#### TRANSMISSION SECTION

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.

This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.

Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

CONTROL SYSTEMS

AUTOMATIC TRANSMISSION
AT

AUTOMATIC TRANSMISSION
(DIAGNOSTICS)

MANUAL TRANSMISSION AND
DIFFERENTIAL

CLUTCH SYSTEM

CS

MT

CL

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.

**FUJI HEAVY INDUSTRIES LTD.** 

G1830GE4

# AUTOMATIC TRANSMISSION (DIAGNOSTICS)

# AT

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## 1. Basic Diagnostic Procedure

## A: PROCEDURE

	Step	Check	Yes	No
1	CHECK PRE-INSPECTION.  1) Ask the customer when and how the trouble occurred using interview checklist. <ref. at-4,="" check="" for="" interview.="" list="" to="">  2) Before performing diagnosis, inspect the following items which might influence the AT problems.  •General inspection <ref. at-5,="" description.="" general="" inspection,="" to="">  •Oil leak  •Stall speed test <ref. at-13,="" stall="" test.="" to="">  •Line pressure test <ref. at-16,="" line="" pressure="" test.="" to="">  •Transfer clutch pressure test <ref. at-18,="" clutch="" pressure="" test.="" to="" transfer="">  •Time lag test <ref. at-15,="" lag="" test.="" time="" to="">  •Road test <ref. at-12,="" road="" test.="" to="">  •Inhibitor switch <ref. at-28,="" inhibitor="" switch.="" to=""></ref.></ref.></ref.></ref.></ref.></ref.></ref.></ref.>	Is unit that might influence the AT problem normal?	Go to step 2.	Repair or replace each item.
2	CHECK POWER INDICATOR LIGHT. Turn ignition switch to ON.	light light up?	Go to step 3.	Go to step 4.
3	CHECK POWER INDICATOR LIGHT.  1) Turn ignition switch to OFF.  2) Repair POWER indicator light circuit or power supply and ground line circuit. <ref. at-26,="" diagnostic="" for="" indicator="" light.="" power="" procedure="" to="">  3) Turn ignition switch to ON.</ref.>	Is the POWER indicator light flashing?	Go to step 4.	Go to step 5.
4	CHECK INDICATION OF TROUBLE CODE. Calling up trouble code. Without SUBARU SELECT MONITOR <ref. at-20,="" code.="" diagnostic="" monitor,="" read="" select="" subaru="" to="" trouble="" without=""> With SUBARU SELECT MONITOR <ref. at-21,="" code.="" diagnostic="" monitor,="" read="" select="" subaru="" to="" trouble="" with=""> NOTE: If the communication function of the select monitor cannot be executed normally, check the communication circuit. <ref. at-35,="" communication="" communication.="" diagnostic="" for="" im-="" initializing="" monitor="" possible,="" procedure="" select="" to=""></ref.></ref.></ref.>		Go to step <b>6.</b> NOTE: Record all trouble codes.	Go to step <b>5</b> .

	Step	Check	Yes	No
5	PERFORM THE GENERAL DIAGNOSTICS.  1)Inspect using "Diagnostic Procedure for Notrouble Code". <ref. at-101,="" code.="" diagnostic="" for="" notrouble="" procedure="" to="">  2)Inspect using "Symptom Related Diagnostic". <ref. <ref.="" at-129,="" diagnostic".="" diagnostic.="" related="" symptom="" to="">  3)Perform the clear memory mode. Without SUBARU SELECT MONITOR <ref. at-23,="" clear="" memory="" mode.="" monitor,="" select="" subaru="" to="" with=""> With SUBARU SELECT MONITOR <ref. at-23,="" clear="" memory="" mode.="" monitor,="" select="" subaru="" to="" without=""> 4)Perform the inspection mode. <ref. at-22,="" inspection="" mode.="" to=""> Calling up the trouble code. Without SUBARU SELECT MONITOR <ref. at-20,="" code.="" diagnostic="" monitor,="" read="" select="" subaru="" to="" trouble="" without=""> With SUBARU SELECT MONITOR <ref. at-21,="" code.="" diagnostic="" monitor,="" operation,="" read="" select="" subaru="" to="" trouble="" with=""></ref.></ref.></ref.></ref.></ref.></ref.></ref.>	Is the trouble code displayed?	Complete the diagnosis.	Go to step 6.
6	PERFORM THE DIAGNOSIS.  1)Inspect using "Diagnostics Chart with Trouble Code". <ref. at-40,="" code.="" diagnostic="" procedure="" to="" trouble="" with="">  NOTE: For trouble code table, refer to "List of Diagnostic Trouble Code".<ref. at-25,="" code.="" diagnostic="" list="" of="" to="" trouble="">  2)Repair trouble cause.  3)Perform the clear memory mode. Without SUBARU SELECT MONITOR <ref. at-23,="" clear="" memory="" mode.="" monitor,="" operation,="" select="" subaru="" to="" with=""> With SUBARU SELECT MONITOR <ref. at-23,="" clear="" memory="" mode.="" monitor,="" select="" subaru="" to="" without=""> 4)Perform the inspection mode. <ref. at-22,="" inspection="" mode.="" to=""> 5)Calling up the trouble code. Without SUBARU SELECT MONITOR <ref. at-20,="" code.="" diagnostic="" monitor,="" operation,="" read="" select="" subaru="" to="" trouble="" without=""> With SUBARU SELECT MONITOR <ref. at-21,="" code.="" diagnostic="" monitor,="" operation,="" read="" select="" subaru="" to="" trouble="" with=""></ref.></ref.></ref.></ref.></ref.></ref.></ref.>	Is the trouble code displayed?	Complete the diagnosis.	Inspect using "Diagnostics Chart with Diagnostic Connector". <ref. at-40,="" code.="" diagnos-="" procedure="" tic="" to="" trouble="" with=""></ref.>

## **CHECK LIST FOR INTERVIEW**

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

## 2. Check List for Interview

NOTE:

A: CHECK

Use copies of this page for interviewing customers.

Check the following items when problem has occurred.

Customer's name						
Data vehicle brought in						
Data of repair						
Trans. model	TRANSMISSION		VIN			
Odometer reading				km/h or mile		
Frequency	☐ Continuous ☐ Intermitter	nt ( times a	day)			
Weather	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/Others ( )					
Place	☐ High ☐ Suburbs ☐ Inner city ☐ Uphill ☐ Rough road ☐ Others ( )					
Outdoor temperature	☐ Hot ☐ Warm ☐ Cool	□ Cold				
Vehiccle speed	e speed km/h (MPF					
Malfunction indicator lamp (MIL)	☐ Continuously lit ☐ Not lit					
Select lever position	OP OR ON OD O	13 🗆 2 🗔 1				
Driving condition	<ul><li>□ Not affected</li><li>□ At racing</li><li>□ While decelerating</li></ul>	☐ At starting☐ While accele☐ While turning☐ LH)		☐ While idling☐ While cruising		
POWER switch	□ ON □ OFF					
HOLD switch	□ ON □ OFF					
Symptoms	☐ No up-shift					
	□ No down-shift					
	☐ No kick down					
	☐ Vehicle does not move (☐ /	Any position	Particular po	sition)		
	☐ Lock-up malfunction					
	□ Noise or vibration					
	☐ Shift shock or slip					
	☐ Select lever does not move	•				
	☐ Others					
	( )					

## 3. General Description

#### A: CAUTION

• Supplemental Restraint System "Airbag"

Airbag system wiring harness is routed near the transmission control module (TCM).

#### **CAUTION:**

- All airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuit.
- Be careful not to damage airbag system wiring harness when performing diagnostics and servicing the TCM.

#### Measurement

When measuring voltage and resistance of the ECM, TCM or each sensor, use a tapered pin with a diameter of less than 0.64 mm (0.025 in) in order to avoid poor contact. Do not insert the pin more than 6.5 mm (0.256 in).

#### **B: INSPECTION**

#### 1. BATTERY

Measure battery voltage and specific gravity of electrolyte.

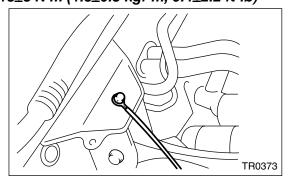
Standard voltage: 12V or more Specific gravity: Above 1.260 2. TRANSMISSION GROUND

Make sure that the ground terminal bolt is tightened securely.

Chassis side

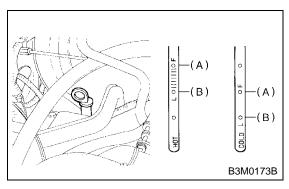
#### Tightening torque:

13±3 N·m (1.3±0.3 kgf-m, 9.4±2.2 ft-lb)



#### 3. ATF LEVEL

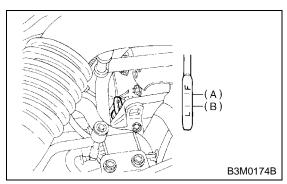
Make sure that ATF level is in the specification.



- (A) Upper level
- (B) Lower level

#### 4. FRONT DIFFERENTIAL OIL LEVEL

Make sure that front differential oil level is in the specification.



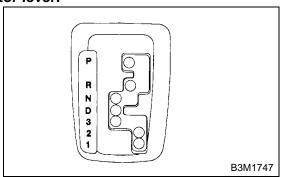
- (A) Upper level
- (B) Lower level

#### 5. OPERATION OF SHIFT SELECT LEVER

Make sure there is no abnormal noise, dragging or contact pattern in each select lever range.

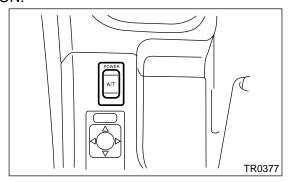
#### **WARNING:**

Stop the engine while checking operation of selector lever.



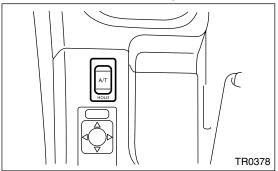
### 6. POWER SWITCH

Make sure that POWER indicator light in combination meter comes ON, when turning power switch to ON.



#### 7. HOLD SWITCH

Make sure that HOLD indicator light in combination meter comes ON, when turning hold switch to ON.



## **C: PREPARATION TOOL**

## 1. SPECIAL TOOLS

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
	24082AA150	CARTRIDGE	Troubleshooting for electrical systems.
B2M3876			
B2M3877	22771AA030	SELECT MONITOR KIT	Troubleshooting for electrical systems.  • English: 22771AA030 (Without printer)  • German: 22771AA070 (Without printer)  • French: 22771AA080 (Without printer)  • Spanish: 22771AA090 (Without printer)

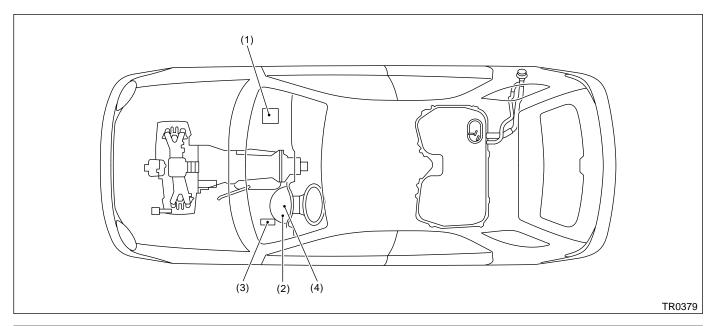
#### 2. GENERAL PURPOSE TOOLS

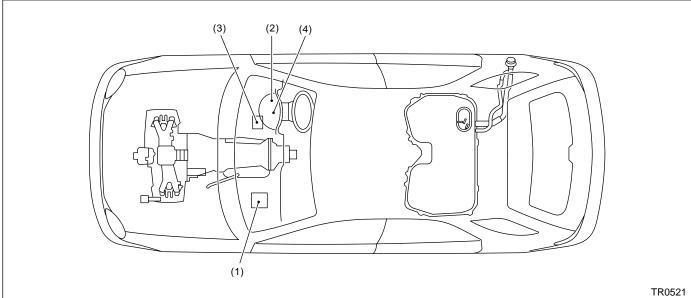
TOOL NAME	REMARKS
Circuit Tester	Used for measuring resistance, voltage and ampere.
Oscilloscope	Used for measuring sensor.

## 4. Electrical Components Location

## A: LOCATION

#### 1. CONTROL MODULE

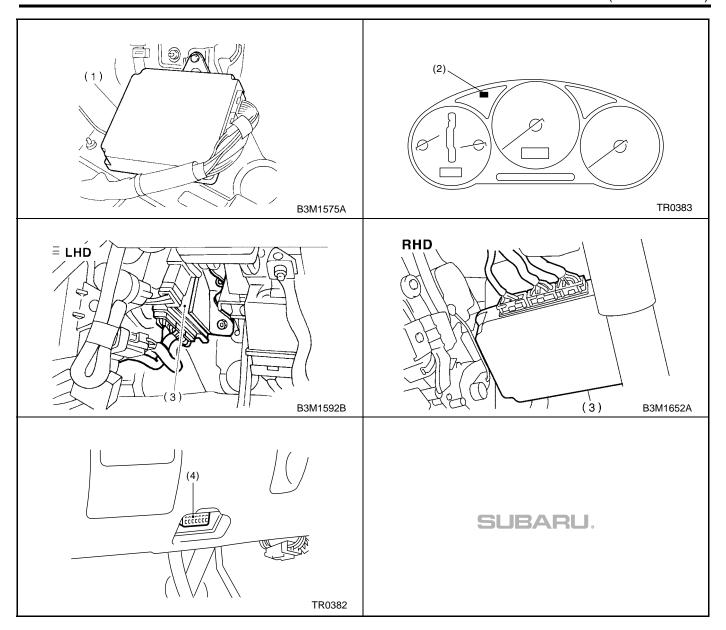




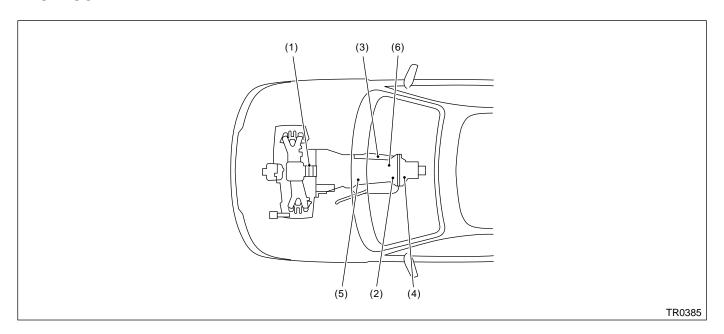
- (1) Engine control module (ECM)
- (2) POWER indicator light (AT diagnostic indicator light)
- 3) Transmission control module (TCM)
- (4) Data link connector

## **ELECTRICAL COMPONENTS LOCATION**

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 



### 2. SENSOR

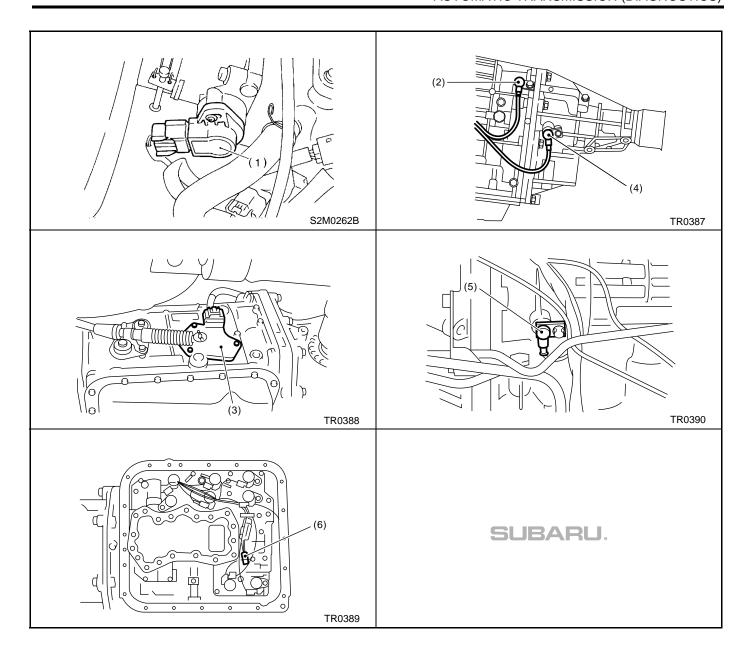


- (1) Throttle position sensor
- (2) Front vehicle speed sensor
- (3) Inhibitor switch

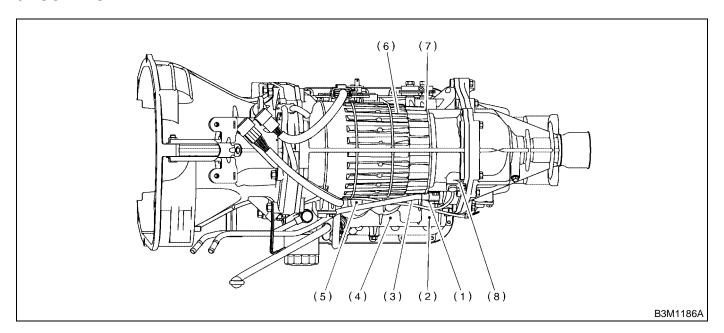
- (4) Rear vehicle speed sensor
- (5) Torque converter turbine speed sensor
- (6) ATF temperature sensor

## **ELECTRICAL COMPONENTS LOCATION**

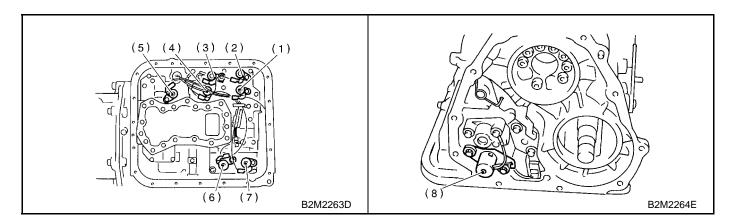
AUTOMATIC TRANSMISSION (DIAGNOSTICS)



#### 3. SOLENOID

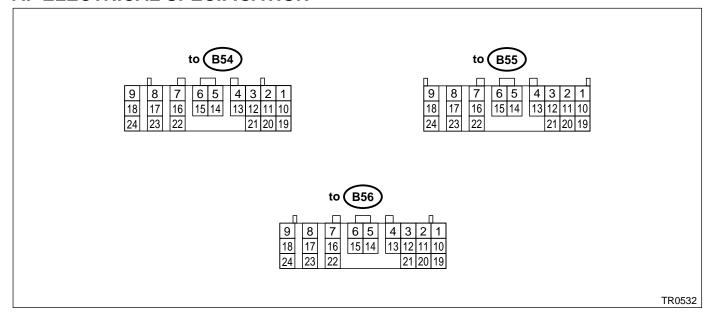


- (1) Solenoid 1
- (2) Solenoid 2
- (3) Line pressure duty solenoid
- (4) Low clutch timing solenoid
- (5) Lock-up duty solenoid
- (6) 2-4 brake duty solenoid
- (7) 2-4 brake timing solenoid
- (8) Transfer duty solenoid



## 5. Transmission Control Module (TCM) I/O Signal

## A: ELECTRICAL SPECIFICATION



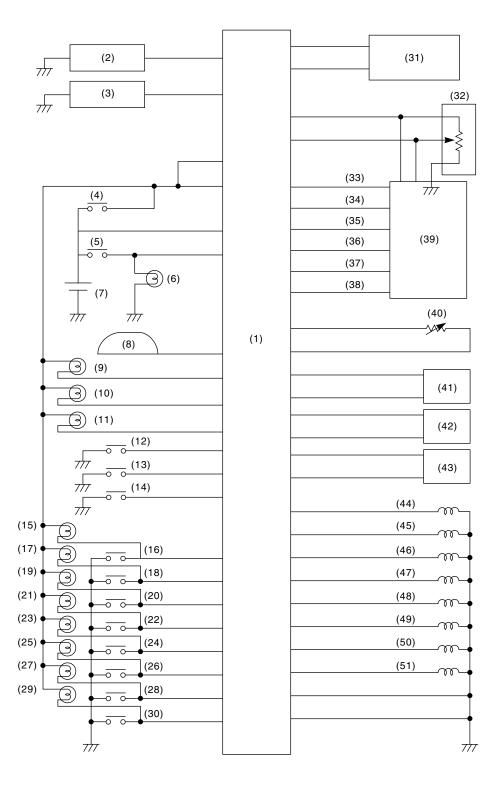
Check with ignition switch ON.								
Content		Con- nector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)		
Back-up pov	ver supply	B56	1	Ignition switch OFF	10 — 16	_		
Ignition pow	or eupply	B54	23	Ignition switch ON (with	10 — 16			
ignition pow	ет заррту	B54	24	engine OFF)	10 — 10	_		
				Select lever in "P" range	Less than 1			
	"P" range switch	B55	1	Select lever in any other than "P" range (except "N" range)	More than 8	_		
	"N" range switch B55			Select lever in "N" range	Less than 1			
		B55	B55 14	Select lever in any other than "N" range (except "P" range)	More than 8	_		
	"R" range switch	nge	3	Select lever in "R" range	Less than 1	_		
		B55		Select lever in any other than "R" range	More than 8			
Inhibitor switch	"D" range switch	)" range	4	Select lever in "D" range	Less than 1	_		
SWITCH		B55		Select lever in any other than "D" range	More than 8			
	"3" range			Select lever in "3" range	Less than 1	_		
	switch	B55	5	Select lever in any other than "3" range	More than 8			
	"2" range			Select lever in "2" range	Less than 1			
	switch		6	Select lever in any other than "2" range	More than 8	_		
	"1" range			Select lever in "1" range	Less than 1			
	switch	B55	7	Select lever in any other than "1" range	More than 8	_		

## TRANSMISSION CONTROL MODULE (TCM) I/O SIGNAL AUTOMATIC TRANSMISSION (DIAGNOSTICS)

		Check w	ith ignition switch ON.			
Content	Con- nector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)	
Droko owitch	DEE	12	Brake pedal depressed.	More than 10.5	_	
Brake switch	B55	12	Brake pedal released.	Less than 1		
Kick-down switch	B55	11	Throttle fully opened.	Less than 1		
NICK-GOWIT SWITCH	DOO	11	Throttle fully closed.	More than 6.5	1 –	
AT OIL TEMP warning light	B56	10	Light ON	Less than 1		
At Oil Thiri Warning light	D30	10	Light OFF	More than 9		
Throttle position sensor	B54	3	Throttle fully closed.	0.3 — 0.7	_	
	Вот		Throttle fully open.	4.0 — 4.6		
Throttle position sensor power supply	B54	2	Ignition switch ON (With engine OFF)	4.8 — 5.3	_	
ATF temperature sensor	B54	11	ATF temperature 20°C (68°F)	1.6 — 2.0	2.1 k — 2.9 k	
7.1. temperature serisor	554	11	ATF temperature 80°C (176°F)	0.4 — 0.9	275 — 375	
			Vehicle stopped.	0		
Rear vehicle speed sensor	B55	24	Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	450 — 650	
		18	Vehicle stopped.	0	450 — 650	
Front vehicle speed sensor	B55		Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)		
Torque converter turbine	B55	0	Engine idling after warm- up. (D range)	0	450 050	
speed sensor		8	Engine idling after warm- up. (N range)	More than 1 (AC range)	450 — 650	
Vehicle speed output signal	B56	17	Vehicle speed at most 10 km/h (6 MPH)	Less than 1← →More than 4	_	
Facing and district	Dec	47	Ignition switch ON (with engine OFF)	More than 10.5		
Engine speed signal	B55	17	Ignition switch ON (with engine ON)	8 — 11		
Cruise set signal	B55	22	When cruise control is set (SET lamp ON)	Less than 1		
Cruise set signal	D33	22	When cruise control is not set (SET lamp OFF)	More than 6.5	1 -	
Torque control signal 1	B56	5	Ignition switch ON (with engine ON)	More than 4		
Torque control signal 2	B56	14	Ignition switch ON (with engine ON)	More than 4	_	
Torque control cut signal	B55	10	Ignition switch ON			
Intake manifold pressure signal	B54	1	Engine idling after warm- up.	1.2 — 1.8	_	
Shift solenoid 1	B54	22	1st or 4th gear 2nd or 3rd gear	More than 9 Less than 1	10 — 16	
Shift solenoid 2	B54	5	1st or 2nd gear 3rd or 4th gear	More than 9 Less than 1	10 — 16	

		Check w	ith ignition switch ON.		
Content	Con- nector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
Line pressure duty solenoid	B54	9	Ignition switch ON (with engine OFF) Throttle fully closed after warm-up.	1.5 — 4.0	2.0 — 4.5
Line pressure duty soleriold	654	ÿ	Ignition switch ON (with engine OFF) Throttle fully open after warm-up.	Less than 0.5	2.0 — 4.5
Lock-up duty solenoid	B54	7	When lock up occurs.	More than 8.5	10 — 17
			When lock up is released.	Less than 0.5	_
Transfer duty solenoid	B54	6	Fuse on FWD switch  Fuse removed from FWD switch (with throttle fully open and with select lever in 1st gear).	More than 8.5  Less than 0.5	10 — 17
2-4 brake duty solenoid	B54	18	Throttle fully closed (with engine OFF) after warm-up.	1.5 — 4.0	2.0 — 4.5
2-4 brake duty Soleriold	B34	10	Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	2.0 — 4.3
2-4 brake timing solenoid	B54	16	1st gear 3rd gear	Less than 1 More than 9	10 — 16
Low clutch timing solenoid	B54	15	2nd gear 4th gear	Less than 1 More than 9	10 — 16
Hold switch	B55	16	Hold switch ON	Less than 1	_
			Hold switch OFF	More than 8	_
Power switch	B55	23	Power switch ON Power switch OFF	Less than 1  More than 10	<del>                                     </del>
Power indicator light	B56	11	Light ON	Less than 1	_
			Light OFF	More than 9	_
FWD switch	B55	20	Fuse removed	6 — 9.1	_
			Fuse installed	Less than 1	_
FWD indicator light	B56	2	Fused ON FWD switch  Fuse removed from FWD switch	Less than 1 More than 9	_
ABS signal	B55	21	ABS switch ON ABS switch OFF	Less than 1 6.5 — 15	_
Sensor ground line 1	B54	20	ADS SWILLTI OFF	0.5 — 15	Less than 1
Sensor ground line 2	B55	9		0	Less than 1
ochoor ground line z	B56	19		U	Less than I
System ground line	B54	21	-	0	Less than 1
Sensor ground line 3	B54	10		0	Less than 1
Sensor ground line 4	B54	19	_	0	Less than 1
AT diagnosis signal	B56	21	Ignition switch ON	Less than 1 $\leftarrow$ $\rightarrow$ More than 4	_
Data link signal (Subaru	DEG	15	_	_	
Select Monitor)	B56	6	_		
			l		

## **B: SCHEMATIC**



TR0395

## TRANSMISSION CONTROL MODULE (TCM) I/O SIGNAL AUTOMATIC TRANSMISSION (DIAGNOSTICS)

(1)	Transmission control module	(18)	"P" range switch	(36)	Torque control signal 1
(2)	Cruise control module	(19)	"R" range indicator light	(37)	Intake manifold pressure signal
(3)	ABS control module	(20)	"R" range switch	(38)	AT diagnostics signal
(4)	Ignition switch	(21)	"N" range indicator light	(39)	Engine control module
(5)	Brake switch	(22)	"N" range switch	(40)	ATF temperature sensor
(6)	Brake light	(23)	"D" range indicator light	(41)	Torque converter turbine speed
(7)	Battery	(24)	"D" range switch		sensor
(8)	Combination meter (Speedome-	(25)	"3" range indicator light	(42)	Rear vehicle speed sensor
	ter circuit)	(26)	"3" range switch	(43)	Front vehicle speed sensor
(9)	AT OIL TEMP light	(27)	"2" range indicator light	(44)	Shift solenoid 1
(10)	FWD indicator light	(28)	"2" range switch	(45)	Shift solenoid 2
(11)	POWER indicator light	(29)	"1" range indicator light	(46)	2-4 brake timing solenoid
(12)	FWD switch	(30)	"1" range switch	(47)	Line pressure duty solenoid
(13)	Power switch	(31)	Data link connector	(48)	2-4 brake duty solenoid
(14)	Kick-down switch	(32)	Throttle position sensor	(49)	Lock-up duty solenoid
(15)	Hold indicator light	(33)	Engine speed signal	(50)	Low clutch timing solenoid
(16)	Hold switch	(34)	Torque control cut signal	(51)	Transfer duty solenoid
(17)	"P" range indicator light	(35)	Torque control signal 2		

#### 6. Subaru Select Monitor

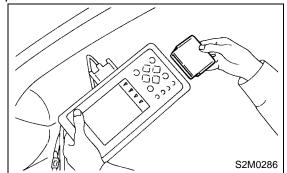
#### A: OPERATION

#### 1. READ DIAGNOSTIC TROUBLE CODE

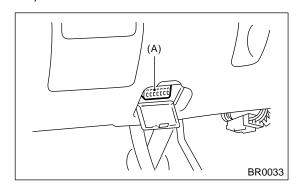
1) Prepare Subaru Select Monitor kit.



- 2) Connect diagnosis cable to Subaru Select Monitor.
- 3) Insert cartridge into Subaru Select Monitor. <Ref. to AT-7, PREPARATION TOOL, General Description.>



- 4) Connect Subaru Select Monitor to data link connector.
  - (1) Data link connector located in the lower portion of the instrument panel (on the driver's side).



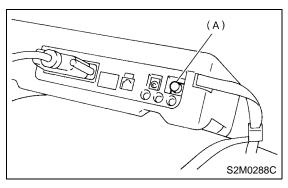
(A) Data link connector

(2) Connect diagnosis cable to data link connector.

#### **CAUTION:**

Do not connect scan tools except for Subaru Select Monitor and OBD-II general scan tool.

5) Turn ignition switch to ON (engine OFF) and Subaru Select Monitor switch to ON.



(A) Power switch

- 6) On the «Main Menu» display screen, select the {Each System Check} and press the [YES] key.
- 7) On the «System Selection Menu» display screen, select the {Transmission Control System} and press the [YES] key.
- 8) Press the [YES] key after displayed the information of transmission type.
- 9) On the «Transmission Diagnosis» display screen, select the {Diagnostic Code(s) Display} and press the [YES] key.
- 10) On the «Diagnostic Code(s) Display» display screen, select the {Latest Diagnostic Code(s)} or {Memorized Diagnostic Code(s)} and press the [YES] key.

#### NOTE:

- For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MAN-UAL.
- For detailed concerning diagnostic trouble codes, refer to the DIAGNOSTIC TROUBLE CODE LIST. <Ref. to AT-25, List of Diagnostic Trouble Code.>

#### 2. READ CURRENT DATA

- 1) On the «Main Menu» display screen, select the {Each System Check} and press the [YES] key.
- 2) On the «System Selection Menu» display screen, select the {Transmission Control System} and press the [YES] key.
- 3) Press the [YES] key after displayed the information of transmission type.
- 4) On the «Transmission Diagnosis» display screen, select the {Current Data Display & Save} and press the [YES] key.
- 5) On the «Data Display Menu» display screen, select the {Data Display} and press the [YES] key.
- 6) Using the scroll key, move the display screen up or down until the desired data is shown.
- A list of the support data is shown in the following table.

