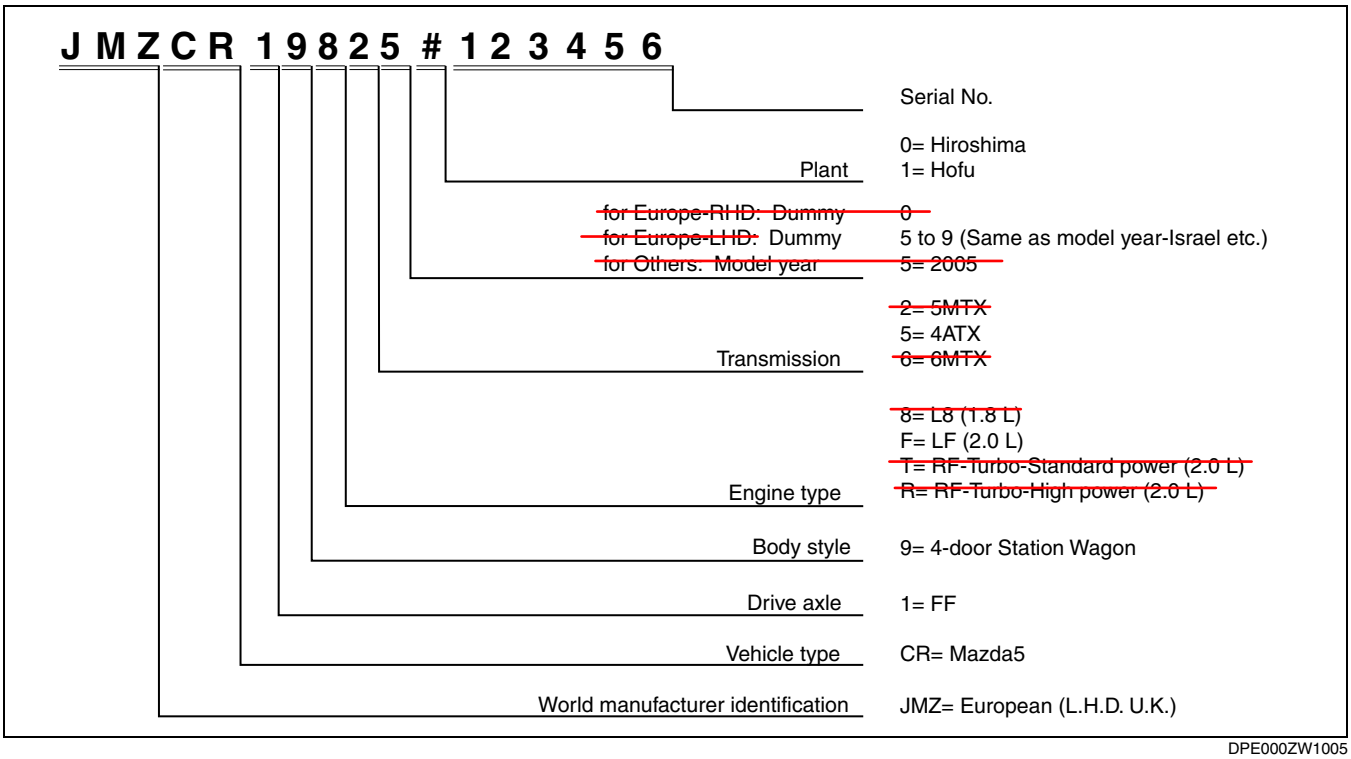
00–00 GENERAL INFORMATION

VEHICLE IDENTIFICATION NUMBER (VIN) CODE

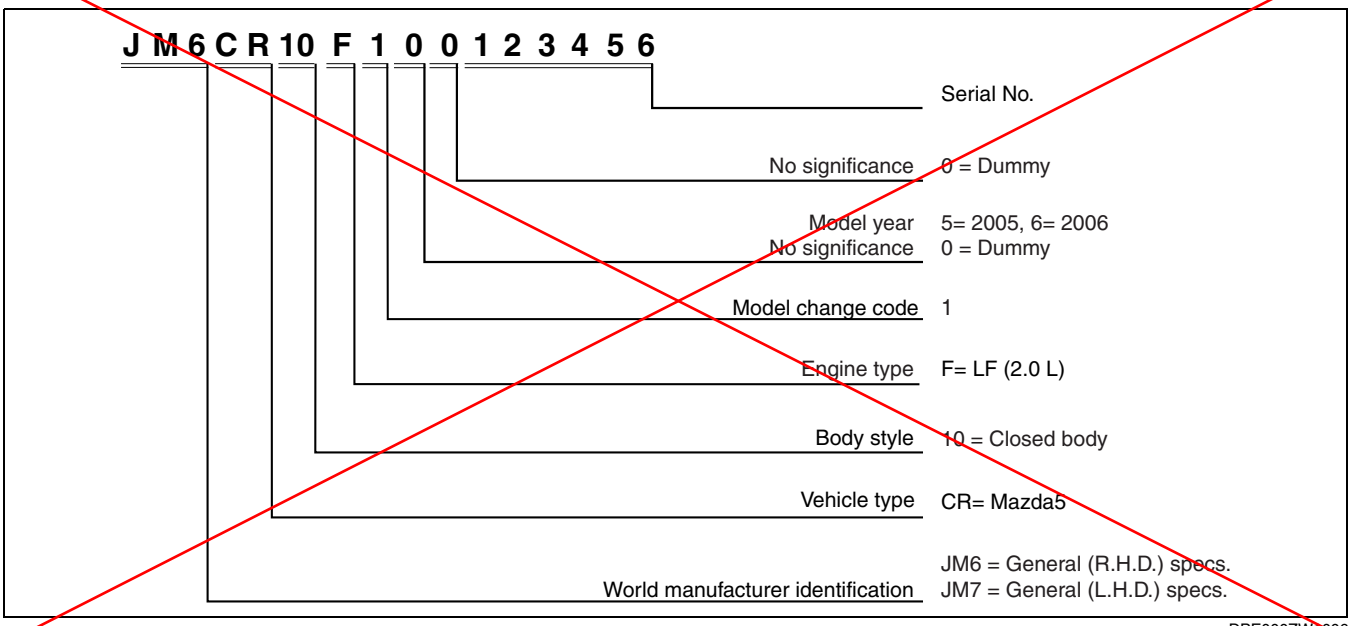
~~European (L.H.D. U.K.) specs.~~

DPE000000000W15



DPE000ZW1005

General (L.H.D R.H.D) specs.



DPE000ZW1006

VEHICLE IDENTIFICATION NUMBER (VIN)

DPE000000000W16

European (L.H.D) specs.
JMZ CR1982*# 100001—
JMZ CR19F2*# 100001—
JMZ CR19F5*# 100001—
JMZ CR19R6*# 100001—
JMZ CR19T6*# 100001—

U.K. specs.
JMZ CR19820# 100001—
JMZ CR19F20# 100001—
JMZ CR19R60# 100001—
JMZ CR19T60# 100001—

General (L.H.D) specs.
JM7 CR10F1*0 100001—
JM7 CR10F100 100001—

General (R.H.D) specs.
JM6 CR10F100 100001—

HOW TO USE THIS MANUAL

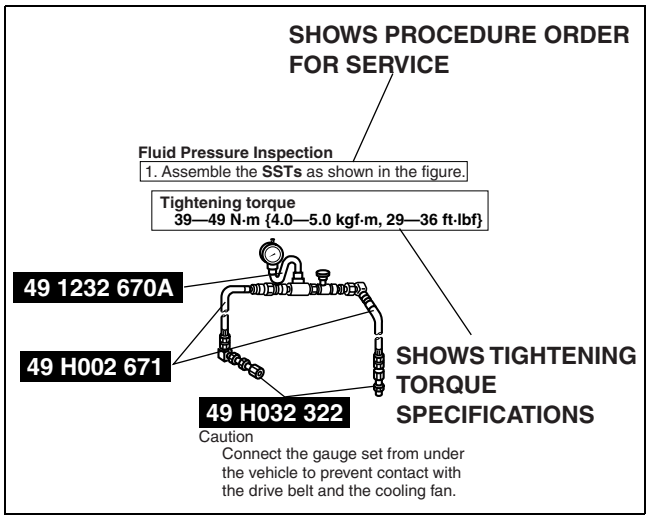
DPE000000000W01

Range of Topics

- This manual contains procedures for performing all required service operations. The procedures are divided into the following five basic operations:
  - — Removal/Installation
  - — Disassembly/Assembly
  - — Replacement
  - — Inspection
  - — Adjustment
- Simple operations which can be performed easily just by looking at the vehicle (i.e., removal/installation of parts, jacking, vehicle lifting, cleaning of parts, and visual inspection) have been omitted.

Service Procedure
Inspection, adjustment

- Inspection and adjustment procedures are divided into steps. Important points regarding the location and contents of the procedures are explained in detail and shown in the illustrations.



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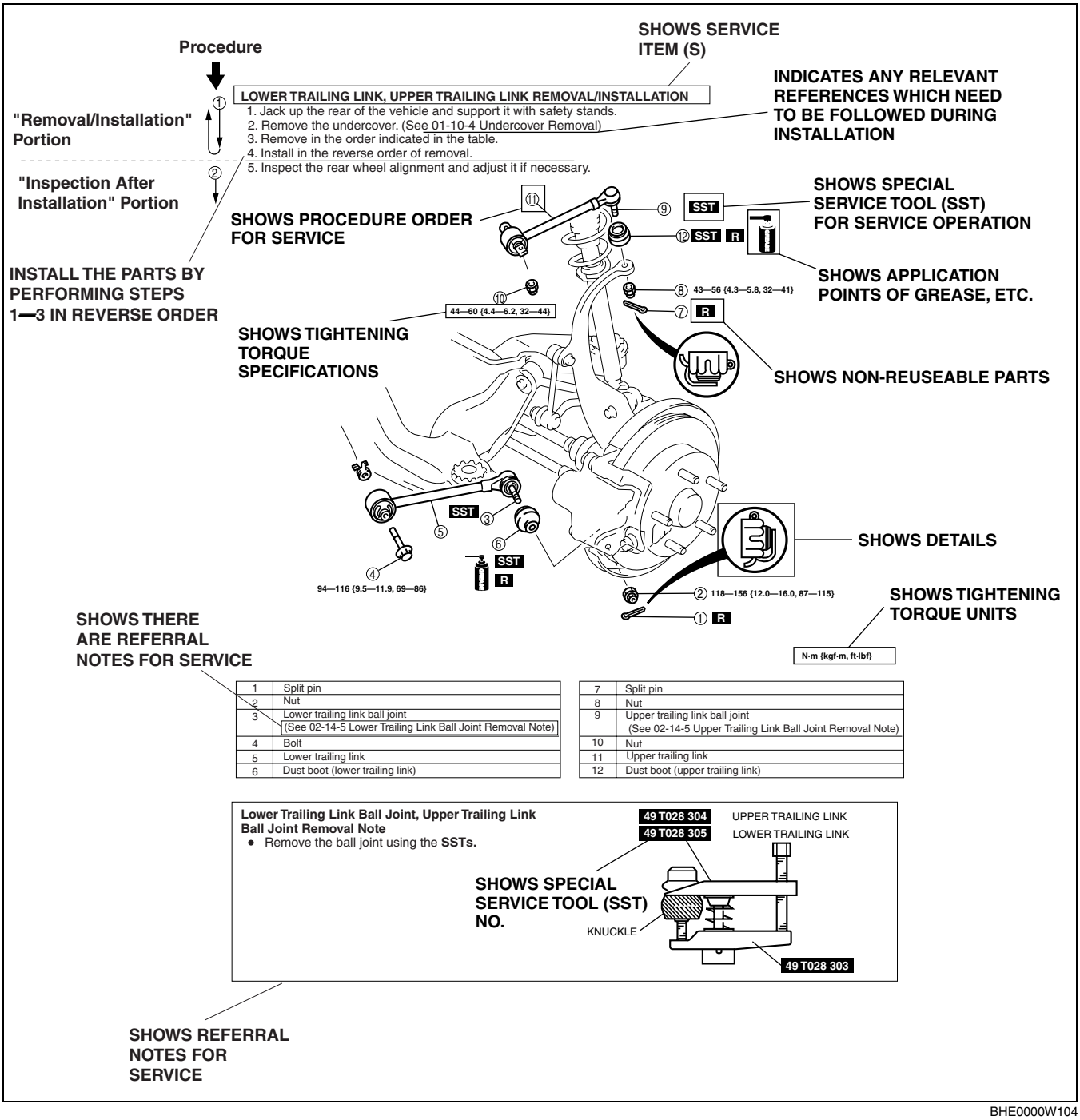
Repair procedure

1. Most repair operations begin with an overview illustration. It identifies the components, shows how the parts fit together, and describes visual part inspection. However, only removal/installation procedures that need to be performed methodically have written instructions.
2. Expendable parts, tightening torques, and symbols for oil, grease, and sealant are shown in the overview illustration. In addition, symbols indicating parts requiring the use of special service tools or equivalent are also shown.

3. Procedure steps are numbered and the part that is the main point of that procedure is shown in the illustration with the corresponding number. Occasionally, there are important points or additional information concerning a procedure. Refer to this information when servicing the related part.



1	Split pin	7	Split pin
2	Nut	8	Nut
3	Lower trailing link ball joint (See 02-14-5 Lower Trailing Link Ball Joint Removal Note)	9	Upper trailing link ball joint (See 02-14-5 Upper Trailing Link Ball Joint Removal Note)
4	Bolt	10	Nut
5	Lower trailing link	11	Upper trailing link
6	Dust boot (lower trailing link)	12	Dust boot (upper trailing link)

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Symbols

- There are eight symbols indicating oil, grease, fluids, sealant, and the use of **SST** or equivalent. These symbols show application points or use of these materials during service.

Symbol	Meaning	Kind
	Apply oil	New appropriate engine oil or gear oil

Symbol	Meaning	Kind
	Apply brake fluid	New appropriate brake fluid
	Apply automatic transaxle/ transmission fluid	New appropriate automatic transaxle/ transmission fluid
	Apply grease	Appropriate grease
	Apply sealant	Appropriate sealant
	Apply petroleum jelly	Appropriate petroleum jelly
R	Replace part	O-ring, gasket, etc.
SST	Use SST or equivalent	Appropriate tools

Advisory Messages
- You will find several **Warnings**, **Cautions**, **Notes**, **Specifications** and **Upper and Lower Limits** in this manual.

Warning
- A Warning indicates a situation in which serious injury or death could result if the warning is ignored.

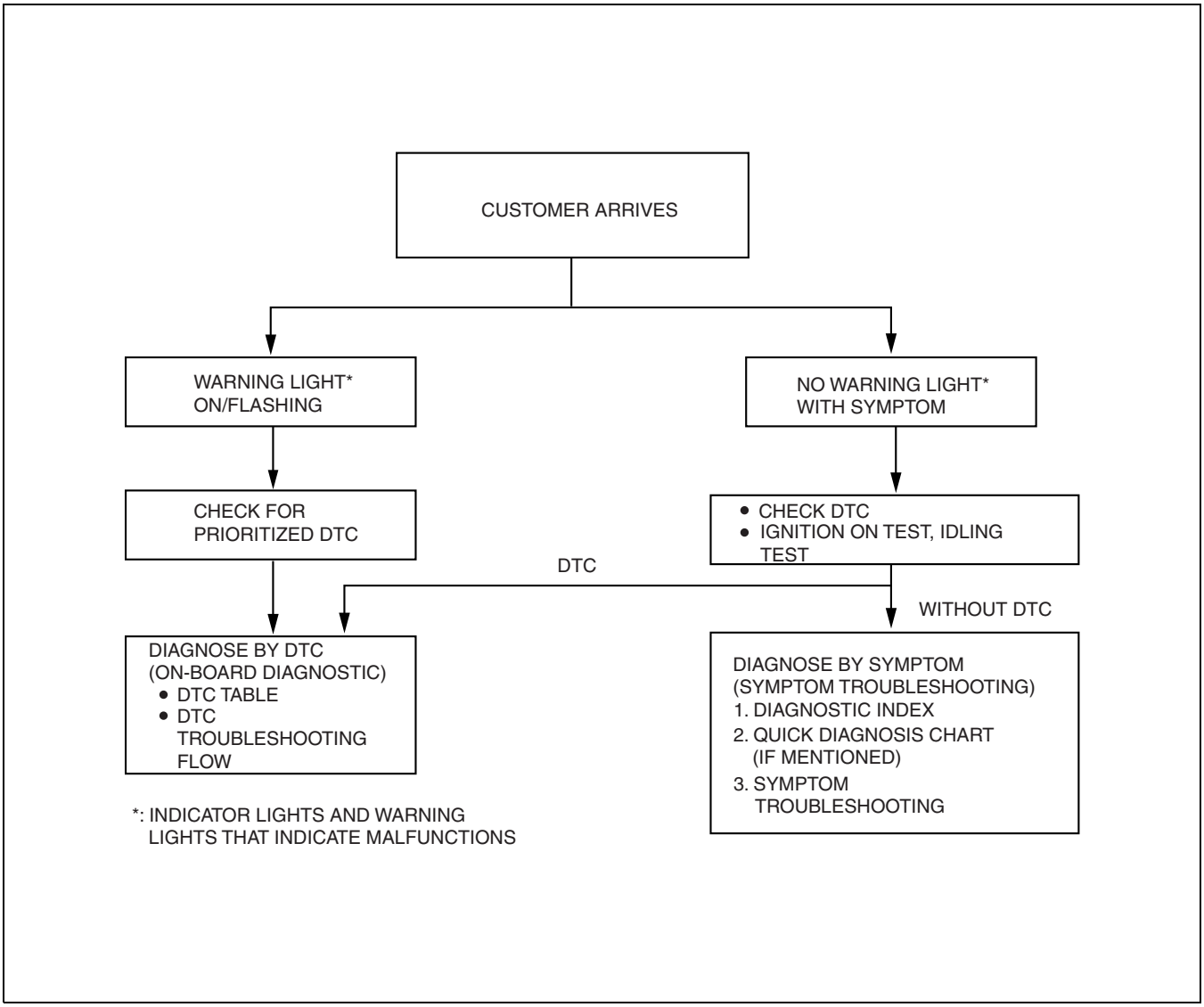
Caution
- A Caution indicates a situation in which damage to the vehicle or parts could result if the caution is ignored.

