





GENUINE FLYWHEEL

INSTALLATION AND USER'S INSTRUCTIONS

Thank you for purchasing a genuine Mazda accessory.
Before removal and installation, be sure to thoroughly read these instructions.
Please read the contents of this booklet in order to properly install and use the flywheel.
Your safety depends on it.
Keep these instructions with your vehicle records for future reference.

WARNING

- There are several  **WARNING** and  **CAUTION** sections in this booklet concerning safety when installing or removing the flywheel. Always read and follow them in order to prevent injuries, accidents, and possible damage to the vehicle.
 -  **WARNING:** Indicates a situation in which serious injury or death could result if the warning is ignored.
 -  **CAUTION:** Indicates a situation in which bodily injury or damage to the vehicle could result if the caution is ignored.
- Do not modify the flywheel.
- Do not install the flywheel in any way other than described in the following instructions.
- If in any doubt, please ask your Mazda dealer to install the accessory in order to prevent errors in installation.
- If you have any questions about the use of the accessory, ask your Mazda dealer for proper advice before using it.
- Mazda and its suppliers are not responsible for injuries, accidents, and damage to persons and property that arise from the failure of the dealer or installer to follow these instructions.
- To ensure safety and reliability of the work, installation, removal and disposal work must be carried out by an Authorized Mazda Dealership.
- Be careful not to lose removed parts, and be sure that they are kept free from scratches, grease or other dirt.

PART NAME: FLYWHEEL
PART NUMBER: QSE1 11 500
VEHICLE: Mazda RX-8
(Type: SE3P, Grade: Type S (6MT))

NOTE

To the dealer

- Please turn over these instructions to the customer after installation.

To the customer

- Keep these instructions after installation. The instructions may be necessary for installing other optional parts or removal of this accessory.
- Should the vehicle or this accessory be resold, always leave these instructions with it for the next owner.

1 PARTS

Note

- Verify that the kit includes all the following parts and that the parts are not dirty, scratched, or damaged.

No.	Part name	Spec (Part no.)	Qty.	No.	Part name	Spec (Part no.)	Qty.
[1]	Flywheel		1	[2]	Counter weight	(N3Z2 11 52X)	1
[3]	Bolt	(8051 27 235)	6	[4]	Washer	(99952 1000)	6
[8]	Installation and user's instructions		1				

2 BEFORE INSTALLATION

REQUIRED TOOLS

Prepare the following tools or items before installation.

Special service tool (SST)

- ★ Ring gear brake (49 F011 101)
- ★ Counter weight stopper (49 1881 055A)
- ★ Clutch disc center tool (49 SE01 310A)
- ★ 49 T018 001
- ★ 49 G030 029
- ★ Flywheel ratchet wrench (49 0820 035)
- ★ Counter weight puller (49 0839 305A)
- ★ Main shaft holder (49 S120 440)
- ★ 49 E017 5A0
- ★ 49 0259 770B

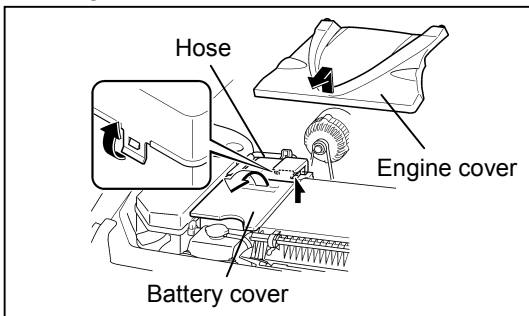
Other item

- ★ Liquid gasket seal no. 50 (1146 77 759)
- ★ Clutch grease (1050 77 767)

⚠ CAUTION

- To prevent burns, perform installation with the engine stopped and after the muffler and any other parts related to the installation work have become cold. Wear protective gloves and goggles when installing parts.
- A running-in period of approximately 100 km. is required after installation of this accessory. Be sure to allow for this running-in period to ensure long and satisfactory use.

Battery removal

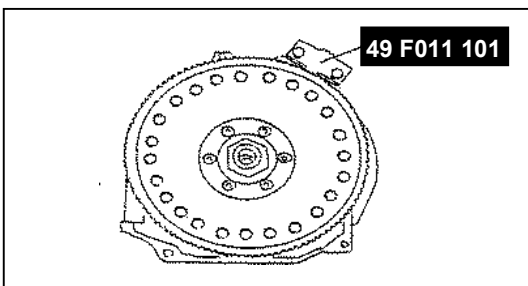
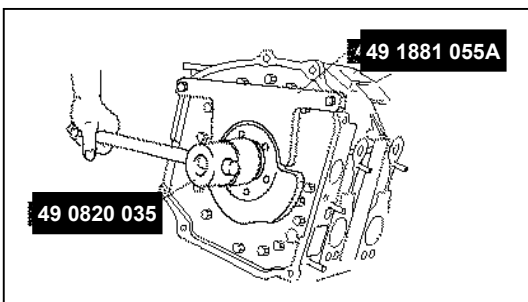
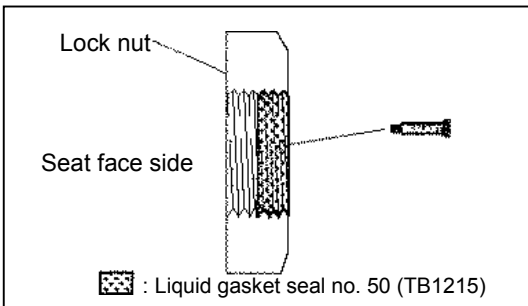
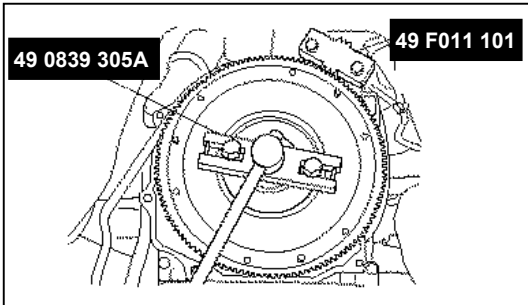
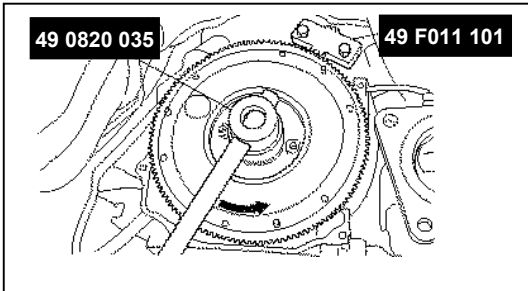
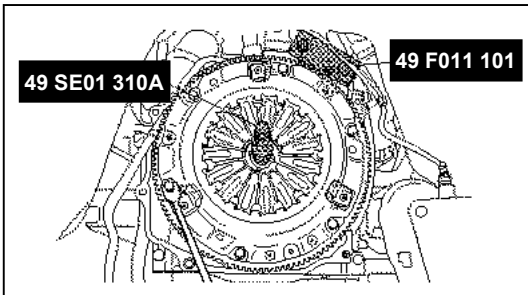


1. Remove the engine cover.
2. Remove the hose from the battery cover.
3. Lift up the rear of the battery cover and remove.
4. Disconnect the negative battery cable.