Contents	Display	Unit of measure
Battery voltage	Battery Voltage	V
Rear vehicle speed sensor signal	Rear Wheel Speed	km/h or MPH
Front vehicle speed sensor signal	Front Wheel Speed	km/h or MPH
Engine speed signal	Engine Speed	rpm
Automatic transmission fluid temperature signal	ATF Temp.	°C or °F
Throttle position signal	Throttle Sensor Voltage	V
Gear position	Gear Position	_
Line pressure control duty ratio	Line Pressure Duty Ratio	%
Lock up clutch control duty ratio	Lock Up Duty Ratio	%
Transfer clutch control duty ratio	Transfer Duty Ratio	%
Power supply for throttle position sensor	Throttle Sensor Power	V
Torque converter turbine speed signal	Turbine Revolution Speed	rpm
2-4 brake timing pressure control duty ratio	Brake Clutch Duty Ratio	%
Intake manifold pressure sensor voltage	Mani. Pressure Voltage	V
2 wheel drive switch signal	FWD Switch	ON or OFF
Stop lamp switch signal	Stop Light Switch	ON or OFF
Anti lock brake system signal	ABS Signal	ON or OFF
Cruise control system signal	Cruise Control Signal	ON or OFF
Neutral/Parking range signal	N/P Range Signal	ON or OFF
Reverse range signal	R Range Signal	ON or OFF
Drive range signal	D Range Signal	ON or OFF
3rd range signal	3rd Range Signal	ON or OFF
2nd range signal	2nd Range Signal	ON or OFF
1st range signal	1st Range Signal	ON or OFF
Shift control solenoid A	Shift Solenoid #1	ON or OFF
Shift control solenoid B	Shift Solenoid #2	ON or OFF
Torque control output signal #1	Torque Control Signal 1	ON or OFF
Torque control output signal #2	Torque Control Signal 2	ON or OFF
Torque control cut signal	Torque Control Cut Sig.	ON or OFF
2-4 brake timing control solenoid valve	2-4 Brake Timing Sol.	ON or OFF
Low clutch timing control solenoid valve	Low Clutch Timing Sol.	ON or OFF
Automatic transmission diagnosis indicator lamp	Diagnosis Lamp	ON or OFF
Power mode switch signal	Power Mode Switch	ON or OFF
Hold mode switch signal	Hold Mode Switch	ON or OFF
Kick down switch signal	Kick Down Switch	ON or OFF
Automatic transmission fluid temperature lamp	ATF Temperature Lamp	ON or OFF

#### NOTE:

For detailed operation procedure, refer to the SUB-ARU SELECT MONITOR OPERATION MANUAL.

#### 3. CLEAR MEMORY MODE

- 1) On the «Main Menu» display screen, select the
- (2. Each System Check) and press the [YES] key.
- 2) On the «System Selection Menu» display screen, select the {Transmission Control System} and press the [YES] key.
- 3) Press the [YES] key after displayed the information of transmission type.
- 4) On the «Transmission Diagnosis» display screen, select the {Clear Memory} and press the [YES] key.

5) When the `Done' and `Turn Ignition Switch OFF' are shown on the display screen, turn the Subaru Select Monitor and ignition switch to OFF.

#### NOTE:

For detailed operation procedure, refer to the SUB-ARU SELECT MONITOR OPERATION MANUAL.

## 7. Read Diagnostic Trouble Code

## A: OPERATION

## 1. WITHOUT SUBARU SELECT MONITOR

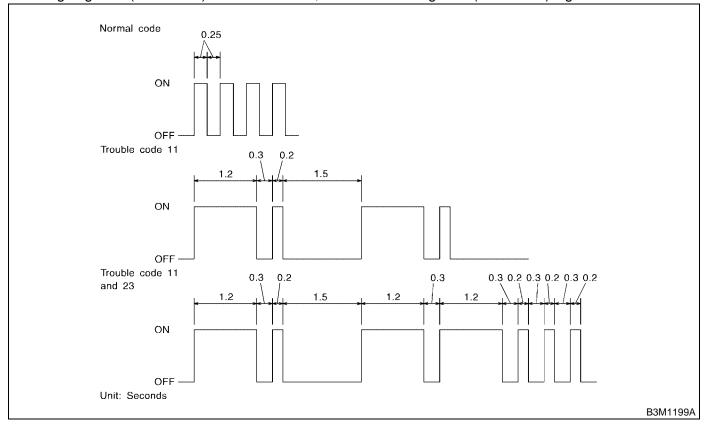
	Step	Check	Yes	No
1	PERFORM READ DIAGNOSTIC TROUBLE CODE.  1) Warm-up the engine.  2) Turn ignition switch to OFF.  3) Turn ignition switch to ON.  4) Start the engine.  5) Drive vehicle at speeds greater than 20 km/h (12 MPH).  6) Stop vehicle.  7) Brake pedal depressed and move select lever to 1 range.  8) Turn ignition switch to OFF.  9) Turn ignition switch to ON.  10) Move select lever 2 range.  11) Move select lever 1 range.  12) Move select lever 2 range.  13) Move select lever 3 range.  14) Move select lever D range.	Does indicator light blinks at 4-Hz intervals? NOTE: Blinks every 0.125 (1/8) seconds (until ignition switch is turned OFF).	Repair power supply and ground circuit. <ref. and="" at-31,="" check="" diagnostic="" for="" ground="" indicator="" light.="" line,="" power="" procedure="" supply="" to=""></ref.>	Go to step 2.
2	CHECK INDICATOR LIGHT.	Does indicator light blinks at 2-Hz intervals? NOTE: Blinks every 0.25 (1/4) seconds (until ignition switch is turned OFF).	AT system is nor- mal.	Go to step 3.
3	CHECK INDICATOR LIGHT.	Is trouble code outputted?	Inspect problem corresponding with trouble code. NOTE: Record all trouble codes.	Go to step 4.
4	CHECK INDICATOR LIGHT.	Does indicator light remains illuminated?	Repair power indicator light circuit < Ref. to AT-26, Diagnostic Procedure for Power Indicator Light.>, or Inspect inhibitor switch, wiring, TCM, etc.	Calling up trouble code again.

#### READ DIAGNOSTIC TROUBLE CODE

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 

The power indicator light flashes the code corresponding to the faulty part.

The long segment (1.2 sec on) indicates a "ten", and the short segment (0.2 sec on) signifies a "one".



#### 2. WITH SUBARU SELECT MONITOR

Refer to SUBARU SELECT MONITOR for information about how to obtain and understand trouble codes. <Ref. to AT-18, OPERATION, Subaru Select Monitor.>

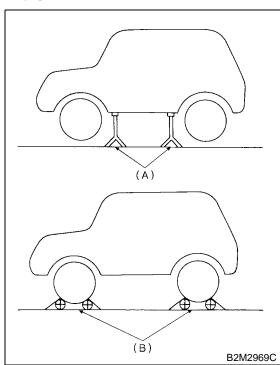
## 8. Inspection Mode

#### A: OPERATION

Raise the vehicle using a garage jack and place on safety stands or drive the vehicle onto free rollers.

#### **WARNING:**

- Before raising the vehicle, ensure parking brakes are applied.
- Do not use a pantograph jack in place of a safety stand.
- Secure a rope or wire to the front and rear towing or tie-down hooks to prevent the lateral runout of front wheels.
- Do not abruptly depress/release clutch pedal or accelerator pedal during works even when engine is operating at low speeds since this may cause vehicle to jump off free rollers.
- In order to prevent the vehicle from slipping due to vibration, do not place any wooden blocks or similar items between the safety stands and the vehicle.
- Since the rear wheels will also rotate, do not place anything near them. Also, make sure that nobody goes in front of the vehicle.



- (A) Safety stand
- (B) Free rollers

## 9. Clear Memory Mode

#### A: OPERATION

#### 1. WITHOUT SUBARU SELECT MONITOR

Current trouble codes shown on the display are cleared by turning the ignition switch OFF after conducting on-board diagnostics operation. Previous trouble codes, however, cannot be cleared since they are stored in the TCM memory which is operating on the back-up power supply. These trouble codes can be cleared by removing the specified fuse (located under the light or left lower position of the instrument panel).

#### **CLEAR MEMORY:**

## Removal of No. 4 fuse (for at least one minute)

- The No. 4 fuse is located in the line to the memory back-up power supply of the TCM. Removal of this fuse clears the previous trouble codes stored in the TCM memory.
- Be sure to remove the No. 4 fuse for at least the specified length of time. Otherwise, trouble codes may not be cleared.

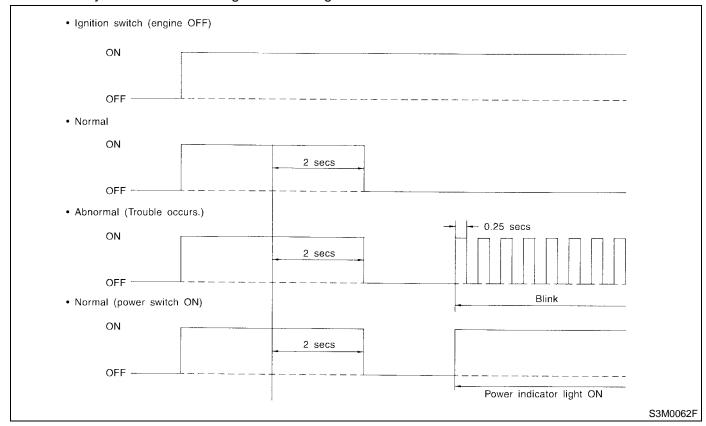
#### 2. WITH SUBARU SELECT MONITOR

Refer to SUBARU SELECT MONITOR for information about how to clear trouble codes. <Ref. to AT-19, CLEAR MEMORY MODE, OPERATION, Subaru Select Monitor.>

## 10.Power Indicator Light Display A: INSPECTION

When any on-board diagnostics item is malfunctioning, the display on the power indicator light blinks from the time the malfunction is detected after starting the engine until the ignition switch is turned OFF. The malfunctioning part or unit can be determined by a trouble code during on-board diag-

nostics operation. Problems which occurred previously can also be identified through the memory function. If the power indicator does not show a problem (although a problem is occurring), the problem can be determined by checking the performance characteristics of each sensor using the select monitor. Indicator signal is as shown in the figure.



# 11.List of Diagnostic Trouble Code

A: LIST

Trouble code	Item	Content of diagnosis	Index
11	Engine speed signal	Detects open or shorted input signal circuit.	<ref. 11="" at-40,="" code="" code.="" diagnostic="" engine="" procedure="" signal="" speed="" to="" trouble="" with="" —="" —,=""></ref.>
27	ATF temperature sensor	Detects open or shorted input signal circuit.	<ref. 27="" at-42,="" atf="" code="" tem-<br="" to="" trouble="" —="">PERATURE SENSOR —, Diagnostic Procedure with Trouble Code.&gt;</ref.>
31	Throttle position sensor	Detects open or shorted input signal circuit.	<ref. 31="" at-47,="" code="" throt-<br="" to="" trouble="" —="">TLE POSITION SENSOR —, Diagnostic Proce- dure with Trouble Code.&gt;</ref.>
33	Front vehicle speed sensor	Detects open or shorted input signal circuit.	<ref. 33="" at-53,="" code="" code.="" diagnostic="" front="" procedure="" sensor="" speed="" to="" trouble="" vehicle="" with="" —="" —,=""></ref.>
36	Torque converter tur- bine speed sensor	Detects open or shorted input signal circuit.	<ref. 36="" at-58,="" code="" code.="" converter="" diagnostic="" procedure="" sensor="" speed="" to="" torque="" trouble="" turbine="" with="" —="" —,=""></ref.>
38	Torque control signal	Detects open or shorted input signal circuit.	<ref. 38="" at-62,="" code="" code.="" control="" diagnostic="" procedure="" signal="" to="" torque="" trouble="" with="" —="" —,=""></ref.>
45	Intake manifold pres- sure signal	Detects open or shorted input signal circuit.	<ref. 45="" at-64,="" code="" code.="" diagnostic="" intake="" manifold="" pressure="" procedure="" signal="" to="" trouble="" with="" —="" —,=""></ref.>
71	Shift solenoid 1	Detects open or shorted output signal circuit.	<ref. 71="" at-66,="" code="" shift<br="" to="" trouble="" —="">SOLENOID 1 —, Diagnostic Procedure with Trou- ble Code.&gt;</ref.>
72	Shift solenoid 2	Detects open or shorted output signal circuit.	<ref. 72="" at-70,="" code="" shift<br="" to="" trouble="" —="">SOLENOID 2 —, Diagnostic Procedure with Trou- ble Code.&gt;</ref.>
73	Low clutch timing sole- noid	Detects open or shorted output signal circuit.	<ref. 73="" at-74,="" clutch="" code="" code.="" diagnostic="" low="" procedure="" solenoid="" timing="" to="" trouble="" with="" —="" —,=""></ref.>
74	2-4 brake timing sole- noid	Detects open or shorted output signal circuit.	<ref. 2-4="" 74="" at-78,="" brake="" code="" code.="" diagnostic="" procedure="" solenoid="" timing="" to="" trouble="" with="" —="" —,=""></ref.>
75	Line pressure duty sole- noid	Detects open or shorted output signal circuit.	<ref. 75="" at-82,="" code="" line<br="" to="" trouble="" —="">PRESSURE DUTY SOLENOID —, Diagnostic Procedure with Trouble Code.&gt;</ref.>
76	2-4 brake duty solenoid	Detects open or shorted output signal circuit.	<ref. 2–4="" 76="" at-86,="" brake="" code="" code.="" diagnostic="" duty="" procedure="" solenoid="" to="" trouble="" with="" —="" —,=""></ref.>
77	Lock-up duty solenoid	Detects open or shorted output signal circuit.	<ref. 77="" at-90,="" code="" code.="" diagnostic="" duty="" lock-up="" procedure="" solenoid="" to="" trouble="" with="" —="" —,=""></ref.>
79	Transfer duty solenoid	Detects open or shorted output signal circuit.	<ref. 79="" at-94,="" code="" to="" trans-<br="" trouble="" —="">FER DUTY SOLENOID —, Diagnostic Procedure with Trouble Code.&gt;</ref.>
93	Rear vehicle speed sensor	Detects open or shorted input signal circuit.	<ref. 93="" at-98,="" code="" rear<br="" to="" trouble="" —="">VEHICLE SPEED SENSOR —, Diagnostic Procedure with Trouble Code.&gt;</ref.>

## DIAGNOSTIC PROCEDURE FOR POWER INDICATOR LIGHT

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 

## 12. Diagnostic Procedure for Power Indicator Light

### A: POWER INDICATOR LIGHT DOES NOT COME ON OR GO OFF

#### **DIAGNOSIS:**

The POWER Indicator light circuit is open or shorted.

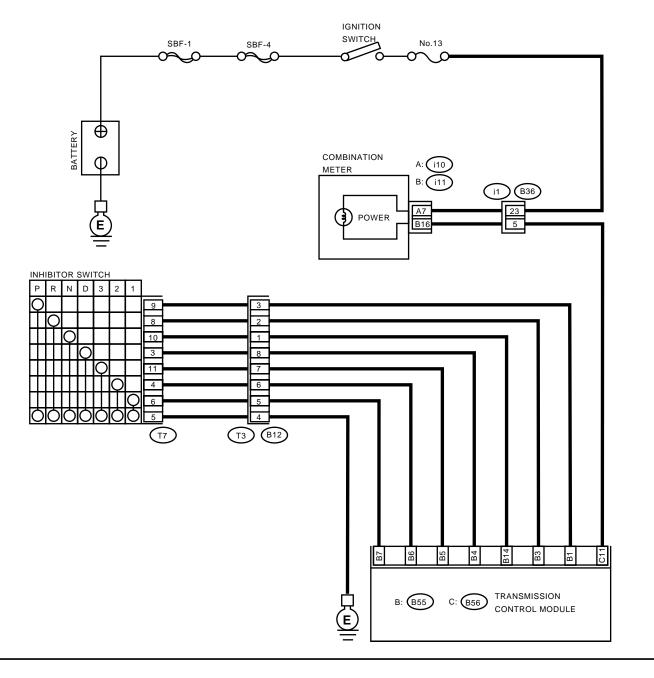
#### **TROUBLE SYMPTOM:**

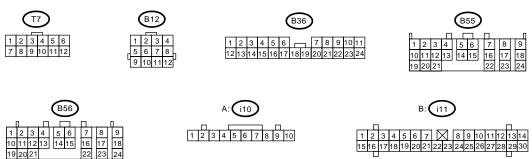
- When ignition switch is turned to ON (engine OFF), POWER indicator light does not illuminate.
- When on-board diagnostics is performed, POWER indicator light remains illuminated.

### DIAGNOSTIC PROCEDURE FOR POWER INDICATOR LIGHT

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 

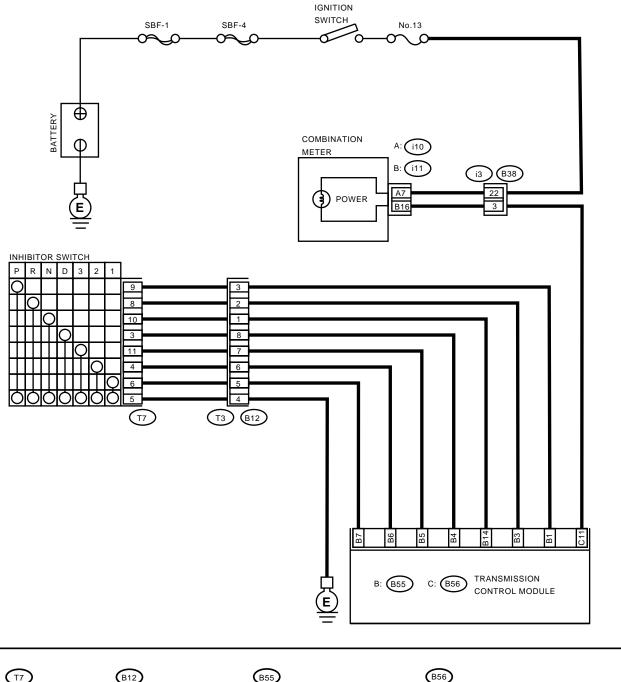
#### WIRING DIAGRAM: LHD MODEL

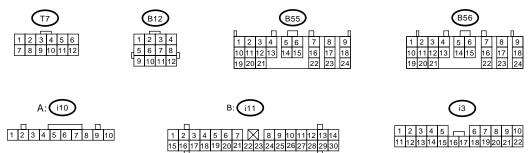




TR0400

#### **RHD MODEL**





TR0401

## DIAGNOSTIC PROCEDURE FOR POWER INDICATOR LIGHT

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK POWER INDICATOR LIGHT.  Turn ignition switch to ON (engine OFF).	Does POWER indicator light illuminate?	Go to step 3.	Go to step 2.
2	CHECK POWER INDICATOR LIGHT.  1) Turn ignition switch to OFF.  2) Remove combination meter.  3) Remove POWER indicator light bulb from combination meter.	Is POWER indicator light bulb OK?	Go to step 4.	Replace POWER indicator light bulb.
3	CHECK POWER INDICATOR LIGHT. Perform "Read Diagnostic Trouble Code". <ref. at-20,="" code.="" diagnostic="" read="" to="" trouble=""></ref.>	Does POWER indicator light blink?	A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM, inhibitor switch and combination meter.	Go to step 9.
4	CHECK FUSE (No. 13). Remove fuse (No. 13).	Is the fuse (No. 13) blown out?	Replace fuse (No. 13). If replaced fuse (No. 13) is blown out easily, repair short circuit in harness between fuse (No. 13) and combination meter.	Go to step 5.
5	CHECK HARNESS CONNECTOR BETWEEN COMBINATION METER AND IGNITION SWITCH.  1) Turn ignition switch to ON (engine OFF). 2) Measure voltage between combination meter connector and chassis ground.  Connector & terminal  (i10) No. 7 (+) — Chassis ground (-):	Is voltage more than 9 V?	Go to step 6.	Repair open circuit in harness between combina- tion meter and bat- tery.
6	CHECK COMBINATION METER.  Measure voltage between combination meter connector and chassis ground.  Connector & terminal  (i11) No. 16 (+) — Chassis ground (-):	Is voltage less than 1 V?	Go to step 7.	Repair combination meter. <ref. assembly.="" combination="" idi-19,="" meter="" to=""></ref.>
7	CHECK OPEN CIRCUIT OF HARNESS.  1)Turn ignition switch to OFF.  2)Disconnect connector from combination meter connector.  3)Measure resistance of harness between combination meter.  Connector & terminal  (B56) No. 11 — (i11) No. 16:	Is the resistance less than 1 $\Omega$ ?	Go to step 8.	Repair open circuit in harness between TCM and combination meter, and poor contact in cou- pling connector.
8	CHECK INPUT SIGNAL FOR TCM.  1)Connect connector to TCM and combination meter.  2)Turn ignition switch to ON (engine OFF).  3)Measure voltage between TCM connector and chassis ground.  Connector & terminal  (B56) No. 11 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Even if POWER indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.	Replace TCM. <ref. (tcm).="" at-44,="" control="" module="" to="" transmission=""></ref.>

## DIAGNOSTIC PROCEDURE FOR POWER INDICATOR LIGHT AUTOMATIC TRANSMISSION (DIAGNOSTICS)

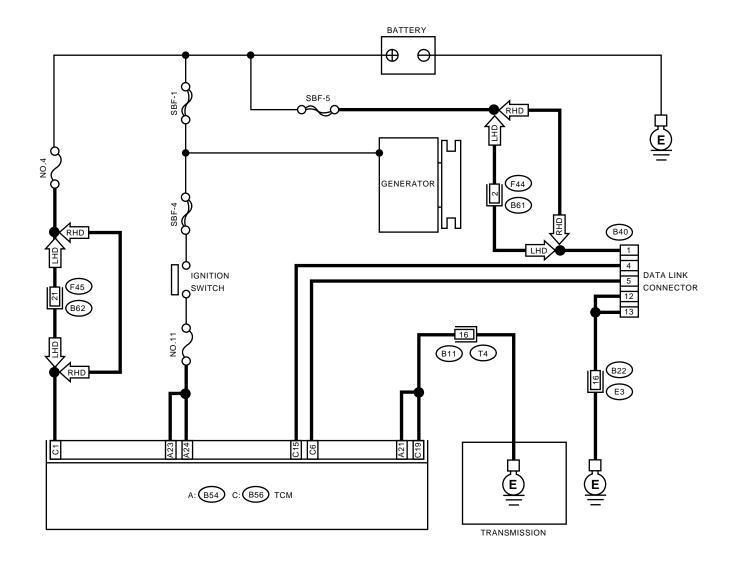
	Step	Check	Yes	No
9	CHECK INHIBITOR SWITCH.  1)Connect Subaru Select Monitor to data link connector.  2)Turn ignition switch to ON.  3)Subaru Select Monitor to ON.  4)Read data of range switch using Subaru Select Monitor.  •Range switch is indicated in ON ⇔ OFF.	When each range is selected, does LED of Subaru Select Monitor light up?	Go to step 10.	Check inhibitor switch circuit. <ref. at-114,<br="" to="">CHECK INHIBI- TOR SWITCH., Diagnostic Proce- dure for No-trouble Code.&gt;</ref.>
10	CHECK SHORT CIRCUIT OF HARNESS.  1) Disconnect connector from TCM.  2) Remove combination meter.  3) Disconnect connector from combination meter.  4) Measure resistance of harness connector between TCM and chassis ground.  Connector & terminal/specified resistance (B56) No. 11 (+) — Chassis ground (-):	Is the resistance less than 1 $\mbox{M}\Omega ?$	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>	Repair short circuit in harness between combination meter connector and TCM connector.

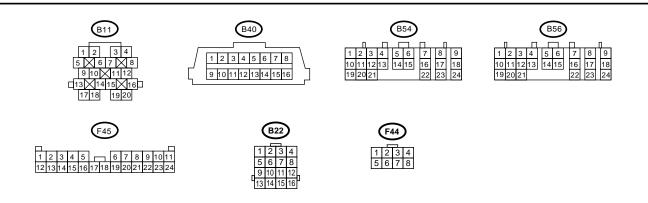
## DIAGNOSTIC PROCEDURE FOR POWER INDICATOR LIGHT

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

**B: CHECK POWER SUPPLY AND GROUND LINE** 

#### **WIRING DIAGRAM:**





TR0402

## DIAGNOSTIC PROCEDURE FOR POWER INDICATOR LIGHT

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK IGNITION SWITCH.	Is ignition switch ON?	Go to step 2.	Turn ignition switch ON.
2	CHECK GENERATOR.  1)Start the engine.  2)Idle the engine.  3)Measure voltage between generator and chassis ground.  Terminal  Generator B terminal (+) — Chassis ground (-):	Is the voltage between 10 and 15 V?	Go to step 3.	Repair generator. <ref. sc-12,<br="" to="">Generator.&gt;</ref.>
3	CHECK BATTERY TERMINAL. Turn ignition switch to OFF.	Is there poor contact at battery terminal?	Repair battery terminal.	Go to step 4.
4	CHECK POWER SUPPLY OF TCM.  1)Disconnect connector from TCM.  2)Turn ignition switch to ON.  3)Measure voltage between TCM connector and chassis ground.  Connector & terminal  (B56) No. 1 (+) — Chassis ground (-):	Is the voltage between 10 and 15 V?	Go to step 6.	Go to step 5.
5	CHECK FUSE (No. 4). Remove fuse (No. 4).	Is the fuse (No. 4) blown out?	Replace fuse (No. 4). If replaced fuse (No. 4) has blown out easily, repair short circuit in harness between fuse (No. 4) and TCM.	
6	CHECK IGNITION POWER SUPPLY CIRCUIT.  1) Turn ignition switch to ON (engine OFF).  2) Measure ignition power supply voltage between TCM connector and chassis ground.  Connector & terminal  (B54) No. 23 (+) — Chassis ground (-):  (B54) No. 24 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 8.	Go to step 7.
7	CHECK FUSE (NO. 11). Remove fuse (No. 11).	Is the fuse (No. 11) blown out?	11). If replaced fuse (No. 11) has blown out easily, repair short circuit in harness between fuse (No. 11) and TCM.	Repair open circuit in harness between fuse (No. 4) and TCM, or fuse (No. 4) and battery, and poor contact in coupling connector.
8	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  1) Turn ignition switch to OFF.  2) Disconnect connector from TCM and transmission.  3) Measure resistance of harness between TCM and transmission connector.  Connector & terminal  (B56) No. 19 — (B11) No. 16  (B54) No. 21 — (B11) No. 16	Is the resistance less than 1 $\Omega$ ?	Go to step 9.	Repair open circuit in harness between TCM, transmission har- ness connector, and poor contact in coupling con- nector.

## DIAGNOSTIC PROCEDURE FOR POWER INDICATOR LIGHT AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
9	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND TRANSMISSION GROUND.  Measure resistance of harness between transmission and transmission ground.  Connector & terminal  (T4) No. 16 — Transmission ground:	Is the resistance less than 1 $\Omega$ ?	Go to step 10.	Repair open circuit in harness between transmis- sion and transmis- sion ground.
10	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in control module power supply, ground line and data link connector?	Repair connector.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>

### DIAGNOSTIC PROCEDURE FOR SELECT MONITOR COMMUNICATION

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 

## 13. Diagnostic Procedure for Select Monitor Communication

### A: COMMUNICATION FOR INITIALIZING IMPOSSIBLE

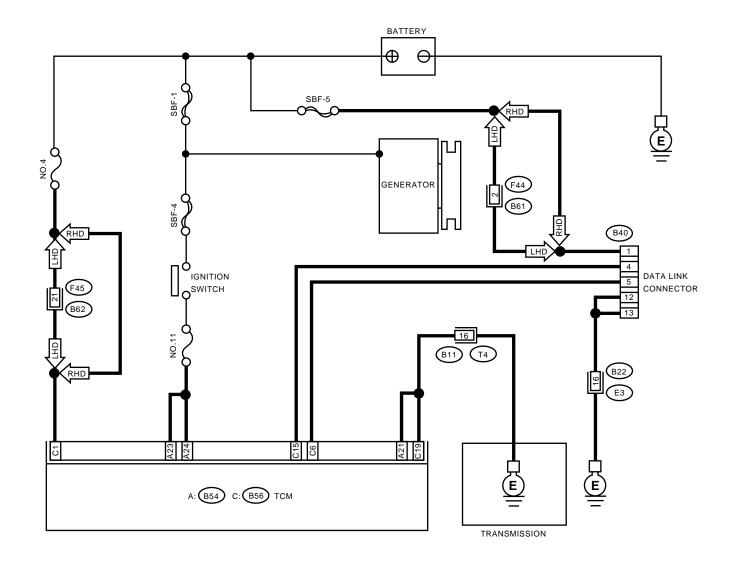
#### **DIAGNOSIS:**

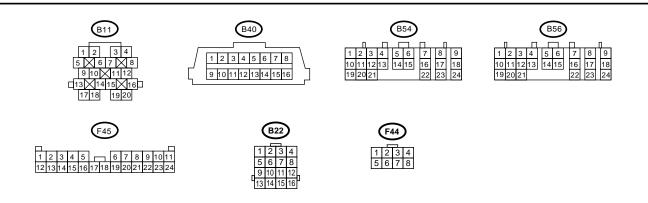
• Faulty harness connector

#### TROUBLE SYMPTOM:

• Select monitor communication failure

#### **WIRING DIAGRAM:**





TR0402

# DIAGNOSTIC PROCEDURE FOR SELECT MONITOR COMMUNICATION

	Step	Check	Yes	No
1	CHECK SUBARU SELECT MONITOR POW- ER SUPPLY CIRCUIT.  Measure voltage between data link connector and chassis ground.  Connector & terminal (B40) No. 1 — Chassis ground:	Is the voltage more than 10V?	Go to step 2.	Repair harness and connector between battery and data link con- nector, and poor contact in cou- pling connector.
2	CHECK SUBARU SELECT MONITOR GROUND CIRCUIT.  Measure resistance of harness between data link connector and chassis ground.  Connector & terminal  (B40) No. 12 — Chassis ground:  (B40) No. 13 — Chassis ground:	Is the resistance less than 1 $\Omega$ ?	Go to step 3.	Repair open circuit in harness between data link connector and ground terminal, and poor contact in coupling connector.
3	CHECK COMMUNICATION OF SELECT MONITOR.  1)Turn ignition switch to ON. 2)Using the select monitor, check whether communication to other systems (such as engine, ABS etc.) can be executed normally.	Are the name and year of the system displayed on the select monitor?	Go to step 8.	Go to step 4.
4	CHECK COMMUNICATION OF SELECT MONITOR.  1) Turn ignition switch to OFF. 2) Disconnect TCM connector. 3) Check whether communication to other systems (such as ABS etc.) can be executed normally.	Are the name and year of the system displayed on the select monitor?	Go to step 8.	Go to step <b>5.</b>
5	CHECK COMMUNICATION OF SELECT MONITOR.  1) Turn ignition switch to OFF. 2) Connect TCM connector. 3) Disconnect ECM connector. 4) Check whether communication to other systems (such as ABS etc.) can be executed normally.	Are the name and year of the system displayed on the select monitor?	Inspect ECM.	Go to step 6.
6	CHECK COMMUNICATION OF SELECT MONITOR.  1) Turn ignition switch to OFF. 2) Connect ECM connector. 3) Disconnect ABSCM&H/U connector. 4) Check whether communication to other systems (such as engine etc.) can be executed normally.	Are the name and year of the system displayed on the select monitor?	Inspect ABSCM&H/U.	Go to step 7.
7	CHECK COMMUNICATION OF SELECT MONITOR.  1) Turn ignition switch to OFF. 2) Connect ABSCM&H/U module connector. 3) Disconnect cruise control module connector. 4) Check whether communication to other systems (such as engine etc.) can be executed normally.  NOTE: If the vehicle is not equipped with cruise control, Go to step 8.	Are the name and year of the system displayed on the select monitor?	Inspect cruise control module.	Go to step 8.