Note
- A Note provides added information that will help you to complete a particular procedure.

Specification
- The values indicate the allowable range when performing inspections or adjustments.

Upper and lower limits
- The values indicate the upper and lower limits that must not be exceeded when performing inspections or adjustments.

Troubleshooting Procedure
Basic flow of troubleshooting



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DTC troubleshooting flow (on-board diagnostic)
- Diagnostic trouble codes (DTCs) are important hints for repairing malfunctions that are difficult to simulate. Perform the specific DTC diagnostic inspection to quickly and accurately diagnose the malfunction.
- The on-board diagnostic function is used during inspection. When a DTC is shown specifying the cause of a malfunction, continue the diagnostic inspection according to the items indicated by the on-board diagnostic function.

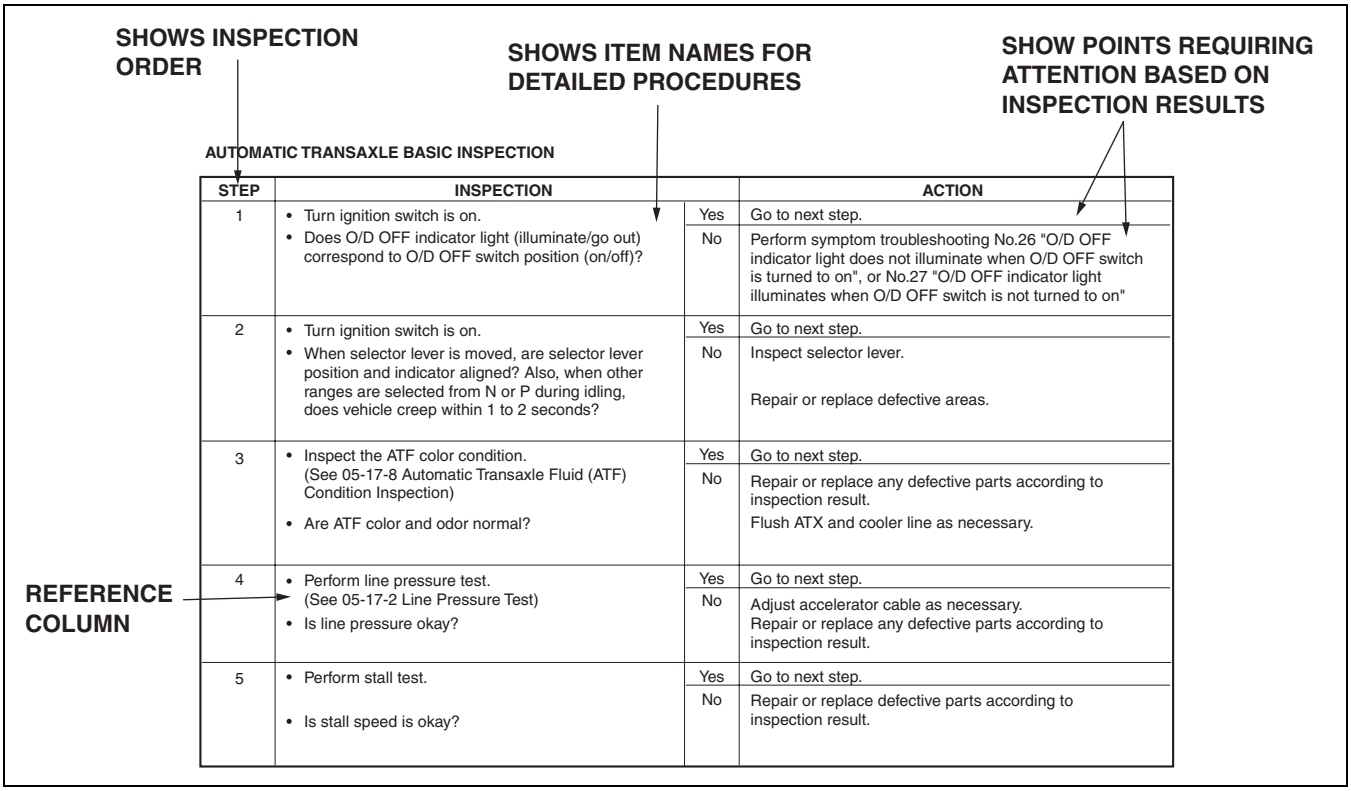
Diagnostic index
- The diagnostic index lists the symptoms of specific malfunctions. Select the symptoms related or most closely relating to the malfunction.

Quick diagnosis chart (If mentioned)
- The quick diagnosis chart lists diagnosis and inspection procedures to be performed specifically relating to the cause of the malfunction.

Symptom troubleshooting
- Symptom troubleshooting quickly determines the location of the malfunction according to symptom type.

Procedures for Use
Using the basic inspection (section 05)
- Perform the basic inspection procedure before symptom troubleshooting.
- Perform each step in the order shown.
- The reference column lists the location of the detailed procedure for each basic inspection.

- Although inspections and adjustments are performed according to the reference column procedures, if the cause of the malfunction is discovered during basic inspection, continue the procedures as indicated in the action column.



AUTOMATIC TRANSAXLE BASIC INSPECTION

STEP	INSPECTION		ACTION
1	• Turn ignition switch is on. • Does O/D OFF indicator light (illuminate/go out) correspond to O/D OFF switch position (on/off)?	Yes	Go to next step.
		No	Perform symptom troubleshooting No.26 "O/D OFF indicator light does not illuminate when O/D OFF switch is turned to on", or No.27 "O/D OFF indicator light illuminates when O/D OFF switch is not turned to on"
2	• Turn ignition switch is on. • When selector lever is moved, are selector lever position and indicator aligned? Also, when other ranges are selected from N or P during idling, does vehicle creep within 1 to 2 seconds?	Yes	Go to next step.
		No	Inspect selector lever. Repair or replace defective areas.
3	• Inspect the ATF color condition. (See 05-17-8 Automatic Transaxle Fluid (ATF) Condition Inspection) • Are ATF color and odor normal?	Yes	Go to next step.
		No	Repair or replace any defective parts according to inspection result. Flush ATX and cooler line as necessary.
4	• Perform line pressure test. (See 05-17-2 Line Pressure Test) • Is line pressure okay?	Yes	Go to next step.
		No	Adjust accelerator cable as necessary. Repair or replace any defective parts according to inspection result.
5	• Perform stall test. • Is stall speed is okay?	Yes	Go to next step.
		No	Repair or replace defective parts according to inspection result.

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Using the DTC troubleshooting flow

- DTC troubleshooting flow shows diagnostic procedures, inspection methods, and proper action to take for each

DTC.

DETECTION CONDITION describes the condition under which the DTC is detected.

TROUBLE CONDITION

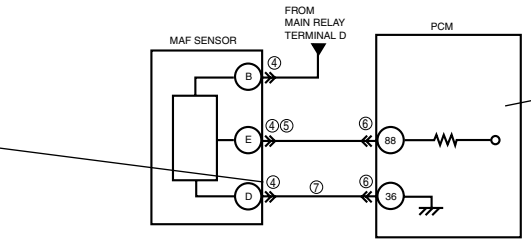
DTC P0103

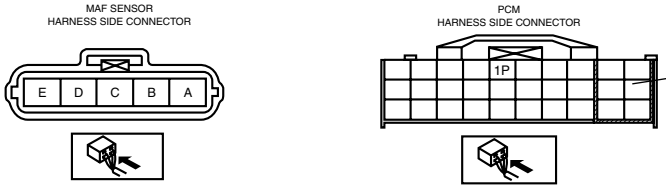
DTC PO103	MAF circuit high input
DETECTION CONDITION	PCM monitors input voltage from TP sensor after ignition key is turned on. If input voltage at PCM terminal 68 is above 8.25 V, PCM determines that TP circuit has malfunction. **Diagnostic support note** • This is a continuous monitor (CCM). • MIL illuminates if PCM detects the above malfunction during first drive cycle. Therefore, PENDING CODE is not available. • FREEZE FRAME DATE is available. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	• MAF sensor malfunction • Connector or terminal malfunction • Open circuit in wiring between MAF sensor terminal D and PCM terminal 36 • Open circuit in MAF sensor ground circuit

POSSIBLE CAUSE describes possible point(s) of malfunction

Indicates the circuit to be inspected (01 and 05 section)

Indicates the inspection step No. to be performed (01 and 05 section)





Indicates the connector related to the inspection

STEP shows the order of troubleshooting

ACTION describes the appropriate action to a take as according to the result (Yes/No).

Diagnostic procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA HAS BEEN RECORDED** • Has FREEZE FRAME DATA been recorded?	Yes	Go to next step.
		No	Record FREEZE FRAME DATA on repair order, then go to next step.
2	**VERIFY RELATED REPAIR INFORMATION AVAILABILITY** • Are related Service Bulletins and/or on-line repair information available?	Yes	Perform repair or diagnosis according to available repair information. If vehicle is not repaired, then go to next step.
		No	Go to next step.
3	**VERIFY CURRENT INPUT SIGNAL STATUS IS CONCERN INTERMITTENT OR CONSTANT** • Connect WDS to DLC-2. • Start engine. • Access MAF V PID using WDS. • Is MAF V PID within 0.2 - 8.3 V?	Yes	Intermittent concern is existing. Go to INTERMITTENT CONCERNS TROUBLESHOOTING procedure. (See 01-03-33 INTERMITTENT CONCERN TROUBLESHOOTING)
		No	Go to next step.
4	**INSPECT POOR CONNECTION OF MAF SENSOR CONNECTOR** • Turn ignition key to OFF. • Disconnect MAF sensor connector. • Check for poor connection (damaged, pulled-out terminals, corrosion etc.). • Are there any malfunctions?	Yes	Repair or replace terminals, then go to Step 8.

INSPECTION describes the method to quickly determine the failedpart(s).

Reference item(s) to perform ACTION.

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Using the diagnostic index

- The symptoms of the malfunctions are listed in the diagnostic index for symptom troubleshooting.

- The exact malfunction symptoms can be selected by following the index.

No.	TROUBLESHOOTING ITEM		DESCRIPTION	Page
1	Melting of main or other fuses		—	(See 01-03-6 MELT NO.1 MAIN OR OTHER FUSE)
2	MIL comes on		MIL is illuminated incorrectly.	(See 01-03-7 NO.2 MIL COMES ON)
3	Will not crank		Starter does not work.	(See 01-03-8 NO. 3 WILL NOT CRANK)
4	Hard start/long crank/erratic start/erratic crank		Starter cranks engine at normal speed but engine requires excessive cranking time before starting.	(See 01-03-9 NO. 4 HARD START/ LONG CRANK/ERRATIC CRANK)
5	Engine stalls.	After start/at idle	Engine stops unexpectedly at idle and/or after start.	(See 01-03-11 NO. 5 ENGINE-STALLS AFTER START/AT IDLE)
6	Cranks normally but will not start		Starter cranks engine at normal speed but engine will not run.	(See 01-03-15 NO.6 CRANKS NORMALLY BUT WILL NOT START)
7	Slow return to idle		Engine takes more time than normal to return to idle speed.	(See 01-03-19 NO. 7 SLOW RERUN TO IDLE)
8	Engine runs rough/rotling		Engine speed fluctuates between specified idle speed and lower speed and engine shakes excessively.	(See 01-03-20 NO. 8 ENGINE RUNS ROUGH/ROLLING IDLE)
9	Fast idle/runs on		Engine speed continues at fast idle after warm-up. Engine runs after ignition key is turned to OFF.	(See 01-03-23 NO. 9 FAST IDLE/RUNS ON)
10	Low idle/stalls during deceleration		Engine stops unexpectedly at beginning of deceleration or recovery from deceleration.	(See 01-03-24 NO. 10 LOW IDLE/ STALLS DURING DECELERATION)

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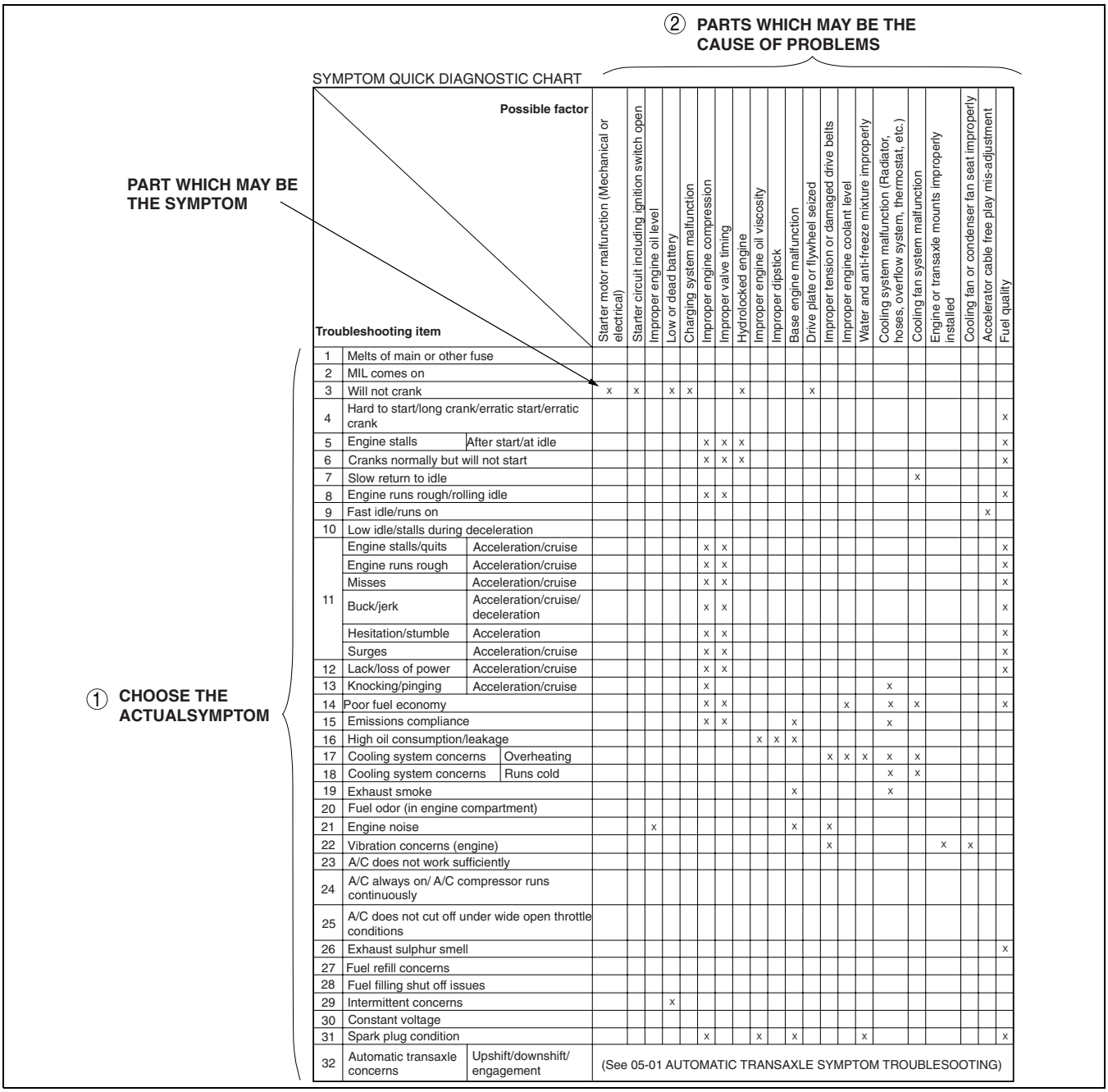
Using the quick diagnosis chart

- The chart lists the relation between the symptom and the cause of the malfunction.
- The chart is effective in quickly narrowing down the relation between symptom and cause of the malfunction. It also specifies the area of the common cause when multiple malfunction symptoms occur.
- The appropriate diagnostic inspection relating to malfunction cause as specified by the symptoms can be

selected by looking down the diagnostic inspection column of the chart.