⚠ WARNING

- Never place the battery near an open flame. Flammable gas from the battery may ignite resulting in an explosion.

2 FLYWHEEL INSTALLATION



1. Remove the transmission. (See “3. TRANSMISSION REMOVAL/INSTALLATION”.)

2. Install the **SSTs** as shown in the figure and loosen the bolts one turn in a crisscross pattern until spring force is released. Remove the clutch cover and the clutch disc.

3. As shown in the figure, loosen the eccentric shaft lock nut using the **SSTs**.

⚠ CAUTION

- Loosen the lock nut a few turns only and do not remove it. Otherwise, the flywheel may fall off when removing it in the next step.

4. Disengage the flywheel using the **SSTs** as shown in the figure. Remove the **SSTs** and the lock nut, and then remove the flywheel. Remove the key from the eccentric shaft as it may fall into the engine.

⚠ CAUTION

- After removing the flywheel, check the eccentric shaft for oil leakage. If leakage is observed, replace the oil seal.

5. Apply a thin film of oil to the oil seal lip, install the key to the eccentric shaft, and then install the counter weight.

6. Apply liquid gasket seal no. 50 (TB1215) to the area shown in the figure. Install the lock nut to the eccentric shaft and tighten temporarily.

7. Lock the counter weight against rotation using the **SSTs** as shown in the figure and tighten the lock nut to the specified torque.

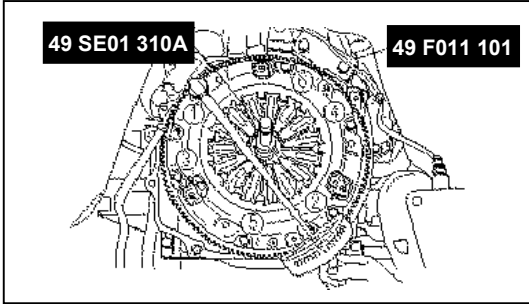
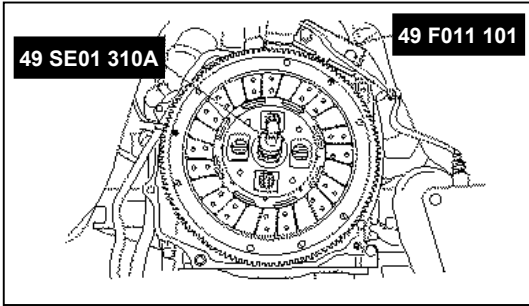
Tightening torque: 392—490 N·m

⚠ CAUTION

- Remove any excess sealant squeezed out during tightening so that it will not get into the pilot bearing.

8. Install the MAZDASPEED flywheel with the bolts and washers included in the kit.

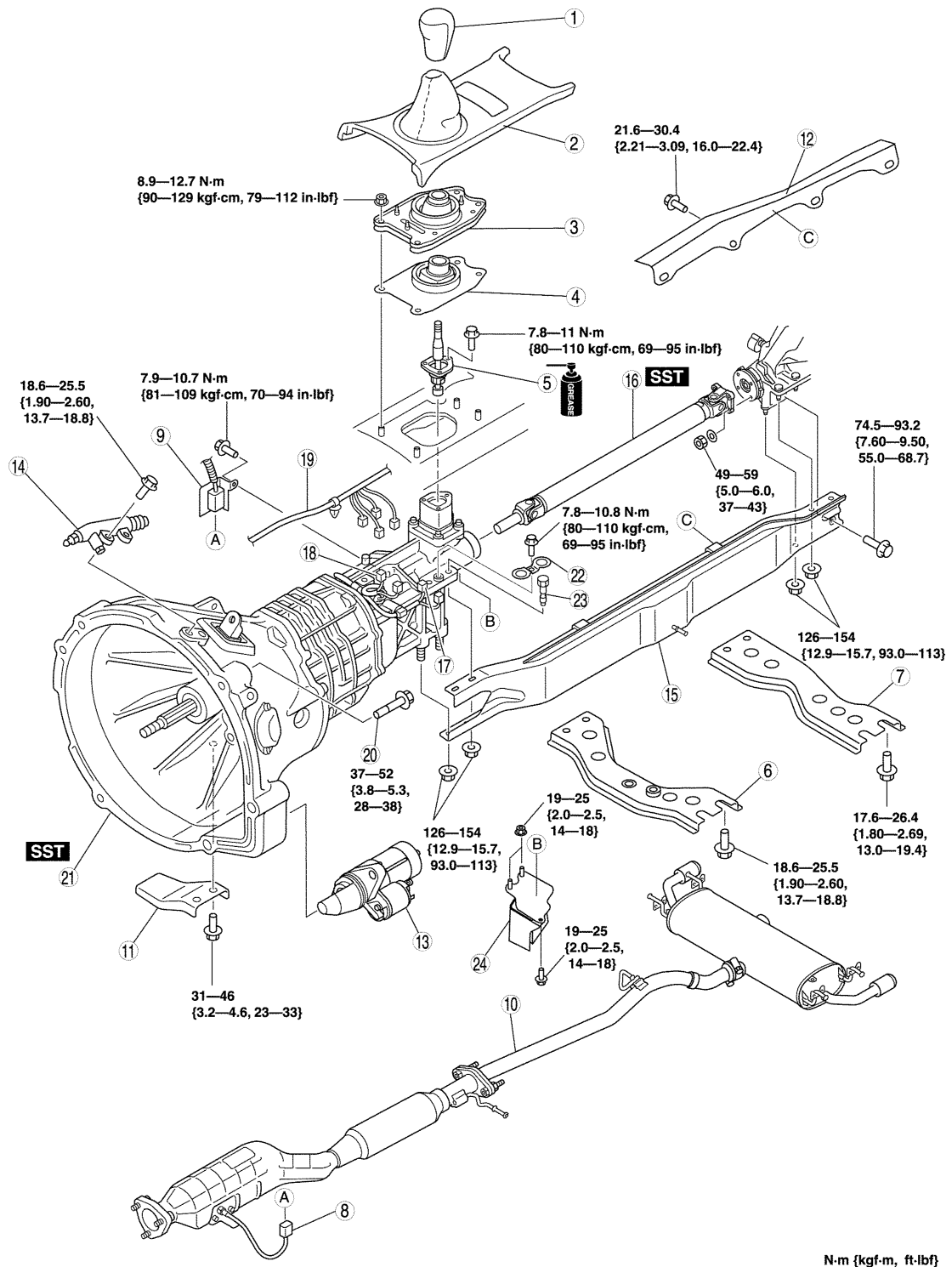
Tightening torque: 41.2—61.8 N·m



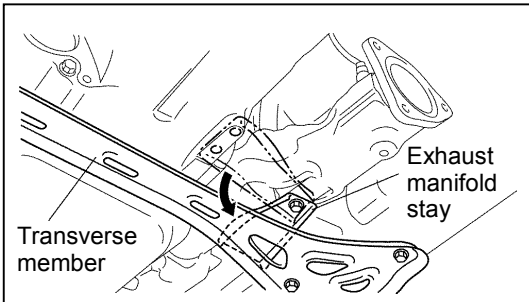
9. Clean the clutch disc and the main drive gear spline with a brush.
10. Apply a thin film of clutch grease to the spline.
11. Remove grease from the sliding surfaces of the flywheel and the clutch cover using parts cleaner.
12. Hold the clutch disc on the flywheel using the **SSTs** as shown in the figure.
13. Align the clutch cover with the flywheel dowel pin and install.
14. Tighten the bolts evenly and gradually in the order indicated in the figure.
Tightening torque: 17.6—26.5 N·m
15. Reinstall the transmission in the reverse order of removal. (See “3. TRANSMISSION REMOVAL/INSTALLATION”.)
16. Reconnect the negative battery cable and put the battery cover and the engine cover back into position. Start the engine and check each part for any malfunction such as oil leakage.
17. It is recommended to check for oil leakage again after road-testing the vehicle.

