SECTION PR
PROPELLER SHAFT

CONTENTS

NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

NVH Troubleshooting Chart

EDS002WN

Use the chart below to help you find the cause of the symptom. If necessary, repair or replace these parts.

Reference page		PR-3 (front) PR-7 (rear)	PR-3 (front) PR-7 (rear)	PR-3 (front) PR-7 (rear)	RFD-7, "NVH Troubleshooting Chart" RFD-39, "NVH Troubleshooting Chart"	FAX-4, "NVH Troubleshooting Chart" RAX-5, "NVH Troubleshooting Chart"	FSU-5, "NVH Troubleshooting Chart" RSU-3, "NVH Troubleshooting Chart"	WT-2, "NVH Troubleshooting Chart"	WT-2, "NVH Troubleshooting Chart"	FAX-4, "NVH Troubleshooting Chart"	RAX-5, "NVH Troubleshooting Chart"	BR-5, "NVH Troubleshooting Chart"	PS-5, "NVH Troubleshooting Chart"
Possible cause and suspected parts		Uneven rotation torque	Rotation imbalance	Excessive runout	Differential	Axle	Suspension	Tires	Road wheel	Drive shaft	Axle shaft	Brakes	Steering
Symptom	Noise	×	×	×	×	×	×	×	×	×	×	×	×
	Shake					×	×	×	×	×	×	×	×
	Vibration	×	×	×		×	×	×		×	×		×

×: Applicable

FRONT PROPELLER SHAFT

PFP:37200

On-Vehicle Service

EDS002WO

APPEARANCE AND NOISE INSPECTION

- Check the propeller shaft tube surface for dents or cracks. If damaged, replace the propeller shaft assembly.
- Check the bearings for noise and damage. Repair or replace the bearings as necessary.

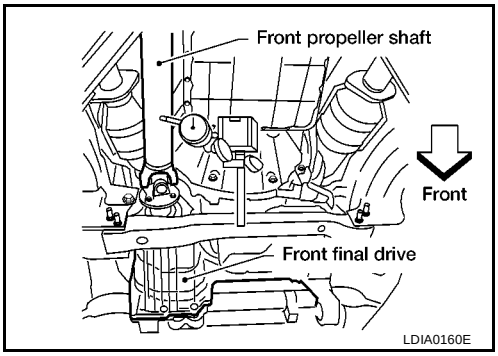
PROPELLER SHAFT VIBRATION

If a vibration is present at high speed, inspect the propeller shaft runout first.

1. Measure the runout of the propeller shaft tube at several points by rotating the final drive companion flange with your hands.
   For measuring point, refer to PR-3, "Propeller Shaft Runout Measuring Point" .

   Propeller shaft runout limit : 0.6 mm (0.024 in) or less

2. If the runout exceeds specifications, disconnect the propeller shaft at the final drive companion flange; then rotate the companion flange 90°, 180° and 270° and reconnect the propeller shaft.
3. Check the runout again. If the runout still exceeds specifications, replace the propeller shaft assembly.
4. After installation, check for vibration by driving the vehicle.

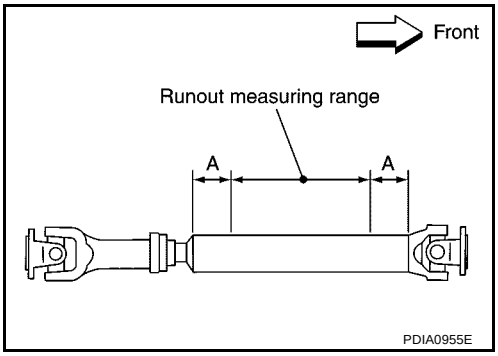


Propeller Shaft Runout Measuring Point

- Propeller shaft runout measuring point.

