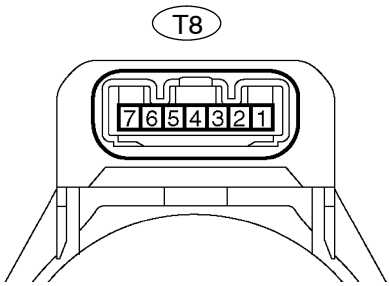
05HSR–01

TERMINALS OF ECU

1. CHECK TRANSPONDER KEY AMPLIFIER



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(a) Disconnect the T8 amplifier connector.

(b) Measure the resistance between the terminal of the wire harness side connector and body ground.

Standard:

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
GND (T8–7) – Body ground	V – Body ground	Ground	Constant	Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.

(c) Reconnect the T8 amplifier connector.

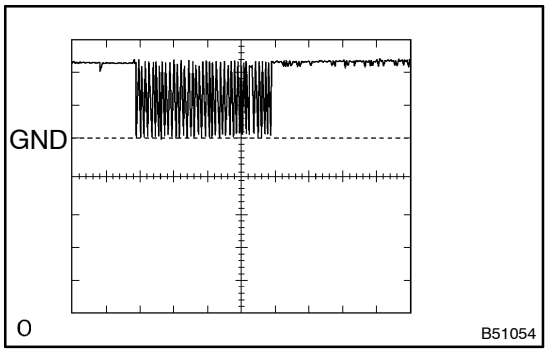
(d) Measure the voltage and resistance between each terminal of the connector and body ground.

Standard:

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
VC5 (T8–1) – GND (T8–7)	R – V	Power source	No key in ignition key cylinder → Key inserted	0 V → 4.6 to 5.4 V
RXCK (T8–3) – GND (T8–7)	L*1 – V L–W*2 – V	Demodulated signal of key code data	No key in ignition key cylinder → Key inserted	Pulse generation (see waveform 1)
CODE (T8–4) – GND (T8–7)	O – V	Demodulated signal of key code data	No key in ignition key cylinder → Key inserted	Pulse generation (see waveform 2)
TXCT (T8–5) – GND (T8–7)	Y–B – V	Key code output signal	No key in ignition key cylinder → Key inserted	Pulse generation (see waveform 3)
GND (T8–7) – Body ground	V – Body ground	Ground	Constant	Below 1 Ω

If the result is not as specified, the amplifier may have a malfunction.

*1: LHD *2: RHD



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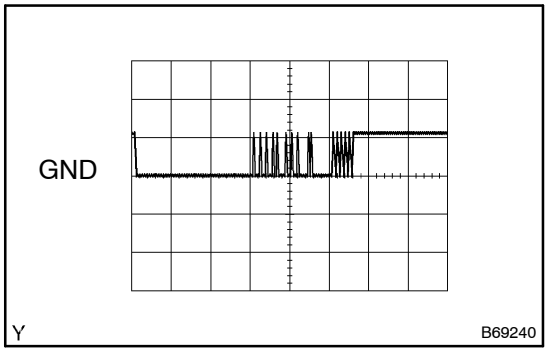
(e) Inspect using an oscilloscope.

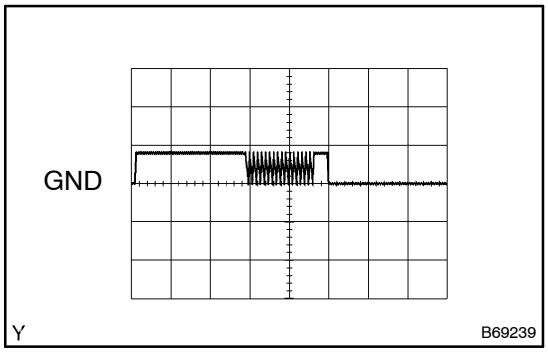
Waveform 1 (Reference):

Terminal	RXCK – GND
Tool Setting	5 V/DIV., 50 ms/DIV.
Condition	No key in ignition key cylinder → Key inserted



Waveform 2 (Reference):

