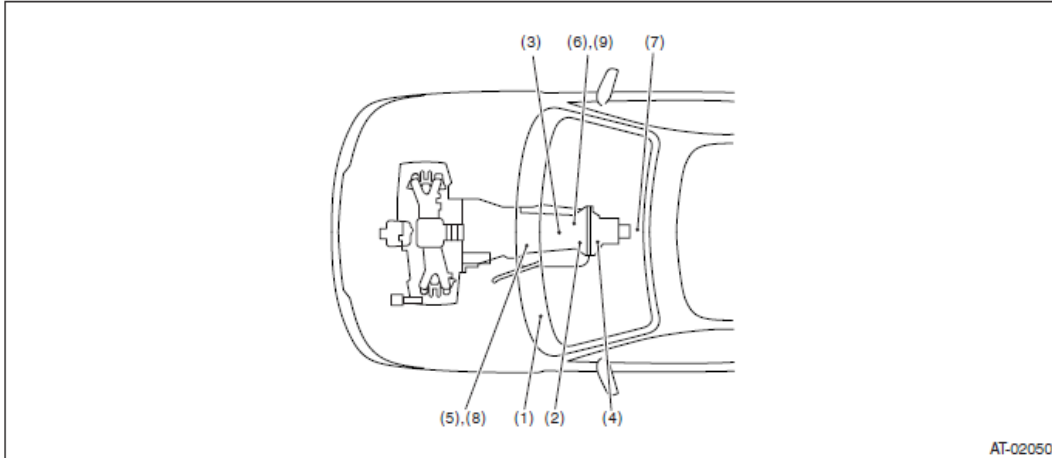


## Electrical Component Location

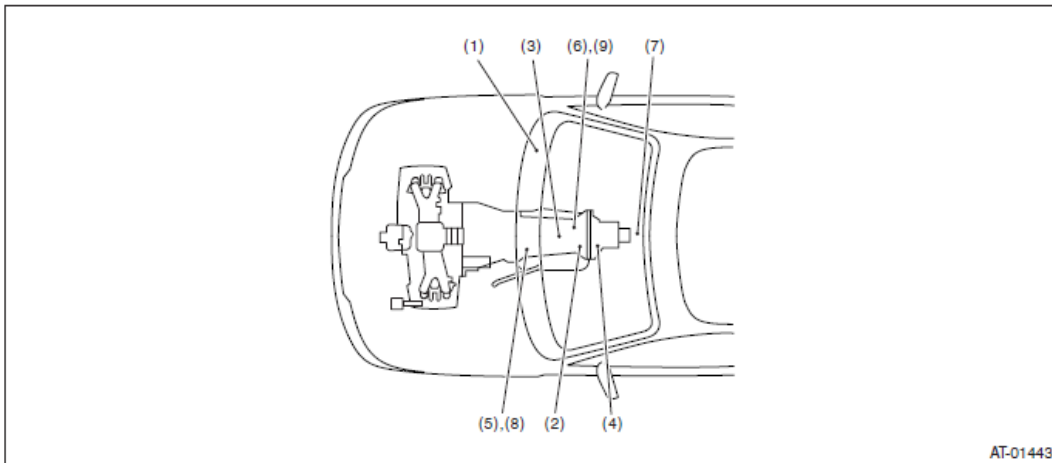
### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

