



# Technical Service Information

A761E

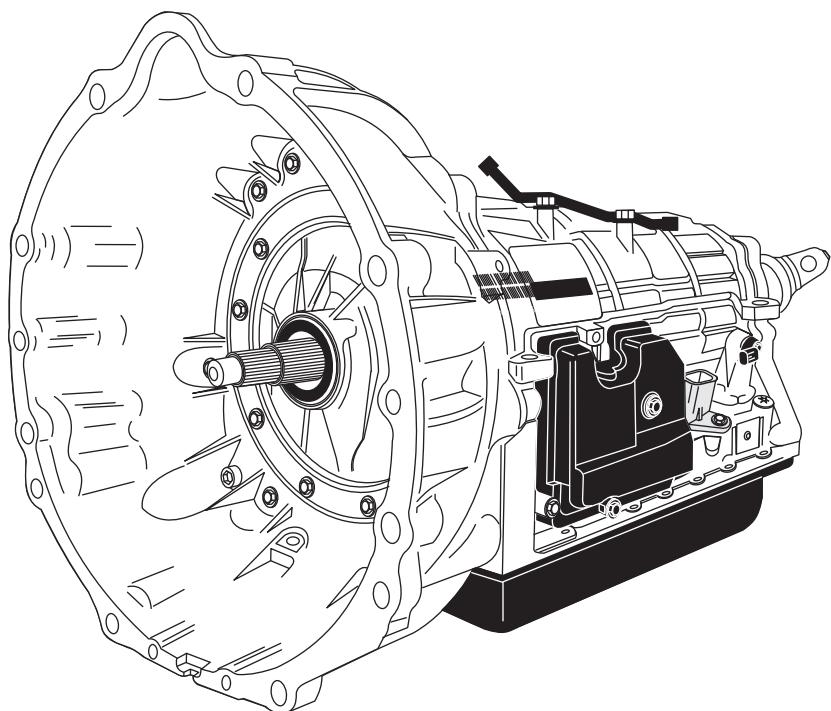
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*Valve Body Mapping Oil Circuit Diagram  
Park Position  
Reverse Position  
Drive Position 1st gear  
Drive Position 2nd gear*

*Drive Position 3rd gear  
Drive Position 4th gear  
Drive Position 5th gear  
Drive Position 6th gear  
Drive Position 6th gear TCC ON*

*Manual "S" (3) Position -3rd gear  
Manual "S" (2) Position -2nd gear  
Manual "S" (1) Position -1st gear  
Drive Position 4th gear (failsafe)  
Manual (2) Position -2nd gear (failsafe)*

**TOYOTA/LEXUS  
A761E****Gear Ratios**

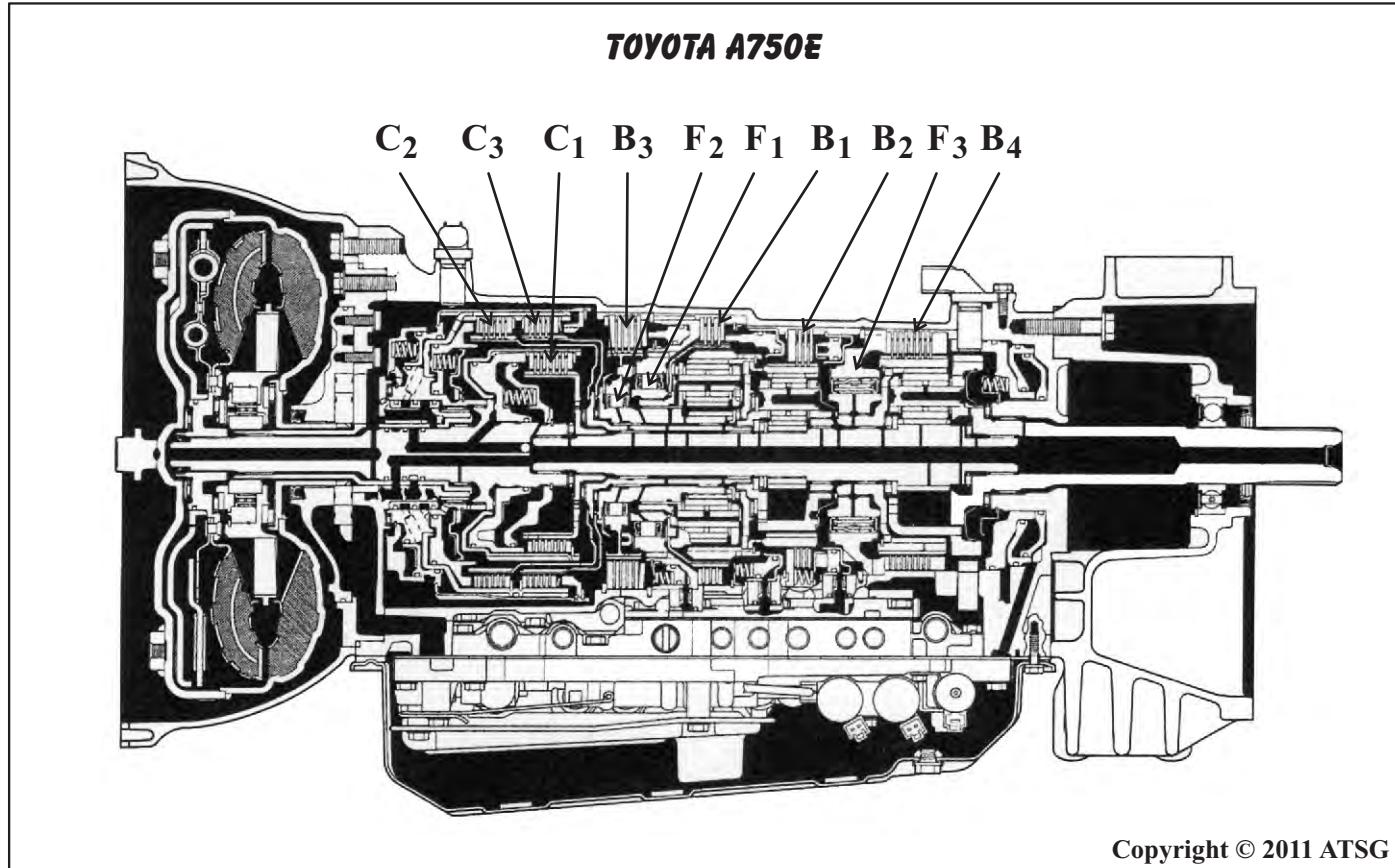
|              |       |
|--------------|-------|
| First.....   | 3.296 |
| Second.....  | 1.959 |
| Third.....   | 1.348 |
| Fourth.....  | 1.000 |
| Fifth.....   | 0.726 |
| Sixth.....   | 0.582 |
| Reverse..... | 2.951 |

**PRELIMINARY INFORMATION**

The A761E transmission is Toyota's first automatic six speed transmission. It is said that it is the lightest six speed automatic transmission in the world weighing in at 85 Kg wet. This transmission is currently found in the 2004 and later Toyota/Lexus models worldwide. It is an enhanced A750E used in various Toyota models. Many of the parts used in the A750E are the same in the A761E. The most significant deviation is with the addition of a C4 clutch and F4 sprag inside the C1 clutch drum assembly (See Figures 1 and 2). This addition confines clutch to clutch shifting without any sprag assist between 5th and 6th speeds only.

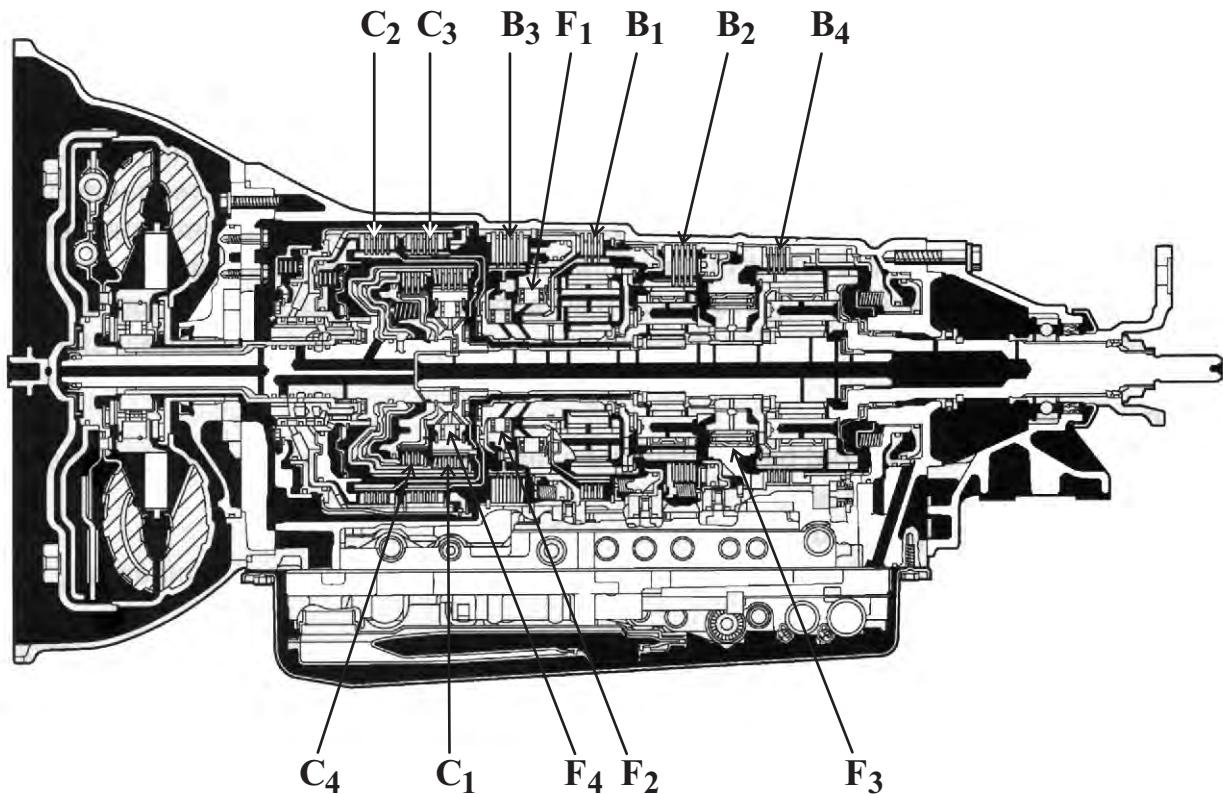
The computer strategy which operates the transmission is called the ECT-i: Electronically Controlled Transmission with intelligence. The ECT-i uses additional electronic controls to adjust hydraulic pressure gradually for even smoother shifts. The ECT-i computer also has a limited ability to adjust for wear in the transmission and even to learn and respond to a person's driving behavior (based on the resulting engine input conditions).

One strategy of the ECT-i is to partially disengage the C1 (Forward) Clutch during stops to increase fuel efficiency. Another strategy with which fuel efficiency is increased is that fuel cut is maintained during 6th-5th/5th-4th decelerations.



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Figure 1

**TOYOTA/LEXUS A761E APPLICATION CHART**

| Shift Lever Position | Solenoids |    |    |    |    |     |     |     | Driving Clutches |                |                |                | Brake Clutches |                |                |                | One-Way Clutches |                |                |                |
|----------------------|-----------|----|----|----|----|-----|-----|-----|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|----------------|----------------|----------------|
|                      | S1        | S2 | S3 | S4 | SR | SL1 | SL2 | SLU | C <sub>1</sub>   | C <sub>2</sub> | C <sub>3</sub> | C <sub>4</sub> | B <sub>1</sub> | B <sub>2</sub> | B <sub>3</sub> | B <sub>4</sub> | F <sub>1</sub>   | F <sub>2</sub> | F <sub>3</sub> | F <sub>4</sub> |
| Park                 |           | ON | ON |    | ON |     |     | ON  |                  |                |                |                |                |                |                |                |                  |                |                |                |
| Reverse              |           | ON | ON |    | ON |     |     | ON  |                  |                |                |                | O              | O              |                |                | O                | O              |                |                |
| Neutral              |           | ON | ON |    | ON |     |     | ON  |                  |                |                |                |                |                |                |                |                  |                |                |                |
| D                    | 1st       |    | ON | ON |    | ON  |     | ON  |                  | O              |                |                |                |                |                |                |                  | O              | O              |                |
| S<br>(6)             | 2nd       | ON | ON | ON |    | ON  |     | ON  | ON               | O              |                |                |                | O              |                |                | O                | O              | O              | O              |
|                      | 3rd       | ON |    | ON |    | ON  |     | ON  | ON               | O              |                | O              | O              |                |                | ●              | O                | O              | O              |                |
|                      | 4th       | ON |    |    | ON |     |     | ON  | ON               | O              | O              | ●              | O              |                |                | ●              |                  |                |                | O              |
|                      | 5th       | ON |    |    | ON |     |     | ON  |                  | ●              | O              | O              |                | O              |                |                | ●                |                |                |                |
|                      | 6th       | ON | ON |    | ON |     |     | ON  |                  | ●              | O              |                |                | ●              | O              | ●              |                  |                |                |                |

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Figure 2

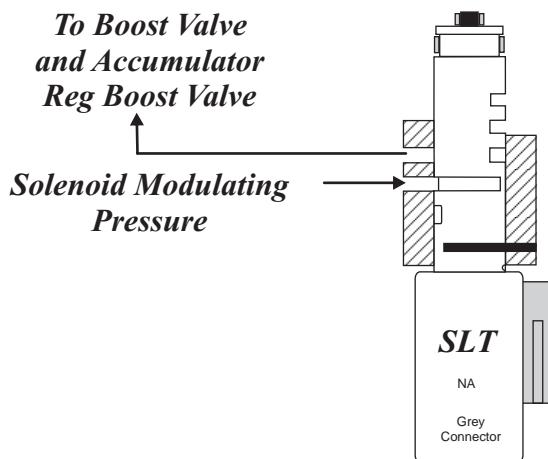
## A761E APPLICATION CHART

| Shift Lever Position | Solenoids |    |    |    |    |     |     |     | Driving Clutches |    |    |    | Brake Clutches |    |    |    | One-Way Clutches |    |    |    |
|----------------------|-----------|----|----|----|----|-----|-----|-----|------------------|----|----|----|----------------|----|----|----|------------------|----|----|----|
|                      | S1        | S2 | S3 | S4 | SR | SL1 | SL2 | SLU | C1               | C2 | C3 | C4 | B1             | B2 | B3 | B4 | F1               | F2 | F3 | F4 |
| S (5)                | 1st       |    | ON | ON |    | ON  |     | ON  | ○                |    | ○  |    |                |    |    |    |                  | ○  | ○  |    |
|                      | 2nd       | ON | ON | ON |    | ON  |     | ON  | ○                |    | ○  |    | ○              |    |    |    | ○                | ○  | ○  | ○  |
|                      | 3rd       | ON |    | ON |    | ON  |     | ON  | ○                | ○  | ○  | ○  | ●              |    |    | ○  |                  |    |    | ○  |
|                      | 4th       | ON |    |    |    | ON  |     | ON  | ○                | ○  | ●  | ○  | ●              |    |    |    |                  |    |    | ○  |
|                      | 5th       | ON |    |    | ON |     | ON  | ON  | ●                | ○  | ○  | ○  | ○              |    |    | ●  |                  |    |    |    |
| S (4)                | 1st       |    | ON | ON |    | ON  |     | ON  | ○                |    | ○  |    |                |    |    |    | ○                | ○  | ○  | ○  |
|                      | 2nd       | ON | ON | ON |    | ON  |     | ON  | ○                |    | ○  |    | ○              |    |    | ○  | ○                | ○  | ○  | ○  |
|                      | 3rd       | ON |    | ON |    | ON  |     | ON  | ○                | ○  | ○  |    | ●              |    |    | ○  |                  |    |    | ○  |
|                      | 4th*      | ON |    |    |    | ON  |     | ON  | ○                | ○  | ●  | ○  | ●              |    |    |    |                  |    |    | ○  |
| S (3)                | 1st       |    | ON | ON |    | ON  |     | ON  | ○                |    | ○  |    |                |    |    |    | ○                | ○  | ○  | ○  |
|                      | 2nd       | ON | ON | ON |    | ON  |     | ON  | ○                |    | ○  |    | ○              |    |    | ○  | ○                | ○  | ○  | ○  |
|                      | 3rd*      | ON |    | ON |    | ON  |     |     | ON               | ○  | ○  | ○  | ○              |    | ●  |    |                  |    |    |    |
| S (2)                | 1st       |    | ON | ON |    | ON  |     | ON  | ○                |    | ○  |    |                |    |    |    | ○                | ○  | ○  | ○  |
|                      | 2nd*      | ON | ON | ON | ON | ON  |     |     | ON               | ○  | ○  | ○  | ○              | ○  | ○  |    |                  |    |    |    |
| S (1)                | 1st*      |    | ON | ON |    | ON  |     |     | ○                |    | ○  |    |                |    |    | ○  |                  |    |    |    |

○ : In operation

● : Applied but ineffective

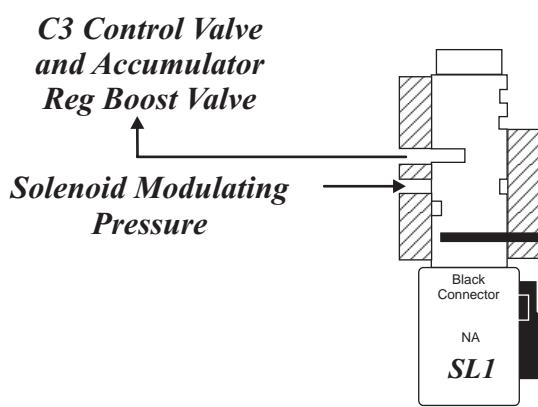
\* : with engine breaking

**SLT LINE PRESSURE CONTROL SOLENOID**

*The SLT Solenoid is a Normally Applied Solenoid. It is fed from the Solenoid Modulating Valve. This solenoid controls Line pressure rise and Accumulator pressure for shift feel. When the solenoid is at a Low Duty Cycle, Pressure is high, when the Duty cycle is high ,pressure is low.*

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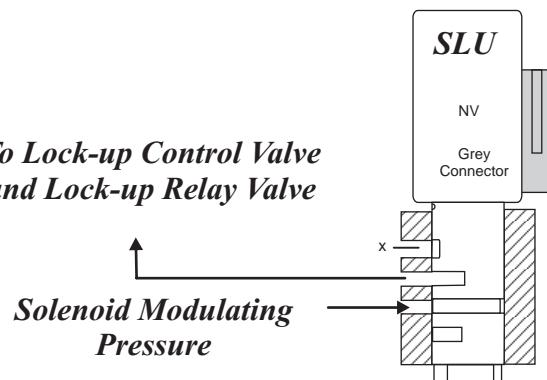
Figure 4

**SL1 SOLENOID**

*The SL1 Solenoid is a Normally Applied Solenoid. It is fed from the Solenoid Modulating Valve. This solenoid controls the C3 Control valve and Accumulator pressure for shift feel based on the position of the NO.1 Relay Valve. When the solenoid is at a Low Duty Cycle, Pressure is high to the C3 Control Valve or Accumulator Regulator Boost Valve. When the Duty cycle is high, pressure is low to the C3 Control Valve or Accumulator Regulator Boost Valve.*

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Figure 5

**SLU TCC CONTROL SOLENOID**

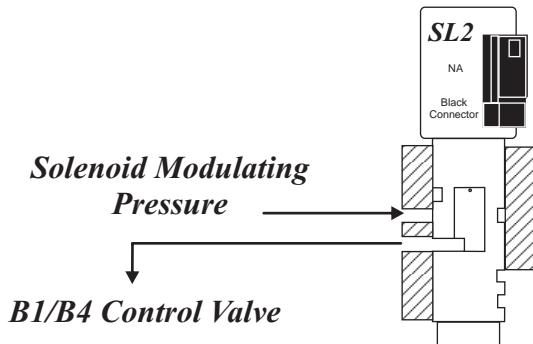
**The SLU Solenoid is a Normally Vented Solenoid. It is fed from the Solenoid Modulating Valve.**

**This solenoid controls Torque Converter Clutch Application. When the solenoid is at a Low Duty Cycle, the TCC is OFF, when the Duty cycle is high, The TCC is ON.**

**Note: the Path to the TCC Valves is thru the S1 Control Valve.**

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Figure 6

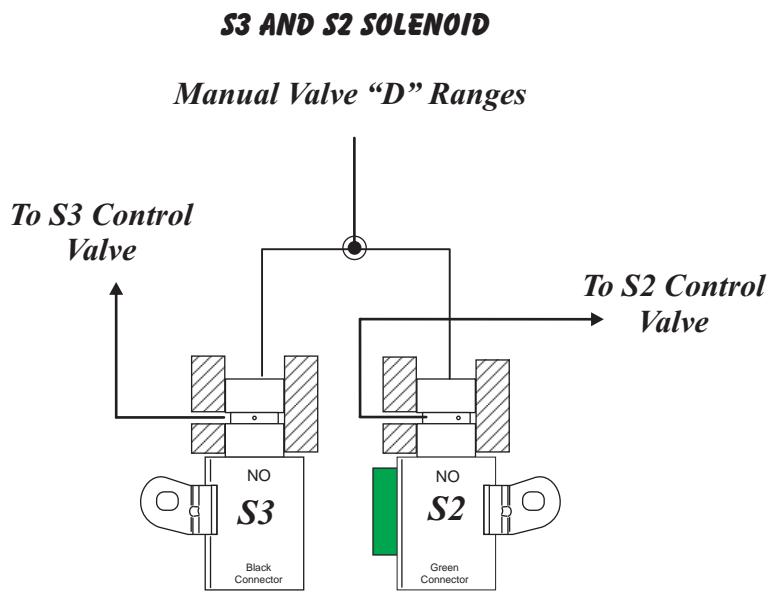
**SL2 SOLENOID**

**The SL2 Solenoid is a Normally Applied Solenoid. It is fed from the Solenoid Modulating Valve.**

**This solenoid controls the B1/B4 Control valve based on the position of the Manual Valve (Note: B4 is controlled in Manual 1). When the solenoid is at a Low Duty Cycle, pressure is high to the B1/B4 Control Valve. When the Duty cycle is high, pressure is low to the B1/B4 Control Valve .**

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Figure 7

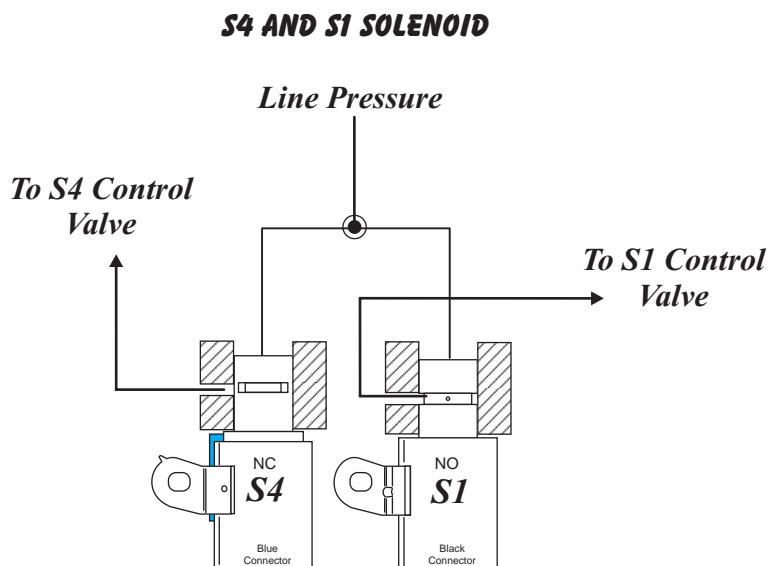


**The S3 Solenoid is a Normally Open Solenoid. It is fed Line pressure from the Manual Valve "D" ranges. When the Solenoid is OFF pressure is high to the S3 control Valve. When the solenoid is ON pressure is blocked to the S3 Control Valve.**

**The S2 Solenoid is a Normally Open Solenoid. It is fed Line pressure from the Manual Valve "D" ranges. When the Solenoid is OFF pressure is high to the S2 Control Valve. When the solenoid is ON pressure is blocked to the S2 Control Valve.**

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Figure 8

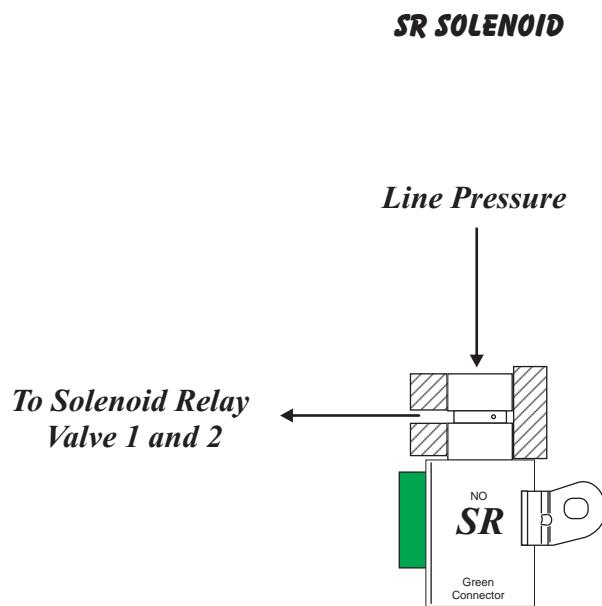


**The S4 Solenoid is a Normally Closed Solenoid. It is fed Line pressure . When the Solenoid is OFF pressure is blocked to the S4 Control Valve. When the solenoid is ON pressure is high to the S4 Control Valve.**

**The S1 Solenoid is a Normally Open Solenoid. It is fed Line pressure. When the Solenoid is OFF pressure is high to the S1 Control Valve. When the solenoid is ON pressure is blocked to the S1 Control Valve.**

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Figure 9



*The SR Solenoid is a Normally Open Solenoid. It is fed Line pressure.  
When the Solenoid is OFF pressure is high to the Solenoid Relay Valve 1 and 2.  
When the solenoid is ON pressure is blocked to Solenoid Relay Valve 1 and 2.*

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Figure 10

# Technical Service Information

## **SOLENOID MALFUNCTION CHARTS**

| DTC   | Actual Gear Shift Command |      |     |     |     |     |
|-------|---------------------------|------|-----|-----|-----|-----|
|       | 1st                       | 2nd  | 3rd | 4th | 5th | 6th |
| P0751 | 1st*                      | 1st* | 3rd | 3rd | 3rd | 3rd |
| P0761 | 1st                       | 2nd  | 3rd | 3rd | 3rd | 3rd |
| P0766 | 1st                       | 2nd  | 3rd | 3rd | 3rd | 3rd |
| P0781 | 1st*                      | 1st* | 3rd | 3rd | 3rd | 3rd |
| P0729 | 1st                       | 2nd  | 3rd | 3rd | 3rd | 3rd |

\*Under certain driving conditions

### **DTC or Malfunctioned Part**

DTC P0748, P0778 Solenoid SL1 and SL2

### **Fail-Safe Strategy**

During a solenoid SL1 or SL2 malfunction, up-shifts to 5th and 6th gears and Flex Lock-up control are prohibited.

### **DTC or Malfunctioned Part**

DTCP2757, 2759 Solenoid SLU

### **Fail-Safe Strategy**

During a solenoid SLU malfunction, the current to the solenoid is stopped. This stops all lock-up and flex lock-up control and fuel economy decreases.

### **DTC or Malfunctioned Part**

DTCP2714, P2716 Solenoid SLT

### **Fail-Safe Strategy**

During a solenoid SLT malfunction, the current to the solenoid is stopped. This stops line pressure optimal control and firmer shifts are expected.

## **Fail-Safe Chart For Electrical Solenoid Malfunction**

| Shift Lever Position | Normal    |                             |     |     |     |     |     | Shift Solenoid S1 Electrical Malfunction Code P0973, P0974 |               |                             |        |        |     |     |     |     |
|----------------------|-----------|-----------------------------|-----|-----|-----|-----|-----|--|---------------|-----------------------------|--------|--------|-----|-----|-----|-----|
|                      | Gear      | Shift Solenoid (ECM output) |     |     |     |     |     |  | Gear *2       | Shift Solenoid (ECM output) |        |        |     |     |     |     |
|                      |           | S1                          | S2  | S3  | S4  | SR  | SL1 | SL2  |               | S1                          | S2     | S3     | S4  | SR  | SL1 | SL2 |
| D, S6                | 1st       | OFF                         | ON  | ON  | OFF | ON  | OFF | ON   | 1st           | X                           | ON     | ON     | OFF | ON  | OFF | ON  |
|                      | 2nd       | ON                          | ON  | ON  | OFF | ON  | OFF | ON   | 1st→4th       | X                           | ON→OFF | ON→OFF | OFF | ON  | OFF | ON  |
|                      | 3rd       | ON                          | OFF | ON  | OFF | ON  | OFF | ON   | 3rd→4th       | X                           | OFF    | ON→OFF | OFF | ON  | OFF | ON  |
|                      | 4th       | ON                          | OFF | OFF | OFF | ON  | OFF | ON   | 4th           | X                           | OFF    | OFF    | OFF | ON  | OFF | ON  |
|                      | 5th       | ON                          | OFF | OFF | ON  | OFF | ON  | OFF  | 5th           | X                           | OFF    | OFF    | ON  | OFF | ON  | OFF |
|                      | 6th       | ON                          | ON  | OFF | ON  | OFF | ON  | OFF  | N→5th         | X                           | ON→OFF | OFF    | ON  | OFF | ON  | OFF |
| S5                   | 1st       | OFF                         | ON  | ON  | OFF | ON  | OFF | ON   | 1st           | X                           | ON     | ON     | OFF | ON  | OFF | ON  |
|                      | 2nd       | ON                          | ON  | ON  | OFF | ON  | OFF | ON   | 1st→4th       | X                           | ON→OFF | ON→OFF | OFF | ON  | OFF | ON  |
|                      | 3rd       | ON                          | OFF | ON  | OFF | ON  | OFF | ON   | 3rd→4th       | X                           | OFF    | ON→OFF | OFF | ON  | OFF | ON  |
|                      | 4th       | ON                          | OFF | OFF | OFF | ON  | OFF | ON   | 4th           | X                           | OFF    | OFF    | OFF | ON  | OFF | ON  |
|                      | 5th       | ON                          | OFF | OFF | ON  | OFF | ON  | OFF  | 5th           | X                           | OFF    | OFF    | ON  | OFF | ON  | OFF |
| S4                   | 1st       | OFF                         | ON  | ON  | OFF | ON  | OFF | ON   | 1st           | X                           | ON     | ON     | OFF | ON  | OFF | ON  |
|                      | 2nd       | ON                          | ON  | ON  | OFF | ON  | OFF | ON   | 1st→4th       | X                           | ON→OFF | ON→OFF | OFF | ON  | OFF | ON  |
|                      | 3rd       | ON                          | OFF | ON  | OFF | ON  | OFF | ON   | 3rd→4th       | X                           | OFF    | ON→OFF | OFF | ON  | OFF | ON  |
|                      | 4th       | ON                          | OFF | OFF | OFF | ON  | OFF | ON   | 4th           | X                           | OFF    | OFF    | OFF | ON  | OFF | ON  |
| S3                   | 1st       | OFF                         | ON  | ON  | OFF | ON  | OFF | ON   | 1st           | X                           | ON     | ON     | OFF | ON  | OFF | ON  |
|                      | 2nd       | ON                          | ON  | ON  | OFF | ON  | OFF | ON   | 1st→4th       | X                           | ON→OFF | ON→OFF | OFF | ON  | OFF | ON  |
|                      | 3rd (E/B) | ON                          | OFF | ON  | OFF | ON  | OFF | OFF  | 3rd (E/B)→4th | X                           | OFF    | ON→OFF | OFF | ON  | OFF | ON  |
| S2                   | 1st       | OFF                         | ON  | ON  | OFF | ON  | OFF | ON   | 1st           | X                           | ON     | ON     | OFF | ON  | OFF | ON  |
|                      | 2nd (E/B) | ON                          | ON  | ON  | ON  | OFF | OFF | OFF  | 1st (E/B)→4th | X                           | ON→OFF | ON→OFF | OFF | ON  | OFF | ON  |
| S1                   | 1st (E/B) | OFF                         | ON  | ON  | OFF | ON  | OFF | OFF  | 1st (E/B)     | X                           | ON     | ON     | OFF | ON  | OFF | OFF |

2\* : Actual gear shift (gear position) under fail-safe operation

X : OFF (the ECM stops sending current to a malfunctioning solenoid)

