

GENERAL INFORMATION

How to use this Manual:

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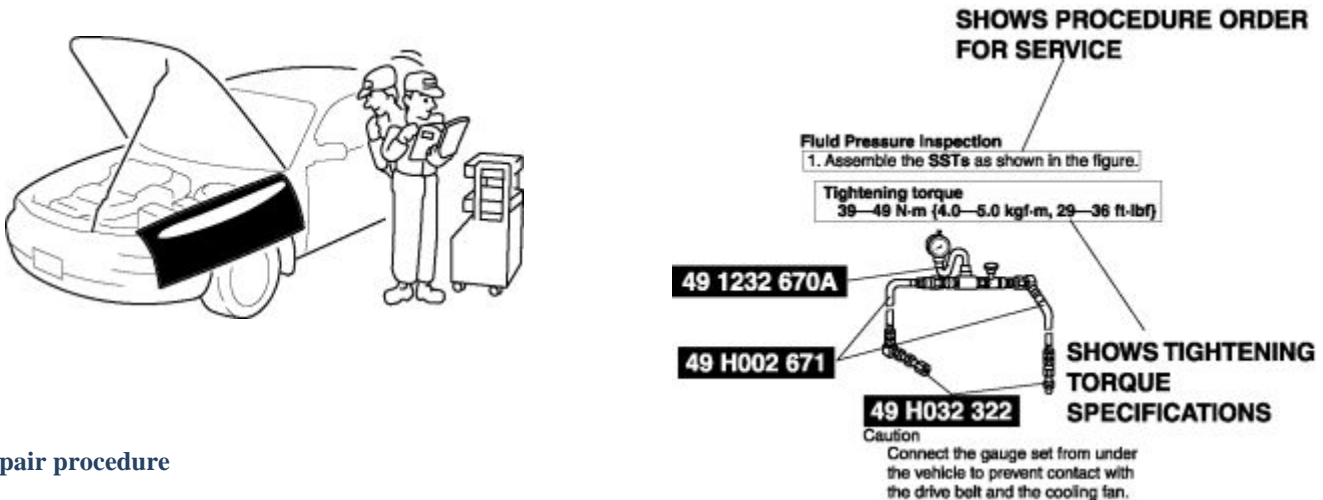
Range of Topics