#### 2. SENSOR

- LHD model



- RHD model

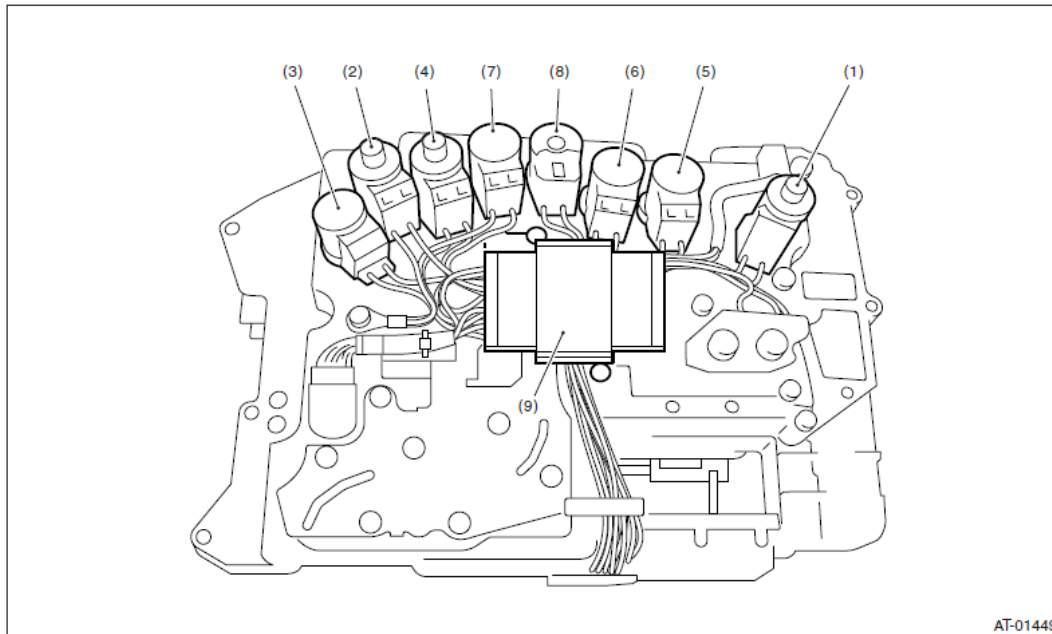


- |                                       |                               |                              |
|---------------------------------------|-------------------------------|------------------------------|
| (1) Accelerator pedal position sensor | (4) Rear vehicle speed sensor | (7) Lateral G sensor         |
| (2) Front vehicle speed sensor        | (5) Turbine speed sensor 1    | (8) Turbine speed sensor 2   |
| (3) Inhibitor switch                  | (6) ATF temperature sensor 1  | (9) ATF temperature sensor 2 |

## Electrical Component Location

### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

#### 3. SOLENOID



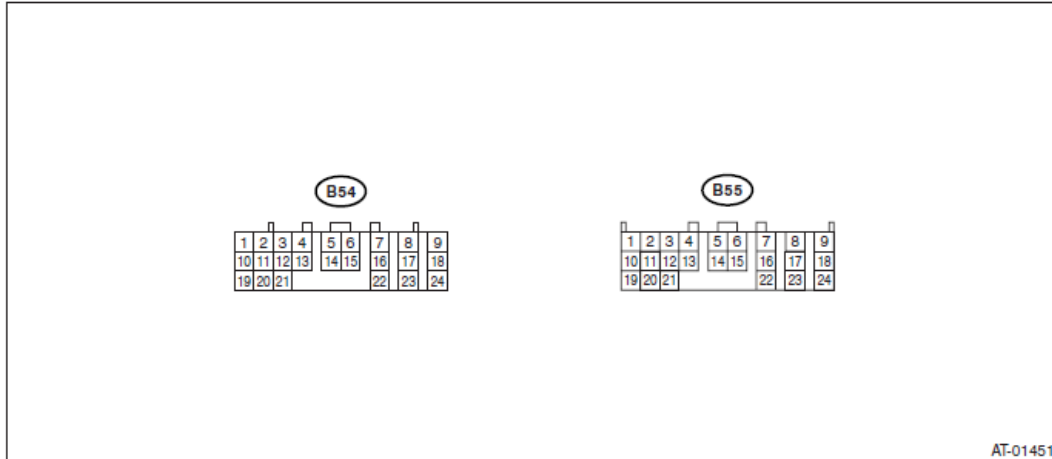
- |  |                            |                              |
|--|----------------------------|------------------------------|
| (1) High & low reverse clutch solenoid | (4) Input clutch solenoid  | (7) Transfer solenoid        |
| (2) Direct clutch solenoid             | (5) Line pressure solenoid | (8) Low coast brake solenoid |
| (3) Front brake solenoid               | (6) Lock up solenoid       | (9) Memory box               |

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

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

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

#### A: ELECTRICAL SPECIFICATION



AT-01451

#### NOTE:

The measurement should be performed after warming up.