3 TRANSMISSION REMOVAL/INSTALLATION

1. Drain the transmission oil. (See "4. TRANSMISSION OIL REPLACEMENT".)
2. Remove parts in the order indicated in the table.
3. Install removed parts in the reverse order of removal.
4. Add transmission oil. (See "4. TRANSMISSION OIL REPLACEMENT".)
5. Perform "INSPECTION AFTER TRANSMISSION INSTALLATION", and verify that there is no malfunction. (See "5. INSPECTION AFTER TRANSMISSION INSTALLATION".)

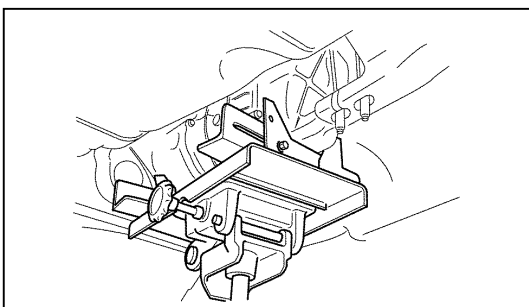


1	Shift lever knob	13	Starter (See "7. STARTER REMOVAL/INSTALLATION".)
2	Upper panel	14	Clutch release cylinder (See "8. CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION".)
3	Shift insulator component (outer)	15	Power plant frame (See "Power plant frame removal note".) (See "Power plant frame installation note".)
4	Shift insulator component (inner)	16	Propeller shaft (See "Propeller shaft removal note".) (See 11. PROPELLER SHAFT REMOVAL/INSTALLATION.)
5	Shift lever component (See "Shift lever component installation note".)	17	Back-up light switch connector
6	Front tunnel member	18	Neutral switch connector
7	Rear tunnel member	19	Wire
8	Heated oxygen sensor connector	20	Transmission installation bolt
9	Heated oxygen sensor connector bracket	21	Transmission (See "Transmission removal note".) (See "Transmission installation note".)
10	Catalytic converter, middle pipe, main silencer (See "6. EXHAUST SYSTEM REMOVAL/INSTALLATION".)	22	Stopper
11	Exhaust manifold stay (See "Exhaust manifold stay removal note".)	23	Bolt
12	Heat insulator	24	Dynamic damper



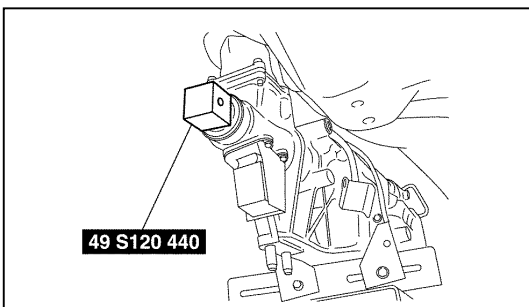
Exhaust manifold stay removal

1. Remove the exhaust manifold stay from the transmission.
2. Rotate the exhaust manifold stay and place it on the transverse member.



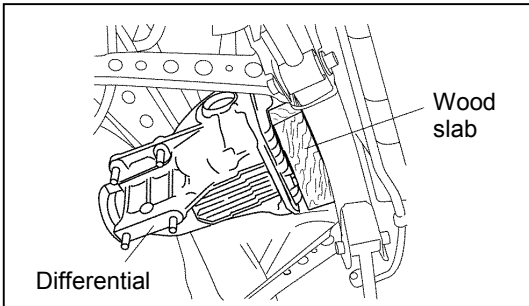
Power plant frame removal

1. Support the transmission using a transmission jack.
2. Remove the power plant frame.

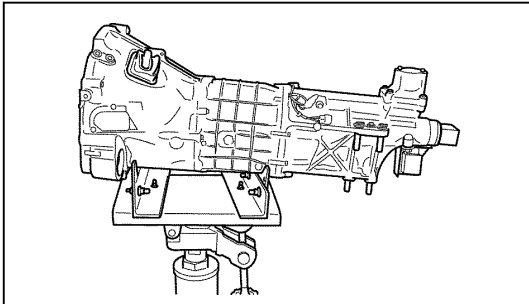


Propeller shaft removal

1. Install the **SST** to the main shaft.



2. Insert a slab of wood behind the rear differential, and remove the propeller shaft.

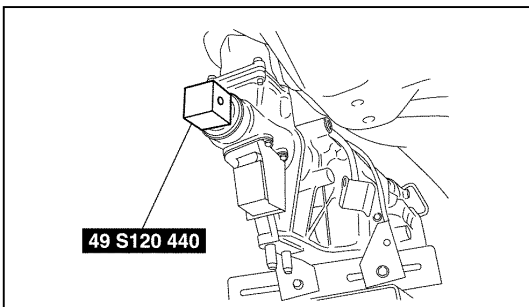


Transmission removal

⚠ WARNING

- Remove the transmission carefully, holding it steady. If the transmission falls it could be damaged or cause injury.

1. Support the transmission securely using a transmission jack.
2. Remove the transmission installation bolt.
3. Remove the transmission.



Transmission installation

1. Shift to any gear position.
2. Install the **SST** to the main shaft.

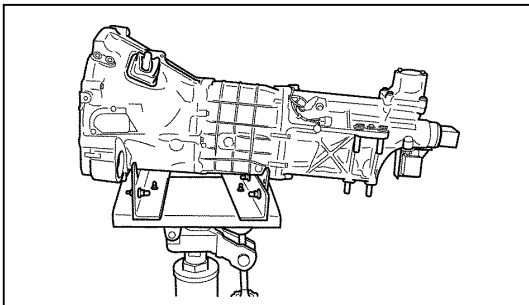
⚠ WARNING

- Remove the transmission carefully, holding it steady. If the transmission falls it could be damaged or cause injury.

3. Place the transmission on the transmission jack and raise it.

Note

- Slowly rotate the **SST** to engage the clutch with the main drive gear spline, and install the transmission.



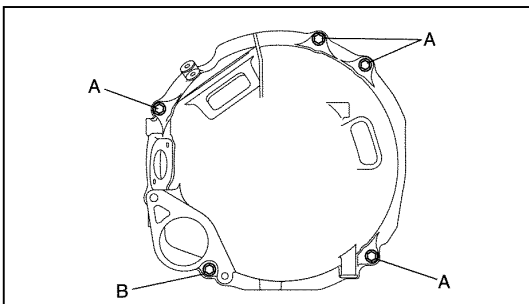
4. Install the transmission.
5. Tighten the transmission installation bolt.

