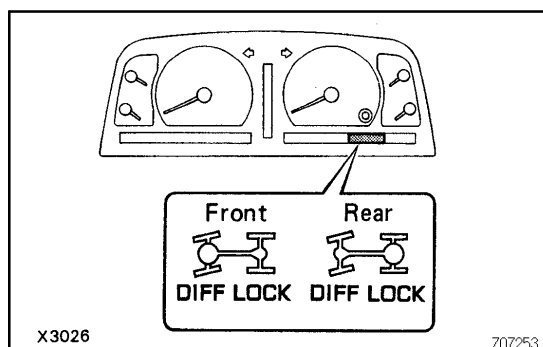


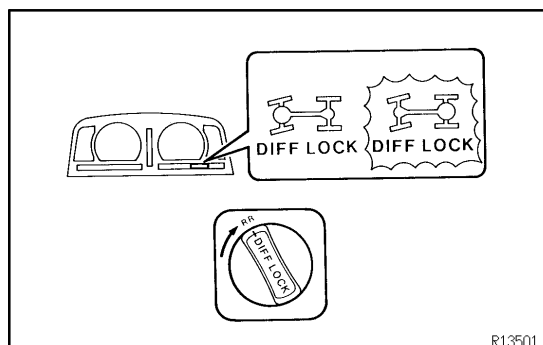


DIFFERENTIAL LOCK SYSTEM ON-VEHICLE INSPECTION

SA1VL-03

1. INSPECT DIFFERENTIAL LOCK SYSTEM

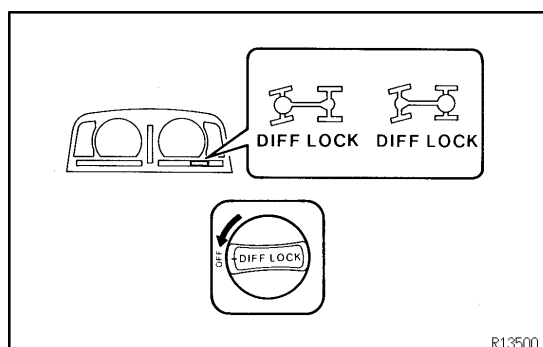
- (a) Inspect the indicator lights.
Check that the indicator lights (front side and rear side) light up for approx. 1 second when the ignition switch is turned ON.



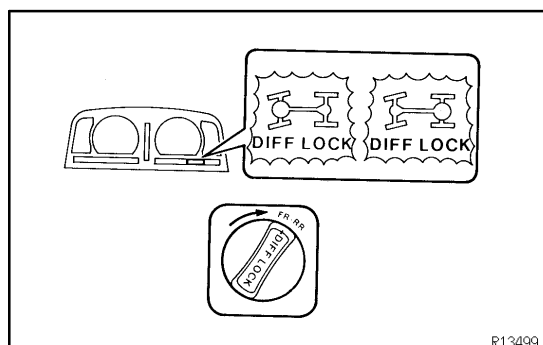
- (b) Inspect the differential lock operation.
- (1) Jack up the vehicle then start the engine.
 - (2) Put the transfer shift lever on the L position.
 - (3) When the Diff. lock control switch is set to the RR position, the indicator light (rear side) is turned on. Differential lock is applied to the rear wheel at this time.

HINT:

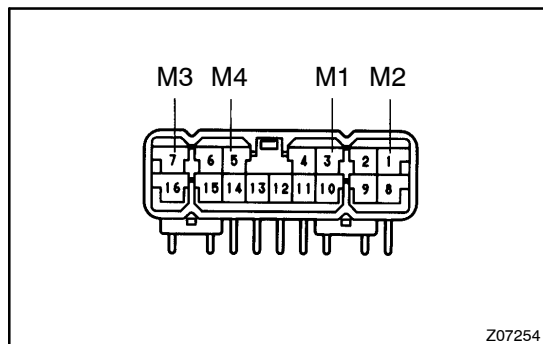
If the gears of the differential lock system are not meshed, the indicator light remains blinking, so rotate the tires to mesh the gear.



- (4) When the Diff. lock control switch is at the OFF position, the indicator light goes off. Differential lock is released for the rear wheel at this time.