Propeller shaft runout measuring range

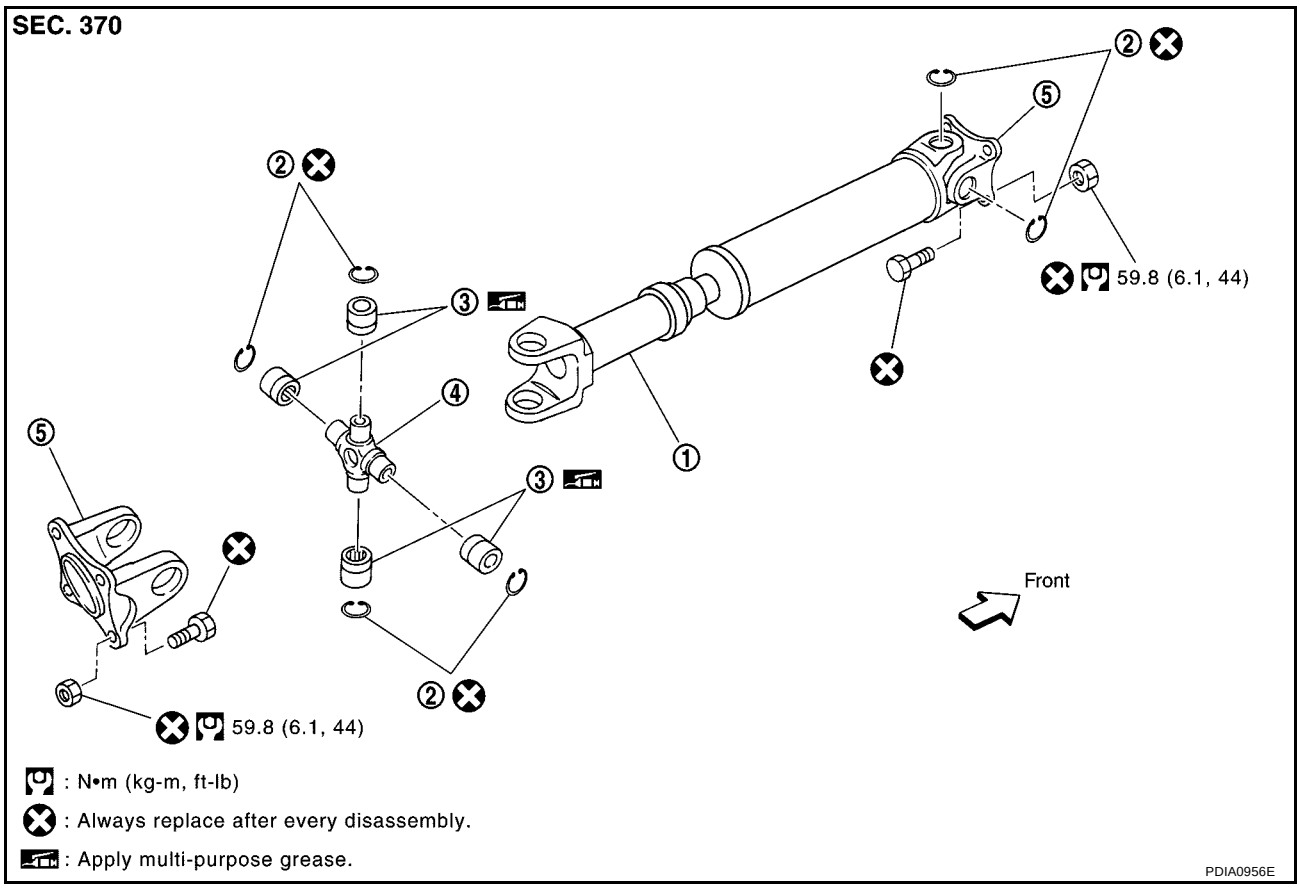
Dimension A : 160mm (6.30 in)



Removal and Installation

EDS002WP

COMPONENTS



1. Propeller shaft tube
2. Snap ring
3. Journal bearing
4. Journal
5. Flange yoke

REMOVAL

1. Put matching marks on the front propeller shaft flange yoke and the front final drive companion flange as shown.

   CAUTION:

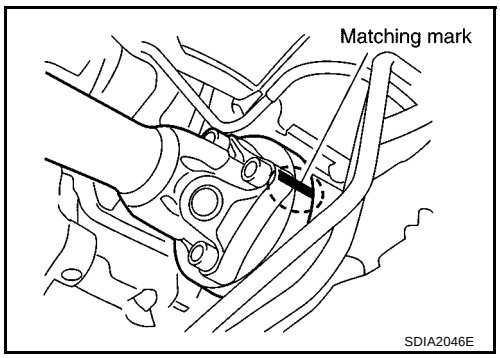
   For matching marks, use paint. Never damage the flange yoke and companion flange of the front final drive.

2. Put matching marks on the front propeller shaft flange yoke and the transfer companion flange.

   CAUTION:

   For matching marks, use paint. Never damage the flange yoke and companion flange of the transfer.

3. Remove the bolts and nuts, then remove the front propeller shaft from the front final drive and transfer.



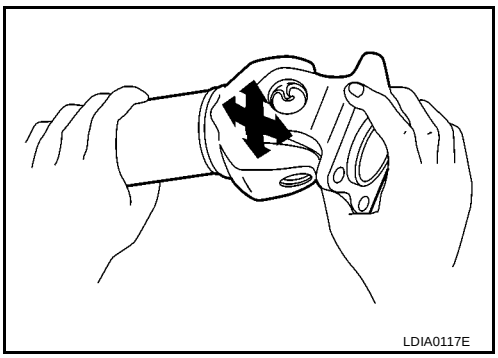
INSPECTION

- Inspect the propeller shaft runout. If runout exceeds the limit, replace the propeller shaft assembly. For measuring point, refer to PR-3, "Propeller Shaft Runout Measuring Point" .

