

## TERMINALS OF ECU

### 1. CHECK BATTERY VOLTAGE

- (a) Measure the battery voltage.

**Standard: 10 to 14 V**

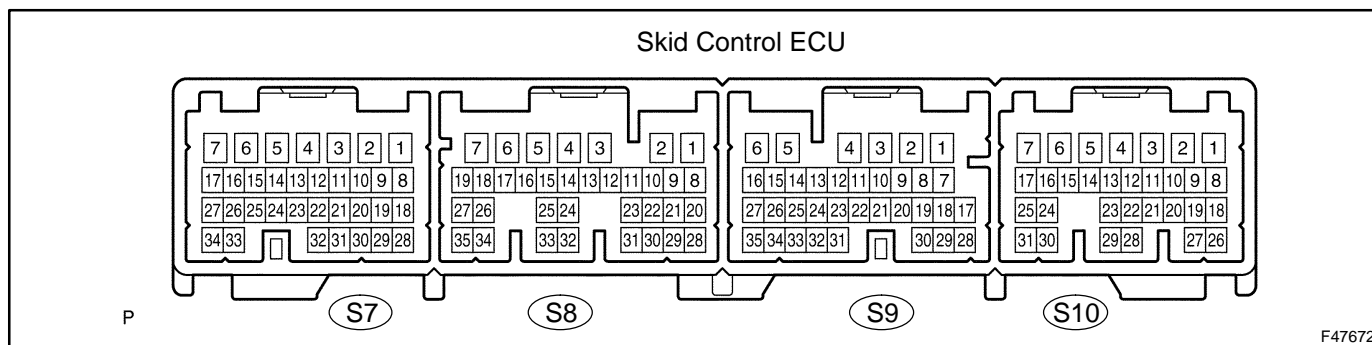
### 2. SKID CONTROL ECU ASSY INSPECTION

- (a) Measure the voltage between each terminal or between each terminal and the body ground.  
 (b) Connect the hand-held tester to the DLC3, and check the communication condition with the skid control ECU.  
 (c) Using an oscilloscope, check that the pulse generates between each terminal or between each terminal and the body ground.

#### NOTICE:

- Inspection should be performed from the back of the connector with the connector connected to the skid control ECU.
- The voltage between terminals of the brake actuator assy may become 0 V due to the fail safe function when the ECB warning light comes on (malfunctioning).

### SKID CONTROL ECU



**HINT:** Inspect the ECU from the wire harness side while the connector is connected.

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
R1+ (S7-2) - GND (S7-1)	P - W	Main relay power 1	Push start switch ON (READY)	9.1 to 13.6 V
BS1 (S7-3) - GND (S7-1)	B - W	Battery source 1	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	8.8 to 14 V
SMC1 (S7-4) - GND (S7-1)	Y - W	Master cut solenoid 1 output	Push start switch ON (READY) Brake pedal depressed approx. 1.5 sec. after pushing start switch ON (READY)	Below 1.5 V
+BCTY (S7-5) - GND (S7-1)	V - W	Courtesy power input	Driver door open → close	Approx. 5 sec. 8 to 16 V → Below 1 V
SLAFR- (S7-6) - GND (S7-1)	W - W	FR solenoid (-) output	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	Below 1.5 V
SLAFR+ (S7-7) - GND (S7-1)	R - W	FR solenoid (+) output	Push start switch ON (READY) Brake pedal depressed approx. 1.5 sec. after pushing start switch ON (READY)	Pulse generation (see waveform 1)
E (S7-8) - GND (S7-1)	L - W	Pressure sensor ground	Push start switch OFF	Below 1 Ω
VCM1 (S7-9) - GND (S7-1)	P - W	Pressure sensor power	Push start switch ON (READY)	4.75 to 5.25 V