SYMPTOM QUICK DIAGNOSTIC CHART

	Troubleshooting item / Possible factor		Starter motor malfunction (Mechanical or electrical)	Starter circuit including ignition switch open	Improper engine oil level	Low or dead battery	Charging system malfunction	Improper engine compression	Improper valve timing	Hydrolocked engine	Improper engine oil viscosity	Improper dipstick	Base engine malfunction	Drive plate or flywheel seized	Improper tension or damaged drive belts	Improper engine coolant level	Water and anti-freeze mixture improperly	Cooling system malfunction (Radiator, hoses, overflow system, thermostat, etc.)	Cooling fan system malfunction	Engine or transaxle mounts improperly installed	Cooling fan or condenser fan seat improperly	Accelerator cable free play mis-adjustment	Fuel quality
1	Melts of main or other fuse																						
2	MIL comes on																						
3	Will not crank		x	x		x	x			x				x									
4	Hard to start/long crank/erratic start/erratic crank																						x
5	Engine stalls	After start/at idle						x	x	x													x
6	Cranks normally but will not start							x	x	x													x
7	Slow return to idle																		x				
8	Engine runs rough/rolling idle							x	x														x
9	Fast idle/runs on																					x	
10	Low idle/stalls during deceleration																						
11	Engine stalls/quits	Acceleration/cruise						x	x														x
	Engine runs rough	Acceleration/cruise						x	x														x
	Misses	Acceleration/cruise						x	x														x
	Buck/jerk	Acceleration/cruise/ deceleration						x	x														x
	Hesitation/stumble	Acceleration						x	x														x
	Surges	Acceleration/cruise						x	x														x
12	Lack/loss of power	Acceleration/cruise						x	x														x
13	Knocking/pinging	Acceleration/cruise						x										x					
14	Poor fuel economy							x	x							x		x	x				x
15	Emissions compliance							x	x				x					x					
16	High oil consumption/leakage										x	x	x										
17	Cooling system concerns	Overheating													x	x	x	x	x				
18	Cooling system concerns	Runs cold																x	x				
19	Exhaust smoke												x					x					
20	Fuel odor (in engine compartment)																						
21	Engine noise				x								x		x								
22	Vibration concerns (engine)														x					x	x		
23	A/C does not work sufficiently																						
24	A/C always on/ A/C compressor runs continuously																						
25	A/C does not cut off under wide open throttle conditions																						
26	Exhaust sulphur smell																						x
27	Fuel refill concerns																						
28	Fuel filling shut off issues																						
29	Intermittent concerns					x																	
30	Constant voltage																						
31	Spark plug condition							x			x		x				x						x
32	Automatic transaxle concerns	Upshift/downshift/ engagement	(See 05-01 AUTOMATIC TRANSAXLE SYMPTOM TROUBLESOOTING)																				

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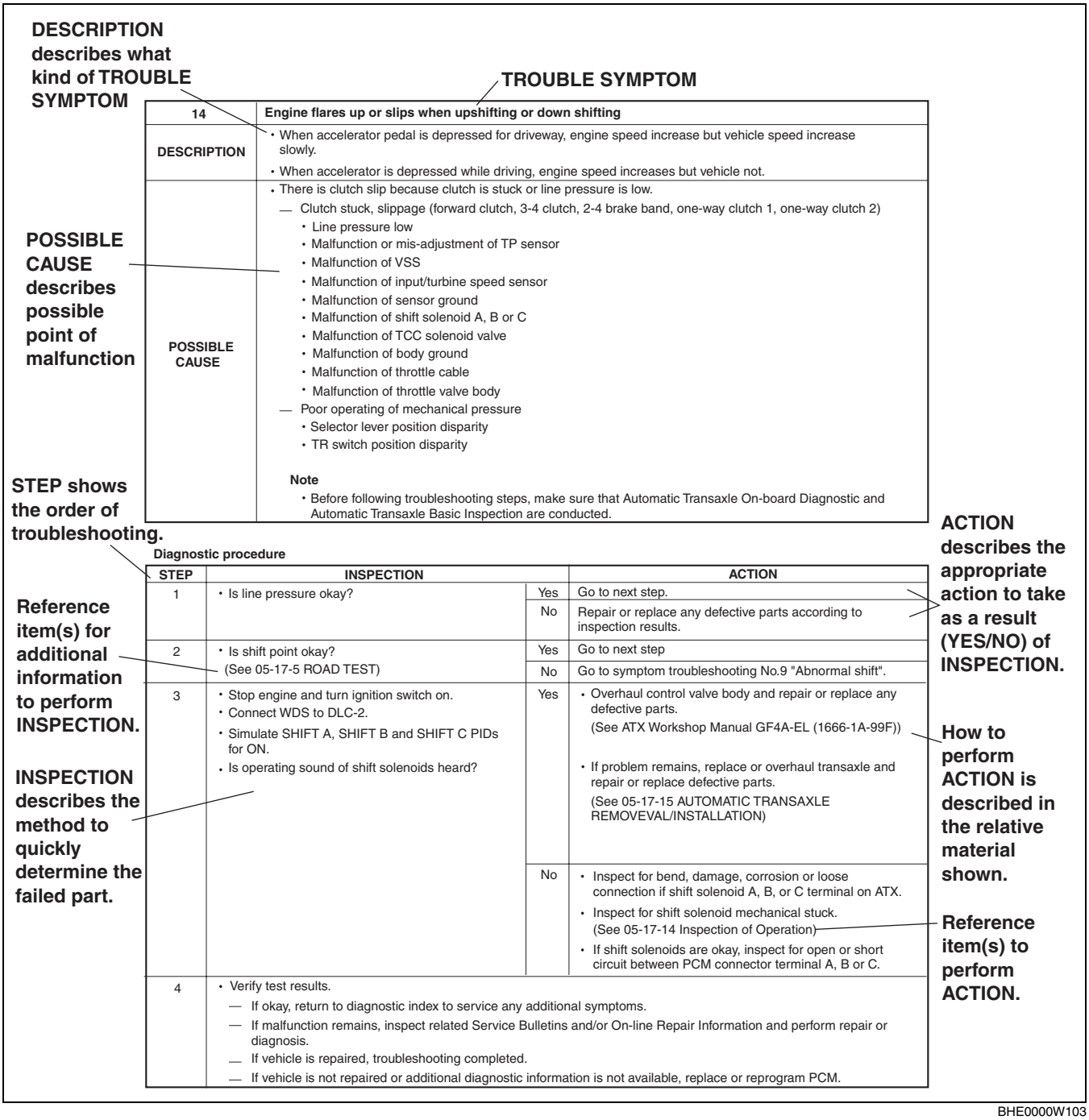
Using the symptom troubleshooting

- Symptom troubleshooting shows diagnostic procedures, inspection methods, and proper action to take for each

trouble symptom.



14	Engine flares up or slips when upshifting or down shifting
DESCRIPTION	• When accelerator pedal is depressed for driveway, engine speed increase but vehicle speed increase slowly. • When accelerator is depressed while driving, engine speed increases but vehicle not.
POSSIBLE CAUSE	• There is clutch slip because clutch is stuck or line pressure is low. — Clutch stuck, slippage (forward clutch, 3-4 clutch, 2-4 brake band, one-way clutch 1, one-way clutch 2) • Line pressure low • Malfunction or mis-adjustment of TP sensor • Malfunction of VSS • Malfunction of input/turbine speed sensor • Malfunction of sensor ground • Malfunction of shift solenoid A, B or C • Malfunction of TCC solenoid valve • Malfunction of body ground • Malfunction of throttle cable • Malfunction of throttle valve body — Poor operating of mechanical pressure • Selector lever position disparity • TR switch position disparity **Note** • Before following troubleshooting steps, make sure that Automatic Transaxle On-board Diagnostic and Automatic Transaxle Basic Inspection are conducted.

Diagnostic procedure

STEP	INSPECTION		ACTION
1	• Is line pressure okay?	Yes	Go to next step.
		No	Repair or replace any defective parts according to inspection results.
2	• Is shift point okay? (See 05-17-5 ROAD TEST)	Yes	Go to next step
		No	Go to symptom troubleshooting No.9 "Abnormal shift".
3	• Stop engine and turn ignition switch on. • Connect WDS to DLC-2. • Simulate SHIFT A, SHIFT B and SHIFT C PIDs for ON. • Is operating sound of shift solenoids heard?	Yes	• Overhaul control valve body and repair or replace any defective parts. (See ATX Workshop Manual GF4A-EL (1666-1A-99F)) • If problem remains, replace or overhaul transaxle and repair or replace defective parts. (See 05-17-15 AUTOMATIC TRANSAXLE REMOVEVAL/INSTALLATION)
		No	• Inspect for bend, damage, corrosion or loose connection if shift solenoid A, B, or C terminal on ATX. • Inspect for shift solenoid mechanical stuck. (See 05-17-14 Inspection of Operation) • If shift solenoids are okay, inspect for open or short circuit between PCM connector terminal A, B or C.
4	• Verify test results. — If okay, return to diagnostic index to service any additional symptoms. — If malfunction remains, inspect related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. — If vehicle is repaired, troubleshooting completed. — If vehicle is not repaired or additional diagnostic information is not available, replace or reprogram PCM.		

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UNITS

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Electric current	A (ampere)
Electric power	W (watt)
Electric resistance	ohm
Electric voltage	V (volt)
Length	mm (millimeter)
	in (inch)
Negative pressure	kPa (kilo pascal)
	mmHg (millimeters of mercury)
	inHg (inches of mercury)

Positive pressure	kPa (kilo pascal)
	kgf/cm^2 (kilogram force per square centimeter)
	psi (pounds per square inch)
Number of revolutions	rpm (revolutions per minute)
Torque	N·m (Newton meter)
	kgf·m (kilogram force meter)
	kgf·cm (kilogram force centimeter)
	ft·lbf (foot pound force)
	in·lbf (inch pound force)
Volume	L (liter)
	US qt (U.S. quart)
	Imp qt (Imperial quart)
	ml (milliliter)
	cc (cubic centimeter)
	cu in (cubic inch)
	fl oz (fluid ounce)
Weight	g (gram)
	oz (ounce)

Conversion to SI Units (Système International d'Unités)
- All numerical values in this manual are based on SI units. Numbers shown in conventional units are converted from these values.

Rounding Off
- Converted values are rounded off to the same number of places as the SI unit value. For example, if the SI unit value is 17.2 and the value after conversion is 37.84, the converted value will be rounded off to 37.8.

Upper and Lower Limits
- When the data indicates upper and lower limits, the converted values are rounded down if the SI unit value is an upper limit and rounded up if the SI unit value is a lower limit. Therefore, converted values for the same SI unit value may differ after conversion. For example, consider 2.7 kgf/cm^2 in the following specifications:

  210—260 kPa {2.1—2.7 kgf/cm^2, 30—38 psi}
  270—310 kPa {2.7—3.2 kgf/cm^2, 39—45 psi}

- The actual converted values for 2.7 kgf/cm^2 are 264 kPa and 38.4 psi. In the first specification, 2.7 is used as an upper limit, so the converted values are rounded down to 260 and 38. In the second specification, 2.7 is used as a lower limit, so the converted values are rounded up to 270 and 39.

SERVICE CAUTIONS

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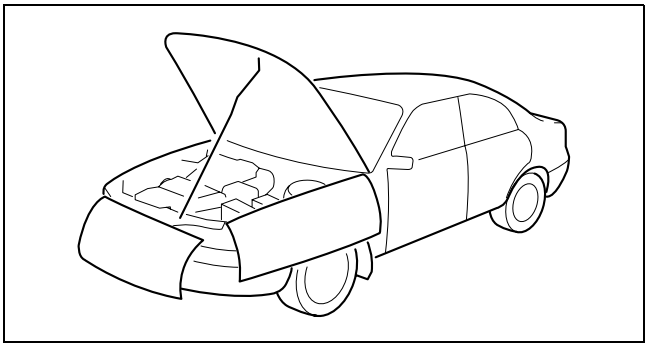
Protection of the Vehicle
- Always be sure to cover fenders, seats and floor areas before starting work.



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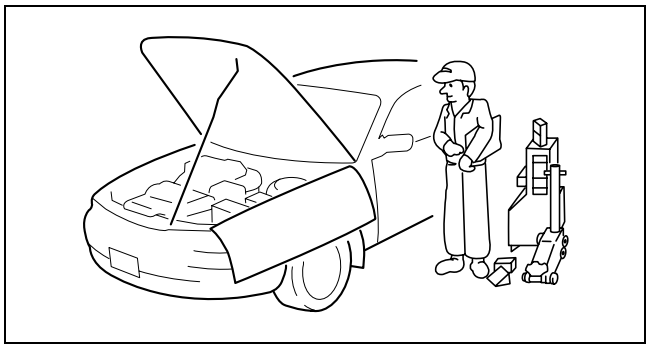
Preparation of Tools and Measuring Equipment

- Be sure that all necessary tools and measuring equipment are available before starting any work.



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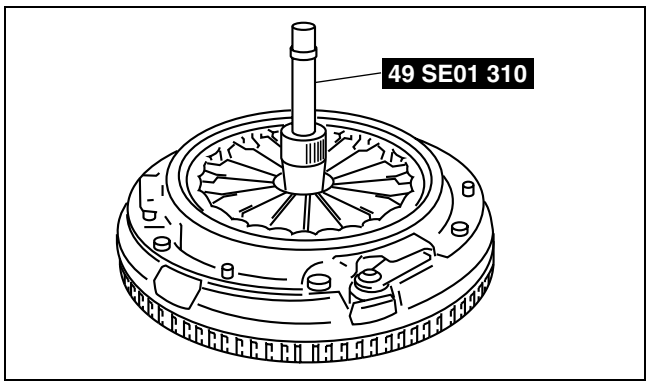
Special Service Tools

- Use special service tools or equivalent when they are required.



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Disconnection of the Negative Battery Cable

- Before beginning any work, turn the ignition switch to LOCK position, then disconnect the negative battery cable and wait for more than 1 min. to allow the backup power supply of the SAS control module to deplete its stored power. Disconnecting the battery cable will delete the memories of the clock, audio, and DTCs, etc. Therefore, it is necessary to verify those memories before disconnecting the cable.
- If the battery had been disconnected during vehicle maintenance or for other reasons, the window will not fully close automatically. Carry out the power window each switch initial setting. (See 09–12–9 POWER WINDOW MOTOR REMOVAL/INSTALLATION.)

Oil Leakage Inspection

- Use either of the following procedures to identify the type of oil that is leaking:

Using UV light (black light)

1. Remove any oil on the engine or transaxle.

   Note
   - Referring to the fluorescent dye instruction manual, mix the specified amount of dye into the engine oil or ATF (or transaxle oil).

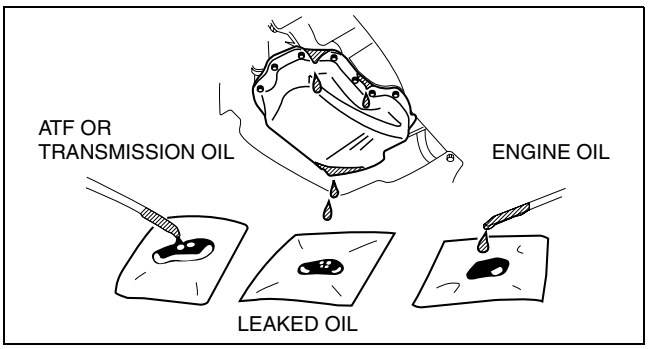
2. Pour the fluorescent dye into the engine oil or ATF (or transaxle oil).
3. Allow the engine to run for 30 min.
4. Inspect for dye leakage by irradiating with UV light (black light), and identify the type of oil that is leaking.
5. If no dye leakage is found, allow the engine to run for another 30 min. or drive the vehicle then reinspect.
6. Find where the oil is leaking from, then make necessary repairs.

   Note
   - To determine whether it is necessary to replace the oil after adding the fluorescent dye, refer to the fluorescent dye instruction manual.

Not using UV light (black light)

1. Gather some of the leaking oil using an absorbent white tissue.
2. Take samples of engine oil and ATF (or transaxle oil), both from the dipstick, and place them next to the leaked oil already gathered on the tissue.

3. Compare the appearance and smell, and identify the type of oil that is leaking.
4. Remove any oil on the engine or transaxle.
5. Allow the engine to run for 30 min.
6. Check the area where the oil is leaking, then make necessary repairs.



