

GROUP 25

PROPELLER SHAFT

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GENERAL INFORMATION

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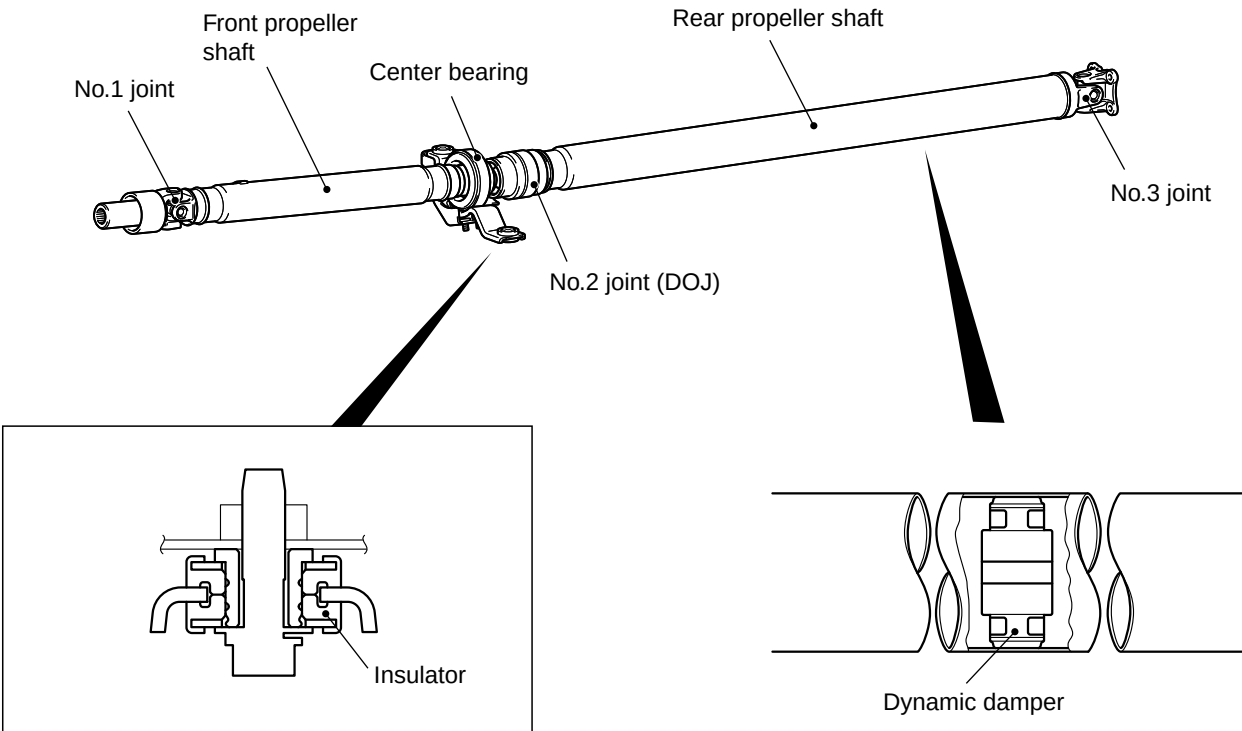
The 2-piece, 3-joint type propeller shaft with a center bearing is adopted.

It has the following features:

- The DOJ, which is of less sliding resistance, is used for the No.2 joint to reduce idling vibration.
- An insulator is installed to the vehicle body joint of the center bearing to reduce vibration.

- Inside the rear propeller shaft, the dynamic damper is integrated to reduce a booming noise caused by the resonance at the high engine speed.
- Adopting the friction welding method, the installation structure is streamlined to reduce weight.
- Lead-free grease is used for the universal joint.

CONSTRUCTION DIAGRAM



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GENERAL SPECIFICATIONS

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Item			Specification
Propeller shaft	Type		2-piece, 3-joint type propeller shaft
	Length* x Outer diameter mm (in)	Front	708.6 × 65 (27.9 × 2.56)
		Rear	1178.9 × 75 (46.4 × 2.95)
Universal joint	Type	No.1	Cross type (caulking method)
		No.2	Constant velocity type (DOJ)
		No.3	Cross type (caulking method)
	Bearing		Needle roller bearing (maintenance-free type)

NOTE: *: Indicates the distance between each joint center.