# DIAGNOSTIC PROCEDURE FOR SELECT MONITOR COMMUNICATION

	Step	Check	Yes	No
8	CHECK COMMUNICATION OF SELECT MONITOR.  1)Turn ignition switch to OFF. 2)Connect cruise control module connector. 3)Disconnect immobilizer control module connector. 4)Check whether communication to other systems (such as engine etc.) can be executed normally.  NOTE: If the vehicle is not equipped with cruise control, Go to step 9.	Are the name and year of the system displayed on the select monitor?	Inspect immobilizer control module.	Go to step 9.
9	CHECK HARNESS CONNECTOR BETWEEN EACH CONTROL MODULE AND DATA LINK CONNECTOR.  1) Turn ignition switch to OFF. 2) Disconnect TCM, ECM, ABSCM&H/U, cruise control module and immobilizer control module connectors. 3) Measure resistance between TCM connector and chassis ground.  Connector & terminal  (B40) No. 5 — Chassis ground:  (B40) No. 4 — Chassis ground:		Go to step 10.	Repair harness and connector between each con- trol module and data link connec- tor.
10	CHECK OUTPUT SIGNAL FOR TCM.  1)Turn ignition switch to ON.  2)Measure voltage between TCM and chassis ground.  Connector & terminal  (B40) No. 5 — Chassis ground:  (B40) No. 4 — Chassis ground:	Is the voltage more than 1 V?	Repair harness and connector between each con- trol module and data link connec- tor.	Go to step 11.
11	CHECK HARNESS/CONNECTOR BETWEEN TCM AND DATA LINK CONNECTOR.  Measure resistance between TCM connector and data link connector.  Connector & terminal  (B56) No. 6 — (B40) No. 5:  (B56) No. 15 — (B40) No. 4:	Is the resistance less than 0.5 $\Omega$ ?	Go to step 12.	Repair harness and connector between TCM and data link connec- tor.
12	CHECK INSTALLATION OF TCM CONNECTOR.  Turn ignition switch to OFF.	Is TCM connector inserted into TCM?	Go to step 13.	Insert TCM con- nector into TCM.
13	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in control module and data link connector?	Repair poor contact.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>

# DIAGNOSTIC PROCEDURE FOR SELECT MONITOR COMMUNICATION

# 14. Diagnostic Procedure with Trouble Code

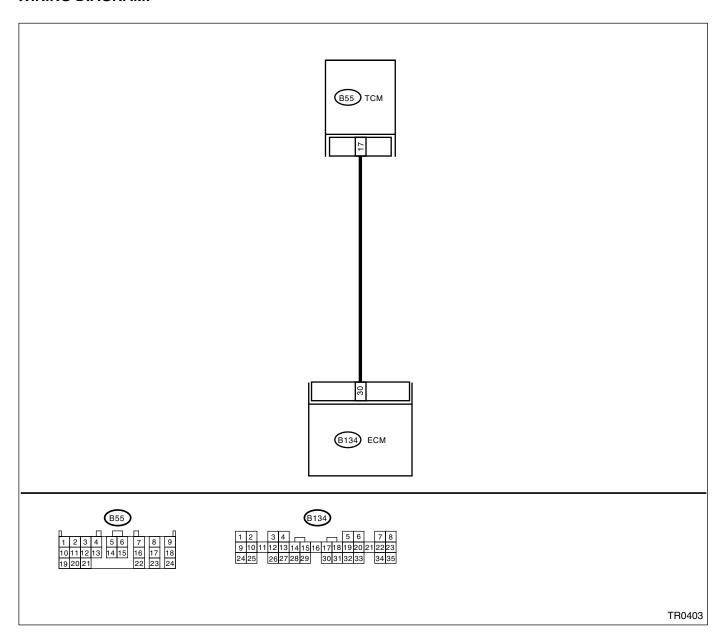
## A: TROUBLE CODE 11 — ENGINE SPEED SIGNAL —

#### **DIAGNOSIS:**

Engine speed input signal circuit is open or shorted.

#### **TROUBLE SYMPTOM:**

- No lock-up (after engine warm-up).
- POWER indicator light remains on when vehicle speed is "0".



	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.  1) Turn ignition switch to OFF.  2) Disconnect connectors from TCM and ECM.  3) Measure resistance of harness between TCM and ECM connector.  Connector & terminal  (B55) No. 17 — (B134) No. 30:	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair open circuit in harness between TCM and ECM connector.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.  Measure resistance of harness between TCM connector and chassis ground.  Connector & terminal  (B55) No. 17 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 3.	Repair short circuit in harness between TCM and ECM connector.
3	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 5.	Go to step 4.
4	CHECK INPUT SIGNAL FOR TCM.  1)Connect connectors to TCM and ECM.  2)Turn ignition switch to ON (engine OFF).  3)Measure voltage between TCM connector and chassis ground.  Connector & terminal  (B55) No. 17 (+) — Chassis ground (-):	Is the voltage more than 10.5 V?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.	Go to step 6.
5	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.  1) Connect connectors to TCM and ECM. 2) Connect Subaru Select Monitor to data link connector. 3) Start the engine, and turn Subaru Select Monitor switch to ON. 4) Warm-up the engine until engine coolant temperature is above 80°C (176°F). 5) Engine idling. 6) Read data of engine speed using Subaru Select Monitor. • Display shows engine speed signal value sent from ECM.	Is the revolution value the same as the tachometer reading shown on the combination meter?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.	Go to step 6.
6	CHECK POOR CONTACT.	Is there poor contact in engine speed signal circuit?	Repair poor contact.	Go to step 7.
7	CONFIRM TROUBLE CODE 11.	Replace ECM with a new one. Does the trouble code appear again, after the memory has been cleared?	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>	Replace ECM.

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 

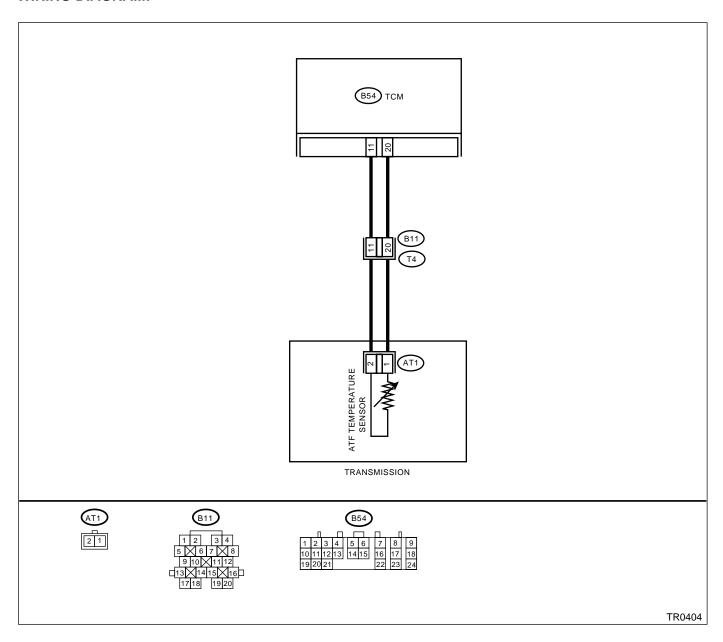
## B: TROUBLE CODE 27 — ATF TEMPERATURE SENSOR —

#### **DIAGNOSIS:**

Input signal circuit of TCM to ATF temperature sensor is open or shorted.

### TROUBLE SYMPTOM:

Excessive shift shock.



	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 2.	Repair open circuit
	TCM AND ATF TEMPERATURE SENSOR.	$\Omega$ ?	·	in harness
	1)Turn ignition switch to OFF.			between TCM and
	2)Disconnect connector from transmission and			transmission con-
	TCM.			nector.
	3)Measure resistance of harness between			
	TCM and transmission connector.			
	Connector & terminal			
	(B54) No. 20 — (B11) No. 12:			
2		Is the resistance less than 1	Go to step 3.	Repair open circuit
	TCM AND ATF TEMPERATURE SENSOR.	Ω?		in harness
	Measure resistance of harness between TCM			between TCM and
	and transmission connector.			transmission con-
	Connector & terminal			nector.
	(B54) No. 11 — (B11) No. 11:			
3	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance more than 1	Go to step 4.	Repair short circuit
	TCM AND ATF TEMPERATURE SENSOR.	ΜΩ?		in harness
	Measure resistance of harness between TCM			between TCM and
	connector and chassis ground.			transmission con-
	Connector & terminal (B54) No. 20 — Chassis ground:			nector.
4	. ,	le the masistance many them.	0-11	Danainahantainadt
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.	Is the resistance more than 1 $M\Omega$ ?	Go to step 5.	Repair short circuit in harness
	Measure resistance of harness between TCM	IVIS2?		between TCM and
	connector and chassis ground.			transmission con-
	Connector & terminal			nector.
	(B54) No. 11 — Chassis ground:			11001011
5	CHECK ATF TEMPERATURE SENSOR.	Is the resistance between 275	Go to step 6.	Go to step 11.
	1)Turn ignition switch to OFF.	and 375 $\Omega$ ?	Co to stop <b>c.</b>	Co to stop 111
	2)Connect connectors to transmission and	and 070 22.		
	TCM.			
	3)Turn ignition switch to ON and start engine.			
	4)Warm-up the transmission until ATF temper-			
	ature reaches to 80°C (176°F).			
	NOTE:			
	If ambient temperature is below 0°C (32°F),			
	drive the vehicle until the ATF reaches its oper-			
	ating temperature.			
	5)Disconnect connector from transmission.			
	6)Measure resistance between transmission			
	connector terminals.			
	Connector & terminal			
	(T4) No. 11 — No. 12:			
6	CHECK ATF TEMPERATURE SENSOR.	Does the resistance value	Go to step 7.	Go to step 11.
	1)Turn ignition switch to ON (engine OFF).	increase while the ATF temper-		
	2)Measure resistance between transmission	ature decreases?		
	connector terminals.			
	Connector & terminal			
7	(T4) No. 11 — No. 12:	Do you have a Subaru Salast	Co to oton 0	Co to oton 9
7	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select	Go to step 9.	Go to step 8.
		Monitor?		

	Step	Check	Yes	No
8	CHECK INPUT SIGNAL FOR TCM.  1) Connect connector to transmission.  2) Warm-up the transmission until ATF temperature is about 80°C (176°F).  NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.  3) Measure voltage between TCM connector terminal.  Connector & terminal  (B54) No. 11 (+) — No. 20 (-):	Is the voltage between 0.4 and 0.9 V?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. Temporary poor contact of the connector or harness may be the case. Repair harness or contact in the ATF temperature sensor and transmission connector.	Go to step 10.
9	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.  1) Connect connector to transmission.  2) Turn ignition switch to ON (engine OFF).	Does the ATF temperature gradually decrease?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. Temporary poor contact of the connector or harness may be the case. Repair harness or contact in the ATF temperature sensor and transmission connector.	Go to step 10.
10	CHECK POOR CONTACT.	Is there poor contact in ATF temperature sensor circuit?	Repair poor contact.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
11	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.  1) Turn ignition switch to OFF. 2) Disconnect connector from transmission. 3) Remove transmission connector from bracket. 4) Lift-up the vehicle and place safety stand. CAUTION: On AWD models, raise all wheels off ground. 5) Drain automatic transmission fluid. CAUTION: Do not drain the automatic transmission fluid until it cools down. 6) Remove oil pan, and disconnect connector from ATF temperature sensor connector. 7) Measure resistance of harness between ATF temperature sensor and transmission connector. Connector & terminal (T4) No. 11 — (AT1) No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step 12.	Repair open circuit in harness between ATF temperature sensor and transmission connector.

	Step	Check	Yes	No
12	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.  Measure resistance of harness between ATF temperature sensor and transmission connector.  Connector & terminal  (T4) No. 12 — (AT1) No. 1:	Is the resistance less than 1 $\Omega$ ?	Go to step 13.	Repair open circuit in harness between ATF tem- perature sensor and transmission connector.
13	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.  Measure resistance of harness between transmission connector and transmission ground.  Connector & terminal  (T4) No. 11 — Transmission ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 14.	Repair short circuit in harness between ATF tem- perature sensor and transmission connector.
14	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.  Measure resistance of harness between transmission connector and transmission ground.  Connector & terminal  (T4) No. 12 — Transmission ground:	Is the resistance more than 1 M $\Omega$ ?	Replace ATF temperature sensor. <ref. and="" at-38,="" atf="" duty="" sensor.="" shift="" solenoids="" solenoids,="" temperature="" to=""></ref.>	Repair short circuit in harness between ATF tem- perature sensor and transmission connector.

# DIAGNOSTIC PROCEDURE WITH TROUBLE CODE AUTOMATIC TRANSMISSION (DIAGNOSTICS)

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 

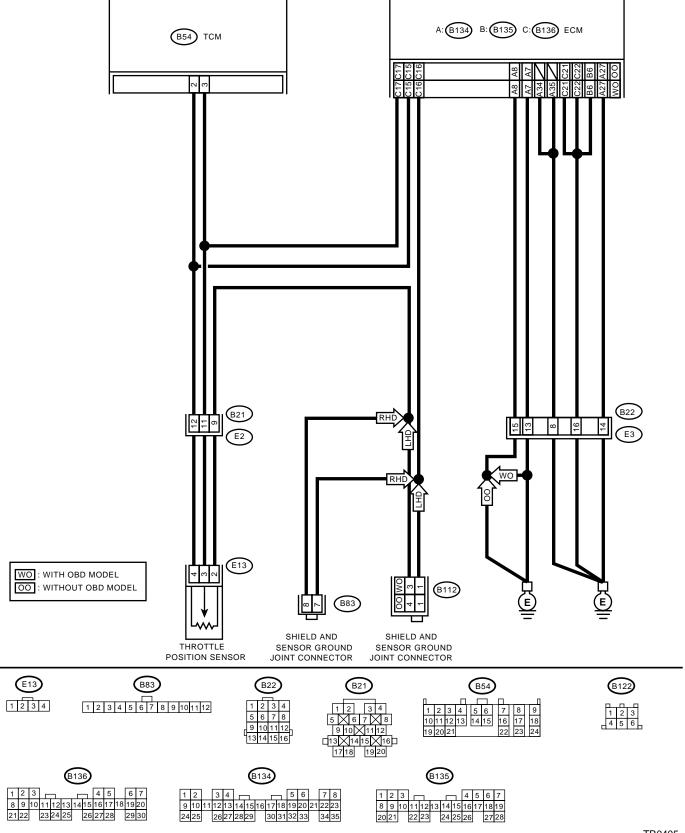
## C: TROUBLE CODE 31 — THROTTLE POSITION SENSOR —

#### **DIAGNOSIS:**

Input signal circuit of throttle position sensor is open or shorted.

#### TROUBLE SYMPTOM:

Shift point too high or too low; excessive shift shock; excessive tight corner "braking".



	Step	Check	Yes	No
1	CHECK ENGINE GROUND TERMINALS.	Have engine ground terminals been tightened?	Go to step 2.	Tighten engine ground terminals.
2	CHECK GROUND CIRCUIT OF ECM.  1) Turn ignition switch to OFF.  2) Disconnect connector from ECM.  3) Measure resistance of harness between ECM and engine ground.  Connector & terminal  H4 ENGINE WITH OBD MODEL  (B134) No. 27 — Engine ground:  (B134) No. 8 — Engine ground:  (B136) No. 21 — Engine ground:  (B136) No. 22 — Engine ground:  (B134) No. 35 — Engine ground:  (B134) No. 35 — Engine ground:  (B134) No. 34 — Engine ground:  (B135) No. 6 — Engine ground:  (B134) No. 27 — Engine ground:  (B136) No. 21 — Engine ground:  (B136) No. 21 — Engine ground:  (B136) No. 22 — Engine ground:	Is the resistance less than 5 Ω?	Go to step 3.	Repair open circuit in harness between ECM connector and engine grounding terminal.
3	CHECK THROTTLE POSITION SENSOR.  1) Disconnect connector from throttle position sensor.  2) Measure resistance between throttle position sensor connector receptacle's terminals.  Terminals  No. 4 — No. 2:	Is the resistance between 3.0 and 4.2 k $\Omega$ ?	Go to step 4.	Replace throttle position sensor.
4	CHECK THROTTLE POSITION SENSOR.  Measure resistance between throttle position sensor connector receptacle's terminals.  Terminals  No. 2 — No. 3:	Is the resistance between 0.35 and 0.5 k $\Omega$ ?	Go to step 5.	Replace throttle position sensor.
5	CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.  1) Disconnect connector from TCM.  2) Measure resistance of harness between TCM and throttle position sensor connector.  Connector & terminal (B55) No. 3 — (E13) No. 3:	Is the resistance less than 1 $\Omega$ ?	Go to step 6.	Repair open circuit in harness between TCM and throttle position sensor connector, and poor contact in coupling connector.
6	CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR. Measure resistance of harness between TCM and throttle position sensor connector.  Connector & terminal  (B54) No. 2 — (E13) No. 4:	Is the resistance less than 1 $\Omega$ ?	Go to step 7.	Repair open circuit in harness between TCM and throttle position sensor connector, and poor contact in coupling connector.
7	CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.  Measure resistance of harness between TCM connector and chassis ground.  Connector & terminal  (B54) No. 3 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 8.	Repair short circuit in harness between TCM and throttle position sensor connector.

	Step	Check	Yes	No
8	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance more than 1	Go to step 9.	Repair short circuit
	TCM AND THROTTLE POSITION SENSOR.	ΜΩ?		in harness
	Measure resistance of harness between TCM			between TCM and
	connector and chassis ground.			throttle position
	Connector & terminal (B54) No. 2 — Chassis ground:			sensor connector.
9		Is the resistance less than 1	Go to step 10.	Panair anan airauit
9	TCM AND ECM.	$\Omega$ ?	Go to step 10.	Repair open circuit in harness
	Measure resistance of harness between TCM	22:		between TCM and
	and ECM connector.			ECM connector.
	Connector & terminal			
	(B54) No. 3 — (B136) No. 17:			
10	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 11.	Repair open circuit
	TCM AND ECM.	Ω?		in harness
	Measure resistance of harness between TCM			between TCM and
	and ECM connector.			ECM connector.
	Connector & terminal (B54) No. 2 — (B136) No. 15:			
11	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select	Co to stop 14	Co to stop 12
11		Monitor?	Go to step 14.	Go to step 12.
12	CHECK INPUT SIGNAL FOR TCM.	Is the voltage between 0.3 and	Go to step 13.	Go to step 18.
		0.7 V in throttle fully closed?		
	sensor and ECM. 2)Turn ignition switch to ON (engine OFF).			
	3)Close the throttle completely.			
	4)Measure voltage between TCM connector			
	and chassis ground.			
	Connector & terminal			
	(B54) No. 3 (+) — Chassis ground (–):			
13	CHECK INPUT SIGNAL FOR TCM.	Is the voltage between 4.0 and	Go to step 16.	Go to step 18.
	1)Open the throttle completely.	4.6 V with throttle fully open?		
	2)Measure voltage between TCM connector			
	and chassis ground.  Connector & terminal			
	(B54) No. 3 (+) — Chassis ground (–):			
14	CHECK INPUT SIGNAL FOR TCM USING	Is the value voltage between	Go to step 15.	Go to step 18.
	SUBARU SELECT MONITOR.	0.3 and 0.7 V?	Co to stop 10.	Co to stop 10.
	1)Connect connectors to TCM, throttle position			
	sensor and ECM.			
	2)Connect Subaru Select Monitor to data link			
	connector.			
	3)Turn ignition switch to ON (engine OFF).			
	4)Turn Subaru Select Monitor switch to ON.			
	<ul><li>5)Throttle fully closed.</li><li>6)Read data of throttle position sensor using</li></ul>			
	Subaru Select Monitor.			
	•Throttle position sensor input signal is indi-			
	cated.			
15	CHECK INPUT SIGNAL FOR TCM USING	Is the value voltage between	Go to step 17.	Go to step 18.
	SUBARU SELECT MONITOR.	4.0 and 4.6 V?		
	Throttle fully open.			
	NOTE:			
	Must be changed correspondingly with acceler-			
	ator pedal operation (from "released" to "de-			
	pressed" position).			

	Step	Check	Yes	No
16	CHECK INPUT SIGNAL FOR TCM (THROT-TLE POSITION SENSOR POWER SUPPLY).  Measure voltage between TCM connector and chassis ground.  Connector & terminal  (B54) No. 2 (+) — Chassis ground (-):	Is the voltage between 4.8 and 5.3 V?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in throttle position sensor circuit.	Go to step 18.
17	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR (THROTTLE POSITION SENSOR POWER SUPPLY). Read data of throttle position sensor power supply using Subaru Select Monitor.  •Throttle position sensor power supply voltage is indicated.	Is the value voltage between 4.8 and 5.3 V?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in throttle position sensor circuit.	Go to step 18.
18	CHECK POOR CONTACT.	Is there poor contact in throttle position sensor circuit?	Repair poor contact.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>

# DIAGNOSTIC PROCEDURE WITH TROUBLE CODE AUTOMATIC TRANSMISSION (DIAGNOSTICS)

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 

## D: TROUBLE CODE 33 — FRONT VEHICLE SPEED SENSOR —

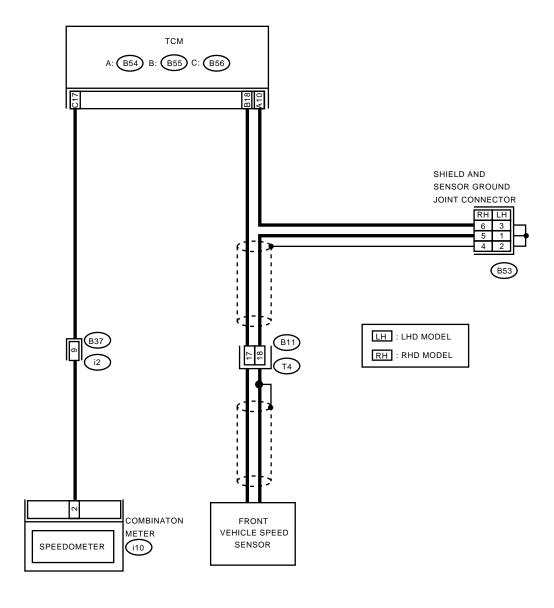
#### **DIAGNOSIS:**

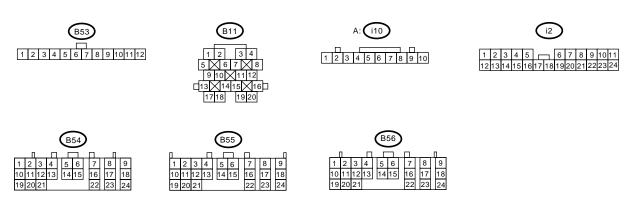
- The vehicle speed signal is abnormal.
- The circuit in combination meter is faulty.
- The harness connector between TCM and vehicle speed sensor is in short or open.

#### **TROUBLE SYMPTOM:**

- · Erroneous idling.
- Engine stalls.
- · Poor driving performance.

#### **WIRING DIAGRAM:**





TR0406

	Step	Check	Yes	No
1) 2)	HECK HARNESS CONNECTOR BETWEEN CM AND TRANSMISSION. Turn ignition switch to OFF. Disconnect connector from TCM and trans- dission.	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair open circuit in harness between TCM and transmission con- nector.
3) T(	)Measure resistance of harness between CM and transmission connector.  Connector & terminal  (B55) No. 18 — (B11) No. 17:			Hector.
<b>T(</b> M ar	HECK HARNESS CONNECTOR BETWEEN CM AND TRANSMISSION. leasure resistance of harness between TCM and transmission connector.  Connector & terminal (B54) No. 10 — (B11) No. 18:	Is the resistance less than 1 $\Omega$ ?	Go to step 3.	Repair open circuit in harness between TCM and transmission con- nector, and poor contact in cou- pling connector.
T( M ar	HECK HARNESS CONNECTOR BETWEEN CM AND TRANSMISSION. leasure resistance of harness between TCM and transmission connector.  Connector & terminal  (B54) No. 10 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 4.	Repair short circuit in harness between TCM and transmission con- nector.
<b>T(</b> M ar	HECK HARNESS CONNECTOR BETWEEN CM AND TRANSMISSION. leasure resistance of harness between TCM and transmission connector.  Connector & terminal  (B55) No. 18 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair short circuit in harness between TCM and transmission con- nector, and poor contact in cou- pling connector.
M cc	HECK FRONT VEHICLE SPEED SENSOR. leasure resistance between transmission onnector receptacle's terminals.  Connector & terminal  (T4) No. 17 — No. 18:	Is the resistance between 450 and 650 $\Omega$ ?	Go to step 6.	Replace front vehi- cle speed sensor. <ref. at-31,<br="" to="">Front Vehicle Speed Sensor.&gt;</ref.>
6 PI	REPARE OSCILLOSCOPE.	Do you have oscilloscope?	Go to step 9.	Go to step 7.
7 PI	REPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 10.	Go to step 8.
1) 2) sta CA On 3) (1 NC Th wh ind ag che sy	HECK INPUT SIGNAL FOR TCM. Connect all connectors. Con		Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contactor or harness may be the case. Repair harness or connector in the front vehicle speed sensor circuit.	Go to step 11.
4) te	Measure voltage between TCM connector erminals.  Connector & terminal  (B55) No. 18 (+) — (B54) No. 10 (-):			

	Step	Check	Yes	No
9	USING OSCILLOSCOPE.  1) Connect all connectors.  2) Lift-up the vehicle and place safety stand.  CAUTION: On AWD models, raise all wheels off ground.  3) Set oscilloscope to TCM connector terminals.  Positive probe; (B55) No. 18 Earth lead; (B54) No. 10  4) Start the engine, and drive the wheels slowly.  NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunctions. When AT control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis system. <ref. abs-22,="" clear="" memory="" mode.="" to="">  5) Measure signal voltage indicated on oscillo-</ref.>		Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contactor or harness may be the case. Repair harness or connector in the front vehicle speed sensor circuit.	Go to step 11.
10	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.  1) Connect all connectors. 2) Connect Subaru Select Monitor to data link connector. 3) Lift-up or raise the vehicle and place safety stands.  CAUTION: On AWD models, raise all wheels off floor. 4) Turn ignition switch to ON and turn Subaru Select Monitor switch to ON. 5) Start the engine. 6) Read data of vehicle speed using Subaru Select Monitor. •Compare speedometer with Subaru Select Monitor indications. •Vehicle speed is indicated in "km/h" or "MPH". 1) Slowly increase vehicle speed to 60 km/h or 37 MPH.  NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <ref. abs-22,="" clear="" memory="" mode.="" to=""></ref.>		Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor connector or harness may be the case. Repair harness or connector in the front vehicle speed sensor circuit.	Go to step 11.
11	CHECK POOR CONTACT.	Is there poor contact in front vehicle speed sensor circuit?	Repair poor contact.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>

## E: TROUBLE CODE 36 — TORQUE CONVERTER TURBINE SPEED SENSOR —

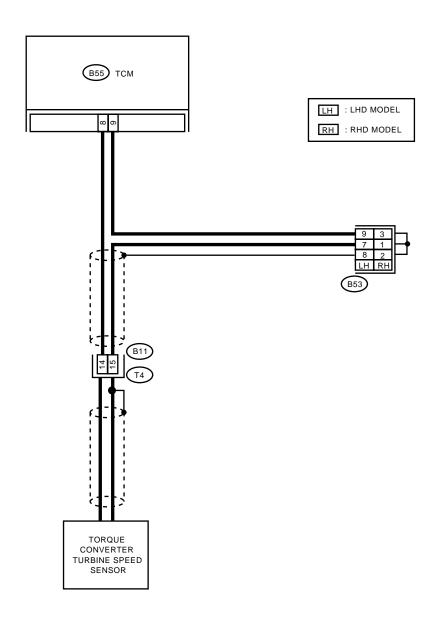
#### **DIAGNOSIS:**

Input signal circuit of TCM is open or shorted.

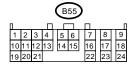
#### TROUBLE SYMPTOM:

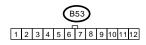
Excessive shift shock.

**WIRING DIAGRAM:** 









TR0407

	Step	Check	Yes	No
1	CHECK TORQUE CONVERTER TURBINE SPEED SENSOR.  1)Turn ignition switch to OFF.  2)Disconnect connector from transmission.	Is the resistance between 450 and 650 $\Omega$ ?	Go to step 2.	Replace turbine speed sensor. <ref. at-35,<br="" to="">Torque Converter</ref.>
	3)Measure resistance between transmission connector receptacle's terminals.  Connector & terminal  (T4) No. 14 — No. 15:			Turbine Speed Sensor.>
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  1) Disconnect connector from TCM.  2) Measure resistance of harness between TCM and transmission connector.  Connector & terminal  (B55) No. 8 — (B11) No. 14:	Ω?	Go to step 3.	Repair open circuit in harness between TCM and transmission con- nector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  Measure resistance of harness between TCM and transmission connector.  Connector & terminal  (B55) No. 9 — (B11) No. 15:	Ω?	Go to step 4.	Repair open circuit in harness between TCM and transmission con- nector, and poor contact in cou- pling connector.
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  Measure resistance of harness between TCM and chassis ground.  Connector & terminal  (B55) No. 9 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair short circuit in harness between TCM and transmission con- nector.
5	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  Measure resistance of harness between TCM and chassis ground.  Connector & terminal  (B55) No. 8 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 6.	Repair short circuit in harness between TCM and transmission con- nector, and poor contact in cou- pling connector.
6	PREPARE OSCILLOSCOPE.	Do you have oscilloscope?	Go to step 10.	Go to step 7.
7	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 9.	Go to step 8.
8	CHECK INPUT SIGNAL FOR TCM.  1)Connect connectors to TCM and transmission.  2)Start the engine and move select lever to "P" or "N" range.  3)Measure voltage between TCM connector terminals.  Connector & terminal  (B55) No. 8 (+) — No. 9 (-):	Is the voltage more than AC 1 V?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.	Go to step 11.

# DIAGNOSTIC PROCEDURE WITH TROUBLE CODE AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
9	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.  1) Connect connectors to TCM and transmission.  2) Connect Subaru Select Monitor to data link connector.  3) Turn ignition switch to ON and turn Subaru Select Monitor switch to ON.  4) Start the engine.  5) Move select lever to "P" or "N" range.  6) Read data of turbine speed using Subaru Select Monitor.  • Compare tachometer with Subaru Select Monitor indications.	Is the revolution value same as the tachometer reading shown on the combination meter?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.	Go to step 11.
10	CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE.  1) Connect connectors to TCM and transmission.  2) Set oscilloscope to TCM connector terminals.  Positive probe; (B55) No. 8  Earth lead; (B55) No. 9  3) Start the engine and move select lever to "P" or "N" range.	Is the signal voltage more than AC 1 V?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.	Go to step 11.
11	CHECK POOR CONTACT.	Is there poor contact in torque converter turbine speed sensor circuit?	Repair poor contact.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 

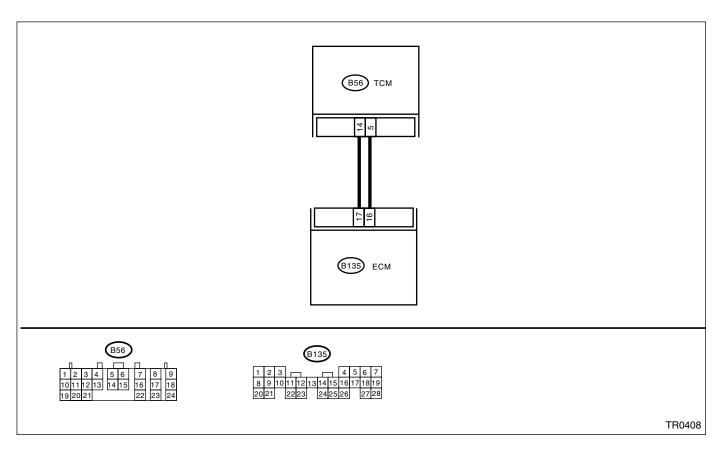
## F: TROUBLE CODE 38 — TORQUE CONTROL SIGNAL —

#### **DIAGNOSIS:**

• The signal circuit is open or shorted.

#### TROUBLE SYMPTOM:

Excessive shift shock.



	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.  1) Turn ignition switch to OFF.  2) Disconnect connectors from TCM and ECM.  3) Measure resistance of harness between TCM and ECM connector.  Connector & terminal  (B56) No. 14 — (B135) No. 17:  (B56) No. 5 — (B135) No. 16:	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair open circuit in harness between TCM and ECM connector.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.  Measure resistance of harness between TCM connector and chassis ground.  Connector & terminal  (B56) No. 14 — Chassis ground:  (B56) No. 5 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 3.	Repair short circuit in harness between TCM and ECM connector.

