2005
Mazda3
Mazda MX-5 Miata
Mazda MX-5
MAZDASPEED MX-5
Mazda MPV
Mazda RX-8

Service Highlights

FOREWORD

This manual explains components, system operations and functions for the Mazda3, Mazda6, Mazda MX-5 Miata, MAZDASPEED MX-5, Mazda MPV, Mazda RX-8, and is intended for use by service training personnel of Authorized Mazda Dealers.

For proper repair and maintenance, a thorough familiarization with this manual is important, and it should always be kept in a handy place for quick and easy reference.

All the contents of this manual, including drawings and specifications, are the latest available at the time of printing. As modifications affecting repair or maintenance occur, relevant information supplementary to this volume will be made available at Mazda dealers. This manual should be kept up-to-date.

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Mazda Motor Corporation
HIROSHIMA, JAPAN

APPLICATION:
This manual is applicable to vehicles beginning with the Vehicle Identification Numbers (VIN), and related materials shown on the following page.

Mazda3

MX–5 Miata
MAZDASPEED MX-5

MPV

RX-8

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RX-8

CONTENTS

TITLE	SECTION
ENGINE	01
BODY & ACCESSORIES	09

ENGINE

01
SECTION

OUTLINE 01-00
ON-BOARD DIAGNOSTIC 01-02

01–00 OUTLINE

ENGINE ABBREVIATIONS 01–00–1
ENGINE FEATURES 01–00–1

ENGINE ABBREVIATIONS

DHU010002000S01

A/C	Air Conditioner
APV	Auxiliary Port Valve
CCM	Comprehensive Component Monitor
DC	Drive Cycle
FP1	Front Primary 1
KOEO	Key On Engine Off
KOER	Key On Engine Running
L/F	Leading Front
L/R	Leading Rear
MT	Manual Transmission
RP1	Rear Primary 1
SSV	Secondary Shutter Valve
SW	Switch
T/F	Trailing Front
T/R	Trailing Rear
VDI	Variable Dynamic Effect Intake
VFAD	Variable Fresh Air Duct

ENGINE FEATURES

DHU010002000S02

To meet OBD-II regulations	• Modes 01, 02, 03, and 06 of diagnostic test modes changed

01–02 ON-BOARD DIAGNOSTIC

ON-BOARD DIAGNOSTIC OUTLINE . . . 01–02–1
DIAGNOSTIC TEST MODE. 01–02–2
DTC DETECTION LOGIC AND CONDITIONS 01–02–7
KOEO/KOER SELF-TEST 01–02–8
PID/DATA MONITOR AND RECORD. . . . 01–02–10
SIMULATION TEST 01–02–13

ON-BOARD DIAGNOSTIC OUTLINE

DHU010200000S01

Features

To meet OBD-II regulations	• Modes 01, 02, 03, and 06 of diagnostic test modes changed

DIAGNOSTIC TEST MODE

DHU010200000S02

- The diagnostic test mode is essentially carried over from that of the 2004MY except for following.
  — To meet OBD-II regulations, modes 01, 02, 03, and 06 have been changed.

Diagnostic test mode	Item
Mode 01	Sending diagnostic data (PID data monitor/On-board system readiness test)
Mode 02	Sending freeze frame data
Mode 03	Sending emission-related malfunction code (DTC)
Mode 04	Clearing/resetting emission-related malfunction information
Mode 06	Sending intermittent monitoring system test results (DMTR)
Mode 07	Sending continuous monitoring system test results (pending code)
Mode 08	On-board device control (simulation test, active command mode)
Mode 09	Request vehicle information

OBD-II Diagnostic Data Monitor (Mode 01)

PID data monitor

- Differences between the 2005 MY and 2004 MY PID data monitor items are shown below.

PID data monitor table

X: Applicable
—: Not applicable

2005 MY	2004 MY	Full names	Unit	
X	X	Monitor status since DTCs cleared	—	
X	X	Fuel system status	Refer to list below.	
X	X	Calculated LOAD Value	%	
X	X	Engine Coolant Temperature	°C	°F
X	X	Short term fuel trim	%	
X	X	Long term fuel trim	%	
X	X	Engine RPM	rpm	
X	X	Vehicle Speed Sensor	km/h	mph
X	X	Ignition Timing Advance	°	
X	X	Intake Air Temperature	°C	°F
X	X	Air Flow Rate from Mass Air Flow Sensor	g/s	
X	X	Absolute Throttle Position	%	
X	X	Commanded Secondary Air Status	—	
X	X	Location of Oxygen Sensors	—	
X	X	Rear HO2S	%	V
X	X	OBD requirement according to vehicle design	—	
X	X	Time since engine start	s	
X	X	Distance travelled while MIL is activated	km	miles
X	X	Commanded Evaporative Purge	%	
X	X	Fuel Level Input	%	
X	X	Number of warm-ups since DTCs cleared	—	
X	X	Distance travelled since DTCs cleared	km	miles
X	X	Barometric Pressure	kPa	
X	X	Front HO2S	Lambda	mA
X	X	Catalyst Temperature	°C	
X	—	Monitor status this driving cycle	—	
X	X	Control module voltage	V	
X	X	Absolute Load Value	%	
X	X	Commanded Equivalence Ratio	—	
X	X	Relative Throttle Position	%	
X	—	Ambient air temperature	%	
X	X	Absolute Throttle Position No.2	%	
X	X	Accelerator Pedal Position No.3	%	
X	X	Accelerator Pedal Position No.4	%	
X	X	Commanded Throttle Actuator Control	%	

Meaning of fuel system loop status

- The following information is displayed on the tester.
  - — Feedback operating: HO2S being used for feedback is normal.
  - — Feedback stops: ECT is lower than the determined feedback zone.
  - — Feedback stops: Open loop due to driving condition.
  - — Feedback stops: Open loop due to detected system fault.