  Runout limit : 0.6 mm (0.024 in) or less

- While holding the flange yoke on one side, check axial play of the joint as shown. If the journal axial play exceeds the specification, repair or replace the journal parts.

  Journal axial play : 0.02 mm (0.0008 in) or less



- Check the propeller shaft tube surface for dents or cracks. If damage is detected, replace the propeller shaft assembly.

INSTALLATION

Installation is in the reverse order of removal.

- After installation, check for vibration by driving the vehicle. Refer to PR-2, "NVH Troubleshooting Chart" .

CAUTION:

Do not reuse the bolts and nuts. Always install new ones.

Disassembly and Assembly

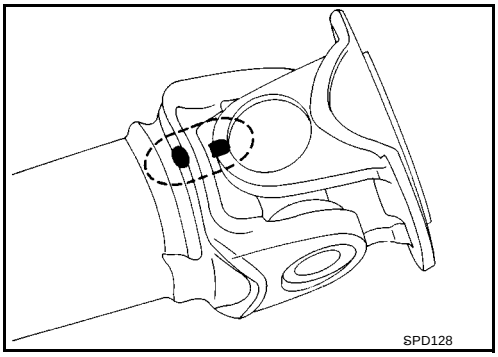
EDS002WQ

DISASSEMBLY

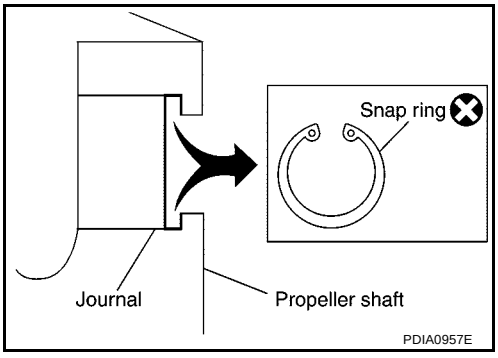
1. Put matching marks on the front propeller shaft and flange yoke as shown.

   CAUTION:

   For matching marks, use paint. Never damage the front propeller shaft or flange yoke.



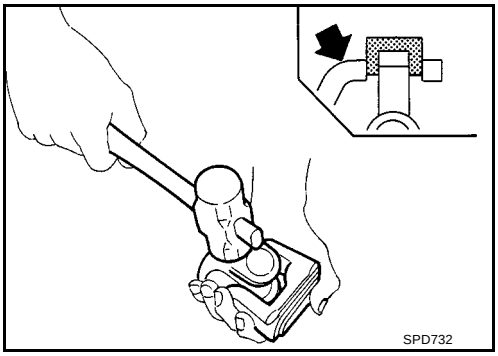
2. Remove the snap rings.



3. Push out and remove the journal bearings by lightly tapping the flange yoke with a hammer, taking care not to damage the journal or flange yoke hole.

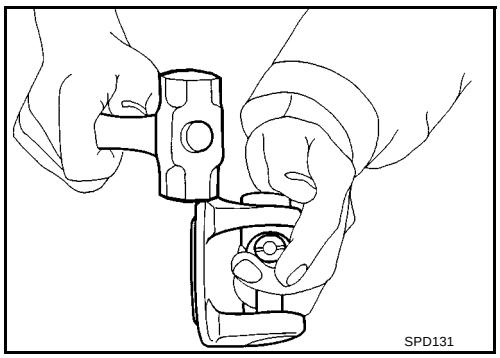
   NOTE:

   Put marks on the disassembled parts so that they can be reinstalled in their original positions from which they were removed.



4. Push out and remove the remaining journal bearings at the opposite side by lightly tapping the flange yoke with a hammer, taking care not to damage the journal or flange yoke hole.

   NOTE:
   Put marks on the disassembled parts so that they can be reinstalled in their original positions from which they were removed.