Item	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance between terminal and chassis ground	Remarks
P/L solenoid output	B54	9	Engine ON, "P" range, Accelerator OFF, Brake ON	Approx. 4.0 — 6.0 V	3 — 9 $\Omega$ (ATF temperature 20°C (68°F))	Driving frequency 750 — 850 Hz
			Manual mode 1st, Accelerator OFF, Brake ON	Approx. 2.0 — 4.0 V		
PVIGN power supply	B54	8	Ignition switch ON	Power supply voltage	—	
		7	Ignition switch ON	Power supply voltage	—	
I/C oil pressure switch input	B54	6	—	—	—	The condition of I/C oil pressure switch cannot read by the tester.
Power GND	B54	5	Always	Approx. 0 V	—	
CAN communication line (+)	B54	4	—	—	—	
CAN communication line (—)	B54	3	—	—	—	
ATF temperature sensor 1 input	B54	2	Ignition switch ON	2.5 — 2.9 V (ATF temperature 20°C (68°F)) 0.8 — 1.0 V (ATF temperature 80°C (176°F))	4.0 — 5.0 k $\Omega$ (ATF temperature 20°C (68°F)) 0.7 — 0.9 k $\Omega$ (ATF temperature 80°C (176°F))	
Battery power supply	B54	1	Always	Power supply voltage	—	

5AT(diag)-13

**Transmission Control Module (TCM) I/O Signal**  
AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Item	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance between terminal and chassis ground	Remarks
I/C solenoid output	B54	18	While driving at 1st — 3rd of manual mode	Approx. 5.5 — 7.5 V	3 — 9 $\Omega$ (ATF temperature 20°C (68°F))	Driving frequency 750 — 850 Hz
			While driving at 4th or 5th of manual mode	Approx. 0 V		
H&LR/C solenoid output	B54	17	While driving at 2nd of manual mode	Approx. 5.5 — 7.5 V	3 — 9 $\Omega$ (ATF temperature 20°C (68°F))	Driving frequency 750 — 850 Hz
			While driving at 3rd — 5th of manual mode	Approx. 0 V		
Control valve power supply output	B54	16	Ignition switch ON	Power supply voltage	—	
			Ignition switch OFF	Approx. 0 V		
LC/B solenoid output	B54	15	While driving at 1st — 2nd of manual mode	Power supply voltage	5 — 17 $\Omega$ (ATF temperature 25°C (77°F))	
			While driving at 3rd — 5th of manual mode	Approx. 0 V		
Power GND	B54	14	Always	Approx. 0 V	—	
Analog GND (Sensor GND)	B54	13	Always	Approx. 0 V	—	
LC/B oil pressure switch input	B54	12	—	—	—	The condition of LC/B oil pressure switch cannot read by the tester.
ATF temperature sensor 2 input	B54	11	Ignition switch ON	2.3 — 2.7 V (ATF temperature 20°C (68°F))	3.0 — 3.6 k $\Omega$ (ATF temperature 20°C (68°F))	
				0.6 — 0.8 V (ATF temperature 80°C (176°F))	0.4 — 0.6 k $\Omega$ (ATF temperature 80°C (176°F))	
PVIGN power supply relay output	B54	10	Ignition switch ON	0 — 1.5 V	—	
Fr/B solenoid output	B54	24	While driving at other than 4th of manual mode	Approx. 4.5 — 6.5 V	3 — 9 $\Omega$ (ATF temperature 20°C (68°F))	Driving frequency 750 — 850 Hz
			While driving at 4th of manual mode	Approx. 0 V		
L/U solenoid output	B54	23	When lock-up	Approx. 3.5 — 5.5 V	3 — 9 $\Omega$ (ATF temperature 20°C (68°F))	Driving frequency 750 — 850 Hz
			When not lock-up	Approx. 0 V		
D/C solenoid output	B54	22	While driving at 1st or 5th of manual mode	Approx. 5.5 — 7.5 V	3 — 9 $\Omega$ (ATF temperature 20°C (68°F))	Driving frequency 750 — 850 Hz
			While driving at 2nd — 4th of manual mode	Approx. 0 V		
D/C oil pressure switch input	B54	21	—	—	—	The condition of D/C oil pressure switch cannot read by the tester.
Subaru Select Monitor communication line	B54	20	—	—	—	
Control GND	B54	19	Always	Approx. 0 V	—	