→ : Condition in the electrical malfunction is shown on the left of the arrow

Condition in the fail-safe mode is shown on the right side of the arrow

(E/B) : Engine Breaking

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Figure 11

## SOLENOID MALFUNCTION CHARTS

| Shift Lever Position | Shift Solenoid S2 Electrical Malfunction Code P0976, P0977 |                             |          |     |     |          |          | Shift Solenoid S3 Electrical Malfunction Code P0979, P0980 |                 |                             |          |     |     |     |     |          |
|----------------------|--|-----------------------------|----------|-----|-----|----------|----------|--|-----------------|-----------------------------|----------|-----|-----|-----|-----|----------|
|                      | Gear *2  | Shift Solenoid (ECM output) |          |     |     |          |          |  | Gear *2         | Shift Solenoid (ECM output) |          |     |     |     |     |          |
|                      |  | S1                          | S2       | S3  | S4  | SR       | SL1      | SL2  |                 | S1                          | S2       | S3  | S4  | SR  | SL1 | SL2      |
| D, S6                | 3rd  | OFF → ON                    | X        | ON  | OFF | ON       | OFF      | ON   | 3rd → 4th       | OFF → ON                    | ON → OFF | X   | OFF | ON  | OFF | ON       |
|                      | 3rd  | ON                          | X        | ON  | OFF | ON       | OFF      | ON   | 4th             | ON                          | ON → OFF | X   | OFF | ON  | OFF | ON       |
|                      | 3rd  | ON                          | X        | ON  | OFF | ON       | OFF      | ON   | 4th             | ON                          | OFF      | X   | OFF | ON  | OFF | ON       |
|                      | 4th  | ON                          | X        | OFF | OFF | ON       | OFF      | ON   | 4th             | ON                          | OFF      | X   | OFF | ON  | OFF | ON       |
|                      | 5th  | ON                          | X        | OFF | ON  | OFF      | ON       | OFF  | 5th             | ON                          | OFF      | X   | ON  | OFF | ON  | OFF      |
|                      | 6th  | ON                          | X        | OFF | ON  | OFF      | ON       | OFF  | 6th             | ON                          | ON       | X   | ON  | OFF | ON  | OFF      |
| S5                   | 3rd  | OFF → ON                    | X        | ON  | OFF | ON       | OFF      | ON   | 3rd → 4th       | OFF → ON                    | ON → OFF | X   | OFF | ON  | OFF | ON       |
|                      | 3rd  | ON                          | X        | ON  | OFF | ON       | OFF      | ON   | 4th             | ON                          | ON → OFF | X   | OFF | ON  | OFF | ON       |
|                      | 3rd  | ON                          | X        | ON  | OFF | ON       | OFF      | ON   | 4th             | ON                          | OFF      | X   | OFF | ON  | OFF | ON       |
|                      | 4th  | ON                          | X        | OFF | OFF | ON       | OFF      | ON   | 4th             | ON                          | OFF      | X   | OFF | ON  | OFF | ON       |
|                      | 5th  | ON                          | X        | OFF | ON  | OFF      | ON       | OFF  | 5th             | ON                          | OFF      | X   | ON  | OFF | ON  | OFF      |
| S4                   | 3rd  | OFF → ON                    | X        | ON  | OFF | ON       | OFF      | ON   | 3rd → 4th       | OFF → ON                    | ON → OFF | X   | OFF | ON  | OFF | ON       |
|                      | 3rd  | ON                          | X        | ON  | OFF | ON       | OFF      | ON   | 4th             | ON                          | ON → OFF | X   | OFF | ON  | OFF | ON       |
|                      | 3rd  | ON                          | X        | ON  | OFF | ON       | OFF      | ON   | 4th             | ON                          | OFF      | X   | OFF | ON  | OFF | ON       |
|                      | 4th  | ON                          | X        | OFF | OFF | ON       | OFF      | ON   | 4th             | ON                          | OFF      | X   | OFF | ON  | OFF | ON       |
| S3                   | 3rd → 3rd (E/B)  | OFF → ON                    | X        | ON  | OFF | ON       | ON → OFF | OFF  | 3rd → 4th       | OFF → ON                    | ON → OFF | X   | OFF | ON  | OFF | ON       |
|                      | 3rd → 3rd (E/B)  | ON                          | X        | ON  | OFF | ON       | ON → OFF | OFF  | 4th             | ON                          | ON → OFF | X   | OFF | ON  | OFF | ON       |
|                      | 3rd (E/B)  | ON                          | X        | ON  | OFF | ON       | OFF      | OFF  | 4th             | ON                          | OFF      | X   | OFF | ON  | OFF | OFF → ON |
| S2                   | 3rd → 3rd (E/B)  | OFF → ON                    | X        | ON  | OFF | ON       | ON → OFF | OFF  | 3rd → 4th       | OFF → ON                    | ON → OFF | X   | OFF | ON  | OFF | ON       |
|                      | 3rd (E/B)  | ON                          | X        | ON  | OFF | ON       | OFF      | OFF  | 6th → 4th       | ON                          | ON → OFF | X   | OFF | ON  | OFF | OFF → ON |
| S1                   | 3rd (E/B)  | OFF → ON                    | X        | ON  | OFF | ON       | OFF      | OFF  | 1st (E/B) → 4th | OFF → ON                    | ON → OFF | X   | OFF | ON  | OFF | OFF → ON |
| Shift Lever Position | Shift Solenoid S4 Electrical Malfunction Code P0982, P0983 |                             |          |     |     |          |          | Shift Solenoid SR Electrical Malfunction Code P0985, P0986 |                 |                             |          |     |     |     |     |          |
|                      | Gear   | Shift Solenoid (ECM output) |          |     |     |          |          |  | Gear *2         | Shift Solenoid (ECM output) |          |     |     |     |     |          |
|                      |  | S1                          | S2       | S3  | S4  | SR       | SL1      | SL2  |                 | S1                          | S2       | S3  | S4  | SR  | SL1 | SL2      |
| D, S6                | 1st  | OFF                         | ON       | ON  | X   | ON       | OFF      | ON   | 1st             | OFF                         | ON       | ON  | OFF | X   | OFF | ON       |
|                      | 2nd  | ON                          | ON       | ON  | X   | ON       | OFF      | ON   | 2nd             | ON                          | ON       | ON  | OFF | X   | OFF | ON       |
|                      | 3rd  | ON                          | OFF      | ON  | X   | ON       | OFF      | ON   | 3rd             | ON                          | OFF      | ON  | OFF | X   | OFF | ON       |
|                      | 4th  | ON                          | OFF      | OFF | X   | ON       | OFF      | ON   | 4th             | ON                          | OFF      | OFF | OFF | X   | OFF | ON       |
|                      | 4th  | ON                          | OFF      | OFF | X   | OFF → ON | ON → OFF | OFF → ON   | 5th             | ON                          | OFF      | OFF | ON  | X   | ON  | OFF      |
|                      | 4th  | ON                          | ON → OFF | OFF | X   | OFF → ON | ON → OFF | OFF → ON   | 6th             | ON                          | ON       | OFF | ON  | X   | ON  | OFF      |
| S5                   | 1st  | OFF                         | ON       | ON  | X   | ON       | OFF      | ON   | 1st             | OFF                         | ON       | ON  | OFF | X   | OFF | ON       |
|                      | 2nd  | ON                          | ON       | ON  | X   | ON       | OFF      | ON   | 2nd             | ON                          | ON       | ON  | OFF | X   | OFF | ON       |
|                      | 3rd  | ON                          | OFF      | ON  | X   | ON       | OFF      | ON   | 3rd             | ON                          | OFF      | ON  | OFF | X   | OFF | ON       |
|                      | 4th  | ON                          | OFF      | OFF | X   | ON       | OFF      | ON   | 4th             | ON                          | OFF      | OFF | OFF | X   | OFF | ON       |
|                      | 4th  | ON                          | OFF      | OFF | X   | OFF → ON | ON → OFF | OFF → ON   | 5th             | ON                          | OFF      | OFF | ON  | X   | ON  | OFF      |
| S4                   | 1st  | OFF                         | ON       | ON  | X   | ON       | OFF      | ON   | 1st             | OFF                         | ON       | ON  | OFF | X   | OFF | ON       |
|                      | 2nd  | ON                          | ON       | ON  | X   | ON       | OFF      | ON   | 2nd             | ON                          | ON       | ON  | OFF | X   | OFF | ON       |
|                      | 3rd  | ON                          | OFF      | ON  | X   | ON       | OFF      | ON   | 3rd             | ON                          | OFF      | ON  | OFF | X   | OFF | ON       |
|                      | 4th  | ON                          | OFF      | OFF | X   | ON       | OFF      | ON   | 4th             | ON                          | OFF      | OFF | OFF | X   | OFF | ON       |
| S3                   | 1st  | OFF                         | ON       | ON  | X   | ON       | OFF      | ON   | 1st             | OFF                         | ON       | ON  | OFF | X   | OFF | ON       |
|                      | 2nd  | ON                          | ON       | ON  | X   | ON       | OFF      | ON   | 2nd             | ON                          | ON       | ON  | OFF | X   | OFF | ON       |
|                      | 3rd (E/B)  | ON                          | OFF      | ON  | X   | ON       | OFF      | OFF  | 3rd             | ON                          | OFF      | ON  | OFF | X   | OFF | OFF      |
| S2                   | 1st  | OFF                         | ON       | ON  | X   | ON       | OFF      | ON   | 1st             | OFF                         | ON       | ON  | OFF | X   | OFF | ON       |
|                      | 2nd (E/B)  | ON                          | ON       | ON  | X   | ON       | OFF      | OFF  | 2nd             | ON                          | ON       | ON  | OFF | X   | OFF | OFF      |
| S1                   | 1st (E/B)  | OFF                         | ON       | ON  | X   | ON       | OFF      | OFF  | 1st             | OFF                         | ON       | ON  | OFF | X   | OFF | OFF      |

Figure 12

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## DIAGNOSTIC TROUBLE CODE CHART

\*1 ● Malfunction Indicator Light Illuminated

\*2 ○ Diagnostic Code stored in memory when the ECM detects the condition that caused the code to set

| DTC No. | Detection Item   | Trouble Area   | MIL *1 | Memory *2 |
|---------|--|--|--------|-----------|
| P0500   | Vehicle Speed Sensor "A"   | <ul style="list-style-type: none"> <li>• Open or short in speed sensor (SP2) circuit</li> <li>• Speed sensor (SP2)</li> <li>• ECM</li> </ul>   | ●      | ○         |
| P0705   | Transmission Range Sensor Circuit Malfunction (PRNDL Input)            | <ul style="list-style-type: none"> <li>• Open or short in park/neutral position switch circuit</li> <li>• Park/neutral position switch</li> <li>• ECM</li> </ul>   | ●      | ○         |
| P0710   | Transmission Fluid Temperature Sensor "A" Circuit                      | <ul style="list-style-type: none"> <li>• Open or short in ATF temperature sensor circuit</li> <li>• Transmission wire (ATF temperature sensor)</li> <li>• ECM</li> </ul>   | ●      | ○         |
| P0711   | Transmission Fluid Temperature Sensor "A" Performance                  | <ul style="list-style-type: none"> <li>• Open or short in ATF temperature sensor circuit</li> <li>• Transmission wire (ATF temperature sensor)</li> <li>• ECM</li> </ul>   | ●      | ○         |
| P0712   | Transmission Fluid Temperature Sensor "A" Circuit Low Input            | <ul style="list-style-type: none"> <li>• Short in ATF temperature sensor circuit</li> <li>• Transmission wire (ATF temperature sensor)</li> <li>• ECM</li> </ul>   | ●      | ○         |
| P0713   | Transmission Fluid Temperature Sensor "A" Circuit High Input           | <ul style="list-style-type: none"> <li>• Open in ATF temperature sensor circuit</li> <li>• Transmission wire (ATF temperature sensor)</li> <li>• ECM</li> </ul>  | ●      | ○         |
| P0717   | Turbine Speed Sensor Circuit No Signal                                 | <ul style="list-style-type: none"> <li>• Open or short in speed sensor (NT) circuit</li> <li>• Speed sensor (NT)</li> <li>• ECM</li> <li>• Automatic transmission (clutch, brake or gear, etc.)</li> </ul>   | ●      | ○         |
| P0724   | Brake Switch "B" Circuit High  | <ul style="list-style-type: none"> <li>• Short in stop light switch signal circuit</li> <li>• Stop light switch</li> <li>• ECM</li> </ul>  | ●      | ○         |
| P0729   | Gear 6 Incorrect Ratio   | <ul style="list-style-type: none"> <li>• Valve body is blocked up or stuck (reverse sequence valve)</li> <li>• Automatic transmission (clutch, brake or gear, etc.)</li> <li>• ECM</li> </ul>  | ●      | ○         |
| P0748   | Pressure Control Solenoid "A" Electrical<br>(Shift Solenoid Valve SL1) | <ul style="list-style-type: none"> <li>• Open or short in shift solenoid valve SL1 circuit</li> <li>• Shift solenoid valve SL1</li> <li>• ECM</li> </ul>   | ●      | ○         |
| P0751   | Shift Solenoid "A" Performance<br>(Shift Solenoid Valve S1)            | <ul style="list-style-type: none"> <li>• Shift solenoid valve S1 remains open or closed</li> <li>• Valve body is blocked</li> <li>• No.2 brake malfunction (Driving is difficult.)</li> <li>• Automatic transmission (clutch, brake or gear, etc.)</li> <li>• ECM</li> </ul> | ●      | ○         |
| P0756   | Shift Solenoid "B" Performance<br>(Shift Solenoid Valve S2)            | <ul style="list-style-type: none"> <li>• Shift solenoid valve S2 remains open or closed</li> <li>• Valve body is blocked</li> <li>• Automatic transmission (clutch, brake or gear, etc.)</li> <li>• ECM</li> </ul>   | ●      | ○         |

Figure 13

**DIAGNOSTIC TROUBLE CODE CHART**

|       |   |   |   |   |
|-------|---|---|---|---|
| P0761 | Shift Solenoid "C" Performance<br>(Shift Solenoid Valve S3)               | <ul style="list-style-type: none"> <li>• Shift solenoid valve S3 remains open or closed</li> <li>• Valve body is blocked</li> <li>• Automatic transmission (clutch, brake or gear, etc.)</li> <li>• ECM</li> </ul>  | ● | ○ |
| P0766 | Shift Solenoid "D" Performance<br>(Shift Solenoid Valve S4)               | <ul style="list-style-type: none"> <li>• Shift solenoid valve S4 remains open or closed</li> <li>• Shift solenoid valve SL2 remains open or closed</li> <li>• Valve body is blocked (Brake control valve)</li> <li>• Automatic transmission (clutch, brake or gear, etc.)</li> <li>• ECM</li> </ul> | ● | ○ |
| P0778 | Pressure Control Solenoid "B"<br>Electrical<br>(Shift Solenoid Valve SL2) | <ul style="list-style-type: none"> <li>• Open or short in shift solenoid valve SL2 circuit</li> <li>• Shift solenoid valve SL2</li> <li>• ECM</li> </ul>  | ● | ○ |
| P0781 | 1-2 Shift (1 - 2 Shift Valve)   | <ul style="list-style-type: none"> <li>• Valve body is blocked up or stuck (1-2 shift valve)</li> <li>• Automatic transmission (clutch, brake or gear, etc.)</li> <li>• ECM</li> </ul>  | ● | ○ |
| P0850 | Park/Neutral Switch Input Circuit   | <ul style="list-style-type: none"> <li>• Short in park/neutral position switch circuit</li> <li>• Park/neutral position switch</li> <li>• ECM</li> </ul>  | ● | ○ |
| P0973 | Shift Solenoid "A" Control Circuit<br>Low (Shift Solenoid Valve S1)       | <ul style="list-style-type: none"> <li>• Short in shift solenoid valve S1 circuit</li> <li>• Shift solenoid valve S1</li> <li>• ECM</li> </ul>  | ● | ○ |
| P0974 | Shift Solenoid "A" Control Circuit<br>High (Shift Solenoid Valve S1)      | <ul style="list-style-type: none"> <li>• Open in shift solenoid valve S1 circuit</li> <li>• Shift solenoid valve S1</li> <li>• ECM</li> </ul>   | ● | ○ |
| P0976 | Shift Solenoid "B" Control Circuit<br>Low (Shift Solenoid Valve S2)       | <ul style="list-style-type: none"> <li>• Short in shift solenoid valve S2 circuit</li> <li>• Shift solenoid valve S2</li> <li>• ECM</li> </ul>  | ● | ○ |
| P0977 | Shift Solenoid "B" Control Circuit<br>High (Shift Solenoid Valve S2)      | <ul style="list-style-type: none"> <li>• Open in shift solenoid valve S2 circuit</li> <li>• Shift solenoid valve S2</li> <li>• ECM</li> </ul>   | ● | ○ |
| P0979 | Shift Solenoid "C" Control Circuit<br>Low (Shift Solenoid Valve S3)       | <ul style="list-style-type: none"> <li>• Short in shift solenoid valve S3 circuit</li> <li>• Shift solenoid valve S3</li> <li>• ECM</li> </ul>  | ● | ○ |
| P0980 | Shift Solenoid "C" Control Circuit<br>High (Shift Solenoid Valve S3)      | <ul style="list-style-type: none"> <li>• Open in shift solenoid valve S3 circuit</li> <li>• Shift solenoid valve S3</li> <li>• ECM</li> </ul>   | ● | ○ |
| P0982 | Shift Solenoid "D" Control Circuit<br>Low (Shift Solenoid Valve S4)       | <ul style="list-style-type: none"> <li>• Short in shift solenoid valve S4 circuit</li> <li>• Shift solenoid valve S4</li> <li>• ECM</li> </ul>  | ● | ○ |
| P0983 | Shift Solenoid "D" Control Circuit<br>High (Shift Solenoid Valve S4)      | <ul style="list-style-type: none"> <li>• Open in shift solenoid valve S4 circuit</li> <li>• Shift solenoid valve S4</li> <li>• ECM</li> </ul>   | ● | ○ |
| P0985 | Shift Solenoid "E" Control Circuit<br>Low (Shift Solenoid Valve SR)       | <ul style="list-style-type: none"> <li>• Short in shift solenoid valve SR circuit</li> <li>• Shift solenoid valve SR</li> <li>• ECM</li> </ul>  | ● | ○ |

Figure 14

**DIAGNOSTIC TROUBLE CODE CHART**

|       |   |  |   |   |
|-------|---|--|---|---|
| P0986 | Shift Solenoid "E" Control Circuit High (Shift Solenoid Valve SR)                                       | <ul style="list-style-type: none"> <li>• Open in shift solenoid valve SR circuit</li> <li>• Shift solenoid valve SR</li> <li>• ECM</li> </ul>  | ● | ○ |
| P2714 | Pressure Control Solenoid "D" Performance (Shift Solenoid Valve SLT)                                    | <ul style="list-style-type: none"> <li>• Shift solenoid valve SLT remains open or closed</li> <li>• Valve body is blocked</li> <li>• Automatic transmission (clutch, brake or gear, etc.)</li> <li>• ECM</li> </ul>  | ● | ○ |
| P2716 | Pressure Control Solenoid "D" Electrical (Shift Solenoid Valve SLT)                                     | <ul style="list-style-type: none"> <li>• Open or short in shift solenoid valve SLT circuit</li> <li>• Shift solenoid valve SLT</li> <li>• ECM</li> </ul>   | ● | ○ |
| P2757 | Torque Converter Clutch Pressure Control Solenoid Performance (Shift Solenoid Valve SLU)                | <ul style="list-style-type: none"> <li>• Shift solenoid valve SLU remains open or closed</li> <li>• Valve body is blocked</li> <li>• Shift solenoid valve SLU</li> <li>• Torque converter clutch</li> <li>• Automatic transmission (clutch, brake or gear, etc.)</li> <li>• Line pressure is too low</li> <li>• ECM</li> </ul> | ● | ○ |
| P2759 | Torque Converter Clutch Pressure Control Solenoid Control Circuit Electrical (Shift Solenoid Valve SLU) | <ul style="list-style-type: none"> <li>• Open or short in shift solenoid valve SLU circuit</li> <li>• Shift solenoid valve SLU</li> <li>• ECM</li> </ul>   | ● | ○ |

Figure 15

## Driving Pattern Select Switch

The Driving Pattern Select Switch located in the center floor console consists of a Park, Reverse, Neutral, Drive and Select Mode Driving position (See Figure 16). A shift lock system is used to minimize the possibility of incorrect operation. This means that you can only shift out of Park when the brake pedal is depressed with the ignition switch in the ON position.

Once the selector lever is placed into the Drive position (Figure 17), the Engine Control Module provides an Artificial Intelligence (AI) shift control strategy.

AI shifting control selects the most suitable shift range automatically according to the driver's operation and driving condition. It judges whether the road is downslope or up-slope by detecting the throttle opening degree or the vehicle speed. It can also detect turns by monitoring wheel speed and will prevent unnecessary upshifting and down shifting. AI can also read the driver's intention by monitoring acceleration and tailor shift time and feel ideal for each driver. AI shift control operates automatically with the selector lever in the "D" position. When it is moved to the "S" position, this function will be cancelled (Figure 18).

If the selector lever is placed into the "S" range from the "D" range on the fly (while driving in the AI shift control strategy), the AI strategy will select the proper shift range based upon the driving condition at the time the selector lever was moved. AI will select either the 5<sup>th</sup>, 4<sup>th</sup> or 3<sup>rd</sup> range. Once selected, AI strategy will be cancelled.

Once in the "S" position, an upper range can be selected by pushing the shifter forward. Likewise, a lower range can be selected by pulling the shifter down. Once a range is selected and the shifter remains untouched in the "S" position, the transmission will shift between the lowest to the highest range selected (See Figure 19). The ranges are as follows:

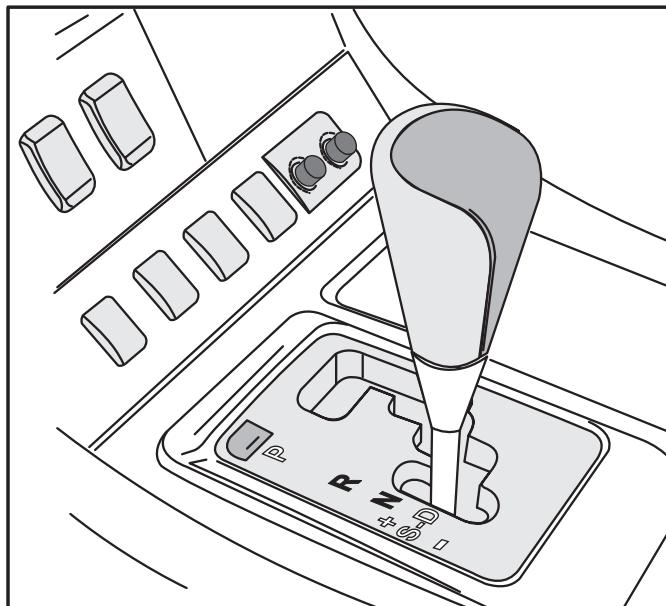


Figure 16

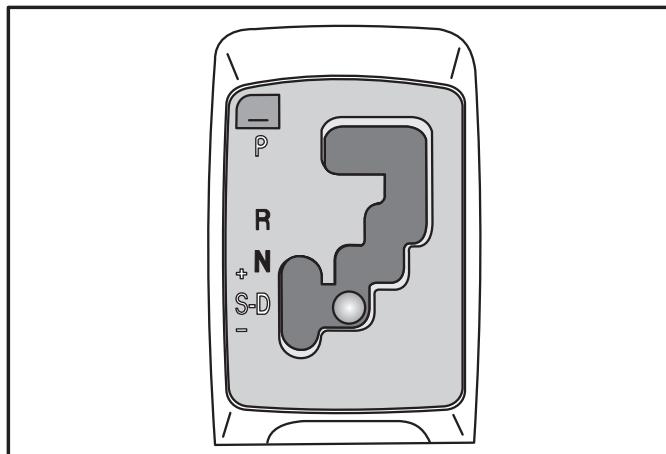


Figure 17

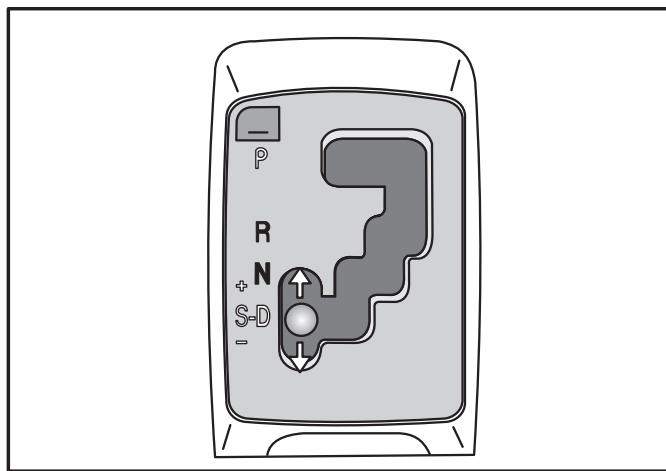


Figure 18

**“6” (sixth range):** The most suitable gear is automatically selected between first and overdrive (sixth) gears according to vehicle speed and driving conditions. This range provides the best in fuel economy and quiet driving.

**“5” (fifth range):** The most suitable gear is automatically selected between first and fifth gears according to vehicle speed and driving conditions. This range works well for passing a vehicle during high speed driving.

**“4” (fourth range):** The most suitable gear is automatically selected between first and fourth gears according to vehicle speed and driving conditions. In this range, the system will select the suitable gear during hilly driving or towing conditions.

**“3” (third range):** The most suitable gear is automatically selected between first and third gears according to vehicle speed and driving conditions. This selection is used if stronger engine braking is needed.

**“2” (second range):** The most suitable gear is automatically selected between first and second gears according to vehicle speed and driving conditions. This selection is used if stronger engine braking than that of third is needed.

**“1” (first range):** This gear is fixed regardless of vehicle speed or driving conditions. This range is to be used when maximum engine braking is necessary.

#### The Do's and Don'ts in the "S" Mode

If you attempt to downshift the transmission when it is not possible to downshift due to high vehicle speed, a warning tone sounds twice.

The maximum speed the vehicle can be held in the first range before manually up-shifting into the second range is 36 mph (59 km/h). The maximum speed second range can be held is 62 mph (100 km/h). The maximum speed third range can be held is 90 mph (146 km/h).

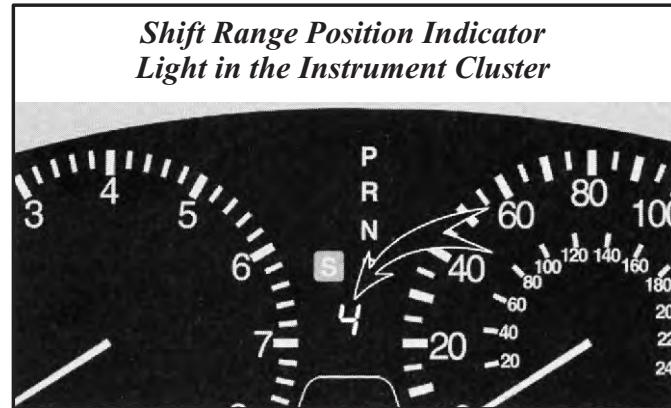


Figure 19

Up-shifts into 5<sup>th</sup> and 6<sup>th</sup> gears are prohibited if engine coolant temperature is 131°F (55°C) or less.

Up-shifts into 4<sup>th</sup> gear is prohibited if the engine coolant temperature is 117°F (47°C) or less.

#### Lock-Up and Flexible Lock-Up Control

The Engine Control Module controls TCC operation through the high side of the SLU solenoid according to shift position, vehicle speed, throttle opening degree and running conditions. The ECM also steadily keeps applying the lock-up clutch to a delicate slippage to improve the transmission efficiency of the torque converter for increased fuel economy.

Lock-Up Control is prohibited if:

1. The brake pedal is depressed
2. The accelerator pedal is released
3. Engine coolant temperature is 140° F (60° C) or less.

There is no lock-up function in 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> gears. This is normal operation.

#### The Electronic Throttle Control System

The electronic throttle control system always maintains appropriate engine output in relation to the accelerator openings in all driving conditions.

The electronic throttle control system has 3 modes: Normal, Power and Snow modes (See Figure 20).

**Normal mode:** For ordinary driving, this selection provides improved fuel economy.

**Power mode:** In the Power Mode, the “ECT PWR” light in the instrument cluster is illuminated and the transmission is shifted at a higher vehicle speed and downshifts more responsively than in the normal mode. This provides for a more powerful acceleration and sporty driving strategy. (Figure 21)

**Snow mode:** For slippery road surfaces such as in snow, the spinning of the rear wheels is controlled appropriately. When selected, the “ECT SNOW” light in the instrument cluster is illuminated. (Figure 21)

### FAIL-SAFE STRATEGIES

This function minimizes the loss of Electronic Transmission Control (ETC) functions should any malfunction occur with a sensor or solenoid.

#### DTC or Malfunctioned Part

DTC P0717 Input Speed Sensor (NT)

#### Fail-Safe Strategy

During an input speed sensor malfunction, shift control occurs through the output speed sensor signal (SP2).

During this malfunction, up-shifts to 5th and 6th, AI Shift Control and Flex Lock-up control are prohibited.

#### DTC or Malfunctioned Part

DTC P0500 Output Speed Sensor (SP2)

#### Fail-Safe Strategy

During an output speed sensor malfunction, shift control occurs through the input speed sensor signal (NT) and up-shifts to 5th and 6th, the AI Shift Control and Flex Lock-up control are prohibited.

#### DTC or Malfunctioned Part

DTC P0710, P0712, P0713 ATF Temp. Sensor

#### Fail-Safe Strategy

During this malfunction, up-shifts to 5th and 6th and Flex Lock-up control are prohibited.

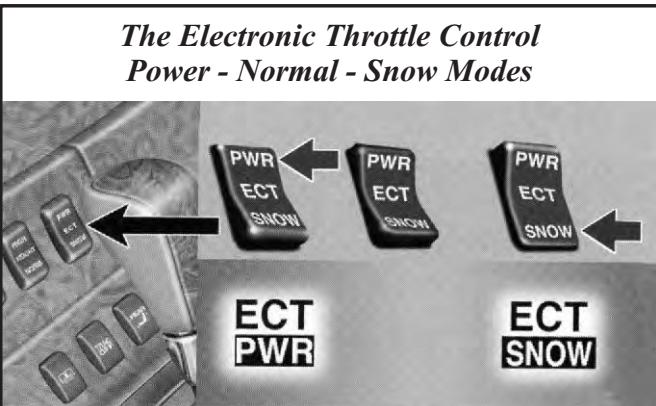


Figure 20



Figure 21

#### DTC or Malfunctioned Part

Shift Solenoids S1, S2, S3, S4 and SR

#### Fail-Safe Strategy - Solenoid Circuit Failure

The current to the failed solenoid is cut off and control is affected by operating other solenoids. Shift control is affected depending on which solenoids have failed. Various shift patterns related to failed solenoids are presented in a chart as seen in Figures 10 and 11.

#### Fail-Safe Strategy - Solenoid Mechanical Failure

Certain mechanical/performance codes will fail-safe the vehicle to 3rd gear regardless of shift lever position in range 3 or higher. They are:

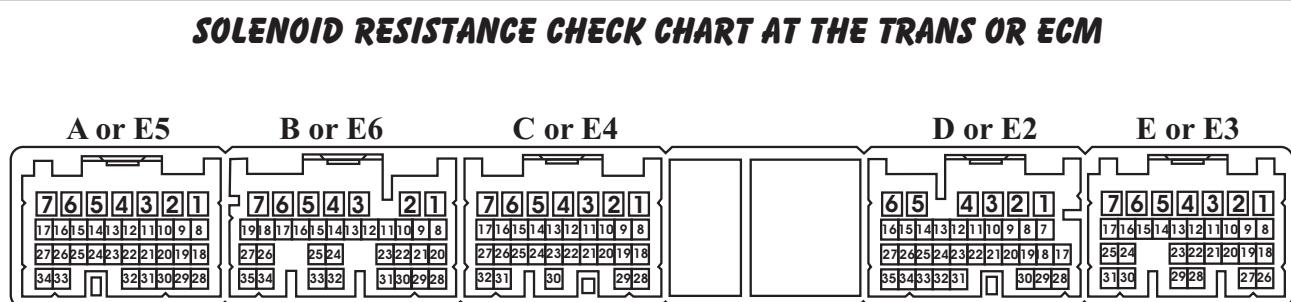
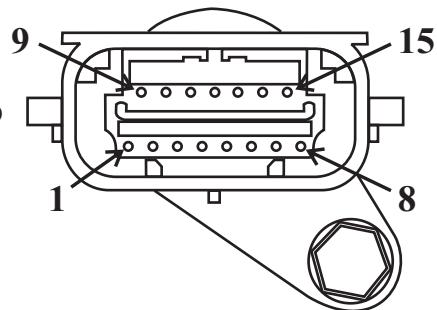
P0729 - Gear 6 Incorrect Ratio Reverse Sequence

P0751 - S1 Performance Failure

P0761 - S3 Performance Failure

P0766 - S4 Performance Failure

P0781 - 1-2 Shift Valve

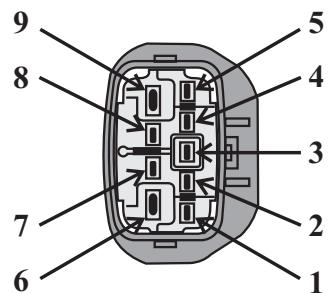
*ECM Connector and Pin ID**Transmission Case Connector Pin ID*

**Solenoid Resistance Check at the Transmission Case Connector OR  
from the ECM Connector "B" (E-6)**

| <i>Description</i> | <i>Transmission Case Connector</i> |                 | <i>ECM "B"-“E6” Connector</i> |                 | <i>Value</i>      |
|--------------------|------------------------------------|-----------------|-------------------------------|-----------------|-------------------|
|                    | <i>Solenoid</i>                    | <i>Positive</i> | <i>Negative</i>               | <i>Positive</i> |                   |
| <i>Solenoid</i>    | <i>Positive</i>                    | <i>Negative</i> | <i>Positive</i>               | <i>Negative</i> | <i>Resistance</i> |
| S1                 | 8                                  | Case Ground     | 19                            | 7               | 11 - 15           |
| S2                 | 15                                 | Case Ground     | 18                            | 7               | 11 - 15           |
| S3                 | 7                                  | Case Ground     | 17                            | 7               | 11 - 15           |
| S4                 | 14                                 | Case Ground     | 16                            | 7               | 11 - 15           |
| SR                 | 6                                  | Case Ground     | 2                             | 7               | 11 - 15           |
| SL1                | 11                                 | 3               | 25                            | 24              | 5.0 - 5.6         |
| SL2                | 10                                 | 2               | 11                            | 10              | 5.0 - 5.6         |
| SLU                | 12                                 | 4               | 13                            | 12              | 5.0 - 5.6         |
| SLT                | 13                                 | 5               | 35                            | 34              | 5.0 - 5.6         |
| TFT                | 9                                  | 1               | 27                            | 26              | 79k - 156k        |

Figure 22

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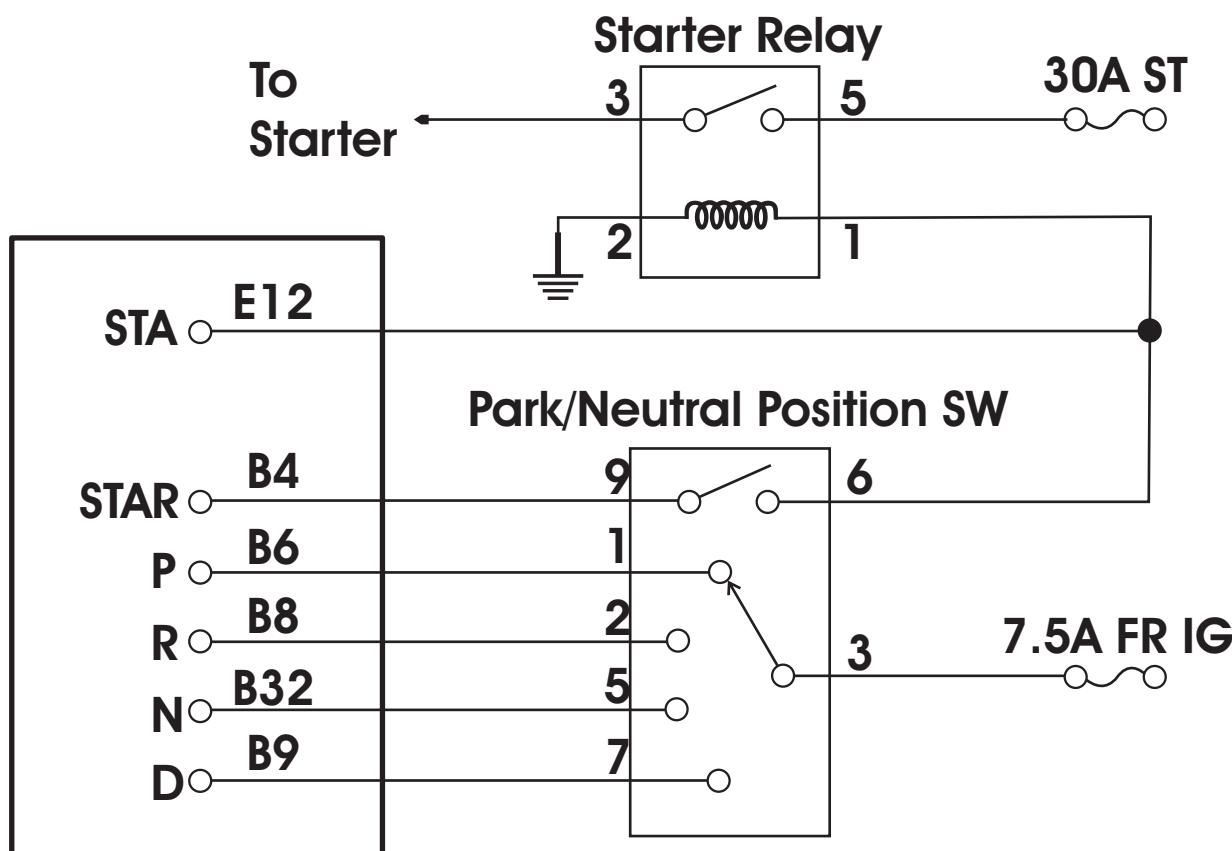
**TRANSMISSION RANGE SENSOR CHECK CHART**


| PIN ID<br>GEAR | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------------|---|---|---|---|---|---|---|---|---|
| P              | • |   | • |   |   | • |   |   | • |
| R              |   | • | • |   |   |   |   |   |   |
| N              | • |   | • |   |   | • |   | • |   |
| D, S           |   |   | • |   |   | • |   |   |   |

•—• Continuity (1 ohm or less)  
in the gear specified.  
10K ohms or greater  
other than gear specified

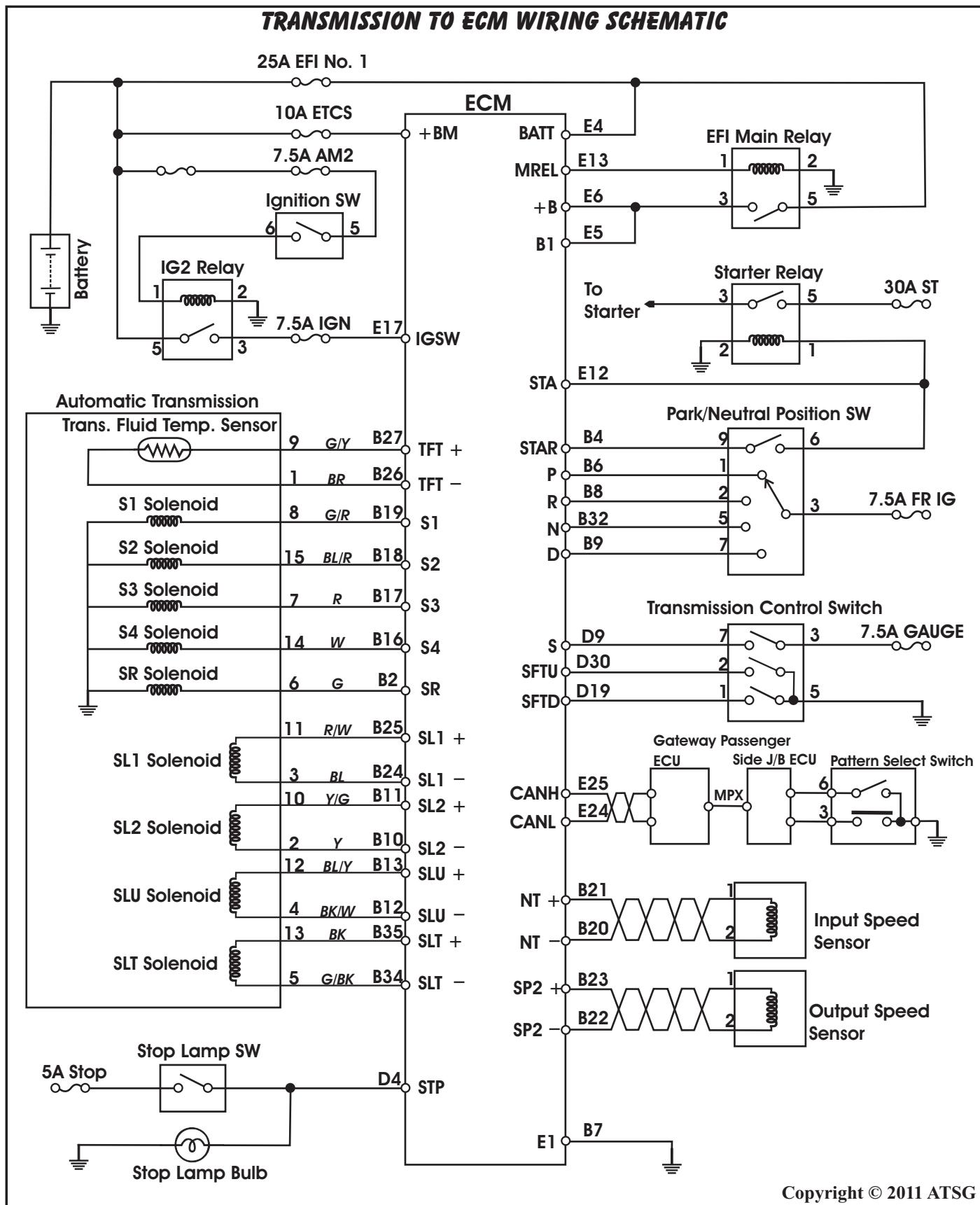
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Figure 23

**TRANSMISSION RANGE SENSOR FUNCTION**


Copyright © 2011 ATSG

 Figure 24  
 AUTOMATIC TRANSMISSION SERVICE GROUP



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Figure 25

**TRANSMISSION FLUID CHECK**

The A761E transmission does not utilize a conventional filler tube and dip stick for checking the fluid level. Looking at the bottom of the pan you will find two plugs one of which is marked as "check" (See Figure 26). The other is a drain plug.