On-board system readiness test

- The items supported by the on-board system readiness test are shown below.

Continuous monitoring system

- — HO2S heater
- — Thermostat
- — Fuel system
- — Misfire
- — CCM

Intermittent monitoring system

- — HO2S
- — AIR system
- — Catalyst
- — EVAP system

OBD-II Freeze Frame Data (Mode 02)

- Differences between the 2005 MY and 2004 MY Freeze Frame Data monitor items are shown below.

Freeze Frame Data monitor table

X: Applicable
—: Not applicable

2005 MY	2004 MY	Full names	Unit	
X	X	DTC that caused required Freeze Frame Data storage	—	
X	X	Fuel system status	Refer to list below.	
X	X	Calculated LOAD Value	%	
X	X	Engine Coolant Temperature	°C	°F
X	X	Short term fuel trim	%	
X	X	Long term fuel trim	%	
X	X	Engine RPM	rpm	
X	X	Vehicle Speed Sensor	km/h	mph
X	X	Ignition Timing Advance	°	
X	X	Intake Air Temperature	°C	°F
X	X	Air Flow Rate from Mass Air Flow Sensor	g/s	
X	X	Absolute Throttle Position	%	
X	X	Commanded Secondary Air Status	—	
X	X	Time since engine start	s	
X	X	Commanded Evaporative Purge	%	
X	X	Fuel Level Input	%	
X	X	Number of warm-ups since DTCs cleared	—	
X	X	Distance travelled since DTCs cleared	km	miles
X	X	Barometric Pressure	kPa	
X	X	Catalyst Temperature	°C	°F
X	X	Control module voltage	V	
X	X	Absolute load value	%	
X	X	Commanded Equivalence Ratio	—	
X	X	Relative Throttle Position	%	
X	—	Ambient air temperature	°C	
X	X	Absolute Throttle Position No.2	%	
X	X	Accelerator Pedal Position No.3	%	
X	X	Accelerator Pedal Position No.4	%	
X	X	Commanded Throttle Actuator Control	%	

Meaning of fuel system loop status

- The following information is displayed on the tester.
  - — Feedback operating: HO2S being used for feedback is normal.
  - — Feedback stops: ECT is lower than the determined feedback zone.
  - — Feedback stops: Open loop due to driving condition.
  - — Feedback stops: Open loop due to detected system fault.

OBD-II Diagnostic Trouble Code (Mode 03)

- The following DTCs have been adopted.
  - — P2009, P2010, P2016, P2017, P2067, P2068, P2102, P2103
- The following DTCs have been deleted.
  - — P0128, P1574, P1577, P2008, P2017, P2101, P2406
- Differences between the 2005 MY and 2004 MY DTCs are shown below.

DTC table

×: Applicable
—: Not applicable

DTC No.		Condition	MIL	DC	Monitor item*1	Self -test type*4	Memory function
2005MY	2004MY						
P0030	←	Front HO2S heater control circuit problem	ON	2	HO2S heater	C, O, R	×
P0031	←	Front HO2S heater control circuit low	ON	2	HO2S heater	C, O, R	×
P0032	←	Front HO2S heater control circuit high	ON	2	HO2S heater	C, O, R	×
P0037	←	Rear HO2S heater control circuit low	ON	2	HO2S heater	C, O, R	×
P0038	←	Rear HO2S heater control circuit high	ON	2	HO2S heater	C, O, R	×
P0076	←	VDI solenoid valve control circuit low	OFF	2	Other	C, O, R	×
P0077	←	VDI solenoid valve control circuit high	OFF	2	Other	C, O, R	×
P0101	←	MAF sensor circuit range/performance problem	ON	2	CCM	C	×
P0102	←	MAF sensor circuit low input	ON	1	CCM	C, O, R	×
P0103	←	MAF sensor circuit high input	ON	1	CCM	C, O, R	×
P0107	←	BARO sensor circuit low input	ON	1	CCM	C, O, R	×
P0108	←	BARO sensor circuit high input	ON	1	CCM	C, O, R	×
P0111	←	IAT sensor circuit range/performance problem	ON	2	CCM	C	×
P0112	←	IAT sensor circuit low input	ON	1	CCM	C, O, R	×
P0113	←	IAT sensor circuit high input	ON	1	CCM	C, O, R	×
P0117	←	ECT sensor circuit low input	ON	1	CCM	C, O, R	×
P0118	←	ECT sensor circuit high input	ON	1	CCM	C, O, R	×
P0122	←	TP sensor No.1 circuit low input	ON	1	CCM	C, O, R	×
P0123	←	TP sensor No.1 circuit high input	ON	1	CCM	C, O, R	×
P0125	←	Insufficient coolant temperature for closed loop fuel control	ON	2	CCM	C	×
P0126	←	Insufficient coolant temperature for stable operation	ON	2	Thermostat	C	×
—	P0128	Coolant thermostat problem	ON	2	Thermostat	C	×
P0130	←	Front HO2S circuit problem	ON	2	HO2S	C, O, R	×
P0131	←	Front HO2S circuit low voltage	ON	2	HO2S	C, O, R	×
P0132	←	Front HO2S circuit high voltage	ON	2	HO2S	C, O, R	×
P0133	←	Front HO2S circuit slow response	ON	2	HO2S	C	×
P0138	←	Rear HO2S circuit high voltage	ON	2	HO2S	C, R	×
P0139	←	Rear HO2S circuit slow response	ON	2	HO2S	C, R	×
P0171	←	System too lean	ON	2	Fuel system	C, R	×
P0172	←	System too rich	ON	2	Fuel system	C, R	×
P0222	←	TP sensor No.2 circuit low input	ON	1	CCM	C, O, R	×
P0223	←	TP sensor No.2 circuit high input	ON	1	CCM	C, O, R	×
P0300	←	Random misfire detected	Flash/ON	1 or 2	Misfire	C	×
P0301	←	Front rotor misfire detected	Flash/ON	1 or 2	Misfire	C	×
P0302	←	Rear rotor misfire detected	Flash/ON	1 or 2	Misfire	C	×
P0327	←	KS circuit low input	ON	1	CCM	C, O, R	×

