

# AUTOMATIC TRANSAXLE <2.0L ENGINE (NON-TURBO)>

22110010012

## GENERAL INFORMATION

The automatic transaxle comes in one model, namely, **F4AC1**.

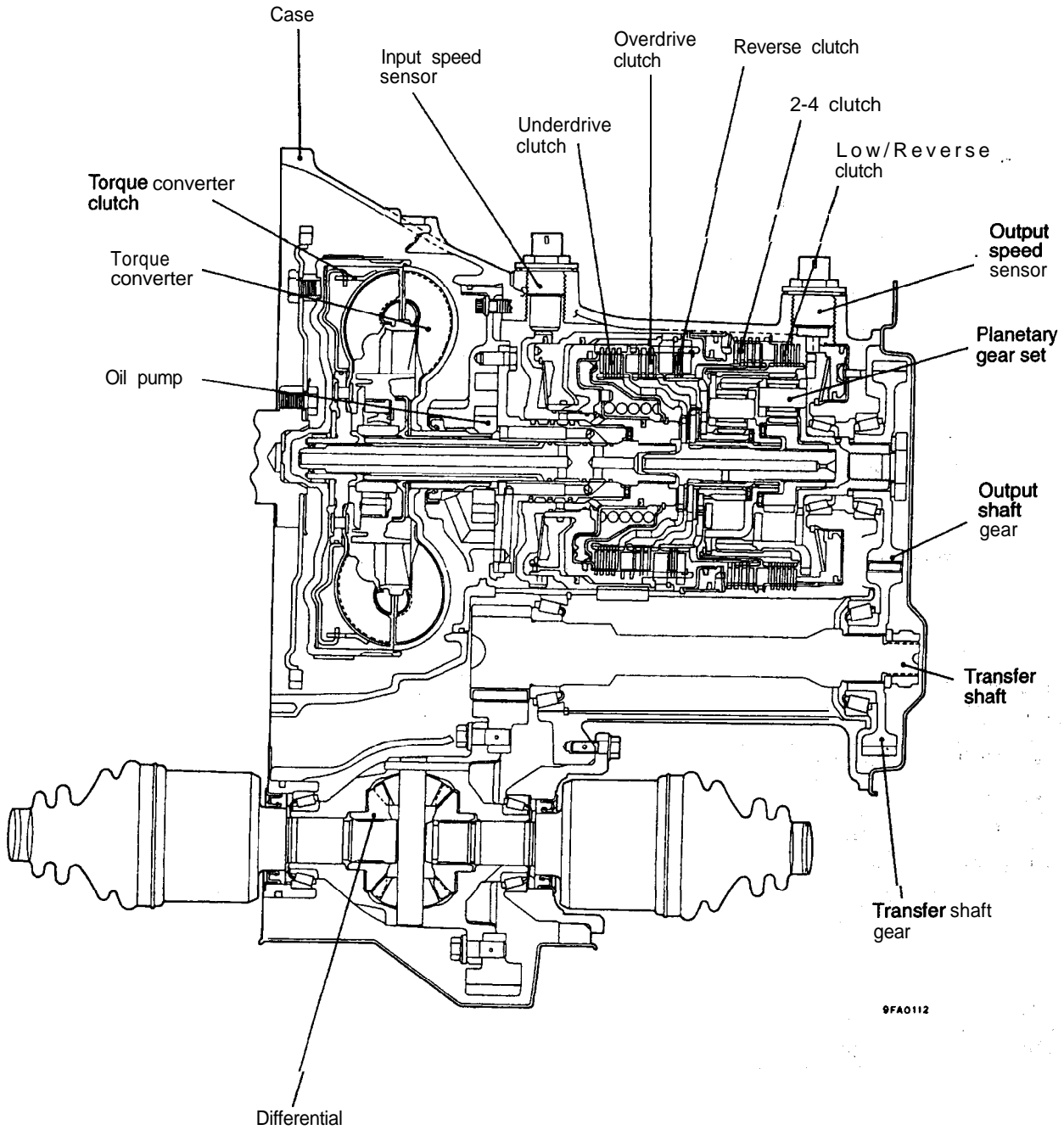
|                   |                          |  |
|-------------------|--------------------------|--|
| Items             |                          | Specifications   |
| Model             |                          | <b>F4AC1-3-QZAF</b>  |
| Applicable engine |                          | <b>420A</b>  |
| Type              |                          | Fully-adaptive, electronically controlled<br><b>4-speed</b> full-automatic |
| Torque converter  | Type                     | <b>3-element</b> with torque converter clutch                              |
|                   | Engine stall speed r/min | <b>2,240–2,440</b>   |
| Gear ratio        | 1st                      | 2.842  |
|                   | 2nd                      | 1.573  |
|                   | 3rd                      | 1.000  |
|                   | 4th                      | 0.689  |
|                   | Reverse                  | 2.214  |
| Final gear ratio  |                          | 3.909  |

## FUNCTION ELEMENT TABLE

| Shift Lever Position |           | Start Safety | Park Sprag | Under-drive clutch | Over-drive clutch | Reverse clutch | 2/4 clutch | Low/Reverse clutch |
|----------------------|-----------|--------------|------------|--------------------|-------------------|----------------|------------|--------------------|
| P - PARK             |           | X            | X          |                    |                   |                |            | X                  |
| R - REVERSE          |           |              |            |                    |                   | X              |            | X                  |
| N - NEUTRAL          |           | X            |            |                    |                   |                |            | X                  |
| D - OVERDRIVE        | First     |              |            | X                  |                   |                |            | X                  |
| D - OVERDRIVE        | Second    |              |            | X                  |                   |                | X          |                    |
| D - OVERDRIVE        | Direct    |              |            | X                  | X                 |                |            |                    |
| D - OVERDRIVE        | Overdrive |              |            |                    | X                 |                | X          |                    |
| 2 - DRIVE GEAR*      | First     |              |            | X                  |                   |                |            | X                  |
| 2 - DRIVE GEAR*      | Second    |              |            | X                  |                   |                | X          |                    |
| 2 - DRIVE GEAR*      | Direct    |              |            | X                  | X                 |                |            |                    |
| L - LOW*             | First     |              |            | X                  |                   |                |            | X                  |
| L - LOW*             | Second    |              |            | X                  |                   |                | X          |                    |
| L - LOW*             | Direct    |              |            | X                  | X                 |                |            |                    |

\*: Vehicle upshift and downshift speeds are increased when in these selector positions.

SECTIONAL VIEW



9FA0112

## SERVICE SPECIFICATIONS

23110030016

| Item   | Standard value      |
|--|---------------------|
| Resistance of input speed sensor kΩ                                    | 0.3-1.2             |
| Resistance of output speed sensor kΩ                                   | 0.3-1.2             |
| Resistance of LR solenoid coil [at 20°C (68°F)] Ω                      | Approx. 1           |
| Resistance of 2/4 solenoid coil [at 20°C (68°F)] Ω                     | Approx. 1           |
| Resistance of OD solenoid coil [at 20°C (68°F)] Ω                      | Approx. 1           |
| Resistance of UD solenoid coil [at 20°C (68°F)] Ω                      | Approx. 1           |
| Distance between detent pin and detent plate mm (in.)                  | 1.7-2.4 (.067-.094) |
| Installation dimension of front roll stopper bracket assembly mm (in.) | 43±3 (1.69±.12)     |



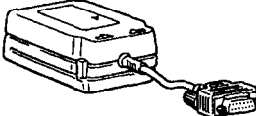


## LUBRICANTS

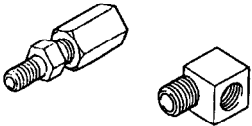
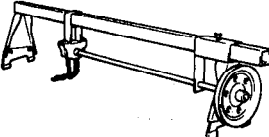
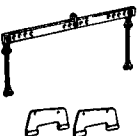

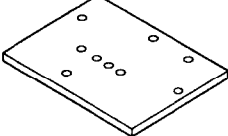
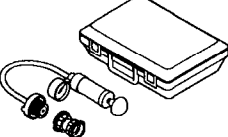
23110040035

| Item            | Specified lubricant             | Quantity dm <sup>3</sup> (qts.) |
|-----------------|---------------------------------|---------------------------------|
| Transaxle fluid | DIAMOND ATF SP II or equivalent | 8.6 (9.1)                       |

## SPECIAL TOOLS

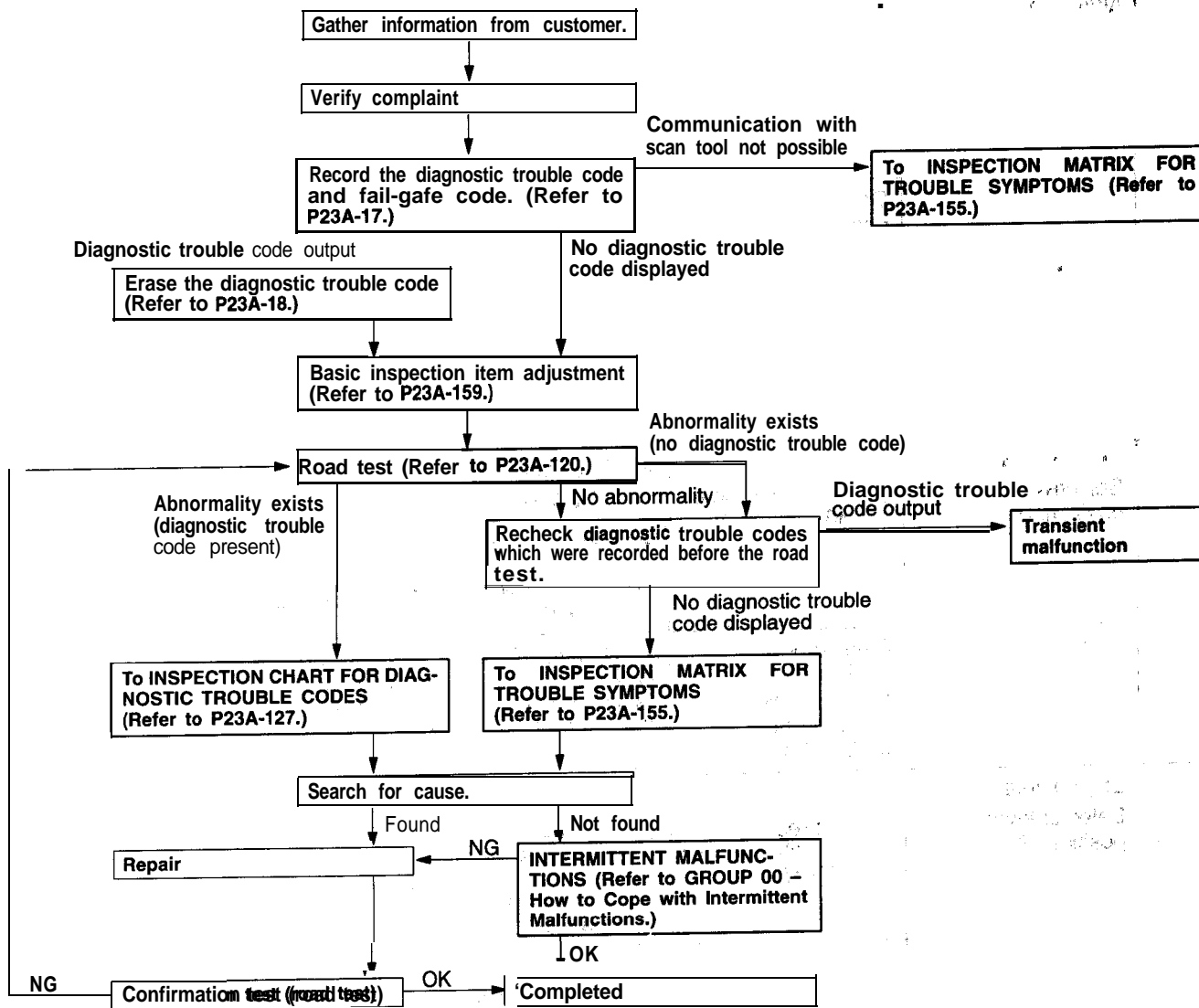
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| Tool  | Tool number and name   | Supersession | Application  |
|---|--|--------------|--|
|   | MB991502<br>Scan tool (MUT-II)   | MB991502     | Diagnostic trouble code check  |
|  | ROM pack<br>(for scan tool)  | -            | Diagnostic trouble code check  |
|  | MB991544<br>MUT-II<br>Interface cartridge  | MB991544     |  |
|  | MD998330<br>Oil pressure gauge<br>3,000 kPa (400 psi)<br>MD999563<br>Oil pressure gauge<br>1,000 kPa (140 psi) | MD998330-01  | To measure oil pressure  |
|  | MB991113<br>Steering linkage puller  | MB991113-01  | <ul style="list-style-type: none"> <li>● Tie rod end ball joint and knuckle removal</li> <li>● Lateral lower arm ball joint and knuckle removal</li> <li>● Compression lower arm ball joint and knuckle removal</li> </ul> |

| Tool  | Tool number and name                                 | Supersession          | Application   |
|---|--|-----------------------|---|
|    | MB991605<br>Oil pressure gauge<br>adapter set        | -                     | Connection of oil pressure<br>gauge   |
|    | GENERAL SERVICE<br>TOOL<br>MZ203827<br>Engine lifter | MZ203827-01           | To support the engine<br>assembly during removal and<br>installation of the transaxle |
|    | MB991453<br>Engine<br>hanger<br>assembly             | MZ203827-01           | To support the engine<br>assembly during removal and<br>installation of the transaxle |
|    | MB991461<br>Plug                                     | General service tool* | To prevent foreign substances<br>from entering transaxle case<br>*: Use shop towel    |
|   | MB995053<br>Air pressure checking<br>plate           | MB995053-01           | To check air pressure of valve<br>operation in the transaxle valve<br>body.           |
|  | MB995054<br>Air pressure checking<br>tool            | General service tool  | Air pressure test of transaxle  |

# TROUBLESHOOTING

## DIAGNOSTIC TROUBLESHOOTING FLOW



**ROAD TEST**

**2311008013**

**\*: Use scan tool**

| Procedure | Conditions   | Operation  | Judgment value  | Inspection item                               | Diagnostic trouble code |
|-----------|--|--|---|---|-------------------------|
| 1         | Ignition switch: ON<br>Engine: Stopped                   | Check the limp-in mode   | ★ Data list <b>No.46</b><br>• No limp-in mode   | Transaxle control module                      | <b>11,13,16,17</b>      |
|           |  |  |   | Transaxle control relay                       | 14<br>15<br>20          |
|           |  | Check the battery positive voltage   | ★ Data list <b>No.04</b><br>• <b>12V</b>  | Battery                                       | 12                      |
| 2         | Warming up   | Drive for 15 minutes or more so that the automatic transmission fluid temperature becomes <b>70–90°C (158–194°F)</b> | ★ Data list No. 56<br>Gradually rises to <b>158–194°F</b>   | Oil temperature sensor                        | 74                      |
| 3         | Engine: <b>Idle</b><br>Selector lever position: <b>P</b> | Engine<br>(1) <b>Idle</b> (for at least 30 seconds)  | ★ Data list <b>No.63</b><br>(1) <b>2.0 LMFI</b>   | Transaxle control module                      | 45                      |
|           |  |  | ★ Check diagnostic trouble code<br>(1) <b>No diagnostic trouble code</b>  | CCD Bus                                       | 19                      |
|           |  | Selector lever position<br>(1) <b>P</b> (2) <b>R</b><br>(3) <b>N</b> (4) <b>D</b><br>(5) <b>2</b> (6) <b>L</b>       | ★ Data list <b>No.46</b><br>(1) <b>P</b> (2) <b>R</b><br>(3) <b>N</b> (4) <b>D</b><br>(5) <b>2</b> (6) <b>L</b> | Solenoid Circuit                              | <b>41,42,43,44</b>      |
|           |  |  |   | Transaxle range and neutral position switches | 28                      |
| 3         | Engine: <b>Idle</b><br>Selector lever position: <b>P</b> | Accelerator pedal<br>(1) Depressed (for at least 3 seconds)  | ★ Data list <b>No.43</b><br>(1) Engine speeds displayed on the scan tool and tachometer are identical           | Crankshaft position sensor                    | 18                      |
|           |  | Accelerator pedal<br>(1) Fully closed<br>(2) Fully open (for at least 2 seconds)                                     | ★ Data list <b>No.00</b><br>(1) <b>400 mV</b> or more<br>(2) <b>3,800 mV</b> or less                            | Throttle position sensor                      | 29                      |

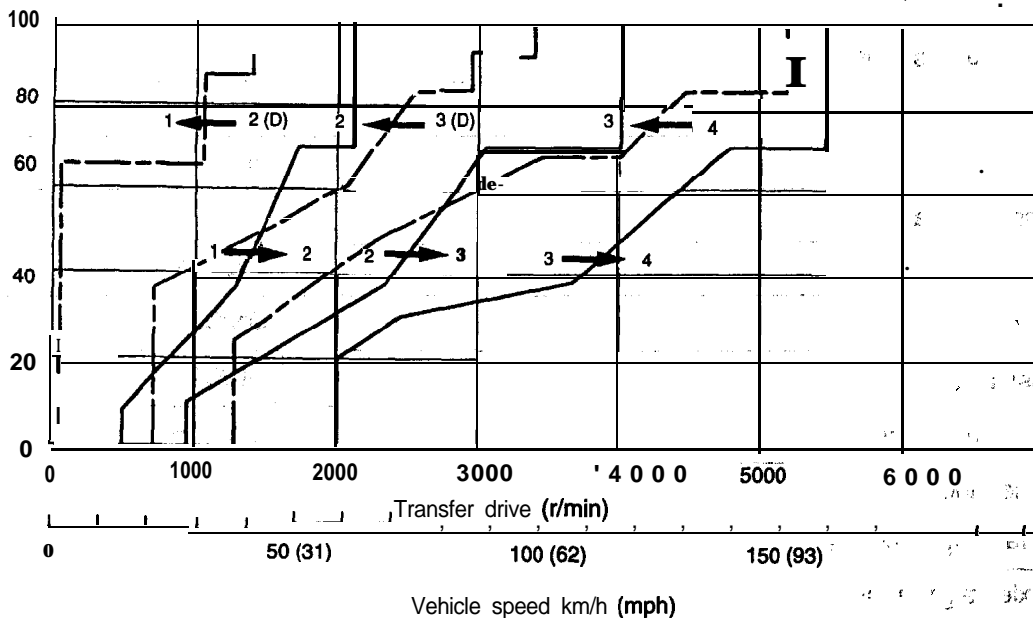
| Procedure | Conditions                        | Operation   | Judgment value                     | Inspection item                   | Diagnostic trouble code       |
|-----------|-----------------------------------|---|------------------------------------|-----------------------------------|-------------------------------|
| 4         | Selector lever position: <b>D</b> | Engine  | ★ Data list<br>Nos.20, 21 and 22   | <b>Pressure switch circuit</b>    | <b>21,22,23, 24,25,26, 27</b> |
|           |                                   | (1) Driving in 1st gear with selector lever in <b>L</b> range   |                                    | (1) LR: ON<br>2-4: OFF<br>OD: OFF |                               |
|           |                                   | (2) Driving in 2nd gear with selector lever in <b>2</b> range   | (2) LR: OFF<br>2-4: ON<br>OD: OFF  |                                   |                               |
|           |                                   | (3) Driving in 3rd gear with selector lever in <b>D</b> range (Overdrive switch OFF)                        | (3) LR: OFF<br>2-4: OFF<br>OD: ON  |                                   |                               |
|           |                                   | (4) Driving in 4th gear with selector lever in <b>D</b> range (Overdrive switch ON) (for at least 1 minute) | (4) LR: OFF<br>2-4: ON<br>OD: ON   | <b>Hydraulic pressure switch</b>  | <b>31,32,33</b>               |
|           |                                   | (5) Driving in Reverse gear with selector lever in <b>R</b> range (for at least 30 seconds)                 | (5) LR: OFF<br>2-4: OFF<br>OD: OFF |                                   |                               |

| Procedure                  | Conditions  | Operation   | Judgment value   | Inspection item                                    | Diagnostic trouble code       |
|----------------------------|---|---|--|--|-------------------------------|
| 4                          | Selector lever position: D  | Engine<br>(1) Driving in 1st gear with selector lever in L range<br>(2) Driving in 2nd gear with selector lever in 2 range<br>(3) Driving in 3rd gear with selector lever in D range (Overdrive switch OFF)<br>(4) Driving in 4th gear with selector lever in D range (Overdrive switch ON) (for at least 1 minute)<br>(5) Driving in Reverse gear with selector lever in R range (for at least 30 seconds) | ★ Data list No.51, No.52, No.53 and No.54<br>(1) Check the UD and LR clutch<br>(2) Check the 2-4 clutch<br>(3) Check the OD clutch<br>LR clutch: 35 to 85<br>2-4 clutch: 20 to 77<br>OD clutch: 75 to 150<br>UD clutch: 24 to 70<br><br>★ Data list No.43, No.44 and No.45<br>(1)(2)(3)(4)(5)<br>Input r/min = Engine r/min<br>Output r/min = Input r/min x gear ratio | ATF level  | 35                            |
|                            |   |   |  | UD hydraulic circuit                               | 46                            |
|                            |   |   |  | LR, 2-4 and OD clutch                              | 60,61,62                      |
|                            |   |   |  | Gear ratio in each gear                            | 36                            |
|                            |   |   |  |  | 50,51                         |
|                            |   |   |  |  | 52,53,54                      |
|                            |   |   |  |  | Input and output speed sensor |
|                            |   |   |  | 56   |                               |
|                            |   |   |  | 57   |                               |
|                            |   |   |  | 58   |                               |
| Selector lever position: D | Engine<br>1) Driving in 2nd gear, then apply the brake until a 2-1 downshift occurs. (Do this at least 3 times) | ★ Data list No.57<br>(1) 2nd → 1st  | Solenoid switch valve (latched in the LU position)   | 37   |                               |
|                            |   |   | Lockup control   | 38   |                               |
|                            |   |   |  | Solenoid switch valve (latched in the -R position) | 47                            |
| Selector lever position: D | Engine<br>1) Driving at constant speed of 80 km/h (50 mph) with selector lever in D range (Overdrive switch ON) | ★ Data list No.49<br>(1) Locked 4th gear  | Solenoid switch valve (latched in the -R position)   | 38   |                               |
|                            |   |   |  | 47   |                               |



**SHIFT PATTERN**

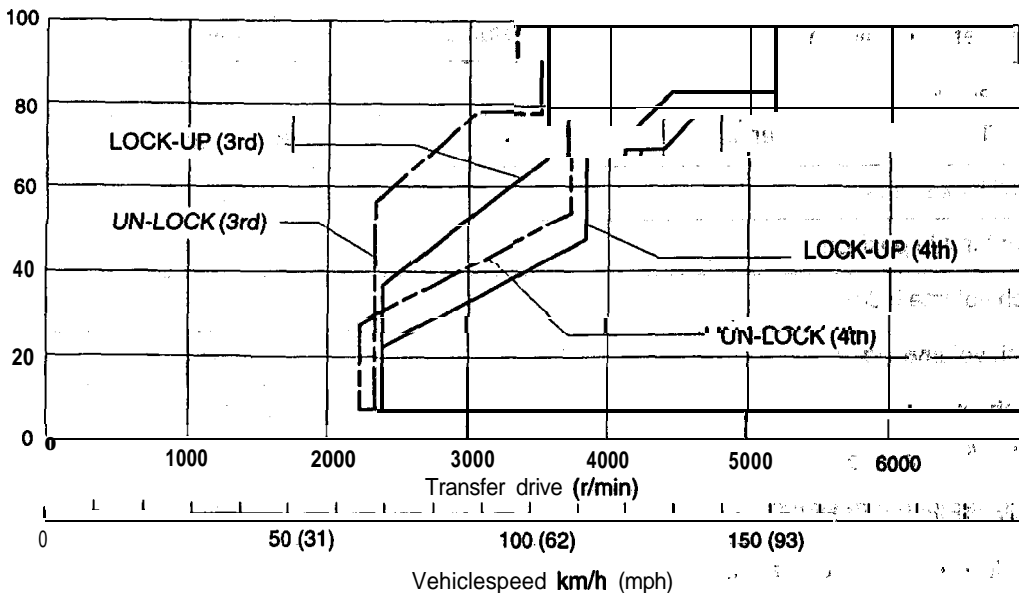
Throttle opening (%)



TFA1823

**LOCK-UP PATTERN**

Throttle opening (%)



TFA1825

## SERVICE DATA REFERENCE TABLE

23110090016

| Data No. | Check item   | Display |
|----------|--|---------|
| 00       | Throttle position sensor                                       | mV      |
| 01       | Transaxle range sensor 41                                      | mV      |
| 02       | Start or run position volt                                     | mV      |
| 03       | Transaxle range sensor 43                                      | mV      |
| 04       | Switched battery volt  | V       |
| 20       | LR pressure switch   | ON/OFF  |
| 21       | 2-4 pressure switch  | ON/OFF  |
| 22       | OD pressure switch   | ON/OFF  |
| 23       | Overdrive lockout switch                                       | ON/OFF  |
| 24       | Transaxle range sensor 1                                       | ON/OFF  |
| 25       | Transaxle range sensor 2                                       | ON/OFF  |
| 26       | Transaxle range sensor 43                                      | ON/OFF  |
| 27       | Transaxle range sensor 41                                      | ON/OFF  |
| 43       | Engine speed   | rpm     |
| 44       | Transaxle input speed  | rpm     |
| 45       | Transaxle output speed   | rpm     |
| 46       | Shift lever position information and controller limp-in status | Status  |
| 47       | Throttle position  | X°      |
| 48       | Transaxle shift schedule                                       | Status  |
| 49       | Partial/full lock status                                       | Status  |
| 50       | Minimum throttle position                                      | X°      |
| 51       | LR clutch volume index   | Index   |
| 52       | 2-4 clutch volume index  | Index   |
| 53       | OD clutch volume index   | Index   |
| 54       | UD clutch volume index   | Index   |
| 55       | Transaxle temperature status                                   | Status  |
| 56       | Transaxle predicted oil temperature                            | °F      |
| 57       | In gear code   | Status  |
| 58       | Shift code   | Status  |
| 59       | Pressure switch error counter                                  | Counts  |
| 60       | Speed/ratio error counter                                      | Counts  |
| 61       | Speed/ratio error 1 second counter                             | Counts  |

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| Data No. | Check item                           | 'Display '   |
|----------|--------------------------------------|--------------|
| 62       | Speed/ratio error 15 second counter  | Counts       |
| 63       | Engine model identification          | Engine Model |
| 64       | General flag                         | Status       |
| 65       | Actuator test status                 | Status       |
| 66       | Element mask register                | Status       |
| 67       | EEPROM flag register                 | Status       |
| 68       | Output teeth count                   | Teeth        |
| 69       | Wheel speed coefficient in EEPROM    | Coefficient  |
| 70       | Current production MY/application MY | Model Year   |

ACTUATOR **TEST** REFERENCE TABLE

23110100016

| Item No. | Check item   | Drive contents   | Check conditions  | Remarks                                  |
|----------|--------------|--|---|--|
| 01       | LR solenoid  | Current flows to the solenoid for 6 seconds at 50% duty. | Engine:<br>Idle (Vehicle stopped)<br>Selector lever position:<br>D range<br>Throttle opening angle:<br>Fully closed | Check the actuator test status (Display) |
| 02       | 2-4 solenoid |  |   |  |
| 03       | UD solenoid  |  |   |  |
| 04       | OD solenoid  |  |   |  |

## FAIL-SAFE FUNCTION

23110110019

If a problem which interferes with the continuous safe operation of the transaxle is identified, the TCM records a diagnostic trouble code in memory, all solenoids are turned off, and the module is switched to limp-in mode.

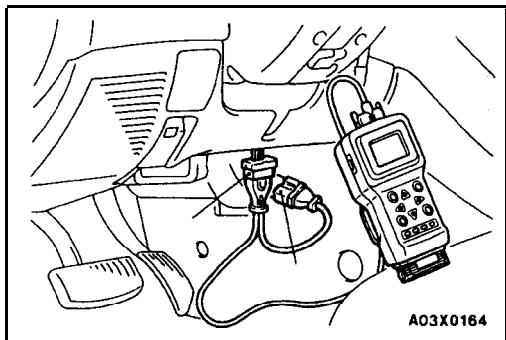
When limp-in mode is started, the transaxle is locked in 2nd gear if a drive gear had previously been selected. Meanwhile, if P, R or N range was selected, operation is as usual.

If the ignition key is turned to OFF and then back to ON again, limp-in mode is  **canceled**  (a record is retained).

## HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

## Caution

1. If battery voltage is low,  **diagnostic trouble codes may not be output. Be sure to check the battery and charging system before, continuing.**
2. If the battery is  **disconnected**  or if the  **TCM connector ' is disconnected, the diagnostic trouble code memory ' will be erased. Do not ' disconnect the battery or TCM until after the diagnostic trouble codes are recorded.,**



3.  **Turn the ignition switch off before connecting or disconnecting the scan tool.**

1. Install the interface cartridge (I/F cartridge) to the scan tool <MUT-II>.
2. Use the I/F cartridge adapter harness to connect the scan tool <MUT-II> to the data link connector.
3. Read the diagnostic trouble codes.
4. Repair the malfunction while referring to the INSPECTION CHART FOR DIAGNOSTIC TROUBLE CODES.
5. Turn the ignition switch to OFF and then back to ON again.
6. Erase the PCM diagnostic trouble code (137:P0700) immediately after erasing the TCM diagnostic trouble code.
7. Check that the diagnostic trouble code is normal.

## NOTE

- If the transaxle DTC has been set, (excluding cases where only part of the DTC has been set), the TCM will let the PCM know that a DTC has been sent to the PCM and a problem has occurred. As a result of this, the PCM records the DTC for a transaxle problem (137:P0700). After the transaxle has been repaired, the DTC (137:P0700) which has been stored in the PCM will remain there without being erased, even after the DTC which is store in the TCM has been erased. Therefore the DTC (137:P0700) in the PCM needs to be erased also.