	Step	Check	Yes	No
3	CHECK OUTPUT SIGNAL EMITTED FROM TCM.  1) Connect connectors to TCM and ECM. 2) Turn ignition switch to ON (engine OFF). 3) Measure voltage between TCM connector terminals.  Connector & terminal (B56) No. 14 (+) — Chassis ground (-): (B56) No. 5 (+) — Chassis ground (-):	C	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.	Go to step 4.
4	CHECK POOR CONTACT.	Is there poor contact in torque control signal circuit?	Repair poor contact.	Go to step 5.
5	CHECK GROUND LINE BETWEEN TRANS- MISSION AND BODY. Check installing condition of ground line in transmission and body.	Is there any dirt or rust at ground line installing point?	Remove dirt and rust.	Go to step 6.
6	CHECK GROUND LINE BETWEEN TRANS-MISSION AND BODY. Check installing condition of ground line in transmission and body.  Tightening torque: 13±3 N·m (1.3±0.3 kgf-m, 9.4±2.2 ft-lb)	Is tightening torque value within specification?	Go to step 7.	Tighten to speci- fied torque.
7	CHECK GROUND LINE INSIDE TRANSMISSION.  1) Drain AT fluid and remove oil pan.  2) Check tightening torque value of ground line installing bolt.  Tightening torque:  T: 8±1 N·m (0.8±0.1 kgf-m, 5.8±0.7 ft-lb)	Is tightening torque value within specification?	Go to step 9.	Tighten to speci- fied torque.
8	CHECK GROUND CIRCUIT OF ECM. <ref. 31="" at-47,="" code="" code.="" diagnostic="" position="" procedure="" sensor="" throttle="" to="" trouble="" with="" —="" —,=""></ref.>	Is there any trouble?	Repair ground ter- minal and/or ground circuit of ECM.	Go to step 9.
9	RECHECK OUTPUT SIGNAL EMITTED FROM TCM. Measure voltage between TCM connector and chassis ground. Connector & terminal (B56) No. 14 (+) — Chassis ground (-): (B56) No. 5 (+) — Chassis ground (-):	Is each voltage more than 4.8 V?	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>	Replace ECM.

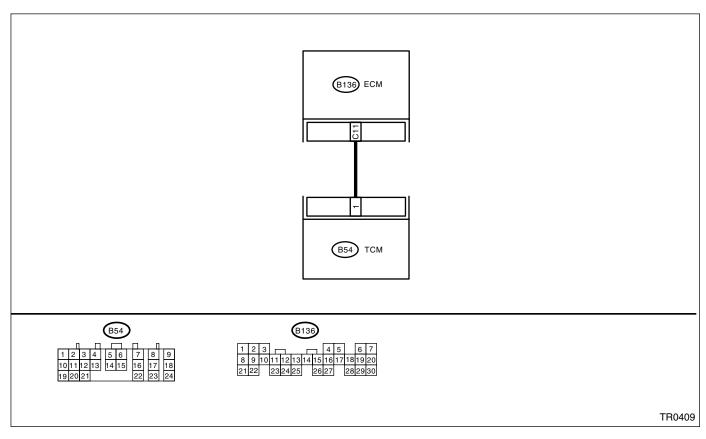
## G: TROUBLE CODE 45 — INTAKE MANIFOLD PRESSURE SIGNAL —

#### **DIAGNOSIS:**

Input signal circuit of TCM from ECM is open or shorted.

### TROUBLE SYMPTOM:

Excessive shift shock.



	Step	Check	Yes	No
1	CHECK ENGINE GROUND TERMINALS AND GROUND CIRCUIT OF ECM <ref. 31="" at-47,="" code="" code.="" diagnostic="" position="" procedure="" sensor="" throttle="" to="" trouble="" with="" —="" —,=""></ref.>	·	Repair ground terminal and/or ground circuit of ECM.	Go to step 2.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.  1) Turn ignition switch to OFF.  2) Disconnect connectors from TCM and ECM.  3) Measure resistance of harness between TCM and ECM connector.  Connector & terminal  (B54) No. 1 — (B136) No. 11:	Is the resistance less than 1 $\Omega$ ?	Go to step 3.	Repair open circuit in harness between TCM and ECM connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.  Measure resistance of harness between TCM connector and chassis ground.  Connector & terminal  (B54) No. 1 — Chassis ground:	Is the resistance more than 1 M $\Omega$ ?	Go to step 4.	Repair short circuit in harness between TCM and ECM connector.
4	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 6.	Go to step 5.

	Step	Check	Yes	No
5	CHECK INPUT SIGNAL FOR TCM.  1) Connect connectors to TCM and ECM.  2) Start the engine, and warm-up the transmission until ATF temperature is above 80°C (176°F).  NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.  3) Engine idling.  4) Measure voltage between TCM connector and chassis ground.  Connector & terminal (B54) No. 1 (+) — Chassis ground (-):	Is the voltage between 0.4 and 1.8 V?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.	Go to step 7.
6	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.  1) Connect connectors to TCM and ECM. 2) Connect Subaru Select Monitor to data link connector. 3) Start the engine, and turn Subaru Select monitor switch to ON. 4) Warm-up the engine until engine coolant temperature is above 80°C (176°F). 5) Engine idling. 6) Read data of intake manifold pressure signal using Subaru Select Monitor. • Display shows intake manifold pressure signal value sent from ECM.	Is the value between 0.4 and 1.8 V?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.	Go to step 7.
7	CHECK POOR CONTACT.	Is there poor contact in intake manifold pressure signal circuit?	Repair poor contact.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>

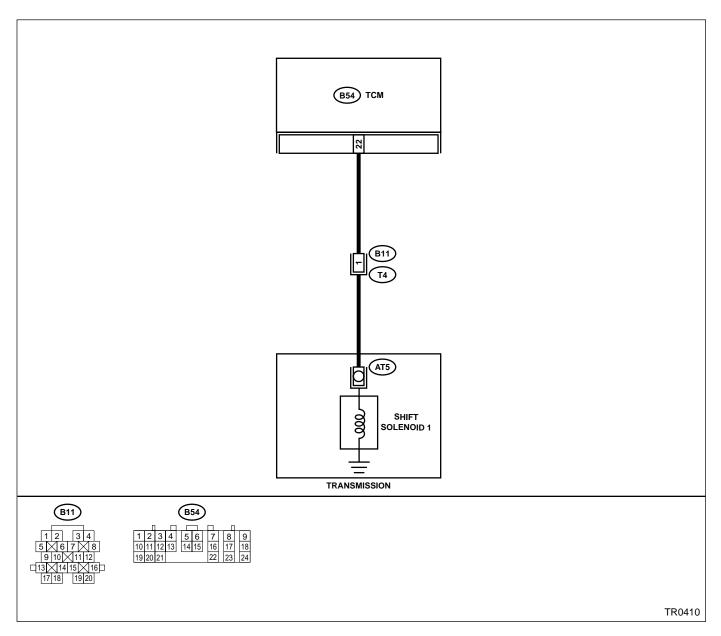
## H: TROUBLE CODE 71 — SHIFT SOLENOID 1 —

**DIAGNOSIS:** 

Output signal circuit of shift solenoid 1 is open or shorted.

TROUBLE SYMPTOM:

Does not shift.



	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  1) Turn ignition switch to OFF.  2) Disconnect connector from TCM and transmission.  3) Measure resistance of harness between TCM and shift solenoid 1 connector.  Connector & terminal  (B54) No. 22 — (B11) No. 1:	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair open circuit in harness between TCM and transmission connector.

	Step	Check	Yes	No
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  Measure resistance of harness between TCM connector and chassis ground.  Connector & terminal  (B54) No. 22 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 3.	Repair short circuit in harness between TCM and transmission con- nector.
3	CHECK SHIFT SOLENOID 1.  Measure resistance between transmission connector terminals.  Connector & terminal  (T4) No. 1 — No. 16:	Is the resistance between 10 and 16 $\Omega$ ?	Go to step 4.	Go to step 7.
4	CHECK OUTPUT SIGNAL EMITTED FROM TCM.  1) Connect connectors to TCM and transmission.  2) Turn ignition switch to ON (engine OFF).  3) Move select lever to "D" range.  4) Measure voltage between TCM connector and chassis ground.  Connector & terminal  (B54) No. 22 (+) — Chassis ground (-):	Is the voltage more than 9V?	Go to step <b>5</b> .	Go to step 6.
5	CHECK OUTPUT SIGNAL EMITTED FROM TCM.  1)Hold switch to ON. 2)Measure voltage between TCM connector and chassis ground.  Connector & terminal  (B54) No. 22 (+) — Chassis ground (-):	Is the voltage less than 1V?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.	Go to step 6.
6	CHECK POOR CONTACT.	Is there poor contact in shift solenoid 1 circuit?	Repair poor contact.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
7	CHECK SHIFT SOLENOID 1 (IN TRANSMISSION).  1) Remove transmission connector from bracket.  2) Lift-up or raise the vehicle and support with safety stand.  CAUTION: On AWD models, raise all wheels off ground.  3) Drain automatic transmission fluid.  CAUTION: Do not drain the automatic transmission fluid until it cools down.  4) Remove oil pan, and disconnect connector from shift solenoid 1.  5) Measure resistance between shift solenoid 1 connector and transmission ground.  Terminal  No. 1 — Transmission ground:	Is the resistance between 10 and 16 $\Omega$ ?	Go to step 8.	Replace shift sole- noid 1. <ref. to<br="">AT-38, Shift Sole- noids, Duty Sole- noids and ATF Temperature Sen- sor.&gt;</ref.>

# DIAGNOSTIC PROCEDURE WITH TROUBLE CODE AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
8	CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 1 AND TRANSMISSION.  Measure resistance of harness between shift solenoid 1 and transmission connector.  Connector & terminal  (AT5) No. 1 — (T4) No. 1:	Is the resistance less than 1 $\Omega$ ?	Go to step 9.	Repair open circuit in harness between shift sole- noid 1 and trans- mission connector.
9	CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 1 AND TRANSMISSION.  Measure resistance of harness between shift solenoid 1 connector and transmission ground.  Connector & terminal  (T4) No. 1 — Transmission ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in shift solenoid 1 and transmission.	Repair short circuit harness between shift solenoid 1 and transmission connector.

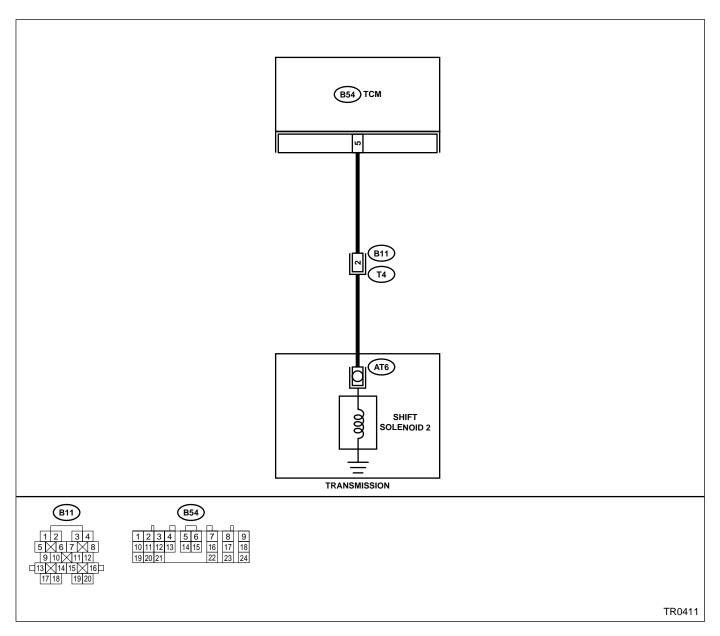
## I: TROUBLE CODE 72 — SHIFT SOLENOID 2 —

**DIAGNOSIS:** 

Output signal circuit of shift solenoid 2 is open or shorted.

TROUBLE SYMPTOM:

Does not shift.



	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  1) Turn ignition switch to OFF.  2) Disconnect connector from TCM and transmission.  3) Measure resistance of harness between TCM and shift solenoid 2 connector.  Connector & terminal  (B54) No. 5 — (B11) No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair open circuit in harness between TCM and transmission connector.

	Step	Check	Yes	No
2		Is the resistance more than 1	Go to step 3.	Repair short circuit
	TCM AND TRANSMISSION.	ΜΩ?		in harness
	Measure resistance of harness between TCM			between TCM and
	connector and transmission ground.			transmission con-
	Connector & terminal			nector.
	(B54) No. 5 — Chassis ground:			
3	CHECK SHIFT SOLENOID 2.	Is the resistance between 10	Go to step 4.	Go to step 6.
	Measure resistance between transmission	and 16 Ω?		
	connector terminals.			
	Connector & terminal			
	(T4) No. 2 — No. 16:			
4	CHECK OUTPUT SIGNAL EMITTED FROM	Is the voltage less than 1 V?	Even if "POWER"	Go to step 5.
	TCM.		indicator lights up,	
	<ol> <li>Connect connectors to TCM and transmis-</li> </ol>		the circuit has	ļ.
	sion.		returned to a nor-	
	2)Lift-up or raise the vehicle and support with		mal condition at	
	safety stand.		this time. A tempo-	
	CAUTION:		rary poor contact	
	On AWD models, raise all wheels off		of the connector or	
	ground.		harness may be	
	3)Start the engine and warm-up the transmis-		the cause. Repair	
	sion until ATF temperature is above 80°C		harness or con- nector in the TCM	
	(176°F).		and transmission.	
	NOTE:		and transmission.	
	If ambient temperature is below 0°C (32°F),			
	drive the vehicle until the ATF reaches its oper-			
	ating temperature.			
	4)Move selector lever to "D", and slowly			
	increase vehicle speed to 50 km/h (31 MPH).			
	NOTE:			
	The speed difference between front and rear			
	wheels may light the ABS warning light, but this			
	indicates no malfunction. When AT control di-			
	agnosis is finished, perform the ABS memory			
	clearance procedure of on-board diagnostics			
	system. <ref. abs-22,="" clear="" memory<="" td="" to=""><td></td><td></td><td></td></ref.>			
	Mode.>			
	5)Measure voltage between TCM connector			
	and chassis ground.			
	Connector & terminal			
_	(B54) No. 22 (+) — Chassis ground (–):	1. 0		D 1 7011
5	CHECK POOR CONTACT.	Is there poor contact in shift	Repair poor con-	Replace TCM.
		solenoid 2 circuit?	tact.	<ref. at-44,<="" td="" to=""></ref.>
				Transmission Control Module
				(TCM).>
				( I CIVI).>

# DIAGNOSTIC PROCEDURE WITH TROUBLE CODE AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
6	CHECK SHIFT SOLENOID 2 (IN TRANSMISSION).  1) Remove transmission connector from bracket.  2) Drain automatic transmission fluid.  CAUTION: Do not drain the automatic transmission fluid until it cools down.  3) Remove oil pan, and disconnect connector from shift solenoid 2.  4) Measure resistance between shift solenoid 2 connector and transmission ground.  Connector & terminal	Is the resistance between 10 and 16 $\Omega$ ?	Go to step 7.	Replace shift sole- noid 2 assembly. <ref. at-38,<br="" to="">Shift Solenoids, Duty Solenoids and ATF Tempera- ture Sensor.&gt;</ref.>
	No. 1 — Transmission ground:			
7	CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 2 AND TRANSMISSION.  Measure resistance of harness between shift solenoid 2 and transmission connector.  Connector & terminal  (AT6) No. 1 — (T4) No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step 8.	Repair open circuit in harness between shift sole- noid 2 and trans- mission connector.
8	CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 2 AND TRANSMISSION.  Measure resistance of harness between shift solenoid 2 connector and transmission ground.  Connector & terminal  (T4) No. 2 — Transmission ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in shift solenoid 2 and transmission.	Repair short circuit harness between shift solenoid 2 and transmission connector.

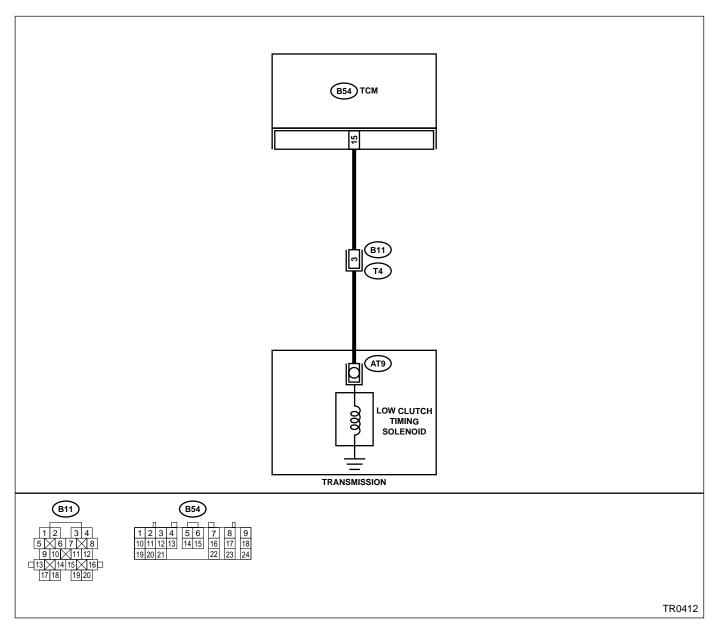
## J: TROUBLE CODE 73 — LOW CLUTCH TIMING SOLENOID —

#### **DIAGNOSIS:**

Output signal circuit of low clutch timing solenoid is open or shorted.

#### TROUBLE SYMPTOM:

Excessive shift shock.



	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  1) Turn ignition switch to OFF.  2) Disconnect connector from TCM and transmission.  3) Measure resistance of harness between TCM and transmission connector.  Connector & terminal  (B54) No. 15 — (B11) No. 3:	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair open circuit in harness between TCM and transmission connector.

	Step	Check	Yes	No
2	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance more than 1	Go to step 3.	Repair short circuit
	TCM AND TRANSMISSION.	ΜΩ?		in harness
	Measure resistance of harness between TCM connector and transmission ground.			between TCM and transmission con-
	Connector & terminal			nector.
	(B54) No. 15 — Chassis ground:			
3	CHECK LOW CLUTCH TIMING SOLENOID.	Is the resistance between 10	Go to step 4.	Go to step 7.
	Measure resistance between transmission	and 16 Ω?		
	connector terminals.			
	Connector & terminal (T4) No. 3 — No. 16:			
4	CHECK OUTPUT SIGNAL EMITTED FROM	Is the voltage more than 9V?	Go to step 5.	Go to step 6.
	TCM.	lo are remage mere man er i		Co to stop c.
	1)Connect connectors to TCM and transmis-			
	sion.			
	<ul><li>2)Turn ignition switch to ON (engine OFF).</li><li>3)Move select lever to "D" range.</li></ul>			
	4)Measure voltage between TCM connector			
	and chassis ground.			
	Connector & terminal			
_	(B54) No. 15 (+) — Chassis ground (-):	1 1 1 1 1 1 1 1	E '("DOMED"	
5	CHECK OUTPUT SIGNAL EMITTED FROM TCM.	Is the voltage less than 1V?	Even if "POWER" indicator lights up,	Go to step 6.
	1)Hold switch to ON.		the circuit has	
	2)Measure voltage between TCM connector		returned to a nor-	
	and chassis ground.		mal condition at	
	Connector & terminal		this time. A tempo-	
	(B54) No. 15 (+) — Chassis ground (–):		rary poor contact of the connector or	
			harness may be	
			the cause. Repair	
			harness or con-	
			tact in the TCM and transmission.	
6	CHECK POOR CONTACT.	Is there poor contact in low	Repair poor con-	Replace TCM.
		clutch timing solenoid circuit?	tact.	<ref. at-44,<="" th="" to=""></ref.>
				Transmission Con-
				trol Module
7	CHECK LOW CLUTCH TIMING SOLENOID	Is the resistance between 10	Go to stop 9	(TCM).> Replace low clutch
'	(IN TRANSMISSION).	and 16 $\Omega$ ?	Go to step 8.	timing solenoid.
	1)Remove transmission connector from			<ref. at-38,<="" th="" to=""></ref.>
	bracket.			Shift Solenoids,
	2)Lift-up or raise the vehicle and support with			Duty Solenoids
	safety stand.  CAUTION:			and ATF Temperature Sensor.>
	On AWD models, raise all wheels off			3
	ground.			
	3)Drain automatic transmission fluid.			
	CAUTION:			
	Do not drain the automatic transmission fluid until it cools down.			
	4)Remove oil pan, and disconnect connector			
	from low clutch timing solenoid. 5)Measure resistance between low clutch tim-			
	ing solenoid connector and transmission			
	ground.			
	Terminal			
	No. 1 — Transmission ground:			

## DIAGNOSTIC PROCEDURE WITH TROUBLE CODE AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
8	CHECK HARNESS CONNECTOR BETWEEN LOW CLUTCH TIMING SOLENOID AND TRANSMISSION.  Measure resistance of harness between low clutch timing solenoid and transmission connector.  Connector & terminal  (AT9) No. 1 — (T4) No. 3:	Is the resistance less than 1 $\Omega$ ?	Go to step 9.	Repair open circuit in harness between low clutch timing solenoid and transmission connector.
9	CHECK HARNESS CONNECTOR BETWEEN LOW CLUTCH TIMING SOLENOID AND TRANSMISSION.  Measure resistance of harness between low clutch timing solenoid connector and transmission ground.  Connector & terminal  (T4) No. 3 — Transmission ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in low clutch timing solenoid and transmission.	Repair short circuit harness between low clutch timing solenoid and transmission con- nector.

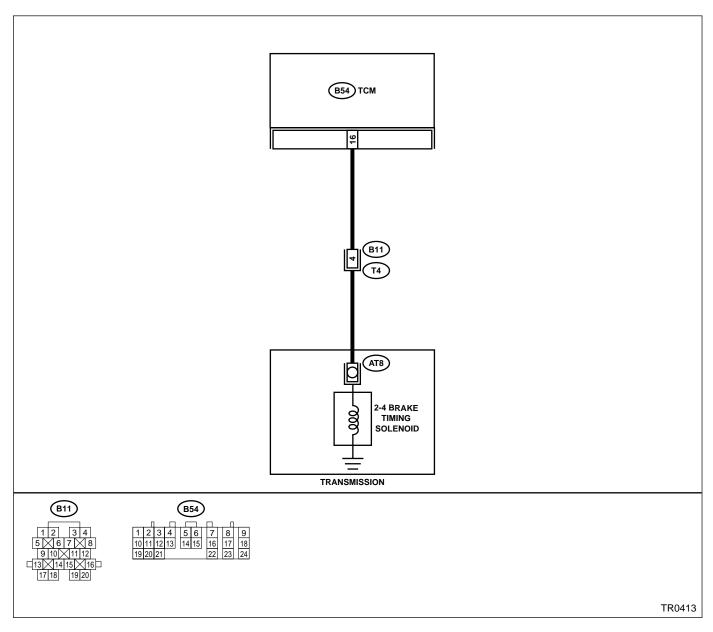
## K: TROUBLE CODE 74 — 2-4 BRAKE TIMING SOLENOID —

#### **DIAGNOSIS:**

Output signal circuit of 2-4 brake timing solenoid is open or shorted.

#### TROUBLE SYMPTOM:

Excessive shift shock.



Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn ignition switch to OFF. 2) Disconnect connector from TCM and transmission. 3) Measure resistance of harness between TCM and transmission connector. Connector & terminal (B54) No. 16 — (B11) No. 4:	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair open circuit in harness between TCM and transmission connector.

Step		Check	Yes	No
2 CHECK HARNESS CONNECTOR		Is the resistance more than 1	Go to step 3.	Repair short circuit
TCM AND TRANSMISSION.		ΜΩ?		in harness
Measure resistance of harness be				between TCM and
connector and transmission ground	d.			transmission con-
Connector & terminal	d -			nector.
(B54) No. 16 — Chassis group			0 1 1	0 1 1 7
3 CHECK 2-4 BRAKE TIMING SOL		Is the resistance between 10	Go to step 4.	Go to step 7.
Measure resistance between trans connector terminals.	smission	and 16 Ω?		
Connector & terminal				
(T4) No. 4 — No. 16:				
4 CHECK OUTPUT SIGNAL EMITT	ED FROM	Is the voltage less than 1 V?	Go to step 5.	Go to step 6.
TCM.		· ·		
1)Connect connectors to TCM and	l transmis-			
sion.				
2)Lift-up or raise the vehicle and si	upport with			
safety stand.				
CAUTION:	"			
On AWD models, raise all wheel	S OII			
ground.				
3)Start the engine and warm-up th sion until ATF temperature is above				
(176°F).	e 80 C			
NOTE:				
If ambient temperature is below	0°C (32°F).			
drive the vehicle until the ATF read				
ating temperature.				
4)Move selector lever to "1", and s	lowly			
increase vehicle speed to 10 km/h	-			
NOTE:				
The speed difference between from				
wheels may light the ABS warning	•			
indicates no malfunction. When A				
agnosis is finished, perform the A				
clearance procedure of on-board system. <ref. abs-22,="" cle<="" th="" to=""><th></th><th></th><th></th><th></th></ref.>				
system. <ref. abs-22,="" cle<br="" to="">Mode.&gt;</ref.>	ear Memory			
5)Measure voltage between TCM	connector			
and chassis ground.	COTTTECTO			
Connector & terminal				
(B54) No. 16 (+) — Chassis gi	round (–):			
5 CHECK OUTPUT SIGNAL EMITT		Is the voltage more than 9 V?	Even if "POWER"	Go to step 6.
тсм.		,	indicator lights up,	
1)Move selector lever to "D", and s			the circuit has	
increase vehicle speed to 65 km/h	(40 MPH).		returned to a nor-	
NOTE:			mal condition at	
The speed difference between from			this time. A tempo-	
wheels may light the ABS warning indicates no malfunction. When A			rary poor contact of the connector or	
agnosis is finished, perform the A			harness may be	
clearance procedure of on-board			the cause. Repair	
system. <ref. abs-22,="" cle<="" th="" to=""><th></th><th></th><th>harness or con-</th><th></th></ref.>			harness or con-	
Mode.>	20. 11.011101y		tact in the trans-	
2)Measure voltage between TCM	connector		mission.	
and chassis ground.				
Connector & terminal				
(B54) No. 16 (+) — Chassis gı	round ( )			

	Step	Check	Yes	No
6	CHECK POOR CONTACT.	Is there poor contact in 2-4 brake timing solenoid circuit?	Repair poor contact.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
7	CHECK 2-4 BRAKE TIMING SOLENOID (IN TRANSMISSION).  1) Remove transmission connector from bracket.  2) Lift-up or raise the vehicle and support with safety stand.  CAUTION: On AWD models, raise all wheels off ground.  3) Drain automatic transmission fluid.  CAUTION: Do not drain the automatic transmission fluid until it cools down.  4) Remove oil pan, and disconnect connector from 2-4 brake timing solenoid.  5) Measure resistance between 2-4 brake timing solenoid connector and transmission ground.  Terminal  No. 1 — Transmission ground:	Is the resistance between 10 and 16 $\Omega$ ?	Go to step 8.	Replace 2-4 brake timing solenoid. <ref. and="" at-38,="" atf="" duty="" sensor.="" shift="" solenoids="" solenoids,="" temperature="" to=""></ref.>
8	CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE TIMING SOLENOID AND TRANSMISSION.  Measure resistance of harness between 2-4 brake timing solenoid and transmission connector.  Connector & terminal (AT8) No. 1 — (T4) No. 4:	Is the resistance less than 1 $\Omega$ ?	Go to step 9.	Repair open circuit in harness between 2-4 brake timing solenoid and transmission connector.
9		Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in 2-4 brake timing solenoid and transmission.	Repair short circuit harness between 2-4 brake timing solenoid and transmission con- nector.

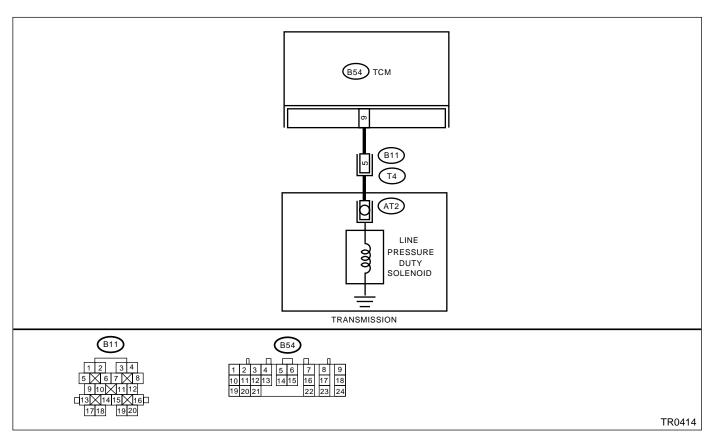
## L: TROUBLE CODE 75 — LINE PRESSURE DUTY SOLENOID —

#### **DIAGNOSIS:**

Output signal circuit of line pressure duty solenoid is open or shorted.

#### TROUBLE SYMPTOM:

Excessive shift shock.



	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  1) Turn ignition switch to OFF.  2) Disconnect connector from transmission and TCM.  3) Measure resistance of harness between TCM and transmission connector.  Connector & terminal (B54) No. 9 — (B11) No. 5:	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair open circuit in harness between TCM and transmission con- nector.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.  Measure resistance of harness between TCM and chassis ground.  Connector & terminal  (B54) No. 9 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 3.	Repair short circuit in harness between TCM and transmission con- nector.
3	CHECK LINE PRESSURE DUTY SOLENOID.  Measure resistance between transmission connector receptacle's terminals.  Terminal  (T4) No. 5 — No. 16:	Is the resistance between 2.0 and 4.5 $\Omega$ ?	Go to step 4.	Go to step 10.
4	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 7.	Go to step 5.

	Step	Check	Yes	No
5	CHECK OUTPUT SIGNAL EMITTED FROM TCM.  1)Connect all connectors.  2)Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).  NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.  3)Turn ignition switch to ON (engine OFF).  4)Move select lever to "N".  5)Measure voltage between TCM connector and chassis ground.  Connector & terminal  (B54) No. 9 (+) — Chassis ground (-):	Is the voltage between 1.5 and 5.0 V with throttle fully closed?	Go to step 6.	Go to step 9.
6	CHECK OUTPUT SIGNAL EMITTED FROM TCM.  Measure voltage between TCM connector and chassis ground.  Connector & terminal  (B54) No. 9 (+) — Chassis ground (-):	Is the voltage less than 1 V with throttle fully open?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in transmission.	Go to step 9.
7	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.  1) Connect connectors to TCM and transmission.  2) Connect Subaru Select Monitor to data link connector.  3) Start the engine, and turn Subaru Select Monitor switch to ON.  4) Warm-up the transmission until ATF temperature is above 80°C (176°F).  NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.  5) Stop the engine and turn ignition switch to ON (engine OFF).  6) Move select lever to "N".  7) Read data of line pressure duty solenoid using Subaru Select Monitor.  •Line pressure duty solenoid is indicated in "%".  1) Throttle is fully closed.	Is the value 100%?	Go to step 8.	Go to step 9.

