TRANSMISSION/TRANSAXLE

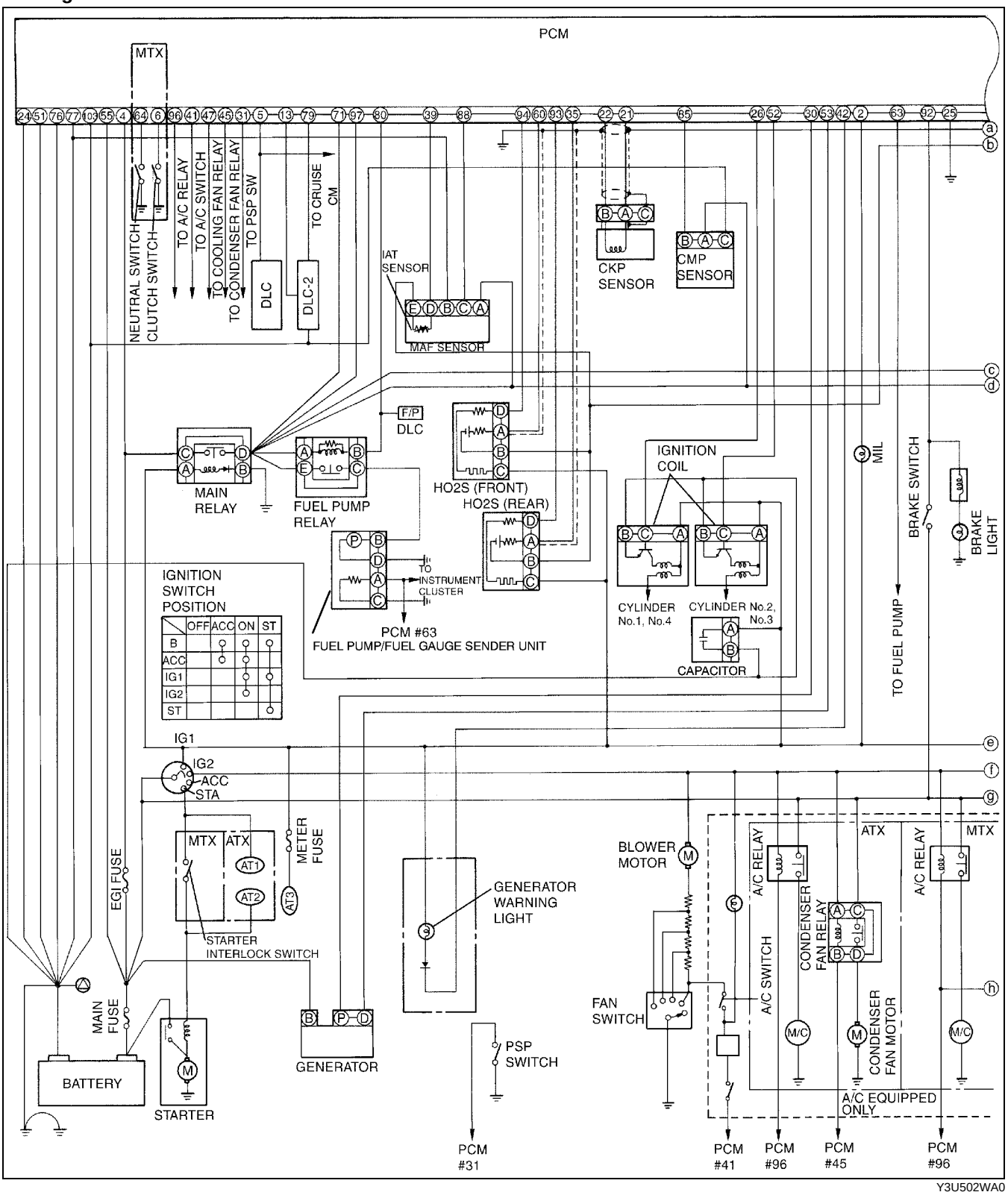
05
SECTION

05–02 ON-BOARD DIAGNOSTIC

AUTOMATIC TRANSAXLE CONTROL SYSTEM WIRING DIAGRAM

A3U050201030W01

ZM Engine



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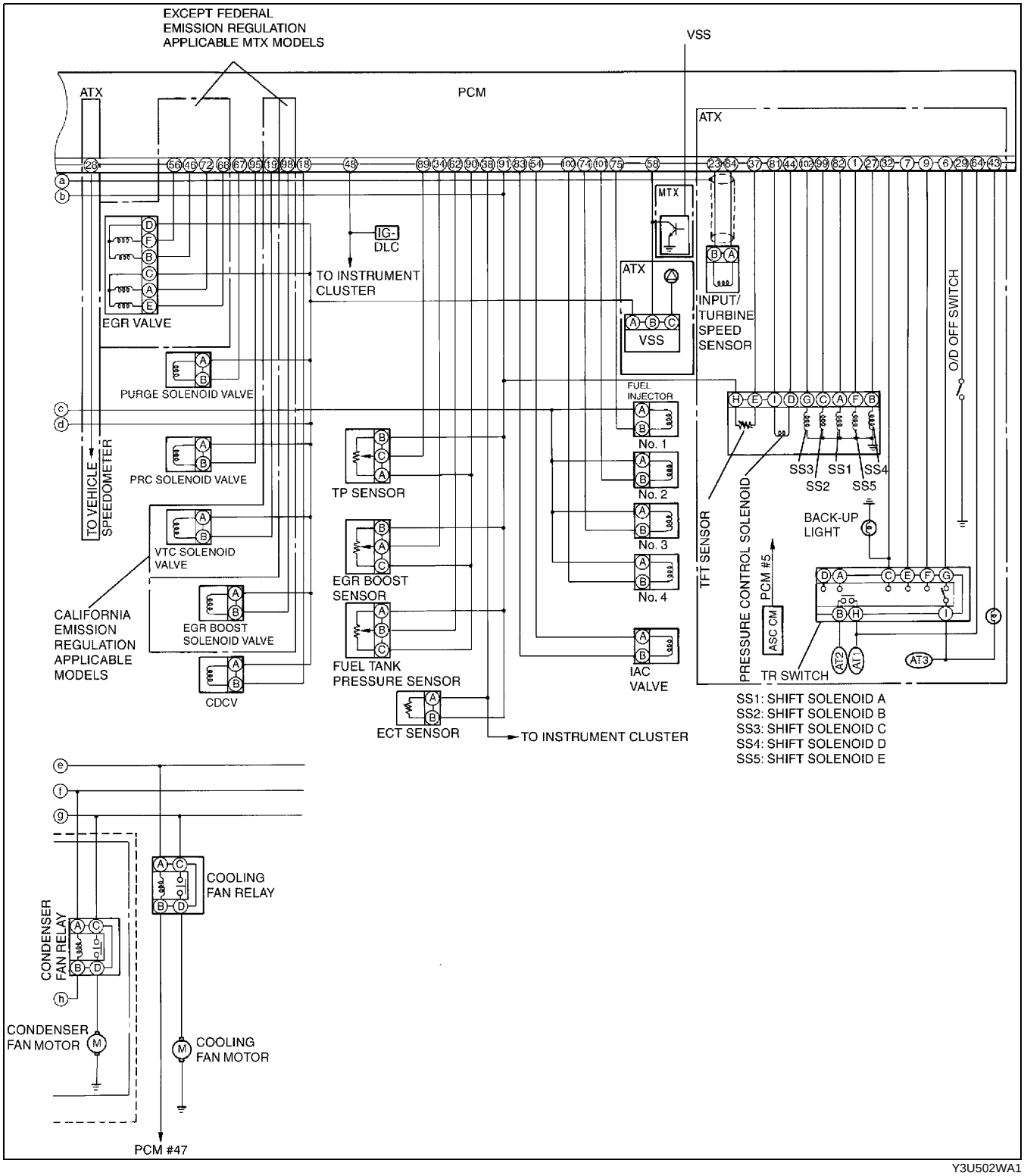
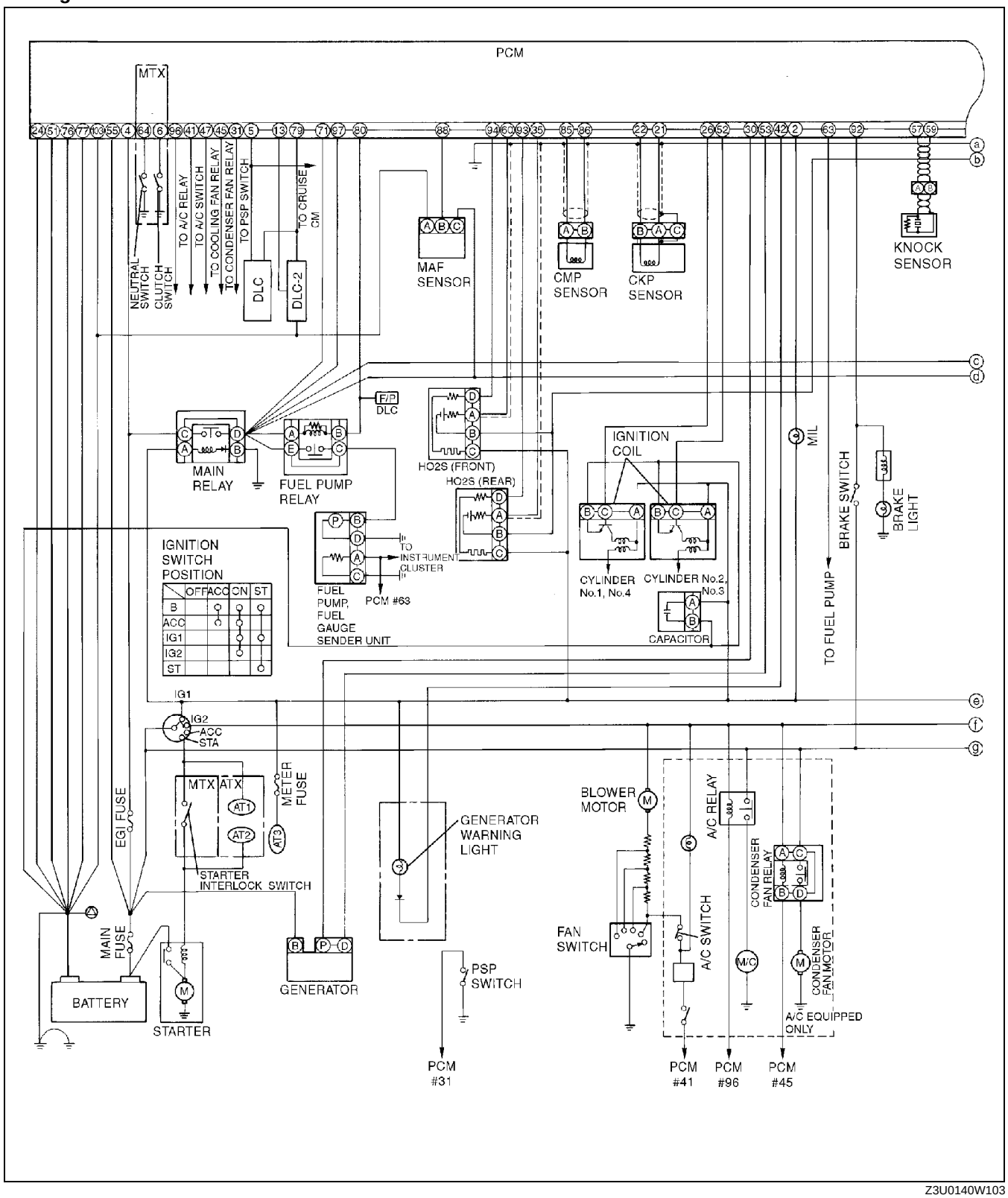

EXCEPT FEDERAL
EMISSION REGULATION
APPLICABLE MTX MODELS
VSS
ATX
PCM
ATX
MTX
IG-DLC
TO INSTRUMENT CLUSTER
ATX
VSS
INPUT/ TURBINE SPEED SENSOR
O/D OFF SWITCH
EGR VALVE
PURGE SOLENOID VALVE
FUEL INJECTOR
No. 1
No. 2
No. 3
No. 4
TO VEHICLE SPEEDOMETER
PRC SOLENOID VALVE
TP SENSOR
SS3
SS1
SS4
SS2
SS5
BACK-UP LIGHT
VTC SOLENOID VALVE
EGR BOOST SENSOR
TFT SENSOR
PRESSURE CONTROL SOLENOID
PCM #5
ASC CM
CALIFORNIA EMISSION REGULATION APPLICABLE MODELS
EGR BOOST SOLENOID VALVE
FUEL TANK PRESSURE SENSOR
IAC VALVE
TR SWITCH
CDCV
ECT SENSOR
TO INSTRUMENT CLUSTER
SS1: SHIFT SOLENOID A
SS2: SHIFT SOLENOID B
SS3: SHIFT SOLENOID C
SS4: SHIFT SOLENOID D
SS5: SHIFT SOLENOID E
COOLING FAN RELAY
CONDENSER FAN RELAY
CONDENSER FAN MOTOR
COOLING FAN MOTOR
PCM #47

Y3U502WA1

FS Engine



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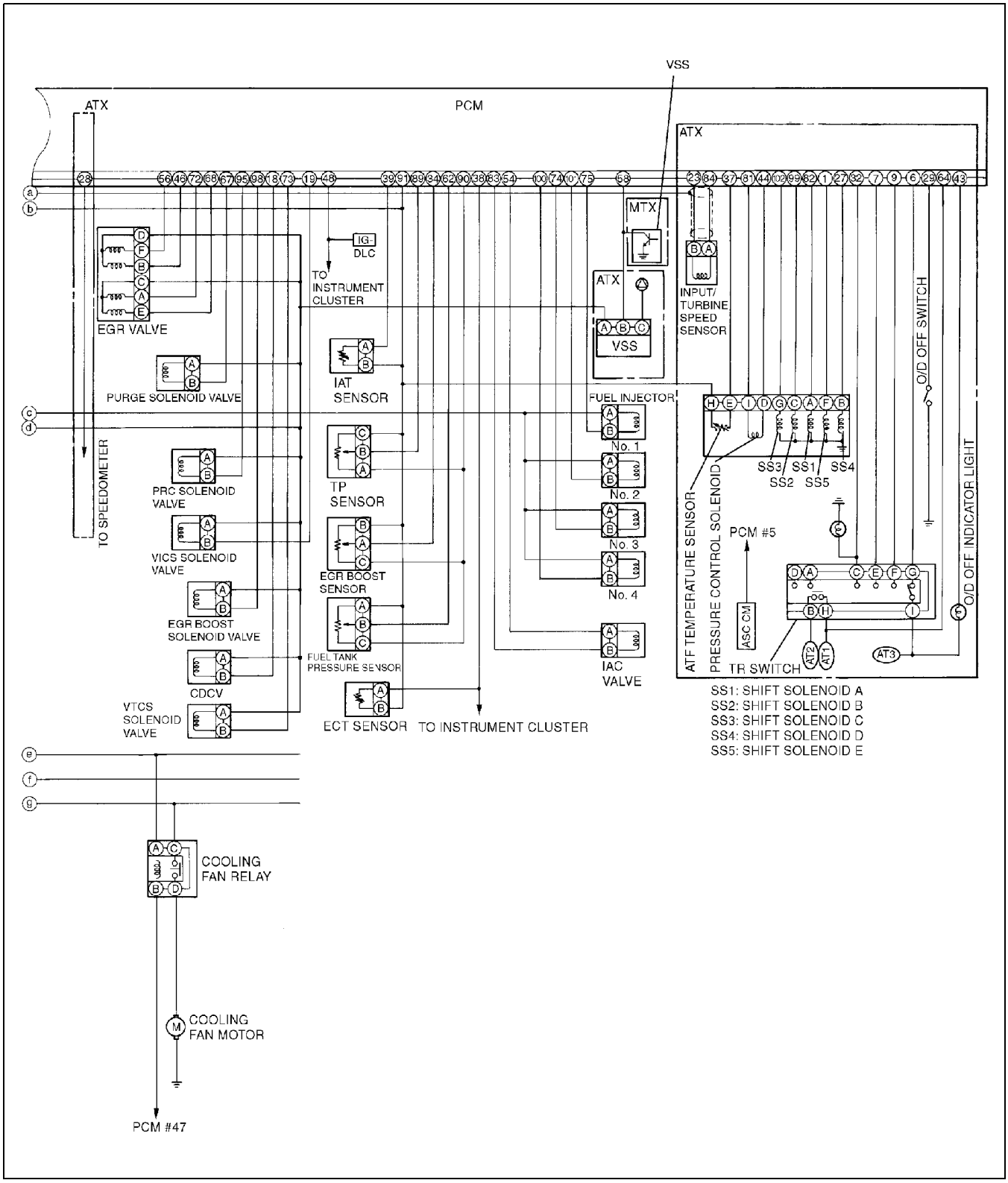
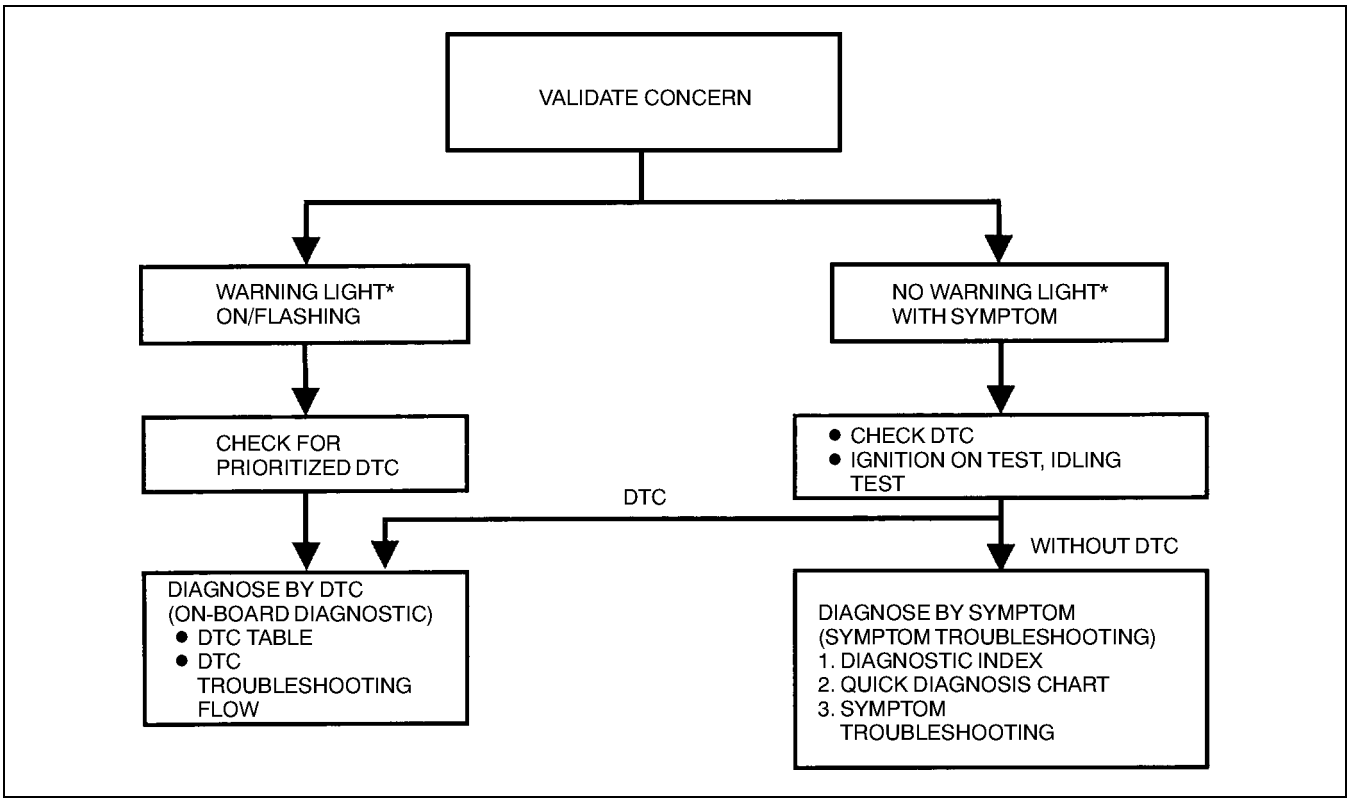


Z3U0140W104

FOREWARD

A3U050201030W02

- When the customer reports a vehicle malfunction, check the malfunction indicator lamp (MIL), O/D OFF indicator light flashing, and PCM memory for diagnostic trouble code (DTC), then diagnose the malfunction according to following flowchart.
  - — If the DTC exists, diagnose the applicable DTC. (See 05–02–7 DTC TABLE.)
  - — If the DTC does not exist, MIL does not illuminate, and O/D OFF indicator light flashes, diagnose the applicable symptom troubleshooting. (See 05–03–7 AUTOMATIC TRANSAXLE SYMPTOM TROUBLESHOOTING ITEM TABLE.)



YMU102WBX

*:Malfunction indicator lamp (MIL), O/D OFF indicator light

AUTOMATIC TRANSAXLE ON-BOARD DIAGNOSTIC FUNCTION

A3U050201030W03

DTC Reading Procedure

(See 01–02A–8 DTCs Retrieving Procedure.)
(See 01–02B–7 DTCs Retrieving Procedure.)

AFTER REPAIR PROCEDURE

A3U050201030W04

Caution

- **After repairing a malfunction, perform this procedure to verify that the malfunction has been corrected.**
- **When this procedure is carried out, be sure to drive the vehicle at lawful speed and pay attention to the other vehicles.**

1. Connect the WDS or equivalent to the DLC-2.
2. Turn the ignition key to ON (engine OFF).
3. Verify that DTCs are cleared from memory.
4. Decrease ATF temperature to **20 °C {68 °F} or below**.
5. Start the engine then wait **180 seconds or more**.
6. Warm up the engine and ATX.
   - Engine coolant temperature: **60 °C {140 °F} or above**.
   - Transaxle fluid temperature: **20 °C {68 °F} or above**.
7. Shift the selector lever between P position to 1 range while depressing brake pedal.
8. Drive the vehicle for **150 seconds or more** at a vehicle speed **between 25 and 59 km/h {15 and 36 mph}**, then **60 km/h {37 mph} or more** for **100 seconds or more**.
9. Drive the vehicle in D range and shift gears between 1st and 4th (TCC operation) gear.
10. Gradually slow down and stop the vehicle.

11. Make sure that the repaired DTC does not recur.

DTC TABLE

A3U050201030W05

DTC No.	Condition	MIL	O/D OFF indicator light flashes	DC	Monitor item	Memory function	Page
P0031	HO2S heater (front) circuit low	(See 01–02A–19 DTC P0031 [ZM]) (See 01–02B–19 DTC P0031 [FS])					
P0032	HO2S heater (front) circuit high	(See 01–02A–20 DTC P0032 [ZM]) (See 01–02B–20 DTC P0032 [FS])					
P0037	HO2S heater (rear) circuit low	(See 01–02A–22 DTC P0037 [ZM]) (See 01–02B–22 DTC P0037 [FS])					
P0038	HO2S heater (rear) circuit high	(See 01–02A–23 DTC P0038 [ZM]) (See 01–02B–23 DTC P0038 [FS])					
P0101	MAF circuit range/performance problem	(See 01–02B–25 DTC P0101 [FS])					
P0102	MAF circuit low input	(See 01–02A–25 DTC P0102 [ZM]) (See 01–02B–27 DTC P0102 [FS])					
P0103	MAF circuit high input	(See 01–02A–28 DTC P0103 [ZM]) (See 01–02B–29 DTC P0103 [FS])					
P0106	BARO circuit performance problem	(See 01–02A–29 DTC P0106 [ZM]) (See 01–02B–30 DTC P0106 [FS])					
P0107	BARO circuit low input	(See 01–02A–31 DTC P0107 [ZM]) (See 01–02B–31 DTC P0107 [FS])					
P0108	BARO circuit high input	(See 01–02A–32 DTC P0108 [ZM]) (See 01–02B–34 DTC P0108 [FS])					
P0111	IAT circuit performance problem	(See 01–02A–34 DTC P0111 [ZM]) (See 01–02B–35 DTC P0111 [FS])					
P0112	IAT circuit low input	(See 01–02A–35 DTC P0112 [ZM]) (See 01–02B–36 DTC P0112 [FS])					
P0113	IAT circuit high input	(See 01–02A–36 DTC P0113 [ZM]) (See 01–02B–38 DTC P0113 [FS])					
P0117	ECT circuit low input	(See 01–02A–39 DTC P0117 [ZM]) (See 01–02B–40 DTC P0117 [FS])					
P0118	ECT circuit high input	(See 01–02A–41 DTC P0118 [ZM]) (See 01–02B–42 DTC P0118 [FS])					
P0121	TP circuit range/performance problem	(See 01–02B–43 DTC P0121 [FS])					
P0122	TP circuit low input	(See 01–02A–42 DTC P0122 [ZM]) (See 01–02B–46 DTC P0122 [FS])					
P0123	TP circuit high input	(See 01–02A–45 DTC P0123 [ZM]) (See 01–02B–47 DTC P0123 [FS])					
P0125	Excessive time to enter closed loop fuel control	(See 01–02A–46 DTC P0125 [ZM]) (See 01–02B–49 DTC P0125 [FS])					
P0126	Coolant thermostat stuck to open	(See 01–02B–50 DTC P0126, P0128 [FS])					
P0128	Coolant thermostat stuck to open	(See 01–02B–50 DTC P0126, P0128 [FS])					
P0130	HO2S (Front) circuit malfunction	(See 01–02A–48 DTC P0130 [ZM])					
P0131	HO2S (Front) no inversion (Low voltage stuck)	(See 01–02B–52 DTC P0131 [FS])					
P0132	HO2S (Front) no inversion (High voltage stuck)	(See 01–02B–55 DTC P0132 [FS])					
P0133	HO2S (Front) circuit malfunction	(See 01–02B–57 DTC P0133 [FS])					
P0134	HO2S (Front) circuit no activity detected	(See 01–02A–50 DTC P0134 [ZM]) (See 01–02B–61 DTC P0134 [FS])					
P0138	HO2S (Rear) circuit high input	(See 01–02A–53 DTC P0138 [ZM]) (See 01–02B–63 DTC P0138 [FS])					
P0140	HO2S (Rear) circuit no activity detected	(See 01–02A–55 DTC P0140 [ZM]) (See 01–02B–64 DTC P0140 [FS])					
P0171	Fuel trim system too lean	(See 01–02A–57 DTC P0171 [ZM]) (See 01–02B–67 DTC P0171 [FS])					
P0172	Fuel trim system too rich	(See 01–02A–60 DTC P0172 [ZM]) (See 01–02B–70 DTC P0172 [FS])					
P0300	Random misfire detected	(See 01–02A–61 DTC P0300 [ZM]) (See 01–02B–71 DTC P0300 [FS])					

DTC No.	Condition	MIL	O/D OFF indicator light flashes	DC	Monitor item	Memory function	Page
P0301	Cylinder 1 misfire detected	(See 01–02A–65 DTC P0301, P0302, P0303, P0304 [ZM]) (See 01–02B–75 DTC P0301, P0302, P0303, P0304 [FS])					
P0302	Cylinder 2 misfire detected	(See 01–02A–65 DTC P0301, P0302, P0303, P0304 [ZM]) (See 01–02B–75 DTC P0301, P0302, P0303, P0304 [FS])					
P0303	Cylinder 3 misfire detected	(See 01–02A–65 DTC P0301, P0302, P0303, P0304 [ZM]) (See 01–02B–75 DTC P0301, P0302, P0303, P0304 [FS])					
P0304	Cylinder 4 misfire detected	(See 01–02A–65 DTC P0301, P0302, P0303, P0304 [ZM]) (See 01–02B–75 DTC P0301, P0302, P0303, P0304 [FS])					
P0325	Knock sensor circuit malfunction	(See 01–02B–77 DTC P0325 [FS])					
P0335	CKP sensor circuit malfunction	(See 01–02A–67 DTC P0335 [ZM]) (See 01–02B–79 DTC P0335 [FS])					
P0340	CMP sensor circuit malfunction	(See 01–02B–80 DTC P0340 [FS])					
P0401	EGR flow insufficient detected	(See 01–02A–69 DTC P0401 [ZM]) (See 01–02B–82 DTC P0401 [FS])					
P0402	EGR flow excessive detected	(See 01–02A–70 DTC P0402 [ZM]) (See 01–02B–83 DTC P0402 [FS])					
P0421	Warm-up catalyst system efficiency below threshold	(See 01–02A–71 DTC P0421 [ZM]) (See 01–02B–84 DTC P0421 [FS])					
P0442	Evaporative emission system leak detected (small leak)	(See 01–02A–72 DTC P0442 [ZM]) (See 01–02B–86 DTC P0442 [FS])					
P0443	Evaporative emission control system purge solenoid valve circuit malfunction	(See 01–02A–75 DTC P0443 [ZM]) (See 01–02B–89 DTC P0443 [FS])					
P0451	Fuel tank pressure sensor performance problem	(See 01–02A–77 DTC P0451 [ZM]) (See 01–02B–90 DTC P0451 [FS])					
P0452	Fuel tank pressure sensor low input	(See 01–02A–78 DTC P0452 [ZM]) (See 01–02B–93 DTC P0452 [FS])					
P0453	Fuel tank pressure sensor high input	(See 01–02A–80 DTC P0453 [ZM]) (See 01–02B–95 DTC P0453 [FS])					
P0455	Evaporative emission control system leak detected (blockage or large leak)	(See 01–02A–83 DTC P0455 [ZM]) (See 01–02B–97 DTC P0455 [FS])					
P0456	Evaporative emission control system leak detected (very small leak)	(See 01–02B–102 DTC P0456 [FS])					
P0461	Fuel gauge sender unit circuit range/ performance	(See 01–02A–87 DTC P0461 [ZM]) (See 01–02B–104 DTC P0461 [FS])					
P0462	Fuel gauge sender unit circuit low input	(See 01–02A–88 DTC P0462 [ZM]) (See 01–02B–105 DTC P0462 [FS])					
P0463	Fuel gauge sender unit circuit high input	(See 01–02A–90 DTC P0463 [ZM]) (See 01–02B–107 DTC P0463 [FS])					
P0464	Fuel gauge sender unit circuit performance (slosh check)	(See 01–02A–91 DTC P0464 [ZM]) (See 01–02B–108 DTC P0464 [FS])					
P0480	Cooling fan relay malfunction	(See 01–02A–92 DTC P0480 [ZM]) (See 01–02B–109 DTC P0480 [FS])					
P0500	VSS circuit malfunction (MTX)	(See 01–02A–94 DTC P0500 [ZM]) (See 01–02B–111 DTC P0500 [FS])					
	VSS circuit malfunction (ATX)	ON	YES	2	CCM	×	(See 05–02–10 DTC P0500)
P0505	IAC valve circuit malfunction	(See 01–02B–113 DTC P0505 [FS])					
P0506	Idle control system RPM lower than expected	(See 01–02A–96 DTC P0506 [ZM]) (See 01–02B–115 DTC P0506 [FS])					
P0507	Idle control system RPM higher than expected	(See 01–02A–97 DTC P0507 [ZM]) (See 01–02B–117 DTC P0507 [FS])					
P0550	PSP switch circuit malfunction	(See 01–02A–99 DTC P0550 [ZM]) (See 01–02B–118 DTC P0550 [FS])					
P0660	VICS solenoid valve circuit malfunction	(See 01–02B–119 DTC P0660 [FS])					
P0703	Brake switch input malfunction	(See 01–02A–100 DTC P0703 [ZM]) (See 01–02B–122 DTC P0703 [FS])					
P0704	Clutch switch input circuit malfunction (MTX)	(See 01–02A–102 DTC P0704 [ZM]) (See 01–02B–123 DTC P0704 [FS])					

DTC No.	Condition	MIL	O/D OFF indicator light flashes	DC	Monitor item	Memory function	Page
P0705	Neutral switch input circuit malfunction (MTX)	(See 01–02A–104 DTC P0705 [ZM]) (See 01–02B–125 DTC P0705 [FS])					
	Transaxle range (TR) switch circuit malfunction (Short circuit) (ATX)	ON	YES	1	CCM	×	(See 05–02–14 DTC P0705)
P0706	Transaxle range (TR) switch circuit malfunction (Open circuit)	ON	YES	2	CCM	×	(See 05–02–16 DTC P0706)
P0710	Transaxle fluid temperature (TFT) sensor circuit malfunction (short to ground/open circuit)	ON	YES	1	CCM	×	(See 05–02–18 DTC P0710)
P0711	Transaxle fluid temperature (TFT) sensor circuit malfunction (Stuck)	ON	NO	2	CCM	×	(See 05–02–21 DTC P0711)
P0715	Input/turbine speed sensor circuit malfunction	ON	YES	1	CCM	×	(See 05–02–22 DTC P0715)
P0731	Gear 1 incorrect (Incorrect Gear Ratio Detected)	OFF	YES	1	CCM	×	(See 05–02–24 DTC P0731)
P0732	Gear 2 incorrect (Incorrect Gear Ratio Detected)	OFF	YES	1	CCM	×	(See 05–02–26 DTC P0732)
P0733	Gear 3 incorrect (Incorrect Gear Ratio Detected)	OFF	YES	1	CCM	×	(See 05–02–28 DTC P0733)
P0734	Gear 4 incorrect (Incorrect Gear Ratio Detected)	OFF	YES	1	CCM	×	(See 05–02–30 DTC P0734)
P0741	Torque converter clutch (TCC) (stuck OFF)	OFF	YES	1	CCM	×	(See 05–02–32 DTC P0741)
P0742	Torque converter clutch (TCC) (stuck ON)	OFF	YES	1	CCM	×	(See 05–02–33 DTC P0742)
P0745	Pressure control solenoid malfunction	OFF	YES	1	CCM	×	(See 05–02–36 DTC P0745)
P0751	Shift solenoid A stuck OFF	ON	YES	2	CCM	×	(See 05–02–38 DTC P0751)
P0752	Shift solenoid A stuck ON	ON	YES	2	CCM	×	(See 05–02–40 DTC P0752)
P0753	Shift solenoid A malfunction (electrical)	ON	YES	1	CCM	×	(See 05–02–42 DTC P0753)
P0756	Shift solenoid B stuck OFF	ON	YES	2	CCM	×	(See 05–02–44 DTC P0756)
P0757	Shift solenoid B stuck ON	ON	YES	2	CCM	×	(See 05–02–46 DTC P0757)
P0758	Shift solenoid B malfunction (electrical)	ON	YES	1	CCM	×	(See 05–02–48 DTC P0758)
P0761	Shift solenoid C stuck OFF	ON	YES	2	CCM	×	(See 05–02–50 DTC P0761)
P0762	Shift solenoid C stuck ON	ON	YES	2	CCM	×	(See 05–02–52 DTC P0762)
P0763	Shift solenoid C malfunction (electrical)	ON	YES	1	CCM	×	(See 05–02–54 DTC P0763)
P0766	Shift solenoid D stuck OFF	ON	YES	2	CCM	×	(See 05–02–56 DTC P0766)
P0767	Shift solenoid D stuck ON	ON	YES	2	CCM	×	(See 05–02–58 DTC P0767.)
P0768	Shift solenoid D malfunction (electrical)	ON	YES	1	CCM	×	(See 05–02–60 DTC P0768)
P0771	Shift solenoid E stuck OFF	ON	YES	2	CCM	×	(See 05–02–62 DTC P0771)
P0772	Shift solenoid E stuck ON	ON	YES	2	CCM	×	(See 05–02–64 DTC P0772)
P0773	Shift solenoid E malfunction (electrical)	ON	YES	1	CCM	×	(See 05–02–66 DTC P0773)
P1102	MAF sensor inconsistent with TP sensor (Lower than expected)	(See 01–02A–106 DTC P1102 [ZM])					

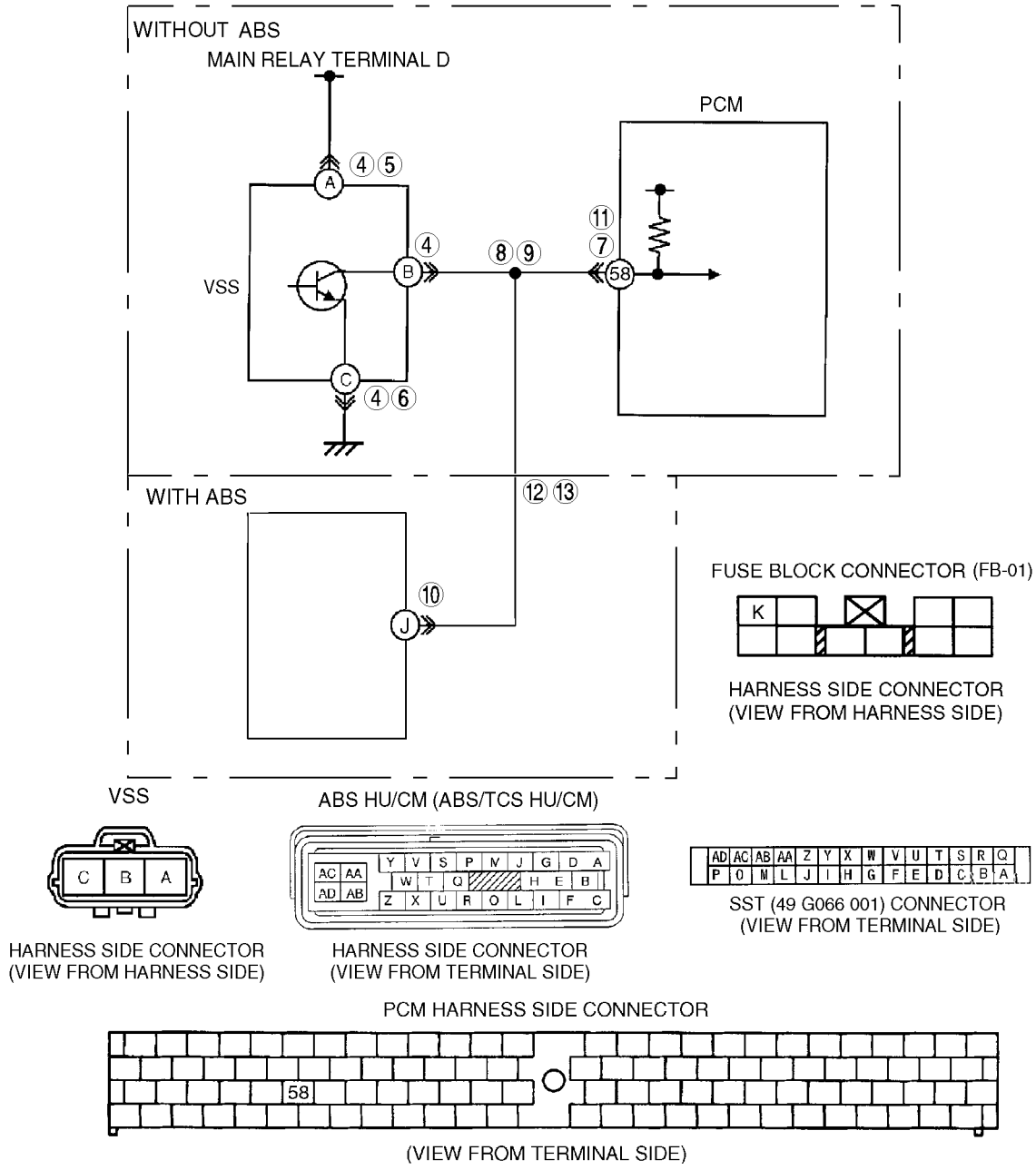
DTC No.	Condition	MIL	O/D OFF indicator light flashes	DC	Monitor item	Memory function	Page
P1103	Mass air flow inconsistent with engine speed (Greater than expected)	(See 01–02A–107 DTC P1103 [ZM])					
P1122	Throttle position stuck closed (lower than expected)	(See 01–02A–108 DTC P1122 [ZM])					
P1123	Throttle position stuck open (higher than expected)	(See 01–02A–110 DTC P1123 [ZM])					
P1170	HO2S (front) no inversion	(See 01–02A–111 DTC P1170 [ZM])					
P1250	PRC solenoid valve circuit malfunction	(See 01–02A–114 DTC P1250 [ZM]) (See 01–02B–127 DTC P1250 [FS])					
P1345	CMP sensor circuit malfunction	(See 01–02A–116 DTC P1345 [ZM])					
P1449	CDCV circuit malfunction	(See 01–02A–118 DTC P1449 [ZM]) (See 01–02B–129 DTC P1449 [FS])					
P1450	Evaporative emission control system malfunction (excessive vacuum)	(See 01–02A–120 DTC P1450 [ZM]) (See 01–02B–131 DTC P1450 [FS])					
P1487	EGR boost sensor solenoid valve circuit malfunction	(See 01–02A–121 DTC P1487 [ZM]) (See 01–02B–133 DTC P1487 [FS])					
P1496	EGR valve stepping motor coil 1 open or short	(See 01–02A–123 DTC P1496 [ZM]) (See 01–02B–135 DTC P1496 [FS])					
P1497	EGR valve stepping motor coil 2 open or short	(See 01–02A–125 DTC P1497 [ZM]) (See 01–02B–137 DTC P1497 [FS])					
P1498	EGR valve stepping motor coil 3 open or short	(See 01–02A–127 DTC P1498 [ZM]) (See 01–02B–139 DTC P1498 [FS])					
P1499	EGR valve stepping motor coil 4 open or short	(See 01–02A–129 DTC P1499 [ZM]) (See 01–02B–141 DTC P1499 [FS])					
P1504	IAC valve circuit malfunction	(See 01–02A–131 DTC P1504 [ZM])					
P1512	VTCS shutter valve close stuck	(See 01–02A–134 DTC P1512 [ZM]) (See 01–02B–143 DTC P1512 [FS])					
P1562	PCM +BB voltage low	(See 01–02A–135 DTC P1562 [ZM]) (See 01–02B–144 DTC P1562 [FS])					
P1569	VTCS solenoid valve circuit low input	(See 01–02A–137 DTC P1569 [ZM]) (See 01–02B–146 DTC P1569 [FS])					
P1570	VTCS solenoid valve circuit high input	(See 01–02A–139 DTC P1570 [ZM]) (See 01–02B–148 DTC P1570 [FS])					
P1631	Generator output voltage signal no electricity	(See 01–02A–141 DTC P1631 [ZM]) (See 01–02B–150 DTC P1631 [FS])					
P1632	Battery voltage monitor signal circuit malfunction	(See 01–02A–143 DTC P1632 [ZM]) (See 01–02B–152 DTC P1632 [FS])					
P1633	Battery overcharge	(See 01–02A–144 DTC P1633 [ZM]) (See 01–02B–153 DTC P1633 [FS])					
P1634	Generator terminal B circuit open	(See 01–02A–145 DTC P1634 [ZM]) (See 01–02B–154 DTC P1634 [FS])					

DTC P0500

A3U050201030W06

DTC P0500	Vehicle speed sensor (VSS) malfunction
DETECTION CONDITION	• Vehicle speed signal not input after following conditions are met and **4.5 seconds or more** have passed — D, 2, or 1 range switch ON. — P and N position of TR switch OFF. — Engine coolant temperature **60 °C {140 °F} or above**. — Turbine speed **1,500 rpm or above**. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.

DTC P0500	Vehicle speed sensor (VSS) malfunction
POSSIBLE CAUSE	**Without ABS:** • VSS malfunction • Open circuit between VSS terminal B and PCM terminal 58 • Short to ground between VSS terminal B and PCM terminal 58 • Open circuit between VSS terminal A and fuse block connector (FB-01) terminal K • Open circuit between VSS terminal C and body ground • Damaged connectors between VSS and PCM • PCM malfunction **With ABS:** • ABS HU/CM malfunction • Open circuit between ABS HU/CM terminal J and PCM terminal 58 • Short to ground between ABS HU/CM terminal J and PCM terminal 58 • Damaged connectors between ABS HU/CM and PCM • PCM malfunction



Diagnostic procedure

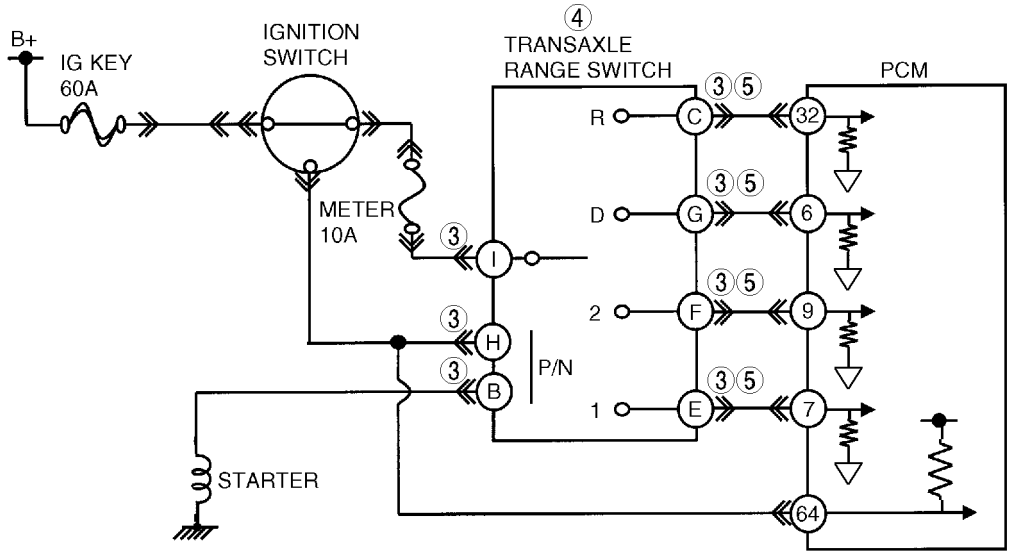
STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED SERVICE INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair Information available?	Yes	Perform repair or diagnosis according to available repair Information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**VERIFY VEHICLE SPECIFICATION** • Verify vehicle specification (With ABS, or without ABS). • Go to appropriate step.		• With ABS: Go to Step 10. • Without ABS: Go to next step
4	**INSPECT VSS CONNECTOR FOR POOR CONNECTION** • Turn ignition key to OFF. • Disconnect VSS connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace pin or connector, then go to Step 14.
5	**INSPECT VSS POWER CIRCUIT FOR OPEN CIRCUIT** • Verify that VSS connector is disconnected. • Turn ignition key to ON (Engine OFF). • Check voltage between VSS terminal A (harness-side) and ground • Is voltage reading **B+**?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 14.
6	**INSPECT VSS GROUND CIRCUIT FOR OPEN** • Turn ignition key to OFF. • Verify that VSS connector is disconnected. • Check for continuity between VSS terminal C (harness-side) and ground • Is there continuity?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 14.
7	**INSPECT PCM CONNECTOR FOR POOR CONNECTION** • Disconnect PCM connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace pin or connector, then go to Step 14.
8	**INSPECT VEHICLE SPEED SIGNAL CIRCUIT FOR OPEN** • Disconnect PCM connector and VSS connector. • Inspect for continuity between VSS terminal B and PCM terminal 58. • Is there continuity?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 14.
9	**INSPECT VEHICLE SPEED SIGNAL CIRCUIT FOR SHORT TO GROUND** • Verity that VSS connector and PCM connector are disconnected. • Inspect for continuity between PCM terminal 58 and body ground. • Is there continuity?	Yes	Repair or replace harness, then go to Step 14.
		No	Repair VSS, then go to Step 14.
10	**INSPECT ABS HU/CM CONNECTOR FOR POOR CONNECTION** • Turn ignition key to OFF. • Disconnect ABS HU/CM connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace pin or connector, then go to Step 14.
11	**INSPECT PCM CONNECTOR FOR POOR CONNECTION** • Disconnect PCM connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace pin or connector, then go to Step 14.

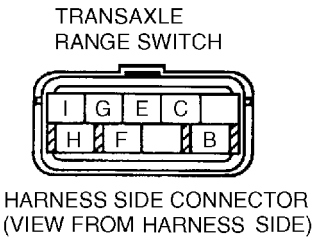
STEP	INSPECTION		ACTION
12	**INSPECT VEHICLE SPEED SIGNAL CIRCUIT FOR OPEN** • Disconnect PCM connector and ABS HU/CM connector. • Connect **SST** to ABS HU/CM vehicle harness side connector (Do not connect to ABS HU/CM). • Inspect for continuity between VSS terminal J and PCM terminal 58. • Is there continuity?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 14.
13	**INSPECT VEHICLE SPEED SIGNAL CIRCUIT FOR SHORT TO GROUND** • Verity that ABS HU/CM connector and PCM connector are disconnected. • Inspect for continuity between PCM terminal 58 and body ground. • Is there continuity?	Yes	Repair or replace harness, then go to Step 14.
		No	Inspect ABS HU/CM, then go to Step 14.
14	**VERIFY TROUBLESHOOTING OF DTC P0500 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Warm up engine. • Drive vehicle under following conditions for **4.5 seconds** or more while monitoring PIDs. — Engine coolant temp: **60 °C {140 °F} or above** — Drive in 1 range — Frequency of input/turbine speed sensor: **800 Hz** • Is pending code present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	No concern is detected. Go to next step.
15	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

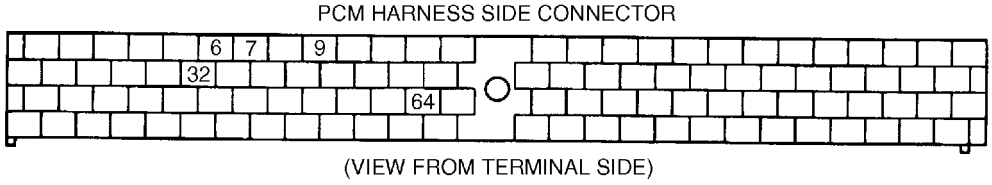
DTC P0705

A3U050201030W07

DTC P0705	Transaxle range (TR) switch circuit malfunction (short circuit)
DETECTION CONDITION	• When all conditions below satisfied and **100 seconds or more** have passed: — Any of D, 2 or 1 range of TR switch ON. — Engine speed **530 rpm or above**. — P/N position or R position of TR switch ON. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• TR switch malfunction • Short to power between TR switch terminal C and PCM terminal 32 • Short to power between TR switch terminal G and PCM terminal 6 • Short to power between TR switch terminal F and PCM terminal 9 • Short to power between TR switch terminal E and PCM terminal 7 • Damaged connector between TR switch and PCM • PCM malfunction







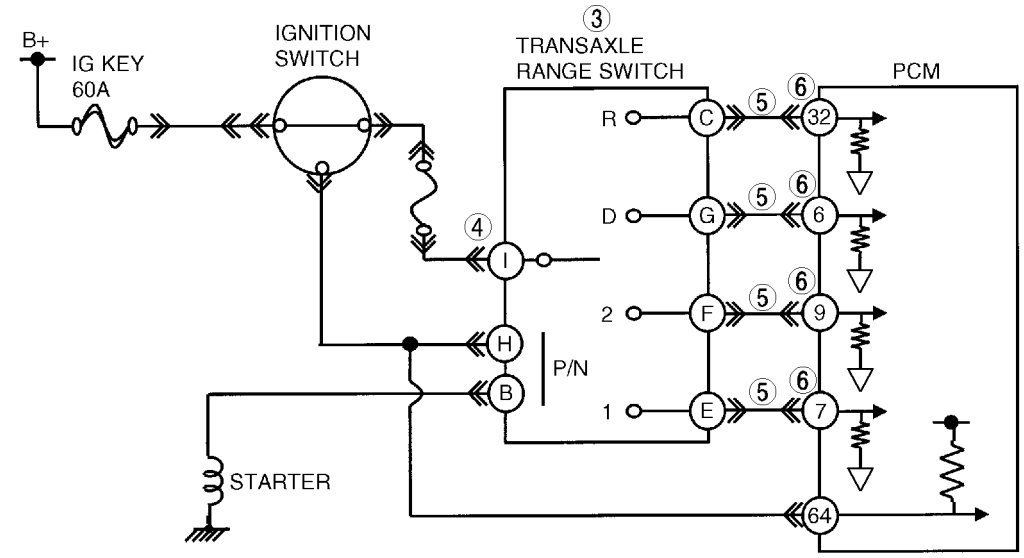
Diagnostic procedure

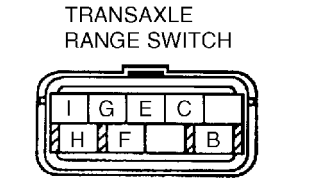
STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**INSPECT TR SWITCH CONNECTOR** • Turn ignition key OFF. • Disconnect TR switch connector. • Inspect for bent terminals of pins using mirror. • Are TR switch terminals okay?	Yes	Go to next step.
		No	Repair terminals or replace TR switch, then go to Step 6. (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION.)
4	**INSPECT TR SWITCH CONTINUITY** • Turn ignition key to OFF. • Disconnect TR switch connector. • Is there continuity between TR switch terminals (part-side)? (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION.)	Yes	Go to next step.
		No	Replace TR switch, then go to Step 6. (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION.)
5	**INSPECT TR SWITCH CIRCUIT FOR SHORT TO POWER** • Turn ignition key to ON (engine OFF). • Measure voltage at TR switch terminals C, E, F and G (harness-side). • Is there **0 V** at TR switch harness side connector?	Yes	Go to next step.
		No	Repair or replace wiring, then go to next step.
6	**VERIFY TROUBLESHOOTING OF DTC P0705 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Run engine at **530 rpm or above**. • Drive vehicle in each range (D, 2, and 1) at engine speed **530 rpm or above** (VSS PID) for **100 seconds or more**. • Are any DTCs present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	No concern is detected. Go to next step.
7	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0706

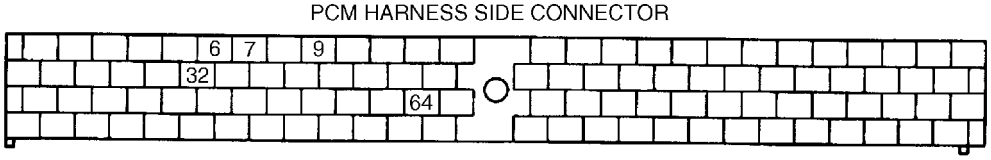
A3U050201030W08

DTC P0706	Transaxle range (TR) switch circuit malfunction (open circuit)
DETECTION CONDITION	• When all conditions below satisfied and **100 seconds or more** have passed. — D, 2, 1range and R range switch not input. — Engine speed **530 rpm or above**. — Vehicle speed **20 km/h {12 mph} or above**. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• Charging system malfunction • TR switch malfunction • TR switch misadjustment • Open circuit between TR switch terminal G and PCM terminal 6 • Open circuit between TR switch terminal F and PCM terminal 9 • Open circuit between TR switch terminal E and PCM terminal 7 • Open circuit between TR switch terminal I and dash harness (JB-04) terminals • Damaged connectors between TR switch and PCM • PCM malfunction





HARNESS SIDE CONNECTOR
(VIEW FROM HARNESS SIDE)



(VIEW FROM TERMINAL SIDE)

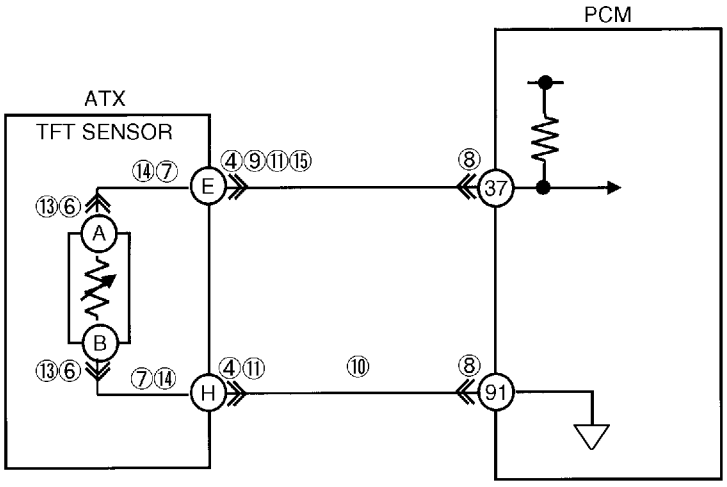
Diagnostic procedure

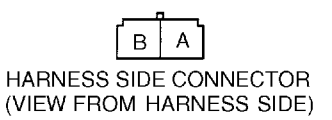
STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**INSPECT TR SWITCH FOR OPEN** • Turn ignition key to OFF. • Disconnect TR switch connector. • Inspect for continuity between TR switch terminals (part-side). — D range: I and G — 2 range: I and F — 1 range: I and E — R range: I and C • Is there continuity between TR switch terminals (part-side)? (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION.)	Yes	Go to next step.
		No	Replace TR switch, then go to Step 7. (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION.)
4	**INSPECT TR SWITCH POWER CIRCUIT FOR OPEN** • Turn ignition key to ON. • Inspect voltage at TR switch terminal I (harness-side). • Is there **B+** at TR switch terminal I (harness-side)?	Yes	Go to next step.
		No	Inspect main fuse. • If okay, repair or replace wiring, then go to Step 7.
5	**INSPECT PCM CONNECTOR FOR POOR CONNECTION** • Turn ignition key to OFF. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 7.
6	**INSPECT TR SWITCH SIGNAL CIRCUIT FOR OPEN** • Inspect for continuity between TR switch terminals (harness-side) and PCM terminals (harness-side). — D range: G to 6 — 2 range: F to 9 — 1 range: E to 7 — R range: C to 32 • Is there continuity?	Yes	Go to next step.
		No	Repair or replace harness, then go to next step.
7	**VERIFY TROUBLESHOOTING OF DTC P0706 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Drive vehicle in each range (D, 2, 1, and R) for **100 seconds or more** under following conditions. — Engine speed (RPM PID) **530 rpm or above** — Vehicle speed (VSS PID) **20 km/h {12 mph} or above** • Is pending code present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	No concern is detected. Go to next step.
8	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

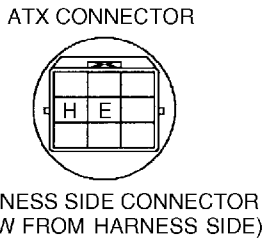
DTC P0710

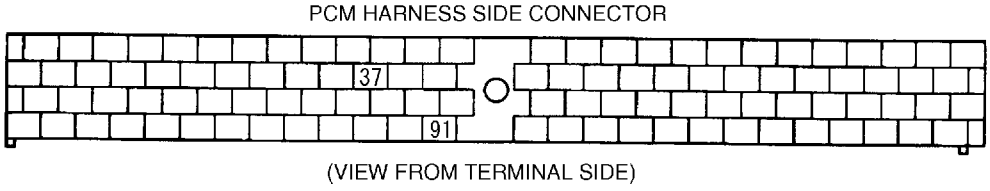
A3U050201030W09

DTC P0710	Transaxle fluid temperature (TFT) sensor circuit malfunction (short to ground/open circuit)
DETECTION CONDITION	• If PCM detects either of following conditions for **150 seconds or more**, PCM determines that TFT sensor circuit has a malfunction. — TFT sensor voltage is **0.06 V or below** and vehicle speed **20 km/h {12 mph} or above**. — TFT sensor voltage is **4.67 V or above** and vehicle speed **20 km/h {12 mph} or above**. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• TFT sensor malfunction • Open circuit between TFT sensor terminal A and ATX connector terminal E • Short to ground between TFT sensor terminal A and ATX connector terminal E • Open circuit between TFT sensor terminal B and ATX connector terminal H • Short to ground between TFT sensor terminal B and ATX connector terminal H • Open circuit between ATX connector terminal E and PCM terminal 37 • Short to ground between ATX connector terminal E and PCM terminal 37 • Open circuit between ATX connector terminal H and PCM terminal 91 • Damaged connectors between TFT sensor and PCM • PCM malfunction









Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**VERIFY CURRENT INPUT SIGNAL STATUS** • Turn ignition key to OFF. • Connect breakout box to PCM. • Turn ignition key to ON (engine OFF). • Measure the voltage at PCM terminal 37. • Are voltage readings **within 0.06—4.67 V**?	Yes	Go to intermittent concern troubleshooting procedure. (See 01–03A–4 INTERMITTENT CONCERN TROUBLESHOOTING [ZM].) (See 01–03B–4 INTERMITTENT CONCERN TROUBLESHOOTING [FS].)
		No	Voltage **0.06 V or below**: go to Step 11. Voltage **4.67 V or above**: go to next step.
4	**INSPECT ATX CONNECTOR FOR POOR CONNECTION** • Turn ignition key to OFF. • Inspect ATX connector connection. • Disconnect ATX connector. • Check for poor connection (damaged/pulled-out terminals, corrosion etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminal, then go to Step 16.
5	**INSPECT TFT SENSOR CIRCUIT** • Turn ignition key to ON (engine OFF). • Measure the voltage at PCM terminal 37 when connect between ATX connector terminals E and H (vehicle harness-side) using jumper wire. • Verify that voltage changes to **0.06 V or below**. • Does voltage change?	Yes	Go to next step.
		No	Go to Step 8.
6	**INSPECT TFT SENSOR CONNECTOR FOR POOR CONNECTION** • Turn ignition key to OFF. • Remove valve body cover. • Disconnect TFT sensor connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminal or replace TFT sensor, then go to Step 16. (See 05–17–25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION.)
7	**INSPECT TFT SENSOR CIRCUIT FOR OPEN** • Check for continuity between TFT sensor terminals (harness-side) and ATX connector terminals (transaxle case side). — ATX connector terminal E and TFT sensor terminal A — ATX connector terminal H and TFT sensor terminal B • Is there continuity?	Yes	Replace TFT sensor, then go to Step 16. (See 05–17–25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION.)
		No	Repair or replace harness, then go to Step 16.
8	**INSPECT PCM CONNECTOR FOR POOR CONNECTION** • Turn ignition key to OFF. • Disconnect PCM connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminal, then go to Step 16.
9	**INSPECT HARNESS FOR OPEN CIRCUIT** • Disconnect ATX connector. • Connect the PCM connector. • Turn ignition key to ON (engine OFF). • Inspect voltage at ATX connector terminal E (vehicle harness-side). • Is voltage **5 V**?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 16.