## INSPECTION CHART FOR DIAGNOSTIC TROUBLE CODES

23110120012

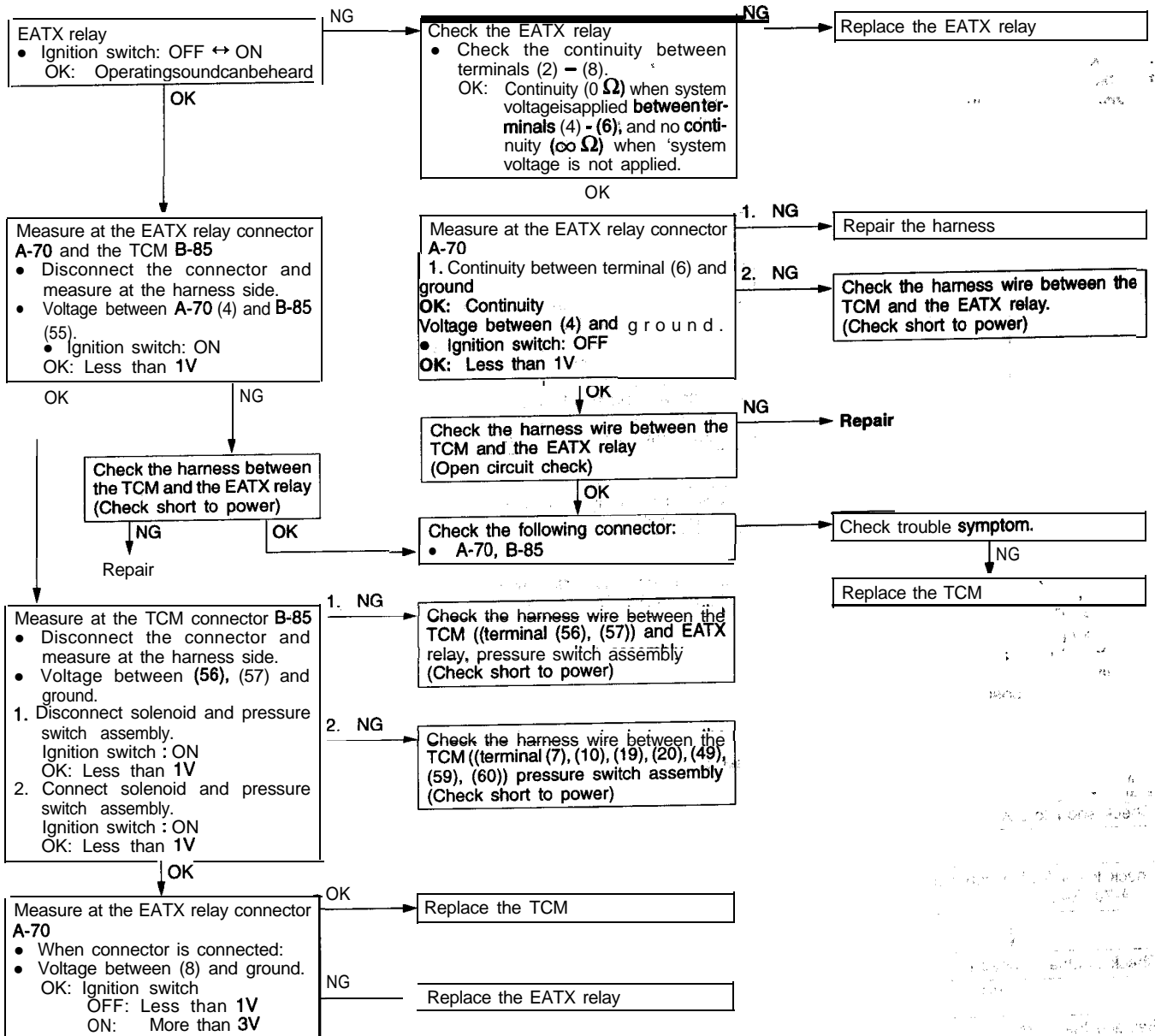
| Code | Diagnostic item  | Limp-in | Reference page |
|------|--|---------|----------------|
| 11   | Internal control module (watchdog circuit test failure)    | Yes     | 23A-128        |
| 12   | Battery power was disconnected since last power down       | No      | 23A-128        |
| 13   | Internal control module (watchdog circuit shutdown)        | Yes     | 23A-128        |
| 14   | Relay always on (relay contacts are welded closed)         | Yes     | 23A-129        |
| 15   | Relay always off (relay contacts are stuck open)           | Yes     | 23A-130        |
| 16   | Internal control module (ROM checksum failure)             | Yes     | 23A-128        |
| 17   | Internal control module (RAM checksum failure)             | Yes     | 23A-128        |
| 18   | Engine speed sensor circuit                                | Yes     | 23A-131        |
| 19   | CCD bus communication with PCM                             | No      | 23A-132        |
| 20   | Switched battery   | Yes     | 23A-133        |
| 21   | Pressure switch circuit: OD                                | Yes     | 23A-134        |
| 22   | Pressure switch circuit: 2-4                               | Yes     | 23A-135        |
| 23   | Pressure switch circuit: 2-4/OD                            | Yes     | 23A-135        |
| 24   | Pressure switch circuit: LR                                | Yes     | 23A-136        |
| 25   | Pressure switch circuit: LR/OD                             | Yes     | 23A-136        |
| 26   | Pressure switch circuit: LR/2-4                            | Yes     | 23A-137        |
| 27   | Pressure switch circuit: ALL                               | Yes     | 23A-137        |
| 28   | Check shifter signal                                       | No      | 23A-138        |
| 29   | Throttle position signal                                   | No      | 23A-139        |
| 31   | Hydraulic pressure switch: OD                              | Yes     | 23A-140        |
| 32   | Hydraulic pressure switch: 2-4                             | Yes     | 23A-140        |
| 33   | Hydraulic pressure switch: OD/2-4                          | Yes     | 23A-141        |
| 35   | Check ATF level  | No      | 23A-141        |
| 36   | Fault immediately after a shift                            | Yes     | 23A-141        |
| 37   | Solenoid switch valve latched in the LU position           | No      | 23A-141        |
| 38   | Lockup control out of range                                | No      | 23A-141        |
| 41   | Solenoid circuit error: LR                                 | Yes     | 23A-142        |
| 42   | Solenoid circuit error: 2-4                                | Yes     | 23A-143        |
| 43   | Solenoid circuit error: OD                                 | Yes     | 23A-144        |
| 44   | Solenoid circuit error: UD                                 | Yes     | 23A-145        |
| 45   | Internal control module (engine model EEPROM cell failure) | No      | 23A-128        |
| 46   | UD hydraulic circuit failure                               | No      | 23A-146        |
| 47   | Solenoid switch valve latched in the LR position           | Yes     | 23A-146        |
| 48   | TRD link communication error                               | No      | 23A-146        |
| 50   | Speeds error: Gear ratio in reverse                        | Yes     | 23A-147        |
| 51   | Speeds error: Gear ratio in 1st                            | Yes     | 23A-147        |
| 52   | Speeds error: Gear ratio in 2nd                            | Yes     | 23A-147        |
| 53   | Speeds error: Gear ratio in 3rd                            | Yes     | 23A-147        |
| 54   | Speeds error: Gear ratio in 4th                            | Yes     | 23A-147        |
| 56   | Speeds error: Input speed sensor                           | Yes     | 23A-149        |
| 57   | Speeds error: Output speed sensor                          | Yes     | 23A-150        |
| 58   | Speeds error: Speed sensor ground                          | Yes     | 23A-151        |
| 60   | Inadequate element volume: LR                              | No      | 23A-151        |

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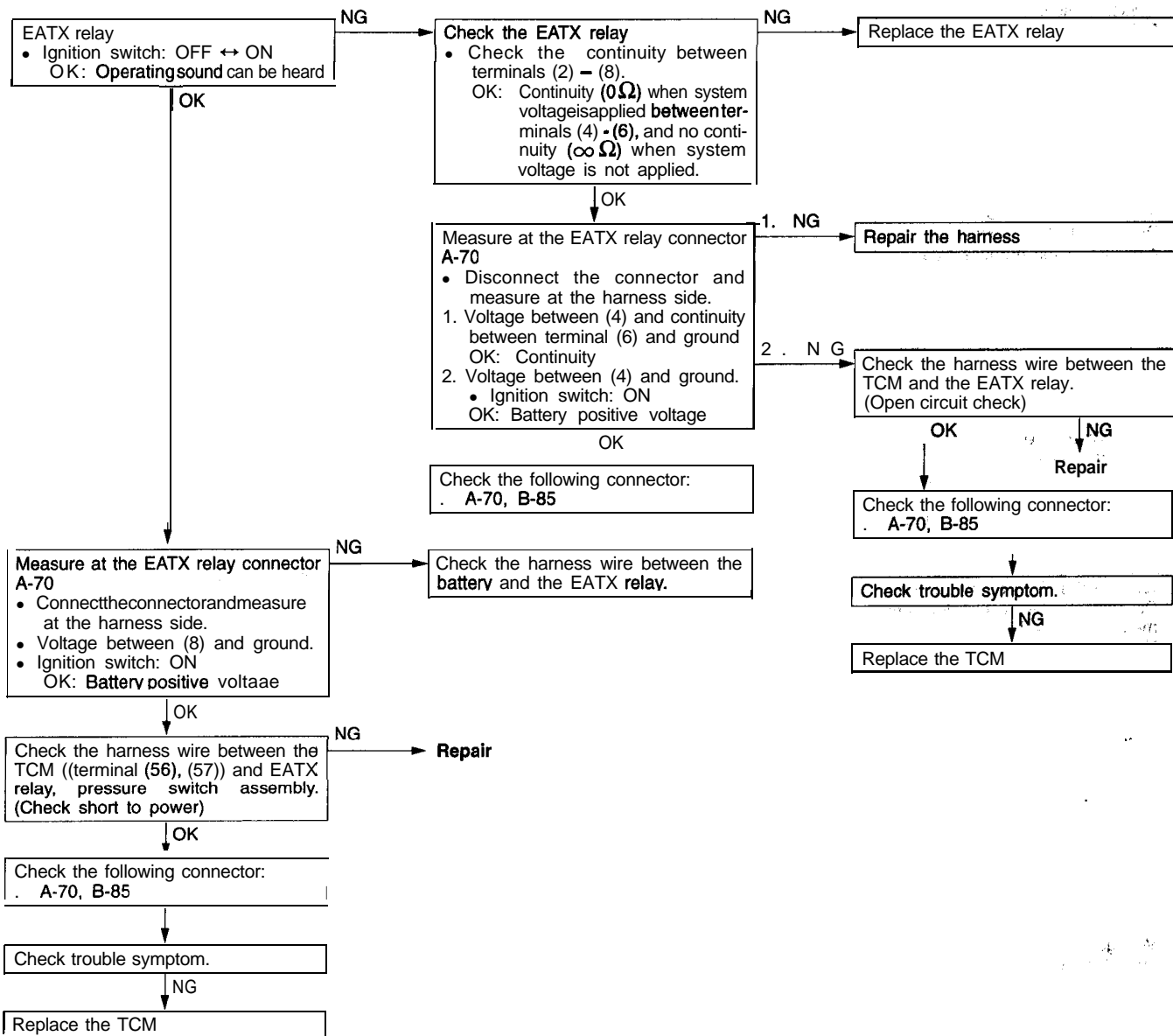
| Code | Diagnostic item                   | Limp-in | Reference page |
|------|-----------------------------------|---------|----------------|
| 61   | Inadequate element volume: 2-4    | No      | 23A-151        |
| 62   | Inadequate element volume: OD     | No      | 23A-151        |
| 73   | Worn out/burnt transmission fluid | No      | 23A-151        |
| 74   | Calculated oil temperature in use | No      | 23A-152        |

| Code No.  | Scan tool<br>11, 13, 16, 17, 45<br>General scan tool<br>P0700, P0700<br>P0065, P0604<br>P1795 | Internal control module                              | Probable cause   |
|---|---|--|--|
| TCM malfunction may be present.   |   |  | <ul style="list-style-type: none"> <li>• Malfunction of TCM</li> <li>• Replace TCM</li> </ul>  |
| Code No.  | Scan tool 12<br>General scan tool<br>P1792  | Battery power was disconnected since last power down | Probable cause   |
| <p>Battery disconnected or first installation.<br/>A battery-backed RAM is used to maintain some learned values. When the battery is disconnected, this memory is lost. When the battery is connected, this memory loss is <b>detected</b> by the controller. The code is set and the learned values are initialized to known constants. This results in the <b>re-initialization</b> of some parameters.</p> |   |  | <ul style="list-style-type: none"> <li>• Battery disconnected</li> <li>• (After securely connecting the battery, use the scan tool to erase the DTC.)</li> </ul> |

| Code No. | Scan tool 14   | Relay always on (Relay contacts are welded closed) | Probable cause  |
|----------|--|--|---|
|          | General scan tool P1767  |  |   |
|          | Relay output (switched battery) has more than 3 volts at TCM pins 56 and 57 (Connector B-85) when TCM pin 55 (Connector B-85) is turned off. Relay should be de-energized whenever ignition switch is OFF. |  | <ul style="list-style-type: none"> <li>Malfunction of relay (<b>welded contacts</b>)</li> <li>Short to power on <b>control side</b> of relay <b>between</b> relay and TCM</li> <li>Short to power on load side of relay between relay and TCM</li> <li>TCM relay driver circuit stuck ON</li> </ul> |

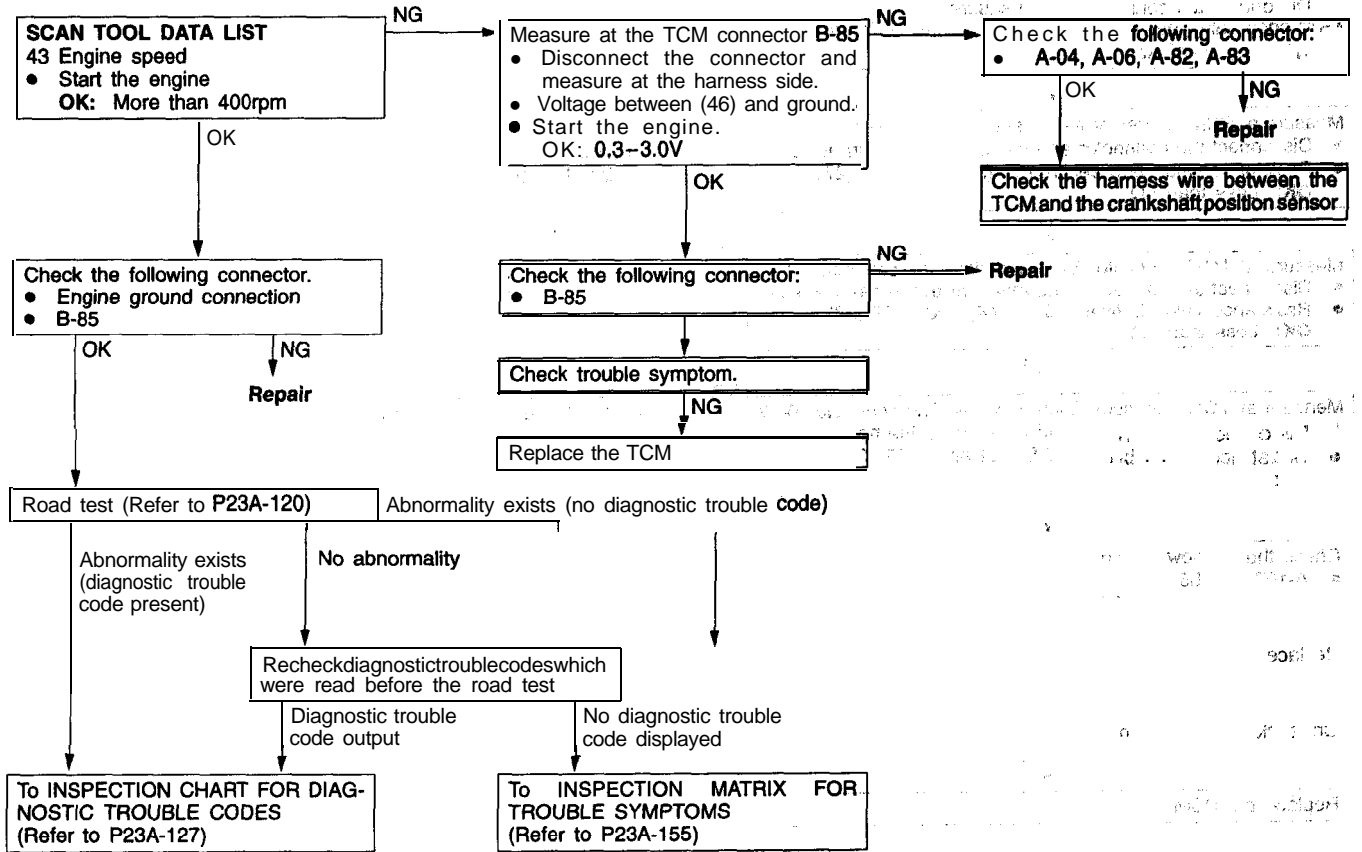


| Code No.  | Scan tool 15<br>General scan tool P1768 | Relay always off (Relay contacts are stuck open) | Probable cause  |
|---|---|--|---|
| Relay output (switched battery) has less than 3 volts at TCM pins 56 and 57 (Connector B-85) when TCM pin 55 (Connector B-85) turns on to energize relay. Relay should be energized whenever key is ON. |   |  | <ul style="list-style-type: none"> <li>Malfunction of relay (open contacts)</li> <li>Harness or connector between relay coil and TCM open or short-circuited</li> <li>Harness or connector between relay output and TCM open-circuited</li> <li>Relay supply lines open-circuited</li> <li>Relay ground open-circuited</li> <li>Malfunction of TCM</li> </ul> |

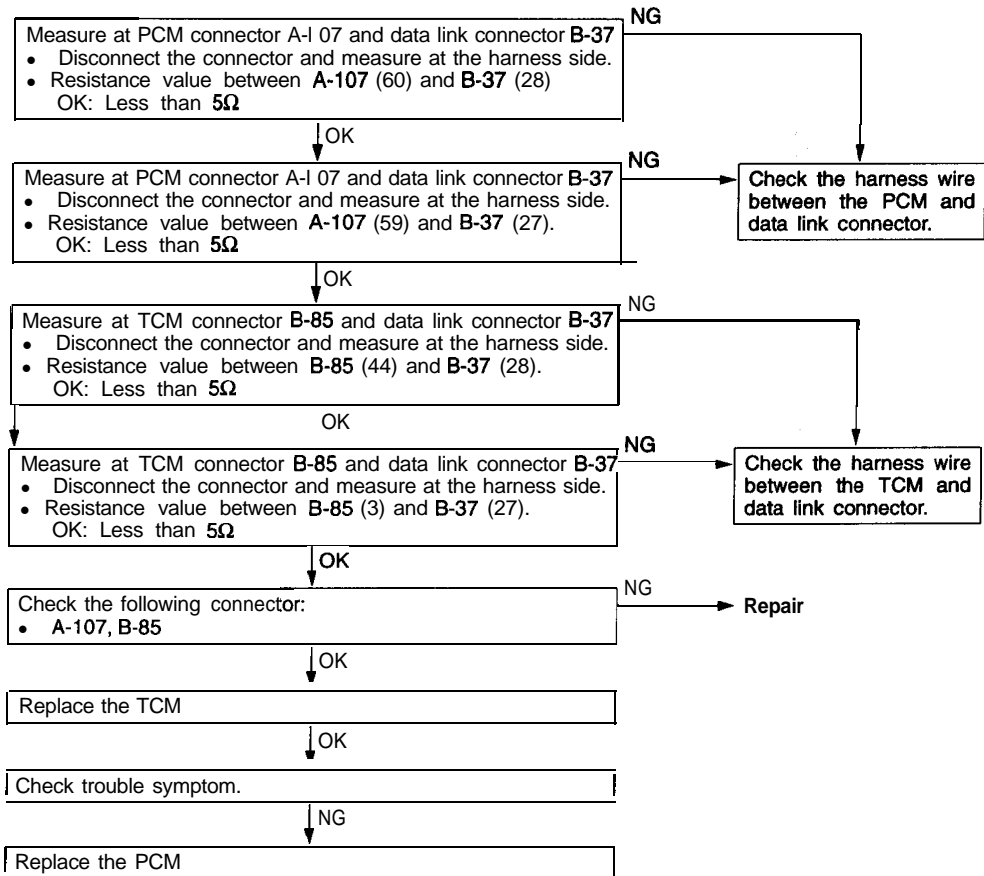




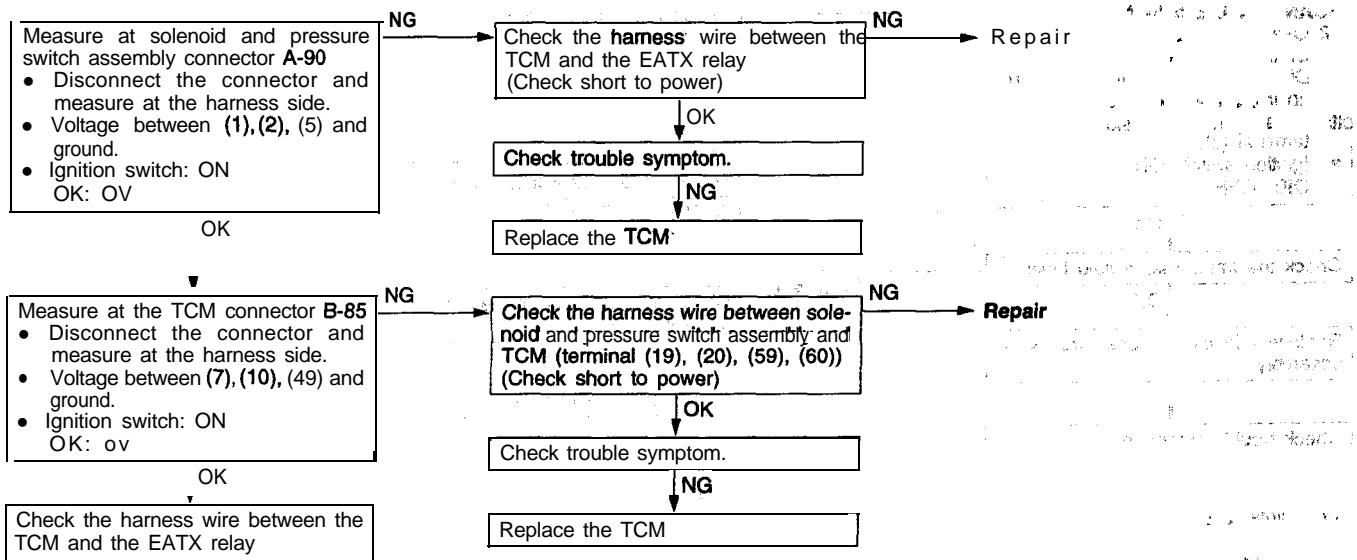
| Code No.   | Scan tool 18<br>General scan tool P0725 | Engine speed sensor circuit | Probable cause   |
|--|---|-----------------------------|--|
| Engine speed received at the PCM from the CKP over the CCD bus is less than 384 r/min. |   |                             | <ul style="list-style-type: none"> <li>• Malfunction of crankshaft position sensor</li> <li>• Harness or connector between crankshaft position sensor and TCM open or short-circuited</li> <li>• Malfunction of TCM</li> </ul> |



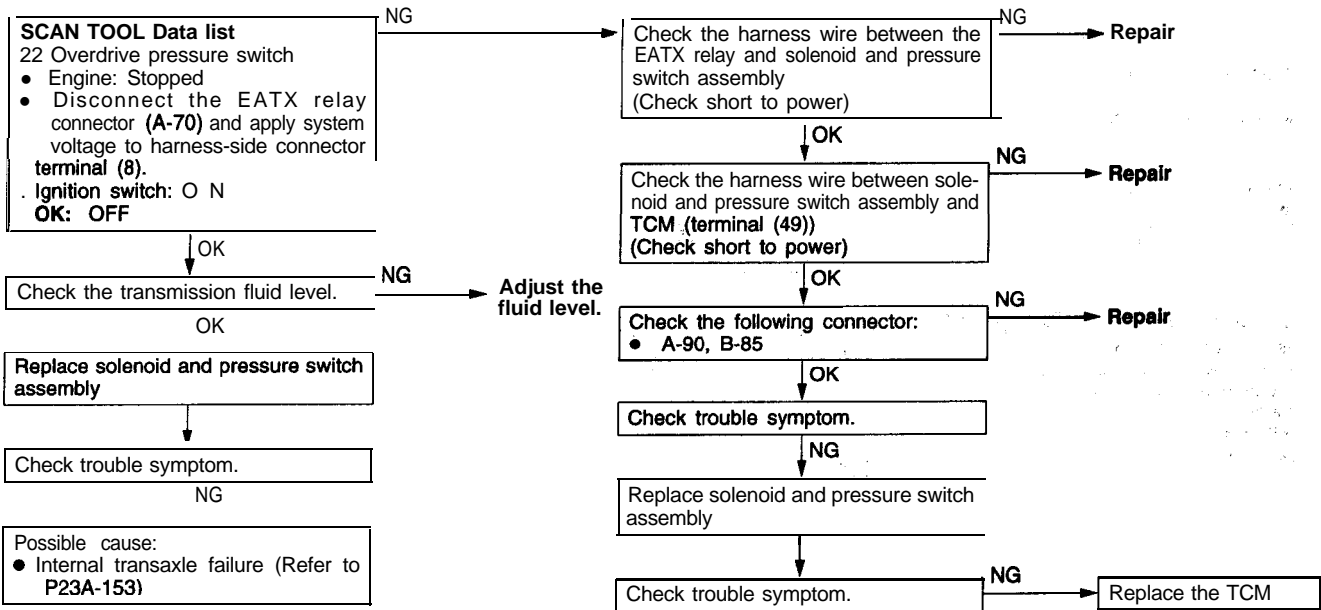
| Code No.                                | Scan tool 19<br>General scan tool P0600 | CCD bus communication with PCM | Probable cause  |
|---|---|--------------------------------|---|
| No CCD messages received for 10 seconds |   |                                | <ul style="list-style-type: none"> <li>• CCD bus between PCM and TCM open or short-circuited</li> <li>• Malfunction of PCM</li> </ul> |



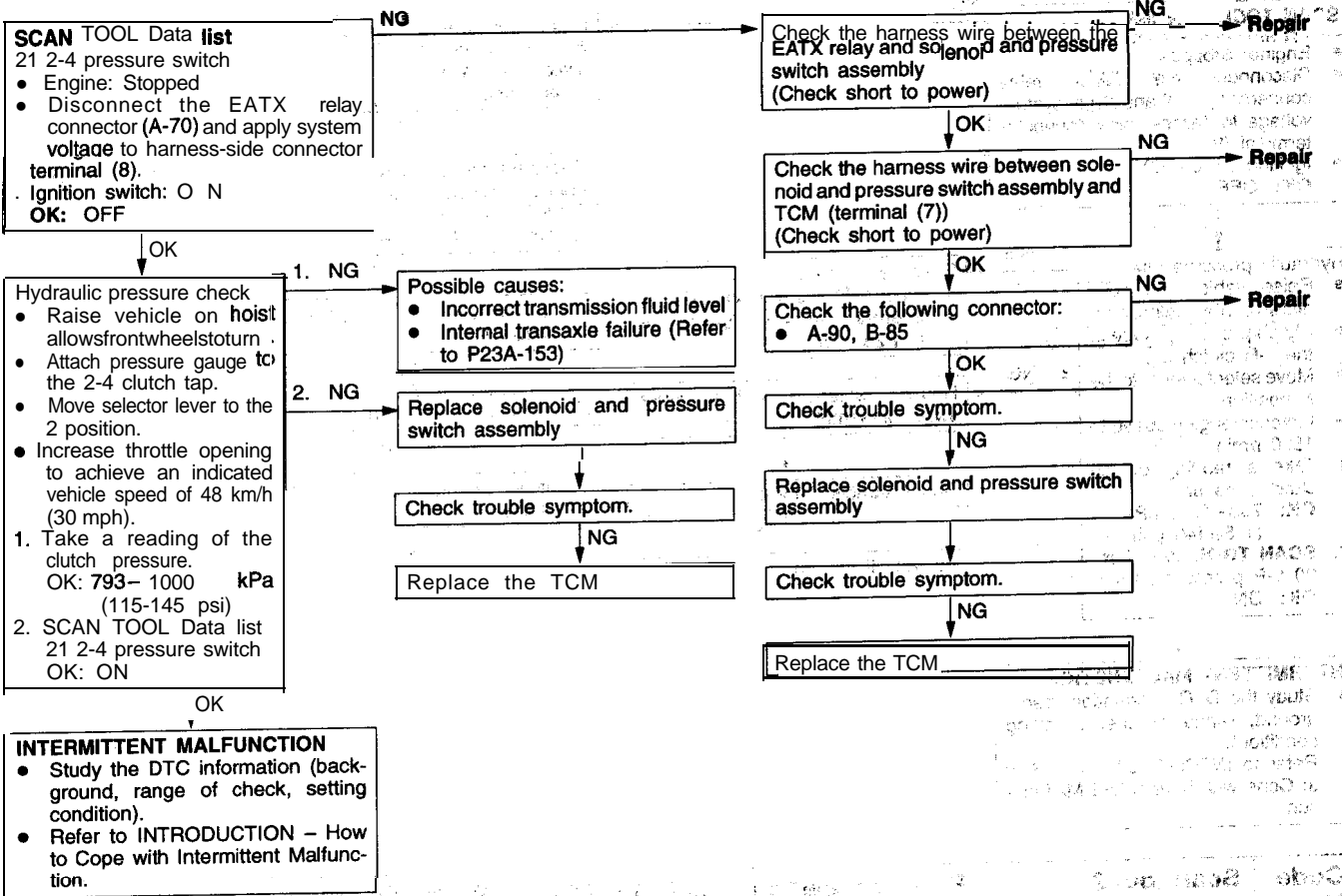
| Code No.   | Scan tool 20<br>General scan tool<br>P1765 | Switched battery | Probable cause  |
|--|--|------------------|---|
| A voltage is detected on any of the pressure switches before the relay is energized. |  |                  | <ul style="list-style-type: none"> <li>• Malfunction of EATX relay</li> <li>• Malfunction of EATX relay, harness or connector between relay output TCM open or short-circuited</li> <li>• Harness or connector between EATX relay output and TCM temporarily short-circuited</li> <li>• Malfunction of TCM</li> </ul> |



| Code No.  | Scan tool 21<br>General scan tool P1781 | Pressure switch circuit: OD | P r o b a b l e c a u s e  |
|---|---|-----------------------------|--|
| A mismatch has occurred between the shift condition and the pressure switch condition (ON/OFF) while the vehicle is moving. |   |                             | <ul style="list-style-type: none"> <li>● <b>Low/high</b> fluid level in transaxle</li> <li>● Malfunction of pressure switch <b>assembly</b></li> <li>● Harness or connector between OD pressure switch and TCM open or short-circuited</li> <li>● <b>Malfunction</b> of TCM</li> <li>● Internal transaxle problem</li> </ul> |



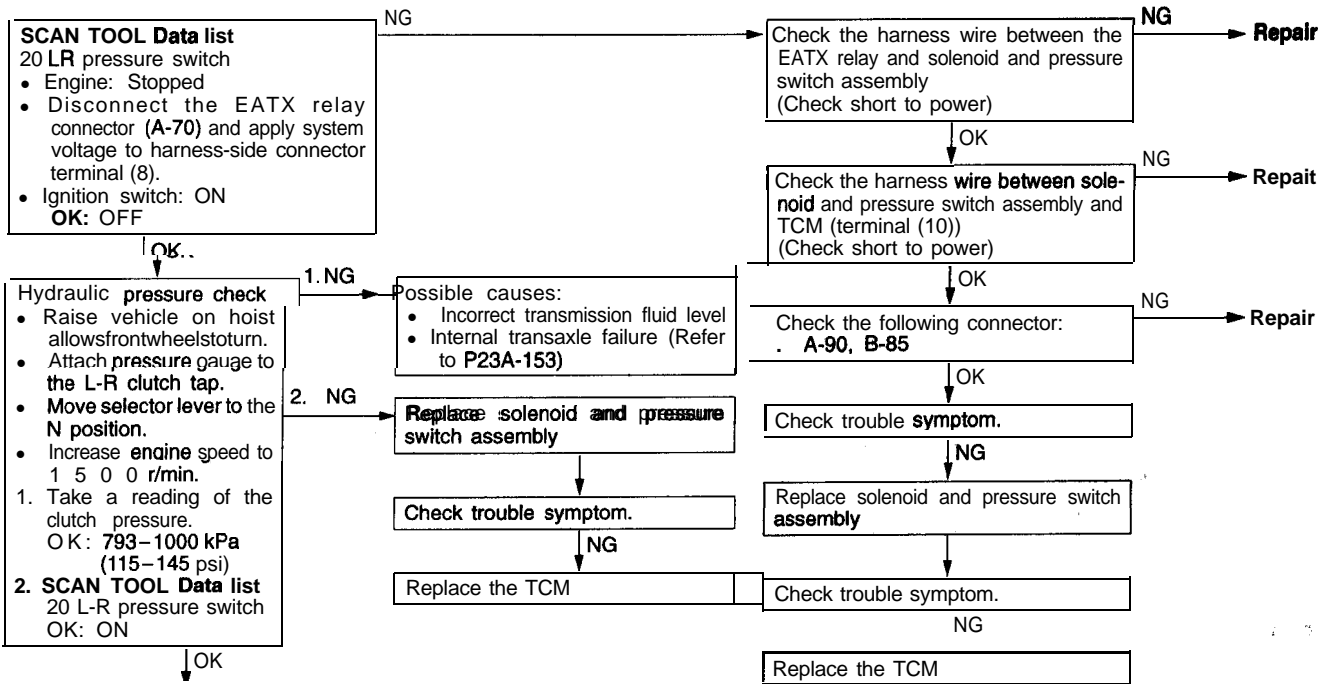
| Code No.  | Scan tool 22<br>General scan tool P1782 | Pressure switch circuit: 2-4 | Probable cause   |
|---|---|------------------------------|--|
| A mismatch has occurred between the shift condition and the pressure switch condition (ON/OFF) while the vehicle is moving. |   |                              | <ul style="list-style-type: none"> <li>● Low/high fluid level in transaxle</li> <li>● Malfunction of pressure switch assembly</li> <li>● Harness or connector between 2-4 pressure switch and TCM open or short-circuited</li> <li>● Malfunction of TCM</li> <li>● Internal transaxle problem</li> </ul> |



| Code No.  | Scan tool 23<br>General scan tool P1783 | Pressure switch circuit: 2-4/OD | Probable cause  |
|---|---|---------------------------------|---|
| A mismatch has occurred between the shift condition and the pressure switch condition (ON/OFF) while the vehicle is moving. |   |                                 | <ul style="list-style-type: none"> <li>● Low/high fluid level in transaxle</li> <li>● Malfunction of pressure switch assembly</li> <li>● Harness or connector between OD pressure switch and TCM open or short-circuited</li> <li>● Harness or connector between 2-4 pressure switch and TCM open or short-circuited</li> <li>● Malfunction of TCM</li> <li>● Internal transaxle problem</li> </ul> |

- Carry out the inspection procedure for code No. 21. (Refer to P23A-134)
- Carry out the inspection procedure for code No. 22. (Refer to P23A-135)

| Code No.  | Scan tool 24<br>General scan tool P1784 | Pressure switch circuit: LR | Probable cause  |
|---|---|-----------------------------|---|
| A mismatch has occurred between the shift condition and the pressure switch condition (ON/OFF) while the vehicle is moving. |   |                             | <ul style="list-style-type: none"> <li>• Low/high fluid level in transaxle</li> <li>• Malfunction of <b>pressure switch assembly</b></li> <li>• Harness or connector between <b>LR</b> pressure switch and TCM open or short-circuited</li> <li>• Malfunction of TCM</li> <li>• Internal transaxle problem</li> </ul> |



**INTERMITTENT MALFUNCTION**

- Study the DTC information (background, range of check, setting condition).
- Refer to INTRODUCTION – How to Cope with Intermittent Malfunction.

| Code No.  | Scan tool 25<br>General scan tool P1785 | Pressure switch circuit: LR/OD | Probable cause   |
|---|---|--------------------------------|--|
| A mismatch has occurred between the shift condition and the pressure switch condition (ON/OFF) while the vehicle is moving. |   |                                | <ul style="list-style-type: none"> <li>• Low/high fluid level in transaxle</li> <li>• Malfunction of pressure switch assembly</li> <li>• Harness or connector between OD pressure switch and TCM open or <b>short-circuited</b></li> <li>• Harness or connector between <b>LR</b> pressure switch and TCM open or short-circuited</li> <li>• Malfunction of TCM</li> <li>• Internal transaxle problem</li> </ul> |

- Carry out the **inspection** procedure for code No. 21. (Refer to P23A-134)
- Carry out the inspection procedure for code No. 24. (Refer to P23A-136)

