05MLT–02

# FAIL–SAFE CHART

## 1. FAIL–SAFE

This function minimizes the loss of the ECT functions when any malfunction occurs in a sensor or solenoid.

| Malfunction Part | Function |
|---|---|
| Output Speed Sensor (SP2) | During an output speed sensor malfunction, shift control is effected through the input speed sensor signal (NCO) or engine speed signal (NE). |
| ATF Temp. Sensor | During a malfunction of ATF temperature sensor, the system fixes the ATF at 80°C (176°F). |
| Shift Solenoid Valve S1 and S2 | The current to the failed solenoid valve is cut off and control is effected by operating the other solenoid valves with normal operation.<br>Shift control is effected depending on the failed solenoid as described in the table on the table below. |
| Shift Solenoid Valve SL | During a solenoid valve SL malfunction, the current to the solenoid valve is stopped. This stops lock–up control, the fuel economy decreases. |
| Shift Solenoid Valve SLT | During a solenoid valve SLT malfunction, the current to the solenoid valve is stopped. This stops line pressure optimal control, the shift shock increases. However, shifting is effected through normal clutch pressure control. |

Fail safe function:

If either of the shift solenoid valve circuits develops an open or short, the ECM turns the other shift solenoid ”ON” and ”OFF” in order to shift into the gear positions shown in the table below. The ECM also turns the shift solenoid valve SL OFF at the same time. If both solenoids are malfunctioning, hydraulic control cannot be done electronically so it must be done manually.

Manual shifting as shown in the following table must be done (In case of a short circuit, the ECM stops sending the current to the short circuit solenoid).

Even if starting the engine in the fail–safe mode, the gear position remain in the same position.

| Position | NORMAL | | | SHIFT SOLENOID S1 MALFUNCTIONING | | | SHIFT SOLENOID S2 MALFUNCTIONING | | | BOTH SOLENOIDS MALFUNCTIONING |
|---|---|---|---|---|---|---|---|---|---|---|
| | Solenoid valve | | Gear | Solenoid valve | | Gear | Solenoid valve | | Gear | Gear when shift selector is manually operated |
| | S1 | S2 | | S1 | S2 | | S1 | S2 | | |
| D | ON | OFF | 1st | X | ON | 3rd | ON | X | 1st | O/D |
| | ON | ON | 2nd | X | ON | 3rd | OFF | X | O/D | O/D |
| | OFF | ON | 3rd | X | ON | 3rd | OFF | X | O/D | O/D |
| | OFF | OFF | O/D | X | OFF | O/D | OFF | X | O/D | O/D |
| 2 | ON | OFF | 1st | X | ON | 3rd | ON | X | 1st | 3rd |
| | ON | ON | 2nd | X | ON | 3rd | OFF | X | 3rd | 3rd |
| | OFF | ON | 3rd | X | ON | 3rd | OFF | X | 3rd | 3rd |
| L | ON | OFF | 1st | X | OFF | 1st | ON | X | 1st | 1st |
| | ON | ON | 2nd | X | ON | 2nd | ON | X | 1st | 1st |

X: Malfunctions