STEP	INSPECTION		ACTION
10	**INSPECT ATX CONNECTOR CIRCUIT FOR OPEN** • Turn ignition key to OFF. • Inspect continuity between ATX connector terminal H (vehicle harness-side) and body ground. • Is there continuity?	Yes	Go to Step 16.
		No	Repair or replace harness, then go to Step 16.
11	**INSPECT TERMINAL CONDITION** • Turn ignition key to OFF. • Disconnect ATX connector. • Inspect for bent terminals. • Are the terminals bent?	Yes	Repair or replace terminals, then go to Step 16. • If terminals cannot be repaired, replace harness, then go to Step 16.
		No	Go to next step.
12	**INSPECT TFT SENSOR CIRCUIT** • Turn ignition key to ON (engine OFF). • Verify if voltage changes to **4.67 V or above** at PCM terminal 37 when ATX connector disconnected. • Does voltage change?	Yes	Go to next step.
		No	Go to Step 15.
13	**INSPECT TFT SENSOR TERMINALS CONDITION** • Turn ignition key to OFF. • Disconnect TFT sensor connector. • Inspect for bent TFT sensor terminals. • Are the terminals bent?	Yes	Repair terminals or replace TFT sensor, then go to Step 16. (See 05–17–25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION.)
		No	Go to next step.
14	**INSPECT TFT SENSOR CIRCUIT FOR SHORT TO GROUND** • Inspect for continuity between TFT sensor terminals (harness-side) and body ground. — A and body ground — B and body ground • Is there continuity?	Yes	Repair or replace harness, then go to Step 16.
		No	Replace TFT sensor, then go to Step 16. (See 05–17–25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION.)
15	**INSPECT ATX CONNECTOR CIRCUIT FOR SHORT TO GROUND** • Turn ignition key to OFF. • Inspect for continuity between ATX connector terminal E (vehicle harness-side) and body ground. • Is there continuity?	Yes	Repair or replace harness, then go to next step.
		No	Go to next step.
16	**VERIFY TROUBLESHOOTING OF DTC P0710 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Drive vehicle under following condition for **150 seconds or more**. — Vehicle speed (VSS PID) **20 km/h {12 mph} or above**. • Is same DTC present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
17	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0711

A3U050201030W10

DTC P0711	Transaxle fluid temperature (TFT) sensor circuit malfunction (stuck)
DETECTION CONDITION	• When all conditions below are satisfied. — When **180 seconds** have passed after engine is started, vehicle is driven for **150 seconds or more** at vehicle speed **between 25 – 59 km/h {15 – 36 mph}**, then **60 km/h {37 mph} or more** for **100 seconds or more**. — P0710 not output. — Variation in ATF voltage **below 0.06 V**. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • O/D OFF indicator light does not flash. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• TFT sensor malfunction • Connector corrosion • PCM malfunction

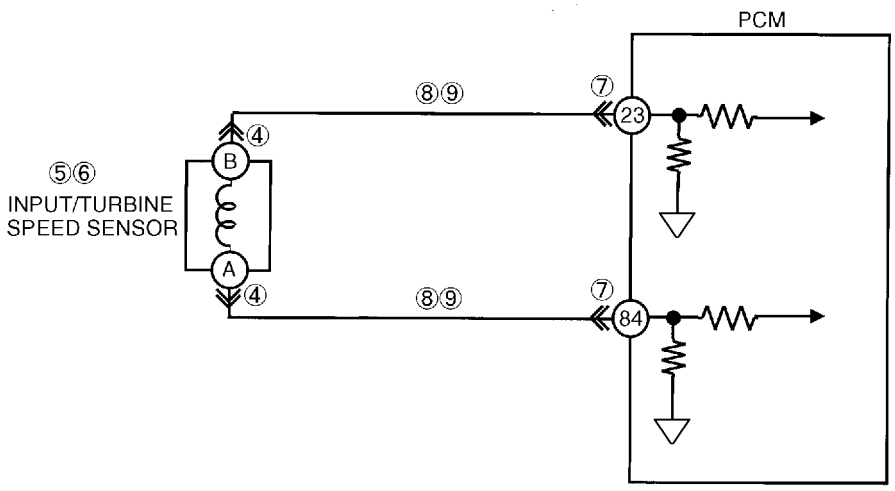
Diagnostic procedure

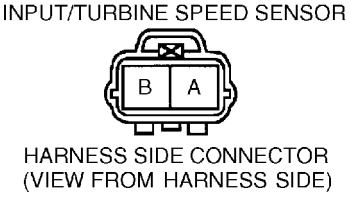
STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**INSPECT TFT SENSOR VOLTAGE** • Turn ignition key to OFF. • Connect breakout box to PCM. • Turn ignition key to ON (engine OFF). • Measure the voltage at PCM terminal 37. • Record terminal 37 voltage. • Start engine. • Drive vehicle at **60 km/h {37 mph} or above** for **430 seconds or more**. • Record terminal 37 voltage again. • Is variation in voltage **0.06V or above**?	Yes	Go to Step 5.
		No	Go to next step.
4	**INSPECT TERMINAL CONDITION** • Turn ignition key to OFF. • Disconnect ATX connector. • Inspect terminals for corrosion. • Are terminals okay?	Yes	Go to next step.
		No	Repair or replace terminals, then go to next step.
5	**VERIFY TROUBLESHOOTING OF DTC P0711 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Decrease ATF temperature to **20 °C {68 °F} or below**. • Start engine and wait for **180 seconds or more**. • Drive vehicle at a vehicle speed **between 25 – 59 km/h {15 – 36 mph}** for **150 seconds or more**. • Drive vehicle at vehicle speed **60 km/h {37 mph} or above** for **100 seconds or more**. • Is pending code present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
6	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

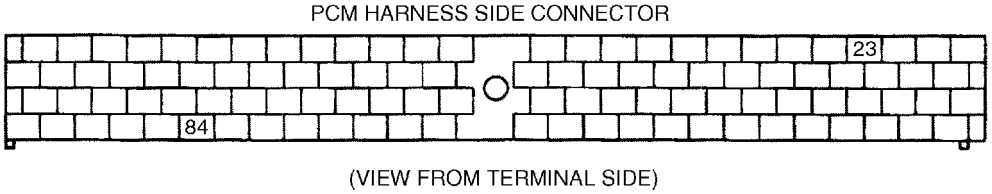
DTC P0715

A3U050201030W11

DTC P0715	Input/turbine speed sensor circuit malfunction
DETECTION CONDITION	• When all conditions below satisfied and **0.7 second or more** have passed. — D, 2 or 1 range of TR switch input. — Driving vehicle with vehicle speed **40 km/h {25 mph} or above**. — Input/turbine speed sensor signal not input. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• Input/turbine speed sensor malfunction • Short to ground between input/turbine speed sensor terminal A and PCM terminal 84 • Short to ground between input/turbine speed sensor terminal B and PCM terminal 23 • Open circuit between input/turbine speed sensor terminal A and PCM terminal 84 • Open circuit between input/turbine speed sensor terminal B and PCM terminal 23 • Damaged connectors between input/turbine speed sensor and PCM • PCM malfunction







Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**VERIFY CURRENT INPUT SIGNAL STATUS** • Turn ignition key to OFF. • Start engine. • Measure frequency of input/turbine speed sensor using a oscilloscope. — IG ON: **0 Hz** — Idle: **Within 320—374 Hz** (P, N position) • Are frequency of input/turbine speed sensor readings within specifications?	Yes	Go to intermittent concern troubleshooting procedure. (See 01–03A–4 INTERMITTENT CONCERN TROUBLESHOOTING [ZM].) (See 01–03B–4 INTERMITTENT CONCERN TROUBLESHOOTING [FS].)
		No	Go to next step.
4	**INSPECT INPUT/TURBINE SPEED SENSOR CONNECTOR FOR POOR CONNECTION** • Turn ignition key to OFF. • Disconnect input/turbine speed sensor connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 10.
5	**INSPECT INPUT/TURBINE SPEED SENSOR RESISTANCE** • Measure resistance between input/turbine speed sensor terminals (part-side). • Is resistance **within 250—600 ohms** between input/turbine speed sensor terminals (part-side)? (See 05–17–26 INPUT/TURBINE SPEED SENSOR INSPECTION.)	Yes	Go to next step.
		No	Replace input/turbine speed sensor, then go to Step 10. (See 05–17–26 INPUT/TURBINE SPEED SENSOR REMOVAL/INSTALLATION.)
6	**INSPECT INPUT/TURBINE SPEED SENSOR** • Remove input/turbine speed sensor. • Is there iron powder stuck on input/turbine speed sensor? (See 05–17–26 INPUT/TURBINE SPEED SENSOR REMOVAL/INSTALLATION.)	Yes	Clean input/turbine speed sensor, then go to Step 10.
		No	Go to next step.
7	**INSPECT PCM CONNECTOR FOR POOR CONNECTION** • Disconnect PCM connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 10.
8	**INSPECT INPUT/TURBINE SPEED SENSOR CIRCUIT FOR OPEN** • Inspect input/turbine speed sensor terminals (harness-side) and PCM terminals (harness-side). — A and 84 — B and 23 • Is there continuity?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 10.
9	**INSPECT INPUT/TURBINE SPEED SENSOR CIRCUIT FOR SHORT TO GROUND** • Inspect input/turbine speed sensor terminal (harness-side) and body ground. — A and body ground — B and body ground • Is there continuity?	Yes	Repair or replace harness, then go to next step.
		No	Go to next step.

STEP	INSPECTION		ACTION
10	**VERIFY TROUBLESHOOTING OF DTC P0715 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Drive vehicle with vehicle speed **40 km/h {25 mph} or above** for **0.7 second or more**. • Is same DTC present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
11	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0731

A3U050201030W12

DTC P0731	Gear 1 incorrect (Incorrect Gear Ratio Detected)
DETECTION CONDITION	• PCM monitors revolution ratio of forward clutch drum revolution to differential gear case revolution when the following monitoring conditions are met. If revolution ratio is **below 2.157**, PCM determines that there is malfunction. **Monitoring condition:** — ATF temperature **20 °C {68 °F} or above**. — Driving in 1GR in D range. — Engine run. — Turbine speed **within 225—4,988 rpm**. — Throttle opening angle **3.13% or above** (FS engine) — Throttle opening angle **3.91% or above** (ZM engine) — Differential gear case (output) revolution speed **35 rpm or above**. — Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715, P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL does not illuminate. • O/D OFF indicator light flashes if PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA is not available. • Pending code is not available. • DTC stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoid A stuck • Pressure control solenoid stuck • Line pressure low • One-way clutch slipping • Forward clutch slipping • Control valve stuck • Oil pump • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information.
		No	Go to next step.
2	**CHECK ATF CONDITION** • Check ATF condition. (See 05–17–17 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION.) • Is it okay?	Yes	Go to next step.
		No	Replace transaxle, then go to Step 8.
3	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–17 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 8.

STEP	INSPECTION		ACTION
4	**INSPECT SHIFT SOLENOID VALVE A** • Perform inspection of operation. (See 05–17–28 SOLENOID VALVES INSPECTION.) • Verify the click sound of shift solenoid A when applying B+ to transaxle connector terminal A. • Was click heard from solenoids?	Yes	Go to next step.
		No	Replace solenoid that you could not hear click sound, then go to Step 8. (See 05–17–30 SOLENOID VALVES REMOVAL/ INSTALLATION.)
5	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressures. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	All ranges: Replace oil pump, then go to Step 8. Any ranges: Replace control valve body, then go to Step 8. (See 05–17–36 CONTROL VALVE BODY REMOVAL/ INSTALLATION.)
6	**INSPECT STALL SPEED** • Measure stall speed in D range. (See 05–17–13 Stall Test.) **Specification** **FS engine**: **2,200—2,500 rpm** **ZM engine**: **2,300—2,600 rpm** • Is stall speed within specification?	Yes	Go to next step.
		No	Replace automatic transaxle, then go to Step8. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.)
7	**INSPECT FREQUENCY OF INPUT/TURBINE SPEED SENSOR WHEN DRIVING VEHICLE** • Turn ignition key to OFF. • Connect WDS or equivalent. • Start engine. • Measure frequency of input/turbine speed sensor while driving vehicle under the following conditions: — Vehicle speed (VSS PID): **20 km/h {12 mph}** — Drive in D range, 1st gear — Throttle opening angle (TP PID): **about 25%** • Was frequency of input/turbine speed sensor at **approx. 1,087 Hz**?	Yes	Go to next step.
		No	Replace control valve body, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/ INSTALLATION.)
8	**VERIFY REPAIR OF DTC P0731** • Make sure to reconnect all disconnected connectors. • Clear DTC using WDS or equivalent. • Start engine. • Warm up transaxle. • Drive vehicle under the following conditions for **more than 15 seconds**. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range, 1st gear — Throttle opening angle (TP PID): **3.13% or above** (FS engine) — Throttle opening angle (TP PID): **3.91% or above** (ZM engine) — Vehicle speed (VSS PID): **4 km/h {3 mph} or above** • Are any DTCs present?	Yes	Replace PCM, then go to next step.
		No	Go to next step.
9	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0732

A3U050201030W13

DTC P0732	Gear 2 incorrect (Incorrect Gear Ratio Detected)
DETECTION CONDITION	• PCM monitors revolution ratio of forward clutch drum revolution to differential gear case revolution when the following monitoring conditions are met. If revolution ratio is **below 1.249 or above 2.157**, PCM determines that there is malfunction. **Monitoring condition:** — ATF temperature **20 °C {68 °F} or above**. — Driving in 2 GR in D range. — Engine run. — Turbine speed **within 225—4,988 rpm**. — Differential gear case (output) revolution speed **35 rpm or above**. — Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715, P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL does not illuminate. • O/D OFF indicator light flashes if PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA is not available. • Pending code is not available. • DTC stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoids A, B or C stuck • Pressure control solenoid stuck • Line pressure low • 2-4 brake band slipping • Forward clutch slipping • Control valve stuck • Oil pump • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information.
		No	Go to next step.
2	**CHECK ATF CONDITION** • Check ATF condition. (See 05–17–17 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION.) • Is it okay?	Yes	Go to next step.
		No	Replace transaxle, then go to Step 8.
3	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–17 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 8.
4	**INSPECTION SHIFT SOLENOID VALVE A, B AND C FOR CLICK SOUND** • Perform inspection of operation. (See 05–17–28 SOLENOID VALVES INSPECTION.) • Verify the click sound of shift solenoid A, B, and C when applying B+ to each transaxle connector terminal. • Was click heard from solenoids?	Yes	Go to next step.
		No	Replace solenoid that you could not hear click sound, then go to Step 8. (See 05–17–30 SOLENOID VALVES REMOVAL/ INSTALLATION.)

STEP	INSPECTION		ACTION
5	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressures. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	All ranges: Replace oil pump, then go to Step 8. Any ranges: Replace control valve body, then go to Step 8. (See 05–17–36 CONTROL VALVE BODY REMOVAL/ INSTALLATION.)
6	**INSPECT STALL SPEED** • Measure stall speed in D range. (See 05–17–13 Stall Test.) **Specification** **FS engine**: **2,200—2,500 rpm** **ZM engine**: **2,300—2,600 rpm** • Is stall speed within specification?	Yes	Go to next step.
		No	Replace automatic transaxle, then go to Step8. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.)
7	**INSPECT FREQUENCY OF INPUT/TURBINE SPEED SENSOR WHEN DRIVING VEHICLE** • Turn ignition key to OFF. • Connect WDS or equivalent. • Start engine. • Measure frequency of input/turbine speed sensor while driving vehicle under the following conditions: — Vehicle speed: **40 km/h {24 mph}** (VSS PID) — Drive in D range, 2nd gear — Throttle opening angle: **about 25% (TP PID)** • Was frequency of input/turbine speed sensor at **approx. 1,156 Hz**?	Yes	Go to next step.
		No	Replace control valve body, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/ INSTALLATION.)
8	**VERIFY REPAIR OF DTC P0732** • Make sure to reconnect all disconnected connectors. • Clear DTC using WDS or equivalent. • Start engine. • Warm up transaxle. • Drive vehicle under the following conditions for **more than 15 seconds**. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range, 2nd gear — Vehicle speed (VSS PID): **3.8 km/h {2.4 mph} or above** • Are any DTCs present?	Yes	Replace PCM, then go to next step.
		No	Go to next step.
9	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0733

A3U050201030W14

DTC P0733	Gear 3 incorrect (Incorrect Gear Ratio Detected)
DETECTION CONDITION	• PCM monitors revolution ratio of forward clutch drum revolution to differential gear case revolution when the following monitoring conditions are met. If revolution ratio is **below 0.863 or above 1.249**, PCM determines that there is malfunction. **Monitoring condition:** — ATF temperature **20 °C {68 °F} or above**. — Driving in 3 GR in D range. — Engine run. — Turbine speed **within 225—4,988 rpm**. — Differential gear case (output) revolution speed **35 rpm or above**. — Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715, P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL does not illuminate. • O/D OFF indicator light flashes if PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA is not available. • Pending code is not available. • DTC stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoids A or C stuck • Pressure control solenoid stuck • Line pressure low • 3-4 clutch slipping • Forward clutch slipping • Control valve stuck (Bypass, TCC or 3-4 shift valve) • Oil pump • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information.
		No	Go to next step.
2	**CHECK ATF CONDITION** • Check ATF condition. (See 05–17–17 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION.) • Is it okay?	Yes	Go to next step.
		No	Replace transaxle, then go to Step 8.
3	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–17 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 8.
4	**INSPECTION SHIFT SOLENOID VALVE A AND C FOR CLICK SOUND** • Perform inspection of operation. (See 05–17–28 SOLENOID VALVES INSPECTION.) • Verify the click sound of shift solenoid A and C when applying B+ to each transaxle connector terminal. • Was click heard from solenoids?	Yes	Go to next step.
		No	Replace solenoid that you could not hear click sound, then go to Step 8. (See 05–17–30 SOLENOID VALVES REMOVAL/ INSTALLATION.)

STEP	INSPECTION		ACTION
5	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressures. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	All ranges: Replace oil pump, then go to Step 8. Any ranges: Replace control valve body, then go to Step 8. (See 05–17–36 CONTROL VALVE BODY REMOVAL/ INSTALLATION.)
6	**INSPECT STALL SPEED** • Measure stall speed in D range. (See 05–17–13 Stall Test.) **Specification** **FS engine**: **2,200—2,500 rpm** **ZM engine**: **2,300—2,600 rpm** • Is stall speed within specification?	Yes	Go to next step.
		No	Replace automatic transaxle, then go to Step 8. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.)
7	**INSPECT FREQUENCY OF INPUT/TURBINE SPEED SENSOR WHEN DRIVING VEHICLE** • Turn ignition key to OFF. • Connect WDS or equivalent. • Start engine. • Measure frequency of input/turbine speed sensor while driving vehicle under the following conditions: — Vehicle speed (VSS PID): **60 km/h {37 mph}** — Drive in D range, 3rd gear — Throttle opening angle (TP PID): **about 25%** • Was frequency of input/turbine speed sensor at **approx. 1,158 Hz**?	Yes	Go to next step.
		No	Replace control valve body, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/ INSTALLATION.)
8	**VERIFY REPAIR OF DTC P0732** • Make sure to reconnect all disconnected connectors. • Clear DTC using WDS or equivalent. • Start engine. • Warm up transaxle. • Drive vehicle under the following conditions for **more than 15 seconds**. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range, 3rd gear — Vehicle speed (VSS PID): **4 km/h {3 mph} or above** • Are any DTCs present?	Yes	Replace PCM, then go to next step.
		No	Go to next step.
9	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0734

A3U050201030W15

DTC P0734	Gear 4 incorrect (Incorrect Gear Ratio Detected)
DETECTION CONDITION	• PCM monitors revolution ratio of forward clutch drum revolution to differential gear case revolution when the following monitoring conditions are met. If revolution ratio is **below 0.6 or above 1.249**, PCM determines that there is malfunction. **Monitoring condition:** — ATF temperature **20 °C {68 °F} or above**. — Driving in 4 GR in D range. — Engine run. — Turbine speed **within 225—4,988 rpm**. — Vehicle speed **50 km/h {31 mph} or above**. — Closed throttle position. — Differential gear case (output) revolution speed **35 rpm or above**. — Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715, P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL does not illuminate. • O/D OFF indicator light flashes if PCM detects the above malfunction condition during first drive cycle. • FREEZE FRAME DATA is not available. • Pending code is not available. • DTC stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoids A, B or C stuck • Pressure control solenoid stuck • Line pressure low • 2-4 brake band slipping • 3-4 clutch slipping • Forward clutch slipping • Control valve stuck (Bypass or 3-4 shift valve) • Oil pump • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information.
		No	Go to next step.
2	**CHECK ATF CONDITION** • Check ATF condition. (See 05–17–17 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION.) • Is it okay?	Yes	Go to next step.
		No	Replace transaxle, then go to Step 8.
3	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–17 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 8.
4	**INSPECT SHIFT SOLENOID VALVE A AND D FOR CLICK SOUND** • Perform inspection of operation. (See 05–17–28 SOLENOID VALVES INSPECTION.) • Verify the click sound of shift solenoids A and D when applying B+ to each transaxle connector terminal. **Note** • Click from solenoid D is barely audible. Remove solenoids to correctly inspect if necessary. • Was click heard from solenoids?	Yes	Go to next step.
		No	Replace solenoid that you could not hear click sound, then go to Step 8. (See 05–17–30 SOLENOID VALVES REMOVAL/ INSTALLATION.)

STEP	INSPECTION		ACTION
5	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressures. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	All ranges: Replace oil pump, then go to Step 8. Any ranges: Replace control valve body, then go to Step 8. (See 05–17–36 CONTROL VALVE BODY REMOVAL/ INSTALLATION.)
6	**INSPECT STALL SPEED** • Measure stall speed in D range. (See 05–17–13 Stall Test.) **Specification** **FS engine**: **2,200—2,500 rpm** **ZM engine**: **2,300—2,600 rpm** • Is stall speed within specification?	Yes	Go to next step.
		No	Replace automatic transaxle, then go to Step 8. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.)
7	**INSPECT FREQUENCY OF INPUT/TURBINE SPEED SENSOR WHEN DRIVING VEHICLE** • Turn ignition key to OFF. • Connect WDS or equivalent. • Start engine. • Measure frequency of input/turbine speed sensor while driving vehicle under the following conditions: — Vehicle speed (VSS PID): **80 km/h {49 mph}** — Drive in D range, 4th gear — Throttle opening angle (TP PID): **about 25%** • Was frequency of input/turbine speed sensor at **approx. 1,120 Hz**?	Yes	Go to next step.
		No	Replace control valve body, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/ INSTALLATION.)
8	**VERIFY REPAIR OF DTC P0732** • Make sure to reconnect all disconnected connectors. • Clear DTC using WDS or equivalent. • Start engine. • Warm up transaxle. • Drive vehicle under the following conditions for **more than 15 seconds**. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range, 4th gear — Throttle opening angle (TP PID): **0%** — Vehicle speed (VSS PID): **50 km/h {31 mph} or above** • Are any DTCs present?	Yes	Replace PCM, then go to next step.
		No	Go to next step.
9	**VERIFY AFTER REPAIR PROCEDURE** • Are any DTCs present? • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.)	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0741

A3U050201030W16

DTC P0741	Torque converter clutch (TCC) stuck OFF
DETECTION CONDITION	• When all conditions below satisfied. — ATF temperature **20 °C {68 °F} or above**. — Driving in 4GR at D range. — Engine run. — Turbine speed **within 225—4,988 rpm**. — Vehicle speed **within 60—100 km/h {37—62 mph}**. — TCC operation — Shift solenoid A duty value exceeds **99%** — Power or normal mode — Difference between engine speed and turbine speed **more than 100 rpm** — Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715, P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL does not illuminate if PCM detects the above malfunction conditions during first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoids A, B, C, D, E, and pressure control solenoid stuck • Line pressure low • 2-4 brake band slipping • 3-4 clutch slipping • Control valve stuck. • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
2	**CHECK ATF CONDITION** • Turn ignition key to OFF. • Check ATF condition. — Clear red: Normal — Milky: Water mixed in fluid — Reddish brown: Deteriorated ATF • Is it okay? (See 05–17–17 Automatic Transaxle Fluid (ATF) Condition Inspection.)	Yes	Go to next step.
		No	If ATF color milky or reddish brown, replace ATF, then go to Step 4. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
3	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 6. (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)
4	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressure. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—169 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	• All ranges: Replace oil pump or control valve body, then go to Step 6. • Any ranges: Replace ATX, then go to Step 6. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)

STEP	INSPECTION		ACTION
5	**CHECK OPERATION OF EACH VALVE AND EACH SPRING** • Turn ignition key to OFF. • Remove control valve body. • Disassemble control valve body. • Is each valve operation okay and is return spring okay? (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)	Yes	Replace ATX, then go to next step (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
		No	Repair or replace shift valve and return spring, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
6	**VERIFY TROUBLESHOOTING OF DTC P0741 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Start engine. • Warm up engine and ATX. • Drive vehicle under following conditions for **15 seconds or more**. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range, 4th gear (TCC operation) — Vehicle speed (VSS PID): **within 60—100 km/h {37—62 mph}** • Are any DTCs present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
7	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0742

A3U050201030W17

DTC P0742	Torque converter clutch (TCC) stuck ON
DETECTION CONDITION	• All of following conditions satisfied under each of following throttle conditions. — ATF temperature **20 °C {68 °F} or above**. — Driving in 4GR at D range. — Engine run. — Turbine speed **within 225—4,988 rpm**. — Vehicle speed **below 70 km/h {43 mph}**. — Torque converter clutch (TCC) no operation — Difference between engine speed and turbine speed **below 50 rpm** — DTC P0734 not output • Throttle conditions. — **FS engine** • Throttle opening angle (TP PID) **above 6.25%** and **10 seconds or more** have passed. • Throttle opening angle (TP PID) **within 3.13—6.25%** and **3 seconds or more** have passed. • Throttle opening angle at closed throttle position and **10 seconds or more** have passed. — **ZM engine** • Throttle opening angle (TP PID) **above 7.03%** and **10 seconds or more** have passed. • Throttle opening angle (TP PID) **within 1.56—7.03%** and **3 seconds or more** have passed. • Throttle opening angle at closed throttle position and **10 seconds or more** have passed. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL does not illuminate if PCM detects the above malfunction conditions during first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoids A, B, C, D, E, and pressure control solenoid stuck • Line pressure low • 2-4 brake band slipping • 3-4 clutch slipping • Control valve stuck • PCM malfunction

Diagnostic procedure

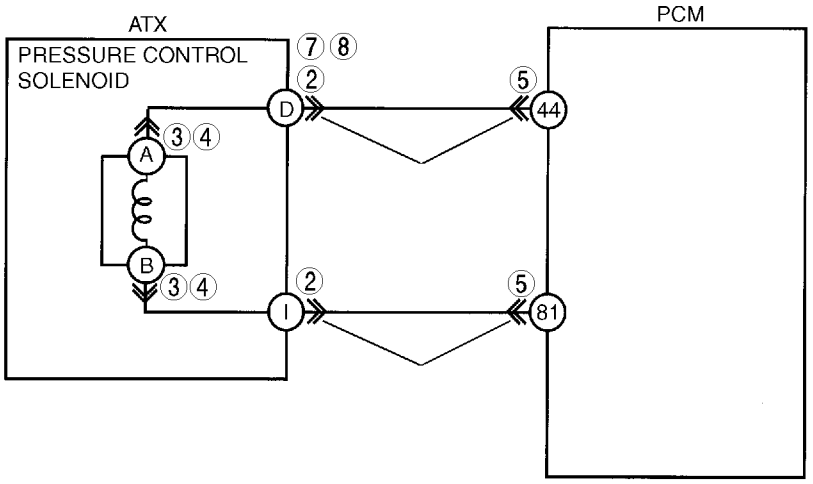
STEP	INSPECTION		ACTION
1	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
2	**CHECK ATF CONDITION** • Turn ignition key to OFF. • Check ATF condition. — Clear red: Normal — Milky: Water mixed in fluid — Reddish brown: Deteriorated ATF • Is it okay? (See 05–17–17 Automatic Transaxle Fluid (ATF) Condition Inspection.)	Yes	Go to next step.
		No	If ATF color milky or reddish brown, replace ATF, then go to Step 4. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
3	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 6. (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)
4	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressure. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	• All ranges: Replace oil pump or control valve body, then go to Step 6. • Any ranges: Replace ATX, then go to Step 6. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
5	**CHECK OPERATION OF EACH VALVE AND EACH SPRING** • Turn ignition key to OFF. • Remove control valve body. • Disassemble control valve body. • Is each valve operation okay and is return spring okay? (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)	Yes	Replace ATX, then go to next step (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
		No	Repair or replace shift valve and return spring, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/ INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)

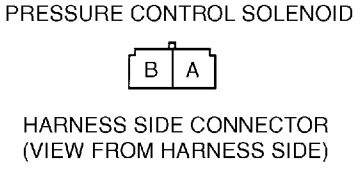
STEP	INSPECTION		ACTION
6	**VERIFY TROUBLESHOOTING OF DTC P0742 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Start engine. • Warm up engine and ATX. • Drive vehicle under following. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range, 4th gear (TCC operation) — Vehicle speed: **below 70 km/h {43 mph}**. • Throttle conditions — **FS engine** • Throttle opening angle (TP PID) **above 6.25%** and **10 seconds or more** have passed. • Throttle opening angle (TP PID) **within 3.13—6.25%** and **3 seconds or more** have passed. • Throttle opening angle at closed throttle position and **10 seconds or more** have passed. — **ZM engine** • Throttle opening angle (TP PID) **7.03%** and **10 seconds or more** have passed. • Throttle opening angle (TP PID) **within 1.56—7.03%** and **3 seconds or more** have passed. • Throttle opening angle at closed throttle position and **10 seconds or more** have passed. • Are any DTCs present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
7	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

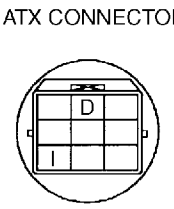
DTC P0745

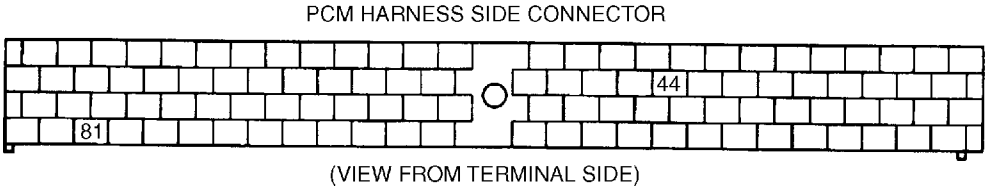
A3U050201030W18

DTC P0745	Pressure control solenoid malfunction
DETECTION CONDITION	• If PCM detects either of following conditions, PCM determines that pressure control solenoid circuit has a malfunction — Pressure control solenoid voltage stuck **0 V** after engine start — Pressure control solenoid voltage stuck **B+** after engine start **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL does not illuminate if PCM detects above malfunction conditions during first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• Pressure control solenoid malfunction • Open circuit between pressure control solenoid terminal B and ATX connector terminal I • Open circuit between ATX connector terminal I and PCM terminal 81 • Short to ground between ATX connector terminal D and PCM terminal 44 • Short to power between ATX connector terminal D and PCM terminal 44 • Open circuit between pressure control solenoid terminal A and ATX connector terminal D • Open circuit between ATX connector terminal D and PCM terminal 44 • Damaged connector between pressure control solenoid and PCM • PCM malfunction









Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
2	**INSPECT ATX CONNECTOR FOR POOR CONNECTION** • Turn ignition key to OFF. • Disconnect ATX connector. • Check for poor connection (damaged/pulled-out terminal, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 10.
3	**INSPECT RESISTANCE** • Inspect resistance between ATX connector (transaxle case side) terminals D and I. • Is resistance **within 2.4—7.3 ohms**? (See 05–17–28 Inspection of Resistance (On-vehicle).)	Yes	Go to Step 6.
		No	Go to next step.
4	**INSPECT PRESSURE CONTROL SOLENOID CONNECTOR FOR POOR CONNECTION** • Disconnect pressure control solenoid connector. • Check for poor connection (damaged/pulled-out terminal, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 10.
5	**INSPECT RESISTANCE** • Inspect resistance between pressure control solenoid terminals A and B. • Is resistance **within 2.4—7.3 ohms**? (See 05–17–28 Inspection of Resistance (On-vehicle).)	Yes	Replace solenoid harness, then go to Step 10.
		No	Verify pressure control solenoid installation. • If solenoid installed correctly, replace pressure control solenoid, then go to Step 10. (See 05–17–30 SOLENOID VALVES REMOVAL/ INSTALLATION.)
6	**INSPECT PCM CONNECTOR FOR POOR CONNECTION** • Disconnect PCM connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 10.
7	**INSPECT ATX CONNECTOR CIRCUIT FOR OPEN** • Inspect for continuity between PCM (harness-side) and ATX connector (vehicle harness-side). — PCM terminal 44 and ATX connector terminal D — PCM terminal 81 and ATX connector terminal I • Is there continuity between terminals?	Yes	Go to next step.
		No	Repair or replace harness, the go to Step 10.
8	**INSPECT ATX CONNECTOR CIRCUIT FOR SHORT TO POWER** • Turn ignition key to ON (engine OFF). • Inspect voltage at ATX connector terminal D (vehicle harness-side). • Is voltage **0 V**?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 10.
9	**INSPECT PCM CIRCUIT FOR SHORT TO GROUND** • Turn ignition key to OFF. • Inspect for continuity between ATX connector terminal D (harness-side) and body ground. • Is there continuity?	Yes	Repair or replace harness, then go to next step.
		No	Go to next step.

STEP	INSPECTION		ACTION
10	**VERIFY TROUBLESHOOTING OF DTC P0745 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Make sure to wait **more than 1 second** after turning ignition key to ON. • Are any DTCs present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	No concern is detected. Go to next step.
11	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0751

A3U050201030W19

DTC P0751	Shift solenoid A stuck OFF
DETECTION CONDITION	• When any of P0731, P0732, and P0733 are not generated, and all conditions below satisfied. — ATF temperature **20 °C {68 °F} or above**. — Driving in 4GR at D range. — Engine run. — Turbine speed **within 225— 4,988 rpm**. — Differential gear case (output) revolution speed **35 rpm or above**. — Torque converter clutch (TCC) not operating — Revolution ratio of forward clutch drum revolution to differential gear case revolution **within 0.91—1.09**. — Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715, P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0767, P0768, P0771, P0772, P0773. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoid A stuck • Control valve stuck • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**CHECK ATF CONDITION** • Turn ignition key to OFF. • Check ATF condition. — Clear red: Normal — Milky: Water mixed in fluid — Reddish brown: Deteriorated ATF • Is it okay? (See 05–17–17 Automatic Transaxle Fluid (ATF) Condition Inspection.)	Yes	Go to next step.
		No	If ATF color milky or reddish brown, replace ATF, then go to Step 5. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
4	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 7. (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)

STEP	INSPECTION		ACTION
5	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressure. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	• All ranges: Replace oil pump or control valve body, then go to Step 7. • Any ranges: Replace ATX, then go to Step 7. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
6	**CHECK OPERATION OF EACH VALVE AND EACH SPRING** • Turn ignition key to OFF. • Remove control valve body. • Disassemble control valve body. • Is each valve operation okay and is return spring okay? (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)	Yes	Replace ATX, then go to next step (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
		No	Repair or replace shift valve and return spring, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
7	**VERIFY TROUBLESHOOTING OF DTC P0751 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Start engine. • Warm up ATX. • Drive the vehicle under the following conditions and make sure that gears shift smoothly from 1GR to 4GR. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range • Is pending code present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
8	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0752

A3U050201030W20

DTC P0752	Shift solenoid A stuck ON
DETECTION CONDITION	• When P0734 is not generated, and all conditions below satisfied in 1GR and 2GR. — ATF temperature **20 °C {68 °F} or above**. — Engine run. — Either of P0705 or P0706 output, or D range is selected. — Brake pedal depressed. — Throttle opening angle closed throttle position. — Vehicle speed **0 km/h {0 mph}**. — Input/turbine speed sensor signal **187.5 rpm or above**. — Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715, P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoid A stuck • Control valve stuck • PCM malfunction

Diagnostic procedure

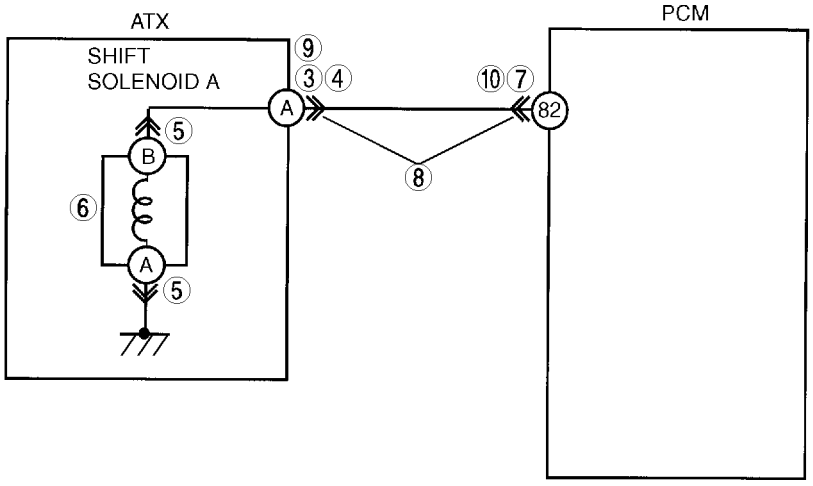
STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**CHECK ATF CONDITION** • Turn ignition key to OFF. • Check ATF condition. — Clear red: Normal — Milky: Water mixed in fluid — Reddish brown: Deteriorated ATF • Is it okay? (See 05–17–17 Automatic Transaxle Fluid (ATF) Condition Inspection.)	Yes	Go to next step.
		No	If ATF color milky or reddish brown, replace ATF, then go to Step 5. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
4	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 7. (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)
5	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressure. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	• All ranges: Replace oil pump or control valve body, then go to Step 7. • Any ranges: Replace ATX, then go to Step 7. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)

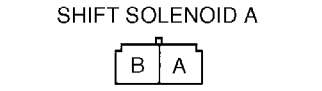
STEP	INSPECTION		ACTION
6	**CHECK OPERATION OF EACH VALVE AND EACH SPRING** • Turn ignition key to OFF. • Remove control valve body. • Disassemble control valve body. • Is each valve operation okay and is return spring okay? (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)	Yes	Replace ATX, then go to next step (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
		No	Repair or replace shift valve and return spring, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
7	**VERIFY TROUBLESHOOTING OF DTC P0752 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Start engine. • Warm up ATX. • Drive the vehicle under the following conditions and make sure that gears shift smoothly from 1GR to 4GR. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range • Is pending code present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
8	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0753

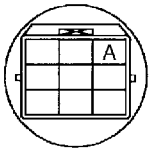
A3U050201030W21

DTC P0753	Shift solenoid A malfunction (electrical)
DETECTION CONDITION	• If PCM detects either of following conditions, PCM determines that shift solenoid A circuit has a malfunction: — Shift solenoid A voltage is stuck at **B+** after engine start. — Shift solenoid A voltage is stuck at **0 V** after engine start. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• Shift solenoid A malfunction • Short to ground between ATX connector terminal A and PCM terminal 82 • Short to power between ATX connector terminal A and PCM terminal 82 • Open circuit between shift solenoid A terminal B and ATX connector terminal A • Open circuit between ATX connector terminal A and PCM terminal 82 • Open circuit between shift solenoid A terminal A and body ground point • Damaged connector between shift solenoid A and PCM • PCM malfunction

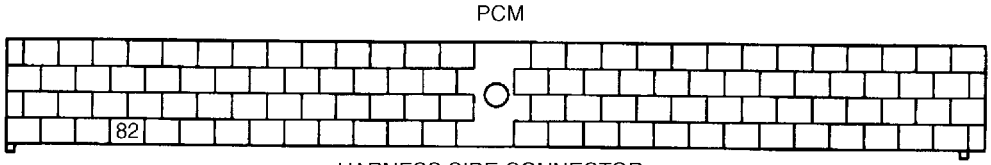




HARNESS SIDE CONNECTOR
(VIEW FROM HARNESS SIDE)



HARNESS SIDE CONNECTOR
(VIEW FROM HARNESS SIDE)



HARNESS SIDE CONNECTOR
(VIEW FROM TERMINAL SIDE)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**INSPECT ATX CONNECTOR FOR POOR CONNECTION** • Turn ignition key to OFF. • Disconnect ATX connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 11.
4	**INSPECT RESISTANCE** • Check resistance between ATX connector terminal A (transaxle case side) and body ground. • Is resistance **within 1.0—4.2 ohms**? (See 05–17–28 Inspection of Resistance (On-vehicle).)	Yes	Go to Step 7.
		No	Go to next step.
5	**INSPECT SHIFT SOLENOID A CONNECTOR FOR POOR CONNECTION** • Disconnect shift solenoid A connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminal, then go to Step 11.
6	**INSPECT RESISTANCE** • Inspect resistance between shift solenoid A terminals A and B (part-side). • Is resistance **within 1.0—4.2 ohms**? (See 05–17–29 Resistance Inspection (Off-vehicle).)	Yes	Replace solenoid harness, then go to Step 11.
		No	Verify shift solenoid A installation. • If solenoid installed correctly, replace solenoid, then go to Step 11. (See 05–17–30 SOLENOID VALVES REMOVAL/ INSTALLATION.)
7	**INSPECT PCM CONNECTOR FOR POOR CONNECTION** • Disconnect PCM connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 11.
8	**INSPECT ATX CONNECTOR CIRCUIT FOR OPEN** • Inspect for continuity between PCM terminal 82 (harness-side) and ATX connector terminal A (vehicle harness-side). • Is there continuity between terminals?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 11.
9	**INSPECT ATX CONNECTOR CIRCUIT FOR SHORT TO POWER** • Turn ignition key to ON (engine OFF). • Inspect voltage at ATX connector terminal A (vehicle harness-side). • Is voltage **0 V**?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 11.
10	**INSPECT PCM CIRCUIT FOR SHORT TO GROUND** • Turn ignition key to OFF. • Inspect for continuity between PCM terminal 82 (harness-side) and body ground. • Is there continuity?	Yes	Repair or replace harness, then go to Step 11.
		No	Go to next step.

STEP	INSPECTION		ACTION
11	**VERIFY TROUBLESHOOTING OF DTC P0753 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Drive vehicle in D range and make sure that gears shift smoothly from 1GR to 4GR. • Are any DTCs present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	No concern is detected. Go to next step.
12	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0756

A3U050201030W22

DTC P0756	Shift solenoid B stuck OFF
DETECTION CONDITION	• When any of DTC P0732, P0733, and P0734 are not generated, and all conditions below satisfied. — ATF temperature **20 °C {68 °F} or above**. — Driving in 1GR at D range. — Engine run. — Turbine speed **within 225—4,988 rpm**. — Differential gear case (output) revolution speed **35 rpm or above** — Throttle opening angle (TP PID) **3.13% or above** (FS engine). — Throttle opening angle (TP PID) **3.91% or above** (ZM engine). — Revolution ratio of forward clutch drum revolution to differential gear case revolution **below 2.157**. — Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715,P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoid B stuck • Control valve stuck • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**CHECK ATF CONDITION** • Turn ignition key to OFF. • Check ATF condition. — Clear red: Normal — Milky: Water mixed in fluid — Reddish brown: Deteriorated ATF • Is it okay? (See 05–17–17 Automatic Transaxle Fluid (ATF) Condition Inspection.)	Yes	Go to next step.
		No	If ATF color milky or reddish brown, replace ATF, then go to Step 5. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
4	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 7. (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)

STEP	INSPECTION		ACTION
5	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressure. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	• All ranges: Replace oil pump or control valve body, then go to Step 7. • Any ranges: Replace ATX, then go to Step 7. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
6	**CHECK OPERATION OF EACH VALVE AND EACH SPRING** • Turn ignition key to OFF. • Remove control valve body. • Disassemble control valve body. • Is each valve operation okay and is return spring okay? (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)	Yes	Replace ATX, then go to next step (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
		No	Repair or replace shift valve and return spring, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
7	**VERIFY TROUBLESHOOTING OF DTC P0756 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Start engine. • Warm up ATX. • Drive the vehicle under the following conditions and make sure that gears shift smoothly from 1GR to 4GR. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range — Engine speed: **450 rpm or above** (RPM PID) — Throttle opening angle (TP PID): **3.13% or above** (FS engine) — Throttle opening angle (TP PID): **3.91% or above** (ZM engine) • Is pending code present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
8	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0757

A3U050201030W23

DTC P0757	Shift solenoid B stuck ON
DETECTION CONDITION	• When either of DTC P0731 and P0733 are not generated, and both the following conditions are satisfied. — When all conditions below satisfied while driving in 2GR. • ATF temperature **20 °C {68 °F} or above**. • Driving in D range. • Engine run. • Turbine speed **within 225—4,988 rpm**. • Differential gear case (output) revolution speed **35 rpm or above**. • Revolution ratio of forward clutch drum revolution to differential gear case revolution **below 1.249 or more than 2.157**. • Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715,P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. — When all conditions below satisfied with driving in 4GR. • ATF temperature **20 °C {68 °F} or above**. • Driving in D range. • Engine run. • Turbine speed **within 225—4,988 rpm**. • Differential gear case (output) revolution speed **35 rpm or above**. • Vehicle speed **50 km/h {31 mph}**. • Throttle opening angle closed throttle position. • Revolution ratio of forward clutch drum revolution to differential gear case revolution **below 0.6 or 1.249 or above**. • Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715,P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoid B stuck • Control valve stuck • PCM malfunction

Diagnostic procedure

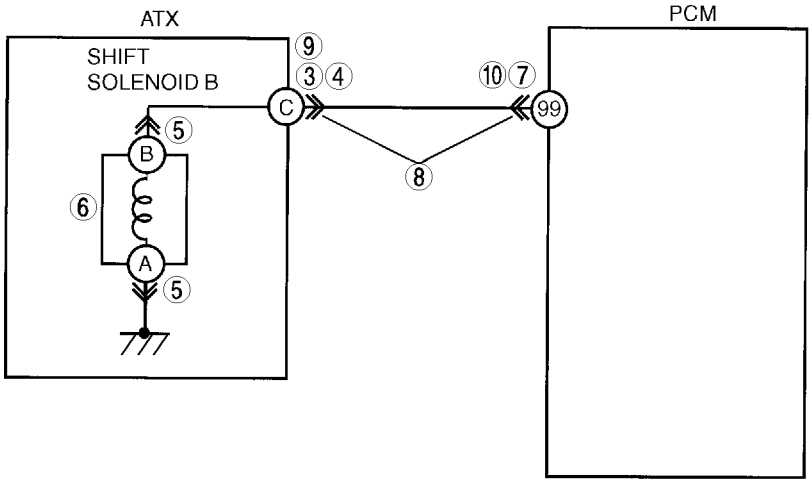
STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**CHECK ATF CONDITION** • Turn ignition key to OFF. • Check ATF condition. — Clear red: Normal — Milky: Water mixed in fluid — Reddish brown: Deteriorated ATF • Is it okay? (See 05–17–17 Automatic Transaxle Fluid (ATF) Condition Inspection.)	Yes	Go to next step.
		No	If ATF color milky or reddish brown, replace ATF, then go to Step 5. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
4	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 7. (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)

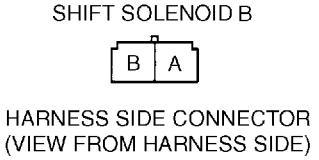
STEP	INSPECTION		ACTION
5	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressure. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	• All ranges: Replace oil pump or control valve body, then go to Step 7. • Any ranges: Replace ATX, then go to Step 7. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
6	**CHECK OPERATION OF EACH VALVE AND EACH SPRING** • Turn ignition key to OFF. • Remove control valve body. • Disassemble control valve body. • Is each valve operation okay and is return spring okay? (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)	Yes	Replace ATX, then go to next step (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
		No	Repair or replace shift valve and return spring, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
7	**VERIFY TROUBLESHOOTING OF DTC P0757 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Start engine. • Warm up ATX. • Drive the vehicle under the following conditions make sure that gears shift smoothly from 1GR to 4GR. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range — Engine speed: **450 rpm or above** (RPM PID) — Throttle opening angle (TP PID): **0%** (4th gear only) — Vehicle speed (VSS PID): **50 km/h {31 mph}** (4th gear only) • Is pending code present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
8	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0758

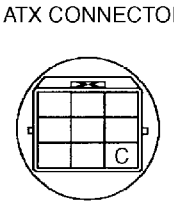
A3U050201030W24

DTC P0758	Shift solenoid B malfunction (electrical)
DETECTION CONDITION	• If PCM detects either of following conditions, PCM determines that shift solenoid B circuit has a malfunction: — Shift solenoid B voltage is stuck at **B+** after engine start. — Shift solenoid B voltage is stuck at **0 V** after engine start. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• Shift solenoid B malfunction • Short to ground between ATX connector terminal C and PCM terminal 99 • Short to power between ATX connector terminal C and PCM terminal 99 • Open circuit between shift solenoid B terminal B and ATX connector terminal C • Open circuit between ATX connector terminal C and PCM terminal 99 • Open circuit between shift solenoid B terminal A and body ground point • Damaged connector between shift solenoid B and PCM • PCM malfunction

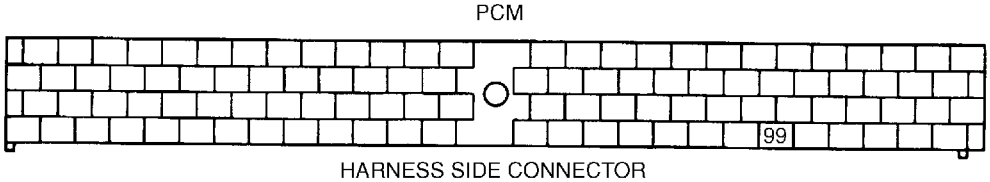




HARNESS SIDE CONNECTOR
(VIEW FROM HARNESS SIDE)



HARNESS SIDE CONNECTOR
(VIEW FROM HARNESS SIDE)



HARNESS SIDE CONNECTOR
(VIEW FROM TERMINAL SIDE)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.

STEP	INSPECTION		ACTION
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**INSPECT ATX CONNECTOR FOR POOR CONNECTION** • Turn ignition key to OFF. • Disconnect ATX connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 11.
4	**INSPECT RESISTANCE** • Inspect resistance between ATX connector terminal C (transaxle case side) and body ground. • Is resistance **within 1.0—4.2 ohms**? (See 05–17–28 Inspection of Resistance (On-vehicle).)	Yes	Go to Step 7.
		No	Go to next step.
5	**INSPECT SHIFT SOLENOID B CONNECTOR FOR POOR CONNECTION** • Disconnect shift solenoid B connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminal, then go to Step 11.
6	**INSPECT RESISTANCE** • Inspect resistance between shift solenoid B terminals A and B (part-side). • Is resistance **within 1.0—4.2 ohms**? (See 05–17–29 Resistance Inspection (Off-vehicle).)	Yes	Replace solenoid harness, then go to Step 11.
		No	Verify shift solenoid B installation. • If solenoid installed correctly, replace solenoid, then go to Step 11. (See 05–17–30 SOLENOID VALVES REMOVAL/ INSTALLATION.)
7	**INSPECT PCM CONNECTOR FOR POOR CONNECTION** • Disconnect PCM connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 11.
8	**INSPECT ATX CONNECTOR CIRCUIT FOR OPEN** • Inspect for continuity between PCM terminal 99 (harness-side) and ATX connector terminal C (vehicle harness-side). • Is there continuity between terminals?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 11.
9	**INSPECT ATX CONNECTOR CIRCUIT FOR SHORT TO POWER** • Turn ignition key to ON (engine OFF). • Check for voltage at ATX connector terminal C (vehicle harness-side). • Is voltage **0 V**?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 11.
10	**INSPECT PCM CIRCUIT FOR SHORT TO GROUND** • Turn ignition key to OFF. • Check for continuity between PCM terminal 99 (harness-side) and body ground. • Is there continuity?	Yes	Repair or replace harness, then go to Step 11.
		No	Go to next step.
11	**VERIFY TROUBLESHOOTING OF DTC P0758 SHIFT SOLENOID B COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Drive vehicle in D range and make sure that gears shift smoothly from 1GR to 4GR. • Are any DTCs present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
12	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0761

A3U050201030W25

DTC P0761	Shift solenoid C stuck OFF
DETECTION CONDITION	• When either of DTC P0733 and P0734 are not generated, and both the following conditions are satisfied. — When all conditions below satisfied while driving in 1GR. • ATF temperature **20 °C {68 °F} or above**. • Driving in D range. • Engine run. • Turbine speed **within 225—4,988 rpm**. • Throttle opening angle **(TP PID) 3.13% or above** (FS engine). • Throttle opening angle **(TP PID) 3.91% or above** (ZM engine). • Differential gear case (output) revolution speed **35 rpm or above**. • Revolution ratio of forward clutch drum revolution to differential gear case revolution **below 2.157**. • Any of DTC P0500, P0705, P0706, P0710, P0715,P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773 not output. — When all conditions below satisfied while driving in 2GR. • ATF temperature **20 °C {68 °F} or above**. • Driving in D range. • Engine run. • Turbine speed **within 225—4,988 rpm**. • Differential gear case (output) revolution speed **35 rpm or above**. • Revolution ratio of forward clutch drum revolution to differential gear case revolution **below 1.249 or 2.157 or above**. • Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715,P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoid C stuck • Control valve stuck • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**CHECK ATF CONDITION** • Turn ignition key to OFF. • Check ATF condition. — Clear red: Normal — Milky: Water mixed in fluid — Reddish brown: Deteriorated ATF • Is it okay? (See 05–17–17 Automatic Transaxle Fluid (ATF) Condition Inspection.)	Yes	Go to next step.
		No	If ATF color milky or reddish brown, replace ATF, then go to Step 5. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
4	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 7. (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)

STEP	INSPECTION		ACTION
5	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressure. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	• All ranges: Replace oil pump or control valve body, then go to Step 7. • Any ranges: Replace ATX, then go to Step 7. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
6	**CHECK OPERATION OF EACH VALVE AND EACH SPRING** • Turn ignition key to OFF. • Remove control valve body. • Disassemble control valve body. • Is each valve operation okay and is return spring okay? (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)	Yes	Replace ATX, then go to next step (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
		No	Repair or replace shift valve and return spring, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
7	**VERIFY TROUBLESHOOTING OF DTC P0761 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Start engine. • Warm up ATX. • Drive the vehicle under the following conditions and make sure that gears shift smoothly from 1GR to 4GR. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range — Throttle opening angle (TP PID): **3.13% or above** (FS engine) — Throttle opening angle (TP PID): **3.91% or above** (ZM engine) (TP PID) • Is pending code present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
8	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0762

A3U050201030W26

DTC P0762	Shift solenoid C stuck ON
DETECTION CONDITION	• When either of DTC P0731 and P0732 are not generated, and both the following conditions are satisfied. — When all conditions below satisfied while driving in 3GR. • ATF temperature **20 °C {68 °F} or above**. • Driving in D range. • Engine run. • Turbine speed **within 225—4,988 rpm**. • Differential gear case (output) revolution speed **35 rpm or above**. • Revolution ratio of forward clutch drum revolution to differential gear case revolution **below 0.863 or 1.249 or above**. • Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715,P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. — When all conditions below satisfied while driving in 4GR. • ATF temperature **20 °C {68 °F} or above**. • Driving in D range. • Engine run. • Turbine speed **within 225—4,988 rpm**. • Vehicle speed **50 km/h {31mph}** or above. • Differential gear case (output) revolution speed **35 rpm or above**. • Throttle opening angle at closed throttle position • Revolution ratio of forward clutch drum revolution to differential gear case revolution **below 0.6 or 1.249 or above**. • Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715,P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoid C and pressure control solenoid stuck • Control valve stuck • PCM malfunction

Diagnostic procedure

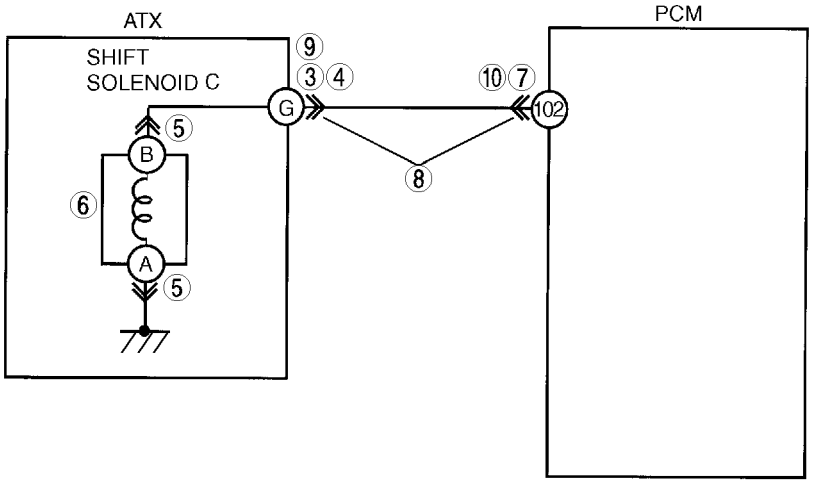
STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**CHECK ATF CONDITION** • Turn ignition key to OFF. • Check ATF condition. — Clear red: Normal — Milky: Water mixed in fluid — Reddish brown: Deteriorated ATF • Is it okay? (See 05–17–17 Automatic Transaxle Fluid (ATF) Condition Inspection.)	Yes	Go to next step.
		No	If ATF color milky or reddish brown, replace ATF, then go to Step 5. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
4	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 7. (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)

STEP	INSPECTION		ACTION
5	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressure. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	• All ranges: Replace oil pump or control valve body, then go to Step 7. • Any ranges: Replace ATX, then go to Step 7. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
6	**CHECK OPERATION OF EACH VALVE AND EACH SPRING** • Turn ignition key to OFF. • Remove control valve body. • Disassemble control valve body. • Is each valve operation okay and is return spring okay? (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)	Yes	Replace ATX, then go to next step (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
		No	Repair or replace shift valve and return spring, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
7	**VERIFY TROUBLESHOOTING OF DTC P0762 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Start engine. • Warm up ATX. • Drive the vehicle under the following conditions and make sure that gears shift smoothly from 1GR to 4GR. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range — Throttle opening angle (TP PID): **0%** (4GR only) — Vehicle speed (VSS PID): **50 km/h {31 mph} or above** (4GR only) • Is pending code present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
8	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

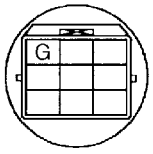
DTC P0763

A3U050201030W27

DTC P0763	Shift solenoid C malfunction (electrical)
DETECTION CONDITION	• If PCM detects either of following conditions, PCM determines that shift solenoid C circuit has a malfunction: — Shift solenoid C voltage is stuck at **B+** after engine start. — Shift solenoid C voltage is stuck at **0 V** after engine start. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• Shift solenoid C malfunction • Short to ground between ATX connector terminal G and PCM terminal 102 • Short to power between ATX connector terminal G and PCM terminal 102 • Open circuit between shift solenoid C terminal B and ATX connector terminal G • Open circuit between ATX connector terminal G and PCM terminal 102 • Open circuit between shift solenoid C terminal A and body ground point • Damaged connector between shift solenoid C and PCM. • PCM malfunction.



ATX CONNECTOR

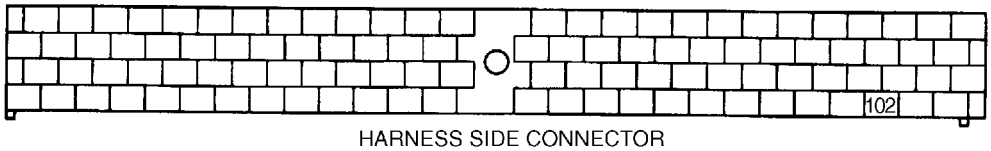


HARNESS SIDE CONNECTOR
(VIEW FROM HARNESS SIDE)

SHIFT SOLENOID B

HARNESS SIDE CONNECTOR
(VIEW FROM HARNESS SIDE)

PCM



HARNESS SIDE CONNECTOR
(VIEW FROM TERMINAL SIDE)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.

STEP	INSPECTION		ACTION
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**INSPECT ATX CONNECTOR FOR POOR CONNECTION** • Turn ignition key to OFF. • Disconnect ATX connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 11.
4	**INSPECT RESISTANCE** • Inspect resistance between ATX connector terminal G (transaxle case side) and body ground. • Is resistance **within 1.0—4.2 ohms**? (See 05–17–28 Inspection of Resistance (On-vehicle).)	Yes	Go to Step 7.
		No	Go to next step.
5	**INSPECT SHIFT SOLENOID C CONNECTOR FOR POOR CONNECTION** • Disconnect shift solenoid C connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminal, then go to Step 11.
6	**INSPECT RESISTANCE** • Inspect resistance between shift solenoid C terminals A and B (part-side). • Is resistance **within 1.0—4.2 ohms**? (See 05–17–29 Resistance Inspection (Off-vehicle).)	Yes	Replace solenoid harness, then go to Step 11.
		No	Verify shift solenoid C installation. • If solenoid installed correctly, replace solenoid, then go to Step 11. (See 05–17–30 SOLENOID VALVES REMOVAL/ INSTALLATION.)
7	**INSPECT PCM CONNECTOR FOR POOR CONNECTION** • Disconnect PCM connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 11.
8	**INSPECT ATX CONNECTOR CIRCUIT FOR OPEN** • inspect for continuity between PCM terminal 102 (harness-side) and ATX connector terminal G (vehicle harness-side). • Is there continuity between terminals?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 11.
9	**INSPECT ATX CONNECTOR CIRCUIT FOR SHORT TO POWER** • Turn ignition key to ON (engine OFF). • Check voltage at ATX connector terminal G (vehicle harness-side). • Is voltage **0 V**?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 11.
10	**INSPECT PCM CIRCUIT FOR SHORT TO GROUND** • Turn ignition key to OFF. • Inspect for continuity between PCM terminal 102 (harness-side) and body ground. • Is there continuity?	Yes	Repair or replace harness, then go to Step 11.
		No	Go to next step.
11	**VERIFY TROUBLESHOOTING OF DTC P0763 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Drive vehicle in D range and make sure that gears shift smoothly from 1GR to 4GR. • Are any DTCs present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	No concern is detected. Go to next step.
12	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0766

A3U050201030W28

DTC P0766	Shift solenoid D stuck OFF
DETECTION CONDITION	• When any of DTC P0731, P0732, and P0733 not output (correct judgment), and all conditions below are satisfied. — ATF temperature **20 °C {68 °F} or above**. — Driving in 4GR at D range. — Engine run. — Turbine speed **within 225—4,988 rpm**. — Differential gear case (output) revolution speed **35 rpm or above**. — Vehicle speed **50 km/h {31 mph} or above**. — Throttle opening angle closed throttle position. — Revolution ratio of forward clutch drum revolution to differential gear case revolution **below 0.6 or 1.249 or above**. — Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715,P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoid D stuck • Control valve stuck • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**CHECK ATF CONDITION** • Turn ignition key to OFF. • Check ATF condition. — Clear red: Normal — Milky: Water mixed in fluid — Reddish brown: Deteriorated ATF • Is it okay? (See 05–17–17 Automatic Transaxle Fluid (ATF) Condition Inspection.)	Yes	Go to next step.
		No	If ATF color milky or reddish brown, replace ATF, then go to Step 5. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
4	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 7. (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)

STEP	INSPECTION		ACTION
5	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressure. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	• All ranges: Replace oil pump or control valve body, then go to Step 7. • Any ranges: Replace ATX, then go to Step 7. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
6	**CHECK OPERATION OF EACH VALVE AND EACH SPRING** • Turn ignition key to OFF. • Remove control valve body. • Disassemble control valve body. • Is each valve operation okay and is return spring okay? (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)	Yes	Replace ATX, then go to next step (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
		No	Repair or replace shift valve and return spring, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
7	**VERIFY TROUBLESHOOTING OF DTC P0766 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Start engine. • Warm up ATX. • Drive the vehicle under the following conditions and make sure that gears shift smoothly from 1GR to 4GR. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range — Throttle opening angle (TP PID): **0%** (4GR only) — Vehicle speed: **50 km/h {31 mph} or above**. (4GR only) (VSS PID) • Is pending code present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
8	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0767

A3U050201030W29

DTC P0767	Shift solenoid D stuck ON
DETECTION CONDITION	• When any of DTC P0731, P0732, P0734, and P0741 are not generated, and all conditions below are satisfied. — ATF temperature **20 °C {68 °F} or above**. — Driving in D range. — Engine run. — Turbine speed **within 225—4,988 rpm**. — Differential gear case (output) revolution speed **35 rpm or above**. — Revolution ratio of forward clutch drum revolution to differential gear case revolution **below 0.863 or 1.249 or above**. — Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715,P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoid D stuck • Control valve stuck • PCM malfunction

Diagnostic procedure

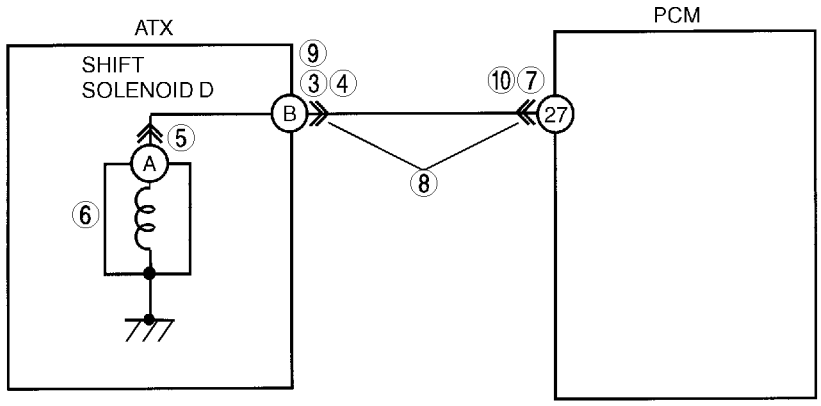
STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**CHECK ATF CONDITION** • Turn ignition key to OFF. • Check ATF condition. — Clear red: Normal — Milky: Water mixed in fluid — Reddish brown: Deteriorated ATF • Is it okay? (See 05–17–17 Automatic Transaxle Fluid (ATF) Condition Inspection.)	Yes	Go to next step.
		No	If ATF color milky or reddish brown, replace ATF, then go to Step 5. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
4	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 7. (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)
5	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressure. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	• All ranges: Replace oil pump or control valve body, then go to Step 7. • Any ranges: Replace ATX, then go to Step 7. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)

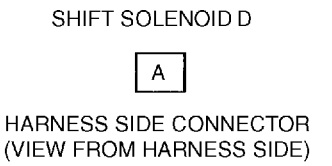
STEP	INSPECTION		ACTION
6	**CHECK OPERATION OF EACH VALVE AND EACH SPRING** • Turn ignition key to OFF. • Remove control valve body. • Disassemble control valve body. • Is each valve operation okay and is return spring okay? (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)	Yes	Replace ATX, then go to next step (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
		No	Repair or replace shift valve and return spring, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
7	**VERIFY TROUBLESHOOTING OF DTC P0767 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Start engine. • Warm up ATX. • Drive the vehicle under the following conditions and make sure that gears shift smoothly from 1GR to 4GR. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range • Is pending code present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
8	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

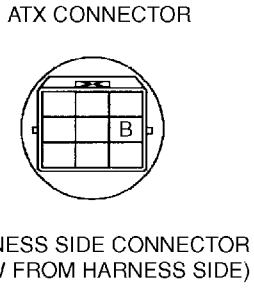
DTC P0768

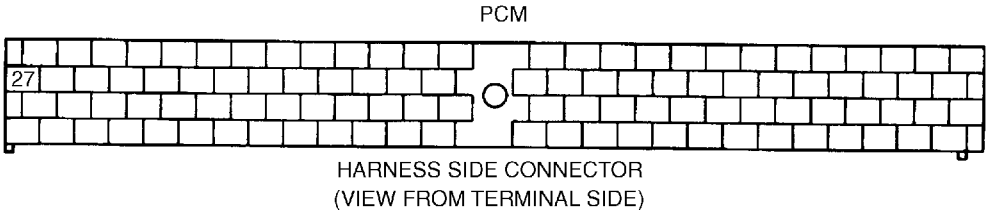
A3U050201030W30

DTC P0768	Shift solenoid D malfunction (electrical)
DETECTION CONDITION	• If PCM detects either of following conditions while driving in 4GR at D range, PCM determines that shift solenoid D circuit has a malfunction: — Shift solenoid D voltage is stuck at **B+** after engine start. — Shift solenoid D voltage is stuck at **0 V** after engine start. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• Shift solenoid D malfunction • Short to ground between ATX connector terminal B and PCM terminal 27 • Short to power between ATX connector terminal B and PCM terminal 27 • Open circuit between shift solenoid D terminal A and ATX connector terminal B • Open circuit between ATX connector terminal B and PCM terminal 27 • Damaged connector between shift solenoid D and PCM • PCM malfunction









Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.