- 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

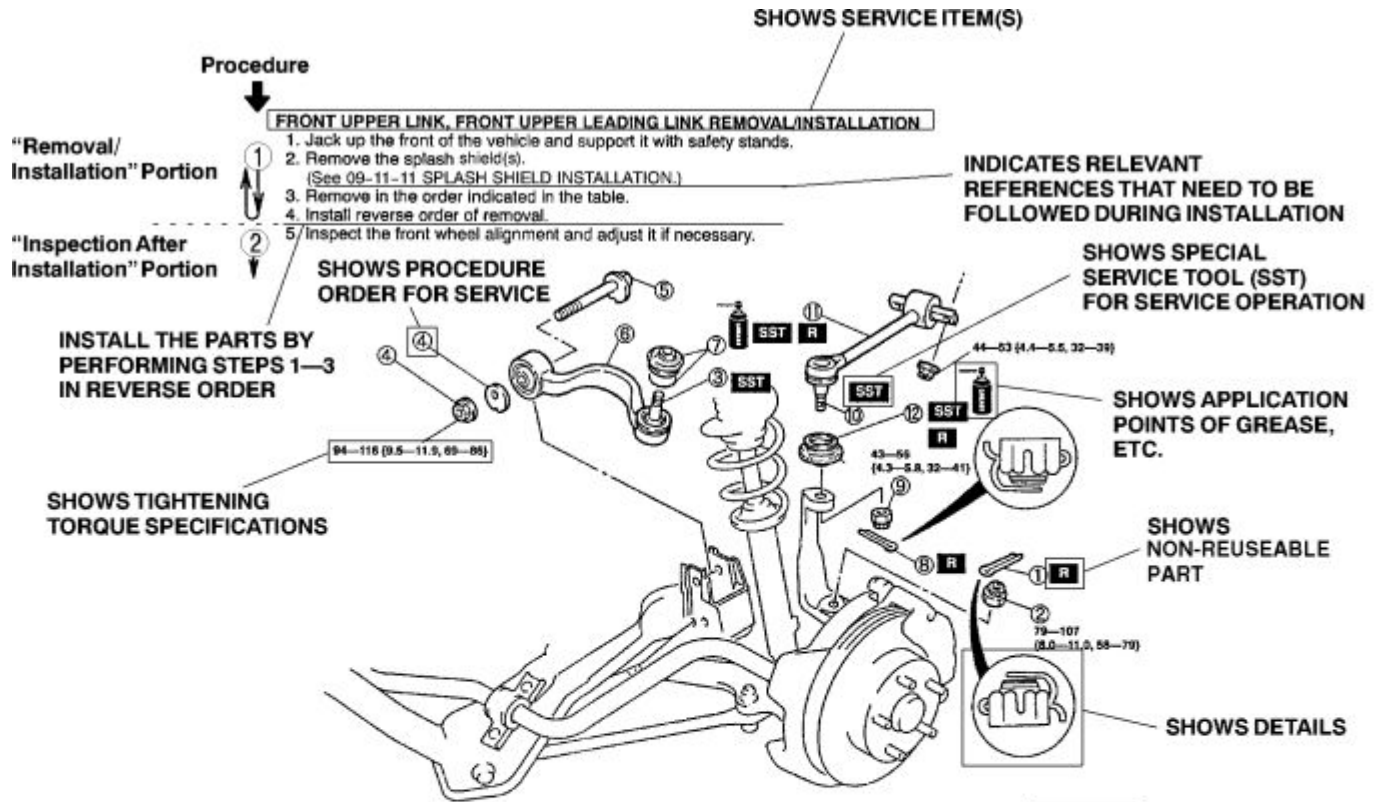
- Inspection and adjustment procedures are divided into steps. Important points regarding the location and contents of the procedures are explained in detail and shown in the illustrations.



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.

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SHOWS REFERRAL NOTES FOR SERVICE

1	Split pin
2	Nut
3	Upper lateral link ball joint
(See 02-13-6 Upper Lateral Link Ball Joint Removal Note)	
4	Cam nut, cam plate

5	Adjust cam ball
6	Upper lateral link
7	Dust boot, clip (upper lateral link)
8	Split pin
9	Nut
10	Upper leading link ball joint
11	Upper leading link
12	Dust boot (upper leading link)

SHOWS TIGHTENING TORQUE UNITS

N·m (kgf·m, ft·lbf)

SHOWS REFERRAL NOTES FOR SERVICE

Upper Lateral Link Ball Joint Removal Note

- Remove the ball joint using the SSTs.

SHOWS SPECIAL SERVICE TOOL (SST) NO.

49 T020 303

49 T020 304 UPPER LEADING LINK

49 T020 305 UPPER LATERAL LINK

KNUCKLE

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
	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
	Replace part	O-ring, gasket, etc.
	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