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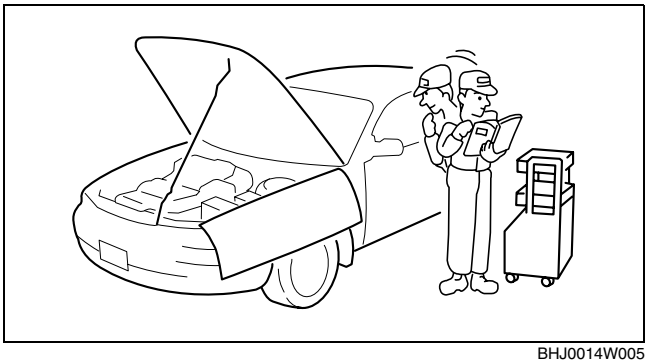
Removal of Parts

- While correcting a problem, also try to determine its cause. Begin work only after first learning which parts and subassemblies must be removed and disassembled for replacement or repair. After removing the part, plug all holes and ports to prevent foreign material from entering.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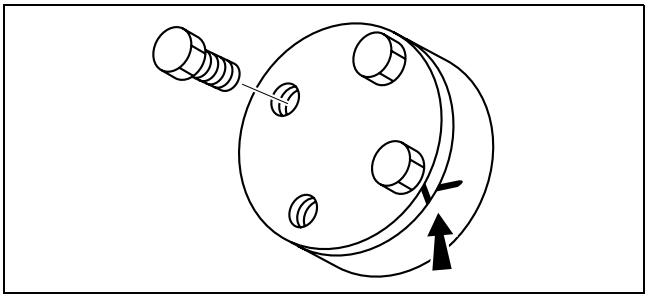
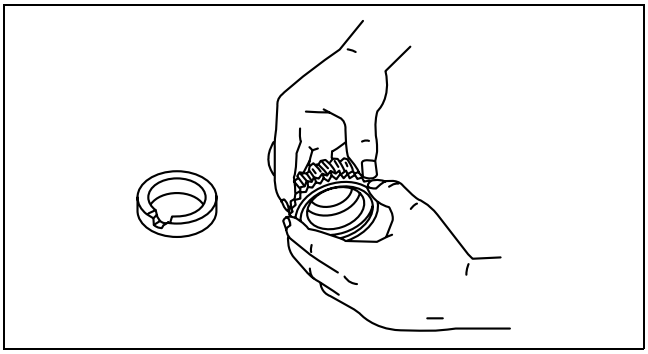
Disassembly

- If the disassembly procedure is complex, requiring many parts to be disassembled, all parts should be marked in a place that will not affect their performance or external appearance and identified so that reassembly can be performed easily and efficiently.


WGIWXX0027E

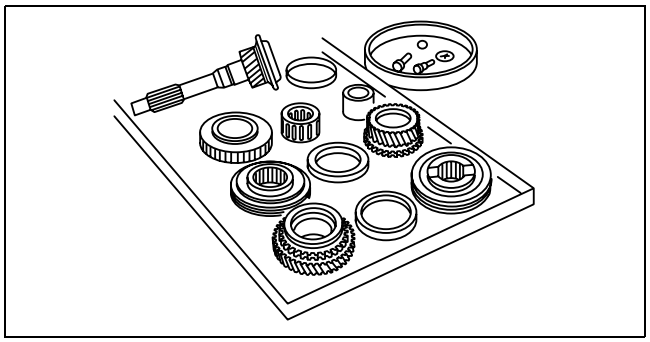
Inspection During Removal, Disassembly

- When removed, each part should be carefully inspected for malfunction, deformation, damage and other problems.


WGIWXX0028E

Arrangement of Parts

- All disassembled parts should be carefully arranged for reassembly.
- Be sure to separate or otherwise identify the parts to be replaced from those that will be reused.

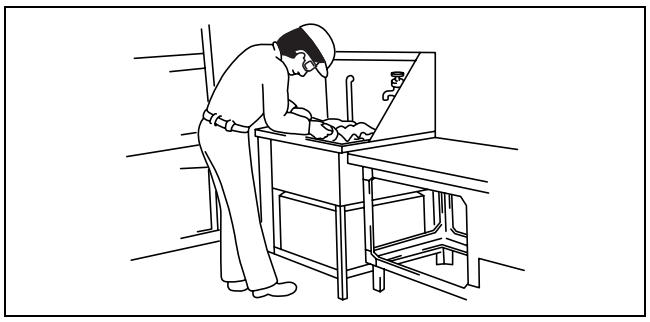


WGIWXX0029E

Cleaning of Parts

- All parts to be reused should be carefully and thoroughly cleaned in the appropriate method.

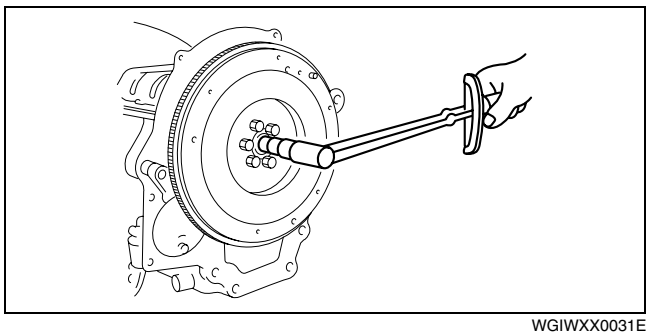
  Warning
  - **Using compressed air can cause dirt and other particles to fly out causing injury to the eyes. Wear protective eye wear whenever using compressed air.**



C5U0000W001

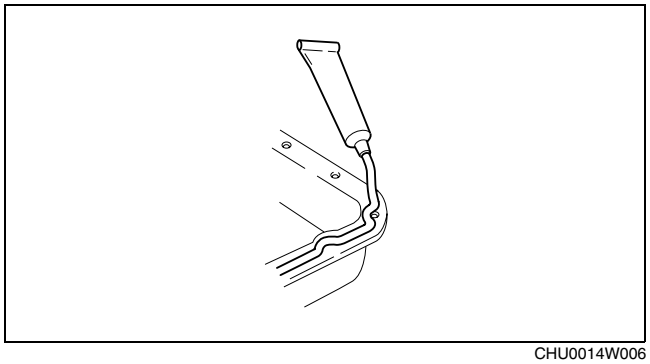
Reassembly

- Standard values, such as torques and certain adjustments, must be strictly observed in the reassembly of all parts.
- If removed, the following parts should be replaced with new ones:
  - — Oil seals
  - — Gaskets
  - — O-rings
  - — Lock washers
  - — Cotter pins
  - — Nylon nuts



WGIWXX0031E

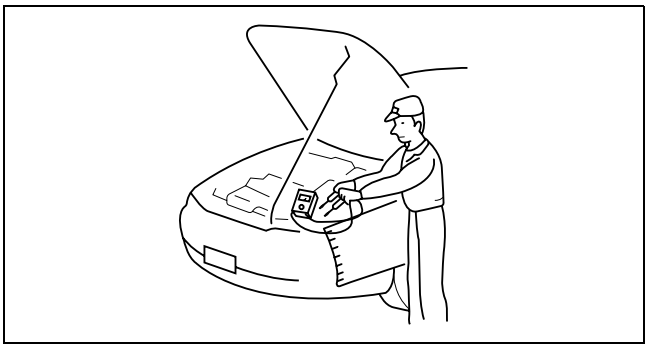
- Depending on location:
  - — Sealant and gaskets, or both, should be applied to specified locations. When sealant is applied, parts should be installed before sealant hardens to prevent leakage.
  - — Oil should be applied to the moving components of parts.
  - — Specified oil or grease should be applied at the prescribed locations (such as oil seals) before reassembly.



CHU0014W006

Adjustment

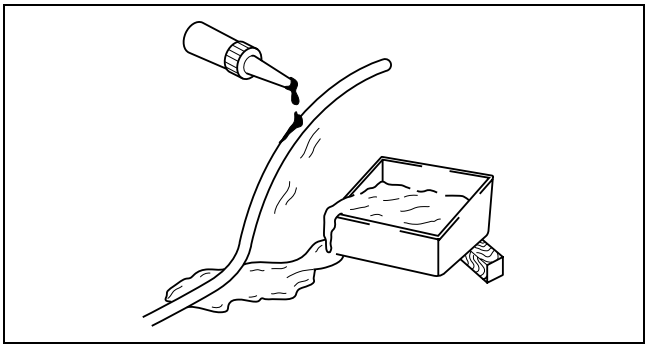
- Use suitable gauges and testers when making adjustments.



BHJ0014W012

Rubber Parts and Tubing

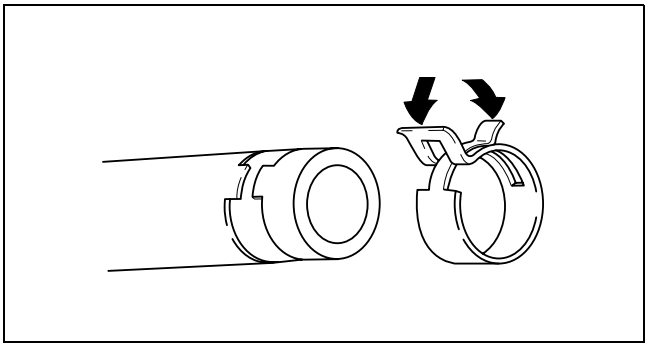
- Prevent gasoline or oil from getting on rubber parts or tubing.



WGIWXX0034E

Hose Clamps

- When reinstalling, position the hose clamp in the original location on the hose and squeeze the clamp lightly with large pliers to ensure a good fit.

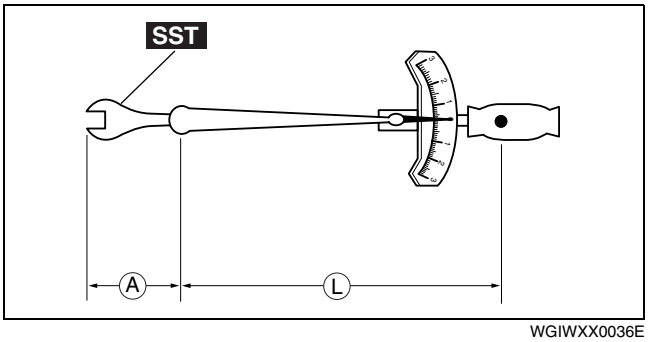


WGIWXX0035E

Torque Formulas

- When using a torque wrench-**SST** or equivalent combination, the written torque must be recalculated due to the extra length that the **SST** or equivalent adds to the torque wrench. Recalculate the torque by using the following formulas. Choose the formula that applies to you.

Torque Unit	Formula
N·m	N·m × [L/(L+A)]
kgf·m	kgf·m × [L/(L+A)]
kgf·cm	kgf·cm × [L/(L+A)]
ft·lbf	ft·lbf × [L/(L+A)]
in·lbf	in·lbf × [L/(L+A)]

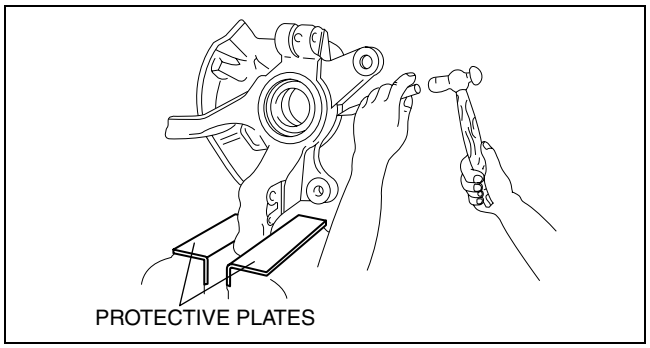


WGIWXX0036E

A : The length of the **SST** past the torque wrench drive.
L : The length of the torque wrench.

Vise

- When using a vise, put protective plates in the jaws of the vise to prevent damage to parts.



CHU0014W010

Dynamometer

- When inspecting and servicing the power train on the dynamometer or speed meter tester, pay attention to the following:
  - — Place a fan, preferably a vehicle-speed proportional type, in front of the vehicle.
  - — Make sure the vehicle is in a facility with an exhaust gas ventilation system.
  - — Since the rear bumper might deform from the heat, cool the rear with a fan. (Surface of the bumper must be below **70°C {158°F} degrees**.)
  - — Keep the area around the vehicle uncluttered so that heat does not build up.
  - — Watch the water temperature gauge and don't overheat the engine.
  - — Avoid added load to the engine and maintain normal driving conditions as much as possible.

Note

- When only the front or rear wheels are rotated on a chassis dynamometer or equivalent, the ABS~~/DSC~~ CM determines that there is a malfunction in the ABS~~/DSC~~ and illuminates the following lights:
  - — Vehicles with ABS
    - ABS warning light
    - Brake system warning light
  - ~~— Vehicles with DSC~~
    - ~~ABS warning light~~
    - ~~Brake system warning light~~
    - ~~DSC indicator light~~
- If the above lights are illuminated, dismount the vehicle from the chassis dynamometer and turn the ignition switch to the LOCK position. Then, turn the ignition switch back to the ON position, run the vehicle at 10 km/h or more and verify that the warning lights go out. In this case, a DTC will be stored in the memory. Clear the DTC from the memory by following the memory clearing procedure [ABS]~~/[DSC]~~ in the on-board diagnostic system. (See 04–02A–2 ON-BOARD DIAGNOSIS [ABS].)~~, (See 04–02B–2 ON-BOARD DIAGNOSIS [DSC (DYNAMIC STABILITY CONTROL)].)~~

4WD testing/servicing

- Brake tester

Caution

- **To ensure the stability of the drag force of the viscous coupling always perform a brake test after using the dynamometer or speed meter tester.**

Note

- If there is a great amount of brake drag, it is probably due to the viscosity of the viscous coupling or the center differential (RBC). To remove the influence of the coupling, jack up all four wheels of the vehicle and verify that each wheel can be rotated freely by hand.

- Chassis dynamometer/speed meter tester

Caution

- **The vehicle may sway or surge forward when on the dynamometer. To prevent possible vehicle movement, firmly secure it in place using steel retainers (chain, wire or similar) attached to the front and rear towing hooks or to the tie down hooks.**
- **Do not pop the clutch.**
- **Do not accelerate suddenly.**

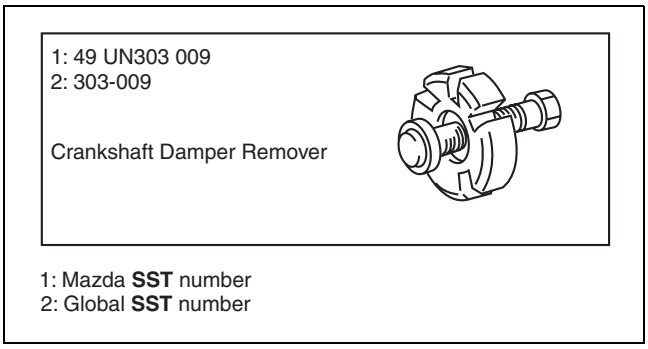
Note

- The dynamometer/speed meter tester has two setting modes: propeller shaft removed mode and free roller mode. After placing the vehicle on the tester and setting the wheels on the free rollers, start the engine. ~~For MTX vehicles, set the shift lever into second gear and gently, at low idle speed, release the clutch pedal.~~ For ATX vehicles, set the selector lever to D range, and slowly accelerate.

SST

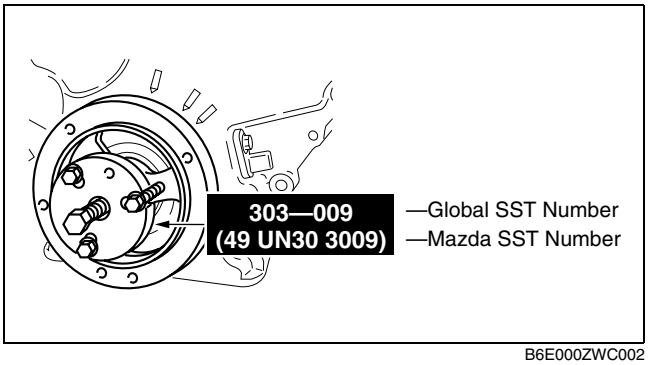
- Some global **SST** or equivalent are used as **SSTs** necessary for engine repair. Note that these **SSTs** are marked with global **SST** numbers.
- Note that a global **SST** number is written together with a corresponding Mazda **SST** number as shown below.

Example (section 01-60)



B6E000ZWC001

Example (except section 01-60)



B6E000ZWC002

INSTALLATION OF RADIO SYSTEM

DPE000000000W04

- If a radio system is installed improperly or if a high-powered type is used, the CIS and other systems may be affected. When the vehicle is to be equipped with a radio, observe the following precautions:
  - — Install the antenna at the farthest point from control modules.
  - — Install the antenna feeder as far as possible from the control module harnesses.
  - — Ensure that the antenna and feeder are properly adjusted.
  - — Do not install a high-powered radio system.