STEP	INSPECTION		ACTION
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**INSPECT ATX CONNECTOR FOR POOR CONNECTION** • Turn ignition key to OFF. • Disconnect ATX connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 11.
4	**INSPECT RESISTANCE** • Inspect resistance between ATX connector terminal B (transaxle case side) and body ground. • Is resistance **within 10.9—26.2 ohms**? (See 05–17–28 Inspection of Resistance (On-vehicle).)	Yes	Go to Step 7.
		No	Go to next step.
5	**INSPECT SHIFT SOLENOID D CONNECTOR FOR POOR CONNECTION** • Disconnect shift solenoid D connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminal, then go to Step 11.
6	**INSPECT RESISTANCE** • inspect resistance between shift solenoid D terminal A (part-side) and body ground. • Is resistance **within 10.9—26.2 ohms**? (See 05–17–29 Resistance Inspection (Off-vehicle).)	Yes	Replace solenoid harness, then go to Step 11.
		No	Verify shift solenoid D installation. • If solenoid installed correctly, replace solenoid, then go to Step 11. (See 05–17–30 SOLENOID VALVES REMOVAL/ INSTALLATION.)
7	**INSPECT PCM CONNECTOR FOR POOR CONNECTION** • Disconnect PCM connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 11.
8	**INSPECT ATX CONNECTOR CIRCUIT FOR OPEN** • Inspect for continuity between PCM terminal 27 (harness-side) and ATX connector terminal B (vehicle harness-side). • Is there continuity between terminals?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 11.
9	**INSPECT ATX CONNECTOR CIRCUIT FOR SHORT TO POWER** • Turn ignition key to ON (engine OFF). • Inspect voltage at ATX connector terminal B (vehicle harness-side). • Is voltage **0 V**?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 11.
10	**INSPECT PCM CIRCUIT FOR SHORT TO GROUND** • Turn ignition key to OFF. • Inspect continuity between PCM terminal 27 (harness-side) and body ground. • Is there continuity?	Yes	Repair or replace harness, then go to Step 11.
		No	Go to next step.
11	**VERIFY TROUBLESHOOTING OF DTC P0768 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Drive vehicle in D range and make sure that gears shift smoothly from 1GR to 4GR. • Are any DTCs present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	No concern is detected. Go to next step.
12	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0771

A3U050201030W31

DTC P0771	Shift solenoid E stuck OFF
DETECTION CONDITION	• When any of P0731, P0732, and P0734 are not generated, and all conditions below are satisfied. — ATF temperature **20 °C {68 °F} or above**. — Driving in 4GR at D range. — Engine run. — Turbine speed **within 225—4,988 rpm**. — Vehicle speed **within 60—100 km/h {37—62 mph}**. — TCC operation — Shift solenoid A duty value exceeds **99%** — Power or normal mode — Difference between engine speed and turbine speed **more than 100 rpm** — Any of the following not generated: DTC P0500, P0705, P0706, P0710, P0715,P0751, P0752, P0753, P0756, P0757, P0758, P0761, P0762, P0763, P0766, P0767, P0768, P0771, P0772, P0773. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoid E stuck • Control valve stuck • PCM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**CHECK ATF CONDITION** • Turn ignition key to OFF. • Check ATF condition. — Clear red: Normal — Milky: Water mixed in fluid — Reddish brown: Deteriorated ATF • Is it okay? (See 05–17–17 Automatic Transaxle Fluid (ATF) Condition Inspection.)	Yes	Go to next step.
		No	If ATF color milky or reddish brown, replace ATF, then go to Step 5. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
4	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 7. (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)

STEP	INSPECTION		ACTION
5	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressure. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	• All ranges: Replace oil pump or control valve body, then go to Step 7. • Any ranges: Replace ATX, then go to Step 7. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
6	**CHECK OPERATION OF EACH VALVE AND EACH SPRING** • Turn ignition key to OFF. • Remove control valve body. • Disassemble control valve body. • Is each valve operation okay and is return spring okay? (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)	Yes	Replace ATX, then go to next step (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
		No	Repair or replace shift valve and return spring, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
7	**VERIFY TROUBLESHOOTING OF DTC P0771 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Start engine. • Warm up ATX. • Drive the vehicle under the following conditions and make sure that gears shift smoothly from 1GR to 4GR. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range — Vehicle speed: **within 60—100 km/h {37—62 mph}** (4th gear only). • Is pending code present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
8	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0772

A3U050201030W32

DTC P0772	Shift solenoid E stuck ON
DETECTION CONDITION	• When any of DTC P0731, P0733, and P0734 are not generated, and all of following conditions satisfied under each of following throttle conditions. — ATF temperature **20 °C {68 °F} or above**. — Driving in 4GR at D range. — Engine run. — Turbine speed **within 225—4,988 rpm**. — Vehicle speed **below 70 km/h {43 mph}**. — Torque converter clutch (TCC) no operation — Difference between engine speed and turbine speed **below 50 rpm** • Throttle conditions. — **FS engine** • Throttle opening angle (TP PID) **above 6.25%** and **10 seconds or more** have passed. • Throttle opening angle (TP PID) **within 3.13—6.25%** and **3 seconds or more** have passed. • Throttle opening angle at closed throttle position and **10 seconds or more** have passed. — **ZM engine** • Throttle opening angle (TP PID) **above 7.03%** and **10 seconds or more** have passed. • Throttle opening angle (TP PID) **within 1.56—7.03%** and **3 seconds or more** have passed. • Throttle opening angle at closed throttle position and **10 seconds or more** have passed. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• ATF level low • Deteriorated ATF • Shift solenoid E stuck • Control valve stuck • PCM malfunction

Diagnostic procedure

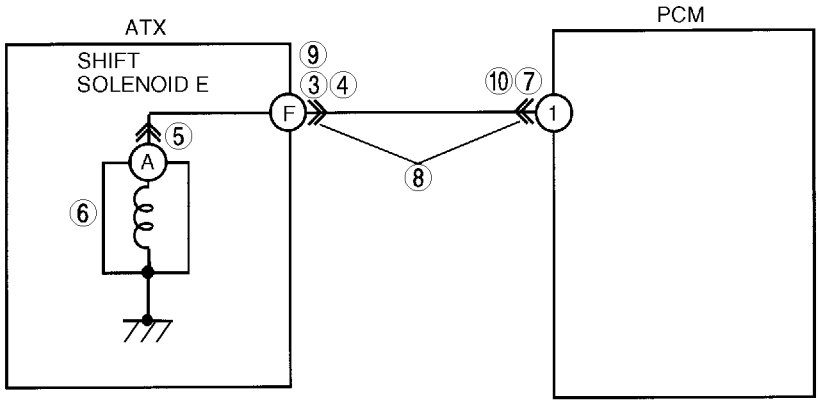
STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.
3	**CHECK ATF CONDITION** • Turn ignition key to OFF. • Check ATF condition. — Clear red: Normal — Milky: Water mixed in fluid — Reddish brown: Deteriorated ATF • Is it okay? (See 05–17–17 Automatic Transaxle Fluid (ATF) Condition Inspection.)	Yes	Go to next step.
		No	If ATF color milky or reddish brown, replace ATF, then go to Step 5. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
4	**CHECK ATF LEVEL** • Start engine. • Warm up ATX. • Is ATF level within specification? (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)	Yes	Go to next step.
		No	Adjust ATF level, then go to Step 7. (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)

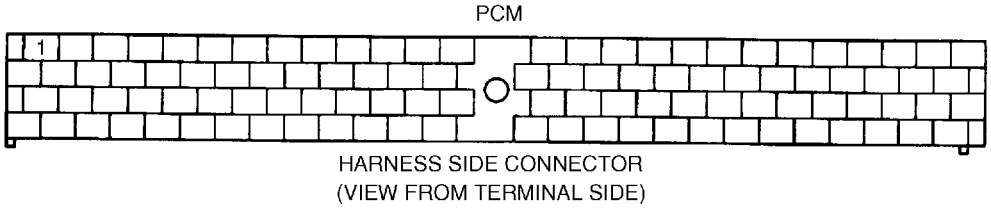
STEP	INSPECTION		ACTION
5	**INSPECT LINE PRESSURE** • Start engine. • Measure line pressure. **Specification** **FS engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,160—1,320 kPa {11.9—13.4 kgf/cm^2, 170—190 psi}** **ZM engine** **Idle: 330—470 kPa {3.4—4.7 kgf/cm^2, 49—66 psi}** **Stall: 1,200—1,360 kPa {12.3—13.8 kgf/cm^2, 175—196 psi}** • Is line pressure within specification? (See 05–17–12 Line Pressure Test.)	Yes	Go to next step.
		No	• All ranges: Replace oil pump or control valve body, then go to Step 7. • Any ranges: Replace ATX, then go to Step 7. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
6	**CHECK OPERATION OF EACH VALVE AND EACH SPRING** • Turn ignition key to OFF. • Remove control valve body. • Disassemble control valve body. • Is each valve operation okay and is return spring okay? (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)	Yes	Replace ATX, then go to next step (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
		No	Repair or replace shift valve and return spring, then go to next step. (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION.) (See ATX Workshop Manual FN4A-EL (9999-95-FN4A-99).)
7	**VERIFY TROUBLESHOOTING OF DTC P0772 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Start engine. • Warm up ATX. • Drive the vehicle under the following conditions and make sure that gears shift smoothly from 1GR to 4GR. — ATF temperature: **20 °C {68 °F} or above** — Drive in D range — Vehicle speed (VSS PID): **below 70 km/h {43 mph}** (4th gear only) • Is pending code present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	Go to next step.
8	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

DTC P0773

A3U050201030W33

DTC P0773	Shift solenoid E malfunction (electrical)
DETECTION CONDITION	• If PCM detects either of following conditions while driving in 4GR at D range with TCC operation, PCM determines that shift solenoid E circuit has a malfunction: — Shift solenoid E voltage is stuck at **B+** after engine start. — Shift solenoid E voltage is stuck at **0 V** after engine start. **Diagnostic support note:** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction conditions during first drive cycle. • PENDING CODE is not available. • FREEZE FRAME DATA is available. • O/D OFF indicator light flashes. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• Shift solenoid E malfunction • Short to ground between ATX connector terminal F and PCM terminal 1 • Short to power between ATX connector terminal F and PCM terminal 1 • Open circuit between shift solenoid E terminal A and ATX connector terminal F • Open circuit between ATX connector terminal F and PCM terminal 1 • Damaged connector between shift solenoid E and PCM • PCM malfunction





Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME PID DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME PID DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Check for related Service Bulletins availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to available repair information. • If vehicle is not repaired, go to next step.
		No	Go to next step.

STEP	INSPECTION		ACTION
3	**INSPECT ATX CONNECTOR FOR POOR CONNECTION** • Turn ignition key to OFF. • Disconnect ATX connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 11.
4	**INSPECT RESISTANCE** • Inspect resistance between ATX connector terminal F (transaxle case side) and body ground. • Is resistance **within 10.9—26.2 ohms**? (See 05–17–28 Inspection of Resistance (On-vehicle).)	Yes	Go to Step 7.
		No	Go to next step.
5	**INSPECT SHIFT SOLENOID E CONNECTOR FOR POOR CONNECTION** • Disconnect shift solenoid E connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminal, then go to Step 11.
6	**INSPECT RESISTANCE** • Inspect resistance between shift solenoid E terminal A (part-side) and body ground. • Is resistance **within 10.9—26.2 ohms**? (See 05–17–29 Resistance Inspection (Off-vehicle).)	Yes	Replace solenoid harness, then go to Step 11.
		No	Verify shift solenoid E installation. • If solenoid installed correctly, replace solenoid, then go to Step 11. (See 05–17–30 SOLENOID VALVES REMOVAL/ INSTALLATION.)
7	**INSPECT PCM CONNECTOR FOR POOR CONNECTION** • Disconnect PCM connector. • Check for poor connection (damaged/pulled-out terminals, corrosion, etc.). • Is connection okay?	Yes	Go to next step.
		No	Repair or replace connector and/or terminals, then go to Step 11.
8	**INSPECT ATX CONNECTOR CIRCUIT FOR OPEN** • Inspect for continuity between PCM terminal 1 (harness-side) and ATX connector terminal F (vehicle harness-side). • Is there continuity between terminals?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 11.
9	**INSPECT ATX CONNECTOR CIRCUIT FOR SHORT TO POWER** • Turn ignition key to ON (engine OFF). • Inspect voltage at ATX connector terminal F (vehicle harness-side). • Is voltage **0 V**?	Yes	Go to next step.
		No	Repair or replace harness, then go to Step 11.
10	**INSPECT PCM CIRCUIT FOR SHORT TO GROUND** • Turn ignition key to OFF. • Inspect for continuity between PCM terminal 1 (harness-side) and body ground. • Is there continuity?	Yes	Repair or replace harness, then go to Step 11.
		No	Go to next step.
11	**VERIFY TROUBLESHOOTING OF DTC P0773 COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear DTC from memory using WDS or equivalent. • Drive vehicle in D range and make sure that gears shift smoothly from 1GR to 4GR. • Are any DTCs present?	Yes	Replace PCM, then go to next step. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
		No	No concern is detected. Go to next step.
12	**VERIFY AFTER REPAIR PROCEDURE** • Perform “After Repair Procedure”. (See 05–02–6 AFTER REPAIR PROCEDURE.) • Are any DTCs present?	Yes	Go to applicable DTC inspection.
		No	Troubleshooting completed.

PID/DATA MONITOR INSPECTION

A3U050201030W34

1. Connect the **SSTs** (WDS or equivalent) to the DLC-2.
2. Measure the PID value.

Note

- Perform part inspection for the output device after PCM inspection.
- The PID/DATA MONITOR function monitors the calculated value of the input/output signals in the PCM. Therefore, if a monitored value of an output device is out of specification, it is necessary to inspect the monitored value of the input device related to the output device control. Since an output device malfunction is not directly indicated as a malfunction of the monitored value for the output device, it is necessary to inspect the output device individually using the simulation function, etc.

PID/DATA MONITOR AND RECORD function table

Monitor item (Definition)	Unit/ Condition	Condition/Specification	Action	PCM terminal
GEAR	—	1GR: 1 2GR: 2 3GR: 3 4GR: 4	Inspect following PIDs: SSA/SS1, SSB/ SS2, SSC/SS3, SSD/SS4, SSE/SS5	1, 27, 82, 99, 102
TFT (Transaxle fluid temperature)	°C	Indicates transaxle fluid temperature	Inspect TFT sensor. (See 05–17–25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION.)	37
TFT V (Transaxle fluid signal voltage)	V	ATF **20 °C {68 °F}**: **3.4—3.6 V** ATF **130 °C {266 °F}**: **0.4—0.5 V**	Inspect TFT sensor. (See 05–17–25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION.)	37
VPWR (Battery positive voltage)	V	Ignition switch ON: **B+** Engine running: **B+**	Inspect main relay. (See 09–21–5 RELAY INSPECTION.) Inspect buttery. (See 01–17–1 BATTERY INSPECTION.)	71, 97
TROD (TR switch (D range))	ON/OFF	D range: ON Others: OFF	Inspect TR switch. (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION.)	6
TRL (TR switch (1 range))	ON/OFF	1 range: ON Others: OFF	Inspect TR switch. (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION.)	7
LPS (Pressure control solenoid)	A	ATF temperature at **60 °C {140 °F}** Idle:**0.94—0.96 A** Stall (D range):**0.25—0.35 A** Stall (R range):**0—0.05 A**	Inspect pressure control solenoid. (See 05–17–28 SOLENOID VALVES INSPECTION.)	44, 81
LINEDES	kPa / inHg	Indicates target line pressure	Inspect following PIDs: TFT, TFT V, VPWR, TP, TSS, VSS, TROD, TRD, TRL, PNP	—
TCIL (O/D OFF indicator light)	ON/OFF	O/D OFF mode: ON Others: OFF	Inspect O/D OFF indicator light.	43
TCS (O/D OFF switch)	ON/OFF	O/D OFF switch pressed: ON O/D OFF switch released: OFF	Inspect O/D OFF switch. (See 05–17–19 O/D OFF SWITCH INSPECTION.)	29
TRR (TR switch (R position))	ON/OFF	R position: ON Others: OFF	Inspect TR switch. (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION.)	32
TRD (TR switch (2 range))	ON/OFF	2 range: ON Others: OFF	Inspect TR switch. (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION.)	9
SSA/SS1 (Shift solenoid A)	%	4GR: **99%** others: **0%**	Inspect shift solenoid A. (See 05–17–28 SOLENOID VALVES INSPECTION.)	82
SSB/SS2 (Shift solenoid B)	%	1GR at D range: **99%** Others: **0%**	Inspect shift solenoid B. (See 05–17–28 SOLENOID VALVES INSPECTION.)	99
SSC/SS3 (Shift solenoid C)	%	1GR/2GR: **99%** Others: **0%**	Inspect shift solenoid C. (See 05–17–28 SOLENOID VALVES INSPECTION.)	102

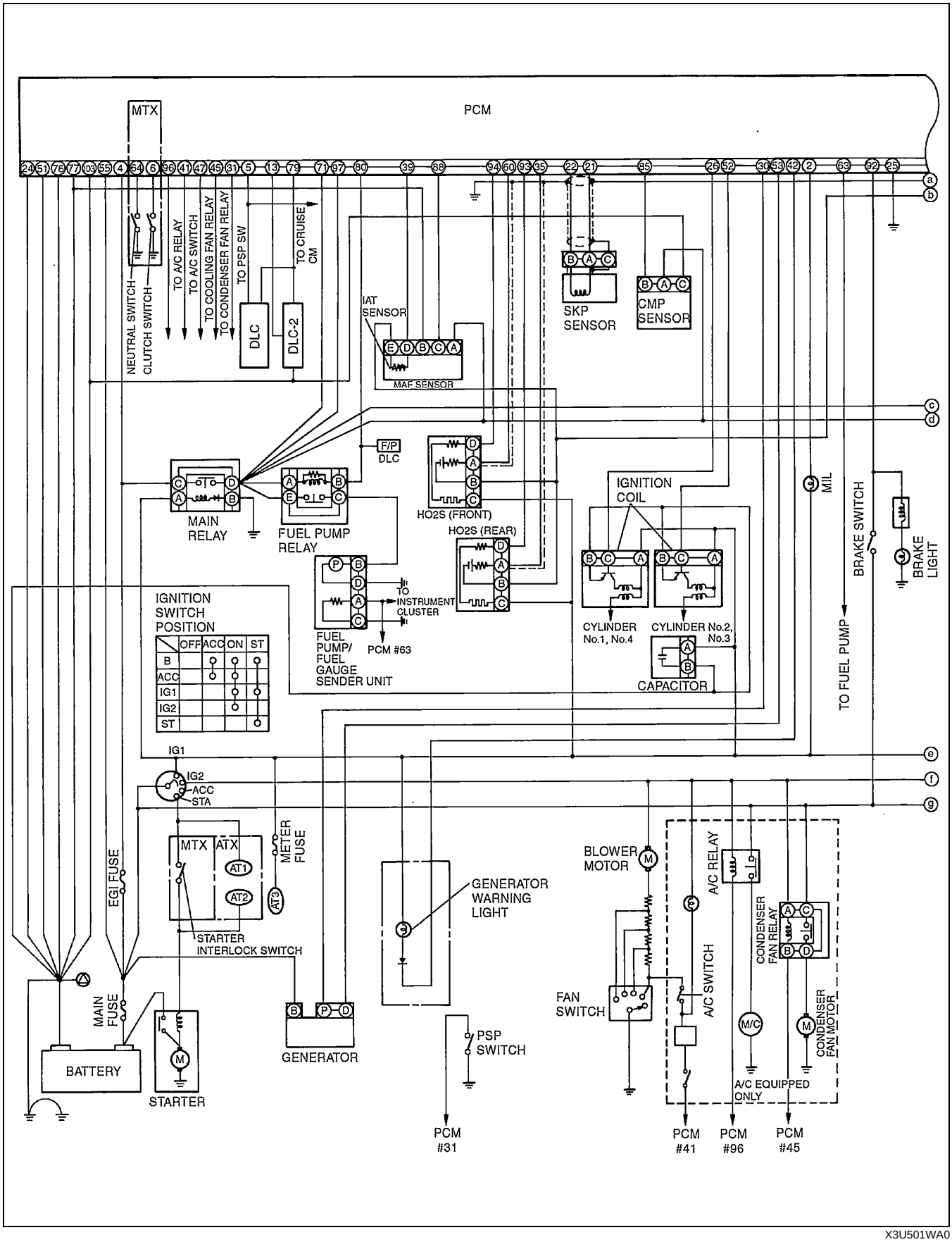
Monitor item (Definition)	Unit/ Condition		Condition/Specification	Action	PCM terminal
SSD/ SS4 (Shift solenoid D)	ON/OFF		P or N position, 4GR, and 1GR at 1range: ON Others: OFF	Inspect shift solenoid D. (See 05–17–28 SOLENOID VALVES INSPECTION.)	27
SSE/SS5 (Shift solenoid E)	ON/OFF		4GR with TCC ON, and 1GR at 1range: ON Others: OFF	Inspect shift solenoid E. (See 05–17–28 SOLENOID VALVES INSPECTION.)	1
TPOD (Throttle position sensor)	%		CTP: **0%** WOT:**100%**	Inspect TP sensor. (See 01–40A–28 THROTTLE POSITION (TP) SENSOR INSPECTION [ZM].) (See 01–40B–29 THROTTLE POSITION (TP) SENSOR INSPECTION [FS].)	89
TP (Throttle position sensor signal voltage)	V		CTP: **0.4—1.5 V** WOT: **4.0—5.0 V**	Inspect TP sensor. (See 01–40A–28 THROTTLE POSITION (TP) SENSOR INSPECTION [ZM].) (See 01–40B–29 THROTTLE POSITION (TP) SENSOR INSPECTION [FS].)	89
PNP (TR switch)	ON/OFF		P position: ON N position: ON Others: OFF	Inspect TR switch. (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION.)	64
TSS (Input/turbine speed)	RPM		Ignition switch ON: **0 rpm** Idle: **700—800 rpm** (P, N position) Indicates Input/turbine speed	Inspect input/turbine speed sensor. (See 05–17–26 INPUT/TURBINE SPEED SENSOR INSPECTION.)	23, 84
VSS (Vehicle speed)	KPH	MPH	Indicates vehicle speed	Inspect VSS. (See 05–17–27 VEHICLE SPEEDOMETER SENSOR (VSS) INSPECTION [ATX].)	58

05–03 SYMPTOM TROUBLESHOOTING

AUTOMATIC TRANSAXLE SYSTEM WIRING DIAGRAM

A3U050301030W01

ZM Engine



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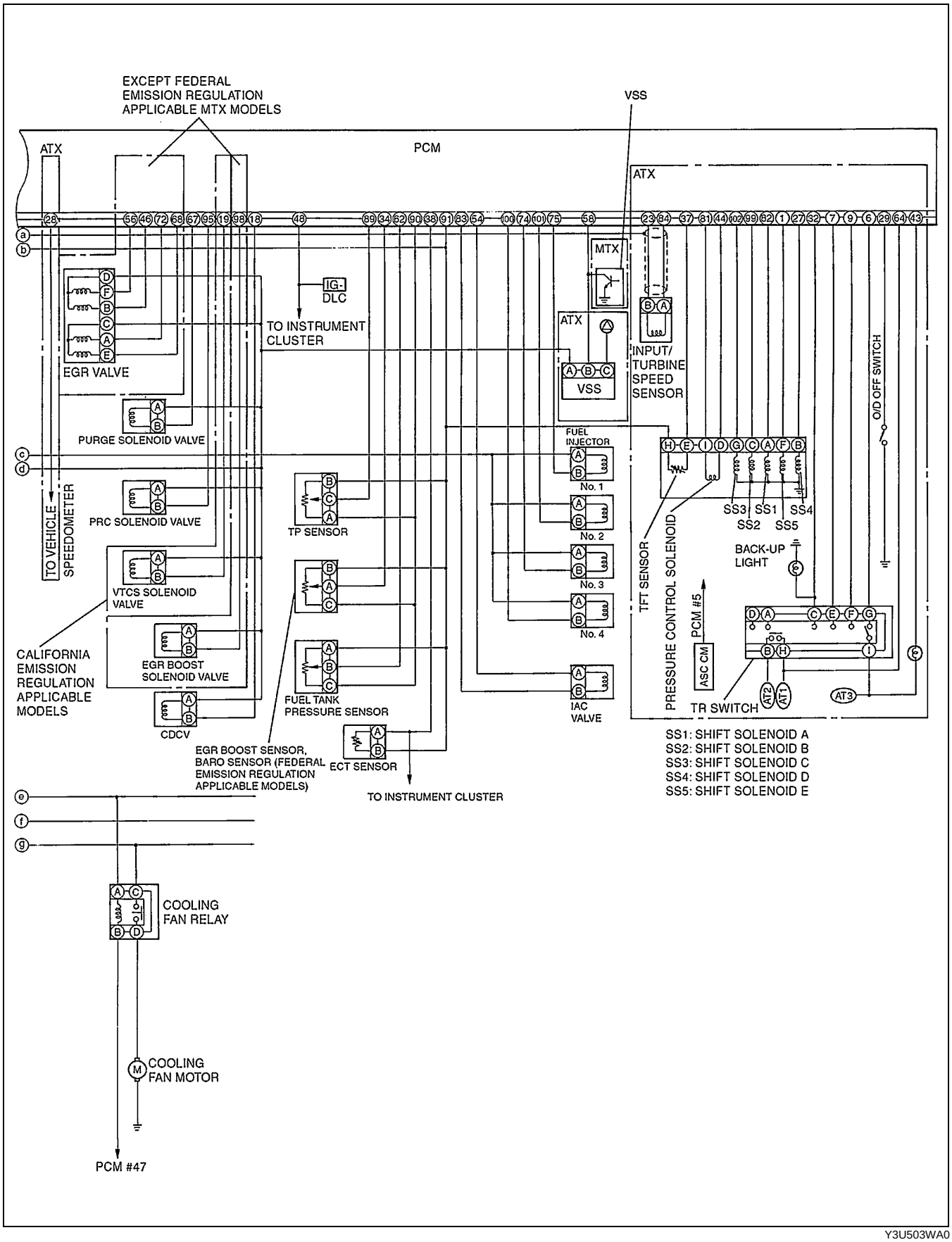
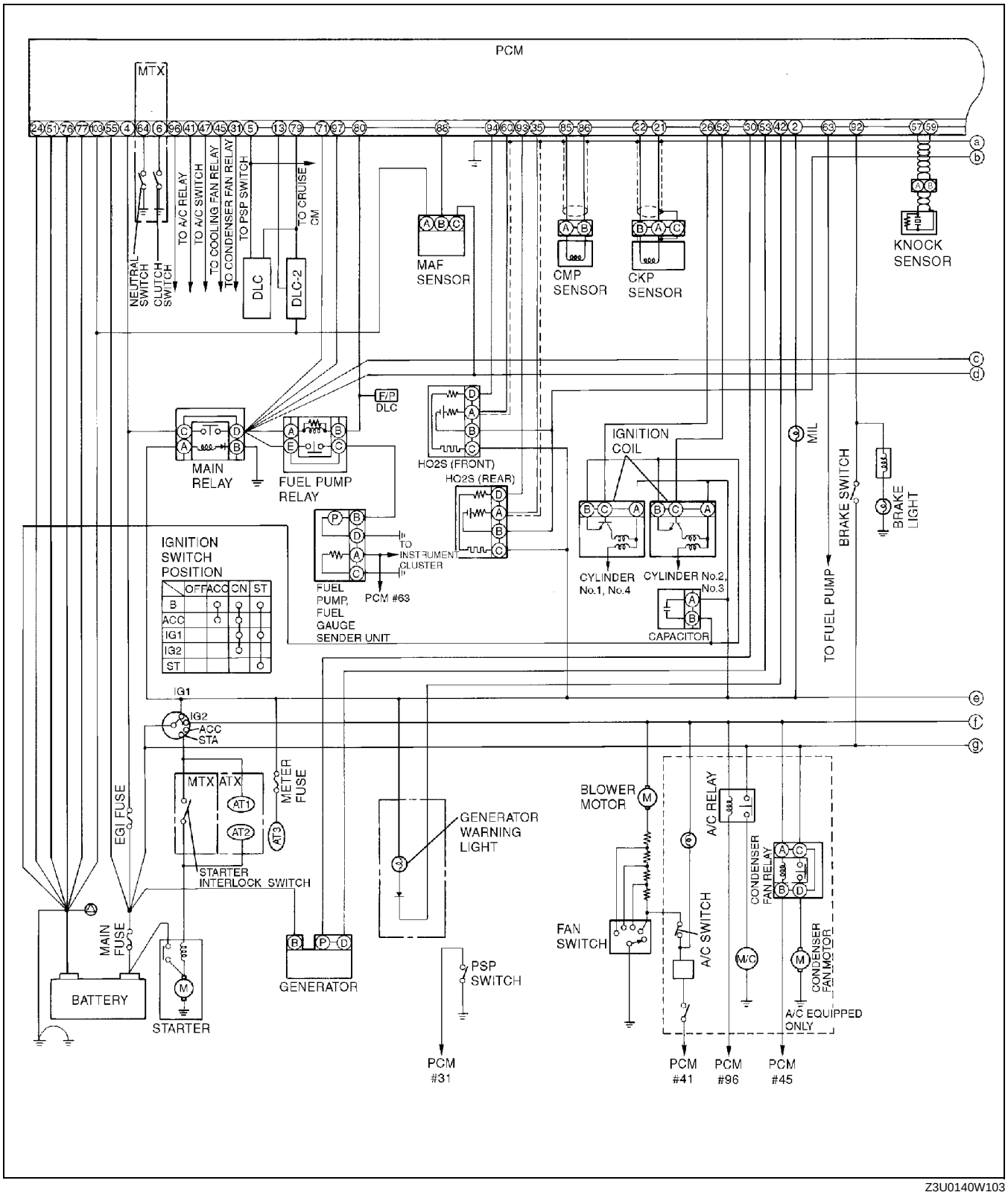

EXCEPT FEDERAL EMISSION REGULATION APPLICABLE MTX MODELS
VSS
ATX
PCM
ATX
MTX
IG-DLC
TO INSTRUMENT CLUSTER
ATX
VSS
INPUT/ TURBINE SPEED SENSOR
O/D OFF SWITCH
EGR VALVE
PURGE SOLENOID VALVE
FUEL INJECTOR
No. 1
No. 2
No. 3
No. 4
IAC VALVE
TO VEHICLE SPEEDOMETER
PRC SOLENOID VALVE
TP SENSOR
SS3 SS1 SS4
SS2 SS5
BACK-UP LIGHT
VTCS SOLENOID VALVE
TFT SENSOR
PRESSURE CONTROL SOLENOID
PCM #5
ASC CM
CALIFORNIA EMISSION REGULATION APPLICABLE MODELS
EGR BOOST SOLENOID VALVE
FUEL TANK PRESSURE SENSOR
TR SWITCH
CDCV
EGR BOOST SENSOR, BARO SENSOR (FEDERAL EMISSION REGULATION APPLICABLE MODELS)
ECT SENSOR
TO INSTRUMENT CLUSTER
SS1: SHIFT SOLENOID A
SS2: SHIFT SOLENOID B
SS3: SHIFT SOLENOID C
SS4: SHIFT SOLENOID D
SS5: SHIFT SOLENOID E
COOLING FAN RELAY
COOLING FAN MOTOR
PCM #47

Y3U503WA0

FS Engine



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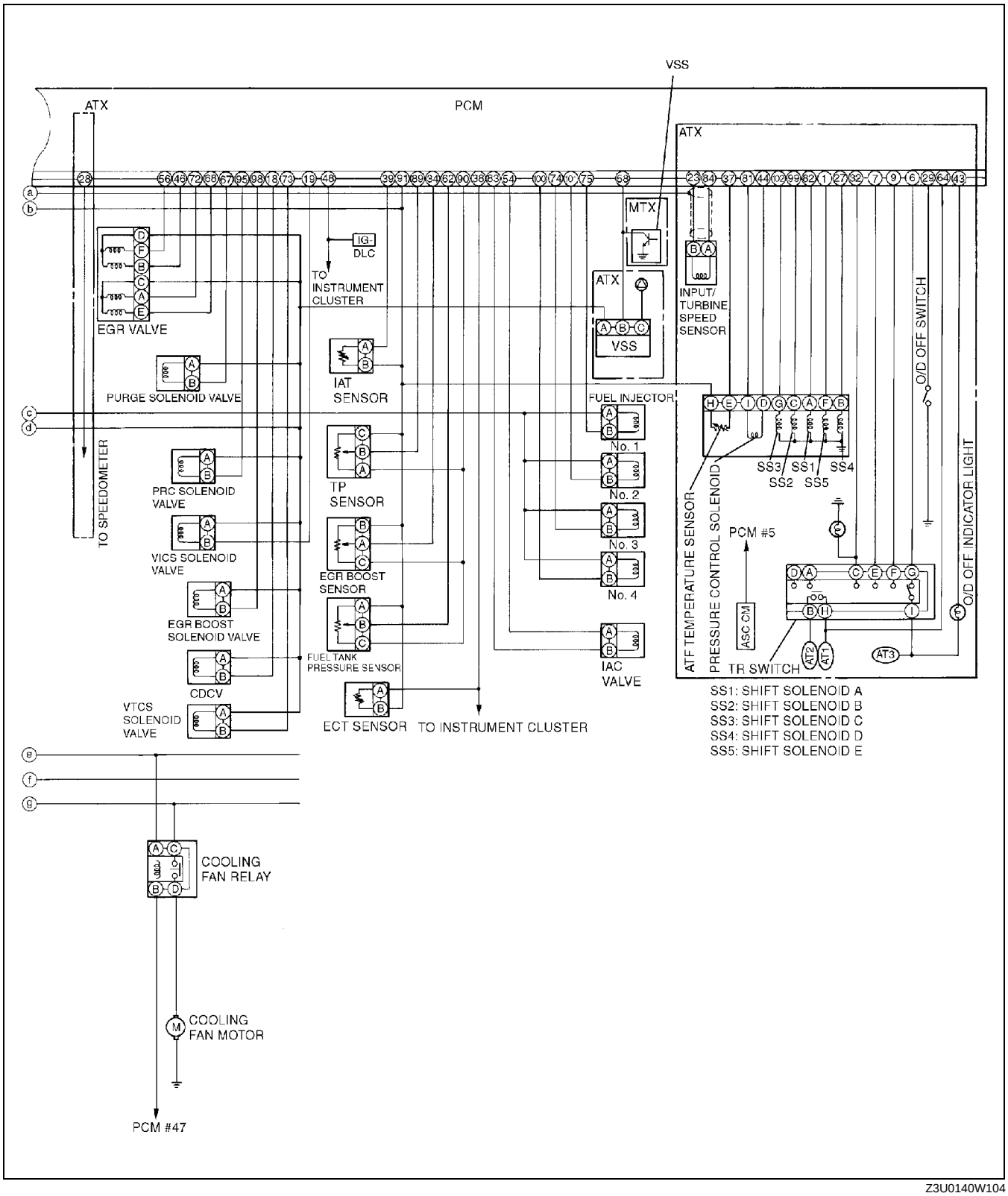
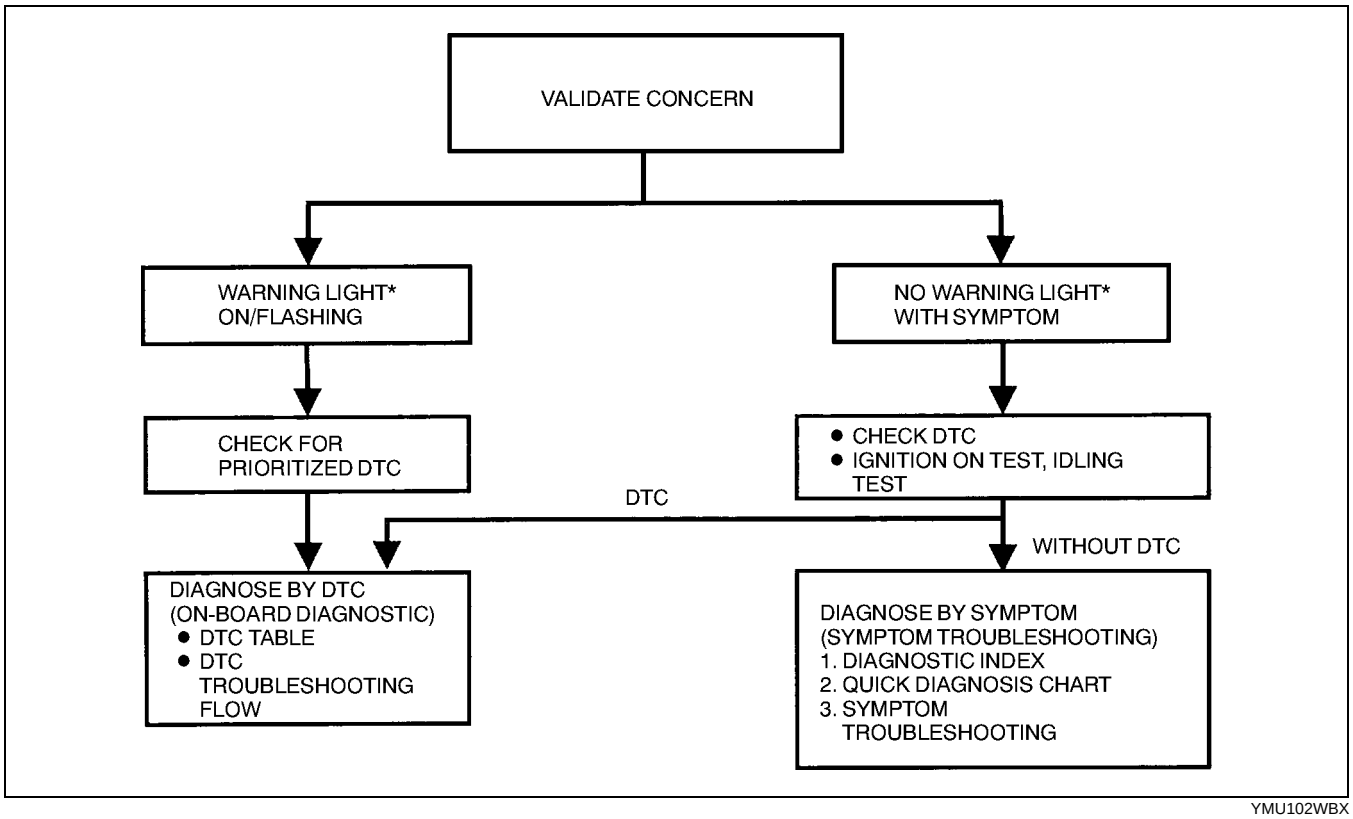


Z3U0140W104

FOREWORD

A3U050301030W02

- When the customer reports a vehicle malfunction, check the malfunction indicator light (MIL) indication, O/D OFF indicator light flashing, and PCM memory for diagnostic trouble code (DTC), then diagnose the malfunction according to following flowchart.
  - — If the DTC exists, diagnose the applicable DTC. (See 05–02–7 DTC TABLE.)
  - — If the DTC does not exist and the MIL does not illuminate and no O/D OFF indicator light flashes, diagnose the applicable symptom troubleshooting. (See 05–03–7 AUTOMATIC TRANSAXLE SYMPTOM TROUBLESHOOTING ITEM TABLE.)



YMU102WBX

* : Malfunction Indicator Light (MIL), O/D OFF indicator light

AUTOMATIC TRANSAXLE BASIC INSPECTION

A3U050301030W03

STEP	INSPECTION		ACTION
1	• Turn ignition switch on. • When selector lever is moved, is the selector illumination synchronized with the lever location? Also, when other ranges are selected from N or P during idling, does vehicle creep within **1 to 2 seconds**?	Yes	Go to next step.
		No	Inspect selector lever and TR switch. Repair or replace defected areas. (See 05–18–2 SELECTOR LEVER INSPECTION.) (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION.) If selector lever and TR switch are okay, go to next step.
2	• Inspect ATF color and condition. (See 05–17–17 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION.) • Are ATF color and odor normal?	Yes	Go to next step.
		No	Repair or replace any defective parts according to inspection result. Flush automatic transaxle and cooler line as necessary.
3	• Perform the line pressure test. (See 05–17–12 Line Pressure Test.) • Is line pressure okay?	Yes	Go to next step.
		No	Adjust accelerator cable as necessary. Repair or replace any defective parts according to inspection result.
4	• Perform the stall test. (See 05–17–13 Stall Test.) • Is stall speed okay?	Yes	Go to next step.
		No	Repair or replace any defective parts according to inspection result.

STEP	INSPECTION		ACTION
5	• Inspect the value at the following PIDs using the WDS or equivalent. (See 01–40A–7 PCM INSPECTION [ZM].) (See 01–40B–7 PCM INSPECTION [FS].) — TP, and VSS PIDs • Is PID value okay?	Yes	Perform symptom troubleshooting and follow procedures.
		No	Repair or replace any defective parts according to inspection result.

AUTOMATIC TRANSAXLE SYMPTOM TROUBLESHOOTING ITEM TABLE

A3U050301030W04

- Use the chart below to verify the symptoms of the trouble in order to diagnose the appropriate area.

No.	TROUBLESHOOTING ITEM	DESCRIPTION	PAGE
1	• Vehicle does not move in D, 2, 1 ranges, or in R position	• Vehicle does not move when accelerator pedal is depressed.	(See 05–03–11 NO.1 VEHICLE DOES NOT MOVE IN D, 2, 1 RANGES, OR IN R POSITION.)
2	• Vehicle moves in N position	• Vehicle creeps in N position. • Vehicle creeps if brake pedal is not depressed in N position.	(See 05–03–11 NO.2 VEHICLE MOVES IN N POSITION.)
3	• Vehicle moves in P position, or parking gear does not disengage when P is disengaged	• Vehicle rolls when on a downward slope and tires do not lock in P position. • Tires are locked when P is disengaged. Vehicle does not move in D, 2, 1 ranges, and R position when accelerator pedal is depressed, and engine remains in stall condition.	(See 05–03–11 NO.3 VEHICLE MOVES IN P POSITION, OR PARKING GEAR DOES NOT DISENGAGE WHEN P IS DISENGAGED.)
4	• Excessive creep	• Vehicle accelerates in D, 2, 1 ranges, and R position without depressing accelerator pedal.	(See 05–03–11 NO.4 EXCESSIVE CREEP.)
5	• No creep at all	• Vehicle does not move in D, 2, 1 ranges, or R position when idling on flat paved road.	(See 05–03–12 NO.5 NO CREEP AT ALL.)
6	• Low maximum speed and poor acceleration	• Vehicle acceleration is poor at start. • Delayed acceleration when accelerator pedal is depressed while driving.	(See 05–03–12 NO.6 LOW MAXIMUM SPEED AND POOR ACCELERATION.)
7	• No shifting	• Single shift range only. • Sometimes it shifts correctly.	(See 05–03–13 NO.7 NO SHIFTING.)
8	• Does not shift to fourth gear (4GR)	• Vehicle does not upshift from 3GR to 4GR even though vehicle speed is increased. • Vehicle does not shift to 4GR even though accelerator pedal is released in D range at **60 km/h {37 mph}**.	(See 05–03–13 NO.8 DOES NOT SHIFT TO FOURTH GEAR (4GR).)
9	• Abnormal shifting	• Shift incorrectly (incorrect shift pattern).	(See 05–03–14 NO.9 ABNORMAL SHIFTING.)
10	• Frequent shifting	• Downshifting occurs immediately even when accelerator pedal is depressed slightly in D, 2, 1 ranges except O/D OFF mode.	(See 05–03–14 NO.10 FREQUENT SHIFTING.)
11	• Shift point is high or low	• Shift point is considerably different from automatic shift diagram. • Shift delayed when accelerating. • Shift occurs quickly when accelerating and engine speed does not increase.	(See 05–03–14 NO.11 SHIFT POINT IS HIGH OR LOW.)
12	• Torque converter clutch (TCC) non-operation	• TCC does not operate when vehicle reaches TCC operation range.	(See 05–03–15 NO.12 TORQUE CONVERTER CLUTCH (TCC) NON-OPERATION.)
13	• No kickdown	• Does not downshift when accelerator pedal is fully depressed within kickdown range.	(See 05–03–15 NO.13 NO KICKDOWN.)

No.	TROUBLESHOOTING ITEM	DESCRIPTION	PAGE
14	• Engine flares up or slips when upshifting or downshifting	• When accelerator pedal is depressed at start, engine speed increases normally but vehicle speed increase slowly. • When accelerator pedal is depressed while driving, engine speed increases but vehicle speed does not.	(See 05–03–16 NO.14 ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING.)
15	• Engine flares up or slips when accelerating vehicle	• Engine flares up when accelerator pedal is depressed for upshifting. • Engine flares up suddenly when accelerator pedal is depressed for downshifting.	(See 05–03–16 NO.15 ENGINE FLARES UP OR SLIPS WHEN ACCELERATING VEHICLE.)
16	• Judder upon torque converter clutch (TCC) operation	• Vehicle jolts when TCC is engaged.	(See 05–03–16 NO.16 JUDDER UPON TORQUE CONVERTER CLUTCH (TCC) OPERATION.)
17	• Excessive shift shock from N to D or N to R position/range	• Strong shock is felt when shifting from N to D or N to R position/range at idle.	(See 05–03–17 NO.17 EXCESSIVE SHIFT SHOCK FROM N TO D OR N TO R POSITION/RANGE.)
18	• Excessive shift shock when upshifting and downshifting	• Excessive shift shock is felt when depressing accelerator pedal to accelerate at upshifting. During cruising, excessive shift shock is felt when depressing accelerator pedal at downshifting.	(See 05–03–17 NO.18 EXCESSIVE SHIFT SHOCK WHEN UPSHIFTING AND DOWNSHIFTING.)
19	• Excessive shift shock on torque converter clutch (TCC)	• Strong shock is felt when TCC is engaged.	(See 05–03–17 NO.19 EXCESSIVE SHIFT SHOCK ON TORQUE CONVERTER CLUTCH (TCC).)
20	• Noise occurs at idle when vehicle is stopped in all positions/ranges	• Transaxle is noisy in all positions and ranges when vehicle is idling.	(See 05–03–17 NO.20 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN ALL POSITIONS/RANGES.)
21	• Noise occurs at idle when vehicle is stopped in D, 2, 1 ranges, or in R position	• Transaxle is noisy in driving ranges when vehicle is idling.	(See 05–03–18 NO.21 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN D, 2, 1 RANGES, OR IN R POSITION.)
22	• No engine braking in O/D OFF mode	• Engine speed drops to idle but vehicle coasts when accelerator pedal is released during cruising at medium to high speeds. • Engine speed drops to idle but vehicle coasts when accelerator pedal is released when in 1 range at low vehicle speed.	(See 05–03–18 NO.22 NO ENGINE BRAKING IN O/D OFF MODE.)
23	• Transaxle overheats	• Burnt smell is emitted from transaxle. • Smoke is emitted from transaxle.	(See 05–03–19 NO.23 TRANSAXLE OVERHEATS.)
24	• Engine stalls when shifted to D, 2, 1 ranges, or in R position	• Engine stalls when shifting from N or P position to D, 2, 1 ranges or R position at idle.	(See 05–03–19 NO.24 ENGINE STALLS WHEN SHIFTED TO D, 2, 1 RANGES, OR IN R POSITION.)
25	• Engine stalls when driving at slow speed or stopping	• Engine stalls when brake pedal is depressed while driving at low speed or stopping.	(See 05–03–19 NO.25 ENGINE STALLS WHEN DRIVING AT SLOW SPEED OR STOPPING.)
26	• O/D OFF indicator light does not illuminate when O/D OFF switch is turned to on	• O/D OFF indicator light in dashboard does not illuminate when O/D OFF switch is turned on and ignition switch at on.	(See 05–03–20 NO.26 O/D OFF INDICATOR LIGHT DOES NOT ILLUMINATE WHEN O/D OFF SWITCH IS TURNED TO ON.)
27	• O/D OFF indicator light illuminates when O/D OFF switch is not turned to on	• O/D OFF indicator light in dashboard illuminates even though O/D OFF switch is turned off and ignition switch at on.	(See 05–03–20 NO.27 O/D OFF INDICATOR LIGHT ILLUMINATES WHEN O/D OFF SWITCH IS NOT TURNED TO ON.)

Quick Diagnosis Chart

No.	Item	Selector lever is misadjusted	Not within line pressure specification	Idle speed is misadjusted	Ignition timing is misadjusted	TR switch is misadjusted	Electrical system components										
							ATX outer parts										
							TP sensor		Input/turbine speed sensor		VSS		O/D OFF switch		ECT sensor		
							Signal is not inputed	Malfunction signal is inputed	Signal is not inputed	Malfunction signal is inputed	Signal is not inputed	Malfunction signal is inputed	Signal is not inputed	Malfunction signal is inputed	Signal is not inputed	Malfunction signal is inputed	Poor GND
1	Vehicle does not move in D, 2, 1 ranges, or in R position	×	×														
2	Vehicle moves in N position	×															
3	Vehicle moves in P position, or parking gear does not disengage when P is disengaged	×															
4	Excessive creep			×	×												
5	No creep at all		×				×	×	×	×	×	×					×
6	Low maximum speed and poor acceleration		×		×		×	×	×	×	×	×	×	×			×
7	No shifting						×	×	×	×	×	×	×	×			×
8	Does not shift to fourth gear (4GR)						×	×	×	×	×	×	×	×			×
9	Abnormal shifting	×	×			×	×	×	×	×	×	×					×
10	Frequent shifting						×	×	×	×	×	×					×
11	Shift point is high or low						×	×	×	×	×	×					×
12	Torque converter clutch (TCC) non-operation					×	×	×	×	×	×	×	×	×	×	×	×
13	No kickdown						×	×									×
14	Engine flares up or slips when upshifting or downshifting		×				×	×	×	×	×	×					×
15	Engine flares up or slips when accelerating vehicle		×				×	×	×	×	×	×					×
16	Judder upon torque converter clutch (TCC) operation		×				×	×	×	×	×	×					×
17	Excessive shift shock from N to D or N to R position/range		×	×			×	×	×	×	×	×					×
18	Excessive shift shock when upshifting and downshifting		×				×	×	×	×	×	×					×
19	Excessive shift shock on torque converter clutch (TCC)		×				×	×	×	×	×	×					×
20	Noise occurs at idle when vehicle is stopped in all positions/ranges																
21	Noise occurs at idle when vehicle is stopped in D, 2, 1 ranges, or in R position																
22	No engine braking in O/D OFF mode						×	×	×	×	×	×	×	×			×
23	Transaxle overheats		×														×
24	Engine stalls when shifted to D, 2, 1 ranges, or in R position			×													
25	Engine stalls when driving at slow speed or stopping			×													
26	O/D OFF indicator light does not illuminate when O/D OFF switch is turned to on												×	×			
27	O/D OFF indicator light illuminates when O/D OFF switch is not turned to on													×			
Item (Symptom / Cause of trouble / Inspection method)																	
Line pressure test			×														
Stall test																	
Time lag test																	
Diagnostic trouble code						×	×		×		×				×		

X3U501WAR

No.	Item	Signal is not inputed	Malfunction signal is inputed	Shift solenoid D malfunction	Shift solenoid E malfunction	Shift solenoid A malfunction	Shift solenoid B malfunction	Shift solenoid C malfunction	Pressure control solenoid malfunction	Control valve is not operating properly	Forward accumulator is not operating properly	Servo apply accumulator is not operating properly	Oil cooler is not operating properly	Slipping (Brake, clutch)	Burnt (Brake, clutch)	Torque converter is not operating properly	TCC burnt
		TFT sensor															
		Electrical system components								Hydraulic system components				Powertrain system			
		ATX outer parts															
1	Vehicle does not move in D, 2, 1 ranges, or in R position			×		×	×		×	×				×	×	×	
2	Vehicle moves in N position									×							
3	Vehicle moves in P position, or parking gear does not disengage when P is disengaged																
4	Excessive creep																
5	No creep at all		×	×	×	×	×	×	×	×				×	×	×	
6	Low maximum speed and poor acceleration	×	×	×	×	×	×	×	×	×				×	×	×	×
7	No shifting			×	×	×	×	×	×	×				×	×		
8	Does not shift to fourth gear	×	×	×	×	×	×	×		×				×	×		
9	Abnormal shifting			×	×	×	×	×		×	×	×		×	×		
10	Frequent shifting									×				×			
11	Shift point is high or low																
12	Torque converter clutch non-operation	×	×	×	×	×	×	×		×						×	×
13	No kickdown			×	×	×	×	×		×				×	×		
14	Engine flares up or slips when upshifting or downshifting		×	×	×	×	×	×	×	×				×	×		
15	Engine flares up or slips when accelerating vehicle		×						×	×				×	×		
16	Judder upon torque converter clutch operation									×						×	×
17	Excessive shift shock from N to D or N to R position/range		×				×		×	×	×	×		×	×		
18	Excessive shift shock when upshifting and downshifting	×	×	×	×	×	×	×	×	×	×	×		×	×		
19	Excessive shift shock on torque converter clutch		×			×				×						×	×
20	Noise occurs at idle when vehicle is stopped in all positions/ranges																
21	Noise occurs at idle when vehicle is stopped in D, 2, 1 ranges, or in R position																
22	No engine braking in O/D OFF mode									×				×	×		
23	Transaxle overheats	×	×							×			×				×
24	Engine stalls when shifted to D, 2, 1 ranges, or in R position									×						×	
25	Engine stalls when driving at slow speed or stopping									×						×	
26	O/D OFF indicator light does not illuminate when O/D OFF switch is turned to on																
27	O/D OFF indicator light illuminates when O/D OFF switch is not turned to on																
	Line pressure test									×				×	×		
	Stall test									×				×	×	×	
	Time lag test										×	×		×	×		
	Diagnostic trouble code	×		×	×	×	×	×	×								

Symptom / Cause of trouble / Inspection method / Item

X3U501WAS

NO.1 VEHICLE DOES NOT MOVE IN D, 2, 1 RANGES, OR IN R POSITION

A3U050301030W05

1	Vehicle does not move in D, 2, 1 ranges, or in R position
DESCRIPTION	• Vehicle does not move when accelerator pedal is depressed.
POSSIBLE CAUSE	• If the vehicle does not move in D, 2, 1 ranges or R position, basically, the malfunction is in the ATX. (Vehicle will move even with a malfunction in the PCM.) Since a malfunction in the sensor circuit or output circuit is the cause of the malfunction in the ATX, inspect the sensors, output circuit, and the related harnesses. a. Clutch slippage, worn (D, 2, 1 ranges - Forward clutch, R position - Reverse clutch, Low and reverse brake) • Line pressure low • Sensor GND malfunction • Shift solenoid D malfunction • Shift solenoid E malfunction • Shift solenoid A malfunction • Shift solenoid B malfunction • Pressure control solenoid malfunction • Body GND malfunction • Control valve body malfunction b. Selector lever malfunction c. Parking mechanism not operating properly d. Torque converter malfunction

NO.2 VEHICLE MOVES IN N POSITION

A3U050301030W06

2	Vehicle moves in N position
DESCRIPTION	• Vehicle creeps in N position. • Vehicle creeps if brake pedal is not depressed in N position.
POSSIBLE CAUSE	• If the vehicle moves in N position, basically, the malfunction is in the ATX. Since a malfunction in the sensor circuit or output circuit is the cause of the malfunction in the ATX, inspect the sensors, output circuit, and the related harnesses. a. Clutch burned (Forward clutch) • Control valve body malfunction b. Selector lever position disparity (Although the selector illumination shows N position, the hydraulic circuit shows D range or R position)

NO.3 VEHICLE MOVES IN P POSITION, OR PARKING GEAR DOES NOT DISENGAGE WHEN P IS DISENGAGED

A3U050301030W07

3	Vehicle moves in P position, or parking gear does not disengage when P is disengaged
DESCRIPTION	• Vehicle rolls when on a downward slope and tires do not lock in P position. • Tires are locked when P is disengaged. Vehicle does not move in D, 2, 1 ranges, and R position when accelerator pedal is depressed, and engine remains in stall condition.
POSSIBLE CAUSE	• Parking mechanism malfunction (May have effect on noise or shock from transaxle) • Improper adjustment of selector lever • If vehicle moves in N position, perform No.2 “Vehicle moves in N position”

NO.4 EXCESSIVE CREEP

A3U050301030W08

4	Excessive creep
DESCRIPTION	• Vehicle accelerates in D, 2, 1 ranges, and R position without depressing accelerator pedal.
POSSIBLE CAUSE	• Engine idle speed high (transaxle system is not cause of problem) • Go to symptom troubleshooting No.8 “Fast idle/runs on”. (See 01–03A–7 SYMPTOM DIAGNOSTIC INDEX [ZM].) (See 01–03B–7 SYMPTOM DIAGNOSTIC INDEX [FS].)

NO.5 NO CREEP AT ALL

A3U050301030W09

5	No creep at all
DESCRIPTION	• Vehicle does not move in D, 2, 1 ranges, or R position when idling on flat paved road.
POSSIBLE CAUSE	• Either the transaxle is stuck in 3GR or 4GR position, or there is clutch circuit slippage because the 3–4 clutch is stuck. a. Clutch burned • Line pressure low • Shift solenoid D malfunction • Shift solenoid A malfunction • Shift solenoid B malfunction • Pressure control solenoid malfunction • Body GND malfunction • Control valve body malfunction b. Transaxle fixed in 3GR (Operation of fail-safe function) • Short or open circuit in wiring • Poor connection of connector • Electronic parts of output and input system are malfunctioning c. Engine torque is not produced • Torque converter is malfunctioning

NO.6 LOW MAXIMUM SPEED AND POOR ACCELERATION

A3U050301030W10

6	Low maximum speed and poor acceleration
DESCRIPTION	• Vehicle acceleration is poor at start. • Delayed acceleration when accelerator pedal is depressed while driving.
POSSIBLE CAUSE	• If the clutch is stuck or does not stay in 3GR, the malfunction is in the engine circuit. a. Clutch slippage, burned • Line pressure low • TP sensor malfunction • VSS malfunction • Input/turbine speed sensor malfunction • Sensor GND malfunction • Shift solenoid D malfunction • Shift solenoid E malfunction • Shift solenoid A malfunction • Shift solenoid B malfunction • Shift solenoid C malfunction • Pressure control solenoid malfunction • Body GND malfunction • Control valve body malfunction b. Transaxle fixed in 3GR (Operation of fail-safe function) • Short or open circuit in wiring • Poor connection of connector • Electronic parts of output and input system are malfunctioning c. Insufficient starting torque (Suspected when in-gear condition, shift control and engine circuit are normal) • Torque converter is malfunctioning (Poor operation, sticking) d. Engagement of TCC operation range (Operation of fail-safe function) • TFT sensor malfunction (Short or open circuit)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	• Go to symptom troubleshooting No.11 “Lack/loss of power”. (See 01–03A–7 SYMPTOM DIAGNOSTIC INDEX [ZM].) (See 01–03B–7 SYMPTOM DIAGNOSTIC INDEX [FS].) • Is engine control system okay?	Yes	Repeat basic inspection and repair or replace any defective parts according to inspection result. (See 05–03–6 AUTOMATIC TRANSAXLE BASIC INSPECTION.)
		No	Repair or replace any defective parts according to inspection results.

Note

- If malfunction remains, inspect related Service Bulletins and perform repair or diagnosis.
- If vehicle is repaired, troubleshooting is completed.
- If vehicle is not repaired or additional diagnostic information is not available, replace PCM.

NO.7 NO SHIFTING

A3U050301030W11

7	No shifting
DESCRIPTION	• Single shift range only. • Sometimes it shifts correctly.
POSSIBLE CAUSE	• When the gear position is fixed in 3GR due to the fail-safe operation, the malfunction is in the ATX. • Perform malfunction diagnosis according to No.6 “Low maximum speed and poor acceleration”. a. Clutch burned • Line pressure low • VSS malfunction • Input/turbine speed sensor malfunction • Sensor GND malfunction • Shift solenoid D malfunction • Shift solenoid E malfunction • Shift solenoid A malfunction • Shift solenoid B malfunction • Shift solenoid C malfunction • Pressure control solenoid malfunction • Body GND malfunction • Control valve body malfunction b. Transaxle fixed in 3GR (Operation in fail-safe function) • Short or open circuit in wiring • Poor connection of connector • Disconnected shift solenoid connector • Poor GND of shift solenoid

NO.8 DOES NOT SHIFT TO FOURTH GEAR (4GR)

A3U050301030W12

8	Does not shift to fourth gear (4GR)
DESCRIPTION	• Vehicle does not upshift from 3GR to 4GR even though vehicle speed is increased. • Vehicle does not shift to 4GR even though accelerator pedal is released in D range at **60 km/h {37 mph}**.
POSSIBLE CAUSE	• Basically, the TCC does not operate when the fail-safe is operating. Verify the DTC first. If the TCC operates when driving at high speeds only, the malfunction (improper adjustment) is in the O/D OFF switch circuit or TR switch circuit. **Caution** • **If the TCC is stuck, inspect it. In addition, inspect the oil cooler for foreign particles which may have mixed in with the ATF.** a. TCC slippage, burned • Line pressure low • TP sensor malfunction • ECT sensor malfunction • VSS malfunction • Input/turbine speed sensor malfunction • Sensor GND malfunction b. TFT sensor malfunction • Short or open circuit in wiring • Poor connection of connector • Sensor malfunction c. TR switch malfunction • Short or open circuit in wiring • Poor connection of connector • Sensor malfunction • Selector lever adjustment incorrect • TR switch adjustment incorrect d. Shift solenoid A, shift solenoid E malfunction • Short or open circuit in wiring • Poor connection of connector • Solenoid valve stuck e. O/D OFF switch malfunction f. Torque converter malfunction g. Control valve body malfunction

NO.9 ABNORMAL SHIFTING

A3U050301030W13

9	Abnormal shifting
DESCRIPTION	• Shift incorrectly (incorrect shift pattern).
POSSIBLE CAUSE	• There is a malfunction in the signal circuit which controls shifting (TP sensor, input/turbine speed sensor, VSS), the control valve is stuck, the accumulator (forward or servo apply) is stuck, or the clutch circuit is stuck. a. Clutch slippage, burned • Line pressure low • TP sensor malfunction or misadjustment • VSS malfunction • Input/turbine speed sensor malfunction • Sensor GND malfunction • Shift solenoid D malfunction • Shift solenoid E malfunction • Shift solenoid A malfunction • Shift solenoid B malfunction • Shift solenoid C malfunction • Body GND malfunction • Accelerator cable misadjustment • Control valve body malfunction

NO.10 FREQUENT SHIFTING

A3U050301030W14

10	Frequent shifting
DESCRIPTION	• Downshifting occurs immediately even when accelerator pedal is depressed slightly in D, 2, 1 ranges except O/D OFF mode.
POSSIBLE CAUSE	• The circuit which is the cause is basically the same as for No.9 “Abnormal shifting”. However, a malfunction of the input signal to the TP sensor, input/turbine speed sensor, VSS (including the sensor GND, sensor harness and connector), or clutch slippage (clutch stuck, low pressure in line) may also be the cause.

NO.11 SHIFT POINT IS HIGH OR LOW

A3U050301030W15

11	Shift point is high or low
DESCRIPTION	• Shift point is considerably different from automatic shift diagram. • Shift delays when accelerating. • Shift occurs quickly when accelerating and engine speed does not increase.
POSSIBLE CAUSE	• If the transaxle shift abnormal, there is a malfunction of the input signal to the TP sensor, input/turbine speed sensor, or VSS. • If the engine speed is high or low regardless that shifting is normal, inspect the tachometer. • Verify that the output signal of the TP sensor changes linearly.

NO.12 TORQUE CONVERTER CLUTCH (TCC) NON-OPERATION

A3U050301030W16

12	Torque converter clutch (TCC) non-operation
DESCRIPTION	• TCC does not operate when vehicle reaches TCC operation range.
POSSIBLE CAUSE	• Basically, the TCC does not operate when the fail-safe is operating. Verify the DTC first. If the TCC operates when driving at high speeds only, the malfunction (improper adjustment) is in the O/D OFF switch circuit or TR switch circuit. **Caution** • **If the TCC is stuck, inspect it. In addition, inspect the oil cooler for foreign particles which may have mixed in with the ATF.** a. TCC burned • TP sensor malfunction • TFT sensor malfunction • VSS malfunction • Input/turbine speed sensor malfunction • Sensor GND malfunction • Shift solenoid D malfunction (Sticking) • Shift solenoid E malfunction (Sticking) • Shift solenoid A malfunction (Sticking) • Shift solenoid B malfunction (Sticking) • Shift solenoid C malfunction (Sticking) • TCC hydraulic pressure system (Poor operation, sticking) b. TP sensor malfunction (Not operating linearly) c. Input/turbine speed sensor or VSS malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	• Remove torque converter. • Inspect torque converter. (See ATX Workshop Manual.) • Is torque converter okay?	Yes	Repeat basic inspection and repair or replace any defective parts according to inspection result. (See 05–03–6 AUTOMATIC TRANSAXLE BASIC INSPECTION.)
		No	Replace torque converter.

Note

- If malfunction remains, inspect related Service Bulletins and perform repair or diagnosis.
- If vehicle is repaired, troubleshooting is completed.
- If vehicle is not repaired or additional diagnostic information is not available, replace PCM.

NO.13 NO KICKDOWN

A3U050301030W17

13	No kickdown
DESCRIPTION	• Does not downshift when accelerator pedal is fully depressed within kickdown range.
POSSIBLE CAUSE	• If the transaxle does not downshift though shifting is normal, the malfunction is in the TP sensor circuit (including the sensor GND, sensor harness and connector).