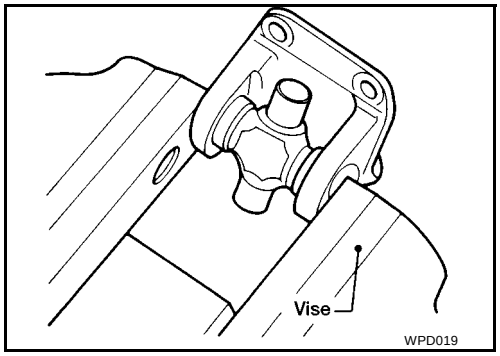
ASSEMBLY

1. Assemble the journal bearings. Apply multipurpose grease on the bearing inner surface.

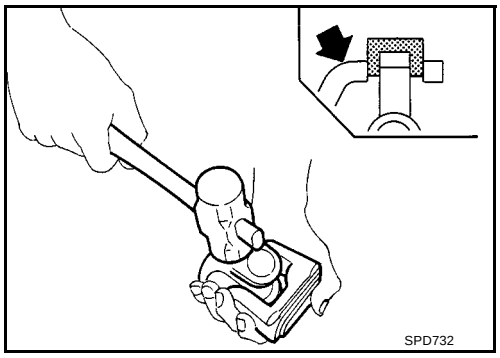
   NOTE:
   During assembly, use caution so that the needle bearings do not fall down.

2. Select snap rings that will provide the specified play in an axial direction of the journal, and install them. Refer to PR-12, "Snap Ring" .

   NOTE:
   Select snap rings with a difference in thickness at both sides within 0.02 mm (0.0008 in).

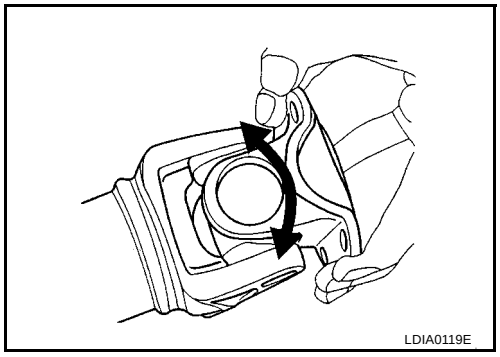


3. Adjust the thrust clearance between the bearing and snap ring to zero by tapping the yoke.



4. Make sure that the journal moves smoothly and is below the joint flex effort specification.

   Joint flex effort : 1.96 N·m (0.20 kg-m, 17 in-lb) or less



REAR PROPELLER SHAFT

PFP:37000

On-Vehicle Service

EDS002WR

APPEARANCE AND NOISE INSPECTION

- Check the propeller shaft tube surface for dents or cracks. If damaged, replace the propeller shaft assembly.
- Check the bearings for noise and damage. Repair or replace the bearings as necessary.

PROPELLER SHAFT VIBRATION

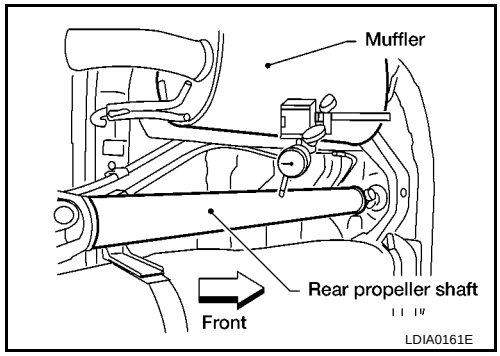
If a vibration is present at high speed, inspect the propeller shaft runout first.

1. Measure the runout of the propeller shaft tube at several points by rotating the final drive companion flange with your hands.
   For measuring point, refer to PR-7, "Propeller Shaft Runout Measuring Point" .

   Propeller shaft runout limit

   2WD : 0.6 mm (0.024 in) or less

   4WD : 1.02 mm (0.0402 in) or less

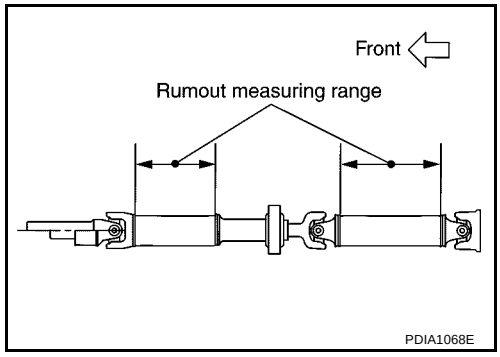


2. If the runout exceeds specifications, disconnect the propeller shaft at the final drive companion flange; then rotate the companion flange 90°, 180° and 270° and reconnect the propeller shaft.
3. Check the runout again. If the runout still exceeds specifications, replace the propeller shaft assembly.
4. After installation, check for vibration by driving vehicle.

