Component Procedures: Keyless Entry

Table of Contents

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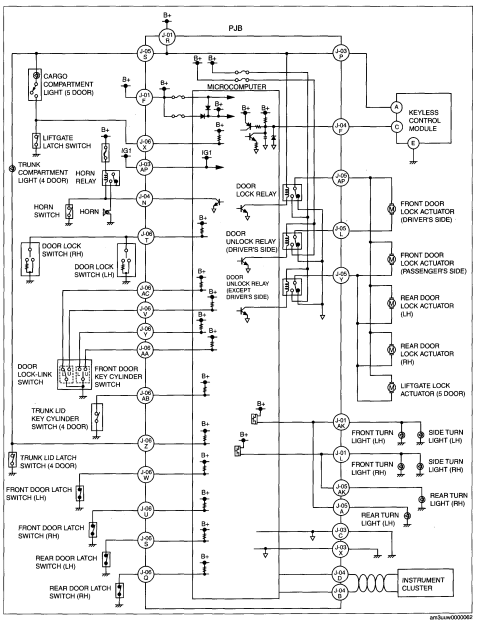
System Schematic (Article 1454229)

KEYLESS ENTRY SYSTEM WIRING DIAGRAM [KEYLESS ENTRY SYSTEM]



All Technical Service Bulletins (itype_100)

Tsbs

- Keyless Entry - Transmitter Battery Replacement Cautions (0904110, 2010/08/30)

Repair Tips (itype_110)

Tsbs

- Keyless Entry - Transmitter Battery Replacement Cautions (0904110, 2010/08/30)

Keyless Entry System on-Board Diagnosis (Article 1453662)

KEYLESS ENTRY SYSTEM ON-BOARD DIAGNOSIS [KEYLESS ENTRY SYSTEM]

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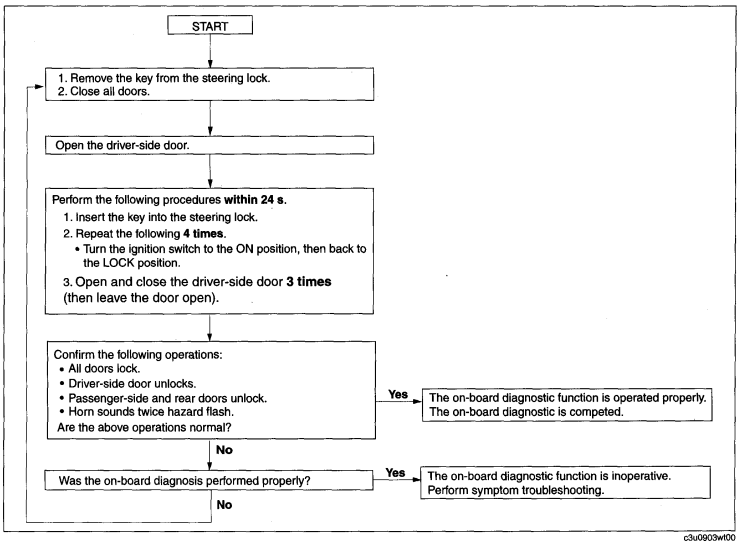
Note

- "All doors" includes the liftgate. (5 door)



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Keyless Entry System Preliminary Inspection (Article 1453663)

KEYLESS ENTRY SYSTEM PRELIMINARY INSPECTION [KEYLESS ENTRY SYSTEM]

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- Perform the following preliminary inspection before troubleshooting.