NO.14 ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING

A3U050301030W18

14	Engine flares up or slips when upshifting or downshifting
DESCRIPTION	• When accelerator pedal is depressed at start, engine speed increases normally but vehicle speed increase slowly. • When accelerator pedal is depressed while driving, engine speed increases but vehicle speed does not.
POSSIBLE CAUSE	• There is clutch slip because the clutch is stuck or the line pressure is low. a. Clutch stuck, slippage (forward clutch, 3–4 clutch, low and reverse brake, 2–4 brake band, one-way clutch) • Line pressure low • TP sensor malfunction or misadjustment • VSS malfunction • Input/turbine speed sensor malfunction • Sensor GND malfunction • Shift solenoid D malfunction • Shift solenoid E malfunction • Shift solenoid A malfunction • Shift solenoid B malfunction • Shift solenoid C malfunction • Pressure control solenoid malfunction • Body GND malfunction • Accelerator cable misadjustment • Control valve body malfunction b. Poor operation of mechanical pressure • Selector lever position disparity • TR switch position disparity

NO.15 ENGINE FLARES UP OR SLIPS WHEN ACCELERATING VEHICLE

A3U050301030W19

15	Engine flares up or slips when accelerating vehicle
DESCRIPTION	• Engine flares up when accelerator pedal is depressed for upshifting. • Engine flares up suddenly when accelerator pedal is depressed for downshifting.
POSSIBLE CAUSE	• The malfunction is basically the same as for No.14 “Engine flares up or slips when upshifting or downshifting”. — If conditions for No.14 worsen, the malfunction will develop to No.15.

NO.16 JUDDER UPON TORQUE CONVERTER CLUTCH (TCC) OPERATION

A3U050301030W20

16	Judder upon torque converter clutch (TCC) operation
DESCRIPTION	• Vehicle jolts when TCC is engaged.
POSSIBLE CAUSE	• Poor TCC engagement due to either slippage because the TCC is stuck or the line pressure is low. **Caution** • **If the TCC is stuck, inspect it. In addition, inspect the oil cooler for foreign particles which may have mixed in with the ATF.** a. TCC piston slippage, burned • Line pressure low • TP sensor malfunction or misadjustment • VSS malfunction • Input/turbine speed sensor malfunction • Shift solenoid A malfunction • Control valve body malfunction b. Torque converter malfunction

NO.17 EXCESSIVE SHIFT SHOCK FROM N TO D OR N TO R POSITION/RANGE

A3U050301030W21

17	Excessive shift shock from N to D or N to R position/range
DESCRIPTION	• Strong shock is felt when shifting from N to D or N to R position/range at idle.
POSSIBLE CAUSE	• Shift shock may worsen when the fail-safe is operating. If no DTC is output, the shift shock may worsen due to poor operation of the control valve body or sticking of the clutch. a. Clutch burned (N→D: Forward clutch, N→R: Reverse clutch or low and reverse brake) • Line pressure low • TP sensor malfunction • VSS malfunction • Input/turbine speed sensor malfunction • Accelerator cable misadjustment • Control valve body malfunction b. Poor hydraulic operation (Malfunction in range change) • Servo apply accumulator malfunction c. Idle speed high d. Poor tightening torque of engine mount and/or exhaust mount

NO.18 EXCESSIVE SHIFT SHOCK WHEN UPSHIFTING AND DOWNSHIFTING

A3U050301030W22

18	Excessive shift shock when upshifting and downshifting
DESCRIPTION	• Excessive shift shock is felt when depressing accelerator pedal to accelerate at upshifting. During cruising, excessive shift shock is felt when depressing accelerator pedal at downshifting.
POSSIBLE CAUSE	• Shift shock may worsen when the fail-safe is operating. The shift shock may also worsen if the TP sensor, input/turbine speed sensor, or VSS signal malfunctions. a. Clutch slippage, burned (2–4 brake band, 3–4 clutch) • Line pressure low, high • TP sensor malfunction • VSS malfunction • Input/turbine speed sensor malfunction • TFT sensor malfunction • Shift solenoid D malfunction • Shift solenoid E malfunction • Shift solenoid A malfunction • Shift solenoid B malfunction • Shift solenoid C malfunction • Pressure control solenoid malfunction • Accelerator cable misadjustment • Control valve body malfunction b. Poor hydraulic operation (Malfunction in range change) • Forward accumulator malfunction • Servo apply accumulator malfunction

NO.19 EXCESSIVE SHIFT SHOCK ON TORQUE CONVERTER CLUTCH (TCC)

A3U050301030W23

19	Excessive shift shock on torque converter clutch (TCC)
DESCRIPTION	• Strong shock is felt when TCC is engaged.
POSSIBLE CAUSE	• The troubleshooting flow is the same as for No.16 “Judder (Intense vibration) upon torque converter clutch (TCC) operation”.

NO.20 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN ALL POSITIONS/RANGES

A3U050301030W24

20	Noise occurs at idle when vehicle is stopped in all positions/ranges
DESCRIPTION	• Transaxle is noisy in all positions and ranges when vehicle is idling.
POSSIBLE CAUSE	• The malfunction is in the oil pump which causes a high-pitched noise to be emitted from the transaxle at idle. **Note** • If a noise is emitted during shifting only, the malfunction is in shift solenoid D, E or duty solenoid valves. • If a noise is emitted during shifting at certain gears only or during deceleration only, it is gear noise.

Diagnostic procedure

STEP	INSPECTION		ACTION
1	• Inspect engine condition. • Is there engine concern (i.e. rough idle)?	Yes	Go to appropriate symptom troubleshooting. (See 01–03A–7 SYMPTOM DIAGNOSTIC INDEX [ZM].) (See 01–03B–7 SYMPTOM DIAGNOSTIC INDEX [FS].)
		No	Repeat basic inspection and repair or replace any defective parts according to inspection result. (See 05–03–6 AUTOMATIC TRANSAXLE BASIC INSPECTION.)

Note
- If malfunction remains, inspect related Service Bulletins and perform repair or diagnosis.
- If vehicle is repaired, troubleshooting is completed.
- If vehicle is not repaired or additional diagnostic information is not available, replace PCM.

NO.21 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN D, 2, 1 RANGES, OR IN R POSITION

A3U050301030W25

21	Noise occurs at idle when vehicle is stopped in D, 2, 1 ranges, or in R position
DESCRIPTION	• Transaxle is noisy in driving ranges when vehicle is idling.
POSSIBLE CAUSE	• Although the malfunction is basically the same as No.20 “Noise occurs at idle when vehicle is stopped in all positions/ranges”, other causes may be selector lever or TR switch not adjusted properly.

NO.22 NO ENGINE BRAKING IN O/D OFF MODE

A3U050301030W26

22	No engine braking in O/D OFF mode
DESCRIPTION	• Engine speed drops to idle but vehicle coasts when accelerator pedal is released during cruising at medium to high speeds. • Engine speed drops to idle but vehicle coasts when accelerator pedal is released when in 1 range at low vehicle speed.
POSSIBLE CAUSE	a. Clutch slippage, or burned (low and reverse brake) • Line pressure low • VSS malfunction • Input/turbine speed sensor malfunction • TP sensor malfunction • Control valve body malfunction b. O/D OFF switch on but not recognized by PCM (short, or open circuit, poor operation) • O/D OFF switch signal malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	• Do following symptoms occur concurrently? • Engine flares up or slips during acceleration. • Engine flares up or slips when shifting.	Yes	Go to symptom troubleshooting No.14 “Engine flares up or slips when upshifting or downshifting” or No.15 “Engine flares up or slips when accelerating vehicle”.
		No	Repeat basic inspection and repair or replace any defective parts according to inspection result. (See 05–03–6 AUTOMATIC TRANSAXLE BASIC INSPECTION.)

Note
- If malfunction remains, inspect related Service Bulletins and perform repair or diagnosis.
- If vehicle is repaired, troubleshooting is completed.
- If vehicle is not repaired or additional diagnostic information is not available, replace PCM.

NO.23 TRANSAXLE OVERHEATS

A3U050301030W27

23	Transaxle overheats
DESCRIPTION	• Burnt smell is emitted from transaxle. • Smoke is emitted from transaxle.
POSSIBLE CAUSE	• The malfunction is restricted to hindrance of coolant at the oil cooler. In addition, overheating of the transaxle may be caused by a malfunction of the TFT sensor. a. Burned (TCC) • Control valve body malfunction • Accelerator cable misadjustment b. Oil cooler malfunction (Foreign material mixed in with ATF) c. TFT sensor malfunction d. Excessive amount of ATF e. Torque converter malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	• Inspect for bend, damage, corrosion or kinks of oil cooler pipes. • Are oil cooler pipes okay?	Yes	Go to next step.
		No	Replace any defective parts.
2	• Remove torque converter. • Inspect torque converter. (See ATX Workshop Manual.) • Is torque converter okay?	Yes	Repeat basic inspection and repair or replace any defective parts according to inspection result. (See 05–03–6 AUTOMATIC TRANSAXLE BASIC INSPECTION.)
		No	Replace torque converter.

Note
- If malfunction remains, inspect related Service Bulletins and perform repair or diagnosis.
- If vehicle is repaired, troubleshooting is completed.
- If vehicle is not repaired or additional diagnostic information is not available, replace PCM.

NO.24 ENGINE STALLS WHEN SHIFTED TO D, 2, 1 RANGES, OR IN R POSITION

A3U050301030W28

24	Engine stalls when shifted to D, 2, 1 ranges, or in R position
DESCRIPTION	• Engine stalls when shifting from N or P position to D, 2, 1 ranges or R position at idle.
POSSIBLE CAUSE	• The malfunction is on the engine control side (i.e. IAC system). Otherwise, the malfunction is in the input/turbine speed sensor (engine sometimes starts) or TCC circuit (engine always stalls).

Diagnostic procedure

STEP	INSPECTION		ACTION
1	• Go to symptom troubleshooting No.4 “Engine stalls”. (See 01–03A–7 SYMPTOM DIAGNOSTIC INDEX [ZM].) (See 01–03B–7 SYMPTOM DIAGNOSTIC INDEX [FS].) • Is engine control system okay?	Yes	Repeat basic inspection and repair or replace any defective parts according to inspection result. (See 05–03–6 AUTOMATIC TRANSAXLE BASIC INSPECTION.)
		No	Repair or replace any defective parts according to inspection results.

Note
- If malfunction remains, inspect related Service Bulletins and perform repair or diagnosis.
- If vehicle is repaired, troubleshooting is completed.
- If vehicle is not repaired or additional diagnostic information is not available, replace PCM.

NO.25 ENGINE STALLS WHEN DRIVING AT SLOW SPEED OR STOPPING

A3U050301030W29

25	Engine stalls when driving at slow speed or stopping
DESCRIPTION	• Engine stalls when brake pedal is depressed while driving at low speed or stopping.
POSSIBLE CAUSE	• The malfunction is on the engine control side (e.g. Fuel injection control and IAC system).

Diagnostic procedure

STEP	INSPECTION		ACTION
1	• Go to symptom troubleshooting No.9 “Low idle/stalls during deceleration”. (See 01–03A–7 SYMPTOM DIAGNOSTIC INDEX [ZM].) (See 01–03B–7 SYMPTOM DIAGNOSTIC INDEX [FS].) • Is engine control system okay?	Yes	Go to next step.
		No	Repair or replace any defective parts according to inspection results.
2	• Go to symptom troubleshooting No.4 “Engine Stalls”. (See 01–03A–7 SYMPTOM DIAGNOSTIC INDEX [ZM].) (See 01–03B–7 SYMPTOM DIAGNOSTIC INDEX [FS].) • Is engine control system okay?	Yes	Repeat basic inspection and repair or replace any defective parts according to inspection result. (See 05–03–6 AUTOMATIC TRANSAXLE BASIC INSPECTION.)
		No	Repair or replace any defective parts according to inspection results.

Note
- If malfunction remains, inspect related Service Bulletins and perform repair or diagnosis.
- If vehicle is repaired, troubleshooting is completed.
- If vehicle is not repaired or additional diagnostic information is not available, replace PCM.

NO.26 O/D OFF INDICATOR LIGHT DOES NOT ILLUMINATE WHEN O/D OFF SWITCH IS TURNED TO ON

A3U050301030W30

26	O/D OFF indicator light does not illuminate when O/D OFF switch is turned to ON
DESCRIPTION	• O/D OFF indicator light in instrument cluster does not illuminate when O/D OFF switch is turned on and ignition switch at on.
POSSIBLE CAUSE	• O/D OFF switch, O/D OFF indicator light or related wiring harness malfunction

NO.27 O/D OFF INDICATOR LIGHT ILLUMINATES WHEN O/D OFF SWITCH IS NOT TURNED TO ON

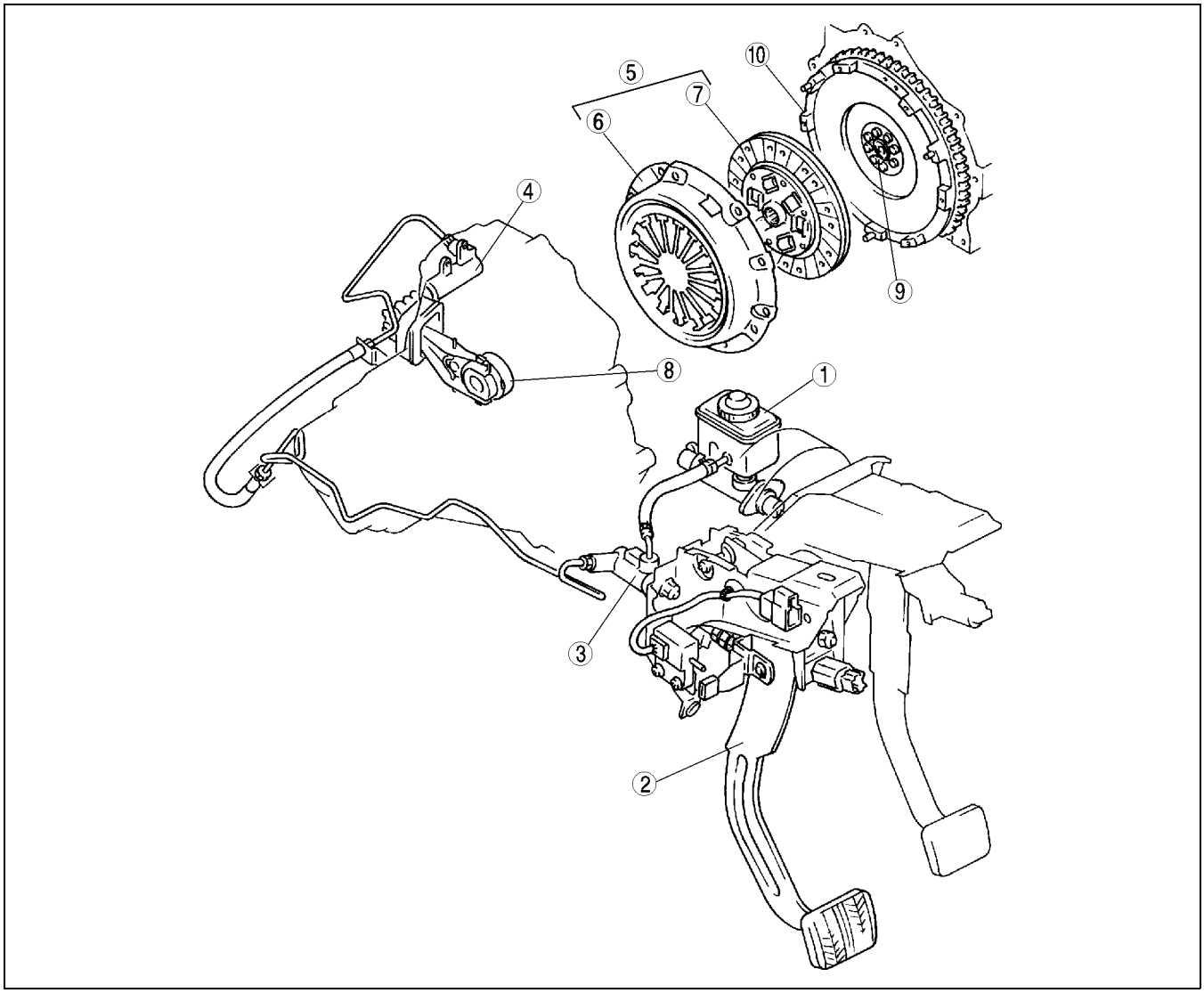
A3U050301030W31

27	O/D OFF indicator light illuminates when O/D OFF switch is not turned to ON
DESCRIPTION	• O/D OFF indicator light in instrument cluster illuminates even though O/D OFF switch is turned off and ignition switch at on.
POSSIBLE CAUSE	• O/D OFF switch or related wiring harness malfunction

05–10 CLUTCH

CLUTCH COMPONENT LOCATION INDEX

A3U051016003W01



Z3U510W01

1	Clutch fluid (See 05–10–3 CLUTCH FLUID INSPECTION) (See 05–10–3 CLUTCH FLUID REPLACEMENT/ AIR BLEEDING)
2	Clutch pedal (See 05–10–3 CLUTCH PEDAL INSPECTION) (See 05–10–4 CLUTCH PEDAL ADJUSTMENT) (See 05–10–5 CLUTCH PEDAL REMOVAL/ INSTALLATION)
3	Clutch master cylinder (See 05–10–6 CLUTCH MASTER CYLINDER REMOVAL/INSTALLATION) (See 05–10–7 CLUTCH MASTER CYLINDER DISASSEMBLY/ASSEMBLY)
4	Clutch release cylinder (See 05–10–8 CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION) (See 05–10–10 CLUTCH RELEASE CYLINDER DISASSEMBLY/ASSEMBLY)

5	Clutch unit (See 05–10–11 CLUTCH UNIT REMOVAL/ INSTALLATION)
6	Clutch cover (See 05–10–13 CLUTCH COVER INSPECTION)
7	Clutch disc (See 05–10–14 CLUTCH DISC INSPECTION)
8	Clutch release collar (See 05–10–15 CLUTCH RELEASE COLLAR INSPECTION)
9	Pilot bearing (See 05–10–15 PILOT BEARING INSPECTION)
10	Flywheel (See 05–10–15 FLYWHEEL INSPECTION)

GENERAL PROCEDURES

A3U051016003W02

Clutch Pipe Removal/Installation Note

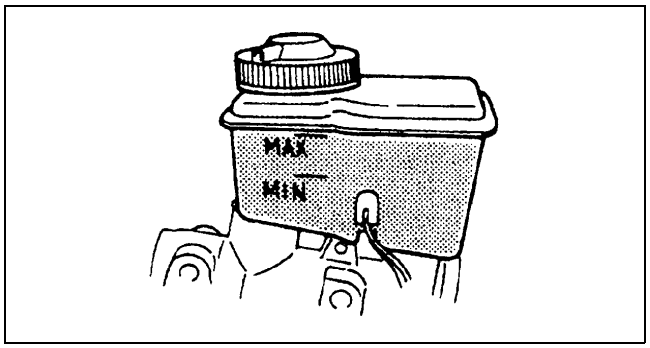
- When any clutch pipe has been disconnected anytime during the procedure, add brake fluid, bleed the air, and inspect for leakage after the procedure has been completed.
- When removing the clutch pipe, remove it using the **SST** (49 0259 770B). When installing the clutch pipe, change the clutch pipe tightening torque to allow for use of a torque wrench-**SST** (49 0259 770B) combination, and then tighten the clutch pipe using the **SST** (49 0259 770B). (See 00–00–15 Torque Formulas.)

CLUTCH FLUID INSPECTION

A3U051016010W01

Note

- A common reservoir is used for the clutch and brake system fluid.
- The fluid in the reservoir must be maintained between the MIN/MAX level during replacement.



U3U51001

CLUTCH FLUID REPLACEMENT/AIR BLEEDING

A3U051016010W02

1. Remove the splash shield.

Caution

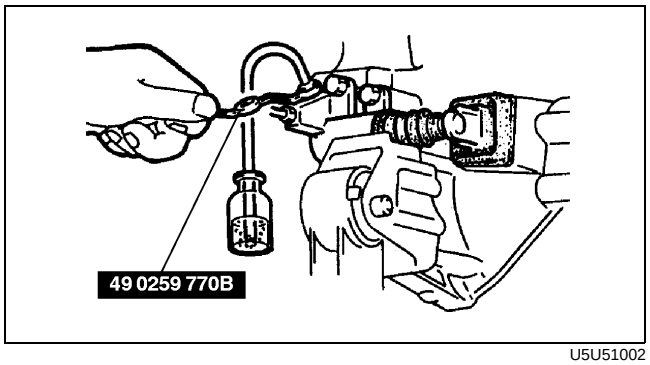
- **Clutch fluid will damage painted surfaces. Be sure to use a container or rags to collect it. If fluid does get on a painted surface, wipe it off immediately with a rag.**

Note

- Do not mix different brands of fluid.
- Do not reuse the clutch fluid that was drained.

2. Draw the fluid from the reservoir with a suction pump.
3. Remove the bleeder cap from the clutch release cylinder and attach a vinyl hose to the bleeder plug.
4. Place the other end of the vinyl hose in a clear container.
5. Slowly pump the clutch pedal several times.
6. With the clutch pedal depressed, loosen the bleeder screw using the **SST** to let the fluid escape. Close the bleeder screw using the **SST**.
7. Repeat Steps 5 and 6 until only clean fluid is seen.
8. Tighten the bleeder screw.

Tightening torque
5.9—8.8 N·m {60—90 kgf·cm, 53—78 in·lbf}



U5U51002

9. Add fluid to the MAX mark.
10. Install the splash shield.
11. Verify the correct clutch operation.

CLUTCH PEDAL INSPECTION

A3U051041030W01

Clutch Pedal Height Inspection

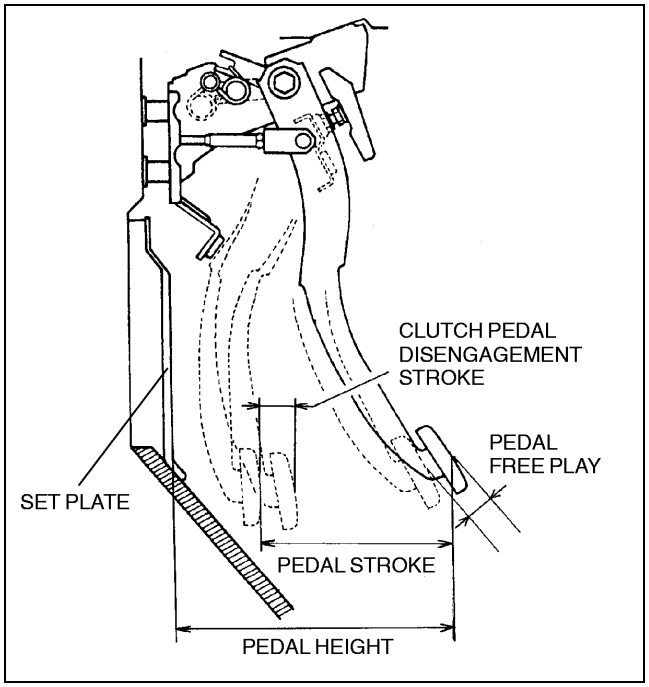
1. Measure the distance from the upper surface of the pedal pad to the set plate.
   - If not as specified, adjust the clutch pedal height.

Pedal height
210—215 mm {8.27—8.46 in} [from set plate]

Clutch Pedal Free Play Inspection

1. Depress the clutch pedal by hand until clutch resistance is felt, and measure the pedal free play.
   - If not as specified, adjust the clutch pedal free play.

   Free play
   0.7—3.5 mm {0.03—0.13 in}
   Total free play
   5.6—15.0 mm {0.23—0.59 in}



X3U510WA0

CLUTCH PEDAL ADJUSTMENT

A3U051041030W02

Clutch Pedal Height Adjustment

1. Adjust the pedal height by turning locknut A and adjustment bolt B.

   Pedal height
   210—215 mm {8.27—8.46 in} [from set plate]

Clutch Pedal Free Play Adjustment

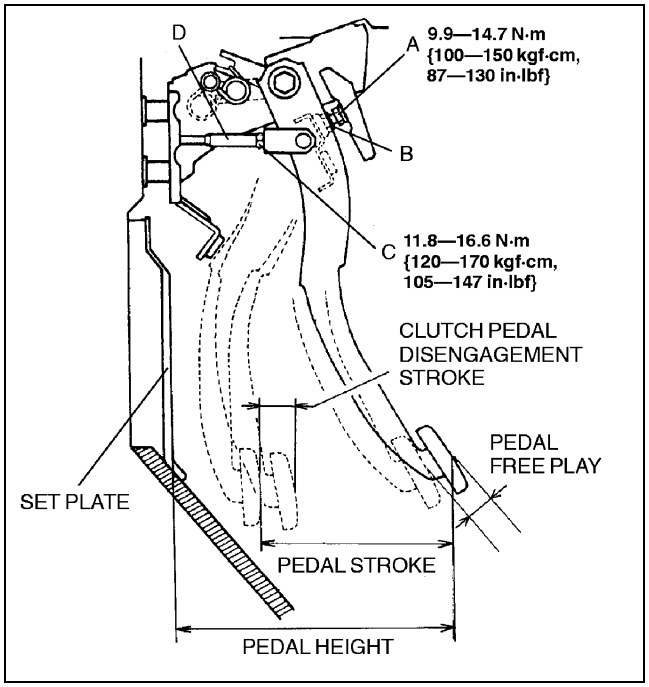
1. Adjust the pedal free play by turning locknut C and adjusting push rod D.

   Pedal free play
   0.7—3.5 mm {0.03—0.13 in}

Clutch Pedal Disengagement Stroke

1. Measure the clutch pedal disengagement stroke.
   - If the clutch pedal disengagement stroke is not within the specification, adjust the pedal height and pedal free play, and verify the pedal stroke.

   Clutch pedal disengagement stroke
   45—55 mm {1.8—2.1 in} (reference value)
   Pedal stroke
   130—140 mm {5.12—5.51 in} (reference value)

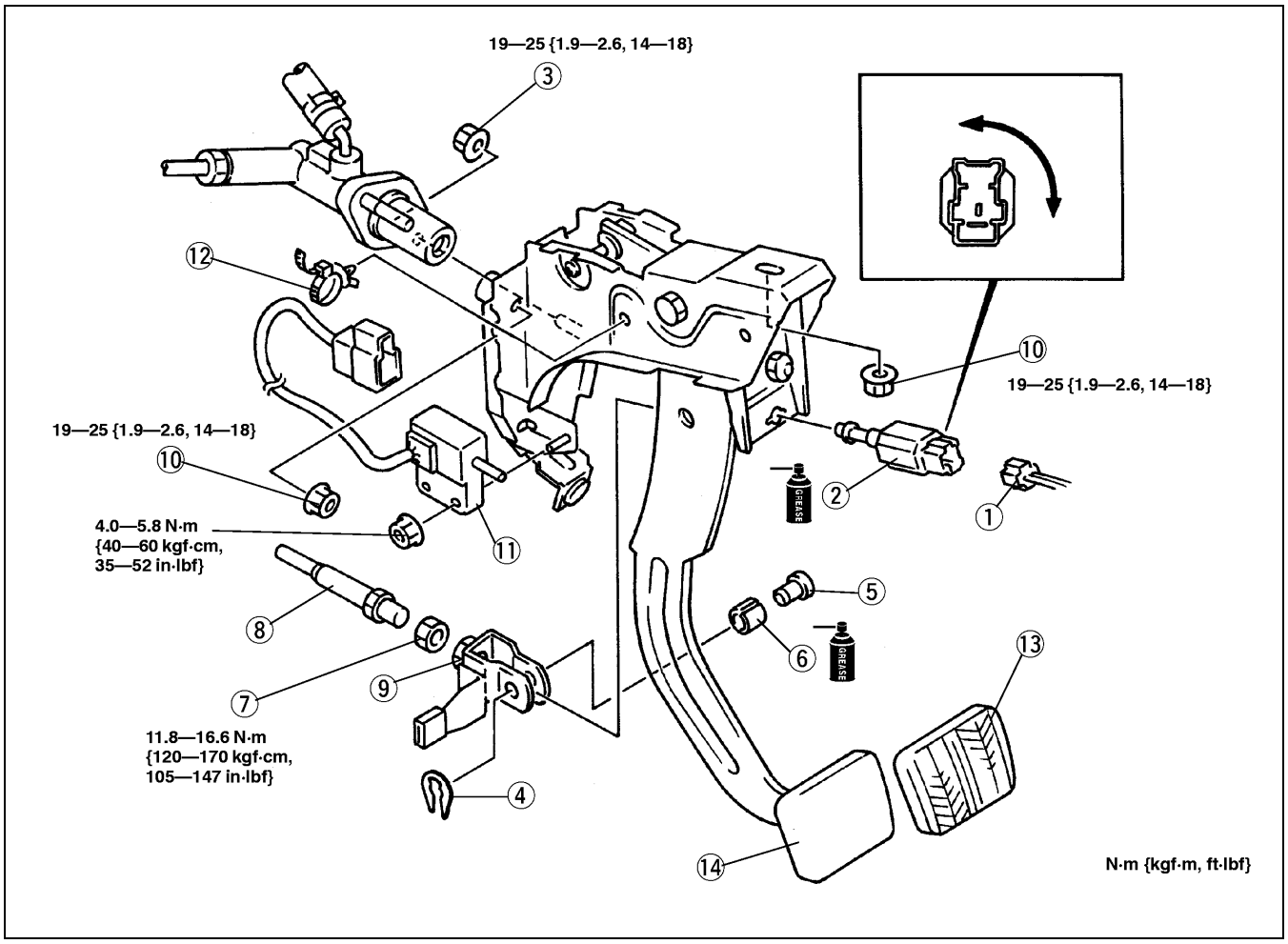


Y3U510WA0

CLUTCH PEDAL REMOVAL/INSTALLATION

A3U051041030W03

1. Disconnect the negative battery cable.
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. After installation, adjust the clutch pedal. (See 05–10–4 CLUTCH PEDAL ADJUSTMENT.)



X3U510WA2

1	Clutch switch connector
2	Clutch switch
3	Nut
4	Clip
5	Pin
6	Bushing
7	Locknut

8	Push rod
9	Fork end
10	Nut
11	Clutch cut switch
12	Band
13	Pedal pad
14	Clutch pedal

CLUTCH MASTER CYLINDER REMOVAL/INSTALLATION

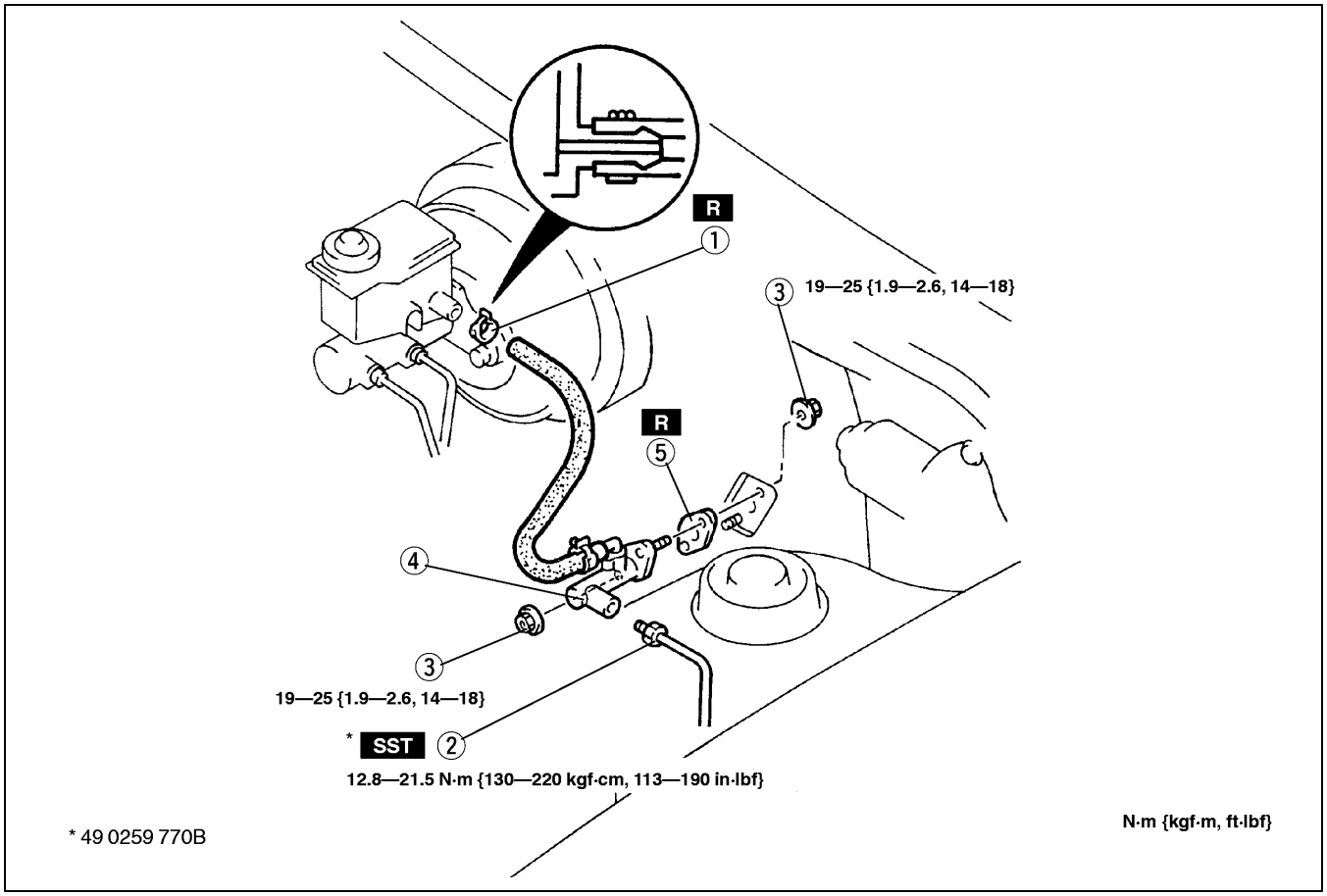
A3U051041990W01

1. Remove the battery and battery cover.

Caution

- **Clutch fluid will damage painted surfaces. Be sure to use a container or rags to collect it. If fluid does get on a painted surface, wipe it off immediately with a rag.**

2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.



X3U510WA3

1	Clip
2	Clutch pipe
3	Nut

4	Clutch master cylinder
5	Gasket

CLUTCH MASTER CYLINDER DISASSEMBLY/ASSEMBLY

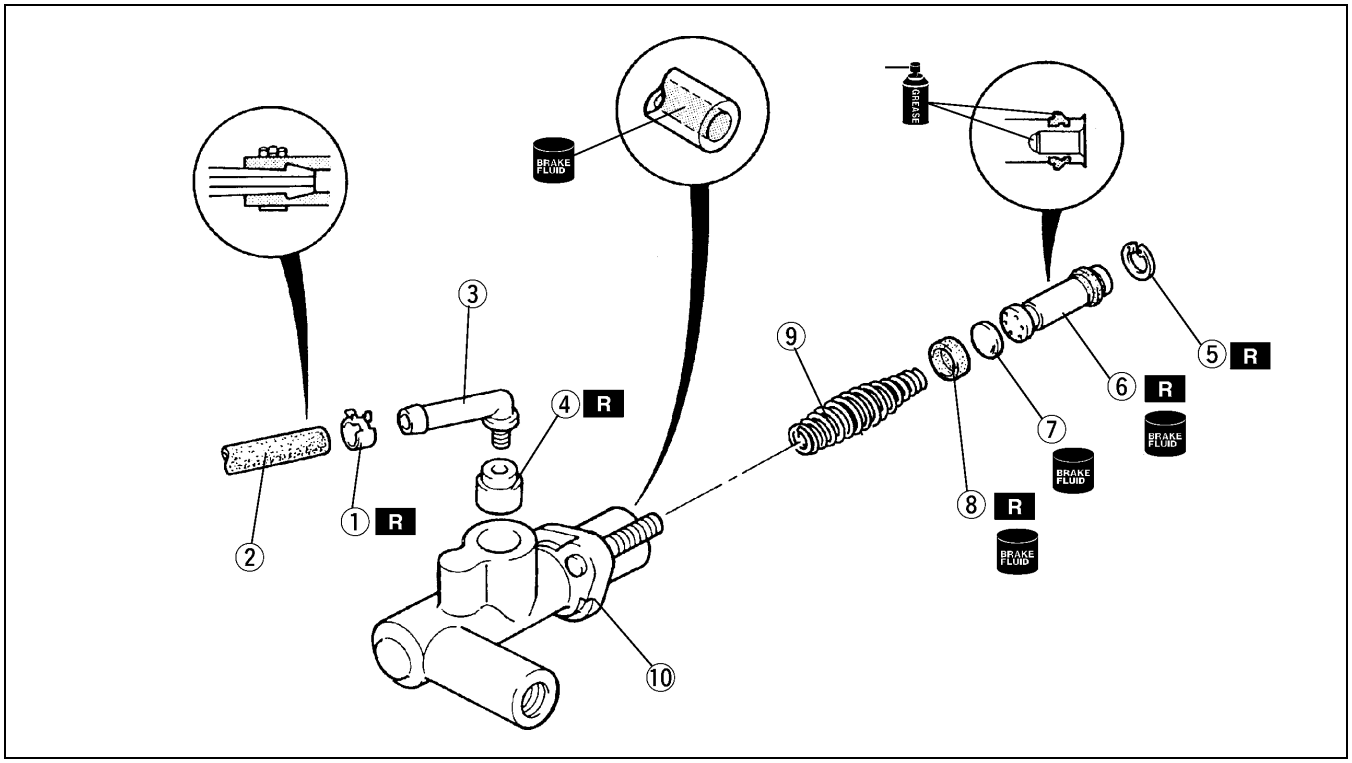
A3U051041990W02

1. Disassemble in the order indicated in the table.

Warning

- **Using compressed air can cause dirt and other particles to fly out, causing injury to the eyes. Wear protective eye wear whenever using compressed air.**

2. Assemble in the reverse order of disassembly.



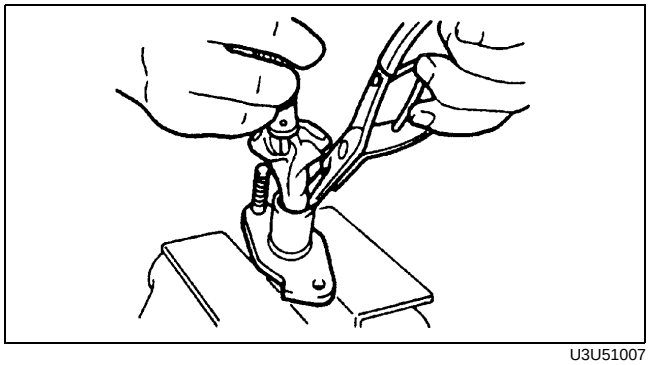
X3U510WA4

1	Clip
2	Hose
3	Joint
4	Bushing
5	Snap ring (See 05–10–7 Snap Ring Disassembly Note.) (See 05–10–8 Snap Ring Assembly Note.)

6	Piston and secondary cup component
7	Spacer
8	Primary cup
9	Return spring
10	Clutch master cylinder body

Snap Ring Disassembly Note

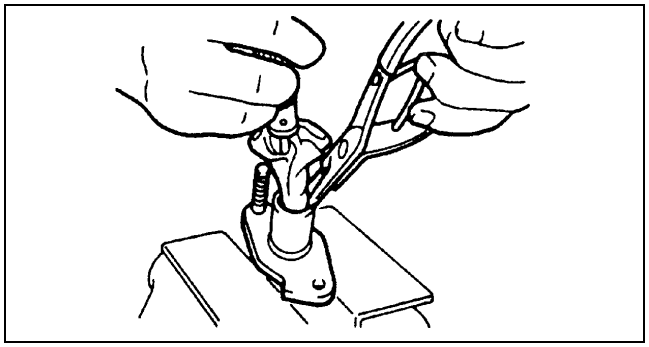
1. Hold the piston down with a cloth-wrapped pin punch.



U3U51007

Snap Ring Assembly Note

1. Hold the piston down using a cloth-wrapped pin punch.



U3U51007

CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION

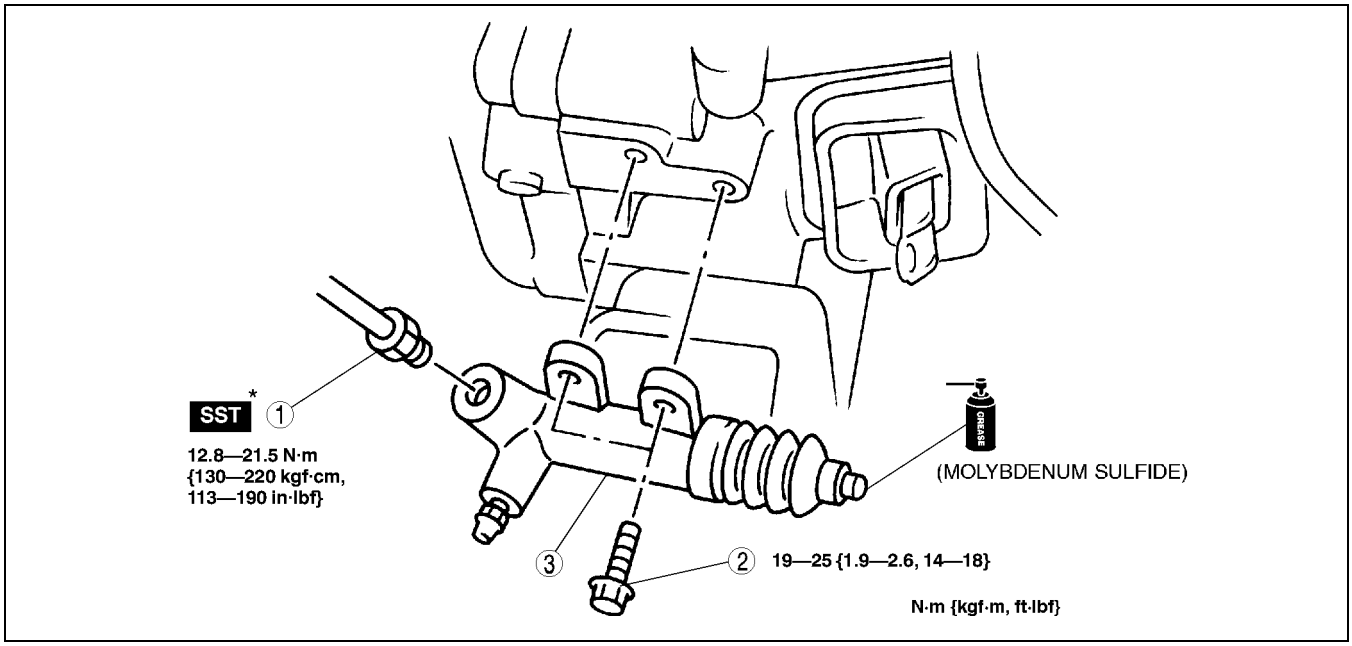
A3U051041920W01

Caution

- **Clutch fluid will damage painted surfaces. If clutch fluid does get on a painted surface, wipe it off immediately.**

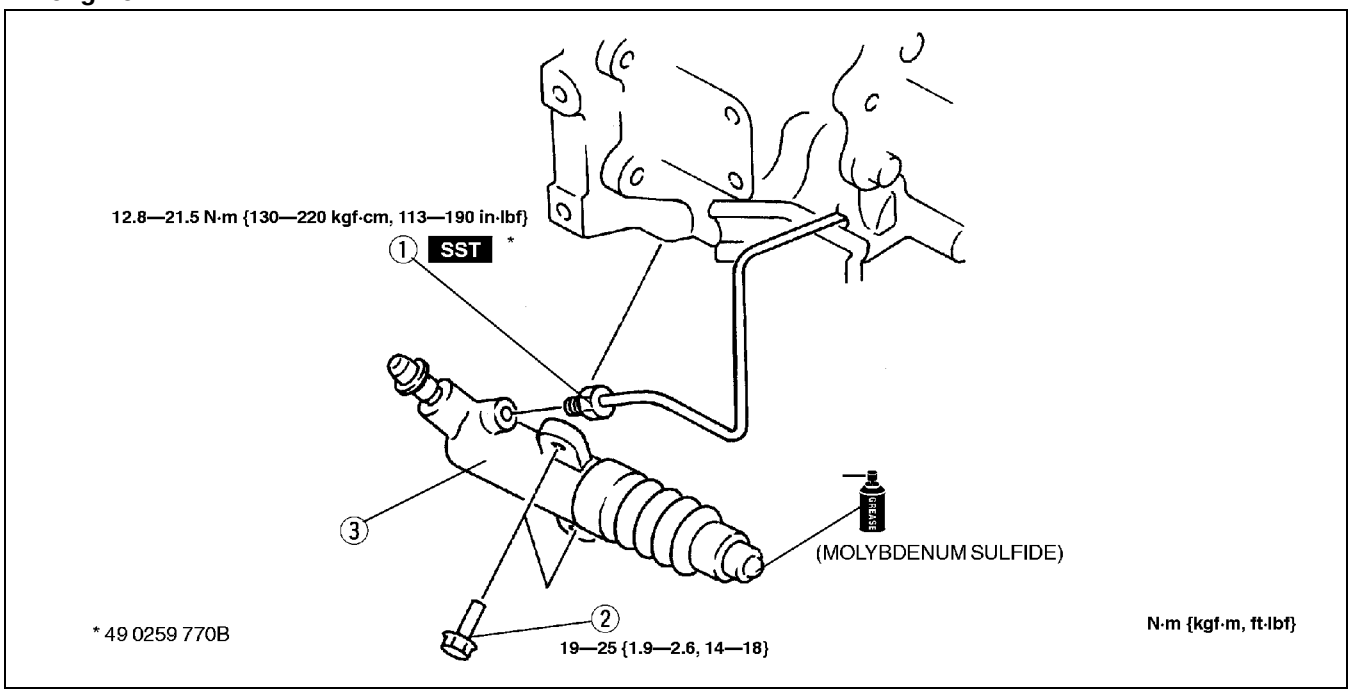
1. Remove in the order indicated in the table.
2. Plug the clutch pipe after removing it to avoid leakage.
3. Install in the reverse order of removal.

FS engine



Z3U510W02

ZM engine



X3U510WA5

1	Clutch pipe
2	Bolt

3	Clutch release cylinder

CLUTCH RELEASE CYLINDER DISASSEMBLY/ASSEMBLY

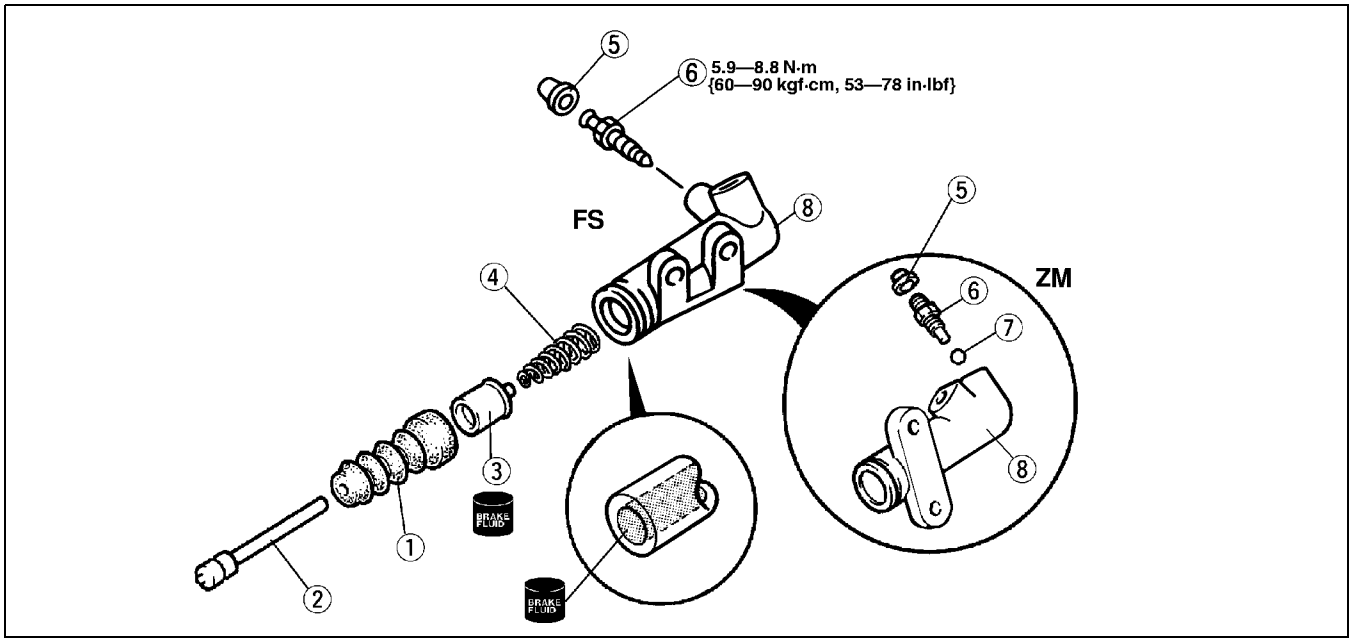
A3U051041920W02

1. Disassemble in the order indicated in the table.

Warning

- **Using compressed air can cause dirt and other particles to fly out, causing injury to the eyes. Wear protective eye wear whenever using compressed air.**

2. Wipe all parts, and use compressed air to clean all ports, passages, and inner parts.
3. Assemble in the reverse order of disassembly.



Z3U510W03

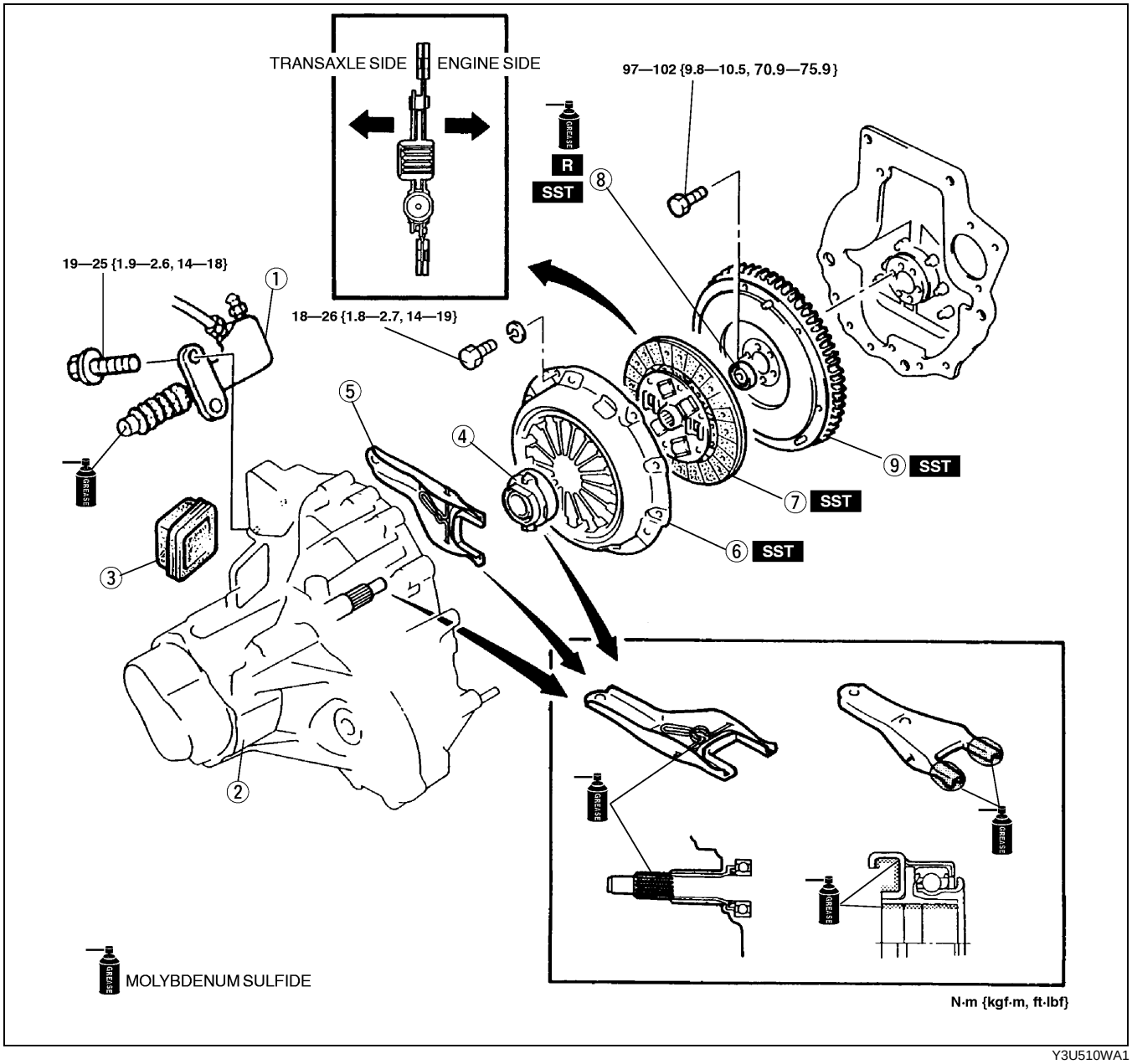
1	Boot
2	Push rod
3	Piston and cup component
4	Return spring

5	Bleeder cap
6	Bleeder screw
7	Steel ball
8	Clutch release cylinder body

CLUTCH UNIT REMOVAL/INSTALLATION

A3U051016000W01

1. Disconnect the negative battery cable.
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.



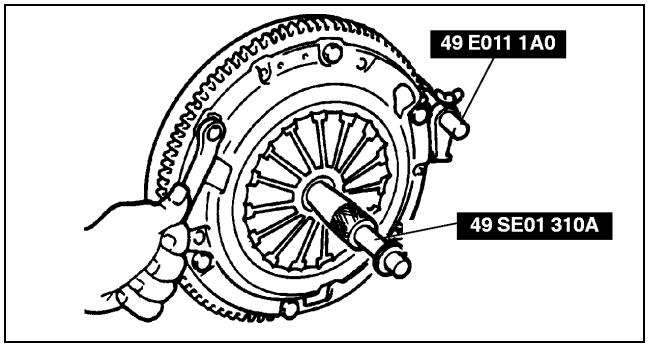
Y3U510WA1

1	Clutch release cylinder
2	Transaxle (See 05–15A–4 MANUAL TRANSAXLE (MTX) REMOVAL/INSTALLATION [F25M-R].) (See 05–15B–4 MANUAL TRANSAXLE (MTX) REMOVAL/INSTALLATION [G15M-R].)
3	Boot
4	Clutch release collar
5	Clutch release fork

6	Clutch cover (See 05–10–12 Clutch Cover Removal Note.) (See 05–10–13 Clutch Cover Installation Note.)
7	Clutch disc (See 05–10–13 Clutch Disc Installation Note.)
8	Pilot bearing (See 05–10–12 Pilot Bearing Removal Note.) (See 05–10–13 Pilot Bearing Installation Note.)
9	Flywheel (See 05–10–12 Flywheel Removal Note.) (See 05–10–12 Flywheel Installation Note.)

Clutch Cover Removal Note

1. Install the **SSTs**.
2. Loosen each bolt one turn at a time in a crisscross pattern until the spring tension is released.
3. Remove the clutch cover and disc.



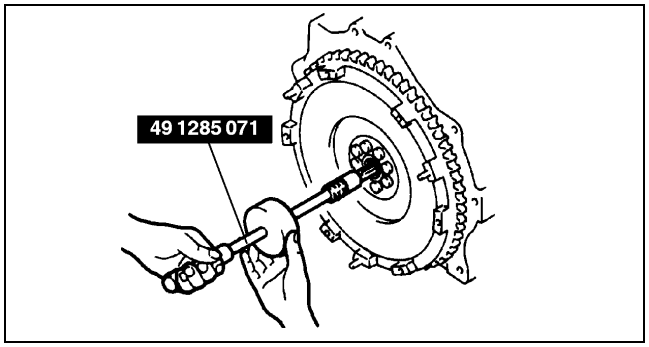
X3U510WA8

Pilot Bearing Removal Note

Note

- The pilot bearing does not need to be removed unless you are replacing it.

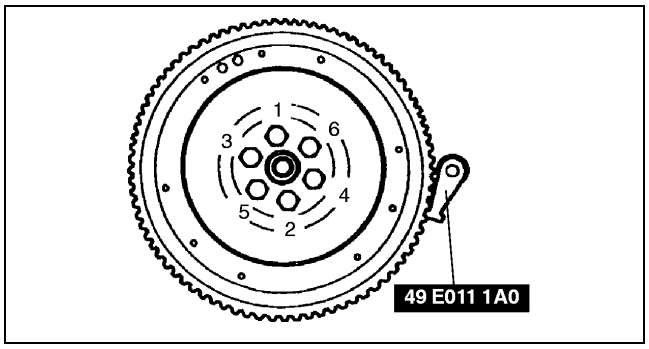
1. Use the **SSTs** to remove the pilot bearing.



X3U510WA9

Flywheel Removal Note

1. Hold the flywheel using the **SST**.
2. Remove the bolts evenly and gradually in the pattern shown.
3. Remove the flywheel.
4. Inspect for oil leakage from the crankshaft rear oil seal.
   - If there is any such leakage or if the oil seal is damaged, replace the crankshaft rear oil seal.

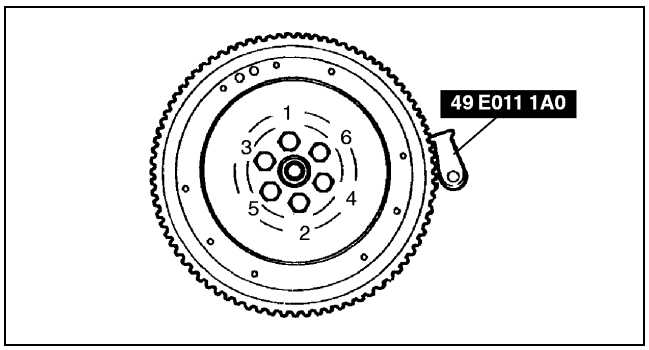


U3U51013

Flywheel Installation Note

1. Install the flywheel to the crankshaft.
2. Hand-tighten the flywheel installation bolts.
3. Install the **SST** to the flywheel.
4. Tighten the flywheel installation bolts in the pattern shown.

Tightening torque
97—102 N·m {9.8—10.5 kgf·m, 70.9—75.9 ft·lbf}

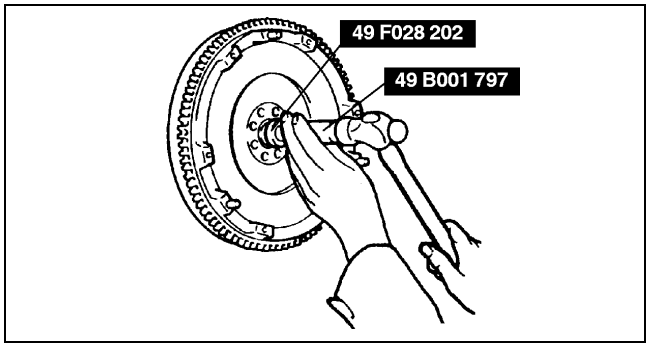


U3U51014

Pilot Bearing Installation Note

1. Install a new pilot bearing using the **SST**.

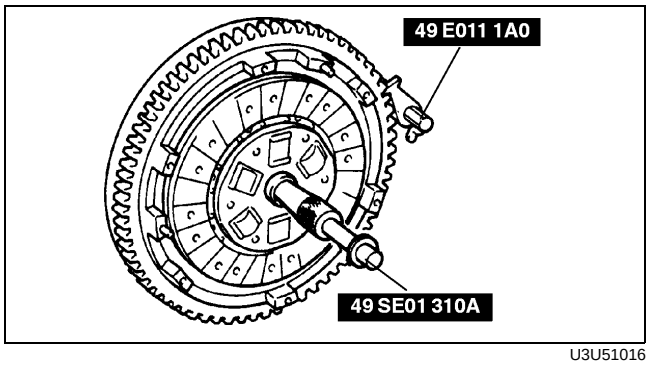
Bearing installation depth
0—0.4 mm {0—0.01 in}



X3U510WB0

Clutch Disc Installation Note

1. Hold the clutch disc in position using the **SSTs**.

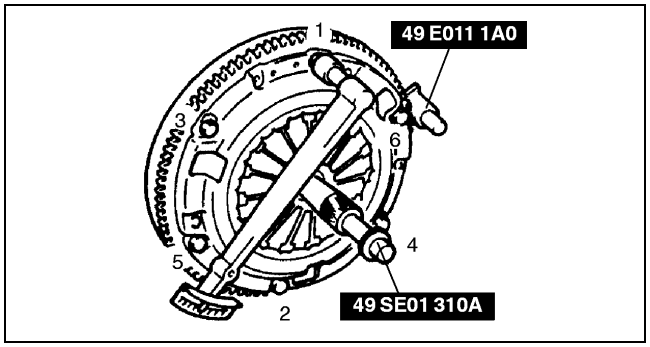


U3U51016

Clutch Cover Installation Note

1. Install the **SSTs**.
2. Tighten the bolts evenly and gradually in the pattern shown.

Tightening torque
18—26 N·m {1.8—2.7 kgf·m, 14—19 ft·lbf}



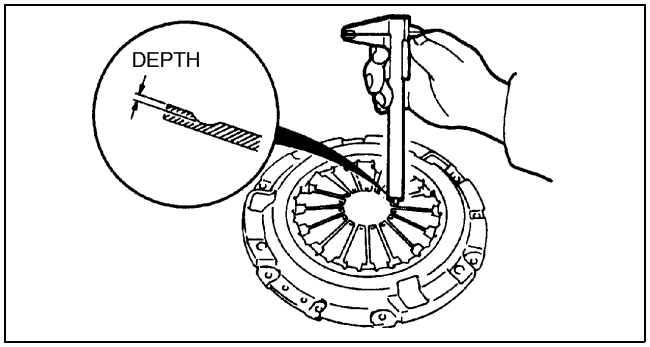
U3U51017

CLUTCH COVER INSPECTION

A3U051016410W01

1. Measure the wear of the diaphragm spring fingers.

Depth
0.5 mm {0.020 in} max.

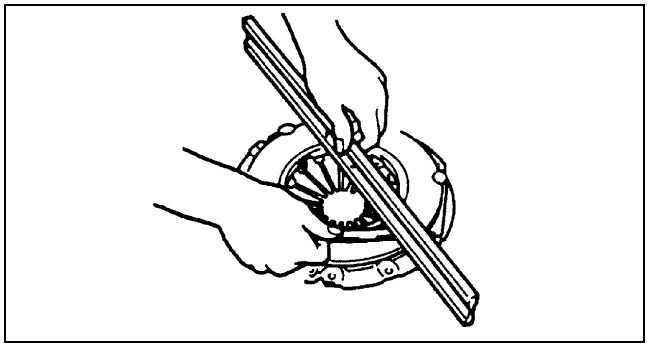


U3U51018

2. Measure the flatness of the pressure plate surface using a straightedge and a feeler gauge as shown in the figure.

Maximum clearance
0.5 mm {0.020 in}

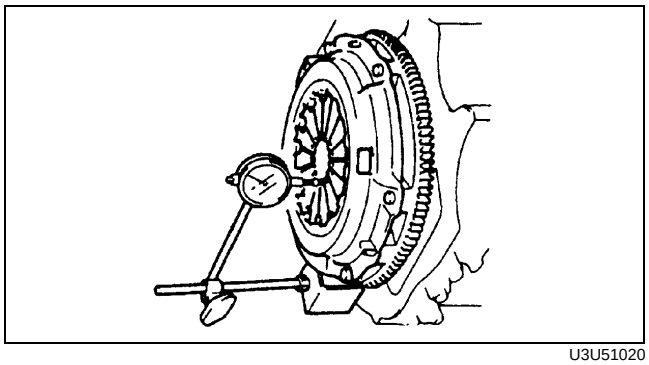
Note
- When inspecting the diaphragm spring fingers, mount a dial indicator on the cylinder block.



U3U51019

3. Rotate the flywheel and inspect for misaligned diaphragm spring fingers.
   - If the misalignment exceeds the maximum, replace the clutch cover.

Misalignment
0.6 mm {0.024 in} max.

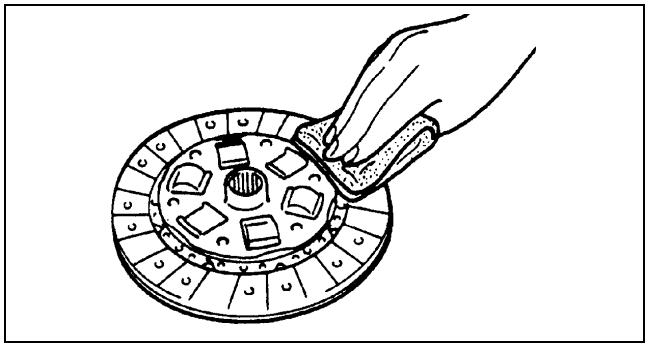


U3U51020

CLUTCH DISC INSPECTION

A3U051016460W01

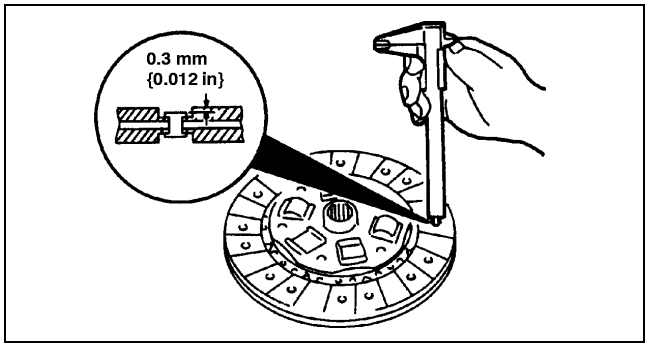
1. Inspect the contact surface of the clutch disc for scoring, cracks, burning, and oil contamination.
2. Remove minor scoring or burning using emery paper.
   - Repair if scoring or burning is major.
   - Replace if cracked or contaminated with oil.
3. Inspect for loose facing rivets and dampers.
   - If the clutch disc is loose, replace the clutch disc.



U3U51021

4. Using vernier calipers, measure the thickness of the lining at a rivet head on both sides.
   - If the thickness of the lining at any rivet head is less than the minimum, replace the clutch disc.