## DIAGNOSTICS - ELECTRONICALLY CONTROLLED BRAKE SYSTEM

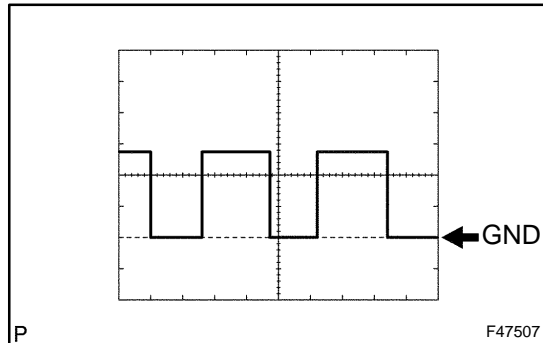
MR1+ (S7-11) - GND (S7-1)	GR - W	Motor relay power 1	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	8.8 to 14 V
SR1 (S7-12) - GND (S7-1)	L - W	Main relay output 1	Push start switch ON (READY) Approx. 1.5 sec. or more after pushing start switch ON (READY)	Below 1 V
SCSS (S7-13) - GND (S7-1)	BR - W	Stroke simulator cut solenoid output	Push start switch ON (READY) Brake pedal depressed	Below 1.5 V
SLARL+ (S7-15) - GND (S7-1)	L - W	RL solenoid (+) output	Push start switch ON (READY) Brake pedal depressed approx. 1.5 sec. after pushing start switch ON (READY)	Pulse generation (see waveform 1)
SLRRL+ (S7-16) - GND (S7-1)	W - W	RL solenoid (+) output	Push start switch ON (READY) Brake pedal depressed approx. 1.5 sec. after pushing start switch ON (READY)	Pulse generation (see waveform 1)
SLRFR+ (S7-17) - GND (S7-1)	Y - W	FR solenoid (+) output	Push start switch ON (READY) After approx. 1.5 sec., brake pedal depressed → released	Pulse generation (see waveform 2)
PRL (S7-18) - GND (S7-1)	G - W	RL pressure sensor input	Push start switch ON (READY) Brake pedal released	0.3 to 0.8 V
SG1 (S7-20) - GND (S7-1)	BR - W	Pressure sensor shield ground 1	Push start switch OFF	Below 1 Ω
PACC (S7-21) - GND (S7-1)	W - W	Accumulator pressure sensor input	Push start switch ON (READY) After pump motor operates and stops by pedal operation	3.3 to 4.7 V
FR- (S7-22) - GND (S7-1)	L - W	FR sensor (-) input	Push start switch OFF	Below 1 Ω
PFR (S7-23) - GND (S7-1)	Y - W	FR pressure sensor input	Push start switch ON (READY) Brake pedal released	0.3 to 0.8 V
MR1 (S7-25) - GND (S7-1)	L - W	Motor relay output 1	Push start switch ON (READY) Pump motor is operating	Below 1.5 V
SLRRL- (S7-26) - GND (S7-1)	P - W	RL solenoid (-) output	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	Below 1.5 V
SLARL- (S7-27) - GND (S7-1)	LG - W	RL solenoid (-) output	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	Below 1.5 V
MTT (S7-29) - GND (S7-1)	R - W	Motor test input	Push start switch ON (READY) Pump motor is operating	3.5 V or higher
PMC1 (S7-30) - GND (S7-1)	R - W	Master pressure sensor input 1	Push start switch ON (READY) Brake pedal released	0.3 to 0.8 V
PCK1 (S7-31) - GND (S7-1)	B - W	Pressure sensor check output 1	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	4.75 to 5.25 V
FR+ (S7-32) - GND (S7-1)	P - W	FR sensor (+) input	Vehicle speed input	Pulse generation (see waveform 3)
SLRFR- (S7-34) - GND (S7-1)	B - W	FR solenoid (-) output	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	Below 1.5 V
+BI1 (S8-3) - GND (S8-1, 2)	B - W	Main relay power input 1	Push start switch OFF	10 to 14 V
+BO1 (S8-5) - GND (S8-1, 2)	Y - W	Main relay power output 1	Push start switch ON	8.8 to 14 V
IG1 (S8-7) - GND (S8-1, 2)	B - W	IG1 power	Push start switch ON	10 to 14 V