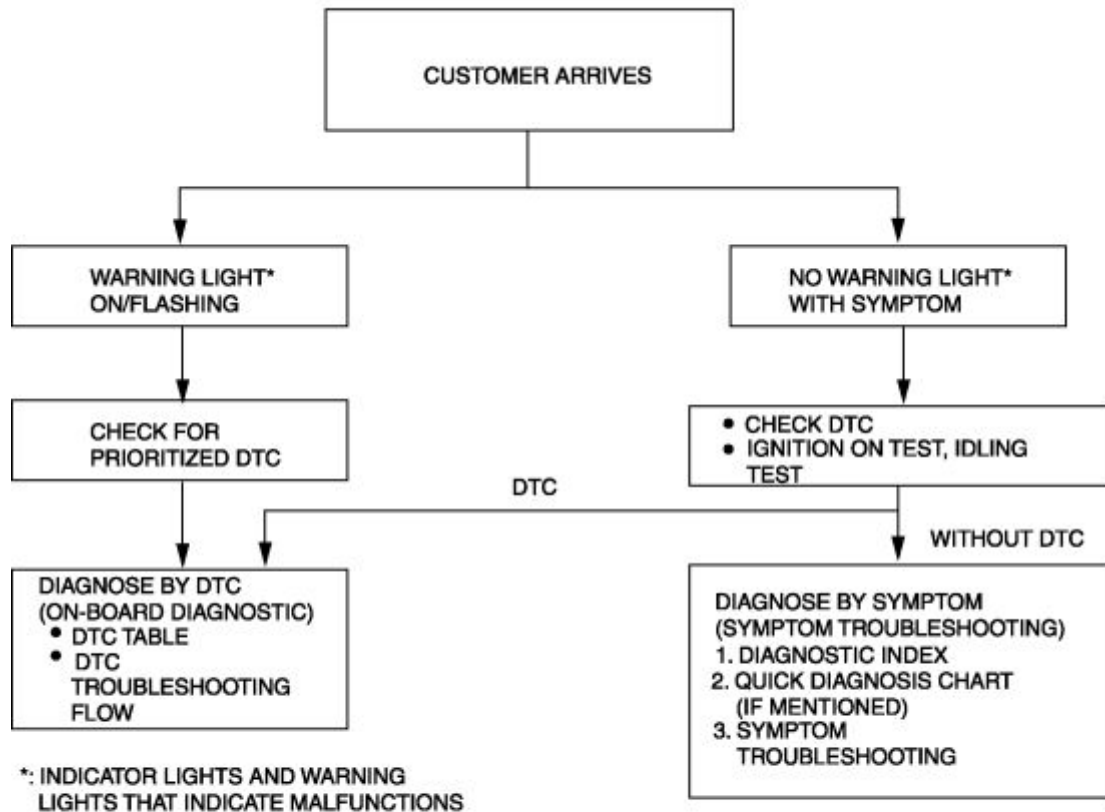
- The values indicate the allowable range when performing inspections or adjustments.

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



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	<ul style="list-style-type: none"> Turn ignition switch to ON position. 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	<ul style="list-style-type: none"> Turn ignition switch to ON position. 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Perform stall test. Is stall speed is okay? 	Yes	Go to next step.
		No	Repair or replace defective parts according to inspection result.

SHOWS INSPECTION ORDER (points to STEP column)
 SHOWS ITEM NAMES FOR DETAILED PROCEDURES (points to INSPECTION column)
 SHOWS POINTS REQUIRING ATTENTION BASED ON INSPECTION RESULTS (points to ACTION column)
 REFERENCE COLUMN (points to the left margin)

Using the DTC troubleshooting flow

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

TROUBLE CONDITION

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

YMU102WAA

DTC P0103	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 a malfunction.	
POSSIBLE CAUSE describes possible point(s) of malfunction.	Diagnostic support note <ul style="list-style-type: none"> This is a continuous monitor (CCM). MIL illuminates if PCM detects the above malfunction condition during first drive cycle. Therefore, PENDING CODE is not available. FREEZE FRAME DATA is available. DTC is stored in the PCM memory. 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> 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 	

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

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

Indicates the connector related to the inspection

STEP shows the order of troubleshooting

Diagnostic procedure		
STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 failed part(s).

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

Reference item(s) to perform ACTION

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 RETURN 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)

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.