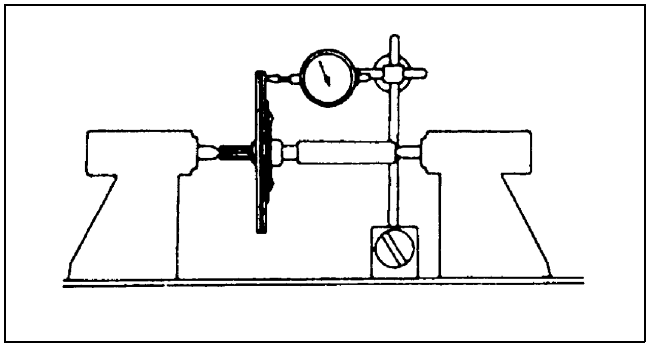
Thickness
0.3 mm {0.012 in} min.



W3U510WC1

5. Measure the clutch disc runout using a dial indicator.
   - If the runout exceeds the maximum, replace the clutch disc.

Runout
0.7 mm {0.028 in} max.



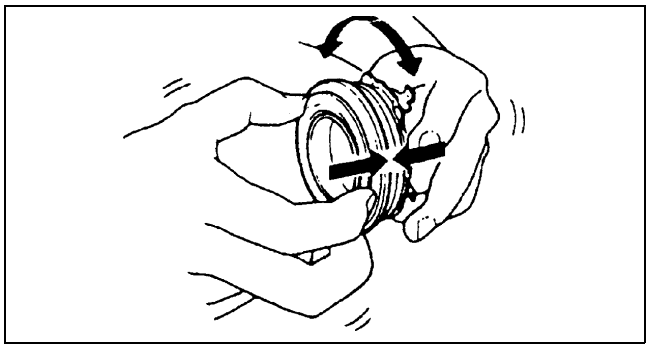
U3U51023

CLUTCH RELEASE COLLAR INSPECTION

A3U051016510W01

Caution
- **Cleaning the clutch release collar with cleaning fluids or a steam cleaner can wash the grease out of the sealed bearing.**

1. Turn the collar while applying force in the axial direction.
   - If the collar sticks or has excessive resistance, replace it.

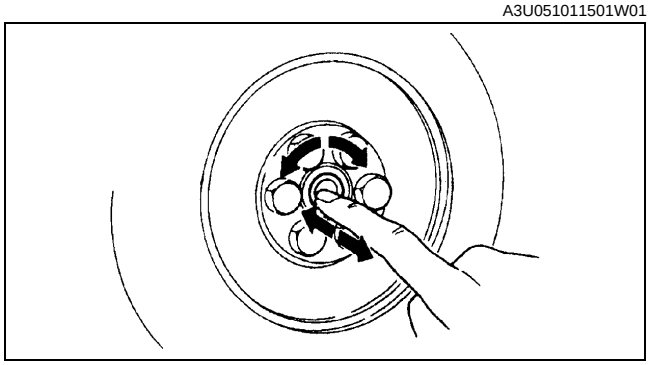


U3U51024

PILOT BEARING INSPECTION

A3U051011501W01

1. Without removing the pilot bearing from the flywheel, turn the bearing while applying force in the axial direction.
   - If the bearing sticks or has excessive resistance, replace it.

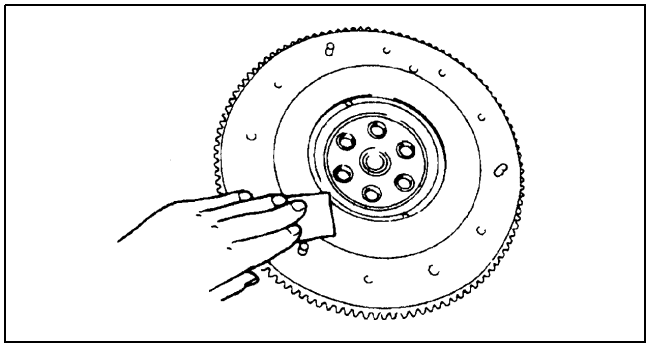


U3U51025

FLYWHEEL INSPECTION

A3U051011500W01

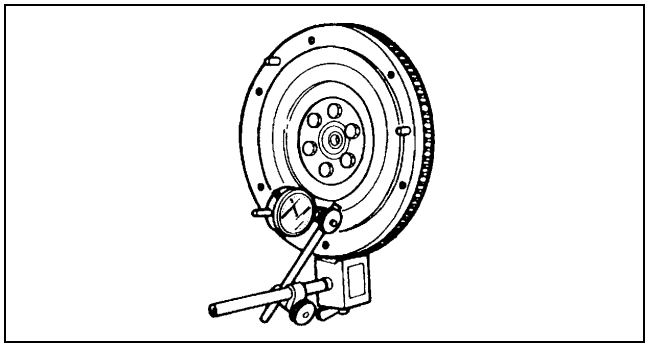
1. Inspect the contact surface for scoring, cracks, and burning.
2. Remove minor scoring or burning using emery paper.
   - Repair if scoring or burning is major.
   - Replace if cracked.
3. Inspect the ring gear teeth for wear and damage.
   - If worn or damaged, replace the flywheel.



U3U51026

4. Install a dial indicator on the cylinder block.
5. Measure the flywheel runout using a dial indicator.
   - If the runout exceeds the maximum, replace the flywheel.

Runout
0.2 mm {0.008 in} max.

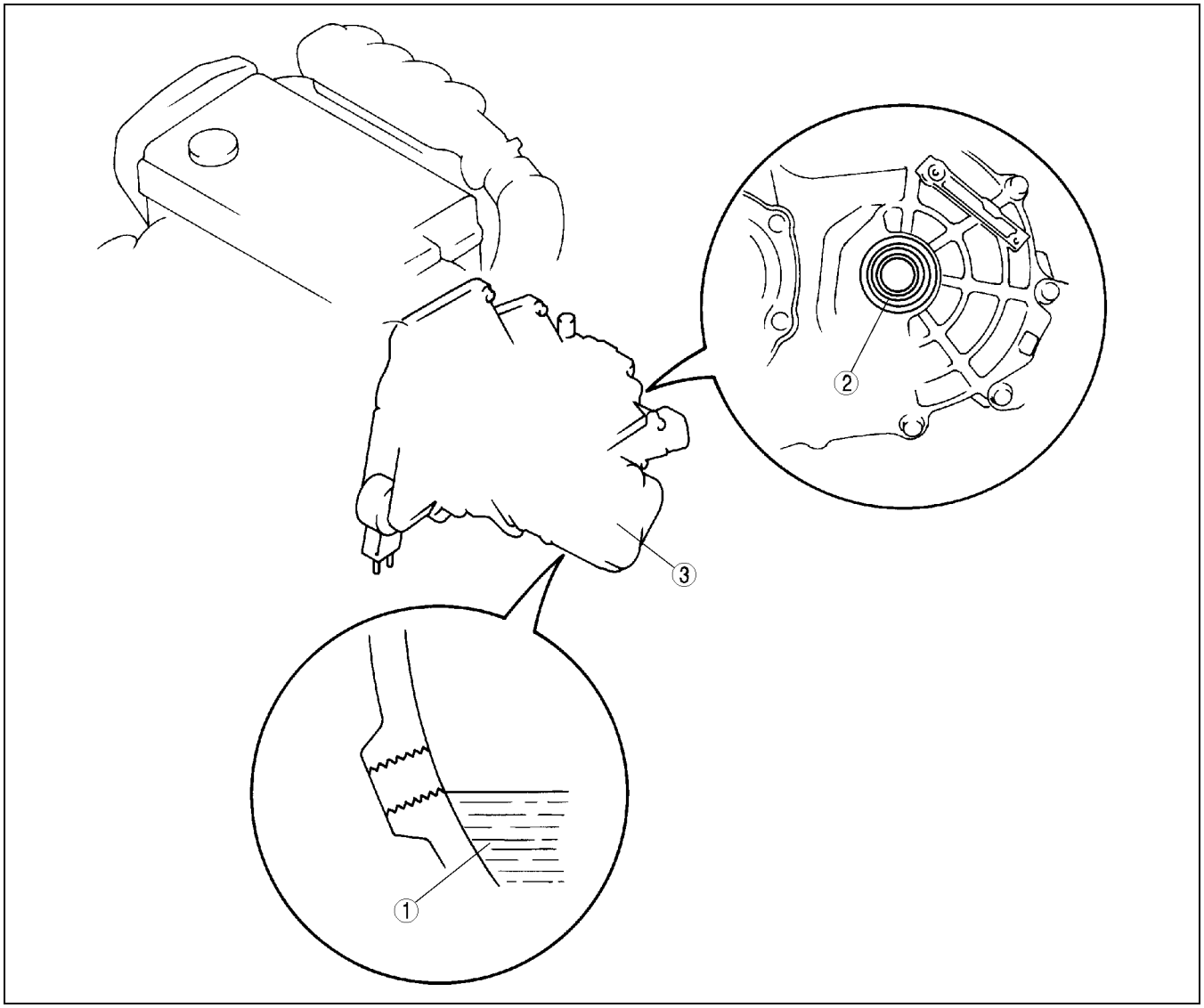


X3U510WB1

05–15A MANUAL TRANSAXLE [F25M-R]

MANUAL TRANSAXLE [F25M-R] LOCATION INDEX

A3U051501025W01



Z3U515W01

1	Transaxle oil (See 05–15A–2 TRANSAXLE OIL INSPECTION [F25M-R]) (See 05–15A–2 TRANSAXLE OIL REPLACEMENT [F25M-R])

2	Oil seal (differential) (See 05–15A–2 OIL SEAL (DIFFERENTIAL) REPLACEMENT [F25M-R])
3	Manual transaxle (See 05–15A–4 MANUAL TRANSAXLE (MTX) REMOVAL/INSTALLATION [F25M-R])

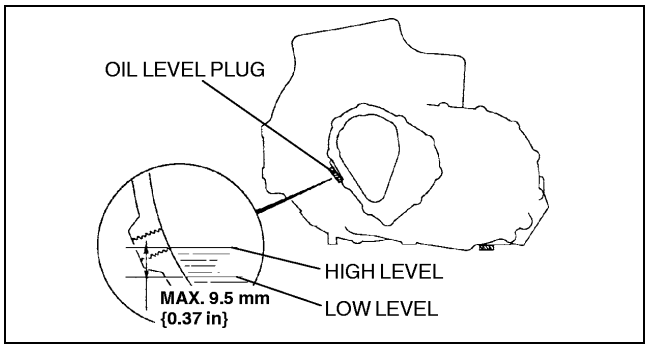
TRANSAXLE OIL INSPECTION [F25M-R]

A3U051527001W01

Note
- Park the vehicle on level ground.

1. Remove the oil level plug and the washer.
2. Verify that the oil is near the bottom of the plug port within the range shown in the figure.
   - If the oil level is low, add the specified type of oil to the bottom of the plug port through the oil level plug hole.

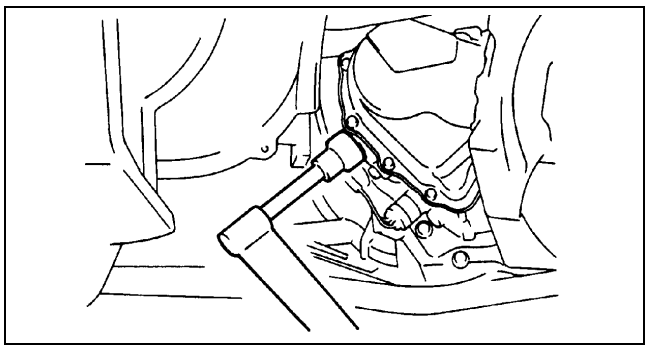
Specified oil
Grade: API service GL-4 or GL-5
Viscosity: SAE 75W—90 (All season) or SAE 80W—90 (Above 10 °C {50 °F})



X3U515WA0

3. Install a new washer and the oil level plug.

Tightening torque
40—58 N·m {4.0—6.0 kgf·m, 29—43 ft·lbf}



U3U51502

TRANSAXLE OIL REPLACEMENT [F25M-R]

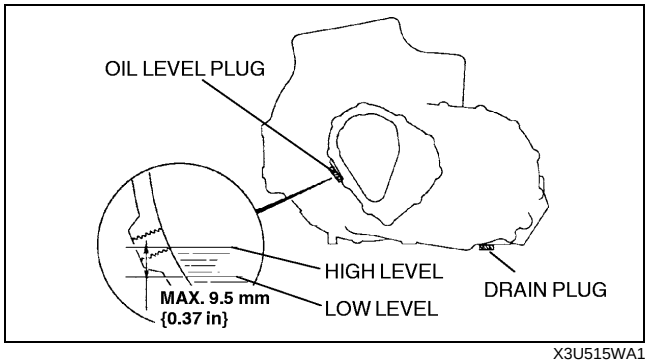
A3U051527001W02

1. Remove the drain plug and the washer.
2. Drain the oil into a container.
3. Install a new washer and the drain plug.

Tightening torque
40—58 N·m {4.0—6.0 kgf·m, 29—43 ft·lbf}

4. Remove the oil level plug and the washer. Add the specified amount and type of oil through the oil level plug hole until the level reaches the bottom of the oil level plug hole.

Specified oil
Grade: API service GL-4 or GL-5
Viscosity: SAE 75W—90 (All season) or SAE 80W—90 (Above 10 °C {50 °F})
Capacity (approximate quantity)
2.68 L {2.83 US qt, 2.36 Imp qt}



X3U515WA1

5. Install a new washer and the oil level plug.

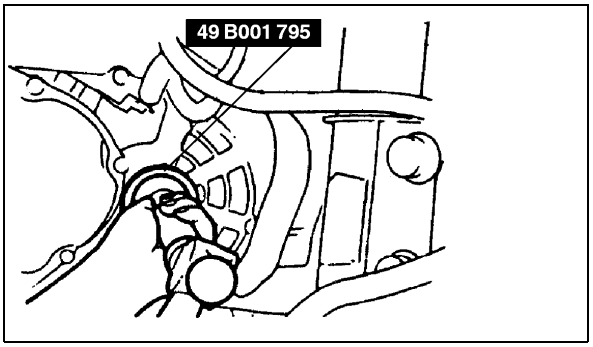
Tightening torque
40—58 N·m {4.0—6.0 kgf·m, 29—43 ft·lbf}

OIL SEAL (DIFFERENTIAL) REPLACEMENT [F25M-R]

A3U051527165W01

1. Drain the transaxle oil into a container.
2. Separate the drive shaft and joint shaft from the transaxle. (See 03–13–3 JOINT SHAFT REMOVAL/INSTALLATION.) (See 03–13–9 DRIVE SHAFT REMOVAL/INSTALLATION.)
3. Remove the oil seal using a screwdriver and seal remover.

4. Using the **SST** and a hammer, tap the new oil seal in evenly until the **SST** contacts the transaxle case.
5. Coat the oil seal lip with transaxle oil.
6. Insert the drive shaft and joint shaft to the transaxle. (See 03–13–3 JOINT SHAFT REMOVAL/ INSTALLATION.) (See 03–13–9 DRIVE SHAFT REMOVAL/INSTALLATION.)
7. Add the specified amount and type of transaxle oil. (See 05–15A–2 TRANSAXLE OIL REPLACEMENT [F25M-R].)

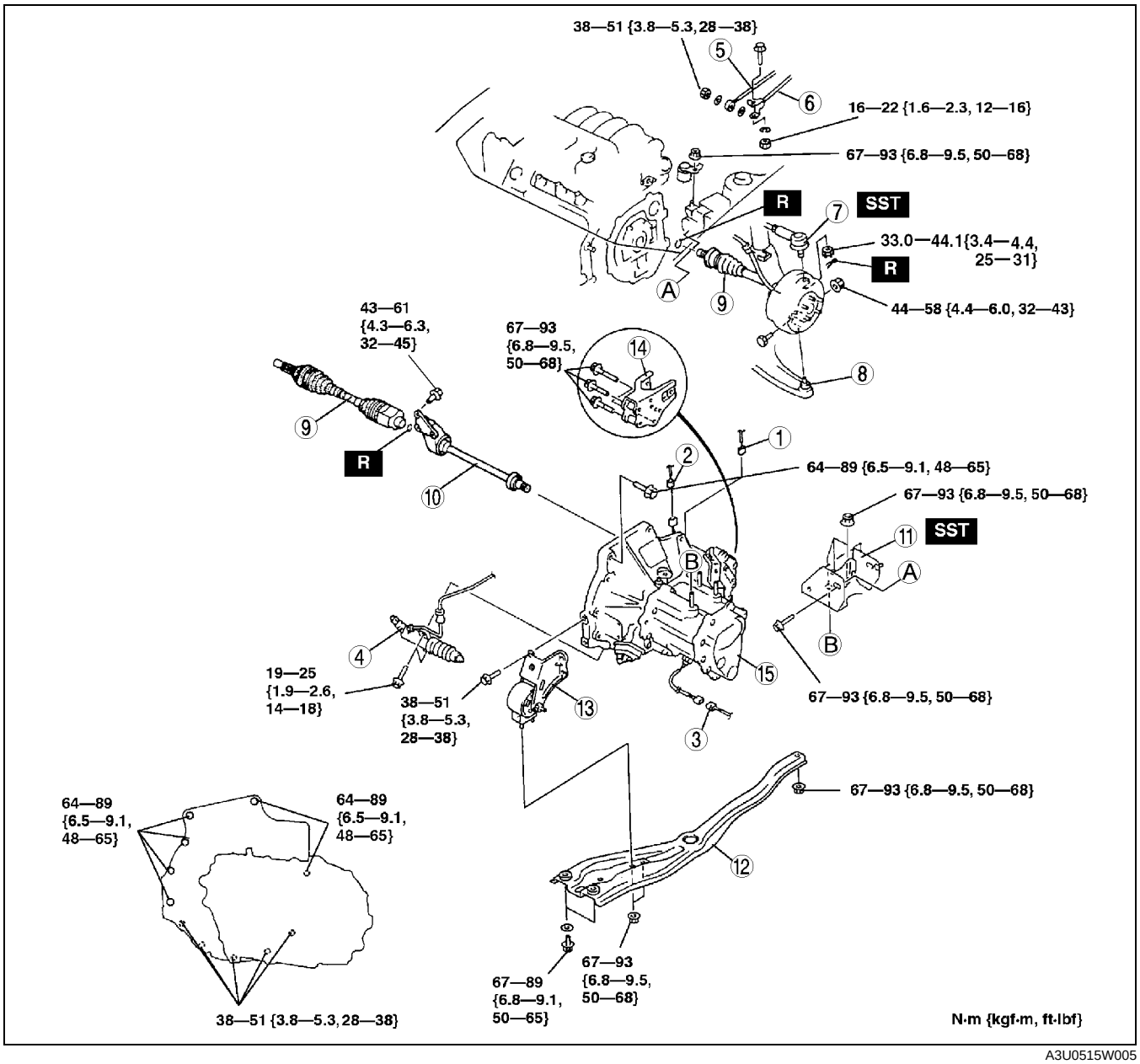


U3U51503

MANUAL TRANSAXLE (MTX) REMOVAL/INSTALLATION [F25M-R]

A3U051501029W01

1. Remove the battery, battery cover, and battery tray.
2. Remove the fresh-air duct and air cleaner component.
3. Remove the wheels and tires and splash shields.
4. Remove the EGR pipe, front pipe and TWC. (See 01–15–1 EXHAUST SYSTEM REMOVAL/INSTALLATION.)
5. Drain the transaxle oil into a container.
6. Remove the starter. (See 01–19–1 STARTER REMOVAL/INSTALLATION.)
7. Remove in the order indicated in the table.
8. Install in the reverse order of removal.
9. Add the specified amount of the specified transaxle oil. (See 05–15A–2 TRANSAXLE OIL REPLACEMENT [F25M-R].)
10. Warm up the engine and transaxle, inspect for oil leakage, and inspect the transaxle operation.



A3U0515W005

1	Speedometer sensor connector
2	Neutral switch connector
3	Back-up light switch connector
4	Clutch release cylinder
5	Extension bar
6	Change control rod

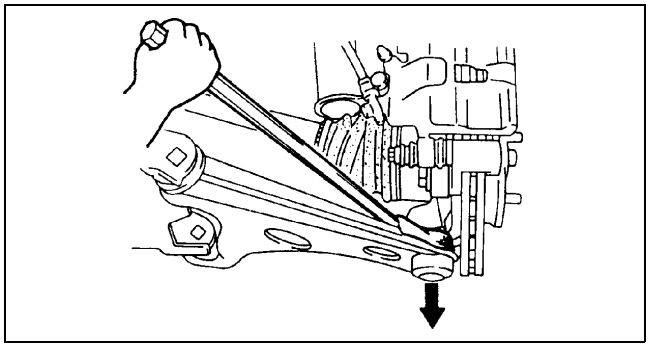
7	Tie-rod end ball joint (See 06–12–9 STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.)
8	Lower arm ball joint (See 05–15A–5 Lower Arm Ball Joint Removal Note.)

9	Drive shaft (See 03–13–9 DRIVE SHAFT REMOVAL/ INSTALLATION.)
10	Joint shaft (See 03–13–3 JOINT SHAFT REMOVAL/ INSTALLATION.)
11	No.4 engine mount bracket (See 05–15A–5 No.4 Engine Mount Bracket Removal Note.)
12	Engine mount member (See 05–15A–6 Engine Mount Member Installation Note.)
13	No.2 engine mount
14	No.1 engine mount bracket
15	MTX (See 05–15A–5 Manual Transaxle (MTX) Removal Note.) (See 05–15A–6 Manual Transaxle (MTX) Installation Note.)

Lower Arm Ball Joint Removal Note

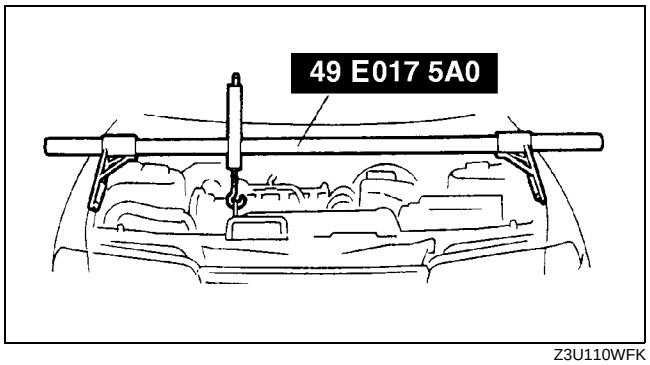
Caution
- **Wrap a rag around the ball joint dust seal to protect it from getting damages.**

1. Pry the lower arm out of the knuckle.



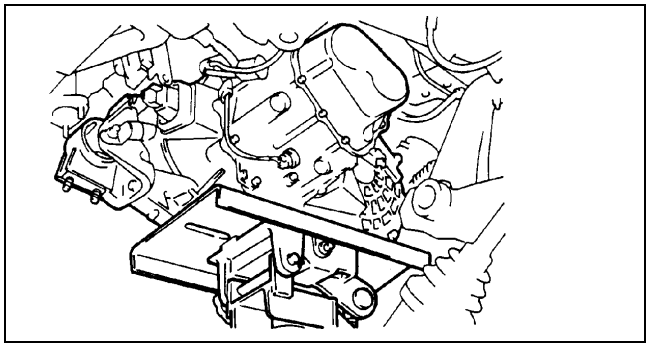
X3U515WA4

No.4 Engine Mount Bracket Removal Note
1. Support the engine using the **SST** before removing the No.4 engine mount bracket.
2. Remove the No.4 engine mount bracket.



Z3U110WFK

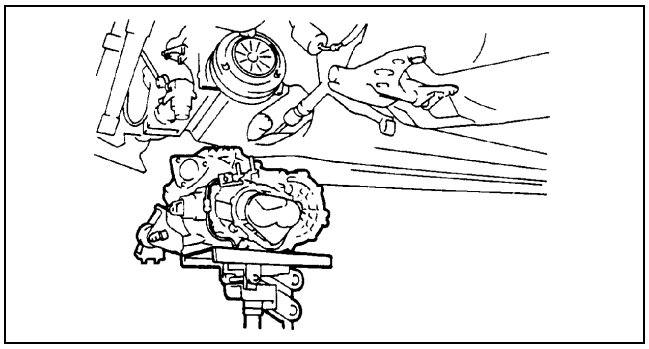
Manual Transaxle (MTX) Removal Note
1. Loosen the **SST** (49 E017 5A0) and lean the engine toward the transaxle.
2. Support the transaxle on a jack.
3. Remove the transaxle mounting bolts.
4. Remove the transaxle.



X3U515WA6

Manual Transaxle (MTX) Installation Note

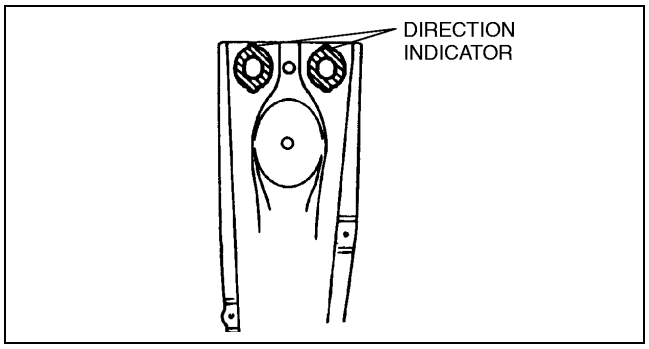
1. Set the transaxle on a jack and lift into place.
2. Install the transaxle mounting bolts.



X3U515WA7

Engine Mount Member Installation Note

1. Verify that the engine mount rubbers are installed as shown.



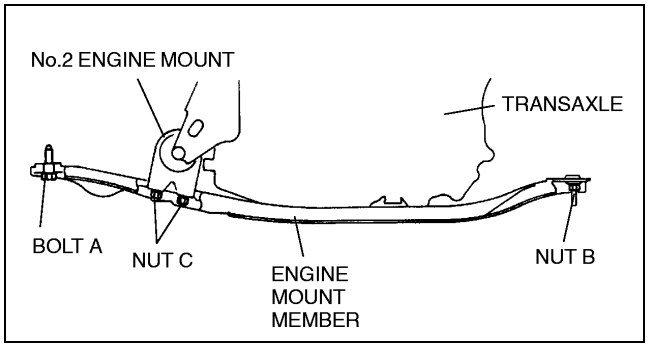
X3U515WA8

2. Put the No.2 engine mount stud bolts in the installation holes when installing the engine mount member.
3. Tighten bolt A and nut B.

   Tightening torque
   Bolt A: 67—89 N·m {6.8—9.1 kgf·m, 50—65 ft·lbf}
   Nut B: 67—93 N·m {6.8—9.5 kgf·m, 50—68 ft·lbf}

4. Tighten nuts C.

   Tightening torque
   Nut C: 67—93 N·m {6.8—9.5 kgf·m, 50—68 ft·lbf}

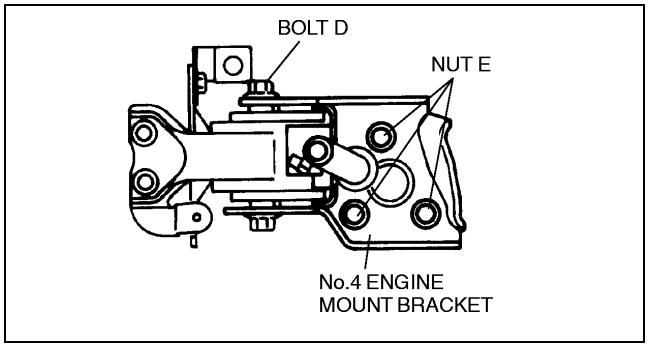


X3U515WA9

5. By aligning the holes with the stud bolts, install the No.4 engine mount bracket to the transaxle.
6. Align the hole of the No.4 engine mount bracket with the No.4 engine mount rubber on vehicle, and temporarily tighten bolt D.
7. Tighten nuts E, then bolt D.

   Tightening torque
   Bolt D and nut E: 67—93 N·m {6.8—9.5 kgf·m, 50—68 ft·lbf}

8. Remove the **SST** (49 E017 5A0).

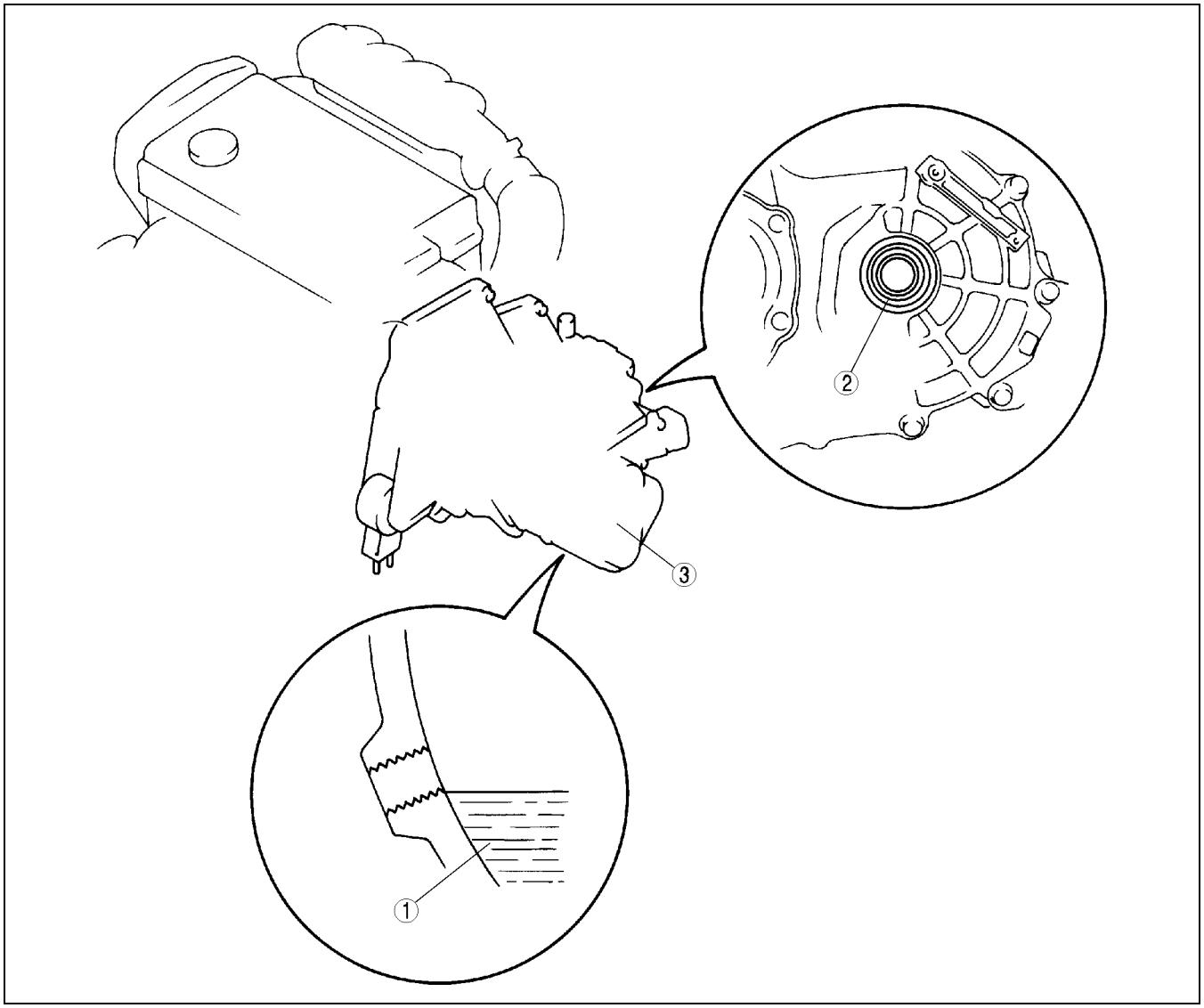


X3U515WB0

05–15B MANUAL TRANSAXLE [G15M-R]

MANUAL TRANSAXLE [G15M-R] LOCATION INDEX

A3U051501025W02



Z3U515W01

1	Transaxle oil (See 05–15B–2 TRANSAXLE OIL INSPECTION [G15M-R]) (See 05–15B–2 TRANSAXLE OIL REPLACEMENT [G15M-R].)

2	Oil seal (differential) (See 05–15B–2 OIL SEAL (DIFFERENTIAL) REPLACEMENT [G15M-R].)
3	Manual transaxle (See 05–15B–4 MANUAL TRANSAXLE (MTX) REMOVAL/INSTALLATION [G15M-R].)

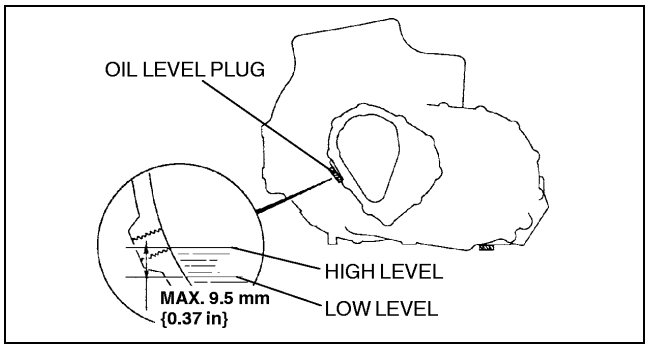
TRANSAXLE OIL INSPECTION [G15M-R]

A3U051527001W03

Note
- Park the vehicle on level ground.

1. Remove the oil level plug and the washer.
2. Verify that the oil is near the bottom of the plug port within the range shown in the figure.
   - If the oil level is low, add the specified type of oil to the bottom of the plug port through the oil level plug hole.

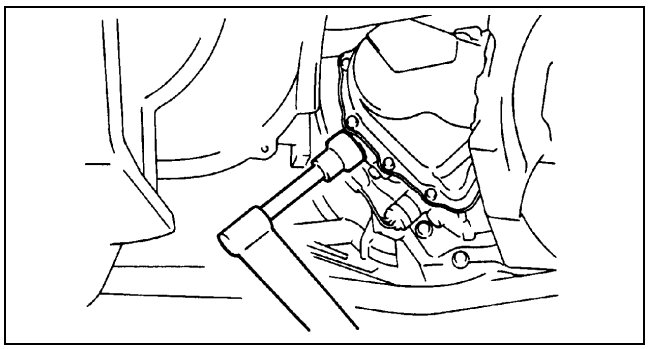
Specified oil
Grade: API service GL-4 or GL-5
Viscosity: SAE 75W—90 (All season) or SAE 80W—90 (Above 10 °C {50 °F})



X3U515WA0

3. Install a new washer and the oil level plug.

Tightening torque
40—58 N·m {4.0—6.0 kgf·m, 29—43 ft·lbf}



U3U51502

TRANSAXLE OIL REPLACEMENT [G15M-R]

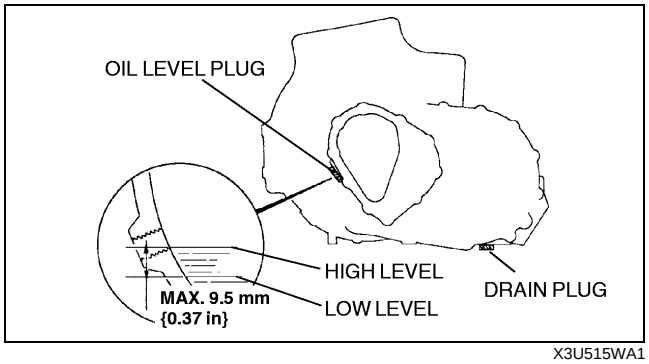
A3U051527001W04

1. Remove the drain plug and the washer.
2. Drain the oil into a container.
3. Install a new washer and the drain plug.

Tightening torque
40—58 N·m {4.0—6.0 kgf·m, 29—43 ft·lbf}

4. Remove the oil level plug and the washer. Add the specified amount and type of oil through the oil level plug hole until the level reaches the bottom of the oil level plug hole.

Specified oil
Grade: API service GL-4 or GL-5
Viscosity: SAE 75W—90 (All season) or SAE 80W—90 (Above 10 °C {50 °F})
Capacity (approximate quantity)
2.68 L {2.83 US qt, 2.36 Imp qt}



X3U515WA1

5. Install a new washer and the oil level plug.

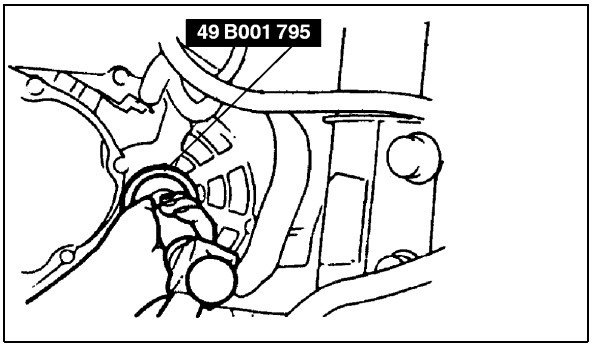
Tightening torque
40—58 N·m {4.0—6.0 kgf·m, 29—43 ft·lbf}

OIL SEAL (DIFFERENTIAL) REPLACEMENT [G15M-R]

A3U051527165W02

1. Drain the transaxle oil into a container.
2. Separate the drive shaft and joint shaft from the transaxle. (See 03–13–3 JOINT SHAFT REMOVAL/INSTALLATION.) (See 03–13–9 DRIVE SHAFT REMOVAL/INSTALLATION.)
3. Remove the oil seal using a screwdriver and seal remover.

4. Using the **SST** and a hammer, tap the new oil seal in evenly until the **SST** contacts the transaxle case.
5. Coat the oil seal lip with transaxle oil.
6. Insert the drive shaft and joint shaft to the transaxle. (See 03–13–3 JOINT SHAFT REMOVAL/ INSTALLATION.) (See 03–13–9 DRIVE SHAFT REMOVAL/INSTALLATION.)
7. Add the specified amount and type of transaxle oil. (See 05–15B–2 TRANSAXLE OIL REPLACEMENT [G15M-R].)

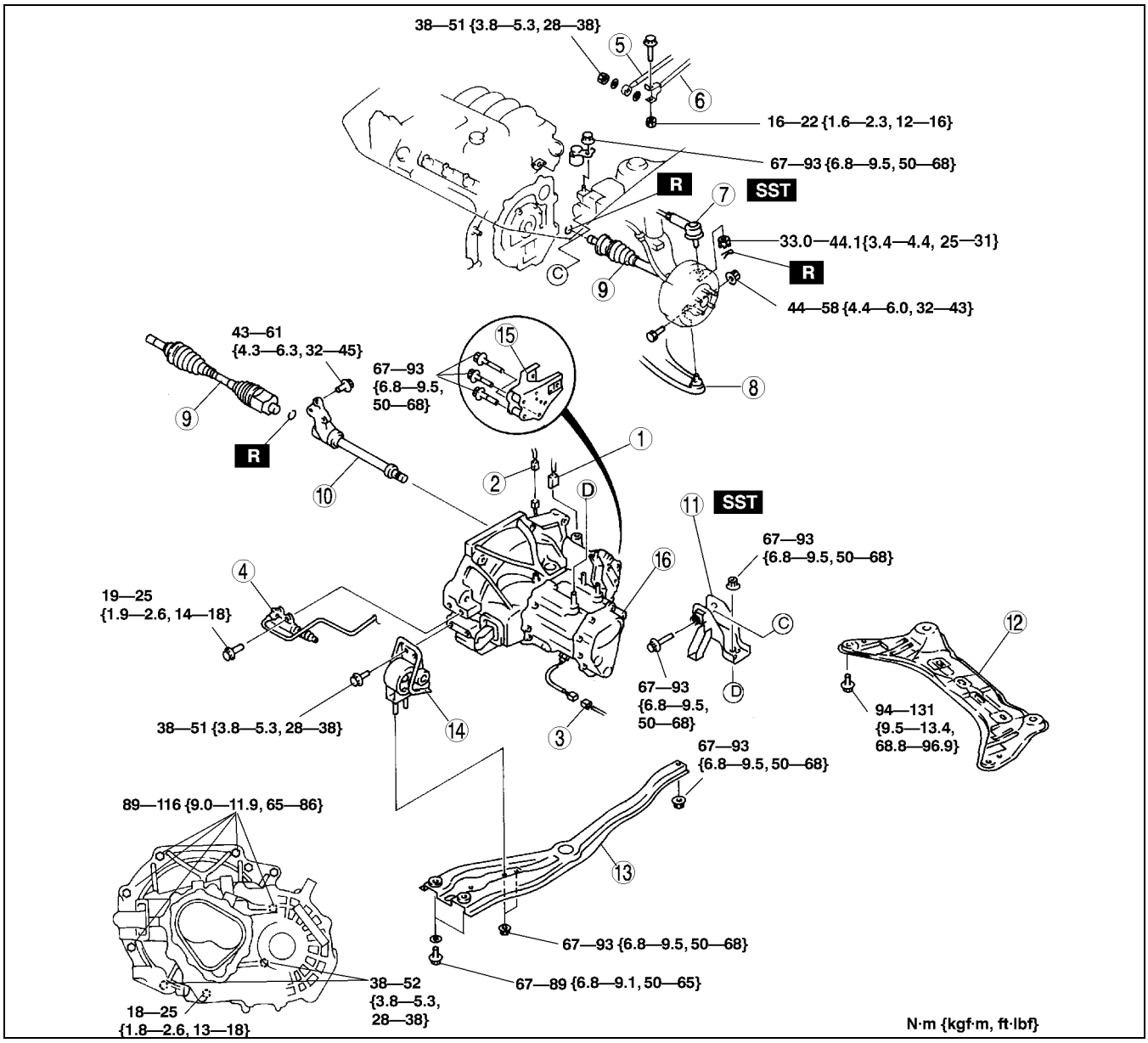


U3U51503

MANUAL TRANSAXLE (MTX) REMOVAL/INSTALLATION [G15M-R]

A3U051501029W02

1. Remove the battery, battery cover, and battery tray.
2. Remove the fresh-air duct and air cleaner component.
3. Remove the wheels and tires and splash shields.
4. Remove the EGR pipe, front pipe and TWC. (See 01–15–1 EXHAUST SYSTEM REMOVAL/INSTALLATION.)
5. Drain the transaxle oil into a container.
6. Remove the starter. (See 01–19–1 STARTER REMOVAL/INSTALLATION.)
7. Remove in the order indicated in the table.
8. Install in the reverse order of removal.
9. Add the specified amount of the specified transaxle oil. (See 05–15B–2 TRANSAXLE OIL REPLACEMENT [G15M-R].)
10. Warm up the engine and transaxle, inspect for oil leakage, and inspect the transaxle operation.



A3U0515W006

1	Speedometer sensor connector
2	Neutral switch connector
3	Back-up light switch connector
4	Clutch release cylinder
5	Extension bar
6	Change control rod

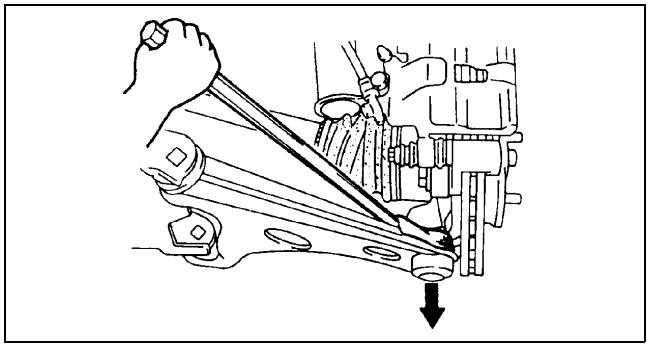
7	Tie-rod end ball joint (See 06–12–9 STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.)
8	Lower arm ball joint (See 05–15B–5 Lower Arm Ball Joint Removal Note.)
9	Drive shaft (See 03–13–9 DRIVE SHAFT REMOVAL/ INSTALLATION.)

10	Joint shaft (See 03–13–3 JOINT SHAFT REMOVAL/ INSTALLATION.)
11	No.4 engine mount bracket (See 05–15B–5 No.4 Engine Mount Bracket Removal Note.)
12	Transverse member (See 02–13–9 TRANSVERSE MEMBER (ZM (ATX), FS) REMOVAL/INSTALLATION.)
13	Engine mount member (See 05–15B–6 Engine Mount Member Installation Note.)
14	No.2 engine mount
15	No.1 engine mount bracket
16	MTX (See 05–15B–5 Manual Transaxle (MTX) Removal Note.) (See 05–15B–6 Manual Transaxle (MTX) Installation Note.)

Lower Arm Ball Joint Removal Note

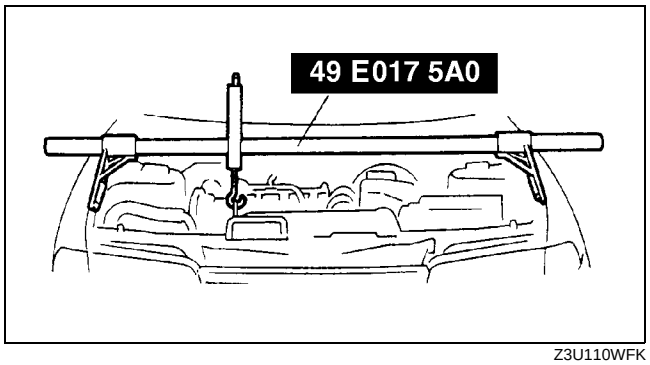
Caution
- **Wrap a rag around the ball joint dust seal to protect it from getting damages.**

1. Pry the lower arm out of the knuckle.



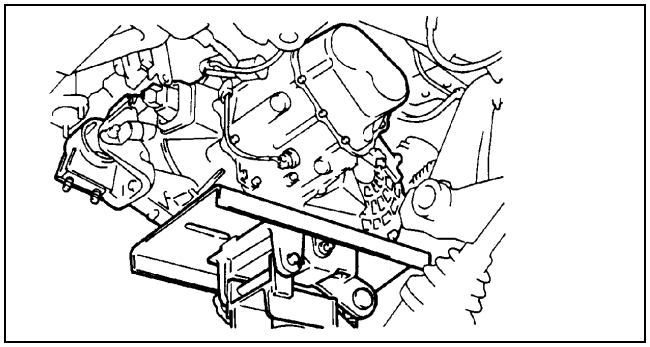
X3U515WA4

No.4 Engine Mount Bracket Removal Note
1. Support the engine using the **SST** before removing the No.4 engine mount bracket.
2. Remove the No.4 engine mount bracket.



Z3U110WFK

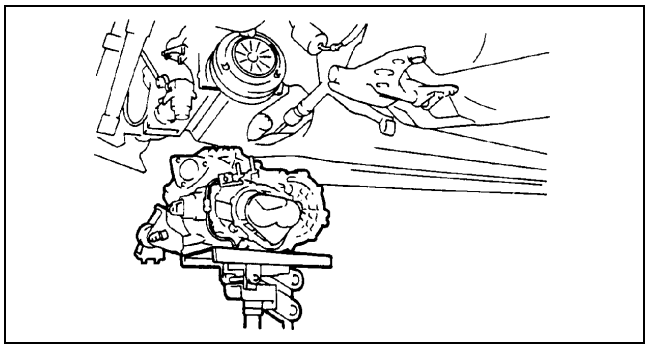
Manual Transaxle (MTX) Removal Note
1. Loosen the **SST** (49 E017 5A0) and lean the engine toward the transaxle.
2. Support the transaxle on a jack.
3. Remove the transaxle mounting bolts.
4. Remove the transaxle.



X3U515WA6

Manual Transaxle (MTX) Installation Note

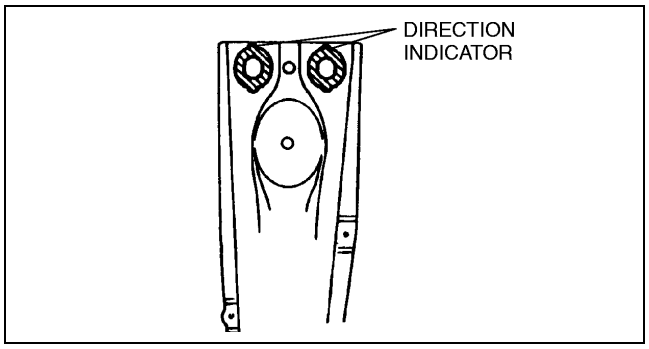
1. Set the transaxle on a jack and lift into place.
2. Install the transaxle mounting bolts.



X3U515WA7

Engine Mount Member Installation Note

1. Verify that the engine mount rubbers are installed as shown.
2. Put the No.2 engine mount stud bolts in the installation holes when installing the engine mount member.



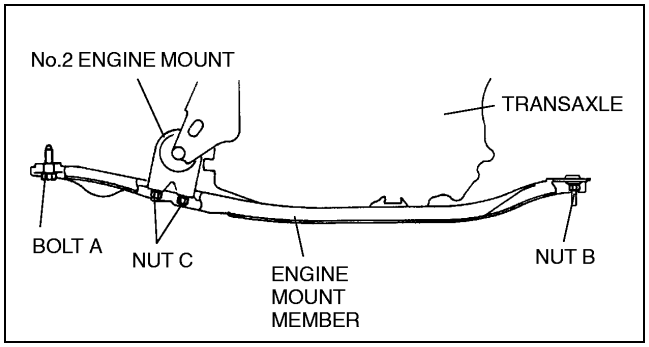
X3U515WA8

3. Tighten bolt A and nut B.

   Tightening torque
   Bolt A: 67—89 N·m {6.8—9.1 kgf·m, 50—65 ft·lbf}
   Nut B: 67—93 N·m {6.8—9.5 kgf·m, 50—68 ft·lbf}

4. Tighten nuts C.

   Tightening torque
   Nut C: 67—93 N·m {6.8—9.5 kgf·m, 50—68 ft·lbf}

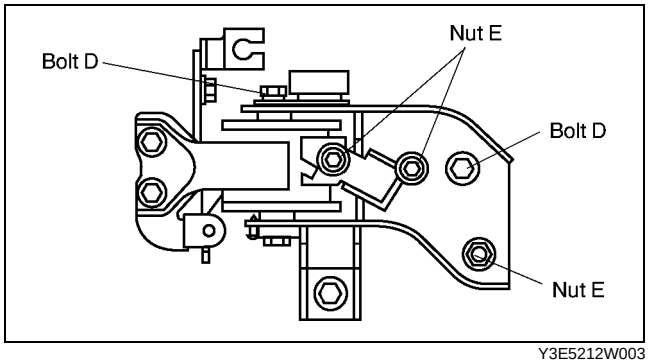


X3U515WA9

5. By aligning the holes with the stud bolts, install the No.4 engine mount bracket to the transaxle.
6. Align the hole of the No.4 engine mount bracket with the No.4 engine mount rubber on vehicle, and temporarily tighten bolt D.
7. Tighten nuts E, then bolt D.

   Tightening torque
   Bolt D and nut E: 67—93 N·m {6.8—9.5 kgf·m, 50—68 ft·lbf}

8. Remove the **SST** (49 E017 5A0).



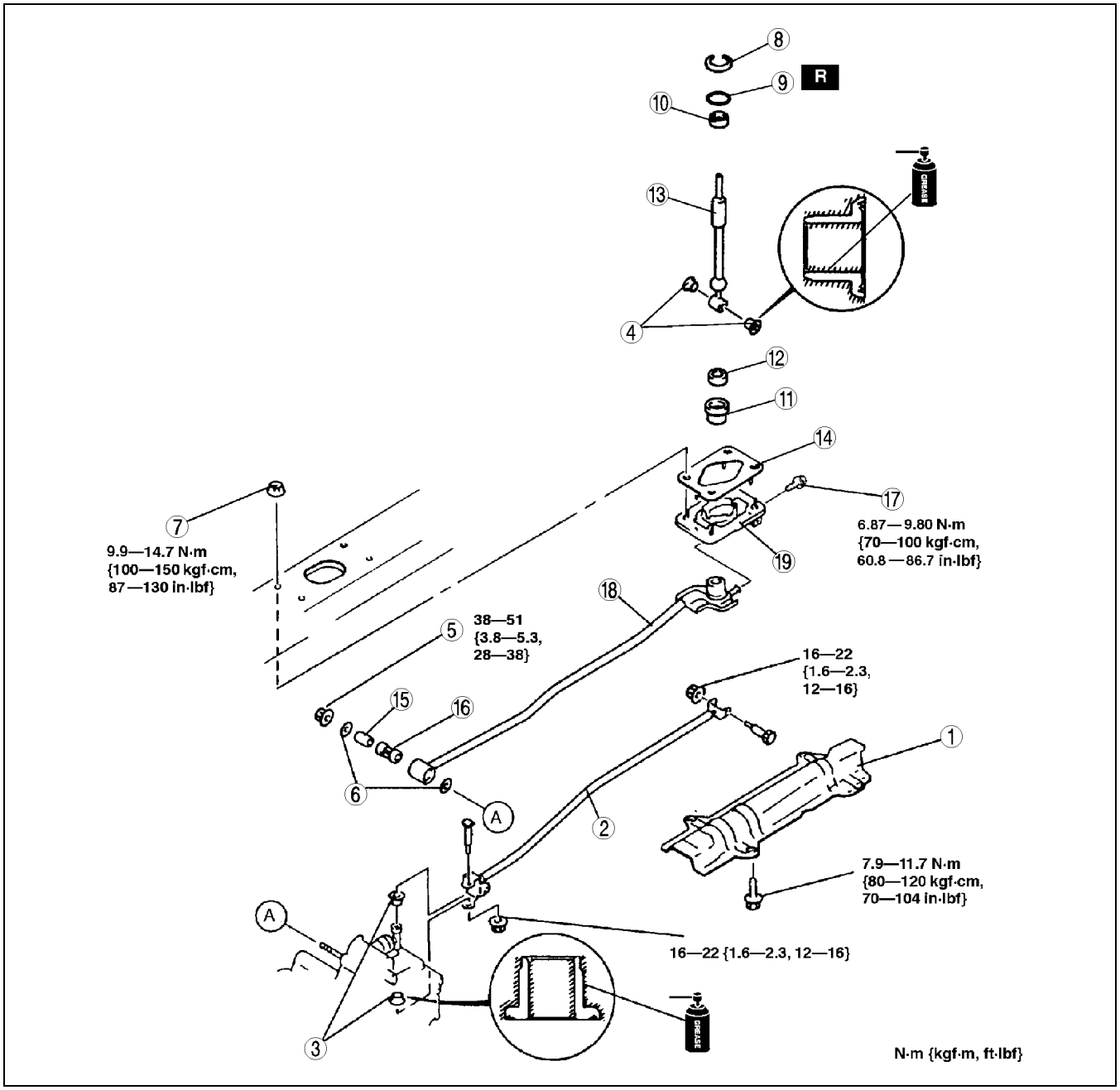
Y3E5212W003

05–16 MANUAL TRANSAXLE SHIFT MECHANISM

SHIFT MECHANISM REMOVAL/INSTALLATION

A3U051646010W01

1. Remove the front console. (See 09–17–5 CONSOLE REMOVAL/INSTALLATION.)
2. Remove the TWC. (See 01–15–1 EXHAUST SYSTEM REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.
5. After installation, verify that the gear shift lever operates smoothly when the clutch pedal is depressed.



Z3U516W01

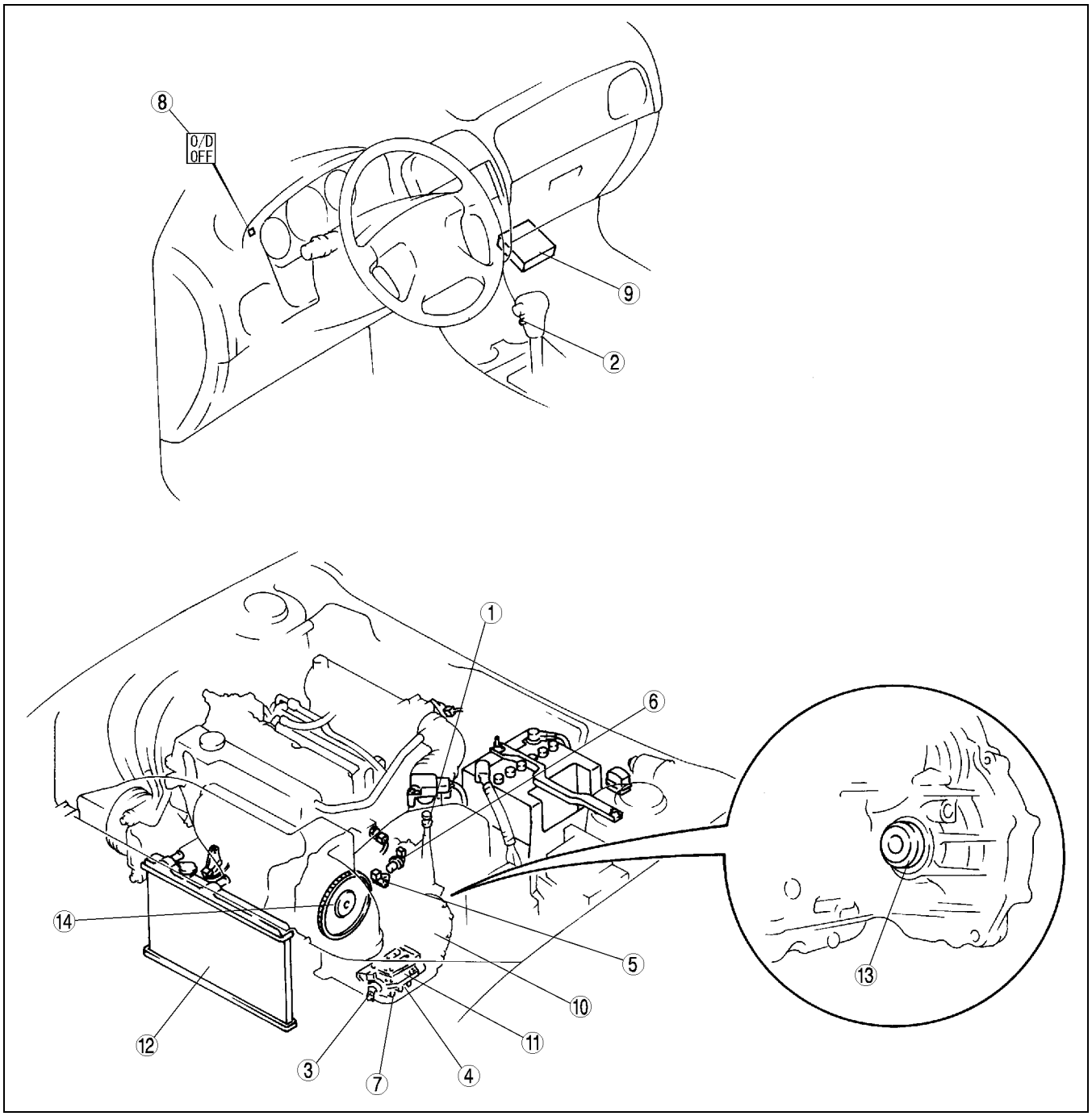
1	Heat insulator
2	Change control rod
3	Bushing
4	Bushing
5	Nut
6	Washer
7	Nut
8	Retaining ring
9	O-ring
10	Upper ball seat

11	Boot
12	Lower ball seat
13	Gear shift lever
14	Seal rubber
15	Pipe
16	Bushing
17	Bolt
18	Extension bar
19	Base plate

05–17 AUTOMATIC TRANSAXLE

AUTOMATIC TRANSAXLE LOCATION INDEX

A3U051701030W01



Z3U517W01

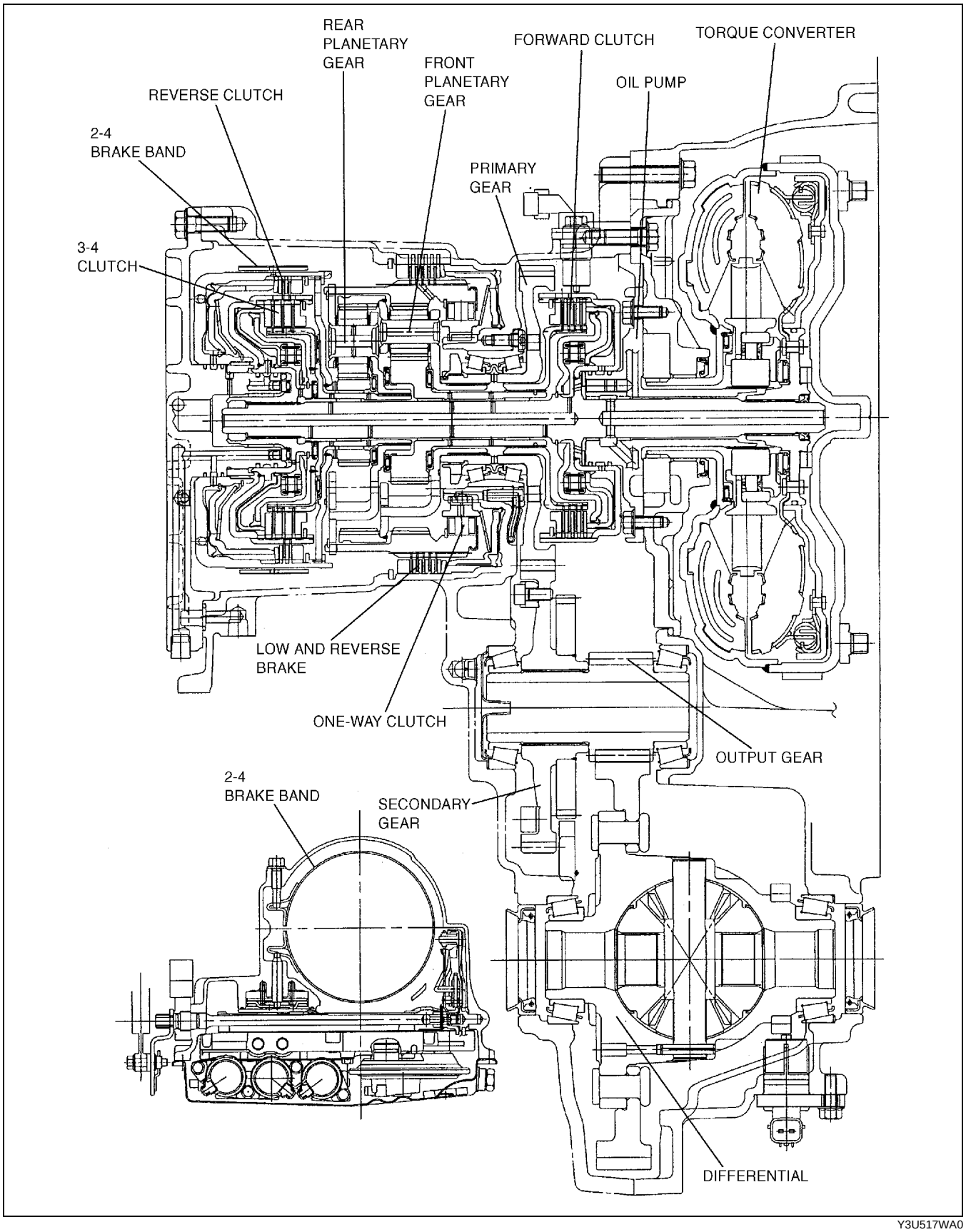
1	ATF (See 05–17–17 AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION.) (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
2	O/D OFF switch (See 05–17–19 O/D OFF SWITCH INSPECTION) (See 05–17–19 O/D OFF SWITCH REMOVAL/INSTALLATION)
3	TR switch (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION) (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION) (See 05–17–23 TRANSAXLE RANGE (TR) SWITCH ADJUSTMENT)

4	TFT sensor (See 05–17–25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION) (See 05–17–25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION)
5	Input/turbine speed sensor (See 05–17–26 INPUT/TURBINE SPEED SENSOR INSPECTION) (See 05–17–26 INPUT/TURBINE SPEED SENSOR REMOVAL/INSTALLATION)
6	Vehicle speedometer sensor (without ABS) (See 05–17–28 VEHICLE SPEEDOMETER SENSOR (VSS) REMOVAL/INSTALLATION [ATX]) (See 05–17–27 VEHICLE SPEEDOMETER SENSOR (VSS) INSPECTION [ATX])

7	Solenoid valve (See 05–17–28 SOLENOID VALVES INSPECTION) (See 05–17–30 SOLENOID VALVES REMOVAL/INSTALLATION)
8	O/D OFF indicator light (See 05–17–30 O/D OFF INDICATOR LIGHT INSPECTION)
9	PCM (See 05–17–30 PCM REMOVAL/INSTALLATION)
10	Transaxle (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION)
11	Control valve body (See 05–17–36 CONTROL VALVE BODY REMOVAL/INSTALLATION)
12	Oil cooler (See 05–17–40 OIL COOLER FLUSHING) (See 05–17–41 OIL COOLER REMOVAL/INSTALLATION)
13	Oil seal (transaxle) (See 05–17–36 OIL SEAL (TRANSAXLE) REPLACEMENT)
14	Drive plate (See 05–17–46 DRIVE PLATE REMOVAL/INSTALLATION)