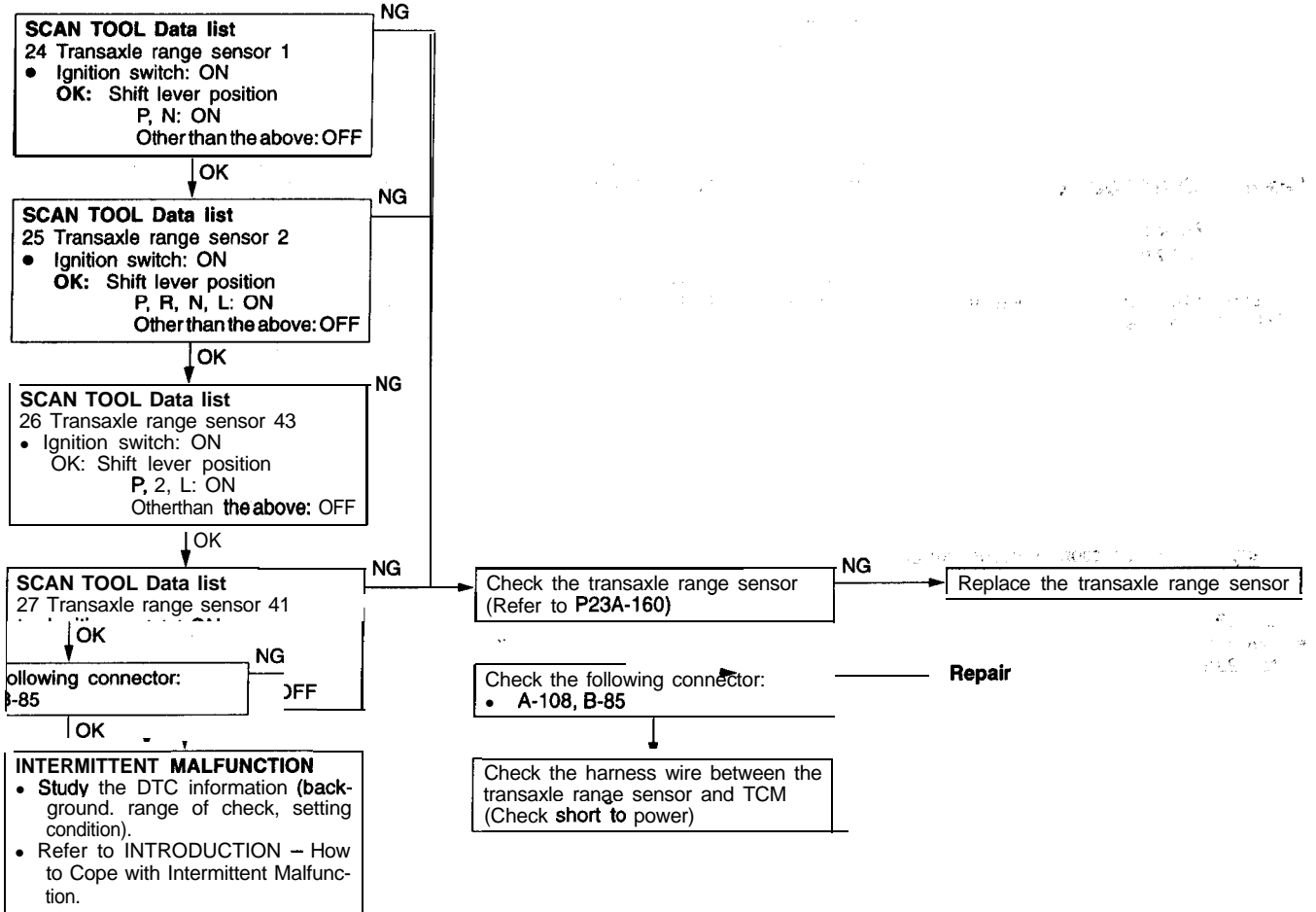
| Code No.  | Scan tool 26            | Pressure switch circuit: LR/2-4 | Probable cause  |
|---|-------------------------|---------------------------------|---|
|   | General scan tool P1786 |                                 |   |
| A mismatch has occurred between the shift condition and the pressure switch condition (ON/OFF) while the vehicle is moving. |                         |                                 | <ul style="list-style-type: none"> <li>● <b>Low/high</b> fluid level in <b>transaxle</b></li> <li>● <b>Malfunction of pressure switch</b> assembly</li> <li>● Harness or connector between <b>2-4</b> pressure switch and <b>TCM</b> open or <b>short-circuited</b></li> <li>● Harness or connector between <b>LR</b> pressure switch and <b>TCM</b> open or <b>short-circuited</b></li> <li>● Malfunction of TCM</li> <li>● <b>Internal</b> transaxle problem</li> </ul> |

- Carry out the inspection procedure for code No. 22. (Refer to P23A-135)
- Carry out the inspection procedure for code No. 24. (Refer to P23A-136)

| Code No.  | Scan tool 27            | Pressure switch circuit: ALL | Probable cause  |
|---|-------------------------|------------------------------|---|
|   | General scan tool P1780 |                              |   |
| A mismatch has occurred between the shift condition and the pressure switch condition (ON/OFF) while the vehicle is moving. |                         |                              | <ul style="list-style-type: none"> <li>● <b>Low/high</b> fluid level in <b>transaxle</b></li> <li>● Malfunction of pressure switch assembly</li> <li>● Harness or connector between OD pressure switch and <b>TCM</b> open or <b>short-circuited</b></li> <li>● <b>Harness or connector between 2-4</b> pressure switch and <b>TCM</b> open or <b>short-circuited</b></li> <li>● <b>Harness or connector between LR</b> pressure switch and <b>TCM</b> open or <b>short-circuited</b></li> <li>● Malfunction of TCM</li> <li>● <b>Internal transaxle problem</b></li> </ul> |

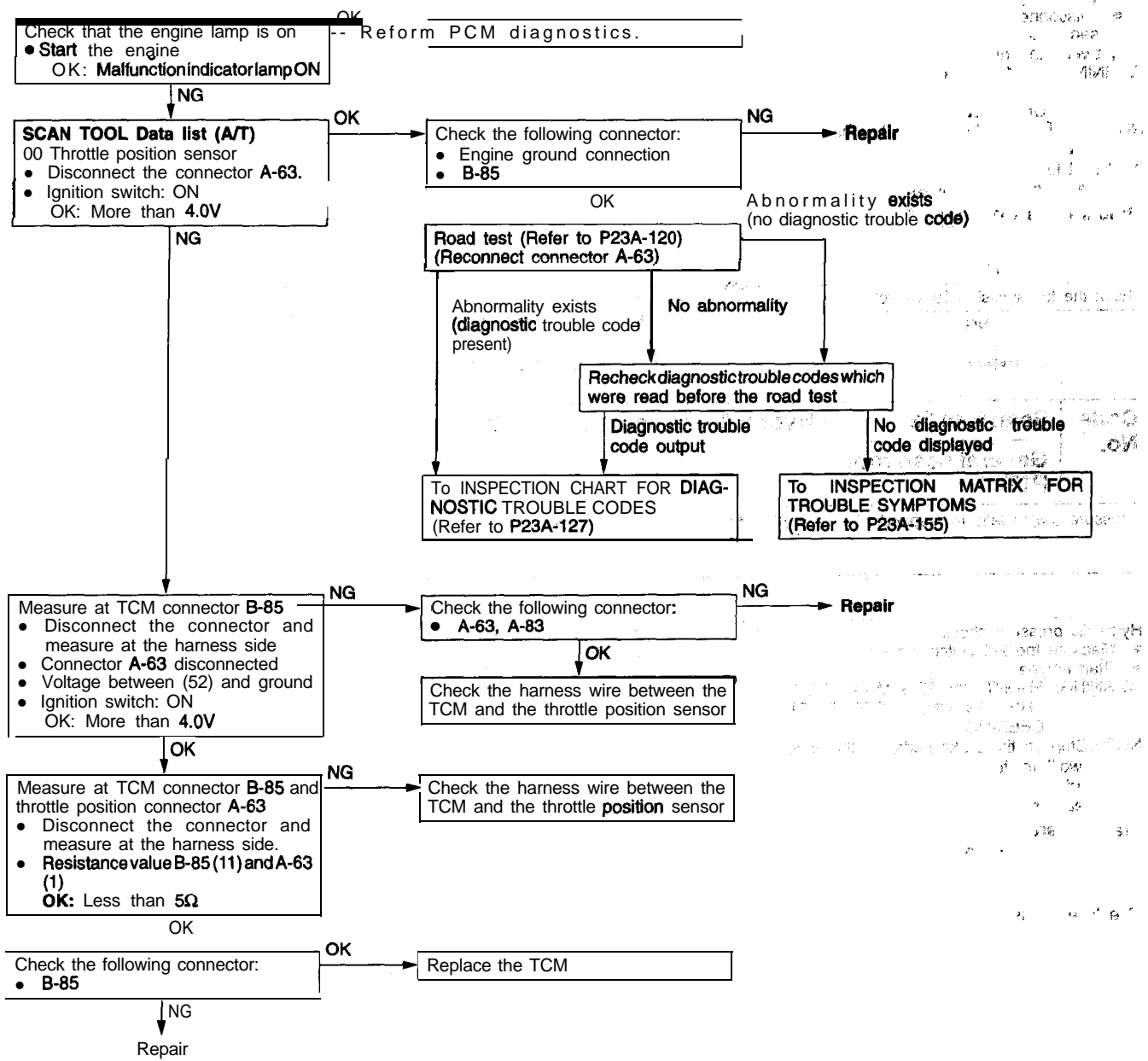
- Carry out the inspection procedure for code No. 21. (Refer to P23A-134)
- Carry out the inspection procedure for code No. 22. (Refer to P23A-135)
- Carry out the inspection procedure for code No. 24. (Refer to P23A-136)

| Code No.  | Scan tool 28<br>General scan tool P0705 | Check shifter signal | Probable cause  |
|---|---|----------------------|---|
| Case 1 Invalid code timer has expired (100 msec).<br>Case 2 Third occurrence of setting PRND2L data error flag since start-up |   |                      | <ul style="list-style-type: none"> <li>• Malfunction of transaxle range sensor.</li> <li>• Harness or connector between transaxle range sensor and TCM open or short-circuited</li> <li>• Transaxle range sensor ground open-circuited</li> <li>• Malfunction of TCM</li> </ul> |

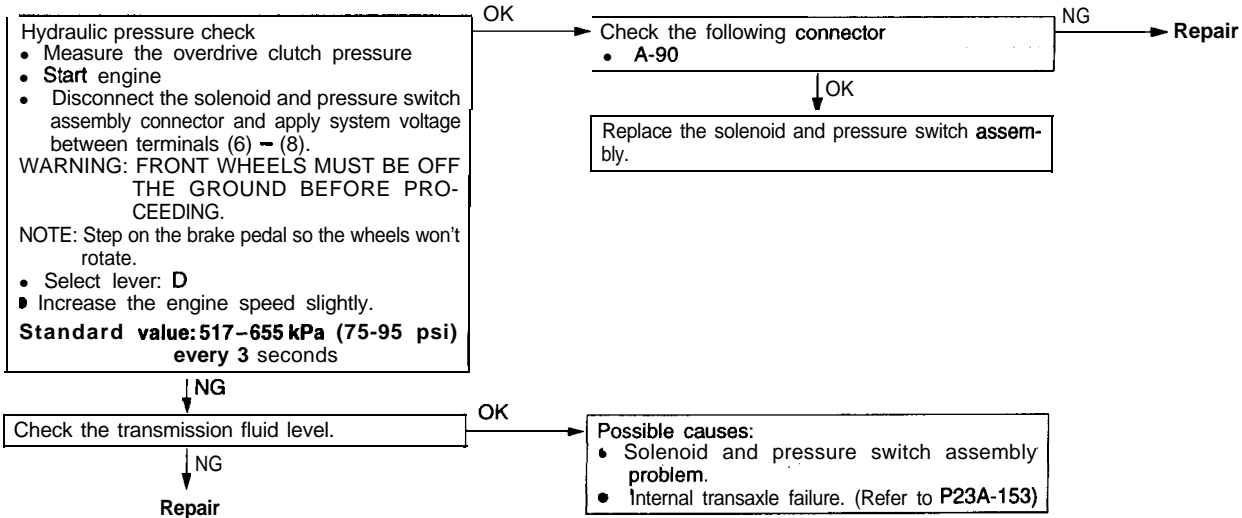




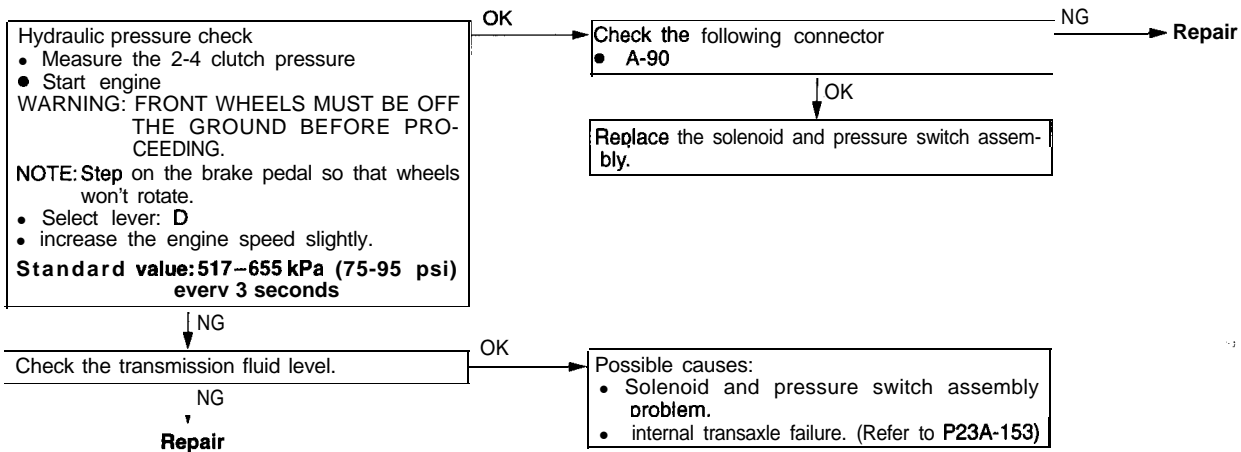
| Code No. | Scan tool 29<br>General scan tool P0120 | Throttle position signal | Probable cause   |
|----------|---|--------------------------|--|
|          |   |                          | <ul style="list-style-type: none"> <li>• Malfunction of <b>throttle position sensor</b></li> <li>• Harness or connector between <b>throttle position sensor</b> and TCM open or short-circuited</li> <li>• <b>Harness</b> or connector <b>between throttle position sensor</b> output and TCM open or short-circuited</li> <li>• Malfunction of <b>TCM</b></li> <li>• Malfunction of <b>PCM</b></li> </ul> |



|   |                         |                               |  |
|---|-------------------------|-------------------------------|--|
| Code No.  | Scan tool 31            | Hydraulic pressure switch: OD | Probable cause   |
|   | General scan tool P1787 |                               |  |
| Pressure switch falls to respond within specified time for given temperature range. |                         |                               | <ul style="list-style-type: none"> <li>• Low/high fluid level in transaxle</li> <li>• Malfunction of pressure switch assembly</li> <li>• Internal transaxle problem</li> </ul> |



|   |                         |                                |  |
|---|-------------------------|--------------------------------|--|
| Code No.  | Scan tool 32            | Hydraulic pressure switch: 2-4 | Probable cause   |
|   | General scan tool P1788 |                                |  |
| Pressure switch falls to respond within specified time for given temperature range. |                         |                                | <ul style="list-style-type: none"> <li>• Low/high fluid level in transaxle</li> <li>• Malfunction of pressure switch assembly</li> <li>• Internal transaxle problem</li> </ul> |



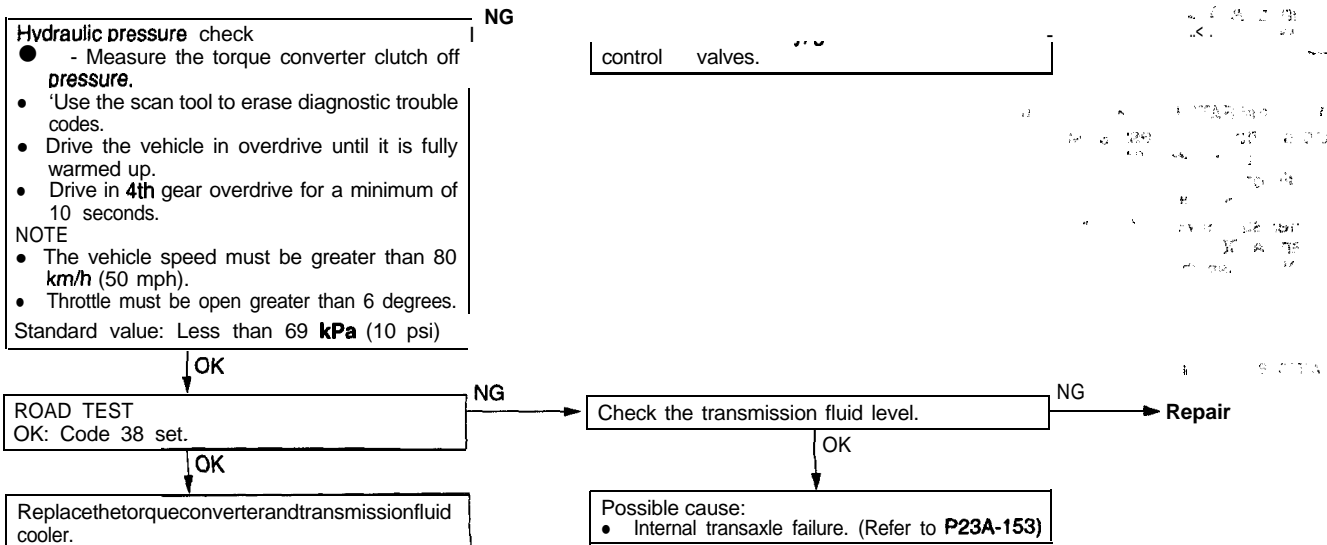
|  |                         |                                      |  |
|--|-------------------------|--------------------------------------|--|
| Code No.   | Scan tool 33            | Hydraulic pressure switch:<br>OD/2-4 | Probable cause   |
|  | General scan tool P1789 |                                      |  |
| Pressure switch fails to respond within specified time for given temperature range.  |                         |                                      | <ul style="list-style-type: none"> <li>• Low/high fluid level in transaxle</li> <li>• Malfunction of pressure switch assembly</li> <li>• Internal transaxle problem</li> </ul> |
| <ul style="list-style-type: none"> <li>• Carry out the inspection procedure for code No. 31. (Refer to P23A-140)</li> <li>• Carry out the inspection procedure for code No. 32. (Refer to P23A-140)</li> </ul> |                         |                                      |  |

|   |                         |                 |  |
|---|-------------------------|-----------------|--|
| Code No.                                | Scan tool 35            | Check ATF level | Probable cause   |
|   | General scan tool P1791 |                 |  |
| No pressure is present for any element. |                         |                 | <ul style="list-style-type: none"> <li>• Low/high fluid level in transaxle</li> <li>• Malfunction of oil filter</li> <li>• Missing O-ring</li> <li>• Malfunction of transmission fluid cooler</li> </ul> |

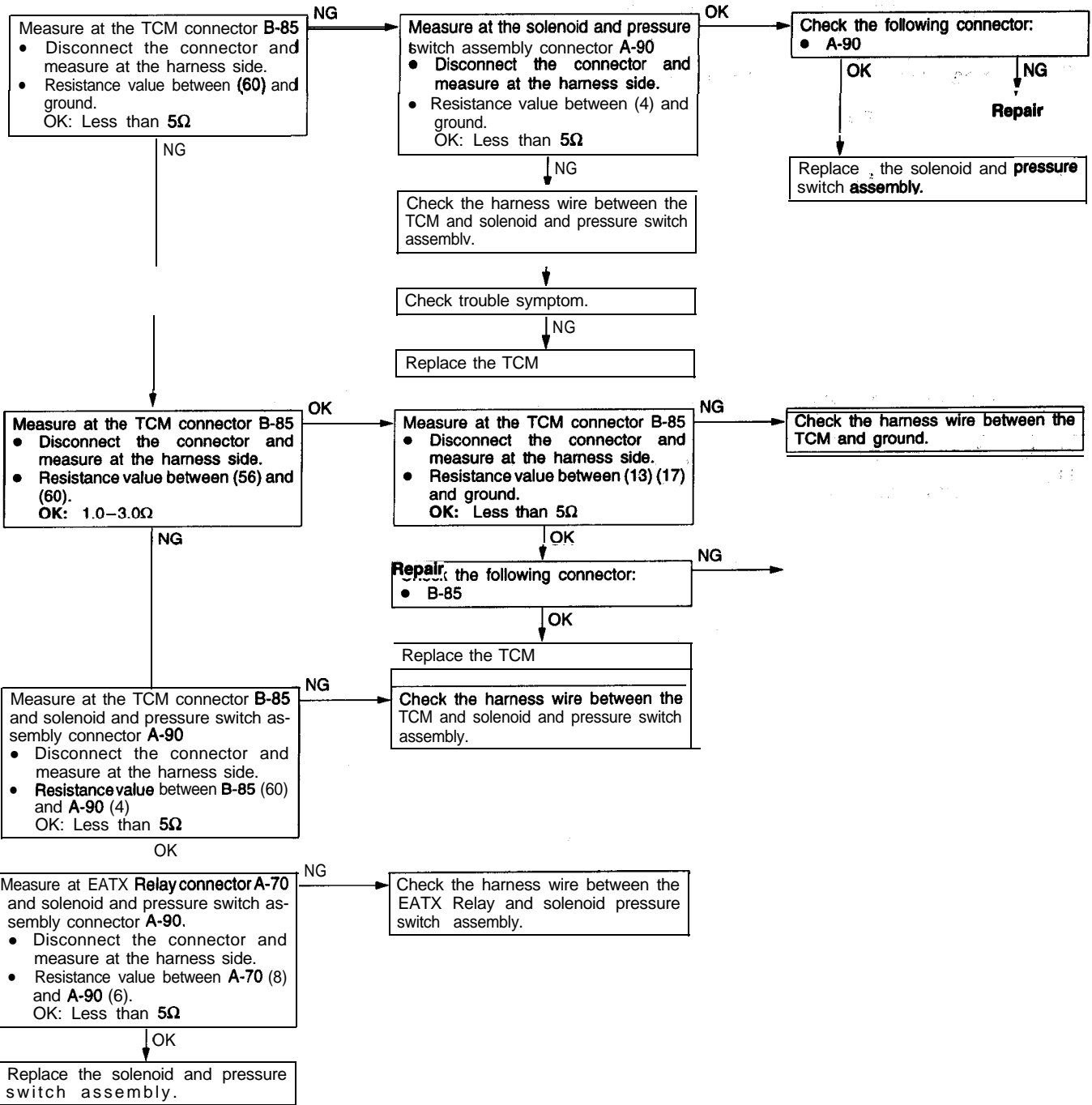
|   |                         |                                 |  |
|---|-------------------------|---------------------------------|--|
| Code No.  | Scan tool 38            | Fault immediately after a shift | Probable cause   |
|   | General scan tool P1790 |                                 |  |
| Fault happened within 1.3 second of a shift (This code is not stored alone. It is stored if a speed error (codes 50 through 58) is detected immediately after a shift). |                         |                                 | <ul style="list-style-type: none"> <li>• Internal transaxle problem (Refer to Speed errors)</li> </ul> |

|   |                         |  |   |
|---|-------------------------|--|---|
| Code No.                                    | Scan tool 37            | Solenoid switch valve latched in the LU position | Probable cause  |
|   | General scan tool P1775 |  |   |
| Three unsuccessful attempts shift 1st gear. |                         |  | <ul style="list-style-type: none"> <li>• Internal transaxle problem</li> <li>• Refer to Inspection matrix for diagnostic trouble code. (Internal transaxle problem (P23A-153))</li> </ul> |

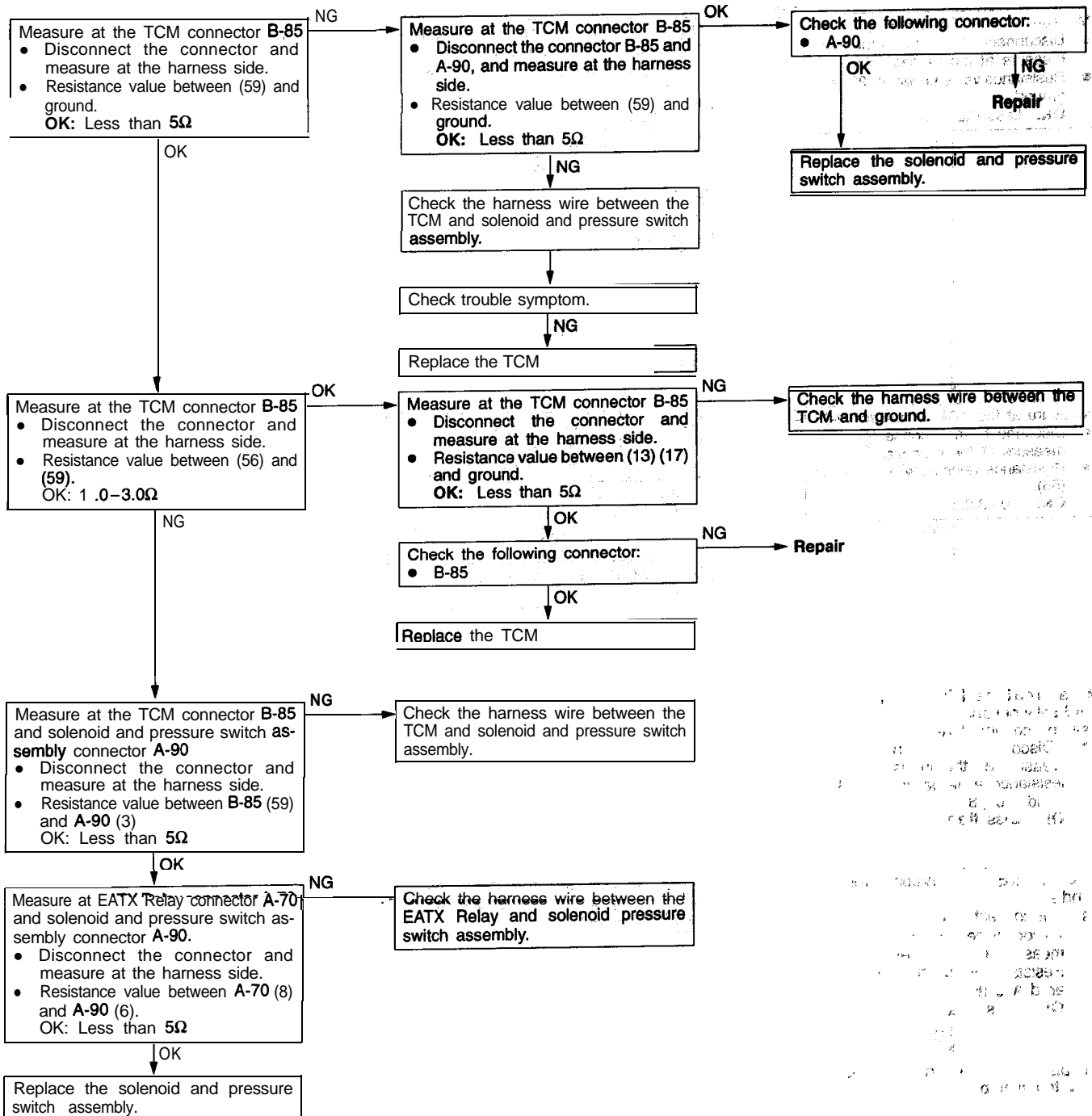
|   |                         |                              |   |
|---|-------------------------|------------------------------|---|
| Code No.  | Scan tool 38            | Lock-up control out of range | Probable cause  |
|   | General scan tool P0740 |                              |   |
| Electronically Modulated Converter Clutch (EMCC) operation is inhibited |                         |                              | <ul style="list-style-type: none"> <li>• Low/high fluid level in transaxle</li> <li>• Internal transaxle problem</li> </ul> |



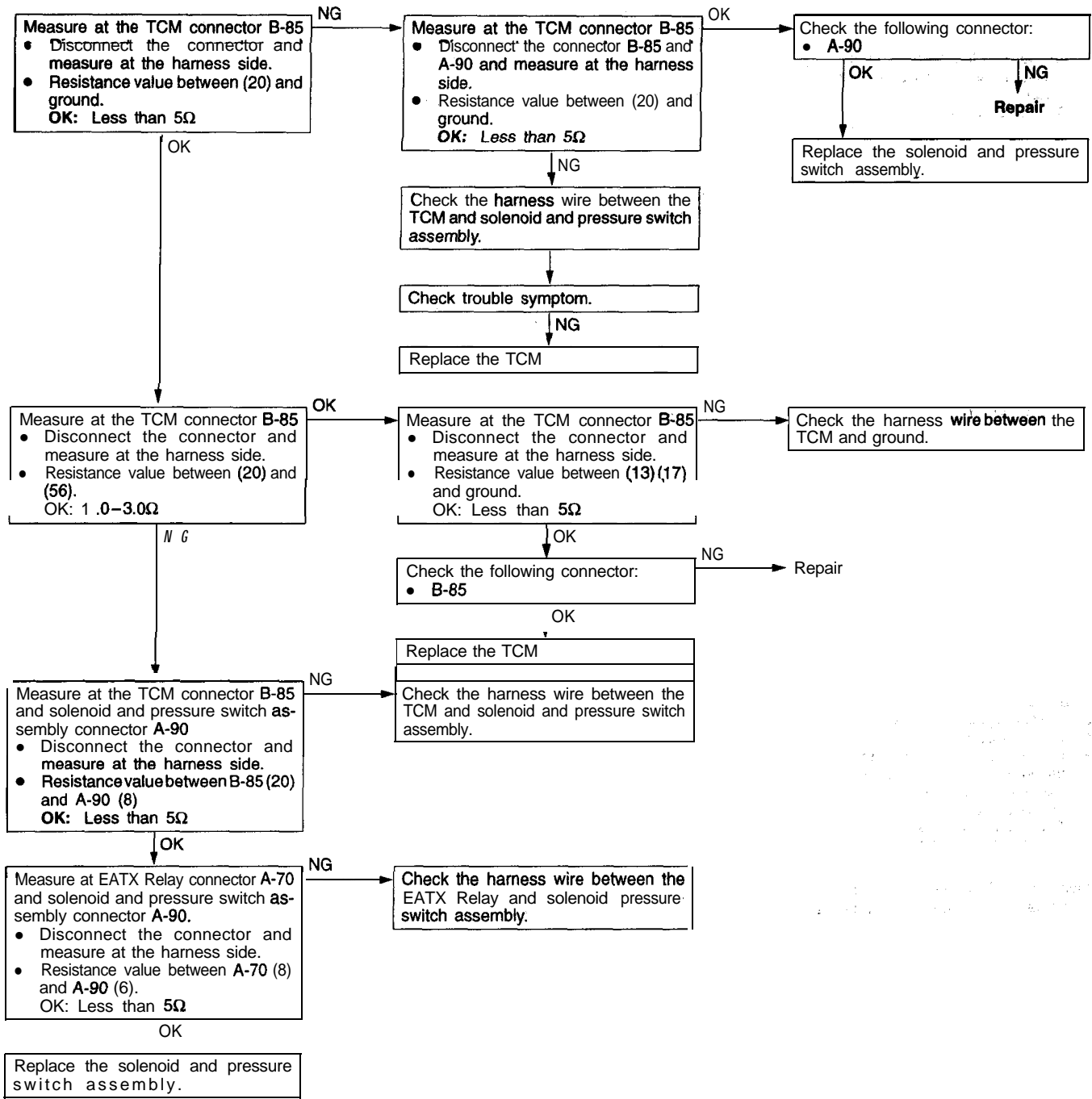
| Code No.   | Scan tool 41<br>General scan tool P0750 | Solenoid circuit error: LR | Probable cause   |
|--|---|----------------------------|--|
| A shift must not be in progress; an selector lever position, pressure switch, or watchdog test must not be in progress; no spike must be detected from the solenoid during the first test, or a pressure switch problem, or a speed problem. The code sets if the solenoid continuity test failed for the second time, or if there is either a pressure switch or speed data problem and the solenoid continuity test failed for the first time. |   |                            | <ul style="list-style-type: none"> <li>• <b>Malfunction</b> of pressure switch assembly</li> <li>• Harness or connector between <b>LR</b> solenoid and TCM open or short-circuited</li> <li>• TCM ground open-circuited</li> <li>• Malfunction of TCM</li> </ul> |