**5AT(diag)-14**

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

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Item	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance between terminal and chassis ground	Remarks
H&LR/C oil pressure switch input	B55	8	While driving at 2nd of manual mode	Power supply voltage	—	
			While driving at 3rd — 5th of manual mode	Approx. 0 V		
Front vehicle speed sensor input	B55	7	While driving at 2nd and 20 km/h (12 MPH) of manual mode	Approx. 140 — 170 rpm	—	
			While driving at 4th and 80 km/h (50 MPH) of manual mode	Approx. 560 — 680 rpm		
Lateral G sensor power supply	B55	6	Ignition switch ON	4.75 — 5.25 V	—	
Lateral G sensor signal input	B55	5	Ignition switch ON, Engine ON, Flat value	2.0 — 3.0 V	—	
Inhibitor switch 1 input	B55	4	Ignition switch ON, "P" range	4.0 — 5.0 V	—	
			Ignition switch ON, "N" range	1.5 V or less		
Inhibitor switch 2 input	B55	3	Ignition switch ON, "P" range	4.0 — 5.0 V	—	
			Ignition switch ON, "D" range	1.5 V or less		
Accessory power supply	B55	2	Accessory switch ON	Power supply voltage	—	
			Accessory switch OFF	Approx. 0 V		
Ignition power supply	B55	1	Ignition switch ON	Power supply voltage	—	
			Ignition switch OFF	Approx. 0 V		
Rear vehicle speed sensor input	B55	18	While driving at 2nd and 20 km/h (12 MPH) of manual mode	Approx. 190 — 230 rpm	—	
			While driving at 4th and 80 km/h (50 MPH) of manual mode	Approx. 760 — 920 rpm		
Fr/B oil pressure switch input	B55	17	Ignition switch ON, Engine ON, While driving at other than 4th	Approx. 0 V	—	
			Ignition switch ON, Engine ON, While driving at 4th	Power supply voltage		
Turbine speed sensor 1 input	B55	16	2nd of manual mode, Turbine speed sensor is 2,000 rpm (Read from Subaru Select Monitor)	Approx. 0 rpm	—	Use the Subaru Select Monitor.
			4th of manual mode, Turbine speed sensor is 2,000 rpm (Read from Subaru Select Monitor)	Approx. 1,900 — 2,100 rpm		Use the Subaru Select Monitor.
Range lock solenoid output	B55	15	Ignition switch ON, While stopping at "D" range	Approx. Power Supply Voltage — 1.2 V	7 — 21 $\Omega$	
			Ignition switch ON, Vehicle speed at least 20 km/h (12 MPH)	Approx. 0 V		

**5AT(diag)-15**

**Transmission Control Module (TCM) I/O Signal**  
AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Item	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance between terminal and chassis ground	Remarks
Inhibitor switch 3 input	B55	14	Ignition switch ON, "R" range	4.0 — 5.0 V	—	
			Ignition switch ON, "D" range	1.5 V or less		
Inhibitor switch 4 input	B55	13	Ignition switch ON, "P" range	4.0 — 5.0 V	—	
			Ignition switch ON, "D" range	1.5 V or less		
Control valve communication line	B55	12	—	—	—	
Back-up light relay output	B55	11	Ignition switch ON, "R" range	1.5 V	Approx. 90 — 110 $\Omega$ (ATF temperature 25°C (77°F))	
			Ignition switch ON, Other than "R" range	Power supply voltage		
Ignition power supply	B55	10	Ignition switch ON	Power supply voltage	—	
			Ignition switch OFF	Approx. 0 V		
AWD solenoid output	B55	23	Engine ON, "P" range or "N" range, Accelerator OFF	Approx. 0 V	3 — 9 $\Omega$ (ATF temperature 20°C (68°F))	Driving frequency 750 — 850 Hz
			Engine ON, "D" range, Accelerator OFF, Brake ON	Approx. 2.0 — 3.0 V		
Turbine speed sensor 2 input	B55	22	2nd of manual mode, Turbine speed sensor is 2,000 rpm (Read from Subaru Select Monitor)	Approx. 1,300 — 1,500 rpm	—	Use the Subaru Select Monitor.
			4th of manual mode, Turbine speed sensor is 2,000 rpm (Read from Subaru Select Monitor)	Approx. 1,900 — 2,100 rpm		Use the Subaru Select Monitor.
Control GND	B55	21	Always	Approx. 0 V	—	
Inhibitor switch 3 open circuit monitor input	B55	20	Ignition switch ON, "D" range	4.0 — 5.0 V	—	
			Ignition switch ON, "R" range	1.5 V or less		
PN signal output	B55	19	Ignition switch ON, Other than "P" range or "N" range	Power supply voltage	—	ECM should be connected correctly
			Ignition switch ON, "P" range or "N" range	0 — 1.0 V	—	

## Subaru Select Monitor

### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

6) Using the scroll key, scroll the display screen up or down until the desired data is shown.