AUTOMATIC TRANSAXLE (ATX) CROSS-SECTIONAL VIEW

A3U051701030W02

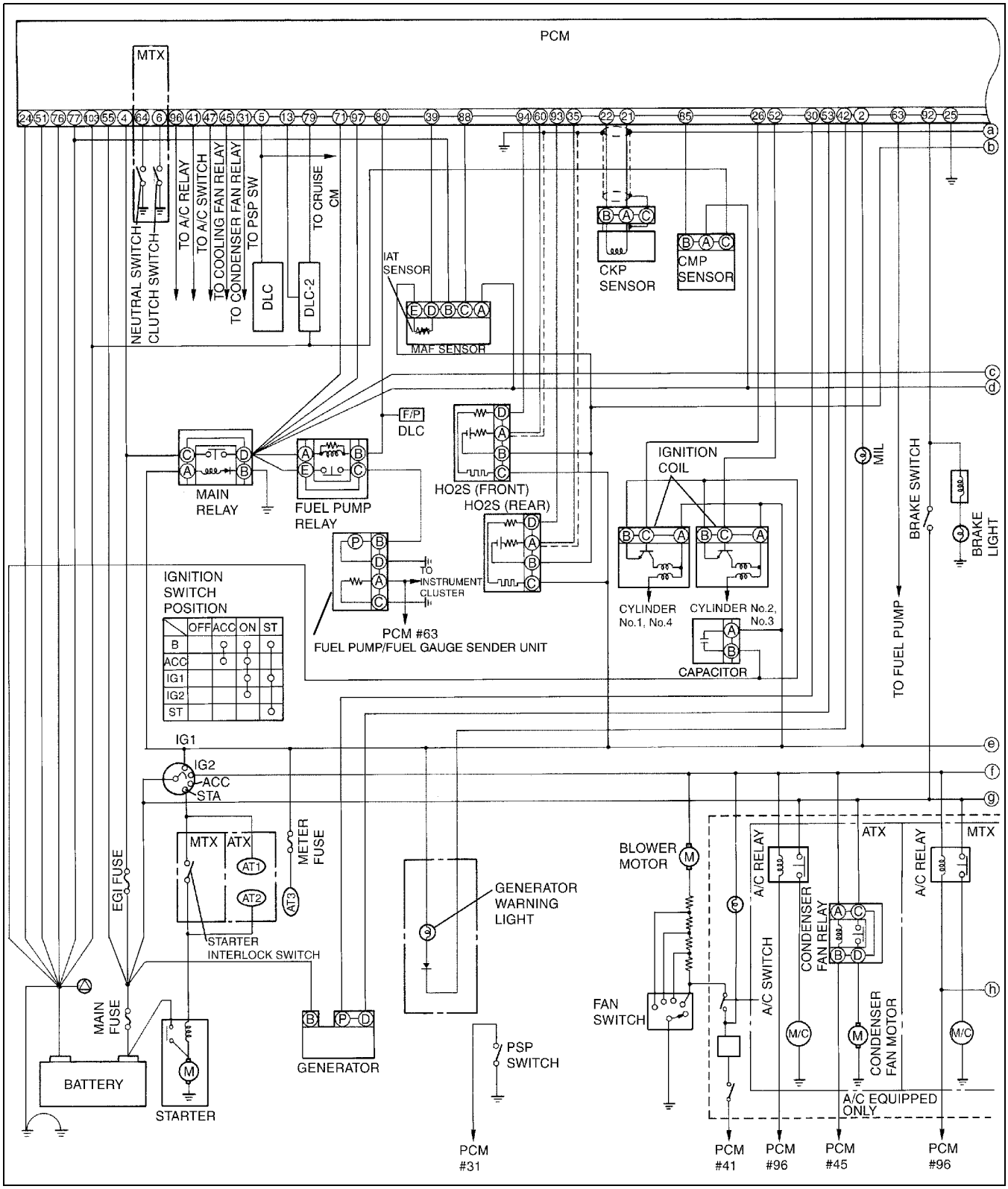


Y3U517WA0

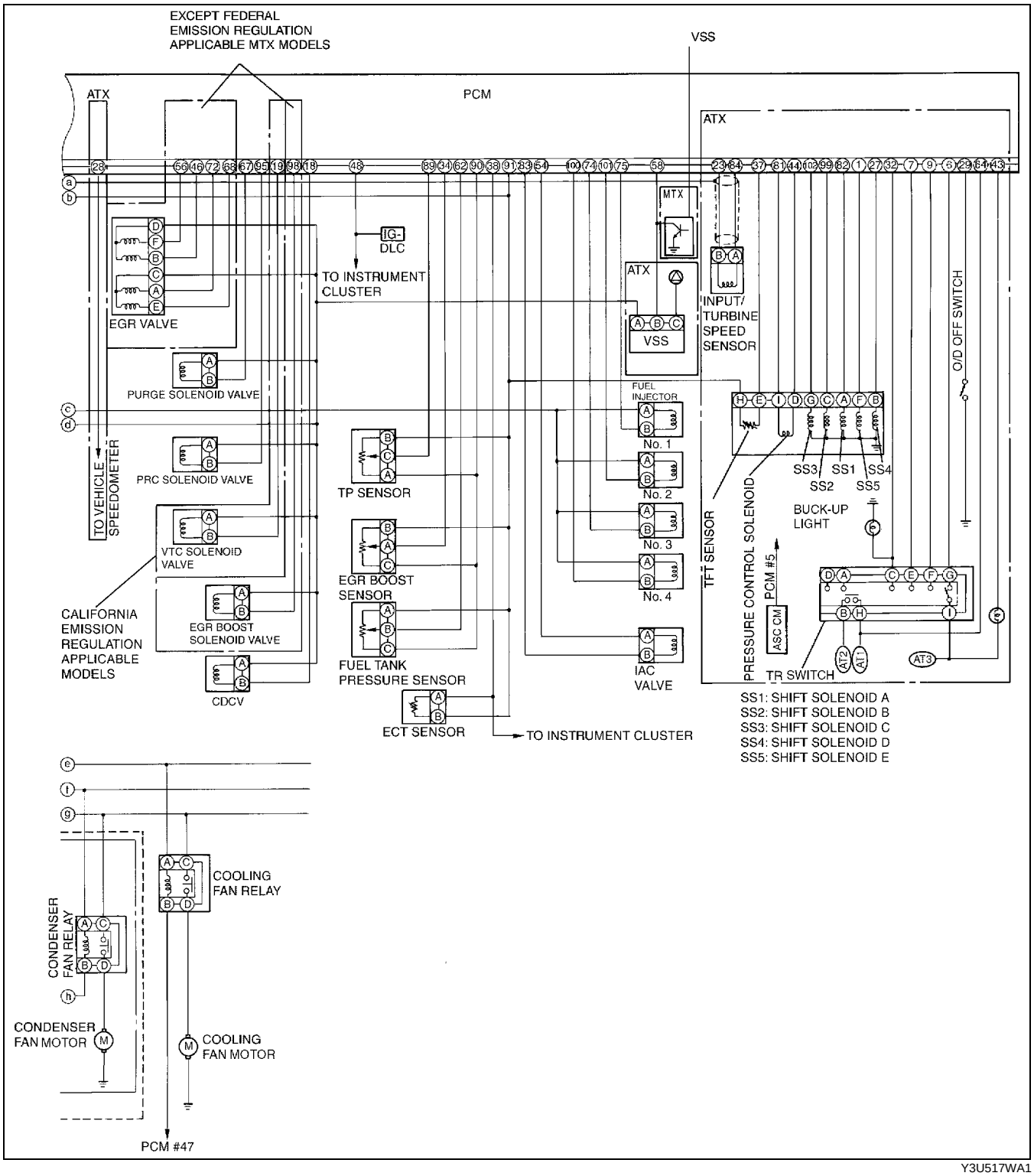
SYSTEM WIRING DIAGRAM

A3U051701030W03

ZM Engine

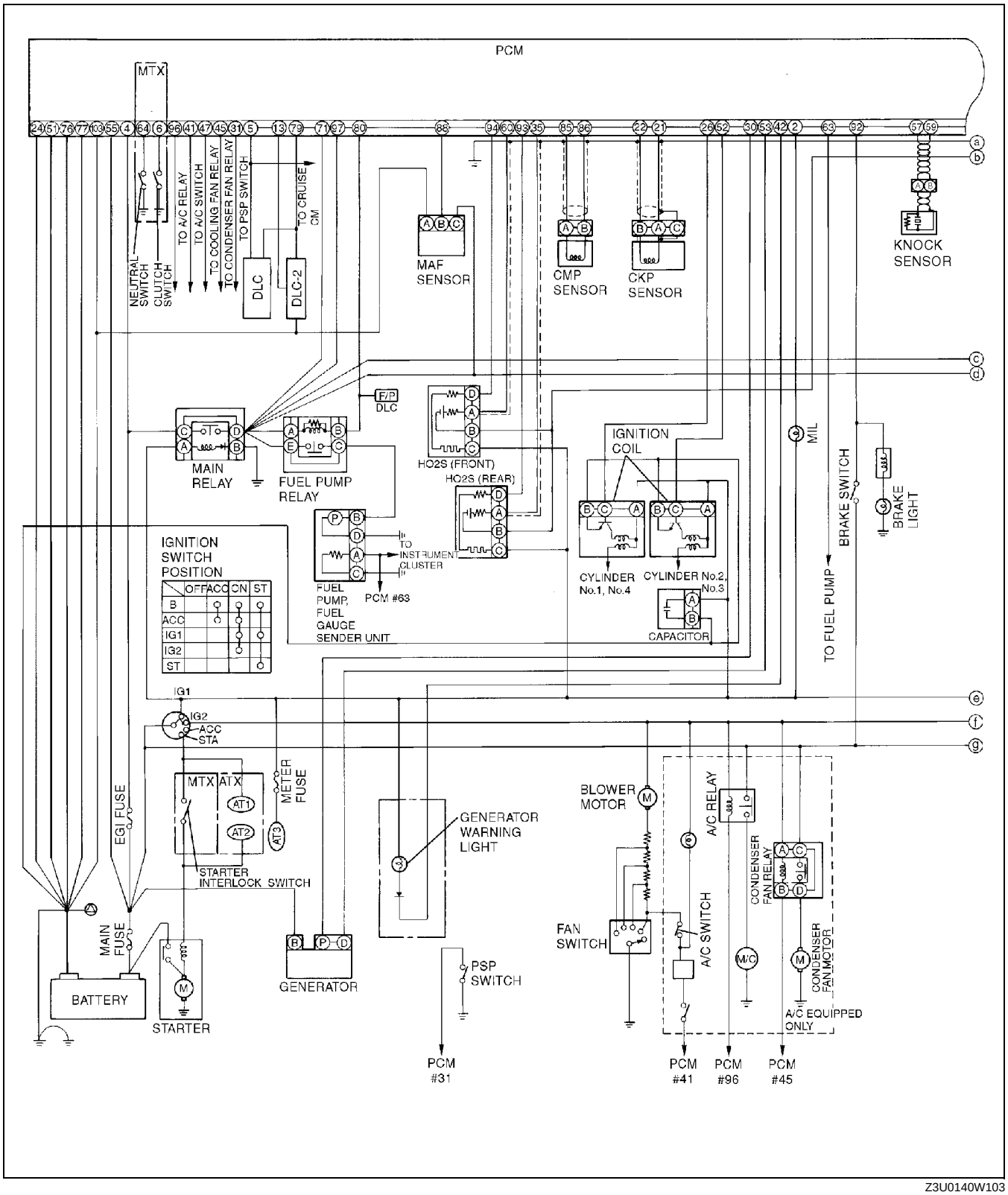


X3U517WCL

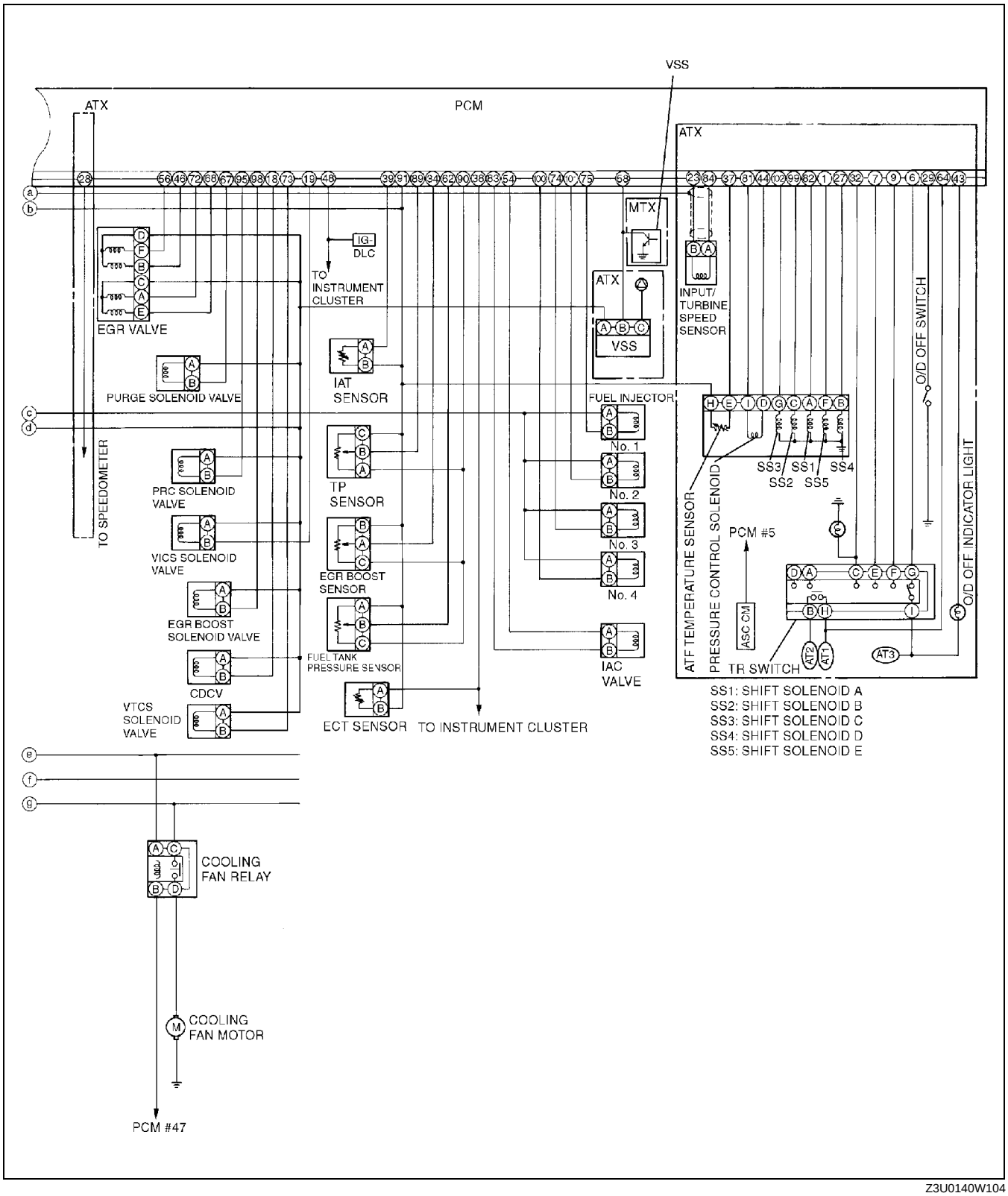

EXCEPT FEDERAL EMISSION REGULATION APPLICABLE MTX MODELS
VSS
ATX
PCM
ATX
MTX
IG-DLC
TO INSTRUMENT CLUSTER
ATX
VSS
INPUT/ TURBINE SPEED SENSOR
O/D OFF SWITCH
EGR VALVE
PURGE SOLENOID VALVE
FUEL INJECTOR
No. 1
No. 2
No. 3
No. 4
IAC VALVE
TO VEHICLE SPEEDOMETER
PRC SOLENOID VALVE
TP SENSOR
SS3 SS1 SS4
SS2 SS5
BUCK-UP LIGHT
VTC SOLENOID VALVE
EGR BOOST SENSOR
TFT SENSOR
PRESSURE CONTROL SOLENOID
PCM #5
ASC CM
CALIFORNIA EMISSION REGULATION APPLICABLE MODELS
EGR BOOST SOLENOID VALVE
FUEL TANK PRESSURE SENSOR
CDCV
ECT SENSOR
TO INSTRUMENT CLUSTER
TR SWITCH
AT2
AT1
AT3
SS1: SHIFT SOLENOID A
SS2: SHIFT SOLENOID B
SS3: SHIFT SOLENOID C
SS4: SHIFT SOLENOID D
SS5: SHIFT SOLENOID E
COOLING FAN RELAY
CONDENSER FAN RELAY
CONDENSER FAN MOTOR
COOLING FAN MOTOR
PCM #47

Y3U517WA1

FS Engine



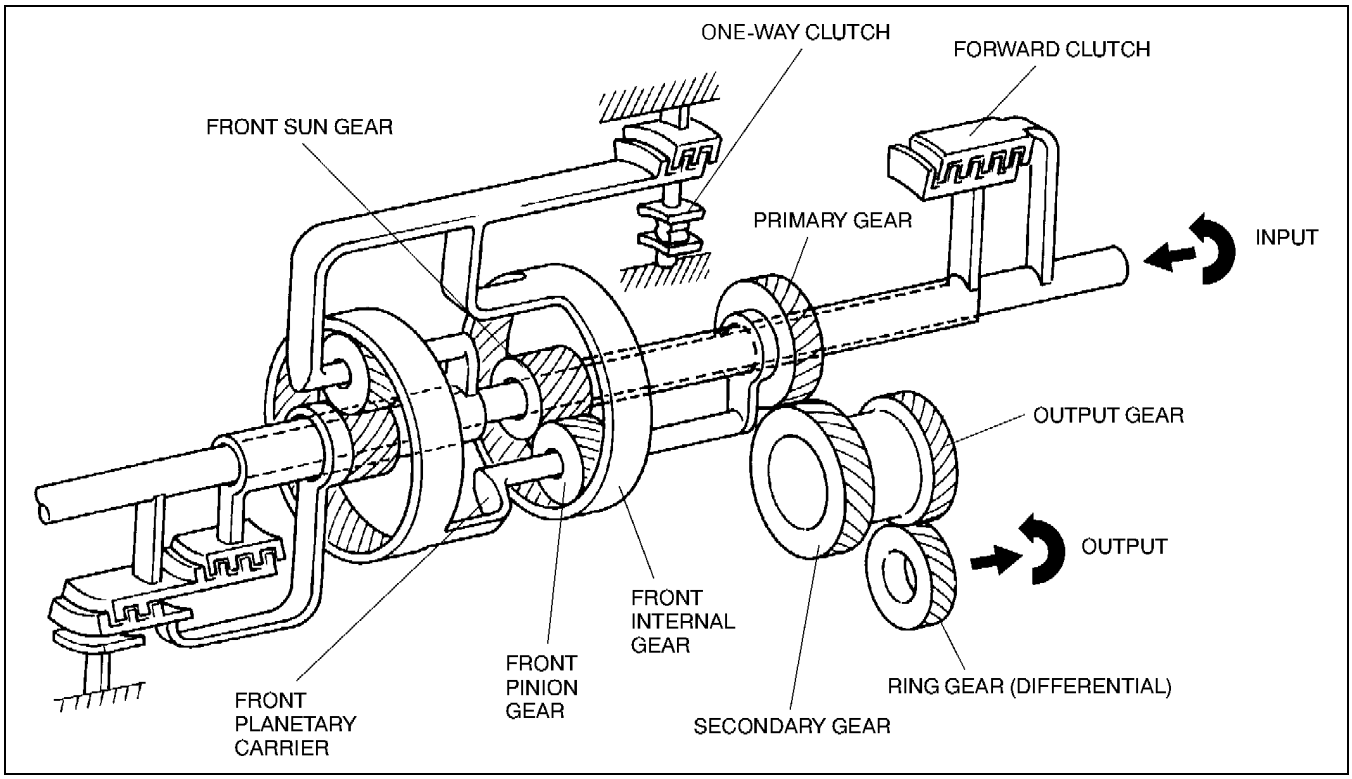
Z3U0140W103



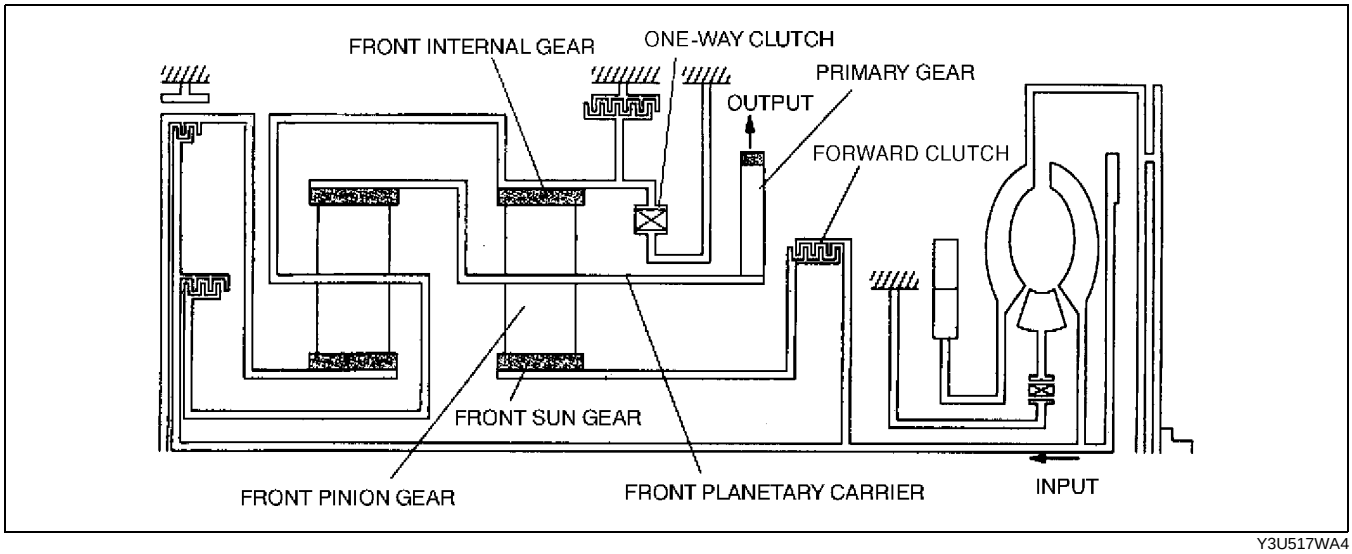
Z3U0140W104

AUTOMATIC TRANSAXLE (ATX) POWERTRAIN STRUCTURAL VIEW

A3U051701030W04



Y3U517WA3



Y3U517WA4

EC-AT Operation Chart

Position/Range	Mode	Gear position		Shift pattern			Transaxle							Operation of shift solenoid				
										2–4 brake band				Solenoid valve (duty-cycle type)			Solenoid valve (ON/OFF type)	
				Shift	TCC	Engine brake	Forward clutch	3–4 clutch	Reverse clutch	Applied	Released	Low and reverse brake	One-way clutch	Shift solenoid A	Shift solenoid B	Shift solenoid C	Shift solenoid D	Shift solenoid E
P	–	Neutral	–	–										–	–	–	ON	OFF
R	–	Reverse	2.648	–		×			×			×		OPEN	OPEN	OPEN	OFF	OFF
N	–	Neutral	–	–										–	–	–	ON	OFF
D	*1 POWER/ NORMAL	1GR	2.816	↕			×						×*4	OPEN	CLOSE	CLOSE	OFF	OFF
		2GR	1.497	↕		×	×			×				OPEN	OPEN	CLOSE	OFF	OFF
		3GR	1.000	↕		×	×	×		×*5	×			OPEN	OPEN	OPEN	OFF	OFF
		4GR	0.725	↕		×		×		×				CLOSE	OPEN	OPEN	ON	OFF
		4GR *2 TCC ON	0.725	↕	×	×		×		×				CLOSE	OPEN	OPEN	ON	ON
2	–	2GR	1.497	↑		×	×			×				OPEN	OPEN	CLOSE	OFF	OFF
		3GR*3	1.000	↑		×	×	×		×*5	×			OPEN	OPEN	OPEN	OFF	OFF
		4GR*3	0.725	↑		×		×		×				CLOSE	OPEN	OPEN	ON	OFF
1	–	1GR	2.816	↑		×	×					×	×*4	OPEN	OPEN	CLOSE	ON	ON
		2GR*3	1.497	↑		×	×			×				OPEN	OPEN	CLOSE	OFF	OFF
		3GR*3	1.000	↑		×	×	×		×*5	×			OPEN	OPEN	OPEN	OFF	OFF
		4GR*3	0.725	↑		×		×		×				CLOSE	OPEN	OPEN	ON	OFF

*1: Automatically switches between POWER and NORMAL modes according to accelerator pedal depressing speed
*2: Performs TCC operation in NORMAL mode
*3: Engine overspeed protection
*4: Transmits the torque only when driving
*5: Indicates operation although the band servo remains deactivated due to the large area of the release pressure side.
×: Operating
✳: Transmits the torque only when driving
OPEN: Engages the line pressure to the clutch pressure (Solenoid de-energized)
CLOSE: Drains the clutch pressure (Solenoid energized)
ON: Engages the output port and the supply port (Solenoid reducing pressure)
OFF: Engages the output port and the drain port (Drains the output port)

Y3U517WAP

MECHANICAL SYSTEM TEST

A3U051701030W05

Mechanical System Test Preparation

1. Apply the parking brake and use wheel chocks at the front and rear of the wheels.
2. Inspect the engine coolant. (See 01–12–2 COOLING SYSTEM SERVICE WARNINGS.) (See 01–12–2 ENGINE COOLANT LEVEL INSPECTION.)
3. Inspect the engine oil. (See 01–11–2 ENGINE OIL INSPECTION.)
4. Inspect the ATF levels. (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)
5. Inspect the ignition timing. (See 01–10A–25 Ignition Timing Inspection.) (See 01–10B–25 Ignition Timing Inspection.)
6. Inspect the idle speed. (See 01–10A–26 Idle Speed Adjustment.) (See 01–10B–26 Idle Speed Adjustment.)

Line Pressure Test

1. Perform mechanical system test preparation. (See 05–17–11 Mechanical System Test Preparation.)

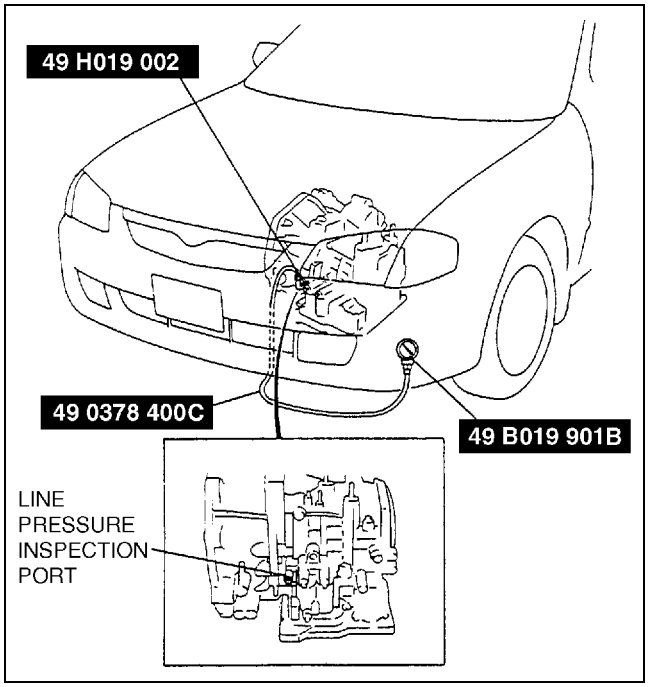
   Warning
   - **Removing the square-head plug when the ATF is hot can be dangerous. Hot ATF can come out of the opening and badly burn you. Before removing the square-head plug, allow the ATF to cool.**

2. Connect the **SSTs** (49 0378 400C, 49 B019 901B and 49 H019 002) to the line pressure inspection port.
3. Start the engine and shift the selector lever to D range and read the line pressure at idle.

   Warning
   - **Removing the SST when the ATF is hot can be dangerous. Hot ATF can come out of the opening and badly burn you. Before removing the SST, allow the ATF to cool.**

4. Turn the engine off and remove the **SST** (49 B019 901B), and replace the gauge part of the **SST** (49 B019 902).

   Caution
   - **Do not maintain WOT in any position/ range for more than 5 seconds, or transaxle damage will occur.**



Z3U502W02

5. Start the engine and firmly depress the brake pedal with the left foot, and then depress the accelerator pedal to floor (WOT) with the right.
6. When the engine speed no longer increases, quickly read the line pressure and release the accelerator pedal.
7. Shift the selector lever to N position and let the engine idle for **1 minute** or more to cool the ATF.
8. Read the line pressure at idle and at the engine stall speed for the 2, and 1 ranges and R position in the same manner.

Line pressure specification

Position /range	Line pressure kPa {kgf/cm^2, psi}			
	Idle		Stall	
	ZM	FS	ZM	FS
D, 2, 1	330—470 {3.4—4.7, 49—66}		1,200—1,360 {12.3—13.8, 175—196}	1,160—1,320 {11.9—13.4, 170—190}
R	490—710 {5.0—7.2, 72—100}		1,470—1,690 {15.0—17.2, 214—244}	

9. Shift the selector lever to P position and turn off the engine.

   Warning
   - **Removing the SST when the ATF is hot can be dangerous. Hot ATF can come out of the opening and badly burn you. Before removing the SST, allow the ATF to cool.**

10. Remove the **SST**.
11. Install a new square head plug in the inspection port.

    Tightening torque
    4.91—9.80 N·m {50—100 kgf·cm, 43.4—86.7 in·lbf}

Evaluation of line pressure test

Condition	Possible cause
Low pressure in all positions/ranges	• Worn oil pump • Oil leaking from oil pump, control valve body, and/or transaxle case • Pressure regulator valve stuck • Pressure control solenoid malfunction • Solenoid reducing valve stuck
Low pressure in D, 2, 1 only	• Oil leaking from forward clutch hydraulic circuit
Low pressure in 2 only	• Oil leaking from 2-4 brake band hydraulic circuit
Low pressure in 1, R only	• Oil leaking from low and reverse brake hydraulic circuit
Low pressure in R only	• Oil leaking from reverse clutch hydraulic circuit
Higher pressure in all positions/ranges	• Pressure control solenoid malfunction and/or open harness • Pressure regulator valve stuck • PCM malfunction

Stall Test

1. Perform mechanical system test preparation. (See 05–17–11 Mechanical System Test Preparation.)
2. Start the engine and shift the selector lever to R position.

Caution
- **Do not maintain WOT in any position/range for more than 5 seconds, or transaxle damage will occur.**

3. Firmly depress the brake pedal with the left foot, and depress the accelerator pedal to floor (WOT) with the right.
4. When the engine speed no longer increases, quickly read the engine speed and release the accelerator pedal.
5. Shift the selector lever to N position and let the engine idle for **1 minute** or more to cool the ATF.
6. Perform stall tests of D, 2, and 1 ranges in the same manner.

Engine stall speed
ZM engine: 2,300—2,600 rpm
FS engine: 2,200—2,500 rpm

7. Turn off the engine.

Evaluation of stall test

Condition	Possible cause	
Above specification	Insufficient line pressure, torque converter pressure	• Worn oil pump
		• Oil leaking from oil pump, control valve, and/or transaxle case
		• Pressure regulator valve sticking
		• Converter relief valve sticking
		• Pressure control solenoid malfunction
	In D, 2 and 1 ranges	• Forward clutch slipping
	In 2 range	• 2-4 brake band slipping
	In 1 range and R position	• Low and reverse brake slipping
	In R position	• Low and reverse brake slipping • Reverse clutch slipping Perform road test to determine whether problem is in low and reverse brake or reverse clutch • Engine braking felt in 1 range: Reverse clutch is defective. • Engine braking not felt in 1 range: Low and reverse brake is defective.
Below specification		• Engine lack of power

Time Lag Test

1. Perform mechanical system test preparation. (See 05–17–11 Mechanical System Test Preparation.)
2. Start the engine and warm up the engine until the ATF temperature reaches **60—70 °C {141— 158 °F}**.
3. Shift the selector lever from N position to D range.
4. Use a stopwatch to measure the time it takes from shifting until engagement is felt. Take 3 measurements for each test and average the results using the following formula.

Formula

$$\text{Average time lag} = \frac{\text{Time 1} + \text{Time 2} + \text{Time 3}}{3}$$

X3U517WD8

5. Perform the test for the following shifts in the same manner.
   - N position→R position

Average time lag
N position→D range: 0.4—0.7 sec
N position→R position: 0.4—0.7 sec

Evaluation of time lag test

Condition		Possible cause
N→D shift	More than specification	• Low line pressure • Forward clutch slipping • Oil leaking from forward clutch fluid circuit • Shift solenoid A not operating properly
	Less than specification	• Forward accumulator not operating properly • Shift solenoid A not operating properly • Excessive line pressure
N→R shift	More than specification	• Low line pressure • Low and reverse brake slipping • Reverse clutch slipping • Shift solenoid B not operating properly
	Less than specification	• Servo apply accumulator not operating properly • Shift solenoid B not operating properly • Excessive line pressure

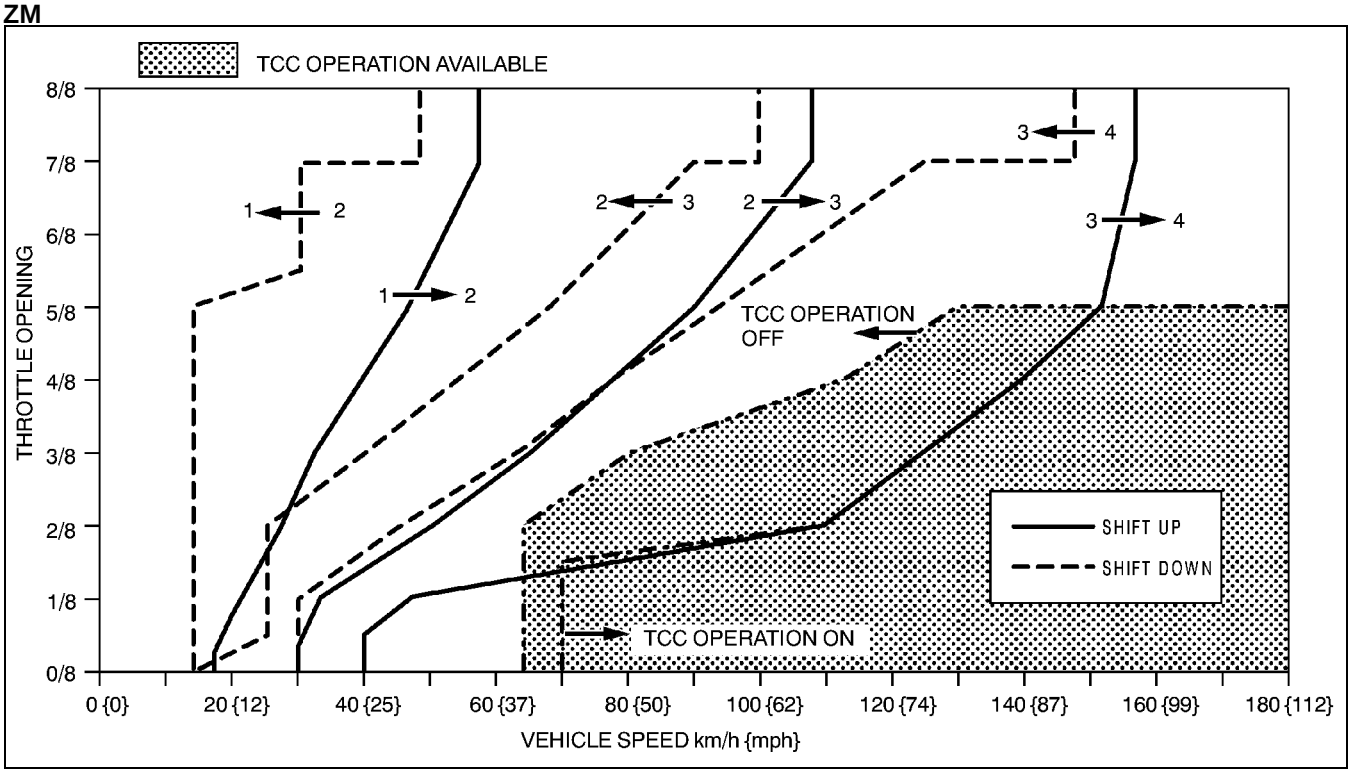
ROAD TEST

A3U051701030W06

Road Test Preparation

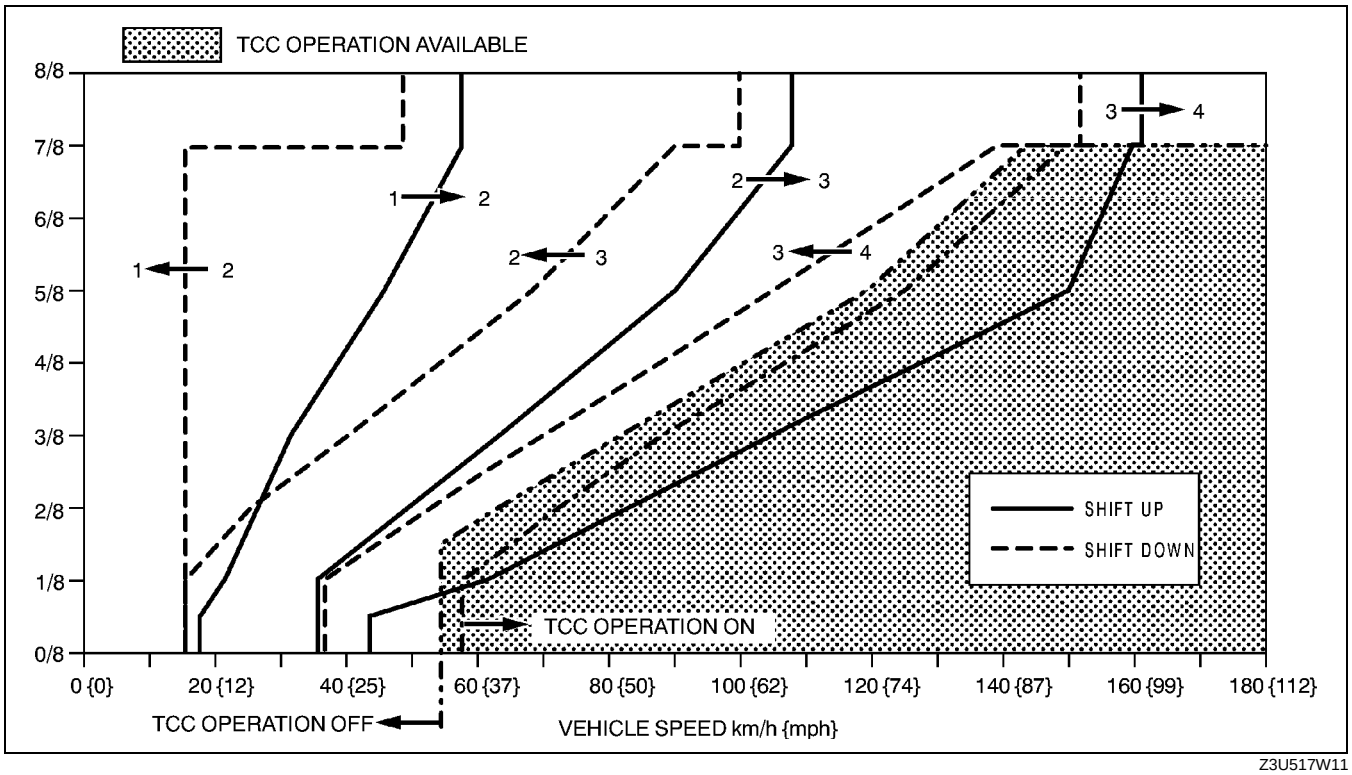
1. Inspect the engine coolant. (See 01–12–2 COOLING SYSTEM SERVICE WARNINGS.) (See 01–12–2 ENGINE COOLANT LEVEL INSPECTION.)
2. Inspect the engine oil. (See 01–11–2 ENGINE OIL INSPECTION.)
3. Inspect the ATF levels. (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)
4. Inspect the ignition timing. (See 01–10A–25 Ignition Timing Inspection.) (See 01–10B–25 Ignition Timing Inspection.)
5. Inspect the idle speed. (See 01–10A–26 Idle Speed Adjustment.) (See 01–10B–26 Idle Speed Adjustment.)
6. Bring up the engine and transaxle to normal operating temperature.

Shift Diagram
D range (normal mode, O/D OFF switch OFF)
ZM



Z3U517W10

FS



Z3U517W11

Vehicle speed at shift point table

Range	Mode	Throttle condition	Shift	Vehicle speed km/h {mph}		Turbine speed (rpm)	
				ZM	FS	ZM	FS
D	Normal	WOT	$D_1 \rightarrow D_2$	56—62 {35—38}	56—62 {35—38}	5,750—6,300	5,750—6,300
			$D_2 \rightarrow D_3$	106—114 {66—70}	106—114 {66—70}	5,750—6,150	5,750—6,150
			$D_3 \rightarrow D_4$	154—164 {96—101}	158—168 {98—104}	5,600—5,900	5,750—6,050
		Half throttle	$D_1 \rightarrow D_2$	35—43 {22—26}	34—42 {22—26}	3,500—4,450	3,400—4,350
			$D_2 \rightarrow D_3$	69—86 {43—53}	68—85 {43—52}	3,750—4,650	3,650—4,650
			$D_3 \rightarrow D_4$	127—150 {79—93}	113—142 {71—88}	4,600—5,450	4,100—5,100
			TCC ON (D_4)	127—150 {79—93}	113—142 {71—88}	3,350—3,950	3,000—3,700
		CTP	$D_4 \rightarrow D_3$	27—33 {17—20}	33—39 {21—24}	750—850	900—1,000
			$D_3 \rightarrow D_2$	11—17 {7—10}	12—18 {8—11}	400—600	450—650
			$D_2 \rightarrow D_1$	11—17 {7—10}	12—18 {8—11}	600—900	700—950
			$D_3 \rightarrow D_1$	11—17 {7—10}	12—18 {8—11}	400—600	450—650
		Kickdown (WOT)	$D_4 \rightarrow D_3$	143—153 {89—94}	147—157 {92—97}	3,800—4,000	3,900—4,100
			$D_3 \rightarrow D_2$	96—104 {60—64}	96—104 {60—64}	3,500—3,750	3,500—3,750
			$D_2 \rightarrow D_1$	45—51 {28—31}	45—51 {28—31}	2,450—2,750	2,450—2,750
	Power	WOT	$D_1 \rightarrow D_2$	56—62 {35—38}	56—62 {35—38}	5,750—6,300	5,750—6,300
			$D_2 \rightarrow D_3$	106—114 {66—70}	106—114 {66—70}	5,750—6,150	5,750—6,150
			$D_3 \rightarrow D_4$	154—164 {96—101}	158—168 {98—104}	5,600—5,900	5,750—6,050
		Half throttle	$D_1 \rightarrow D_2$	35—43 {22—26}	34—42 {22—26}	3,500—4,450	3,400—4,350
			$D_2 \rightarrow D_3$	69—86 {43—53}	68—85 {43—52}	3,750—4,650	3,650—4,650
			$D_3 \rightarrow D_4$	127—150 {79—93}	113—142 {71—88}	4,600—5,450	4,100—5,100
		CTP	$D_4 \rightarrow D_3$	27—33 {17—20}	33—39 {21—24}	750—850	900—1,000
			$D_3 \rightarrow D_2$	11—17 {7—10}	12—18 {8—11}	400—600	450—650
			$D_2 \rightarrow D_1$	11—17 {7—10}	12—18 {8—11}	600—900	700—950
			$D_3 \rightarrow D_1$	11—17 {7—10}	12—18 {8—11}	400—600	450—650
		Kickdown (WOT)	$D_4 \rightarrow D_3$	143—153 {89—94}	147—157 {92—97}	3,800—4,000	3,900—4,100
			$D_3 \rightarrow D_2$	96—104 {60—64}	96—104 {60—64}	3,500—3,750	3,500—3,750
			$D_2 \rightarrow D_1$	45—51 {28—31}	45—51 {28—31}	2,450—2,750	2,450—2,750
2	—	—	$2_4 \rightarrow 2_3$	154—160 {96—99}	158—164 {98—101}	4,050—4,200	4,150—4,300
			$2_3 \rightarrow 2_2$	99—105 {62—65}	97—103 {61—63}	3,600—3,800	3,550—3,700
1	—	—	$1_4 \rightarrow 1_3$	154—160 {96—99}	158—164 {98—101}	4,050—4,200	4,150—4,300
			$1_3 \rightarrow 1_2$	99—105 {62—65}	97—103 {61—63}	3,600—3,800	3,550—3,700
			$1_2 \rightarrow 1_1$	42—48 {27—29}	42—48 {27—29}	2,300—2,600	2,300—2,600

D Range Test

1. Perform road test preparation. (See 05–17–14 Road Test Preparation.)
2. Shift the selector lever to D range.
3. Accelerate the vehicle at half and WOT.
4. Verify that 1→2, 2→3, and 3→4 upshifts and downshifts are obtained. The shift points must be as shown in the table below.
   - If not as specified, inspect the PCM and ATX. (See 01–40A–7 PCM INSPECTION [ZM].) (See 01–40B–7 PCM INSPECTION [FS].) (See ATX Workshop Manual.)
5. Drive the vehicle in 4GR, 3GR, and 2GR and verify that kickdown occurs for 4→3, 3→2, 2→1 downshifts, and that the shift points are as shown in the table below.
   - If not as specified, inspect the PCM and ATX. (See 01–40A–7 PCM INSPECTION [ZM].) (See 01–40B–7 PCM INSPECTION [FS].) (See ATX Workshop Manual.)
6. Decelerate the vehicle and verify that engine braking effect is felt in 2GR, 3GR and 4GR.
   - If not as specified, inspect the PCM and ATX. (See 01–40A–7 PCM INSPECTION [ZM].) (See 01–40B–7 PCM INSPECTION [FS].) (See ATX Workshop Manual.)

7. Drive the vehicle and verify that TCC operation is obtained. The operation points must be as shown in the table below.
   - If not as specified, inspect the PCM and ATX. (See 01–40A–7 PCM INSPECTION [ZM].) (See 01–40B–7 PCM INSPECTION [FS].) (See ATX Workshop Manual.)
8. Select O/D OFF mode.
9. Accelerate the vehicle to half throttle and WOT, and verify that 1→2 and 2→3 upshift and downshift are obtained. The shift points must be as shown in the table below.
   - If not as specified, inspect the PCM and ATX. (See 01–40A–7 PCM INSPECTION [ZM].) (See 01–40B–7 PCM INSPECTION [FS].) (See ATX Workshop Manual.)
10. Drive the vehicle in 3GR, 2GR and verify that kickdown occurs for 3→2, 2→1, and that the shift points are as shown in the table below.
    - If not as specified, inspect the PCM and ATX. (See 01–40A–7 PCM INSPECTION [ZM].) (See 01–40B–7 PCM INSPECTION [FS].) (See ATX Workshop Manual.)
11. Decelerate the vehicle and verify that engine braking effect is felt in 2GR and 3GR.
    - If not as specified, inspect the PCM and ATX. (See 01–40A–7 PCM INSPECTION [ZM].) (See 01–40B–7 PCM INSPECTION [FS].) (See ATX Workshop Manual.)

2 Range Test

1. Perform road test preparation. (See 05–17–14 Road Test Preparation.)
2. Shift the selector lever to 2 range.
3. Accelerate the vehicle with half throttle and WOT, and verify that 2GR is held.
   - If not as specified, inspect the PCM and ATX. (See 01–40A–7 PCM INSPECTION [ZM].) (See 01–40B–7 PCM INSPECTION [FS].) (See ATX Workshop Manual.)
4. Decelerate the vehicle and verify that engine braking effect is felt.
   - If not as specified, inspect the PCM and ATX. (See 01–40A–7 PCM INSPECTION [ZM].) (See 01–40B–7 PCM INSPECTION [FS].) (See ATX Workshop Manual.)

1 Range Test

1. Perform road test preparation. (See 05–17–14 Road Test Preparation.)
2. Shift the selector lever to 1 range.
3. Accelerate the vehicle with half throttle and WOT, and verify that 1GR is held.
   - If not as specified, inspect the PCM and ATX. (See 01–40A–7 PCM INSPECTION [ZM].) (See 01–40B–7 PCM INSPECTION [FS].) (See ATX Workshop Manual.)
4. Decelerate the vehicle and verify that engine braking effect is felt.
   - If not as specified, inspect the PCM and ATX. (See 01–40A–7 PCM INSPECTION [ZM].) (See 01–40B–7 PCM INSPECTION [FS].) (See ATX Workshop Manual.)

P Position Test

1. Shift into P position on a gentle slope. Release the brake and verify that the vehicle does not roll.
   - If the vehicle rolls, inspect the ATX. (See ATX Workshop Manual.)

AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION

A3U051719001W01

Automatic Transaxle Fluid (ATF) Condition Inspection

1. One way of determining whether the transaxle should be replaced is by noting:
   - If the ATF is muddy or varnished.
   - If the ATF smells strange or unusual.

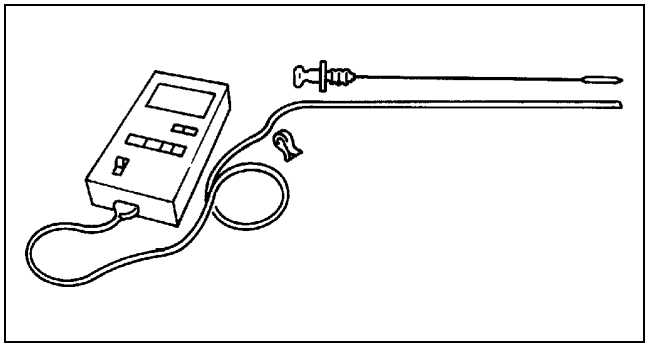
ATF condition

Condition			Possible cause
Clear red		Normal	—
Light red (pink)		Contaminated with water	• Broken oil cooler inside of radiator • Poor filler tube installation: Problem could be occurring to parts inside of transaxle by water contamination. • If necessary, replace transaxle.
Reddish brown	Has burnt smell and metal specks are found	Deteriorated ATF	Defect powertrain components inside of transaxle: Specks cause wide range of problems by plugging up oil pipe, control valve body and oil cooler in radiator. • When large amount of metal specks are found. Replace transaxle if necessary. • Implement flushing operation as there is a possibility to have specks plugging up oil pipe and/or oil cooler inside of radiator.
	Has no burnt smell	Normal	• Discoloration by oxidation.

Automatic Transaxle Fluid (ATF) Level Inspection

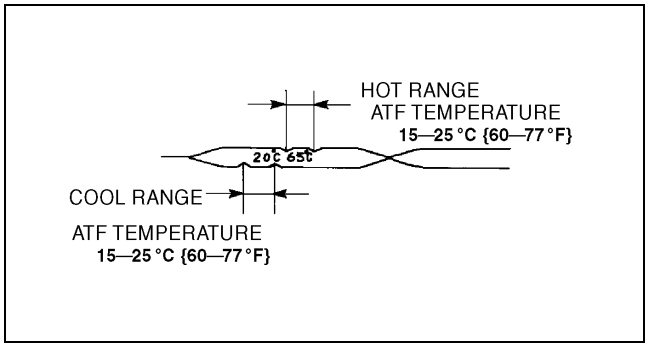
Caution
- **The ATF amount varies according to ATF temperature. Therefore, when checking the ATF level or replacing the ATF, use a thermometer to measure the temperature then adjust the ATF amount to the specified level according to the specified temperature.**

1. Park the vehicle on level ground.
2. Apply the parking brake and position wheel chocks securely to prevent the vehicle from rolling.
3. Adjust the length or thermistor probe to measure the same depth as the oil dipstick and hold the probe with a paper holder.
4. Insert into the filler tube and measure the temperature.
5. Inspect the ATF level before warming up the engine. In this case, use the cool **(20 °C {68 °F})** range.
6. Warm up the engine until the ATF reaches **(60—70 °C {141—158 °F})**.
7. While depressing the brake pedal, shift the selector lever to each range (P—1), pausing momentarily in each range.
8. Shift back to P position.
9. While the engine is idling, verify that the ATF level is in the HOT **(65 °C {149 °F})** range. Add ATF to the specification, if necessary.



X3U517WA3

ATF type
M-V or equivalent (e.g. Dexron®III)



Y3U517WA5

AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT

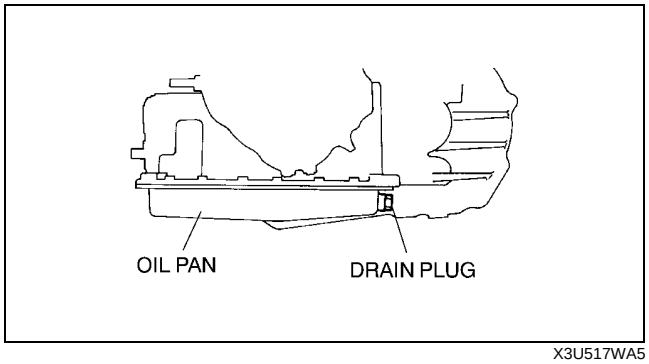
A3U051719001W02

Warning
- **When the transaxle and ATF are hot, they can badly burn you. Turn off the engine and wait until they are cool before changing the ATF.**

1. Remove the oil dipstick.
2. Remove the drain plug and washer.
3. Drain the ATF into a container.
4. Install a new washer and the drain plug.

Tightening torque
30—41 N·m {3.0—4.2 kgf·m, 22—30 ft·lbf}

5. Add the specified type of ATF through the oil filler tube until ATF level reaches lower notch of dipstick.



X3U517WA5

ATF type
M-V or equivalent (e.g. Dexron®III)

6. That the ATF level is in the HOT **(65 °C {149 °F})** range.
7. Add ATF to the specified level if necessary.

O/D OFF SWITCH INSPECTION

A3U051746040W01

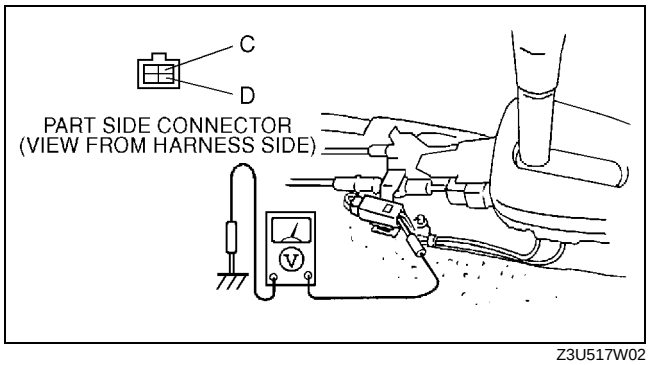
Inspection of Operation

1. Turn the ignition switch from OFF to ON.
2. Verify that the O/D OFF indicator light is not illuminated. Depress the O/D OFF switch and verify that the O/D OFF indicator light illuminates.
   - If not as specified, inspect the terminal voltage of the O/D OFF switch. (See 05–17–19 Inspection of Voltage.)

Inspection of Voltage

1. Turn the ignition switch at ON.
2. Measure the voltage at the O/D OFF switch connector.
   - If not as specified, inspect for continuity at the O/D OFF switch. (See 05–17–19 Inspection of Continuity.)

Position	Connector terminal	
	C	D
Normal	B+	0
Depressed	0	0



Z3U517W02

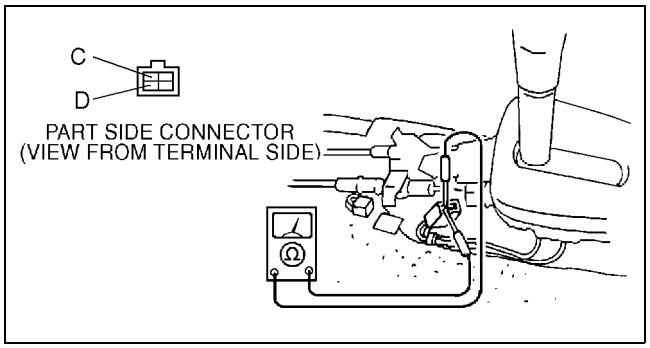
Inspection of Continuity

1. Inspect for continuity at the O/D OFF switch.
   - If the switch is okay, inspect the wiring harness. (O/D OFF switch — PCM, O/D OFF switch — Body ground)
   - If not as specified, replace the selector lever knob component. (See 05–18–8 SELECTOR LEVER DISASSEMBLY/ASSEMBLY.)

○——○ : Continuity

Position	Connector Terminal	
	C	D
Normal		
Depressed	○	○

X3U517WCN



Z3U517W03

O/D OFF SWITCH REMOVAL/INSTALLATION

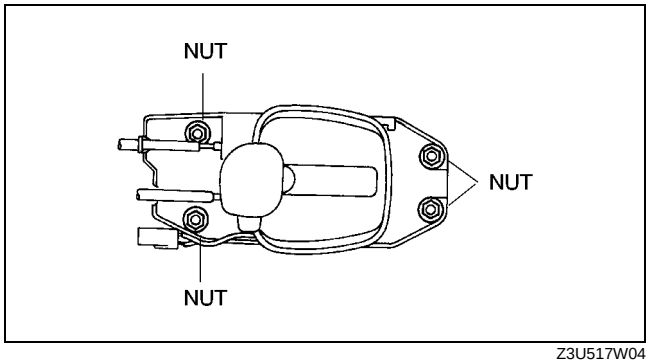
A3U051746040W02

1. Disconnect the negative battery cable.
2. Remove the center console.
3. Remove the selector lever nuts.
4. Disconnect the connector and remove the O/D OFF switch terminals. (See 05–18–8 Connector Disassembly Note.)
5. Remove the selector lever knob component.
6. Install a new selector lever knob component.

   Tightening torque
   2.0—2.9 N·m {20—30 kgf·cm, 18—26 in·lbf}

7. Install the selector lever nuts.

   Tightening torque
   16—22 N·m {1.6—2.3 kgf·m, 12—16 ft·lbf}



Z3U517W04

8. Install the O/D OFF switch terminals and connect the connector.
9. Install the center console.
10. Connect the negative battery cable.

TRANSAXLE RANGE (TR) SWITCH INSPECTION

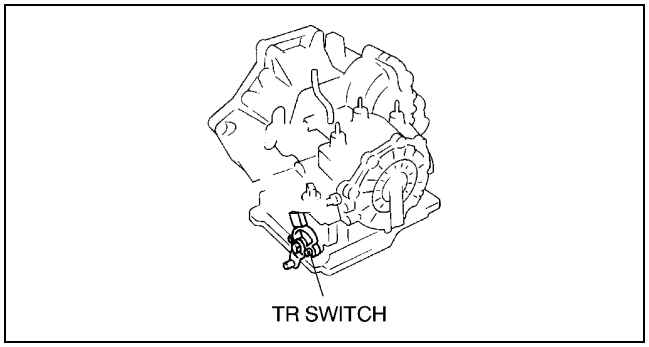
A3U051719440W01

Inspection of Operation

1. Verify that the starter operates only with the IG SW at the START position and the selector lever in P and N positions.
   - If not as specified, inspect for continuity at the TR switch. (See 05–17–20 Inspection of Continuity.)
2. Verify that the back-up lights illuminate when shifted to R position with the ignition switch at the ON position.
   - If not as specified, inspect for continuity at the TR switch. (See 05–17–20 Inspection of Continuity.)

Inspection of Continuity

1. Inspect for continuity at the TR switch.



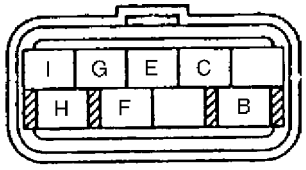
X3U517WA9

○——○ : Continuity

Position	Connector terminal								
	A	B	C	D	E	F	G	H	I
P	○	○						○	○
R			○						○
N		○		○				○	○
D							○		○
2						○			○
1					○				○

Z3U517W13

- If not as specified, replace or adjust the TR switch. (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION.) (See 05–17–23 TRANSAXLE RANGE (TR) SWITCH ADJUSTMENT.)



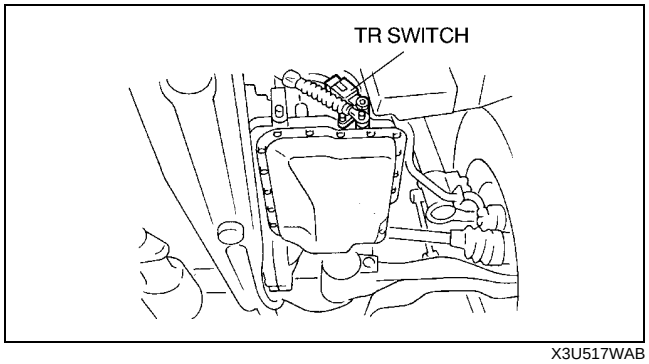
PART SIDE CONNECTOR
(VIEW FROM TERMINAL SIDE)

Z3U517W14

TRANSAXLE RANGE (TR) SWITCH REMOVAL/INSTALLATION

A3U051719440W02

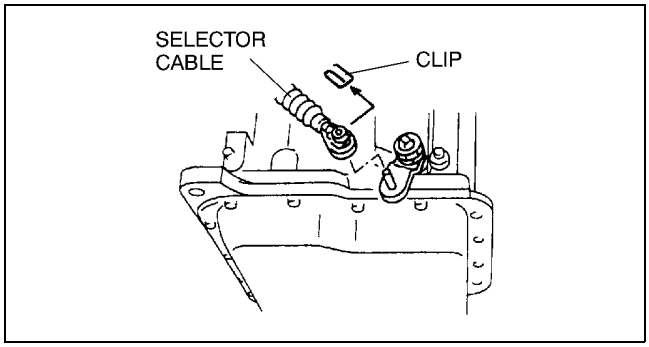
1. Disconnect the negative battery cable.
2. Remove the fresh-air duct and air cleaner component. (See 01–13A–5 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [ZM].) (See 01–13B–6 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [FS].)
3. Remove the splash shield.
4. Disconnect the TR switch connector.



X3U517WAB

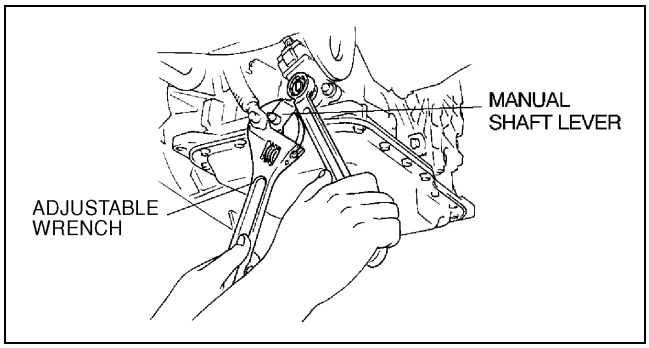
5. Remove the clip and disconnect the selector cable.

Caution
- **Do not use an impact wrench. Hold the manual shaft lever when removing the manual shaft nut, or the transaxle may be damaged.**



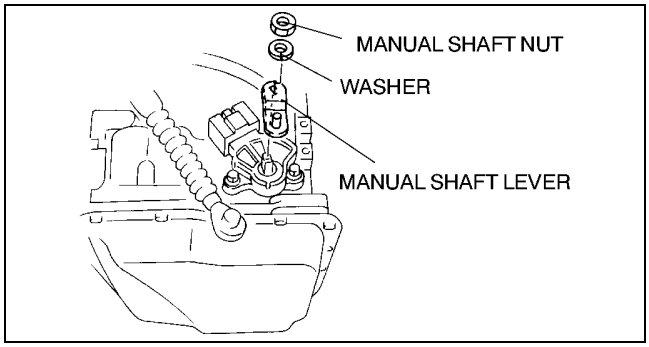
X3U517WAC

6. Set the adjustable wrench as shown to hold the manual shaft lever.
7. Remove the manual shaft nut and washer.



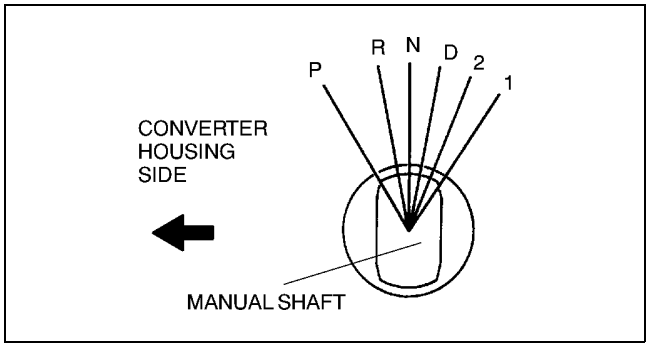
Y3U517WAM

8. Remove the manual shaft lever.
9. Remove the TR switch.



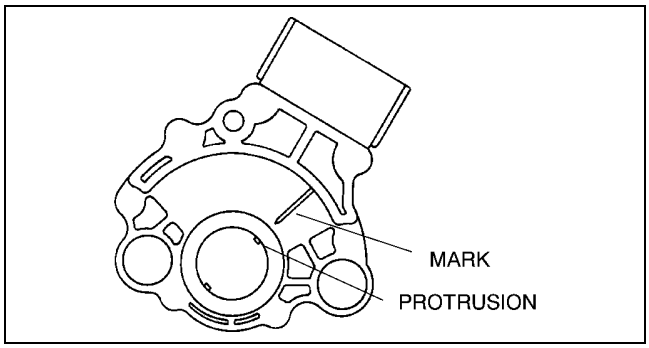
X3U517WAD

10. Rotate the manual shaft to the converter housing side fully, then return 2 notches to set the N position.



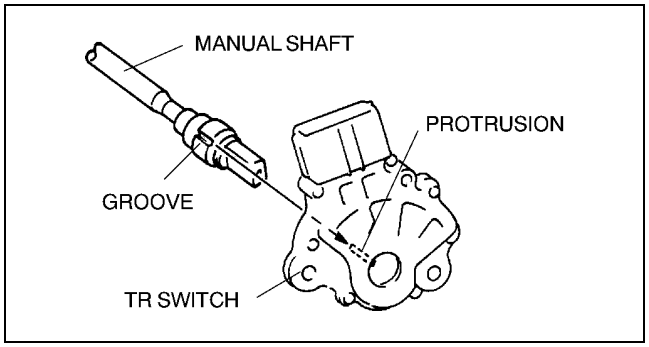
X3U517WAE

11. Align the protrusion and mark as shown.



X3U517WCW

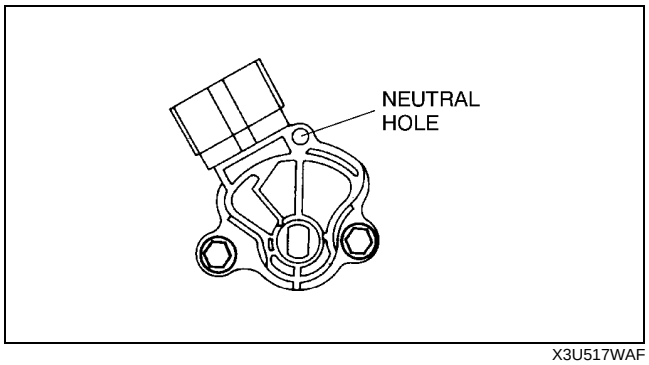
12. Install the TR switch while aligning the protrusion and groove as shown.