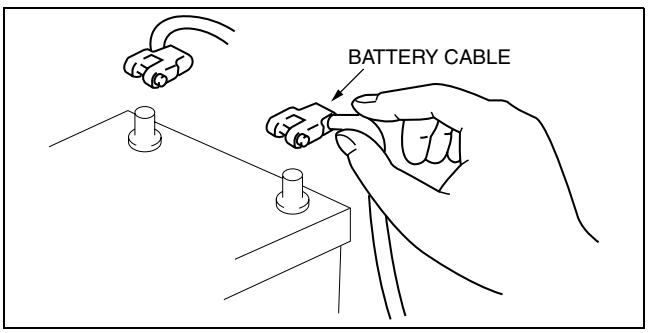
ELECTRICAL SYSTEM

DPE000000000W05

Electrical Parts

Battery cable

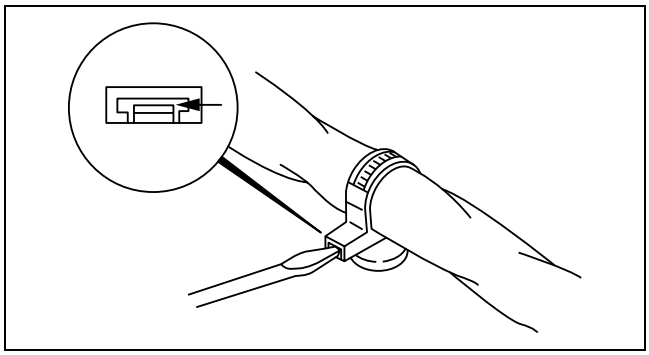
- Before disconnecting connectors or removing electrical parts, disconnect the negative battery cable.



WGIWXX0007E

Wiring harness

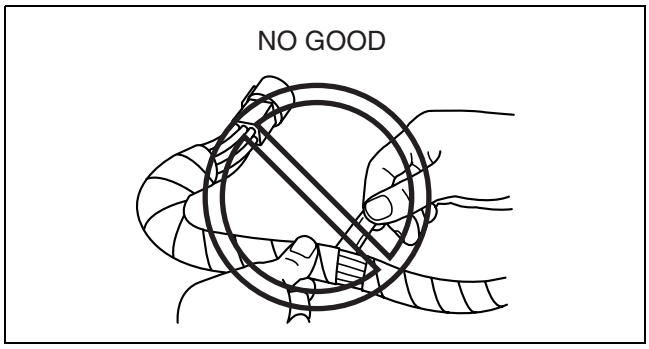
- To remove the wiring harness from the clip in the engine room, pry up the hook of the clip using a flathead screwdriver.



WGIWXX0039E

Caution

- **Do not remove the harness protective tape. Otherwise, the wires could rub against the body, which could result in water penetration and electrical shorting.**

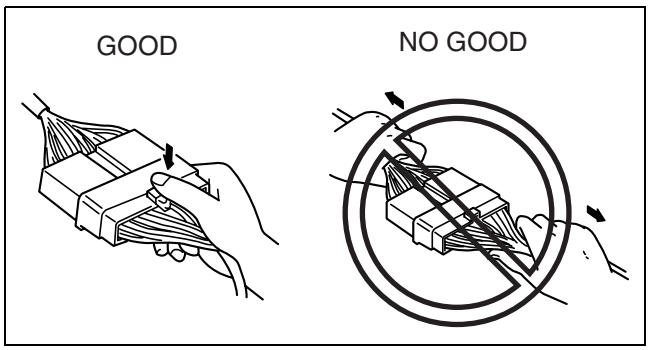


CHU0000W010

Connectors

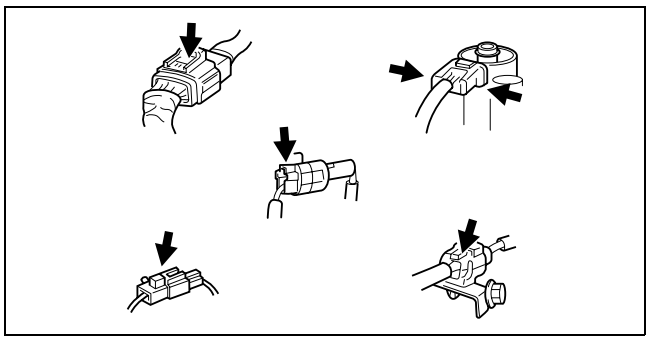
Disconnecting connectors

- When disconnecting connector, grasp the connectors, not the wires.



CHU0000W014

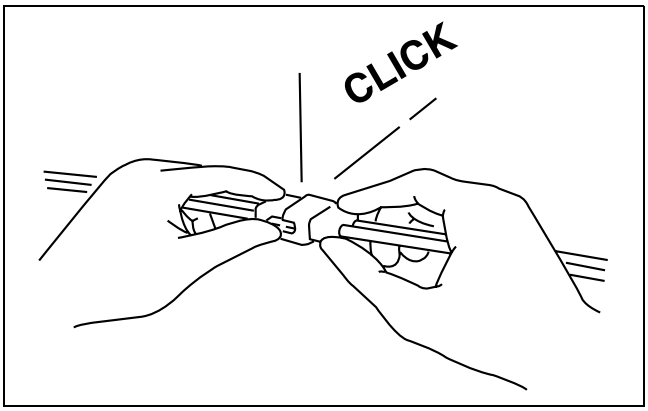
- Connectors can be disconnected by pressing or pulling the lock lever as shown.



WGIWXX0042E

Locking connector

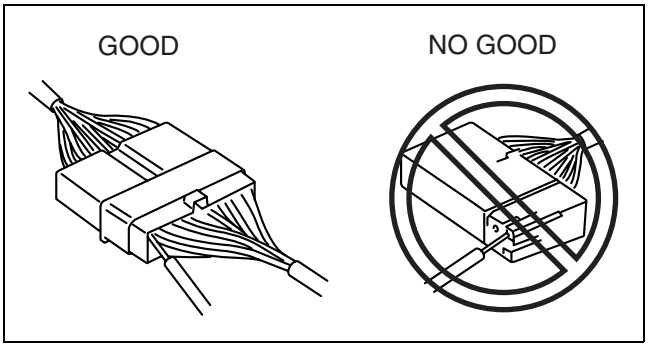
- When locking connectors, listen for a click indicating they are securely locked.



WGIWXX0043E

Inspection

- When a tester is used to inspect for continuity or measuring voltage, insert the tester probe from the wiring harness side.

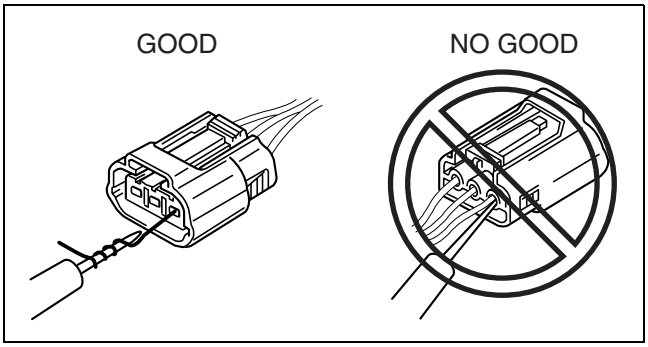


CHU0000W011

- Inspect the terminals of waterproof connectors from the connector side since they cannot be accessed from the wiring harness side.

Caution

- **To prevent damage to the terminal, wrap a thin wire around the tester probe before inserting into terminal.**

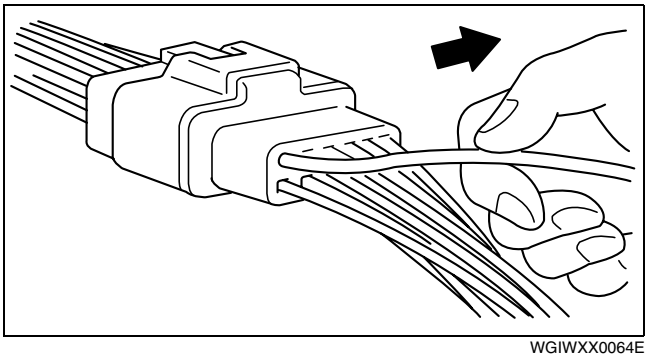


CHU0000W012

Terminals

Inspection

- Pull lightly on individual wires to verify that they are secured in the terminal.

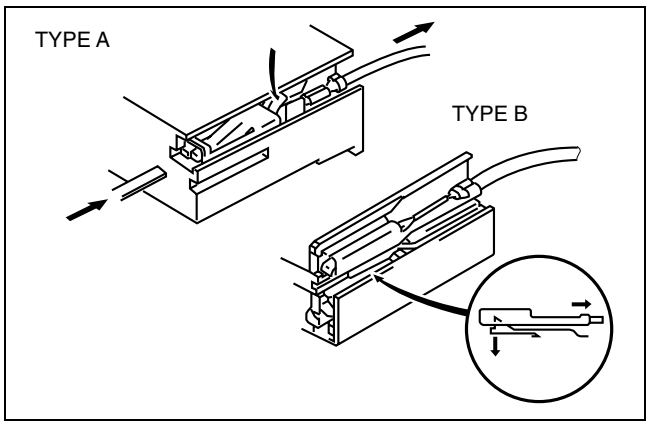


WGIWXX0064E

Replacement

- Use the appropriate tools to remove a terminal as shown. When installing a terminal, be sure to insert it until it locks securely.

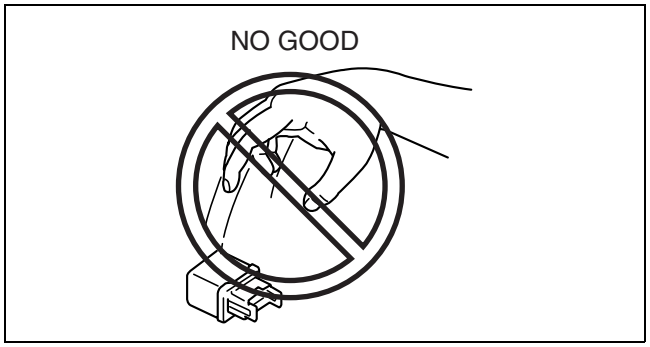
- Insert a thin piece of metal from the terminal side of the connector and with the terminal locking tab pressed down, pull the terminal out from the connector.



WGIWXX0046E

Sensors, Switches, and Relays

- Handle sensors, switches, and relays carefully. Do not drop them or strike them against other objects.



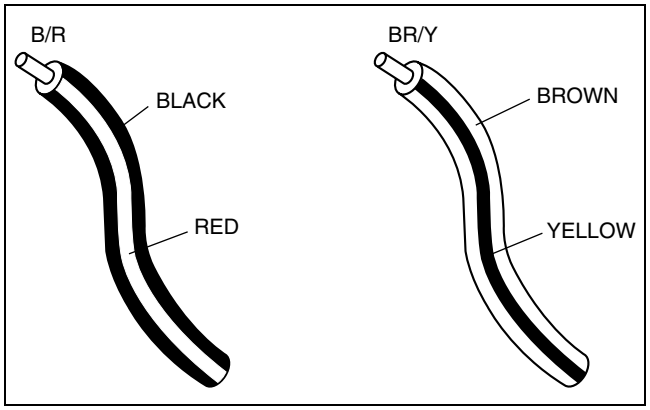
CHU0000W013

Wiring Harness

Wiring color codes

- Two-color wires are indicated by a two-color code symbol.
- The first letter indicates the base color of the wire and the second the color of the stripe.

CODE	COLOR	CODE	COLOR
B	Black	O	Orange
BR	Brown	P	Pink
G	Green	R	Red
GY	Gray	V	Violet
L	Blue	W	White
LB	Light Blue	Y	Yellow
LG	Light Green	–	–



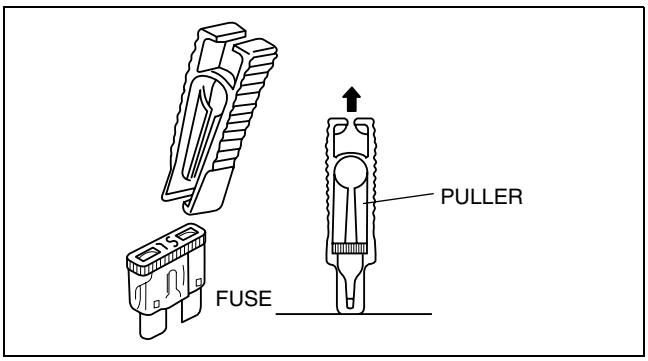
WGIWXX0048E

Fuse

Replacement

- When replacing a fuse, be sure to replace it with one of the same capacity. If a fuse fails again, the circuit probably has a short and the wiring should be inspected.
- Be sure the negative battery terminal is disconnected before replacing a main fuse.

- When replacing a pullout fuse, use the fuse puller.

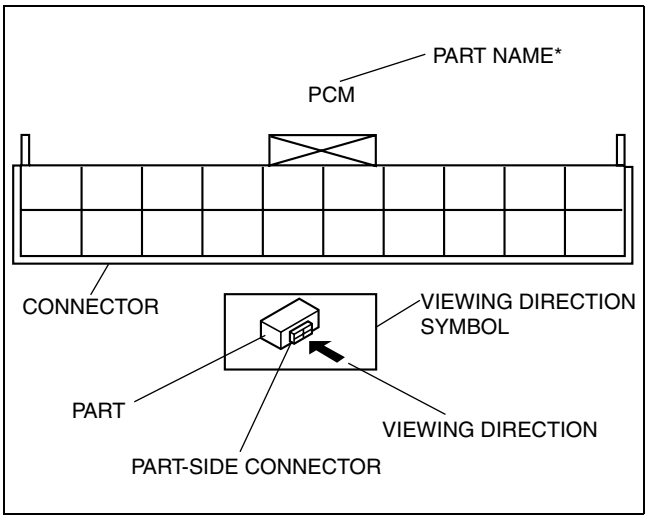


WGIWXX0050E

Direction of View for Connector
- The viewing direction of connectors is indicated with a symbol.
- The figures showing the viewing direction are the same as those used in Wiring Diagrams.
- The viewing directions are shown in the following three ways:

Part-side connector
The viewing direction of part-side connectors is from the terminal side.

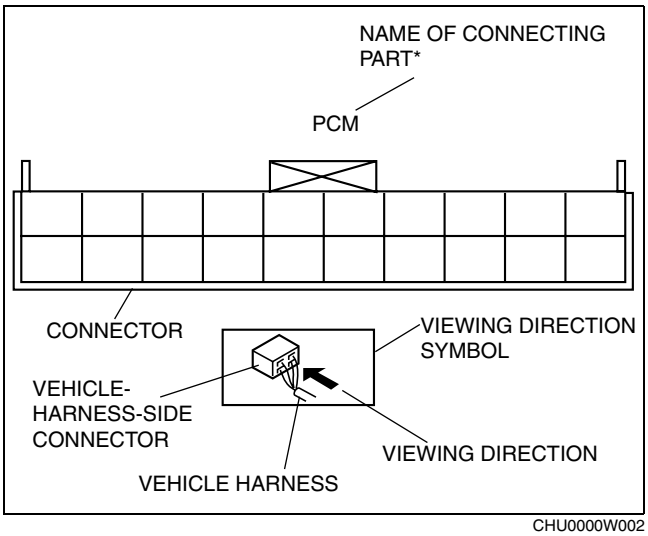
* : Part names are shown only when there are multiple connector drawings.



CHU0000W001

Vehicle harness-side connector
The viewing direction of vehicle harness-side connectors is from the harness side.

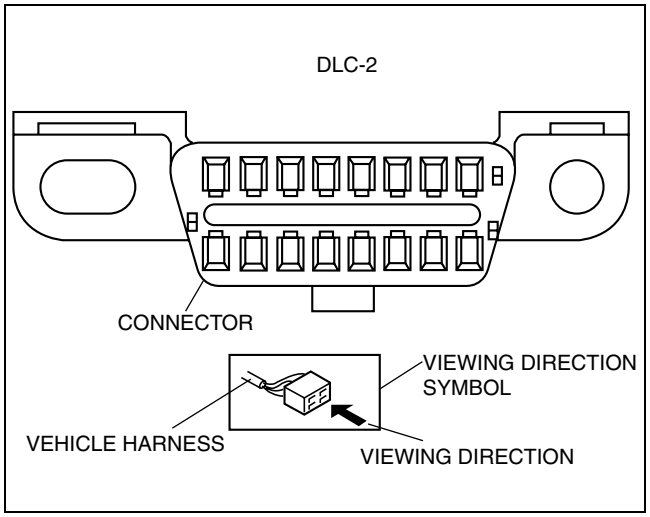
* : Part names are shown only when there are multiple connector drawings.



