3. Keyless Entry System

A: WIRING DIAGRAM

1. KEYLESS ENTRY

<Ref. to WI-161, WIRING DIAGRAM, Keyless Entry System.>

B: ELECTRICAL SPECIFICATION

1. KEYLESS ENTRY CONTROL MODULE

TO (B176)

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

SL-00469
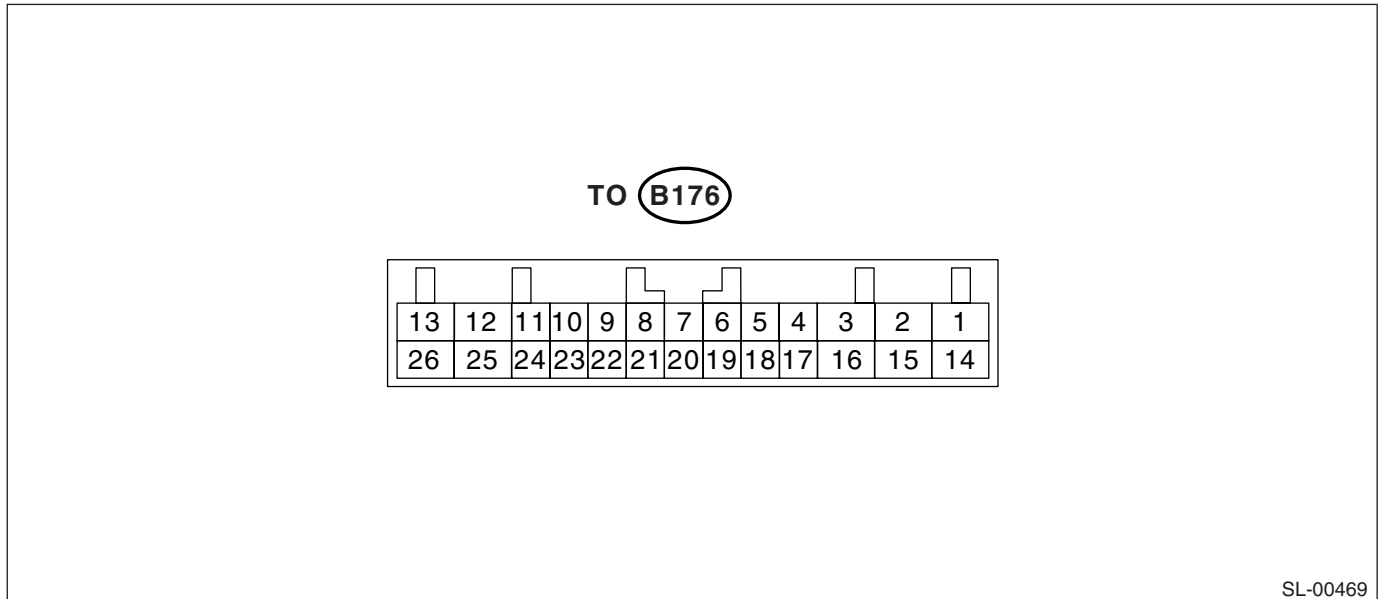
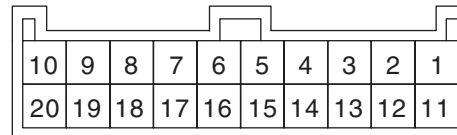| Content	Terminal No.	Measuring condition
Turn signal light LH	1 (OUTPUT)	Battery voltage is present when the keyless transmitter UNLOCK/DISARM or LOCK/ARM button is pressed.
Power supply (Back-up)	2	Battery voltage is constantly present.
Keyless buzzer	3 (OUTPUT)	0 V is present when the keyless transmitter UNLOCK/DISARM or LOCK/ARM button is pressed.
Door lock switch	4 (INPUT)	0 V is present when the door lock switch is turned to UNLOCK.
Door lock switch	5 (INPUT)	0 V is present when the door lock switch is turned to LOCK.
Door switch	6 (INPUT)	0 V is present when opening one of the doors or rear gate.
Key warning switch	9 (INPUT)	Battery voltage is present when inserting the key into ignition switch.
Ignition switch (ON)	10 (INPUT)	Battery voltage is present when ignition switch is turned to ON.
Turn signal light RH	13 (OUTPUT)	Battery voltage is present when the keyless transmitter UNLOCK/DISARM or LOCK/ARM button is pressed.
Ground	14	0 V is constantly present.
Body integrated unit	18 (OUTPUT)	Battery voltage is present when the keyless transmitter UNLOCK/DISARM button is pressed.
Body integrated unit	19 (OUTPUT)	Battery voltage is present when the keyless transmitter LOCK/ARM button is pressed.
Horn relay	24 (OUTPUT)	0 V is present when the keyless transmitter LOCK/ARM button is pressed for approx. 2 seconds, and the panic alarm is operated.
Power supply (Back-up)	26	Battery voltage is constantly present.