② PARTS WHICH MAY BE THE CAUSE OF PROBLEMS

SYMPTOM QUICK DIAGNOSTIC CHART

PART WHICH MAY BE THE SYMPTOM

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 main or other fuse																						
2	MIL comes on																						
3	Will not crank		x	x		x	x							x									
4	Hard 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																						
	Engine stalls / quits	Acceleration / cruise						x	x														x
	Engine runs rough	Acceleration / cruise						x	x														x
	Misses	Acceleration / cruise						x	x														x
11	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					
16	High oil consumption/leakage												x	x	x								
17	Cooling system concerns	Overheating													x	x	x						
18	Cooling system concerns	Runs cold																x	x				
19	Exhaust smoke													x					x				
20	Fuel odor (in engine compartment)													x	x								
21	Engine noise												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 TROUBLESHOOTING)																				

① CHOOSE THE ACTUAL SYMPTOM

Using the symptom troubleshooting

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

DESCRIPTION describes what kind of TROUBLE SYMPTOM.

TROUBLE SYMPTOM

POSSIBLE CAUSE describes possible point of malfunction.

STEP shows the order of troubleshooting.

14	<p>Engine flares up or slips when upshifting or down shifting</p> <ul style="list-style-type: none"> • 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.
DESCRIPTION	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • There is clutch slip because clutch is stuck or line pressure is low. <ul style="list-style-type: none"> — Clutch stuck, slippage (forward clutch, 3-4 clutch, 2-4 brake band, one-way clutch 1, one-way clutch 2) <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Selector lever position disparity • TR switch position disparity <p>Note</p> <ul style="list-style-type: none"> • Before following troubleshooting steps, make sure that Automatic Transaxle On-board Diagnostic and Automatic Transaxle Basic Inspection are conducted.

Reference item(s) for additional information to perform INSPECTION

INSPECTION describes the method to quickly determine the failed part.

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	<ul style="list-style-type: none"> • Overhaul control valve body and repair or replace any defective parts. (See ATX Workshop Manual GF4A-EL (9999-95-GF4A-00)) • If problem remains, replace or overhaul transaxle and repair or replace defective parts. (See 05-17-15 AUTOMATIC TRANSAXLE REMOVAL/INSTALLATION)
		No	<ul style="list-style-type: none"> • 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.		

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

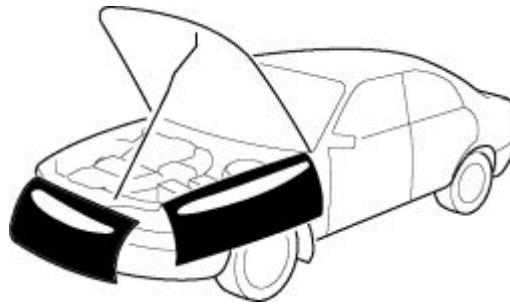
How to perform ACTION is described in the relative material shown.

Reference item(s) to perform ACTION

SERVICE CAUTIONS

Protection of the Vehicle

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



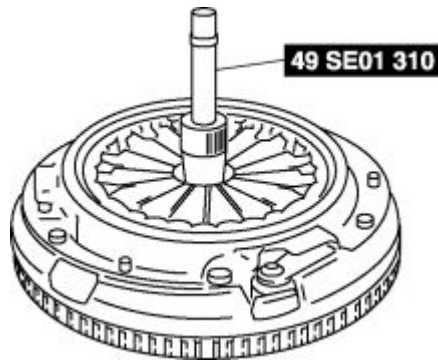
Preparation of Tools and Measuring Equipment

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



Special Service Tools

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



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.

WARNING:

- For vehicles with DSC, if the negative battery cable is disconnected, the stored initial position of the steering angle sensor will be cleared and the DSC will not operate properly, making the vehicle unsafe to drive. Perform the steering angle sensor initialization procedure after connecting the negative battery cable. (See STEERING ANGLE SENSOR INITIALIZATION PROCEDURE)

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 transmission.