RSS (S8-10) - GND (S8-1, 2)	BR - W	Speed sensor shield ground	Push start switch OFF	Below 1 $\Omega$
BZ (S8-12) - GND (S8-1, 2)	BR - W	Warning buzzer output	Push start switch ON (READY) Buzzer is operating	Below 1 V
STP (S8-14) - GND (S8-1, 2)	R - W	Stop light switch signal input	Push start switch ON (READY) Brake pedal depressed → released	10 to 12 V → Below 1.5 V
CAN-L (S8-18) - GND (S8-1, 2)	W - W	CAN communication (Send and receive-)	Check DTC using hand-held tester	CAN communication's DTC is not output
CAN-H (S8-19) - GND (S8-1, 2)	B - W	CAN communication (Send and receive+)	Check DTC using hand-held tester	CAN communication's DTC is not output
FAIL (S8-20) - GND (S8-1, 2)	P - W	Capacitor communication (Receive)	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	Pulse generation (see waveform 5)
SP1 (S8-22) - GND (S8-1, 2)	V - W	Speed meter output	Vehicle speed input	Pulse generation (see waveform 4)
RL- (S8-27) - GND (S8-1, 2)	B - W	RL sensor (-) input	Push start switch OFF	Below 1 $\Omega$
D/G (S8-28) - GND (S8-1, 2)	W - W	Diagnosis output	Push start switch ON (READY)	9.1 to 13.6 V
ENA (S8-30) - GND (S8-1, 2)	B - W	Capacitor communication (Send)	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	Pulse generation (see waveform 6)
TS (S8-32) - GND (S8-1, 2)	L - W	Sensor diagnosis check input	Push start switch ON (READY)	Below 1.5 V → 9.1 to 13.6 V
VBZ (S8-33) - GND (S8-1, 2)	B - W	Warning buzzer power	Push start switch ON (READY)	9.1 to 13.6 V
RL+ (S8-35) - GND (S8-1, 2)	W - W	RL sensor (+) input	Vehicle speed input	Pulse generation (see waveform 3)
+BO2 (S9-4) - GND (S9-1, 2)	W - W-B	Main relay power output 2	Push start switch ON (READY)	8.8 to 14 V
+BI2 (S9-5) - GND (S9-1, 2)	R - W-B	Main relay power input 2	Push start switch OFF	10 to 14 V
VCSK (S9-6) - GND (S9-1, 2)	B - W-B	Stroke sensor power	Push start switch ON (READY)	3.75 to 4.95 V
SSK (S9-7) - GND (S9-1, 2)	Shielded - W-B	Stroke sensor shield ground	Push start switch OFF	Below 1 $\Omega$
SKG (S9-8) - GND (S9-1, 2)	W - W-B	Stroke sensor ground	Push start switch OFF	Below 1 $\Omega$
PKB (S9-14) - GND (S9-1, 2)	R - W-B	Parking brake signal input	Parking brake applied → released	Below 1.5 V → 9.1 to 13.6 V
SKS1 (S9-21) - GND (S9-1, 2)	R - W-B	Stroke sensor signal input 1	Push start switch ON (READY) Brake pedal released	0.46 to 1.35 V
SKS2 (S9-22) - GND (S9-1, 2)	G - W-B	Stroke sensor signal input 2	Push start switch ON (READY) Brake pedal released	2.56 to 4.35 V
RR- (S9-23) - GND (S9-1, 2)	B - W-B	RR sensor (-) input	Push start switch OFF	Below 1 $\Omega$
RR+ (S9-31) - GND (S9-1, 2)	W - W-B	RR sensor (+) input	Vehicle speed input	Pulse generation (see waveform 3)
SLAFL+ (S10-1) - GND (S10-4)	P - W-B	FL solenoid (+) output	Push start switch ON (READY) Brake pedal depressed approx. 1.5 sec. after pushing start switch ON (READY)	Pulse generation (see waveform 1)
SLAFL- (S10-2) - GND (S10-4)	O - W-B	FL solenoid (-) output	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	Below 1.5 V
SMC2 (S10-3) - GND (S10-4)	LG - W-B	Master cut solenoid 2 output	Push start switch ON (READY) Brake pedal depressed approx. 1.5 sec. after pushing start switch ON (READY)	Below 1.5 V