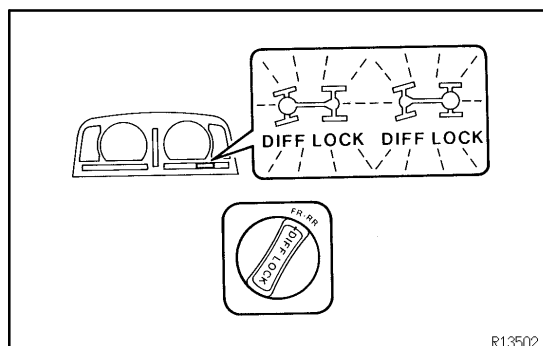
- (5) When the Diff. lock control switch is set to the FR/RR position, the indicator lights (front side and rear side) are turned on. Differential lock is applied to both the front wheels and rear wheels at this time.



- (6) Check the voltage between the terminals of the Diff. lock ECU when switching the Diff. lock control switch with the speedometer, registering approx. 8 km/h (5 mph) or more.

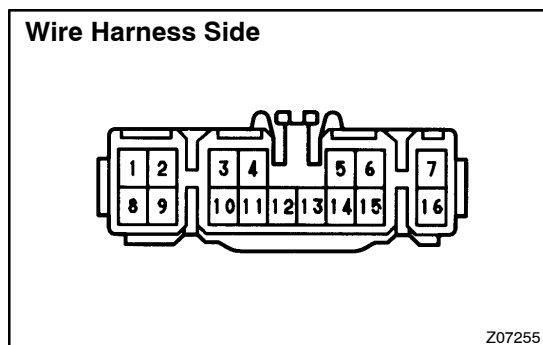
Diff. lock control switch	Terminal	Specified value
OFF → RR	3 (M1) – 1 (M2)	0.5 V or less (on change)
RR → FR·RR	7 (M3) – 5 (M4)	0.5 V or less (on change)

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- (7) Check that the indicator lights blink when center Diff. lock release mode is set.
Diff. lock is released for both the front wheels and rear wheels at this time.
- (8) Return the Diff. lock control switch to OFF.
- (9) Stop the engine and lower the vehicle.

Wire Harness Side



2. INSPECT DIFF. LOCK SYSTEM CIRCUIT

- (a) Inspect the system circuit with connector disconnected. Disconnect the connector from the Diff. lock ECU and inspect the connector on the wire harness side, as shown in the chart.

Trouble Part/ Terminals (Symbols)	Condition	Specified Value
Rear diff. lock actuator/ 1 (M2) – 3 (M1)	–	Less than 100 Ω
Front diff. lock actuator/ 5 (M4) – 7 (M1)	–	Less than 100 Ω
Body ground/ 13 (GND) – Body ground	–	Continuity
Vehicle speed sensor/ 4 (SPD) – Body ground	Vehicle moving slowly	1 pulse each 40 cm (15.75 in.)

SUSPENSION AND AXLE – DIFFERENTIAL LOCKING SYSTEM

DIFF. fuse/ 8 (IG) – Body ground	Ignition switch ON	Battery positive voltage
Rear diff. lock position switch/ 2 (RLP) – Body ground	Ignition switch ON, Indicator light (Rear) ON	About 0 V
	Ignition switch ON, Indicator light (Rear) OFF	Battery positive voltage
Front diff. lock position switch/ 9 (FLP) – Body ground	Ignition switch ON, Indicator light (front) ON.	About 0 V
	Ignition switch ON, Indicator light (front) OFF	Battery positive voltage
Center diff. indicator switch/ 15 (4WD) – Body ground	Ignition switch ON, Indicator light (Center diff. lock) ON	About 0 V
	Ignition switch ON, Indicator light (Center diff. lock) OFF	Battery positive voltage
Differential lock control switch/ 12 (R) – Body ground	Ignition switch ON, Diff. lock control switch RR or FR RR	Battery positive voltage
	Ignition switch ON, Diff. lock control switch OFF	About 0 V
Differential lock control switch/ 6 (RF) – Body ground	Ignition switch ON, Diff. lock control switch FR RR	Battery positive voltage
	Ignition switch ON, Diff. lock control switch OFF or RR	About 0 V

HINT:

When a signal enters the ECU to LOCK the front differential and set the rear differential to FREE (when battery positive voltage is inputted to terminal 6 (RF) of ECU and about 0 V is inputted to terminal 12 (R)), or a signal to FREE both the front and rear differentials, the indicator lights keep blinking until the ignition switch is turned off (Fail-safe function).