DTC No.		Condition	MIL	DC	Monitor item[*1]	Self -test type[*4]	Memory function
2005MY	2004MY						
P0328	←	KS circuit high input	ON	1	CCM	C, O, R	×
P0335	←	Eccentric shaft position sensor circuit problem	ON	1	CCM	C	×
P0336	←	Eccentric shaft position sensor circuit range/ performance problem	ON	1	CCM	C, R	×
P0410	←	AIR system problem	ON	2	AIR system	C, R	×
P0420	←	Catalyst system efficiency below threshold	ON	2	Catalyst	C	×
P0441	←	EVAP system incorrect purge flow	ON	2	EVAP system	C, R	×
P0442	←	EVAP system leak detected (small leak)	ON	2	EVAP system	C, R	×
P0443	←	Purge solenoid valve circuit problem	ON	2	CCM	C, R	×
P0446	←	EVAP system vent control circuit problem	ON	2	EVAP system	C, R	×
P0455	←	EVAP system leak detected (large leak)	ON	2	EVAP system	C, R	×
P0456[*2]	←	EVAP system leak detected (very small leak)	ON	2	EVAP system	C, R	×
P0461	←	Fuel gauge sender unit circuit range/performance problem	ON	2	CCM	C	×
P0462	←	Fuel gauge sender unit (main) circuit low input	ON	2	CCM	C, O, R	×
P0463	←	Fuel gauge sender unit (main) circuit high input	ON	2	CCM	C, O, R	×
P0480	←	Cooling fan No.1 control circuit problem	OFF	2	Other	C, O, R	×
P0481	←	Cooling fan No.2 control circuit problem	OFF	2	Other	C, O, R	×
P0500	←	VSS circuit problem	ON	2	CCM	C	×
P0505	←	Idle air control system problem	OFF	—	—	R	—
P0506	←	Idle air control system RPM lower than expected	ON	2	CCM	C	×
P0507	←	Idle air control system RPM higher than expected	ON	2	CCM	C	×
P0562	←	System voltage low (KAM)	ON	1	CCM	C, O, R	×
P0564	←	Cruise control switch input circuit problem	OFF	1	Other	C, O, R	×
P0571	←	Brake switch input circuit problem	OFF	1	Other	C, O, R	×
P0601	←	PCM memory check sum error	ON	1	CCM	C, O, R	×
P0602	←	PCM programming error	ON	1	CCM	C, O, R	×
P0604	←	PCM random access memory error	ON	1	CCM	C, O, R	×
P0610	←	PCM vehicle options error	ON	1	CCM	C, O, R	×
P0638	←	Throttle actuator control circuit range/performance problem	ON	1	CCM	C	×
P0661	←	SSV solenoid valve control circuit low	ON	2	CCM	C, O, R	×
P0662	←	SSV solenoid valve control circuit high	ON	2	CCM	C, O, R	×
P0703	←	Brake switch input circuit problem	ON	2	CCM	C	×
P0704[*3]	←	CPP switch input circuit problem	ON	2	CCM	C	×
P0850[*3]	←	Neutral switch input circuit problem	ON	2	CCM	C	×
P1260	←	Immobilizer system problem	OFF	1	Other	C, O	—
—	P1574	TP sensor output incongruent	ON	1	CCM	C, O, R	×
—	P1577	APP sensor output incongruent	ON	1	CCM	C, O, R	×
P1686	←	Metering oil pump control circuit low flow side problem	ON	1	Other	C, R	×
P1687	←	Metering oil pump control circuit high flow side problem	ON	1	Other	C, R	×
P1688	←	Metering oil pump control circuit initial check problem	ON	1	Other	C, R	×
P2004[*3]	←	APV stuck open	ON	2	CCM	C, O, R	×
P2006[*3]	←	APV motor control driver IC problem	ON	2	CCM	C	×
P2009[*3]	P2008	APV motor control circuit low	ON	2	CCM	C, O, R	×
P2010[*3]		APV motor control circuit high	ON	2	CCM	C, O, R	×
P2016[*3]	P2017	APV position sensor circuit low	ON	2	CCM	C, O, R	×
P2017[*3]		APV position sensor circuit high	ON	2	CCM	C, O, R	×
P2067	—	Fuel gauge sender unit (sub) circuit low input	ON	2	CCM	C, O, R	×
P2068	—	Fuel gauge sender unit (sub) circuit high input	ON	2	CCM	C, O, R	×