Propeller Shaft Runout Measuring Point

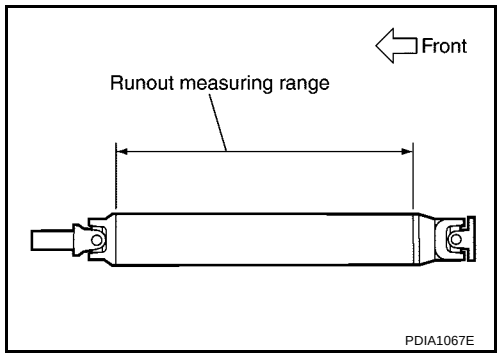
- **2WD**

  Propeller shaft runout measuring range



- **4WD**

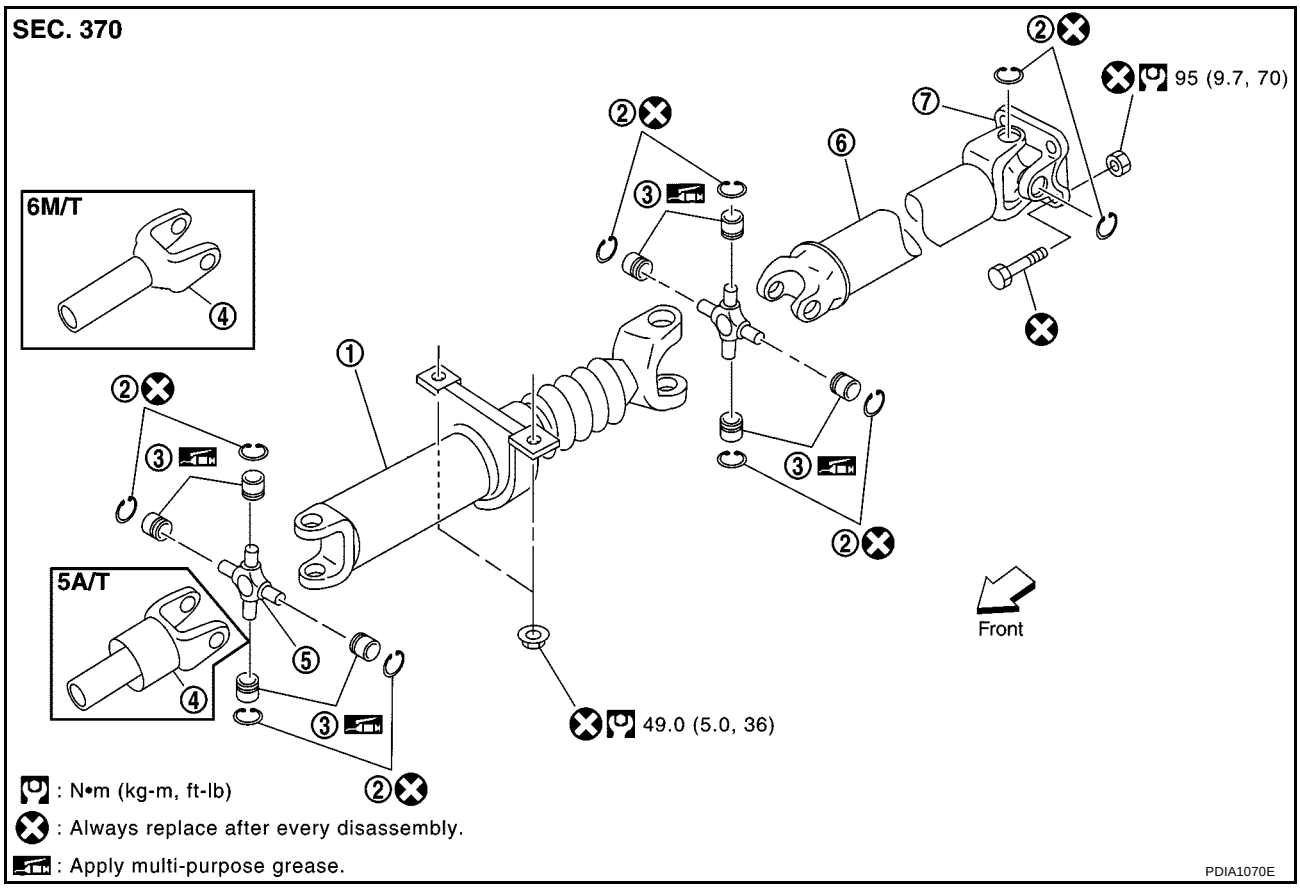
  Propeller shaft runout measuring range



