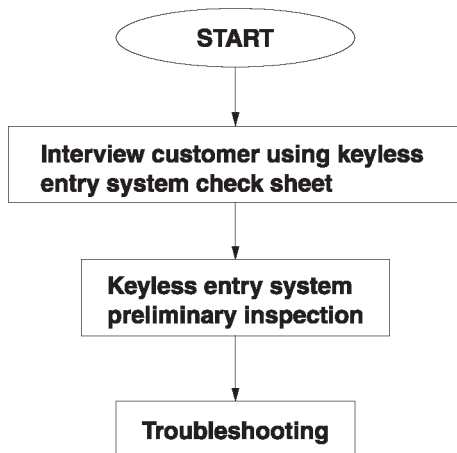


TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

FOREWORD

- Go to troubleshooting after identifying the specific malfunction by doing a keyless entry system preliminary inspection.

Flowchart



KEYLESS ENTRY SYSTEM CHECK SHEET

- Use the sheet below as a customer interview sheet when accepting a vehicle for service.
- If the symptom is Power door lock system does not operate with transmitter at all, find out how the customer uses the keyless entry system by following the check sheet below.

TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

Perform the following inspection with customer.

Q1. What's the customer's complaint?

- ☐ Power door lock system does not operate with transmitter (door does not lock/unlock).
☐ Other _____

Q2. Is system factory-installed or after-market?

- ☐ Factory-installed system

→GO to Q3.

- ☐ After-market system

→ Perform troubleshooting according to after-market keyless entry system manual.

Q3. Operate transmitter with customer from 2.5 m {8.2 ft} away from center of vehicle. (Make sure the ignition key is either in the LOCK position or removed.)
 Does keyless entry system work?

- ☐ Yes

→ Explain the following to the customer.

- Keyless entry system does not work when ignition switch is in ON position.
- Keyless entry system does not work form excessive distances (more than 2.5 m {8.2 ft} away from center of vehicle).

- ☐ No

→ Go to Q4.

Q4. Check location where customer uses keyless entry system.

Does a particular area, such as being near TV towers, power plants, power lines, or factories, have an effect on malfunction?

- ☐ Yes Place _____

→ Area of operation is bad. Explain effect of outside interference on transmitter to customer.

- ☐ No

→ Go to Q5.

Q5. Make sure there are no after-market electrical parts installed on vehicle.

Are there any of the following present?

- Cellular phone
- Radio-wave equipment
- Remote engine starter
- TV, ect.

- ☐ Yes Parts _____

- ☐ No

Perform the keyless entry system preliminary inspection.

KEYLESS ENTRY SYSTEM PRELIMINARY INSPECTION

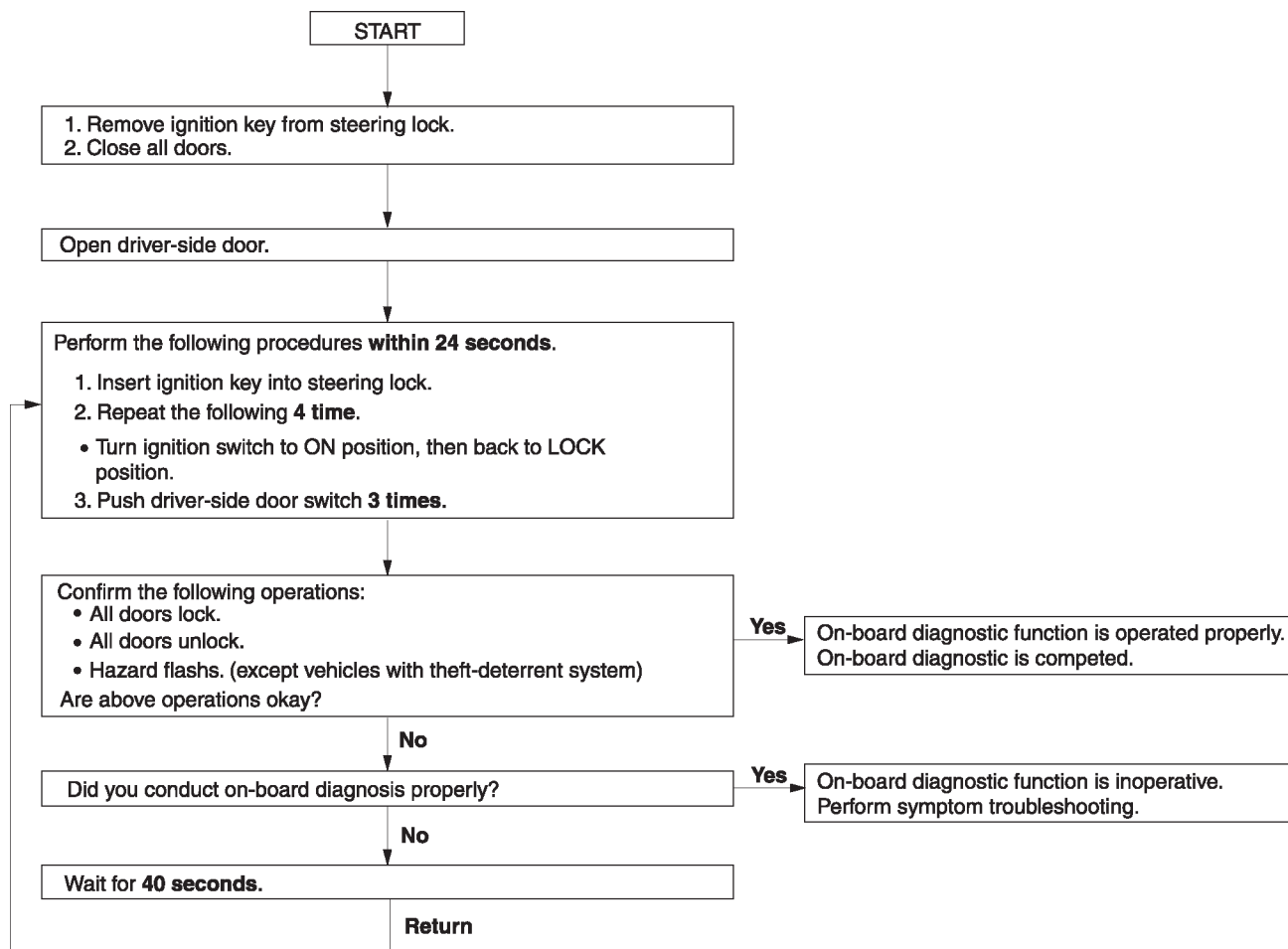
- Perform the following preliminary inspection before troubleshooting.