DTC No.		Condition	MIL	DC	Monitor item*1	Self -test type*4	Memory function
2005MY	2004MY						
P2070	←	SSV stuck open	ON	2	CCM	C, O, R	×
P2096	←	Target A/F feedback system too lean	ON	2	Fuel system	C, R	×
P2097	←	Target A/F feedback system too rich	ON	2	Fuel system	C, R	×
P2102	P2101	Drive-by-wire relay control circuit low	ON	1	CCM	C, O, R	×
P2103		Drive-by-wire relay control circuit high	ON	1	CCM	C, O, R	×
P2106	←	Throttle actuator control system-forced limited power	ON	1	CCM	C	×
P2107	←	Throttle actuator control module processor error	ON	1	CCM	C, O, R	×
P2108	←	Throttle actuator control module performance error	ON	1	CCM	C	×
P2109	←	TP sensor minimum stop range/performance problem	ON	1	CCM	C	×
P2112	←	Throttle actuator control system range/performance problem	ON	1	CCM	C	×
P2119	←	Throttle actuator control throttle body range/ performance problem	ON	2	CCM	C, O, R	×
P2122	←	APP sensor No.1 circuit low input	ON	1	CCM	C, O, R	×
P2123	←	APP sensor No.1 circuit high input	ON	1	CCM	C, O, R	×
P2127	←	APP sensor No.2 circuit low input	ON	1	CCM	C, O, R	×
P2128	←	APP sensor No.2 circuit high input	ON	1	CCM	C, O, R	×
P2135	←	TP sensor No.1/No.2 voltage correlation problem	ON	1	CCM	C, O, R	×
P2136	←	TP sensor No.1/No.3 (calculation value in PCM) voltage correlation problem	ON	1	CCM	C, O, R	×
P2138	←	TP sensor No.3 (calculation value in PCM)/No.4 (calculation value in PCM) voltage correlation problem	ON	1	CCM	C, O, R	×
P2195	←	Front HO2S signal stuck lean	ON	2	HO2S	C, R	×
P2196	←	Front HO2S signal stuck rich	ON	2	HO2S	C, R	×
P2257	←	AIR pump relay control circuit low	ON	2	Air system	C, O, R	×
P2258	←	AIR pump relay control circuit high	ON	2	Air system	C, O, R	×
P2259	←	AIR solenoid valve control circuit low	ON	2	Air system	C, O, R	×
P2260	←	AIR solenoid valve control circuit high	ON	2	Air system	C, O, R	×
P2270	←	Rear HO2S signal stuck lean	ON	2	HO2S	C, R	×
P2271	←	Rear HO2S signal stuck rich	ON	2	HO2S	C, R	×
P2401	←	EVAP system leak detection pump control circuit low	ON	2	EVAP system	C, O, R	×
P2402	←	EVAP system leak detection pump control circuit high	ON	2	EVAP system	C, O, R	×
P2404	←	EVAP system leak detection pump sense circuit range/performance problem	ON	2	EVAP system	C	×
P2405	←	EVAP system leak detection pump sense circuit low	ON	2	EVAP system	C, O, R	×
—	P2406	EVAP system leak detection pump sense circuit high	ON	2	EVAP system	C, O, R	×
P2407	←	EVAP system leak detection pump sense circuit intermittent/erratic problem	ON	2	EVAP system	C, O, R	×
P2502	←	Charging system voltage problem	OFF	1	Other	C, R	×
P2503	←	Charging system voltage low	OFF	1	Other	C, R	×
P2504	←	Charging system voltage high	OFF	1	Other	C, R	×

*1 : Indicates the applicable item in the On-Board System Readiness Test as defined by CARB.
*2 : California emission regulation applicable model
*3 : MT model
*4 : C: CMDTC self-test, O: KOEO self-test, R: KOER self-test

OBD-II Diagnostic Monitoring System Test Results (Mode 06)

- Differences between the 2005 MY and 2004 MY diagnostic monitoring system test results are shown below.

DMTR table

Test ID		Description	Related system
2005 MY	2004 MY		
10:01:80	←	Response lean to rich	HO2S (front HO2S)
10:01:81	←	Response rich to lean	
10:02:03	←	Low sensor voltage for switch time calculation	HO2S (rear HO2S)
10:02:04	←	High sensor voltage for switch time calculation	
10:02:05	←	Rich to lean sensor switching time	
10:21:80	←	Front and rear HO2S switching time ratio	Catalyst
10:3A:80	←	Large leak check	EVAP system
10:3B:80	←	Small leak check	
10:3C:80	←	Very small leak check	
10:3D:80	←	Purge flow monitor	
10:71:80	←	Secondary airflow test	AIR system
—	10:E1:80	Heat radiation ratio	Thermostat
10:E1:81	←	ECT	
10:A2:0B	—	Exponentially weighted moving average misfire counts for last 10 driving cycles	Misfire
10:A2:0C	—	Misfire counts for last/current driving cycles	
10:A3:0B	—	Exponentially weighted moving average misfire counts for last 10 driving cycles	
10:A3:0C	—	Misfire counts for last/current driving cycles	

DTC DETECTION LOGIC AND CONDITIONS

DHU010200000S03

- The following DTCs have been adopted.
  — P2009, P2010, P2016, P2017, P2067, P2068, P2102, P2103
- The following failure detection conditions are summarized information.

Fuel Gauge Sender Unit (Sub)

P2067 Fuel gauge sender unit (sub) circuit low input

- The PCM monitors the fuel tank level and input voltage from the fuel gauge sender unit (sub) when the engine is running. If the input voltage is **less than 0.78 V** and fuel tank level is full, the PCM determines that the fuel gauge sender unit (sub) circuit input voltage is low.