Removal and Installation

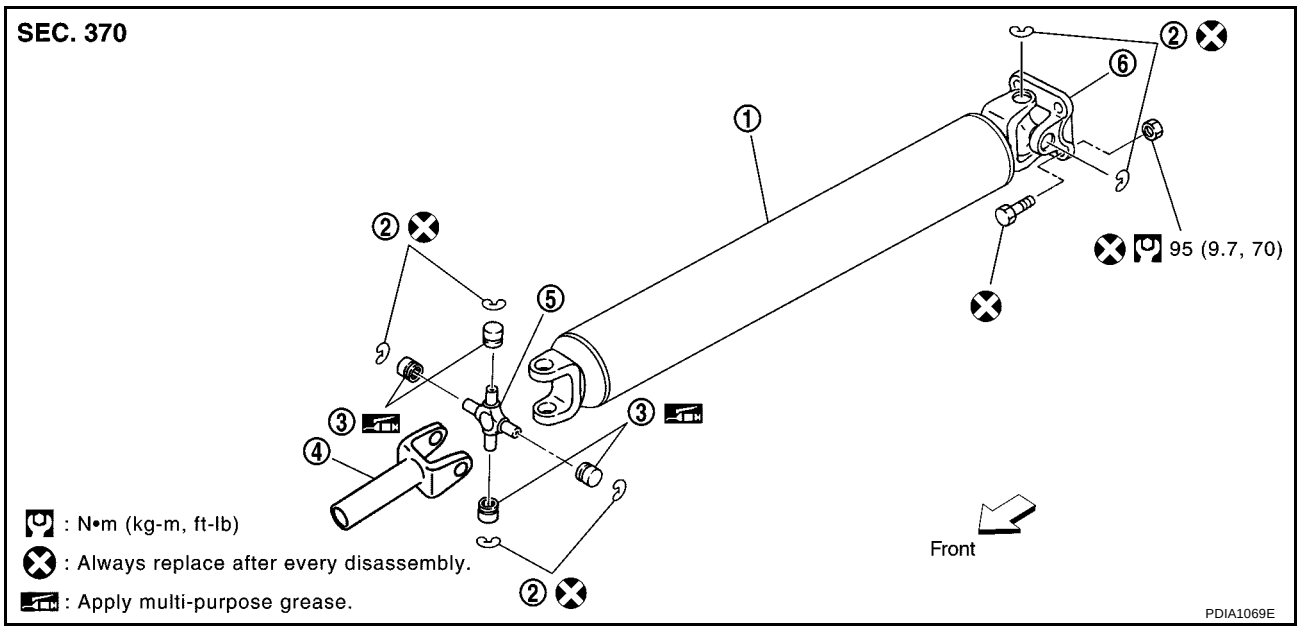
EDS002WS

COMPONENTS (2WD)



1. Propeller shaft (1st shaft)
2. Snap ring
3. Journal bearing
4. Sleeve yoke
5. Journal
6. Propeller shaft (2nd shaft)
7. Flange yoke

COMPONENTS (4WD)

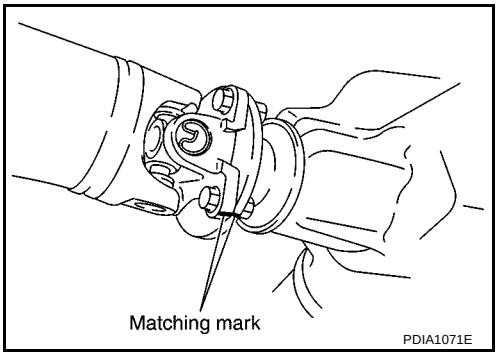


1. Propeller shaft tube
2. Snap ring
3. Journal bearing
4. Sleeve yoke
5. Journal
6. Flange yoke

REMOVAL

1. Move the A/T select lever to the N position or set M/T shift lever to neutral position.
2. Release the parking brake.
3. Put matching marks on the rear propeller shaft flange yoke and the rear final drive companion flange as shown.

   CAUTION:
   For matching marks, use paint. Never damage the rear propeller shaft flange yoke or the companion flange.
4. Remove the bolts and nuts, then remove the propeller shaft from the rear final drive and A/T, M/T or transfer.



INSPECTION

- Inspect the propeller shaft runout. If runout exceeds the limit, replace the propeller shaft assembly. For measuring point, refer to PR-7, "Propeller Shaft Runout Measuring Point" .

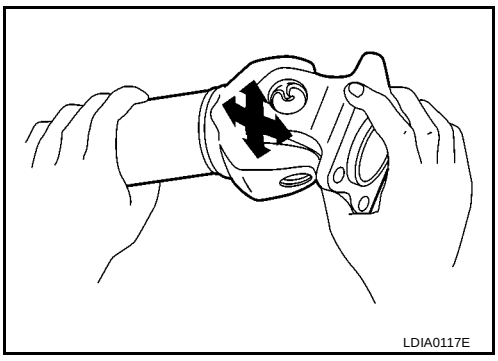
  Propeller shaft runout limit

  2WD : 0.6 mm (0.024 in) or less

  4WD : 1.02 mm (0.0402 in) or less

- While holding the flange yoke on one side, check axial play of the joint as shown. If the journal axial play exceeds the specification, repair or replace the journal parts.