If the circuit is not as specified, check and repair or replace the trouble part shown in the table above.

(b) Inspect the battery positive voltage

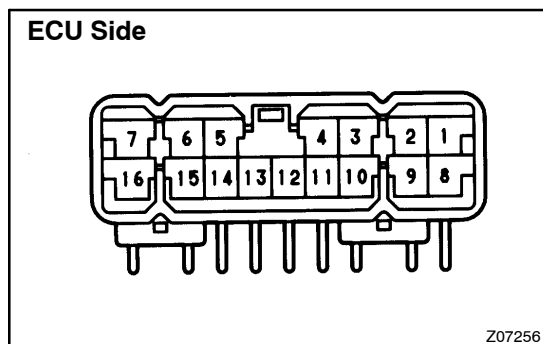
Battery positive voltage: 10 – 14.5 V

(c) Inspect the system circuit with connector connected

- (1) Turn the ignition switch to the ON position.
- (2) Keep the center Diff. lock condition.
- (3) Remove the Diff. lock ECU.

(4) Using a voltmeter, measure the voltage when the differential lock control switch is in the position, as shown below.

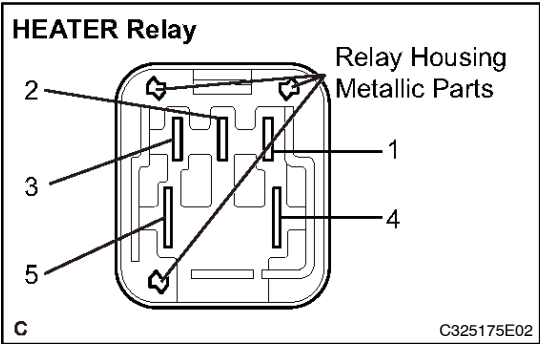
Terminals (Symbols)	Switch Position	STD Voltage (V)
15 (4WD) – 13 (GND)	–	0.5 or less
9 (FLP) – 13 (GND)	FR RR	0.5 or less
2 (RLP) – 13 (GND)	RR or FR RR	0.5 or less



3 (M1) – 1 (M2)	OFF – RR	0.5 or less → 10 – 14.5 (Approx. 1 sec) → 0.5 or less
1 (M2) – 3 (M1)	RR – OFF	0.5 or less → 10 – 14.5 (Approx. 1 sec) → 0.5 or less
7 (M3) – 5 (M4)	OFF or RR – FR RR	0.5 or less → 10 – 14.5 (Approx. 1 sec) → 0.5 or less
5 (M4) – 7 (M3)	FR RR – RR or OFF	0.5 or less → 10 – 14.5 (Approx. 1 sec) → 0.5 or less

If the circuit is not as specified, replace the ECU.

(d) Install the ECU in place.