Looking inside the pan in Figure 27, you can see that on the other side of this check plug is a check pipe. Fluid is to be filled until the level is high enough to run over and out of the check pipe.

To fill the transmission, there are two options. The first option which the manufacturer suggests is to remove the case cover from the side of the transmission as seen in Figure 28.

When the cover is removed, a 24mm fill plug becomes accessible (Figure 29). But further back on the same side of the case is another location that can be used to fill the transmission without having to pull this case cover off (Figure 30). This 55 torx head bolt is just below the output shaft speed sensor so care must be taken to not damage the sensor when you access this location.

This transmission utilizes a "WS" designated fluid and on a dry fill it will require 11.5 quarts (10.9L). 3.2 quarts (3.0L) on a drain and refill.

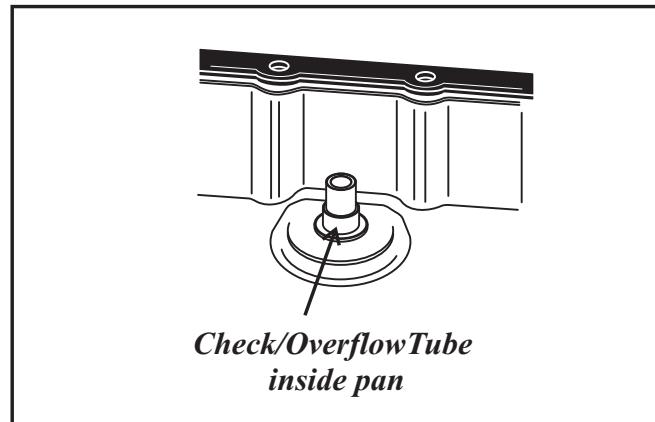


Figure 27

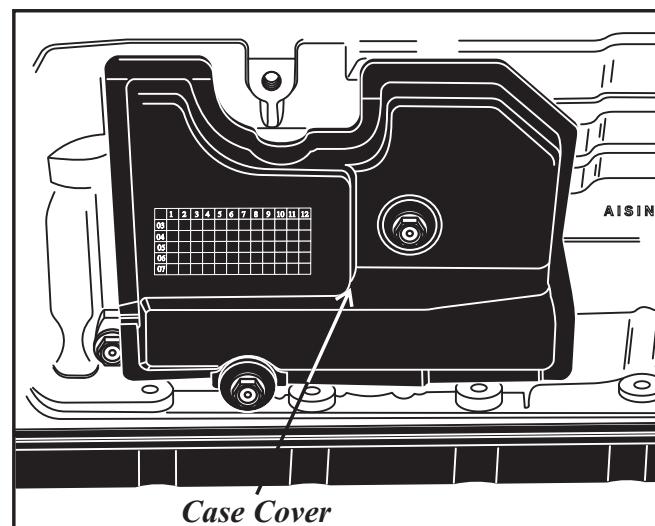


Figure 28

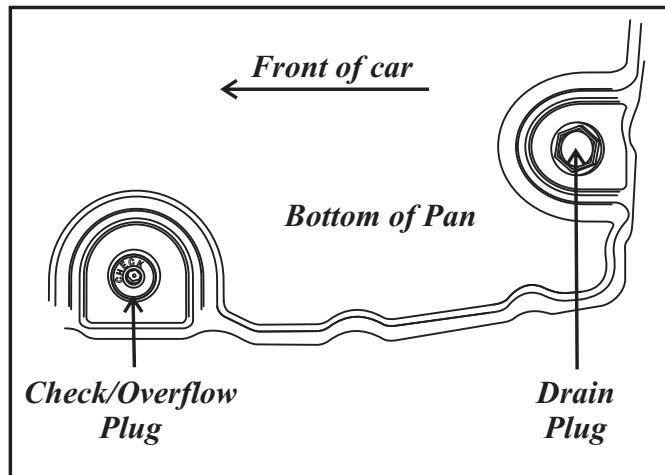


Figure 26

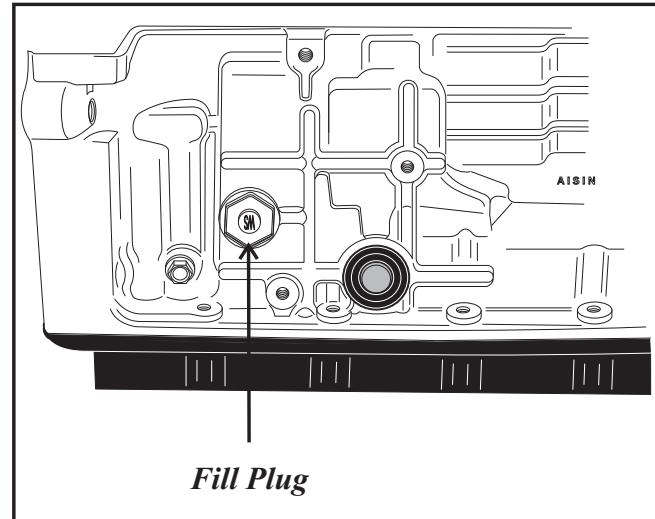


Figure 29

**TRANSMISSION FLUID CHECK...CONTINUED  
LINE PRESSURE TEST & SPECIFICATIONS**

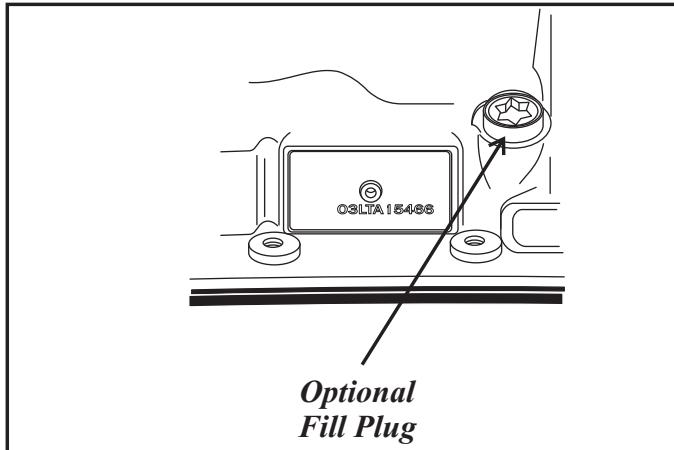


Figure 30

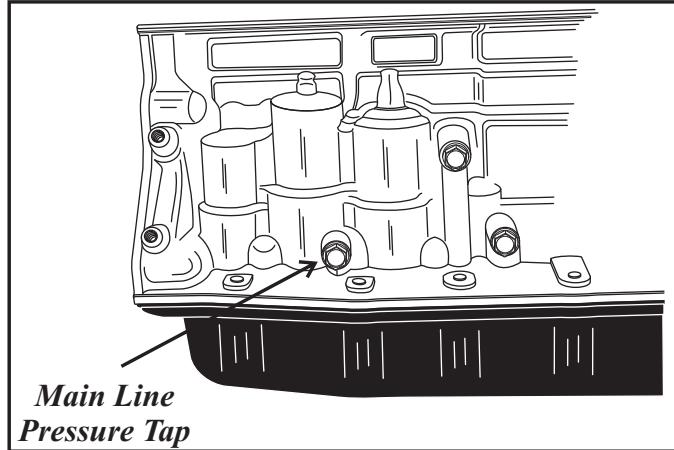


Figure 31

### Main Line Pressure Tap

The main line pressure tap can be located on the side of the case as seen in Figure 31. Refer to the accompanying chart for pressure specifications.

#### Basic Pressure Diagnostics:

If pressure is high in all ranges and there are no DTC's, suspect a mechanical problem with the SLT solenoid or the pressure regulator valve.

If pressure is low in all ranges, suspect a mechanical problem with the SLT solenoid, the pressure regulator valve, the pump, or filter.

If pressure is low in the "D" position only, suspect a leak in the "D" hydraulic circuit or the C1 clutch.

If pressure is low in the "R" position only, suspect a leak in the "R" hydraulic circuit, the C3 or B4 clutch.

| RPM   | DRIVE                            | REVERSE                          |
|-------|----------------------------------|----------------------------------|
| Idle  | 359 - 421 kPa<br>(52-61 psi)     | 482 - 565 kPa<br>(70-82 psi)     |
| Stall | 1248 - 1344 kPa<br>(181-195 psi) | 1469 - 1613 kPa<br>(213-234 psi) |

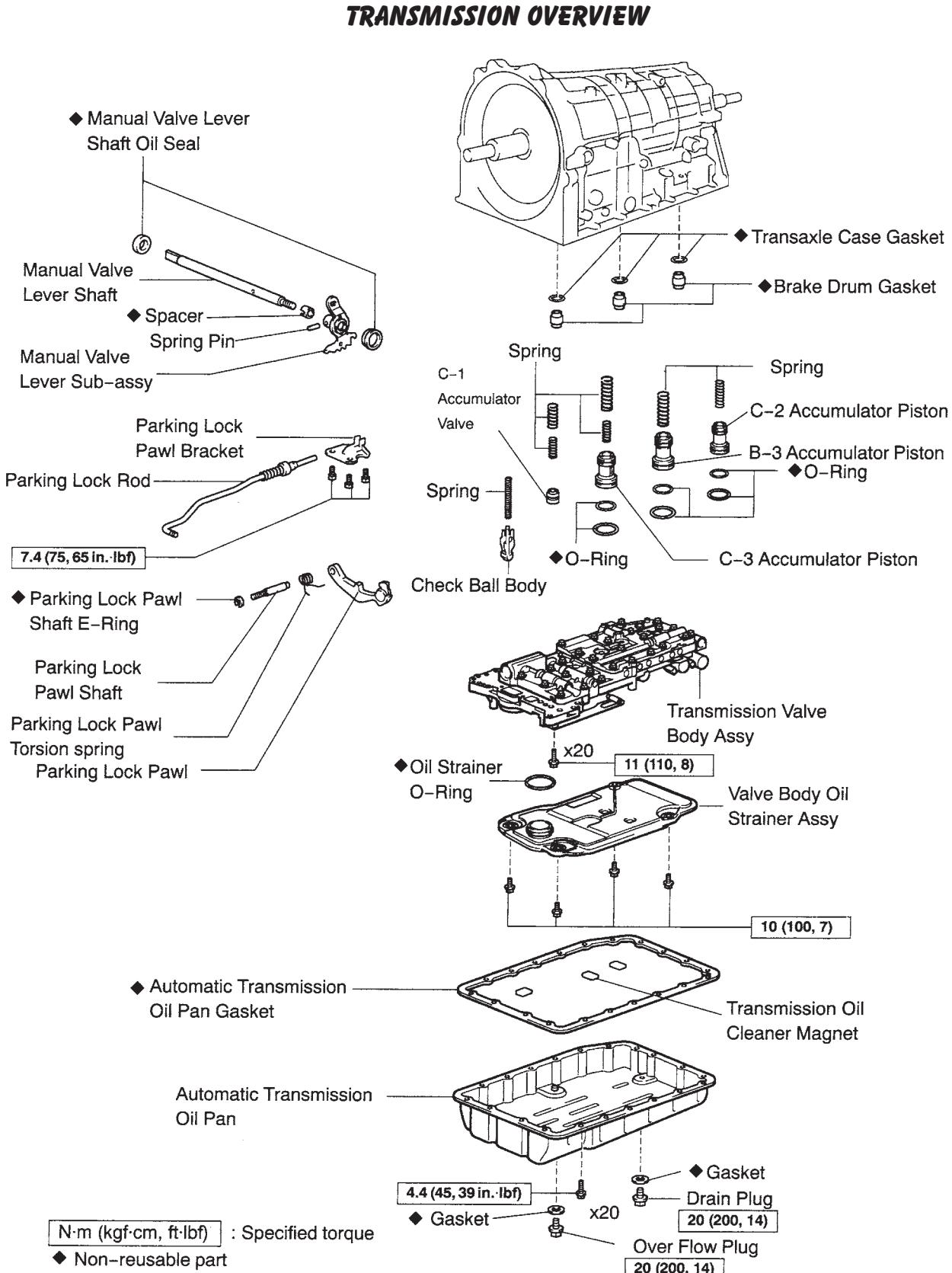
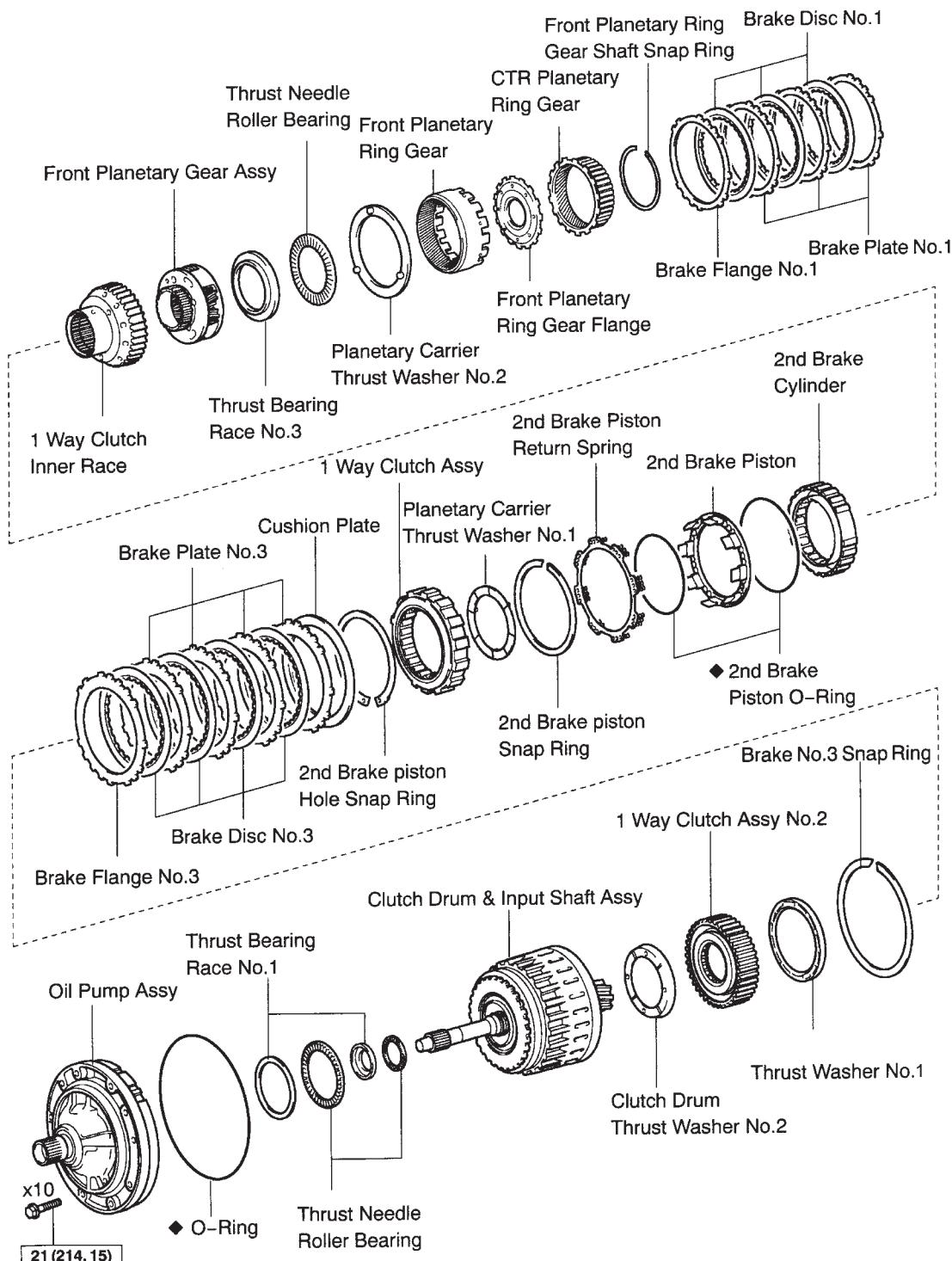


Figure 32

AUTOMATIC TRANSMISSION SERVICE GROUP

**TRANSMISSION OVERVIEW...CONTINUED**

N·m (kgf·cm, ft·lbf) : Specified torque  
◆ Non-reusable part

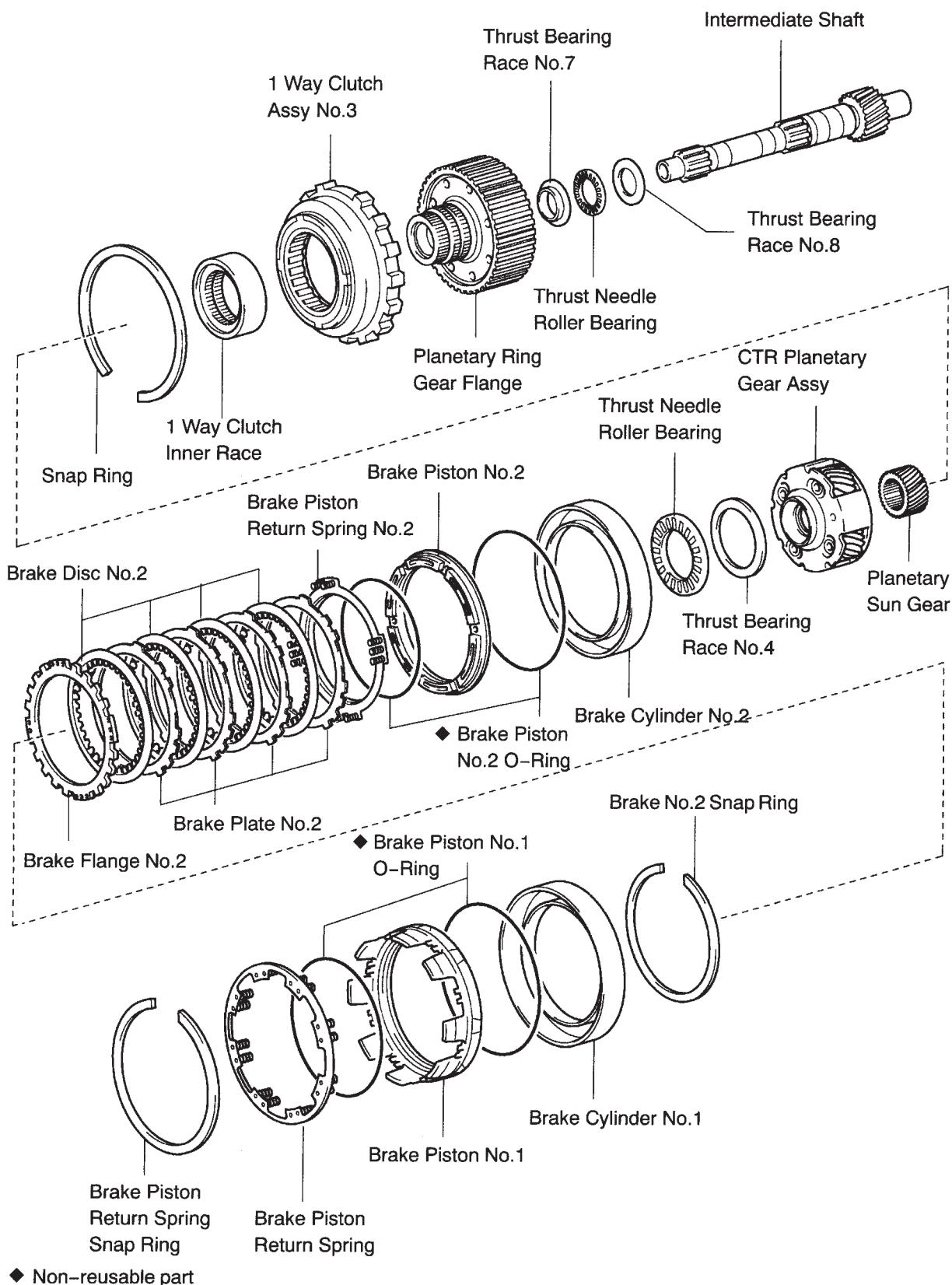
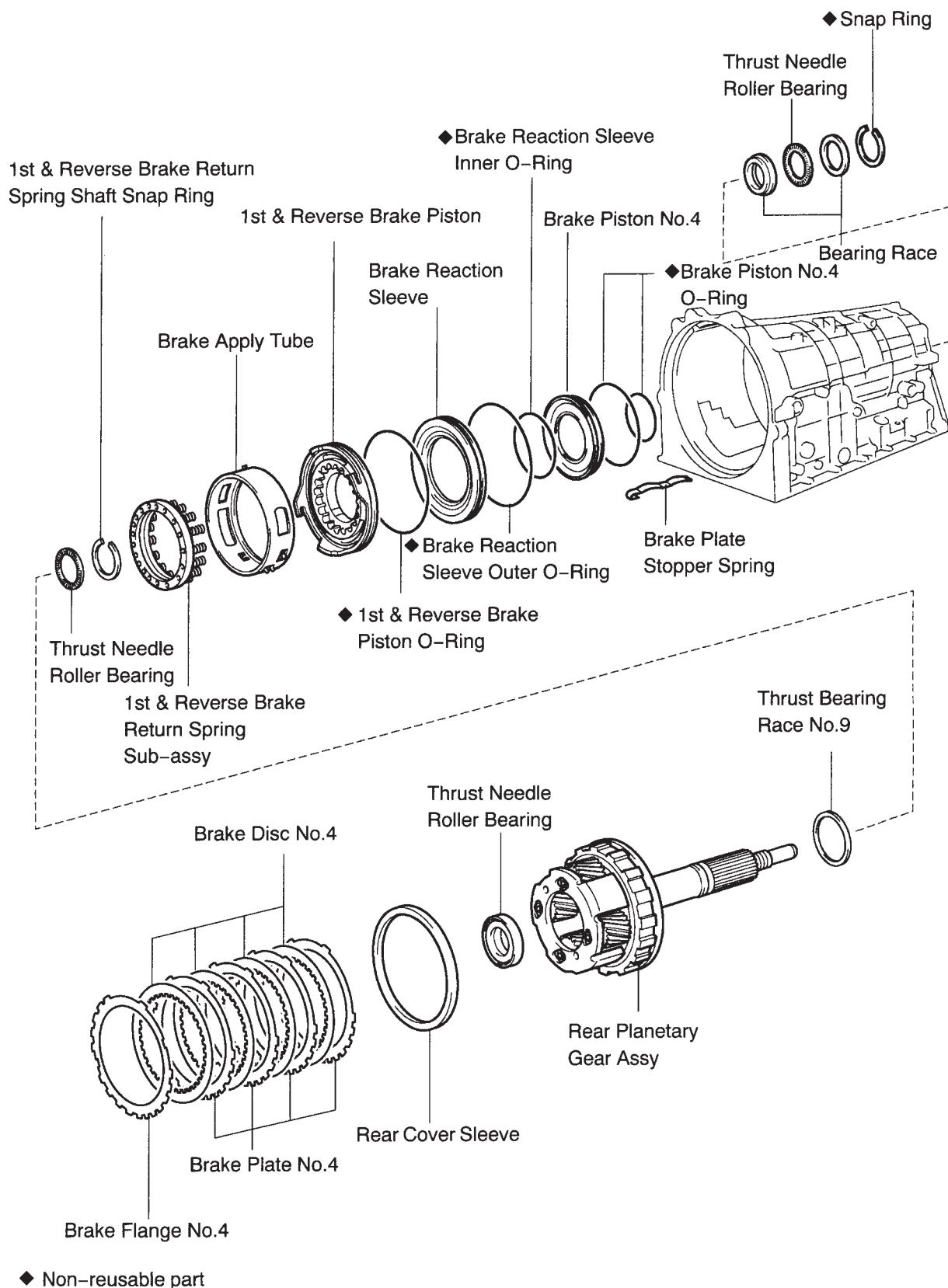
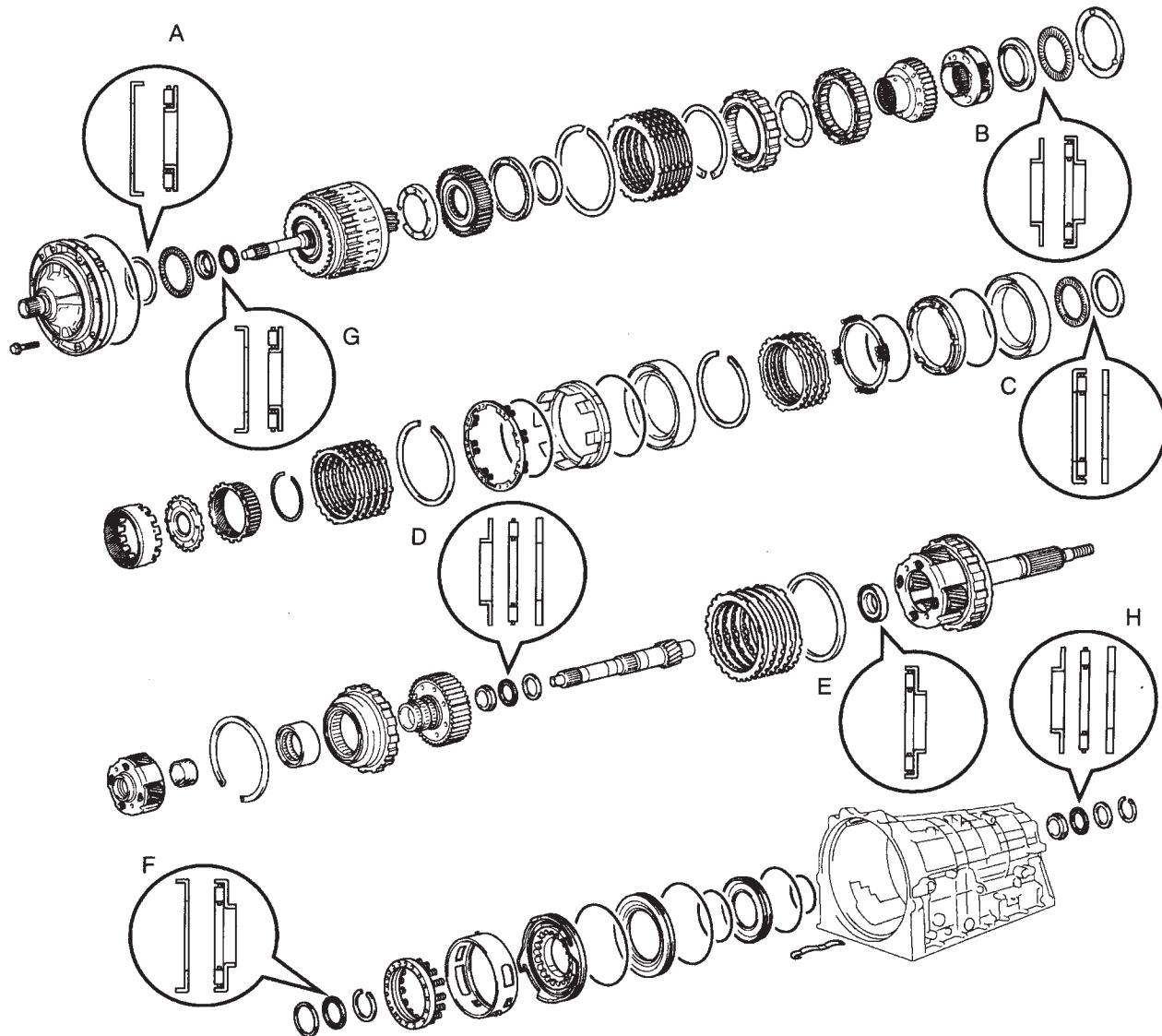
**TRANSMISSION OVERVIEW...CONTINUED**

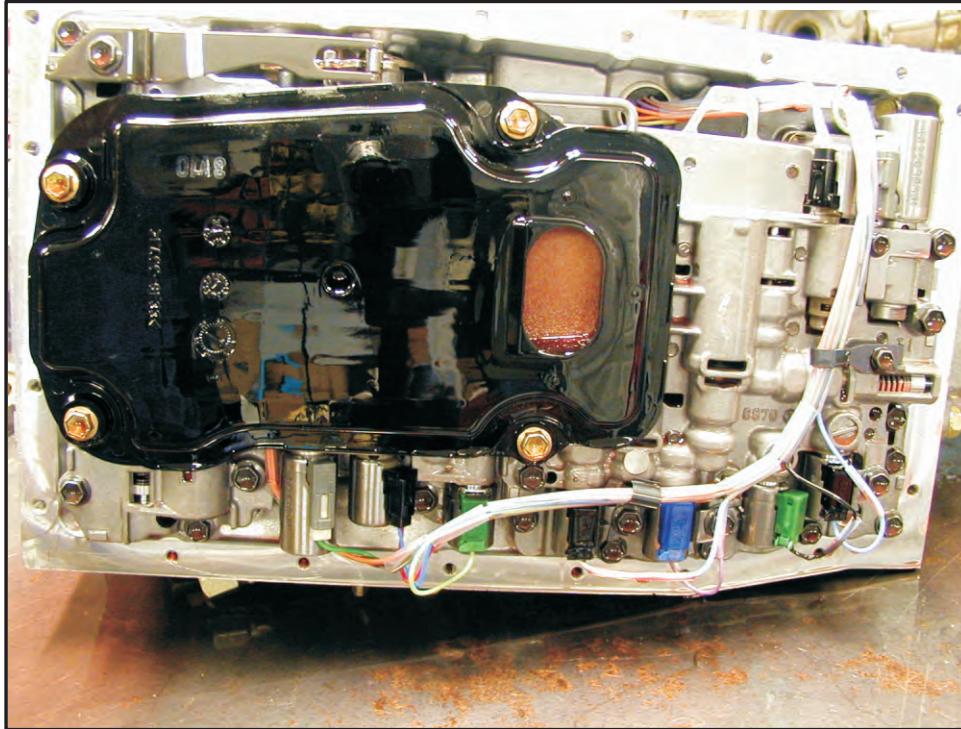
Figure 34  
AUTOMATIC TRANSMISSION SERVICE GROUP

**TRANSMISSION OVERVIEW...CONTINUED**

**BEARING IDENTIFICATION AND SPECIFICATIONS**

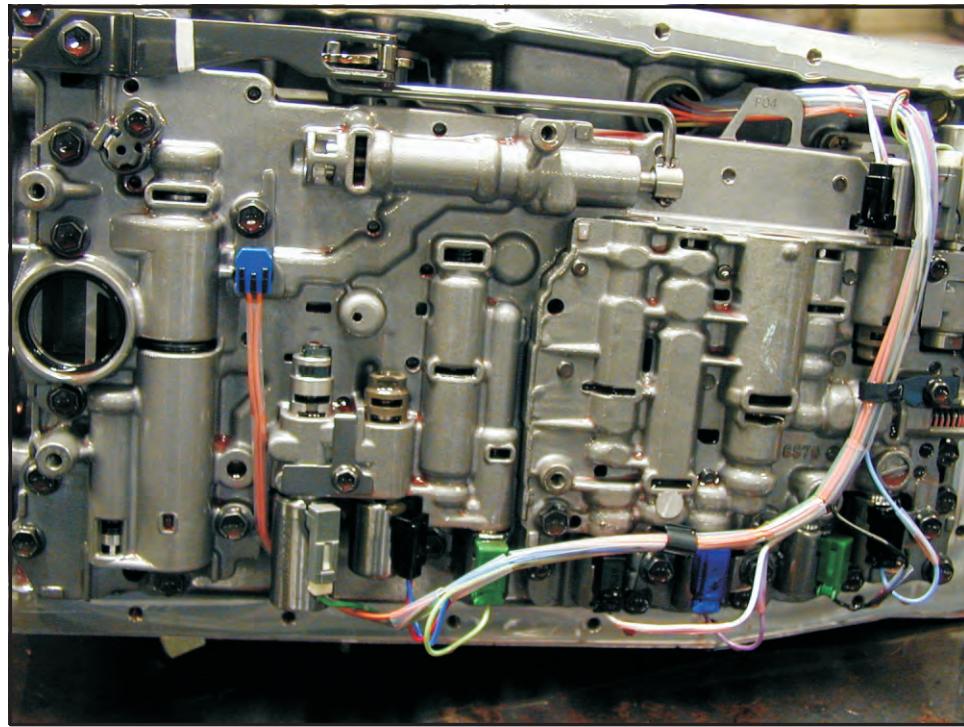
| Mark | Front Race Diameter                        | Thrust Bearing Diameter                    | Rear Race Diameter                        |
|------|--|--|---|
|      | Inside / Outside                           | Inside / Outside                           | Inside / Outside                          |
| A    | 73.6 mm (2.898 in.) / 102.0 mm (4.016 in.) | 71.9 mm (2.831 in.) / 85.6 mm (3.370 in.)  | -   |
| B    | 38.0 mm (1.496) / 57.0 mm (2.244 in.)      | 43.4 mm (1.709 in.) / 58.3 mm (2.295 in.)  | -   |
| C    | -  | 55.7 mm (2.193 in.) / 76.4 mm (3.008 in.)  | 53.7 mm (2.114 in.) / 74.0 mm (2.913 in.) |
| D    | 33.4 mm (1.315) / 49.0 mm (1.929 in.)      | 32.1 mm (1.264 in.) / 49.35 mm (1.943 in.) | 32.1 mm (1.264 in.) / 49.0 mm (1.929 in.) |
| E    | -  | 21.5 mm (0.847 in.) / 40.8 mm (1.606 in.)  | -   |
| F    | 48.5 mm (1.909) / 62.7 mm (2.469 in.)      | 45.9 mm (1.807 in.) / 64.0 mm (2.520 in.)  | -   |
| G    | 37 mm (1.45 in.) / 52.3 mm (2.059 in.)     | 34.6 mm (1.362 in.) / 52.0 mm (2.047 in.)  | -   |
| H    | 36.0 mm (1.453 in.) / 49.7 mm (1.957 in.)  | 36.1 mm (1.421 in.) / 52.5 mm (2.067 in.)  | 36.1 mm (1.421 in.) / 51.0 mm (2.007 in.) |

Figure 36

**SOLENOID IDENTIFICATION AND LOCATION**

Once filter is removed carefully disconnect all solenoid & sensor connectors.