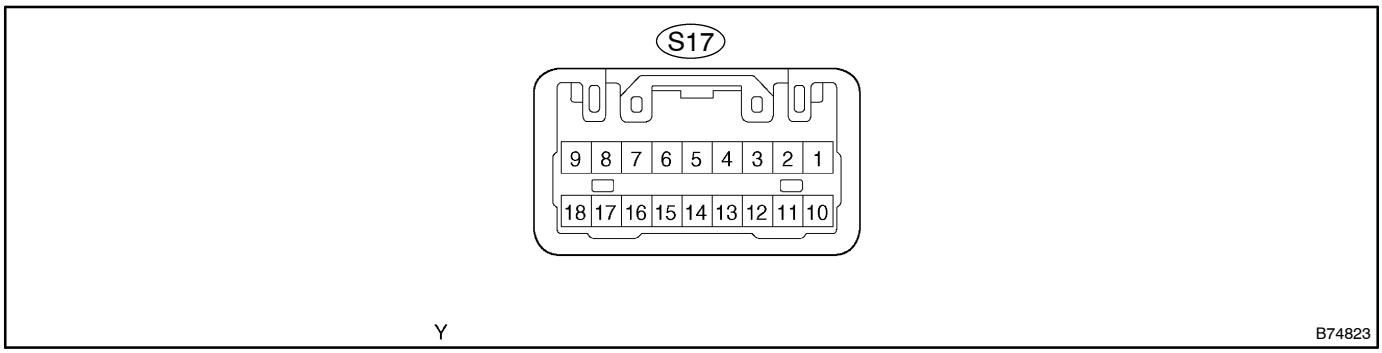
Terminal	CODE – GND
Tool Setting	10 V/DIV., 20 ms/DIV.
Condition	No key in ignition key cylinder → Key inserted



Waveform 3 (Reference):

Terminal	TXCT – GND
Tool Setting	5 V/DIV., 20 ms/DIV.
Condition	No key in ignition key cylinder → Key inserted

2. CHECK STEERING LOCK ECU



(a) Disconnect the S17 ECU connector.

(b) Measure the voltage and resistance between each terminal of the wire harness side connector and body ground.

Standard:

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
AGND (S17–18) – Body ground	V – Body ground	Ground	Constant	Below 1 Ω
CPUB (S17–1) – GND (S17–9)	V–Y – W–B	Battery	Constant	10 to 14 V
IG2 (S17–2) – AGND (S17–18)	B – V	Ignition switch	Ignition switch OFF → ON	0 V → 10 to 14 V
KSW (S46–12) – AGND (S17–18)	LG–B – V	Unlock warning switch	No key in ignition key cylinder → Key inserted	10 kΩ or higher → Below 1 Ω
PUSH (S17–11) – AGND (S17–18)	P–B – V	Ignition push start switch	Ignition switch not pushed → pushed	10 kΩ or higher → Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.

(c) Reconnect the S17 ECU connector.

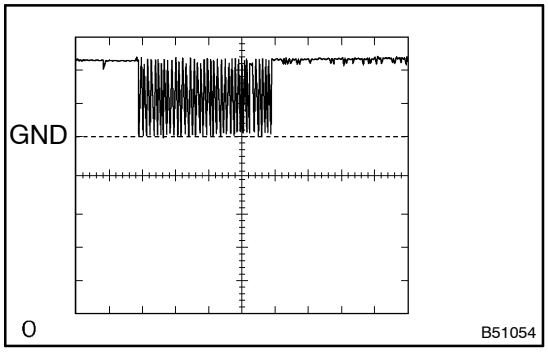
(d) Measure the voltage between each terminal of the connector

Standard:

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
KSW (S17–12) – AGND (S17–18)	LG–B – V	Unlock warning switch	No key in ignition key cylinder → Key inserted	10 to 14 V → 0 V
VC5 (S17–7) – AGND (S17–18)	R – V	Power source	Ignition switch OFF → ON	0 V → 4.6 to 5.4 V
RXCK (S17–8) – AGND (S17–18)	L*1 – V L–W*2 – V	Transponder key amplifier communication signal	Ignition switch OFF → ON	Pulse generation (see waveform 1)
TXCT (S17–16) – AGND (S17–18)	Y–B – V	Transponder key amplifier communication signal	Ignition switch OFF → ON	Pulse generation (see waveform 2)
CODE (S17–17) – AGND (S17–18)	O – V	Transponder key amplifier communication signal	Ignition switch OFF → ON	Pulse generation (see waveform 3)
EFIO (S17–13) – AGND (S17–18)	GR–G – V	ECM output signal	Ignition switch OFF → ON	Pulse generation (see waveform 4)
EFII (S17–8) – AGND (S17–18)	GR–R – V	ECM input signal	Ignition switch OFF → ON	Pulse generation (see waveform 5)

If the result is not as specified, the ECU may have a malfunction.

