SECTION PR
PROPELLER SHAFT

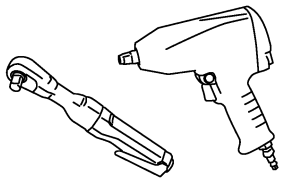
CONTENTS

PREPARATION

PFP:00002

Commercial Service Tools

EDS0032M

Tool name	Description
Power tool  PBIC0190E	Loosening bolts and nuts

NOISE, VIBRATION, AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

NVH Troubleshooting Chart

EDS0032N

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

Reference page		PR-4 (front) PR-9 (rear)	PR-4 (front) PR-9 (rear)	PR-4 (front) PR-9 (rear)	FFD-6, "NVH Troubleshooting Chart" RFD-8, "NVH Troubleshooting Chart"	FAX-4, "NVH Troubleshooting Chart" RAX-5, "NVH Troubleshooting Chart"	FSU-4, "NVH Troubleshooting Chart" RSU-4, "NVH Troubleshooting Chart"	WT-4, "NVH Troubleshooting Chart"	WT-4, "NVH Troubleshooting Chart"	FAX-4, "NVH Troubleshooting Chart"	BR-5, "NVH Troubleshooting Chart"	PS-5, "NVH Troubleshooting Chart"
Possible cause and suspected parts		Uneven rotation torque	Rotation imbalance	Excessive run out	Differential	Axle	Suspension	Tires	Road wheel	Drive shaft	Brakes	Steering
Symptom	Noise	×	×	×	×	×	×	×	×	×	×	×
	Shake					×	×	×	×	×	×	×
	Vibration	×	×	×		×	×	×		×		×

×: Applicable

FRONT PROPELLER SHAFT

PFP:37200

On-Vehicle Service

EDS0032O

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.

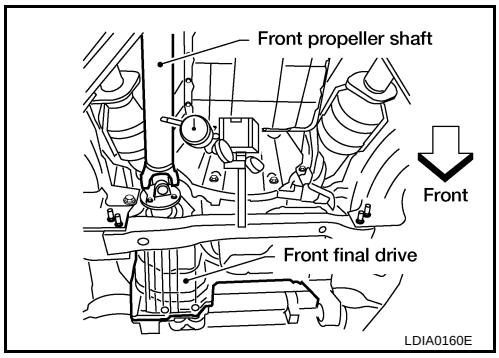
PROPELLER SHAFT VIBRATION

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

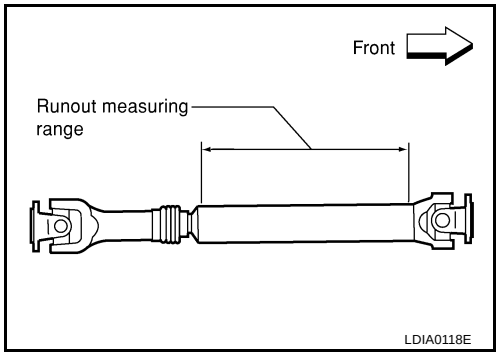
1. Measure the runout of the propeller shaft tube at several points by rotating the final drive companion flange with your hands.

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.