## DIAGNOSTICS - ELECTRONICALLY CONTROLLED BRAKE SYSTEM

IG2 (S10-5) - GND (S10-4)	O - W-B	IG2 power	Push start switch ON (READY)	10 to 14 V
LBL (S10-6) - GND (S10-4)	P - W-B	Brake fluid level switch input	Reservoir level switch OFF → ON	4 to 4.65 → Below 1.5 V
BS2 (S10-7) - GND (S10-4)	P - W-B	Battery source 2	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	8.8 to 14 V
SLRFL+ (S10-8) - GND (S10-4)	Y - W-B	FL solenoid (+) output	Push start switch ON (READY) After approx. 1.5 sec., brake pedal depressed → released	Pulse generation (see waveform 2)
SLARR- (S10-9) - GND (S10-4)	P - W-B	RR solenoid (-) output	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	Below 1.5 V
SG2 (S10-12) - GND (S10-4)	Shielded - W-B	Pressure sensor shield ground 2	Push start switch OFF	Below 1 Ω
FSS (S10-13) - GND (S10-4)	BR - W-B	Speed sensor shield ground	Push start switch OFF	Below 1 Ω
VCM2 (S10-14) - GND (S10-4)	B - W-B	Pressure sensor power 2	Push start switch ON (READY)	4.75 to 5.25 V
SR2 (S10-15) - GND (S10-4)	V - W-B	Main relay output 2	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	Below 1 V
R2+ (S10-17) - GND (S10-4)	Y - W-B	Main relay power 2	Push start switch ON (READY)	9.1 to 13.6 V
SLRRR- (S10-18) - GND (S10-4)	BR - W-B	RR solenoid (-) output	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	Below 1.5 V
SLARR+ (S10-19) - GND (S10-4)	V - W-B	RR solenoid (+) output	Push start switch ON (READY) Brake pedal depressed approx. 1.5 sec. after pushing start switch ON (READY)	Pulse generation (see waveform 1)
SLRRR+ (S10-20) - GND (S10-4)	R - W-B	RR solenoid (+) output	Push start switch ON (READY) Brake pedal depressed approx. 1.5 sec. after pushing start switch ON (READY)	Pulse generation (see waveform 1)
PCK2 (S10-21) - GND (S10-4)	L - W-B	Pressure sensor check output 2	Push start switch ON (READY)	4.75 to 5.25 V
FL- (S10-22) - GND (S10-4)	G - W-B	FL sensor (-) input	Push start switch OFF	Below 1 Ω
PFL (S10-23) - GND (S10-4)	R - W-B	FL pressure sensor input	Push start switch ON (READY) Brake pedal released	0.3 to 0.8 V
MR2+ (S10-25) - GND (S10-4)	R - W-B	Motor relay power 2	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	8.8 to Below 14 V
SLRFL- (S10-26) - GND (S10-4)	L - W-B	FL solenoid (-) output	Push start switch ON (READY) Approx. 1.5 sec. after pushing start switch ON (READY)	Below 1.5 V
PMC2 (S10-27) - GND (S10-4)	W - W-B	Master pressure sensor input 2	Push start switch ON (READY) Brake pedal released	0.3 to 0.8 V
FL+ (S10-28) - GND (S10-4)	R - W-B	FL sensor (+) input	Vehicle speed input	Pulse generation (see waveform 3)
E2 (S10-29) - GND (S10-4)	G - W-B	Pressure sensor ground 2	Push start switch OFF	Below 1 Ω

MR2 (S10-30) - GND (S10-4)	G - W-B	Motor relay output 2	Push start switch ON (READY) Pump motor is operating	Below 1.5 V
PRR (S10-31) - GND (S10-4)	Y - W-B	RR pressure sensor input	Push start switch ON (READY) Brake pedal released	0.3 to 0.8 V



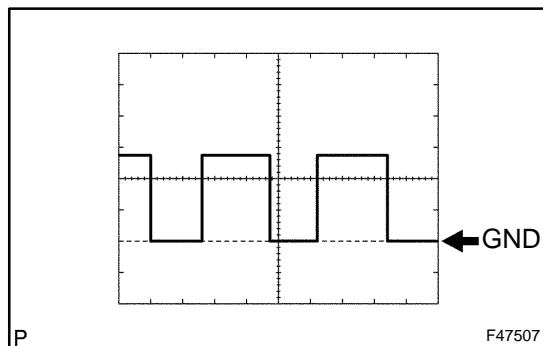
Waveform 1

**NOTICE:**

**Normal waveform is output only when BS 1 and 2 voltages are normal (10 to 14 V).**

**HINT:**

- While driving at approximately 12 mph (20 km/h).
- 5V/DIV, 200 ms/DIV.
- Brake pedal depressed.