  Journal axial play : 0.02 mm (0.0008 in) or less



- Check the propeller shaft tube for dents or cracks. If damage is detected, replace the propeller shaft assembly.

INSTALLATION

Installation is in the reverse order of removal.

- After installation, check for vibration by driving the vehicle. Refer to PR-2, "NVH Troubleshooting Chart" .

CAUTION:

Do not reuse the bolts and nuts. Always install new ones.

Disassembly and Assembly

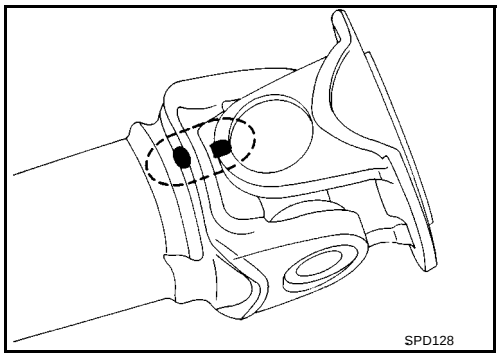
EDS002WT

DISASSEMBLY

1. Put matching marks on the rear propeller shaft and flange yoke as shown.

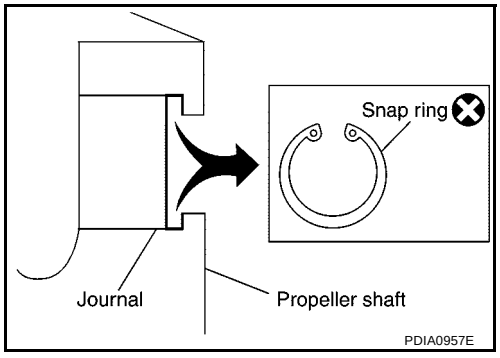
   CAUTION:

   For matching marks use paint. Never damage the rear propeller shaft or flange yoke.

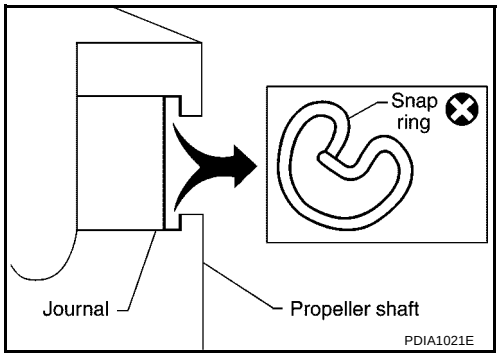


2. Remove the snap rings.

   - **2WD**



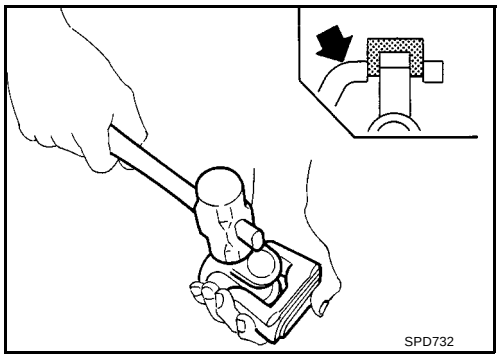
   - **4WD**



3. Push out and remove the journal bearings by lightly tapping the flange yoke with a hammer, taking care not to damage the journal or flange yoke hole.

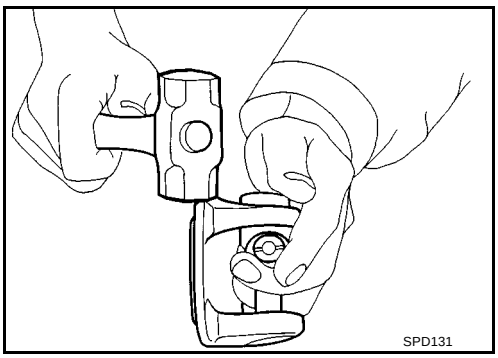
   NOTE:

   Put marks on the disassembled parts so that they can be reinstalled in their original positions from which they were removed.



4. Push out and remove the remaining journal bearings at the opposite side by lightly tapping the flange yoke with a hammer, taking care not to damage the journal or flange yoke hole.

NOTE:
Put marks on the disassembled parts so that they can be reinstalled in their original positions from which they were removed.