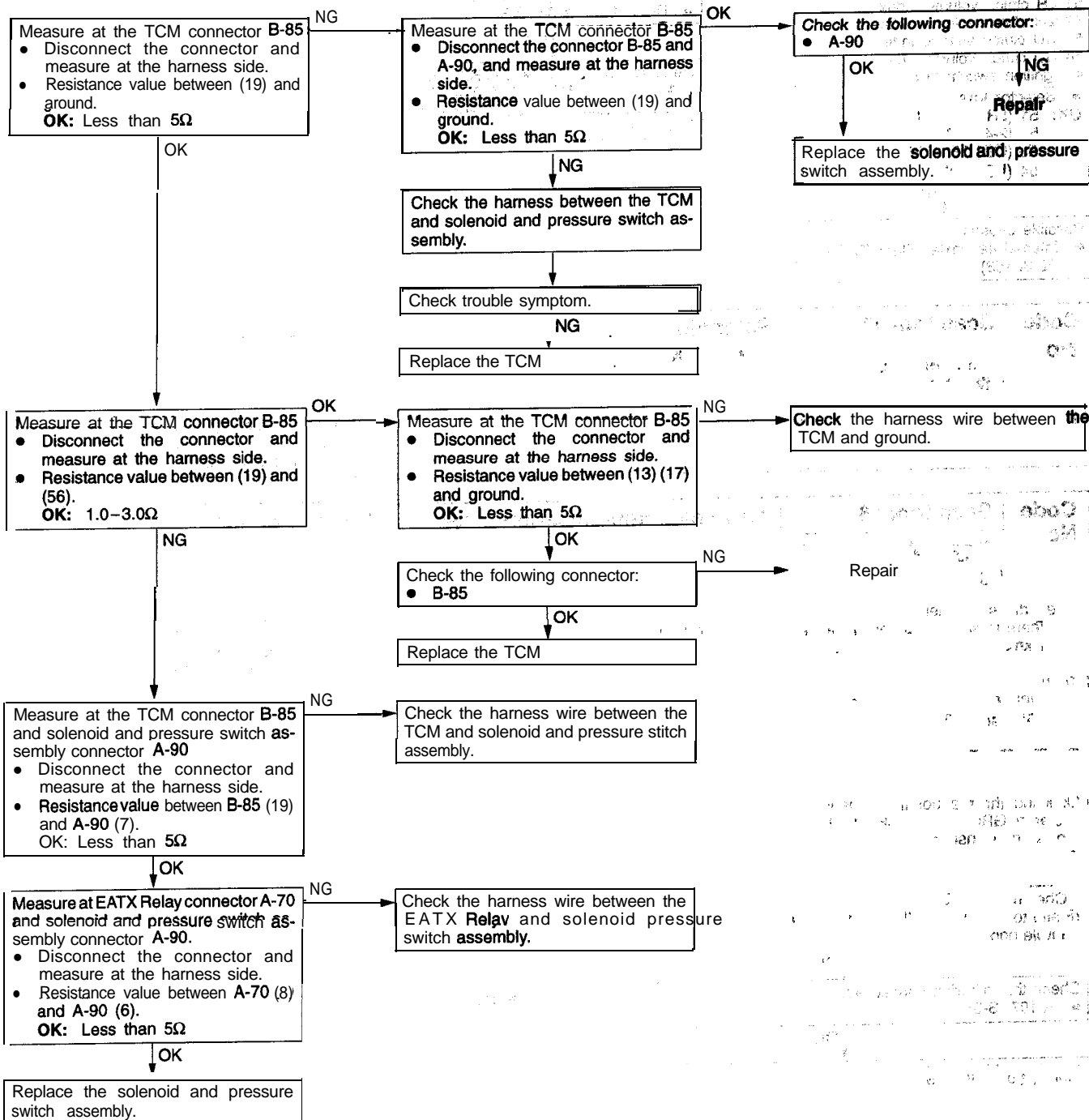
|  |                                |                                    |   |
|--|--------------------------------|------------------------------------|---|
| <b>Code No.</b>  | <b>Scan tool 42</b>            | <b>Solenoid circuit error: 2-4</b> | <b>Probable cause</b>   |
|  | <b>General scan tool P0755</b> |                                    |   |
| <p>A shift must not be in progress; an selector lever position, <b>pressure switch</b>, or watchdog test must not be in progress; no <b>spike</b> must be detected from the solenoid during the first test, or a pressure switch problem, or a speed problem. The code sets if the solenoid continuity test failed for the second time, or if there is <b>either</b> a pressure switch or speed data problem and the solenoid continuity test failed for the first time.</p> |                                |                                    | <ul style="list-style-type: none"> <li>● <b>Malfunction of pressure switch assembly</b></li> <li>● <b>Harness or connector between 2-4 solenoid and TCM open or short-circuited</b></li> <li>● <b>TCM ground open-circuited</b></li> <li>● <b>Malfunction of TCM</b></li> </ul> |



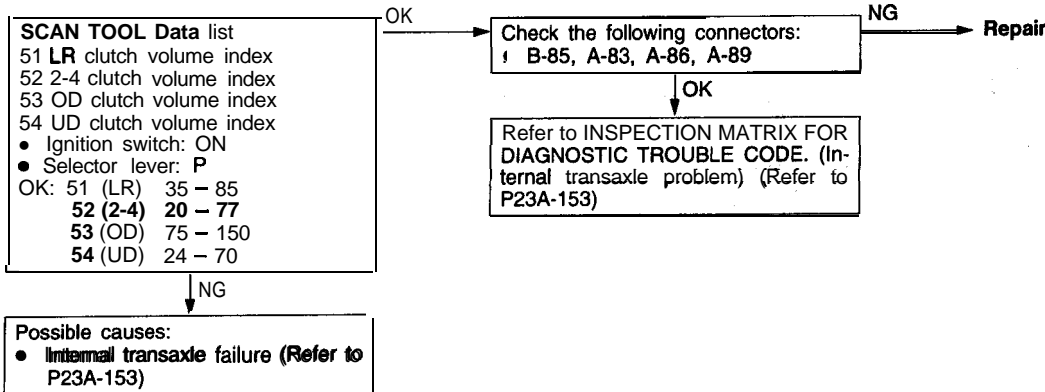
| Code No.   | Scan tool 43<br>General scan tool P0760 | Solenoid circuit error: OD | Probable cause   |
|--|---|----------------------------|--|
| A shift must not be in progress; an selector lever position, pressure switch, or watchdog test must not be in progress: no spike must be detected from the solenoid during the first test, or a pressure switch problem, or a speed problem. The code sets if the solenoid continuity test failed for the second time, or if there is either a pressure switch or speed data problem and the solenoid continuity test failed for the first time. |   |                            | <ul style="list-style-type: none"> <li>● Malfunction of pressure switch assembly</li> <li>● Harness or connector between OD solenoid and TCM open or short-circuited</li> <li>● TCM ground open-circuited</li> <li>● Malfunction of TCM</li> </ul> |



|  |   |                                   |   |
|--|---|-----------------------------------|---|
| <b>Code No.</b>  | <b>Scan tool 44</b><br><b>General scan tool P0765</b> | <b>Solenoid circuit error: UD</b> | <b>Probable cause</b>   |
| A shift must not be in progress; an selector lever position, pressure switch, or watchdog test must not be in progress; no spike must be detected from the solenoid during the first test, or a pressure switch problem, or a speed problem. The code sets if the solenoid continuity test failed for the second time, or if there is either a pressure switch or speed data problem and the solenoid continuity test failed for the first time. |   |                                   | <ul style="list-style-type: none"> <li>● Malfunction of <b>pressure switch assembly</b></li> <li>● <b>Harness</b> or connector between UD solenoid and TCM <b>open or short-circuited</b></li> <li>● TCM ground open-circuited</li> <li>● Malfunction of TCM</li> </ul> |

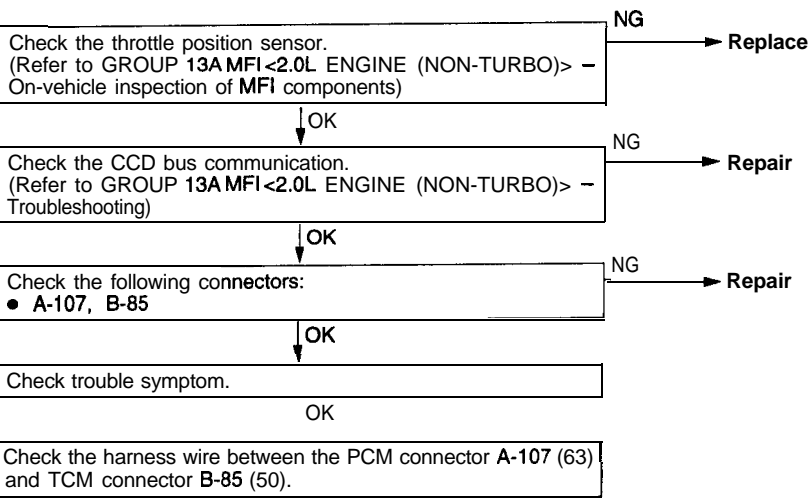


|   |                         |                              |  |
|---|-------------------------|------------------------------|--|
| Code No.  | Scan tool 46            | UD Hydraulic circuit failure | Probable cause   |
|   | General scan tool P0783 |                              |  |
| A 3-4 shift must be in progress, and the UD flag must be set (temperature must not be cold). The code sets concurrently with the third consecutive 3-4 shift abort if the underdrive fault counter is greater than three. |                         |                              | <ul style="list-style-type: none"> <li>Internal transaxle problem</li> </ul> |



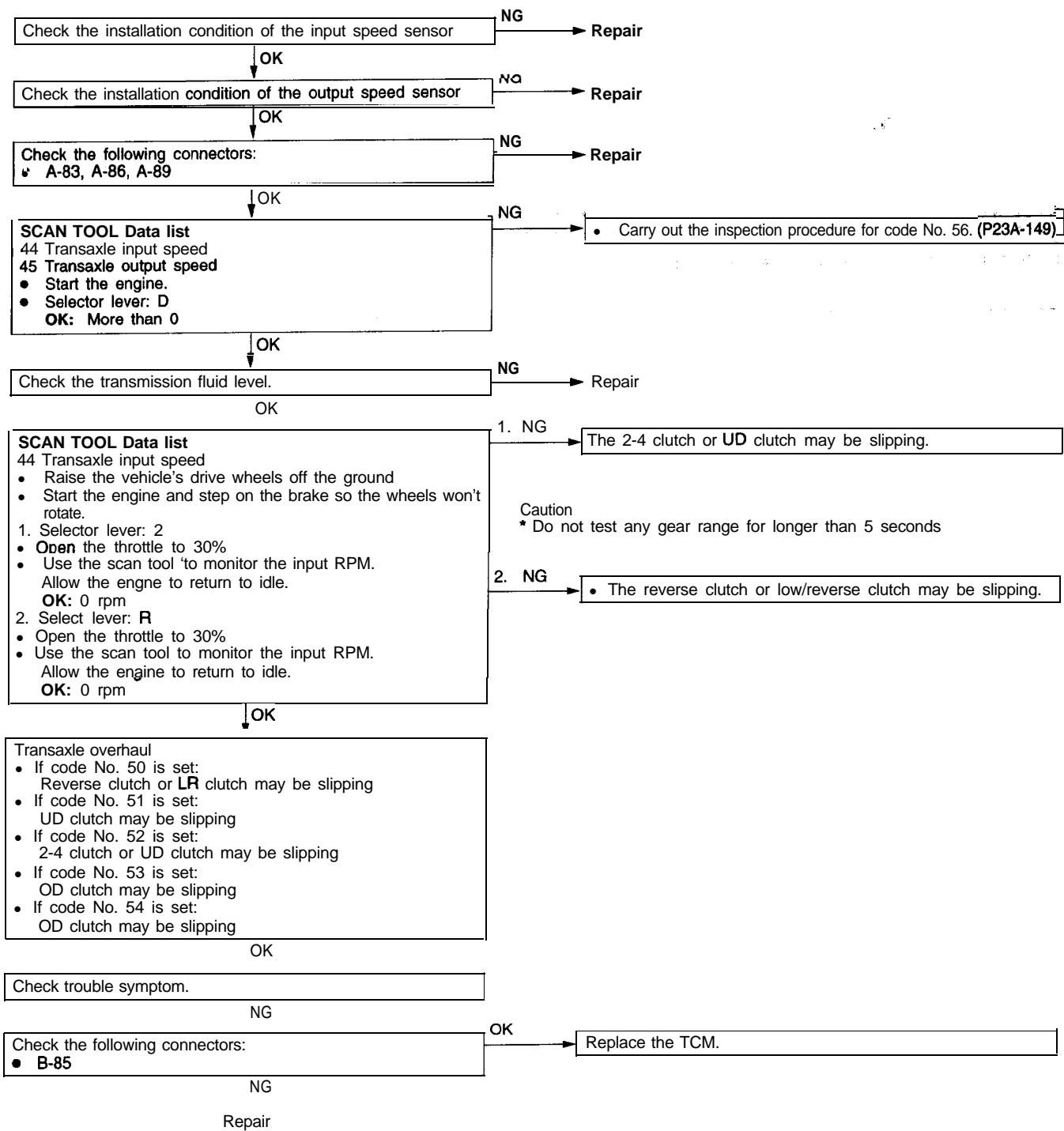
|                                      |                         |  |   |
|--------------------------------------|-------------------------|--|---|
| Code No.                             | Scan tool 47            | Solenoid switch valve latched in the LR position | Probable cause  |
|                                      | General scan tool P1776 |  |   |
| LR pressure is high for second time. |                         |  | <ul style="list-style-type: none"> <li>Internal transaxle problem</li> <li>Refer to Inspection matrix for diagnostic trouble code. (Internal transaxle problem) (P23A-153)</li> </ul> |

|  |                         |                              |  |
|--|-------------------------|------------------------------|--|
| Code No.   | Scan tool 48            | TRD link communication error | Probable cause   |
|  | General scan tool P1793 |                              |  |
| <p>The code sets when:<br/>There is an incorrect response from the power train control module via the CCD bus acknowledging request for torque management test during idle.</p> <p>or when:<br/>Event dependent on two sequential request for torque managed shift without correct response from <b>powertrain</b> control module on CCD bus acknowledging that torque management is in process.</p> |                         |                              | <ul style="list-style-type: none"> <li>CCD bus communication problem</li> <li>Sticky throttle position sensor</li> <li>Open circuit or short-circuit in TRD link line between TCM and PCM</li> </ul> |

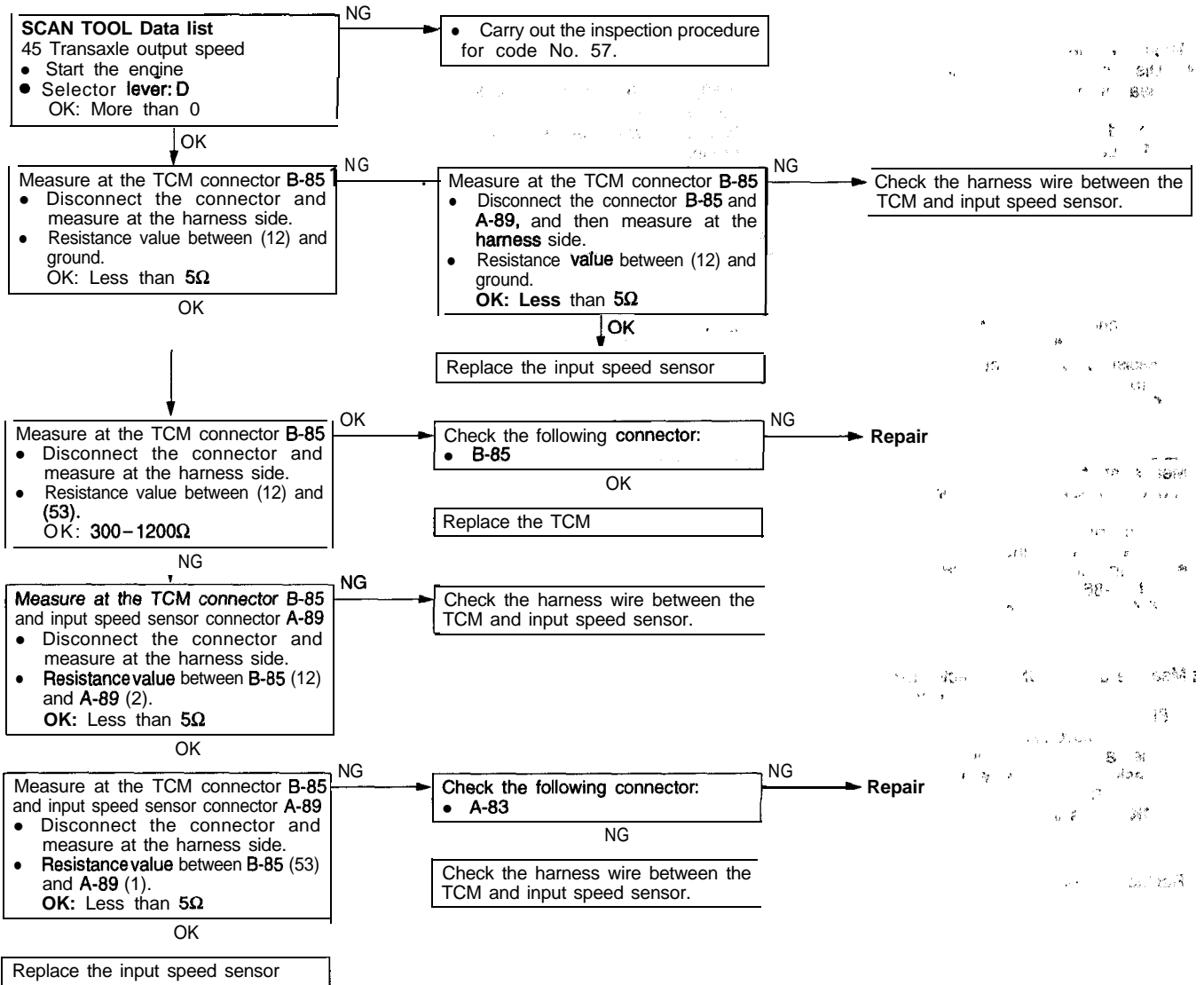




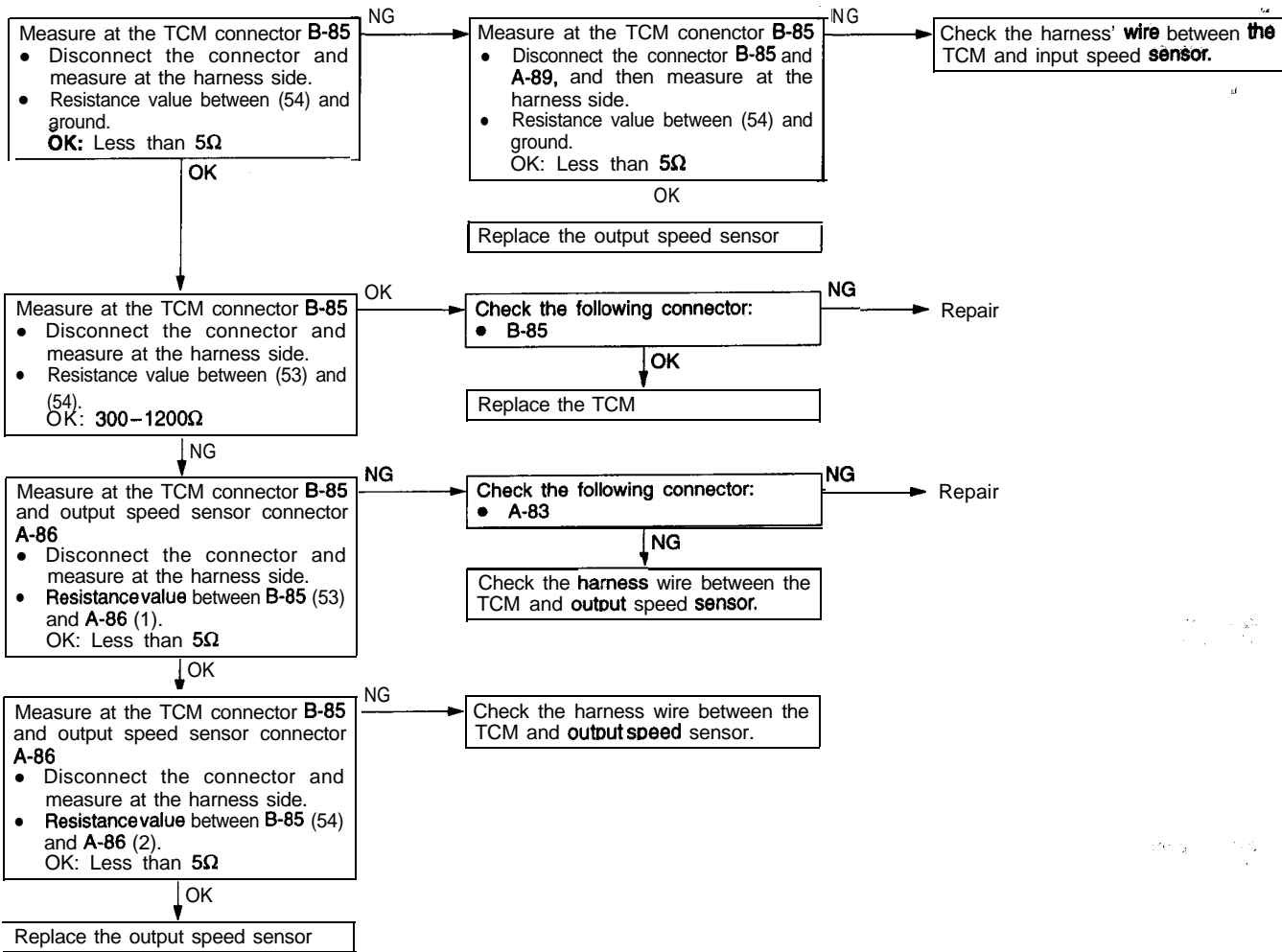
| Code No.   | Scan tool<br>50, 51, 52, 53, 54<br><br>General scan tool<br>P0736, P0731<br>P0732 P0733<br>P0734 | Speeds error (Gear, ratio reverse, 1st, 2nd, 3rd, 4th) | Probable cause   |
|--|--|--|--|
| <p>Code <b>50-54</b> sets if the ratio of the input <b>r/min</b> to the output <b>r/min</b> does not compare to a particular gear ratio.<br/>                     A hard fault is considered to exist when the fault counter has matured to a value of <b>255</b>.<br/>                     An intermittent fault is considered present when the fault counter is greater than or equal to <b>6</b> and less than <b>255</b>.<br/>                     No fault is considered to exist when the fault counter is less than <b>6</b>.</p> |  |  | <ul style="list-style-type: none"> <li>• Malfunction of input speed sensor</li> <li>• Malfunction of output speed sensor</li> <li>• Harness or connector between input speed sensor and TCM open or short-circuited</li> <li>• Harness or connector between output speed sensor and TCM open or short-circuited</li> <li>• Malfunction of TCM</li> <li>• Internal transaxle problem</li> </ul> |



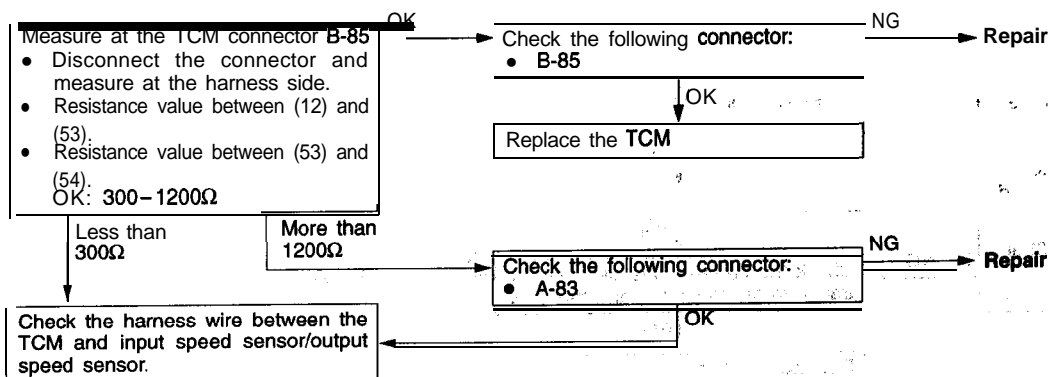
| Code No.   | Scan tool 56<br>General scan tool P0715 | Speeds error: Input Speed Sensor | Probable cause  |
|--|---|----------------------------------|---|
| <p>There is an excessive change in input shaft speed in any gear.<br/>A hard fault is considered to exist when the fault counter has matured to a value of 255.<br/>An intermittent fault is considered present when the fault counter is greater than or equal to 6 and less than 255.<br/>No fault is considered to exist when the fault counter is less than 6.</p> |   |                                  | <ul style="list-style-type: none"> <li>• Malfunction of input speed <b>sensor</b></li> <li>• Harness or connector between output speed sensor and <b>TCM</b> open or <b>short-circuited</b></li> <li>• Malfunction of <b>TCM</b></li> </ul> |



| Code No.  | Scan tool 57<br>General scan tool P0720 | Speeds error: Output Speed Sensor | Probable cause  |
|---|---|-----------------------------------|---|
| There is an excessive change in output shaft speed in any gear.<br>A hard fault is considered to exist when the fault counter has matured to a value of 255.<br>An intermittent fault is considered present when the fault counter is greater than or equal to 6 and less than 255.<br>No fault is considered to exist when the fault counter is less than 6. |   |                                   | <ul style="list-style-type: none"> <li>● Malfunction of output speed sensor</li> <li>● Harness or connector <b>between</b> output Speed sensor and TCM open or short-circuited</li> <li>● Malfunction of TCM</li> </ul> |

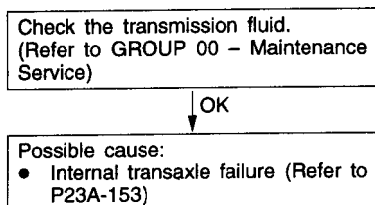


|  |                         |                                   |  |
|--|-------------------------|-----------------------------------|--|
| Code No.   | Scan tool 58            | Speeds error: Speed sensor ground | Probable cause:  |
|  | General scan tool P1794 |                                   |  |
| After a reset in Neutral and input shaft speed/output shaft speed equals a ratio of input gear teeth to output gear teeth of 2.50.<br>A hard fault is considered to exist when the fault counter has matured to a value of 255.<br>An intermittent fault is considered present when the fault counter is greater than or equal to 6 and less than 255.<br>No fault is considered to exist when the fault counter is less than 6. |                         |                                   | <ul style="list-style-type: none"> <li>• Sensor ground open-circuited</li> <li>• Malfunction of TCM</li> </ul> |

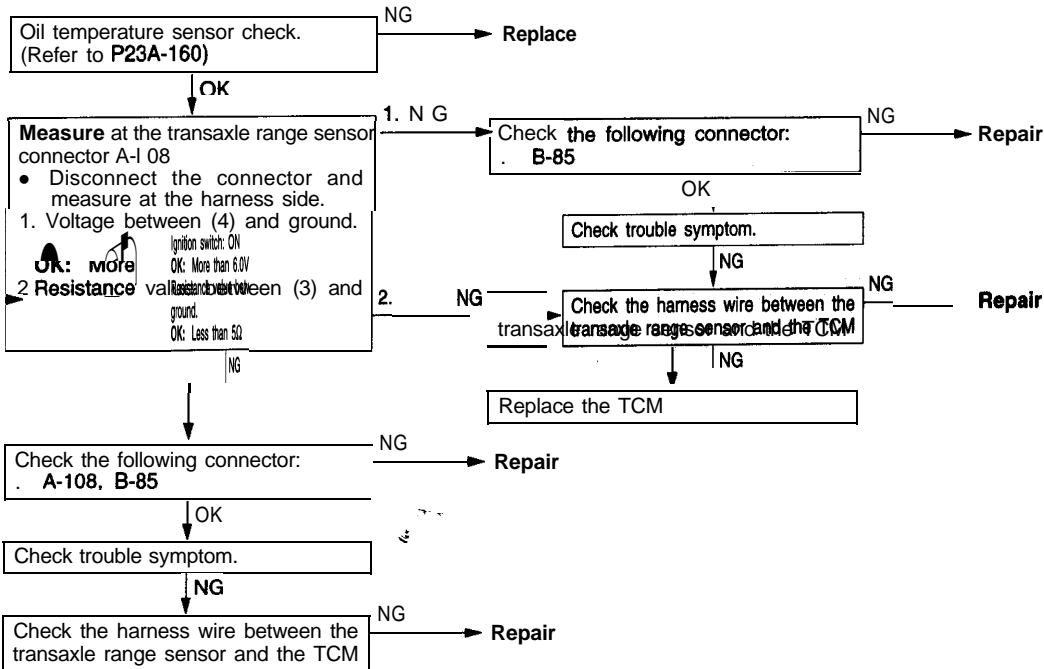


|  |                                      |   |   |
|--|--------------------------------------|---|---|
| Code No.   | Scan tool 60, 61, 62                 | LR inadequate element volume: LR, 2-4, OD | Probable cause:   |
|  | General scan tool P1770, P1771 P1772 |   |   |
| The updated learned volume is below a threshold value.<br>The volumes of the transmission fluid needed to apply the friction elements are continuously monitored and learned for adaptive controls. As the friction material wears, the volume of fluid needed to apply the element increases. The following are the typical clutch volumes beyond which the clutches might be damaged:<br>LR: 35-83 OD: 75-150 2-4: 20-77 UD: 24-70 |                                      |   | <ul style="list-style-type: none"> <li>• Internal transaxle problem</li> <li>• Refer to inspection matrix for diagnostic trouble code. (Internal transaxle problem (P23A-153))</li> </ul> |

|   |                         |                                   |  |
|---|-------------------------|-----------------------------------|--|
| Code No.  | Scan tool 73            | Worn out/burnt transmission fluid | Probable cause:  |
|   | General scan tool P1798 |                                   |  |
| With the A/C clutch engaged, converter clutch fully on, partial lock failure counter greater than equal to 20, and the turbine acceleration out of range.<br>Theory of operation:<br>While in 3rd, 4th gear Fully electronically modulated converter clutch (FEMCC) and just before the A/C clutch engages, the PCM requests the TCM to momentarily establish Partial electronically modulated converter clutch (PEMCC) operation. If the turbine acceleration is out of range during the FEMCC to PEMCC transition, a counter is incremented. When the count is 20 or more, the trouble code is set. This code does not cause the code is set, FEMCC to PEMCC operation before the A/C clutch engagement will be disabled. |                         |                                   | <ul style="list-style-type: none"> <li>• Degraded fluid</li> <li>• Wheels severely out of alignment</li> <li>• Internal transaxle problem</li> </ul> |



| Code No.   | Scan tool 74<br>General scan tool P1799 | Calculated oil temperature in use | Probable cause  |
|--|---|-----------------------------------|---|
| This code will set when the Transaxle Thermistor Voltage is below .0784 volts or above 4.9412 volts for 15 seconds, for 3 consecutive engine starts. |   |                                   | <ul style="list-style-type: none"> <li>Malfunction of oil temperature sensor</li> <li><b>Harness</b> or connector between transaxle range sensor and TCM open or short-circuited</li> <li>Malfunction of TCM</li> </ul> |



**INSPECTION MATRIX FOR DIAGNOSTIC TROUBLE CODE  
 (Internal transaxle problem)**

23110410010

| Code | Condition  | 1 | 2 | 3   | 4 | 5 | 6 | 7 | 8 | 9 | 10   | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19  | 20 | 21 | 22 | 23 | 24 | 25 |   |
|------|--|---|---|-----|---|---|---|---|---|---|------|----|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|---|
| 21   | OD clutch -pressure too low                      | X | X | X   |   | X |   | X |   |   |      | X  | X  | X  | X  |    |    |    |    |     | X  | X  | X  | X  | X  | X  |   |
| 22   | 2-4 clutch - pressure too low                    | X | X |     |   | X |   |   |   | X |      | X  | X  | X  | X  |    |    |    | X  | X   | X  | X  | X  | X  |    |    |   |
| 23   | OD & 2-4 clutch - pressure too low               | X | X |     |   | X |   |   |   |   |      | X  | X  | X  | X  |    |    |    | X  | X   | X  | X  | X  | X  |    |    |   |
| 24   | LR clutch - pressure too low                     | X | X |     |   | X |   |   |   |   | xxxx |    |    |    |    |    |    |    | X  | X   | X  | X  | X  | X  |    |    |   |
| 25   | OD & LR clutch - pressure too low                | X | X |     |   | X |   |   |   |   |      | X  | X  | X  | X  |    |    |    | X  | X   | X  | X  | X  | X  |    |    |   |
| 26   | 2-4 & LR clutch- pressure too low                | X | X |     |   | X |   |   |   |   |      | x  | x  | x  | x  |    |    |    | X  | X   | X  | x  |    | x  |    | x  |   |
| 27   | OD, 2-4 & LR clutch - pressure too low           | X | X |     |   | X |   |   |   |   |      | X  | X  | X  | X  |    |    |    | x  | x   | x  | x  | x  | x  |    |    |   |
| 31   | OD clutch pressure switch response failure       |   |   |     |   | X | X | X | X |   |      |    |    |    |    |    |    |    |    | X   |    | x  | x  |    |    |    |   |
| 32   | 2-4 clutch pressure switch response failure      | X | X |     |   | X |   |   |   | X |      |    |    |    |    |    |    |    |    | X   |    | X  |    |    |    |    |   |
| 33   | OD & 2-4 clutch pressure switch response failure | X | X |     |   | X |   |   |   |   |      |    | X  |    |    |    |    |    |    | X   |    | X  |    |    |    |    |   |
| 37   | Solenoid switch valve stuck in the LU position   |   |   |     |   |   |   |   |   |   |      |    |    | X  | X  |    |    |    |    | X   |    | X  |    |    |    |    |   |
| 38   | Partial lockup control out of range              |   |   |     | x | x |   |   |   |   |      |    |    |    | X  |    | X  | X  |    | x   |    | x  |    | x  |    | x  |   |
| 46   | UD clutch - not lowering pressure                | X |   |     |   | X |   |   |   |   |      | X  | X  |    |    | X  |    |    |    | x   | x  | x  | x  |    |    |    |   |
| 47   | Solenoid switch valve stuck in the LR position   |   |   |     |   |   |   |   |   |   |      |    |    | x  | x  |    |    |    |    | X   |    | X  |    |    |    |    |   |
| 50   | Speed ratio default in reverse                   | X |   | x   | x | x |   |   | X |   | X    | x  | x  | X  | X  |    |    |    |    | x   | x  | x  | x  |    | X  | X  | X |
| 51   | Speed ratio default in 1st                       | X |   | x   | x | x | x |   |   |   | x    | x  | x  | x  | x  |    |    |    |    | X   | X  | X  | X  |    | X  | X  | X |
| 52   | Speed ratio default in 2nd                       | X |   | x   | x | x | x |   | X |   | xx   |    |    | X  |    |    |    |    |    | X   | X  | X  | X  |    | X  |    | X |
| 53   | Speed ratio default in 3rd                       | X |   | x   | x | x | x | x |   |   | xx   |    |    | X  |    |    |    |    |    | xxx |    |    |    |    | X  |    | X |
| 54   | Speed ratio default in 4th                       | X |   | xxx |   |   |   |   | X | X |      | xx |    | X  |    |    |    |    |    | x   | x  | x  | x  | X  |    | X  |   |
| 60   | Inadequate LR element volume                     |   |   |     |   |   |   |   |   |   | x    | x  | x  |    |    |    |    |    |    | X   |    |    |    |    |    | X  |   |
| 61   | Inadequate 2-4 element volume                    |   |   |     |   |   |   |   | X |   | x    | x  |    |    |    |    |    |    |    | X   |    |    |    |    |    | X  |   |
| 62   | inadequate OD element volume                     |   |   |     |   |   |   | X |   |   | x    | x  |    |    |    |    |    |    |    | X   |    |    |    |    |    | X  |   |

NOTE

Code 36 is not stored alone. It is stored if a speed error (code 50 through 58) is detected immediately after a shift. Look at the possible causes associated with the speed error code.