STEP	INSPECTION		ACTION
1	• Is system an aftermarket one?	Yes	Perform troubleshooting according to aftermarket keyless entry system manual.
		No	Go to next step.
2	• Did customer activate keyless entry system when ignition switch was in LOCK position?	Yes	Go to next step.
		No	• Explain to customer that system does not work when ignition is in ON position. • Turn ignition switch to LOCK position, then go to next step.
3	• Did customer use keyless entry system in particular area, such as being near TV towers, power plants, power lines, or factories?	Yes	Attempt to lock/unlock doors with transmitter in non-interference area. If system operates: • Area of operation is bad. Explain effect of outside interference on transmitter to customer. If system does not operate: • Go to next step.
		No	

TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

STEP	INSPECTION		ACTION
4	- Are any of the following aftermarket electrical parts on the vehicle? — Cellular phone — Radio-wave equipment — Remote engine starter — TV.etc.	Yes	Disconnect aftermarket electrical part connectors and attempt to lock/unlock doors with transmitter. If system operates: - Aftermarket electrical parts are interfering with keyless entry system. If system does not operate: - Go to next step.
		No	
5	- Perform on-board diagnostic function. (See ON-BOARD DIAGNOSTIC FUNCTION) - Does on-board diagnostic function work?	Yes	Go to next step.
		No	- Go to Step 1 of NO. 1 ONE OR MORE ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE. - Go to Step 1 of NO. 2 ALL ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE.
6	- Attempt to reprogram transmitter ID code. - Can transmitter ID code be reprogrammed?	Yes	System is in normal now
		No	Go to Step 1 of troubleshooting NO. 3 TRANSMITTER ID CODE CANNOT BE REPROGRAMMED.

ON-BOARD DIAGNOSTIC FUNCTION



TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

TROUBLESHOOTING INDEX

No.	TROUBLESHOOTING ITEM	DESCRIPTION	ACTION
1	One or more on-board diagnostic functions inoperative.	Malfunction in hazard warning light system (except vehicle with theft-deterrent system), or door lock linkage system, drivers door key cylinder switch system.	(See NO. 1 ONE OR MORE ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE)
2	All on-board diagnostic functions inoperative.	Malfunction in keyless unit power supply circuit, door switch circuit or keyless unit ground circuit.	(See NO. 2 ALL ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE)
3	Transmitter ID code cannot be reprogrammed.	Malfunction in transmitter battery, transmitter, keyless unit bracket, keyless unit bracket ground screw or keyless unit circuit.	(See NO. 3 TRANSMITTER ID CODE CANNOT BE REPROGRAMMED)

NO. 1 ONE OR MORE ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE

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

1	One or more on-board diagnostic functions inoperative
DESCRIPTION	Malfunction in hazard warning light system (except vehicle with theft-deterrent system), or door lock linkage system, drivers door key cylinder switch system.
POSSIBLE CAUSE	- Malfunction in hazard warning light system (except vehicle with theft-deterrent system) - Hazard warning light circuit - Keyless unit malfunction - Malfunction in wiring harness between keyless unit and flasher unit - Malfunction in door lock linkage - Malfunction in keyless unit door lock/unlock signal circuit - Keyless unit malfunction - Malfunction in wiring harness between keyless unit and door lock timer unit

Diagnostic procedure

Note

- For with theft-deterrent system, follow the procedure from Step 4.