	Step	Check	Yes	No
8	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.  1)Turn ignition switch to ON (Engine OFF).  2)Throttle is fully open.	Is the value less than 25%?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in transmission.	Go to step 9.
9	CHECK POOR CONTACT.	Is there poor contact in line pressure duty solenoid circuit?	Repair poor contact.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
10	CHECK LINE PRESSURE DUTY SOLENOID (IN TRANSMISSION).  1) Remove transmission connector from bracket.  2) Drain automatic transmission fluid.  CAUTION: Do not drain the automatic transmission fluid until it cools down.  3) Remove oil pan, and disconnect connector from line pressure duty solenoid.  4) Measure resistance between line pressure duty solenoid connector and transmission ground.  Terminal  No. 1 — Transmission ground:	Is the resistance between 2.0 and 4.5 $\Omega$ ?	Go to step 11.	Replace line pressure duty solenoid. <ref. and="" at-38,="" atf="" duty="" sensor.="" shift="" solenoids="" solenoids,="" temperature="" to=""></ref.>
11	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LINE PRESSURE DUTY SOLENOID.  Measure resistance of harness between line pressure duty solenoid and transmission connector.  Connector & terminal  (T4) No. 5 — (AT2) No. 1:	Ω?	Go to step 12.	Repair open circuit in harness between line pres- sure duty solenoid and transmission connector.
12	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LINE PRESSURE DUTY SOLENOID.  Measure resistance of harness between transmission connector and transmission ground.  Connector & terminal  (T4) No. 5 — Transmission ground:	Is the resistance more than 1 $M\Omega$ ?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in line pressure duty solenoid and transmission.	Repair short circuit in harness between line pres- sure duty solenoid and transmission connector.

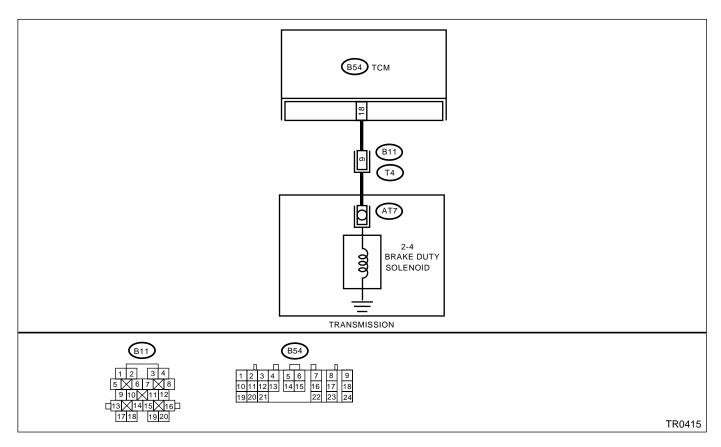
## M: TROUBLE CODE 76 — 2-4 BRAKE DUTY SOLENOID —

#### **DIAGNOSIS:**

Output signal circuit of 2-4 brake duty solenoid is open or shorted.

#### TROUBLE SYMPTOM:

Excessive shift shock.



	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  1)Turn ignition switch to OFF.  2)Disconnect connector from transmission and TCM.  3)Measure resistance of harness between TCM and transmission connector.  Connector & terminal  (B54) No. 18 — (B11) No. 9:	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair open circuit in harness between TCM and transmission con- nector.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.  Measure resistance of harness between TCM and chassis ground.  Connector & terminal  (B54) No. 18 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 3.	Repair short circuit in harness between TCM and transmission con- nector.
3	CHECK 2-4 BRAKE DUTY SOLENOID.  Measure resistance between transmission connector receptacle's terminals.  Terminal  (T4) No. 16 — No. 9:	Is the resistance between 2.0 and 4.5 $\Omega$ ?	Go to step 4.	Go to step 10.
4	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 7.	Go to step 5.

	Step	Check	Yes	No
5	CHECK OUTPUT SIGNAL EMITTED FROM TCM.  1)Connect all connectors. 2)Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).  NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 3)Turn ignition switch to ON (engine OFF). 4)Move select lever to "N". 5)Measure voltage between TCM connector and chassis ground.  Connector & terminal  (B54) No. 18 (+) — Chassis ground (-):	Is the voltage between 1.5 and 5.0 V with throttle fully closed?	Go to step 6.	Go to step 9.
6	CHECK OUTPUT SIGNAL EMITTED FROM TCM.  Measure voltage between TCM connector and chassis ground.  Connector & terminal  (B54) No. 18 (+) — Chassis ground (-):	Is the voltage less than 1 V with throttle fully open?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM and transmission.	Go to step 9.
7	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.  1) Connect all connectors.  2) Connect Subaru Select Monitor to data link connector.  3) Start the engine, and turn Subaru Select Monitor switch to ON.  4) Warm-up the transmission until ATF temperature is above 80°C (176°F).  NOTE:  If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.  5) Stop the engine and turn ignition switch to ON (engine OFF).  6) Move select lever to "N".  7) Read data of 2-4 brake duty solenoid using Subaru Select Monitor.  •2-4 brake duty solenoid is indicated in "%".  1) Throttle is fully closed.	Is the value 100%?	Go to step 8.	Go to step 9.

		Observe	V	NI-
	Step	Check	Yes	No
8	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.  1)Turn ignition switch to ON (Engine OFF).  2)Throttle is fully open.	Is the value less than 25%?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM and transmission.	Go to step 9.
9	CHECK POOR CONTACT.	Is there poor contact in 2-4 brake duty solenoid circuit?	Repair poor contact.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
10	CHECK 2-4 BRAKE DUTY SOLENOID (IN TRANSMISSION).  1)Remove transmission connector from bracket.  2)Drain automatic transmission fluid.  CAUTION: Do not drain the automatic transmission fluid until it cools down.  3)Remove oil pan, and disconnect connector from 2-4 brake duty solenoid.  4)Measure resistance between 2-4 brake duty solenoid connector and transmission ground.  Terminal  No. 1 — Transmission ground:	Is the resistance between 2.0 and 4.5 $\Omega$ ?	Go to step 11.	Replace 2-4 brake duty solenoid. <ref. at-38,<br="" to="">Shift Solenoids, Duty Solenoids and ATF Tempera- ture Sensor.&gt;</ref.>
11	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND 2-4 BRAKE DUTY SO-LENOID.  Measure resistance of harness between 2-4 brake duty solenoid and transmission connector.  Connector & terminal  (T4) No. 9 — (AT7) No. 1:		Go to step 12.	Repair open circuit in harness between 2-4 brake duty solenoid and transmission con- nector.
12	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND 2-4 BRAKE DUTY SO-LENOID.  Measure resistance of harness between transmission connector and transmission ground.  Connector & terminal  (T4) No. 9 — Transmission ground:		Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in line pressure duty solenoid and transmission.	Repair short circuit in harness between 2-4 brake duty solenoid and transmission connector.

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 

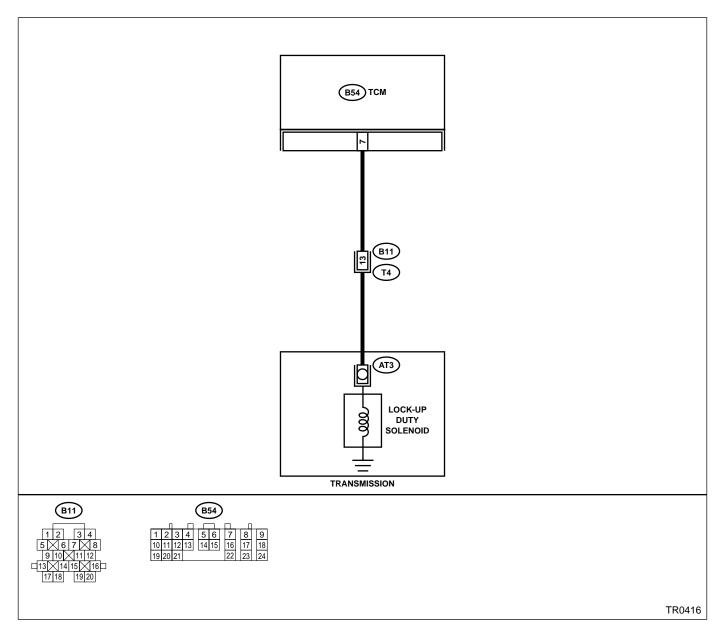
## N: TROUBLE CODE 77 — LOCK-UP DUTY SOLENOID —

#### **DIAGNOSIS:**

Output signal circuit of lock-up duty solenoid is open or shorted.

#### TROUBLE SYMPTOM:

No "lock-up" (after engine warm-up).



	Step	Check	Yes	No
1	CHECK TROUBLE CODE.	Do multiple trouble codes	Go to another trou-	Go to step 2.
		appear in the on-board diag-	ble code.	
		nostics test mode?		

	Step	Check	Yes	No
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  1) Turn ignition switch to OFF.  2) Disconnect connector from TCM and transmission.  3) Measure resistance of harness between TCM and transmission connector.  Connector & terminal  (B54) No. 7 — (B11) No. 13:	Is the resistance than 1 $\Omega$ ?	Go to step 3.	Repair open circuit in harness between TCM and transmission connector.
3	TCM AND TRANSMISSION.  Measure resistance of harness connector between TCM and chassis ground.  Connector & terminal  (B54) No. 7 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 4.	Repair short circuit in harness between TCM and transmission con- nector.
4	CHECK LOCK-UP DUTY SOLENOID.  Measure resistance between transmission connector receptacle's terminals.  Connector & terminal  (T4) No. 13 — No. 16:	Is the resistance between 10 and 17 $\Omega$ ?	Go to step 5.	Go to step 11.
5	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 8.	Go to step 6.
6	CHECK OUTPUT SIGNAL EMITTED FROM TCM.  1)Connect connectors to TCM and transmission.  2)Lift-up the vehicle and place safety stand.  CAUTION:  On AWD models, raise all wheels off ground.  3)Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).  NOTE:  If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.  4)Move selector lever to "D" and slowly increase vehicle speed to 75 km/h (47 MPH). Wheels will lock-up.  NOTE:  The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <ref. abs-22,="" clear="" memory="" mode.="" to="">  5)Measure voltage between TCM connector and chassis ground.  Connector &amp; terminal  (B54) No. 7 (+) — Chassis ground (-):</ref.>		Go to step 7.	Go to step 10.

	Step	Check	Yes	No
7	CHECK OUTPUT SIGNAL EMITTED FROM TCM.  1)Return the engine to idling speed and move select lever to "N".  2)Measure voltage between TCM connector and chassis ground.  Connector & terminal  (B54) No. 7 (+) — Chassis ground (-):	Is the voltage less than 0.5 V?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM and transmission.	Go to step 10.
8	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.  1) Connect connectors to TCM and transmission.  2) Lift-up the vehicle and place safety stand.  CAUTION: On AWD models, raise all wheels off ground.  3) Connect Subaru Select Monitor to data link connector.  4) Start the engine, and turn Subaru Select Monitor switch to ON.  5) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).  NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.  6) Read data of lock-up duty solenoid using Subaru Select Monitor.  •Lock-up duty solenoid is indicated in "%".  1) Move selector lever to "D" and slowly increase vehicle speed to 75 km/h (47 MPH). Wheels will lock-up.  NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <ref. abs-22,="" clear="" memory<="" td="" to=""><td></td><td>Go to step 9.</td><td>Go to step 10.</td></ref.>		Go to step 9.	Go to step 10.
9	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. Return the engine to idling speed and move selector lever to "N".  NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <ref. abs-22,="" clear="" memory="" mode.="" to=""></ref.>		Even if "POWER" indiccator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM and transmission.	Go to step 10.

	Step	Check	Yes	No
10	CHECK POOR CONTACT.	Is there poor contact in lock-up duty solenoid circuit?	Repair poor contact.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
11	CHECK LOCK-UP DUTY SOLENOID (IN TRANSMISSION).  1) Remove transmission connector from bracket.  2) Drain automatic transmission fluid.  CAUTION: Do not drain the automatic transmission fluid until it cools down.  3) Remove oil pan, and disconnect connector from lock-up duty solenoid.  4) Measure resistance between lock-up duty solenoid connector and transmission ground.  Terminal  No. 1 — Transmission ground:	Is the resistance between 10 and 17 $\Omega$ ?	Go to step 12.	Replace lock-up duty solenoid. <ref. at-38,<br="" to="">Shift Solenoids, Duty Solenoids and ATF Tempera- ture Sensor.&gt;</ref.>
12	CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANS-MISSION.  Measure resistance of harness between lock-up duty solenoid and transmission connector.  Connector & terminal  (T4) No. 13 — (AT3) No. 1:	Is the resistance less than 1 $\Omega$ ?	Go to step 13.	Repair open circuit in harness between TCM and transmission con- nector.
13	CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANS-MISSION.  Measure resistance of harness between transmission connector and transmission ground.  Connector & terminal  (T4) No. 13 — Transmission ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in lock-up duty solenoid and transmission.	Repair short circuit in harness between lock-up duty solenoid and transmission connector.

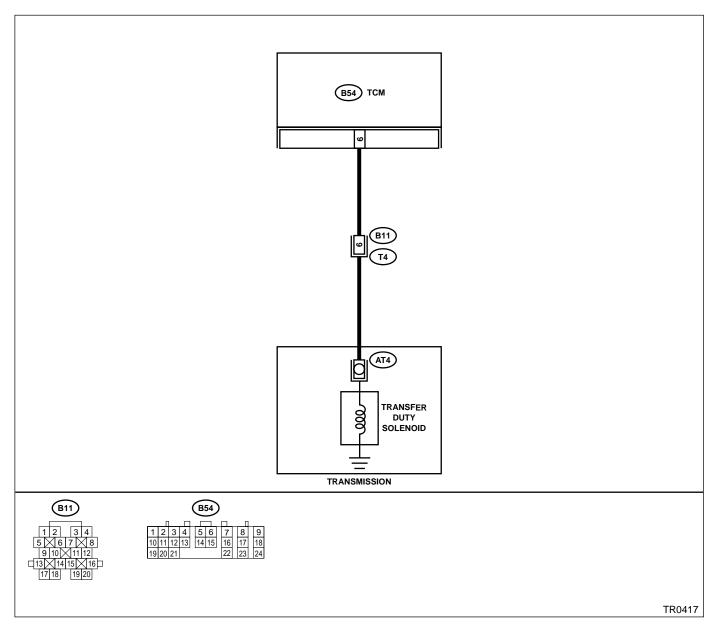
## O: TROUBLE CODE 79 — TRANSFER DUTY SOLENOID —

#### **DIAGNOSIS:**

Output signal circuit of transfer duty solenoid is open or shorted.

#### TROUBLE SYMPTOM:

Excessive "braking" in tight corners.



Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn ignition switch to OFF. 2) Disconnect connector from TCM and transmission. 3) Measure resistance of harness between TCM and transmission connector. Connector & terminal (B54) No. 6 — (B11) No. 6:	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair open circuit in harness between TCM and transmission connector.

	Step	Check	Yes	No
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  Measure resistance harness connector between TCM and chassis ground.  Connector & terminal  (B54) No. 6 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 3.	Repair short circuit in harness between TCM and transmission connector.
3	CHECK TRANSFER DUTY SOLENOID.  Measure resistance between transmission connector and transmission terminals.  Connector & terminal  (T4) No. 6 — No. 16:	Is the resistance between 10 and 17 $\Omega$ ?	Go to step 4.	Go to step 10.
4	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 7.	Go to step 5.
5	CHECK OUTPUT SIGNAL EMITTED FROM TCM.  1) Connect connectors to TCM and transmission.  2) Turn ignition switch to ON (engine OFF).  3) Throttle is fully closed.  4) Measure voltage between TCM connector and chassis ground.  Connector & terminal  (B54) No. 6 (+) — Chassis ground (-):	Is the voltage less than 1 V in "P" range?	Go to step 6.	Go to step 9.
6	CHECK OUTPUT SIGNAL EMITTED FROM TCM.  Measure voltage between TCM connector and chassis ground.  Connector & terminal  (B54) No. 6 (+) — Chassis ground (-):	Is the voltage between 5 and 7 V in "D" range?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.	Go to step 9.
7	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.  1) Connect connectors to TCM and transmission.  2) Connect Subaru Select Monitor to data link connector.  3) Turn ignition switch to ON (engine OFF) and turn Subaru Select Monitor switch to ON.  4) Move select lever to "D" with throttle fully open (vehicle speed 0 km/h or 0 MPH).  5) Read data of transfer duty solenoid using Subaru Select Monitor.  •Transfer duty solenoid is indicated in "%".	Is the value between 5 and 10%?	Go to step 8.	Go to step 9.

	Step	Check	Yes	No
8	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.  1) Move select lever to "N" with throttle fully closed (vehicle speed 0 km/h or 0 MPH).  2) Rear data of transfer duty solenoid using Subaru Select Monitor.  •Transfer duty solenoid is indicated in "%".	Is the value between approx. 60% and approx. 70%?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.	Go to step 9.
9	CHECK POOR CONTACT.	Is there poor contact in transfer duty solenoid circuit?	Repair poor contact.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
10	CHECK TRANSFER DUTY SOLENOID (IN TRANSMISSION).  1) Lift-up the vehicle and place safety stand.  CAUTION: On AWD models, raise all wheels off ground.  2) Drain automatic transmission fluid.  CAUTION: Do not drain the automatic transmission fluid until it cools down.  3) Remove extension case, and disconnect connector from transfer duty solenoid.  4) Measure resistance between transfer duty solenoid connector and transmission ground.  Connector & terminal  (AT4) No. 1 — Transmission ground:	Is the resistance between 10 and 17 $\Omega$ ?	Go to step 11.	Replace transfer duty solenoid.
11	CHECK HARNESS CONNECTOR BETWEEN TRANSFER DUTY SOLENOID AND TRANS-MISSION.  Measure resistance of harness between transfer duty solenoid and transmission connector.  Connector & terminal  (T4) No. 6 — (AT4) No. 1:	Is the resistance less than 1 $\Omega$ ?	Go to step 12.	Repair open circuit in harness between transfer duty solenoid and transmission con- nector.
12	CHECK HARNESS CONNECTOR BETWEEN TRANSFER DUTY SOLENOID AND TRANSMISSION.  Measure resistance of harness between transmission connector and transmission ground.  Connector & terminal  (T4) No. 6 — Transmission ground:	Is the resistance more than 1 M $\Omega$ ?	Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the transfer duty solenoid and transmission.	Repair short circuit in harness between transfer duty solenoid and transmission con- nector.

## P: TROUBLE CODE 93 — REAR VEHICLE SPEED SENSOR —

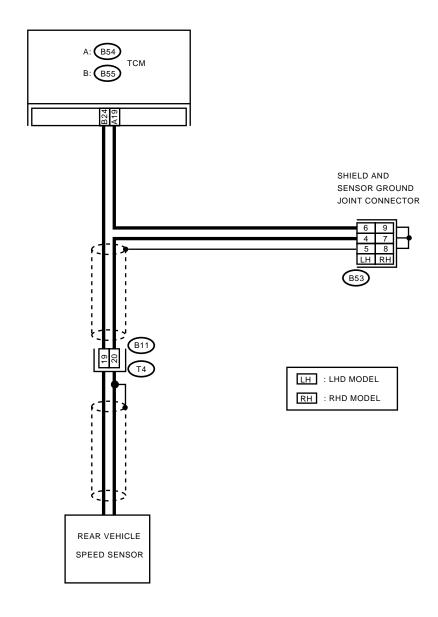
#### **DIAGNOSIS:**

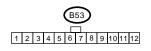
Input signal circuit of TCM is open or shorted.

#### TROUBLE SYMPTOM:

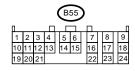
No lock-up or excessive tight corner "braking".

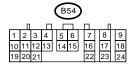
#### **WIRING DIAGRAM:**











TR0418

	Step	Check	Yes	No
1	TCM AND TRANSMISSION.  1)Turn ignition switch to OFF.  2)Disconnect connector from TCM and transmission.  3)Measure resistance of harness between	Is the resistance less than 1 $\Omega$ ?	Go to step 2.	Repair open circuit in harness between TCM and transmission connector.
	TCM and transmission connector.  Connector & terminal  (B55) No. 24 — (B11) No. 19:			
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  Measure resistance of harness between TCM and transmission connector.  Connector & terminal  (B54) No. 19 — (B11) No. 20:	Is the resistance less than 1 $\Omega$ ?	Go to step 3.	Repair open circuit in harness between TCM and transmission, and poor contact in coupling connec- tor.
3	TCM AND TRANSMISSION.  Measure resistance of harness between TCM and chassis ground.  Connector & terminal  (B55) No. 24 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 4.	Repair short circuit in harness between TCM and transmission connector.
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  Measure resistance of harness between TCM and chassis ground.  Connector & terminal  (B54) No. 19 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair short circuit in harness between TCM and transmission con- nector.
5	CHECK REAR VEHICLE SPEED SENSOR.  Measure resistance between transmission connector receptacle's terminals.  Connector & terminal  (T4) No. 19 — No. 20:	Is the resistance between 450 and 650 $\Omega$ ?	Go to step 6.	Replace rear vehicle speed sensor. <ref. at-34,<br="" to="">Rear Vehicle Speed Sensor.&gt;</ref.>
6	PREPARE OSCILLOSCOPE.	Do you have oscilloscope?	Go to step 10.	Go to step 7.
7	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 9.	Go to step 8.
8	CHECK INPUT SIGNAL FOR TCM.  1)Connect connectors to TCM and transmission.  2)Lift-up or raise the vehicle and place safety stands.  CAUTION: On AWD models, raise all wheels off floor.  3)Start the engine and set vehicle in 20 km/h (12 MPH) condition.  NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <ref. abs-22,="" clear="" memory<="" th="" to=""><th></th><th>Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.</th><th>Go to step 11.</th></ref.>		Even if "POWER" indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.	Go to step 11.
	Mode.> 4)Measure voltage between TCM connector terminals.  Connector & terminal (B55) No. 24 (+) — (B54) No. 19 (-):			

	Step	Check	Yes	No
9	CHECK INPUT SIGNAL FOR TCM USING	Does the speedometer indica-	Even if "POWER"	Go to step 11.
	SUBARU SELECT MONITOR.	tion increase as the Subaru	indicator lights up,	
	1)Connect connectors to TCM and transmis-	Select Monitor data increases?	the circuit has	
	sion.		returned to a nor-	
	2)Connect Subaru Select Monitor to data link		mal condition at	
	connector.		this time. A tempo-	
	3)Lift-up or raise the vehicle and place safety		rary poor contact	
	stands.		of the connector or	
	CAUTION:		harness may be	
	On AWD models, raise all wheels off floor.		the cause. Repair harness or con-	
	4)Turn ignition switch to ON and turn Subaru		nector in the TCM	
	Select Monitor switch to ON.		and transmission.	
	5)Start the engine.			
	<ol><li>6)Read data of vehicle speed using Subaru Select Monitor.</li></ol>			
	Compare speedometer with Subaru Select			
	Monitor indications.			
	•Vehicle speed is indicated in "km/h" or "MPH".			
	1)Slowly increase vehicle speed to 60 km/h or			
	37 MPH.			
	NOTE:			
	The speed difference between front and rear			
	wheels may light the ABS warning light, but this			
	indicates no malfunction. When AT control di-			
	agnosis is finished, perform the ABS memory			
	clearance procedure of on-board diagnostics			
	system. <ref. abs-22,="" clear="" memory<="" td="" to=""><td></td><td></td><td></td></ref.>			
	Mode.>			
10	CHECK INPUT SIGNAL FOR TCM USING	Is the signal voltage more than	Even if "POWER"	Go to step 11.
	OSCILLOSCOPE.	AC 1 V?	indicator lights up,	
	1)Connect connectors to TCM and transmis-		the circuit has	
	Sion.		returned to a nor- mal condition at	
	<ol><li>2)Lift-up or raise the vehicle and place safety stands.</li></ol>		this time. A tempo-	
			rary poor contact	
	CAUTION: On AWD models, raise all wheels off floor.		of the connector or	
	· · · · · · · · · · · · · · · · · · ·		harness may be	
	<ol> <li>Set oscilloscope to TCM connector termi- nals.</li> </ol>		the cause. Repair	
	Positive probe; (B55) No. 24		harness or con-	
	Earth lead; (B54) No. 19		nector in the TCM	
	4)Start the engine and set vehicle in 20 km/h		and transmission.	
	(12 MPH) condition.			
	NOTE:			
	The speed difference between front and rear			
	wheels may light the ABS warning light, but this			
	indicates no malfunction. When AT control di-			
	agnosis is finished, perform the ABS memory			
	clearance procedure of on-board diagnostics			
	system. <ref. abs-22,="" clear="" memory<="" td="" to=""><td></td><td></td><td></td></ref.>			
	Mode.>			
	5)Measure signal voltage indicated on oscillo-			
<u></u>	scope.			<b>—</b>
11	CHECK POOR CONTACT.	Is there poor contact in rear	Repair poor con-	Replace TCM.
		vehicle speed sensor circuit?	tact.	<ref. at-44,<br="" to="">Transmission Con-</ref.>
				trol Module
				(TCM).>
				( 1 O 1 V 1 ) . ~

## DIAGNOSTIC PROCEDURE FOR NO-TROUBLE CODE

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

## 15. Diagnostic Procedure for No-trouble Code

## A: CHECK GEAR POSITION.

	Step	Check	Yes	No
1	CHECK GEAR POSITION.  1)Lift-up the vehicle and place safety stand.  CAUTION: On AWD models, raise all wheels off ground.  2)Start the engine.  3)Move select lever to "D", and drive vehicle.  4)Read data of gear position using Subaru Select Monitor.  •Gear position is indicated.  NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system.		Go to step 2.	Check shift sole- noid 1 and shift solenoid 2 signal circuit. <ref. 1="" 66,="" 71="" at-="" code="" code.="" diag-="" noid="" nostic="" procedure="" shift="" sole-="" to="" trouble="" with="" —="" —,=""> and <ref. 2="" 72="" at-70,="" ble="" code="" code.="" diag-="" noid="" nostic="" procedure="" shift="" sole-="" to="" trou-="" trouble="" with="" —="" —,=""> diag- solution of the state of the st</ref.></ref.>
2	CHECK VEHICLE.	Is the target AWD vehicle?	FWD SWITCH. <ref. to<br="">AT-102, CHECK FWD SWITCH.,</ref.>	Go to step CHECK BRAKE SWITCH. <ref. at-106,<br="" to="">CHECK BRAKE SWITCH., Diag- nostic Procedure for No-trouble Code.&gt;</ref.>

## DIAGNOSTIC PROCEDURE FOR NO-TROUBLE CODE

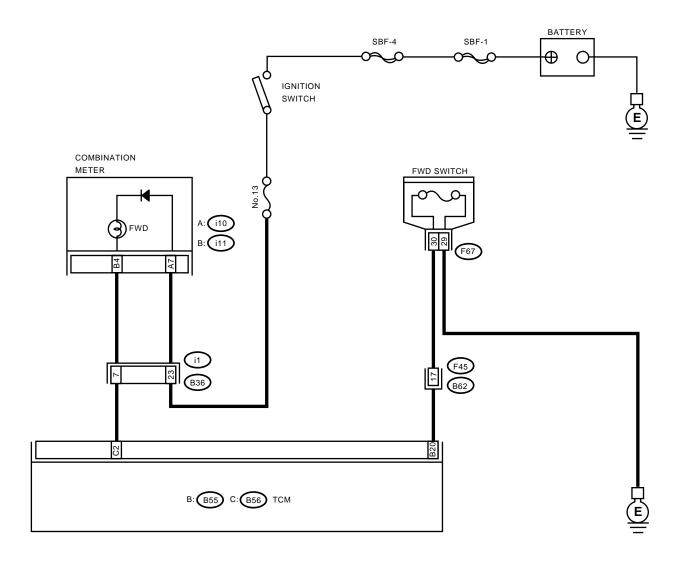
AUTOMATIC TRANSMISSION (DIAGNOSTICS)

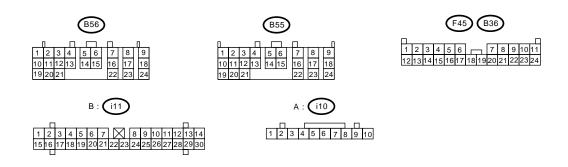
## **B: CHECK FWD SWITCH.**

#### **DIAGNOSIS:**

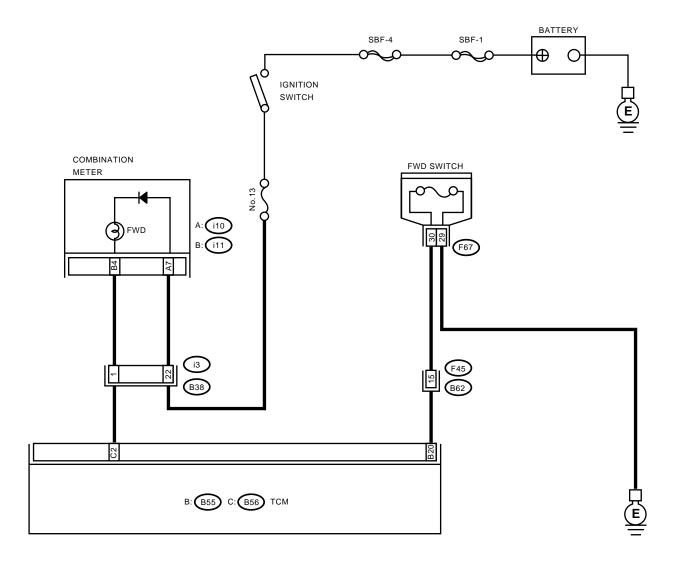
- LED does not come on even if FWD switch is ON.
- FWD switch circuit is open or short.

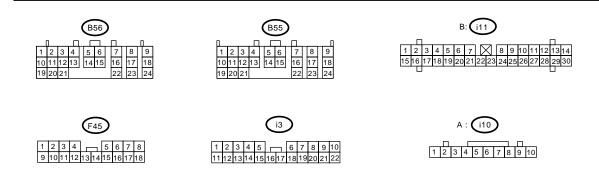
#### WIRING DIAGRAM: LHD MODEL





#### **RHD MODEL**





TR0420

	Step	Check	Yes	No
1	CHECK FWD SWITCH.	When fuse is inserted to FWD switch, does LED light up?	Go to step CHECK BRAKE SWITCH. <ref. to<br="">AT-106, CHECK BRAKE SWITCH., Diagnostic Proce- dure for No-trouble Code.&gt;</ref.>	
2	CHECK FWD INDICATOR LIGHT.  1)Turn ignition switch to OFF.  2)Remove combination meter.  3)Remove FWD indicator light bulb from combination meter.	Is FWD indicator light bulb OK?	Go to step 3.	Replace FWD indicator light bulb. <ref. assembly.="" combination="" idi-19,="" meter="" to=""></ref.>
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD SWITCH.  1) Turn ignition switch to OFF.  2) Disconnect connector from TCM and FWD switch.  3) Measure resistance of harness between TCM and FWD switch connector.  Connector & terminal  (B55) No. 20 — (F67) No. 30:	Is the resistance less than 1 $\Omega$ ?	Go to step 4.	Repair open circuit in harness between TCM and FWD switch con- nector.
4	CHECK HARNESS CONNECTOR BETWEEN FWD SWITCH AND CHASSIS GROUND. Measure resistance of harness between FWD switch and chassis ground. Connector & terminal (F67) No. 29 — Chassis ground:	Is the resistance less than 1 $\Omega$ ?	Go to step 5.	Repair open circuit in harness between FWD switch connector and chassis ground.
5	CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD SWITCH.  Measure resistance of harness connector between TCM and body to make sure that circuit does not short.  Connector & terminal  (B55) No. 20 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 6.	Repair short circuit in harness between TCM and FWD switch con- nector.
6	CHECK INPUT SIGNAL FOR TCM.  1) Turn ignition switch to OFF.  2) Connect connector to TCM and FWD switch.  3) Turn ignition switch to ON.  4) Measure signal voltage for TCM while installing the fuse to FWD switch connector.  Connector & terminal  (B55) No. 20 (+) — Chassis ground (-):	Is the voltage less than 1 V in FWD switch while installing?	Go to step 7.	Go to step 11.
7	CHECK INPUT SIGNAL FOR TCM.  Measure signal voltage for TCM while removing the fuse from FWD switch connector.  Connector & terminal  (B55) No. 20 (+) — Chassis ground (-):	Is the voltage more than 10 V in FWD switch while removing?	Go to step 8.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
8	CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.  1) Turn ignition switch to OFF. 2) Disconnect connector from TCM and combination meter. 3) Measure resistance of harness between TCM and diagnosis connector. Connector & terminal (B56) No. 2 — (i11) No. 4:	Is the resistance less than 1 $\Omega$ ?	Go to step 9.	Repair open circuit in harness between TCM and combination meter and poor contact in coupling con- nector.

