by means of the one-way clutch as in 2nd speed.

NOTE: When used, "left" or "right" indicates direction on the flowchart.





D Position

1. 1st speed

The flow of fluid through the torque converter circuit is the same as in **N** position.

The line pressure (1) becomes the line pressure (4) and it becomes the 1st clutch pressure (10).

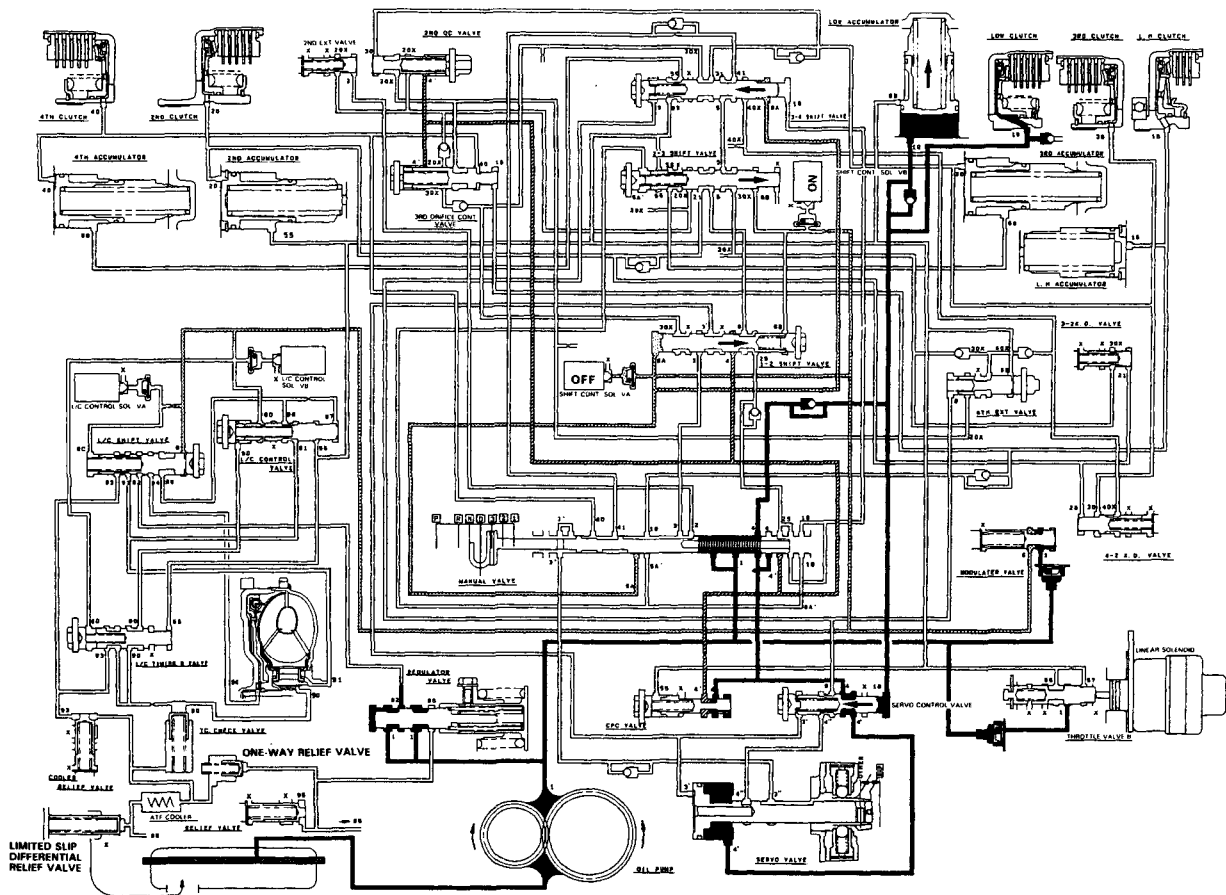
The 1st clutch pressure is applied to the 1st clutch and 1st accumulator, consequently the vehicle will move as the engine power is transmitted.