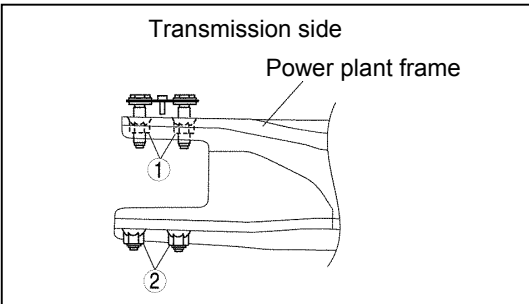
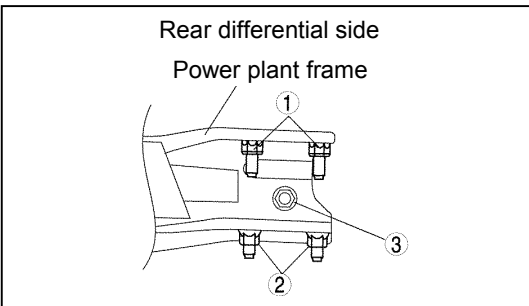
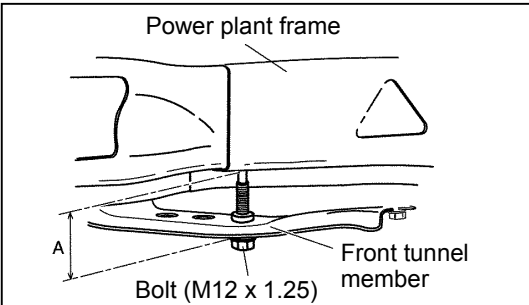
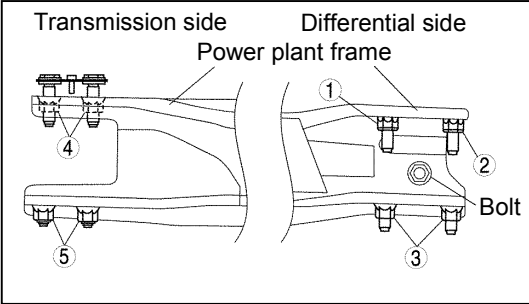
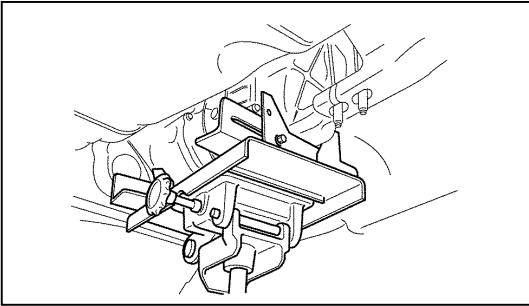
Bolt length:

A: 55 mm {2.1 in}, B: 90 mm {3.5 in}

Tightening torque:

37—52 N·m {3.8—5.3 kgf·m, 28-38 ft·lbf}





Power plant frame installation

1. Support the transmission using a transmission jack.
2. Install the power plant frame.
3. Temporarily tighten the nuts in the order shown in the figure.
4. Tighten nut 1 until the power plant frame is seated in the rear differential.
5. Install the heat insulator, exhaust manifold stay, exhaust pipe, silencer, and front tunnel member.
6. Raise the front end of the power plant frame (transmission side) with the transmission jack and adjust dimension A to the standard (lower end of power plant frame—lower end of the front tunnel member) as shown in the figure.

Standard dimension A: 48.4—56.4 mm {1.91—2.22 in}

Note

- When raising power plant frame without a transmission jack, use bolts with a thread length of **55 mm {2.16 in}** or more (**M12 x 1.25**). Tighten bolts from the underside of the front tunnel member as shown in the figure and raise power plant frame.
- When using bolts, the underside of the power plant frame could be damaged. Affix tape to the underside of the frame to prevent damage.

7. Tighten the nuts and bolts on the rear differential side in the order shown in the figure.

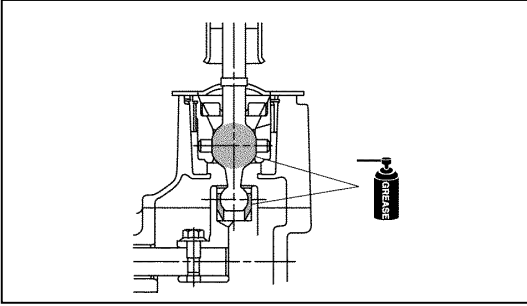
Bolt, nut number	N·m {kgf·m, ft·lbf}
	Tightening torque
1, 2	126.0—154.0 {12.9—15.7, 93.0—113}
3	74.5—93.2 {7.60—9.50, 55.0—68.7}

8. Tighten the nuts on the rear differential side in the order shown in the figure.

Tightening torque:

126.0—154.0 N·m {12.9—15.7 kgf·m, 93.0—113 ft·lbf}

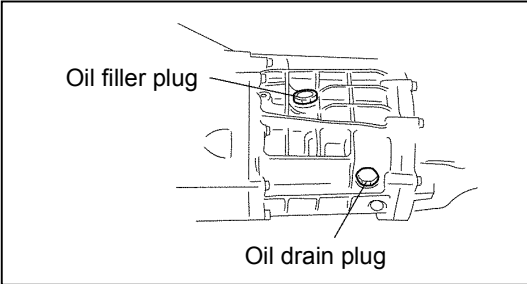
9. Verify again that dimension A is within the specification. If it is not within the specification, adjust dimension A again.



Shift lever component installation

1. Apply grease to the areas of the shift lever component as shown in the figure.

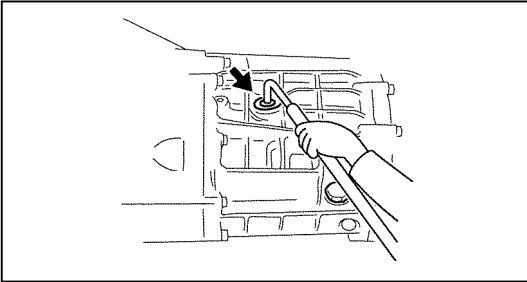
4 TRANSMISSION OIL REPLACEMENT



1. Position the vehicle on level ground.
2. Remove the oil filler plug and the drain plug, and then drain the oil.
3. Clean the drain plug.
4. Install the drain plug and a new washer.

Tightening torque:

27—48 N·m {2.8—4.9 kgf·m, 20—35 ft·lbf}

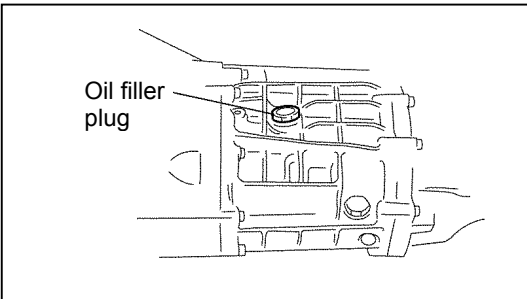


5. Add the specified amount and type of oil through the oil filler plug port to near the brim of the port.

Specified oil grade: API Service GL-4 or GL-5

Specified oil viscosity: SAE 75W-90

Capacity (approx. quantity): 1.75 L {1.85 US qt, 1.54 Imp qt}



6. Install the oil filler plug and a new washer.

Tightening torque:

27—48 N·m {2.8—4.9 kgf·m, 20—35 ft·lbf}

5 INSPECTION AFTER TRANSMISSION INSTALLATION

1. After warming up the engine, perform a road test and inspect the following items:
 - (1) No abnormal noise in each shift position.
 - (2) Smooth shift operation when shifting gears.
 - (3) No gear slipout after shifting gears.
 - (4) Back-up light switch operates correctly.