STEP	INSPECTION		ACTION
1	• Is an after-market system installed?	Yes	Perform troubleshooting according to the after-market keyless entry system.
		No	Go to the next step.
2	• Did the customer activate the keyless entry system with the key inserted into the steering lock?	Yes	• Explain to the customer that the system does not work with the key inserted into the steering lock. • Go to the next step.
		No	Go to the next step.
3	• Did the customer use the keyless entry system in particular area, such as being near TV towers, power plants, power lines, or factories?	Yes	Attempt to lock/unlock the doors with the transmitter in a non-interference area. **If system operates:** • Area of operation is suspect. Explain effect of outside interference on the transmitter to the customer. **If system does not operate:** • Go to the next step.
		No	Go to the next step.
4	• Are any of the following after-market electrical parts on the vehicle? — Cellular phone — Radio-wave equipment — Remote engine starter — TV — Other	Yes	Disconnect the after-market electrical part connectors and attempt to lock/unlock the doors with the transmitter. **If system operates:** • The after-market electrical parts are interfering with the keyless entry system. **If system does not operate:** • Go to the next step.
		No	Go to the next step.
5	• Perform the on-board diagnostic function. (See KEYLESS ENTRY SYSTEM ON-BOARD DIAGNOSIS [KEYLESS ENTRY SYSTEM].) • Does the on-board diagnostic function work?	Yes	Go to the next step.
		No	• Go to Step 1 of troubleshooting NO. 1. (See NO.1 ONE OR MORE ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE [KEYLESS ENTRY SYSTEM].) • Go to Step 1 of troubleshooting NO. 2. (See NO.2 ALL ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE [KEYLESS ENTRY SYSTEM].)
6	• Attempt to reprogram the transmitter ID code. • Can the transmitter ID code be reprogrammed?	Yes	The system is normal.
		No	Go to Step 1 of troubleshooting NO. 3. (See NO.3 TRANSMITTER ID CODE CANNOT BE REPROGRAMMED [KEYLESS ENTRY SYSTEM].)

Symptom Troubleshooting Chart (Article 1362322)

SYMPTOM TROUBLESHOOTING CHART [KEYLESS ENTRY SYSTEM]

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No.	Troubleshooting Item	Description
1	One or more on-board diagnostic functions inoperative	• Malfunction in door lock linkage system
2	All on-board diagnostic functions inoperative	• Malfunction in PJB power supply circuit, door latch switch circuit, PJB ground circuit, or keyless control module.
3	Transmitter ID code cannot be reprogrammed	• Malfunction in transmitter battery, transmitter, PJB circuit, or keyless control module circuit.

No.1 One or More on-Board Diagnostic Functions Inoperative (Article 1453494)

NO.1 ONE OR MORE ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE [KEYLESS ENTRY SYSTEM]

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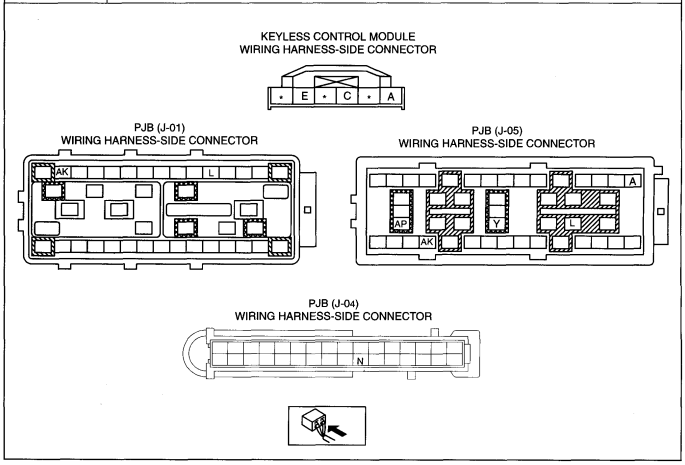
- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, verify that the connectors, terminals and wiring harnesses are connected correctly and undamaged.

1	One or more on-board diagnostic functions inoperative
DESCRIPTION	• Malfunction in door lock linkage system
POSSIBLE CAUSE	• Malfunction in door lock linkage • Malfunction in PJB door lock/unlock signal circuit — PJB malfunction