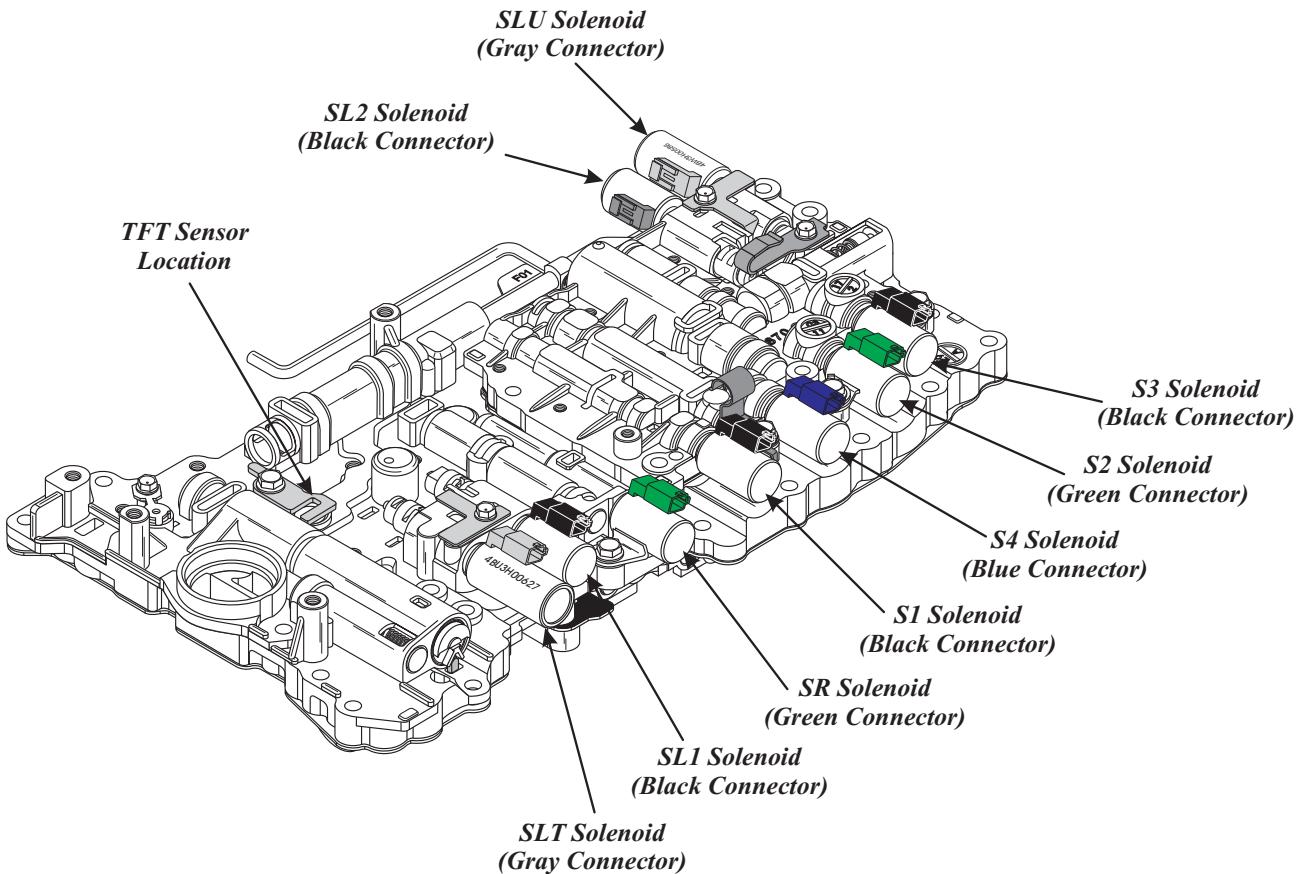
Figure 37



To avoid solenoid connector cross connect use the illustration in Figure 39 for wire color identification.

Figure 38

AUTOMATIC TRANSMISSION SERVICE GROUP

**SOLENOID IDENTIFICATION AND LOCATION**

**NOTE: Solenoids "S1", "S3", "SL2" & the "SLU" are the only four that will interchange. All other Solenoids are position sensitive.**

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Figure 39

The SL2 & SLU solenoids are held in place with steel pins. These pins index into slots in the solenoid stem. The slots on the solenoids are identically placed, they can be switched.

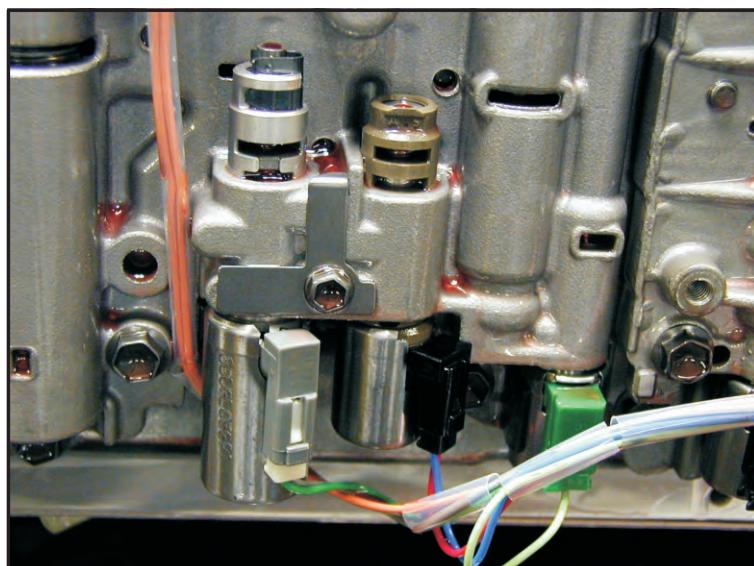


Figure 40  
AUTOMATIC TRANSMISSION SERVICE GROUP

**SOLENOID IDENTIFICATION AND LOCATION**

SOLENOID  
RETAINING  
PINS

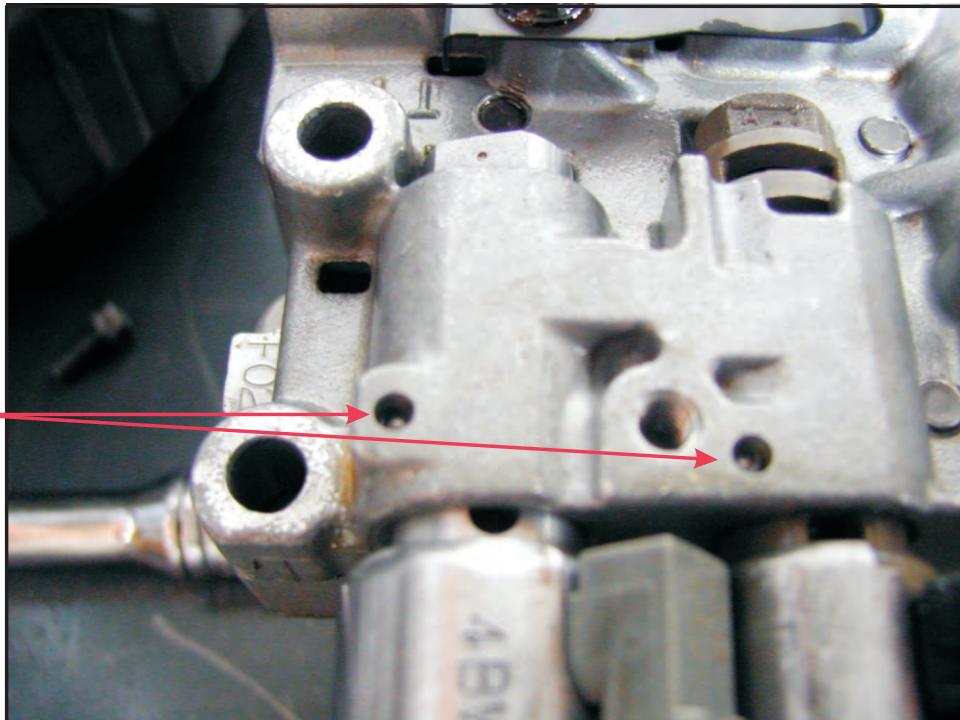
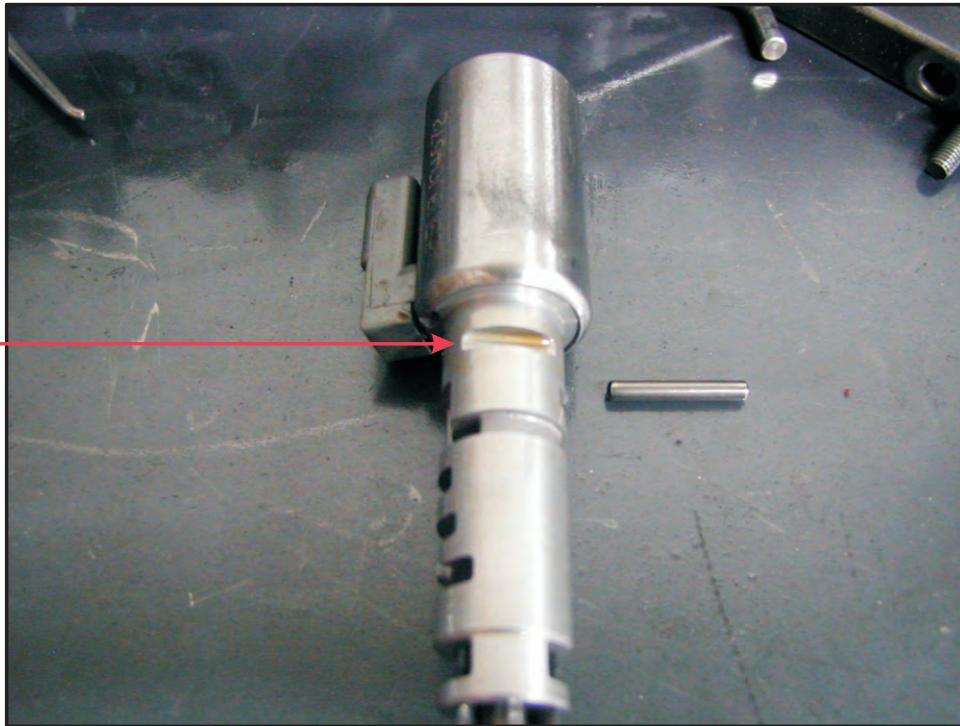
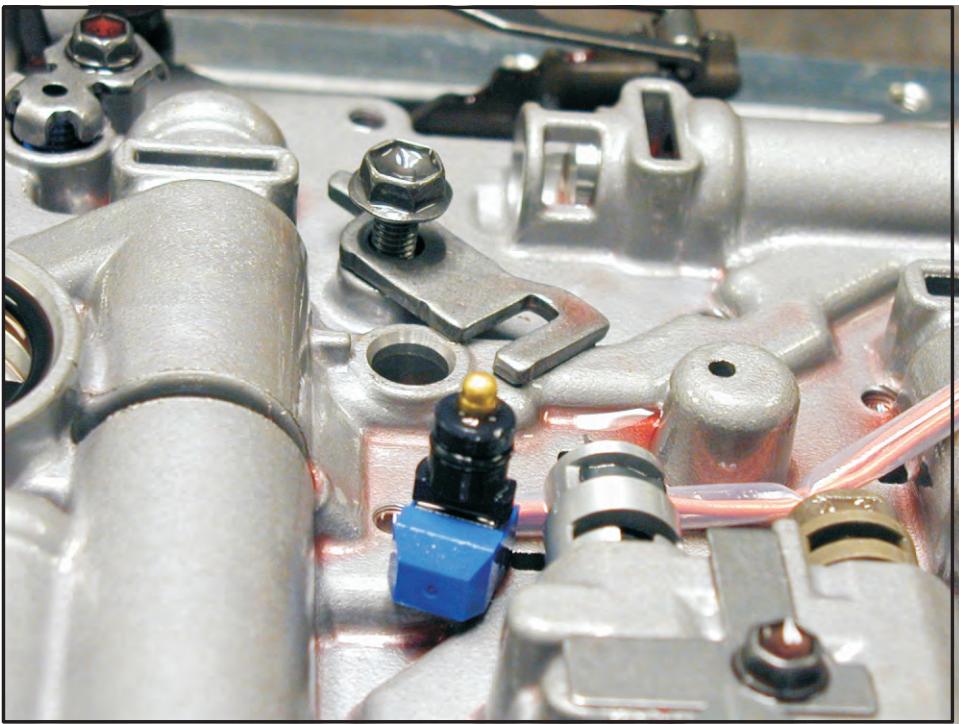


Figure 41

SOLENOID  
RETAINING  
PIN  
LOCATING  
GROOVE

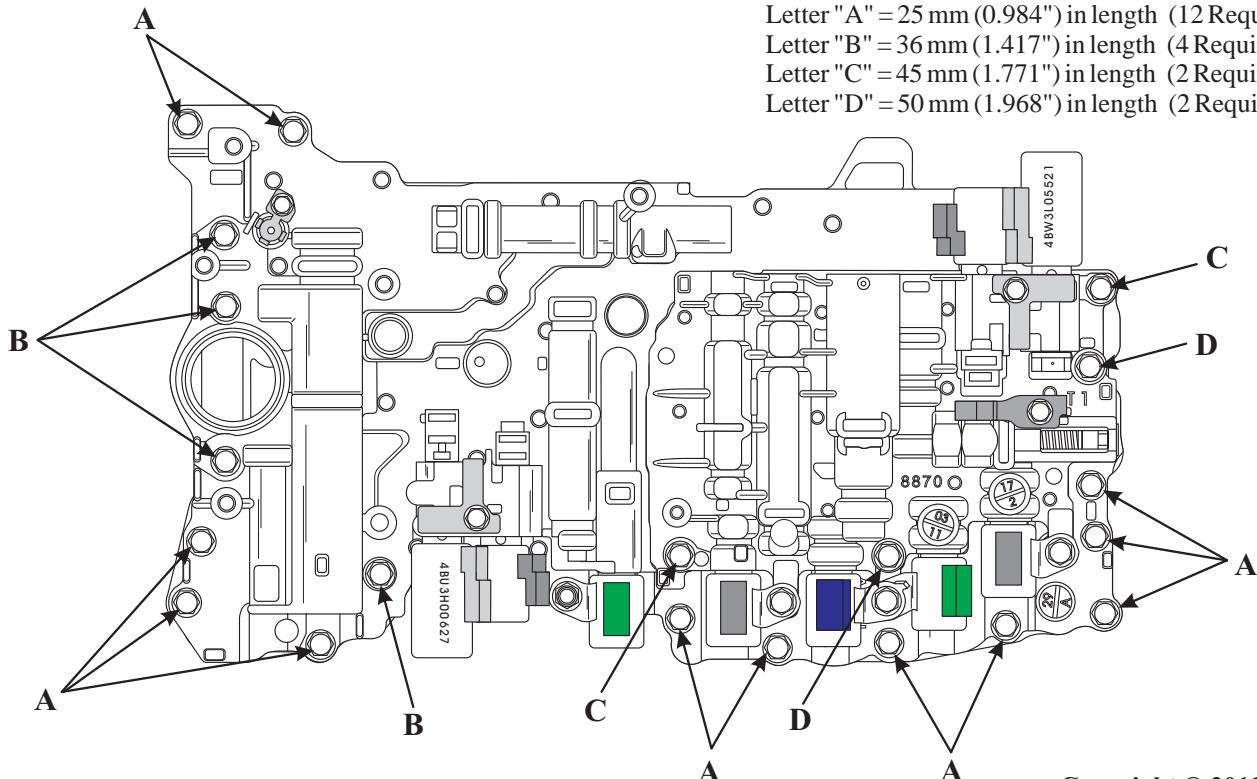


The steel solenoid retaining pin indexes into a groove in the solenoid stem.

**ATF TEMPERATURE SENSOR**

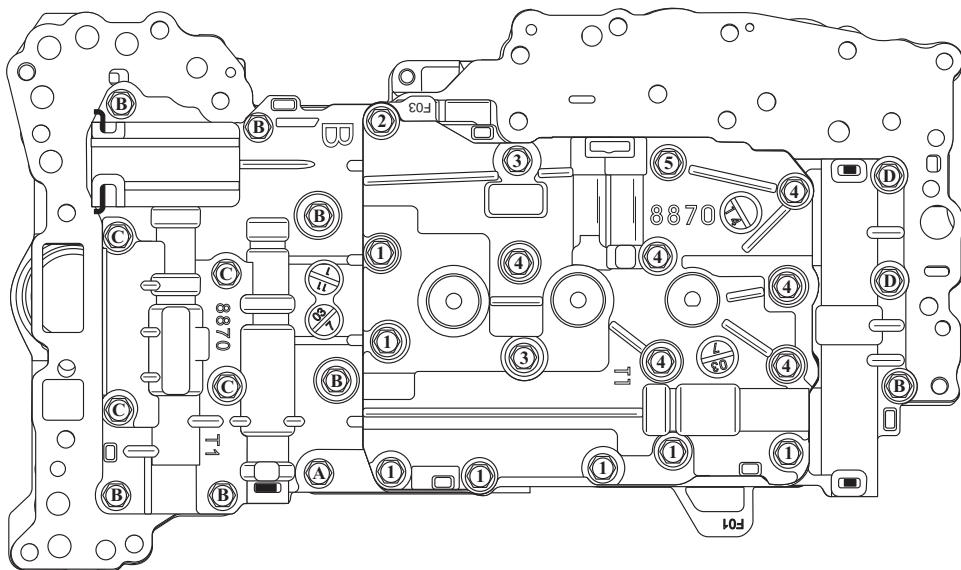
The ATF Temperature Sensor is located in a main line pressure circuit.  
If the sensor would leak, line pressure would be affected.

Figure 43

**VALVE BODY TO CASE BOLT IDENTIFICATION AND LOCATION**

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Figure 44  
AUTOMATIC TRANSMISSION SERVICE GROUP

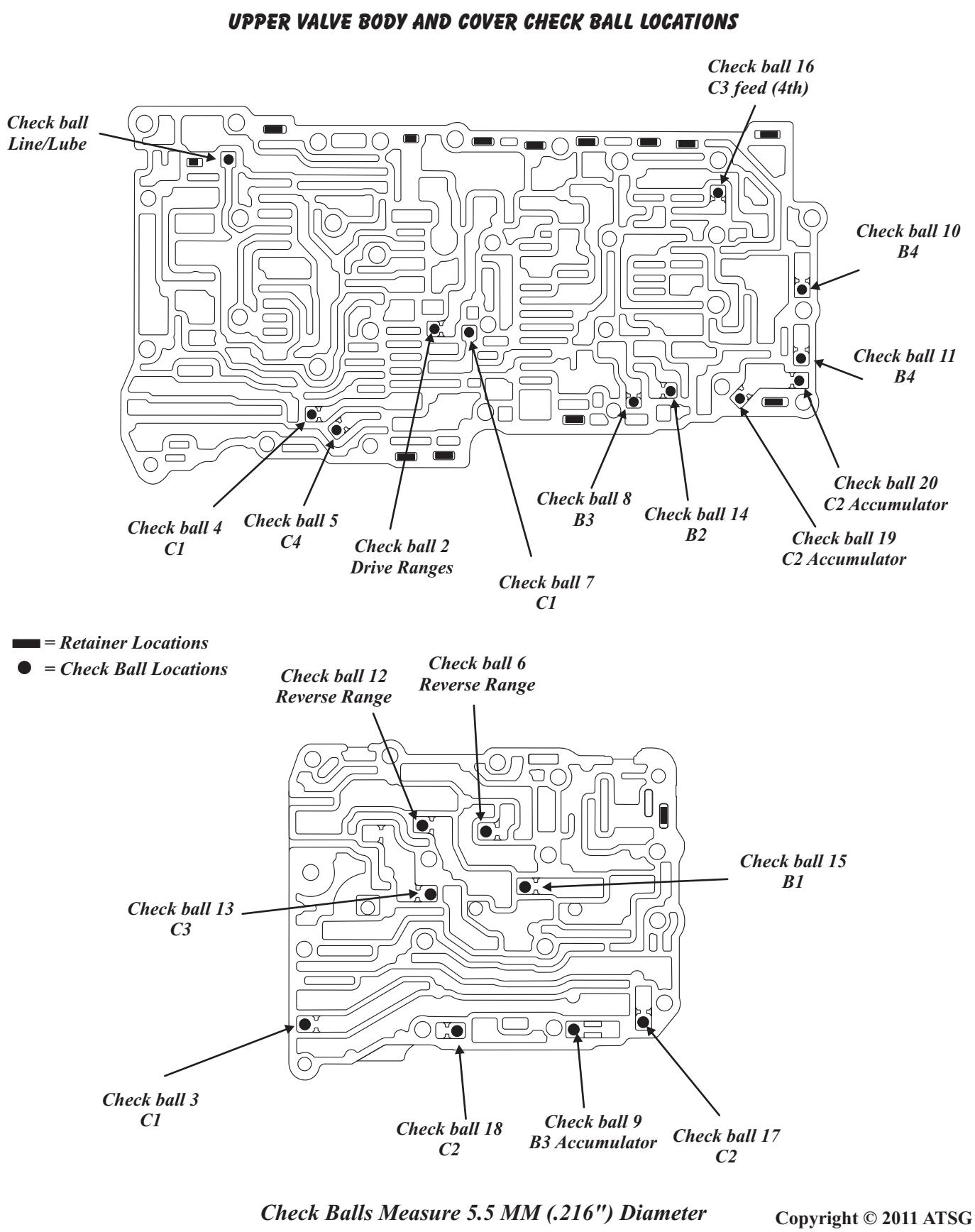
**VALVE BODY BOLT LENGTH AND LOCATIONS**

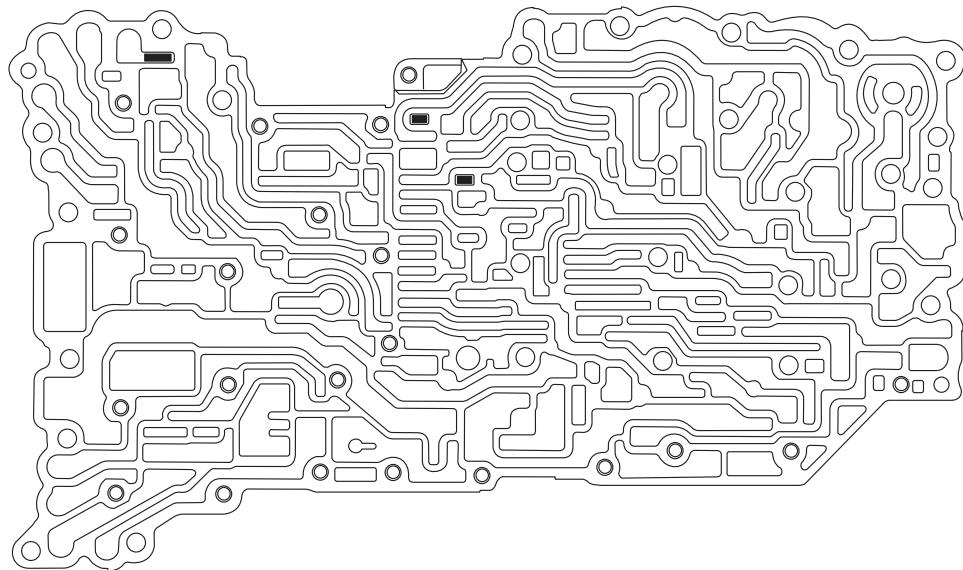
Number 1 = 39.5 mm (1.555") in length (7 Required).  
Number 2 = 50 mm (1.968") in length (1 Required).  
Number 3 = 59.5 mm (2.342") in length (2 Required).  
Number 4 = 64 mm (2.519") in length (6 Required).  
Number 5 = 76 mm (2.992") in length (1 Required).

Letter "A" = 20 mm (0.787") in length (1 Required).  
Letter "B" = 25 mm (0.984") in length (7 Required).  
Letter "C" = 32 mm (1.259") in length (4 Required).  
Letter "D" = 50 mm (1.968") in length (2 Required).

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Figure 45

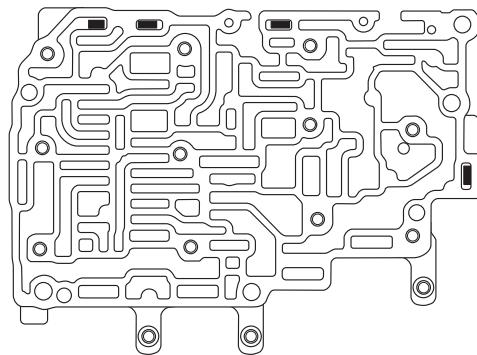

**Figure 46**
**AUTOMATIC TRANSMISSION SERVICE GROUP**

**TRANSFER PLATE RETAINER LOCATIONS**

■ = Retainer Locations

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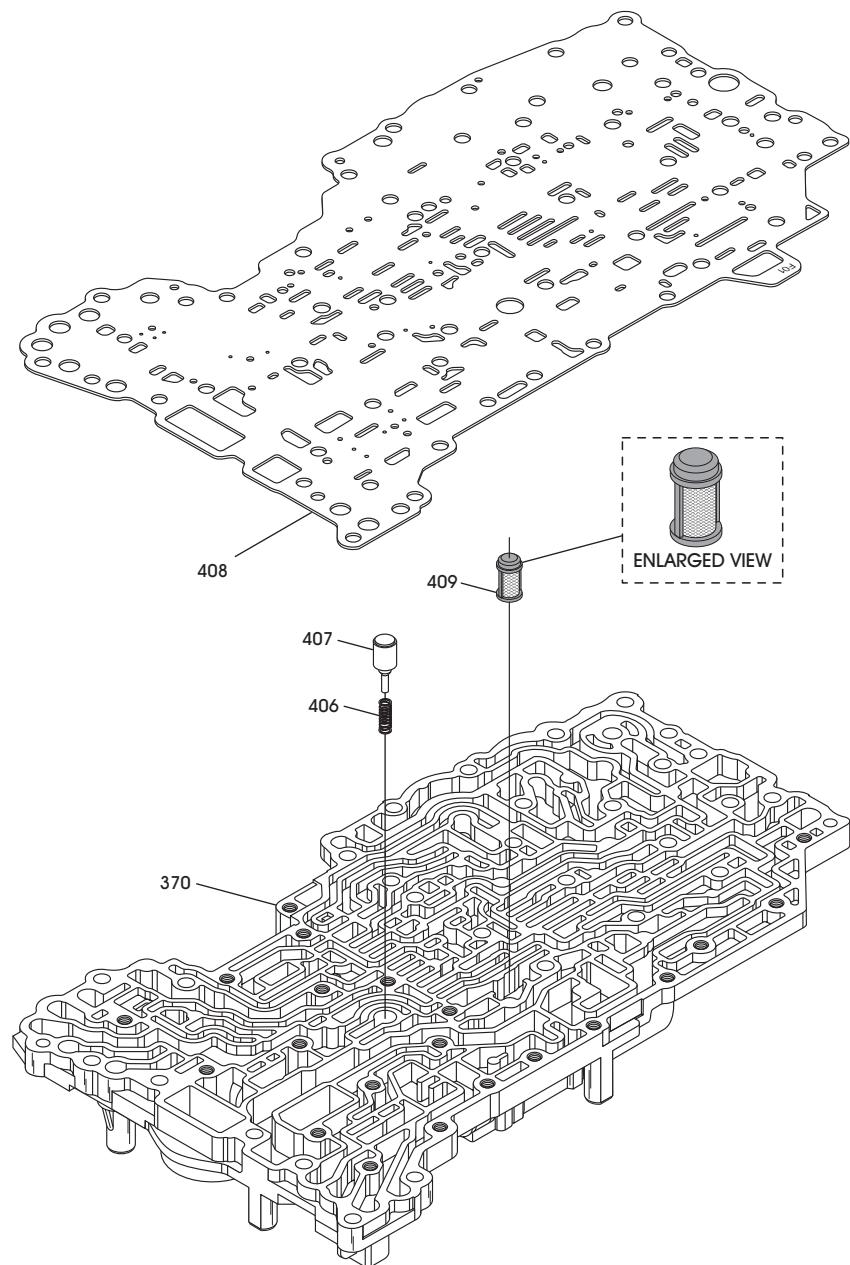
Figure 47

**LOWER VALVE BODY RETAINER LOCATIONS**

■ = Retainer Locations

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Figure 48

**TRANSFER PLATE UPPER SIDE EXPLODED VIEW**

370 TRANSFER PLATE CASTING.

406 CHECK VALVE SPRING.

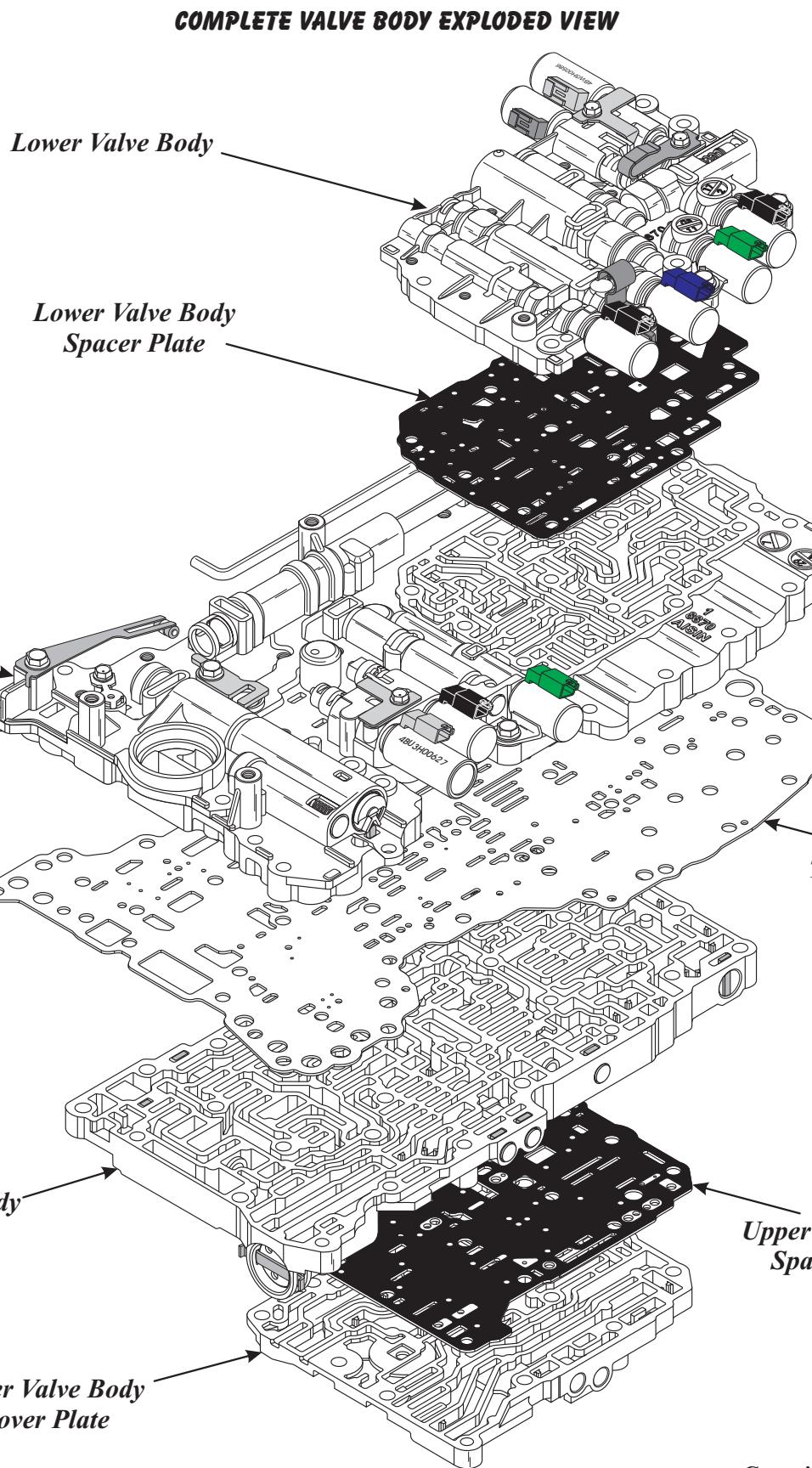
407 CHECK VALVE.