SERVICE SPECIFICATIONS

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Item		Standard value	Limit
Propeller shaft runout mm (in)	Front	-	0.5 (0.02)
	Rear	-	0.8 (0.03)

LUBRICANT

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Item	Specified lubricant	Quantity
Front propeller shaft yoke	Hypoid gear oil API classification GL-5 SAE90	as required

PROPELLER SHAFT DIAGNOSIS

INTRODUCTION TO PROPELLER SHAFT DIAGNOSIS

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If an abnormal noise is heard from the propeller shaft while driving, some parts of the propeller shaft may be worn or damaged, or some mounting bolts may be loose.

PROPELLER SHAFT DIAGNOSTIC TROUBLESHOOTING STRATEGY

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Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted all of the possible ways to find a propeller shaft fault.

1. Gather information from the customer.

2. Verify that the condition described by the customer exists.

3. Find the malfunction by following the Symptom Chart.

4. Verify malfunction is eliminated.

SYMPTOM CHART

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Symptom	Inspection procedure	Reference page
Noise at start	1	P.25-3
Noise and vibration at high speed	2	P.25-4

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Noise at Start

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DIAGNOSIS

STEP 1. Check if the propeller shaft mounting nuts and the center bearing mounting nuts are loose (Refer to P.25-5).

YES: Go to Step 2.

NO: Tighten the propeller shaft mounting nuts to 52 ± 2 N·m (38 ± 2 ft-lb). Tighten the center bearing mounting nuts to 40 ± 5 N·m (30 ± 3 ft-lb). Then go to Step 4.

Q:Are the mounting nuts tightened to the specified torque?

STEP 2. Check the sleeve yoke's spline of the front propeller shaft for wear.

Q: Is wear apparent?

YES: Replace the propeller shaft. Then go to Step 4.

NO: Go to Step 3.

STEP 3. Check the propeller shaft for looseness.

Q: Is looseness recognized?

YES: Replace the propeller shaft. Then go to Step 4.

NO: Go to Step 4.

STEP 4. Retest the system.

Q: Is the abnormal noise eliminated?

YES: The procedure is complete.

NO: Recheck from Step 1.

INSPECTION PROCEDURE 2: Noise and Vibration at High Speed

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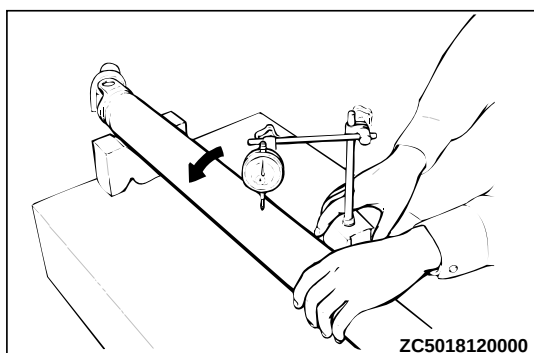
DIAGNOSIS

STEP 1. Check the propeller shaft runout.

Q: Is the measured value within the limit: 0.5 mm (0.02 inch)?

YES: Go to Step 2.

NO: Replace the propeller shaft. Then go to Step 3.



STEP 2. Check the propeller shaft for looseness.

Q: Is looseness recognized?

YES: Replace the propeller shaft. Then go to Step 3.

NO: Go to Step 3.

STEP 3. Retest the system.

Q: Is the abnormal noise eliminated?

YES: The procedure is complete.

NO: Recheck from Step 1.