Diagnostic procedure

STEP	INSPECTION		ACTION
1	**CHECK HORN, AND HAZARD WARNING LIGHT OPERATION DURING ON-BOARD DIAGNOSIS** • Did all of the following items work during on-board diagnostic function operation? — Hazard warning lights flashed — Horns sounded intermittently	Yes	Go to Step 8.
		No	Go to next step.
2	**INSPECT HAZARD WARNING LIGHT OPERATION DURING ON-BOARD DIAGNOSIS** • Did hazard warning lights flash during on-board diagnostic function operation?	Yes	Go to Step 5.
		No	Go to next step.
3	**INSPECT HAZARD WARNING LIGHT CIRCUIT** • Do hazard warning lights flash when hazard warning switch is on?	Yes	Go to next step.
		No	Inspect hazard warning light circuit.
*4	**INSPECT IF MALFUNCTION IS IN WIRING HARNESS (BETWEEN PJB AND TURN LIGHTS) OR PJB** • Measure the voltage at PJB terminals J-01 AK, J-01 L, J-05 AK and J-05 A during on-board diagnostic function operation. — When hazard warning light flashed: **Alternates between B+ and below 1.0 V** • Are the voltage as above?	Yes	Recheck malfunction symptoms, then repeat from Step 1 if malfunction reoccurs.
		No	• Inspect wiring harness between PJB and turn lights. — If wiring harness is normal, replace the PJB, then go to Step 11. — If wiring harness malfunction, repair wiring harness, then go to Step 11.
5	**INSPECT HORN OPERATION DURING ON-BOARD DIAGNOSIS** • Did horns sound intermittently during on-board diagnostic function operation?	Yes	Go to Step 8.
		No	Go to next step.
6	**INSPECT HORN CIRCUIT** • Do horns sound when depressing horn switch on vehicle?	Yes	Go to next step.
		No	Inspect horn circuit.
*7	**INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN PJB AND HORN RELAY) OR PJB** • Turn ignition switch to LOCK position. • Disconnect the PJB connector and horn relay connector. • Is there continuity between PJB J-04 N and horn relay connector?	Yes	Replace PJB, then go to Step 11.
		No	Repair wiring harness between PJB and horn relay, then go to Step 11.
8	**VERIFY THAT ALL DOORS LOCK AND UNLOCK DURING ON-BOARD DIAGNOSIS** • Do all doors unlock and lock during on-board diagnostic function operation?	Yes	Reinspect the malfunction symptoms, then repeat from Step 1 if the malfunction recurs.
		No	Go to the next step.
9	**INSPECT DOOR LOCK LINKAGE** • Operate the door lock knob and verify the door locks and unlocks manually. • Does every door lock system work?	Yes	Go to the next step.
		No	Inspect the door lock linkage.
*10	**INSPECT IF MALFUNCTION IS IN DOOR LOCK ACTUATOR, PJB GROUND CIRCUIT OR ELSEWHERE** • Measure the voltage at PJB terminals J-05 AP, and J-05 Y. — All doors locked: **1.0 V or less → B+ → 1.0 V or less** (terminal J-05 AP) — Driver-side door unlocked: **1.0 V or less → B+ → 1.0 V or less** (terminal J-05 L) — All doors door unlocked: **B+→1.0 V or less→B+** (terminal J-05 Y) • Is the voltage as above?	Yes	Reinspect the malfunction symptoms, then repeat from Step 1 if the malfunction recurs.
		No	• Inspect the PJB connector. • Inspect the wiring harness between the PJB and door lock actuator. — If the above parts are normal, go to the next step. — If any of above parts are malfunctioning, repair the malfunctioning part.
11	**REINSPECT MALFUNCTION SYMPTOM AFTER REPAIR** • Does the keyless entry system operate properly?	Yes	• Troubleshooting completed. • Explain repairs to the customer.
		No	Reinspect the malfunction symptoms, then repeat from Step 1 if malfunction recurs.

No.2 All on-Board Diagnostic Functions Inoperative (Article 1453496)

NO.2 ALL ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE [KEYLESS ENTRY SYSTEM]

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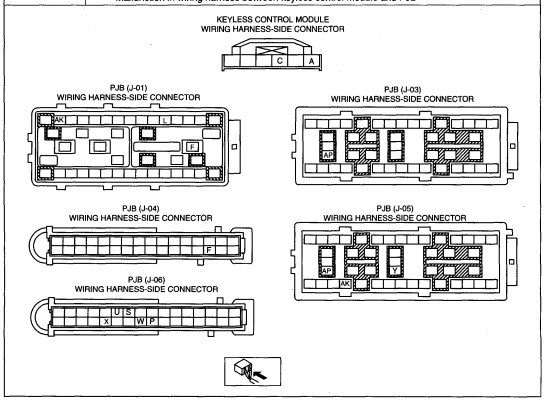
- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, verify that the connectors, terminals and wiring harnesses are connected correctly and undamaged.