STEP	INSPECTION		ACTION
1	CHECK HAZARD WARNING LIGHT OPERATION DURING ON-BOARD DIAGNOSIS Did hazard warning lights flash during on-board diagnostic function operation?	Yes	Go to Step 4.
		No	Go to next step.
2	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.
*3	CHECK TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (BETWEEN KEYLESS UNIT AND FLASHER UNIT) OR KEYLESS UNIT - Measure voltage at keyless unit connector terminal H during on-board diagnostic function operation. - When hazard warning light flashed: B+↔below 1.0 V - Is voltage as above?	Yes	Recheck malfunction symptoms, then repeat from Step 1 if malfunction reoccurs.
		No	- Inspect wiring harness between keyless unit and flasher unit. - If wiring harness is OK, replace keyless unit and reprogram transmitter ID code, then go to Step 8. - If wiring harness malfunction, repair wiring harness, then go to Step 8.
4	MAKE SURE THAT ALL DOORS LOCK AND UNLOCK DURING ON-BOARD DIAGNOSIS Did all doors unlock and lock during on-board diagnostic function operation?	Yes	Recheck malfunction symptoms, then repeat from Step 1 if malfunction reoccurs.
		No	Go to next step.
5	INSPECT DOOR LOCK LINKAGE - Operate inner door lock knob and make sure door locks and unlocks manually. - Does every door lock system work?	Yes	Go to next step.
		No	Inspect door lock linkage.

TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

STEP	INSPECTION	ACTION
*6	CHECK TO SEE WHETHER MALFUNCTION IS IN DOOR LOCK ACTUATOR, DOOR LOCK TIMER UNIT GROUND CIRCUIT OR ELSEWHERE - Measure voltage at keyless unit connector terminal O during on-board diagnostic function operation. - With double locking system or theft-deterrent system All doors locked: 5 2.5 5 V All door unlocked: 5 below 1.0 V 5V - Other All door locked: B+ 6 V B+ All door unlocked: B+ below 1.0 V B+ - Is voltage as above?	Yes Recheck malfunction symptoms, then repeat from Step 1 if malfunction reoccurs.
		- Inspect door lock timer unit connector. - Inspect wiring harness between keyless unit and door lock timer unit. - If above parts are OK, go to next step. - If above parts malfunction, repair malfunction part.
*7	CHECK TO SEE WHETHER MALFUNCTION IS IN KEYLESS UNIT OR DOOR LOCK TIMER UNIT - Measure voltage at door lock timer unit connector terminal F. - Is voltage as following? - With double locking system or theft-deterrent system: 5 V - Other: B+	Yes Replace keyless unit and reprogram transmitter ID code, then go to next step.
		No Replace door lock timer unit, then go to next step.
8	RECHECK MALFUNCTION SYMPTOM AFTER REPAIR Does keyless entry system operate properly?	Yes Troubleshooting completed. Explain repairs to customer.
		No Recheck malfunction symptoms, then repeat from Step 1 if malfunction reoccurs.

NO. 2 ALL ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE

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

2	All on-board diagnostic functions inoperative
DESCRIPTION	Malfunction in keyless unit power supply circuit, door switch circuit or keyless unit ground circuit.
POSSIBLE CAUSE	- Malfunction in IG1, B+ signal circuit of keyless unit - Keyless unit power supply fuse malfunction - Malfunction in wiring harness between keyless unit power supply fuse(s) and keyless unit itself - Malfunction in keyless unit's door open/closed signal circuit - Door switch system malfunction - Keyless unit malfunction - Malfunction in wiring harness between keyless unit and door switch - Malfunction in keyless unit GND signal circuit - Malfunction in wiring harness between keyless unit and ground

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT KEYLESS UNIT POWER SUPPLY FUSES Are keyless unit power supply fuses okay?	Yes Go to next step.
		No Check for a short to ground on blown fuse's circuit. Repair or replace as necessary. Install appropriate amperage fuse.
2	INSPECT DOOR SWITCH INSTALLATION Are door switches installed securely?	Yes Go to next step.
		No Install door switch(es) securely, then go back to Step 5 of keyless entry system preliminary inspection.

TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

STEP	INSPECTION	ACTION	
*3	CHECK TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN FUSE BLOCK AND KEYLESS UNIT) OR ELSEWHERE • Turn ignition switch to ON position. • Measure voltage at following keyless unit terminals: — IG1 signal (Terminal A) — B signal (Terminal B) • Is voltage B+?	Yes	Go to next step.
		No	Repair wiring harness between fuse block and keyless unit, then go to Step 8.
*4	CHECK TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO B+ BETWEEN FUSE BLOCK AND KEYLESS UNIT, OR BETWEEN KEYLESS UNIT AND GROUND) OR ELSEWHERE • Turn ignition switch to LOCK position. • Disconnect keyless unit connector. • Measure voltage at following keyless unit connector terminals: — IG1 signal (Terminal A) • Is voltage B+?	Yes	Repair malfunctioning wiring harness, then go to Step 8.
		No	Go to next step.
*5	CHECK TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN KEYLESS UNIT AND GROUND) OR ELSEWHERE • Is there continuity between keyless unit connector terminal L and ground?	Yes	Go to next step.
		No	Repair wiring harness between keyless unit and ground, then go to Step 8.
6	CHECK FOR CHECK CODE 04 IN INSTRUMENT CLUSTER • Inspect door switch using instrument cluster input/output check mode. (See Section T) • Does DTC 04 function properly?	Yes	Go to next step.
		No	Repair door switch system using DTC 04 inspection procedure, then go to Step 8.
7	INSPECT KEYLESS UNIT OR WIRING HARNESS (BETWEEN KEYLESS UNIT AND DOOR SWITCHES FOR CONTINUITY) • Open the driver-side door. • Is there continuity between keyless unit connector terminal C, D and ground?	Yes	Replace keyless unit and reprogram keyless unit ID code, then go to next step.
		No	Repair wiring harness between keyless unit and door switch(es) then go to next step.
8	RECHECK MALFUNCTION SYMPTOM AFTER REPAIR • Does keyless entry system operate properly?	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction reoccurs.

TROUBLESHOOTING [KEYLESS ENTRY SYSTEM]

NO. 3 TRANSMITTER ID CODE CANNOT BE REPROGRAMMED

3	Transmitter ID code cannot be reprogrammed
DESCRIPTION	Malfunction in transmitter battery, transmitter keyless unit bracket, keyless unit bracket ground screw or keyless unit circuit.
POSSIBLE CAUSE	- Malfunction in transmitter battery, transmitter, keyless unit bracket, keyless unit bracket ground screw or keyless unit circuit - Transmitter battery, transmitter, keyless unit bracket, keyless unit bracket ground screw or keyless unit malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT TRANSMITTER BATTERY INSTALLATION AND TYPE - Visually inspect transmitter battery. - Are below items okay? - Transmitter battery installation (correct polarity) - Battery type (CR2025)	Yes	Go to next step.
		No	Set transmitter battery properly or replace with specified transmitter battery (CR2025), then go to Step 8.
2	INSPECT TRANSMITTER BATTERY TERMINALS FOR RUST AND POOR CONNECTION - Visually inspect transmitter. - Is there rust on transmitter battery terminals (positive or negative pole)? - Is there poor connection between terminals and battery?	Yes	Replace transmitter battery or repair transmitter battery terminal, then go to Step 8.
		No	Go to next step.
3	INSPECT TRANSMITTER BATTERY - Inspect transmitter battery. - Is battery voltage normal?	Yes	Go to next step.
		No	Replace transmitter battery, then go to Step 8.
4	INSPECT KEYLESS UNIT BRACKET INSTALLATION Is keyless unit bracket installed securely?	Yes	Go to next step.
		No	Install bracket securely, then go back to Step 6 of keyless entry system preliminary inspection.
5	INSPECT GROUND SCREW INSTALLATION BETWEEN KEYLESS UNIT AND KEYLESS UNIT BRACKET Are keyless unit and keyless unit bracket connected securely to ground screw?	Yes	Go to next step.
		No	Install screw securely, then go back to Step 6 of keyless entry system preliminary inspection.
6	CHECK TO SEE WHETHER MALFUNCTION IS IN TRANSMITTER BATTERY OR ELSEWHERE - Replace with a known good transmitter battery. - Does keyless entry system operate properly?	Yes	Replace transmitter battery, then go to Step 8.
		No	Go to next step.
7	CHECK TO SEE WHETHER MALFUNCTION IS IN TRANSMITTER OR KEYLESS UNIT - Reprogram keyless unit ID code by using another known good transmitter. - Does keyless entry system operate okay?	Yes	Replace transmitter and reprogram transmitter ID code, then go to next step.
		No	Replace keyless unit and reprogram keyless unit ID code, then go to next step.
8	RECHECK MALFUNCTION SYMPTOM AFTER REPAIR Does keyless entry system operate properly?	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction reoccurs.