NOTE:

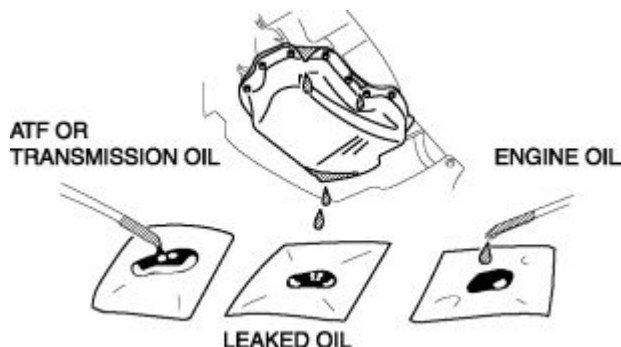
- Referring to the fluorescent dye instruction manual, mix the specified amount of dye into the engine oil or ATF (or transmission oil).
2. Pour the fluorescent dye into the engine oil or ATF (or transmission oil).
 3. Allow the engine to run for 30 min.
 4. Inspect for dye leakage by irradiating with 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 transmission 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 transmission.
5. Allow the engine to run for 30 min.

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6. Check the area where the oil is leaking, then make necessary repairs.

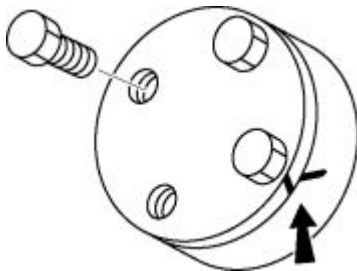
Removal of Parts

- 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.



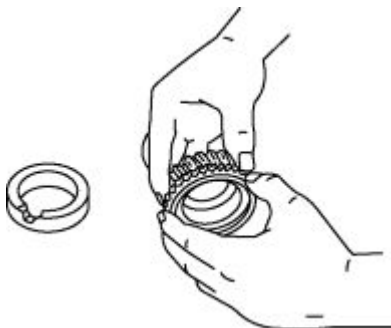
Disassembly

- 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.



Inspection During Removal, Disassembly

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



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.

Cleaning of Parts

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

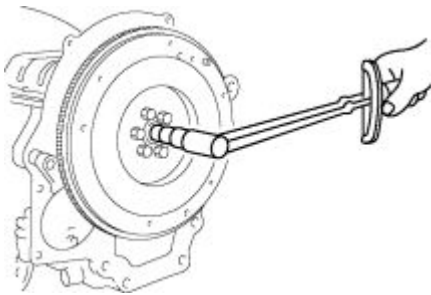


WARNING:

- 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.

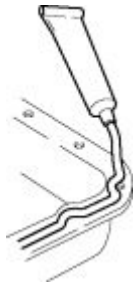
Reassembly

- 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
- 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.

Adjustment

- Use suitable gauges and testers when making adjustments.



Rubber Parts and Tubing

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



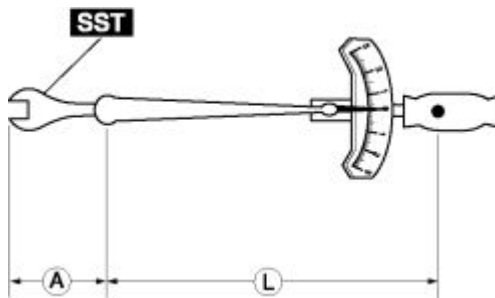
Hose Clamps

- 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.



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	$N \cdot m \times [L / (L + A)]$
kgf·m	$kgf \cdot m \times [L / (L + A)]$
kgf·cm	$kgf \cdot cm \times [L / (L + A)]$
ft·lbf	$ft \cdot lbf \times [L / (L + A)]$
in·lbf	$in \cdot lbf \times [L / (L + A)]$

A

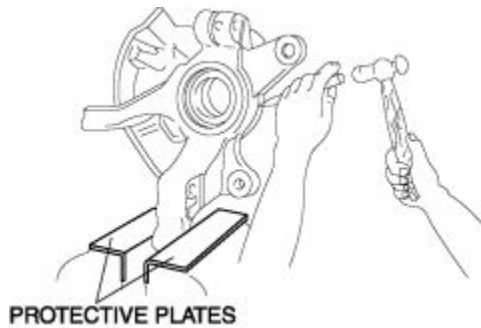
The length of the SST past the torque wrench drive.