408 TRANSFER PLATE TO UPPER VALVE BODY SPACER PLATE.

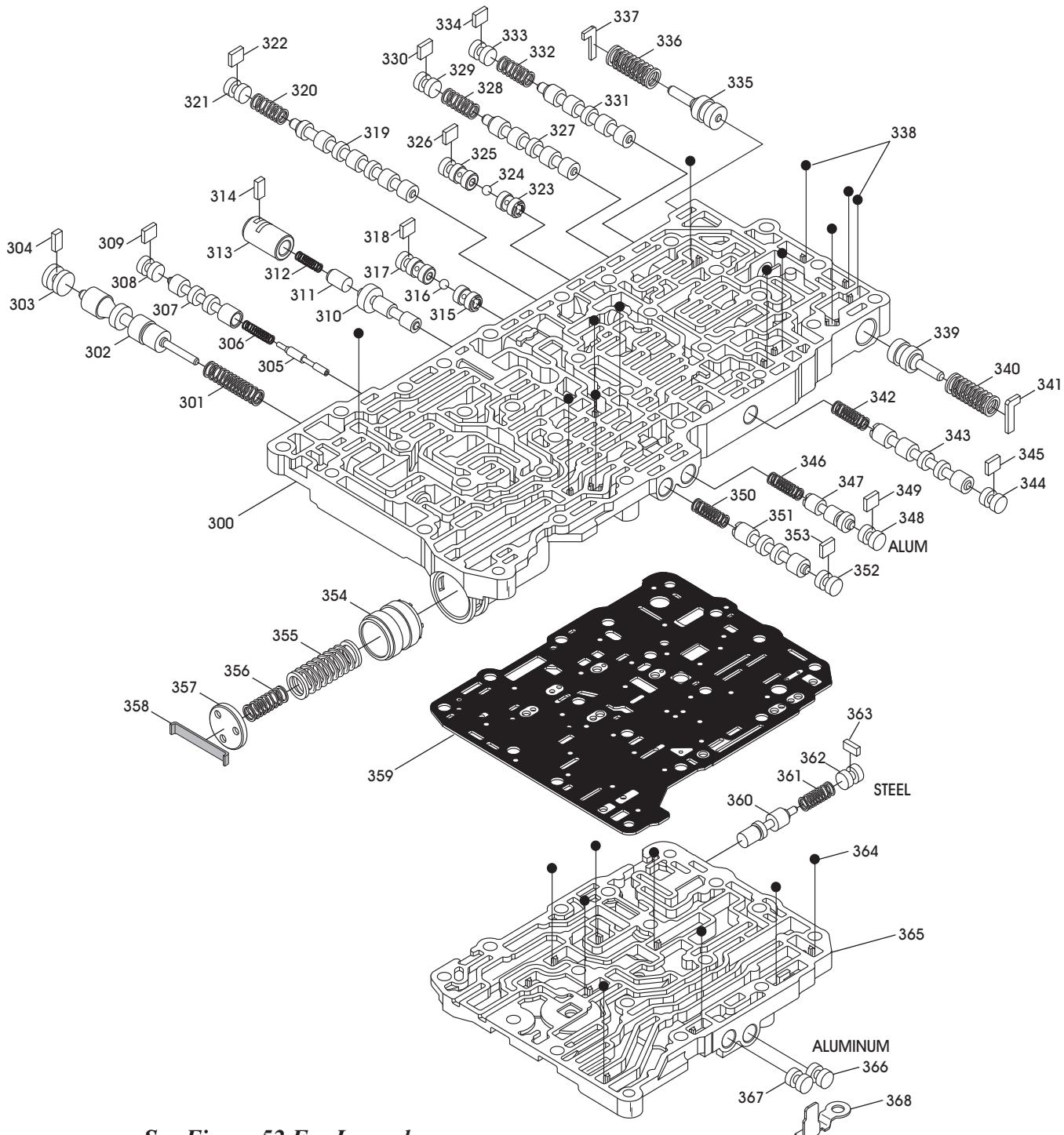
409 SOLENOID FEED SCREEN.

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Figure 49  
AUTOMATIC TRANSMISSION SERVICE GROUP



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**UPPER VALVE BODY AND COVER EXPLODED VIEW**

*See Figure 52 For Legend*

*See Figure 53 For Spring Specifications*

## UPPER VALVE BODY LEGEND

- 300 UPPER VALVE BODY CASTING.  
 301 SECONDARY REGULATOR VALVE SPRING.  
 302 SECONDARY REGULATOR VALVE.  
 303 ALUMINUM BORE PLUG.  
 304 BORE PLUG RETAINER.  
 305 LOCK-UP RELAY INNER VALVE.  
 306 LOCK-UP RELAY VALVE SPRING.  
 307 LOCK-UP RELAY VALVE.  
 308 STEEL BORE PLUG.  
 309 BORE PLUG RETAINER.  
 310 LOCK-UP CONTROL VALVE.  
 311 LOCK-UP CONTROL BOOST VALVE.  
 312 LOCK-UP CONTROL BOOST VALVE SPRING.  
 313 LOCK-UP CONTROL BOOST VALVE SLEEVE.  
 314 RETAINER  
 315 NO.2- 3-WAY CHECK BALL INNER SEAT (C3).  
 316 SHUTTLE BALL (.250" DIAMETER).  
 317 NO.2- 3-WAY CHECK BALL OUTER SEAT.  
 318 RETAINER.  
 319 S1 CONTROL VALVE.  
 320 S1 CONTROL VALVE SPRING.  
 321 BORE PLUG.  
 322 BORE PLUG RETAINER.  
 323 NO.1- 3-WAY CHECK BALL INNER SEAT (R/M1).  
 324 SHUTTLE BALL (.250" DIAMETER).  
 325 NO.1- 3-WAY CHECK BALL OUTER SEAT.  
 326 RETAINER.  
 327 S2 CONTROL VALVE.  
 328 S2 CONTROL SPRING.  
 329 BORE PLUG.  
 330 BORE PLUG RETAINER.  
 331 S3 CONTROL VALVE.  
 332 S3 CONTROL VALVE SPRING.  
 333 BORE PLUG.  
 334 BORE PLUG RETAINER.  
 335 B2 ACCUMULATOR VALVE "A".  
 336 B2 ACCUMULATOR VALVE "A" SPRING.  
 337 RETAINER.  
 338 5.5 MM (.216") DIAMETER CHECK BALLS (12 REQ. IN V. B.).  
 339 B2 ACCUMULATOR VALVE "B" VALVE.  
 340 B2 ACCUMULATOR VALVE "B" SPRING.  
 341 RETAINER.  
 342 NO. 2 RELAY VALVE SPRING.  
 343 NO. 2 RELAY VALVE.  
 344 STEEL BORE PLUG.  
 345 BORE PLUG RETAINER.  
 346 C3 CONTROL VALVE SPRING.  
 347 C3 CONTROL VALVE.  
 348 ALUMINUM BORE PLUG.  
 349 BORE PLUG RETAINER.  
 350 SOLENOID RELAY VALVE 2 SPRING.  
 351 SOLENOID RELAY VALVE 2.  
 352 STEEL BORE PLUG.  
 353 BORE PLUG RETAINER.  
 354 C1 ACCUMULATOR PISTON.  
 355 C1 ACCUMULATOR PISTON OUTER SPRING.  
 356 C1 ACCUMULATOR PISTON INNER SPRING.  
 357 C1 ACCUMULATOR VENTED BORE PLUG.  
 358 C1 ACCUMULATOR BORE PLUG RETAINER.  
 359 UPPER V.B. COVER TO UPPER V. B. SPACER PLATE (ID "F03").  
 360 C3 SWITCH VALVE.  
 361 C3 SWITCH VALVE SPRING.  
 362 STEEL BORE PLUG.  
 363 BORE PLUG RETAINER.  
 364 5.5 MM (.216") DIAMETER CHECK BALLS (8 REQ. IN COVER).  
 365 UPPER VALVE BODY COVER.  
 366 ALUMINUM BORE PLUG. (NOTE: EMPTY BORE-PASSAGE)  
 367 ALUMINUM BORE PLUG. (NOTE: EMPTY BORE-PASSAGE)  
 368 BORE PLUG RETAINER (HELD WITH VB BOLT).

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Figure 52

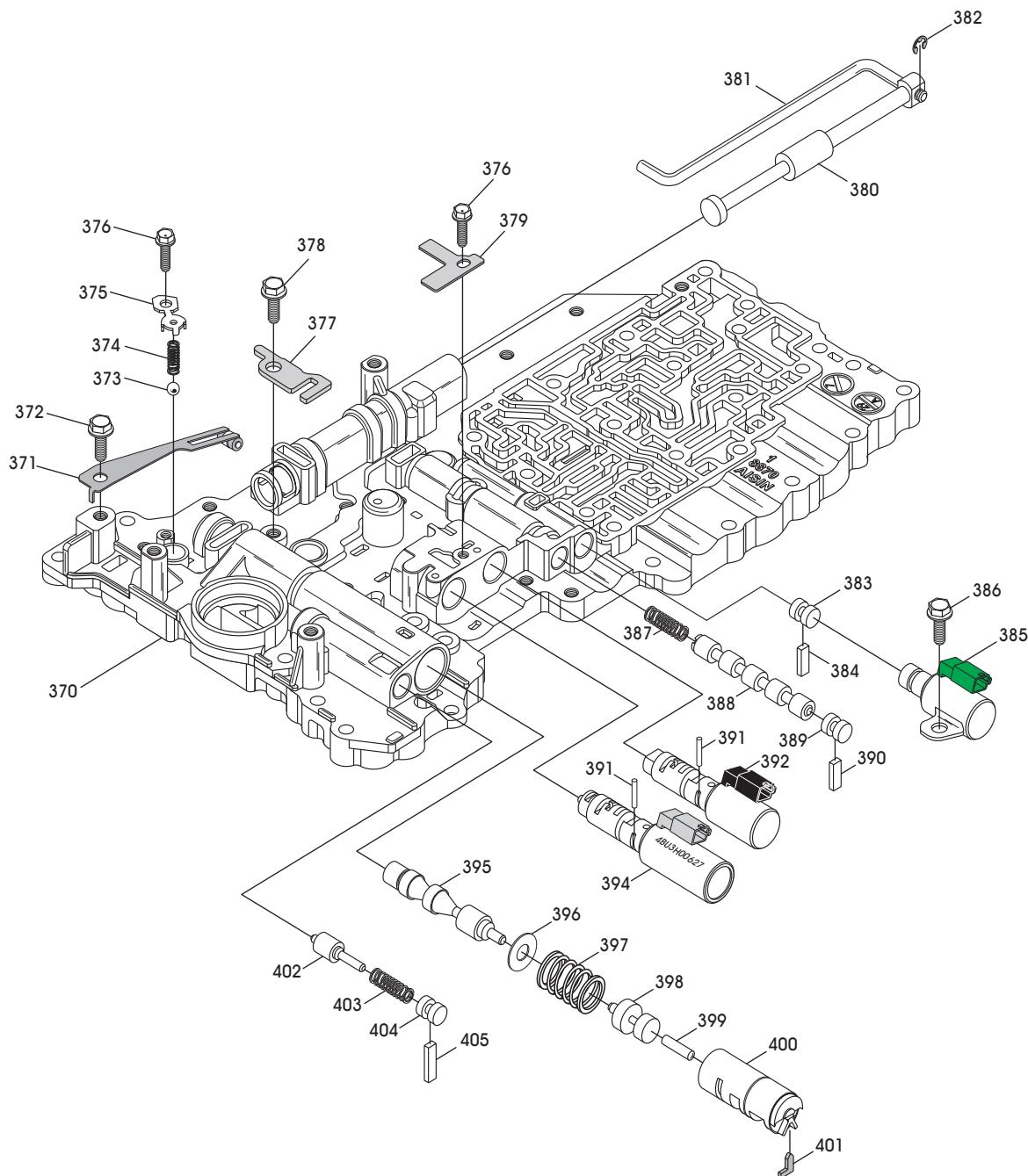
## UPPER VALVE BODY AND COVER OBSERVED SPRING SPECIFICATIONS

|   |   |  |   |
|---|---|--|---|
| SPRING NUMBER 301<br>FREE LENGTH = 1.370"<br>SPRING DIAMETER = .355"<br>WIRE DIAMETER = .048"<br>APPROX COILS 14 = (ORANGE) | SPRING NUMBER 328<br>FREE LENGTH = .991"<br>SPRING DIAMETER = .389"<br>WIRE DIAMETER = .031"<br>APPROX COILS 7 = (RED)    | SPRING NUMBER 342<br>FREE LENGTH = 1.135"<br>SPRING DIAMETER = .295"<br>WIRE DIAMETER = .029"<br>APPROX COILS 11 = (WHITE) | SPRING NUMBER 356<br>FREE LENGTH = 1.197"<br>SPRING DIAMETER = .408"<br>WIRE DIAMETER = .063"<br>APPROX COILS 10 = (YELLOW) |
| SPRING NUMBER 306<br>FREE LENGTH = .930"<br>SPRING DIAMETER = .235"<br>WIRE DIAMETER = .024"<br>APPROX COILS 12 = (RED)     | SPRING NUMBER 332<br>FREE LENGTH = .991"<br>SPRING DIAMETER = .389"<br>WIRE DIAMETER = .031"<br>APPROX COILS 7 = (RED)    | SPRING NUMBER 346<br>FREE LENGTH = .790"<br>SPRING DIAMETER = .271"<br>WIRE DIAMETER = .026"<br>APPROX COILS 10 = (WHITE)  | SPRING NUMBER 361<br>FREE LENGTH = 1.270"<br>SPRING DIAMETER = .369"<br>WIRE DIAMETER = .021"<br>APPROX COILS 8 = (NONE)    |
| SPRING NUMBER 312<br>FREE LENGTH = .815"<br>SPRING DIAMETER = .225"<br>WIRE DIAMETER = .030"<br>APPROX COILS 13 = (LT BLUE) | SPRING NUMBER 336<br>FREE LENGTH = 1.631"<br>SPRING DIAMETER = .580"<br>WIRE DIAMETER = .078"<br>APPROX COILS 10 = (NONE) | SPRING NUMBER 350<br>FREE LENGTH = 1.135"<br>SPRING DIAMETER = .295"<br>WIRE DIAMETER = .029"<br>APPROX COILS 11 = (WHITE) | SPRING NUMBER 365<br>FREE LENGTH = 1.825"<br>SPRING DIAMETER = .674"<br>WIRE DIAMETER = .110"<br>APPROX COILS 11 = (BLUE)   |
| SPRING NUMBER 320<br>FREE LENGTH = .991"<br>SPRING DIAMETER = .389"<br>WIRE DIAMETER = .031"<br>APPROX COILS 7 = (RED)      | SPRING NUMBER 340<br>FREE LENGTH = 1.631"<br>SPRING DIAMETER = .580"<br>WIRE DIAMETER = .078"<br>APPROX COILS 10 = (NONE) |  |   |

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Figure 53

AUTOMATIC TRANSMISSION SERVICE GROUP

**TRANSFER PLATE LOWER SIDE EXPLODED VIEW**

*See Figure 55 For Legend  
And Spring Specifications*

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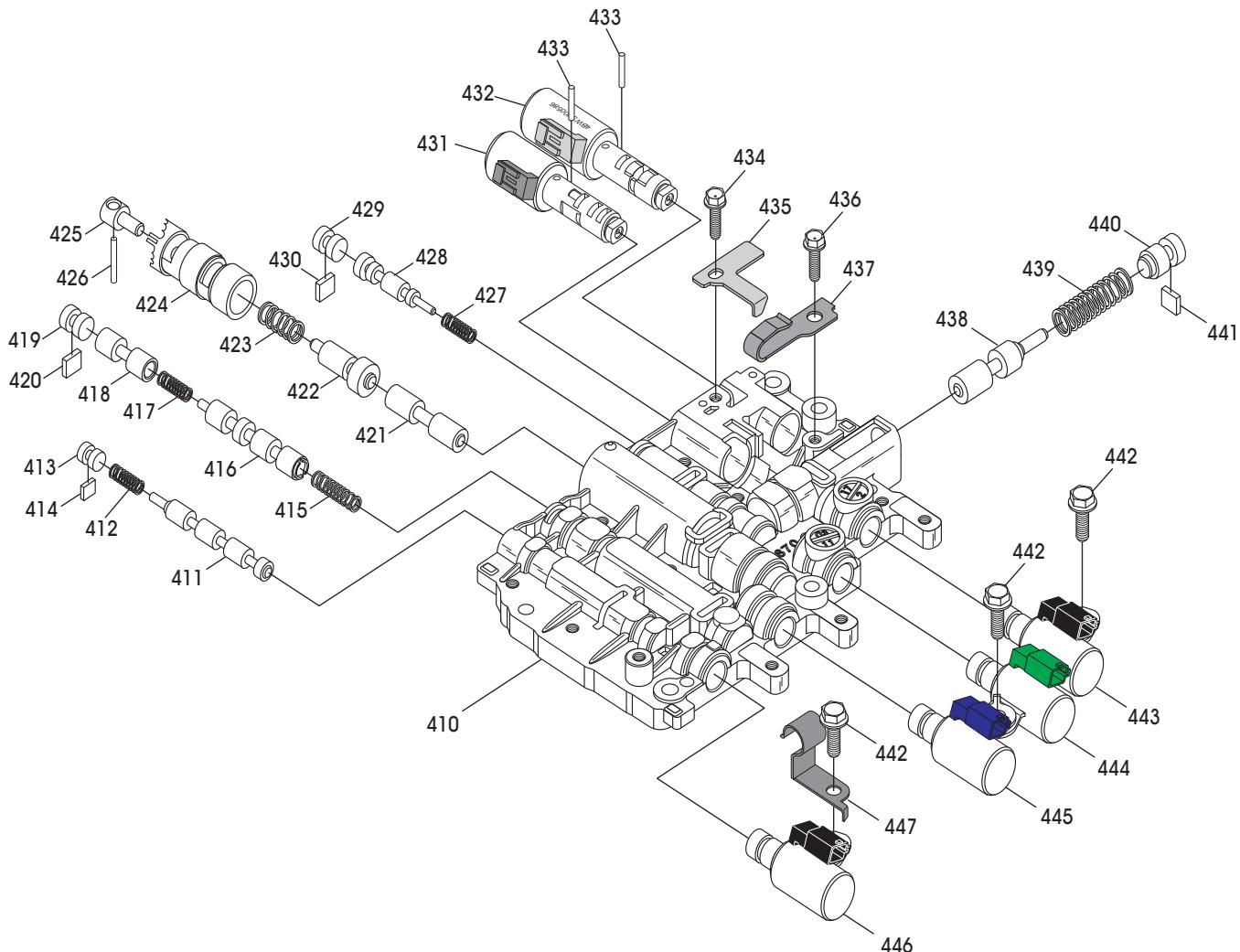
Figure54  
AUTOMATIC TRANSMISSION SERVICE GROUP

**TRANSFER PLATE LOWER SIDE LEGEND**

- |  |   |
|--|---|
| 370 TRANSFER PLATE CASTING.                              | 390 BORE PLUG RETAINER.                         |
| 371 INSIDE DETENT SPRING.                                | 391 "SL1" & "SLT" SOLENOID RETAINING PINS.      |
| 372 DETENT SPRING RETAINING BOLT.                        | 392 "SL1" SOLENOID.                             |
| 373 LINE PRESSURE BLOW-OFF BALL, 8.0 MM (.315") DIAMETER | 394 "SLT" SOLENOID.                             |
| 374 LINE PRESSURE BLOW-OFF BALL SPRING.                  | 395 MAIN PRESSURE REGULATOR VALVE.              |
| 375 BLOW-OFF BALL SPRING RETAINER.                       | 396 MAIN PRESSURE REGULATOR VALVE SPRING SEAT.  |
| 376 BLOW-OFF BALL & SOLENOID BRACKET RETAINING BOLT.(2)  | 397 MAIN PRESSURE REGULATOR VALVE SPRING.       |
| 377 FLUID TEMPERATURE SENSOR RETAINER.                   | 398 MAIN PRESSURE REGULATOR BOOST VALVE.        |
| 378 FLUID TEMPERATURE SENSOR RETAINING BOLT.             | 399 MAIN PRESSURE REGULATOR BOOST VALVE PLUG.   |
| 379 SOLENOID PIN RETAINING BRACKET.                      | 400 MAIN PRESSURE REGULATOR BOOST VALVE SLEEVE. |
| 380 MANUAL VALVE.  | 401 BOOST VALVE SLEEVE RETAINER.                |
| 381 MANUAL VALVE LINK.                                   | 402 SLT ACCUMULATOR VALVE.                      |
| 382 MANUAL VALVE LINK RETAINING "E" CLIP.                | 403 SLT ACCUMULATOR SPRING.                     |
| 383 BORE PLUG.   | 404 BORE PLUG.                                  |
| 384 BORE PLUG RETAINER.                                  | 405 BORE PLUG RETAINER.                         |
| 385 "SR" SOLENOID (GREEN CONNECTOR).                     |   |
| 386 SOLENOID RETAINING BOLT.                             |   |
| 387 S4 CONTROL VALVE SPRING.                             |   |
| 388 S4 CONTROL VALVE.                                    |   |
| 389 BORE PLUG.   |   |

**TRANSFER PLATE OBSERVED  
SPRING SPECIFICATIONS**

|   |  |
|---|--|
| SPRING NUMBER 374<br>FREE LENGTH = .710"<br>SPRING DIAMETER = .308"<br>WIRE DIAMETER = .043"<br>APPROX COILS = 8 (BLUE)     | SPRING NUMBER 406<br>FREE LENGTH = .835"<br>SPRING DIAMETER = .328"<br>WIRE DIAMETER = .035"<br>APPROX COILS = 10 (YELLOW) |
| SPRING NUMBER 387<br>FREE LENGTH = .1.135"<br>SPRING DIAMETER = .295"<br>WIRE DIAMETER = .029"<br>APPROX COILS = 11 (WHITE) | SPRING NUMBER 403<br>FREE LENGTH = .1.465"<br>SPRING DIAMETER = .420"<br>WIRE DIAMETER = .050"<br>APPROX COILS = 11 (NONE) |
| SPRING NUMBER 397<br>FREE LENGTH = .1.465"<br>SPRING DIAMETER = .865"<br>WIRE DIAMETER = .071"<br>APPROX COILS = 6 (NONE)   |  |

**LOWER VALVE BODY EXPLODED VIEW**

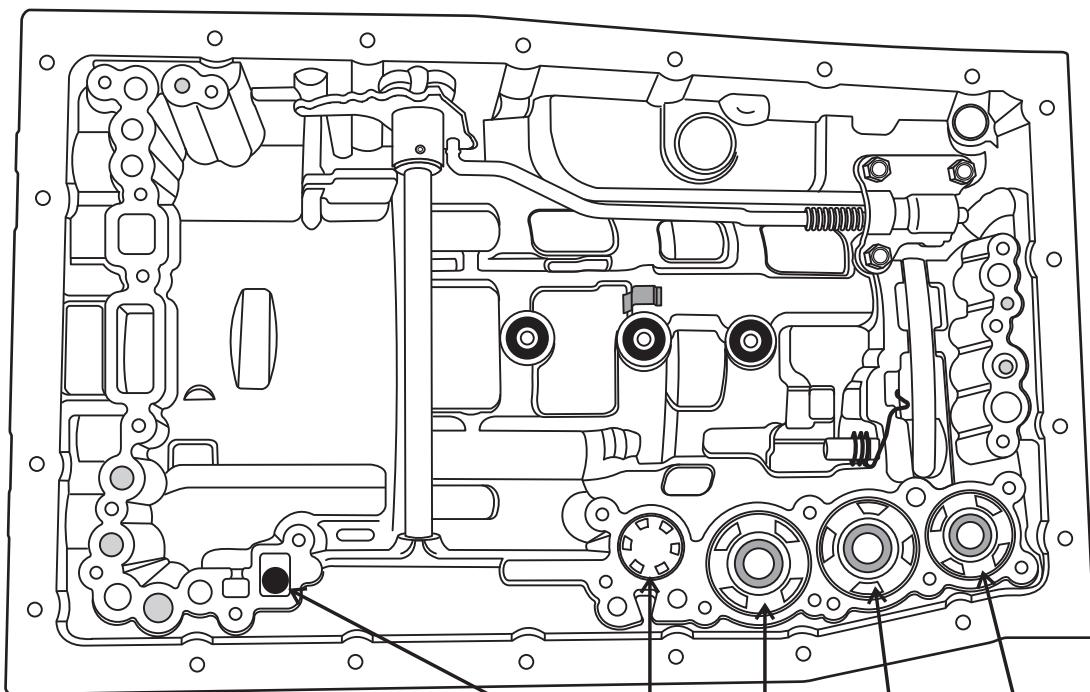
*See Figure 57 For Valve Identification  
And Spring Specifications*

**LEGEND FOR LOWER VALVE BODY**

- |  |  |
|--|--|
| 410 LOWER VALVE BODY CASTING.                  | 429 BORE PLUG.                             |
| 411 SOLENOID RELAY VALVE 1.                    | 430 BORE PLUG RETAINER.                    |
| 412 SOLENOID RELAY VALVE 1SPRING.              | 431 "SL2" SOLENOID.                        |
| 413 BORE PLUG.                                 | 432 "SLU" SOLENOID.                        |
| 414 BORE PLUG RETAINER.                        | 433 "SL2" & "SLU" SOLENOID RETAINING PINS. |
| 415 NO.1 INNER RELAY VALVE SPRING.             | 434 RETAINING PIN BRACKET BOLT.            |
| 416 NO.1 INNER RELAY VALVE.                    | 435 SOLENOID PIN RETAINING BRACKET.        |
| 417 NO.1 OUTER RELAY VALVE SPRING.             | 436 WIRE HARNESS RETAINING CLIP BOLT.      |
| 418 NO.1 OUTER RELAY VALVE.                    | 437 WIRE HARNESS RETAINING CLIP.           |
| 419 BORE PLUG.                                 | 438 SOLENOID MODULATING VALVE.             |
| 420 BORE PLUG RETAINER.                        | 439 SOLENOID MODULATING SPRING.            |
| 421 ACCUMULATOR REGULATOR VALVE.               | 440 BORE PLUG.                             |
| 422 ACCUMULATOR REGULATOR BOOST VALVE.         | 441 BORE PLUG RETAINER.                    |
| 423 ACCUMULATOR REGULATOR SPRING.              | 442 SOLENOID RETAINING BOLT.               |
| 424 ACCUMULATOR REGULATOR ADJUSTABLE SLEEVE.   | 443 "S3" SOLENOID (BLACK CONNECTOR).       |
| 425 ADJUSTABLE SLEEVE PLUG.                    | 444 "S2" SOLENOID (GREEN CONNECTOR).       |
| 426 RETAINING PIN (LONGER THAN SOLENOID PINS). | 445 "S4" SOLENOID (BLUE CONNECTOR).        |
| 427 B1/B4 CONTROL VALVE SPRING.                | 446 "S1" SOLENOID (BLACK CONNECTOR).       |
| 428 B1/B4 CONTROL VALVE.                       | 447 WIRE HARNESS RETAINING CLIP.           |

**LOWER VALVE BODY OBSERVED  
SPRING SPECIFICATIONS**

|   |   |
|---|---|
| SPRING NUMBER 412<br>FREE LENGTH = 1.040"<br>SPRING DIAMETER = .323"<br>WIRE DIAMETER = .027"<br>APPROX COILS = 10 (LT GREEN) | SPRING NUMBER 427<br>FREE LENGTH = .715"<br>SPRING DIAMETER = .257"<br>WIRE DIAMETER = .028"<br>APPROX COILS = 10 (DK BLUE) |
| SPRING NUMBER 415<br>FREE LENGTH = 1.135"<br>SPRING DIAMETER = .295"<br>WIRE DIAMETER = .029"<br>APPROX COILS = 11 (WHITE)    | SPRING NUMBER 439<br>FREE LENGTH = 1.703"<br>SPRING DIAMETER = .432"<br>WIRE DIAMETER = .054"<br>APPROX COILS = 13 (PINK)   |
| SPRING NUMBER 417<br>FREE LENGTH = .930"<br>SPRING DIAMETER = .255"<br>WIRE DIAMETER = .019"<br>APPROX COILS = 10 (NONE)      |   |
| SPRING NUMBER 423<br>FREE LENGTH = .855"<br>SPRING DIAMETER = .327"<br>WIRE DIAMETER = .027"<br>APPROX COILS = 6 (VIOLET)     |   |

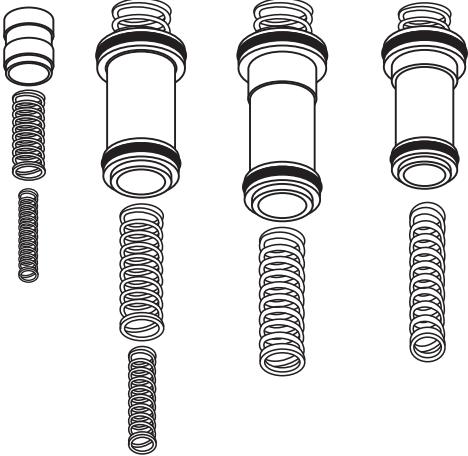


### B1 Accumulator Spring

#### Inner Spring

|                                   |                                     |                  |
|-----------------------------------|-------------------------------------|------------------|
| Free Length<br>1.7099" (44.98 mm) | Outer Diameter<br>0.445" (11.30 mm) | Color<br>Natural |
|-----------------------------------|-------------------------------------|------------------|

**B1**      **C3**      **B3**      **C2**



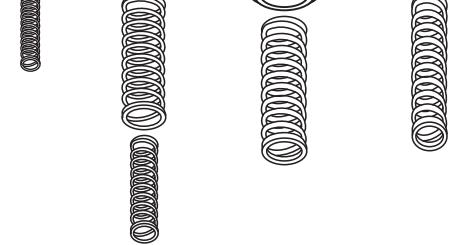
#### Outer Spring

|                                   |                                      |                  |
|-----------------------------------|--------------------------------------|------------------|
| Free Length<br>1.8252" (46.36 mm) | Outer Diameter<br>0.6732" (17.10 mm) | Color<br>Natural |
|-----------------------------------|--------------------------------------|------------------|

### C3 Accumulator Spring

#### Inner Spring

|                                 |                                     |                 |
|---------------------------------|-------------------------------------|-----------------|
| Free Length<br>1.732" (44.0 mm) | Outer Diameter<br>0.551" (14.00 mm) | Color<br>Yellow |
|---------------------------------|-------------------------------------|-----------------|



#### Outer Spring

|                                   |                                      |                  |
|-----------------------------------|--------------------------------------|------------------|
| Free Length<br>3.0178" (76.65 mm) | Outer Diameter<br>0.7913" (20.10 mm) | Color<br>Natural |
|-----------------------------------|--------------------------------------|------------------|

### B3 Accumulator Spring

|                                 |                                    |                 |
|---------------------------------|------------------------------------|-----------------|
| Free Length<br>2.539" (64.5 mm) | Outer Diameter<br>0.768" (19.5 mm) | Color<br>Orange |
|---------------------------------|------------------------------------|-----------------|

### C2 Accumulator Spring

|                                   |                                     |                   |
|-----------------------------------|-------------------------------------|-------------------|
| Free Length<br>2.4858" (63.14 mm) | Outer Diameter<br>0.6299" (16.0 mm) | Color<br>Lt. Grey |
|-----------------------------------|-------------------------------------|-------------------|

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Figure 58

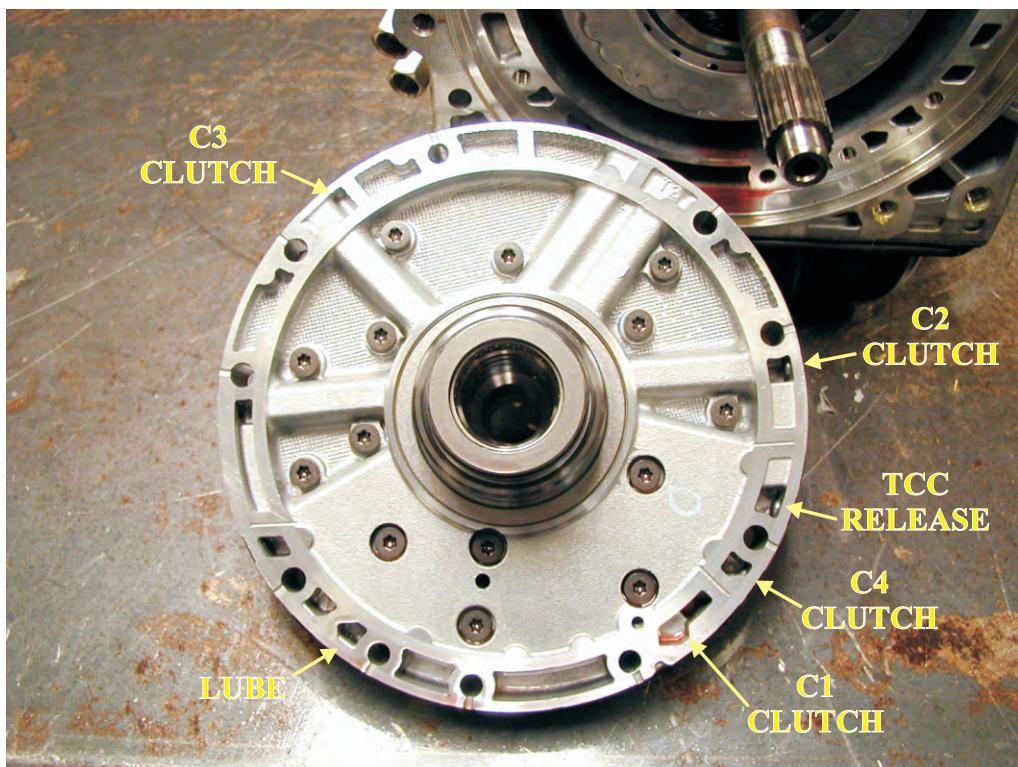
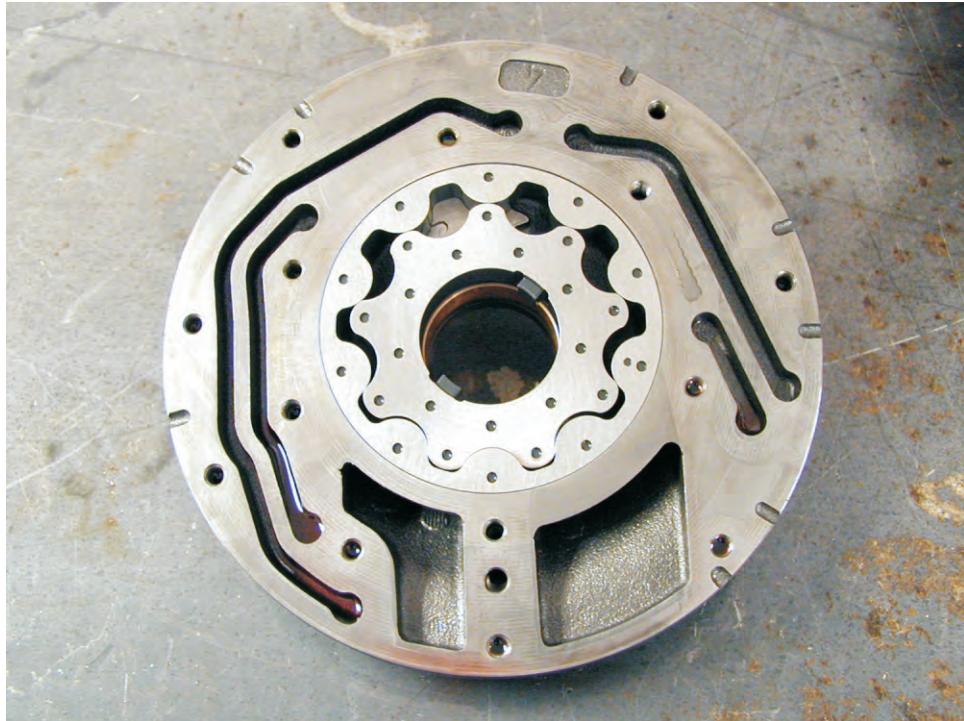
**FRONT PUMP ASSEMBLY**

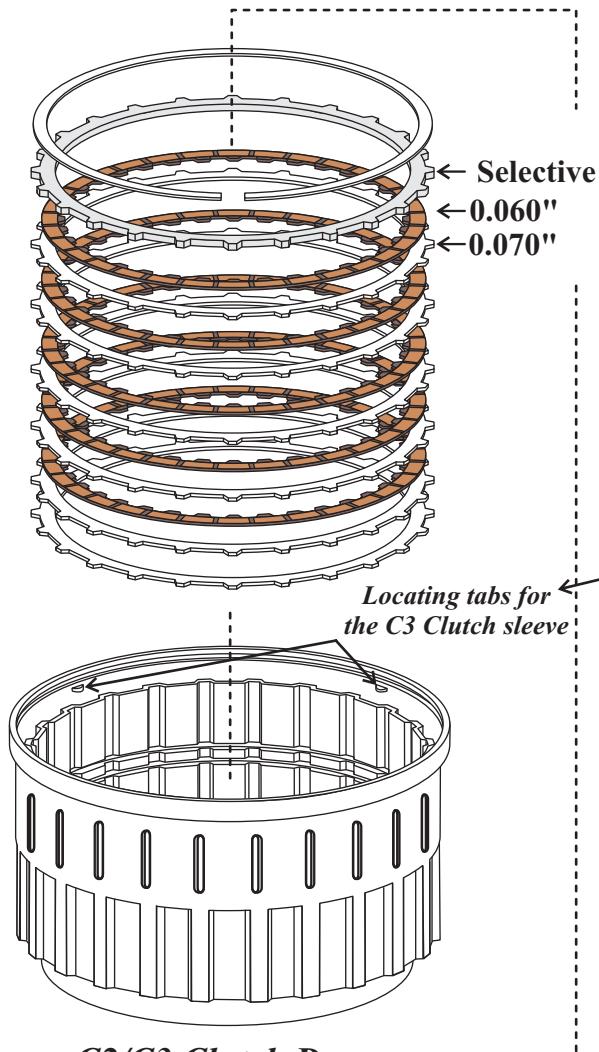
Figure 59



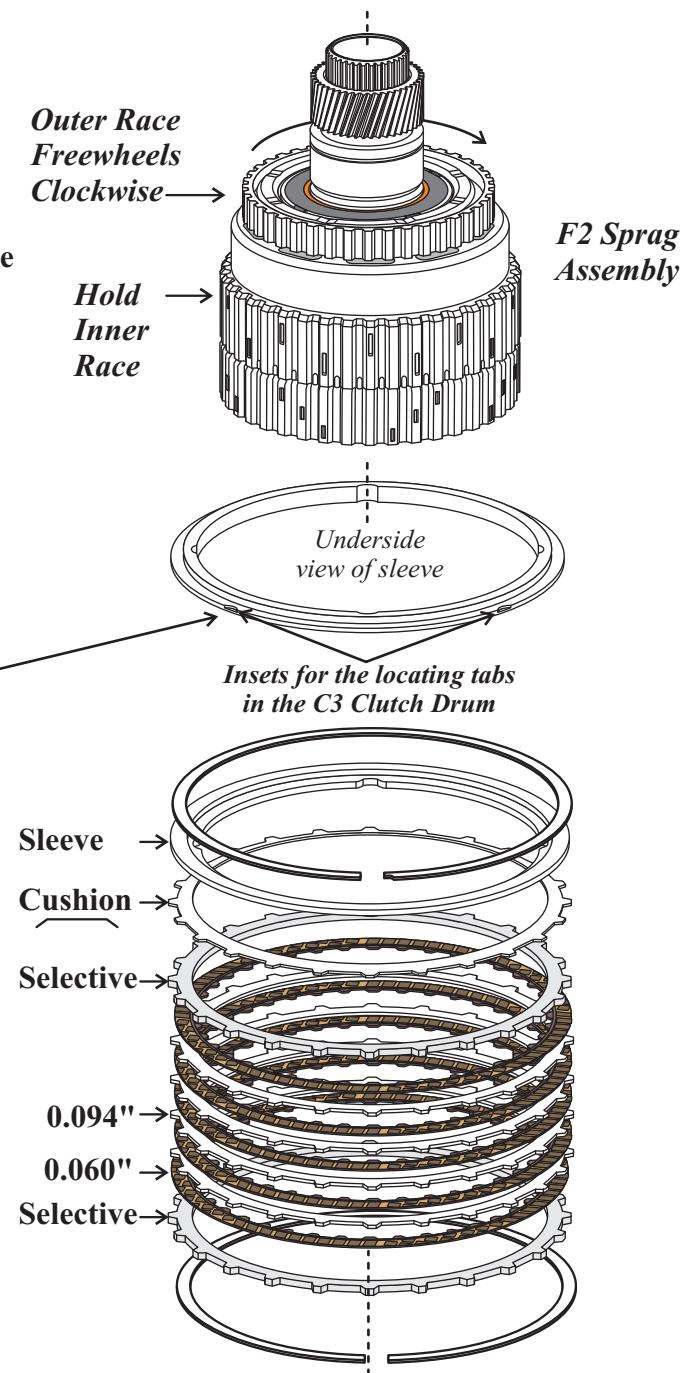
The pump gears are of a Gerotor style which does not use a crescent.  
The dots on the gears face up.

