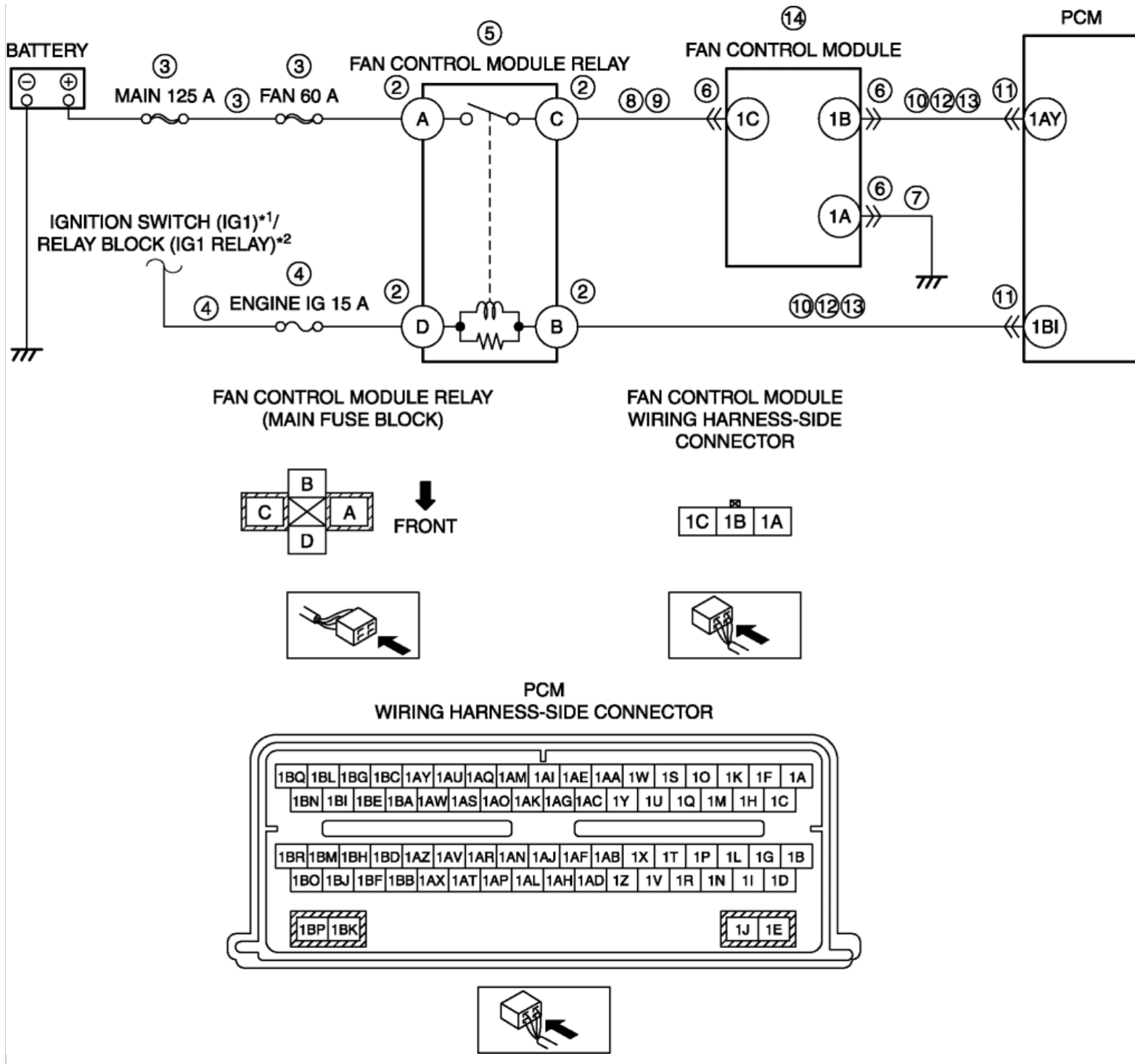


2012 - Mazda6 - Engine

DTC P0480:00 [MZI 3.7 V6]