CHU0000W002

Other
When it is necessary to show the terminal side of vehicle harness-side connectors, such as the following connectors, the viewing direction is from the terminal side.
- Main fuse block and the main fuse block relays

- Data link connector
- Check connector
- Relay box

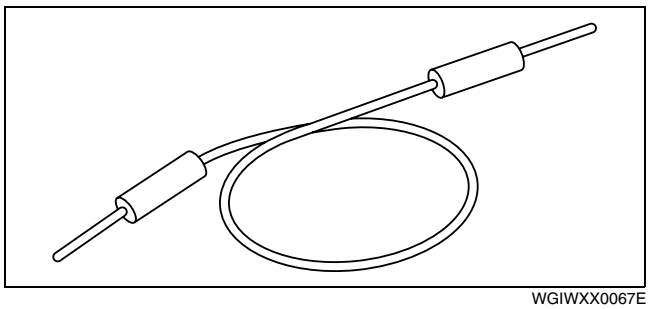


CHU0000W003

Electrical Troubleshooting Tools
Jumper wire

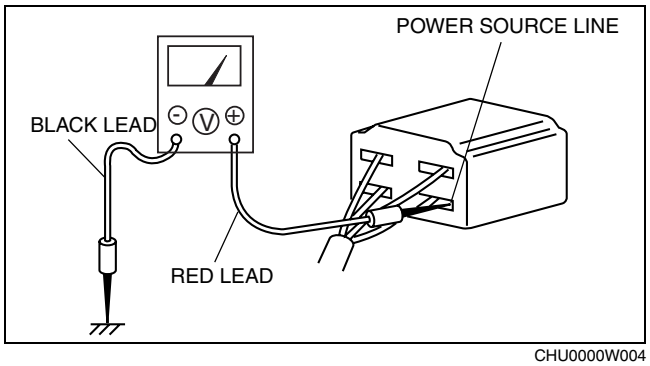
Caution
- **Do not connect a jumper wire from the power source line to a body ground. This may cause burning or other damage to wiring harnesses or electronic components.**

- A jumper wire is used to create a temporary circuit. Connect the jumper wire between the terminals of a circuit to bypass a switch.



WGIWXX0067E

Voltmeter
- The DC voltmeter is used to measure circuit voltage. A voltmeter with a range of **15 V or more** is used by connecting the positive (+) probe (red lead wire) to the point where voltage will be measured and the negative (-) probe (black lead wire) to a body ground.

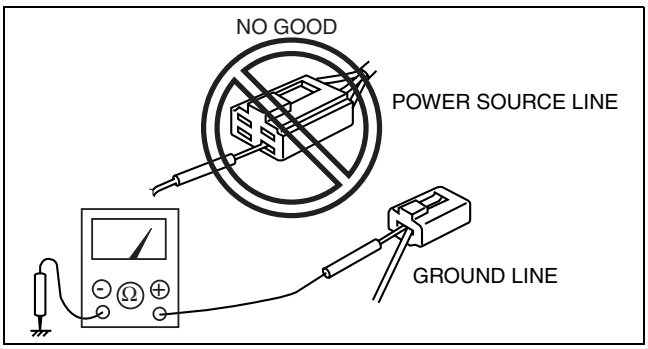


CHU0000W004

Ohmmeter

Caution
- **Do not connect the ohmmeter to any circuit where voltage is applied. This will damage the ohmmeter.**

- The ohmmeter is used to measure the resistance between two points in a circuit and to inspect for continuity and short circuits.

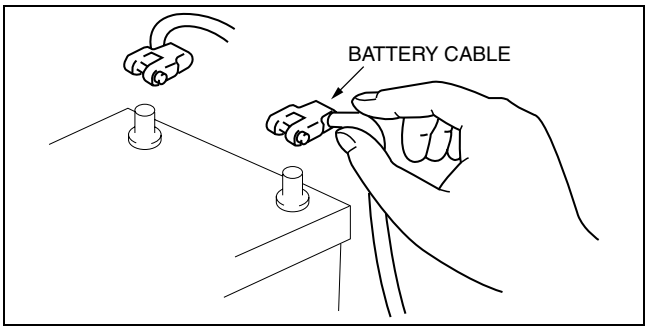


CHU0000W005

Precautions Before Welding

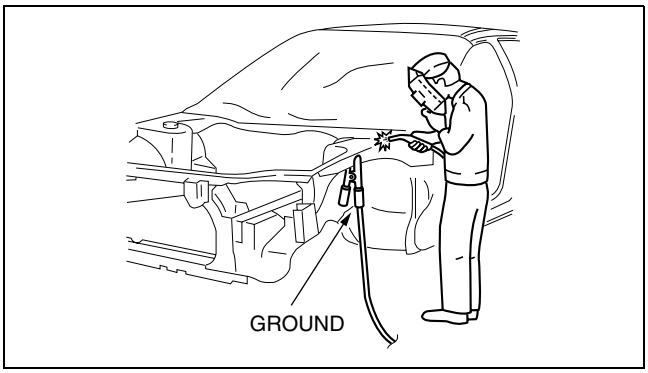
A vehicle has various electrical parts. To protect the parts from excessive current generated when welding, be sure to perform the following procedure.

1. Turn the ignition switch to the LOCK position.
2. Disconnect the battery cables.



WGIWXX0007E

3. Securely connect the welding machine ground near the welding area.
4. Cover the peripheral parts of the welding area to protect them from weld spatter.



WGIWXX0008E

JACKING POSITIONS, VEHICLE LIFT (2 SUPPORTS) AND SAFETY STAND (RIGID RACK) POSITIONS

DPE000000000W13

Jacking Positions

Warning

- **Improperly jacking a vehicle is dangerous. The vehicle can slip off the jack and cause serious injury. Use only the correct front and rear jacking points and block the wheels.**

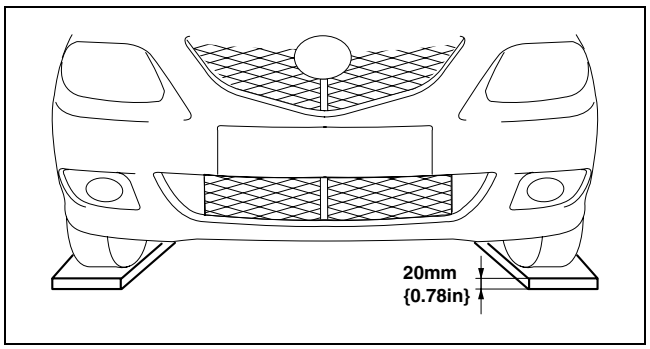
- Use safety stands to support the vehicle after it has been lifted.

Front

Note

- To prevent obstruction between the jack body and front bumper when the jack body is inserted, use a low-floor type jack (frame height is 170 mm or less).

- Near the center of the front crossmember.



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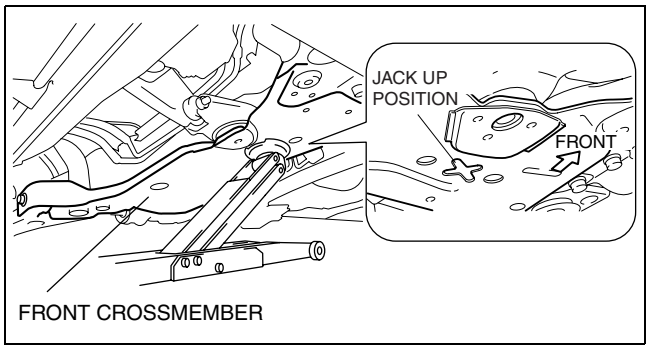
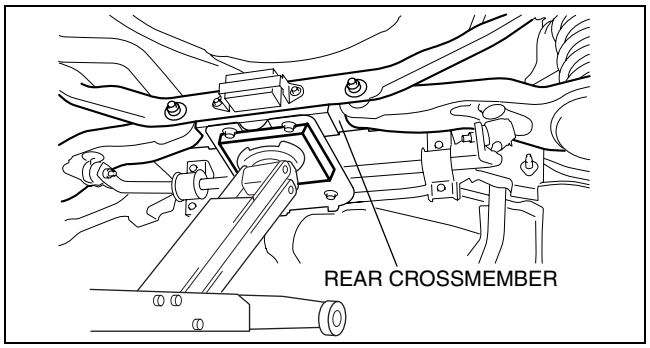


DPE000ZW1003

Rear

Caution
- **Place a board (approx. 20 mm {0.78 in} thick) between the rear crossmember and the jack to prevent damage to the crossmember.**

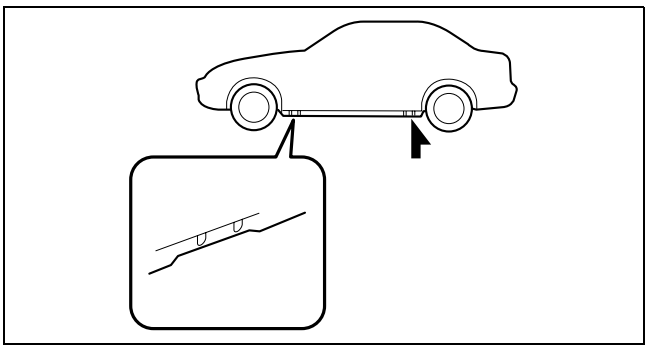
- At the center of the rear crossmember.



DPE000ZW1004

Vehicle Lift Positions
Front and rear

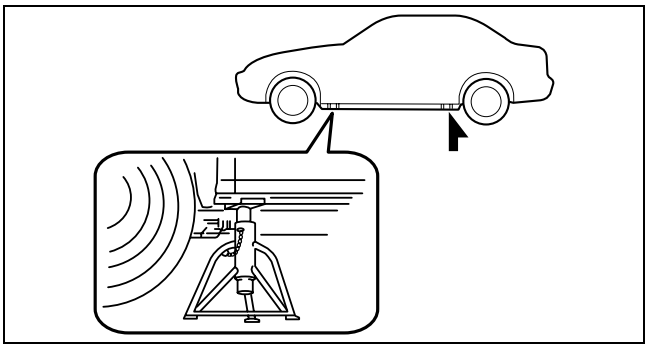
Warning
- **Unstably lifting a vehicle is dangerous. The vehicle can slip off the lift and cause serious injury and/or vehicle damage. Make sure that the vehicle is on the lift horizontally by adjusting the height of support at the end of the arm of the lift.**



BHJ0021W003

Safety Stand Positions
Front and rear

- Both sides of the vehicle, on side sills.



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TOWING

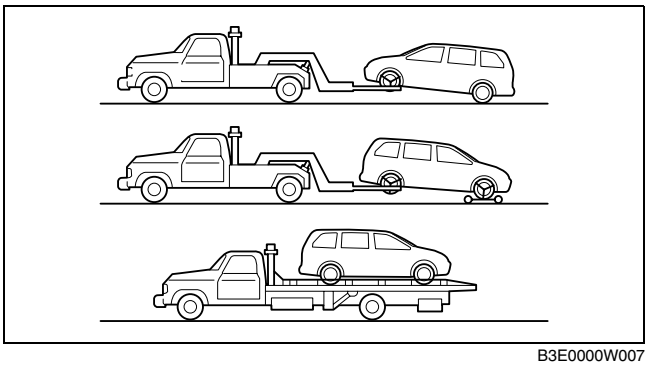
DPE000000000W07

Towing

- Proper lifting and towing are necessary to prevent damage to the vehicle. Government and local laws must be followed.
- A towed vehicle should have its front wheels off the ground. If excessive damage or other conditions prevent this, use wheel dollies.
- When towing with the rear wheels on the ground, release the parking brake.

Caution

- **Do not tow the vehicle backward forward with driving wheel on the ground. This may cause internal damage to the transaxle.**



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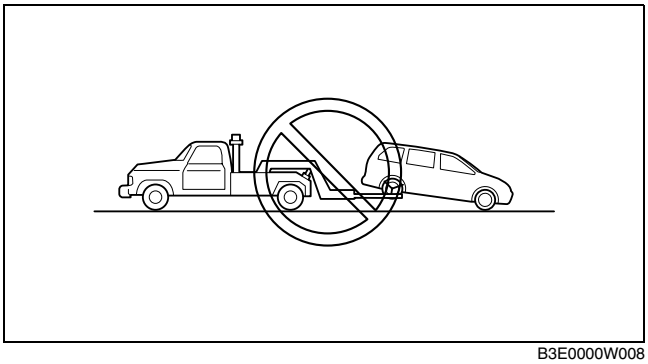
Caution

- **Do not tow with sling-type equipment. This could damage your vehicle. Use wheel-lift or flatbed equipment.**



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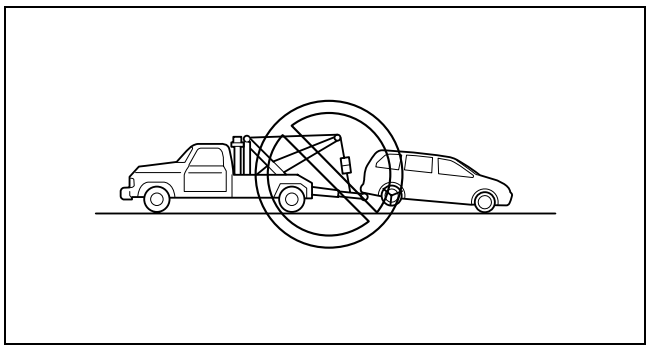
Caution
- **Do not use the hook loops under the front and rear for towing. They are designed ONLY for tying down the vehicle when it is being transported. Using them for towing will damage the bumper.**



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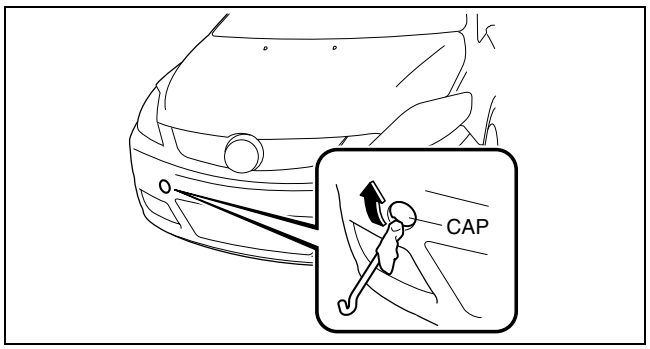
Towing Hooks

Caution
- **The towing hooks should be used only in an emergency (to get the vehicle out of a ditch or a snow bank, for example).**
- **When using the towing hooks, always pull the cable or chain in a straight direction with respect to the hook. Apply no sideways force.**

Front

1. Remove the towing eyelet and the lug wrench from the trunk.
2. Wrap a screwdriver or similar tool with a soft cloth to prevent damage to the painted bumper and open the cap located on the front bumper, below the left headlight.

Caution
- **The cap cannot be completely removed. Do not use excessive force as it may damage the cap or scratch the painted bumper surface.**



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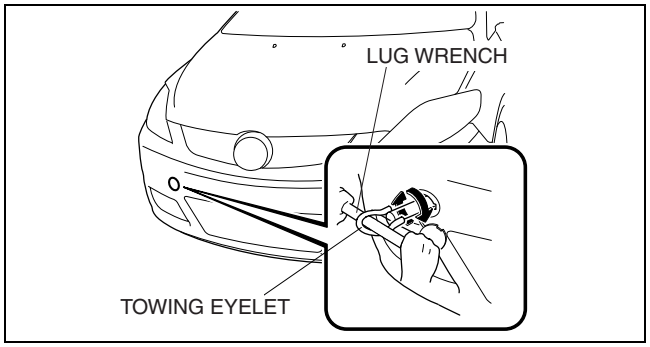
3. Securely install the towing eyelet using the lug wrench.
4. Hook the towing rope to the towing eyelet.