P2068 Fuel gauge sender unit (sub) circuit high input

- The PCM monitors the fuel tank level and input voltage from the fuel gauge sender unit (sub) when the engine is running. If the input voltage is **more than 4.9 V** and fuel tank level is empty, the PCM determines that the fuel gauge sender unit (sub) circuit input voltage is high.

APV Control

P2009 APV motor control circuit low input

- The PCM monitors the APV motor control current when the engine is running. If the control current is **less than 0.1 A**, the PCM determines that there is an APV motor control circuit malfunction.

P2010 APV motor control circuit high input

- The PCM monitors the APV motor control current when the engine is running. If the control current is **more than 10 A**, the PCM determines that there is an APV motor control circuit malfunction.

APV Position Sensor

P2016 APV position sensor circuit low input

- The PCM monitors the input voltage from the APV position sensor when the engine is running. If the input voltage is **less than 0.2 V**, the PCM determines that the APV position sensor circuit input voltage is low.

P2017 APV position sensor circuit high input

- The PCM monitors the input voltage from the APV position sensor when the engine is running. If the input voltage is **more than 4.8 V**, the PCM determines that the APV position sensor circuit input voltage is high.

Throttle Actuator Control Circuit

P2102 Throttle actuator power supply line circuit low input

- The PCM monitors the input voltage from the drive-by-wire relay when the PCM turns the drive-by-wire relay on. If the input voltage is **less than 5.0 V**, the PCM determines that the drive-by-wire relay control circuit voltage is low.

P2103 Throttle actuator power supply line circuit high input

- The PCM monitors the input voltage from the drive-by-wire relay when the PCM turns the drive-by-wire relay off. If the input voltage is **more than 5.0 V**, the PCM determines that the drive-by-wire relay control circuit voltage is high.

KOEO/KOER SELF-TEST

DHU010200000S04

- Differences between the 2005 MY and 2004 MY KOEO/KOER self-test items are shown below.

KOEO/KOER self-test table

×: Applicable
—: Not applicable

DTC No.		Condition	Test condition	
2005MY	2004MY		KOEO	KOER
P0030	←	Front HO2S heater control circuit problem	×	×
P0031	←	Front HO2S heater control circuit low	×	×
P0032	←	Front HO2S heater control circuit high	×	×
P0037	←	Rear HO2S heater control circuit low	×	×
P0038	←	Rear HO2S heater control circuit high	×	×
P0076	←	VDI solenoid valve control circuit low	×	×
P0077	←	VDI solenoid valve control circuit high	×	×
P0101	←	MAF sensor circuit range/performance problem	—	—
P0102	←	MAF sensor circuit low input	×	×
P0103	←	MAF sensor circuit high input	×	×
P0107	←	BARO sensor circuit low input	×	×
P0108	←	BARO sensor circuit high input	×	×
P0111	←	IAT sensor circuit range/performance problem	—	—
P0112	←	IAT sensor circuit low input	×	×
P0113	←	IAT sensor circuit high input	×	×
P0117	←	ECT sensor circuit low input	×	×
P0118	←	ECT sensor circuit high input	×	×
P0122	←	TP sensor No.1 circuit low input	×	×
P0123	←	TP sensor No.1 circuit high input	×	×
P0125	←	Insufficient coolant temperature for closed loop fuel control	—	—
P0126	←	Insufficient coolant temperature for stable operation	—	—
—	P0128	Coolant thermostat problem	×	—
P0130	←	Front HO2S circuit problem	×	×
P0131	←	Front HO2S circuit low voltage	×	×
P0132	←	Front HO2S circuit high voltage	×	×
P0133	←	Front HO2S circuit slow response	—	—
P0138	←	Rear HO2S circuit high voltage	—	×
P0139	←	Rear HO2S circuit slow response	—	×
P0171	←	System too lean	—	×
P0172	←	System too rich	—	×
P0222	←	TP sensor No.2 circuit low input	×	×
P0223	←	TP sensor No.2 circuit high input	×	×
P0300	←	Random misfire detected	—	—
P0301	←	Front rotor misfire detected	—	—
P0302	←	Rear rotor misfire detected	—	—
P0327	←	KS circuit low input	×	×
P0328	←	KS circuit high input	×	×
P0335	←	Eccentric shaft position sensor circuit problem	—	—
P0336	←	Eccentric shaft position sensor circuit range/performance problem	—	×
P0410	←	AIR system problem	—	×