Keyless Entry System

2. BODY INTEGRATED UNIT

8	7	6	5	4	3	2	1
16	15	14	13	12	11	10	9

a

10	9	8	7	6	5	4	3	2	1
20	19	18	17	16	15	14	13	12	11
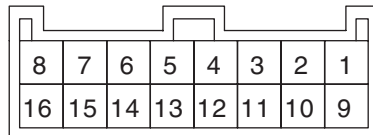
b

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Description	Terminal No.	Measuring condition
Door switch (Except driver's door)	b7 (INPUT)	0 V is present when opening the doors. (Except driver's door).
Door switch (Driver's door)	b8 (INPUT)	0 V is present when opening the driver's side door.
Door lock switch	b11 (INPUT)	0 V is present when the door lock switch is turned to UNLOCK.
Door lock switch	b12 (INPUT)	0 V is present when the door lock switch is turned to LOCK.
Keyless entry control module (LOCK)	b13 (INPUT)	Battery voltage is present when the keyless transmitter LOCK/ARM button is pressed.
Keyless entry control module (UNLOCK)	b14 (INPUT)	Battery voltage is present when the keyless transmitter UNLOCK/ DISARM button is pressed.
Ignition switch (ON)	b19 (INPUT)	Battery voltage is present when ignition switch is turned to ON.
Key warning switch	b20 (INPUT)	Battery voltage is present when inserting the key into ignition switch.
Power supply	a2	Battery voltage is constantly present.
Ground	a4	0 V is constantly present.
Room light	a5 (OUTPUT)	0 V is present when the keyless transmitter UNLOCK/DISARM button is pressed.
Door and rear gate lock actuator	a6 (OUTPUT)	Battery voltage is present when the keyless transmitter LOCK/ARM button is pressed.
Door and rear gate lock actuator (Except driver side)	a7 (OUTPUT)	Battery voltage is present when the keyless transmitter UNLOCK/ DISARM button is pressed twice.
Door lock actuator (Driver side)	a8 (OUTPUT)	Battery voltage is present when the keyless transmitter UNLOCK/ DISARM button is pressed once.
Ground	a13	0 V is constantly present.