2	**All on-board diagnostic functions inoperative**
DESCRIPTION	• Malfunction in PJB power supply circuit, door latch switch circuit, PJB ground circuit, or keyless control module.
POSSIBLE CAUSE	• Malfunction in IG1 or power supply signal circuit of PJB — PJB power supply fuse malfunction — Malfunction in wiring harness between PJB power supply fuses and PJB • Malfunction in door open/closed signal circuit of PJB — Door latch switch system malfunction — PJB malfunction — Malfunction in wiring harness between PJB and door latch switch • Malfunction in PJB GND signal circuit — Malfunction in wiring harness between PJB and ground • Malfunction in keyless control module — Keyless control module malfunction — Malfunction in wiring harness between keyless control module and PJB



Diagnostic procedure

STEP	INSPECTION		ACTION
1	**INSPECT PJB POWER SUPPLY FUSES** • Are the PJB power supply fuses normal?	Yes	Go to the next step.
		No	Install an appropriate amperage fuse.
*2	**INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN FUSE BLOCK AND PJB) OR ELSEWHERE** • Turn the ignition switch to the ON position. • Measure the voltage at the following PJB terminals: — IG1 signal (terminal J-03 AP) — Power supply signal (terminal J-01 F) • Is the voltage **B+**?	Yes	Go to the next step.
		No	Repair the wiring harness between the fuse block and PJB, then go to Step 11.
*3	**INSPECT IF MALFUNCTION IS IN WIRING HARNESS (SHORT TO POWER SUPPLY BETWEEN FUSE BLOCK AND PJB, OR BETWEEN PJB AND GROUND) OR ELSEWHERE** • Turn the ignition switch to the LOCK position. • Disconnect the PJB connector. • Measure the voltage at the following PJB terminal (wiring harness-side): — IG1 signal (terminal J-03 AP) • Is the voltage **B+**?	Yes	Repair the malfunctioning wiring harness, then go to Step 11.
		No	Go to the next step.
*4	**INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN PJB AND GROUND) OR ELSEWHERE** • Is there continuity between PJB terminal J-03 C, J-03 X and ground?	Yes	Go to the next step.
		No	Repair the wiring harness between the PJB and ground, then go to Step 11.
5	**INSPECT PJB OR WIRING HARNESS (BETWEEN PJB AND DOOR LATCH SWITCHES FOR CONTINUITY)** • Is there continuity between PJB terminals J-06 P, J-06 S, J-06 U, J-06 W, J-06 X and ground?	Yes	Go to the next step.
		No	Repair the wiring harness between the PJB and door latch switches, then go to Step 11.
6	**INSPECT LATCH SWITCHES** • Inspect the door latch switches. • Are there normal?	Yes	Replace the PJB, then go to the next step.
		No	Repair latch switch system, then go to the next step.
7	**INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN FUSE BLOCK AND KEYLESS CONTROL MODULE) OR ELSEWHERE** • Turn the ignition switch to the ON position. • Measure the voltage at the following keyless control module terminal: — Power supply signal (terminal A) • Is the voltage **B+**?	Yes	Go to the next step.
		No	Repair the wiring harness between the fuse block and keyless control module, then go to Step 11.
8	**INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN KEYLESS CONTROL MODULE AND GROUND) OR ELSEWHERE** • Is there continuity between keyless control module terminal E and ground?	Yes	Go to the next step.
		No	Repair the wiring harness between the keyless control module and ground, then go to Step 11.
9	**INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN KEYLESS CONTROL MODULE AND PJB) OR ELSEWHERE** • Turn the ignition switch to the ON position. • Disconnect the keyless control module connector and PJB connector. • Is there continuity between the following terminals? — J-04 F (PJB connector)—C (keyless control module connector)	Yes	Go to the next step.
		No	Repair the wiring harness between the keyless control module and PJB, then go to Step 11.

STEP	INSPECTION		ACTION
10	**INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN KEYLESS CONTROL MODULE AND PJB) OR PJB** • Measure the voltage at keyless control module terminal C. — When transmitter operated: • Any transmitter button is operated **0.5 V** • Any transmitter button is not operated: **3.5 V** • Is the voltage normal?	Yes	Replace the PJB, then go to the next step.
		No	Replace the keyless control module, then go to the next step.
11	**REINSPECT MALFUNCTION SYMPTOM AFTER REPAIR** • Does the keyless entry system operate properly?	Yes	Troubleshooting completed. Explain repairs to the customer.
		No	Reinspect the malfunction symptoms, then repeat from Step **1** if the malfunction recurs.