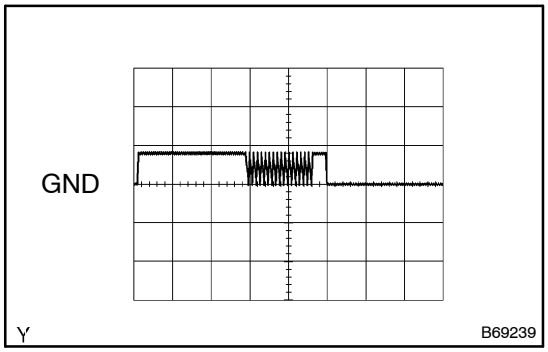
*1: LHD *2: RHD



(e) Inspect using an oscilloscope.

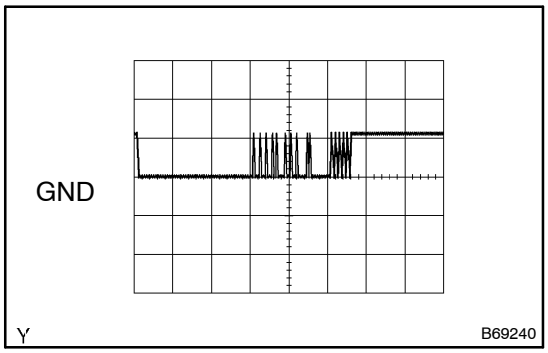
Waveform 1 (Reference):

Terminal	RXCK – GND
Tool Setting	5 V/DIV., 10 ms/DIV.
Condition	Ignition switch OFF → ON



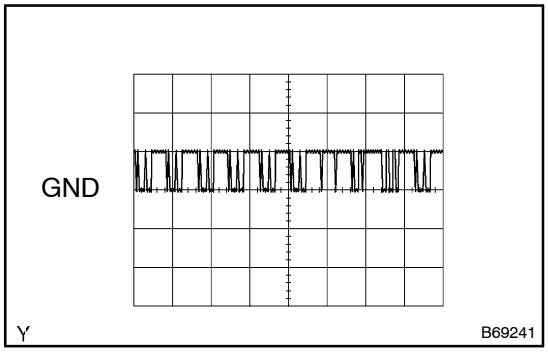
Waveform 2 (Reference):

Terminal	TXCT – GND
Tool Setting	5 V/DIV., 20 ms/DIV.
Condition	Ignition switch OFF → ON



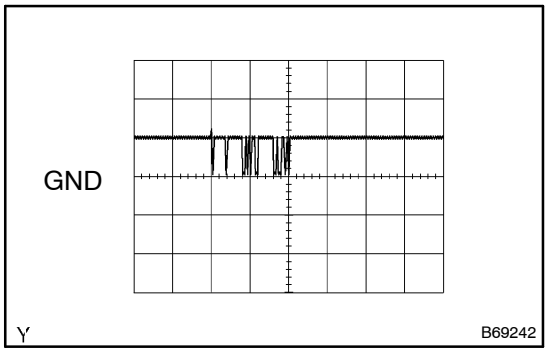
Waveform 3 (Reference):

Terminal	CODE – GND
Tool Setting	10 V/DIV., 20 ms/DIV.
Condition	Ignition switch OFF → ON



Waveform 4 (Reference):