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C: INSPECTION

1. SYMPTOM CHART

Symptom	Repair order		Reference
None of the functions of the keyless entry system operate.	1. Check the keyless transmitter battery and function.		<Ref. to SL-14, CHECK KEYLESS TRANSMITTER BATTERY AND FUNCTION, INSPECTION, Keyless Entry System.>
	2. Check the fuse.		<Ref. to SL-15, CHECK FUSE, INSPECTION, Keyless Entry System.>
	3. Check the keyless entry control module power supply and ground circuit.		<Ref. to SL-16, CHECK POWER SUPPLY AND GROUND CIRCUIT, INSPECTION, Keyless Entry System.>
	4. Replace the keyless entry control module.		<Ref. to SL-49, Keyless Entry Control Module.>
The keyless transmitter cannot be registered.	1. Check the keyless transmitter battery and function.		<Ref. to SL-14, CHECK KEYLESS TRANSMITTER BATTERY AND FUNCTION, INSPECTION, Keyless Entry System.>
	2. Check the ignition switch circuit.		<Ref. to SL-16, CHECK IGNITION SWITCH CIRCUIT, INSPECTION, Keyless Entry System.>
	3. Check the door switch.		<Ref. to SL-17, CHECK DOOR SWITCH, INSPECTION, Keyless Entry System.>
	4. Replace the keyless entry control module.		<Ref. to SL-49, Keyless Entry Control Module.>
Door lock or unlock does not operate. NOTE: If the door lock control system does not operate when using the door lock switch, check the door lock control system. <Ref. to SL-8, INSPECTION, Door Lock Control System.>	1. Check the keyless transmitter battery and function.		<Ref. to SL-14, CHECK KEYLESS TRANSMITTER BATTERY AND FUNCTION, INSPECTION, Keyless Entry System.>
	2. Check the key warning switch.		<Ref. to SL-18, CHECK KEY WARNING SWITCH, INSPECTION, Keyless Entry System.>
	3. Check the door switch.		<Ref. to SL-17, CHECK DOOR SWITCH, INSPECTION, Keyless Entry System.>
	4. Check the output signal of the body integrated unit.		<Ref. to SL-19, CHECK OUTPUT SIGNAL OF THE BODY INTEGRATED UNIT, INSPECTION, Keyless Entry System.>
	5. Replace the keyless entry control module.		<Ref. to SL-49, Keyless Entry Control Module.>
The panic alarm does not operate.	1. Check the keyless transmitter battery and function.		<Ref. to SL-14, CHECK KEYLESS TRANSMITTER BATTERY AND FUNCTION, INSPECTION, Keyless Entry System.>
	2. Check the horn operation.		<Ref. to SL-20, CHECK HORN OPERATION, INSPECTION, Keyless Entry System.>
	3. Replace the keyless entry control module.		<Ref. to SL-49, Keyless Entry Control Module.>
Buzzer and hazard light do not operate.	1. Check the buzzer function.		<Ref. to SL-15, CHECK BUZZER CHIRP SETTING, INSPECTION, Keyless Entry System.>
	2. Check buzzer and hazard light operation.	Buzzer	<Ref. to SL-21, CHECK KEYLESS BUZZER, INSPECTION, Keyless Entry System.>
		Hazard light	<Ref. to SL-20, CHECK HAZARD LIGHT OPERATION, INSPECTION, Keyless Entry System.>
	3. Replace the keyless entry control module.		<Ref. to SL-49, Keyless Entry Control Module.>
The room light does not operate.	1. Check the room light operation.		<Ref. to SL-19, CHECK ROOM LIGHT OPERATION, INSPECTION, Keyless Entry System.>
	2. Replace the keyless entry control module.		<Ref. to SL-49, Keyless Entry Control Module.>
The door warning does not operate.	1. Check the door switch.		<Ref. to SL-17, CHECK DOOR SWITCH, INSPECTION, Keyless Entry System.>
	2. Check the buzzer operation.		<Ref. to SL-21, CHECK KEYLESS BUZZER, INSPECTION, Keyless Entry System.>
	3. Replace the keyless entry control module.		<Ref. to SL-49, Keyless Entry Control Module.>

2. CHECK KEYLESS TRANSMITTER BATTERY AND FUNCTION

	Step	Check	Yes	No
1	**CHECK KEYLESS TRANSMITTER BATTERY.** 1) Remove the battery from the keyless transmitter. <Ref. to SL-51, REMOVAL, Keyless Transmitter.> 2) Check the battery voltage. <Ref. to SL-51, INSPECTION, Keyless Transmitter.>	Is the voltage more than 2.5 V?	Go to step **2**.	Replace the keyless transmitter battery.
2	**CHECK KEYLESS TRANSMITTER.** Register a keyless transmitter which operated normally on other vehicles to the inspection target vehicle. <Ref. to SL-52, REGISTRATION OF KEYLESS TRANSMITTER WITH SUBARU SELECT MONITOR, REPLACEMENT, Keyless Transmitter.> 1) Close all the doors and rear gate of inspection target vehicle. 2) Using the keyless transmitter, lock and unlock the doors and rear gate of vehicle.	Is the inspection target vehicle operates lock and unlock normally?	Go to step **3**.	Due to vehicle malfunction, continue the keyless entry system diagnosis.
3	**CHECK KEYLESS TRANSMITTER.** Register the keyless transmitter of the inspection target vehicle to an other vehicle for which the keyless system operates normally. <Ref. to SL-52, REGISTRATION OF KEYLESS TRANSMITTER WITH SUBARU SELECT MONITOR, REPLACEMENT, Keyless Transmitter.>	Is the keyless transmitter registered correctly?	Go to step **4**.	Replace the keyless transmitter. <Ref. to SL-52, REGISTRATION OF KEYLESS TRANSMITTER WITH SUBARU SELECT MONITOR, REPLACEMENT, Keyless Transmitter.>
4	**CHECK KEYLESS TRANSMITTER.** Check the registered keyless transmitter. 1) Close all the doors and rear gate of the vehicle for which the keyless system is known to operate normally. 2) Using the keyless transmitter, lock and unlock the doors and rear gate of vehicle.	Does the vehicle operates lock and unlock normally?	The keyless transmitter is OK.	Replace the keyless transmitter. <Ref. to SL-52, REGISTRATION OF KEYLESS TRANSMITTER WITH SUBARU SELECT MONITOR, REPLACEMENT, Keyless Transmitter.>