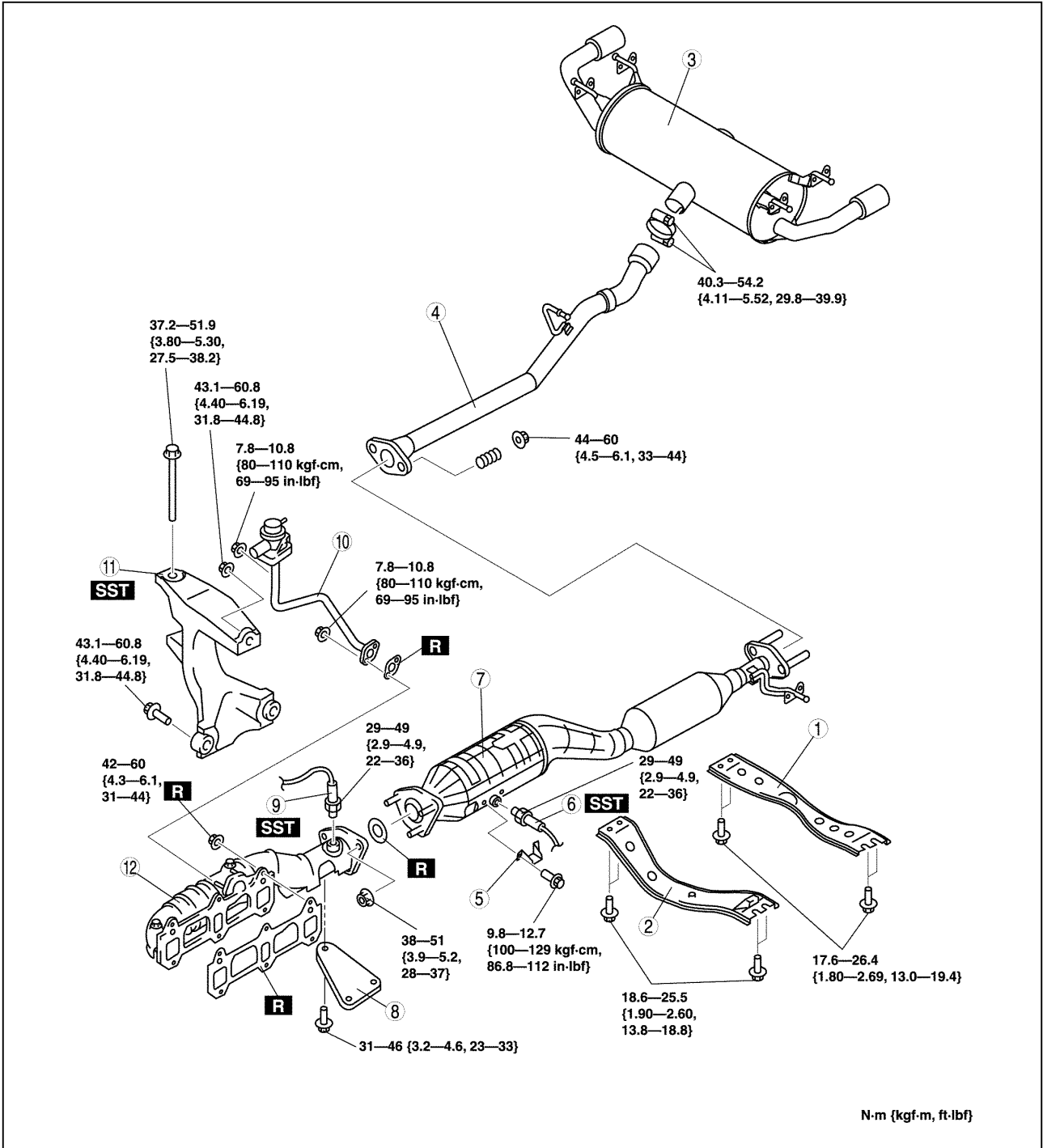
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EXHAUST SYSTEM REMOVAL/INSTALLATION

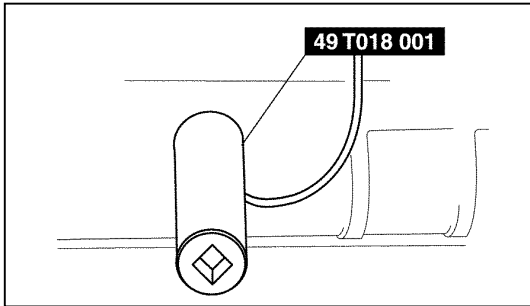
⚠ WARNING

- A hot engine and exhaust system can cause severe burns. Turn off the engine and wait until they are cool before servicing the exhaust system.

1. Remove parts in the order indicated in the table.
2. Install removed parts in the reverse order of removal.

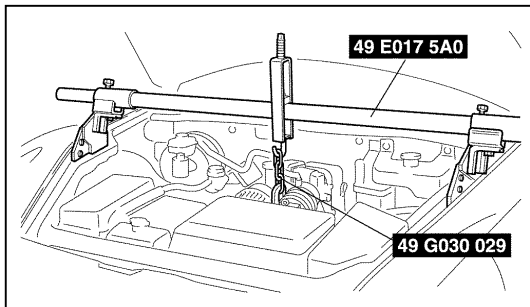


1	Rear tunnel member	7	Catalytic converter
2	Front tunnel member	8	Bracket
3	Main silencer (See "Main silencer installation note".)	9	Front heated oxygen sensor (See "Heated oxygen sensor removal note".)
4	Middle pipe	1 0	AIR pipe
5	Protector	1 1	Engine mount bracket (RH) (See "Engine mount bracket (RH) removal note".)
6	Rear heated oxygen sensor (See "Heated oxygen sensor removal note".)	1 2	Exhaust manifold (See "Exhaust manifold installation note".)



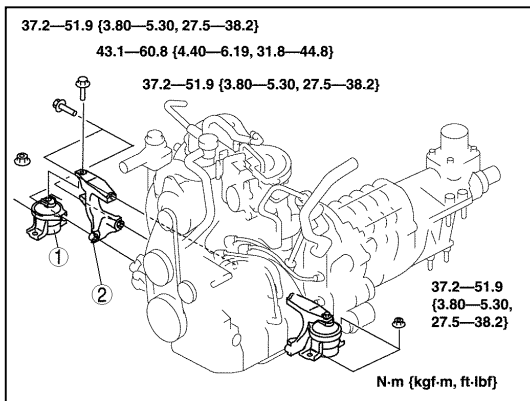
Heated oxygen sensor removal

1. Remove the heated oxygen sensor using the **SST**.



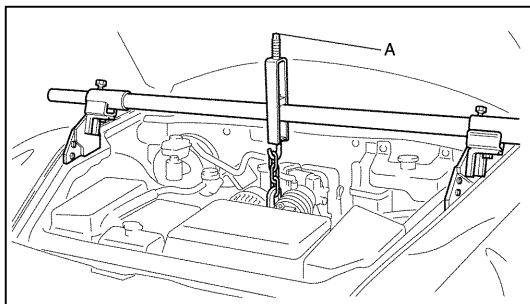
Engine mount bracket (RH) removal

1. Attach the **SSTs** and support the engine.
2. Remove the engine mount rubber (LH) installation nut.



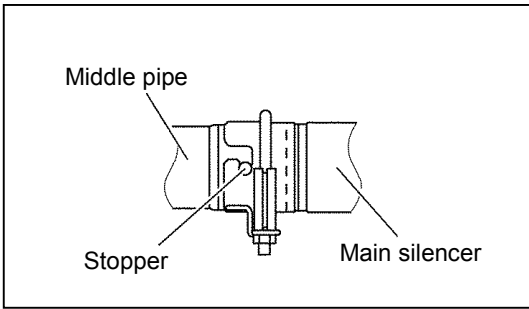
3. Remove parts in the order indicated in the table.