**C2 AND C3 CLUTCH STACK-UP****C2 Clutch Clearance 0.020"- 0.031"**

The clearance is adjusted by the top pressure plate of which there are 9 selective plates available  
(See Figure 53)

**C3 Clutch Clearance 0.020"- 0.031"**

The clearance is adjusted by the top pressure plate of which there are 11 selective plates available  
(See Figure 53)



**DIRECT DRUM/REVERSE CLUTCH PISTON ASSEMBLY**

There are 4 double notches evenly spaced around the outside of the C2 drum.

Figure 62

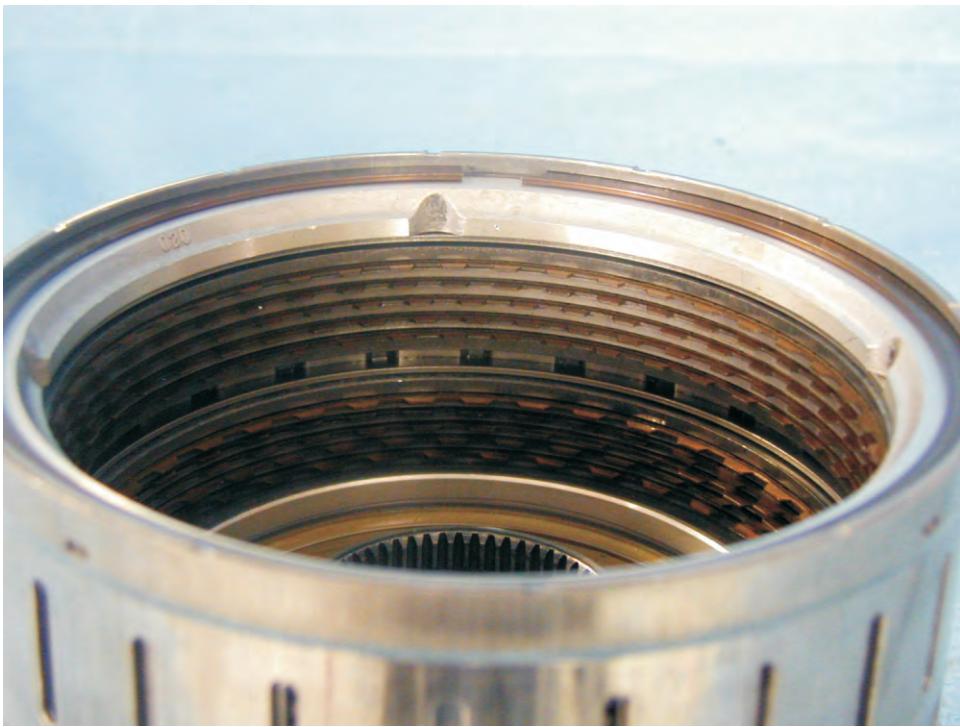


The notches on the C2 drum must line up with the 4 lugs in the C3 drum. These components can be assembled incorrectly which would make them extremely difficult to get back apart.

**DIRECT DRUM/REVERSE CLUTCH PISTON ASSEMBLY**

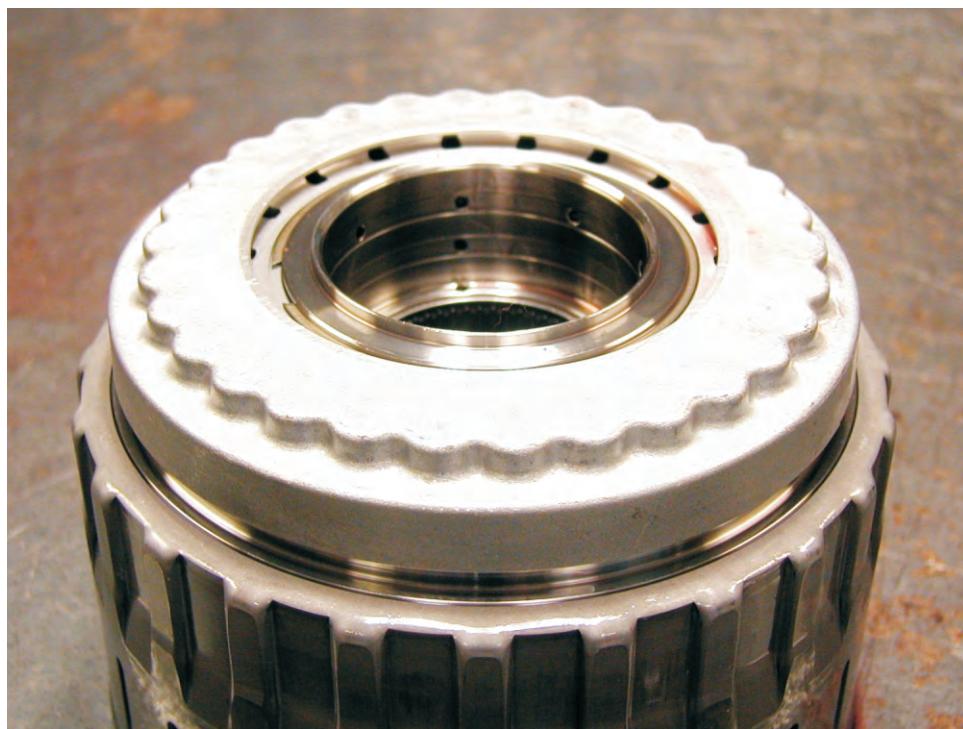
**Looking at the underside of the C3 clutch cushion plate,  
the notches must align with the lugs in the C3 drum.**

Figure 64



**With the notches aligned, the cushion plate depth will allow the snap ring to be put in place.**

Figure 65  
AUTOMATIC TRANSMISSION SERVICE GROUP

**DIRECT DRUM/REVERSE CLUTCH PISTON ASSEMBLY**

The C2 piston is secured to the back of the C3 drum.

Figure 66



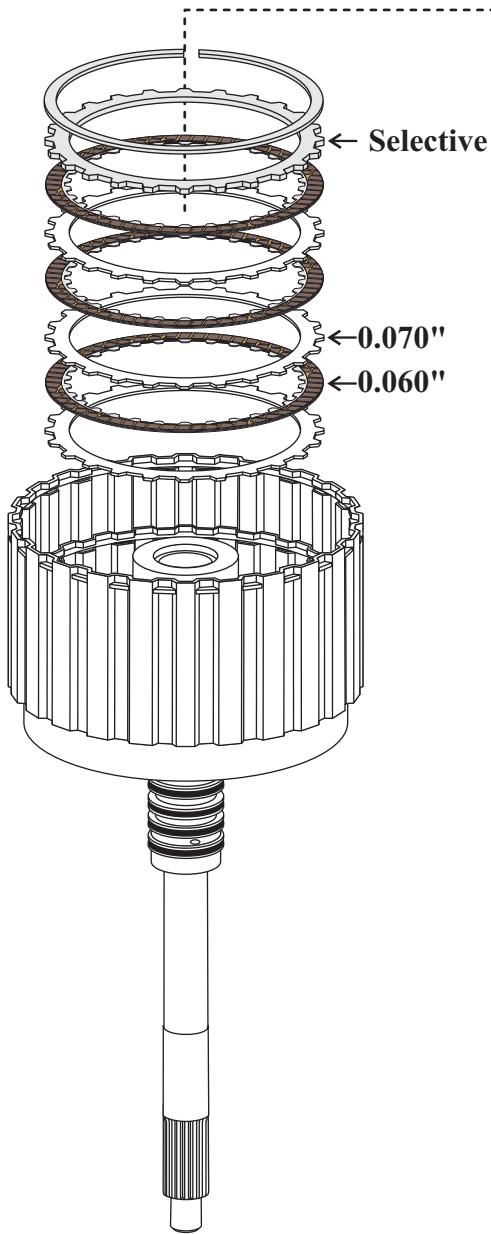
The C2 clutch and balance piston, located inside the C2 drum along with the C3 piston create a push/pull clutch application.

Figure 67

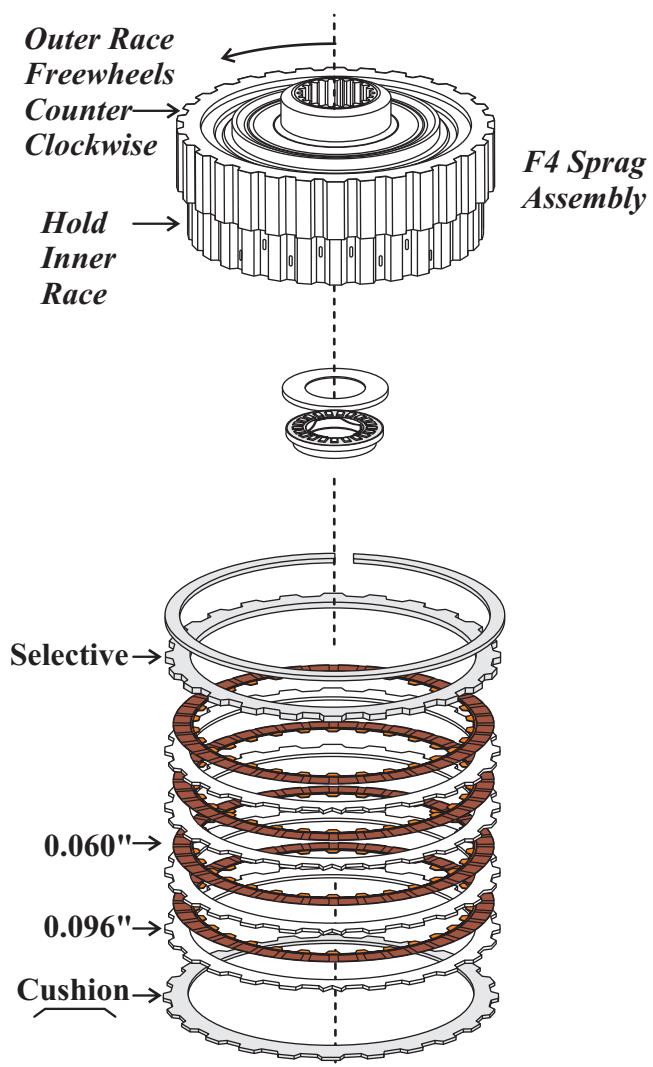
AUTOMATIC TRANSMISSION SERVICE GROUP

**C4 AND C1 CLUTCH STACK-UP****C4 Clutch Clearance 0.012"- 0.024"**

The clearance is adjusted by the top pressure plate of which there are 10 selective plates available  
(See Figure 53)

**C1 Clutch Clearance 0.022"- 0.034"**

The clearance is adjusted by the top pressure plate of which there are 11 selective plates available  
(See Figure 53)



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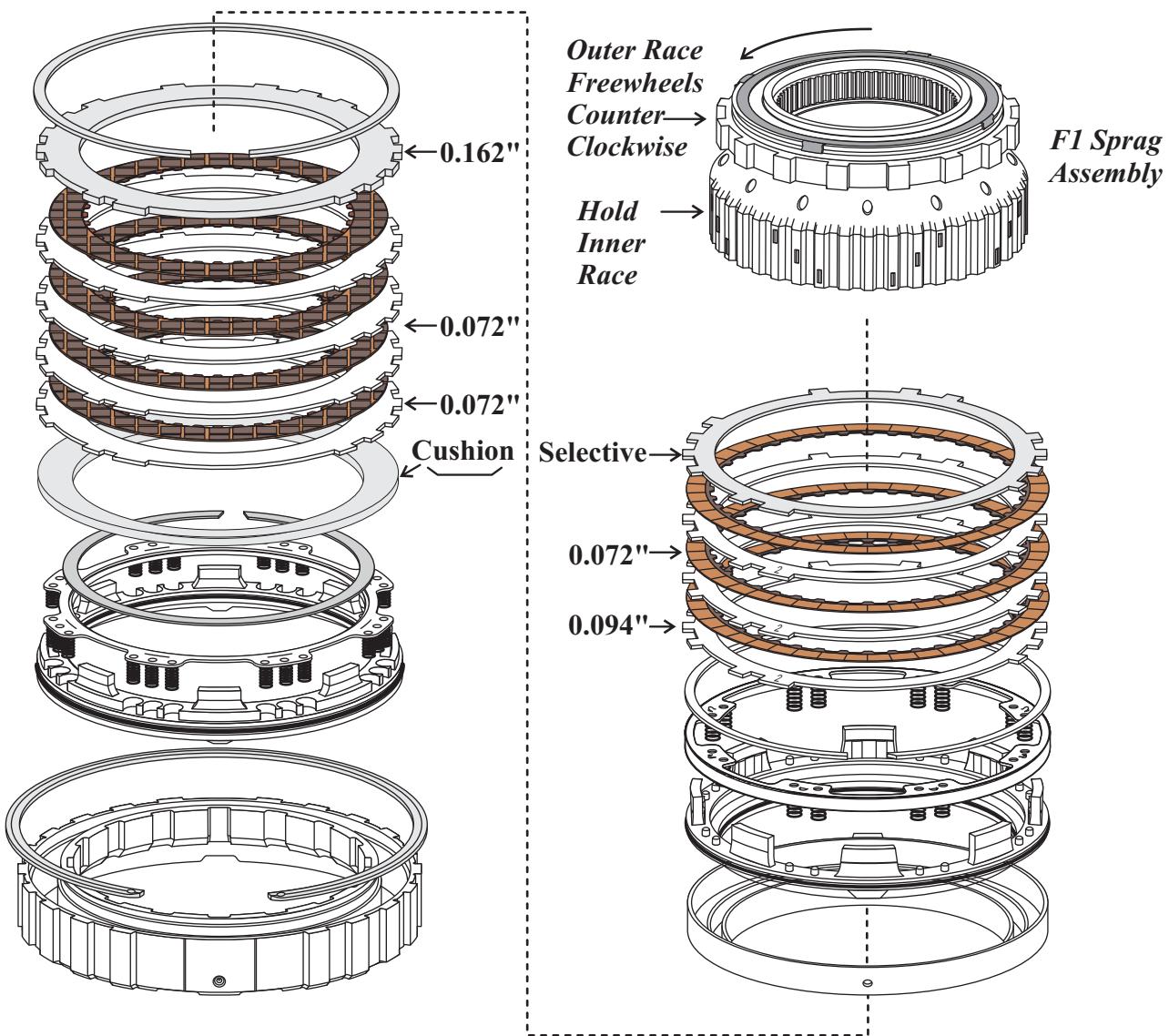
Figure 68

**B1 AND B3 CLUTCH STACK-UP****B3 Clutch Clearance not specified**

No adjustments are provided

**B1 Clutch Clearance 0.017"- 0.028"**

The clearance is adjusted by the top pressure plate of which there are 4 selective plates available  
(See Figure 54)

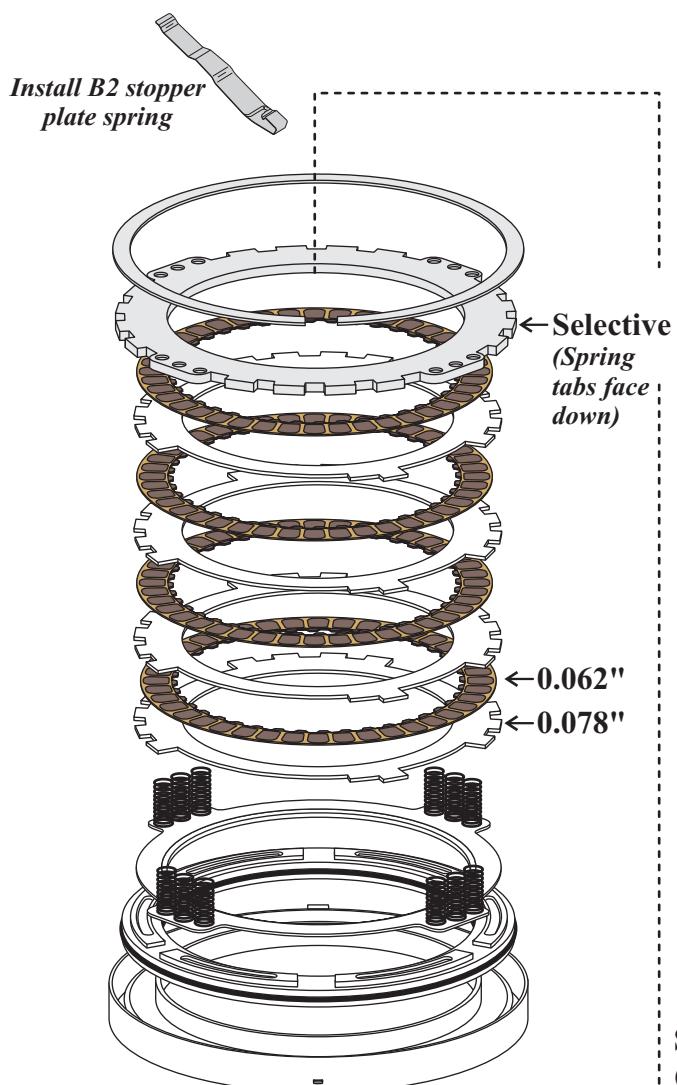


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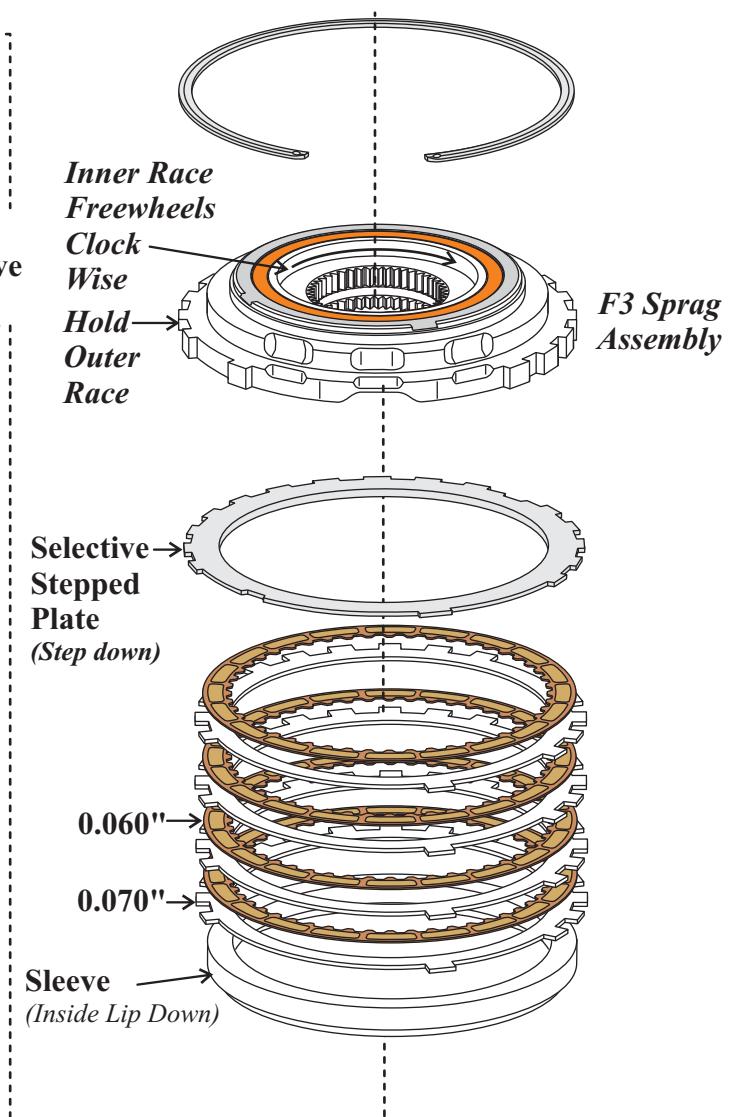
Figure 69

**B2 AND B4 CLUTCH STACK-UP****B2 Clutch Clearance 0.024"- 0.035"**

The clearance is adjusted by the top pressure plate of which there are 7 selective plates available  
(See Figure 54)

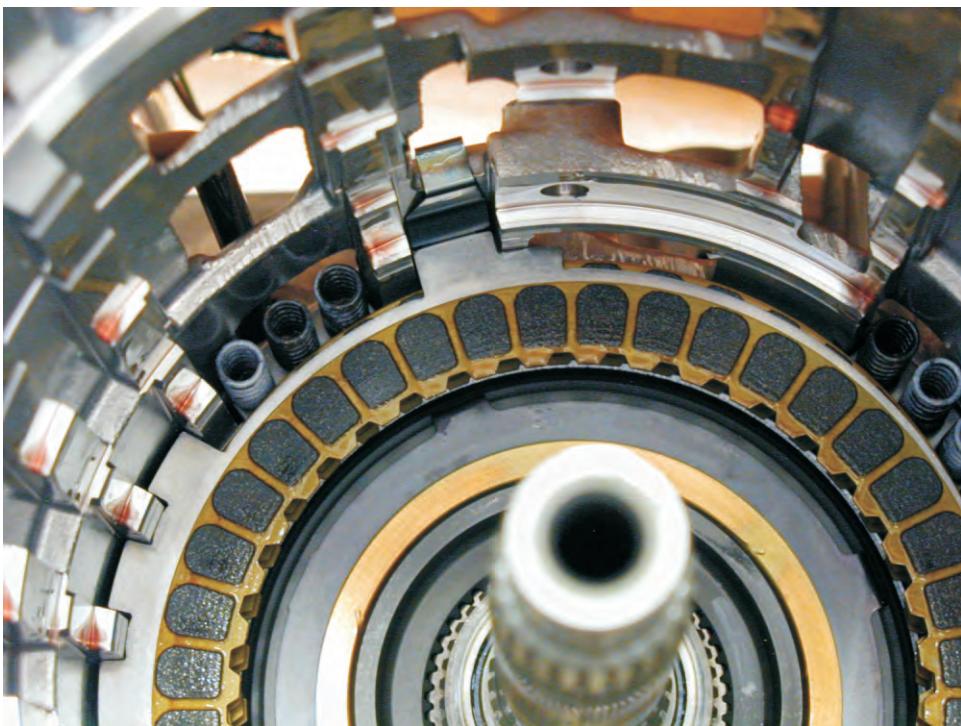
**B4 Clutch Clearance 0.016"- 0.028"**

The clearance is adjusted by the top pressure plate of which there are 8 selective plates available  
(See Figure 54)



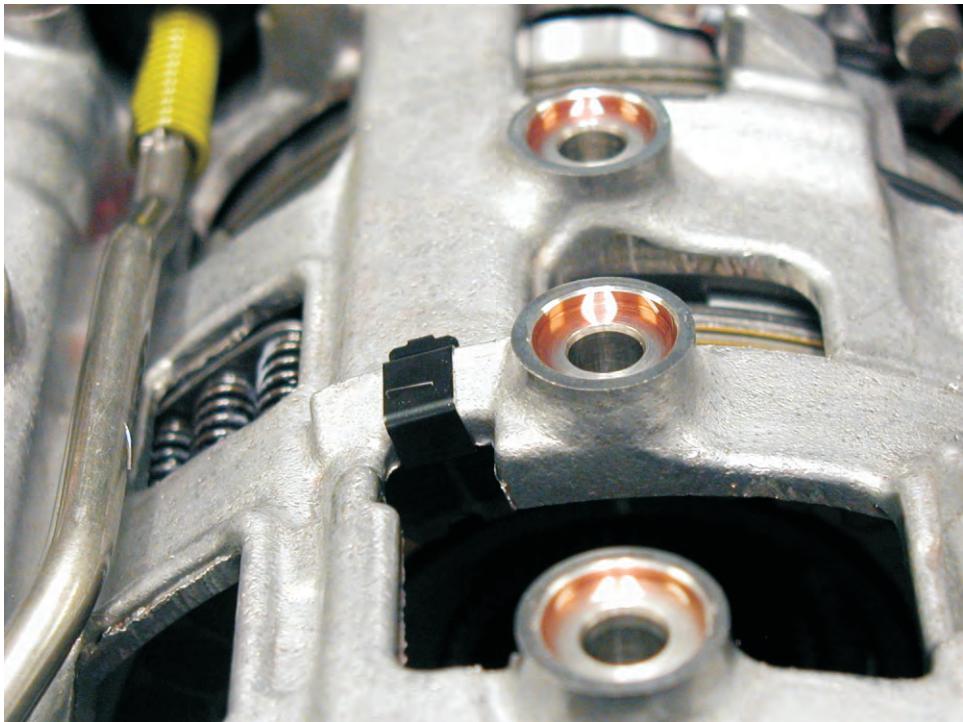
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Figure 70

**B2 ANTI-RATTLE SPRING INSTALLATION**

Located between the case and the B2 steel plates is the stopper plate spring, this serves as an anti-rattle clip.

Figure 71



Once in place the spring snaps over a rib in the case to hold it in place.

Figure 72

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**"C" CLUTCH SELECTIVE CHARTS**

| <b>C1 Selective Chart</b>            |                |
|--------------------------------------|----------------|
| Number stamped<br>on selective plate | Thickness      |
| 0                                    | 0.118" (3.0mm) |
| 1                                    | 0.122" (3.1mm) |
| 2                                    | 0.126" (3.2mm) |
| 3                                    | 0.130" (3.3mm) |
| 4                                    | 0.134" (3.4mm) |
| 5                                    | 0.138" (3.5mm) |
| 6                                    | 0.142" (3.6mm) |
| 7                                    | 0.146" (3.7mm) |
| 8                                    | 0.150" (3.8mm) |
| 9                                    | 0.154" (3.9mm) |
| A                                    | 0.158" (4.0mm) |

| <b>C2 Selective Chart</b>            |                |
|--------------------------------------|----------------|
| Number stamped<br>on selective plate | Thickness      |
| 0                                    | 0.118" (3.0mm) |
| 1                                    | 0.122" (3.1mm) |
| 2                                    | 0.126" (3.2mm) |
| 3                                    | 0.130" (3.3mm) |
| 4                                    | 0.134" (3.4mm) |
| 5                                    | 0.138" (3.5mm) |
| 6                                    | 0.142" (3.6mm) |
| 7                                    | 0.146" (3.7mm) |
| 8                                    | 0.150" (3.8mm) |

| <b>C3 Selective Chart</b>            |                |
|--------------------------------------|----------------|
| Number stamped<br>on selective plate | Thickness      |
| 0                                    | 0.110" (2.8mm) |
| 1                                    | 0.114" (2.9mm) |
| 2                                    | 0.118" (3.0mm) |
| 3                                    | 0.122" (3.1mm) |
| 4                                    | 0.126" (3.2mm) |
| 5                                    | 0.130" (3.3mm) |
| 6                                    | 0.134" (3.4mm) |
| 7                                    | 0.138" (3.5mm) |
| 8                                    | 0.142" (3.6mm) |
| 9                                    | 0.146" (3.7mm) |
| A                                    | 0.150" (3.8mm) |

| <b>C4 Selective Chart</b>            |                |
|--------------------------------------|----------------|
| Number stamped<br>on selective plate | Thickness      |
| 0                                    | 0.118" (3.0mm) |
| 1                                    | 0.122" (3.1mm) |
| 2                                    | 0.126" (3.2mm) |
| 3                                    | 0.130" (3.3mm) |
| 4                                    | 0.134" (3.4mm) |
| 5                                    | 0.138" (3.5mm) |
| 6                                    | 0.142" (3.6mm) |
| 7                                    | 0.146" (3.7mm) |
| 8                                    | 0.150" (3.8mm) |
| 9                                    | 0.154" (3.9mm) |

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Figure 73

**"B" CLUTCH SELECTIVE CHARTS**

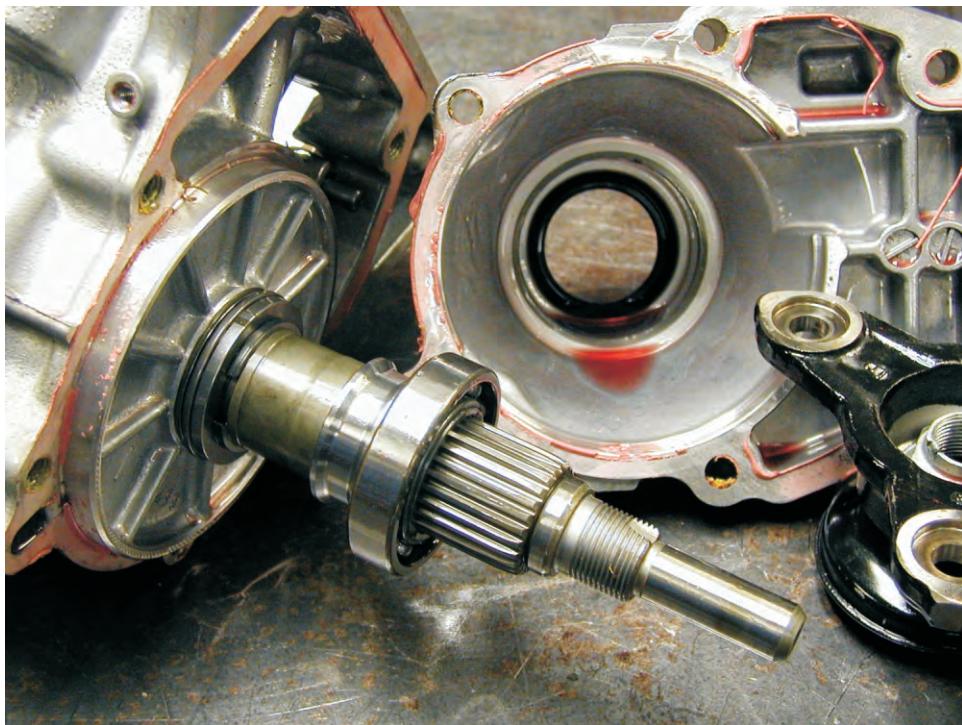
| <b>B4 Selective Chart</b>            |                  |
|--------------------------------------|------------------|
| Number stamped<br>on selective plate | Thickness        |
| 0                                    | No Step          |
| 2                                    | 0.00787" (0.2mm) |
| 4                                    | 0.01575" (0.4mm) |
| 6                                    | 0.02363" (0.6mm) |
| 8                                    | 0.03150" (0.8mm) |
| 10                                   | 0.03937" (1.0mm) |
| 12                                   | 0.04724" (1.2mm) |
| 14                                   | 0.05512" (1.4mm) |

| <b>B2 Selective Chart</b>            |                |
|--------------------------------------|----------------|
| Number stamped<br>on selective plate | Thickness      |
| 0                                    | 0.079" (2.0mm) |
| 1                                    | 0.083" (2.1mm) |
| 2                                    | 0.087" (2.2mm) |
| 3                                    | 0.091" (2.3mm) |
| 4                                    | 0.094" (2.4mm) |
| 5                                    | 0.098" (2.5mm) |
| 6                                    | 0.102" (2.6mm) |
| 7                                    | 0.106" (7.7mm) |

| <b>B1 Selective Chart</b>            |                |
|--------------------------------------|----------------|
| Number stamped<br>on selective plate | Thickness      |
| 0                                    | 0.079" (2.0mm) |
| 1                                    | 0.087" (2.2mm) |
| 2                                    | 0.094" (2.4mm) |
| 3                                    | 0.102" (2.6mm) |

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Figure 74

**REAR BEARING ASSEMBLIES**

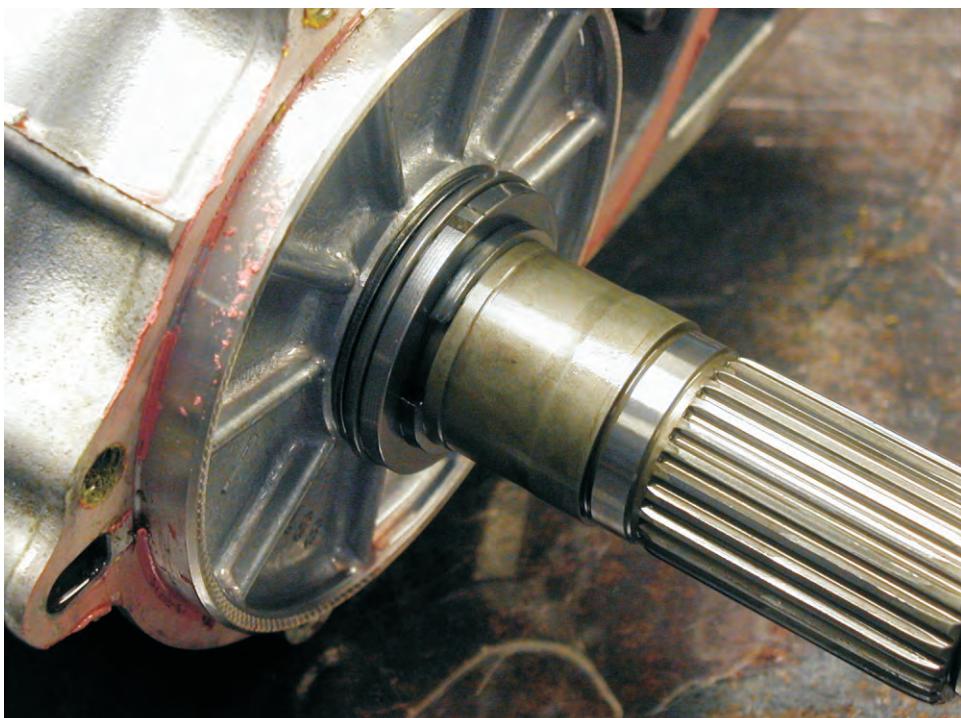
A ball bearing is located in the extension housing, there is a spacer with 2 shims that go in front of the bearing.