DTC No.		Condition	Test condition	
2005MY	2004MY		KOEO	KOER
P0420	←	Catalyst system efficiency below threshold	—	—
P0441	←	EVAP system incorrect purge flow	—	×
P0442	←	EVAP system leak detected (small leak)	—	×
P0443	←	Purge solenoid valve circuit problem	—	×
P0446	←	EVAP system vent control circuit problem	—	×
P0455	←	EVAP system leak detected (large leak)	—	×
P0456	←	EVAP system leak detected (very small leak)	—	×
P0461	←	Fuel gauge sender unit circuit range/performance problem	—	—
P0462	←	Fuel gauge sender unit (main) circuit low input	×	×
P0463	←	Fuel gauge sender unit (main) circuit high input	×	×
P0480	←	Cooling fan No.1 control circuit problem	×	×
P0481	←	Cooling fan No.2 control circuit problem	×	×
P0500	←	VSS circuit problem	—	—
P0505	←	Idle air control system problem	—	×
P0506	←	Idle air control system RPM lower than expected	—	—
P0507	←	Idle air control system RPM higher than expected	—	—
P0562	←	System voltage low (KAM)	×	×
P0564	←	Cruise control switch input circuit problem	×	×
P0571	←	Brake switch input circuit problem	×	×
P0601	←	PCM memory check sum error	×	×
P0602	←	PCM programming error	×	×
P0604	←	PCM random access memory error	×	×
P0610	←	PCM vehicle options error	×	×
P0638	←	Throttle actuator control circuit range/performance problem	—	—
P0661	←	SSV solenoid valve control circuit low	×	×
P0662	←	SSV solenoid valve control circuit high	×	×
P0703	←	Brake switch input circuit problem	—	—
P0704	←	CPP switch input circuit problem	—	—
P0850	←	Neutral switch input circuit problem	—	—
P1260	←	Immobilizer system problem	×	—
—	P1574	TP sensor output incongruent	×	×
—	P1577	APP sensor output incongruent	×	×
P1686	←	Metering oil pump control circuit low flow side problem	—	×
P1687	←	Metering oil pump control circuit high flow side problem	—	×
P1688	←	Metering oil pump control circuit initial check problem	—	×
P2004	←	APV stuck open	×	×
P2006	←	APV motor control driver IC problem	—	—
P2009	P2008	APV motor control circuit low	×	×
P2010		APV motor control circuit high	×	×
P2016	P2017	APV position sensor circuit low	×	×
P2017		APV position sensor circuit high	×	×
P2067	—	Fuel gauge sender unit (sub) circuit low input	×	×
P2068	—	Fuel gauge sender unit (sub) circuit high input	×	×
P2070	←	SSV stuck open	×	×
P2096	←	Target A/F feedback system too lean	—	×
P2097	←	Target A/F feedback system too rich	—	×
P2102	P2101	Drive-by-wire relay control circuit low	×	×
P2103		Drive-by-wire relay control circuit high	×	×
P2106	←	Throttle actuator control system-forced limited power	—	—
P2107	←	Throttle actuator control module processor error	×	×
P2108	←	Throttle actuator control module performance error	—	—
P2109	←	TP sensor minimum stop range/performance problem	—	—
P2112	←	Throttle actuator control system range/performance problem	—	—

DTC No.		Condition	Test condition	
2005MY	2004MY		KOEO	KOER
P2119	←	Throttle actuator control throttle body range/performance problem	×	×
P2122	←	APP sensor No.1 circuit low input	×	×
P2123	←	APP sensor No.1 circuit high input	×	×
P2127	←	APP sensor No.2 circuit low input	×	×
P2128	←	APP sensor No.2 circuit high input	×	×
P2135	←	TP sensor No.1/No.2 voltage correlation problem	×	×
P2136	←	TP sensor No.1/No.3 (calculation value in PCM) voltage correlation problem	×	×
P2138	←	TP sensor No.3 (calculation value in PCM) /No.4 (calculation value in PCM) voltage correlation problem	×	×
P2195	←	Front HO2S signal stuck lean	—	×
P2196	←	Front HO2S signal stuck rich	—	×
P2257	←	AIR pump relay control circuit low	×	×
P2258	←	AIR pump relay control circuit high	×	×
P2259	←	AIR solenoid valve control circuit low	×	×
P2260	←	AIR solenoid valve control circuit high	×	×
P2270	←	Rear HO2S signal stuck lean	—	×
P2271	←	Rear HO2S signal stuck rich	—	×
P2401	←	EVAP system leak detection pump control circuit low	×	×
P2402	←	EVAP system leak detection pump control circuit high	×	×
P2404	←	EVAP system leak detection pump sense circuit range/ performance problem	—	—
P2405	←	EVAP system leak detection pump sense circuit low	×	×
—	P2406	EVAP system leak detection pump sense circuit high	×	×
P2407	←	EVAP system leak detection pump sense circuit intermittent/ erratic problem	×	×
P2502	←	Charging system voltage problem	—	×
P2503	←	Charging system voltage low	—	×
P2504	←	Charging system voltage high	—	×

PID/DATA MONITOR AND RECORD

DHU010200000S05

- Differences between the 2005 MY and 2004 MY PID/DATA monitor items are shown below.

PID/DATA monitor item table

—: Not applicable

Item		Definition	Unit/Condition	PCM terminal
2005 MY	2004 MY			
ACCS	←	A/C relay control signal in PCM	On/Off	5AA
ACSW	←	Input signal from A/C switch	On/Off	4W
AIP RLY	←	AIR pump relay control signal in PCM	On/Off	4O
ALTF	←	Generator field coil control signal in PCM	%	2I
ALTT V	←	Input voltage from generator	V	2T
APP	←	APP	%	5C, 5F
APP1	←	APP from APP sensor No.1	%	5F
	←	Input voltage from APP sensor No.1	V	
APP2	←	APP from APP sensor No.2	%	5C
	←	Input voltage from APP sensor No.2	V	
APV	←	APV motor control signal in PCM	Opening/Closing	3G, 3J
APV_POS	←	Input voltage from APV position sensor	V	3B
ARPMDES	←	Target engine speed	RPM	—
B+	←	Input voltage from battery	V	5I
BARO	←	BARO	kPa / Bar / psi	5S
	←	Input voltage from BARO sensor	V	
BOO	←	Input signal from brake switch No.2	On/Off	4P
CATT11_DSD	←	Estimated catalyst converter temperature	°C / °F	—