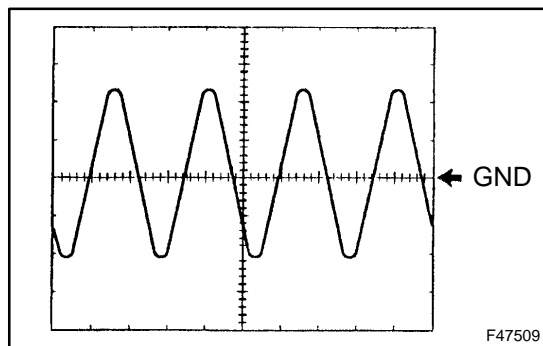
Waveform 2

**NOTICE:**

**Normal waveform is output only when BS 1 and 2 voltages are normal (10 to 14 V).**

**HINT:**

- While driving at approximately 12 mph (20 km/h).
- 5V/DIV, 200 ms/DIV.
- Brake pedal depress → released



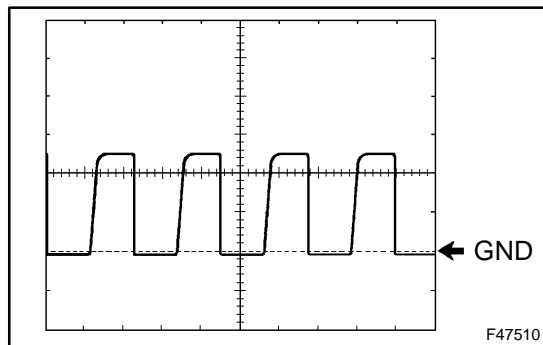
Waveform 3

**NOTICE:**

**As the vehicle speed (tire rotating speed) becomes faster the cycle becomes shorter and the output voltage larger.**

**HINT:**

- 1V/DIV, 2 ms/DIV.
- While driving at approximately 18 mph (30 km/h).



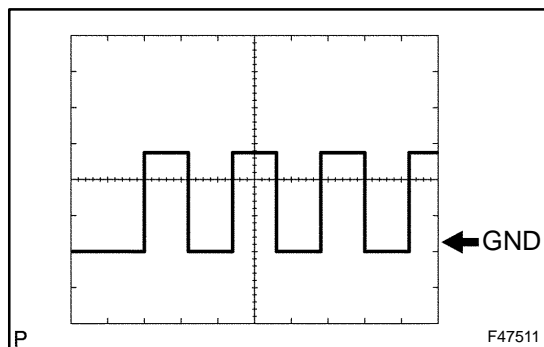
Waveform 4

**NOTICE:**

**As the vehicle speed (tire rotating speed) becomes faster the cycle becomes shorter.**

**HINT:**

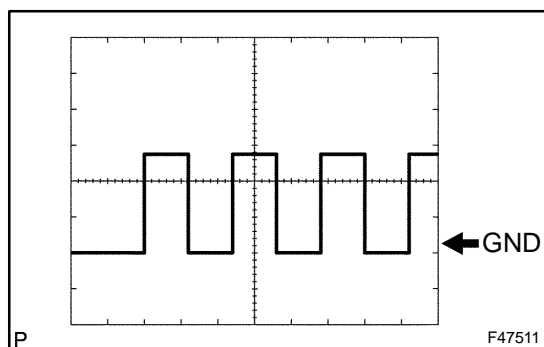
- 5V/DIV, 50 ms/DIV.
- While driving at approximately 12 mph (20 km/h).



Waveform 5

HINT:

- 5V/DIV, 200 ms/DIV.
- Power switch ON (READY)



Waveform 6

HINT:

- 5V/DIV, 100 ms/DIV.
- Power switch ON (READY)