The line pressure (1) becomes the modulator pressure (6) by the modulator valve and travels to each shift valve.

The 1-2 shift valve is moved to the right side because the shift control solenoid valve A is turned OFF and B is ON by the TCM.

The line pressure (1) also flows to the throttle valve.

NOTE: When used, "left" or "right" indicates direction on the flowchart.



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Description

Hydraulic Flow (cont'd)

2. 2nd.speed

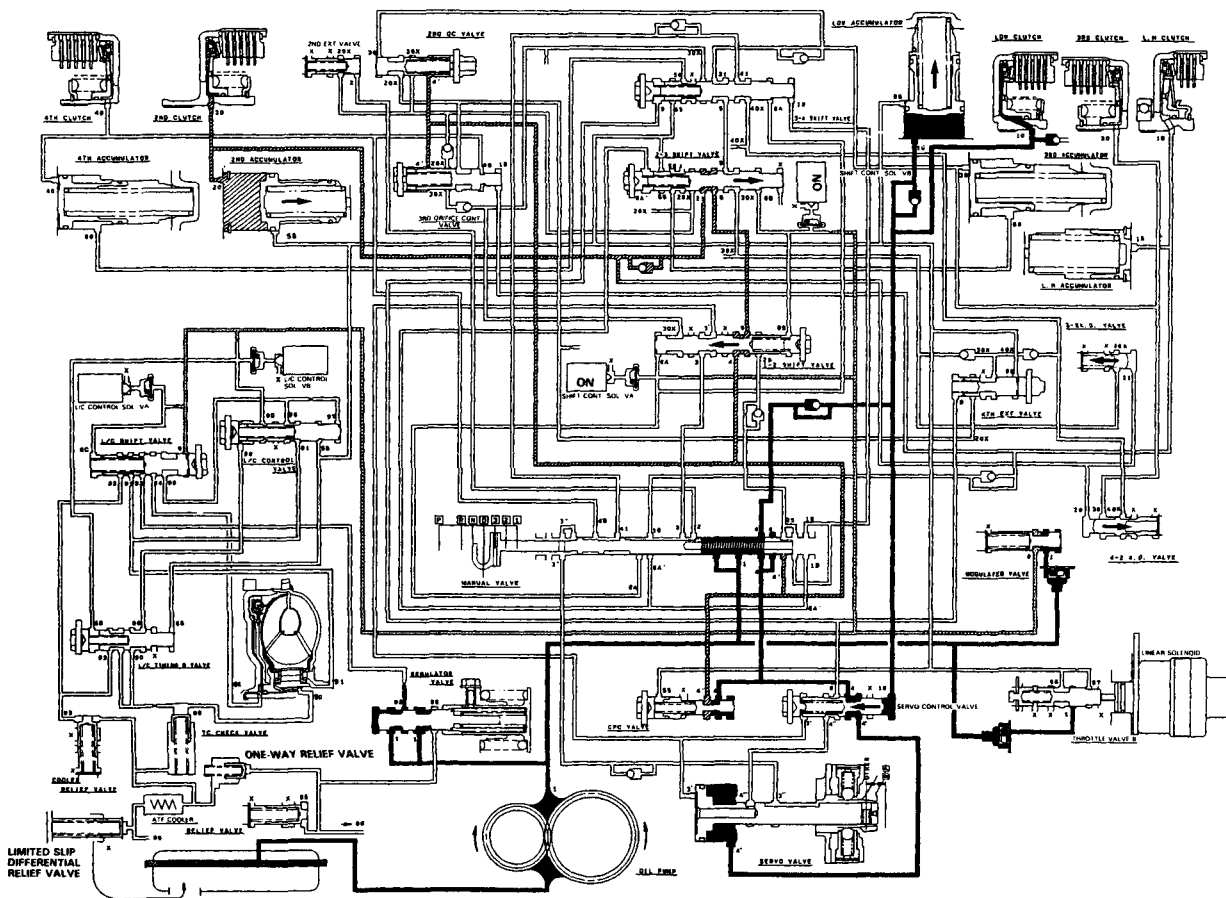
The flow of fluid up to the 1-2 and 2-3 shift valves is the same as in the 1st speed range. As the speed of the car reaches the prescribed value, the solenoid valve A is turned ON by means of the TCM. As a result, the 1-2 shift valve is moved to the left side and uncovers the port leading to the 2nd clutch; the 2nd clutch is engaged.