Caution
- **If the towing eyelet is not securely tightened, it may loosen or disengage from the bumper when towing the vehicle. Make sure that the towing eyelet is securely tightened to the bumper.**



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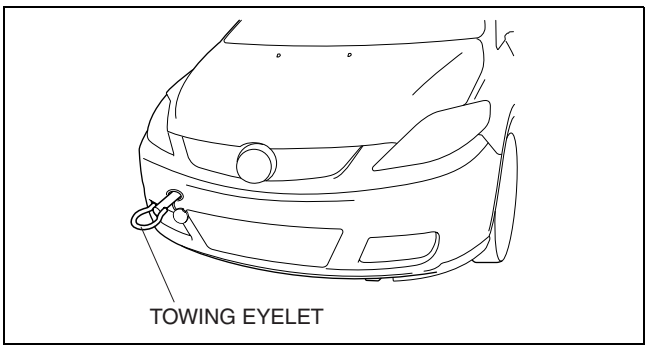

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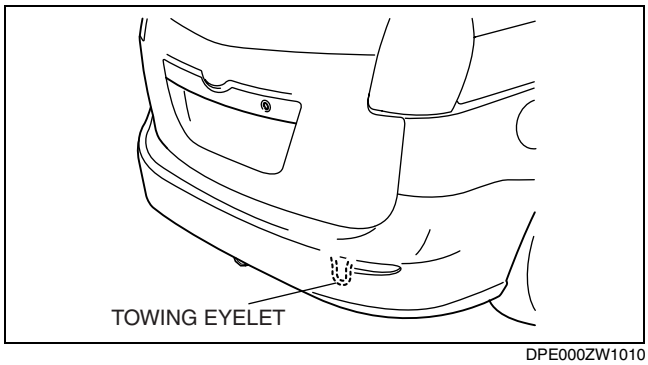
Rear



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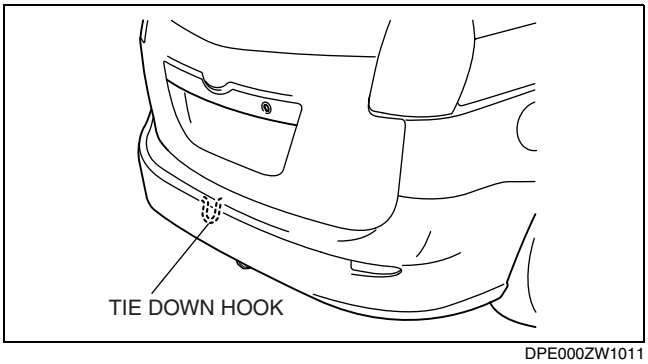

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VEHICLE IDENTIFICATION NUMBER (VIN) LOCATIONS

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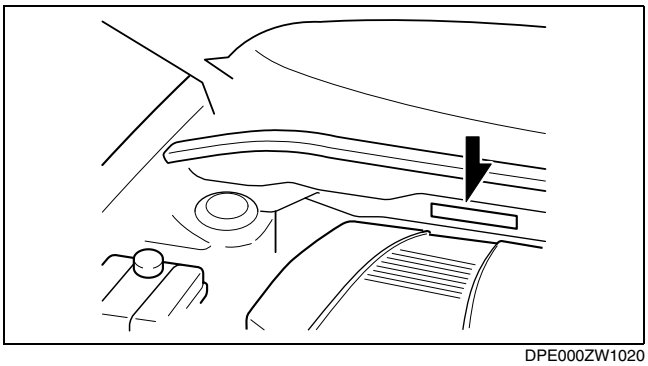

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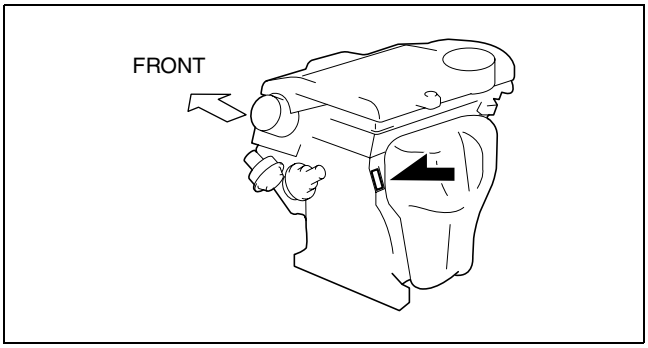
Engine Identification Number

~~L8, LF~~

~~MZR-CD (RF Turbo)~~



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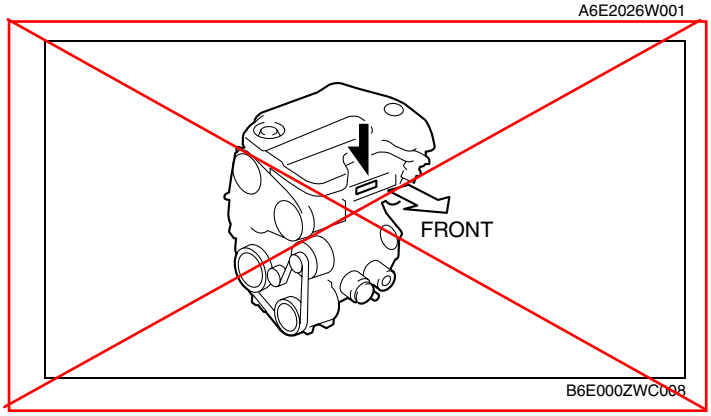

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NEW STANDARDS

DPE000000000W09

- Following is a comparison of the previous standard and the new standard.

New Standard		Previous Standard		Remark
Abbreviation	Name	Abbreviation	Name	
AP	Accelerator Pedal	—	Accelerator Pedal	
APP	Accelerator Pedal Position	—	Accelerator Pedal Position	
ACL	Air Cleaner	—	Air Cleaner	
A/C	Air Conditioning	—	Air Conditioning	
BARO	Barometric Pressure	—	Atmospheric Pressure	
B+	Battery Positive Voltage	V_B	Battery Voltage	
—	Brake Switch	—	Stoplight Switch	
—	Calibration Resistor	—	Corrected Resistance	#6
CMP sensor	Camshaft Position Sensor	—	Crank Angle Sensor	
LOAD	Calculated Load Voltage	—	—	
CAC	Charge Air Cooler	—	Intercooler	
CLS	Closed Loop System	—	Feedback System	
CTP	Closed Throttle Position	—	Fully Closed	
CPP	Clutch Pedal Position	—	Clutch Position	
CIS	Continuous Fuel Injection System	EGI	Electronic Gasoline Injection System	
CS sensor	Control Sleeve Sensor	CSP sensor	Control Sleeve Position Sensor	#6
CKP sensor	Crankshaft Position Sensor	—	Crank Angle Sensor 2	
DLC	Data Link Connector	—	Diagnosis Connector	
DTM	Diagnostic Test Mode	—	Test Mode	#1
DTC	Diagnostic Trouble Code(s)	—	Service Code(s)	
DI	Distributor Ignition	—	Spark Ignition	
DLI	Distributorless Ignition	—	Direct Ignition	
EI	Electronic Ignition	—	Electronic Spark Ignition	#2
ECT	Engine Coolant Temperature	—	Water Thermo	
EM	Engine Modification	—	Engine Modification	
—	Engine Speed Input Signal	—	Engine RPM Signal	

New Standard		Previous Standard		Remark
Abbreviation	Name	Abbreviation	Name	
EVAP	Evaporative Emission	—	Evaporative Emission	
EGR	Exhaust Gas Recirculation	—	Exhaust Gas Recirculation	
FC	Fan Control	—	Fan Control	
FF	Flexible Fuel	—	Flexible Fuel	
4GR	Fourth Gear	—	Overdrive	
—	Fuel Pump Relay	—	Circuit Opening Relay	#3
FSO solenoid	Fuel Shut Off Solenoid	FCV	Fuel Cut Valve	#6
GEN	Generator	—	Alternator	
GND	Ground	—	Ground/Earth	
HO2S	Heated Oxygen Sensor	—	Oxygen Sensor	With heater
IAC	Idle Air Control	—	Idle Speed Control	
—	IDM Relay	—	Spill Valve Relay	#6
—	Incorrect Gear Ratio	—	—	
—	Injection Pump	FIP	Fuel Injection Pump	#6
—	Input/Turbine Speed Sensor	—	Pulse Generator	
IAT	Intake Air Temperature	—	Intake Air Thermo	
KS	Knock Sensor	—	Knock Sensor	
MIL	Malfunction Indicator Lamp	—	Malfunction Indicator Light	
MAP	Manifold Absolute Pressure	—	Intake Air Pressure	
MAF	Mass Air Flow	—	Mass Air Flow	
MAF sensor	Mass Air Flow Sensor	—	Airflow Sensor	
MFL	Multiport Fuel Injection	—	Multiport Fuel Injection	
OBD	On-Board Diagnostic	—	Diagnosis/Self Diagnosis	
OL	Open Loop	—	Open Loop	
—	Output Speed Sensor	—	Vehicle Speed Sensor 1	
OC	Oxidation Catalytic Converter	—	Catalytic Converter	
O2S	Oxygen Sensor	—	Oxygen Sensor	
PNP	Park/Neutral Position	—	Park/Neutral Range	
PID	Parameter Identification	—	Parameter Identification	
—	PCM Control Relay	—	Main Relay	#6
PSP	Power Steering Pressure	—	Power Steering Pressure	
PCM	Powertrain Control Module	ECU	Engine Control Unit	#4
—	Pressure Control Solenoid	—	Line Pressure Solenoid Valve	
PAIR	Pulsed Secondary Air Injection	—	Secondary Air Injection System	Pulsed injection
—	Pump Speed Sensor	—	NE Sensor	#6
RAM	Random Access Memory	—	—	
AIR	Secondary Air Injection	—	Secondary Air Injection System	Injection with air pump
SAPV	Secondary Air Pulse Valve	—	Reed Valve	
SFI	Sequential Multipoint Fuel Injection	—	Sequential Fuel Injection	
—	Shift Solenoid A	—	1–2 Shift Solenoid Valve	
		—	Shift A Solenoid Valve	
—	Shift Solenoid B	—	2–3 Shift Solenoid Valve	
		—	Shift B Solenoid Valve	
—	Shift Solenoid C	—	3–4 Shift Solenoid Valve	
3GR	Third Gear	—	3rd Gear	
TWC	Three Way Catalytic Converter	—	Catalytic Converter	
TB	Throttle Body	—	Throttle Body	
TP	Throttle Position	—	—	
TP sensor	Throttle Position Sensor	—	Throttle Sensor	
TCV	Timer Control Valve	TCV	Timing Control Valve	#6

New Standard		Previous Standard		Remark
Abbreviation	Name	Abbreviation	Name	
TCC	Torque Converter Clutch	—	Lockup Position	
TCM	Transmission (Transaxle) Control Module	—	EC-AT Control Unit	
—	Transmission (Transaxle) Fluid Temperature Sensor	—	ATF Thermosensor	
TR	Transmission (Transaxle) Range	—	Inhibitor Position	
TC	Turbocharger	—	Turbocharger	
VSS	Vehicle Speed Sensor	—	Vehicle Speed Sensor	
VR	Voltage Regulator	—	IC Regulator	
VAF sensor	Volume Air Flow Sensor	—	Air Flow Sensor	
WUTWC	Warm Up Three Way Catalytic Converter	—	Catalytic Converter	#5
WOT	Wide Open Throttle	—	Fully Open	

#1: Diagnostic trouble codes depend on the diagnostic test mode
#2: Controlled by the PCM
#3: In some models, there is a fuel pump relay that controls pump speed. That relay is now called the fuel pump relay (speed).
#4: Device that controls engine and powertrain
#5: Directly connected to exhaust manifold
#6: Part name of diesel engine

ABBREVIATIONS

DPE000000000W10

ABS	Antilock Brake System
ACC	Accessories
ALC	Auto Level Control
ATDC	After Top Dead Center
ATF	Automatic Transaxle Fluid
ATX	Automatic Transaxle
BCM	Body Control Module
BDC	Bottom Dead Center
BTDC	Before Top Dead Center
CAN	Controller Area Network
CKP	Crankshaft Position
CM	Control Module
CMP	Camshaft Position
CPU	Central Processing Unit
DC	Drive Cycle
DIS	Drive Information System
~~DPF~~	~~Diesel Particulate Filter~~
~~DSC~~	~~Dynamic Stability Control~~
EBD	Electronic Brakeforce Distribution
EHPAS	Electro Hydraulic Power Assist Steering
ELR	Emergency Locking Retractor
~~GPS~~	~~Global Positioning System~~
HI	High
HDD	Hard Disc Drive
HU	Hydraulic Unit
IG	Ignition
IN	Intake
INT	Intermittent
LED	Light Emitting Diode
LF	Left Front
LH	Left Hand
L.H.D.	Left Hand Drive

LO	Low
LR	Left Rear
M	Motor
MAX	Maximum
MIN	Minimum
MTX	Manual Transaxle
PAD	Passenger Air Bag Deactivation
PM	Particulate Matter
P/S	Power Steering
P/W CM	Power Window Control Module
REC	Recirculate
RF	Right Front
RH	Right Hand
R.H.D.	Right Hand Drive
RR	Right Rear
SAS	Sophisticated Air Bag Sensor
SST	Special Service Tool
SW	Switch
TCS	Traction Control System
TDC	Top Dead Center
TFT	Transaxle Fluid Temperature
TNS	Tail Number Side Lights
WDS	Worldwide Diagnostic System
1GR	First Gear
2GR	Second Gear
5GR	Fifth Gear
6GR	Sixth Gear

PRE-DELIVERY INSPECTION

DPE000000000W14

Pre-Delivery Inspection Table

Exterior

INSPECT and **ADJUST**, if necessary, the following items to specification:

❑Glass, exterior bright metal and paint for damage
❑Wheel lug nuts
❑All weatherstrips for damage or detachment
❑Tire pressures
❑Headlight cleaner and fluid level (if equipped)
❑Operation of bonnet release and lock
❑Operation of trunk lid and fuel-filler lid opener
❑Door operation and alignment including side door and back door
❑Headlight aiming

INSTALL the following parts:

❑Flap (front)
❑Wheel caps or rings (if equipped)

Under bonnet—engine off

INSPECT and **ADJUST**, if necessary, the following items to specification:

❑Fuel, engine coolant, and hydraulic lines, fittings, connections, and components for leaks
❑Engine oil level
❑Brake and clutch fluid level
❑Windshield washer reservoir fluid level
❑Manual transmission/Transaxle oil level
❑Radiator coolant level and specific gravity
❑Tightness of water hose clamps
❑Tightness of battery terminals, electrolyte level and specific gravity
❑Differential oil level

Interior

INSTALL the following items:

❑Fuse for accessories
❑Equipments for advanced keyless system (if equipped)
- After install the accessories fuse, assemble the card key (transmitter and auxiliary key)
- Install the start knob to the ignition switch

INSPECT the operations of the following items:
❑Seat controls (slide and recline) and headrests
❑Folding rear seat
❑Door locks, including childproof door locks
❑Seat belts and warning system
❑Ignition switch and steering lock
❑Transmission/Transaxle range switch
❑Warning buzzers
❑Ignition key reminder alarm
❑Air bag system using warning light
❑Cruise control system (if equipped)
❑Power door lock
❑Shift-lock system (if equipped)
❑Starter interlock
❑All lights including warning, and indicator lights
❑Horn, wipers, and washers
❑Wiper blades performance
Clean wiper blades and windshield, if necessary
❑Antenna
❑Audio system
❑Cigarette lighter and clock
❑Power windows (if equipped)
❑Heater, defroster, and air conditioner at various mode selections (if equipped)
INSPECT the following items:
❑Presence of spare fuse
❑Upholstery and interior finish
INSPECT and **ADJUST**, if necessary, the following items:
❑Operation and fit of windows
❑Pedal height and free play of clutch pedal
❑Parking brake

Under bonnet—engine running at operating temperature
INSPECT the following items:
❑Automatic transmission/Transaxle fluid level
❑Operation of idle-up system for electrical load, air conditioner or power steering (if equipped)
❑Ignition timing
❑Idle speed
❑Operation of throttle position sensor

On hoist
INSPECT the following items:
❑Manual transmission/Transaxle oil level
❑Underside fuel, coolant and hydraulic lines, fittings, connections, and components for leaks
❑Tires for cuts or bruises
❑Steering linkage, suspension, exhaust system, and all underside hardware for looseness or damage

Road test
INSPECT the following items:
❑Brake operation
❑Clutch operation
❑Steering control
❑Operation of gauges
❑Squeaks, rattles, and unusual noises
❑Engine general performance
❑Emergency locking retractors and automatic locking retractors
❑Cruise control system (if equipped)
❑Operation of meters and gauges, squeaks, rattles, and abnormal noises

After road test
INSPECT for necessary owner information materials, tools, and spare tire in vehicle
The following items must be completed just before delivery to your customer.

❑Load test battery and charge if necessary (Load test result: Volts)
❑Adjust tire pressure to specification (Specified tire pressure is indicated on the door label.)
❑Clean outside of vehicle
❑Install fuses for accessories
❑Remove seat and cabin carpet protective covers
❑Vacuum inside of vehicle

SCHEDULED MAINTENANCE TABLE

DPE000000000W12

For Europe (L.H.D. U.K.)
Chart symbols:

I : Inspect: Inspect and clean, repair, adjust, or replace if necessary.
R : Replace
C : Clean
D : Drain

Remarks:

- The ignition and fuel systems are highly important to the emission control systems and to efficient engine operation. All inspections and adjustments must be made by an expert repairer, we recommend an Authorized Mazda Repairer.
- After the prescribed period, continue to follow the described maintenance at the recommended intervals.
- Refer below for a description of items marked* in the maintenance chart.

*1: If the vehicle is operated in very dusty or sandy areas, clean and if necessary, replace the air cleaner element more often than the recommended intervals.

*2: Replacement of the timing belt is required at every 120,000 km (75,000 miles). Failure to replace the timing belt may result in damage to the engine.

*3: If the vehicle is operated under any of the following conditions, change the engine oil and oil filter every 10,000 km (6,250 miles) or shorter.

a. Driving in dusty conditions.
b. Extended periods of idling or low speed operation.
c. Driving for long period in cold temperatures or driving regularly at short distance only.

*4: Also inspect and adjust the power steering and air conditioner drive belts, if installed.

*5: Use FL22 type coolant in vehicles with the inscription “FL22” on the radiator cap itself or the surrounding area. Use FL22 when replacing the coolant.

*6: If the brakes are used extensively (for example, continuous hard driving or mountain driving) or if the vehicle is operated in extremely humid climates, change the brake fluid annually.