Figure 75



The 2 shims are placed in between the spacer and the bearing.

Figure 76

**REAR BEARING ASSEMBLIES...CONTINUED**

With the output shaft installed, a bearing assembly is located against the back of the case and is held in place with a snap ring.

Figure 77



The order of the bearing assembly installation is, the thinner race goes against the case followed by the bearing. Next goes the thick race followed by the snap ring.

Figure 78

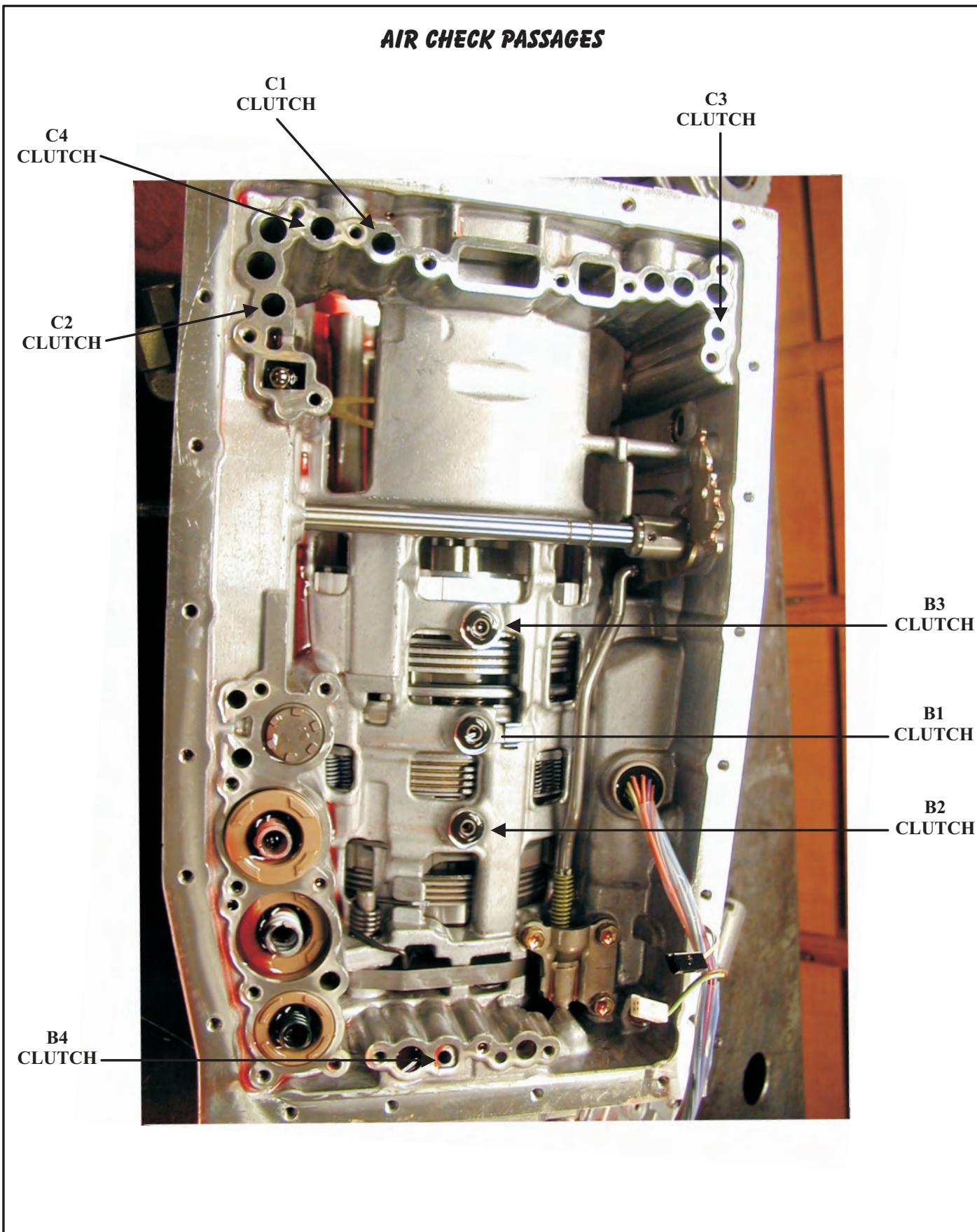
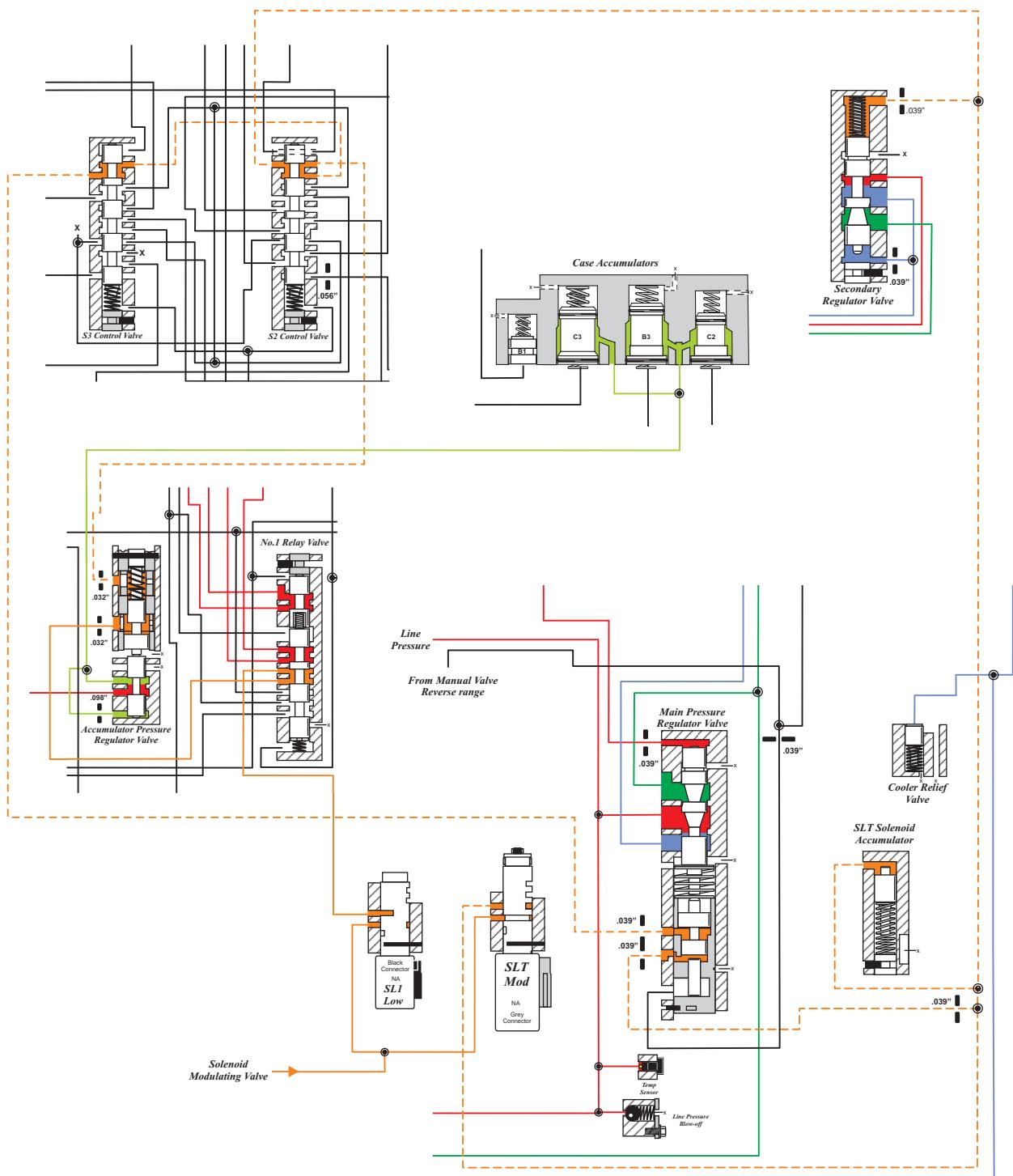


Figure 79  
AUTOMATIC TRANSMISSION SERVICE GROUP

**TORQUE SPECIFICATIONS**

|  |                           |
|--|---------------------------|
| <i>Prop Shaft Nut.....</i>                             | <i>126 Nm (92 Ft Lbs)</i> |
| <i>Transmission Revolution Sensor (NT) Bolt.....</i>   | <i>5.4 Nm (48 In Lbs)</i> |
| <i>Transmission Revolution Sensor (SP2) Bolt.....</i>  | <i>5.4 Nm (48 In Lbs)</i> |
| <i>Park/Neutral Switch Bolts.....</i>                  | <i>13 Nm (10 Ft Lbs)</i>  |
| <i>Transmission Control Shaft Lever Nut.....</i>       | <i>16 Nm (12 Ft Lbs)</i>  |
| <i>ATF Fill Plug.....</i>                              | <i>39 Nm (29 Ft Lbs)</i>  |
| <i>ATF Drain Plug.....</i>                             | <i>20 Nm (15 Ft Lbs)</i>  |
| <i>ATF Check Plug.....</i>                             | <i>20 Nm (15 Ft Lbs)</i>  |
| <i>Internal Wire Harness Bolts.....</i>                | <i>6.4 Nm (57 In Lbs)</i> |
| <i>Oil Filter Bolts.....</i>                           | <i>10 Nm (7 Ft Lbs)</i>   |
| <i>Transmission Oil Pan Bolts.....</i>                 | <i>4.4 Nm (39 In Lbs)</i> |
| <i>Torque Converter Housing To Case Bolts.....</i>     | <i>34 Nm (42 Ft Lbs)</i>  |
| <i>Transmission Case Side Cover Bolts.....</i>         | <i>5.4 Nm (48 In Lbs)</i> |
| <i>ATF Temperature Sensor Clamp Bolt.....</i>          | <i>10 Nm (7 Ft Lbs)</i>   |
| <i>Converter Housing To Case Bolts.....</i>            | <i>34 Nm (42 Ft Lbs)</i>  |
| <i>Transmission Breather Tube Bolt.....</i>            | <i>5.4 Nm (8 In Lbs)</i>  |
| <i>Park Pawl Bracket Bolts.....</i>                    | <i>7.4 Nm (65 In Lbs)</i> |
| <i>Front Pump To Case Bolts.....</i>                   | <i>21 Nm (15 Ft Lbs)</i>  |
| <i>Front Pump Cover To Pump Body Bolts.....</i>        | <i>12 Nm (9 Ft Lbs)</i>   |
| <i>Valve Body To Case Bolts.....</i>                   | <i>11 Nm (8 Ft Lbs)</i>   |
| <i>Upper Valve Body To Lower Valve Body Bolts.....</i> | <i>6.4 Nm (57 In Lbs)</i> |
| <i>SLT, SLU, SL1, SL2, Solenoid Bolts.....</i>         | <i>6.4 Nm (57 In Lbs)</i> |
| <i>SR, S4, S1, S2, S3 Solenoid Bolts.....</i>          | <i>10 Nm (7 Ft Lbs)</i>   |

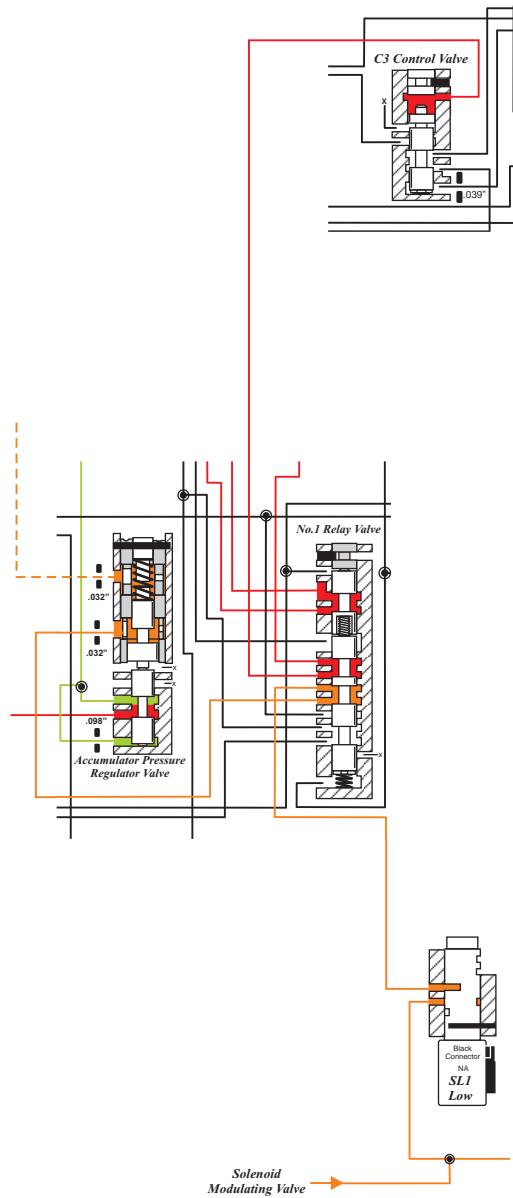
**SLT LINE PRESSURE SOLENOID THEORY OF OPERATION**


The SLT Solenoid is a Normally Applied solenoid. This solenoid controls the Main Pressure Regulator, the Secondary Regulator, and the Accumulator Pressure Regulator Valve. SLT pressure is routed to the S2 Control Valve which, when not stroked, provides a feed to the S3 Control Valve and the Accumulator Pressure Regulator boost valve. SLT pressure is also routed thru the S3 Control valve via the S2 Control Valve, which provides an additional feed to the boost valve of the Main Pressure Regulator Valve for quick pressure rise. This additional feed is provided in Park, Reverse, 1st and 2nd gear both in the Drive and Manual 1 and Manual 2 ranges. When the Solenoid is at low Duty cycle SLT pressure is High. When the Duty cycle is High the SLT pressure is Low. SLT pressure has an accumulator which helps prevent pressure spikes.

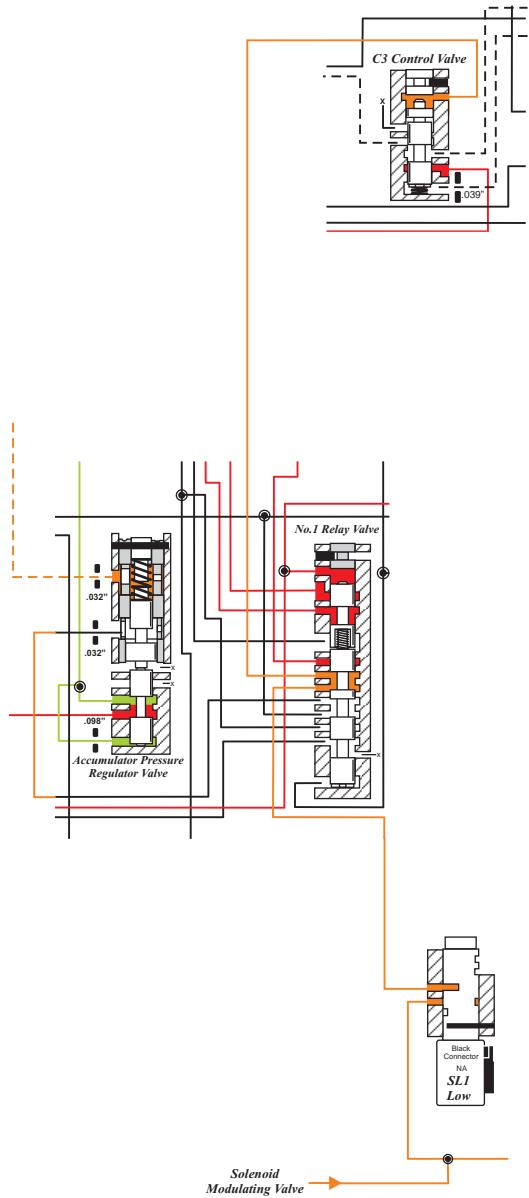
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## SL1 SOLENOID THEORY OF OPERATION

**FUNCTION 1**  
DRIVE 1ST GEAR SHOWN



**FUNCTION 2**  
MANUAL 2 SHOWN

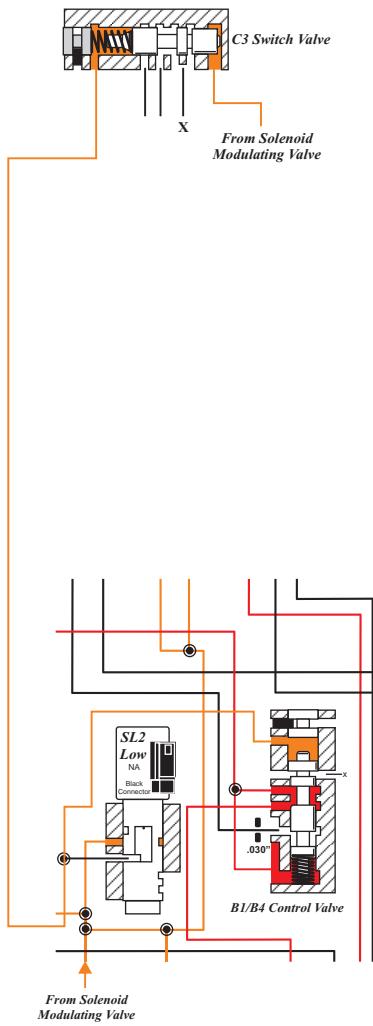


The SL1 Solenoid is a Normally Applied solenoid. When the SL1 Duty Cycle is Low, SL1 pressure is fed thru the No.1 Relay Valve which connects it to the Accumulator Pressure Regulator Boost Valve, which in turn causes low Accumulator Pressure, as shown in the partial schematic above. When the SL1 Duty Cycle is High SL1 pressure is Low to the Accumulator Pressure Regulator Valve, which in turn causes low Accumulator Pressure.

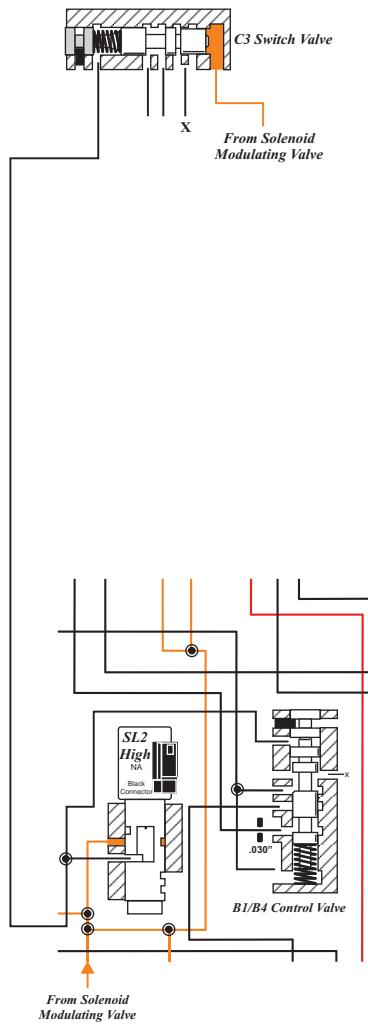
The SL1 Solenoid is a Normally Applied solenoid. When the SL1 Duty Cycle is Low, SL1 pressure is fed thru the No.1 Relay Valve, which is stroked in the schematic shown above, which connects it to the C3 Control Valve. When the SL1 Duty cycle is High SL1 pressure is Low to the C3 Control Valve.

## SL2 SOLENOID THEORY OF OPERATION

Duty Cycle Low



Duty Cycle High

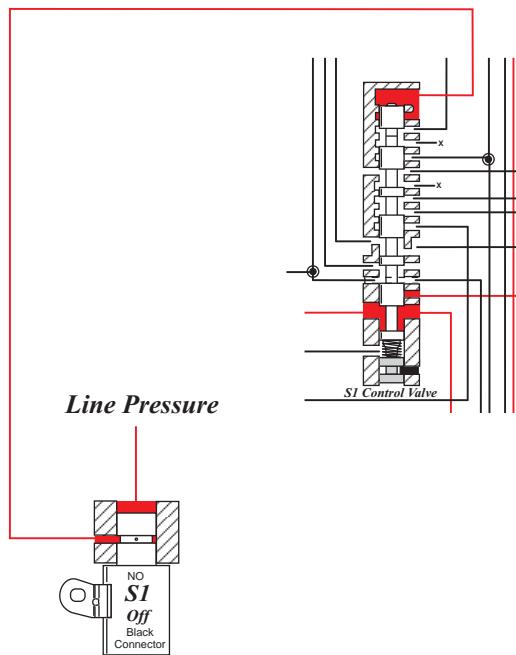


The SL2 Solenoid is a Normally Applied solenoid. When SL2 Duty Cycle is Low the B1/B4 Control valve is stroked which connects line pressure to B1, B4 and B2 Circuit depending on Manual Position and Computer Strategy.

SL2 Pressure also is fed to the spring side of the C3 Switch Valve connecting it to an exhaust.

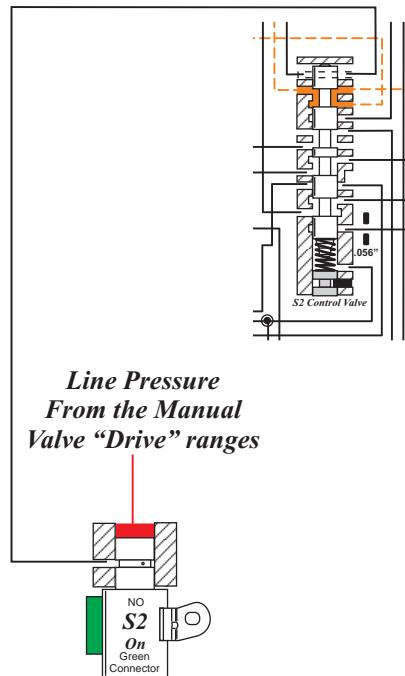
When the SL2 Duty Cycle is High SL2 Pressure is blocked.

## S1 SOLENOID THEORY OF OPERATION



The S1 solenoid is a Normally Open Solenoid, when the solenoid is OFF line pressure is connected thru the solenoid to the S1 Control valve. When the Solenoid is ON pressure is blocked to the S1 Control Valve.

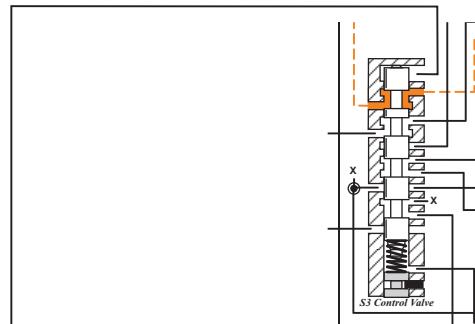
## S2 SOLENOID THEORY OF OPERATION



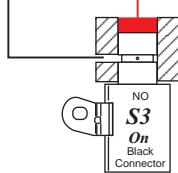
The S2 solenoid is a Normally Open Solenoid, when the solenoid is OFF line pressure from the Manual valve "Drive" ranges, is connected thru the solenoid to the S2 Control valve. When the Solenoid is ON pressure is blocked to the S2 Control Valve.

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### S3 SOLENOID THEORY OF OPERATION

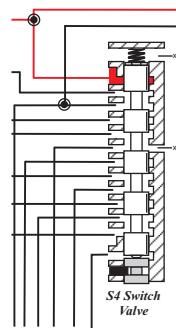


*Line Pressure  
From the Manual  
Valve "Drive" ranges*

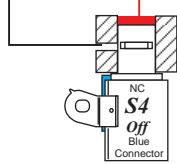


The S3 solenoid is a Normally Open Solenoid, when the solenoid is OFF line pressure from the Manual valve "Drive" ranges, is connected thru the solenoid to the S3 Control valve. When the Solenoid is ON pressure is blocked to the S3 Control Valve.

### S4 SOLENOID THEORY OF OPERATION



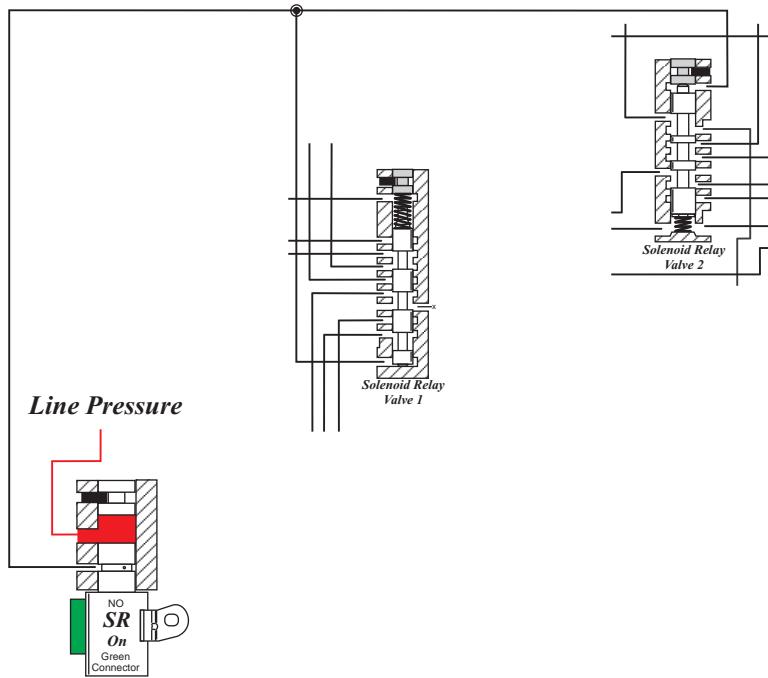
*Line Pressure*



The S4 solenoid is a Normally Closed Solenoid, when the solenoid is OFF line pressure is blocked to the S4 Control Valve. When the Solenoid is ON line pressure is connected to the S4 Control Valve.

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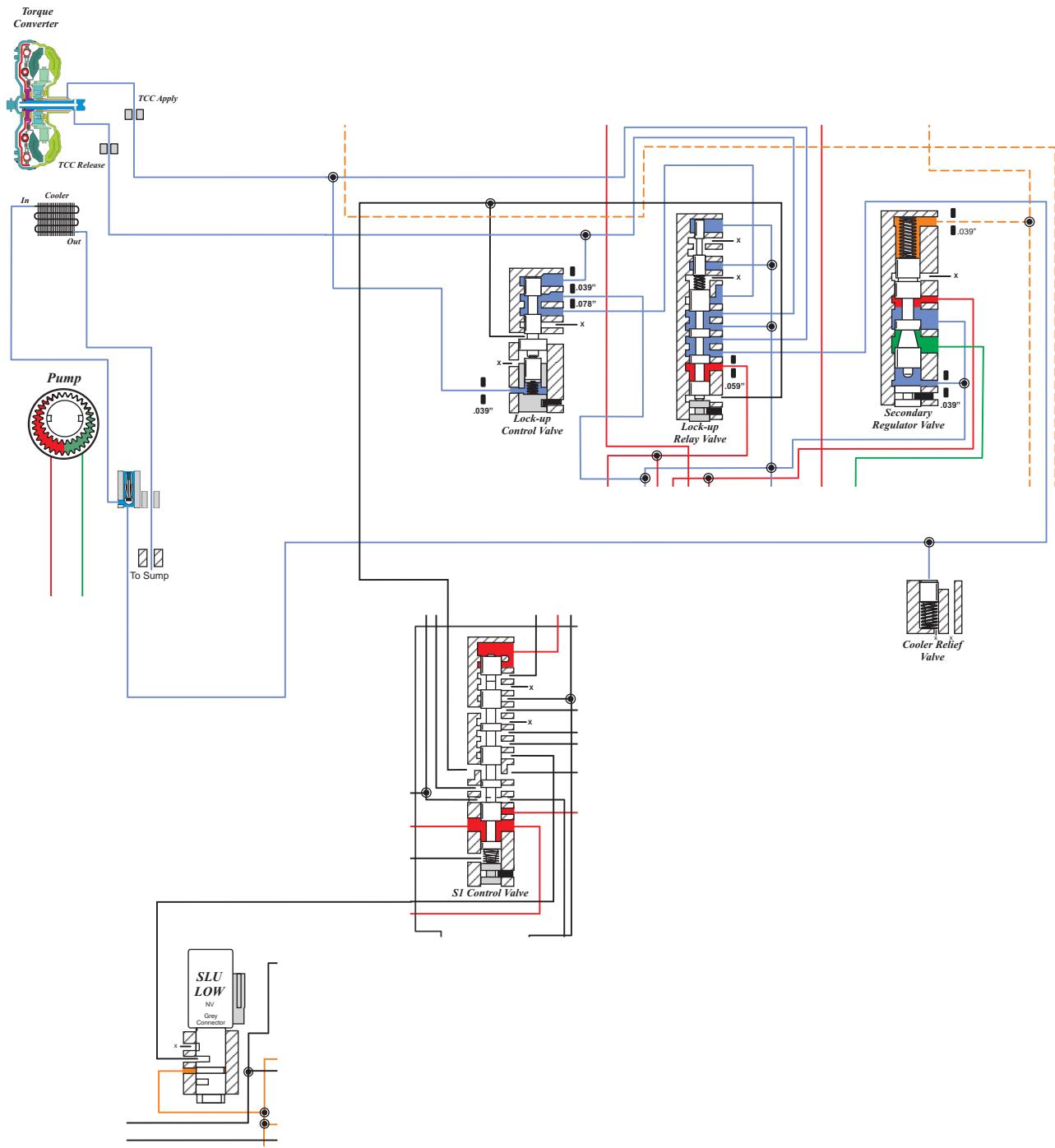
### S3 SOLENOID THEORY OF OPERATION



*The S3 solenoid is a Normally Open Solenoid, when the solenoid is OFF line pressure is connected to Solenoid Relay Valve 1 and 2. When the Solenoid is ON pressure is blocked to the Solenoid Relay Valve 1 and 2.*

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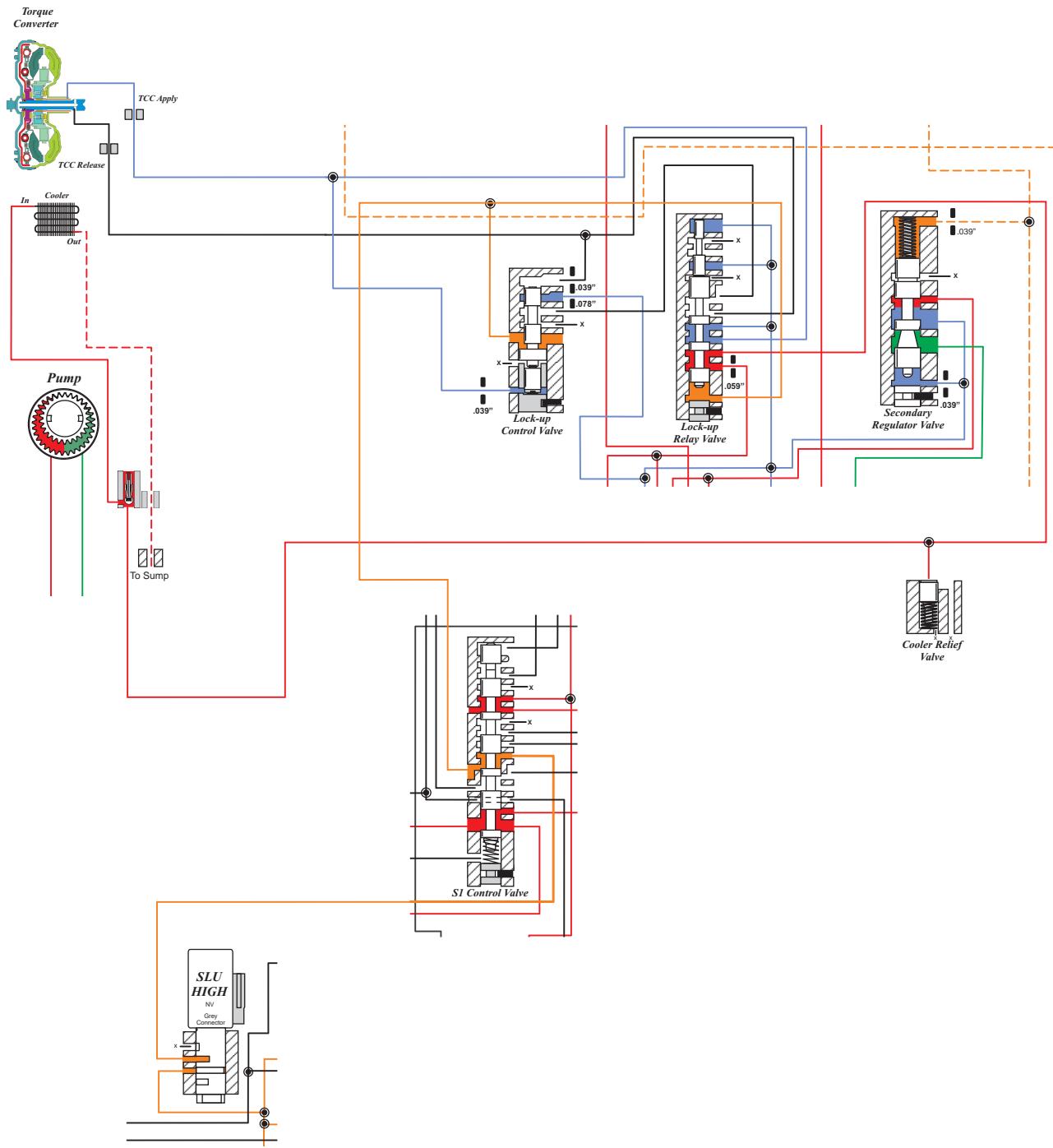
## SLU SOLENOID THEORY OF OPERATION TCC OFF



**The SLU solenoid is a Normally Vented Solenoid, when the solenoid is at Low duty cycle the Torque Converter Clutch is not applied. The SLU circuit is connected to the S1 Control valve which prevents TCC application in Reverse or 1st gear.**

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## SLU SOLENOID THEORY OF OPERATION TCC ON