**PROBABLE CAUSE**

| No. | Probable cause                                 |
|-----|--|
| 1   | Low fluid level                                |
| 2   | Aerated fluid (High fluid level)               |
| 3   | Worn or damaged reaction shaft support sealing |
| 4   | worn or damaged input shaft sealing            |
| 5   | Worn pump                                      |
| 6   | Damaged or failed underdrive clutch            |
| 7   | Damaged or failed overdrive clutch             |
| 8   | Damaged or failed reverse clutch               |
| 9   | Damaged or failed 2-4 clutch                   |
| 10  | Damaged or failed low/reverse clutch           |
| 11  | Damaged clutch seal                            |
| 12  | Worn or damaged accumulator sealing            |
| 13  | Plugged filter                                 |
| 14  | Stuck/sticky valves                            |
| 15  | Solenoid switch valve                          |
| 16  | Lock-up switch valve                           |
| 17  | Torque converter control valve                 |
| 18  | Regulator valve                                |
| 19  | Valve body leakage                             |
| 20  | Pressures too high                             |
| 21  | Internal solenoid leak                         |
| 22  | Torque converter clutch failure                |
| 23  | Faulty cooling system                          |
| 24  | Damaged speed sensor gear teeth                |
| 25  | Planetary gear sets broken or seized           |
|     |  |



**INSPECTION MATRIX FOR TROUBLE SYMPTOMS**

23110130015

| Trouble symptom                                    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|--|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|
| Harsh engagement from Neutral (N) to Drive (D)     |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Harsh engagement from Neutral (N) to Reverse (R)   |   |   |   |   |   |   |   |   |   |    |    |    |    | X  |    |    |    |
| Delayed engagement from Neutral (N) to Drive (D)   | X | X |   |   | X | X |   |   | X | X  |    |    |    |    |    |    |    |
| Delayed engagement from Neutral (N) to Reverse (R) |   |   |   |   |   |   |   |   |   |    |    | X  |    |    |    |    |    |
| Poor shift quality                                 |   |   | X |   |   |   |   |   |   |    |    | X  |    |    |    |    |    |
| Shifts erratically                                 | X |   | X |   | X |   |   |   |   |    |    |    |    |    |    |    |    |
| Drives in neutral (N)                              |   |   |   |   |   |   |   | X |   |    | X  |    | X  |    |    |    |    |
| Drags or locks                                     |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Grating, scraping, growling noise                  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Knocking noise                                     |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Buzzing noise during shifts only                   |   |   |   |   |   |   |   |   |   |    |    |    |    |    | X  | X  | X  |
| Hard to fill oil blows out filler tube             |   | X | X | X | X | X |   |   |   |    |    |    |    |    | X  | X  | X  |
| Transaxle overheats                                |   | X | X | X |   |   | X | X |   |    |    |    | X  |    |    |    |    |
| Harsh upshift                                      | X | X | X |   | X | X |   |   |   |    |    |    | X  |    |    |    |    |
| No upshift into overdrive                          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| No torque converter control                        |   |   |   | X |   |   |   |   | X | X  |    |    | X  |    |    |    |    |
| Harsh downshifts                                   |   | X |   |   |   |   |   |   | X | X  |    |    | X  |    |    |    |    |
| High shift efforts                                 | X |   |   | X |   | X |   |   |   | X  |    |    |    |    |    |    |    |
| Harsh torque converter control shift               | X | X |   |   |   | X |   |   |   | X  |    |    |    |    |    |    |    |

**PROBABLE CAUSE**

| No. | Probable cause                                  |
|-----|---|
| 1   | Engine performance                              |
| 2   | Worn or faulty underdrive clutch                |
| 3   | Worn or faulty overdrive clutch                 |
| 4   | Worn or faulty reverse clutch                   |
| 5   | Worn or faulty 2-4 clutch                       |
| 6   | Worn or faulty low/reverse clutch               |
| 7   | Clutch(es) dragging                             |
| 8   | Insufficient clutch plate clearance             |
| 9   | Damaged clutch seal                             |
| 10  | Worn or damaged accumulator sealing(s)          |
| 11  | Faulty cooling system                           |
| 12  | Engine coolant temperature too low              |
| 13  | Incorrect gear shift control linkage adjustment |
| 14  | Shift linkage damaged                           |
| 15  | Chipped or damaged gear teeth                   |
| 16  | Planetary gear sets broken or seized            |
| 17  | Bearings worn or damaged                        |

**Trouble symptom**

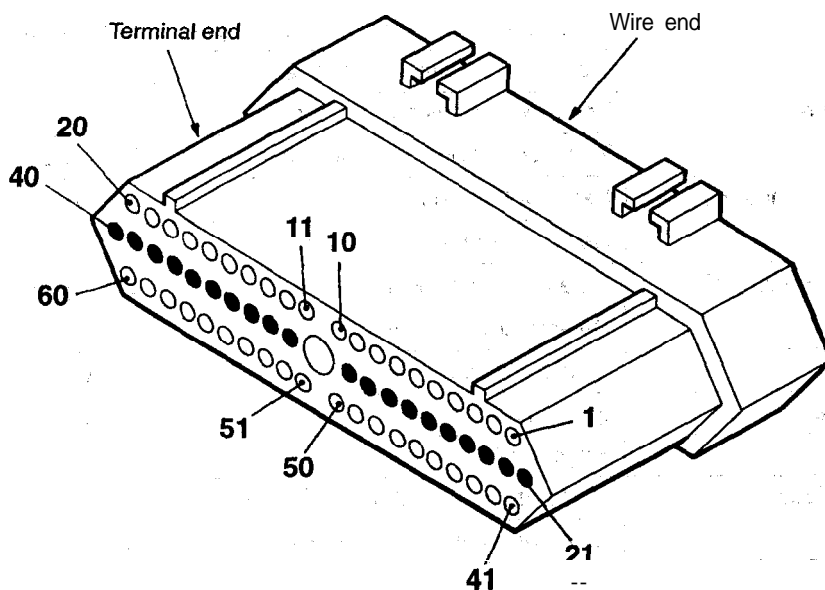
| Trouble symptom                                  | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 |
|--|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Harsh engagement from Neutral(N) to Drive(D)     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | X  |
| Harsh engagement from Neutral(N) to Reverse(R)   |    |    |    | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Delayed engagement from Neutral(N) to Drive(D)   |    | X  |    | X  |    | X  |    |    | X  |    | X  |    | X  |    |    |    |    |
| Delayed engagement from Neutral(N) to Reverse(R) |    |    | X  | X  | X  |    | X  |    | X  |    | X  |    |    |    |    |    | X  |
| Poor shift quality                               |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Shifts erratically                               |    |    |    |    | X  | X  |    |    |    |    |    |    |    |    |    |    |    |
| Drives in Neutral (N)                            |    |    |    |    | X  |    | X  |    | X  | X  | X  |    | X  |    |    |    | X  |
| Drags or locks                                   |    |    |    |    |    |    |    | X  |    | X  | X  |    |    |    |    |    |    |
| Grating, scraping, growling noise                |    |    |    |    |    |    |    |    |    |    |    |    |    | X  | X  |    |    |
| Knocking noise                                   |    |    |    |    |    |    |    |    | X  |    | X  |    |    |    |    |    |    |
| Buzzing noise during shifts only                 | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Hard to fill oil blows out filler tube           |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Transaxle overheats                              |    |    |    | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Harsh upshift                                    |    | X  |    | X  | X  |    | X  | X  | X  |    | X  |    |    |    |    |    |    |
| No upshift into overdrive                        |    | X  |    | X  | X  |    |    | X  | X  |    | X  |    |    |    |    |    |    |
| No torque converter control                      |    | X  | X  | X  | X  |    | X  | X  | X  |    | X  | X  |    |    |    |    |    |
| Harsh downshifts                                 |    | X  | X  | X  | X  |    | X  | X  | X  |    | X  | X  |    |    |    |    |    |
| High shift efforts                               |    |    |    | X  |    | X  |    |    |    |    |    |    | X  |    |    |    |    |
| Harsh torque converter control shift             |    |    |    | X  |    | X  |    |    |    |    |    |    | X  |    |    |    |    |

**PROBABLE CAUSE**

| No. | Probable cause                                |
|-----|---|
| 18  | Drive shaft(s) bushing(s) worn or damaged     |
| 19  | Worn or broken reaction shaft support sealing |
| 20  | Worn or damaged input shaft sealing           |
| 21  | Valve body malfunction or leakage             |
| 22  | Hydraulic pressure too low                    |
| 23  | Hydraulic pressure too high                   |
| 24  | Faulty oil pump                               |
| 25  | Oil filter clogged                            |
| 26  | Low fluid level                               |
| 27  | High fluid level                              |
| 28  | Aerated fluid                                 |
| 29  | Engine idle too low                           |
| 30  | Engine idle too high                          |
| 31  | Normal solenoid operation                     |
| 32  | Solenoid sound cover loose                    |
| 33  | Sticking lockup piston                        |
| 34  | Torque converter failure                      |

CHECK AT TCM TERMINALS

23110140018



A9FA0115

| Terminal No. | Check item               | Check conditions   | Normal condition                 |
|--------------|--------------------------|--|----------------------------------|
| 1            | Transaxle range sensor 1 | Selector lever position: <b>R, D, 2, L</b>   | Battery positive voltage         |
|              |                          | Selector lever position: <b>P, N</b>   | 0v                               |
| 2            | Transaxle range sensor 2 | Selector lever position: <b>D, 2</b>   | Battery positive. <b>voltage</b> |
|              |                          | Selector lever position: <b>P, R, N, L</b>   | 0 v                              |
| 3            | CCD Bus (+)              | Ignition switch: <b>OFF</b>  | 2.5 <b>V</b>                     |
| 6            | SCI REC                  | Ignition switch: OFF   | 5 <b>V</b>                       |
| 7            | 2-4 pressure switch      | Transaxle condition: <b>2nd, 4th gear</b>  | 0v                               |
|              |                          | Transaxle condition: other gears   | Battery positive voltage         |
| 9            | Overdrive switch         | Overdrive switch: <b>ON</b>  | Battery positive voltage         |
|              |                          | Overdrive switch: <b>OFF</b>   | 0 v                              |
| 10           | L/R pressure switch      | Transaxle condition: <b>N and 1st gear</b>   | 0 <b>V</b>                       |
|              |                          | Transaxle condition: other gears   | Battery positive voltage         |
| 11           | Sensor ground            | Ignition switch: <b>ON</b>   | <b>0 V</b>                       |
| 12           | Input speed sensor       | Measure between terminals (53) and (12)<br>Engine: 3,000 <b>r/min</b><br>Selector lever position: <b>D range</b><br>Transaxle condition: <b>3rd gear</b> | 2.6 <b>V</b>                     |
| 13           | Signal ground            | Ignition switch: <b>ON</b>   | 0 v                              |
| 16           | Direct battery           | Ignition switch: <b>OFF</b>  | Battery positive <b>voltage</b>  |
| 17           | Power ground             | Ignition switch: <b>ON</b>   | 0 v                              |
| 18           | Vehicle speed output     | Vehicle: Slowly moving forward   | <b>0-4 V</b>                     |

| Terminal No. | Check item                | Check conditions  | Normal condition                |
|--------------|---------------------------|---|---------------------------------|
| 19           | UD solenoid driver        | Transaxle condition: <b>1st, 2nd, 3rd</b> gear  | Battery positive voltage        |
|              |                           | Transaxle condition: other <b>gears</b>   | <b>10 V</b>                     |
| 20           | OD solenoid driver        | Transaxle condition: <b>3rd, 4th</b> gear   | <b>10 V</b>                     |
|              |                           | Transaxle condition: other gears  | Battery positive voltage        |
| 41           | Transaxle range sensor 41 | Selector lever position: <b>P, R, 2</b>   | Battery positive voltage        |
|              |                           | Selector lever position: <b>N, D, L</b>   | 0 v                             |
| 43           | Transaxle range sensor 43 | Selector lever position: <b>R, N, D</b>   | Battery positive voltage        |
|              |                           | Selector lever position: <b>P, 2, L</b>   | 0 v                             |
| 44           | CCD Bus (-)               | Ignition switch: OFF  | <b>2.5 V</b>                    |
| 45           | CCD Bus (+) Bias          | Ignition switch: OFF  | <b>2.5 V</b>                    |
| 46           | Crank signal              | Engine: idle  | <b>1.5 V</b>                    |
| 48           | Ignition ground feed      | Selector lever position: <b>R, D, 2, L</b>  | Battery positive voltage        |
|              |                           | Selector lever position: <b>P, N</b>  | 0 v                             |
| 49           | OD pressure switch        | Transaxle condition: <b>3rd, 4th</b> gear   | Battery positive voltage        |
|              |                           | Transaxle condition: other <b>gears</b>   | <b>0V</b>                       |
| 51           | Ignition 12V Feed         | Ignition switch: ON   | Battery positive voltage        |
|              |                           | Ignition switch: OFF  | 0 v                             |
| 52           | Throttle position sensor  | Accelerator pedal: full closed  | <b>0 V</b>                      |
|              |                           | Accelerator pedal: full open  | <b>3.8 V</b>                    |
| 53           | Sensor ground             | Ignition switch: ON   | 0 v                             |
| 54           | Output speed sensor       | Measure between terminals (53) and (54)<br>Engine: 3,000 r/min<br>Selector lever position: <b>D</b> range<br>Transaxle condition: <b>3rd</b> gear | <b>2.6 V</b>                    |
| 55           | Relay power               | Ignition switch: ON   | Battery positive voltage        |
|              |                           | Ignition switch: OFF  | 0 v                             |
| 56           | Switched battery          | Ignition switch: ON   | Battery <b>positive</b> voltage |
|              |                           | Ignition switch: OFF  | <b>0 V</b>                      |
| 57           | Switched battery          | Ignition switch: ON   | Battery <b>positive</b> voltage |
|              |                           | Ignition switch: OFF  | 0 v                             |
| 59           | 2-4 solenoid driver       | Transaxle condition: <b>2nd, 4th</b> gear   | Battery <b>positive</b> voltage |
|              |                           | Transaxle condition: other gears  | <b>10 V</b>                     |
| 60           | L/R solenoid driver       | Transaxle condition: <b>N</b> and <b>1st</b> gear   | <b>10 V</b>                     |
|              |                           | Transaxle condition: other gears  | Battery positive voltage        |

## ON-VEHICLE SERVICE

23110160045

### TRANSAXLE FLUID LEVEL CHECK

Refer to GROU'P 00 – Maintenance Service.

### TRANSAXLE FLUID REPLACEMENT

23110170048

Refer to GROUP 00 – Maintenance Service.

## TCM RESETTING PROCEDURE

23110420013

- (1) Disconnect the negative battery cable from the **battery** before replacing the transaxle or **carrying out an** overhaul.
- (2) After work has been completed, check **the diagnostic** trouble codes (DTC). If DTC **No. 12** ("Battery power was disconnected since last power **down**") has been generated, this DTC must be cleared.  
Furthermore, select "Special function" on the scan tool and then set the scan tool to Quick Learn mode (carry out this operation from the scan tool screen). Then input the clutch volume index into the **TCM**.

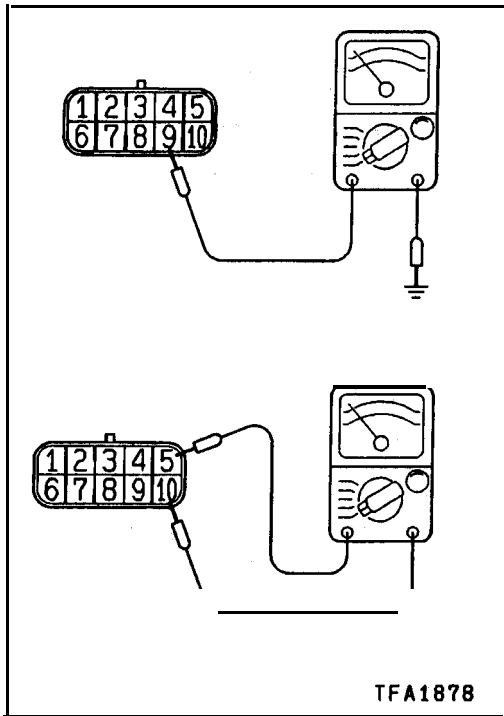
## PINION FACTOR WRITING PROCEDURE AFTER TCM REPLACEMENT OR TIRE SIZE CHANGE

23110430016

### NOTE

With **F4AC1** transmissions, the TCM uses the rotation speed of the transaxle output shaft to calculate the vehicle speed and cumulative distance **travelled**. Because of this, it is necessary to input (or update) the tire size coefficient into the TCM memory after the TCM has been replaced or the tire size has been changed.

- (1) Select "Special function" on the scan **tool** and then set the scan tool to Pinion Factor mode (carry out this operation from the scan tool screen). Then input (or update) the tire size coefficient **into** the TCM memory. Note that new **TCMs** do not **have** a tire size **coefficient** already input.



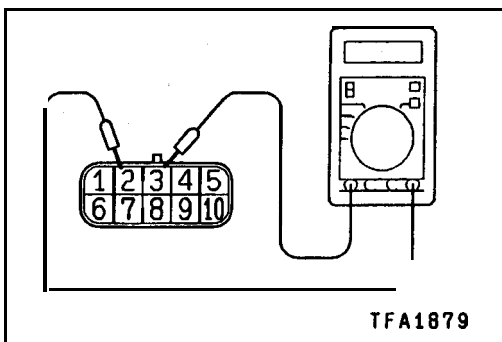
**TRANSAXLE RANGE SENSOR CONTINUITY CHECK**

23110440019

- (1) Disconnect the transaxle range sensor connector.
- (2) Check the continuity between sensor terminals and body ground (and terminals 5-10) while shifting the gearshift lever at each position. The continuity between sensor terminals and body ground (and terminals 5-10) should be as shown in the table below.

| Lever position | Terminal No. |   |   |   |   |   |    | Body ground      |
|----------------|--------------|---|---|---|---|---|----|------------------|
|                | 1            | 5 | 6 | 7 | 8 | 9 | 10 |                  |
| P              | ○            |   | ○ | ○ | ○ | ○ | ○  | ○<br>○<br>○<br>○ |
| R              |              | ○ |   |   |   |   | ○  |                  |
| N              | ○            |   | ○ | ○ | ○ |   |    | ○<br>○<br>○<br>○ |
| D              |              |   |   |   |   | ○ |    | ○                |
| 2              |              |   |   |   | ○ |   |    | ○                |
| L              |              |   |   | ○ | ○ | ○ | ○  | ○<br>○<br>○<br>○ |

- (3) If there is a defect, replace the transaxle range sensor.



**OIL TEMPERATURE SENSOR CONTINUITY CHECK**

23110450012

- (1) Disconnect the transaxle range sensor connector.
- (2) Measure the resistance between terminals 2-3 and check that the values are as shown in the table below.

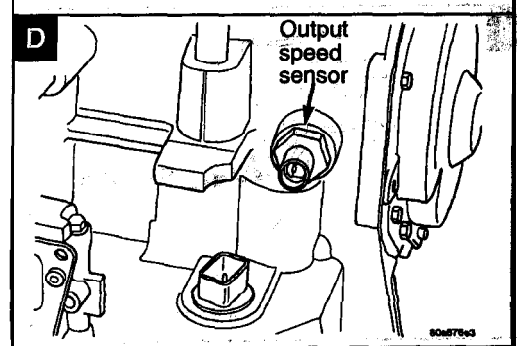
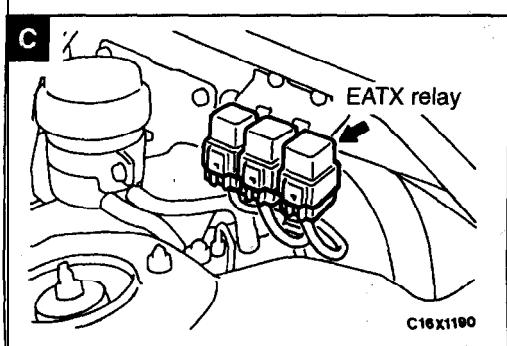
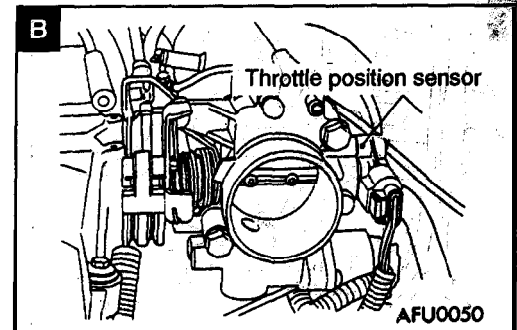
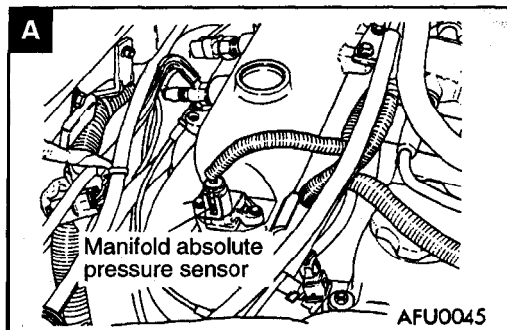
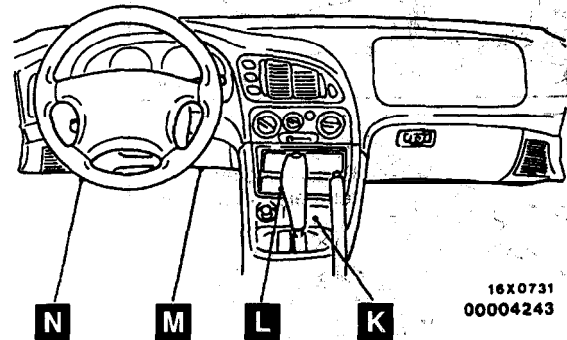
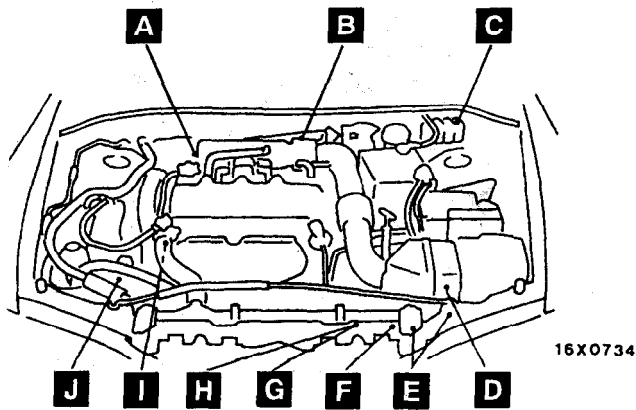
| Oil temperature °C(°F) | Resistance value kΩ |
|------------------------|---------------------|
| 0 (32)                 | 29.33 - 35.99       |
| 100 (212)              | 640 - 720           |

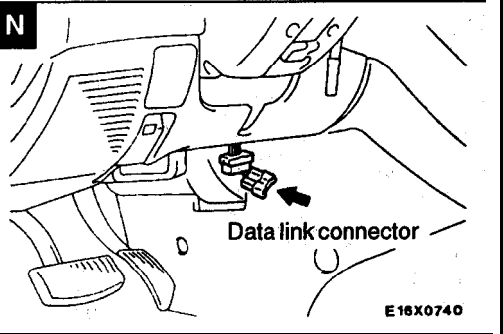
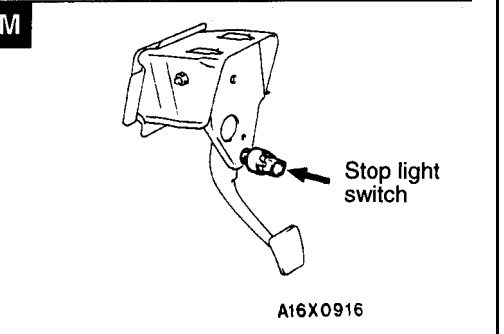
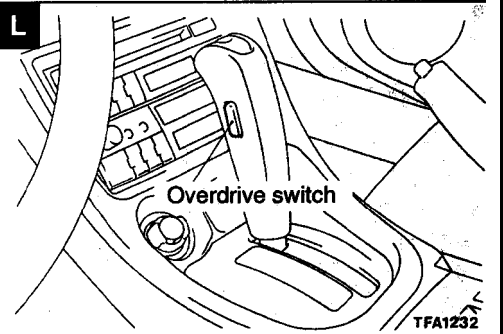
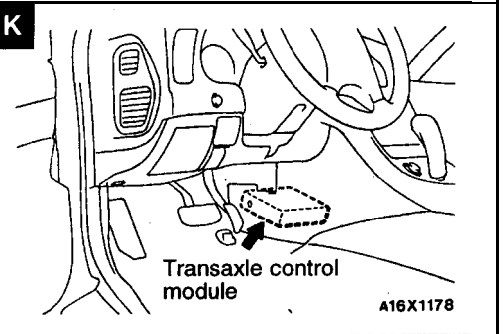
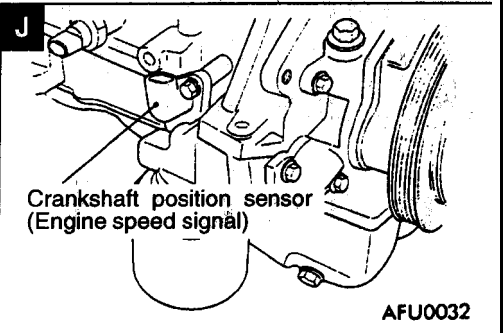
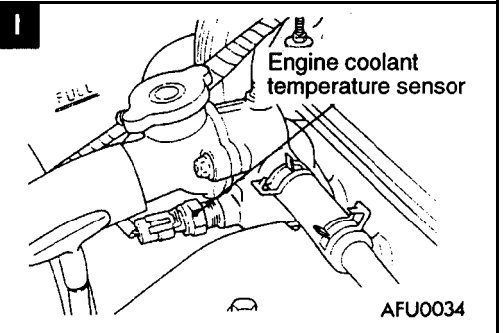
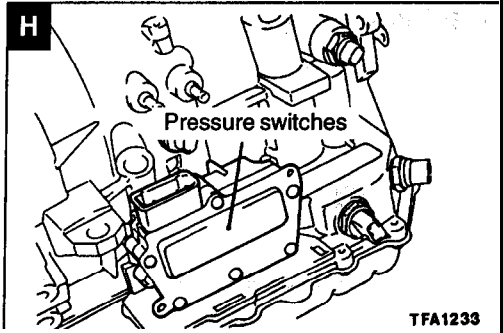
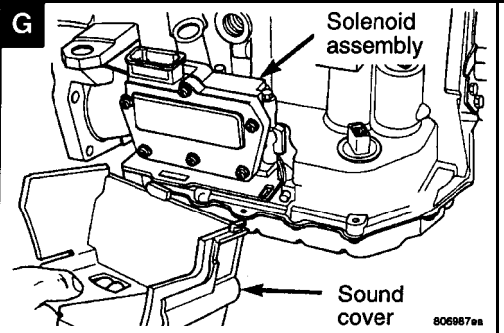
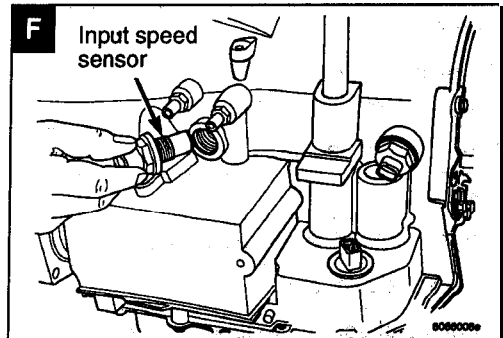
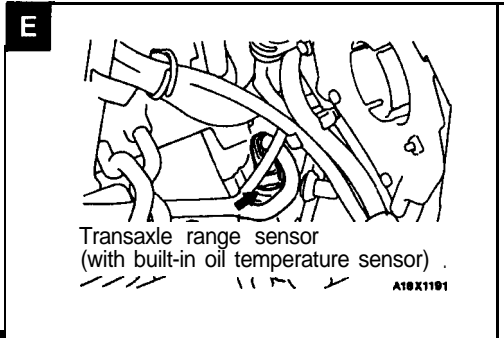
- (3) If the values are outside the standard values, replace the transaxle range sensor.

**AUTOMATIC TRANSAXLE CONTROL COMPONENT LAYOUT**

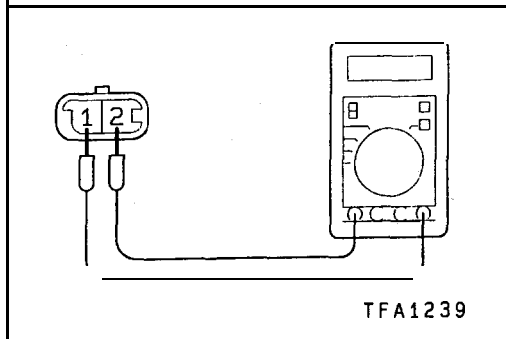
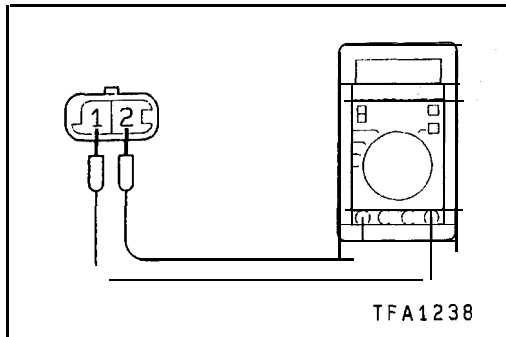
23110200020

| Name   | Symbol | Name  | Symbol |
|--|--------|---|--------|
| Crankshaft position sensor (Engine speed signal) | J      | Overdrive switch  | L      |
| Data link connector                              | N      | Pressure switches   | H      |
| EATX relay                                       | C      | Solenoid assembly   | G      |
| Engine coolant temperature sensor                | I      | Stop light switch   | M      |
| Input speed sensor                               | F      | Throttle position sensor                                      | B      |
| Manifold absolute pressure sensor                | A      | Transaxle control module                                      | K      |
| Output speed sensor                              | D      | Transaxle range sensor (With built-in oil temperature sensor) | E      |









## AUTOMATIC TRANSAXLE CONTROL COMPONENT CHECK

23110220026

### INPUT SPEED SENSOR CHECK

- (1) Disconnect the input speed sensor connector.
- (2) Measure the resistance **between** the input speed sensor side connector terminals 1 and 2.

**Standard value: 0.3–1.2 k $\Omega$**

- (3) If the resistance is outside the standard value, replace the input speed sensor.

### OUTPUT SPEED SENSOR CHECK

23110230029

- (1) Disconnect the output speed sensor connector.
- (2) Measure the resistance between the input speed sensor side connector terminals 1 and 2.

**Standard value: 0.3–1.2 k $\Omega$**

- (3) If the resistance is outside the standard value, replace the output speed sensor.

### TRANSAXLE RANGE SENSOR CONTINUITY CHECK

23110440026

Refer to P.23A-160.

### OVERDRIVE SWITCH CONTINUITY CHECK

23110240022

Refer to P.23A-193.

### THROTTLE POSITION SENSOR (TPS) CHECK

23110250018

Refer to GROUP 13A – On-vehicle Inspection of MFI Components.

### ENGINE COOLANT TEMPERATURE SENSOR CHECK

23110260028

Refer to GROUP 13A – On-vehicle Inspection of MFI Components.

### CRANKSHAFT POSITION SENSOR CHECK

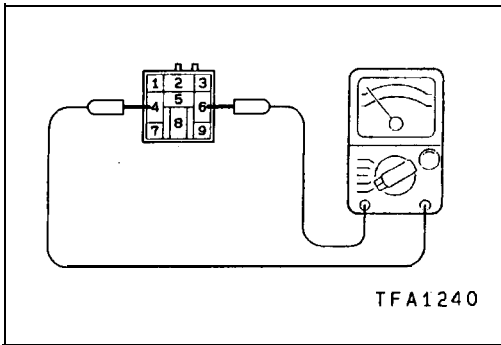
23110270021

Refer to GROUP 13A – Troubleshooting.

### MANIFOLD ABSOLUTE PRESSURE SENSOR CHECK

23110280024

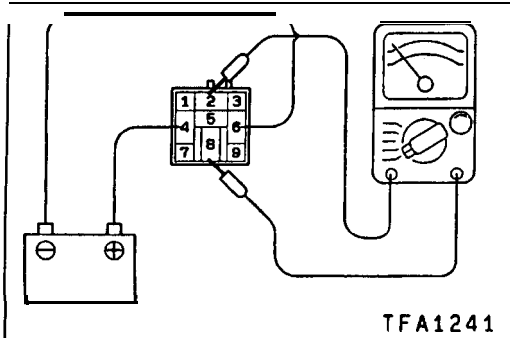
Refer to GROUP 13A – On-vehicle Inspection of MFI Components.



**EATX RELAY CHECK**

23110290027

- (1) Remove the EATX relay.
- (2) Check the continuity between the EATX relay terminals 4 and 6.



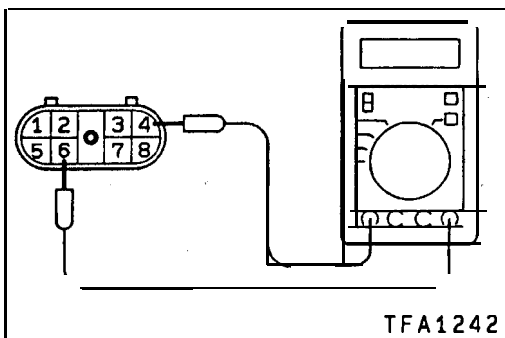
- (3) Use jumper leads to connect EATX relay terminal 4 to the battery (+) terminal and terminal 6 to the battery (-) terminal.
- (4) Check the continuity between EATX relay terminals 2 and 8 while connecting and disconnecting the jumper lead at the battery (-) terminal.

| Jumper lead  | Terminal 2 | Terminal 8 |
|--------------|------------|------------|
| Connected    | ○ — ○      | ○ — ○      |
| Disconnected |            |            |

**STOP LIGHT SWITCH CHECK**

23110300027

Refer to GROUP 35A – On-vehicle Service.