- A list of the support data is shown in the following table.

Item	Display	Unit of measure
Engine speed signal	Engine speed	rpm
Battery voltage	Battery Voltage	V
Accel. Pedal Position Sensor	Accel. opening angle	%
Front vehicle speed sensor signal	Front Wheel Speed	km/h
Gear position	Gear Position	—
Turbine speed sensor signal	Turbine Revolution Speed	rpm
Rear vehicle speed sensor signal	Rear Wheel Speed	km/h
Lateral G sensor	Lateral G sensor	V
ATF Temperature Sensor 1 Signal	ATF Temp.	°C
ATF Temperature Sensor 2 Signal	ATF Temperature 2	°C
Turbine speed sensor 1 signal	AT Turbine Speed 1	rpm
Turbine speed sensor 2 signal	AT Turbine Speed 2	rpm
High & Low Reverse Clutch Solenoid Indicator Current	H&LR/C Solenoid Current	A
Direct Clutch Solenoid Indicator Current	D/C Solenoid Current	A
Front Brake Solenoid Indicator Current	F/B Solenoid Current	A
Input Clutch Solenoid Indicator Current	I/C Solenoid Current	A
Line Pressure Solenoid Indicator Current	P/L Solenoid Current	A
Lock-up Solenoid Indicator Current	L/U Solenoid Current	A
Transfer Solenoid Indicator Current	AWD Sol. Current	A
High & Low Reverse Clutch Solenoid Target Oil Pressure	H&LR/C Solenoid Pressure	kPa
Direct Clutch Solenoid Target Oil Pressure	D/C Solenoid Pressure	kPa
Front Brake Solenoid Target Oil Pressure	F/B Solenoid Pressure	kPa
Input Clutch Solenoid Target Oil Pressure	I/C Solenoid Pressure	kPa
Line Pressure Solenoid Target Oil Pressure	P/L Solenoid Pressure	kPa
Lock-up Solenoid Target Oil Pressure	L/U Solenoid Pressure	kPa
Transfer Solenoid Target Oil Pressure	4WD Solenoid Pressure	kPa
Ignition switch	Ignition Switch	ON Input or OFF Input
Tip signal	Tip Mode Switch	ON or OFF
Cruise control On signal	Cruise Control Signal	ON or OFF
Tip Down Shift Signal	Down Switch	ON or OFF
Stop light switch signal	Stop Light Switch	ON or OFF
Tip Up Shift Signal	Up Switch	ON or OFF
Drive range signal	D Range Signal	ON or OFF
Reverse range signal	R Range Signal	ON or OFF
Diagnosis Light Output Signal	Diagnosis Lamp	ON or OFF
Shift lock solenoid signal	Shift lock solenoid	ON or OFF
Parking range signal	"P" Range	ON or OFF
P/N Range Output Signal	P/N Signal	ON or OFF
Neutral range signal	"N" Range	ON or OFF
Inhibitor Switch 1 Input Signal	Inhibitor SW1	High or Low
Inhibitor Switch 2 Input Signal	Inhibitor SW2	High or Low
Inhibitor Switch 3 Input Signal	Inhibitor SW3	High or Low
Inhibitor Switch 4 Input Signal	Inhibitor SW4	High or Low
Inhibitor Switch 3 Monitor Input Signal	Inhibitor SW3 Monitor	High or Low
Back Lamp relay output signal	Back Lamp relay	ON or OFF
High & Low Reverse Clutch Fluid Pressure Switch Input Signal	H&LR/C Fluid Pressure	ON or OFF
Direct Clutch Fluid Pressure Switch Input Signal	D/C Fluid Pressure	ON or OFF
Front Brake Fluid Pressure Switch Input Signal	Fr/B Fluid Pressure	ON or OFF
Input Clutch Fluid Pressure Switch Input Signal	I/C Fluid Pressure	ON or OFF

5AT(diag)-18

## Subaru Select Monitor

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Item	Display	Unit of measure
Low Coast Brake Fluid Pressure Switch Input Signal	LC/B Fluid Pressure	ON or OFF
Low Coast Brake Solenoid Input Signal	LC/B Solenoid	ON or OFF