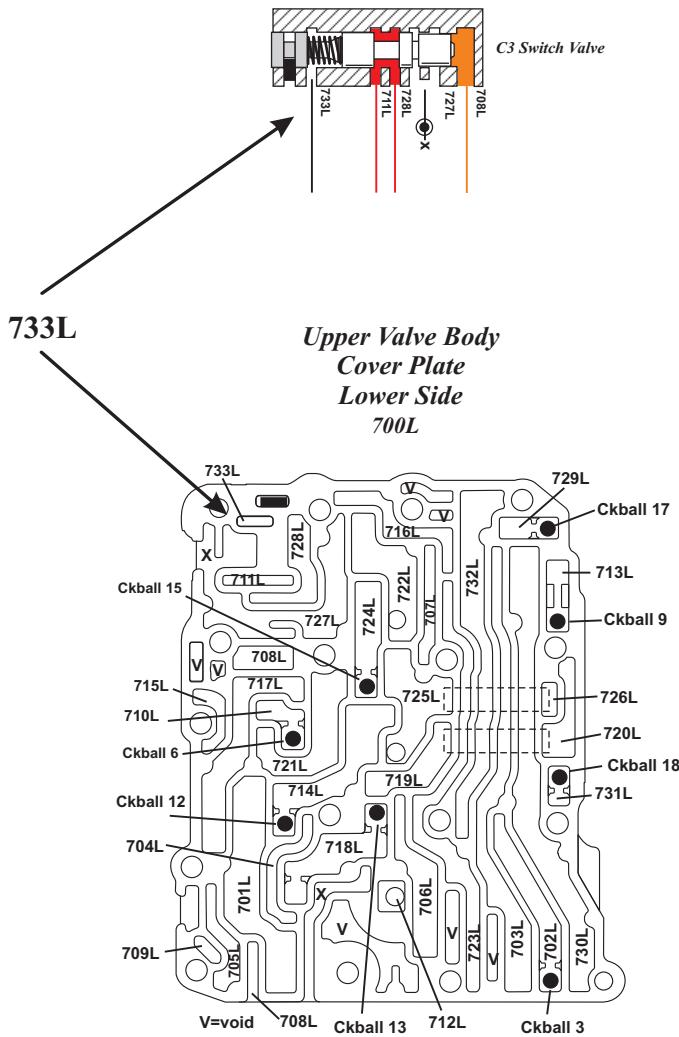
*The SLU solenoid is a Normally Vented Solenoid, when the solenoid is at High duty cycle and the SI Control valve is not stroked, in 2nd thru 6th gear, the Torque Converter Clutch is Applied, thru the Lock-up relay and Lock-up Control Valve. The cooler is also fed orificed line pressure when these valves switch.*

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## VALVE BODY MAPPING A761

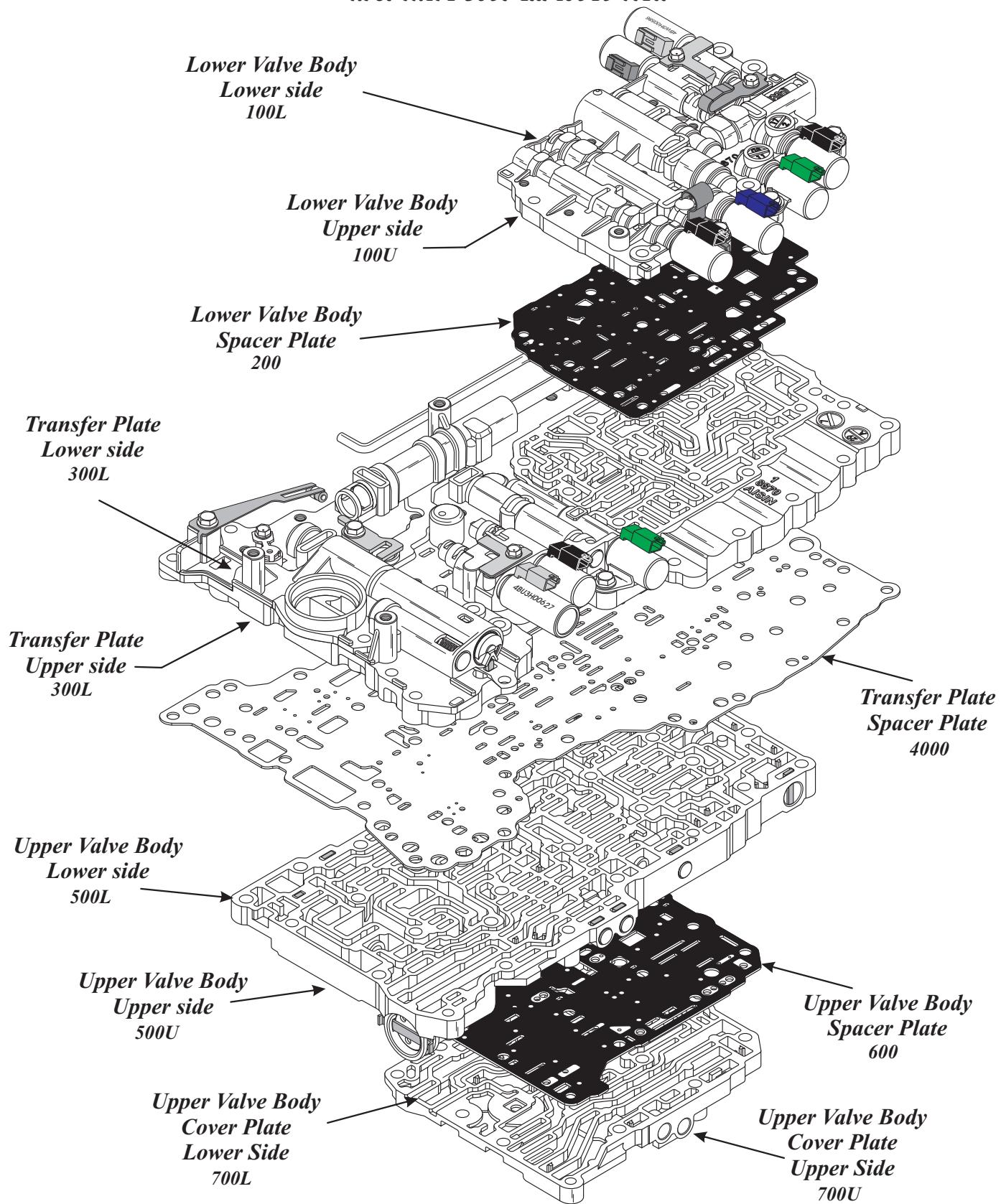
PARTIAL HYDRAULIC  
SCHEMATIC FOR  
C3 SWITCH VALVE



### HOW TO USE THIS MANUAL:

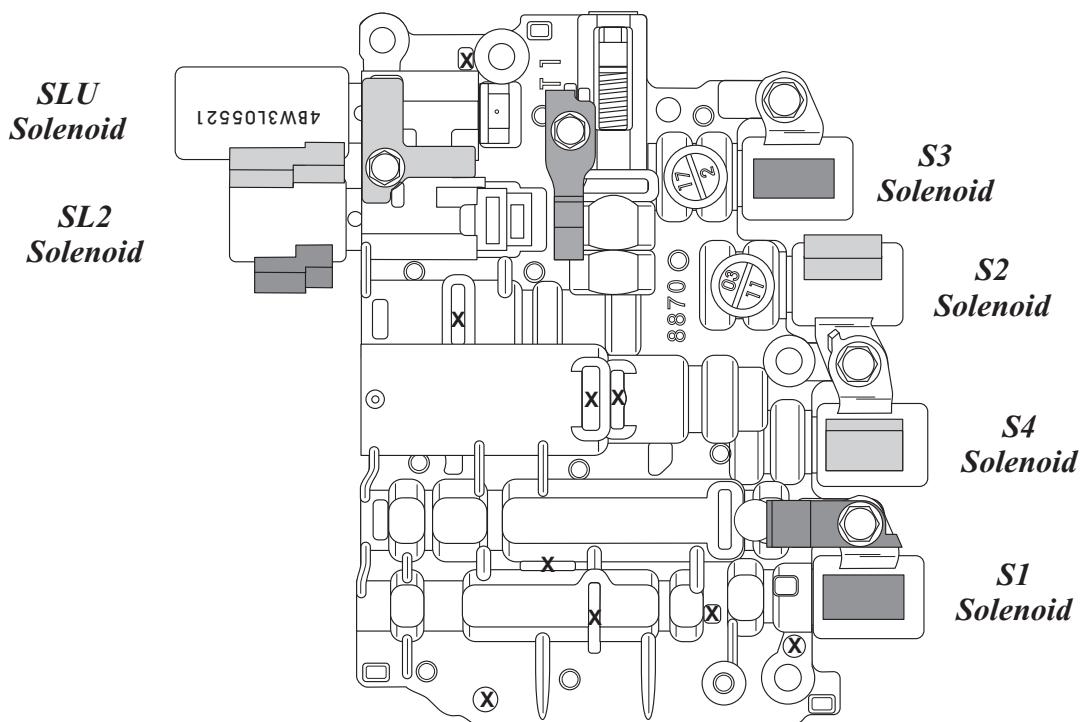
All castings and spacer plates have been numbered so they can be identified in an oil circuit diagram. **Example:** 733L passage is located in the Upper valve body cover plate lower side (700L series). This passage can now be located in the partial oil circuit diagram shown above. Spacer plate orifice sizes and locations are also identified in the oil circuit diagram labeled Valve body Mapping.

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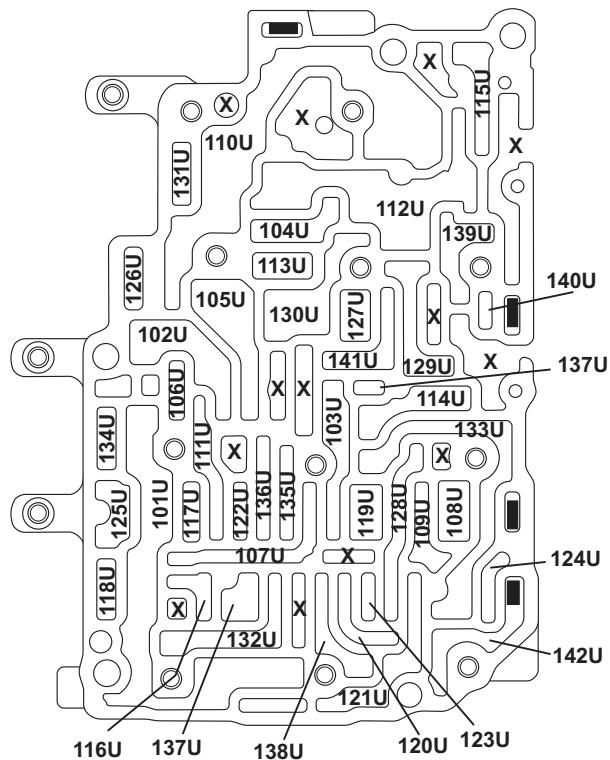
**A761 VALVE BODY EXPLODED VIEW**

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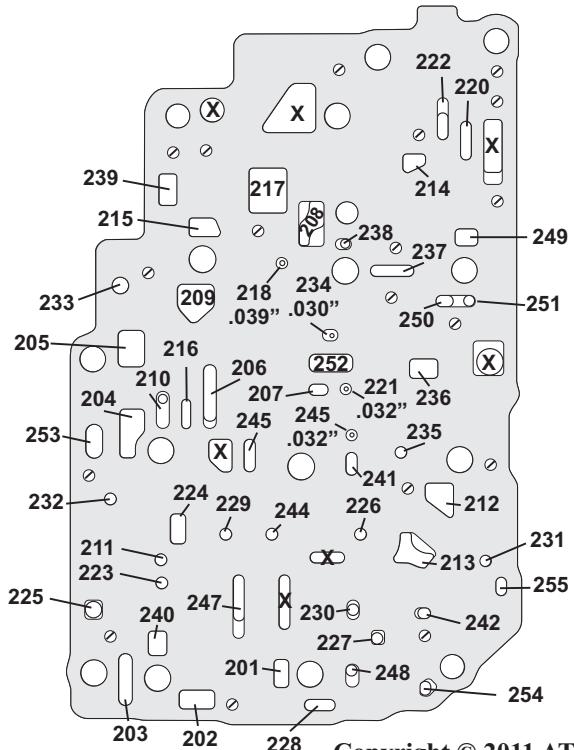
***Lower Valve Body  
Lower Side  
100L Series***



***Lower Valve Body  
Upper Side  
100U Series***

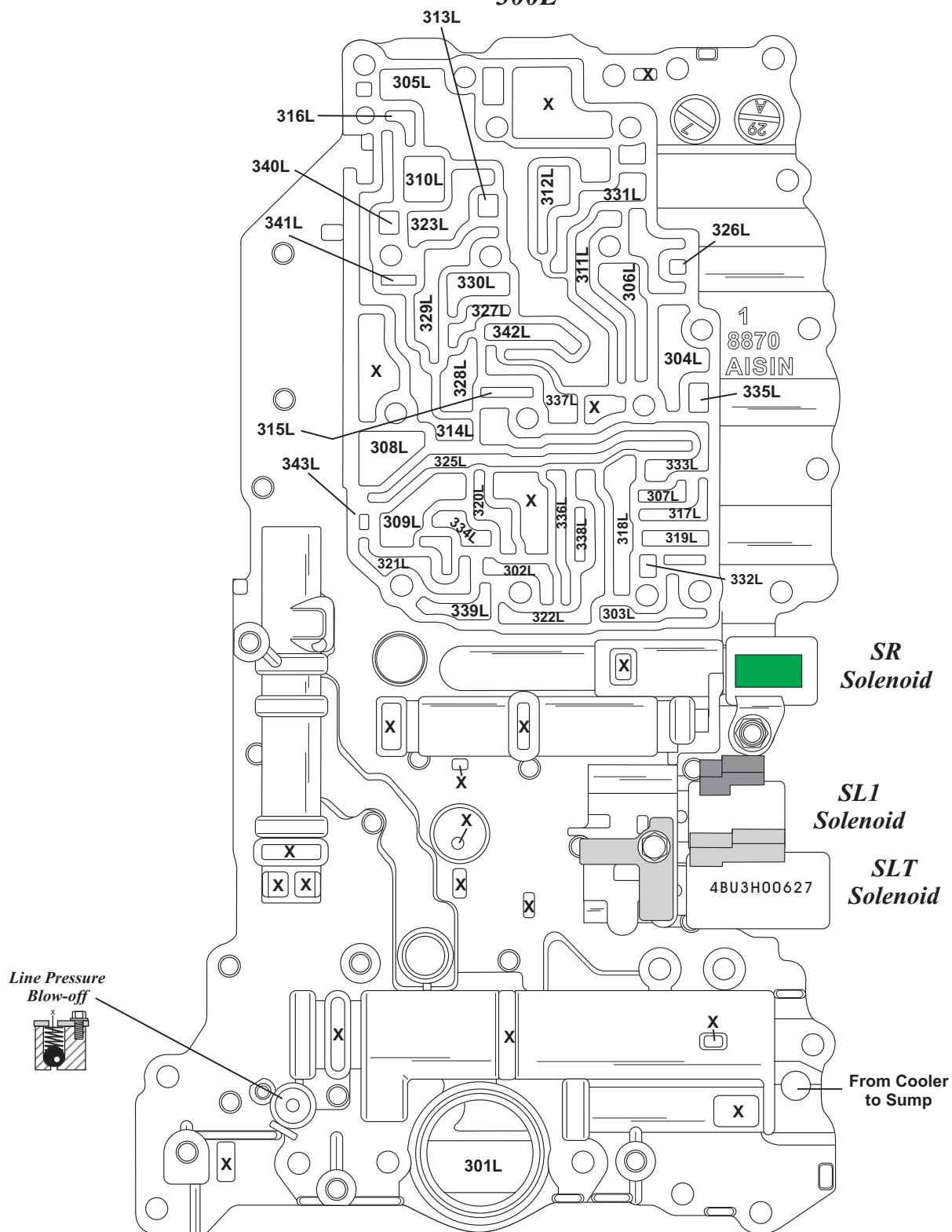


***Lower Valve Body  
Spacer Plate  
200 Series***



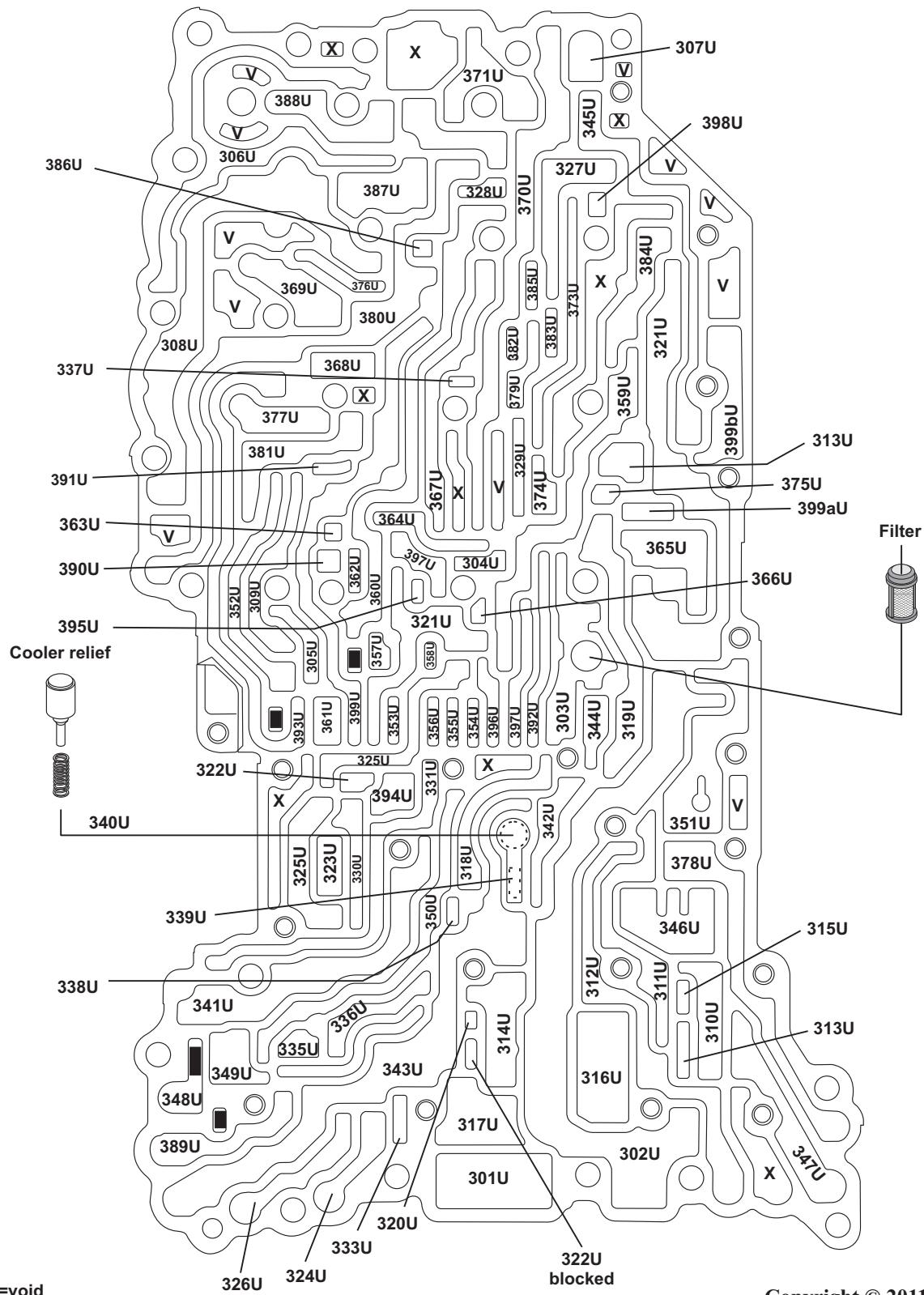
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*Transfer Plate  
Lower side  
300L*



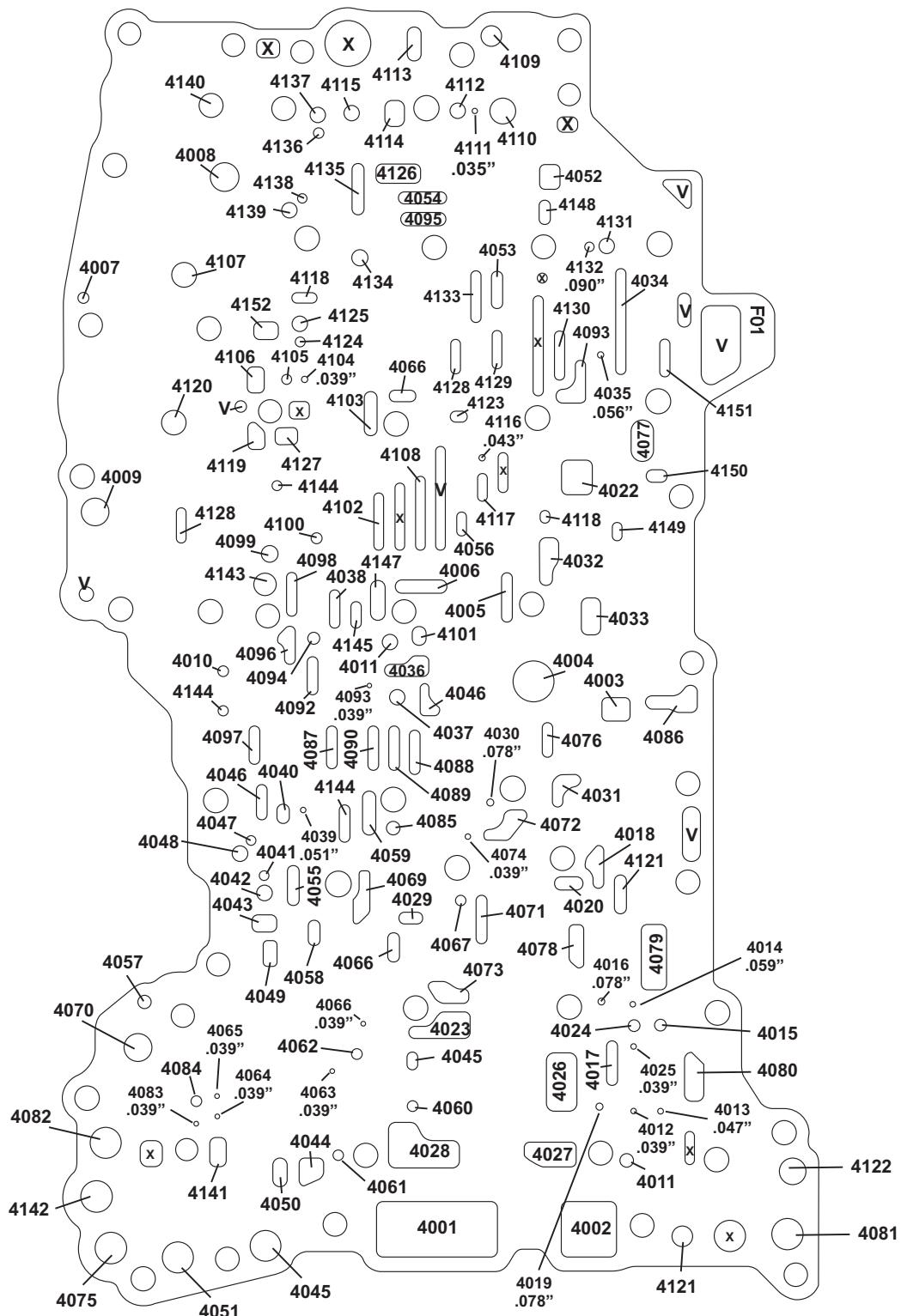
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*Transfer Plate  
Upper side  
300U*



**V=void**

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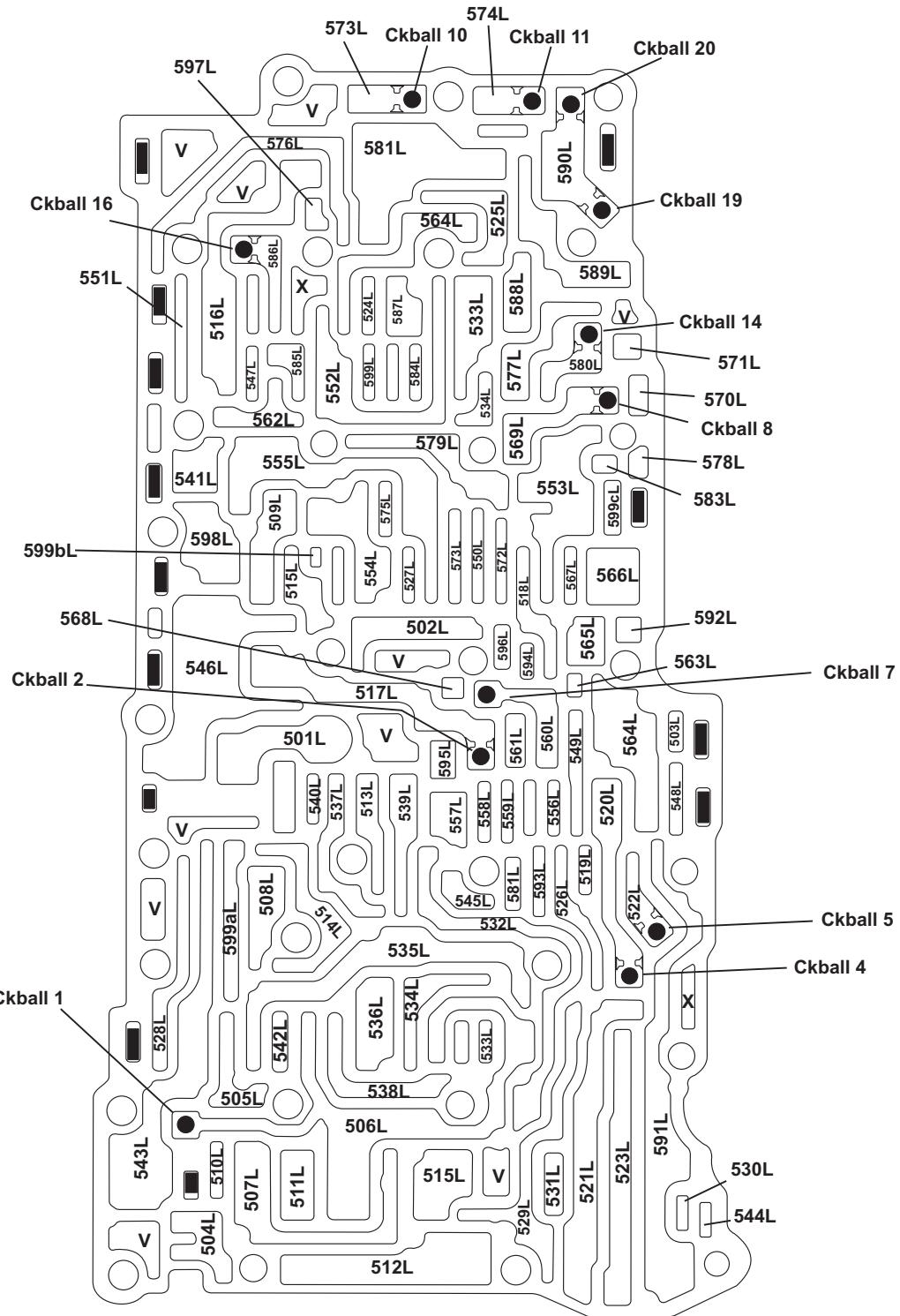
*Transfer Plate  
Spacer Plate***4000**

V=void

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## *Upper Valve Body Lower Side*

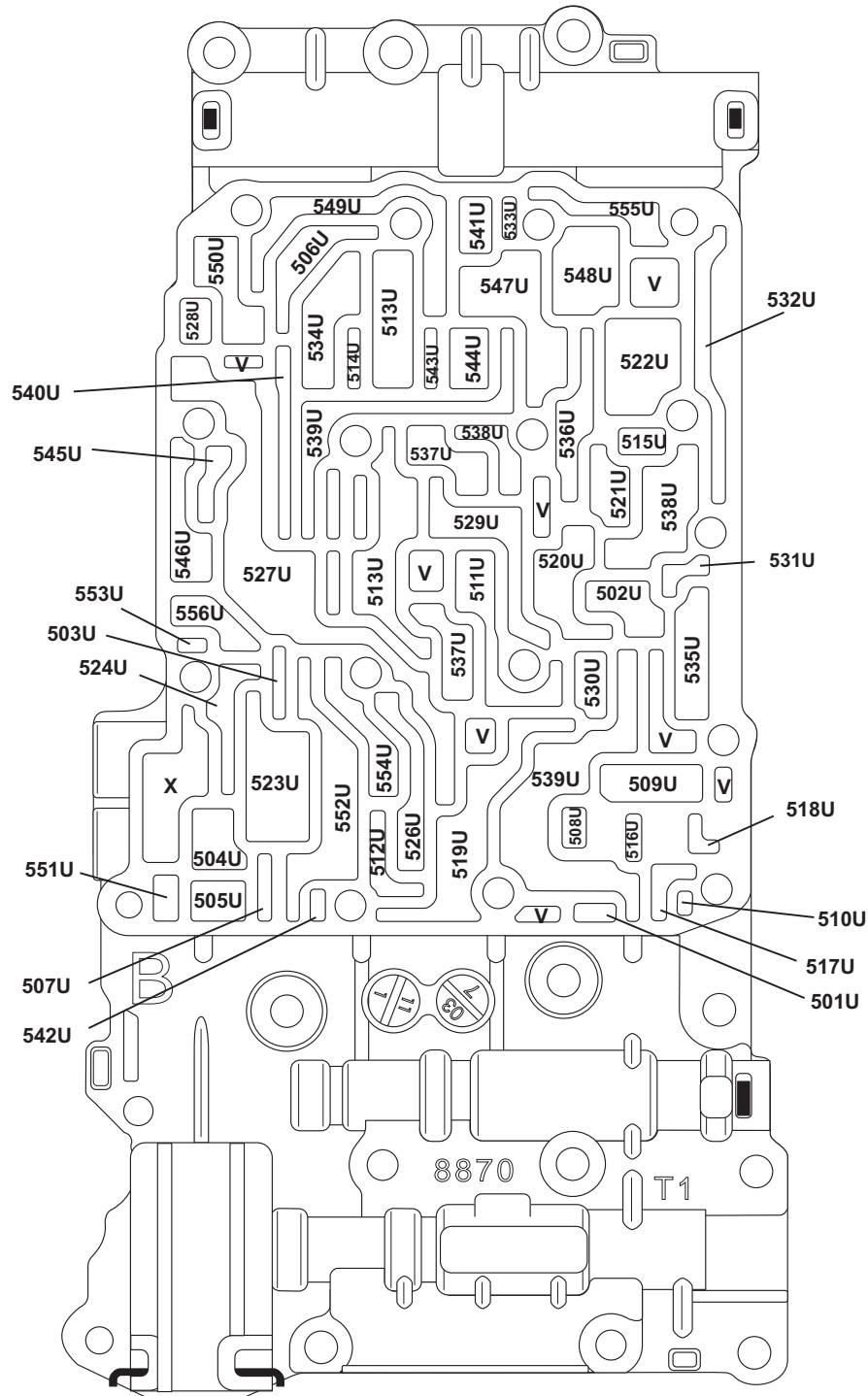
500L



**V=void**

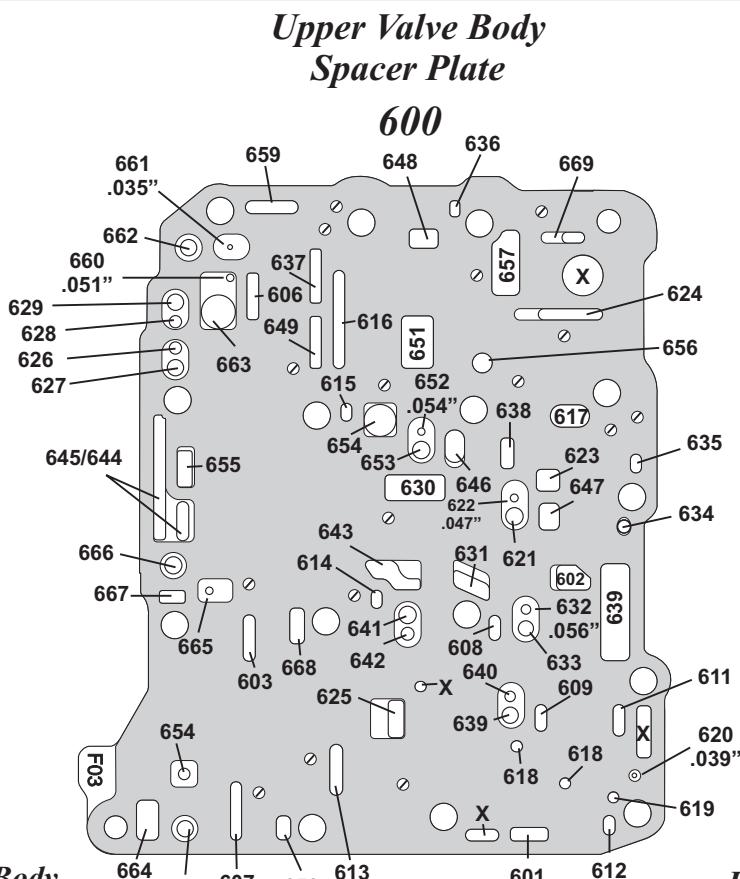
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*Upper Valve Body  
Upper Side  
500U*



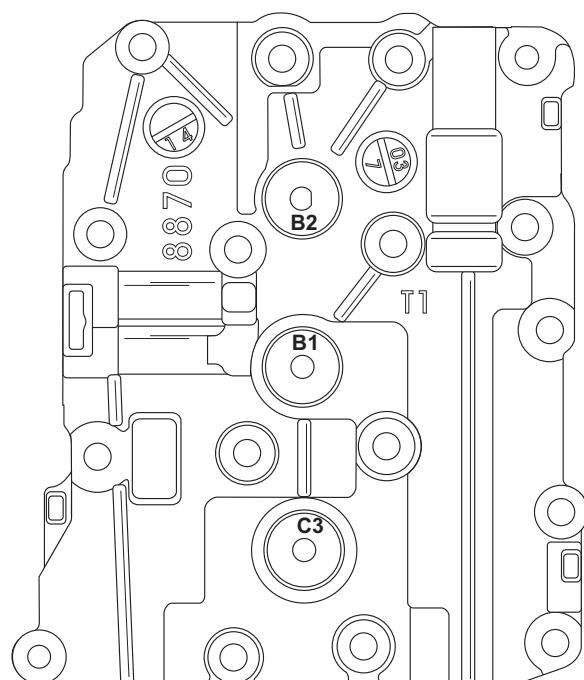
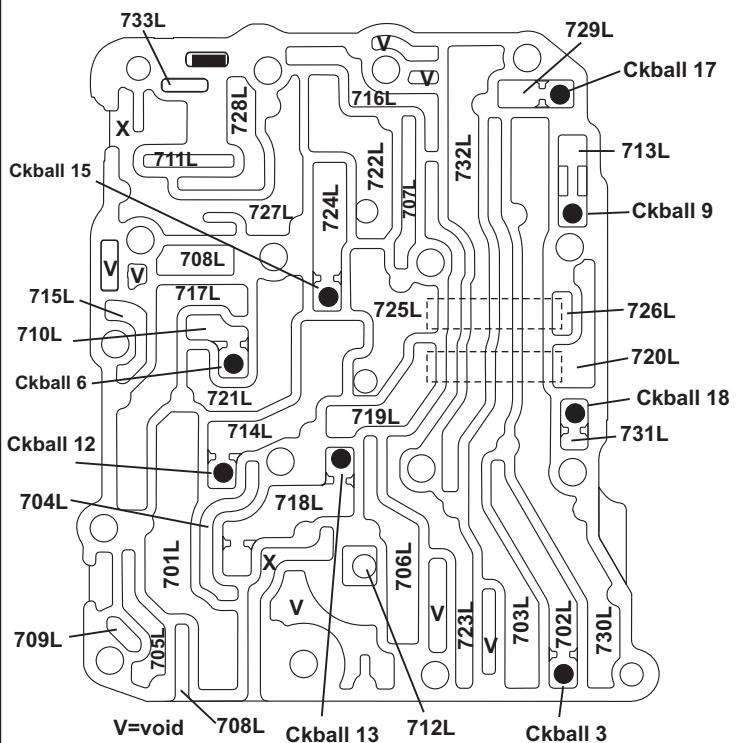
V=void

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**Upper Valve Body  
Cover Plate  
Lower Side  
700L**

**Upper Valve Body  
Cover Plate  
Upper Side  
700U**



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*Case Passages**C100*