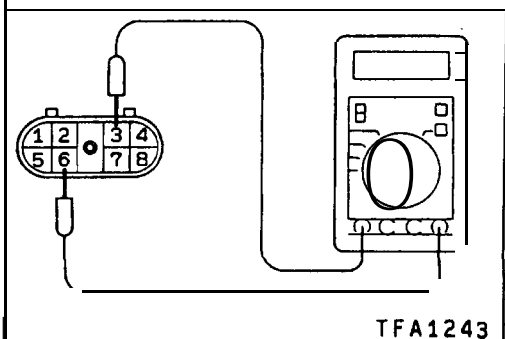
**LR SOLENOID CHECK**

23110310020

- (1) Disconnect the solenoid and pressure switch assembly connector.
- (2) Measure the resistance between the solenoid and pressure switch assembly side connector terminals 4 and 6.

**Standard value: Approx. 1 Ω [at 20°C(68°F)]**

- (3) If the resistance is outside the standard value, replace the solenoid and pressure switch assembly.



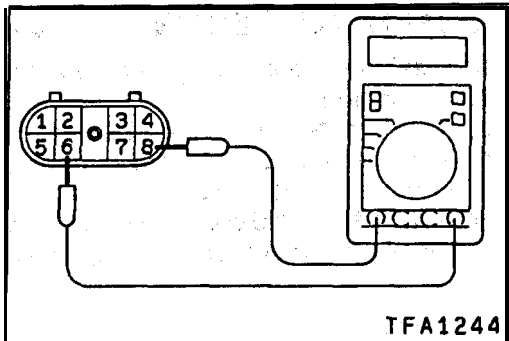
**2/4 SOLENOID CHECK**

23110320023

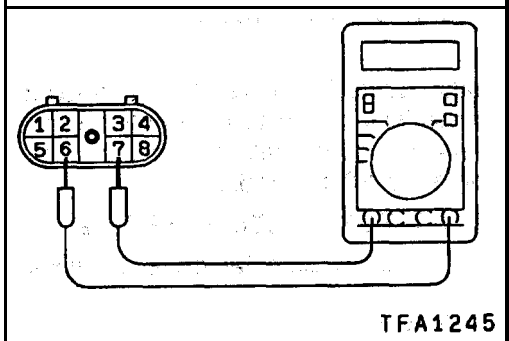
- (1) Disconnect the solenoid and pressure switch assembly connector.
- (2) Measure the resistance between the solenoid and pressure switch assembly side connector terminals 3 and 6.

**Standard value: Approx. 1Ω [at 20°C(68°F)]**

- (3) If the resistance is outside the standard value, replace the solenoid and pressure switch assembly.



TFA1244



TFA1245

### OD SOLENOID CHECK

23110330026

- (1) Disconnect the solenoid and **pressure switch assembly connector**.
- (2) Measure the resistance between the solenoid and pressure switch assembly side connector terminals 6 and 8.

**Standard, value: Approx. 1 Ω [at 20°C(68°F)]**

- (3) If the resistance is outside the **standard value**, replace the solenoid and pressure switch, assembly.

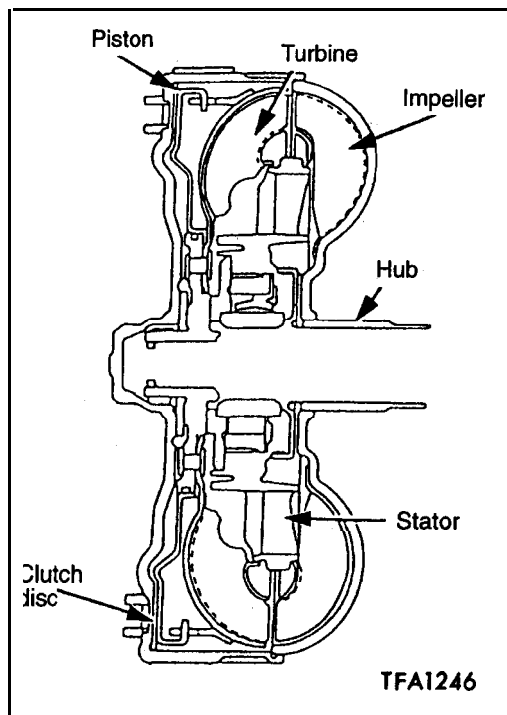
### UD SOLENOID CHECK

23110340029

- (1) Disconnect the solenoid and pressure **switch assembly connector**.
- (2) Measure the resistance between the solenoid and pressure switch assembly **side connector terminals 6 and 7**.

**Standard value: Approx. 1 Ω [at 20 °C (68 °F)]**

- (3) If the resistance is outside the **standard value**, replace the solenoid and pressure switch assembly.



## TORQUE CONVERTER STALL TESTING 23110350022

The torque converter stall test is used primarily to determine **stator** overrunning clutch operation.

Use the scan tool and a tachometer to **do the stall** test. Determine engine rpm with the transaxle in **drive, engine** at wide open throttle, and vehicle **stationary**.

To keep the vehicle stationary and to avoid creeping or lurching forward, apply both the service brakes and the parking brake.

### WARNING

**When performing a stall test, always apply both the service brakes and parking brake. Also, do not let anyone stand in front of the vehicle during testing.**

### NOTE

Avoid keeping the throttle open for more than 5 seconds at a time. Allow the transmission fluid to cool **between stall** tests by placing the transaxle in neutral, raising the **engine** rpm slightly for approximately 20 seconds.

### TORQUE CONVERTER STATOR CLUTCH FAILURE

One type of **stator** over-running clutch failure is a slipping clutch. With this type of failure, the **vehicle** will exhibit normal transaxle operation at highway speeds **but** will have poor acceleration.

Another type of **stator** over-running clutch failure is a seized clutch.

With this type of failure, the vehicle acceleration may be acceptable but a high throttle is required to maintain vehicle speed.

The vehicle may seem like it has a loss of power.

With either type of failure, poor fuel economy and transaxle fluid over-heating may be the result.

### STALL SPEED ABOVE SPECIFICATION

If the stall speed exceeds 2,440 r/min by more than 200 r/min, a clutch is slipping.

Diagnose the clutch circuits by performing hydraulic and air pressure tests.

The clutches of the **F4AC1** transaxles may also be checked using information given through the input and output speed sensors to the TCM.

### STALL SPEED BELOW SPECIFICATION

If stall speed is 250–350 r/min below specification, the **stator** over-running clutch is slipping. During the road test, if poor acceleration occurs through the gears with normal transaxle operation at highway speeds, the vehicle has a slipping **stator** clutch.

### NORMAL STALL SPEED AND ACCELERATION

If stall speed and acceleration appear normal, but it takes excessively high throttle opening to maintain vehicle speed, the starter's over-running clutch is seized.

This will impede the flow of fluid within the torque converter, causing excessive use of power from the engine for cruising.

### CONVERTER NOISE

While performing the stall test, listen for abnormal noise coming from the converter area.

A whining noise due to fluid flow within the converter is considered normal.

Loud metallic noises coming from **the converter** indicate loose parts or internal damage. Remove the **inspection cover** from the **bellhousing** area and check for a cracked torque converter flex plate or its bolts.

If the flex plate and bolts are ok, and there is still noise coming from the torque converter, the torque converter may be defective and must be replaced.

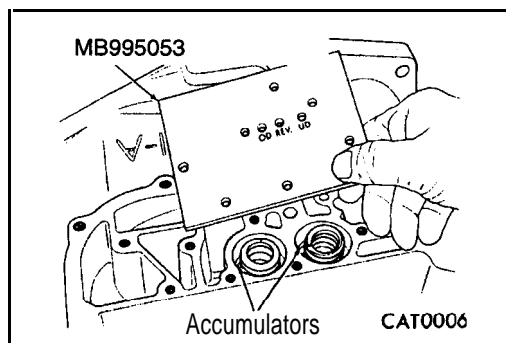
Be sure to check a sample of the **fluid** for **contamination**.

#### **TRANSAXLE COOLER AND LINE FLUSHING**

If there has been a mechanical failure within the torque converter or in the transaxle itself, the fluid becomes contaminated and circulates throughout the hydraulic system.

This includes the cooler for the transaxle inside the radiator. The cooler and the lines connecting the cooler to the transaxle, must be flushed before being connected to the newly repaired or replaced torque converter or transaxle.

If the system is not flushed, the new components will become contaminated with the old fluid. The proper method for flushing is reverse flushing the system.



## CLUTCH AIR PRESSURE TESTS

23110360025

Inoperative clutches can be located using a series of tests by substituting air pressure for fluid pressure.

The clutches may be tested by applying air pressure to their respective passages.

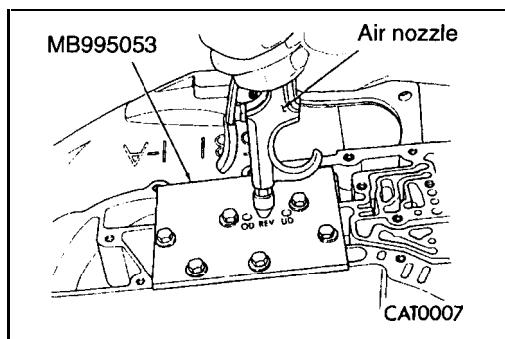
Remove the valve body and then install the special tool **MB995053**. To make air pressure tests, go on as follows:

The compressed air supply must be free of all dirt and moisture. Use a pressure of 207 kPa (30 psi).

Remove oil pan and valve body. See Valve body removal.

### OVERDRIVE CLUTCH

Apply air pressure to the overdrive clutch apply passage and watch for the push/pull piston to move forward. The piston should return to its starting position when the air pressure is removed.



### REVERSE CLUTCH

Apply air pressure to the reverse clutch apply passage and watch for the push/pull piston to move rearward. The piston should return to its starting position when the air pressure is removed.

### 2/4 CLUTCH

Apply air pressure to the feed hole located on the 2/4 clutch retainer. Look in the area where the 2/4 piston contacts the first separator plate and watch carefully for the 2/4 piston to move rearward. The piston should return to its original position after the air pressure is removed.

### LOW/REVERSE CLUTCH

Apply air pressure to the low/reverse clutch feed hole (rear of case, between 2 bolt holes). Then, look in the area where the low/reverse piston contacts the first separator plate and watch carefully for the piston to move forward. The piston should return to its original position after the air pressure is removed.

### UNDERDRIVE CLUTCH

Because this clutch piston cannot be seen, its operation is checked by function. Air pressure is applied to low/reverse and the 2/4 clutches. This locks the output shaft. Use a piece of rubber hose wrapped around the input shaft and a pair of clamp-on pliers to turn the input shaft. Next apply air pressure to the underdrive clutch. The input shaft should not rotate with hand torque. Release the air pressure and confirm that the input shaft will rotate.

## FLUID LEAKAGE-TORQUE CONVERTER HOUSING AREA CHECK

23110370028

- (1) Check for source of leakage.  
Since fluid leakage at or around the torque converter area may originate from an engine oil leak, the area should be examined closely, Factory fill fluid is dyed red and, therefore, can be distinguished from engine oil.
- (2) Before removing the transaxle, perform the following checks:  
When leakage is determined to originate from the transaxle, check fluid level before removal of the transaxle and torque converter.  
High oil level can result in oil leakage out the vent in the manual shaft. If the fluid level is high, adjust to proper level.  
After fluid is at the proper level, check for leakage. If a leak persists, perform the following operation on the vehicle to determine if it is the torque converter or transaxle that is, leaking.

## TORQUE CONVERTER LEAKAGE

- (1) Possible sources of torque converter leakage are:
- (2) Torque converter weld leaks at the out side (peripheral) weld. Torque converter hub weld.
- (3) Hub weld is inside and not visible. Do not attempt to repair.

Replace torque converter.

If the torque converter must be replaced, refer to Torque Converter Clutch Break-in Procedure in this section. This procedure will reset the transaxle control module break-in status. Failure to perform this procedure may cause transaxle shutter.

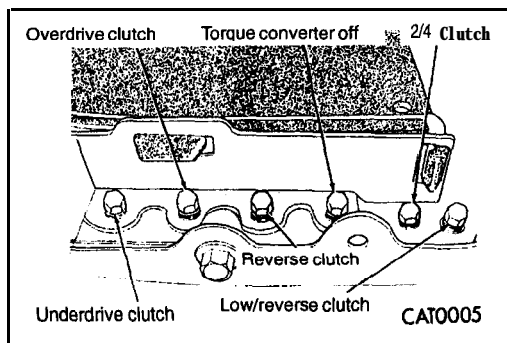
## HYDRAULIC PRESSURE TESTS

23110380021

Pressure testing is a very important step in the diagnostic procedure. These tests usually reveal the cause of most transaxle problems.

Before performing pressure tests, be certain that fluid level and condition, and shift cable adjustments have been checked and approved. Fluid must be at operating temperature 65–93°C (150 to 200°F).

1. Install an engine tachometer.
2. Raise vehicle on hoist which allows front wheels to turn, and position tachometer so it can be read.
3. Attach 1,000 kPa (140 psi) gauge and special tool **MB991605** to ports required for test being conducted. A 3,000 kPa (400 psi) gauge and special tool **MB991605** are required for reverse pressure test. Test port locations are shown in illustration.



**TEST ONE-SELECTOR IN LOW 1st GEAR**

- (1) Attach pressure gauge to the low/reverse clutch tap.
- (2) Move selector lever to the **L** position.
- (3) Allow vehicle wheels to turn and increase throttle opening to achieve an indicated vehicle speed of 32 km/h (20 mph).
- (4) Low/reverse clutch pressure should read 793 to 1,000 **kPa** (115 to 145 psi).
- (5) This test checks pump output, pressure regulation and condition of the low/reverse clutch hydraulic circuit and shift schedule.

**TEST TWO-SELECTOR IN DRIVE 2nd GEAR**

- (1) Attach pressure gauge to the underdrive clutch tap.
- (2) Move selector lever to the **2** position.
- (3) Allow vehicle wheels to turn and increase throttle opening to achieve an indicated vehicle speed of 48 km/h (30 mph).
- (4) Underdrive clutch pressure should read 758 to 1,000 **kPa** (110 to 145 psi).
- (5) This test checks the underdrive clutch hydraulic circuit as, well as the shift schedule.

**TEST THREE-OVERDRIVE CLUTCH CHECK**

- (1) Attach pressure gauge to the overdrive clutch tap.
- (2) Move selector lever to the **D** position.
- (3) Allow vehicle wheels to turn and increase throttle opening to achieve an indicated vehicle speed of 32 km/h (20 mph).
- (4) Overdrive clutch pressure should read 517 to 655 **kPa** (75 to 95 psi).
- (5) Move selector lever to the **2** position and increase indicated vehicle speed of 48 km/h (30 mph).
- (6) The vehicle should be in second gear and overdrive clutch pressure should be less than 35 **kPa** (5 psi).
- (7) This test checks the overdrive clutch hydraulic circuit as well as the shift schedule.



### TEST FOUR-SELECTOR IN DRIVE, OVERDRIVE GEAR

- (1) Attach pressure gauge to the 2/4 clutch tap.
- (2) Move selector lever to the **D** position.
- (3) Allow vehicle wheels to turn and increase throttle opening to achieve an indicated vehicle speed of **48 km/h (30 mph)**.
- (4) The 2/4 clutch pressure should read 517 to **655 kPa (75 to 95 psi)**.
- (5) This test checks the 2/4 clutch hydraulic circuit.

### TEST FIVE-SELECTOR IN DRIVE, OVERDRIVE

- (1) Attach pressure gauge to the torque converter clutch off pressure tap.
- (2) Move selector lever to the **D** position.
- (3) Allow vehicle wheels to turn and increase throttle opening to achieve an indicated vehicle speed of **80 km/h (50 mph)**.

#### CAUTION

**Both wheels must turn at the same speed.**

- (4) Torque converter clutch off pressure should be **less than 35 kPa (5 psi)**.
- (5) This test checks the torque converter clutch hydraulic circuit.

### TEST SIX-SELECTOR IN REVERSE

- (1) Attach pressure gauge to the reverse clutch tap.
- (2) Move selector lever to the reverse position.
- (3) Read reverse clutch pressure with output stationary (foot on brake) and throttle opened to achieve **1,500 r/min**.
- (4) Reverse clutch pressure should read **1,138 to 1,620 kPa (165 to 235 psi)**.
- (5) This test checks the reverse clutch hydraulic circuit.

### TEST RESULT INDICATIONS

- (1) If proper line pressure is found in any one test, the pump and pressure regulator are working properly.
- (2) Low pressure in all positions indicates a defective pump, a clogged filter, or a stuck pressure regulator valve.
- (3) Clutch circuit leaks are indicated if pressures do not fall within the specified pressure range.
- (4) If the overdrive clutch pressure is greater than **35 kPa (5 psi)** in step (6) of Test Three, a worn reaction shaft seal ring is indicated.

**PRESSURE CHECK SPECIFICATIONS**

PRESSURE TAP ORDER ON CASE FROM BELLHOUSING TO END COVER

ALL PRESSURE SPECIFICATIONS ARE kPa (psi) [on hoist, with front wheels free to turn]

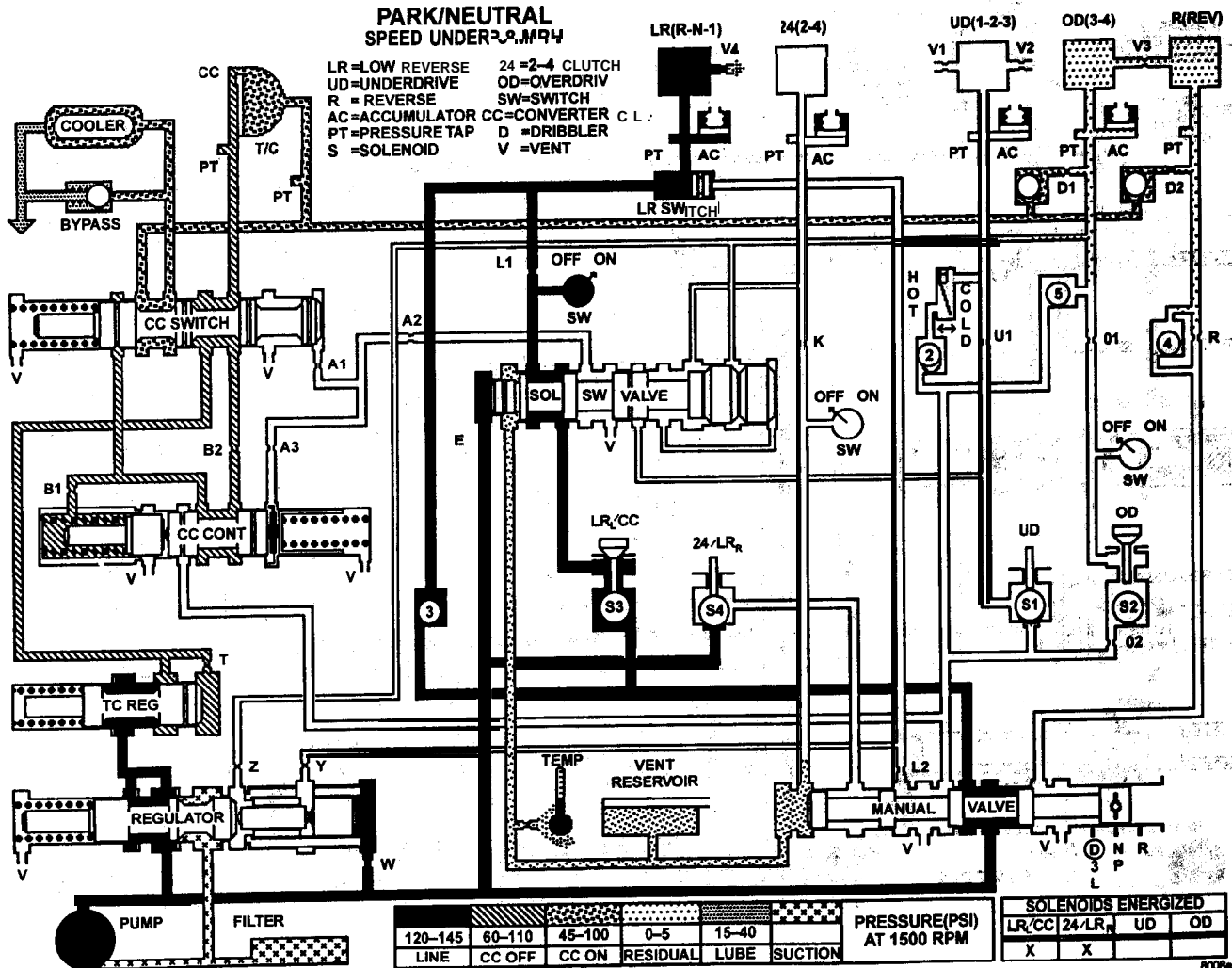
| Gear Selector Position     | Actual Gear         | Under-Drive Clutch      | Over-Drive Clutch  | Reverse Clutch            | Torque Converter Clutch Off | 2/4 Clutch            | Low/Reverse Clutch       |
|----------------------------|---------------------|-------------------------|--------------------|---------------------------|-----------------------------|-----------------------|--------------------------|
| PARK*<br>0 km/h (0 mph)    | PARK                | 0-14<br>(0-2)           | 0-35<br>(0-5)      | 0-35 (0-2)                | 414-758<br>(60-110)         | 0-35<br>(0-2)         | 793- 1,000<br>(115-145)  |
| REVERSE*<br>0 km/h (0 mph) | RE-VERSE            | 0-14<br>(0-2)           | 0-49<br>(0-7)      | 1,138- 1,620<br>(165-235) | 345-690<br>(50-100)         | 0-35<br>(0-2)         | 1,138-1,620<br>(165-235) |
| NEUTRAL*<br>0 km/h (0 mph) | NEUTRAL             | 0-14<br>(0-2)           | 0-35<br>(0-5)      | 0-35 (0-2)                | 414-758<br>(60-110)         | 0-35<br>(0-2)         | 793- 1,000<br>(115-145)  |
| L#<br>32 km/h<br>(20 mph)  | FIRST               | 758- 1,000<br>(110-145) | 0-35<br>(0-5)      | 0-35 (0-2)                | 414-758<br>(60-110)         | 0-35<br>(0-2)         | 793- 1,000<br>(115-145)  |
| 2#<br>48 km/h<br>(30mph)   | SECOND              | 758- 1,000<br>(110-145) | 0-35<br>(0-5)      | 0-35 (0-2)                | 414-758<br>(60-110)         | 793-1000<br>(115-145) | 0-35 (0-2)               |
| 2#<br>72 km/h<br>(45 mph)  | DIRECT              | 517-655<br>(75-95)      | 517-655<br>(75-95) | 0-35 (0-2)                | 414-621<br>(60-90)          | 0-35<br>(0-2)         | 0-35 (0-2)               |
| D#<br>48 km/h<br>(30 mph)  | OVER-DRIVE          | 0-14<br>(0-2)           | 517-655<br>(75-95) | 0-35 (0-2)                | 414-621<br>(60-90)          | 517-655<br>(75-95)    | 0-35 (0-2)               |
| D#<br>80 km/h<br>(50 mph)  | OVER-DRIVE WITH TCC | 0-14<br>(0-2)           | 517-655<br>(75-95) | 0-35 (0-2)                | 0-35<br>(0-5)               | 517-655<br>(75-95)    | 0-35 (0-2)               |

● : Engine speed at 1,500 r/min

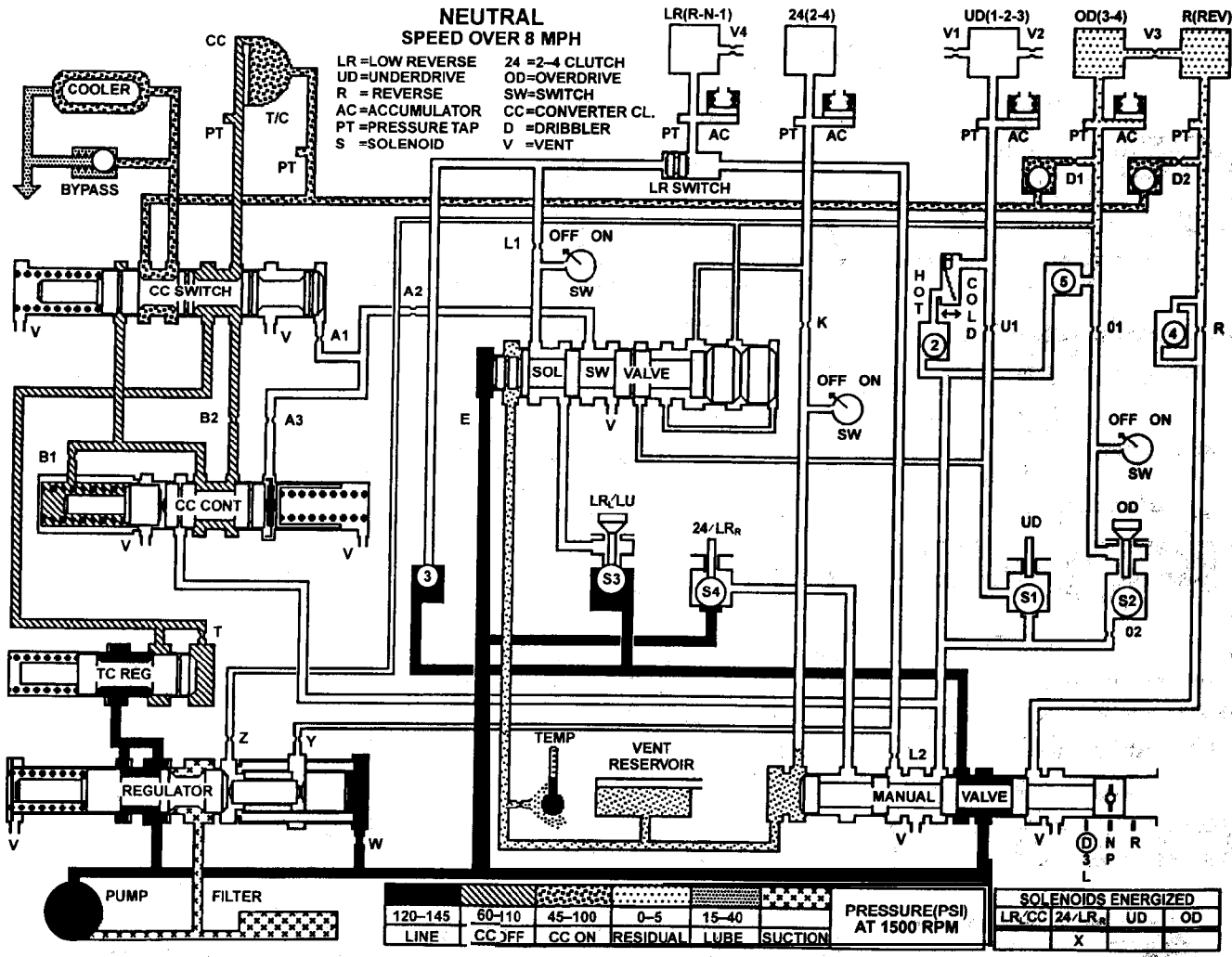
#: CAUTION; Both front wheels must be turning at same speed.