DTC P0480:00	Fan control circuit
DETECTION CONDITION	This test inspect the fan control circuit. The DTC sets if the PCM detects the voltage on the fan control variable circuit is not within the expected range.
POSSIBLE CAUSE	- Short to ground or open circuit in fan control module relay secondary power supply circuit - Short to ground in wiring harness between battery positive terminal and fan control module relay terminal A - MAIN 125 A fuse and/or FAN 60 A fuse malfunction - Open circuit in wiring harness between battery positive terminal and fan control module relay terminal A - Short to ground or open circuit in fan control module relay primary power supply circuit - Short to ground in wiring harness between ignition switch terminal C^{*1}/relay block terminal 1B^{*2} and fan control module relay terminal D - ENGINE IG 15 A fuse malfunction - Open circuit in wiring harness between ignition switch (IG1)^{*1}/relay block (IG1 relay)^{*2} and fan control module relay terminal D - Fan control module relay malfunction - Fan control module connector or terminals malfunction - Short to ground in wiring harness between fan control module relay terminal C and fan control module terminal 1C - Open circuit in wiring harness between fan control module relay terminal C and fan control module terminal 1C - Open circuit in wiring harness between fan control module terminal 1A and body ground - Poor contact or loose installation of fan control module ground point. - Short to ground in wiring harness between the following terminals: - Fan control module relay terminal B—PCM terminal 1BI - Fan control module terminal 1B—PCM terminal 1AY - PCM connector or terminals malfunction - Short to power supply in wiring harness between the following terminals: - Fan control module relay terminal B—PCM terminal 1BI - Fan control module terminal 1B—PCM terminal 1AY - Open circuit in wiring harness between the following terminals: - Fan control module relay terminal B—PCM terminal 1BI - Fan control module terminal 1B—PCM terminal 1AY - Fan control module malfunction - PCM malfunction



*1

Vehicles without advanced keyless entry and push button start system

*2

Vehicles with advanced keyless entry and push button start system

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY - Verify related Service Bulletins and/or on-line repair information availability. - Is any related repair information available?	Yes Perform repair or diagnosis according to the available repair information. If the vehicle is not repaired, go to the next step.

		No	Go to the next step.
2	INSPECT FAN CONTROL MODULE RELAY CONNECTOR CONDITION - Switch the ignition to off. - Remove the fan control module relay. - Inspect for poor connection (such as damaged/pulled-out pins, corrosion). - Is there any malfunction?	Yes	Repair or replace the terminal and/or connector, then go to Step 15.
		No	Go to the next step.
3	INSPECT FAN CONTROL MODULE RELAY SECONDARY POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT - Fan control module relay is removed. - Measure the voltage between fan control module relay terminal A and body ground. - Is the voltage B+ ?	Yes	Go to the next step.
		No	Inspect the MAIN 125 A fuse and FAN 60 A fuse. - If the fuse is melt: - Repair or replace the wiring harness for a possible short to ground. - Replace the fuse. - If the fuse is deterioration: - Replace the fuse. - If all fuses are normal: - Repair or replace the wiring harness for a possible open circuit. Go to Step 15.
4	INSPECT FAN CONTROL MODULE RELAY PRIMARY POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT - Fan control module relay is removed. - Switch the ignition to ON (engine off). - Measure the voltage between fan control module relay terminal D and body ground. - Is the voltage B+ ?	Yes	Go to the next step.
		No	Inspect the ENGINE IG 15 A fuse. - If the fuse is melt: - Repair or replace the wiring harness for a possible short to ground. - Replace the fuse. - If the fuse is deterioration: - Replace the fuse. - If the fuse is normal: - Repair or replace the wiring harness for a possible open circuit. Go to Step 15.
5	INSPECT FAN CONTROL MODULE RELAY - Switch the ignition to off. - Inspect the fan control module relay. (See RELAY INSPECTION.) - Is there any malfunction?	Yes	Replace the fan control module relay, then go to Step 15.
		No	Go to the next step.
6	INSPECT FAN CONTROL MODULE CONNECTOR CONDITION Disconnect the fan control module connector.	Yes	Repair or replace the terminal and/or connector, then go to Step 15.