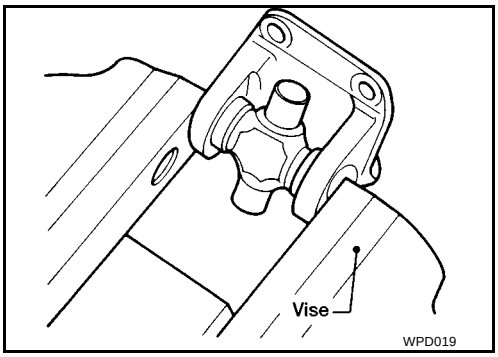
ASSEMBLY

1. Assemble the journal bearings. Apply multipurpose grease on the bearing inner surface.

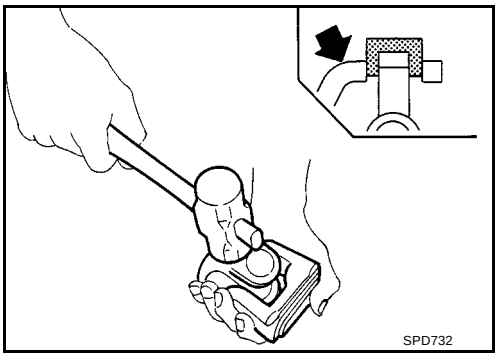
NOTE:
During assembly, use caution so that the needle bearings do not fall down.

2. Select snap rings that will provide the specified play in an axial direction of the journal, and install them. Refer to PR-12, "Snap Ring" .

NOTE:
Select snap rings with a difference in thickness at both sides within 0.02 mm (0.0008 in).



3. Adjust the thrust clearance between the bearing and snap ring to zero by tapping the yoke.

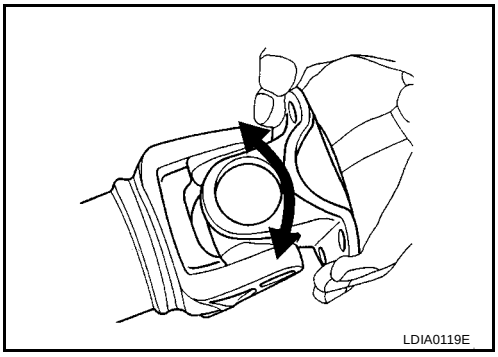


4. Make sure that the journal moves smoothly and is below the joint flex effort specification.

Joint flex effort

2WD : 1.96 N·m (0.20 kg-m, 17 in-lb) or less

4WD : 2.26 N·m (0.23 kg-m, 20 in-lb) or less



SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specifications

EDS0035N

2WD Models

Applied model	YD25DDTi	
	6M/T	5A/T
Propeller shaft model	3S S1310	
Number of joints	3	
Coupling method with rear final drive	Flange type	
Coupling method with transmission	Sleeve type	
1st Shaft length (Center bearing to spider)	675 mm (26.57 in)	742 mm (29.21 in)
2nd Shaft length (Spider to spider)	897 mm (35.31 in)	
Shaft outer diameter	75.64 mm (2.9779 in)	
Journal axial play	0.02 mm (0.0008 in) or less	
Propeller shaft run out limit	0.6 mm (0.024 in) or less	
Propeller shaft joint flex effort	1.96 N·m (0.20 kg-m, 17 in-lb) or less	

4WD Models

Applied model	YD25DDTi	
Propeller shaft model	Front	Rear
	2F S1300	2S1330 (aluminum tube)
Number of joints	2	
Coupling method with front final drive	Flange type	
Coupling method with transfer	Flange type	Sleeve type
Shaft length (Spider to spider)	718 mm (28.27 in)	1266.8 mm (35.51 in)
Shaft outer diameter	65 mm (2.56 in)	102.5 mm (2.97 in)
Journal axial play	0.02 mm (0.0008 in) or less	
Propeller shaft run out limit	0.6 mm (0.024 in) or less	1.02 mm (0.0402 in) or less
Propeller shaft joint flex effort	1.96 N·m (0.20 kg-m, 17 in-lb) or less	2.26 N·m (0.23 kg-m, 20 in-lb) or less

Snap Ring

EDS0035O

Model 2S1330

Unit: mm (in)

Thickness	Part number*	Thickness	Part number*
1.600 - 1.638 (0.0630 - 0.0645)	37146-7S000	1.524 - 1.562 (0.0600 - 0.0615)	37148-7S000
1.549 - 1.588 (0.0610 - 0.0625)	37147-7S000	1.499 - 1.537 (0.0590 - 0.0605)	37149-7S000

*Always check with the Parts Department for the latest parts information.

Model 2F S1300 and 3S S1310

Unit: mm (in)

Thickness	Part number*	Thickness	Part number*
1.45 (0.0571)	37146 7F000	1.65 (0.0650)	37150 7F000
1.50 (0.0591)	37147 7F000	1.70 (0.0669)	37151 7F000
1.55 (0.0610)	37148 7F000	1.75 (0.0689)	37152 7F000
1.60 (0.0630)	37149 7F000		

*Always check with the Parts Department for the latest parts information.