CAUTION:
Be sure to reset the keyless transmitter of the other vehicle that was registered to the inspection target vehicle, and the vehicle for which the keyless transmitter was registered for inspection, to the condition before performing the inspection. (Register the keyless transmitter again.)

3. CHECK BUZZER CHIRP SETTING

	Step	Check	Yes	No
1	**CHECK BUZZER CHIRP SETTING.** 1) Check the current setting of the buzzer chirp. 2) Remove the key from ignition switch. 3) Close all the doors and the rear gate. 4) Press the LOCK/ARM or UNLOCK/DISARM button.	Does the buzzer sound?	The buzzer function is OK.	Go to step **2**.
2	**CHECK BUZZER CHIRP SETTING.** NOTE: When steps 1) to 5) are performed with the answer-back buzzer setting OFF, the answer-back buzzer setting is switched to ON. 1) Open the driver's door, and remove the key from ignition switch. 2) Turn the center door lock switch to UNLOCK, then insert the ignition key. 3) Remove and insert the key five times within 10 seconds from the step 2). 4) Close the driver's door within 10 seconds from the 5th of the step 3). 5) Switch the answer-back buzzer setting (ON⇔OFF), then hazard light will blink three times. NOTE: If the driver's door is not closed within 10 seconds, the hazard light blinks once. In this case, retry from the beginning. 6) Press the LOCK/ARM or UNLOCK/DISARM button.	Does the buzzer sound?	The buzzer function is OK.	Check the keyless transmitter function. <Ref. to SL-14, CHECK KEYLESS TRANSMITTER BATTERY AND FUNCTION, INSPECTION, Keyless Entry System.>

4. CHECK FUSE

	Step	Check	Yes	No
1	**CHECK FUSE.** Remove and visually check the fuses No. 6 (in the main fuse box) and No. 3 (in the fuse & relay box).	Is the fuse blown out?	Replace the fuse with a new one.	Check the power supply and ground circuit. <Ref. to SL-16, CHECK POWER SUPPLY AND GROUND CIRCUIT, INSPECTION, Keyless Entry System.>

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5. CHECK POWER SUPPLY AND GROUND CIRCUIT

	Step	Check	Yes	No

1	**CHECK POWER SUPPLY.**
	1) Disconnect the keyless entry control module harness connector.
	2) Measure the voltage between harness connector terminal and chassis ground.
	   Connector & terminal
	     (B176) No. 2, 26 (+) — Chassis ground (–):
		Is the voltage more than 10 V?	Go to step **2**.	Check the harness for open circuits and shorts between the keyless entry control module and fuse.

2	**CHECK GROUND CIRCUIT.**
	Measure the resistance between harness connector terminal and chassis ground.
	   Connector & terminal
	     (B176) No. 14 — Chassis ground:
		Is the resistance less than 10 Ω?	The power supply and ground circuit are OK.	Repair the harness.

6. CHECK IGNITION SWITCH CIRCUIT

	Step	Check	Yes	No

1	**CHECK IGNITION SWITCH CIRCUIT**
	1) Disconnect the keyless entry control module harness connector.
	2) Turn the ignition switch to ON.
	3) Measure the voltage between harness connector terminal and chassis ground.
	   Connector & terminal
	     (B176) No. 10 (+) — Chassis ground (–):
		Is the voltage more than 10 V?	Ignition switch function is normal.	Check the harness for open circuits or shorts between the keyless entry control module and the ignition relay.