1	Engine mount rubber (RH) (See Engine mount rubber (RH) removal note.)
2	Engine mount bracket (RH)



Engine mount rubber (RH) removal

1. Tighten part "A" indicated in the figure, and then pull up the engine to remove the engine mount rubber (RH).

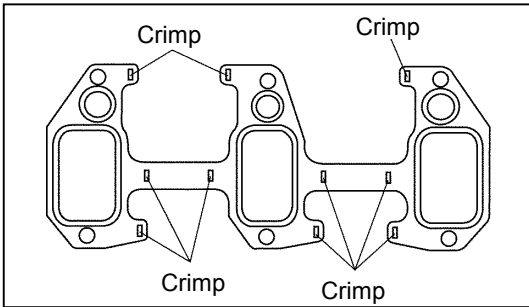


Main silencer installation

⚠ CAUTION

- If the main silencer and middle pipe are reused after being separated once, exhaust gas leakage will occur. When replacing the main silencer or middle pipe, always replace the main silencer and middle pipe at the same time.

1. Install the main silencer so that the stopper is at the position shown in the figure.



Exhaust manifold installation

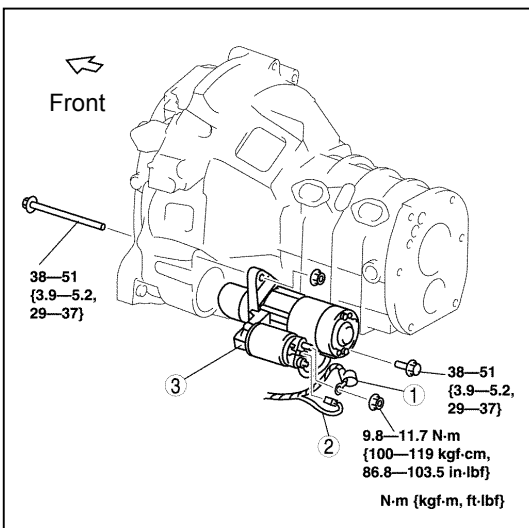
⚠ CAUTION

- Do not reuse the gasket and self-lock nuts on the joint area between the engine and exhaust manifold.
- If a gasket with detached crimps is used on the joint area between the engine and exhaust manifold, exhaust gas will leak. Be careful not to allow the crimps to detach from the gasket. Do not use a gasket if any crimps are detached.

7 STARTER REMOVAL/INSTALLATION

⚠ WARNING

- When the battery cables are connected, touching the vehicle body with starter terminal B will generate sparks. This can cause personal injury, fire, and damage to the electrical components. Always disconnect the negative battery cable before performing the following operation.



1. Remove parts in the order indicated in the table.
2. Install removed parts in the reverse order of removal.

1	Terminal B cable
2	Terminal S connector
3	Starter

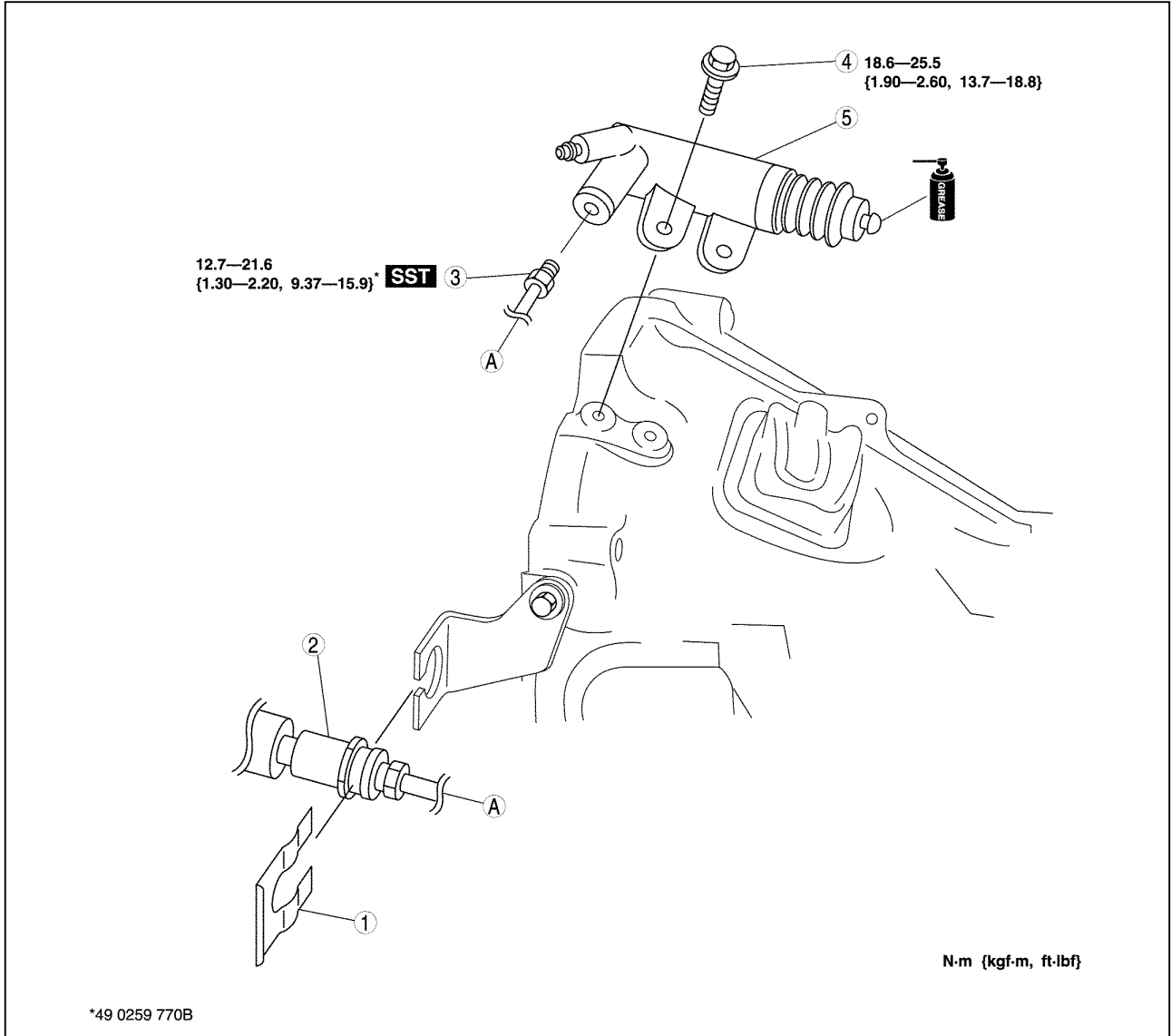
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CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION

⚠ CAUTION

- Fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If fluid does get on painted surfaces, wipe it off immediately.