Maintenance Item		Maintenance Interval (Number of months or km (miles), whichever comes first)								
	Months	12	24	36	48	60	72	84	96	108
	×1000 km	20	40	60	80	100	120	140	160	180
	×1000 miles	12.5	25	37.5	50	62.5	75	87.5	100	112.5
GASOLINE ENGINE										
Engine valve clearance		Audible inspect every 120,000 km (75,000 miles), if noisy, adjust								
Spark plugs		Replace every 120,000 km (75,000 miles)								
Air cleaner element *1				R			R			R
Evaporative system (if installed)				I			I			I
DIESEL ENGINE										
Engine valve clearance		I					I			
Engine timing belt *2		Replace every 120,000 km (75,000 miles)								
Fuel filter				R			R			R
Fuel injection system		I		I			I			I
Fuel system (Drain water)		D	D	D	D	D	D	D	D	D
Air cleaner element *1		C	C	R	C	C	R	C	C	R
GASOLINE and DIESEL ENGINE										
Engine oil *3		R	R	R	R	R	R	R	R	R
Engine oil filter *3		R	R	R	R	R	R	R	R	R
Drive belts *4				I			I			I
Cooling system (including coolant level adjustment)			I		I		I		I	
Engine coolant	FL22 type *5	Replace every 200,000 km (125,000 miles) or 11 years								
	Others	Replace at first 100,000 km (62,500 miles) or 4 years; after that, every 2 years								
Fuel lines and hoses			I		I		I		I	

Maintenance Item	Maintenance Interval (Number of months or km (miles), whichever comes first)									
	Months	12	24	36	48	60	72	84	96	108
	×1000 km	20	40	60	80	100	120	140	160	180
	×1000 miles	12.5	25	37.5	50	62.5	75	87.5	100	112.5
Battery electrolyte level and specific gravity		I	I	I	I	I	I	I	I	I
Brake lines, hoses and connections		I	I	I	I	I	I	I	I	I
Brake fluid *6			R		R		R		R	
Parking brake		I	I	I	I	I	I	I	I	I
Disc brakes		I	I	I	I	I	I	I	I	I
Power steering fluid, lines, hoses and connections		I	I	I	I	I	I	I	I	I
Steering operation and linkages			I		I		I		I	
Manual transaxle oil						R				
Front and rear suspension and ball joints			I		I		I		I	
Drive shaft dust boots			I		I		I		I	
Exhaust system and heat shields		Inspect every 80,000 km (50,000 miles) or 5 years								
Body condition (for rust, corrosion and perforation)		Inspect annually								
Cabin air filter (if installed)			R		R		R		R	
Tires (including spare tire)(with inflation pressure adjustment)		I	I	I	I	I	I	I	I	I

For General (L.H.D. R.H.D.)
Chart symbols:

I : Inspect: Inspect and clean, repair, adjust, or replace if necessary.
R : Replace
T : Tighten
C : Clean
D : Drain

Remarks:

- The ignition and fuel systems are highly important to the emission control systems and to efficient engine operation. All inspections and adjustments must be made by an Authorized Mazda Dealer.
- After the prescribed period, continue to follow the described maintenance at the recommended intervals.
- Refer below for a description of items marked* in the maintenance chart.

*1: Replacement of the timing belt is required at every 120,000 km (75,000 miles). Failure to replace the timing belt may result in damage to the engine.

*2: If the vehicle is operated in very dusty or sandy areas, clean and if necessary, replace the air cleaner element more often than the recommended intervals.

*3: Also inspect and adjust the power steering and air conditioner drive belts, if installed.

*4: If the vehicle is operated under any of the following conditions, change the engine oil and oil filter more often than recommended intervals.

a. Driving in dusty conditions.
b. Extended periods of idling or low speed operation.
c. Driving for long period in cold temperatures or driving regularly at short distance only.

*5: Use FL22 type coolant in vehicles with the inscription “FL22” on the radiator cap itself or the surrounding area. Use FL22 when replacing the coolant.

*6: If the brakes are used extensively (for example, continuous hard driving or mountain driving) or if the vehicle is operated in extremely humid climates, change the brake fluid annually.

Maintenance Item	Maintenance Interval (Number of months or km (miles), whichever comes first)															
	Months	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
	×1000 km	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
	×1000 miles	6.25	12.5	18.75	25	31.25	37.5	43.75	50	56.25	62.5	68.75	75	81.25	87.5	93.75	100
GASOLINE ENGINE																	
Engine valve clearance		Audible inspect every 120,000 km (75,000 miles), if noisy, adjust															
Spark plugs		Replace every 120,000 km (75,000 miles)															
Fuel filter		Replace every 60,000 km (37,500 miles)															
Evaporative system (if installed)			I		I		I		I		I		I		I		I

Maintenance Item		Maintenance Interval (Number of months or km (miles), whichever comes first)															
	Months	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
	×1000 km	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
	×1000 miles	6.25	12.5	18.75	25	31.25	37.5	43.75	50	56.25	62.5	68.75	75	81.25	87.5	93.75	100
DIESEL ENGINE																	
Engine valve clearance			I										I				
Engine timing belt *1		Replace every 120,000 km (75,000 miles)															
Fuel filter					R				R				R				R
Fuel injection system			I						I						I		
Fuel system (Drain water)		D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
GASOLINE and DIESEL ENGINE																	
Air cleaner element *2			C		C		R		C		C		R		C		C
Drive belts *3		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Engine oil *4		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Engine oil filter *4		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Cooling system			I		I		I		I		I		I		I		I
Engine coolant	FL22 type *5										R						
	Others	Replace every 2 years															
Fuel lines and hoses			I		I		I		I		I		I		I		I
Battery electrolyte level and specific gravity			I		I		I		I		I		I		I		I
Brake lines, hoses and connections			I		I		I		I		I		I		I		I
Brake fluid *6		I	I	I	R	I	I	I	R	I	I	I	R	I	I	I	R
Parking brake		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Power brake unit (Brake booster) and hoses			I		I		I		I		I		I		I		I
Disc brakes		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Power steering fluid, lines, hoses and connections		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Steering operation and linkages			I		I		I		I		I		I		I		I
Manual transaxle oil											R						
Automatic transaxle fluid level			I		I		I		I		I		I		I		I
Front and rear suspension and ball joints					I				I				I				I
Drive shaft dust boots					I				I				I				I
Exhaust system and heat shields		Inspect every 80,000 km (50,000 miles)															
Bolts and nuts on chassis and body			T		T		T		T		T		T		T		T
Body condition (for rust, corrosion and perforation)		Inspect annually															
Cabin air filter (if installed)			R		R		R		R		R		R		R		R
Tires (including spare tire)(with inflation pressure adjustment)			I		I		I		I		I		I		I		I

For Israel
Chart symbols:

I : Inspect: Inspect and clean, repair, adjust, or replace if necessary.
R : Replace
C : Clean

Remarks:

- The ignition and fuel systems are highly important to the emission control systems and to efficient engine operation. All inspections and adjustments must be made by an Authorized Mazda Dealer.
- After the prescribed period, continue to follow the described maintenance at the recommended intervals.
- Refer below for a description of items marked* in the maintenance chart.

*1: If the vehicle is operated under any of the following conditions, change the engine oil and oil filter every 10,000 km (6,250 miles) or shorter.

a. Driving in dusty conditions.
b. Extended periods of idling or low speed operation.
c. Driving for long period in cold temperatures or driving regularly at short distance only.

*2: Also inspect and adjust the power steering and air conditioner drive belts, if installed.

*3: Use FL22 type coolant in vehicles with the inscription “FL22” on the radiator cap itself or the surrounding area. Use FL22 when replacing the coolant.

*4: If the vehicle is operated in very dusty or sandy areas, clean and if necessary, replace the air cleaner element more often than the recommended intervals.

*5: If the brakes are used extensively (for example, continuous hard driving or mountain driving) or if the vehicle is operated in extremely humid climates, change the brake fluid annually.

Maintenance Item		Maintenance Interval (Number of months or km (miles), whichever comes first)											
	Months	**12**	**24**	**36**	**48**	**60**	**72**	**84**	**96**	**108**	**120**	**132**	**144**
	×1000 km	**15**	**30**	**45**	**60**	**75**	**90**	**105**	**120**	**135**	**150**	**165**	**180**
	×1000 miles	**9.4**	**18.8**	**28.1**	**37.5**	**46.9**	**56.3**	**65.6**	**75**	**84.4**	**93.8**	**103.1**	**112.5**
ENGINE													
Engine valve clearance		Audible inspect every 120,000 km (75,000 miles), if noisy, adjust											
Engine oil *1		R	R	R	R	R	R	R	R	R	R	R	R
Engine oil filter *1		R	R	R	R	R	R	R	R	R	R	R	R
Drive belts *2		I	I	I	I	I	I	I	I	I	I	I	I
COOLING SYSTEM													
Cooling system (Including coolant level adjustment)			I		I		I		I		I		I
Engine coolant	FL22 type *3	Replace every 195,000 km (121,900 miles) or 10 years											
	Others	Replace at first 90,000 km (56,300 miles) or 4 years; after that, every 2 years											
FUEL SYSTEM													
Air cleaner element *4		C	C	C	R	C	C	C	R	C	C	C	R
Fuel filter		Replace every 105,000 km (65,600 miles)											
Fuel lines and hoses			I		I		I		I		I		I
IGNITION SYSTEM													
Spark plugs		Replace every 120,000 km (75,000 miles) or 3 years											
EMISSION CONTROL SYSTEM													
Evaporative system (if installed)					I				I				I
ELECTRICAL SYSTEM													
Battery electrolyte level and specific gravity		I	I	I	I	I	I	I	I	I	I	I	I
CHASSIS and BODY													
Parking brake		I	I	I	I	I	I	I	I	I	I	I	I
Brake lines, hoses and connections		I	I	I	I	I	I	I	I	I	I	I	I
Brake fluid *5		I	R	I	R	I	R	I	R	I	R	I	R
Power brake unit (brake booster) and hoses		I	I	I	I	I	I	I	I	I	I	I	I
Disc brakes		I	I	I	I	I	I	I	I	I	I	I	I
Power steering fluid, lines, hoses, and connections		I	I	I	I	I	I	I	I	I	I	I	I
Steering operation and linkages			I		I		I		I		I		I
Automatic transaxle fluid level			I		I		I		I		I		I
Front and rear suspension and ball joints				I		I		I		I		I	
Drive shaft dust boots				I		I		I		I		I	
Exhaust system and heat shields		Inspect every 75,000 km (46,900 miles)											
Body condition (for rust, corrosion and perforation)		Inspect annually											
Cabin air filter (if installed)		R	R	R	R	R	R	R	R	R	R	R	R

Maintenance Item	Maintenance Interval (Number of months or km (miles), whichever comes first)											
	Months	12	24	36	48	60	72	84	96	108	120	132	144
	×1000 km	15	30	45	60	75	90	105	120	135	150	165	180
	×1000 miles	9.4	18.8	28.1	37.5	46.9	56.3	65.6	75	84.4	93.8	103.1	112.5
Tires (including spare tire)(with inflation pressure adjustment)		I	I	I	I	I	I	I	I	I	I	I	I

Scheduled Maintenance Service (Specific Work Required)

- The specific work required for each maintenance item is listed in the following table. (Please refer to the section applicable to the model serviced.)

Maintenance Item	Specific Work Required
ENGINE	
Engine valve clearance	Inspect engine vale clearance.
Engine timing belt	Replace engine timing belt.
Drive belts	Inspect for wear, cracks, raying and tension.
Engine oil	Replace engine oil and inspect for leakage.
Engine oil filter	Replace engine oil filter and inspect for leakage.
COOLING SYSTEM	
Cooling system (including coolant level adjustment)	Check engine coolant level and quality, and inspect for leakage.
Radiator cap	Inspect radiator cap.
Engine coolant	Replace engine coolant.
FUEL SYSTEM	
Idle speed	Check engine idle rpm.
Idle mixture	Inspect the CO and HC concentrations (see W/M).
Choke system	Check system operation.
Air cleaner element	Inspect dirt, oil and damage. Clean air cleaner element (by blowing air). Replace air cleaner element.
Fuel filter	Replace fuel filter.
Fuel injection pump inlet filter	Clean fuel injection pump inlet filter.
Fuel lines and hoses Fuel lines, hoses and connections	Inspect for cracks, leakage and loose connection.
Fuel injection system	Update to injection amount correction with WDS (see W/M).
Fuel system (Drain water)	Drain water in fuel system.
Diesel particulate filter (DPF)	Replace diesel particulate filter.
Fuel additive for DPF	Fill up fuel additive.
IGNITION SYSTEM	
Initial ignition timing	Check initial ignition timing.
Spark plugs	Inspect for wear, damage, carbon, plug gap and high-tension lead condition. Replace spark plugs.
EMISSION CONTROL SYSTEM	
Evaporative system Evaporative emission control system	Check system operation (see W/M), vapor lines, vacuum fitting hoses and connection.
E.G.R. system	Check system operation (see W/M), vacuum fitting hoses and connection. MZR-CD (RF turbo) engine: Update to MAF correction for E.G.R control with WDS (see W/M).
Throttle positioner system	Check the diaphragm and system operation, vacuum fitting hoses and connection.
Dash pot	Check system operation.
ELECTRICAL SYSTEM	
Battery electrolyte level and specific gravity	Check battery electrolyte level and specific gravity.
Battery condition	Check battery for corroded or loose connections and cracks.
All electrical system Lighting system and windshield wipers and washer	Check function of lighting system, windshield wiper (including wiper blade condition), washer and power windows.
Head light alignment	Check head light alignment.
CHASSIS AND BODY	

Maintenance Item	Specific Work Required
Brake and clutch pedals Brake pedals	Check pedal height and free play.
Brake fluid	Check brake fluid level and for leakage. Replace brake fluid.
Clutch fluid	Check clutch fluid level and for leakage.
Brake lines, hoses and connections	Inspect for cracks, damage, chafing, corrosion, scars, swelling and fluid leakage.
Parking brake	Check parking lever stroke.
Power brake unit and hoses Power brake unit (Brake booster) and hoses	Check vacuum lines, connections and check valve for improper attachment, air tightness, cracks chafing and deterioration.
Disc brakes	Inspect caliper for correct operation and fluid leakage, brake pads for wear. Check disc plate condition and thickness. Test for judder and noise.
Drum brakes	Inspect brake drum for wear and scratches: brake lining for wear, peeling and cracks; wheel cylinder for fluid leakage. Test for judder and noise.
Manual steering gear oil	Check manual gear oil level.
Power steering fluid, lines, hoses and connections Power steering fluid and lines	Check power steering fluid level and lines for improper attachment, leakage, cracks, damage, loose connections, chafing and deterioration.
Steering operation and gear housing Steering linkages tie rod ends and arms Steering operation and linkages	Check that the steering wheel has the specified play. Be sure to check for changes, such as excessive play, hard steering or strange noises. Check gear housing and boots for looseness, damage and grease/gear oil leakage. Check ball joint, dust cover and other components for looseness, wear, damage and grease leakage.
Front and rear suspension and ball joints Front suspension ball joints	Inspect for grease leakage, crack, damage and looseness.
Manual transmission/transaxle oil	Check manual transmission/ transaxle oil level and for leakage. Replace manual transmission/ transaxle oil.
Automatic transmission/transaxle fluid level	Check automatic transmission/ transaxle fluid level.
Automatic transmission/transaxle fluid	Replace automatic transmission/ transaxle fluid.
Front and rear differential oil Front differential oil Front axle oil Rear differential oil Rear axle oil	Check front and rear differential oil level and inspect for leakage. Replace front and rear differential oil.
Transfer oil	Check transfer oil level inspect for leakage. Replace transfer oil.
Front and rear wheel bearing grease Front wheel bearing grease	Remove wheel bearing and replace wheel bearing grease.
Propeller shaft joints	Lubricate propeller shaft joints.
Drive shaft dust boots	Inspect for grease leakage, cracks, damage and looseness.
Wheel nuts	Tighten wheel nuts.
Bolts and nuts on chassis and body Bolts and nuts on seats	Tighten bolts and nuts fastening suspension components, members and seat frames.
Body condition (for rust, corrosion and perforation)	Inspect body surface for paint damage, rust, corrosion and perforation.
Exhaust system and heat shields Exhaust pipe connections	Inspect for damage, corrosion, looseness of connections and gas leakage.
Tires (including spare tire) (with inflation pressure adjustment)	Check air pressure and inspect tires for tread wear, damage, cracks; and wheels for damage and corrosion.
Flat tire repair kit	Check tire repair fluid expiration date.
Hinges and catches	Lubricate hinges and catches of doors, trunk lid and hood.
Underside of vehicle	Inspect underside of vehicle (floor pans, frames, fuel lines, around exhaust system etc.) for damage and corrosion.
Road test	Check brake operation/ clutch operation/ steering control/ operation of meters and gauges/ squeaks, rattles, or unusual noises/ engine general performance/ emergency locking retractors.
Diagnostic trouble code by WDS	Check diagnostic trouble code with WDS (see W/M).
AIR CONDITIONER SYSTEM	
Cabin air filter	Replace cabin air filter.