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.



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:

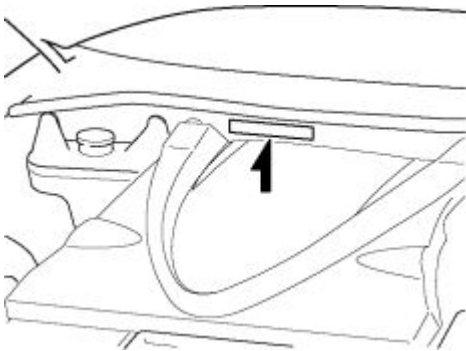
- When only the front or rear wheels are rotated on a chassis dynamometer or equivalent, the ABS/DSC CM determines that there is a malfunction in the ABS/DSC and illuminates the following lights:
 - Vehicles with ABS
 - ABS warning light
 - Brake system warning light
 - Vehicles with DSC
 - ABS warning 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 ON-BOARD DIAGNOSIS [ABS]) (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL])

IDENTIFICATION NUMBER LOCATIONS

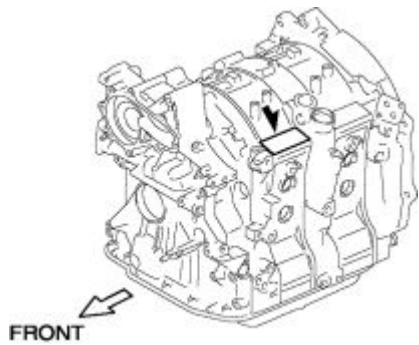
Vehicle Identification Number (VIN)



Chassis Number



Engine Identification Number



SCHEDULED MAINTENANCE

Scheduled Maintenance Table

Schedule 1 : (Normal driving conditions) U.S.A.

- The vehicle is mainly operated where none of the "unique driving conditions" apply.

Maintenance Item	Number of months or kilometers (miles), whichever comes first								
	Months	6	12	18	24	30	36	42	48
	× 1000 km	12	24	36	48	60	72	84	96
	× 1000 miles	7.5	15	22.5	30	37.5	45	52.5	60
ENGINE									
Engine oil	R	R	R	R	R	R	R	R	R
Engine oil filter	R	R	R	R	R	R	R	R	R
Drive belt				I					I
AIR CLEANER									
Air cleaner element		C		C	R		C		
IGNITION SYSTEM									
Spark plugs					R				
FUEL SYSTEM									
Fuel filter		Replace every 160,000 Km (100,000 miles)							
Fuel lines, hoses and connections * ¹				I					I
COOLING SYSTEM									
Cooling system				I					I
Engine coolant		Replace at first 96,000 km (60,000 miles) or 48 months; after that, every 24 months							
CHASSIS & BODY									
Brake line, hoses and connection				I					I
Disc brakes		I		I		I			I
Steering operation and linkages				I					I
Front and rear suspension and ball joints				I					I
Manual transmission oil									R
Rear differential oil									R
Driveshaft dust boots				I					I
Bolts and nut on seats				I					I
Exhaust system heat shields				I					I
All locks & hinges	L	L	L	L	L	L	L	L	L
Flat tire repair kit * ²		Inspect every year							
AIR CONDITIONER SYSTEM									

Cabin air filter (If installed)	Replace every 40,000 km (25,000 miles) or 24 months
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Chart symbols

- I** Inspect and repair, clean, adjust, or replace if necessary.
- R** Replace
- L** Lubricate
- C** Clean

Remarks

- After the described period, continue to follow the described maintenance at the recommended intervals.
- Refer below for a description of items marked * in the maintenance chart.
 - *¹ : According to state / provincial and federal regulations, failure to perform maintenance on these items will not void your emissions warranties. However, Mazda recommends that all maintenance services be performed at the recommended time or mileage / kilometer period to ensure long-term reliability.
 - *² : Check the tire repair fluid expiration date every year when performing the periodic maintenance. Replace the tire repair fluid bottle with new one before the expiration date.