## DIAGNOSTIC PROCEDURE FOR NO-TROUBLE CODE

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 

	Step	Check	Yes	No
9	CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.  Measure resistance of harness connector between TCM and chassis ground to make sure that circuit does not short.  Connector & terminal  (B56) No. 2 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 10.	Repair short circuit in harness between TCM and combination meter connector.
10	CHECK OUTPUT SIGNAL EMITTED FROM TCM.  1) Turn ignition switch to OFF. 2) Connect connector to TCM and combination meter. 3) Turn ignition switch to ON. 4) Measure signal voltage for TCM while installing and removing the fuse to FWD switch connector.  Connector & terminal (B56) No. 2 — Chassis ground:	Is the voltage less than 1 V in FWD switch while installing?	Go to step 11.	Go to step 12.
11	CHECK OUTPUT SIGNAL EMITTED FROM TCM.  Measure signal voltage for TCM while removing the fuse from FWD switch connector.  Connector & terminal  (B56) No. 2 — Chassis ground:	Is the voltage more than 10 V in FWD switch while removing?	Go to step 12.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
12	CHECK POOR CONTACT.	Is there poor contact in FWD switch circuit?	Repair poor contact.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>

## C: CHECK BRAKE SWITCH.

Step	Check	Yes	No
1 CHECK BRAKE SWITCH.	When the brake pedal is depressed, does LED light up?	Go to step CHECK ABS SWITCH. <ref. at-107,<br="" to="">CHECK ABS SWITCH., Diag- nostic Procedure for No-trouble</ref.>	Check brake switch circuit. <ref. to<br="">EN(SOHC)-218, DTC P0703 — BRAKE SWITCH INPUT MAL-</ref.>
		Code.>	FUNCTION —, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

## DIAGNOSTIC PROCEDURE FOR NO-TROUBLE CODE

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

## D: CHECK ABS SWITCH.

Step	Check	Yes	No
1 CHECK ABS SWITCH.	Does the LED of ABS switch	Check ABS switch	Go to step CHECK
	light up?	circuit. <ref. th="" to<=""><th>CRUISE CON-</th></ref.>	CRUISE CON-
		ABS-142, TROU-	
		BLE CODE 44 —	<ref. at-107,<="" th="" to=""></ref.>
		ABS-AT CON-	CHECK CRUISE
		TROL (NON CON-	CONTROL
			SWITCH., Diag-
		Diagnostics Chart	nostic Procedure
		with Subaru Select	for No-trouble
		Monitor.> and	Code.>
		<ref. abs-144,<="" th="" to=""><th></th></ref.>	
		TROUBLE CODE	
		44 — ABS-AT	
		CONTROL (CON-	
		TROLLED) —,	
		Diagnostics Chart	
		with Subaru Select	
		Monitor.>	

## E: CHECK CRUISE CONTROL SWITCH.

	Step	Check	Yes	No
1	CHECK CRUISE CONTROL SWITCH.	does LED light up?	SWITCH. <ref. to<br="">AT-108, CHECK</ref.>	trol. <ref. cc-<="" th="" to=""></ref.>

## F: CHECK KICK-DOWN SWITCH.

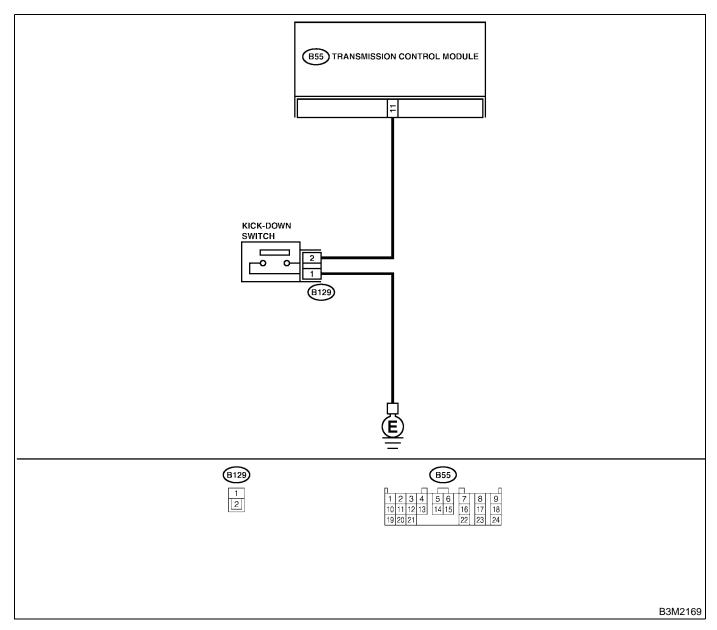
## **DIAGNOSIS:**

• The kick-down switch is ON when the throttle is fully opened but is OFF when the throttle is partially open or fully closed.

## TROUBLE SYMPTOM:

No kick-down occurs (when the throttle is fully opened).

### **WIRING DIAGRAM:**



Step	Check	Yes	No
	depressed, does "ON" dis- played?	Go to step CHECK POWER MODE SWITCH. <ref. at-110,="" check="" code.="" diag-="" for="" mode="" no-trouble="" nostic="" power="" procedure="" switch.,="" to=""></ref.>	Go to step 2.

	Step	Check	Yes	No
2	CHECK KICK-DOWN SWITCH GROUND LINE.  1) Disconnect connector from kick-down switch. 2) Measure resistance of harness connector between kick-down switch and chassis ground.  Connector & terminal (B129) No. 1 — Chassis ground:	Is the resistance less than 1 $\Omega$ ?	Go to step 3.	Repair open circuit in harness between kick- down switch and TCM.
3	CHECK KICK-DOWN SWITCH.  Measure resistance for kick-down switch when depressing the accelerator pedal.  Terminals  No. 1 — No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step 4.	Replace kick-down switch. <ref. to<br="">SP-4, Accelerator Pedal.&gt;</ref.>
4	CHECK KICK-DOWN SWITCH.  Measure resistance for kick-down switch when pressing the accelerator pedal.  Terminals  No. 1 — No. 2:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Replace kick-down switch.
5	CHECK HARNESS CONNECTOR BETWEEN TCM AND KICK-DOWN SWITCH.  1) Turn ignition switch OFF.  2) Disconnect connectors from kick-down switch.  3) Measure resistance of harness connector between TCM and kick-down switch.  Connector & terminal  (B55) No. 11 — (B129) No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step 6.	Repair open circuit in harness between TCM and kick-down switch.
6	CHECK HARNESS CONNECTOR BETWEEN TCM AND KICK-DOWN SWITCH. Measure resistance of harness connector between TCM and chassis ground. Connector & terminal (B55) No. 11 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 7.	Repair short circuit in harness between TCM and chassis ground.
7	CHECK INPUT SIGNAL FOR TCM.  1)Turn ignition switch to OFF.  2)Connect connector to kick-down switch.  3)Turn ignition switch ON (with engine OFF).  4)Measure signal voltage for TCM when depressing the accelerator pedal.  Connector & terminal  (B55) No. 11 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 8.	Go to step 9.
8	CHECK INPUT SIGNAL FOR TCM.  Measure signal voltage for TCM when pressing the accelerator pedal.  Connector & terminal  (B55) No. 11 (+) — Chassis ground (-):	Is the voltage more than 6.5 V?	A temporary poor contact of the connector and harness may be the cause. Repair harness and connector in the TCM.	Go to step 9.
9	CHECK POOR CONTACT.	Is there poor contact?	Repair poor contact.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 

## G: CHECK POWER MODE SWITCH.

### **DIAGNOSIS:**

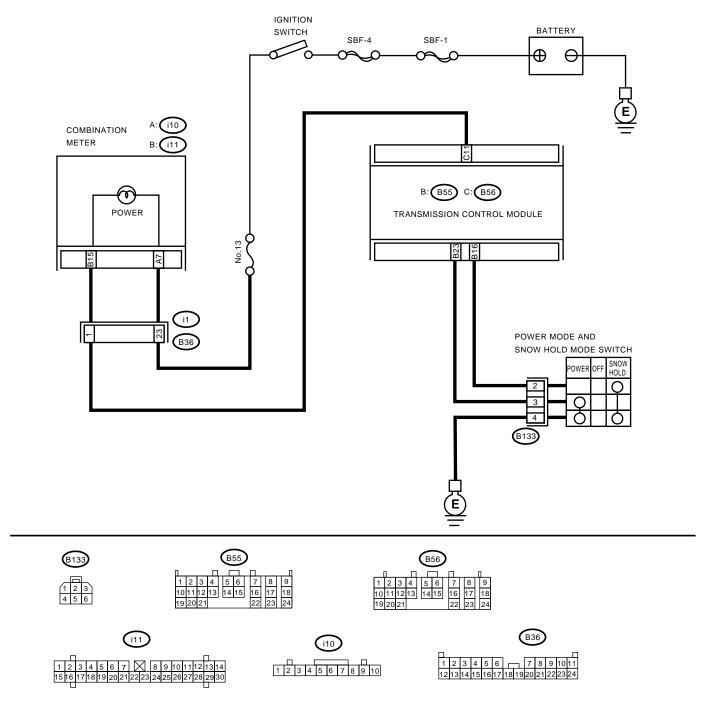
- LED does not come on when power switch is ON.
- Power switch circuit is open or shorted.

## **TROUBLE SYMPTOM:**

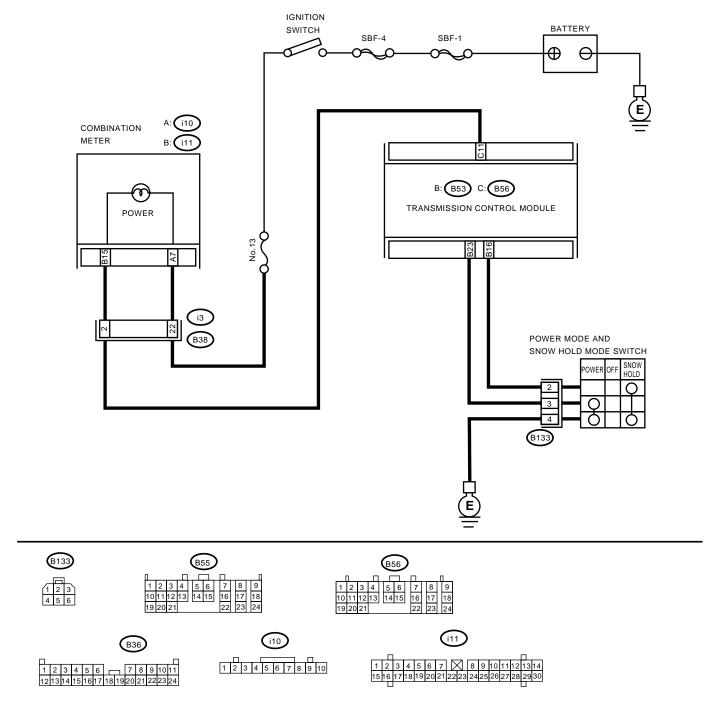
No power mode occurs.

**WIRING DIAGRAM:** 

**LHD MODEL** 



### **RHD MODEL**



	Step	Check	Yes	No
1	CHECK POWER SWITCH OPERATION.	When power switch is turned OFF, does LED light up?	Go to step 5.	Go to step 2.
2	CHECK POWER SWITCH OPERATION.	When power switch is turned ON, does LED light up?	Go to step CHECK INHIBITOR SWITCH. <ref. at-114,="" check="" code.="" diagnostic="" for="" inhibitor="" no-trouble="" procedure="" switch.,="" to=""></ref.>	Go to step 3.
3	CHECK POWER INDICATOR LIGHT.  1)Turn ignition switch to OFF.  2)Remove combination meter.  3)Remove POWER indicator light bulb from combination meter.	Is POWER indicator light bulb OK?	Go to step 4.	Replace POWER indicator light bulb. <ref. assembly.="" combination="" idi-19,="" meter="" to=""></ref.>
4	CHECK POWER SWITCH GROUND LINE.  1)Turn ignition switch to OFF.  2)Disconnect connector from power switch.  3)Measure resistance of harness connector between power switch and chassis ground.  Connector & terminal  (B133) No. 4 — Chassis ground:	Is the resistance less than 1 $\Omega$ ?	Go to step 5.	Repair open circuit in harness between power switch and chas- sis ground.
5	CHECK POWER SWITCH.  1)Power switch turned ON.  2)Measure resistance between terminals of power switch.  Terminals  No. 3 — No. 4:	Is the resistance less than 1 $\Omega$ ?	Go to step 6.	Repair power switch.
6	CHECK POWER SWITCH.  1)Power switch turned OFF.  2)Measure resistance between terminals of power switch.  Terminals  No. 3 — No. 4:	Is the resistance more than 1 M $\Omega$ ?	Go to step 7.	Repair power switch.
7	CHECK HARNESS CONNECTOR BETWEEN TCM AND POWER SWITCH.  Measure resistance of harness connector between TCM and power switch.  Connector & terminal  (B55) No. 23 — (B133) No. 3:	Is the resistance less than 1 $\Omega$ ?	Go to step 8.	Repair open circuit in harness between TCM and power switch con- nector.
8	TCM AND POWER SWITCH.  Measure resistance of harness connector between TCM and chassis ground.  Connector & terminal  (B55) No. 23 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 9.	Repair short circuit in harness between TCM and power switch con- nector.
9	CHECK INPUT SIGNAL FOR TCM.  1) Connect connectors to TCM and power switch.  2) Turn ignition switch ON (with engine OFF).  3) Measure signal voltage for TCM while turning power switch OFF.  Connector & terminal  (B55) No. 23 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 10.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>

	Step	Check	Yes	No
10	CHECK INPUT SIGNAL FOR TCM.  Measure signal voltage for TCM while turning power switch ON.  Connector & terminal  (B55) No. 23 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 11.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
11	CHECK POOR CONTACT.	Is there poor contact?	Repair poor contact.	A temporary poor contact of the con- nector or harness or connector in power switch cir- cuit.

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 

## H: CHECK INHIBITOR SWITCH.

### **DIAGNOSIS:**

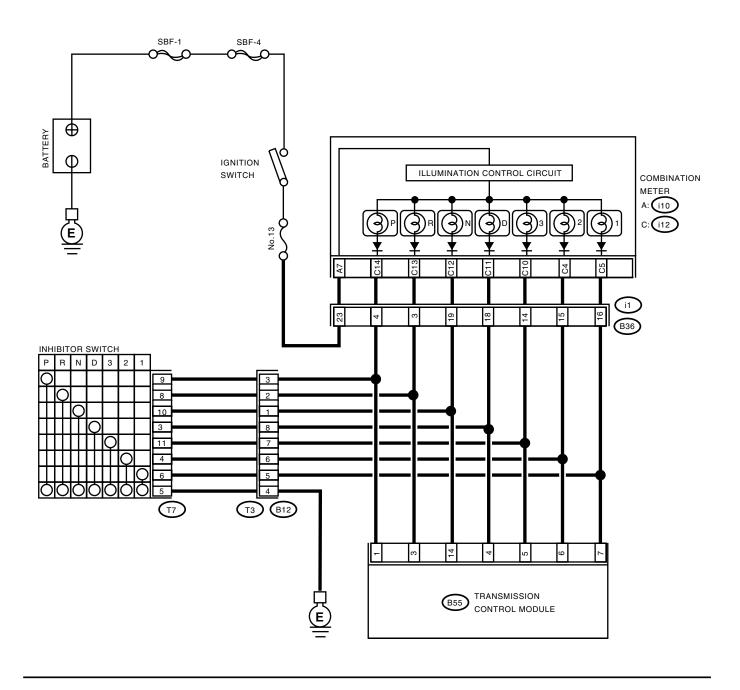
Input signal circuit of inhibitor switch is open or shorted.

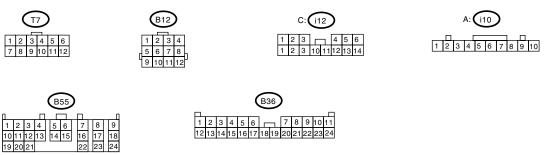
## TROUBLE SYMPTOM:

- Shift characteristics are erroneous.
- Engine brake is not effected when selector lever is in "3" range.
- Engine brake is not effected when selector lever is in "2" range.
- Engine brake is not effected when selector lever is in "1" range.

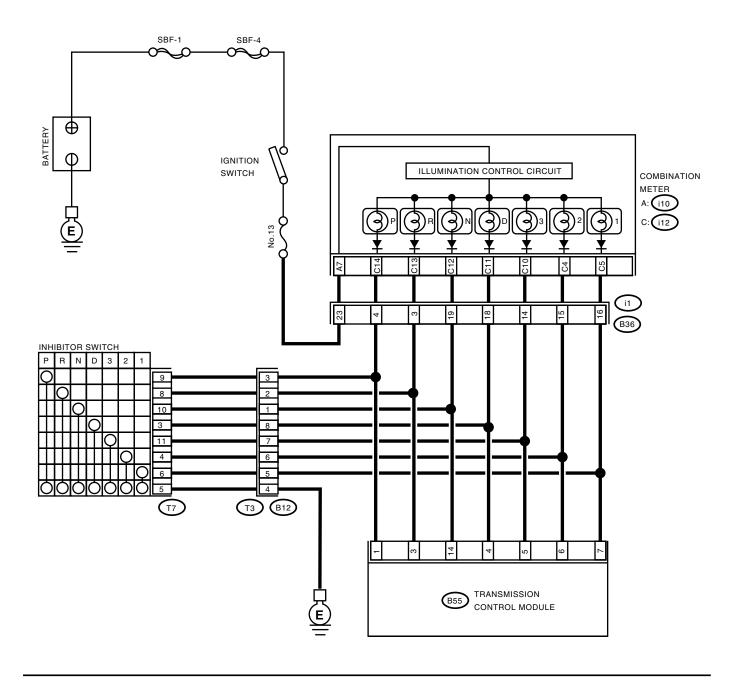
**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 

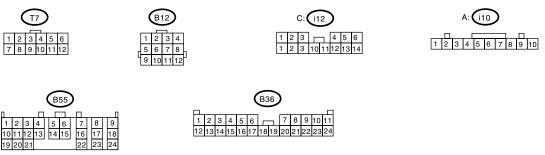
## WIRING DIAGRAM: LHD MODEL





### **RHD MODEL**





	Step	Check	Yes	No
1	CHECK "P" RANGE SWITCH.	When "P" range is selected, does LED light up?	Go to step 2.	Go to step 22.
2	CHECK INDICATOR LIGHT.	Does combination meter "P" range indicator illuminate?	Go to step 3.	Go to step 26.
3	CHECK "P" RANGE SWITCH.	When the "R" range is selected, does "P" range LED light up?	Go to step 28.	Go to step 4.
4	CHECK "R" RANGE SWITCH.	When the "R" range is selected, does LED light up?	Go to step 5.	Go to step 29.
5	CHECK INDICATOR LIGHT.	Does combination meter "R" range indicator illuminate?	Go to step 6.	Go to step 32.
6	CHECK "R" RANGE SWITCH.	When the "N" range is selected, does "R" range LED light up?	Go to step 34.	Go to step 7.
7	CHECK "N" RANGE SWITCH.	When the "N" range is selected, does LED light up?	Go to step 8.	Go to step 35.
8	CHECK INDICATOR LIGHT.	Does combination meter "N" range indicator illuminate?	Go to step 9.	Go to step 38.
9	CHECK "N" RANGE SWITCH.	When the "D" range is selected, does "N" range LED light up?	Go to step 40.	Go to step 10.
10	CHECK "D" RANGE SWITCH.	When the "D" range is selected, does LED light up?	Go to step 11.	Go to step 41.
11	CHECK INDICATOR LIGHT.	Does combination meter "D" range indicator illuminate?	Go to step 12.	Go to step 44.
12	CHECK "D" RANGE SWITCH.	When the "3" range is selected, does "D" range LED light up?	Go to step 46.	Go to step 13.
13	CHECK "3" RANGE SWITCH.	When the "3" range is selected, does LED light up?	Go to step 14.	Go to step 47.
14	CHECK INDICATOR LIGHT.	Does combination meter "3" range indicator illuminate?	Go to step 15.	Go to step 50.
15	CHECK "3" RANGE SWITCH.	When the "2" range is selected, does "3" range LED light up?	Go to step 52.	Go to step 16.
16	CHECK "2" RANGE SWITCH.	When the "2" range is selected, does LED light up?	Go to step 17.	Go to step 53.
17	CHECK INDICATOR LIGHT.	Does combination meter "2" range indicator illuminate?	Go to step 18.	Go to step 56.
18	CHECK "2" RANGE SWITCH.	When the "1" range is selected, does "2" range LED light up?	Go to step 58.	Go to step 19.
19	CHECK "1" RANGE SWITCH.	When the "1" range is selected, does LED light up?	Go to step 20.	Go to step 59.
20	CHECK INDICATOR LIGHT.	Does combination meter "1" range indicator illuminate?	Go to step 21.	Go to step 62.
21	CHECK "1" RANGE SWITCH.	When the "P" range is selected, does "1" range LED light UP?	Go to step 64.	Go to step CHECK HOLD SWITCH. <ref. at-124,="" check="" code.="" diag-="" for="" hold="" no-trouble="" nostic="" procedure="" switch.,="" to=""></ref.>