Fluid flows by way of:

- Line Pressure (4) → CPC Valve - Clutch Pressure Control (4') → 1-2 Shift Valve - Clutch Pressure Control (5) → 2-3 Shift Valve - 2nd Clutch Pressure (21) → Orifice - 2nd Clutch Pressure (20) → 2nd Clutch

The hydraulic pressure also flows to the 1st clutch. However no power is transmitted by means of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the flowchart.





3. 3rd Speed

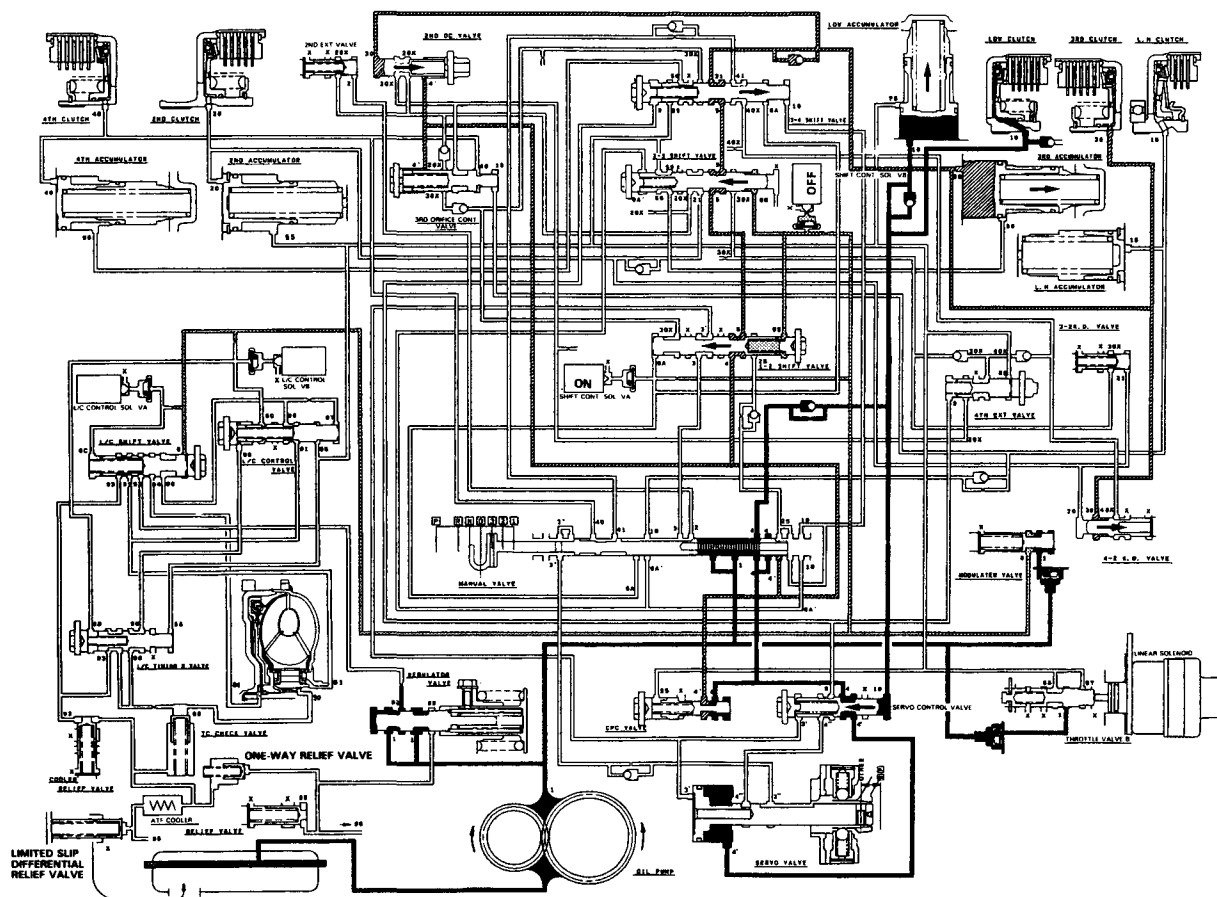
The flow of fluid up to the 1-2, 2-3 and 3-4 shift valves is the same as in the 2nd speed. As the speed of the car reaches the prescribed value, the shift control solenoid valve B is turned OFF (Shift control solenoid valve A remains ON). The 2-3 shift valve is then moved to the left side, uncovering the oil port leading to the 3rd clutch. Since the 3-4 shift valve is moved to the right side to cover the oil port to the 4th clutch, the 3rd clutch is engaged.