HYDRAULIC CIRCUIT

<Park/Neutral>

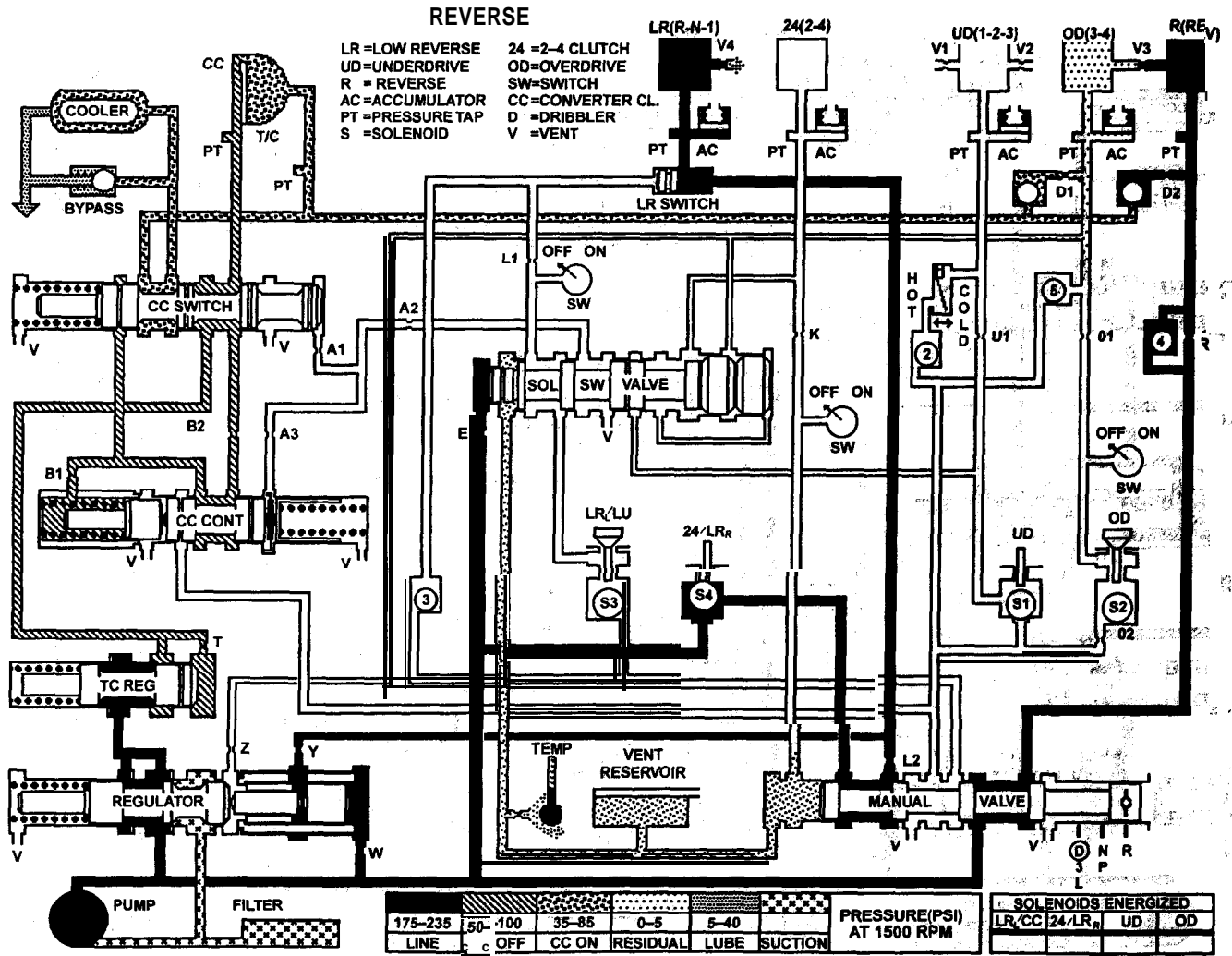


<Neutral>

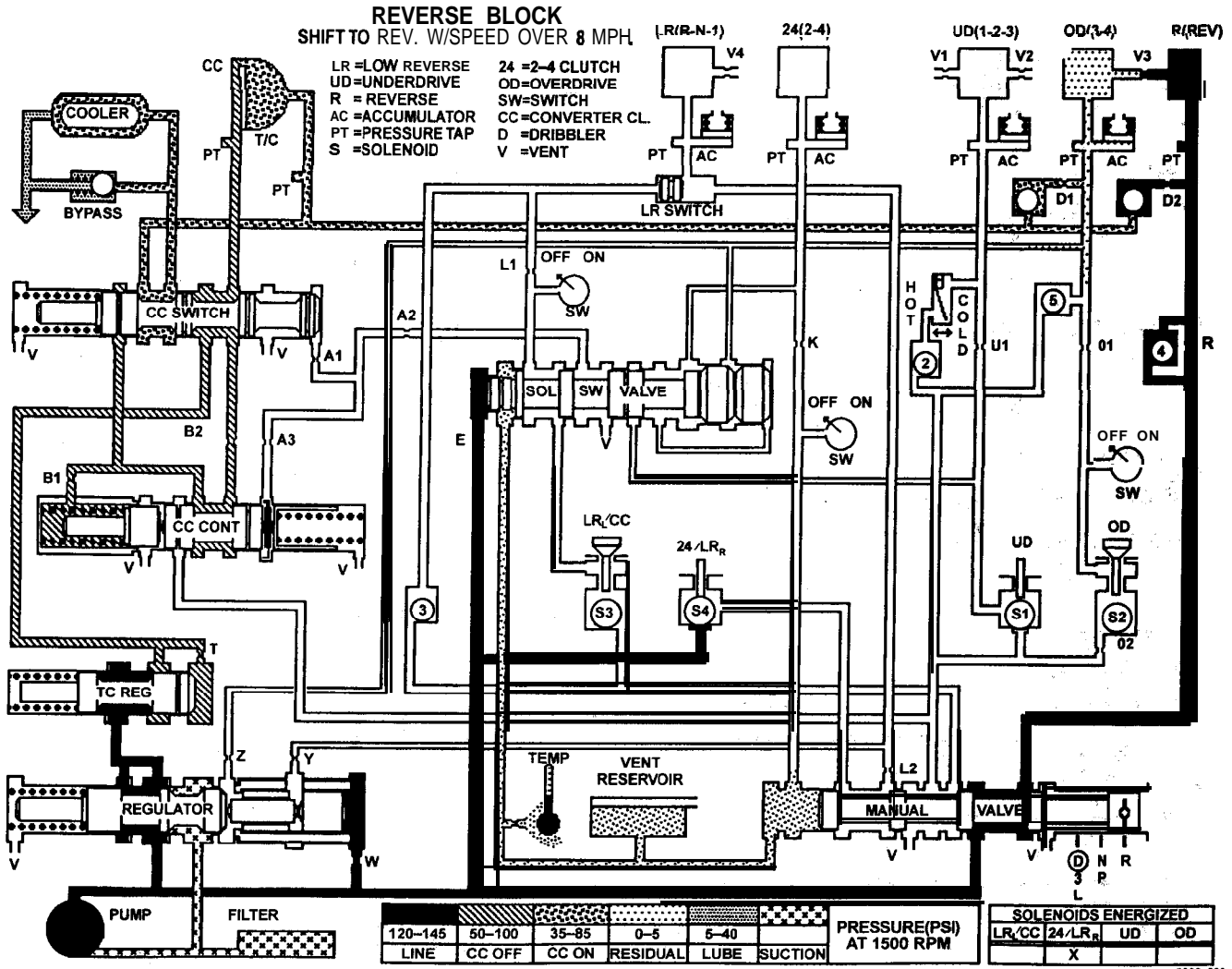


8008a584

<Reverse>

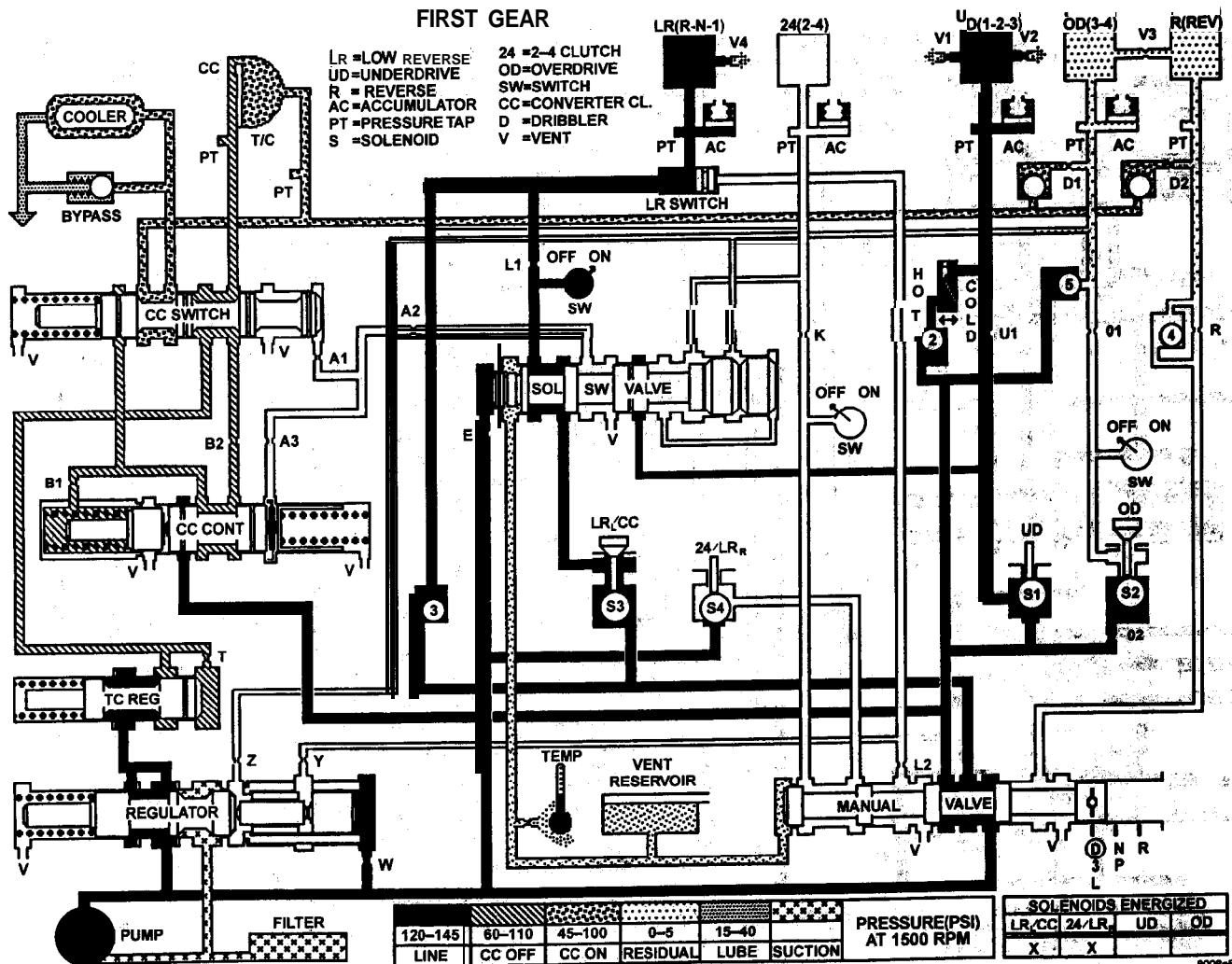


<Reverse Block>



8008606

<First Gear>

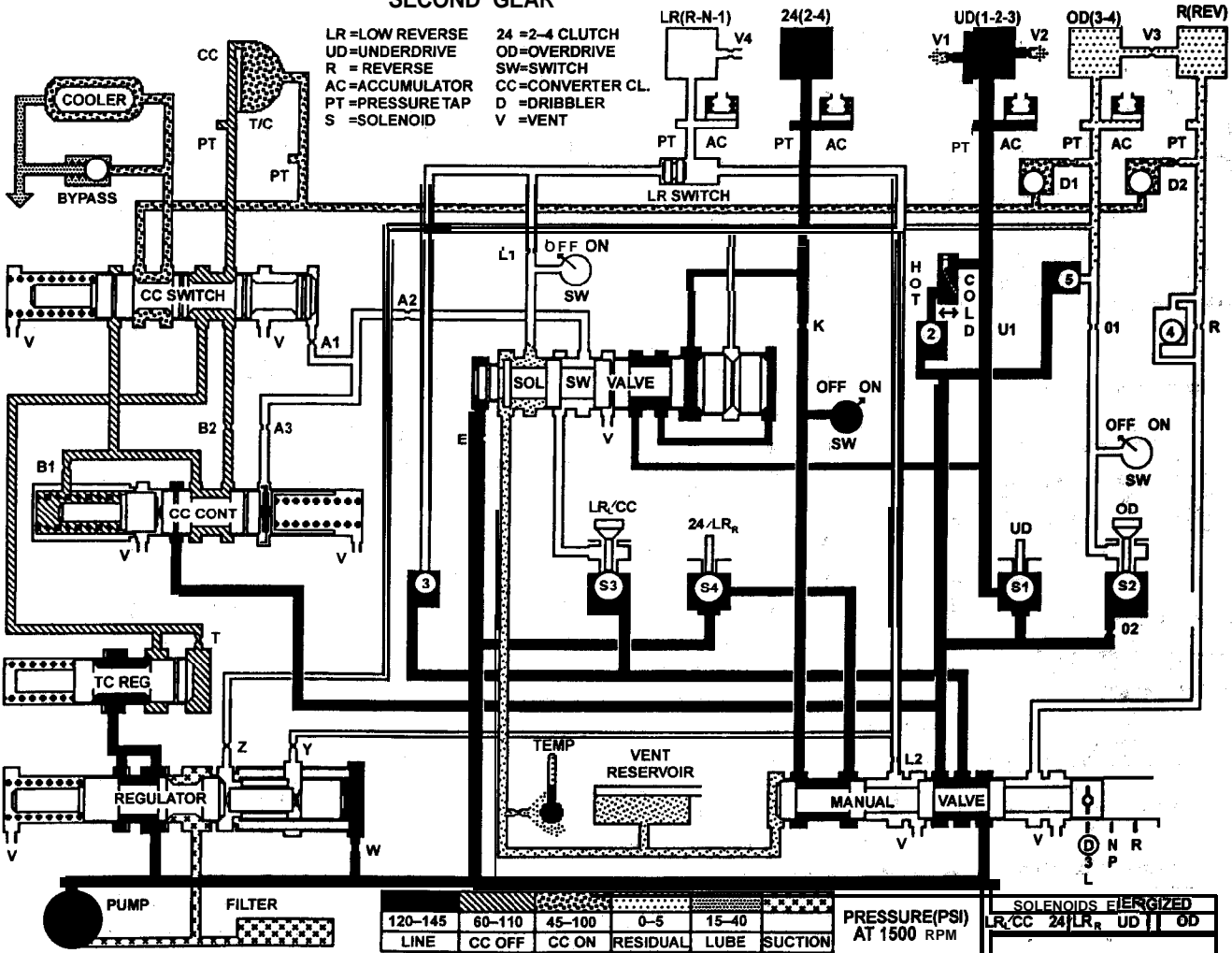


8008587

TSB Revision

<Second Gear>

SECOND GEAR

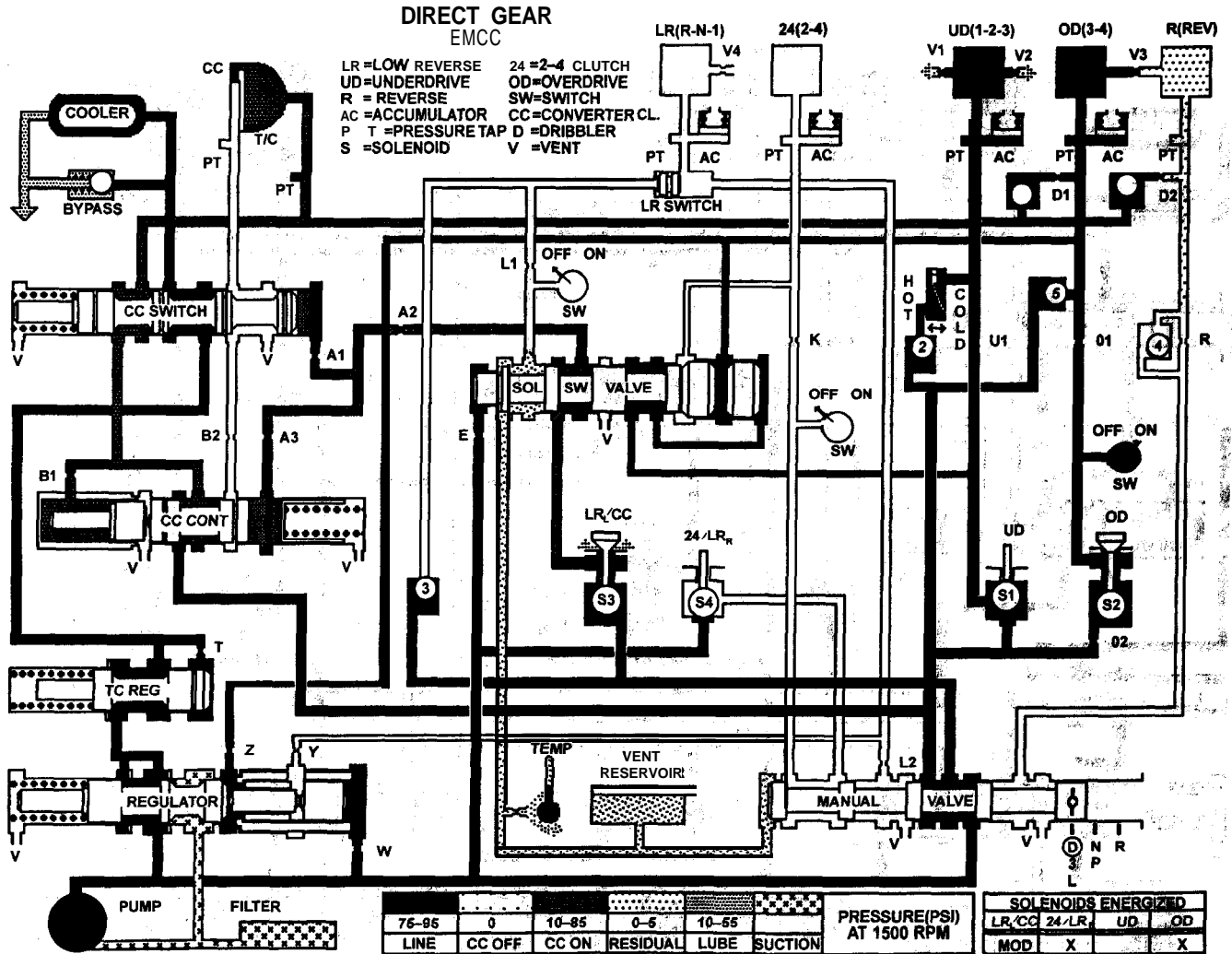


|         |        |        |          |       |                                 |                     |       |                    |    |
|---------|--------|--------|----------|-------|---------------------------------|---------------------|-------|--------------------|----|
| 120-145 | 60-110 | 45-100 | 0-5      | 15-40 | PRESSURE(P.S.I.)<br>AT 1500 RPM | SOLENOIDS ENERGIZED |       |                    |    |
| LINE    | CC OFF | CC ON  | RESIDUAL | LUBE  |                                 | SUCTION             | LR/CC | 24/LR <sub>r</sub> | UD |

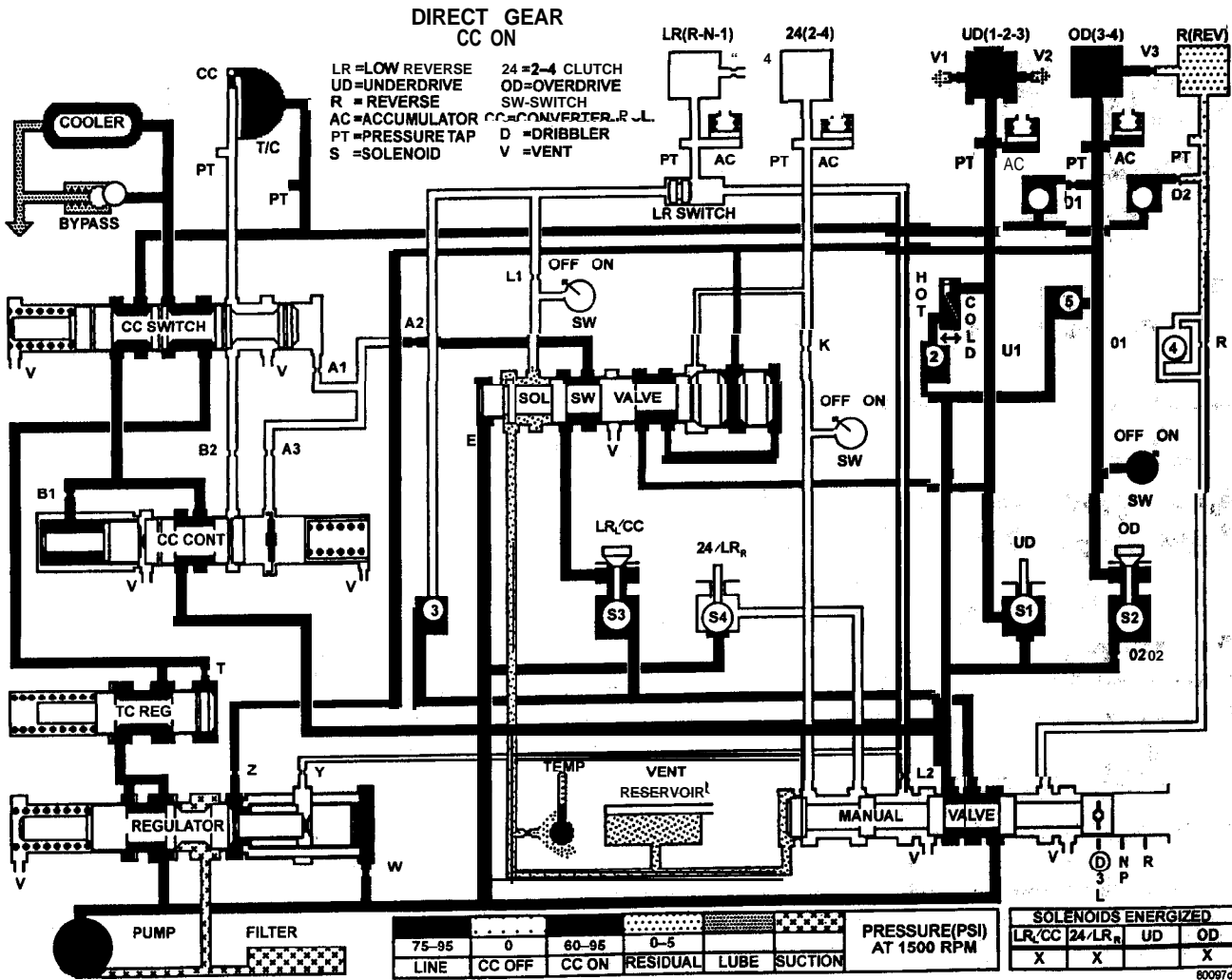
8008a588



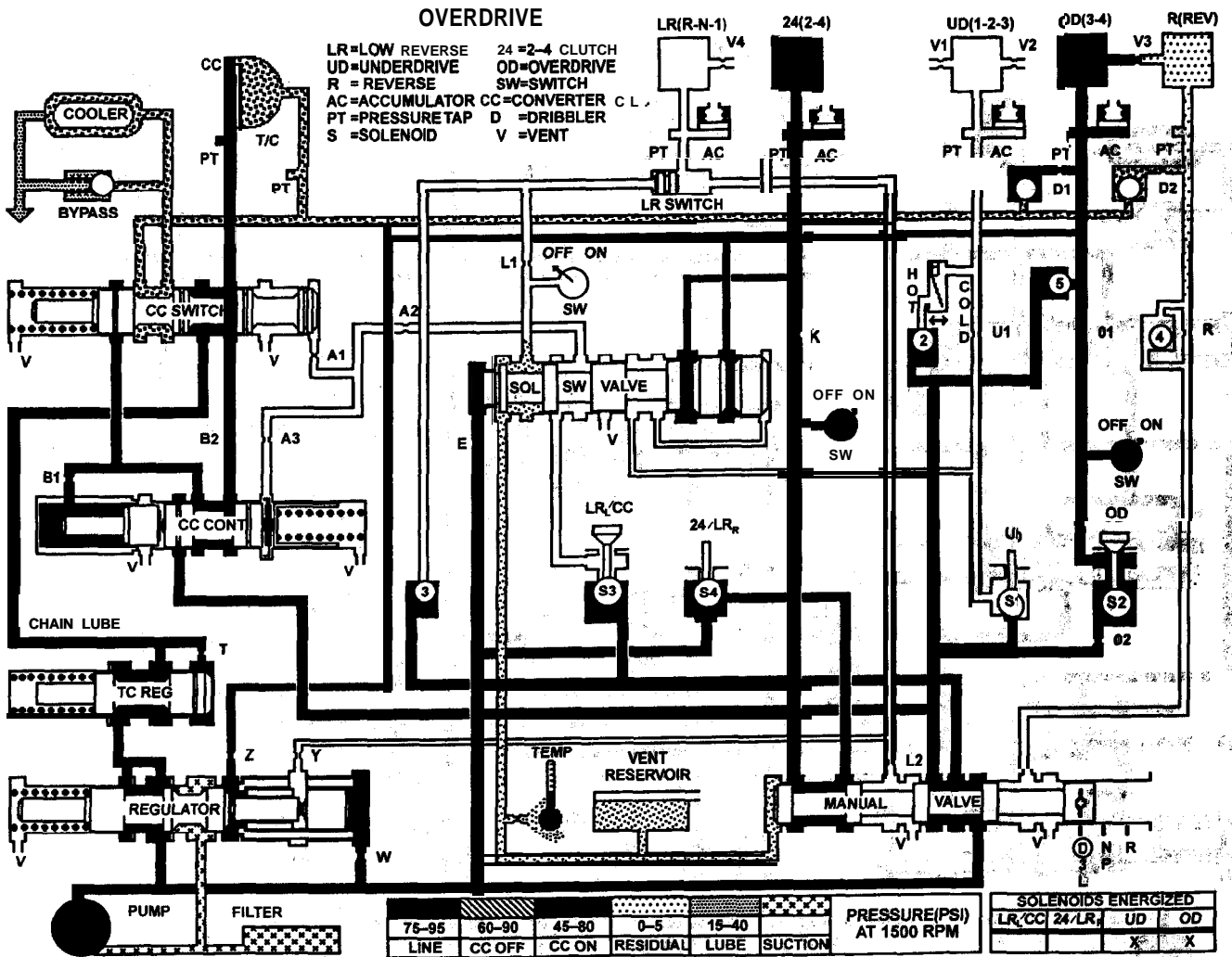
<Direct Gear>  
 Electronically Modulated Converter Clutch



<Direct Gear>  
 Converter Clutch ON



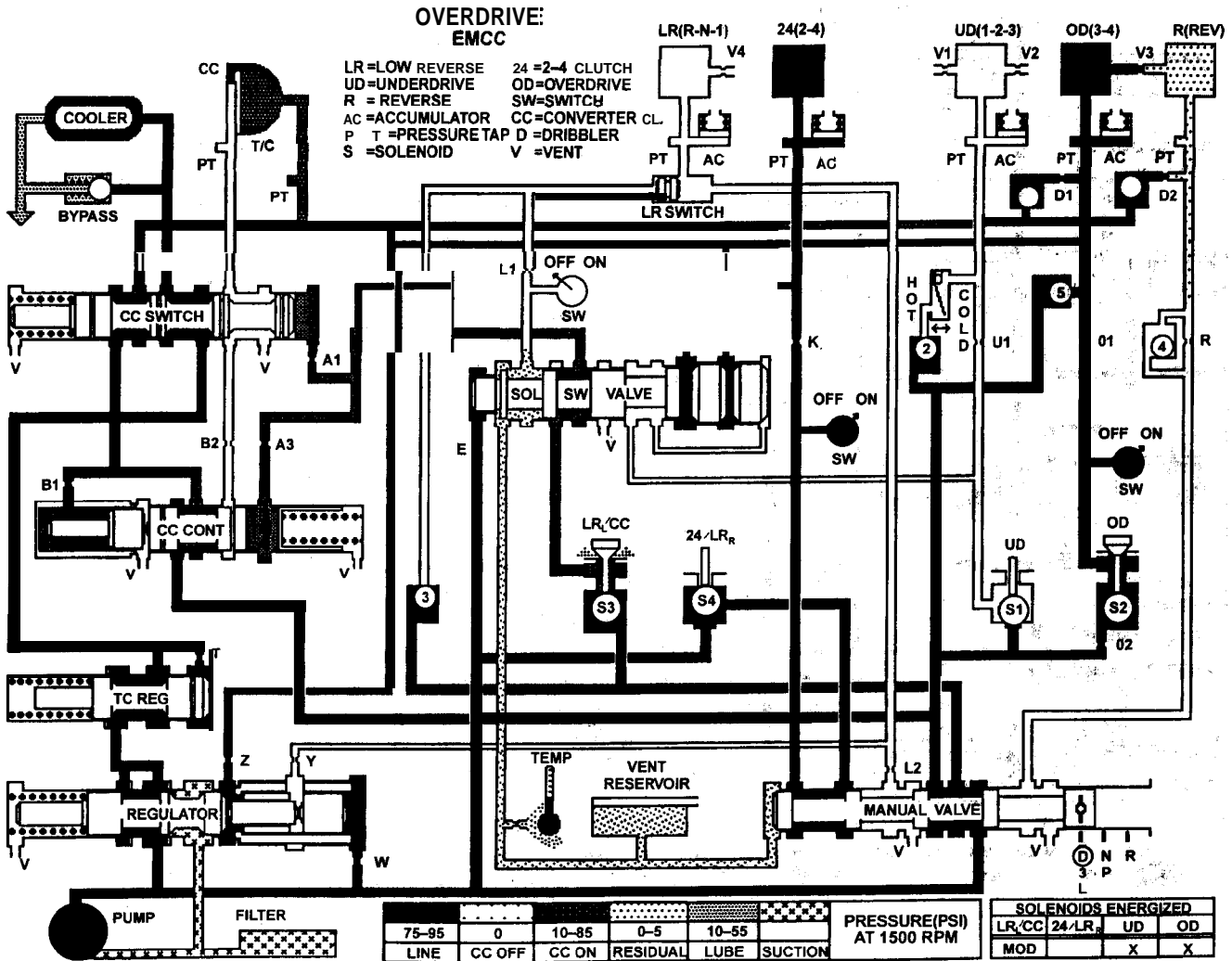
<Overdrive>



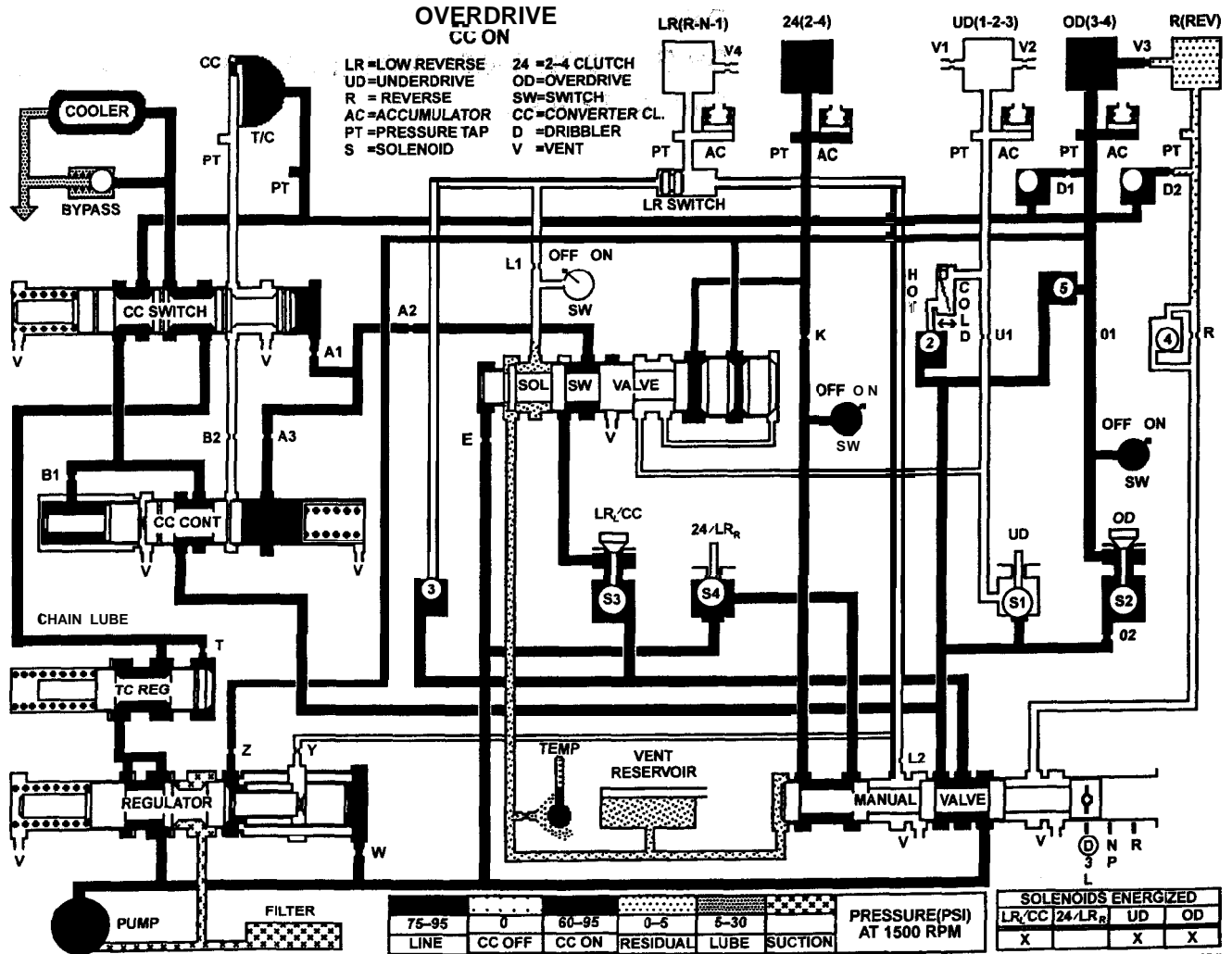
90097037

TSB Revision

<Overdrive>  
 Electronically Modulated Converter Clutch



<Overdrive>  
 Converter Clutch ON



8009743b

**SELECTOR LEVER OPERATION CHECK** 23100130083

Refer to P.23A-91.

**KEY INTERLOCK MECHANISM CHECK** 23200090070

Refer to P.23A-91.

**SHIFT LOCK MECHANISM CHECK** 23200100070

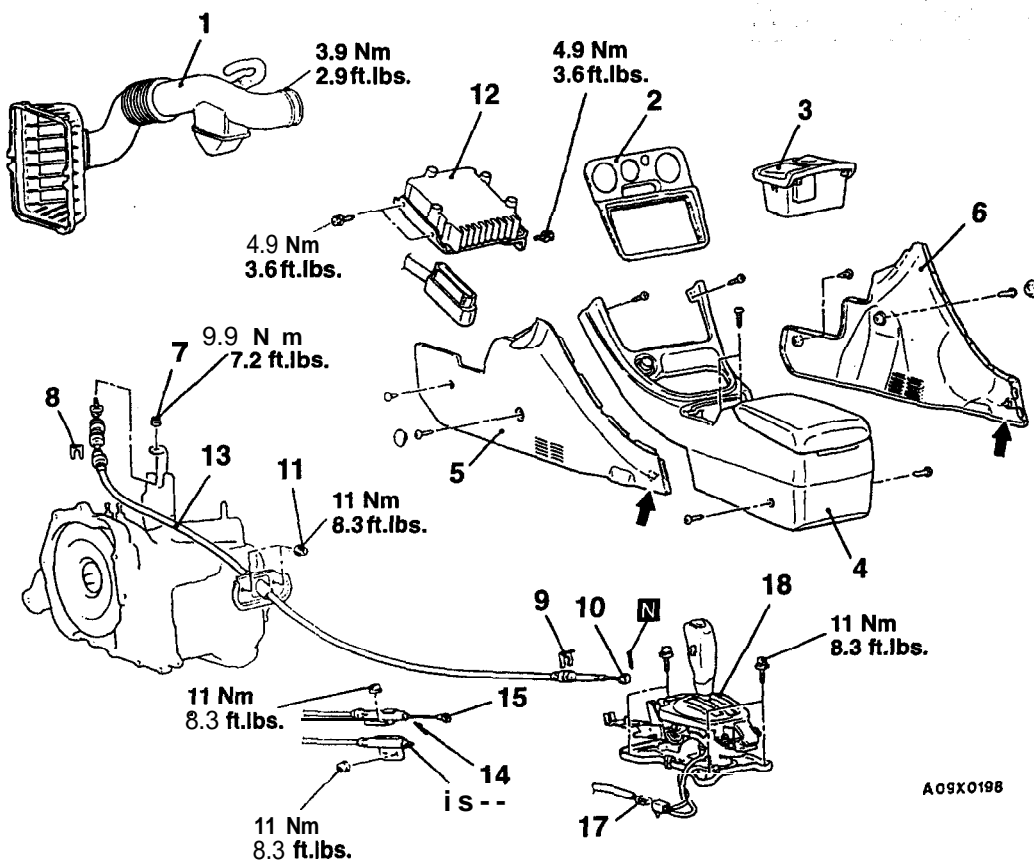
Refer to P.23A-92.

# TRANSAXLE CONTROL REMOVAL AND INSTALLATION

23100660100

**Caution: SRS**

Be careful not to subject the SRS-ECU to any shocks during removal and installation of the transaxle control cable and shift lever assembly.