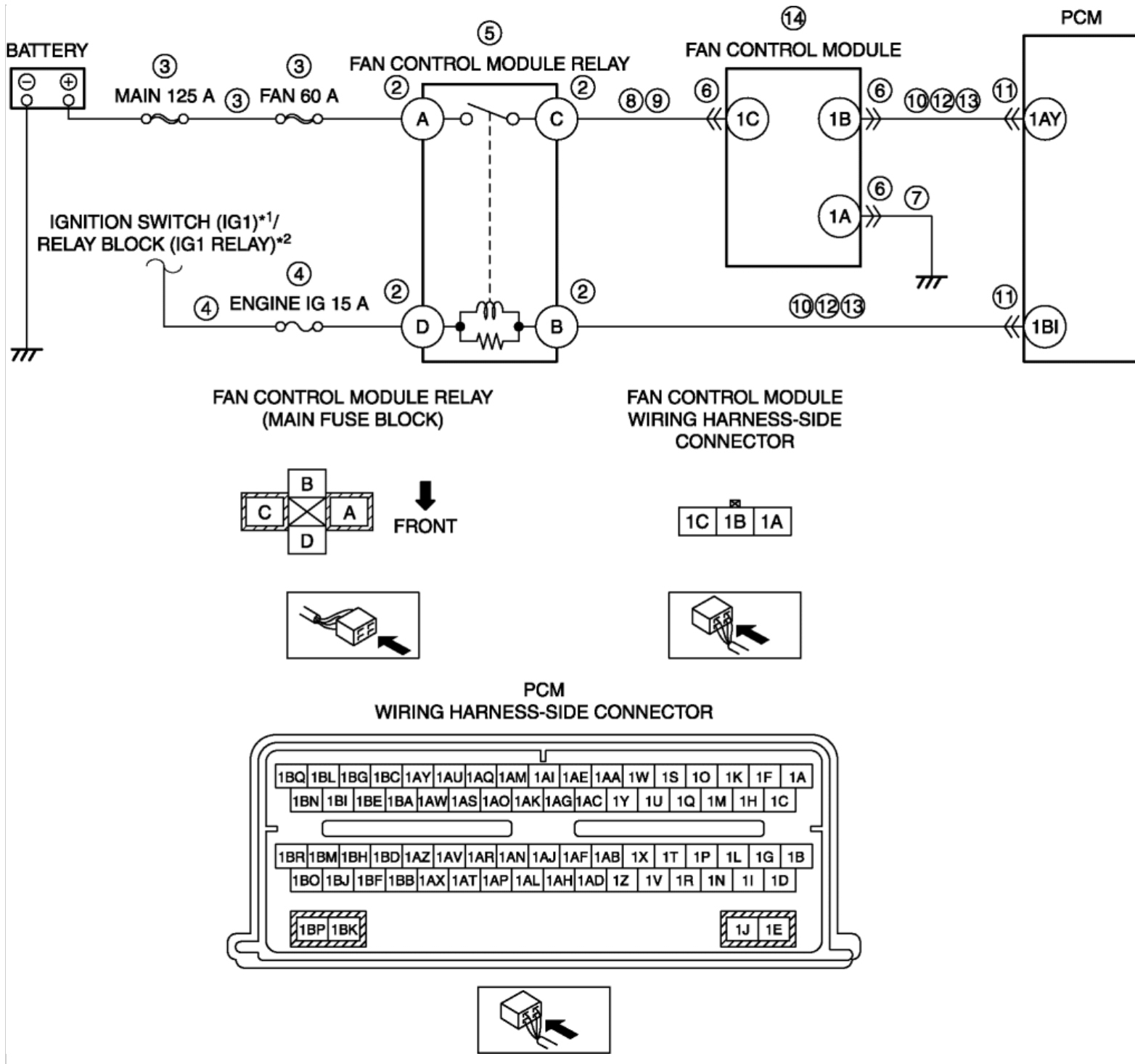
	- Inspect for poor connection (such as damaged/pulled-out pins, corrosion). - Is there any malfunction?	No	Go to the next step.
7	INSPECT FAN CONTROL MODULE GROUND CIRCUIT FOR OPEN CIRCUIT - Fan control module relay is removed. - Fan control module connector is disconnected. - Inspect for continuity between fan control module terminal 1A (wiring harness-side) and body ground. - Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the following: - Loose or lift ground point - Open circuit between fan control module and ground Go to Step 15.
8	INSPECT FAN CONTROL MODULE CONTROL CIRCUIT FOR SHORT TO GROUND - Fan control module relay is removed. - Fan control module connector is disconnected. - Inspect for continuity between fan control module terminal 1C (wiring harness-side) and body ground. - Is there continuity?	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 15.
		No	Go to the next step.
9	INSPECT FAN CONTROL MODULE CONTROL CIRCUIT FOR OPEN CIRCUIT - Fan control module relay is removed. - Fan control module connector is disconnected. - Inspect for continuity between fan control module relay terminal C (wiring harness-side) and fan control module terminal 1C. - Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 15.
10	INSPECT FAN CONTROL MODULE AND FAN CONTROL MODULE RELAY CONTROL CIRCUIT FOR SHORT TO GROUND - Fan control module relay is removed. - Fan control module connector is disconnected. - Inspect for continuity between the following terminals (wiring harness-side) and body ground: - Fan control module relay terminal B - Fan control module terminal 1B - Is there continuity?	Yes	If the short to ground circuit could be detected: - Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: - Replace the PCM (short to ground in PCM internal circuit). (See PCM REMOVAL/INSTALLATION [MZI 3.7 V6] .) Go to Step 15.
		No	Go to the next step.
11	INSPECT PCM CONNECTOR CONDITION - Disconnect the PCM connector. - Inspect for poor connection (such as damaged/pulled-out pins, corrosion). - Is there any malfunction?	Yes	Repair or replace the terminal and/or connector, then go to Step 15.
		No	Go to the next step.
12	INSPECT FAN CONTROL MODULE AND FAN CONTROL MODULE RELAY CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY - Fan control module relay is removed. - Fan control module and PCM connectors are disconnected. - Switch the ignition to ON (engine off). - Measure the voltage between the following terminals (wiring	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 15.
		No	Go to the next step.