Schedule 2 : Canada, Puerto Rico and (Unique driving conditions) U.S.A.

Unique driving conditions consist of

- Repeated short-distance driving
- Driving in dusty conditions
- Driving with extended use of brakes
- Driving in areas where salt or other corrosive materials are used
- Driving on rough or muddy roads
- Extended periods of idling or low-speed operation
- Driving for long periods in cold temperatures or extremely humid climates

Maintenance Item	Number of months or kilometers (miles), whichever comes first												
	Months	4	8	12	16	20	24	28	32	36	40	44	48
	× 1000 km	8	16	24	32	40	48	56	64	72	80	88	96
	× 1000 miles	5	10	15	20	25	30	35	40	45	50	55	60
ENGINE													
Engine oil	Puerto Rico	Replace every 5,000 km (3,000 miles) or 3 months											
	Others	R	R	R	R	R	R	R	R	R	R	R	R
Engine oil filter		R	R	R	R	R	R	R	R	R	R	R	R
Drive belt							I						I
AIR CLEANER													

Air cleaner element					C					C	R				C		
IGNITION SYSTEM																	
Spark plugs											R						
FUEL SYSTEM																	
Fuel filter																	
Replace every 160,000 Km (100,000 miles)																	
Fuel lines, hoses and connections * ¹											I						I
COOLING SYSTEM																	
Cooling system											I						I
Engine coolant																	
Replace at first 96,000 km (60,000 miles) or 48 months; after that, every 24 months.																	
CHASSIS & BODY																	
Brake line, hoses and connection											I						I
Brake fluid											R						R
Disc brakes											I					I	I
Steering operation and linkages											I						I
Front and rear suspension and ball joints											I						I
Manual transmission oil											R						R
Rear differential oil											R						R
Driveshaft dust boots											I						I
Bolts and nut on seats											I						I
Exhaust system heat shields											I						I
All locks & hinges	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Flat tire repair kit * ²																	
Inspect every year																	
AIR CONDITIONER SYSTEM																	
Cabin air filter (If installed)																	
Replace every 40,000 km (25,000 miles) or 24 months																	

Chart symbols

- I**
Inspect and repair, clean, adjust, or replace if necessary.
- R**
Replace
- L**
Lubricate
- C**
Clean

Remarks

- 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 : According to state / provincial and federal regulations, failure to perform maintenance on these items will not void your emissions warranties. However, Mazda recommends that all maintenance services be performed at the recommended time or mileage / kilometer period to ensure long-term reliability.
- *² : Check the tire repair fluid expiration date every year when performing the periodic maintenance. Replace the tire repair fluid bottle with new one before the expiration date.

Schedule 3: Except for U.S.A., Canada and Puerto Rico

Maintenance Item	Number of months or kilometers (miles), whichever comes first																
	Months	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
	× 100 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
ENGINE																	
Engine oil* ¹	R	R	R	R	R	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	R	R	R	R	R
Drive belt* ²	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
COOLING SYSTEM																	
Cooling system		I		I		I		I		I		I		I		I	
Engine coolant	Replace every 2 years																
FUEL SYSTEM																	
Air cleaner element* ³		C		C		R		C		C		R		C		C	
Fuel filter				R				R				R					R
Fuel lines, hoses and connections				I* ⁴				I* ⁴				I* ⁴					I* ⁴
Evaporative system				I* ⁴				I* ⁴			I* ⁴		I* ⁴			I* ⁴	I* ⁴
IGNITION SYSTEM																	
Spark plugs						R							R				
ELECTRICAL SYSTEM																	
Battery electrolyte level and specific gravity		I		I		I		I		I		I		I		I	
All electrical system* ⁵		I		I		I		I		I		I		I		I	
CHASSIS & BODY																	
Brake and clutch pedals	I	I	I	I	I	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	
Brake fluid* ⁶	I	I	I	R	I	I	I	R	I	I	I	R	I	I	I	I	R
Parking brake	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Power brake unit 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	I
Steering operation and linkages		I		I		I		I		I		I		I		I	
Front and rear suspension and ball joints				I				I				I					I
Manual transmission oil											R						
Automatic transmission fluid level		I		I		I		I		I		I		I		I	