No.3 Transmitter ID Code Cannot Be Reprogrammed (Article 1453498)

NO.3 TRANSMITTER ID CODE CANNOT BE REPROGRAMMED [KEYLESS ENTRY SYSTEM]

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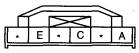
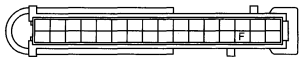
3	Transmitter ID code cannot be reprogrammed
DESCRIPTION	• Malfunction in transmitter battery, transmitter, PJB circuit, or keyless control module circuit.
POSSIBLE CAUSE	• Malfunction in transmitter battery, transmitter, PJB, or keyless control module.

KEYLESS CONTROL MODULE
WIRING HARNESS-SIDE CONNECTOR



PJB (J-04)
WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION		ACTION
1	**INSPECT TRANSMITTER BATTERY INSTALLATION AND TYPE** • Visually inspect the transmitter battery. • Are the below items correct? — Transmitter battery installation (correct polarity) — Battery type (CR2025)	Yes	Go to the next step.
		No	Install the transmitter battery properly or replace with the specified transmitter battery (CR2025), then go to Step 11.
2	**INSPECT TRANSMITTER BATTERY TERMINALS FOR RUST AND POOR CONNECTION** • Visually inspect the transmitter. — Is there rust on the transmitter battery terminals (positive or negative)? — Is there poor connection between the terminals and battery?	Yes	Replace the transmitter battery or repair the transmitter battery terminal, then go to Step 11.
		No	Go to the next step.
3	**INSPECT TRANSMITTER BATTERY** • Inspect the transmitter battery. • Is the battery voltage normal?	Yes	Go to the next step.
		No	Replace the transmitter battery, then go to Step 11.
4	**INSPECT IF MALFUNCTION IS IN TRANSMITTER BATTERY OR ELSEWHERE** • Replace with a transmitter battery known to be good. • Does the keyless entry system operate properly?	Yes	Replace the transmitter battery, then go to Step 11.
		No	Go to the next step.

STEP	INSPECTION		ACTION
5	**INSPECT IF MALFUNCTION IS IN TRANSMITTER OR PJB** • Reprogram the transmitter ID code using another known good transmitter. • Does the keyless entry system operate properly?	Yes	Replace the transmitter and reprogram the transmitter ID code, then go to Step 11.
		No	Go to the next step.
6	**INSPECT POWER SUPPLY FUSE** • Is the keyless control module power supply fuse normal?	Yes	Go to the next step.
		No	Install an appropriate amperage fuse, then go to Step 11.
7	**INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN FUSE BLOCK AND KEYLESS CONTROL MODULE) OR ELSEWHERE** • Measure the voltage at the following keyless control module terminal: — Power supply signal (terminal A) • Is the voltage **B+**?	Yes	Go to the next step.
		No	Repair the wiring harness between the fuse block and keyless control module, then go to Step 11.
8	**INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN KEYLESS CONTROL MODULE AND GROUND) OR ELSEWHERE** • Is there continuity between keyless control module terminal E and ground?	Yes	Go to the next step.
		No	Repair the wiring harness between the keyless control module and ground, then go to Step 11.
9	**INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN KEYLESS CONTROL MODULE AND PJB) OR ELSEWHERE** • Disconnect the keyless control module connector and PJB connector. • Is there continuity between the following terminals? — J-04-F (PJB connector)—C (keyless control module connector)	Yes	Go to the next step.
		No	Repair the wiring harness between the keyless control module and PJB, then go to Step 11.
10	**INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN KEYLESS CONTROL MODULE AND PJB) OR PJB** • Measure the voltage at keyless control module terminal C. — When transmitter operated: • Any transmitter button is operated: **0.5 V** • Any transmitter button is not operated: **3.5 V** • Is the voltage normal?	Yes	Replace the PJB, then go to the next step.
		No	Replace the keyless control module, then go to the next step.
11	**REINSPECT MALFUNCTION SYMPTOM AFTER REPAIR** • Does the keyless entry system operate properly?	Yes	Troubleshooting completed. Explain repairs to the customer.
		No	Reinspect the malfunction symptoms, then repeat from Step 1 if the malfunction recurs.