	harness-side) and body ground: ▪ Fan control module relay terminal B ▪ Fan control module terminal 1B • Is there any voltage?		
13	INSPECT FAN CONTROL MODULE AND FAN CONTROL MODULE RELAY CONTROL CIRCUIT FOR OPEN CIRCUIT • Fan control module relay is removed. • Fan control module and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): ▪ Fan control module relay terminal B—PCM terminal 1BI ▪ Fan control module terminal 1B—PCM terminal 1AY • Is there continuity?	Yes Go to the next step. No Repair or replace the wiring harness for a possible open circuit, then go to Step 15.	
14	INSPECT FAN CONTROL MODULE • Inspect the fan control module. (See FAN CONTROL MODULE INSPECTION [MZI 3.7 V6].) • Is there any malfunction?	Yes Replace the fan control module, then go to the next step. (See COOLING FAN MOTOR REMOVAL/ INSTALLATION [MZI 3.7 V6].) No Go to the next step.	
15	VERIFY DTC TROUBLESHOOTING COMPLETED • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [MZI 3.7 V6].) • Perform the KOEO or KOER self test. (See KOEO/ KOER SELF TEST [MZI 3.7 V6].) • Is the same DTC present?	Yes Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/ INSTALLATION [MZI 3.7 V6].) Go to the next step. No Go to the next step.	
16	VERIFY AFTER REPAIR PROCEDURE • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [MZI 3.7 V6].) • Are any DTCs present?	Yes Go to the applicable DTC inspection. (See DTC TABLE [MZI 3.7 V6].) No DTC troubleshooting completed.	