3. INSPECT DIFF. LOCK ACTUATOR

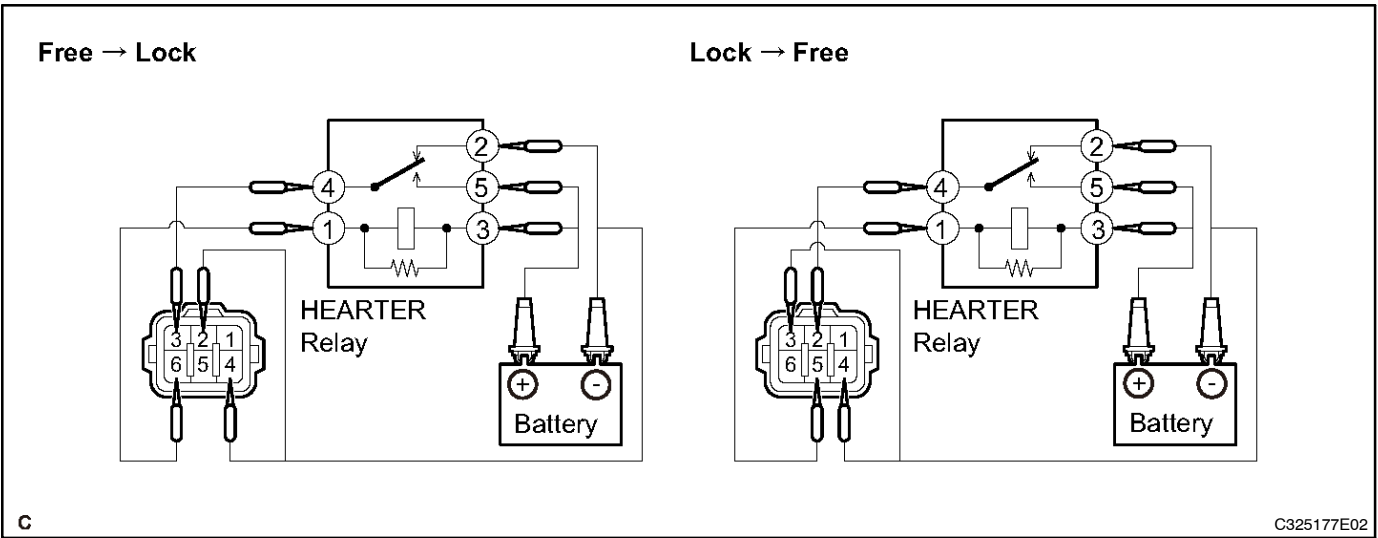
- (a) Jack up the vehicle.
- (b) Use the HEATER relay and connect it, as shown below.

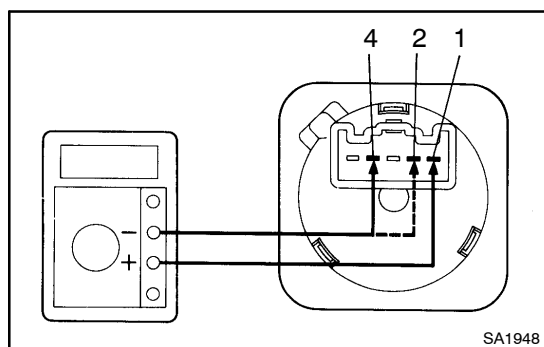
NOTICE:

Connect the terminals being careful not to touch the neighboring terminals or metallic parts of relay housing.

- (c) Rotate the tire and check that differential lock has occurred.

If operation is not as specified, replace the actuator.



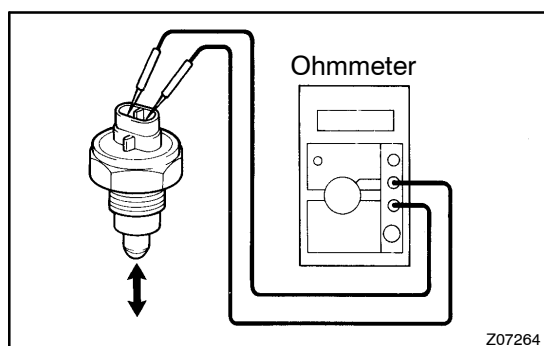


4. INSPECT DIFF. LOCK CONTROL SWITCH

Inspect the switch continuity between terminals, as shown.

Switch Position	Terminals	Specified Condition
OFF	1 - 2	No continuity
	1 - 4	No continuity
RR	1 - 2	No continuity
	1 - 4	Continuity
FR RR	1 - 2	Continuity
	1 - 4	Continuity

If continuity is not as specified, replace the switch.



5. INSPECT DIFF. LOCK POSITION SWITCH

(a) Front and Rear:

Inspect the diff. lock position switch.

- (1) Check that there is continuity between terminals when the switch is pushed (differential connected position).
- (2) Check that there is no continuity when the switch is free (differential disconnected position).

If operation is not as specified, replace the switch.

(b) Inspect the center diff. indicator switch.

6. INSPECT VEHICLE SPEED SENSOR AND INDICATOR LIGHT

- (a) Inspect the vehicle speed sensor (See page [BE-34](#)).
- (b) Inspect the indicator light.