SPECIAL TOOL

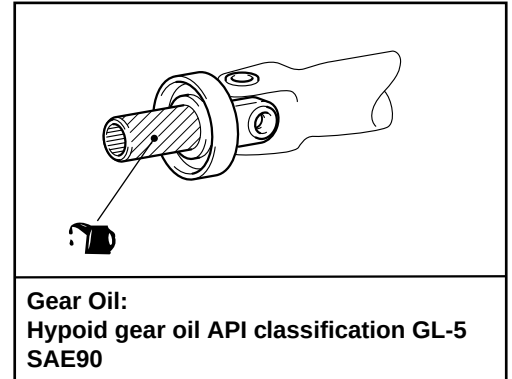
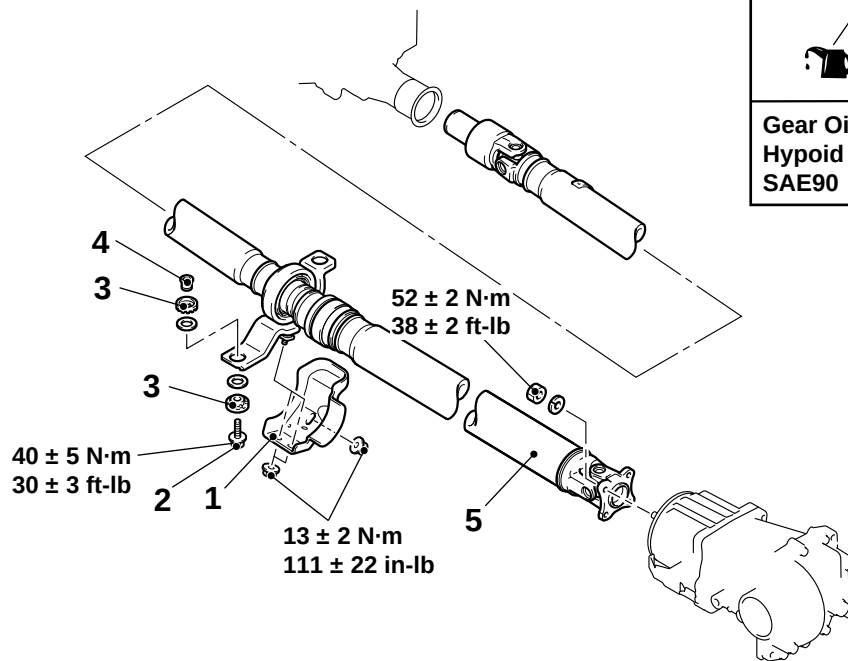
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Tool	Tool number and name	Supersession	Application
	MB991193 Plug	-	Prevent the entry of foreign materials into the transfer case during removal of the propeller shaft.

PROPELLER SHAFT

REMOVAL AND INSTALLATION

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Removal steps

1. Heat protector
2. Bolt
3. Insulator

Removal steps

4. Spacer
5. Propeller shaft assembly

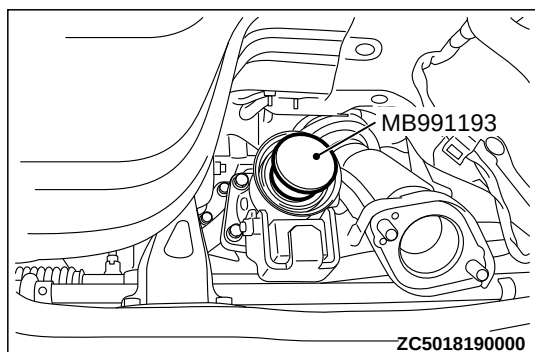
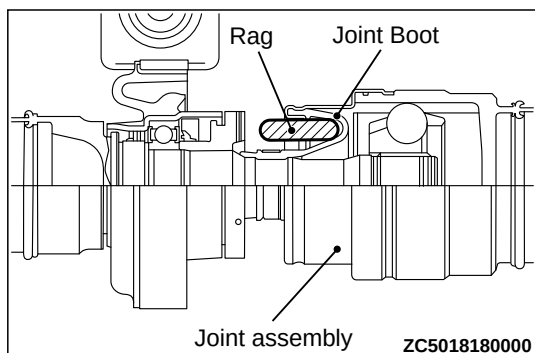
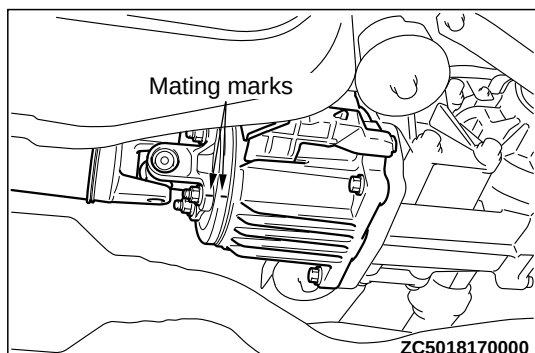
Required Special Tool:

*MB991193: Plug

REMOVAL SERVICE POINTS

<<A>> PROPELLER SHAFT ASSEMBLY REMOVAL

1. Put mating marks on the flange yoke and the electronic control coupling.

**CAUTION**

If the joint assembly is bent, it may be damaged when pinching the joint boots.

2. Insert a rag or similar materials into the joint boots, and remove the propeller shaft assembly by aligning the front propeller shaft with the rear shaft.

3. Using Special tool MB991193, cover the transfer case to prevent the entry of foreign materials.

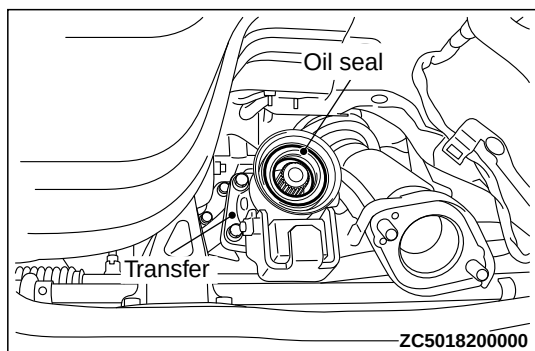
INSTALLATION SERVICE POINTS

>>A<< PROPELLER SHAFT ASSEMBLY INSTALLATION

CAUTION

- Do not damage the oil seal lip of the transfer.
- The mounting bolt and nut may be loosened if oil or grease is stuck on the threads of the bolt and nut. Tighten them after degreasing the threads.
- If the joint assembly is bent, it may be damaged when pinching the joint boots.

If the propeller shaft is reused, install the propeller shaft to the electronic control coupling by aligning the mating mark.



INSPECTION

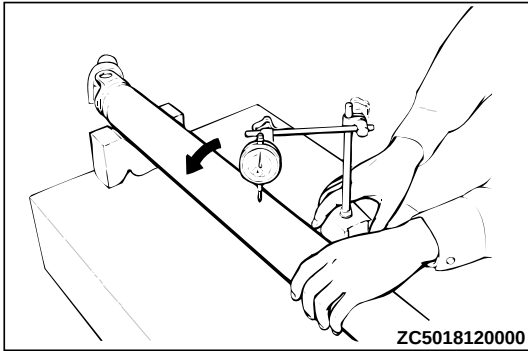
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- Check the sleeve yoke and center yoke for wear, damage or cracks.
- Check the propeller shaft for bends, twisting or damage.
- Check the universal joint for smooth operation in all directions.
- Check the center bearing for smooth movement.

PROPELLER SHAFT RUNOUT

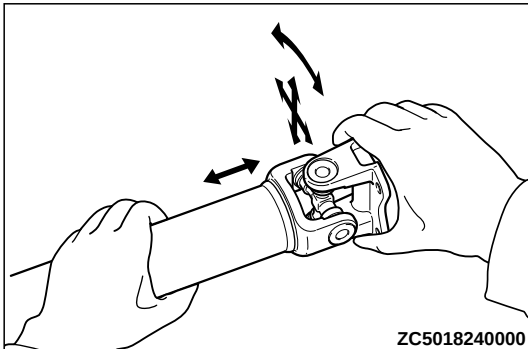
Limit

- Front: 0.5 mm (0.02 inch)
- Rear: 0.8 mm (0.03 inch)



PROPELLER SHAFT LOOSENESS CHECK

Hold the tube of propeller shaft with one hand, and apply force by the other hand to the flange yoke or sleeve yoke in rotating direction, shaft direction, and perpendicular direction for checking looseness. If looseness is recognised, replace the propeller shaft with a new one.



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PROPELLER SHAFT

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