2012 - Mazda6 - Engine

DTC P0480:00 [MZI 3.7 V6]

DTC P0480:00	Fan control circuit
DETECTION CONDITION	This test inspect the fan control circuit. The DTC sets if the PCM detects the voltage on the fan control variable circuit is not within the expected range.
POSSIBLE CAUSE	- Short to ground or open circuit in fan control module relay secondary power supply circuit - Short to ground in wiring harness between battery positive terminal and fan control module relay terminal A - MAIN 125 A fuse and/or FAN 60 A fuse malfunction - Open circuit in wiring harness between battery positive terminal and fan control module relay terminal A - Short to ground or open circuit in fan control module relay primary power supply circuit - Short to ground in wiring harness between ignition switch terminal C^{*1}/relay block terminal 1B^{*2} and fan control module relay terminal D - ENGINE IG 15 A fuse malfunction - Open circuit in wiring harness between ignition switch (IG1)^{*1}/relay block (IG1 relay)^{*2} and fan control module relay terminal D - Fan control module relay malfunction - Fan control module connector or terminals malfunction - Short to ground in wiring harness between fan control module relay terminal C and fan control module terminal 1C - Open circuit in wiring harness between fan control module relay terminal C and fan control module terminal 1C - Open circuit in wiring harness between fan control module terminal 1A and body ground - Poor contact or loose installation of fan control module ground point. - Short to ground in wiring harness between the following terminals: - Fan control module relay terminal B—PCM terminal 1BI - Fan control module terminal 1B—PCM terminal 1AY - PCM connector or terminals malfunction - Short to power supply in wiring harness between the following terminals: - Fan control module relay terminal B—PCM terminal 1BI - Fan control module terminal 1B—PCM terminal 1AY - Open circuit in wiring harness between the following terminals: - Fan control module relay terminal B—PCM terminal 1BI - Fan control module terminal 1B—PCM terminal 1AY - Fan control module malfunction - PCM malfunction



*1

Vehicles without advanced keyless entry and push button start system

*2

Vehicles with advanced keyless entry and push button start system

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY - Verify related Service Bulletins and/or on-line repair information availability. - Is any related repair information available?	Yes Perform repair or diagnosis according to the available repair information. If the vehicle is not repaired, go to the next step.

		No	Go to the next step.
2	INSPECT FAN CONTROL MODULE RELAY CONNECTOR CONDITION - Switch the ignition to off. - Remove the fan control module relay. - Inspect for poor connection (such as damaged/pulled-out pins, corrosion). - Is there any malfunction?	Yes	Repair or replace the terminal and/or connector, then go to Step 15.
		No	Go to the next step.
3	INSPECT FAN CONTROL MODULE RELAY SECONDARY POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT - Fan control module relay is removed. - Measure the voltage between fan control module relay terminal A and body ground. - Is the voltage B+ ?	Yes	Go to the next step.
		No	Inspect the MAIN 125 A fuse and FAN 60 A fuse. - If the fuse is melt: - Repair or replace the wiring harness for a possible short to ground. - Replace the fuse. - If the fuse is deterioration: - Replace the fuse. - If all fuses are normal: - Repair or replace the wiring harness for a possible open circuit. Go to Step 15.
4	INSPECT FAN CONTROL MODULE RELAY PRIMARY POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT - Fan control module relay is removed. - Switch the ignition to ON (engine off). - Measure the voltage between fan control module relay terminal D and body ground. - Is the voltage B+ ?	Yes	Go to the next step.
		No	Inspect the ENGINE IG 15 A fuse. - If the fuse is melt: - Repair or replace the wiring harness for a possible short to ground. - Replace the fuse. - If the fuse is deterioration: - Replace the fuse. - If the fuse is normal: - Repair or replace the wiring harness for a possible open circuit. Go to Step 15.
5	INSPECT FAN CONTROL MODULE RELAY - Switch the ignition to off. - Inspect the fan control module relay. (See RELAY INSPECTION.) - Is there any malfunction?	Yes	Replace the fan control module relay, then go to Step 15.
		No	Go to the next step.
6	INSPECT FAN CONTROL MODULE CONNECTOR CONDITION Disconnect the fan control module connector.	Yes	Repair or replace the terminal and/or connector, then go to Step 15.