7. CHECK DOOR SWITCH

	Step	Check	Yes	No
1	**CHECK DOOR SWITCH CIRCUIT.** Measure the voltage between the keyless entry control module harness connector terminal and the body ground. **Connector & terminal** **Front and rear door, rear gate:** **(B176) No. 6 (+) — Chassis ground (–):**	Is the voltage 0 V when any door or rear gate is opened?	Go to step **2**.	Go to step **3**.
2	**CHECK DOOR SWITCH CIRCUIT.** Measure the voltage between the keyless entry control module harness connector terminal and the body ground. **Connector & terminal** **Front and rear door, rear gate:** **(B176) No. 6 (+) — Chassis ground (–):**	Is the voltage more than 10 V when any door or rear gate is closed?	The door switch is OK.	Go to step **3**.
3	**CHECK DOOR SWITCH.** 1) Disconnect the door switch harness connector. 2) Measure the resistance between door switch terminals. **Terminals** **Door switch No. 1 — No. 3:** **Rear gate latch switch No. 1 — No. 2:**	Is the resistance more than 1 MΩ when door switch is pushed?	Go to step **4**.	Replace the door switch.
4	**CHECK DOOR SWITCH.** Measure the resistance between door switch terminals. **Terminals** **Door switch No. 1 — No. 3:** **Rear gate latch switch No. 1 — No. 2:**	Is the resistance less than 1 Ω when door switch is released?	Check the harness for open circuits and shorts between the keyless entry control module and the door switch.	Replace the door switch.

Keyless Entry System

8. CHECK KEY WARNING SWITCH

	Step	Check	Yes	No
1	**CHECK FUSE.** Remove and visually check the fuse No. 6 (in the main fuse box).	Is the fuse blown out?	Replace the fuse with a new one.	Go to step **2**.

2	**CHECK KEY WARNING SWITCH CIRCUIT.**
	1) Disconnect the keyless entry control module harness connector.
	2) Insert the key into ignition switch. (LOCK position)
	3) Measure the voltage between harness connector terminal and chassis ground.
	   Connector & terminal
	     (B176) No. 9 (+) — Chassis ground (–):
		Is the voltage more than 10 V?	Go to step **3**.	Go to step **4**.

3	**CHECK KEY WARNING SWITCH CIRCUIT.**
	1) Remove the key from ignition switch.
	2) Measure the voltage between harness connector terminal and chassis ground.
	   Connector & terminal
	     (B176) No. 9 (+) — Chassis ground (–):
		Is the voltage 0 V?	The key warning switch is OK.	Go to step **4**.

4	**CHECK KEY WARNING SWITCH.**
	1) Disconnect the key warning switch harness connector.
	2) Insert the key into ignition switch. (LOCK position)
	3) Measure the resistance between key warning switch terminals.
	   Terminals
	     No. 1 — No. 2:
		Is the resistance less than 1 Ω?	Go to step **5**.	Replace the key warning switch.

5	**CHECK KEY WARNING SWITCH.**
	1) Remove the key from ignition switch.
	2) Measure the resistance between key warning switch terminals.
	   Terminals
	     No. 1 — No. 2:
		Is the resistance more than 1 MΩ?	Check the following:
			• Harness for open circuits and shorts between the key warning switch and fuse.
			• Harness for open circuits and shorts between the keyless entry control module and the key warning switch.
				Replace the key warning switch.

9. CHECK ROOM LIGHT OPERATION

	Step	Check	Yes	No
1	**CHECK ROOM LIGHT OPERATION.** Make sure the room light illuminates when the room light switch is turned to ON.	Does the room light illuminate?	Go to step **2**.	Check the room light circuit.
2	**CHECK HARNESS BETWEEN ROOM LIGHT AND BODY INTEGRATED UNIT.** 1) Disconnect the body integrated unit harness connector and room light harness connector. 2) Measure the resistance between the body integrated unit harness connector terminal and room light harness connector terminal. ***Connector & terminal*** ***(B280) No. 5 — (R52) No. 2:***	Is the resistance less than 10 Ω?	The room light operation circuit is OK.	Check the harness for open or short circuit between body integrated unit and the room light.