Fluid flows by way of:

- Line Pressure (4) → CPC Valve - Clutch Pressure Control (4') → 1-2 Shift Valve - Clutch Pressure Control (5) → 2-3 Shift Valve - Clutch Pressure Control (5) → 3-4 Shift Valve - 3rd Clutch Pressure (31) → 3rd Clutch

The hydraulic pressure also flows to the 1st clutch. However no power is transmitted by means of the one-way clutch as in the 2nd speed.

NOTE: When used, "left" or "right" indicates direction on the flowchart.



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Description

Hydraulic Flow (cont'd)

4. 4th Speed

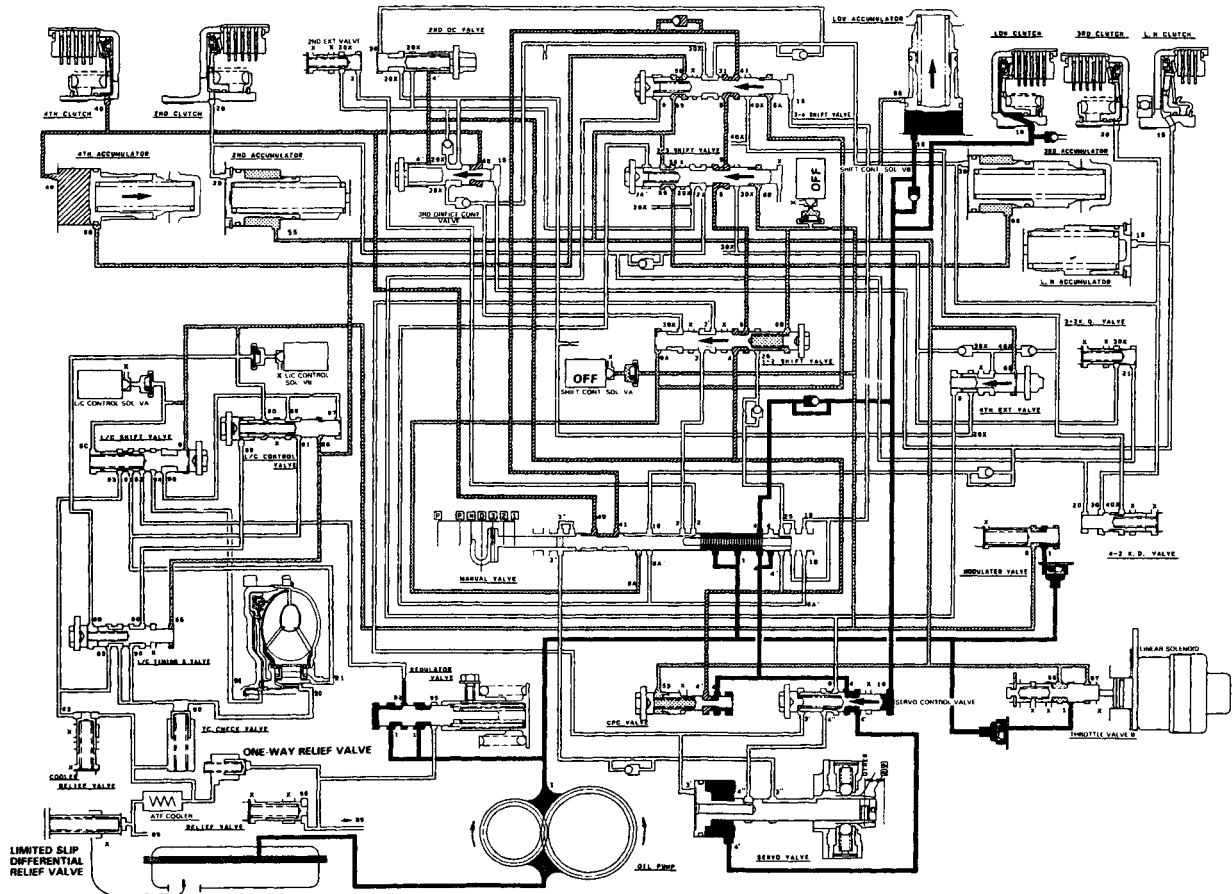
The flow of fluid up to the 1-2, 2-3 and 3-4 shift valves is the same as in the 3rd speed. When the speed of the car reaches the prescribed value, the shift control solenoid valve A is turned OFF (Shift control solenoid valve B remains OFF). As this takes place, the 3-4 shift valve is moved to the left side and uncovers the oil port leading to the 4th clutch. Since the 1-2 and 2-3 shift valves are kept on the left side, the fluid flows through the 4th clutch; the power is transmitted through the 4th clutch.