**NOTE**

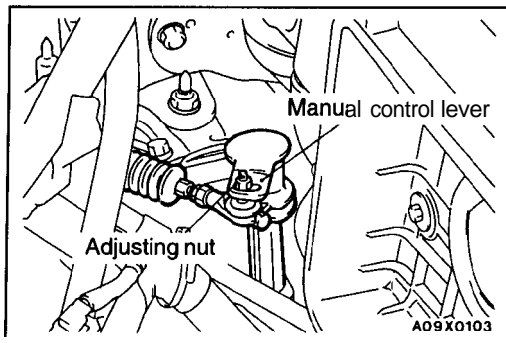
←: Resin clip position

**Transaxle control cable assembly removal steps**

1. Air cleaner and air intake hose assembly
2. Center panel
3. Cup holder assembly
4. Floor console assembly
5. Console side cover (L.H.)
6. Console side cover (R.H.)
7. Nut
8. Clip
9. Clip
10. Transaxle control cable connection
11. Nut
12. EATX-ECM
13. Transaxle control cable assembly

**Selector lever assembly removal steps**

2. Center panel
3. Cup holder assembly
4. Floor console assembly
5. Console side cover (L.H.)
6. Console side cover (R.H.)
9. Clip
10. Transaxle control cable connection
14. Snap pin
15. Key interlock cable connection
16. Shift lock cable connection
17. Overdrive switch/position indicator light connector
18. Selector lever assembly



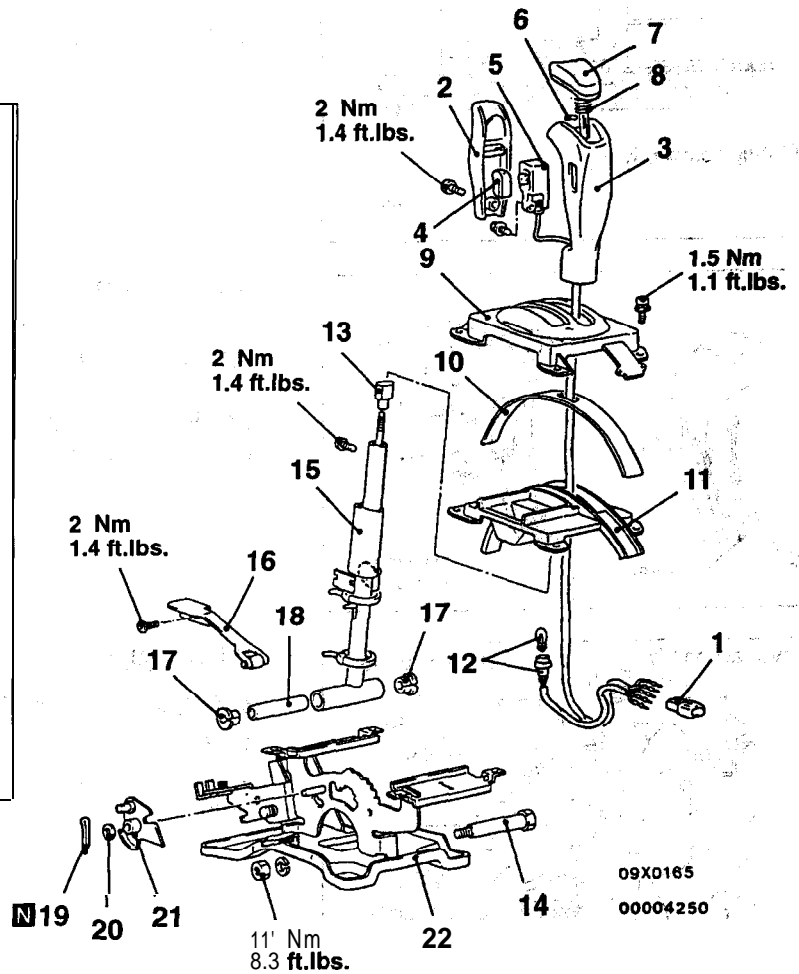
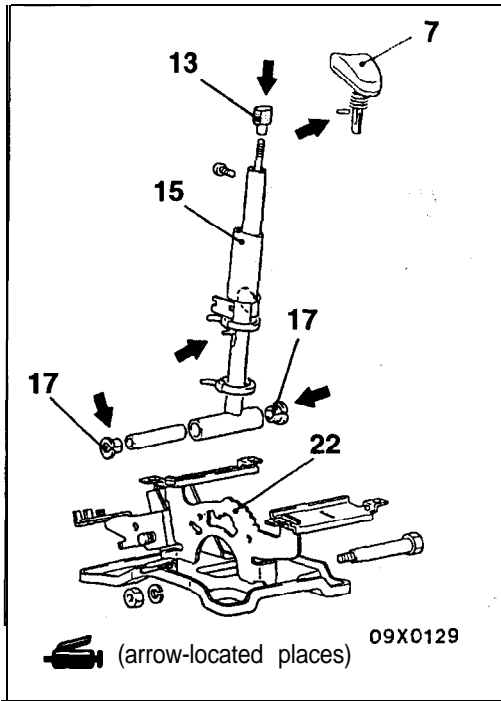
## INSTALLATION SERVICE POINT

### ▶A◀ NUT INSTALLATION

- (1) Put the selector lever in the "N" position.
- (2) Loosen the adjusting nut, gently pull the transaxle control cable in the direction of the arrow **and** tighten **the** nut.



**SELECTOR LEVER ASSEMBLY.  
 DISASSEMBLY AND REASSEMBLY**



**Disassembly steps**

◀A▶

1. Overdrive switch / position indicator light connector case

2. Cover

▶B▶

3. Selector knob

◀B▶

4. Overdrive switch button

◀B▶

5. Overdrive switch

6. Pin

7. Push button

8. Spring

9. Indicator panel upper

10. Slider

11. Indicator panel lower

12. Position indicator light assembly

13. Sleeve

14. Bolt

15. Lever assembly

▶A▶

16. Detent, spring assembly

17. Bushing

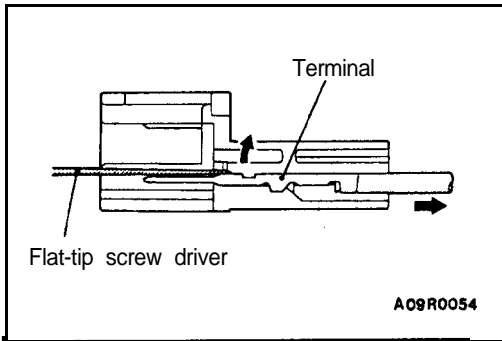
18. Pipe

19. Cotter pin

20. Washer

21. Lock cam

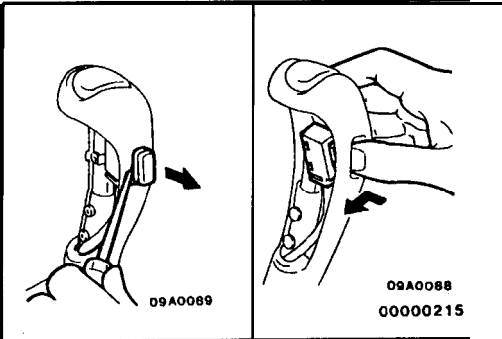
22. Bracket assembly



**DISASSEMBLY SERVICE POINTS**

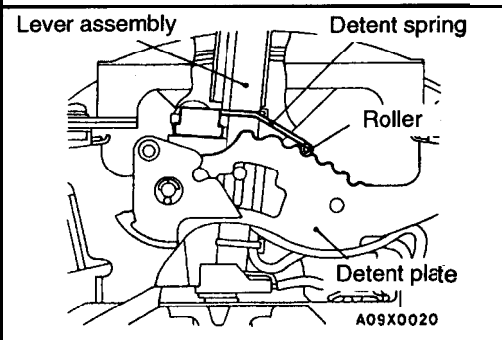
**◀A▶ OVERDRIVE SWITCH / POSITION INDICATOR LIGHT CONNECTOR CASE REMOVAL**

Use a flat-tip screwdriver or similar tool to pull out the terminal from the overdrive switch/position indicator light connector case.



**◀B▶ OVERDRIVE SWITCH BUTTON/OVERDRIVE SWITCH REMOVAL**

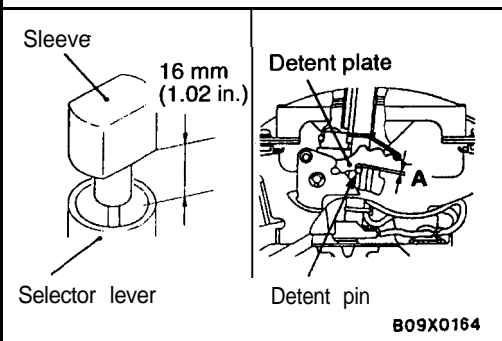
- (1) Use a flat-tip screwdriver to remove the overdrive switch button.
- (2) Remove the overdrive switch mounting screw.
- (3) Pressing the switch, remove the overdrive switch.



**REASSEMBLY SERVICE POINTS**

**▶A◀ DETENT SPRING ASSEMBLY INSTALLATION**

Shift the selector lever to the neutral (N) position, and then install the detent spring assembly so that the roller is in the detent plate groove.



**▶B◀ SELECTOR KNOB INSTALLATION**

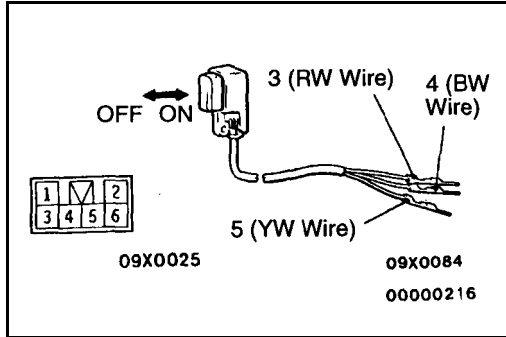
- (1) Put the selector lever in the “N” position, turn the sleeve and adjust the dimension between the sleeve and the end of the lever so it reaches 16 mm (1.02 in.)
- (2) Install the selector knob.
- (3) Check that dimension (A) between the detent plate and detent pin reaches the standard value.

**Standard value (A): 1.7-2.4 mm (.067-.094 in.)**

- (4) If outside the standard value, remove the selector knob and turn the sleeve again to readjust.

**INSPECTION**

- Check the detent plate for wear.
- Check the bushing for wear or damage.
- Check the spring for damage or deterioration.



**OVERDRIVE SWITCH CONTINUITY CHECK**

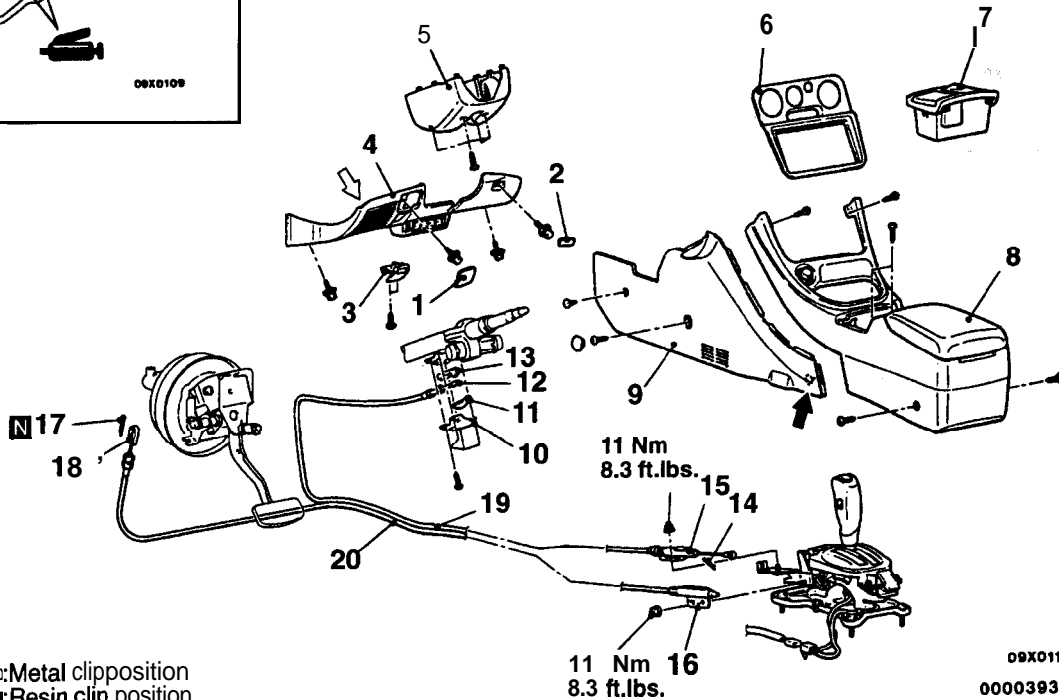
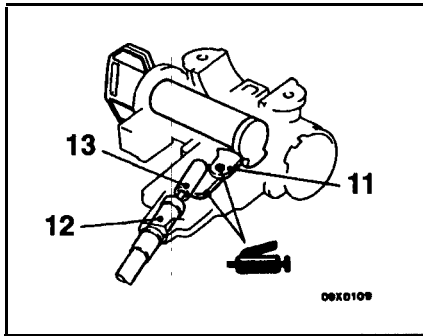
| Switch position           | Terminal No. |   |   |
|---------------------------|--------------|---|---|
|                           | 3            | 4 | 5 |
| OD is operating (ON)      | 0            | — | — |
| OD is not operating (OFF) | ○            | — | ○ |

# AUTOMATIC TRANSAXLE KEY INTERLOCK AND SHIFT LOCK MECHANISMS

## REMOVAL AND INSTALLATION

**Caution: SRS**

Be careful not to subject the SRS-ECU to any shocks during removal and installation of the key interlock cable and shift lock cable.



**NOTE**

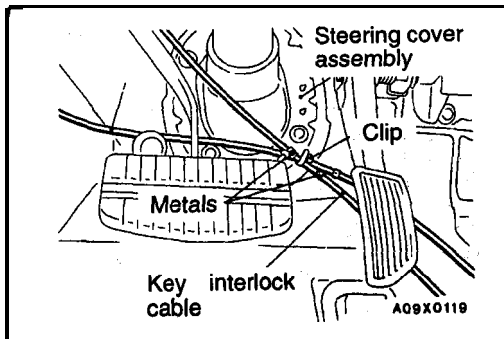
- (1) Metal clip position
- (2) Resin clip position

**Key interlock cable removal steps**

1. Plug A
2. Plug B
3. Hood release lever
4. Instrument panel under cover
5. Steering column lower cover
6. Center panel
7. Cup holder assembly
8. Floor console assembly
9. Console side cover (L.H.)
10. Cover
11. Cam and lever
12. Key interlock cable connection
13. Slide lever
14. Snap pin
15. Key interlock cable connection
19. Key interlock cable

**Shift lock cable removal steps**

1. Plug A
2. Plug B
3. Hood release lever
4. Instrument panel under cover
6. Center panel
7. Cup holder assembly
8. Floor console assembly
9. Console side cover (L.H.)
16. Shift lock cable connection
17. Cotter pin
18. Shift lock cable connection
20. Shift lock cable



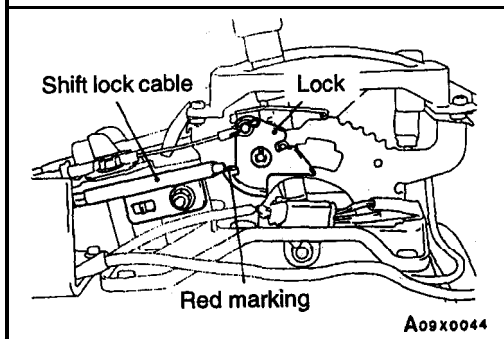
## INSTALLATION SERVICE POINTS

### ▶A◀ SHIFT LOCK CABLE/ KEY INTERLOCK CABLE INSTALLATION

Secure the section between the metals of the shift lock cable and key interlock cable with the clip of the steering cover assembly.

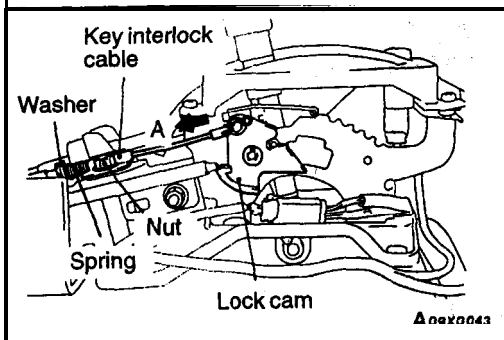
#### Caution

Do not change the routing of shift lock cable to the selector lever assembly.



### ▶B◀ SHIFT LOCK CABLE (SELECTOR LEVER SIDE) INSTALLATION

- (1) Place the selector lever in position "P".
- (2) Fasten the shift lock cable at the position where the end of the shift lock cable is positioned above the red marking.



### ▶C◀ KEY INTERLOCK CABLE (SELECTOR LEVER SIDE) INSTALLATION

- (1) Install the key interlock cable on the lock cam.
- (2) Install the spring and washer of the key interlock cable as shown.
- (3) While lightly pushing the cable coupling portion of the lock cam in the direction A, tighten the nut to fasten the key interlock cable.

## INSPECTION

23200130031

Check the cable assemblies for function and for damage.

TRANSAXLE ASSEMBLY

23100570212

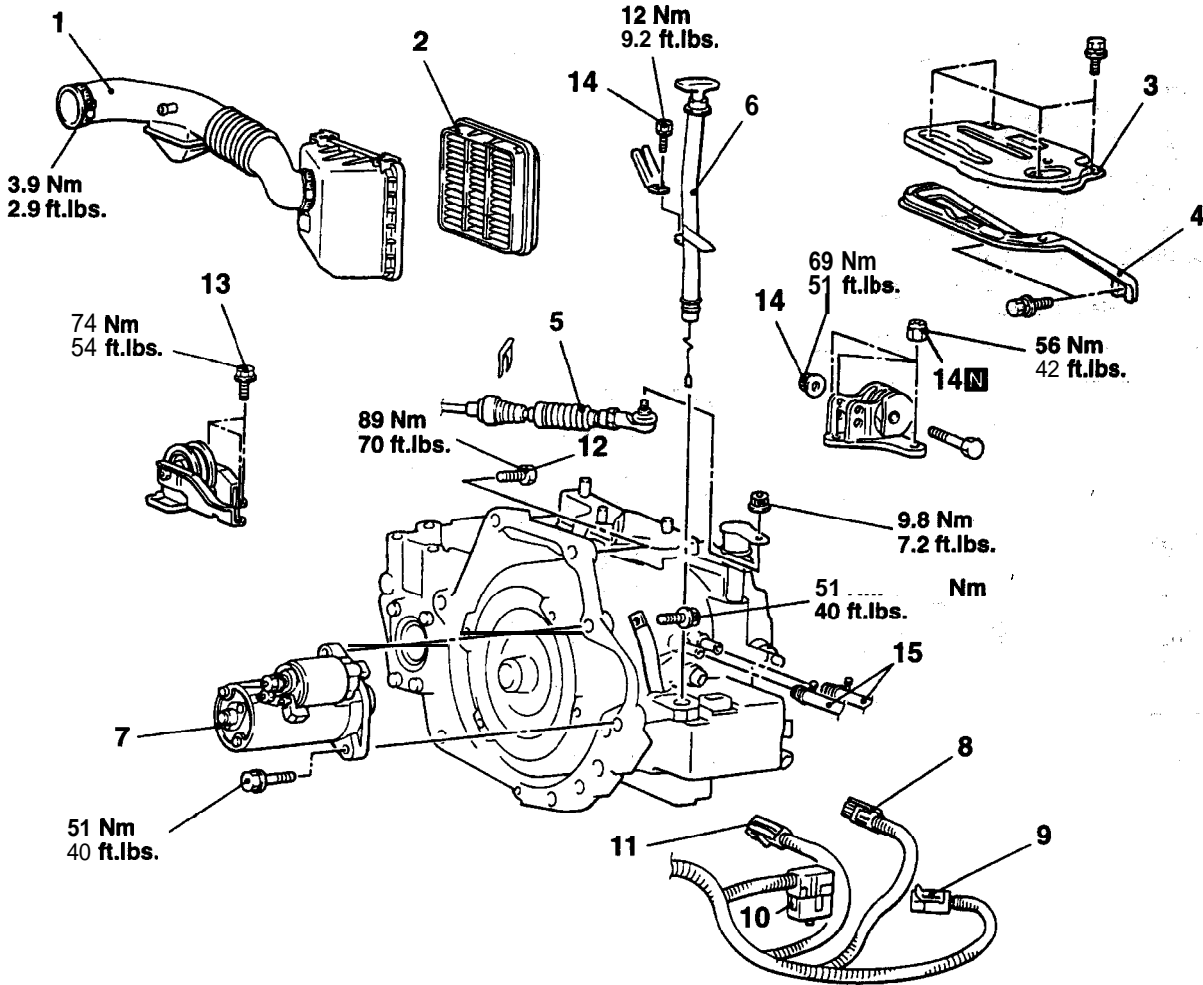
REMOVAL AND INSTALLATION

**Pre-removal Operation**

- Transaxle Fluid Draining  
(Refer to GROUP 00 – Maintenance service)
- Battery Removal
- Under Cover Removal  
(Refer to GROUP 42 – Under Cover)

**Post-installation Operation**

- Under Cover Installation  
(Refer to GROUP 42 – Under Cover)
- Battery Installation
- Transaxle Fluid Supplying  
(Refer to GROUP 00 – Maintenance Service)
- Selector Lever Operation Check



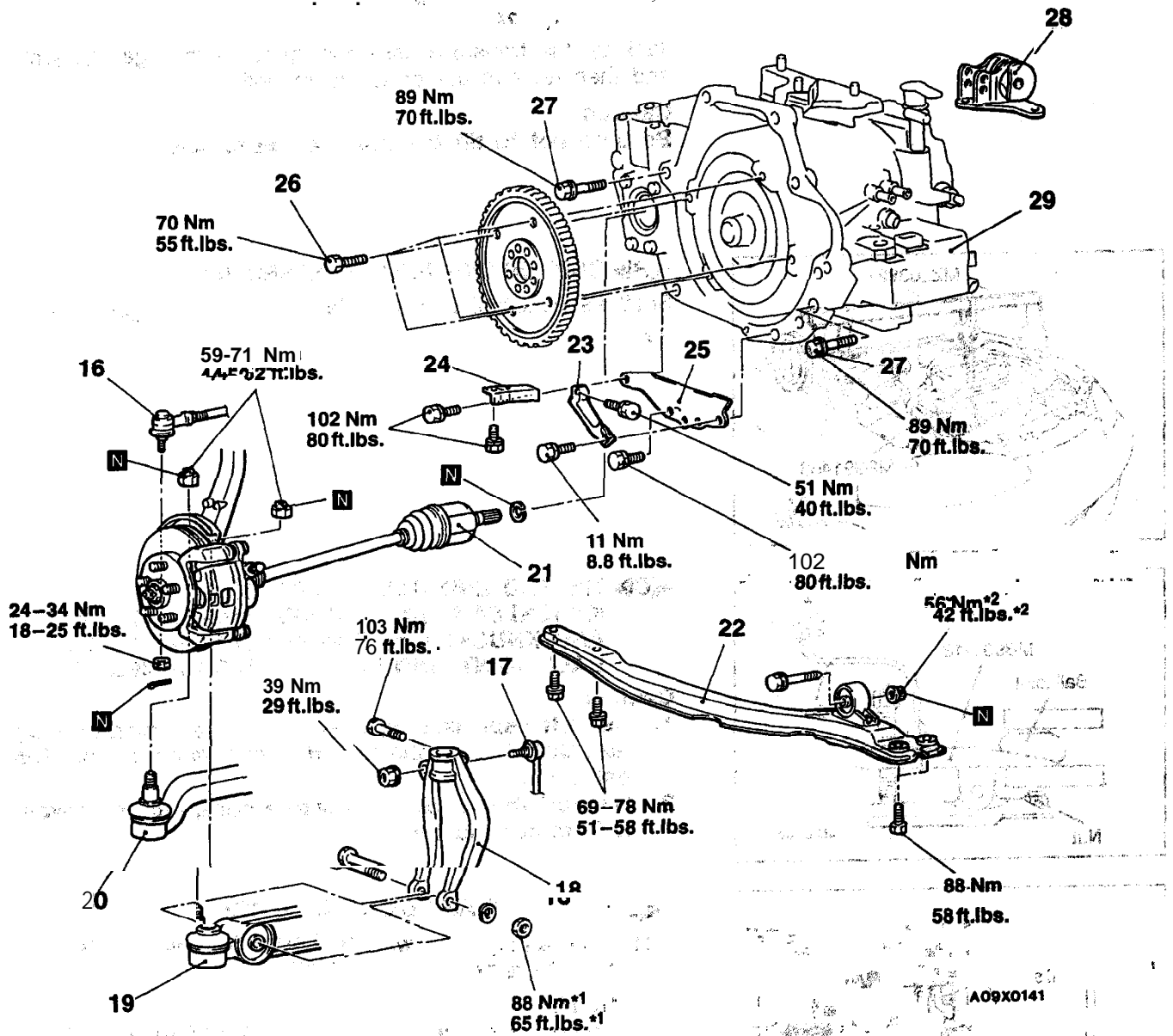
A09X0176

**Removal steps**

1. Air cleaner cover and air intake hose assembly
2. Air cleaner element
3. Battery tray
4. Battery tray stay
5. Transaxle control cable connection
6. Oil dipstick and guide assembly
7. Starter motor
8. Output speed sensor connector
9. Transaxle range switch connector

10. Solenoid and pressure switch connector
11. Input speed sensor connector
12. Transaxle assembly mounting bolts
13. Rear roll stopper bracket mounting bolts
14. Transaxle mounting bracket mounting nuts
15. Transaxle oil cooler hoses connection
- Supporting engine assembly





**From under vehicles**

- (C)** 16. Tie-rod end ball joint and knuckle connection
- (C)** 17. Stabilizer link connection
- (C)** 16. Damper fork
- (C)** 19. Lateral lower arm ball joint and knuckle connection
- (C)** 20. Compression lower arm ball joint and knuckle connection
- (D) (B)** 21. Drive shaft connection
- (A)** 22. Centermember assembly
- 23. Front plate
- 24. Rear plate
- 25. Transaxle case lower cover

- (E)** 26. Torque converter connecting bolts
- (E)** 27. Transaxle assembly mounting bolts
- (E)** 26. Transaxle mounting bracket
- 29. Transaxle assembly

**Caution**

**\*1:** Indicates parts which should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.

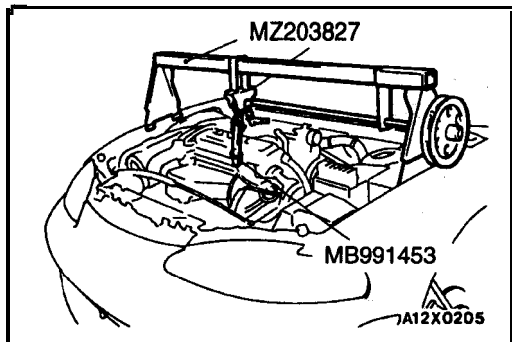
**\*2:** For tightening locations indicated by the symbol, first tighten temporarily, and then make the final tightening with the entire weight of the engine applied to the vehicle body.

**REMOVAL SERVICE POINTS****◀A▶ TRANSAXLE MOUNTING BRACKET MOUNTING NUTS REMOVAL**

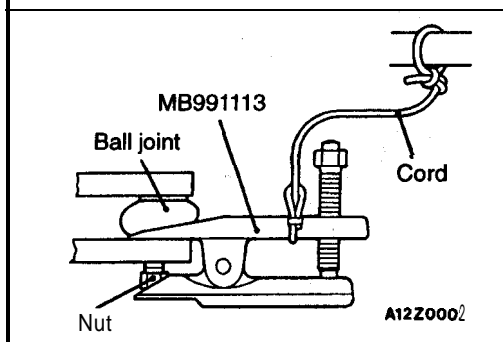
Jack up the transaxle assembly gently with a garage jack, and then remove the transaxle mounting.

**Caution**

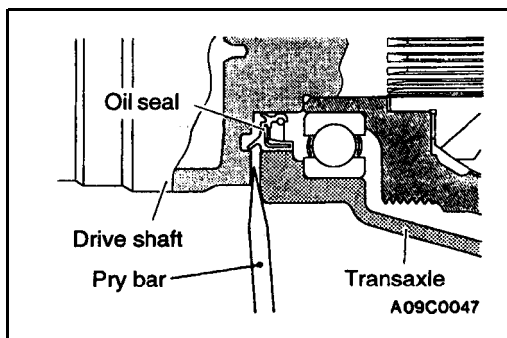
Be sure not to tilt the transaxle assembly.

**◀B▶ SUPPORTING ENGINE' ASSEMBLY**

Set the special tool to the vehicle to support the engine assembly.

**◀C▶ TIE ROD END BALL JOINT AND KNUCKLE/LATERAL LOWER ARM BALL JOINT AND KNUCKLE/COMPRESSION-LOWER ARM BALL JOINT AND KNUCKLE DISCONNECTION****Caution**

1. Using the **special tool**, loosen the tie rod end mounting nut. Only loosen the nut; do not remove it from the ball joint.
2. Support the **special tool** with a cord, etc. to prevent it from coming off.

**◀D▶ DRIVE SHAFT DISCONNECTION**

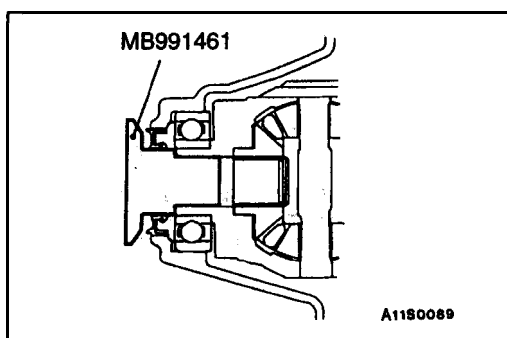
- (1) insert a pry bar between the transaxle case and the drive shaft to remove the drive shaft.

**NOTE**

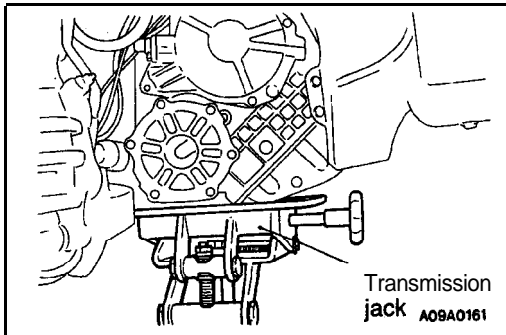
Do not remove the hub and knuckle from the drive shaft.

**Caution**

1. Use a pry bar to remove the drive shaft from the B.J. assembly, or the T.J. assembly may be damaged.
2. Do not insert the pry bar too far, or the oil seal may be damaged.
- (2) Suspend the removed drive shaft with wire so that there are no sharp bends in any of the joints.
- (3) Use the general service tool as a cover not to let foreign objects get into the transaxle case.

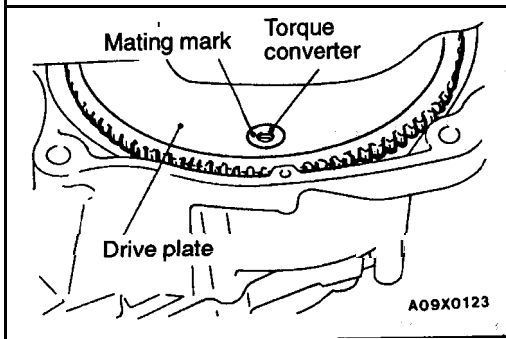




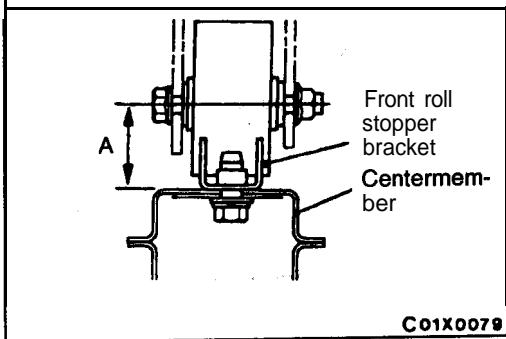


◀E▶ TORQUE CONVERTER CONNECTING BOLTS/TRANSAXLE ASSEMBLY MOUNTING BOLTS/TRANSAXLE ASSEMBLY REMOVAL

- (1) Use a transmission jack to support the transaxle assembly.  
**Caution**  
 Support the transaxle case side, not the oil pan.



- (2) To make installation easier, use chalk to make mating marks on the torque converter and drive plate.
- (3) Remove the connection bolts while turning the crankshaft.
- (4) Press the torque converter into the transaxle for easier removal.
- (5) Remove the transaxle, assembly mounting bolt and lower the transaxle assembly.

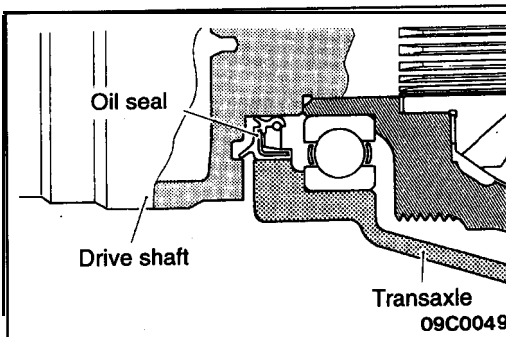


INSTALLATION SERVICE POINTS

▶A◀ CENTERMEMBER ASSEMBLY INSTALLATION

If the dimension shown in the illustration is outside the standard value when the weight of the engine is on the body, replace the front roll stopper bracket assembly.

Standard value (A) : 43±3 mm (1.69±.12 in.)



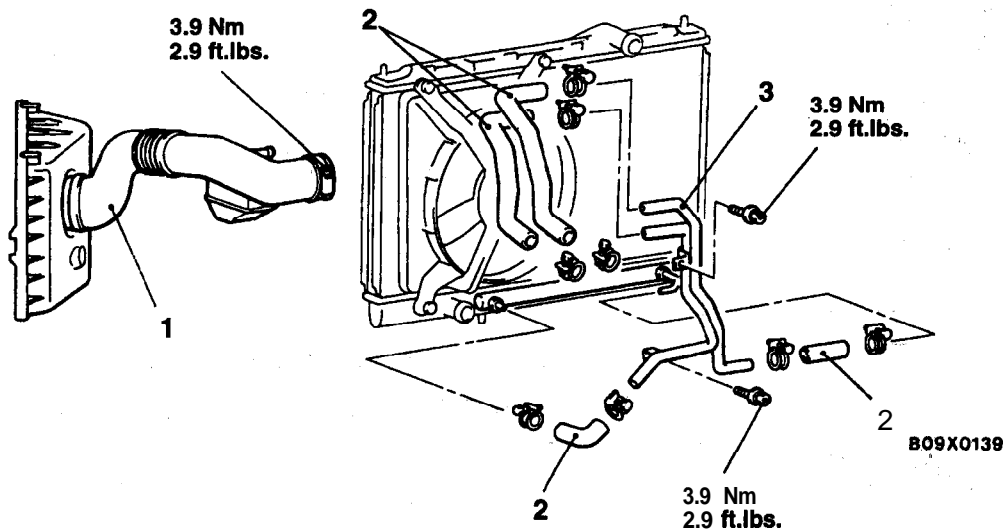
▶B◀ DRIVE SHAFT CONNECTION

Temporarily install the drive shaft so that the TJ case of the drive shaft is perpendicular to the transaxle.

**Caution**  
 Do not damage the oil seal lip by the serrated part of the drive shaft.

**TRANSAXLE OIL COOLER****REMOVAL AND INSTALLATION**

**Pre-removal and Post-installation**  
Transaxle Fluid Draining and Supplying  
(Refer to GROUP 00 – Maintenance Service.)

**Removal steps**

1. Air cleaner cover and air intake hose
2. Hose
3. Pipe assembly

**INSPECTION**

23100720044

- Check the hose for cracks, damage and clogs.
- Check for rusted or clogged transaxle oil cooler.
- Check oil cooler fins for bents, damage, and clogged with foreign matter.