INHIBITOR SWITCH AND CHASSIS GROUND. 1)Turn ignition switch to OFF. 2)Disconnect connector from inhibitor switch. 3)Measure resistance of harness between inhibitor switch and chassis ground. Connector & terminal (T7) No. 3 — Chassis ground:  23		Step	Check	Yes	No
1)Turn ignition switch to OFF (2)Disconnect connector from inhibitor switch. 3)Measure resistance of harness between inhibitor switch and chassis ground.	22	INHIBITOR SWITCH AND CHASSIS		Go to step 23.	
2)Disconnect connector from inhibitor switch. 3)Measure resistance of harness between inhibitor switch and chassis ground. (77) No. 5 — Chassis ground:  23 CHECK HARNESS CONNECTOR BETWEEN TOM AND INHIBITOR SWITCH. 1)Turn ignition switch to OFF. 2)Disconnector from TCM and inhibitor switch in inhibitor inhibitor in inhibitor i					between inhibitor
3)Measure resistance of harness between inhibitor switch and chassis ground:   23					
inhibitor switch and chassis ground:  Connector & terminal (77) No. 5 — Chassis ground:  CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1)Turn ignition switch to OFF. 2)Disconnect connectors from TCM and inhibitor switch. 3)Measure resistance of harness between TCM and inhibitor switch connector.  Connector & terminal (B55) No. 1 — (77) No. 9  24 CHECK INPUT SIGNAL FOR TCM. 1)Turn ignition switch to OFF. 2)Connect connector to TCM and inhibitor switch. 3)Turn ignition switch to OFF. 2)Connect connector to TCM and inhibitor switch. 3)Turn ignition switch to OFF. 2)Connect connector to TCM and chassis ground.  Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  25 CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and chassis ground.  Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  26 CHECK "P" RANGE INDICATOR LIGHT BULB. 1)Turn ignition switch to OFF. 2)Remove combination meter. 2)Remove "P" range indicator light bulb from combination meter. 2)Remove Combination meter. 2)Measure resistance of harness between TCM and Combination meter. 2)Measure resistance of harness between TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. 3)Disconnect connectors from TCM and combination meter. 1)Disconnect connectors from TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. 3)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and chansis ground.					
Connector & terminal (T7) No. 5 - Chassis ground:   Check HARNESS CONNECTOR BETWEEN 1   Such a resistance less than 1   Ω?					
CHECK HARNESS CONNECTOR BETWEEN   Is the resistance less than 1   Go to step 24.   Repair open cin in harness between TCM and inhibitor switch to OFF.   2)Disconnect connectors from TCM and inhibitor switch tor switch.   3)Measure resistance of harness between TCM and inhibitor switch connector.   Connector & terminal (B55) No. 1 — (T7) No. 9					
State   Check Harness Connectors Between TCM and inhibitor switch to Service   State   Stat					pling connector.
TCM AND INHIBITOR SWITCH.   1)Turn ignition switch to OFF.   2)Disconnect connectors from TCM and inhibitor switch.   3)Measure resistance of harness between TCM and inhibitor switch connector.   Connector & terminal (B55) No. 1 — (177) No. 9  24	23	· · · · · · · · · · · · · · · · · · ·	Is the resistance less than 1	Go to sten 24	Repair open circuit
2)Disconnect connectors from TCM and inhibitor switch.   3)Measure resistance of harness between TCM and inhibitor switch connector. Connector & terminal (B55) No. 1 — (T7) No. 9   24   CHECK INPUT SIGNAL FOR TCM. 1)Turn ignition switch to OFF. 2)Connect or to TCM and inhibitor switch.   3)Turn ignition switch to OFF. 2)Connect or to TCM and inhibitor switch.   3)Turn ignition switch to ON. 4)Measure voltage between TCM and chassis ground. Connector & terminal (B55) No. 1 (**) — Chassis ground (**):   CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and chassis ground. Connector & terminal (B55) No. 1 (**) — Chassis ground (**):   Connector & terminal (B55) No. 1 (**) — Chassis ground (**):   CHECK "P" RANGE INDICATOR LIGHT BULB. 1) Turn ignition switch to OFF. 2)Remove combination meter. 3)Remove "P" range indicator light bulb from combination meter. 1)Disconnect connectors from TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and chassis ground. 4 Turn ignition switch to OFF. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure	-"			00 10 010 2 11	· ·
2)Disconnect connectors from TCM and inhibitor switch.   3)Measure resistance of harness between TCM and inhibitor switch connector.   Connector & terminal (B55) No. 1 — (T7) No. 9     24   CHECK INPUT SIGNAL FOR TCM.   1)Turn ignition switch to OFF.   2)Connect or to TCM and inhibitor switch switch.   3)Turn ignition switch to ON.   4)Measure voltage between TCM and chassis ground.   Connector & terminal (B55) No. 1 (*) — Chassis ground (-):   Is the voltage less than 1 V in (B55) No. 1 (*) — Chassis ground (-):   Is the voltage more than 8 V in other ranges?   Go to step 65.   Replace TCM.   Kef. to AT-44,   Transmission C trol Module (TCM).   Connector & terminal (B55) No. 1 (*) — Chassis ground (-):   Is the voltage more than 8 V in other ranges?   CHECK INPUT SIGNAL FOR TCM.   Is the voltage more than 8 V in other ranges?   Replace TCM.   Kef. to AT-44,   Transmission C trol Module (TCM).   Is "P" range indicator light bulb OK?   Check "P" RANGE INDICATOR LIGHT BULB.   1) Turn ignition switch to OFF.   2) Remove combination meter.   Signal in the resistance more than 1   Ω?   Combination Meter Assembly combination meter.   Check Harness Connectors from TCM and combination meter.   Signal in the resistance less than 1   Go to step 65.   Replace "P" range indicator light bulb from combination meter.   Signal in the resistance less than 1   Ω?   Go to step 65.   Repair open circ in harness between TCM and combination meter.   Signal in the resistance less than 1   Ω?   Go to step 65.   Repair open circ in harness between TCM and combination meter.   Signal in the resistance less than 1   Go to step 29.   Repair ground short circuit in "range circuit.   Signal in the resistance less than 1   Repair ground short circuit in "range circuit.   Signal in the resistance less than 1   Repair ground short circuit in "range circuit.   Signal in the resistance less than 1   Signal in the resistance les		1)Turn ignition switch to OFF.			between TCM and
3)Measure resistance of harness between TCM and inhibitor switch connector.  Connector & terminal (855) No. 1 — (T7) No. 9  24 CHECK INPUT SIGNAL FOR TCM. 1)Turn ignition switch to OFF. 2)Connect connector to TCM and inhibitor switch. 3)Turn ignition switch to ON. 4)Measure voltage between TCM and chassis ground.  Connector & terminal (855) No. 1 (+) — Chassis ground (-):  25 CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and chassis ground.  Connector & terminal (855) No. 1 (+) — Chassis ground (-):  CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and chassis ground.  Connector & terminal (855) No. 1 (+) — Chassis ground (-):  CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and chassis ground.  Connector & terminal (855) No. 1 (+) — Chassis ground (-): 2) CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and chassis ground (-): 20 CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and combination meter. 3) Remove combination meter. 2) Replace "P" range indicator light bulb from combination meter. 2) Measure resistance of harness between TCM and combination meter. 2) Measure resistance of harness between TCM and combination meter. 2) Measure resistance of harness between TCM and combination meter. 2) Measure resistance of harness between TCM and combination meter. 2) Measure resistance of harness between TCM and combination meter. 2) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM					inhibitor switch
TCM and inhibitor switch connector. Connector & terminal (B55) No. 1 — (T7) No. 9  24 CHECK INPUT SIGNAL FOR TCM. 1) Turn ignition switch to OFE. 2) Connect connector to TCM and inhibitor switch. 3) Turn lignition switch to ON. 4) Measure voltage between TCM and chassis ground. Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  25 CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and chassis ground. Connector & terminal (B55) No. 1 (+) — Chassis ground (-): CCNNECTOR & terminal (B55) No. 1 (+) — Chassis ground (-): CHECK "P" RANGE INDICATOR LIGHT BULB. 1) Turn ignition switch to OFE. 2) Remove combination meter. 3) Remove "P" range indicator light bulb from combination meter. CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect connectors from TCM and combination meter. 27 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. 28 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. Connector & terminal (B55) No. 1 — (It2) No. 14: CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn ignition switch to OFF. 2) Disconnect connectors from TCM and combination meter. 2) Measure resistance of harness between TCM and combination meter. 2) CHECK HARNESS CONNECTOR BETWEEN TCM And INHIBITOR SWITCH. 1) Turn ignition switch to OFF. 2) Disconnect connectors from TCM, inhibitor switch and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM, inhibitor switch and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and chassis ground.		tor switch.			connector, and
Connector & terminal (B55) No. 1 — (T7) No. 9  24 CHECK INPUT SIGNAL FOR TCM. 1)Turn ignition switch to OFF. 2)Connect connector to TCM and inhibitor switch. 3)Turn ignition switch to ON. 4)Measure voltage between TCM and chassis ground. Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  25 CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and chassis ground. Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  26 CHECK "P" RANGE INDICATOR LIGHT BULB. 1)Turn ignition switch to OFF. 2)Remove combination meter. 3)Remove "P" range indicator light bulb from combination meter. 1)Disconnect connectors from TCM and combination meter. 27 CHECK HARNESS CONNECTOR BETWEEN TCM and Combination meter. 28 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. 29 Measure resistance of harness between TCM and combination meter. 28 CHECK HARNESS CONNECTOR BETWEEN TCM and DOMBINATION METER. 1)Disconnect connectors from TCM and combination meter. 29 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. 20 Chasses and the resistance less than 1 MΩ? 20 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. 21 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. 22 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. 23 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. 24 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. 25 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. 26 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter.		3)Measure resistance of harness between			poor contact in
24 CHECK INPUT SIGNAL FOR TCM. 1) Turn ignition switch to OFF. 2) Connect connector to TCM and inhibitor switch. 3) Turn ignition switch to ON. 4) Measure voltage between TCM and chassis ground. Connector & terminal (B55) No. 1 (+) — Chassis ground (−):  25 CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and chassis ground. Connector & terminal (B55) No. 1 (+) — Chassis ground (−):  26 CHECK "P" RANGE INDICATOR LIGHT BULB. 1) Turn ignition switch to OFF. 2) Remove combination meter. 3) Remove "P" range indicator light bulb from combination meter. 27 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect connectors from TCM and combination meter. 28 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. 29 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. 21 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn ignition switch to OFF. 2) Disconnect connectors from TCM, inhibitor switch and combination meter. 3) Measure resistance of harness between TCM and combination meter. 21 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 22 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn ignition switch to OFF. 2) Disconnect connectors from TCM, inhibitor switch and combination meter. 2) Measure resistance of harness between TCM and combination meter. 2) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. 3) Measure resistance of ha		TCM and inhibitor switch connector.			coupling connec-
State   CHECK INPUT SIGNAL FOR TCM.   1)Turn ignition switch to OFF.   2)Connect connector to TCM and inhibitor switch.   3)Turn ignition switch to ON.   4)Measure voltage between TCM and chassis ground.   Connector & terminal (B55) No. 1 (+) — Chassis ground (-):   Is the voltage more than 8 V in other ranges?   Go to step 65.   Replace TCM.   Ref. to AT-44, Transmission C troil Module (B55) No. 1 (+) — Chassis ground (-):   Is the voltage more than 8 V in other ranges?   Go to step 65.   Replace TCM.   Ref. to AT-44, Transmission C troil Module (B55) No. 1 (+) — Chassis ground (-):   Is "P" range indicator light bulb (B55) No. 1 (+) — Chassis ground (-):   Is "P" range indicator light bulb (TCM).>   Replace "P" range indicator light bulb (NC?   S)Remove combination meter.   S)Remove "P" range indicator light bulb from combination meter.   S)Remove "P" range indicator light bulb from combination meter.   S)Remove "P" range indicator light bulb from combination meter.   S)Remove "P" range indicator light bulb from combination meter.   S)Remove "P" range indicator light bulb from combination meter.   S)Remove "P" range indicator light bulb from combination meter.   S)Remove "P" range indicator light bulb from combination meter.   S)Remove "P" range indicator light bulb from combination meter.   S)Remove "P" range indicator light bulb from combination meter.   S)Remove "P" range indicator light bulb from combination meter.   S)Remove "P" range indicator light bulb from combination meter.   S)Remove "P" range indicator light bulb from combination meter.   S the resistance more than 1   S the resistance more than 1   S the resistance less than 1					tor.
1)Turn ignition switch to OFF. 2)Connect connector to TCM and inhibitor switch. 3)Turn ignition switch to ON. 4)Measure voltage between TCM and chassis ground.  Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  25 CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and chassis ground.  Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  26 CHECK "P" RANGE INDICATOR LIGHT BULB. 1)Turn ignition switch to OFF. 2)Remove combination meter. 3)Remove "P" range indicator light bulb OK?  CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1)Disconnect connectors from TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter.  Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1)Disconnect connectors from TCM and combination meter.  Connector & terminal (B55) No. 1 (-) (12) No. 14:  28 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1)Turn ignition switch to OFF. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and combination meter. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and chassis ground.					
2)Connect connector to TCM and inhibitor switch.  3)Turn ignition switch to ON. 4)Measure voltage between TCM and chassis ground.  Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  25 CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and chassis ground.  Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  26 CHECK "P" RANGE INDICATOR LIGHT BULB. 1)Turn ignition switch to OFF. 2)Remove combination meter. 3)Remove "P" range indicator light bulb from combination meter. 3)Remove "P" range indicator light bulb from combination meter. 1)Disconnect connectors from TCM and combination meter. 27 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1)Disconnect connectors from TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. Connector & terminal (B55) No. 1 — (I12) No. 14:  28 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1)Turn ignition switch to OFF. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and combination meter. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and chassis ground.	24			Go to step 25.	Go to step 65.
Switch. 3) Turn ignition switch to ON. 4)Measure voltage between TCM and chassis ground.  Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  25 CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and chassis ground.  Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  26 CHECK "P" RANGE INDICATOR LIGHT BULB. 1) Turn ignition switch to OFF. 2) Remove combination meter.  27 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect connectors from TCM and combination meter. 28 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn ignition switch to OFF. 2) Disconnect connectors from TCM, inhibitor switch and combination meter.  28 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn ignition switch to OFF. 2) Disconnect connectors from TCM, inhibitor switch and combination meter. 3) Measure resistance of harness between TCM and combination meter. 2) Disconnect connectors from TCM, inhibitor switch and combination meter. 3) Measure resistance of harness between TCM and combination meter. 2) Disconnect connectors from TCM, inhibitor switch and combination meter. 3) Measure resistance of harness between TCM and chassis ground.			Pr range?		
3)Turn ignition switch to ON. 4)Measure voltage between TCM and chassis ground.  Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  25 CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and chassis ground.  Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  26 CHECK "P" RANGE INDICATOR LIGHT BULB. 1)Turn ignition switch to OFF. 2)Remove combination meter. 3)Remove "P" range indicator light bulb from combination meter.  27 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1)Disconnect connectors from TCM and combination meter. 28 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. 29 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1)Turn ignition switch to OFF. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and combination switch to OFF. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and combination switch to OFF. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and combination switch to OFF. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and chassis ground.		,			
4)Measure voltage between TCM and chassis ground.  Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  25 CHECK INPUT SIGNAL FOR TCM. Measure voltage between TCM and chassis ground.  Connector & terminal (B55) No. 1 (+) — Chassis ground (-):  26 CHECK "P" RANGE INDICATOR LIGHT BULB. 1)Turn ignition switch to OFF. 2)Remove combination meter. 3)Remove "P" range indicator light bulb from combination meter. 1)Disconnect connectors from TCM and combination meter. 27 CHECK HARNESS CONNECTOR BETWEEN TCM and combination meter. 2 (2)Measure resistance of harness between TCM and combination meter. 2 (2)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and combination meter. 3)Measure resistance of harness between TCM and chassis ground.  4 Step Vin (-):  Is the resistance more than 1 Co to step 65.  Replace TCM.  A (Ref. to AT-44, Transmission Co trol Module (TCM).>  Replace TCM.  A (Ref. to AT-44, Transmission Co trol Module (TCM).>  Replace TCM.  A (Ref. to AT-44, Transmission Co trol Module (TCM).>  Replace TCM.  A (Ref. to AT-44, Transmission Co trol Module (TCM).>  Replace "P" ranicidator light bulb ofter and point indicator light bulb ofter and point indicator light bulb ofter anges?  Replace "P" ranicidator light bulb ofter anges?  Step Vin A (B55) No. 1 (-):  Step Vin A (B55) No. 1 (-):  A (					
Go to step 65.   Replace TCM.   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges of voltage more than 8 V in other ranges of voltage more than 9 V in other ranges?   Sis the voltage more than 8 V in other ranges of voltage more than 8 V in other ranges of voltage more than 8 V in other ranges of voltage more than 8 V in other ranges?   Sis the voltage more than 8 V in other ranges of voltage more than 8 V in other ranges?   S					
Connector & terminal (B55) No. 1 (+) — Chassis ground (-):    25		•			
CHECK INPUT SIGNAL FOR TCM.   Is the voltage more than 8 V in other ranges?   Is the voltage more than 8 V in other ranges?   Go to step 65.   Replace TCM.   Ref. to A7-44, Transmission C trol Module (TCM).>					
Step of the composition of th					
Measure voltage between TCM and chassis ground.   Connector & terminal (B55) No. 1 (+) — Chassis ground (-):   26   CHECK "P" RANGE INDICATOR LIGHT BULB. 1)Turn ignition switch to OFF. 2)Remove combination meter. 3)Remove "P" range indicator light bulb from combination meter.   27   CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1)Disconnect connectors from TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. 2)Measure resistance of harness between TCM and combination switch to OFF. 2)Disconnect connectors from TCM. 1)Turn ignition switch to OFF. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and combination meter. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and chassis ground.   St the resistance less than 1   Go to step 29.   Repair ground short circuit in "range circuit."	25		Is the voltage more than 8 V in	Go to step 65.	Replace TCM.
Connector & terminal (B55) No. 1 (+) — Chassis ground (-):       trol Module (TCM).>         26       CHECK "P" RANGE INDICATOR LIGHT BULB.       Is "P" range indicator light bulb OK?       Go to step 27.       Replace "P" ran indicator light bulb CRF.       Replace "P" ran indicator light bulb of P" range indicator light bulb from combination meter.       OK?       Replace "P" range indicator light bulb of P" range indicator light bulb		Measure voltage between TCM and chassis	other ranges?	•	<ref. at-44,<="" td="" to=""></ref.>
CHECK "P" RANGE INDICATOR LIGHT BULB.   Is "P" range indicator light bulb OK?   Replace "P" range indicator light bulb often combination meter.   Since the properties of the proper		ground.			Transmission Con-
Separation   Se					
BULB. 1) Turn ignition switch to OFF. 2) Remove combination meter. 3) Remove "P" range indicator light bulb from combination meter.  27 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect connectors from TCM and combination meter. 2) Measure resistance of harness between TCM and combination meter. 2) Measure resistance of harness between TCM and combination meter. Connector & terminal (B55) No. 1 — (i12) No. 14:  28 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn ignition switch to OFF. 2) Disconnect connectors from TCM, inhibitor switch and combination meter. 3) Measure resistance of harness between TCM and chassis ground.					
2)Remove combination meter. 3)Remove "P" range indicator light bulb from combination meter.  27 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1)Disconnect connectors from TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. Connector & terminal (B55) No. 1 — (i12) No. 14:  28 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1)Turn ignition switch to OFF. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and chassis ground.	26	BULB.		Go to step 27.	Replace "P" range indicator light bulb.
3)Remove "P" range indicator light bulb from combination meter.  27 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.  1)Disconnect connectors from TCM and combination meter.  2)Measure resistance of harness between TCM and combination meter.  Connector & terminal (B55) No. 1 — (i12) No. 14:  28 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  1)Turn ignition switch to OFF.  2)Disconnect connectors from TCM, inhibitor switch and combination meter.  3)Measure resistance of harness between TCM, inhibitor switch and combination meter.  3)Measure resistance of harness between TCM and chassis ground.					
CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1)Disconnect connectors from TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. Connector & terminal (B55) No. 1 — (i12) No. 14:  28 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1)Turn ignition switch to OFF. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and chassis ground.					
<ul> <li>CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.         <ul> <li>1)Disconnect connectors from TCM and combination meter.</li> <li>2)Measure resistance of harness between TCM and combination meter.</li> <li>Connector &amp; terminal (B55) No. 1 — (i12) No. 14:</li> </ul> </li> <li>CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.         <ul> <li>1)Turn ignition switch to OFF.</li> <li>2)Disconnect connectors from TCM, inhibitor switch and combination meter.</li> <li>3)Measure resistance of harness between TCM and chassis ground.</li> </ul> </li> <li>Is the resistance more than 1         <ul> <li>Ω?</li> <li>Repair open circ in harness between resistance on nation meter.</li> <li>Ω?</li> </ul> </li> <li>Repair open circ in harness between resistance on nation meter.</li> <li>Qo to step 29.</li> <li>Repair ground short circuit in "range circuit.</li> </ul>					Meter Assembly.>
TCM AND COMBINATION METER.  1) Disconnect connectors from TCM and combination meter.  2) Measure resistance of harness between TCM and combination meter.  Connector & terminal (B55) No. 1 — (i12) No. 14:  28 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  1) Turn ignition switch to OFF.  2) Disconnect connectors from TCM, inhibitor switch and combination meter.  3) Measure resistance of harness between TCM and chassis ground.	27		Is the resistance more than 1	Go to sten 65	Renair open circuit
1)Disconnect connectors from TCM and combination meter. 2)Measure resistance of harness between TCM and combination meter. Connector & terminal (B55) No. 1 — (i12) No. 14:  28 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1)Turn ignition switch to OFF. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and chassis ground.				00 to step <b>03.</b>	
2)Measure resistance of harness between TCM and combination meter.  Connector & terminal (B55) No. 1 — (i12) No. 14:  28 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1)Turn ignition switch to OFF. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and chassis ground.		1)Disconnect connectors from TCM and com-			between TCM con-
TCM and combination meter.  Connector & terminal (B55) No. 1 — (i12) No. 14:  28 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  1) Turn ignition switch to OFF. 2) Disconnect connectors from TCM, inhibitor switch and combination meter.  3) Measure resistance of harness between TCM and chassis ground.		bination meter.			nector and combi-
Connector & terminal         (B55) No. 1 — (i12) No. 14:       coupling connectors         28       CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.       Is the resistance less than 1 MΩ?       Go to step 29.       Repair ground short circuit in "range circuit."         1) Turn ignition switch to OFF.       2) Disconnect connectors from TCM, inhibitor switch and combination meter.       3) Measure resistance of harness between TCM and chassis ground.       TCM and chassis ground.		2)Measure resistance of harness between			nation meter, and
(B55) No. 1 — (i12) No. 14:       tor.         28       CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.       Is the resistance less than 1 MΩ?       Go to step 29.       Repair ground short circuit in "range circuit."         1) Turn ignition switch to OFF.       2) Disconnect connectors from TCM, inhibitor switch and combination meter.       3) Measure resistance of harness between TCM and chassis ground.       TCM and chassis ground.					•
TCM AND INHIBITOR SWITCH.  1) Turn ignition switch to OFF.  2) Disconnect connectors from TCM, inhibitor switch and combination meter.  3) Measure resistance of harness between TCM and chassis ground.  Is the resistance less than 1  MΩ?  Repair ground short circuit in "range circuit."					coupling connec-
TCM AND INHIBITOR SWITCH.  1) Turn ignition switch to OFF.  2) Disconnect connectors from TCM, inhibitor switch and combination meter.  3) Measure resistance of harness between TCM and chassis ground.					
1)Turn ignition switch to OFF. 2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and chassis ground.	28			Go to step 29.	
2)Disconnect connectors from TCM, inhibitor switch and combination meter. 3)Measure resistance of harness between TCM and chassis ground.			IVIZZ (		
switch and combination meter. 3)Measure resistance of harness between TCM and chassis ground.		, 0			range circuit.
3)Measure resistance of harness between TCM and chassis ground.					
TCM and chassis ground.					
Connector & terminal		Connector & terminal			
(B55) No. 1 — Chassis ground:					

<u> </u>	Step	Check	Yes	No
29	CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  1)Turn ignition switch to OFF.  2)Disconnect connectors from TCM and inhibitor switch.  3)Measure resistance of harness between TCM and inhibitor switch connector.  Connector & terminal  (B55) No. 3 — (T7) No. 8:	Is the resistance less than 1 $\Omega$ ?	Go to step 30.	Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.
30	CHECK INPUT SIGNAL FOR TCM.  1)Turn ignition switch to OFF.  2)Connect connector to TCM and inhibitor switch.  3)Turn ignition switch to ON.  4)Measure voltage between TCM and chassis ground.  Connector & terminal  (B55) No. 3 (+) — Chassis ground (-):	Is the voltage less than 1 V in "R" range?	Go to step 31.	Go to step 65.
31	CHECK INPUT SIGNAL FOR TCM.  Measure voltage between TCM and chassis ground.  Connector & terminal  (B55) No. 3 (+) — Chassis ground (-):	Is the voltage more than 8 V in other ranges?	Go to step 65.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
32	CHECK "R" RANGE INDICATOR LIGHT BULB.  1)Turn ignition switch to OFF.  2)Remove combination meter.  3)Remove "R" range indicator light bulb from combination meter.	Is "R" range indicator light bulb OK?	Go to step 33.	Replace "R" range indicator light bulb. <ref. idi-19,<br="" to="">Combination Meter Assembly.&gt;</ref.>
33	CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.  1) Disconnect connectors from TCM and combination meter.  2) Measure resistance of harness between TCM and combination meter.  Connector & terminal (B55) No. 3 (+) — (i12) No. 13 (-):	Is the resistance less than 1 $\Omega$ ?	Go to step 65.	Repair open circuit in harness between TCM con- nector and combi- nation meter, and poor contact in TCM connector.
34	CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  1)Turn ignition switch to OFF.  2)Disconnect connectors from TCM, inhibitor switch and combination meter.  3)Measure resistance of harness between TCM and chassis ground.  Connector & terminal  (B55) No. 3 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 35.	Repair ground short circuit in "R" range circuit.
35	CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  1)Turn ignition switch to OFF.  2)Disconnect connectors from TCM and inhibitor switch.  3)Measure resistance of harness between TCM and inhibitor switch connector.  Connector & terminal (B55) No. 14 — (T7) No. 10:	Is the resistance less than 1 $\Omega$ ?	Go to step 36.	Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connec- tor.

	Step	Check	Yes	No
36	CHECK INPUT SIGNAL FOR TCM.  1)Turn ignition switch to OFF.  2)Connect connector to TCM and inhibitor	Is the voltage less than 1 V in "N" range?	Go to step 37.	Go to step 65.
	switch.			
	3)Turn ignition switch to ON.			
	4)Measure voltage between TCM and chassis ground.			
	Connector & terminal			
	(B55) No. 14 (+) — Chassis ground (–):			
37	CHECK INPUT SIGNAL FOR TCM.	Is the voltage more than 8 V in	Go to step 65.	Replace TCM.
	Measure voltage between TCM and chassis	other ranges?		<ref. at-44,<="" td="" to=""></ref.>
	ground.			Transmission Con-
	Connector & terminal			trol Module (TCM).>
38	(B55) No. 14 (+) — Chassis ground (-): CHECK "N" RANGE INDICATOR LIGHT	Is "N" range indicator light bulb	Go to sten 30	Replace "N" range
30	BULB.	OK?	Go to step <b>39.</b>	indicator light bulb.
	1)Turn ignition switch to OFF.			<ref. idi-19,<="" td="" to=""></ref.>
	2)Remove combination meter.			Combination
	3)Remove "N" range indicator light bulb from			Meter Assembly.>
	combination meter.			
39	CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.	Is the resistance less than 1 $\Omega$ ?	Go to step 65.	Repair open circuit in harness
	1)Disconnect connectors from TCM and com-	22 !		between TCM con-
	bination meter.			nector and combi-
	2)Measure resistance of harness between			nation meter, and
	TCM and combination meter.			poor contact in
	Connector & terminal			TCM connector.
	(B55) No. 14 — (i12) No. 12:			
40	CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.	Is the resistance more than 1 $M\Omega$ ?	Go to step 41.	Repair ground short circuit in "N"
	1)Turn ignition switch to OFF.	10122 :		range circuit.
	2)Disconnect connectors from TCM, inhibitor			lange en eam
	switch and combination meter.			
	3)Measure resistance of harness between			
	TCM and chassis ground.			
	Connector & terminal (B55) No. 14 — Chassis ground:			
41	CHECK HARNESS CONNECTOR BETWEEN	ls the resistance less than 1	Go to step <b>42.</b>	Repair open circuit
	TCM AND INHIBITOR SWITCH.	$\Omega$ ?	00 to step 42.	in harness
	1)Turn ignition switch to OFF.			between TCM and
	2)Disconnect connectors from TCM and inhibi-			inhibitor switch
	tor switch.			connector, and
	3)Measure resistance of harness between			poor contact in
	TCM and inhibitor switch connector.  Connector & terminal			coupling connector.
	(B55) No. 4 — (T7) No. 3:			101.
42	CHECK INPUT SIGNAL FOR TCM.	Is the voltage less than 1 V in	Go to step 43.	Go to step 65.
	1)Turn ignition switch to OFF.	"D" range?	·	·
	2)Connect connector to TCM and inhibitor			
	switch.			
	<ul><li>3)Turn ignition switch to ON.</li><li>4)Measure voltage between TCM and chassis</li></ul>			
	ground.			
	Connector & terminal			
	(B55) No. 4 (+) — Chassis ground (–):			
43	CHECK INPUT SIGNAL FOR TCM.	Is the voltage more than 8 V in	Go to step 65.	Replace TCM.
	Measure voltage between TCM and chassis	other ranges?		<ref. at-44,<="" td="" to=""></ref.>
	ground.			Transmission Con-
	Connector & terminal			trol Module
	(B55) No. 4 (+) — Chassis ground (–):			(TCM).>

	Step	Check	Yes	No
44	CHECK "D" RANGE INDICATOR LIGHT	Is "D" range indicator light bulb	Go to step 45.	Replace "D" range
	BULB.	OK?		indicator light bulb.
	1)Turn ignition switch to OFF.			<ref. idi-19,<="" td="" to=""></ref.>
	2)Remove combination meter.			Combination
	3)Remove "D" range indicator light bulb from			Meter Assembly.>
	combination meter.			
45		Is the resistance less than 1	Go to step 65.	Repair open circuit
	TCM AND COMBINATION METER.	Ω?		in harness
	1)Disconnect connectors from TCM and com-			between TCM con-
	bination meter.			nector and combi-
	2)Measure resistance of harness between			nation meter, and
	TCM and combination meter.			TCM connector.
	Connector & terminal			
	(B55) No. 4 — (i12) No. 11:			<u></u>
46	CHECK HARNESS CONNECTOR BETWEEN		Go to step 47.	Repair ground
	TCM AND INHIBITOR SWITCH.	ΜΩ?		short circuit in "D"
	1)Turn ignition switch to OFF.			range circuit.
	2)Disconnect connectors from TCM, inhibitor			
	switch and combination meter.			
	3)Measure resistance of harness between			
	TCM and chassis ground.  Connector & terminal			
	(B55) No. 4 — Chassis ground:			
47		le the reciptores less them 4	Ca ta atam 40	Danair an an aireadh
47	TCM AND INHIBITOR SWITCH.	Is the resistance less than 1 $\Omega$ ?	Go to step 48.	Repair open circuit in harness
	1)Turn ignition switch to OFF.	22 ?		between TCM and
	2)Disconnect connector from TCM and inhibi-			inhibitor switch
	tor switch.			connector, and
	3)Measure resistance of harness between			poor contact in
	TCM and inhibitor switch connector.			coupling connec-
	Connector & terminal			tor.
	(B55) No. 5 — (T7) No. 11:			
48	CHECK INPUT SIGNAL FOR TCM.	Is the voltage less than 1 V in	Go to step 49.	Go to step 65.
	1)Turn ignition switch to OFF.	"3" range?		
	2)Connect connector to TCM and inhibitor			
	switch.			
	3)Turn ignition switch to ON.			
	4)Measure voltage between TCM and chassis			
	ground.			
	Connector & terminal			
	(B55) No. 5 (+) — Chassis ground (–):			
49	CHECK INPUT SIGNAL FOR TCM.	Is the voltage more than 8 V in	Go to step 65.	Replace TCM.
	Measure voltage between TCM and chassis	other ranges?		<ref. at-44,<="" td="" to=""></ref.>
	ground.			Transmission Con-
	Connector & terminal			trol Module
	(B55) No. 5 (+) — Chassis ground (–):			(TCM).>
50	CHECK "3" RANGE INDICATOR LIGHT	Is "3" range indicator light bulb	Go to step 51.	Replace "3" range
	CHECK 3 RANGE INDICATOR LIGHT	ris 5 range indicator light built		
	BULB.	OK?		indicator light bulb.
				indicator light bulb. <ref. idi-19,<="" td="" to=""></ref.>
	BULB.			
	BULB. 1)Turn ignition switch to OFF.			<ref. idi-19,<="" td="" to=""></ref.>
	BULB. 1)Turn ignition switch to OFF. 2)Remove combination meter.			<ref. idi-19,<br="" to="">Combination</ref.>
51	BULB. 1) Turn ignition switch to OFF. 2) Remove combination meter. 3) Remove "3" range indicator light bulb from combination meter.		Go to step <b>65</b> .	<ref. idi-19,<br="" to="">Combination</ref.>
	BULB. 1) Turn ignition switch to OFF. 2) Remove combination meter. 3) Remove "3" range indicator light bulb from combination meter.	OK?	·	<ref. idi-19,<br="" to="">Combination Meter Assembly.&gt;</ref.>
	BULB. 1) Turn ignition switch to OFF. 2) Remove combination meter. 3) Remove "3" range indicator light bulb from combination meter.  CHECK HARNESS CONNECTOR BETWEEN	OK?  Is the resistance more than 1	·	<ref. idi-19,<br="" to="">Combination Meter Assembly.&gt;</ref.>
	BULB.  1)Turn ignition switch to OFF.  2)Remove combination meter.  3)Remove "3" range indicator light bulb from combination meter.  CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.	OK?  Is the resistance more than 1	·	<ref. idi-19,<br="" to="">Combination Meter Assembly.&gt;</ref.>
	BULB.  1)Turn ignition switch to OFF.  2)Remove combination meter.  3)Remove "3" range indicator light bulb from combination meter.  CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.  1)Disconnect connectors from TCM and combination meter.  2)Measure resistance of harness between	OK?  Is the resistance more than 1	·	<ref. idi-19,<br="" to="">Combination Meter Assembly.&gt; Repair open circuit in harness between TCM con-</ref.>
	BULB. 1) Turn ignition switch to OFF. 2) Remove combination meter. 3) Remove "3" range indicator light bulb from combination meter.  CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect connectors from TCM and combination meter. 2) Measure resistance of harness between TCM and combination meter.	OK?  Is the resistance more than 1	·	<ref. idi-19,<br="" to="">Combination Meter Assembly.&gt;  Repair open circuit in harness between TCM con- nector and combi- nation meter, and poor contact in</ref.>
	BULB.  1)Turn ignition switch to OFF.  2)Remove combination meter.  3)Remove "3" range indicator light bulb from combination meter.  CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.  1)Disconnect connectors from TCM and combination meter.  2)Measure resistance of harness between	OK?  Is the resistance more than 1	·	<ref. idi-19,<br="" to="">Combination Meter Assembly.&gt;  Repair open circuit in harness between TCM con- nector and combi- nation meter, and</ref.>

	Step	Check	Yes	No
52	TCM AND INHIBITOR SWITCH.  1)Turn ignition switch to OFF.  2)Disconnect connectors from TCM, inhibitor switch and combination meter.	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 53.	Repair ground short circuit in "3" range circuit.
	3)Measure resistance of harness between TCM and chassis ground. Connector & terminal (B55) No. 5 — Chassis ground:			
53	CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  1)Turn ignition switch to OFF.  2)Disconnect connector from TCM and inhibitor switch.  3)Measure resistance of harness between TCM and inhibitor switch connector.  Connector & terminal (B55) No. 6 — (T7) No. 4:	Is the resistance less than 1 $\Omega$ ?	Go to step 54.	Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connec- tor.
54	CHECK INPUT SIGNAL FOR TCM.  1) Turn ignition switch to OFF.  2) Connect connector to TCM and inhibitor switch.  3) Turn ignition switch to ON.  4) Measure voltage between TCM and chassis ground.  Connector & terminal  (B55) No. 6 (+) — Chassis ground (-):	Is the voltage less than 1 V in "2" range?	Go to step 55.	Go to step 65.
55	CHECK INPUT SIGNAL FOR TCM.  Measure voltage between TCM and chassis ground.  Connector & terminal  (B55) No. 6 (+) — Chassis ground (-):	Is the voltage more than 8.0 V in other ranges?	Go to step 65.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
56	CHECK "2" RANGE INDICATOR LIGHT BULB.  1)Turn ignition switch to OFF.  2)Remove combination meter.  3)Remove "2" range indicator light bulb from combination meter.	Is "2" range indicator light bulb OK?	Go to step 57.	Replace "2" range indicator light bulb. <ref. idi-19,<br="" to="">Combination Meter Assembly.&gt;</ref.>
57	CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.  1) Disconnect connectors from TCM and combination meter.  2) Measure resistance of harness between TCM and combination meter.  Connector & terminal  (B55) No. 6 — (i12) No. 4:	Is the resistance less than 1 $\Omega$ ?	Go to step 65.	Repair open circuit in harness between TCM and combination meter, and poor contact in TCM connector.
58	CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  1) Turn ignition switch to OFF.  2) Disconnect connectors from TCM, inhibitor switch and combination meter.  3) Measure resistance of harness between TCM and chassis ground.  Connector & terminal  (B55) No. 6 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 59.	Repair ground short circuit in "2" range circuit.

	Step	Check	Yes	No
59	CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  1)Turn ignition switch to OFF.  2)Disconnect connectors from TCM and inhibitor switch.  3)Measure resistance of harness between TCM and inhibitor switch connector.  Connector & terminal  (B55) No. 7 — (T7) No. 6:	Is the resistance less than 1 $\Omega$ ?	Go to step 60.	Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.
60	CHECK INPUT SIGNAL FOR TCM.  1)Turn ignition switch to OFF.  2)Connect connector to TCM and inhibitor switch.  3)Turn ignition switch to ON.  4)Measure voltage between TCM and chassis ground.  Connector & terminal  (B55) No. 7 (+) — Chassis ground (-):	Is the voltage less than 1 V in "1" range?	Go to step 61.	Go to step 65.
61	CHECK INPUT SIGNAL FOR TCM.  Measure voltage between TCM and chassis ground.  Connector & terminal  (B55) No. 7 (+) — Chassis ground (-):	Is the voltage more than 8 V in other ranges?	Go to step 65.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
62	CHECK "1" RANGE INDICATOR LIGHT BULB.  1)Turn ignition switch to OFF.  2)Remove combination meter.  3)Remove "1" range indicator light bulb from combination meter.	Is "1" range indicator light bulb OK?	Go to step 63.	Replace "1" range indicator light bulb. <ref. idi-19,<br="" to="">Combination Meter Assembly.&gt;</ref.>
63	CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.  1) Disconnect connectors from TCM and combination meter.  2) Measure resistance of harness between TCM and combination meter.  Connector & terminal  (B55) No. 7 — (i12) No. 5:	Is the resistance less than $1\Omega$ ?	Go to step 65.	Repair open circuit in harnes between TCM and combi- nation meter, poor contact in TCM connector.
64	CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  1)Turn ignition switch to OFF.  2)Disconnect connectors from TCM, inhibitor switch and combination meter.  3)Measure resistance of harness between TCM and chassis ground.  Connector & terminal  (B55) No. 7 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 65.	Repair ground short circuit in "1" range circuit.
65	CHECK POOR CONTACT.	Is there poor contact in inhibitor switch circuit?	Repair poor contact.	Adjust inhibitor switch and select cable. <ref. at-<br="" to="">28, ADJUST- MENT, Inhibitor Switch.&gt; and <ref. cs-9,<br="" to="">Select Cable.&gt;</ref.></ref.>

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)** 

## I: CHECK HOLD SWITCH.

### **DIAGNOSIS:**

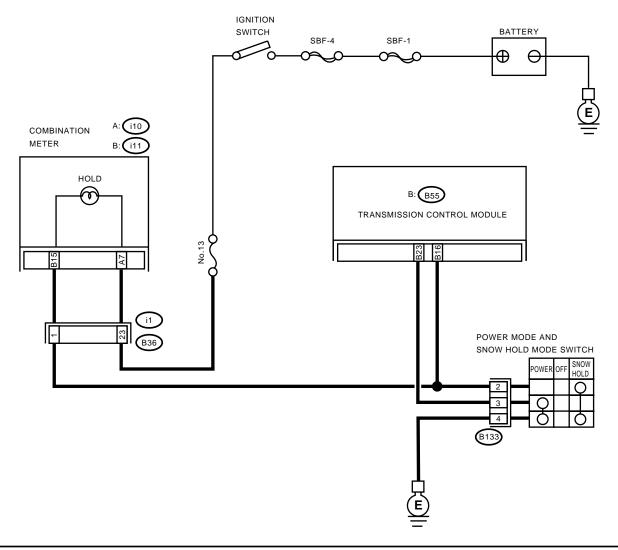
- LED does not come on when hold switch is ON.
- Hold switch circuit is open or shorted.

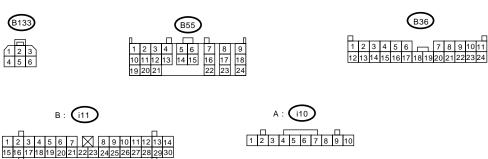
## **TROUBLE SYMPTOM:**

- 2nd gear is not held.
- Failure of vehicle to start in 2nd gear except 1st range.