Rear differential oil								R								R
Driveshaft dust boots				I				I				I				I
Bolts and nut on chassis & body		T		T		T		T		T		T		T		T
Body condition (for rust, corrosion and perforation)	Inspect annually															
Exhaust system heat shields	Inspect at first 80,000 km (50,000 miles) or 48 months; after that every 40,000 km (25,000 miles) or 24 months															
Flat tire repair kit *7	Inspect every year															
AIR CONDITIONER SYSTEM																
Cabin air filter (If installed)		R		R		R		R		R		R		R		R

Chart symbols

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

Remarks

- **To ensure efficient operation of the engine and all systems related to emission control, the ignition and fuel systems must be serviced regularly. It is strongly recommended that all servicing related to these systems be done 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 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.**
 - ***² : Also inspect and adjust the air conditioner drive belts, if installed.**
 - ***³ : If the vehicle is operated in very dusty or sandy areas, inspect and if necessary, clean or replace the air cleaner element more often than the recommended intervals.**
 - ***⁴ : According to regulations, failure to perform maintenance on these items will not void your emissions warranties. However, Mazda recommends that all maintenance services be performed at the recommended time or mileage/kilometer period to ensure long-term reliability.**
 - ***⁵ : This is a full function check of electrical systems such as lights, wiper and washer systems (including wiper blades), and power windows.**
 - ***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.**
 - ***⁷ : Check the tire repair fluid expiration date every year when performing the periodic maintenance. Replace the tire repair fluid bottle with new one before the expiration date.**

PRE-DELIVERY INSPECTION

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 hood 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 hood—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 oil level

Radiator coolant level and specific gravity

Tightness of water hose clamps

Tightness of battery terminals, electrolyte level and specific gravity

(w)

Differential oil level

Interior

INSTALL the following items:

Fuse for accessories

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 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)

(w)

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 hood—engine running at operating temperature

INSPECT the following items:

Automatic transmission 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 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

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

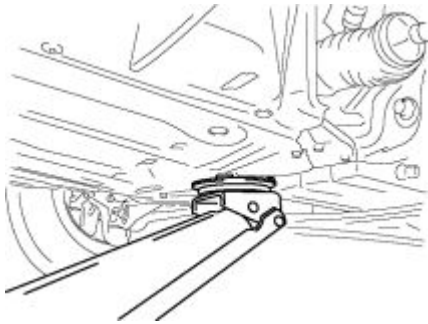
Jacking Positions

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.

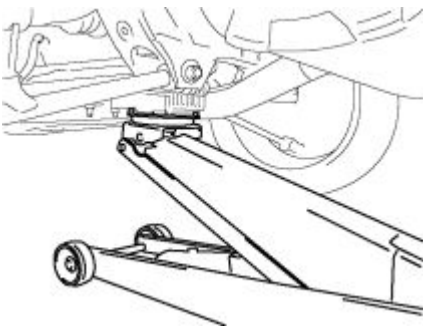
Front

- At the center of the front crossmember.



Rear

- At the center of the differential.

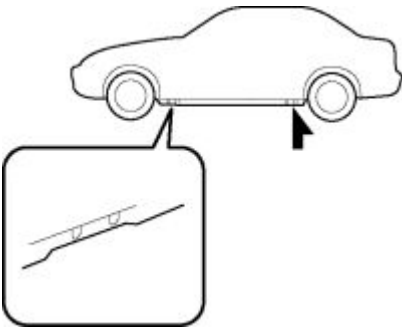


Vehicle Lift Positions

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.



Safety Stand Positions

Front and rear

- Both sides of the vehicle, on side sills.