	- Inspect for poor connection (such as damaged/pulled-out pins, corrosion). - Is there any malfunction?	No	Go to the next step.
7	INSPECT FAN CONTROL MODULE GROUND CIRCUIT FOR OPEN CIRCUIT - Fan control module relay is removed. - Fan control module connector is disconnected. - Inspect for continuity between fan control module terminal 1A (wiring harness-side) and body ground. - Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the following: - Loose or lift ground point - Open circuit between fan control module and ground Go to Step 15.
8	INSPECT FAN CONTROL MODULE CONTROL CIRCUIT FOR SHORT TO GROUND - Fan control module relay is removed. - Fan control module connector is disconnected. - Inspect for continuity between fan control module terminal 1C (wiring harness-side) and body ground. - Is there continuity?	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 15.
		No	Go to the next step.
9	INSPECT FAN CONTROL MODULE CONTROL CIRCUIT FOR OPEN CIRCUIT - Fan control module relay is removed. - Fan control module connector is disconnected. - Inspect for continuity between fan control module relay terminal C (wiring harness-side) and fan control module terminal 1C. - Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 15.
10	INSPECT FAN CONTROL MODULE AND FAN CONTROL MODULE RELAY CONTROL CIRCUIT FOR SHORT TO GROUND - Fan control module relay is removed. - Fan control module connector is disconnected. - Inspect for continuity between the following terminals (wiring harness-side) and body ground: - Fan control module relay terminal B - Fan control module terminal 1B - Is there continuity?	Yes	If the short to ground circuit could be detected: - Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: - Replace the PCM (short to ground in PCM internal circuit). (See PCM REMOVAL/INSTALLATION [MZI 3.7 V6] .) Go to Step 15.
		No	Go to the next step.
11	INSPECT PCM CONNECTOR CONDITION - Disconnect the PCM connector. - Inspect for poor connection (such as damaged/pulled-out pins, corrosion). - Is there any malfunction?	Yes	Repair or replace the terminal and/or connector, then go to Step 15.
		No	Go to the next step.
12	INSPECT FAN CONTROL MODULE AND FAN CONTROL MODULE RELAY CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY - Fan control module relay is removed. - Fan control module and PCM connectors are disconnected. - Switch the ignition to ON (engine off). - Measure the voltage between the following terminals (wiring	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 15.
		No	Go to the next step.

	harness-side) and body ground: ▪ Fan control module relay terminal B ▪ Fan control module terminal 1B • Is there any voltage?		
13	INSPECT FAN CONTROL MODULE AND FAN CONTROL MODULE RELAY CONTROL CIRCUIT FOR OPEN CIRCUIT • Fan control module relay is removed. • Fan control module and PCM connectors are disconnected. • Switch the ignition to off. • Inspect for continuity between the following terminals (wiring harness-side): ▪ Fan control module relay terminal B—PCM terminal 1BI ▪ Fan control module terminal 1B—PCM terminal 1AY • Is there continuity?	Yes Go to the next step. No Repair or replace the wiring harness for a possible open circuit, then go to Step 15.	
14	INSPECT FAN CONTROL MODULE • Inspect the fan control module. (See FAN CONTROL MODULE INSPECTION [MZI 3.7 V6].) • Is there any malfunction?	Yes Replace the fan control module, then go to the next step. (See COOLING FAN MOTOR REMOVAL/ INSTALLATION [MZI 3.7 V6].) No Go to the next step.	
15	VERIFY DTC TROUBLESHOOTING COMPLETED • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [MZI 3.7 V6].) • Perform the KOEO or KOER self test. (See KOEO/ KOER SELF TEST [MZI 3.7 V6].) • Is the same DTC present?	Yes Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/ INSTALLATION [MZI 3.7 V6].) Go to the next step. No Go to the next step.	
16	VERIFY AFTER REPAIR PROCEDURE • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [MZI 3.7 V6].) • Are any DTCs present?	Yes Go to the applicable DTC inspection. (See DTC TABLE [MZI 3.7 V6].) No DTC troubleshooting completed.	