X3U517WCX

13. Turn the TR switch so that the neutral hole is in line with the flat, straight surfaces on either side of the manual shaft.
14. Hand-tighten the TR switch bolts.
15. Perform the TR switch adjustment. (See 05–17–23 TRANSAXLE RANGE (TR) SWITCH ADJUSTMENT.)
16. Install the manual shaft lever and washer.

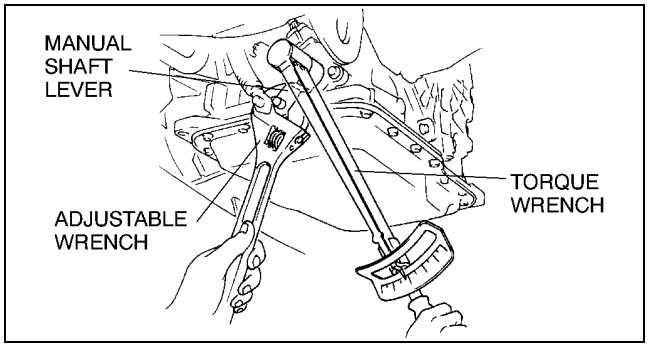
Caution
- **Do not use an impact wrench. Hold the manual shaft lever when tightening the manual shaft nut, or the transaxle may be damaged.**



X3U517WAF

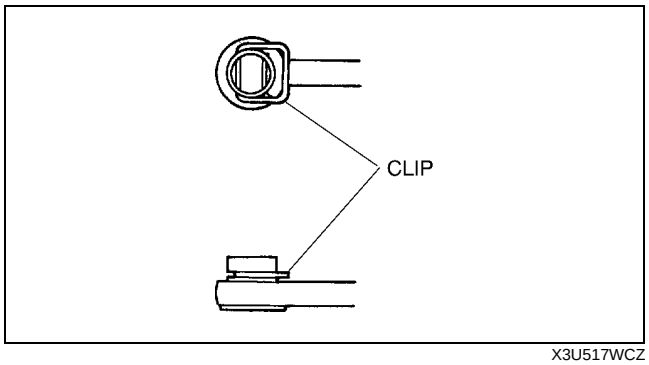
17. Set the adjustable wrench as shown to hold the manual shaft lever.
18. Tighten the manual shaft nut using a torque wrench.

Tightening torque
32—46 N·m {3.2—4.7 kgf·m, 24—33 ft·lbf}



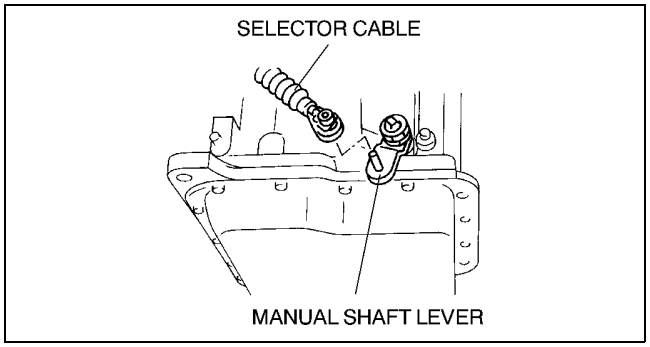
X3U517WAJ

19. Install the clip as shown in the figure.



X3U517WCZ

20. Verify that the selector lever range position and TR switch are aligned, then connect the selector cable.
21. Inspect for continuity at the TR switch. (See 05–17–20 Inspection of Continuity.)
22. Connect the TR switch connector.
23. Install the splash shield.
24. Install the air cleaner component and fresh-air duct. (See 01–13A–5 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [ZM].) (See 01–13B–6 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [FS].)
25. Connect the negative battery cable.
26. Inspect operation of the TR switch. (See 05–17–20 Inspection of Operation.)

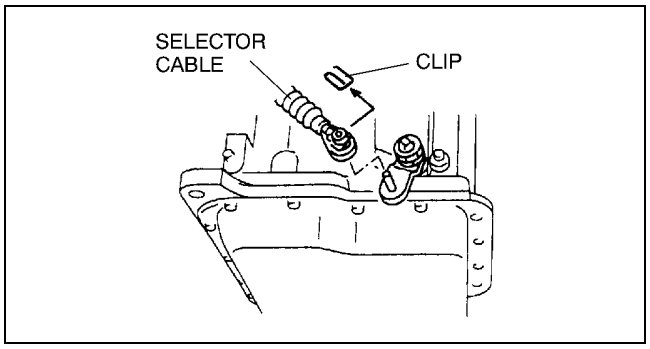


X3U517WAK

TRANSAXLE RANGE (TR) SWITCH ADJUSTMENT

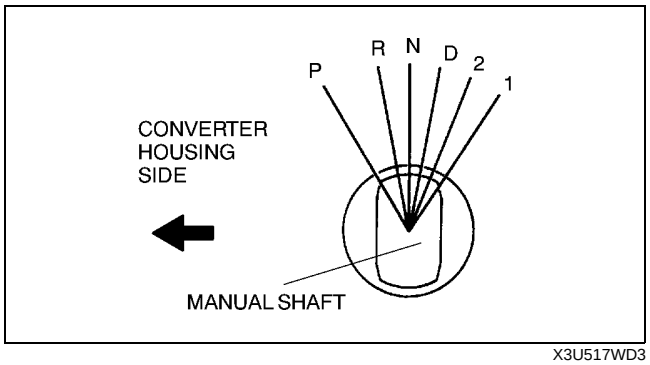
A3U051719440W03

1. Disconnect the negative battery cable.
2. Remove the fresh-air duct and air cleaner component. (See 01–13A–5 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [ZM].) (See 01–13B–6 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [FS].)
3. Remove the splash shield.
4. Remove the clip and disconnect the selector cable.



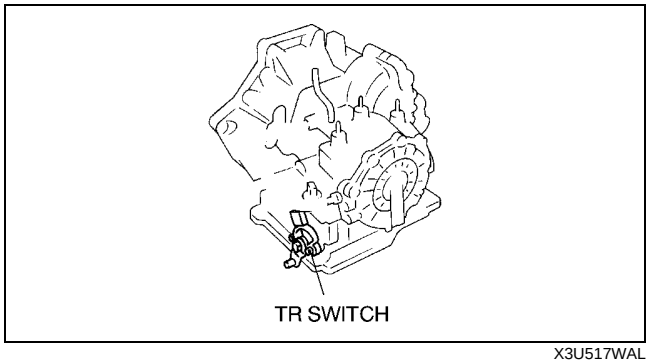
X3U517WD0

5. Rotate the manual shaft to the converter housing side fully, then return 2 notches to set the N position.



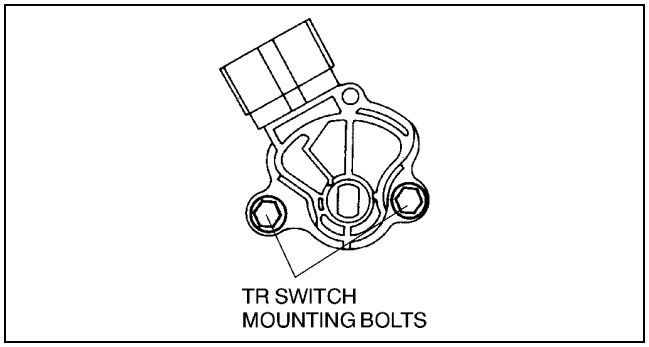
X3U517WD3

6. Disconnect the TR switch connector.



X3U517WAL

7. Loosen the TR switch mounting bolts.

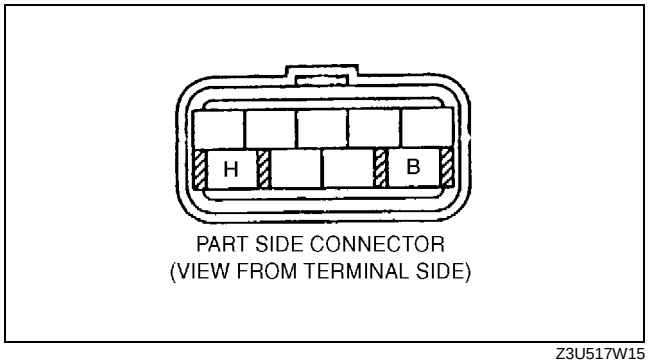


X3U517WAM

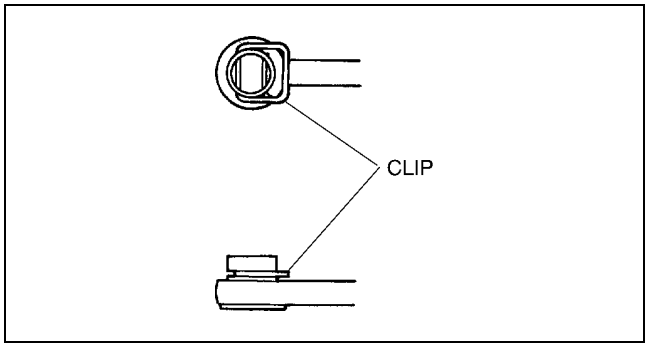
8. Connect an ohmmeter between terminals B and H.
9. Adjust the switch to the point where there is continuity between the terminals.
10. Tighten the TR switch mounting bolts.

    Tightening torque
    7.9—10.7 N·m {80—110 kgf·cm, 69.5—95.4 in·lbf}

11. Verify that the selector lever range position and TR switch are aligned.
12. Connect the TR switch connector.
13. Install the clip as shown in the figure.

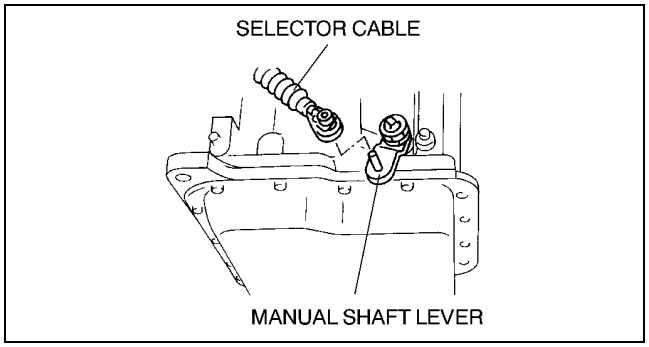


Z3U517W15



X3U517WD1

14. Connect the selector cable.
15. Install the splash shield.
16. Install the air cleaner component and fresh-air duct. (See 01–13A–5 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [ZM].) (See 01–13B–6 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [FS].)
17. Connect the negative battery cable.



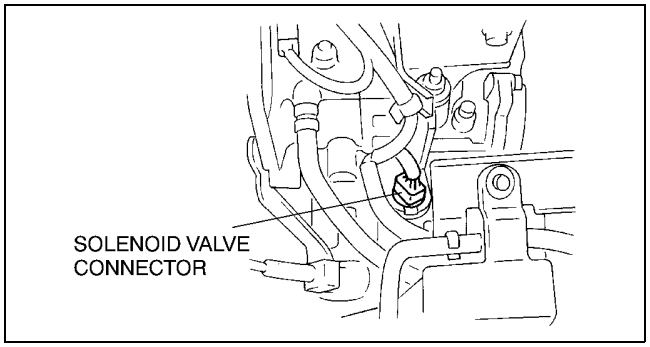
X3U517WD2

TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION

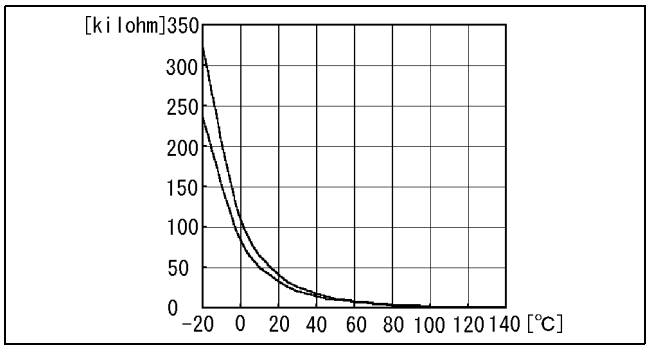
A3U051719010W01

1. Measure the resistance between the terminals E and H.
   - If it is out of specifications, replace the TFT sensor. (See 05–17–25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION.)

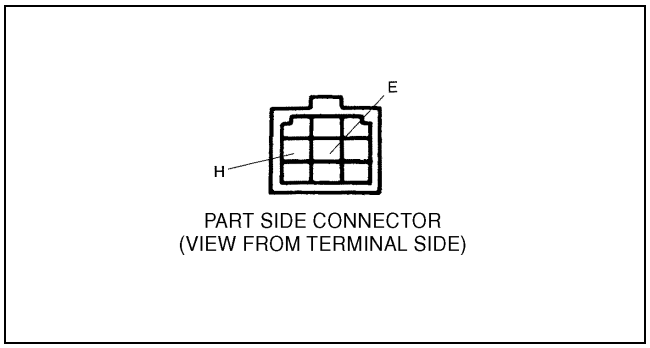
ATF temperature (°C {°F})	Resistance (kilohm}
–20 {–4}	236—324
0 {32}	84.3—110
20 {68}	33.5—42.0
40 {104}	14.7—17.9
60 {140}	7.08—8.17
80 {176}	3.61—4.15
100 {212}	1.96—2.24
120 {248}	1.13—1.28
130 {266}	0.87—0.98



X3U517WAP



Z3U517W12



Y3U517WAA

TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION

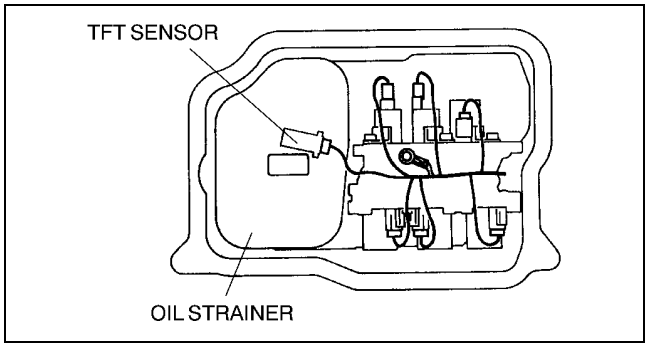
A3U051719010W02

Warning

- **When the transaxle and ATF are hot, they can badly burn. Turn off the engine and wait until they are cool before performing this procedure.**

1. Remove the oil pan. (See 05–17–36 On-vehicle Removal.)
2. Disconnect the TFT sensor connector.

3. Remove the TFT sensor.
4. Install a new TFT sensor.
5. Connect the TFT sensor connector.
6. Install the oil pan. (See 05–17–38 On-vehicle Installation.)
7. Carry out the mechanical system test. (See 05–17–11 MECHANICAL SYSTEM TEST.)



X3U517WAR

INPUT/TURBINE SPEED SENSOR INSPECTION

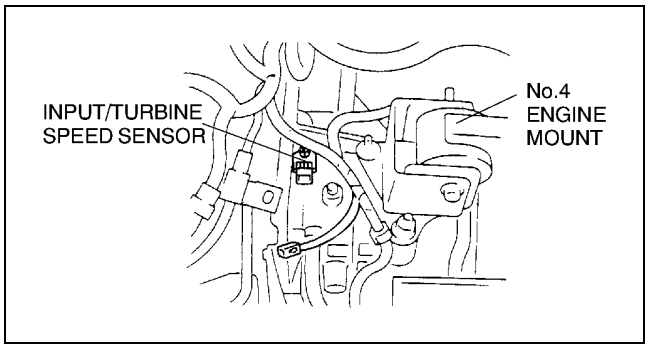
A3U051721550W01

Resistance Inspection

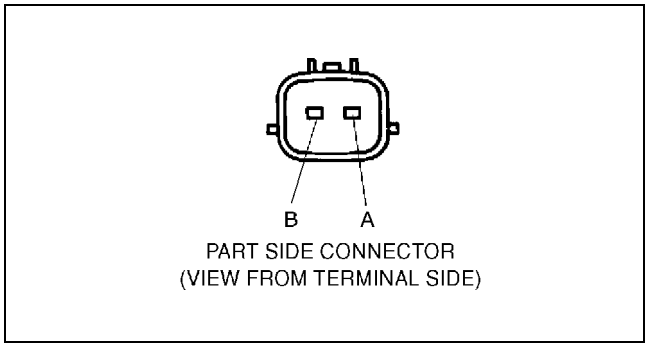
1. Measure the resistance between the terminals of the input/turbine speed sensor.

   Resistance
   250—600 ohms (ATF temperature:–40—160 °C {–40—320 °F})

   - If not as specified, replace the input/turbine speed sensor. (See 05–17–26 INPUT/ TURBINE SPEED SENSOR REMOVAL/ INSTALLATION.)



X3U517WAS



Z3U517W16

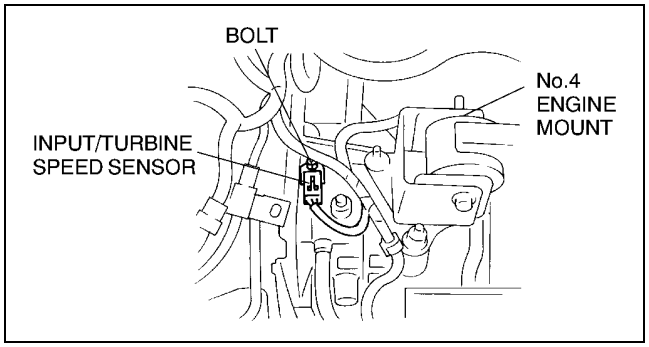
INPUT/TURBINE SPEED SENSOR REMOVAL/INSTALLATION

A3U051721550W02

1. Disconnect the negative battery cable.
2. Remove the air cleaner component. (See 01–13A–5 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [ZM].) (See 01–13B–6 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [FS].)
3. Disconnect the input/turbine speed sensor connector.
4. Remove the input/turbine speed sensor.
5. Apply ATF to a new O-ring and install it on a new input/turbine speed sensor.
6. Install the input/turbine speed sensor.

   Tightening torque
   7.9—10.7 N·m {80—110 kgf·cm, 69.5—95.4 in·lbf}

7. Connect the input/turbine speed sensor connector.
8. Install the air cleaner component. (See 01–13A–5 INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [ZM].) (See 01–13B–6 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [FS].)
9. Connect the negative battery cable.



X3U517WAU

VEHICLE SPEEDOMETER SENSOR (VSS) INSPECTION [ATX]

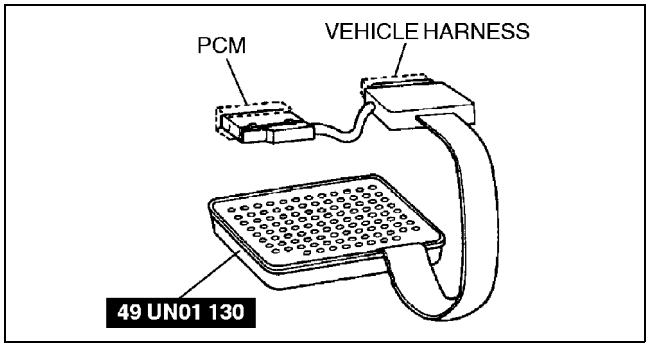
A3U051717401W01

Visual Inspection

1. Remove the VSS. (See 05–17–28 VEHICLE SPEEDOMETER SENSOR (VSS) REMOVAL/INSTALLATION [ATX].)
2. Make sure that the sensor is free of any metallic shavings or particles.
   - If any are found on the sensor, clean them off.
3. Install the VSS. (See 05–17–28 VEHICLE SPEEDOMETER SENSOR (VSS) REMOVAL/INSTALLATION [ATX].)

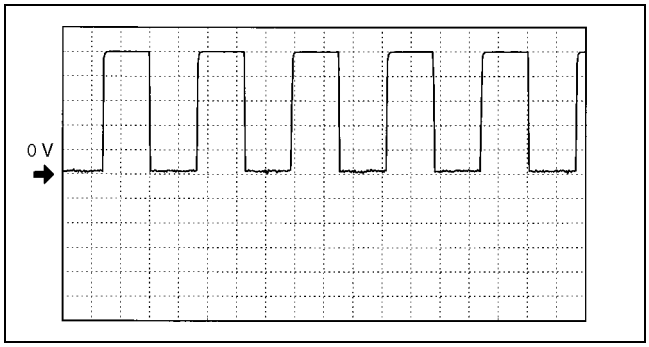
Wave profile Inspection

1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)
2. Connect WDS or equivalent to DLC-2 connector.
3. Connect the **SST** (104 Pin Breakout Box) to the PCM as shown.
4. Connect osilloscope test leads to the following PCM connector terminals.
   - (+) lead: PCM terminal 58
   - (-) lead: PCM terminal 103
5. Start the engine.
6. Monitor VSS PID.



A3U0517W001

7. Inspect wave profile.
   - PCM terminal: 58 (+)-103(-)
   - Oscilloscope setting: 1 V/DIV(Y), 2.5 ms/DIV(X), DC range
   - Vehicle condition: drive the vehicle with 32 km/h{20 mph}
     — If wave profile or voltage are out of specifications, carry out the “Open Circuit Inspection” or “Short Circuit Inspection”



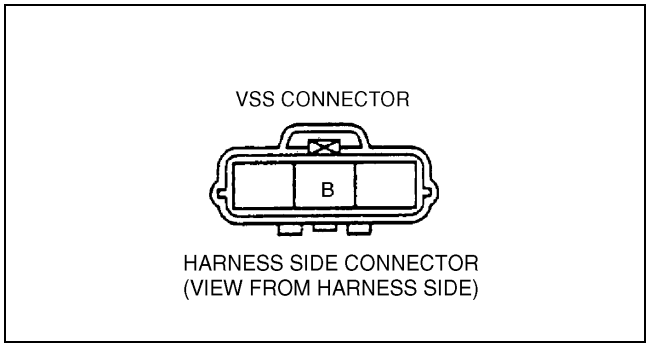
Z3U0140W013

Power Supply Voltage Inspection

1. Disconnect the VSS connector.
2. Turn the ignition switch to ON.
3. Measure voltage at VSS connector terminal B (wiring harness side).

   Specification
   4.5—5.5 V

   - If voltage is okay, go to “See 05–17–27 Open Circuit Inspection” and “Short Circuit Inspection”.
   - If voltage is wrong, repair wiring harness between VSS and PCM.



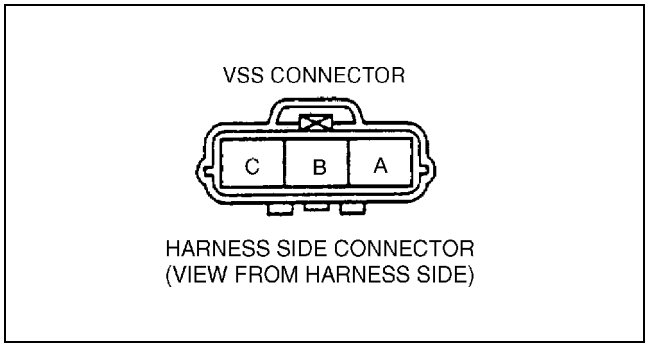
Y3U517WAE

Open Circuit Inspection

1. Inspect the following circuit for open.
   - Power circuit (VSS connector terminal A to main relay terminal D)
   - Ground circuit (VSS connector terminal C to GND)
   - If an open circuit or short circuit is found, repair the malfunctioning wiring harness.
   - If there are no open or short circuits, perform the sensor rotor inspection. (See 05–17–28 Sensor Rotor Inspection.)

Short Circuit Inspection

1. Inspect the following circuit for short.
   - Power circuit (VSS connector terminal A to main relay terminal D)
   - If an open circuit or short circuit is found, repair the malfunctioning wiring harness.
   - If there are no open or short circuits, perform the sensor rotor inspection. (See 05–17–28 Sensor Rotor Inspection.)



Z3U517W17

Sensor Rotor Inspection

1. Remove the VSS. (See 05–17–28 VEHICLE SPEEDOMETER SENSOR (VSS) REMOVAL/INSTALLATION [ATX].)
2. Shift the selector lever to N position.
3. Inspect sensor rotor surface via VSS installation hole while rotating the front tire manually.
   (1) Is sensor rotor free of damage and cracks?
   (2) Is sensor rotor free of any metallic shavings or particles?
      - If sensor rotor is okay, replace VSS.
      - If there is a problem, clean or replace the sensor rotor.

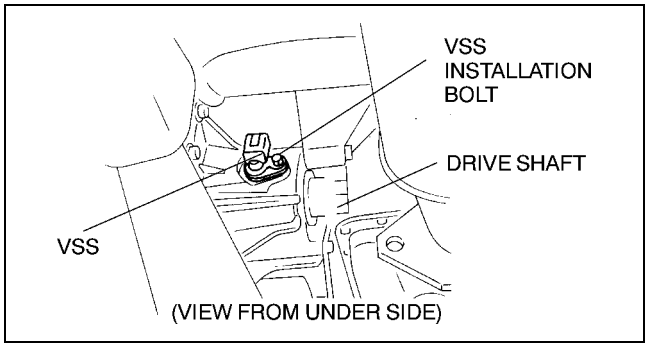
VEHICLE SPEEDOMETER SENSOR (VSS) REMOVAL/INSTALLATION [ATX]

A3U051717401W02

1. Disconnect the negative battery cable.
2. Disconnect the VSS connector.
3. Remove the VSS.
4. Apply ATF to a new O-ring and install it on a new VSS.
5. Install the VSS.

   Tightening torque
   7.9—10.7 N·m {80—110 kgf·cm, 69.5—95.4 in·lbf}

6. Connect the VSS connector.
7. Connect the negative battery cable.



X3U517WAZ

SOLENOID VALVES INSPECTION

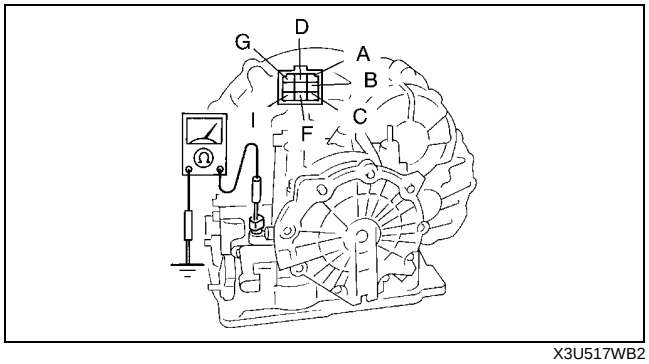
A3U051721280W01

Inspection of Resistance (On-vehicle)

1. Measure the resistances between the following terminals.
   - If any resistances are out of specifications, inspect the ground, then perform the operation and the part inspection.

ATF temperature: **–40—150 °C {–40—302 °F}**

Terminal	Solenoid valve	Resistance (ohm)
A-GND	Shift solenoid A	1.0—4.2
B-GND	Shift solenoid D	10.9—26.2
C-GND	Shift solenoid B	1.0—4.2
D-I	Pressure control solenoid	2.4—7.3
F-GND	Shift solenoid E	10.9—26.2
G-GND	Shift solenoid C	1.0—4.2

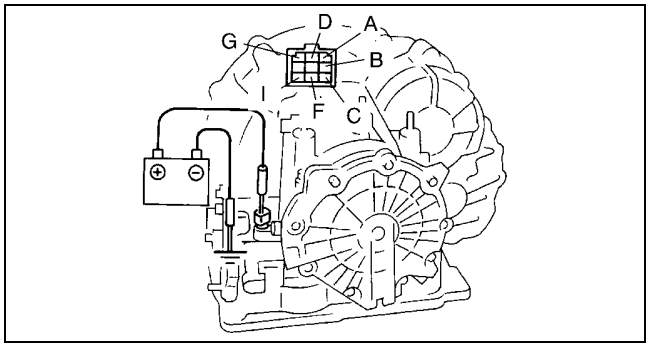


X3U517WB2

Inspection of Operation

Note
- When inspecting the pressure control solenoid, connect the GND connection to the GND terminal (I terminal) of the pressure control solenoid inside the solenoid valve connector.
- Do not apply voltage for more than **3 seconds**.

1. Apply B+ to terminal A, B, C, F, or G and battery negative voltage to GND, and verify that a click sound is heard from each solenoid.
   - If the click sound is not heard from each solenoid, replace solenoids.
2. Apply B+ to terminal D and battery negative voltage to terminal I, and verify that a click sound is heard from solenoid.
   - If the “click” is not heard, replace the solenoid valve. (See 05–17–30 SOLENOID VALVES REMOVAL/INSTALLATION.)

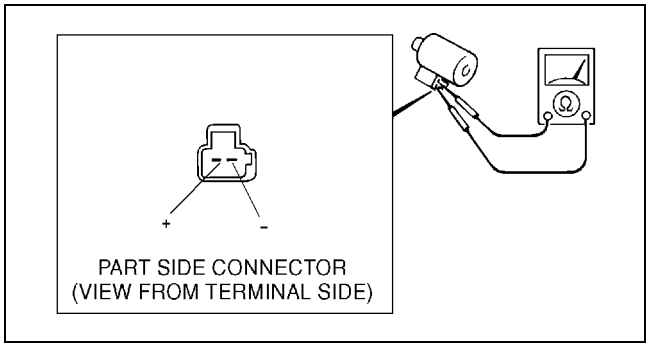


X3U517WB3

Resistance Inspection (Off-vehicle)
1. Measure the resistance of each solenoid valve individually.
   - If not as specified, replace the solenoid valve.

Pressure control solenoid

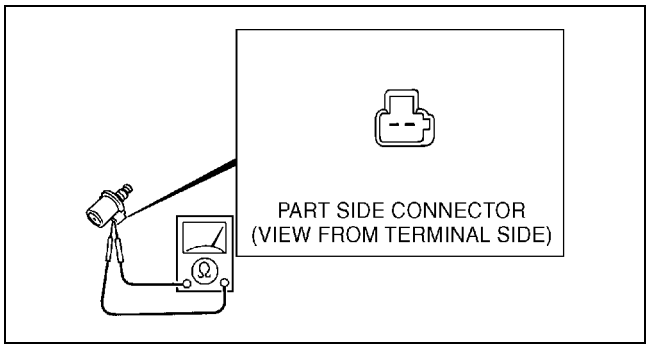
Resistance: 2.4—7.3 ohms



Z3U517W05

Shift solenoid A, B, C

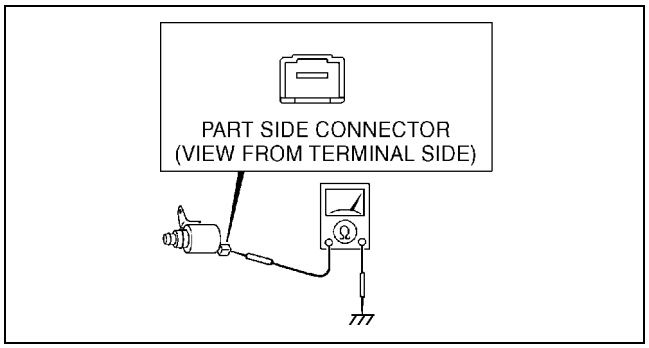
Resistance: 1.0—4.2 ohms



Z3U517W06

Shift solenoid D, E

Resistance: 10.9—26.2 ohms



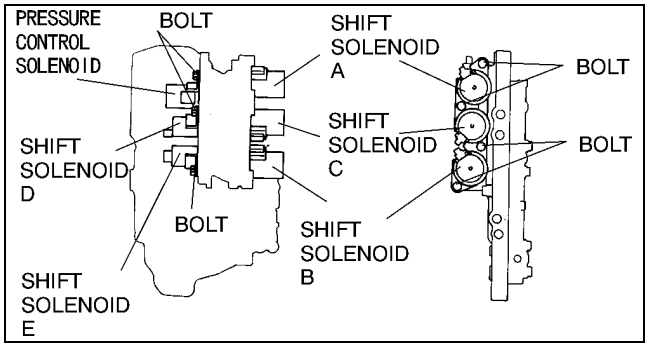
Z3U517W07

SOLENOID VALVES REMOVAL/INSTALLATION

A3U051721280W02

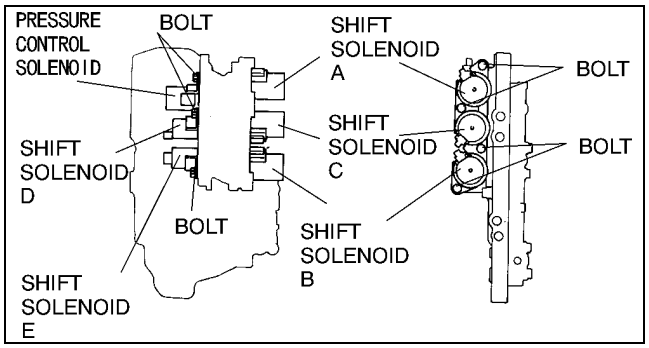
1. Remove the control valve body. (See 05–17–36 On-vehicle Removal.)
2. Remove the solenoid valve(s).
3. Apply ATF to a new O-ring and install it on the solenoid valve.
4. Install the solenoid valve in the control valve body.

Tightening torque
7.9—10.7 N·m {80—110 kgf·cm, 69.5—95.4 in·lbf}



X3U517WB7

5. Install the control valve body. (See 05–17–38 On-vehicle Installation.)
6. Add in ATF and, with the engine idling, inspect the ATF level and inspect for leakage. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.) (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)
7. Carry out the mechanical system test. (See 05–17–11 MECHANICAL SYSTEM TEST.)
8. Carry out the road test. (See 05–17–14 ROAD TEST.)



X3U517WB8

O/D OFF INDICATOR LIGHT INSPECTION

A3U051755480W01

Inspection of Operation

1. Turn the IG SW from OFF to ON.

Note
- The O/D OFF indicator light flashes when any malfunction exists in the EC-AT system components.

2. Verify that the O/D OFF indicator light is not illuminating.
3. Depress the switch and verify that the O/D OFF indicator light illuminates.
   - If the O/D OFF switch does not function, inspect the O/D OFF switch, and then inspect the terminal voltage of the O/D OFF indicator light.

PCM INSPECTION

A3U051718880W01

1. Inspect the PCM. (See 01–40A–7 PCM INSPECTION [ZM].) (See 01–40B–7 PCM INSPECTION [FS].)

PCM REMOVAL/INSTALLATION

A3U051718880W02

1. Remove and install the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].) (See 01–40B–7 PCM REMOVAL/INSTALLATION [FS].)

AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION

A3U051701030W07

1. Drain the ATF. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
2. Remove the tires and splash shield.
3. Remove the battery and battery carrier.
4. Remove the fresh-air duct and air cleaner component. (See 01–13A–5 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [ZM].) (See 01–13B–6 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [FS].)
5. Remove the EGR pipe, front pipe and TWC. (See 01–15–1 EXHAUST SYSTEM REMOVAL/INSTALLATION.)

Warning

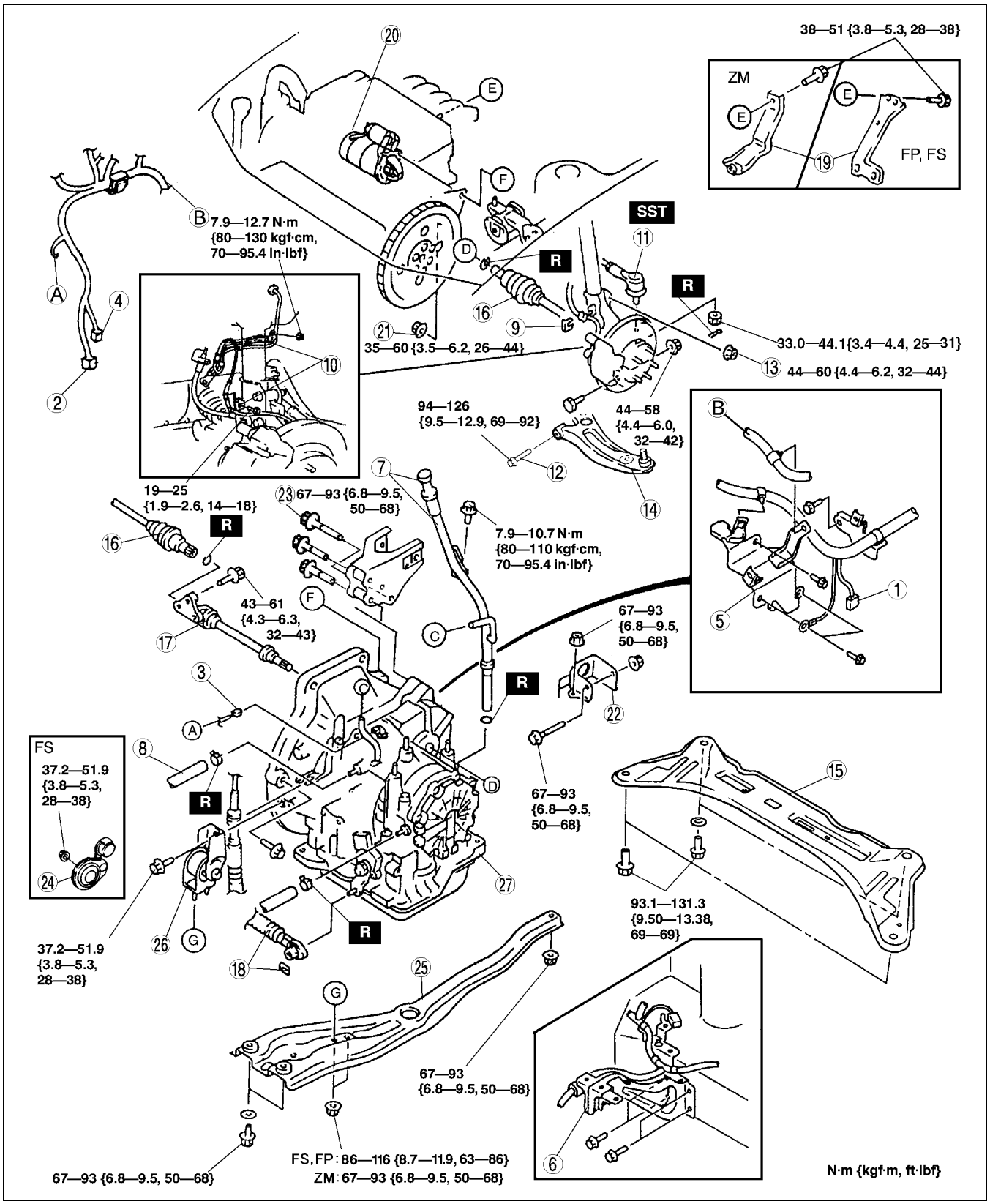
- **Improperly jacking a transaxle is dangerous. It can slip off the jack and may cause serious injury.**

6. Remove in the order indicated in the table.
7. Install in the reverse order of removal.
8. Add ATF to the specified level. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
9. Carry out the mechanical system test. (See 05–17–11 MECHANICAL SYSTEM TEST.)

Service item	Test item		
	Line pressure test	Stall test	Time lag test
ATX replacement	×		
ATX overhaul	×	×	×
Torque converter replacement	×	×	
Oil pump replacement	×		
Clutch system replacement	×		

× : Test to be performed after the service work

10. Carry out the road test. (See 05–17–14 ROAD TEST.)



A3U0517W005

1	Vehicle speedometer sensor connector
2	TR switch connector
3	Input/turbine speed sensor connector
4	Transaxle connector
5	Harness bracket
6	Battery tray bracket

7	Oil dipstick and filler tube
8	Oil hose
9	Brake hose clip
10	ABS wheel speed sensor bracket
11	Tie rod end (See 06–12–9 STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.)

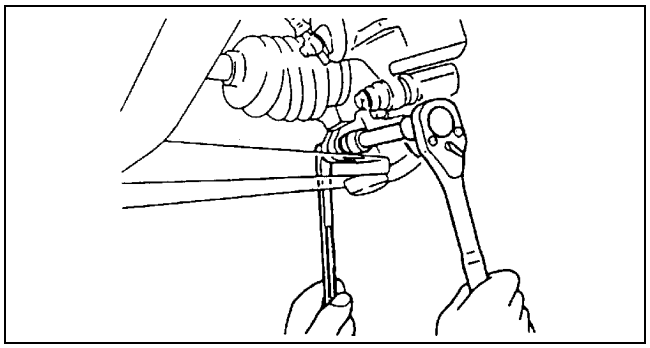
12	Bolt
13	Stabilizer control link nut
14	Lower arm (See 05–17–33 Lower Arm Removal Note.)
15	Transverse member (See 02–13–9 TRANSVERSE MEMBER (ZM (ATX), FS) REMOVAL/INSTALLATION.)
16	Drive shaft (See 03–13–9 DRIVE SHAFT REMOVAL/ INSTALLATION.)
17	Joint shaft (See 03–13–3 JOINT SHAFT REMOVAL/ INSTALLATION.)
18	Selector cable
19	Intake manifold stay
20	Starter
21	Torque converter installation nuts (See 05–17–34 Torque Converter Installation Nuts Removal Note.)
22	No.4 engine mount (See 05–17–34 No.4 Engine Mount Removal Note.) (See 05–17–35 No.2 Engine Mount, Engine Mounting Member, No.4 Engine Mount Installation Note.)
23	No.1 engine mount bolts
24	Roll damper (FS)
25	Engine mounting member (See 05–17–35 No.2 Engine Mount, Engine Mounting Member, No.4 Engine Mount Installation Note.)
26	No.2 engine mount (See 05–17–35 No.2 Engine Mount, Engine Mounting Member, No.4 Engine Mount Installation Note.)
27	Transaxle (See 05–17–34 Transaxle Removal Note.) (See 05–17–35 Transaxle Installation Note.)

Lower Arm Removal Note

1. Remove the clinch bolt from the lower arm ball joint.

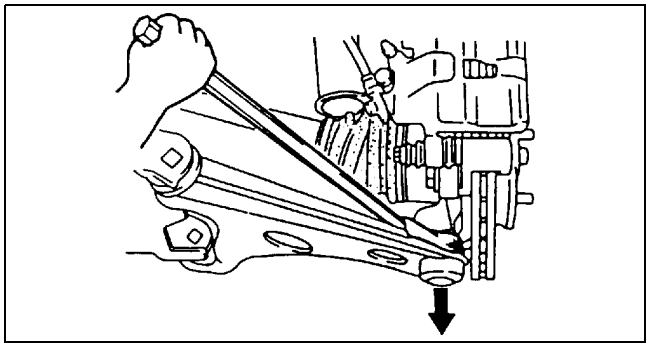
Caution

- **Wrap a rag around the ball joint dust seal to protect it from damage.**



Y3E5614W005

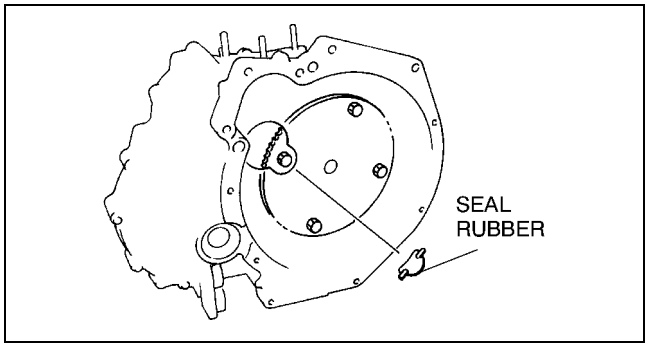
2. Pry the lower arm out of the knuckle.



Y3E5614W006

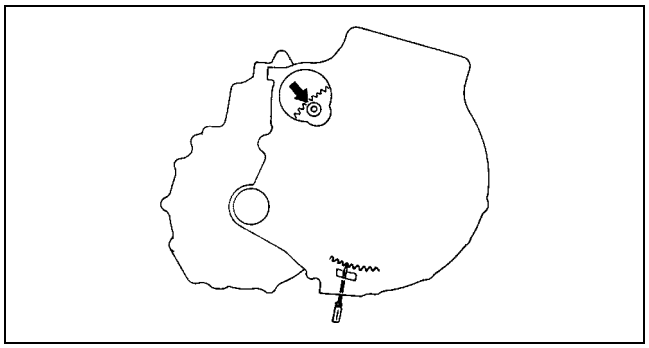
Torque Converter Installation Nuts Removal Note

1. Remove the seal rubber from the end plate.



Y3E5614W007

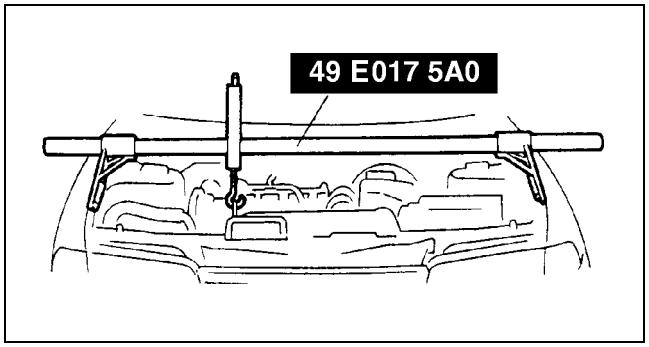
2. Remove the torque converter nuts.



Y3E5614W008

No.4 Engine Mount Removal Note

1. Support the engine by using the **SST** before removing the engine mounting member.
2. Remove the No.4 engine mount.



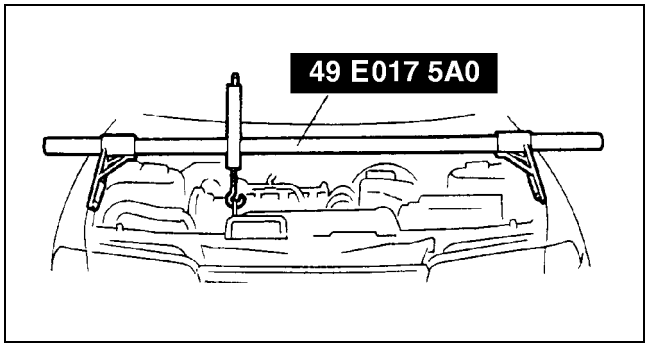
Z3U110WFK

Transaxle Removal Note

1. Loosen the **SST (engine support)** and lean the engine toward the transaxle.
2. Support the transaxle on a jack.

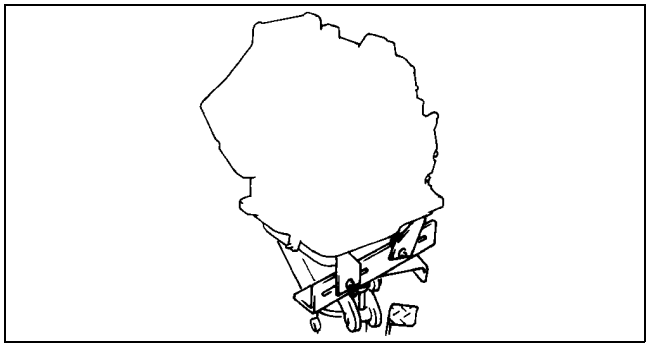
   Warning
   - **Do not allow the transaxle to fall from the jack.**

3. Remove the transaxle mounting bolts.



Z3U110WFK

4. Remove the transaxle.

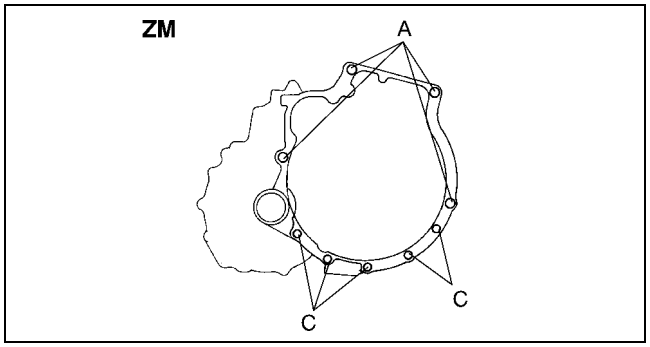


Y3E5614W010

Transaxle Installation Note

Warning
- **Do not allow the transaxle to fall from the jack.**

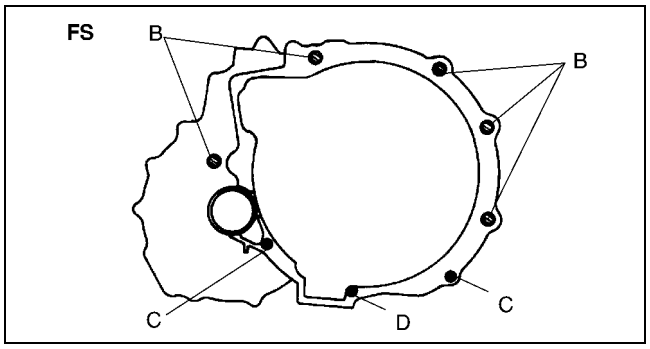
1. Set the transaxle on a jack and lift it.
2. Install the transaxle mounting bolts.



Y3E5614W011

Tightening torque
A: 64—89 N·m {6.5—9.1 kgf·m, 48—65 ft·lbf}
B: 90—116 N·m {9.1—11.9 kgf·m, 66—86 ft·lbf}
C: 38—51 N·m {3.8—5.3 kgf·m, 28—38 ft·lbf}
D: 19—25 N·m {1.9—2.6 kgf·m, 14—18 ft·lbf}

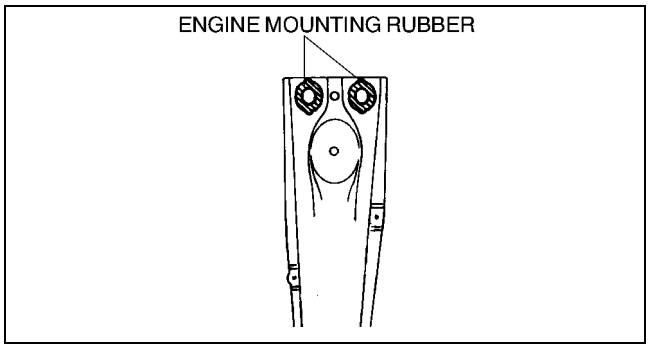
3. Tighten the **SST** (49 E017 5A0) so that the engine is located at the specified position.



Z3U517W08

No.2 Engine Mount, Engine Mounting Member, No.4 Engine Mount Installation Note

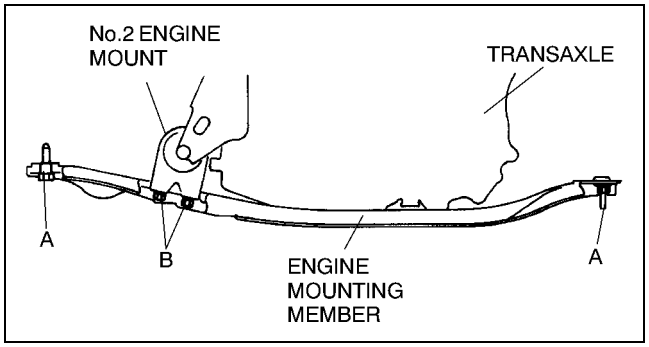
1. Verify that the engine mounting rubber is installed as shown.
2. Install the No.2 engine mount to the transaxle.
3. Put the No.2 engine mount stud bolts in the installing holes when installing the engine mounting member.



Y3E5614W013

4. Install the bolts and nuts A, then the nuts B as shown.

   Tightening torque
   A: 67—93 N·m {6.8—9.5 kgf·m, 50—68 ft·lbf}
   B (ZM): 67—93 N·m {6.8—9.5 kgf·m, 50—68 ft·lbf}
   B (FS): 86—116 N·m {8.7—11.9 kgf·m, 63—86 ft·lbf}

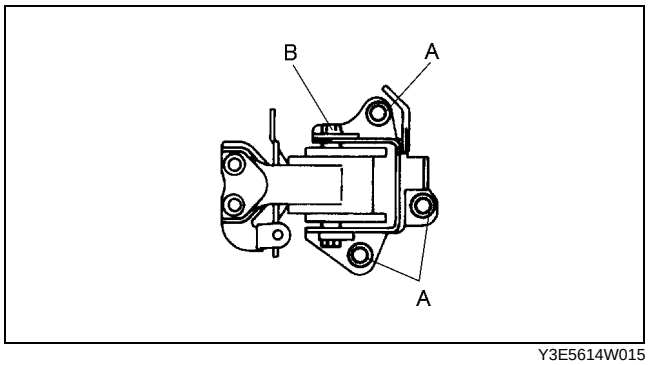


Y3E5614W014

5. Install the No.4 engine mount bracket by passing it through the stud bolt on the transaxle.
6. Match the positions of the No.4 engine mount bracket and the rubber, then temporarily tighten installation bolt A.
7. Tighten installation nut B, then tighten bolt A.

   Tightening torque
   A, B: 67—93 N·m {6.8—9.5 kgf·m, 50—68 ft·lbf}

8. Remove the **SST (49 E017 5A0).**



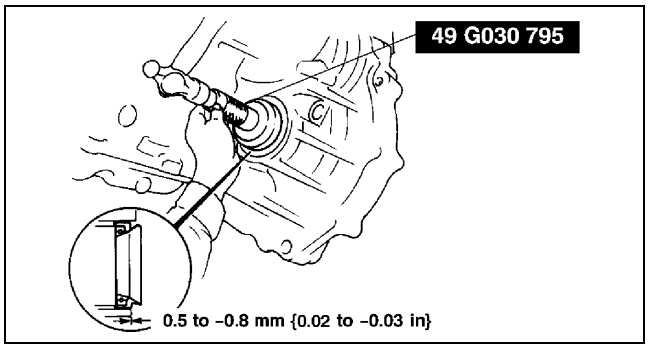
Y3E5614W015

OIL SEAL (TRANSAXLE) REPLACEMENT

A3U051719240W01

1. Drain the ATF. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
2. Remove the drive shaft. (See 03–13–9 DRIVE SHAFT REMOVAL/INSTALLATION.)
3. Remove the oil seal.
4. Using the **SST** and a hammer, tap a new oil seal in evenly until the **SST** contacts the transaxle case.
5. Coat the lip of the oil seal with transaxle oil.

   Caution
   - **The oil seal is easily damaged by the sharp edges of the drive shaft splines. Do not let the splines contact the oil seal.**



Y3U517WAL

6. Install the drive shaft. (See 03–13–9 DRIVE SHAFT REMOVAL/INSTALLATION.)
7. Add ATF to the specified level. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
8. Carry out the mechanical system test. (See 05–17–11 MECHANICAL SYSTEM TEST.)

CONTROL VALVE BODY REMOVAL/INSTALLATION

A3U051721100W01

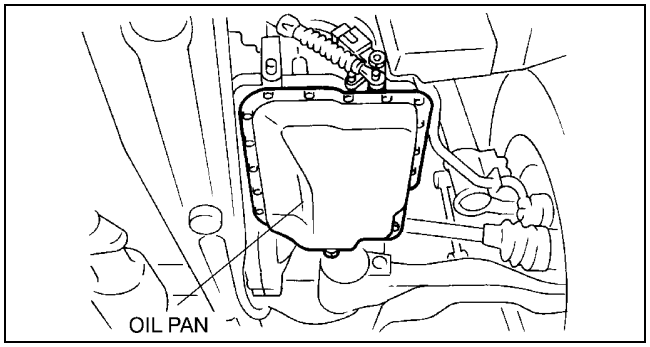
On-vehicle Removal

Warning
- **Using compressed air can cause dirt and other particles to fly out, causing injury to the eyes. Wear protective eye wear whenever using compressed air.**

Caution
- **Clean the transaxle exterior throughout with a steam cleaner or cleaning solvents before removal.**
- **If any old sealant gets into the transaxle during installation of the oil pan, trouble may occur in the transaxle. Remove any old sealant from the transaxle case and oil pan, and clean with cleaning fluids.**

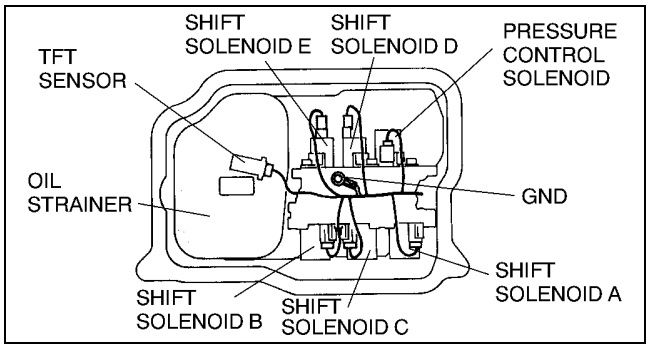
1. Disconnect the negative battery cable.
2. Drain the ATF into a separate suitable container. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)

3. Remove the splash shield.
4. Remove the oil pan.
5. Disconnect the solenoid connectors and TFT sensor connector and GND.



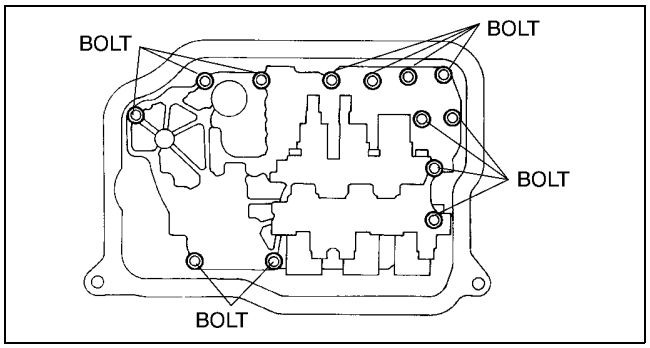
X3U517WBP

6. Remove the oil strainer.



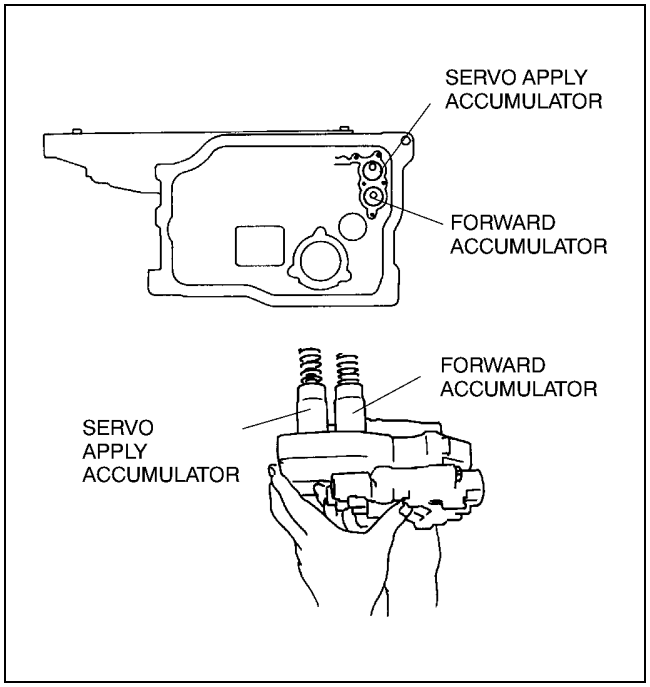
X3U517WBQ

7. Remove the control valve body component as shown.



X3U517WBR

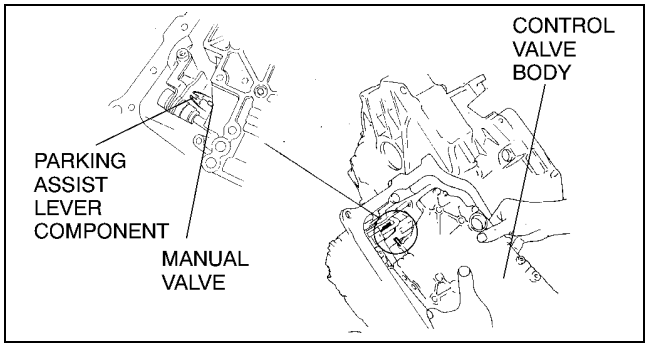
8. Remove the accumulators and accumulator springs.



X3U517WCU

On-vehicle Installation

Caution
- **Be sure to align the parking rod and the manual valve.**

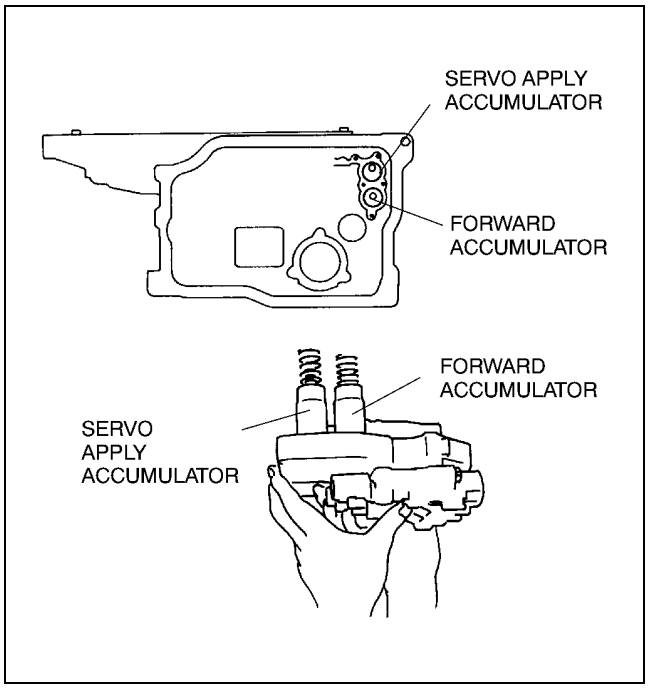


X3U517WBS

1. Install the accumulator springs and accumulator into the transaxle case.

Accumulator springs specification

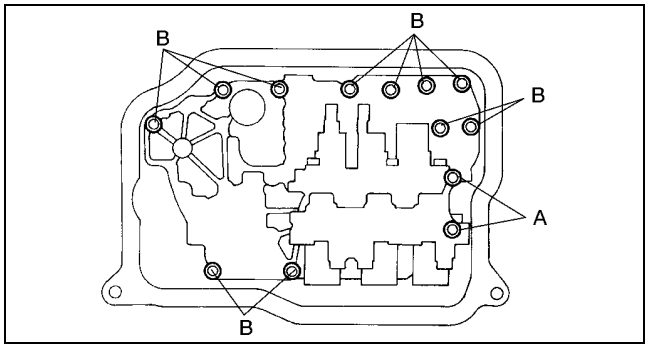
Spring	Outer diameter (mm {in})	Free length (mm {in})	No. of coils	Wire diameter (mm {in})
Servo apply accumulator large spring	21.0 {0.827}	67.8 {2.67}	10.3	3.5 {0.14}
Servo apply accumulator small spring	13.0 {0.512}	67.8 {2.67}	17.1	2.2 {0.087}
Forward accumulator large spring	21.0 {0.827}	75.0 {2.95}	10.7	2.3 {0.091}
Forward accumulator small spring	15.6 {0.614}	55.0 {2.17}	12.9	2.4 {0.094}



X3U517WBT

2. Install the control valve body component.

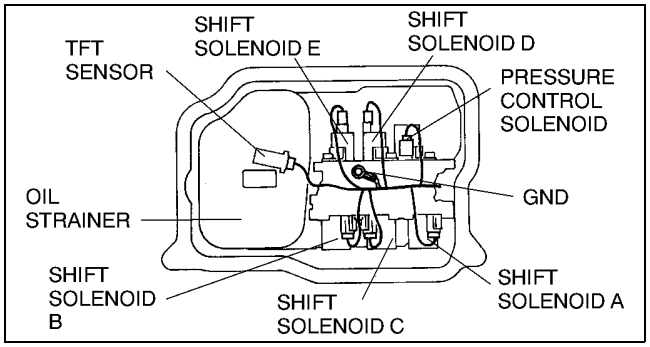
Tightening torque
7.9—10.7 N·m {80—110 kgf·cm, 69.5—95.4 in·lbf}
Bolt length (measured from below the head)
A: 70 mm {2.8 in}
B: 40 mm {1.6 in}



X3U517WBU

3. Install the oil strainer.

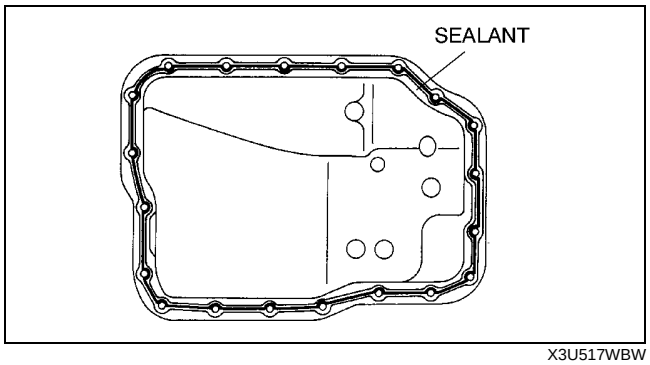
4. Match the harness colors, then connect the solenoid connectors and TFT sensor connector.



X3U517WBV

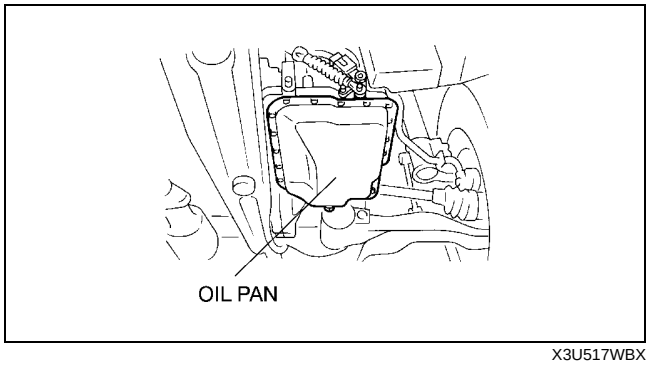
5. Apply a light coat of silicon sealant to the contact surfaces of the oil pan and transaxle case.
6. Install the oil pan.