1. Remove parts in the order indicated in the table.
2. Install removed parts in the reverse order of removal.
3. Bleed the air from the system. (See “9. CLUTCH FLUID REPLACEMENT”.)
4. Inspect and adjust the clutch pedal. (See “10. CLUTCH PEDAL ADJUSTMENT”.)



1	Clip	4	Bolt
2	Clutch pipe, clutch hose	5	Clutch release cylinder
3	Clutch pipe		

9 CLUTCH FLUID REPLACEMENT

⚠ CAUTION

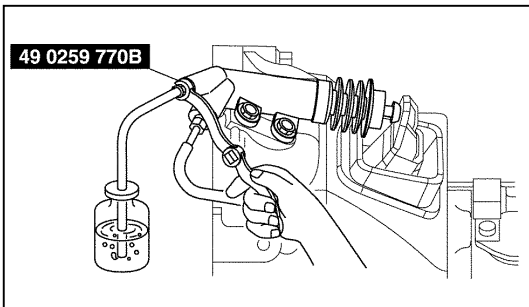
- Fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If fluid does get on painted surfaces, wipe it off immediately.
- Keep the fluid level in the reserve tank at 3/4 full or more during air bleeding.

Note

- When replacing the fluid, drain the old fluid, fill the reserve tank with new fluid and then perform steps 1—6 below.

Specified fluid: SAE J1703, FMVSS 116 DOT-3

1. Remove the bleeder cap from the clutch release cylinder, and connect a vinyl hose to the bleeder plug.
2. Place the other end of the vinyl tube in a clear container, and fill fluid in the container during air bleeding.
3. Working with two people, one should depress the clutch pedal a few times, and then depress and hold the pedal down.



4. While the clutch pedal is being held down, the other person should loosen the bleeder screw using the **SST**, and bleed any fluid containing air bubbles. Once completed, tighten the bleeder screw.

5. Continue to perform Steps 3 and 4 until no air comes from the vinyl hose.

6. Tighten the bleeder screw using the **SST**.

Tightening torque:

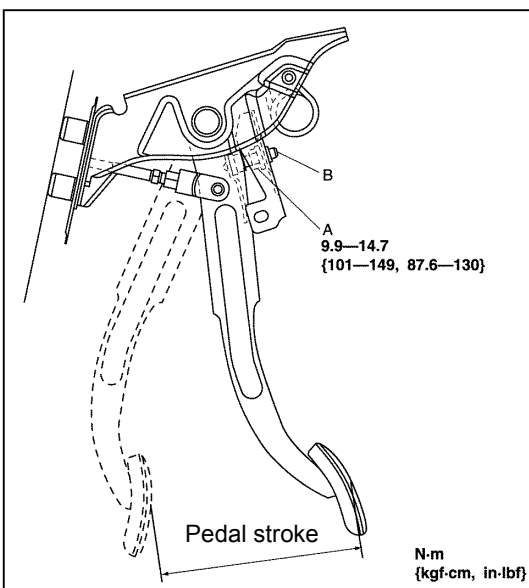
5.9—8.8 N·m {61—89 kgf·cm, 53—77 in·lbf}

7. Fill the reserve tank to MAX with the recommended fluid.

8. Perform the following inspections:

- (1) Brake operation
- (2) Fluid leakage
- (3) Fluid level

10 CLUTCH PEDAL ADJUSTMENT

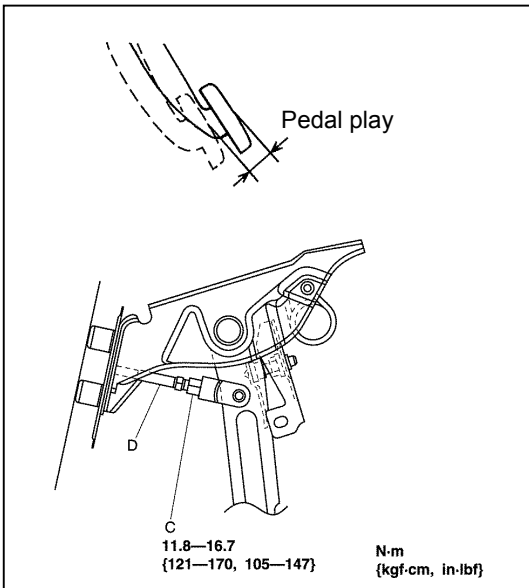


Clutch pedal stroke inspection/adjustment

1. Measure the clutch pedal stroke.

If there is any malfunction, loosen locknut A and adjust the pedal stroke with adjusting bolt B. Tighten locknut A after adjustment.

Standard pedal stroke: 130 mm {5.12 in}



Clutch pedal play inspection/adjustment

1. Lightly depress the clutch pedal by hand until clutch resistance is felt and then measure the pedal play.

Standard:

Clutch pedal play: 5—15 mm {0.20—0.59 in}

Clutch pedal push rod play:

At push rod setting line:

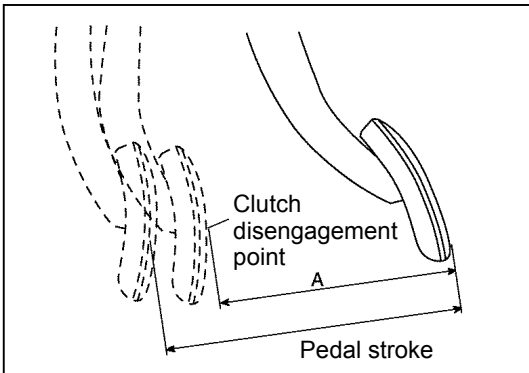
0.1—0.5 mm {0.004—0.020 in}

(Reference value)

At pedal pad:

0.5—2.9 mm {0.020—0.110 in}

2. If it is not within the specification, loosen locknut C and turn push rod D to adjust the pedal play.
3. Remeasure the pedal play and, if it is within the specification, tighten locknut C.

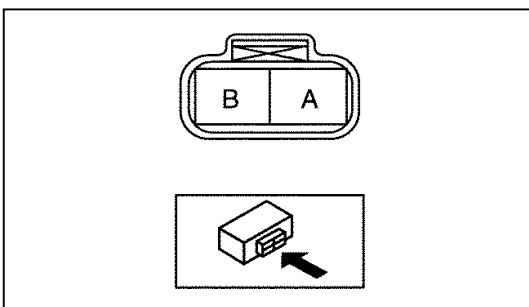


Clutch disengagement point inspection

1. Start the engine.
2. Without depressing the clutch pedal, move the shift lever slowly to the reverse position until gear noise is heard and hold the lever in that position.
3. Slowly depress the clutch pedal and hold at the point where the gear noise stops (clutch disengagement point).
4. Measure distance A (from pedal not depressed to clutch disengagement point) and verify that it is within the specification.