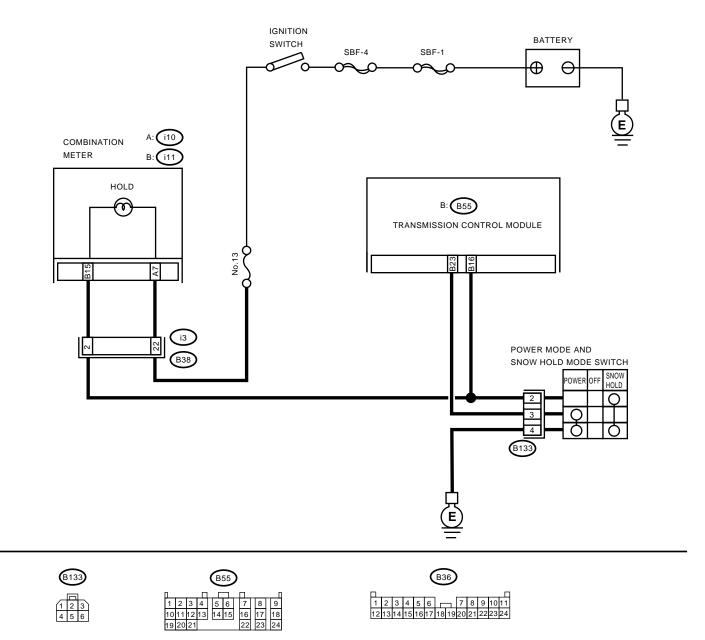
### **WIRING DIAGRAM:**

#### **LHD MODEL**





### **RHD MODEL**



TR0427

Step	Check	Yes	No
	When hold switch is turned OFF, does LED light up?	Go to step 5.	Go to step 2.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

1 2 3 4 5 6 7 8 9 10

	Step	Check	Yes	No
2	CHECK HOLD SWITCH OPERATION.	When hold switch is turned	Go to step CHECK	_
	ONE ON THE STATION.	ON, does LED light up?	FWD LIGHT. <ref. to AT-128, CHECK FWD LIGHT, Diagnostic Proce- dure for No-trouble</ref. 	So to stop 3.
			Code.>	
3	CHECK HOLD INDICATOR LIGHT.  1)Turn ignition switch to OFF.  2)Remove combination meter.  3)Remove HOLD indicator light bulb from combination meter.	Is HOLD indicator light bulb OK?	Go to step 4.	Replace HOLD indicator light bulb. <ref. idi-19,<br="" to="">Combination Meter Assembly.&gt;</ref.>
4	CHECK HOLD SWITCH GROUND LINE.  1)Turn ignition switch to OFF.  2)Disconnect connector from hold switch.  3)Measure resistance of harness connector between hold switch and chassis ground.  Connector & terminal  (B133) No. 4 — Chassis ground:	Is the resistance less than 1 $\Omega$ ?	Go to step 5.	Repair open circuit in harness between hold switch and chas- sis ground.
5	CHECK HOLD SWITCH.  1)Hold switch turned ON.  2)Measure resistance between terminals of hold switch.  Terminals  No. 4 — No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step 6.	Repair hold switch.
6	CHECK HOLD SWITCH.  1)Hold switch turned OFF.  2)Measure resistance between terminals of hold switch.  Terminals  No. 4 — No. 2:	Is the resistance more than 1 M $\Omega$ ?	Go to step 7.	Repair hold switch.
7	CHECK HARNESS CONNECTOR BETWEEN TCM AND HOLD SWITCH.  1) Disconnect connector TCM and combination meter.  2) Measure resistance of harness connector between TCM and hold switch.  Connector & terminal  (B55) No. 16 — (B133) No. 2:	Is the resistance less than 1 $\Omega$ ?	Go to step 8.	Repair open circuit in harness between TCM and hold switch connector and poor contact in coupling connector.
8	CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.  Measure resistance of harness connector TCM and combination meter.  Connector & terminal  (B55) No. 16 — (i11) No. 15:	Is the resistance less than 1 $\Omega$ ?	Go to step 9.	Repair open circuit in harness between TCM and combination meter, and poor contact in cou- pling connector.
9	CHECK HARNESS CONNECTOR BETWEEN TCM AND HOLD SWITCH.  Measure resistance of harness connector between TCM and chassis ground to make sure that circuit does not short.  Connector & terminal  (B55) No. 16 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 10.	Repair short circuit in harness between TCM and hold switch con- nector.

	Step	Check	Yes	No
10	CHECK INPUT SIGNAL FOR TCM.  1) Connect connectors to TCM and hold switch.  2) Turn ignition switch ON (with engine OFF).  3) Measure signal voltage for TCM while turning hold switch OFF.  Connector & terminal  (B55) No. 16 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 11.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
11	CHECK INPUT SIGNAL FOR TCM.  Measure signal voltage for TCM while turning hold switch ON.  Connector & terminal  (B55) No. 16 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 12.	Replace TCM. <ref. at-44,<br="" to="">Transmission Con- trol Module (TCM).&gt;</ref.>
12	CHECK POOR CONTACT.	Is there poor contact?	Repair poor contact.	A temporary poor contact of the con- nector or harness or connector in hold switch circuit.

## DIAGNOSTIC PROCEDURE FOR NO-TROUBLE CODE AUTOMATIC TRANSMISSION (DIAGNOSTICS)

## J: CHECK FWD LIGHT

	Step	Check	Yes	No
1	CHECK VEHICLE.	Is the target AWD vehicle?		Go to step Symptom Related Diagnostic. <ref. at-129,="" diagnostic.="" related="" symptom="" to=""></ref.>
2	CHECK FWD LIGHT.	Does the LED of FWD light illuminate?	circuit. <ref. at-<br="" to="">102, CHECK FWD SWITCH., Diag- nostic Procedure</ref.>	•

## 16.Symptom Related Diagnostic

## A: INSPECTION

Symptom	Problem parts
Starter does not rotate when select lever is in "P" or "N"; starter rotates when select lever is in "R", "D", "3" or "2".	<ul><li>Inhibitor switch</li><li>Select cable</li><li>Select lever</li><li>Starter motor and harness</li></ul>
Abnormal noise when select lever is in "P" or "N".	<ul> <li>Strainer</li> <li>Transfer duty solenoid</li> <li>Oil pump</li> <li>Drive plate</li> <li>ATF level too high or too low</li> </ul>
Hissing noise occurs during standing start.	Strainer     ATF level too high or too low
Noise occurs while driving in "D1".	Final gear
Noise occurs while driving in "D2".	<ul><li>Planetary gear</li><li>Reduction gear</li><li>Differential gear oil level too high or too low</li></ul>
Noise occurs while driving in "D3".	<ul> <li>Final gear</li> <li>Low &amp; reverse brake</li> <li>Reduction gear</li> <li>Differential gear oil level too high or too low</li> </ul>
Noise occurs while driving in "D4".	<ul> <li>Final gear</li> <li>Low &amp; reverse brake</li> <li>Planetary gear</li> <li>Reduction gear</li> <li>Differential gear oil level too high or too low</li> </ul>
Engine stalls while shifting from one range to another.	<ul><li>Control valve</li><li>Lock-up damper</li><li>Engine performance</li><li>Input shaft</li></ul>
Vehicle moves when select lever is in "N".	TCM     Low clutch
Shock occurs when select lever is moved from "N" to "D".	<ul><li>TCM</li><li>Harness</li><li>Control valve</li><li>ATF deterioration</li></ul>
Excessive time lag occurs when select lever is moved from "N" to "D".	<ul> <li>Control valve</li> <li>Low clutch</li> <li>Line pressure duty solenoid</li> <li>Seal ring</li> <li>Front gasket transmission case</li> </ul>
Shock occurs when select lever is moved from "N" to "R".	TCM Harness Control valve ATF deterioration
Excessive time lag occurs when select lever is moved from "N" to "R".	<ul> <li>Control valve</li> <li>Low &amp; reverse clutch</li> <li>Reverse clutch</li> <li>Line pressure duty solenoid</li> <li>Seal ring</li> <li>Front gasket transmission case</li> </ul>
Vehicle does not start in any shift range (engine stalls).	Parking brake mechanism     Planetary gear

Strainer  - Line pressure duty solenoid - Control valve - Drive pinion - Hypoid gear - Axle shaft - Differential gear - Oil pump - Input shaft - Output shaft - Planetary gear - Drive plate - ATF level too low - Front gasket transmission case - Select cable - Select tever - Control valve - Low dutch - 2-4 brake - Planetary gear - Parking brake mechanism - Low clutch - Output shaft - Planetary gear - Drive plate - ATF level too low - Front gasket transmission case - Select cable - Select tever - Control valve - Low & reverse clutch - Low clutch - 2-4 brake - Planetary gear - Parking brake mechanism - Low clutch - One-way clutch - One-way clutch - Low clutch - Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range - Control valve - Engine performance - Engine performance - TCM -	Symptom	Problem parts
Line pressure duty solenoid	-7 1	-
Control valve		
Vehicle does not start in any shift range (engine revving up).  Vehicle does not start in any shift range (engine revving up).  Vehicle does not start in "R" range only (engine revving up).  Vehicle does not start in "R" range only (engine revving up).  Vehicle does not start in "R" range only (engine stalls).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).		
Vehicle does not start in any shift range (engine revving up).  Vehicle does not start in any shift range (engine revving up).  Vehicle does not start in "R" range only (engine revving up).  Vehicle does not start in "R" range only (engine revving up).  Vehicle does not start in "R" range only (engine stalls).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).		Drive pinion
Vehicle does not start in any shift range (engine revving up).  - Axie shaft - Differential gear - Oil pump - Input shaft - Output shaft - Planetary gear - Drive plate - ATF level too low - Front gasket transmission case  - Select cable - Select cable - Select cable - Select tever - Control valve - Low & reverse clutch - 2-4 brake - Planetary gear - Parking brake mechanism  - Vehicle does not start in "R" range only (engine revving up).  - Vehicle does not start in "D", "3" range only (engine revving up).  - Vehicle does not start in "D", "3" or "2" range only (engine revving up).  - Vehicle does not start in "D", "3" or "2" range only (engine revving up).  - Vehicle does not start in "D", "3" or "2" range only (engine revving up).  - Vehicle does not start in "D", "3" or "2" range only (engine revving up).  - Vehicle starts in "R" range only (engine revving up).  - Control valve - Low clutch - Reverse clutch - Control valve - Control valve - Control valve - Low clutch - Reverse clutch - Reverse clutch - Rate level too low - Front gasket transmission case - Differential gear - Oil pump - Torque converter one-way clutch - Reverse clutch - Revers		
Vehicle does not start in any shift range (engine revving up).  Planetary gear Drive plate ATF level to low Front gasket transmission case Select cable Select lever Control valve Low & reverse clutch Planetary gear Select cable Select lever Control valve Low & reverse clutch Low clutch		
Oil pump Input shaft Output shaft Planetary gear Drive plate ATF level too low Front gasket transmission case  Select cable Select cable Select lever Control valve Low & reverse clutch Reverse clutch Low clutch Planetary gear Parking brake mechanism  Vehicle does not start in "R" range only (engine revving up).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Polity brake Planetary gear Parking brake mechanism  Low clutch One-way clutch  Low clutch One-way clutch  Peverse clutch Reverse clutch  Reverse clutch  Reverse clutch  Control valve Low clutch ATF level too low Pront gasket transmission case Differential gear oil level too high or too low  Oil pump Torque converter one-way clutch Engine performance  TCM Control valve Planetary gear  Control valve Planetary gear  Control valve Planetary gear		
Input shaft   Output shaft   Output shaft   Output shaft   Planetary gear   Drive plate   ATF level too low   Front gasket transmission case   Select cable   Select lever   Control valve   Low dutch   2-4 brake   Planetary gear   Parking brake mechanism   Vehicle does not start in "R" range only (engine revving up).   Low clutch   2-4 brake   Planetary gear   Parking brake mechanism   Vehicle does not start in "D", "3" or "2" range only (engine revving up).   Vehicle does not start in "D", "3" or "2" range only (engine revving up).   Vehicle does not start in "D", "3" or "2" range only (engine revving up).   Control valve   Low clutch   One-way clutch   Control valve   Contro	Vehicle does not start in any shift range (engine revving up).	
Output shaft Planetary gear Drive plate ATF level too low Front gasket transmission case  Select cable Select lever Control valve Low & reverse clutch Reverse clutch Reverse clutch Reverse clutch Reverse clutch Low clutch 2-4 brake Planetary gear Parking brake mechanism  Low clutch One-way clutch One-way clutch Control valve Control valve Planetary gear Parking brake mechanism  Control valve Control valve Planetary gear Parking brake mechanism  Control valve Control valve Control valve Control valve Control valve Planetary gear Parking brake mechanism  Control valve Find gear oil level too high or too low Find gasket transmission case Differential gear oil level too high or too low Find gasket transmission case Differential gear oil level too high or too low Find gasket transmission case Control valve Find gear Find Market Find Control valve Find Gutch Find Control valve Find Control va		
Planetary gear Drive plate ATF level too low Front gasket transmission case  Select cable Select lever Control valve Low & reverse clutch Reverse clutch Planetary gear Control valve Low & reverse clutch Planetary gear Parking brake mechanism  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle starts in "R" range only (engine revving up).  Vehicle starts in "R" range only (engine revving up).  Vehicle starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Acceleration start in "D", "3" or "2" range (normal stall rpm).  Planetary gear Control valve Low clutch Reverse clutch ATF level too low Oil pump Torque converter one-way clutch Engine performance TOM Control valve High clutch 2-4 brake Planetary gear Control valve High clutch 2-4 brake Planetary gear Control valve		
Drive plate   ATF level too low   Front gasket transmission case		
Parking brake mechanism  Vehicle does not start in "R" range only (engine revving up).  Vehicle does not start in "R" range only (engine stalls).  Vehicle does not start in "R" range only (engine stalls).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine stalls).  Vehicle starts in "R" range only (engine revving up).  Period of the starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range only "2" range only "2" range only (engine revving up).  Acceleration is poor when select lever is in "D", "3" or "2" range only "2" range only "2" range only (engine revving up).  Acceleration is poor when select lever is in "D", "3" or "2" range only "2" range only (engine revving up).  Acceleration is poor when select lever is in "D", "3" or "2" range only (engine revving up).  Acceleration is poor when select lever is in "D", "3" or "2" range only (engine revving up).  Acceleration is poor when select lever is in "D", "3" or "2" range only (engine revving up).  Acceleration is poor when select lever is in "D", "3" or "2" range only (engine revving up).  Acceleration is poor when select lever is in "D", "3" or "2" range only (engine revving up).  Acceleration is poor when select lever is in "D", "3" or "2" range only (engine revving up).  Acceleration is poor when select lever is in "D", "3" or "2" range only (engine revving up).  Acceleration is poor when select lever is in "D", "3" or "2" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).		
Pront gasket transmission case  Select cable Select tever Control valve Low & reverse clutch Reverse clutch Reverse clutch Planetary gear Parking brake mechanism  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle starts in "R" range only (engine reving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Parking drake transmission case Differential gear oil level too high or too low  Oil pump Torque converter one-way clutch Engine performance  TCM Control valve High clutch 2-4 brake High clutch 2-4 brake Planetary gear		
Vehicle does not start in "R" range only (engine revving up).  Vehicle does not start in "R" range only (engine stalls).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle starts in "R" range only (engine revving up).  Vehicle starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  P Select cable Select lever (control valve)  Low clutch  Control valve  Control valve  Control valve  Low clutch  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  P TORQ  Control valve  High clutch  2-4 brake  P Planetary gear  Parking brake mechanism  Low clutch  Control valve  High clutch  2-4 brake  Planetary gear  Portion valve		
Vehicle does not start in "R" range only (engine revving up).  Vehicle does not start in "R" range only (engine stalls).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Acceleration start in "D", "3" or "2" range (normal stall rpm).  Control valve  Control valve  Control valve  Control valve  Control valve  Dil pump  Torque converter one-way clutch  Engine performance  TCM  Control valve  High clutch  2-4 brake  Planetary gear  Control valve  High clutch  2-4 brake  Planetary gear  Control valve		-
Vehicle does not start in "R" range only (engine revving up).  Vehicle does not start in "R" range only (engine stalls).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle starts in "R" range only (engine revving up).  Vehicle starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Ponton valve  Ontrol valve  Low clutch  Reverse clutch  Are level too low  Front gasket transmission case  Differential gear oil level too high or too low  Oil pump  Torque converter one-way clutch  Engine performance  TCM  Control valve  High clutch  2-4 brake  Planetary gear		
Low & reverse clutch   Reverse clutch   Reverse clutch   Reverse clutch	Vehicle does not start in "R" range only (engine rewing up)	
Per Reverse clutch  Vehicle does not start in "R" range only (engine stalls).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  **Reverse clutch**  **Reverse clutch**  **Reverse clutch**  **Reverse clutch**  **Control valve**  **Low clutch**  **Control valve**  **Low clutch**  **Reverse clutch**  **Control valve**  **Low clutch**  **Reverse clutch**  **Control valve**  **Low clutch**  **Reverse clutch**  **Control valve**  **Low clutch**  **Control valve**  **Low clutch**  **Control valve**  **Low clutch**  **Control valve**  **Differential gear oil level too high or too low**  **Oil pump**  **Torque converter one-way clutch**  **Engine performance**  **TCM**  **Control valve**  **TCM**  **Control valve**  **TCM**  **Control valve**  **High clutch**  **2-4 brake**  **Planetary gear*  **Control valve**  **High clutch**  **2-4 brake**  **Planetary gear*  **Control valve**  **Control valve**  **Control valve**  **Control valve**  **Control valve**  **Control valve**  **Planetary gear*  **Control valve**  **Control valve**  **Control valve**  **Control valve**  **Control valve**  **Control valve**  **Planetary gear*  **Control valve**  **Planetary gear*  **Control valve**  **Control	verniore aces not start in it range only tengine revvilly up).	
Vehicle does not start in "R" range only (engine stalls).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  **Low clutch**  **Reverse clutch**  **Control valve**  **Control valve**  **Oil pump  **Torque converter one-way clutch**  **Engine performance**  **TCM**  **Control valve**  **TCM**  **Control valve**  **High clutch**  **Planetary gear*  **Parking brake mechanism*  **Done-way clutch**  **Control valve**  **Oil pump  **Tordue converter one-way clutch**  **Engine performance**  **TCM**  **Control valve**  **High clutch**  **Planetary gear**  **Control valve**  **Planetary gear**  **Control valve**  **Planetary gear**  **Control valve**  **Control valve**  **High clutch**  **Planetary gear**  **Control valve**  **Planetary gear**  **Control valve**  **Control valve**  **High clutch**  **Planetary gear**  **Control valve**  **Control valve**  **High clutch**  **Planetary gear*  **Control valve**  **Control valve**  **Planetary gear*  **Control valve**		
Vehicle does not start in "R" range only (engine stalls).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Parking brake mechanism  Low clutch  Control valve  Control valve  Control valve  Low clutch  Reverse clutch  ATF level too low  Front gasket transmission case  Differential gear oil level too high or too low  Oil pump  Torque converter one-way clutch  Engine performance  TCM  Control valve  High clutch  High clutch  Planetary gear  Control valve  Planetary gear		
Vehicle does not start in "R" range only (engine stalls).  Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Planetary gear  Parking brake mechanism  Low clutch  Reverse clutch  Control valve  Low clutch  Reverse clutch  ATF level too low  Front gasket transmission case  Differential gear oil level too high or too low  Oil pump  Torque converter one-way clutch  Engine performance  TCM  Control valve  High clutch  2-4 brake  Planetary gear  Control valve		
Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle does not start in "D", "3" or "2" range only (engine stalls).  Vehicle starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Parking brake mechanism  Low clutch  Control valve  Control valve  Control valve  Differential gear oil level too high or too low  Oil pump  Torque converter one-way clutch  Engine performance  TCM  Control valve  High clutch  2-4 brake  Planetary gear  Control valve	Vehicle does not start in "R" range only (engine stalls).	
Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine stalls).  Vehicle starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  **Low clutch**  **Control valve**  Low clutch  **Reverse clutch  **ATF level too low  **Front gasket transmission case  Differential gear oil level too high or too low  **Oil pump  Torque converter one-way clutch  **Engine performance**  **TCM**  **Control valve**  High clutch  **2-4 brake  **Planetary gear  **Control valve**  **Planetary gear  **Control valve**  **Planetary gear	<b>5</b> , <b>( 5</b> ,	
Vehicle does not start in "D", "3" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine revving up).  Vehicle does not start in "D", "3" or "2" range only (engine stalls).  Vehicle starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Pone-way clutch  Control valve  Control valve  Low clutch  Reverse clutch  At Flevel too low  Front gasket transmission case  Differential gear oil level too high or too low  Oil pump  Torque converter one-way clutch  Engine performance  TCM  Control valve  High clutch  2-4 brake  Planetary gear  Control valve		
Vehicle does not start in "D", "3" or "2" range only (engine reving up).  Vehicle does not start in "D", "3" or "2" range only (engine stalls).  Vehicle starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Point-way dutch  Reverse clutch  Control valve  Control valve  Low clutch  Reverse clutch  Reverse clutch  Reverse clutch  Control valve  Low clutch  Reverse clutch  Reverse clutch  Control valve  Control valve  Oil pump  Torque converter one-way clutch  Engine performance  TCM  Control valve  High clutch  2-4 brake  Planetary gear  Control valve	Vehicle does not start in "D" "3" range only (engine revying up)	
ving up).  Vehicle does not start in "D", "3" or "2" range only (engine stalls).  Vehicle starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).	verified december ottain 12 ; or range only (origina revving up).	One-way clutch
Vehicle does not start in "D", "3" or "2" range only (engine stalls).  Vehicle starts in "R" range only (engine revving up).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Person gasket transmission case Differential gear oil level too high or too low  Oil pump  Torque converter one-way clutch  Engine performance  TCM  Control valve  High clutch  2-4 brake  Planetary gear  Control valve		Low clutch
Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (high stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  * Control valve    • Low clutch   • Reverse clutch   • ATF level too low   • Differential gear oil level too high or too low    • Oil pump   • Torque converter one-way clutch   • Engine performance    • TCM   • Control valve   • High clutch   • 2-4 brake   • Planetary gear   • Control valve	Vehicle does not start in "D", "3" or "2" range only (engine	Reverse clutch
Acceleration during standing starts is poor (high stall rpm).  - Low clutch - Reverse clutch - ATF level too low - Front gasket transmission case - Differential gear oil level too high or too low - Oil pump - Torque converter one-way clutch - Engine performance  - TCM - Control valve - High clutch - 2-4 brake - Planetary gear - Control valve	Vehicle starts in "R" range only (engine revving up).	Control valve
Acceleration during standing starts is poor (high stall rpm).  • Reverse clutch • ATF level too low • Front gasket transmission case • Differential gear oil level too high or too low  • Oil pump • Torque converter one-way clutch • Engine performance  • TCM • Control valve • High clutch • 2-4 brake • Planetary gear • Control valve		
Acceleration during standing starts is poor (high stall rpm).  • ATF level too low • Front gasket transmission case • Differential gear oil level too high or too low  • Oil pump • Torque converter one-way clutch • Engine performance  • TCM • Control valve • High clutch • 2-4 brake • Planetary gear • Control valve		Low clutch
Acceleration during standing starts is poor (low stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).	A cooleration during standing starts is possylhigh stall rose.	Reverse clutch
Differential gear oil level too high or too low      Oil pump     Torque converter one-way clutch     Engine performance      Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).      High clutch     2-4 brake     Planetary gear      Control valve	Acceleration during standing starts is poor (night stall rpm).	ATF level too low
Acceleration during standing starts is poor (low stall rpm).  • Oil pump • Torque converter one-way clutch • Engine performance  • TCM • Control valve • High clutch • 2-4 brake • Planetary gear • Control valve		Front gasket transmission case
Acceleration during standing starts is poor (low stall rpm).  • Oil pump • Torque converter one-way clutch • Engine performance  • TCM • Control valve • High clutch • 2-4 brake • Planetary gear • Control valve		
Acceleration during standing starts is poor (low stall rpm).  • Torque converter one-way clutch • Engine performance  • TCM • Control valve • High clutch • 2-4 brake • Planetary gear • Control valve		
Engine performance      TCM      Control valve     High clutch     2-4 brake     Planetary gear      Control valve      Control valve	Acceleration during standing starts is poor (low stall rpm).	
Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  • TCM • Control valve • High clutch • 2-4 brake • Planetary gear • Control valve	3 3 [3	
Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  • Control valve • High clutch • 2-4 brake • Planetary gear • Control valve		-
Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).  High clutch 2-4 brake Planetary gear Control valve		
• 2-4 brake     • Planetary gear     • Control valve		
Planetary gear     Control valve	(normal stall rpm).	
Control valve		
Acceleration is poor when select lever is in "k" (normal stall   ● High clutch	Application is magnificated at the second of	
· · · · · · · · · · · · · · · · · · ·		
rpm).	rpm).	
Planetary gear		
• TCM		
Rear vehicle speed sensor		
Front vehicle speed sensor		
No shift occurs from 1st to 2nd gear.  • Throttle position sensor	No shift occurs from 1st to 2nd gear.	
Shift solenoid 1		
Control valve		
2-4 brake		• 2-4 brake
• TCM		• TCM
Control valve	No shift assure from On the O. I.	Control valve
No shift occurs from 2nd to 3rd gear.  • High clutch	No shift occurs from 2nd to 3rd gear.	
Shift solenoid 2		

Symptom	Problem parts
	• TCM
	Shift solenoid 1
No shift occurs from 3rd to 4th gear.	ATF temperature sensor
-	Control valve
	• 2-4 brake
	Inhibitor switch
Engine brake is not effected when select lever is in "3" range.	• TCM
Engine state to het enected when eclest level to in a range.	Throttle position sensor
	Control valve
Engine brake is not effected when select lever is in "3" or "2"	Control valve
range.	
Engine brake is not effected when select lever is in "1" range.	Control valve
	Low & reverse brake
	• Inhibitor switch
	TCM Front vehicle speed sensor
Shift characteristics are erroneous.	Rear vehicle speed sensor
China Gharacterionido aro offontodo.	Throttle position sensor
	Control valve
	Ground earth
	• TCM
	Throttle position sensor
No look up occure	ATF temperature sensor
No lock-up occurs.	Control valve
	Lock-up facing
	Engine speed signal
Parking brake is not effected.	Select cable
Shift lever cannot be moved or is hard to move from "P" range.	Select lever
ATF spurts out.	Parking mechanism     ATF level too high
Differential oil spurts out.	Differential gear oil too high
	Seal pipe
Differential oil level changes excessively.	Double oil seal
	High clutch
	• 2-4 brake
Odor is produced from ATF supply pipe.	Low & reverse clutch
Oddi is produced from Arr supply pipe.	Reverse clutch
	Lock-up facing
	ATF deterioration
	• TCM
	Throttle position sensor  2-4 brake duty solenoid
	2-4 brake duty solenoid     ATF temperature sensor
	Line pressure duty solenoid
Shock occurs from 1st to 2nd gear.	Control valve
	• 2-4 brake
	ATF deterioration
	Engine performance
	2-4 brake timing solenoid
	• TCM
	Throttle position sensor
	2-4 brake duty solenoid
	ATF temperature sensor
Slippage occurs from 1st to 2nd gear.	Line pressure duty solenoid     Control value
	Control valve     2-4 brake
	2-4 brake     2-4 brake timing solenoid
	High clutch
	- riigii dutoii

Symptom	Problem parts
Shock occurs from 2nd to 3rd gear.	<ul> <li>TCM</li> <li>Throttle position sensor</li> <li>2-4 brake duty solenoid</li> <li>ATF temperature sensor</li> <li>Line pressure duty solenoid</li> <li>Control valve</li> <li>High clutch</li> <li>2-4 brake</li> <li>ATF deterioration</li> <li>Engine performance</li> <li>2-4 brake timing solenoid</li> </ul>
Slippage occurs from 2nd to 3rd gear.	<ul> <li>TCM</li> <li>Throttle position sensor</li> <li>2-4 brake duty solenoid</li> <li>ATF temperature sensor</li> <li>Line pressure duty solenoid</li> <li>Control valve</li> <li>High clutch</li> <li>2-4 brake</li> <li>2-4 brake timing solenoid</li> </ul>
Shock occurs from 3rd to 4th gear.	<ul> <li>TCM</li> <li>Throttle position sensor</li> <li>2-4 brake duty solenoid</li> <li>ATF temperature sensor</li> <li>Line pressure duty solenoid</li> <li>Control valve</li> <li>2-4 brake timing solenoid</li> <li>2-4 brake</li> <li>ATF deterioration</li> <li>Engine performance</li> <li>Low clutch timing solenoid</li> <li>Low clutch</li> </ul>
Slippage occurs from 3rd to 4th gear.	TCM Throttle position sensor 2-4 brake duty solenoid ATF temperature sensor Line pressure duty solenoid Control valve 2-4 brake 2-4 brake timing solenoid
Shock occurs when select lever is moved from "3" to "2" range.	<ul> <li>TCM</li> <li>Throttle position sensor</li> <li>ATF temperature sensor</li> <li>Line pressure duty solenoid</li> <li>Control valve</li> <li>2-4 brake duty solenoid</li> <li>2-4 brake</li> <li>ATF deterioration</li> <li>2-4 brake timing solenoid</li> </ul>
Shock occurs when select lever is moved from "D" to "1" range.	<ul> <li>TCM</li> <li>Throttle position sensor</li> <li>ATF temperature sensor</li> <li>Line pressure duty solenoid</li> <li>Control valve</li> <li>ATF deterioration</li> <li>2-4 brake duty solenoid</li> <li>2-4 brake timing solenoid</li> <li>Low clutch timing solenoid</li> </ul>

Symptom	Problem parts
Shock occurs when select lever is moved from "2" to "1" range.	<ul> <li>TCM</li> <li>Throttle position sensor</li> <li>ATF temperature sensor</li> <li>Line pressure duty solenoid</li> <li>Control valve</li> <li>Low &amp; reverse clutch</li> <li>ATF deterioration</li> <li>2-4 brake duty solenoid</li> <li>2-4 brake timing solenoid</li> <li>Low clutch timing solenoid</li> </ul>
Shock occurs when accelerator pedal is released at medium speeds.	<ul> <li>TCM</li> <li>Throttle position sensor</li> <li>ATF temperature sensor</li> <li>Line pressure duty solenoid</li> <li>Control valve</li> <li>Lock-up damper</li> <li>Engine performance</li> <li>2-4 brake duty solenoid</li> <li>2-4 brake timing solenoid</li> <li>Low clutch timing solenoid</li> </ul>
Vibration occurs during straight-forward operation.	TCM Lock-up duty solenoid Lock-up facing Lock-up damper Hold switch
Vibration occurs during turns (tight corner "braking" phenomenon).	TCM Front vehicle speed sensor Rear vehicle speed sensor Throttle position sensor ATF temperature sensor Transfer clutch Transfer valve Transfer duty solenoid ATF deterioration Harness Hold switch
Front wheel slippage occurs during standing starts.	<ul> <li>TCM</li> <li>Front vehicle speed sensor</li> <li>FWD switch</li> <li>Throttle position sensor</li> <li>ATF temperature sensor</li> <li>Control valve</li> <li>Transfer clutch</li> <li>Transfer valve</li> <li>Transfer pipe</li> <li>Transfer duty solenoid</li> </ul>
Vehicle is not set in FWD mode.	TCM FWD switch Transfer clutch Transfer valve Transfer duty solenoid
Select lever is hard to move.	<ul><li>Select cable</li><li>Select lever</li><li>Detent spring</li><li>Manual plate</li></ul>

# SYMPTOM RELATED DIAGNOSTIC AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Symptom	Problem parts
Select lever is too high to move (unreasonable resistance).	Detent spring     Manual plate
Select lever slips out of operation during acceleration or while driving on rough terrain.	<ul><li>Select cable</li><li>Select lever</li><li>Detent spring</li><li>Manual plate</li></ul>