Item		Definition	Unit/Condition	PCM terminal
2005 MY	2004 MY			
CHRGLP	←	Generator warning light control signal in PCM	On/Off	—
COLP	←	Input signal from refrigerant pressure switch (medium-pressure)	On/Off	4Z
CPP	←	Input signal from CPP switch	On/Off	4F
CPP/PNP	←	Input signal from neutral switch	Drive/Neutral	2O
DEI	←	VDI solenoid valve control signal in PCM	On/Off	1W
DTCCNT	←	DTC count (includes those needing no action)	—	—
ECT	←	ECT	°C | °F	2K
	←	Input voltage from ECT sensor	V	
ECT_DES	←	Estimated ECT	°C | °F	—
EQ_RAT11	←	Lambda	—	2B
ETC_ACT	←	Throttle valve opening angle	°	1J, 1M
ETC_DSD	←	Target throttle valve position	%	—
	←	Target throttle valve opening angle	°	
EVAPCP	←	Purge solenoid valve control signal in PCM	%	2P
FAN1	←	Cooling fan relay No.1 control signal in PCM	On/Off	5X
FAN2	←	Cooling fan relay No.2 control signal in PCM	On/Off	5AD
—	FDPDTC	Pending code that caused Freeze Frame Data storage	—	—
FLI	←	Fuel tank level	%	—
FP	←	Fuel pump relay control signal in PCM	On/Off	5P
FPRR	←	Fuel pump speed control relay control signal in PCM	On/Off	4M
FUELPW	←	Fuel injection duration in PCM	ms	2J, 2M
FUELSYS	←	Fuel system loop status	OL/CL/OL Drive/ OL Fault/CL Fault	—
GENVDSD	←	Target generator voltage	V	—
HTR11	←	Front HO2S heater control signal in PCM	On/Off	1V
HTR12	←	Rear HO2S heater control signal in PCM	On/Off	2A
IAC	←	Throttle actuator control signal in PCM	%	1B, 1C
IASV	←	VFAD solenoid valve control signal in PCM	On/Off	5Z
IAT	←	IAT	°C | °F	5K
	←	Input voltage from IAT sensor	V	
INGEAR	←	In gear	On/Off	—
IVS	←	Idle validation	Idle/Off Idle	1J, 1M
KNOCKR	←	Spark retard value to prevent knocking	°	1T
LDP_MON	—	Indicates EVAP System leak detection pump monitoring current	mA	4D
LDP_REF	—	Indicates EVAP System leak detection pump reference current	mA	4D
LDP_IDL	—	Indicates EVAP System leak detection pump idle current	mA	4D
LDP_SLDV	—	Indicates EVAP Control system small leak detection value	mA	4D
LDP_VSLDV	—	Indicates EVAP Control system very small leak detection value	mA	4D
LDP_EVAPCP	—	Indicates EVAP Control system incorrect purge flow detection value	mA	4D
LOAD	←	LOAD	%	—
LONGFT1	←	Long term fuel trim	%	—
MAF	←	MAF	g/s	5N
	←	Input voltage from MAF sensor	V	
MIL	←	MIL control signal in PCM	On/Off	—
MIL_DIS	←	Distance travelled while MIL is activated	km | mile	—
MOP_POS	←	Metering oil pump control status	—	2V, 2W, 2Y, 2AB

Item		Definition	Unit/Condition		PCM terminal
2005 MY	2004 MY				
MOP_SW	←	Input signal from metering oil pump switch	On/Off		2N
O2S11	←	Front HO2S output current	mA		2B
O2S12	←	Input voltage from rear HO2S	V		2Q
PACNTV	←	AIR solenoid valve control signal in PCM	On/Off		1O
PCM_T	←	Input voltage from PCM temperature sensor	V		—
—	PREDELI	Delivery mode	On/Off		—
RO2FT1	←	Target A/F feedback system status	—		—
RPM	←	Engine speed	RPM		—
SC_SET	←	Cruise indicator light control signal in PCM	On/Off		—
SCCS	←	Input voltage from cruise control switch	V		5V
SELTESTDTC	←	DTC count by KOEO/KOER self-test	—		—
SHRTFT1	←	Short term fuel trim	%		—
SHRTFT12	←	Target A/F fuel trim	%		—
SPARK-L	←	Spark advance (L/F) in PCM	°		2AA
SPARK-T	←	Spark advance (T/F) in PCM	°		2AD
SSV	←	SSV solenoid valve control signal in PCM	On/Off		1L
Test	←	Test mode	On/Off		—
TIRESIZE	←	Tire revolution per mile	—		—
TP	←	Input voltage from TP sensor	V		1J, 1M
TP REL	←	Relative TP	%		1J, 1M
TP1	←	TP from TP sensor No.1	%		1J
	←	Input voltage from TP sensor No.1	V		
TP2	←	TP from TP sensor No.2	%		1M
	←	Input voltage from TP sensor No.2	V		
TPCT	←	Minimum input voltage from TP sensor at throttle closing	V		1J, 1M
VSS	←	Vehicle speed	KPH	MPH	—

SIMULATION TEST

DHU010200000S06

- The simulation items are shown below.