Tightening torque
7.9—10.7 N·m {80—110 kgf·cm, 69.5—95.4 in·lbf}



X3U517WBW

7. Install the splash shield.
8. Connect the negative battery cable.
9. Add ATF, and with the engine idling, inspect the ATF level. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.) (See 05–17–18 Automatic Transaxle Fluid (ATF) Level Inspection.)
10. Carry out the mechanical system test. (See 05–17–11 MECHANICAL SYSTEM TEST.)
11. Carry out the road test. (See 05–17–14 ROAD TEST.)



X3U517WBX

OIL COOLER FLUSHING

A3U051719900W01

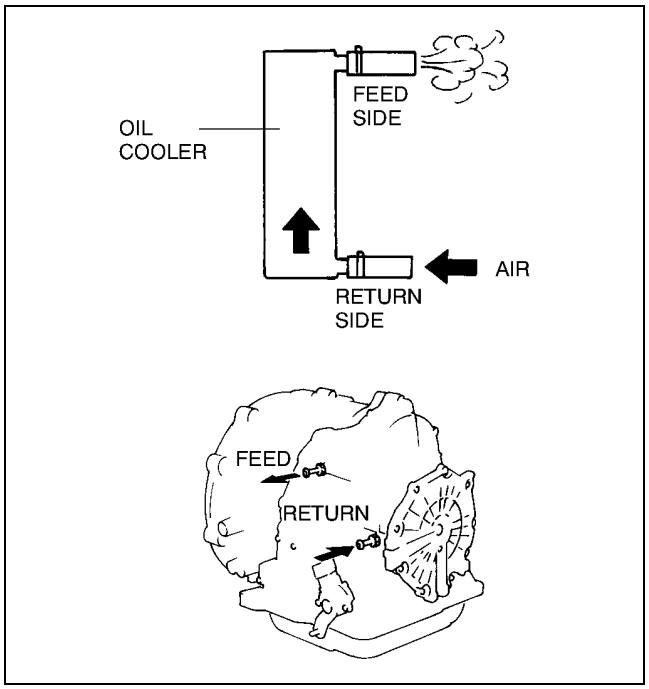
Note
- The contaminated cooler line (oil pipes and hoses) and auxiliary cooler (if equipped) must be flushed completely when ATX is overhauled or replaced.

1. Remove the two oil cooler line hoses and apply air pressure of **200 kPa {2.0 kgf/cm^2, 28 psi}** from the return hose (pipe) side.
   - If there is no ventilation, flush the oil cooler lines using the power-flushing tool. (See 05–17–40 Power Flushing)
   - If there is ventilation, go to next step.

Caution
- **Power flushing should be performed very carefully when removing the accumulated debris from the fluid baffle, otherwise the debris cannot be removed or the problem becomes even worse.**

Recommended Power-flushing Manufacturer

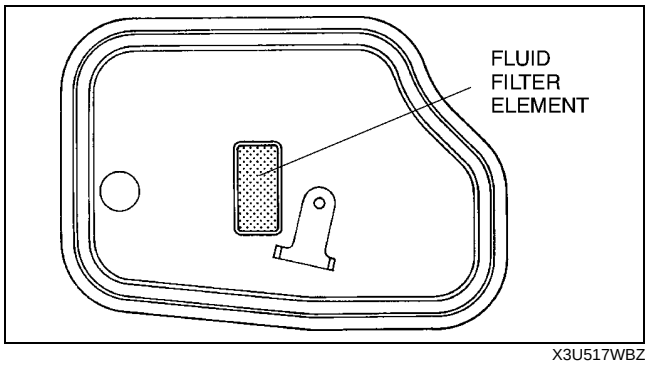
Manufacturer	Part number	Description
Kent Moore	J35944-AMAZ	Flushing kit or equivalent
OTC	60081	Portable torque converter, oil cooler cleaner or equivalent



X3U517WBY

2. Carry out the followings steps.
   (1) Remove the oil pan and inspect the fluid filter element from the front filter.
      - If the element is covered with too much debris or particles and cannot be seen, replace the oil cooler. (See 05–17–41 OIL COOLER REMOVAL/INSTALLATION.)
      - If the element can be seen, flush the oil cooler lines using the power-flushing tool.

Note
- Performing back and reverse power flushing **2 times** each does not work because debris or particles flow out from the feed pipe side of ATX.



X3U517WBZ

Power Flushing
Repair procedure
1. Before power flushing, inspect the hoses/lines and clamps. Power flushing must begin with back flushing followed by forward flushing to quickly dislodge the restriction.
   - If back flushing is not performed before forward flushing, the restriction could further reduce the ATF flow through the internal mesh type baffle of the cooler and flushing will not be effective or possible.

Inspecting oil lines & clamps
1. Be sure to Inspect the lines (hoses/pipes) for cuts, crimps (pinched), cracks or any other damage before reusing them.
   - If any problems exist, replace hoses and/or pipes.

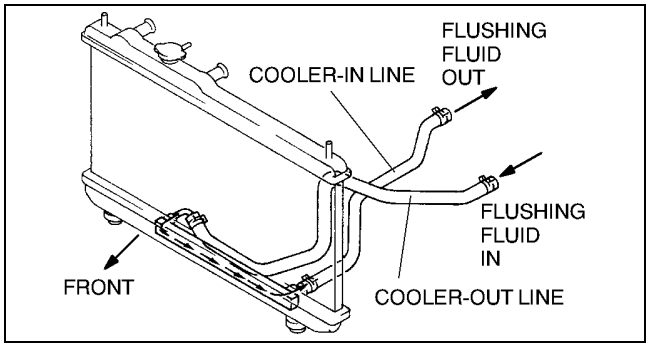
Caution
- **Always use new clamps when replacing hoses.**

Back flushing

1. Using the power flushing equipment manufacturer's instructions, connect equipment so the flushing fluid flows in the opposite direction of normal fluid flow.
2. Flush oil cooler/lines until discharge fluid is clean.

Caution

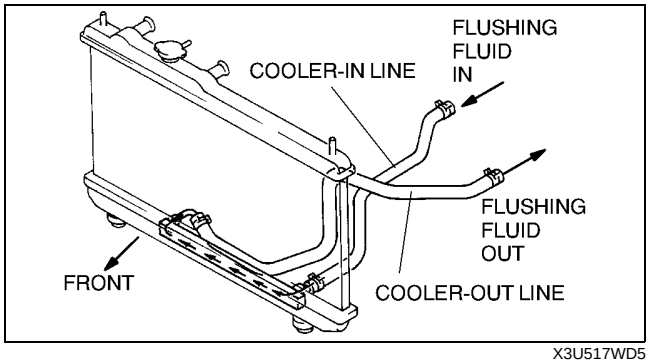
- **If the cooler can not be properly flushed using recommended equipment, send the radiator out for sublet cleaning or replace.**



X3U517WD4

Forward flushing

1. Connect power flushing equipment so the flushing fluid flows in the direction of normal fluid flow.
2. Flush oil cooler/lines until discharge fluid is clean.

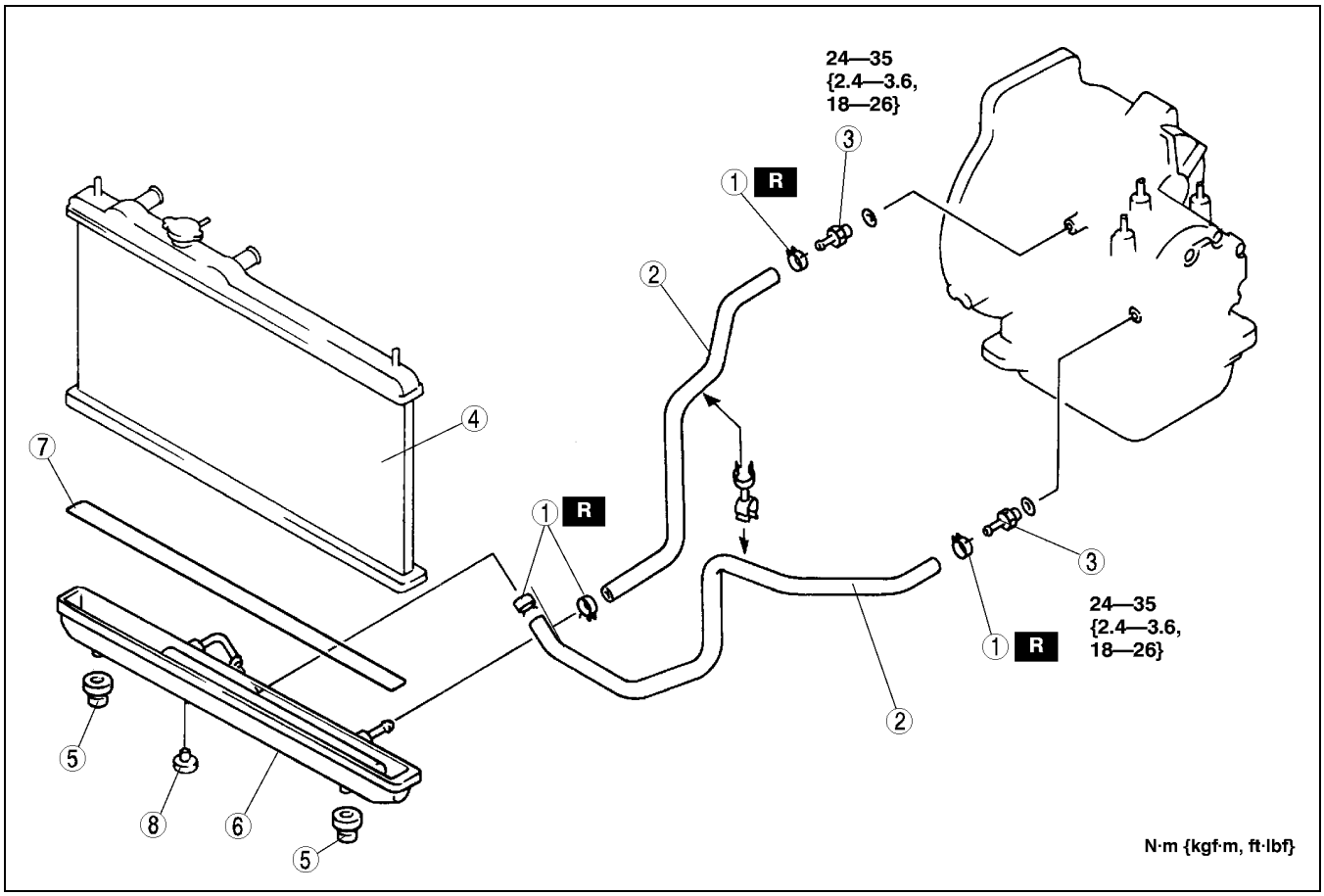


X3U517WD5

OIL COOLER REMOVAL/INSTALLATION

A3U051719900W02

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. Add engine coolant. (See 01–12–2 COOLING SYSTEM SERVICE WARNINGS.) (See 01–12–3 ENGINE COOLANT REPLACEMENT.)
4. Add ATF to the specified level. (See 05–17–18 AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT.)
5. Inspect for the coolant and ATF leakage.
6. Carry out the mechanical system test. (See 05–17–11 MECHANICAL SYSTEM TEST.)
7. Carry out the road test. (See 05–17–14 ROAD TEST.)



X3U517WC0

1	Hose clamp
2	Oil hose (See 05–17–45 Oil Hose Installation Note.)
3	Connector bolt
4	Radiator (See 05–17–45 Radiator Installation Note.)
5	Mount rubber

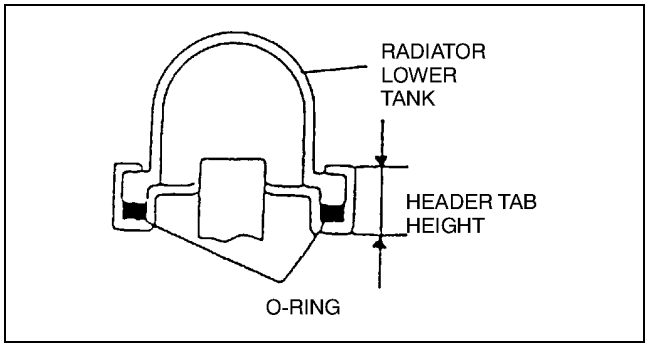
6	Radiator lower tank (in tank oil cooler) (See 05–17–42 Radiator Lower Tank (In Tank Oil Cooler) Removal Note.) (See 05–17–43 Radiator Lower Tank (In Tank Oil Cooler) Installation Note.)
7	O-ring
8	Drain cock

Radiator Lower Tank (In Tank Oil Cooler) Removal Note

1. Inspect the height of the header tabs.
2. Insert the end of a medium tip screwdriver between the end of the header tab and the lower tank.

Note

- Do not open more tabs than necessary for tank removal.

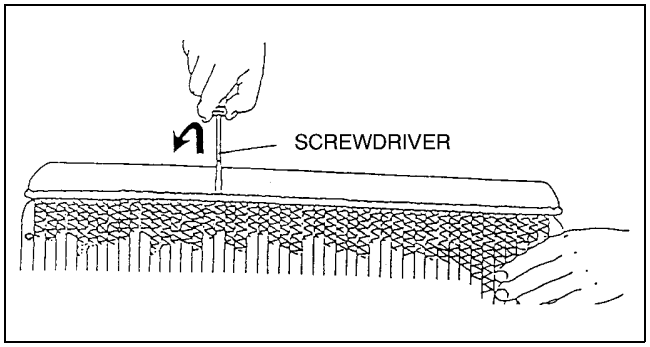


X3U517WC5

3. Pivot the screwdriver to pry the tab away from the tank and repeat the procedure for each tab.
4. Remove the radiator lower tank and O-ring (gasket) from the core header when all of the tabs are opened.

Note
- If any header tabs are missing from the core, replace the radiator.

5. Verify that the gasket surface of the radiator core header is clean and free of foreign material or damage.
6. Inspect the radiator lower tank for warping.
   - If it is warped, replace the radiator tank.



X3U517WC6

Radiator Lower Tank (In Tank Oil Cooler) Installation Note

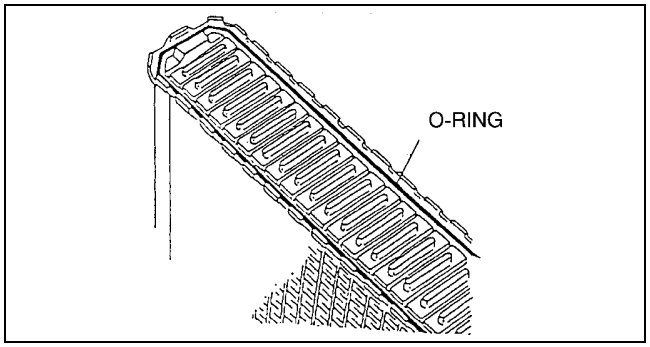
1. Install a new O-ring and ensure it is not twisted.

Note
- The old O-ring must be replaced.

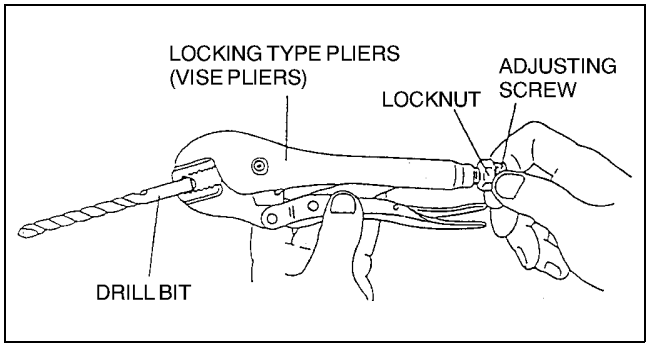
2. Position the radiator tank in the original direction to the core using care not to scratch the tank sealing surface with the header tabs.

Note
- Step 3 will set jaw opening to the correct specification.

3. With the jaws of locking-type pliers (vise grips) closed and locked, turn the adjusting screw to position the jaws against the drill bit with the diameter measured (height) in removal procedure.
   - Tighten the lock nut on the adjusting screw against the handle to lock the adjustment in place.

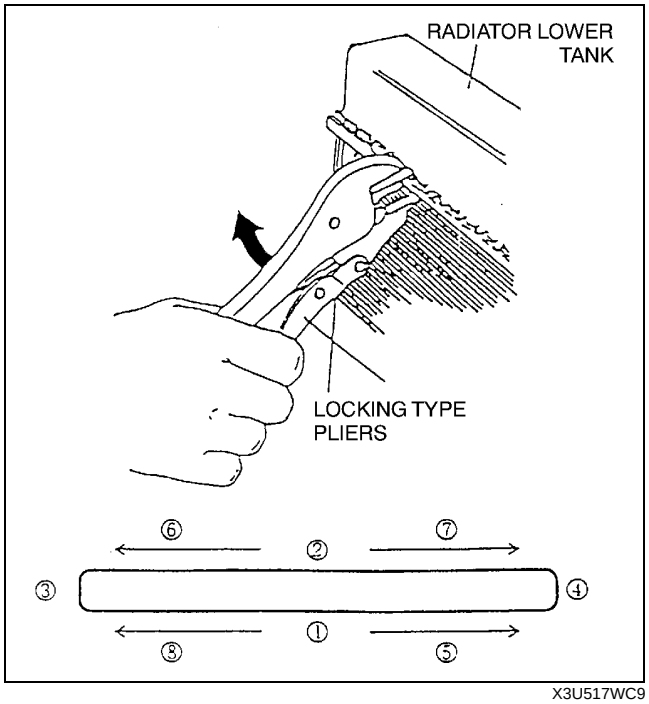


X3U517WC7



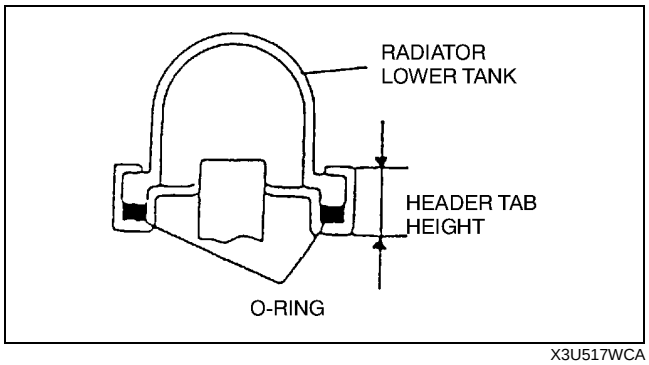
X3U517WC8

4. Squeeze the header tabs down in order as shown against the lip of radiator lower tank base with locking-type pliers while rotating the pliers toward the tank.



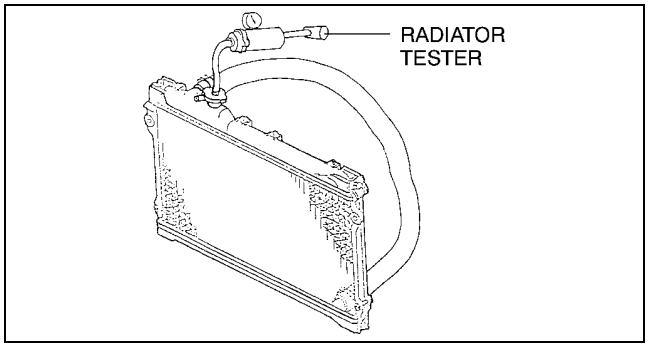
X3U517WC9

5. Verify the height of the header tabs is same as the height before removal.
6. Inspect for the leakage of radiator according to the following procedure.
   (1) Blind the radiator inlet and outlet.
   (2) Blind the ATF cooler inlet and outlet.
   (3) Connect a radiator tester.



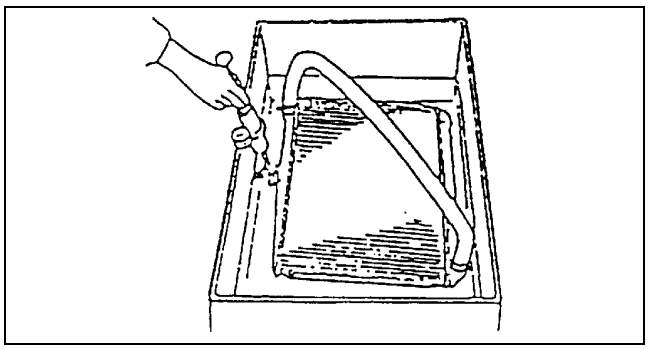
X3U517WCA

   (4) Apply pressure of **150 kPa {1.5 kgf/m^2, 21 psi}** and verify that the pressure is held.



X3U517WCB

   (5) Put the radiator into water slowly with the radiator tester connected.
   (6) Inspect for air leakage.

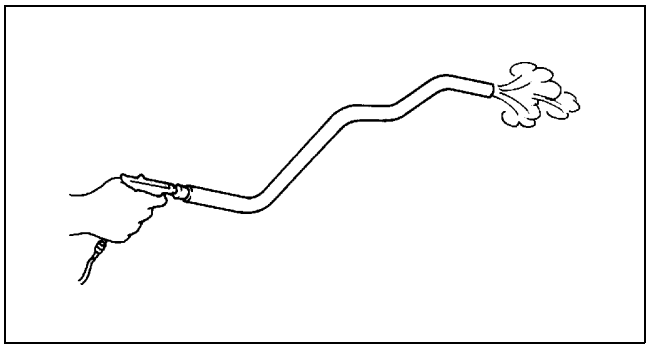

X3U517WCC

Radiator Installation Note

1. The ATX oil cooler flushing must be performed whenever a transaxle is removed for service because the existing fluid may be contaminated, and to prevent contamination of new fluid. The flushing must be performed after installation of the overhauled or replaced transaxle. (See 05–17–40 OIL COOLER FLUSHING)

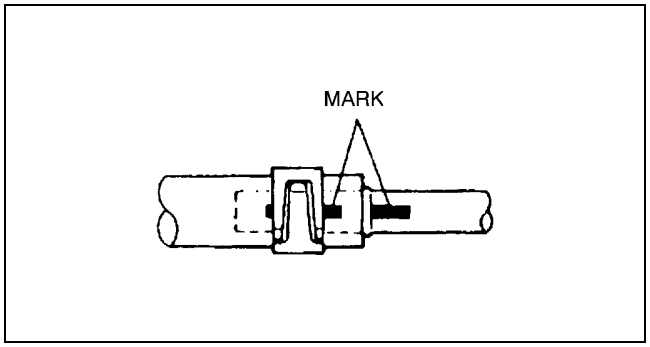
Oil Hose Installation Note

1. Apply compressed air to cooler-side opening more than **1 minute**, and blow any remaining grime and foreign material from the cooler pipes.



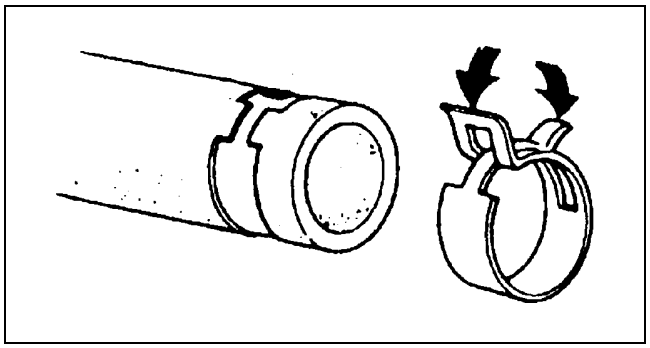
X3U517WC1

2. Align the marks, and slide the oil hose onto the oil pipe until it is fully seated as shown.



Y3U517WAN

3. Install the hose clamp onto the hose.
   - If reusing the hose, install a new hose clamp exactly on the mark left by the previous hose clamp.
4. Verify that the hose clamp does not interfere with any other components.



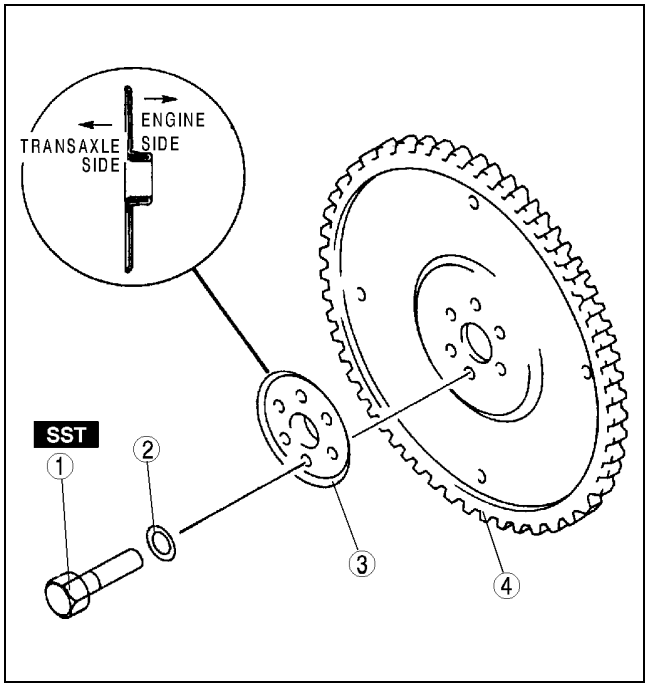
X3U517WC3

DRIVE PLATE REMOVAL/INSTALLATION

A3U051719020W01

1. Remove the transaxle. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/ INSTALLATION.)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. Install the transaxle. (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/ INSTALLATION.)

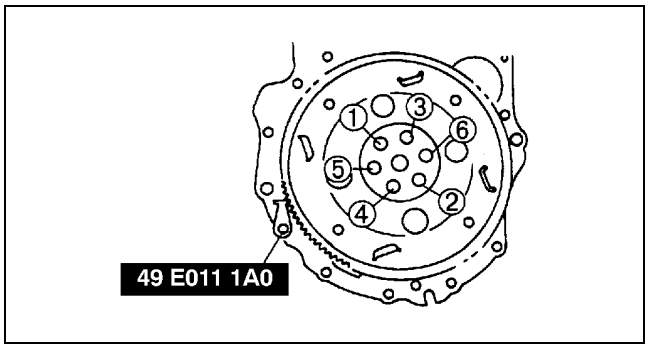
1	Drive plate mounting bolt (See 05–17–46 Drive Plate Mounting Bolts Removal Note.) (See 05–17–46 Drive Plate Mounting Bolts Installation Note.)
2	Washer
3	Adapter
4	Drive plate



X3U517WCD

Drive Plate Mounting Bolts Removal Note

1. Set the **SST** or equivalent against the drive plate.
2. Remove the drive plate mounting bolts.



X3U517WCE

Drive Plate Mounting Bolts Installation Note

Caution

- **If the bolts are reused, remove the oil sealant from the bolt threads. Tightening a bolt that has old sealant on it can cause thread damage.**

1. Remove the sealant from the bolts hole in the crankshaft and from the drive plate mounting bolts.

Note

- If all the previous sealant cannot be removed from a bolt, replace the bolts.
- Do not apply sealant if new bolts are used.

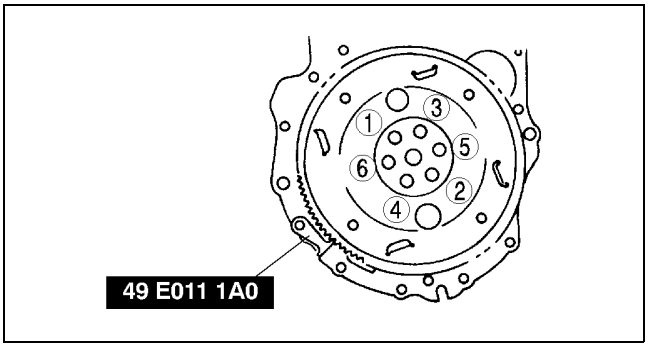
2. Install the drive plate.
3. Install the adapter.
4. Apply sealant to the drive plate mounting bolts and install them.
5. Set the **SST** or equivalent against the drive plate.

Caution

- **When installing sealant covered bolts tighten them immediately. Leaving these bolts in a half installed condition could cause them to be stuck that way, due to the natural hardening of the sealant.**

6. Tighten the drive plate installation bolts in 2 or 3 steps as shown.

Tightening torque
97—102 N·m {9.8—10.5 kgf·m,70.9—75.9 ft·lbf}

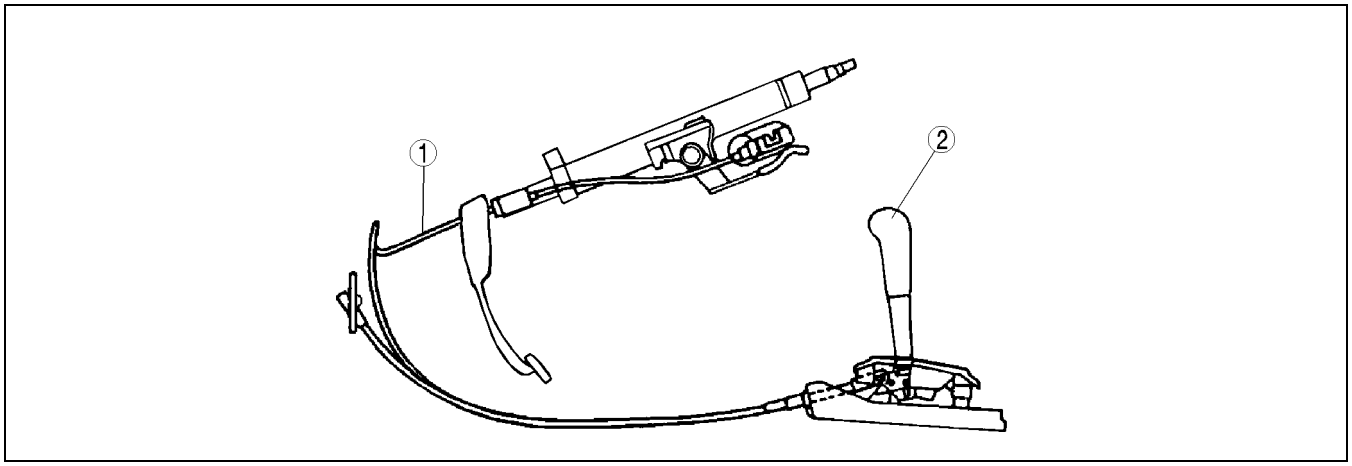


X3U517WCF

05–18 AUTOMATIC TRANSAXLE SHIFT MECHANISM

AUTOMATIC TRANSMISSION SHIFT MECHANISM LOCATION INDEX

A3U051864350W01



Z3U518W01

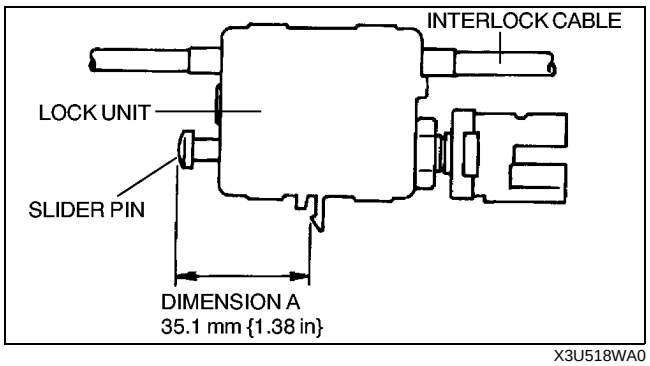
1	Interlock cable (See 05–18–1 INTERLOCK CABLE INSPECTION)

2	Selector lever (See 05–18–3 SELECTOR LEVER REMOVAL/INSTALLATION) (See 05–18–2 SELECTOR LEVER INSPECTION) (See 05–18–2 SELECTOR LEVER ADJUSTMENT) (See 05–18–8 SELECTOR LEVER DISASSEMBLY/ASSEMBLY)

INTERLOCK CABLE INSPECTION

A3U051846300W01

1. Remove the interlock cable and lock unit. (See 05–18–3 SELECTOR LEVER REMOVAL/INSTALLATION.)
   - If the slider pin protrusion is as specified below (dimension A), verify that the interlock cable moves freely in the lock unit.
   - If not as specified, replace the interlock cable.
2. Install the interlock cable and lock unit. (See 05–18–4 Interlock Cable and Lock Unit Installation Note.)

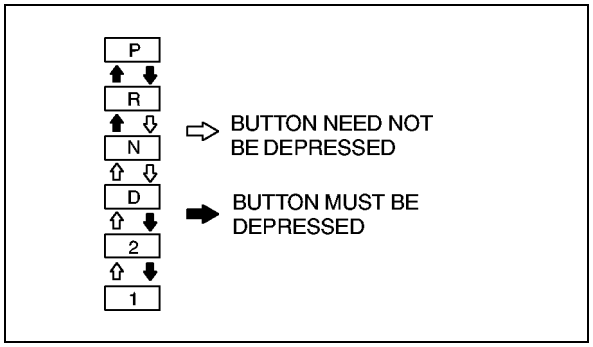


X3U518WA0

SELECTOR LEVER INSPECTION

A3U051846102W01

1. Turn the ignition switch to the ON position (engine off).
2. With the brake pedal depressed, verify that a “click” sound is heard at each range when shifted in the pattern shown.
3. Verify that the selector lever can only be shifted as shown.
4. Verify that a “click” sound is heard at each position when shifted from P position to 1 range.
5. Verify that the positions of the selector lever and the indicator are aligned.
6. Verify that the position of the selector lever and the selector illumination light correspond.
   - If not as specified, adjust the TR switch. (See 05–17–23 TRANSAXLE RANGE (TR) SWITCH ADJUSTMENT.)
7. Verify that the vehicle operates in each selected range.

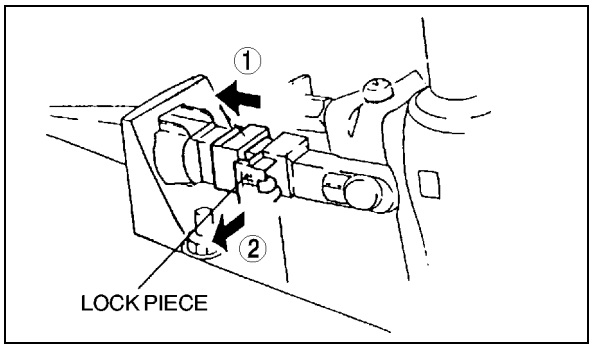


X3U518WA1

SELECTOR LEVER ADJUSTMENT

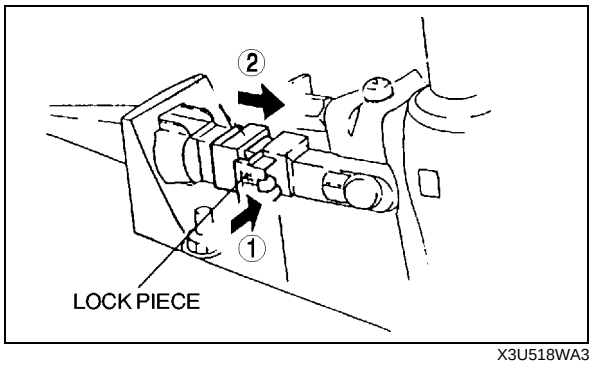
A3U051846102W02

1. Remove the center console.
2. Shift the selector lever to the P position.
3. Unlock the lock piece of the selector cable (selector lever side) in the order shown in the figure.
4. Verify that the manual shaft is at the P position.



X3U518WA2

5. Lock the lock piece of the selector cable (selector lever side) in the order shown in the figure.
6. Install the center console.
7. Shift the selector lever from P position to 1 range, and make sure that there are no other components in that area to interfere with the lever.

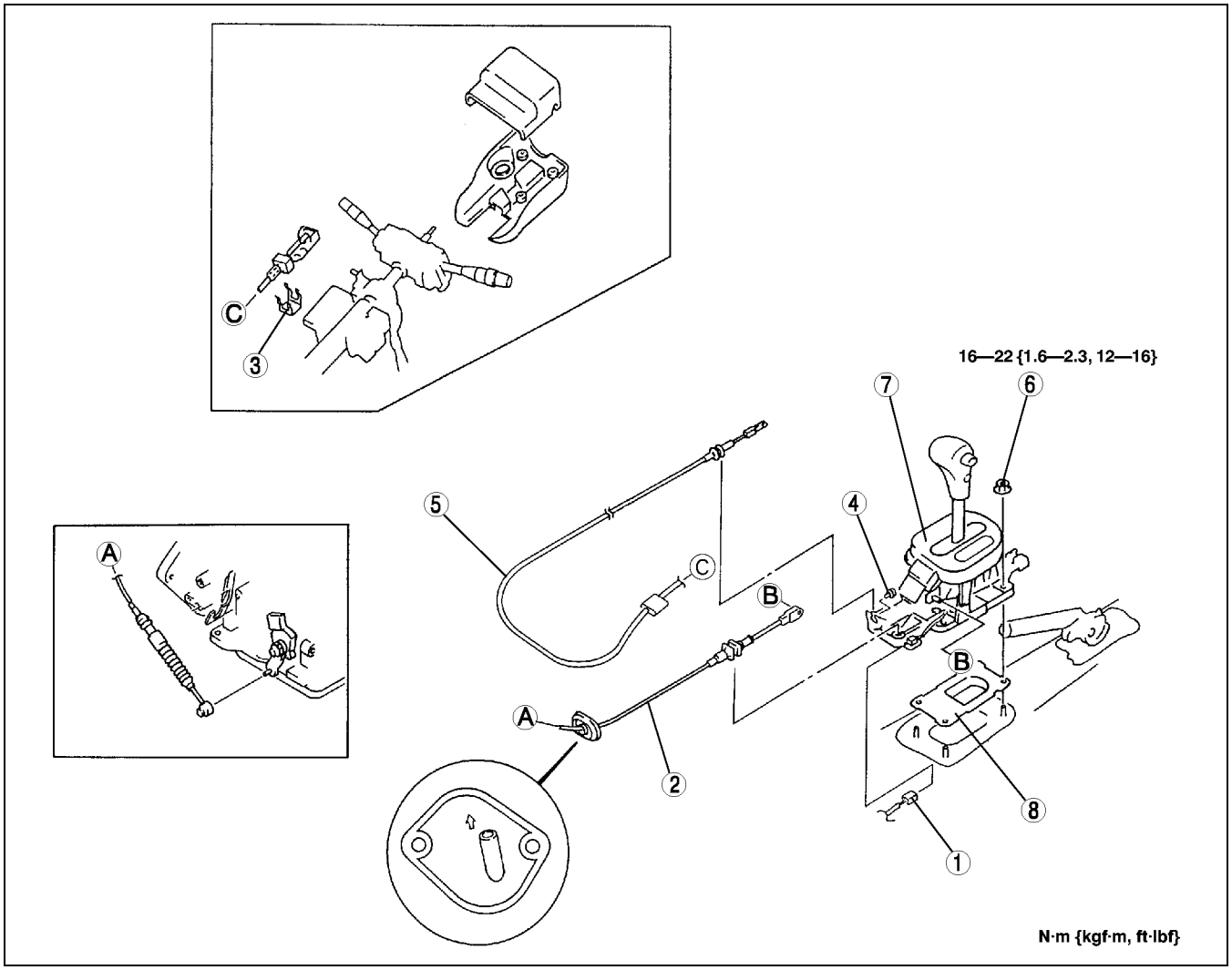


X3U518WA3

SELECTOR LEVER REMOVAL/INSTALLATION

A3U051846102W03

1. Disconnect the negative battery cable.
2. Remove the center console.
3. Disconnect the brake switch connector.
4. Remove in the order indicated in the table.
5. Install in the reverse order of removal.



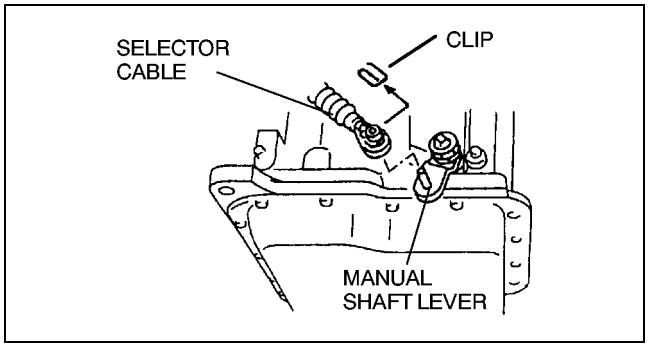
X3U518WA4

1	Connector
2	Selector cable (See 05–18–4 Selector Cable Removal Note.) (See 05–18–6 Selector Cable Installation Note.)
3	Clip
4	Clip

5	Interlock cable and lock unit (See 05–18–4 Interlock Cable and Lock Unit Installation Note.)
6	Nut
7	Selector lever
8	Seal rubber

Selector Cable Removal Note

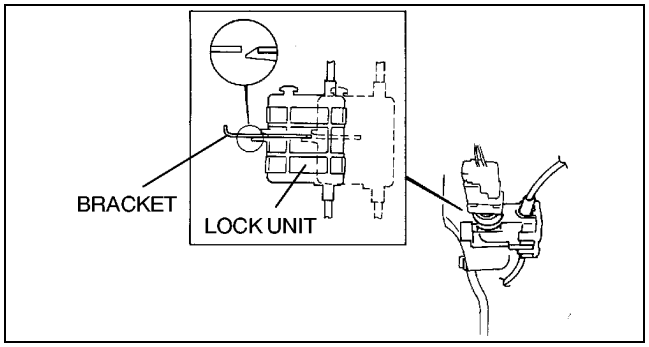
Note
- Remove the clip shown in the figure before removing the selector cable from manual shaft lever.



X3U518WAP

Interlock Cable and Lock Unit Installation Note

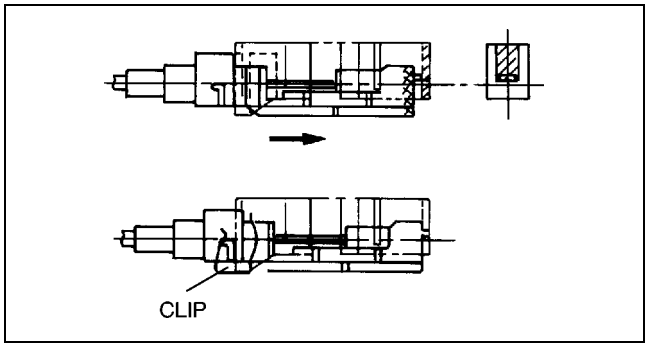
1. Verify that the ignition switch is at ACC position, and shift the selector lever to P position.
2. Press the lock unit onto the brake pedal stopper bracket.
3. From this position, slide the lock unit to fix the lock unit hook into the bracket hole securely as shown in the figure.
4. Install the interlock cable to the key cylinder.
5. Slide the outer casing to the key cylinder. Verify that the outer casing hook is secured in the cylinder hole.



X3U518WA5

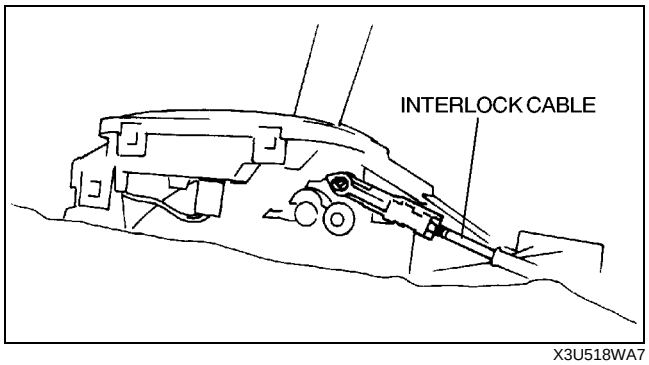
6. Insert the clip over the convex part of the outer casing.

Caution
- **Allowing the interlock cable to become bent or twisted during installation can affect the lock unit operation.**



X3U518WA6

7. Install the interlock cable end onto the cam pin on the selector lever.

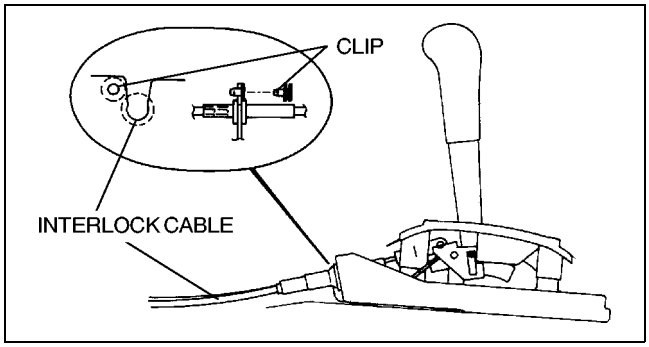


X3U518WA7

8. Fit the interlock cable in the U-groove in the selector lever base plate, and install the clip.

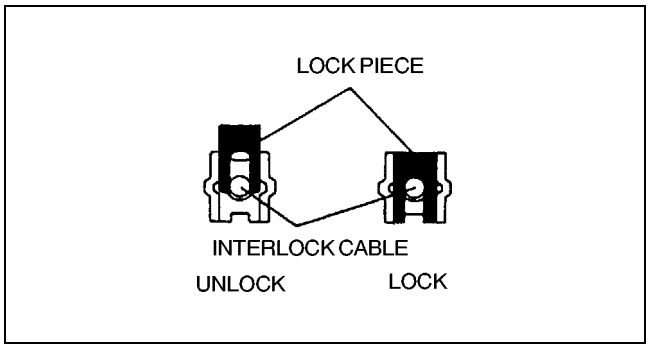
Note
- Steps 9—12 are for the interlock cable replacement only.

Caution
- **Applying load to the interlock cable while pressing the lock piece in can affect the lock unit operation.**



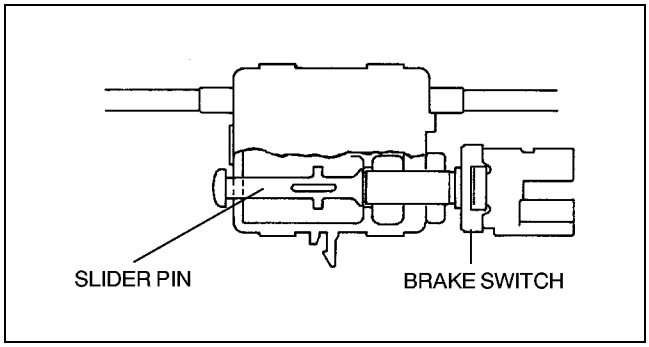
X3U518WA8

9. Press the interlock cable lock piece in until it is locked.



X3U518WA9

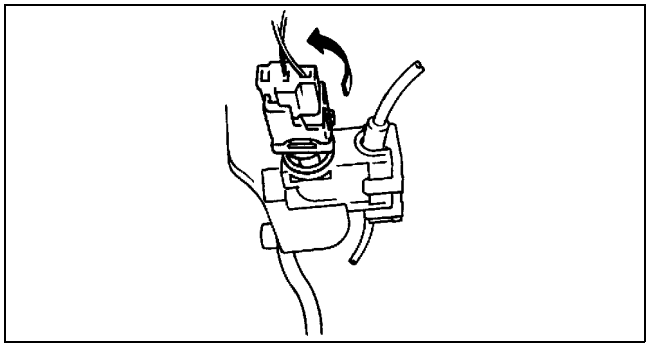
10. Screw the brake switch into the slider pin of the lock unit as far as possible.



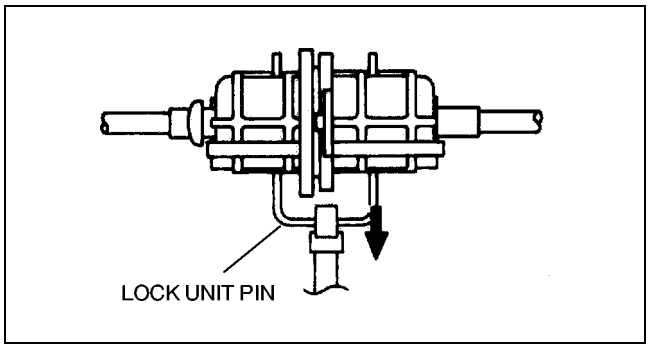
X3U518WAA

11. From this position, turn the brake switch counterclockwise **about 90 degrees**, then tighten the lock nut.

Tightening torque
13.8—17.6 N·m {140—180 kgf·cm, 122—156 in·lbf}


X3U518WAB

12. Remove the lock unit pin in the order shown in the figure.

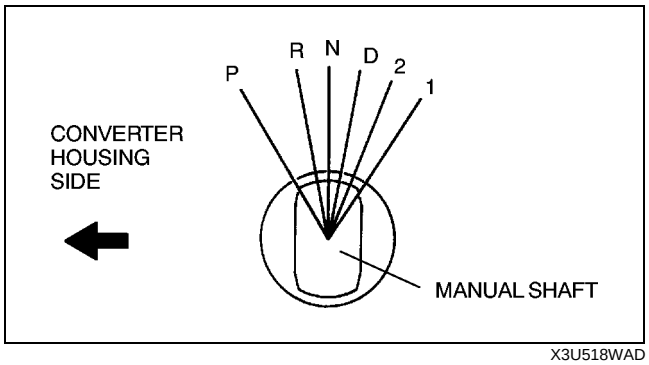


X3U518WAC

Selector Cable Installation Note

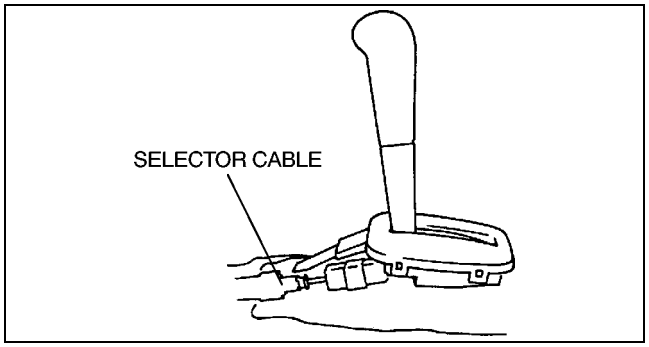
Caution
- **Do not apply load to the manual shaft after manual shaft is shifted to P position. Otherwise, the transaxle may be damaged.**

1. Turn the manual shaft to the converter housing side fully, to set the P position.



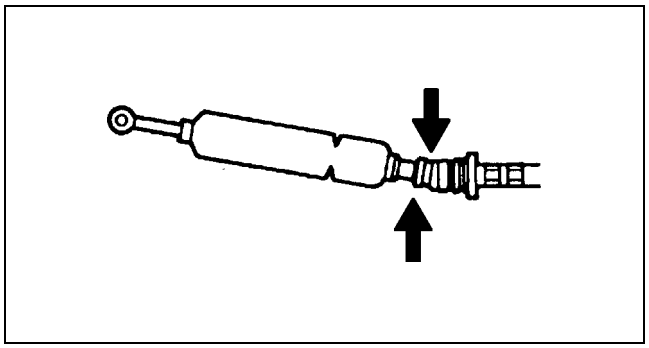
X3U518WAD

2. Install the selector cable to the selector lever.

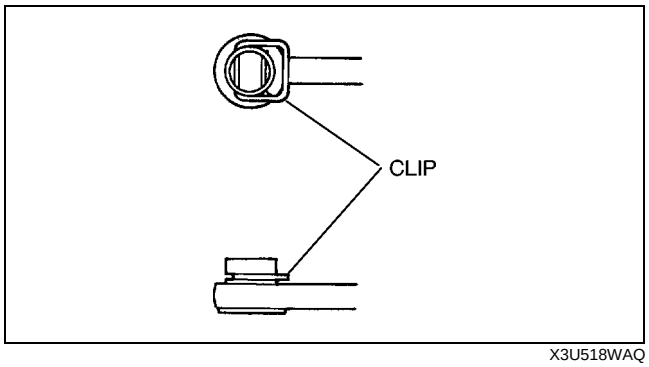


X3U518WAE

Caution
- **Bending the selector cable in the manner shown in the figure will damage the cable and it may become loose when shifted. When installing the selector cable, hold it straight.**


X3U518WAF

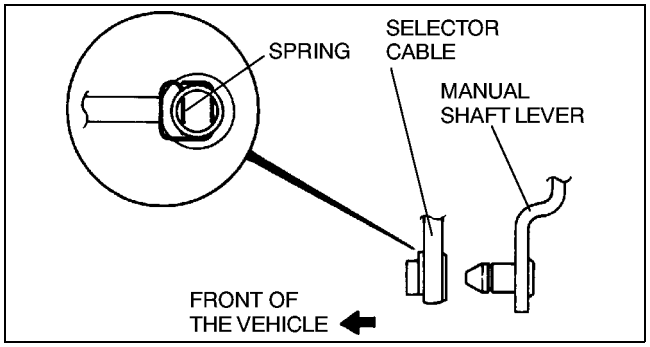
3. Install the clip as shown in the figure.



X3U518WAQ

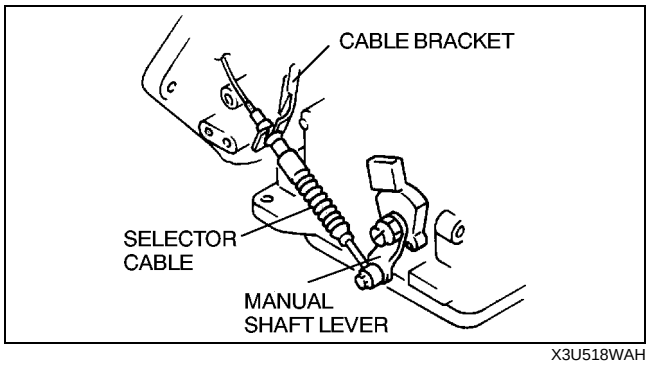
Note
- Install the selector cable to the manual shaft lever with the spring side of the selector cable end facing the front of the vehicle.

4. Install the selector cable to the manual shaft lever in such a way that the selector cable does not bear a load.
5. Confirm that the end of the manual shaft lever sticks out of the end of the selector cable.



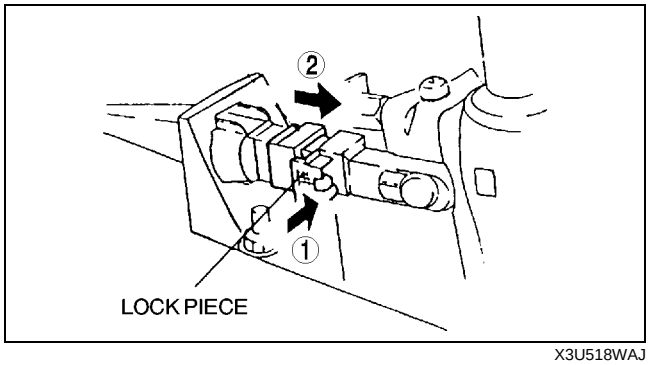
X3U518WAG

6. Install the selector cable to the cable bracket.
7. Verify that the selector lever is at P position.



X3U518WAH

8. Unlock the lock piece of the selector cable (selector lever side) in the order shown in the figure.
9. Shift the selector lever from P position to 1 range, and make sure that there are no other components in that area to interfere with the lever.

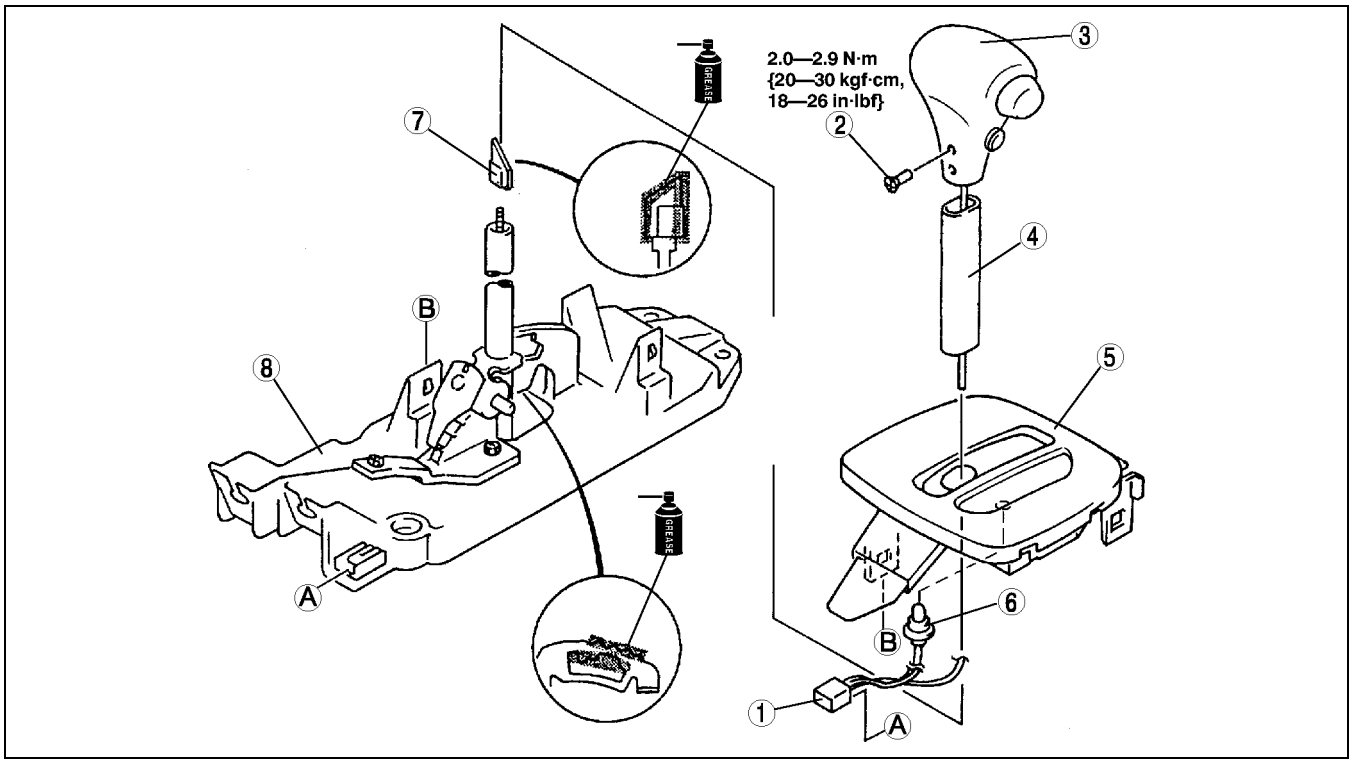


X3U518WAJ

SELECTOR LEVER DISASSEMBLY/ASSEMBLY

A3U051846102W04

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.

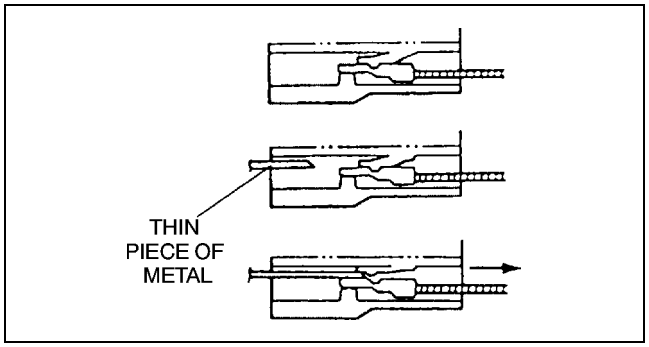


X3U518WAK

1	Connector (See 05–18–8 Connector Disassembly Note.)
2	Screw
3	Selector lever knob
4	Cover
5	Indicator panel
6	Selector illumination light
7	Cam (See 05–18–9 Cam Assembly Note.)
8	Selector lever

Connector Disassembly Note

1. Insert a thin piece of metal from the terminal side of the connector, and press down the terminal locking tab.
2. Pull the terminal out of the connector.



X3U518WAL

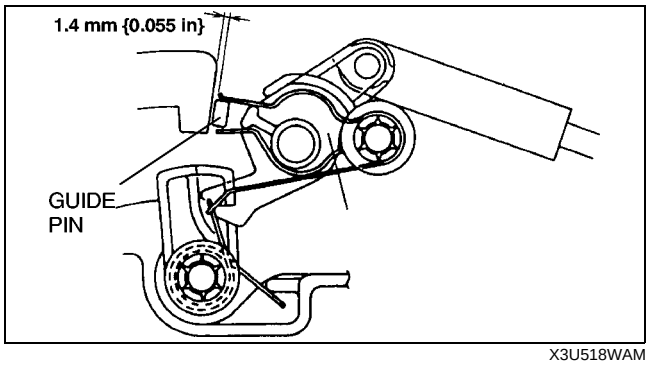
Cam Assembly Note

1. Loosely install the cam to the push rod.

Note

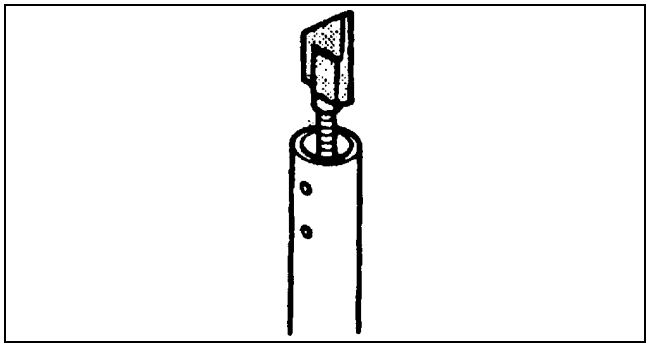
- Clearance can be reduced by turning the cam clockwise.

2. Adjust the clearance between the guide plate and the guide pin by turning the cam.
3. Install the selector lever knob and verify that the clearance is as specified.
   - If not, repeat from Step 2.
4. Remove the selector lever knob.



X3U518WAM

5. Apply grease to the cam as shown.



X3U518WAN

05–50 TECHNICAL DATA

TRANSMISSION/TRANSAXLE TECHNICAL DATA

A3U055001024W01

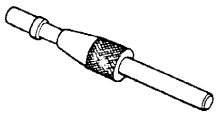
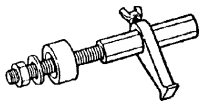
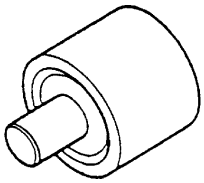
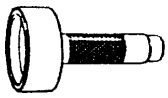
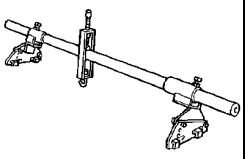
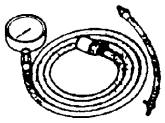
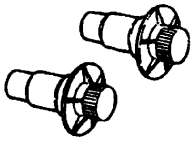
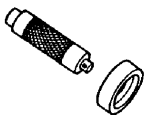
Item				Engine	
				ZM	FS
CLUTCH					
Clutch pedal	Full stroke		(mm {in})	130—140 {5.12—5.51}	
	Height (from set plate)		(mm {in})	210—215 {8.27—8.46}	
	Free play		(mm {in})	0.7—3.5 {0.03—0.13}	
Clutch cover	Diaphragm spring fingers	Depth	(mm {in})	0.5 {0.020}	
		Misalignment	(mm {in})	0.6 {0.024}	
	Maximum clearance of flatness of the pressure plate		(mm {in})	0.5 {0.020}	
Clutch disc	Minimum thickness		(mm {in})	0.3 {0.012}	
	Run out limit		(mm {in})	0.7 {0.028}	
Flywheel	Run out limit		(mm {in})	0.2 {0.008}	
MANUAL TRANSAXLE					
Transaxle type				**F25M-R**	**G15M-R**
Transaxle oil	Grade			API Service GL-4 or GL-5	
	Viscosity	All season		SAE 75W—90	
		Above 10 °C {50 °F}		SAE 80W—90	
	Capacity (Approx. quantity) (L {US qt, Imp qt})			2.68 {2.83, 2.36}	
AUTOMATIC TRANSAXLE					
Transaxle type				**FN4A-EL**	
Line pressure (kPa {kgf/cm^2, psi})	D, 2, 1 range	Idle		330—470 {3.4—4.7, 49—66}	
		Stall		1,200—1,360 {12.3—13.8, 175—196}	1,160—1,320 {11.9—13.4, 170—190}
	R position	Idle		490—710 {5.0—7.2, 72—100}	
		Stall		1,470—1,690 {15.0—17.2, 214—244}	
Engine stall speed (rpm)	D, 2, 1 range			2,300—2,600	2,200—2,500
	R position			2,300—2,600	2,200—2,500
Time lag (sec)	N→D			0.4—0.7	
	N→R			0.4—0.7	
Transaxle fluid temperature (TFT) sensor (kilohm)	–20 °C {–4 °F}			236—324	
	0 °C {32 °F}			84.3—110	
	20 °C {68 °F}			33.5—42.0	
	40 °C {104 °F}			14.7—17.9	
	60 °C {140 °F}			7.08—8.17	
	80 °C {176 °F}			3.61—4.15	
	100 °C {212 °F}			1.96—2.24	
	120 °C {248 °F}			1.13—1.28	
	130 °C {266 °F}			0.87—0.98	
Input/turbine speed sensor (ohm)	ATF temperature: –40—160 °C {–40—320 °F}			250—600	
Solenoid valve (ohm)	Shift solenoid A			1.0—4.2	
	Shift solenoid B			1.0—4.2	
	Shift solenoid C			1.0—4.2	
	Shift solenoid D			10.9—26.2	
	Shift solenoid E			10.9—26.2	
	Pressure control solenoid			2.4—7.3	

Item		Engine	
		ZM	FS
Automatic transaxle fluid (ATF)	Type	ATF M-V or equivalent (e.g. Dexron®III)	
	Capacity (Approx. quantity) (L {US qt, Imp qt})	7.2 {7.6, 6.3}	

05–60 SERVICE TOOLS

TRANSMISSION/TRANSAXLE SST

A3U056001024W01

49 0259 770B Flare nut wrench 	49 SE01 310A Clutch disc centering tool 	49 1285 071 Bearing puller 
49 E011 1A0 Ring gear brake set 	49 F028 202 Bush installer 	49 B001 797 Handle (Part of 49 B001 795) 
49 B001 795 Oil seal installer 	49 E017 5A0 Engine support 	49 0378 400C Oil pressure gauge set 
49 B019 901B Oil pressure gauge 	49 H019 002 Adapter 	49 G030 455 Diff. side gear holder 
49 G030 795 Oil seal installer 	418FS475 WDS 	—