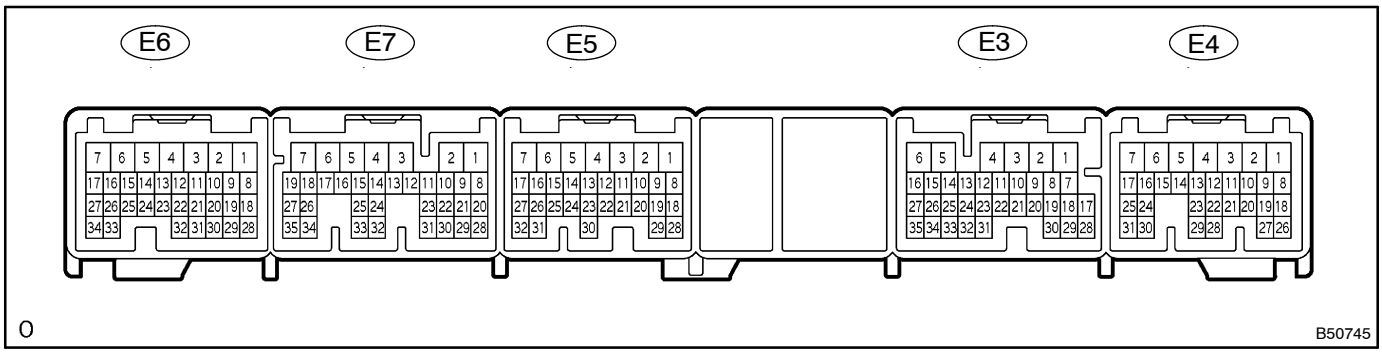
Terminal	EFIO – GND
Tool Setting	10 V/DIV., 500 ms/DIV.
Condition	Ignition switch OFF → ON



Waveform 5 (Reference):

Terminal	EFII – GND
Tool Setting	10 V/DIV., 500 ms/DIV.
Condition	Ignition switch OFF → ON

3. CHECK ECM



(a) Disconnect the E3 and E5 ECM connectors.

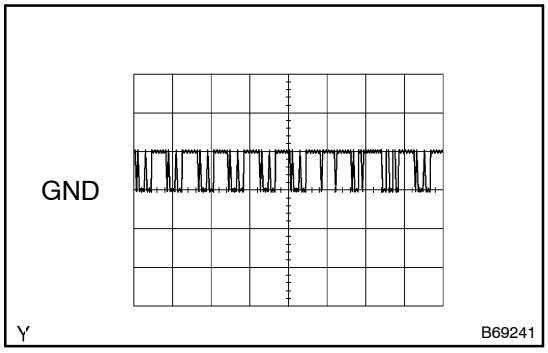
(b) Measure the voltage and resistance between each terminal of the wire harness side connectors and body ground.

Standard:

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
IMI (E3–6) – E01 (E5–2)	B–Y*1 – W–B GR–G*2 – W–B	Steering lock ECU input signal	No key in ignition key cylinder → Key inserted	Pulse generation (see waveform 1)
IMO (E3–7) – E01 (E5–2)	GR–R – W–B	Steering lock ECU output signal	No key in ignition key cylinder → Key inserted	Pulse generation (see waveform 2)
E01 (E5–2) – Body ground	W–B – Body ground	Ground	Constant	Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.

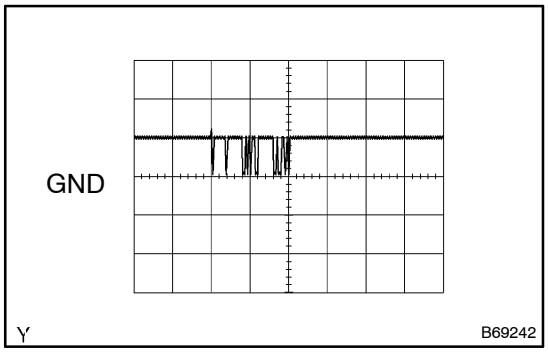
*1: LHD *2: RHD



(c) Inspect using an oscilloscope.

Waveform 1 (Reference):

Terminal	IMI – GND
Tool Setting	10 V/DIV., 500 ms/DIV.
Condition	No key in ignition key cylinder → Key inserted



Waveform 2 (Reference):

Terminal	IMO – GND
Tool Setting	10 V/DIV., 500 ms/DIV.
Condition	No key in ignition key cylinder → Key inserted