Simulation item table

×: Applicable
—: Not applicable

Item	Applicable component	Unit/condition	Test condition		PCM terminal
			KOEO	KOER	
ACCS	A/C relay	On/Off	×	×	5AA
AIP RLY	AIR pump relay	On/Off	×	×	4O
ALTF	Generator (field coil)	%	—	×	2I
APV	APV motor	On/Off	×	×	3G, 3J
ARPMDES	Target engine speed	RPM	×	×	—
DEI	VDI solenoid valve	On/Off	×	×	1W
ETC_DSD	Target throttle valve opening angle	°	×	×	—
EVAPCP	Purge solenoid valve	%	×	×	2P
FAN1	Cooling fan relay No.1	On/Off	×	×	5X
FAN2	Cooling fan relay No.2	On/Off	×	×	5AD
FP	Fuel pump relay	On/Off	×	×	5P
FPRR	Fuel pump speed control relay	On/Off	×	×	4M
FUELPW1	Fuel injector (FP1, RP1)	%	—	×	2J, 2M
GENVDSD	Target generator voltage	V	—	×	—
HTR12	Rear HO2S heater	On/Off	×	×	2A
IASV	VFAD solenoid valve	On/Off	×	×	5Z
MOP_POS	Metering oil pump	—	×	×	2V, 2W, 2Y, 2AB
PACNTV	AIR solenoid valve	On/Off	×	×	1O
SSV	SSV solenoid valve	On/Off	×	×	1L
test	Test mode	On/Off	×	×	—

BODY & ACCESSORIES

09
SECTION

OUTLINE 09-00
SECURITY AND LOCKS 09-14
EXTERIOR TRIM 09-16

09–00 OUTLINE

BODY AND ACCESSORIES
NEW FEATURES 09–00–1

BODY AND ACCESSORIES NEW FEATURES

DHU090000000S01

Improved marketability	• Rear spoiler adopted • Retractable key type transmitter adopted

RX-8

09–14 SECURITY AND LOCKS

SECURITY AND LOCKS OUTLINE 09–14–1
POWER DOOR LOCK SYSTEM OUTLINE 09–14–1
TRANSMITTER (RETRACTABLE KEY TYPE) STRUCTURAL VIEW 09–14–1

SECURITY AND LOCKS OUTLINE

DHU091400001S01

Features

Improved marketability	• Retractable key type transmitter adopted

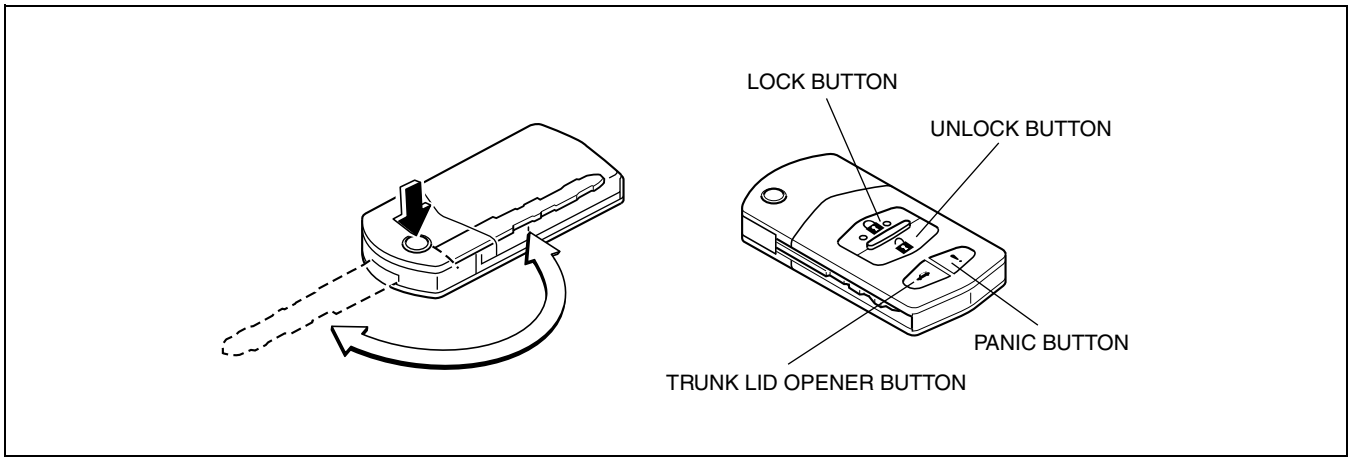
POWER DOOR LOCK SYSTEM OUTLINE

DHU091466000S01

- A retractable key type transmitter has been adopted.

TRANSMITTER (RETRACTABLE KEY TYPE) STRUCTURAL VIEW

DHU091466000S02



C5U914ZS5001

09–16 EXTERIOR TRIM

EXTERIOR TRIM OUTLINE 09–16–1
EXTERIOR TRIM STRUCTURAL VIEW 09–16–1

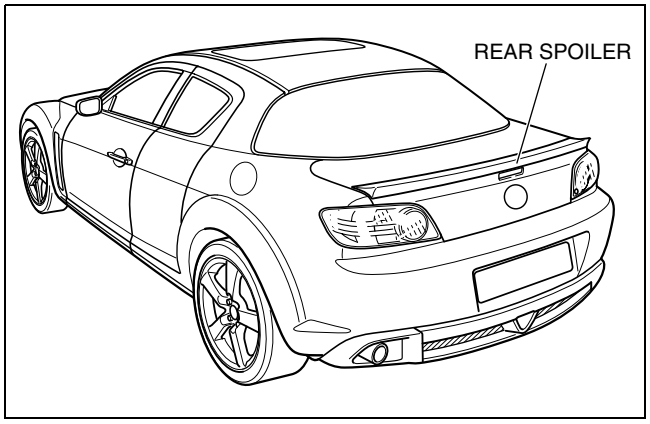
EXTERIOR TRIM OUTLINE

DHU091600000S01

- Rear spoiler has been adopted.

EXTERIOR TRIM STRUCTURAL VIEW

DHU091600000S02



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