Clutch disengagement stroke (Reference value):

A: 111.8 mm {4.402 in}



Clutch switch inspection

1. Remove the engine cover.
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Disconnect the clutch switch connector.
5. Verify continuity as indicated in the table.

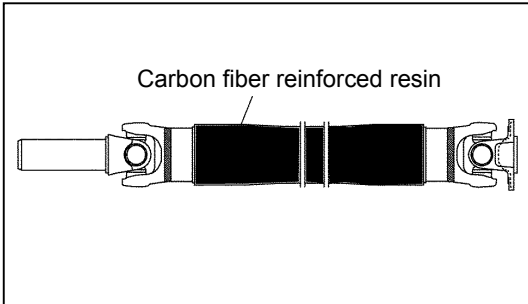
If there is any malfunction, replace the clutch switch.

Condition	Terminal	
	A	B
Clutch pedal depressed	Continuity	
Clutch pedal released		

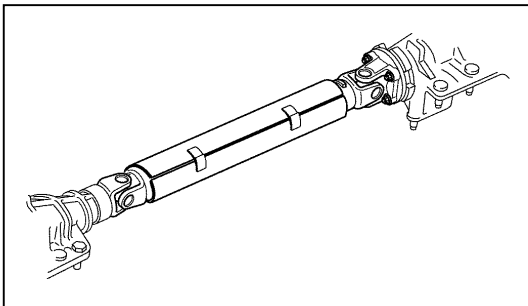
11 PROPELLER SHAFT REMOVAL/INSTALLATION

⚠ CAUTION

- The carbon-fiber-reinforced propeller shaft could be chipped or cracked if dropped. To prevent any damage, handle the shaft with careful attention when removing/installing.
- Replace the propeller shaft if it is dropped.



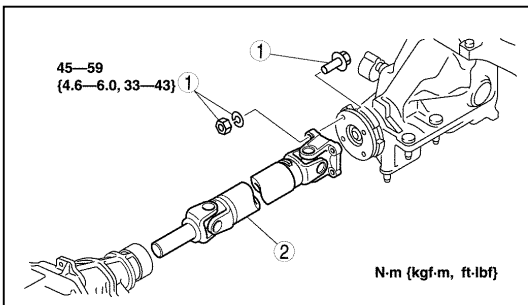
1. Remove the front tunnel member.
2. Remove the rear tunnel member.
3. Remove the exhaust pipe and the silencer.
(See 6. EXHAUST SYSTEM REMOVAL/INSTALLATION.)
4. Remove the heat insulator.



5. Protect the propeller shaft with rubber padding or similar protective cover to prevent damage.

⚠ CAUTION

- Remove the rubber padding or similar protective cover after propeller shaft installation is complete.



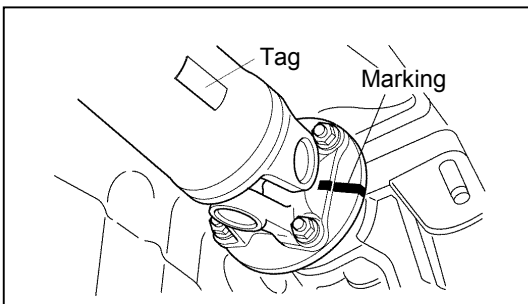
6. Remove parts in the order indicated in the table.
7. Install removed parts in the reverse order of removal.
8. Remove the rubber padding or similar protective cover from the propeller shaft.

1	Bolt, nut
2	Propeller shaft (See "Propeller shaft removal note".) (See "Propeller shaft installation note".)

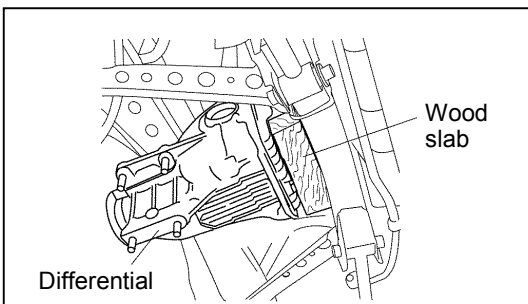
Propeller shaft removal

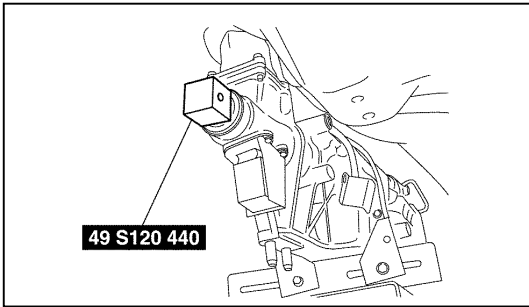
⚠ CAUTION

- When replacing with a new propeller shaft, mark the companion flange to match the position of the tag on the propeller shaft.

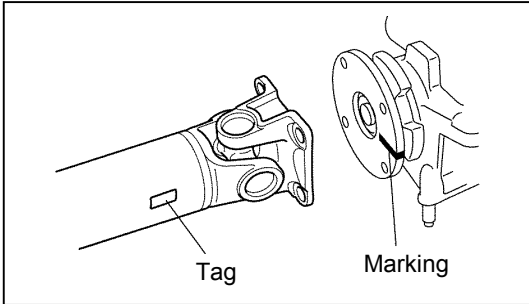


1. Before removing the propeller shaft, make alignment marks on the yoke and differential companion flange.
2. Insert a slab of wood behind the rear differential, and remove the propeller shaft.





3. Install the **SST** to the extension housing.



Propeller shaft installation

1. Align the marks and install the propeller shaft.

⚠ CAUTION

- When installing a new carbon-fiber propeller shaft, install the shaft with the protective cover still on and then remove after completion.
- Handle the propeller shaft with careful attention.

2. When installing a new propeller shaft, align the differential companion flange mark with the tag on the propeller shaft and assemble.

Battery terminal and engine cover reinstallation

- After installing the front bumper face, check that each part is securely fixed and all the parts are installed.
- Connect the negative battery cable, and check that the front turn lights operate properly.

⚠ CAUTION

*If the front turn lights do not operate properly, check the following points.

- Are the connectors connected properly?
- Is there an open circuit due to pinching of a wiring harness?
- Has a fuse blown?

⚠ CAUTION

When the battery is disconnected, the DSC indicator light will no longer operate.

(At this time, the DSC OFF indicator light flashes and the TCS/DSC operation indicator light illuminates.)

Perform the following procedure to enable DSC operation.

1. Turn the ignition switch to the ON position.
2. Turn the steering wheel fully right and then fully left.
3. Verify that the DSC OFF indicator light goes out.
4. Turn the ignition switch off and once again to the ON position.
5. Verify that the TCS/DSC operation indicator light goes out.

If the TCS/DSC operation indicator light and the DSC OFF indicator light do not go out even after the ignition switch is turned to the ON position, contact an Authorized Mazda Dealer.

⚠ CAUTION

When the battery is disconnected, the power window will no longer fully open/close automatically.

Perform the following procedure to restore the function.

1. Turn the ignition switch to the ON position.
2. Press the switch to fully open the window.
3. Pull up the switch to fully close the window and continue to pull it up for about two seconds.

- Install the battery cover, hose, and engine cover in the reverse order of removal.



CAUTION

After attaching the engine cover, check that it is securely installed.



CAUTION

Make sure that the vehicle parts are clean before reinstalling. Clean any dirty parts.