10.CHECK OUTPUT SIGNAL OF THE BODY INTEGRATED UNIT

	Step	Check	Yes	No
1	**CHECK OUTPUT SIGNAL.** Measure the voltage between the keyless entry control module harness connector terminal and the chassis ground when the UNLOCK/DISARM buttons of the keyless transmitter are pressed. ***Connector & terminal*** ***(B176) No. 18 (+) — Chassis ground (–):***	Is the voltage more than 10 V?	Go to step **2**.	Replace the keyless entry control module.
2	**CHECK OUTPUT SIGNAL.** Measure the voltage between the keyless entry control module harness connector terminal and the chassis ground when the LOCK/ARM buttons of the keyless transmitter are pressed. ***Connector & terminal*** ***(B176) No. 19 (+) — Chassis ground (–):***	Is the voltage more than 10 V?	Go to step **3**.	Replace the keyless entry control module.
3	**CHECK HARNESS BETWEEN KEYLESS ENTRY CONTROL MODULE AND BODY INTEGRATED UNIT.** 1) Disconnect the keyless entry control module harness connector and the body integrated unit harness connector. 2) Measure the resistance between keyless entry control module harness connector terminal and body integrated unit harness connector terminal. ***Connector & terminal*** ***(B176) No. 18 — (B281) No. 14:*** ***(B176) No. 19 — (B281) No. 13:***	Is the resistance less than 10 Ω?	Replace the body integrated unit.	Check the harness for open or short circuit between the keyless entry control module and the body integrated unit.

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Keyless Entry System

11.CHECK HORN OPERATION

Step		Check	Yes	No
1	**CHECK HORN OPERATION.** Make sure the horn sounds when the horn switch is pushed.	Does the horn sound?	Go to step **2**.	Check the horn circuit.
2	**CHECK HORN OPERATION.** 1) Disconnect the keyless entry control module harness connector. 2) Connect the harness connector terminal to ground using a suitable lead wire. **Connector & terminal** **(B176) No. 24 (+) — Chassis ground (–):**	Does the horn sound?	Replace the keyless entry control module.	Check the harness for open circuits or shorts between the keyless entry control module and the horn relay.

12.CHECK HAZARD LIGHT OPERATION

Step		Check	Yes	No
1	**CHECK HAZARD LIGHT OPERATION.** Make sure the hazard light blinks when hazard switch is turned to ON.	Does the hazard light blink?	Go to step **2**.	Check the hazard light circuit.
2	**CHECK OUTPUT SIGNAL.** 1) Remove the key from ignition switch. 2) Close all the doors and the rear gate. 3) Measure the voltage between the keyless entry control module harness connector terminal and the chassis ground when the LOCK/ARM buttons of the keyless transmitter are pressed. **Connector & terminal** **(B176) No. 1, No. 13 (+) — Chassis ground (–):**	Is the voltage more than 10 V?	Check the harness for open circuits or shorts between the keyless entry control module and the turn signal light.	Replace the keyless entry control module.

13.CHECK KEYLESS BUZZER

Step	Check	Yes	No
1 **CHECK FUSE.** Remove and check the fuse No. 2 (in the main fuse box).	Is the fuse blown out?	Replace the fuse with a new one.	Go to step **2**.

2   **CHECK FOR POWER SUPPLY OF KEYLESS BUZZER.**
1) Disconnect the connector from keyless buzzer.
2) Measure the voltage between the keyless buzzer harness connector terminal and the body ground.
   Connector & terminal
   (F102) No. 2 (+) — Chassis ground (–):
	Is the voltage more than 10 V?	Go to step **3**.	Check for open or short circuit in the harness between fuse and keyless buzzer.

3   **CHECK THE HARNESS BETWEEN KEYLESS BUZZER AND KEYLESS ENTRY CONTROL MODULE.**
1) Disconnect the connector from the keyless entry control module.
2) Measure the resistance of the harness between keyless buzzer and keyless entry control module.
   Connector & terminal
   (F102) No. 1 — (B176) No. 3:
	Is the resistance more than 10 Ω?	Go to step **4**.	Repair the harness between keyless buzzer and keyless entry control module.

4 **CHECK KEYLESS BUZZER.** Connect the positive terminal (+) of the battery to No. 2 terminal of the keyless buzzer connector, and the negative (–) terminal to No. 1 terminal. Check the buzzer sounds.	Does the buzzer ring?	Replace the keyless entry control module.	Replace the keyless buzzer.