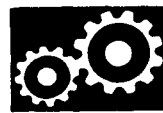
Fluid flows by way of:

- Line Pressure (4) → CPC Valve - Clutch Pressure Control (4') → 1-2 Shift Valve - Clutch Pressure Control (5) → 2-3 Shift Valve - Clutch Pressure Control (5) → 3-4 Shift Valve - 4th Clutch Pressure (41) → Manual Valve - 4th Clutch Pressure (40) → 4th Clutch

The hydraulic pressure also flows to the 1st clutch. However no power is transmitted by means of the one-way clutch as in 2nd and 3rd speed.

NOTE: When used, "left" or "right" indicates direction on the flowchart.





R Position

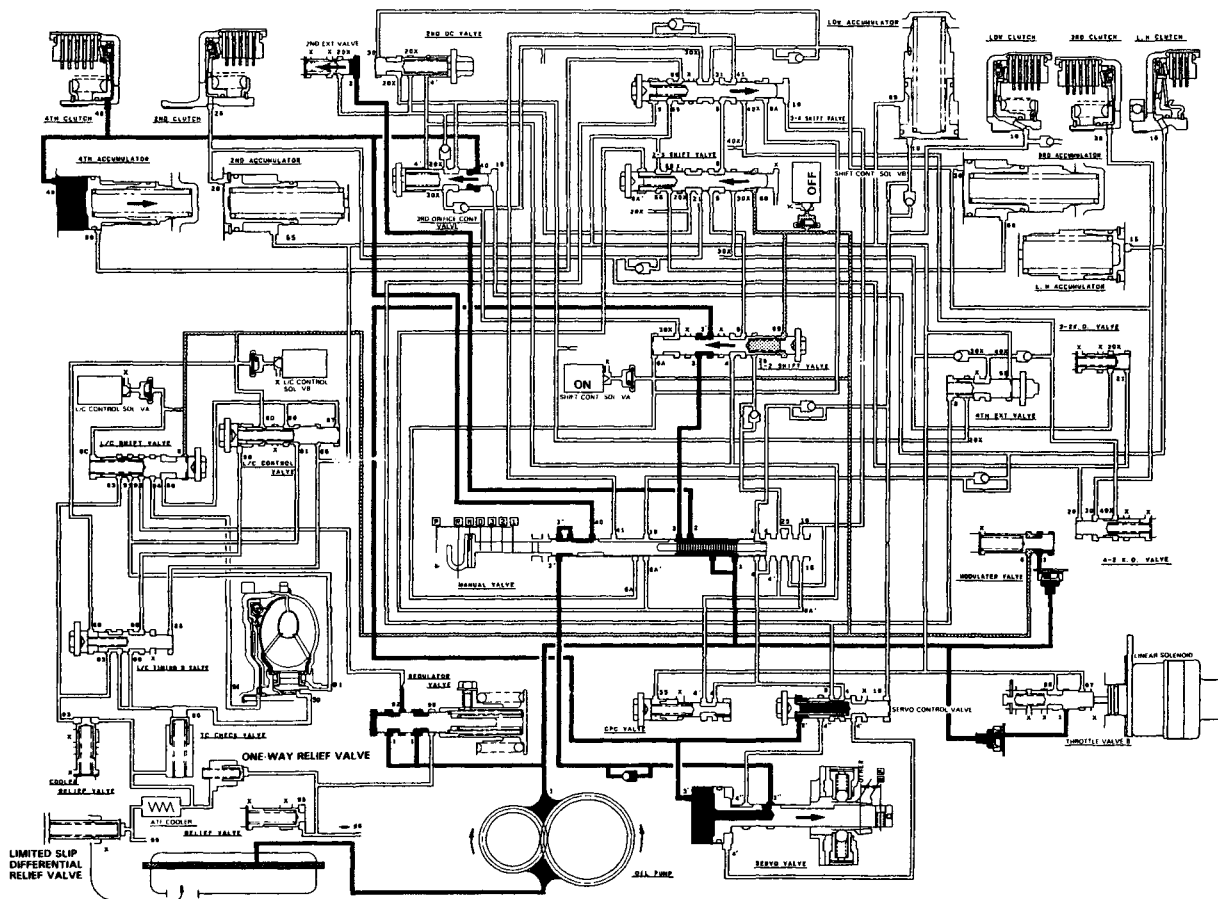
The flow of fluid through the torque converter circuit is the same as in the **N** position. The fluid (1) from the oil pump flows through the manual valve and becomes the line pressure (3). It then flows through the 1-2 shift valve to the servo valve (3), causing the shift fork shaft to be moved in to the reverse position.

Under this condition, the shift control solenoid valve A is turned ON and the valve B is turned OFF as in 3rd speed. As a result, the 1-2 shift valve is also moved to the left side. The fluid (3') will flow through the servo valve and manual valve to the 4th clutch; power is transmitted through the 4th clutch.

Reverse Inhibitor Control

When the **R** position is selected while the vehicle is moving forward at a speed over 6 mph (10 km/h), the TCM outputs 1st signal (A: OFF, B: ON), the 1-2 shift valve is moved to the right side. The line pressure (3) is intercepted by the 1-2 shift valve, consequently the power is not transmitted as the 4th clutch and servo valve are not operated.

NOTE: When used, "left" or "right" indicates direction on the flowchart.



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Description

Hydraulic Flow (cont'd)

P Position

The flow of fluid through the torque converter circuit is the same as in **N** position.

The line pressure (1) becomes the line pressure (3) as it passes through the manual valve. The line pressure (3) flows through the 1-2 shift valve to the servo valve and the servo control valve, causing the shift fork to be moved to the reverse position as in the **R** position.

However, the hydraulic pressure is not supplied to the clutches. The power is not transmitted.

NOTE: When used, "left" or "right" indicates direction on the flowchart.