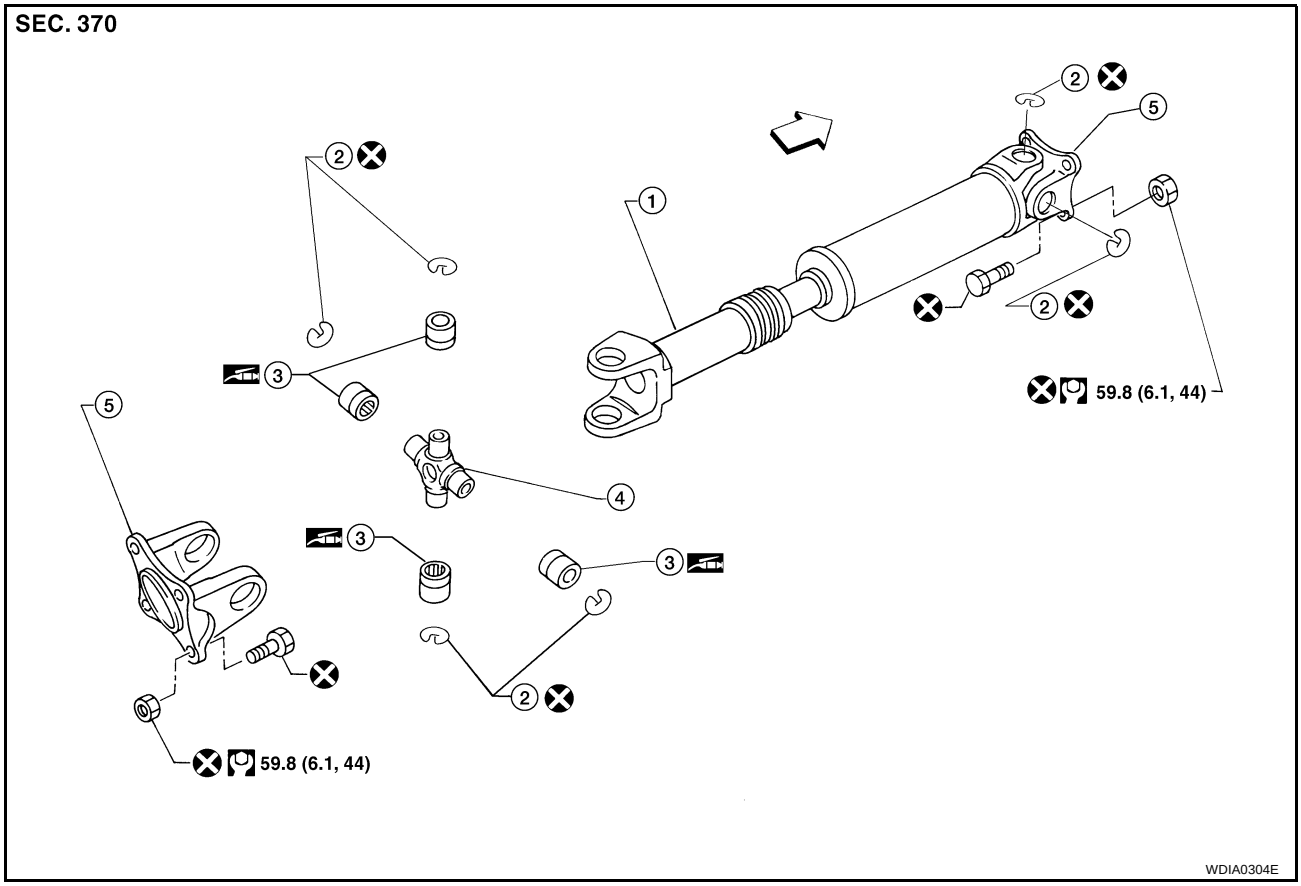


Removal and Installation

EDS0032P

COMPONENTS

Model 2F1310



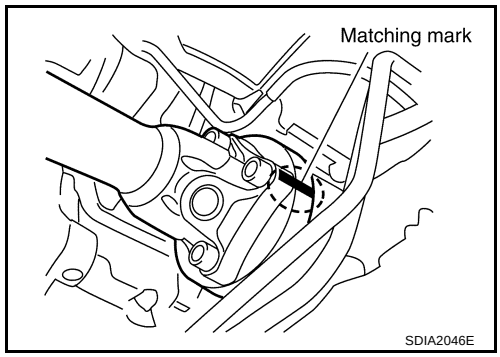
1. Propeller shaft tube
2. Snap ring
3. Journal bearing
4. Journal
5. Flange yoke
⇐: Vehicle front

REMOVAL

1. Remove the undercover using power tool.
2. 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.
3. Put matching marks on the front propeller shaft flange yoke and the transfer companion flange.

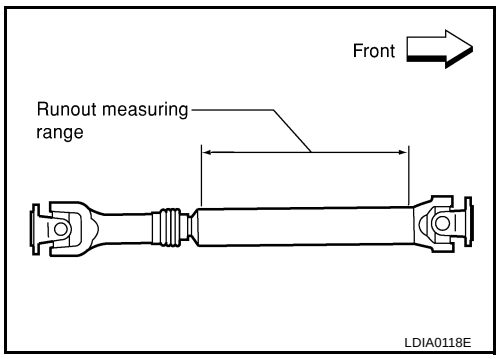
   CAUTION:
   For matching marks, use paint. Never damage the flange yoke and companion flange of the front final drive.
4. Remove the bolts and then remove the front propeller shaft from the front final drive and transfer.



INSPECTION

- Inspect the propeller shaft runout. If runout exceeds the limit, replace the propeller shaft assembly.

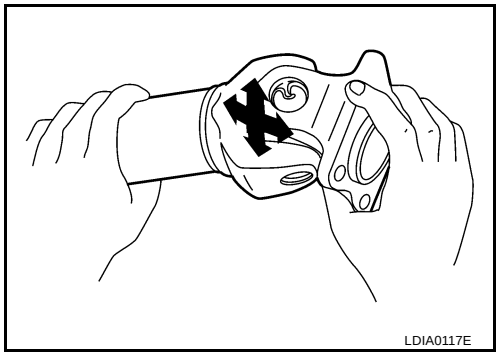
  Runout limit : 0.6 mm (0.024 in) or less



- 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-3, "NVH Troubleshooting Chart" .

CAUTION:

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

Disassembly and Assembly

EDS0032Q

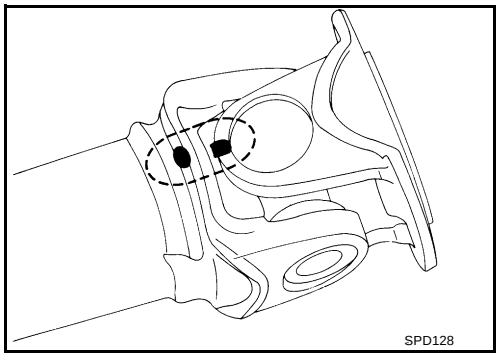
DISASSEMBLY

Journal

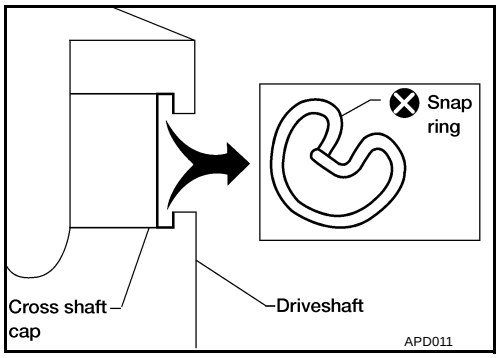
1. Put matching marks on the front propeller shaft and flange yoke as shown.

   CAUTION:

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

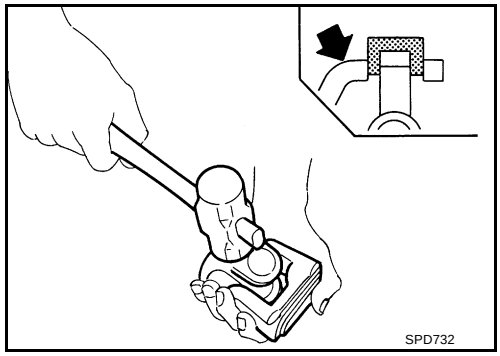


2. Remove the snap rings.



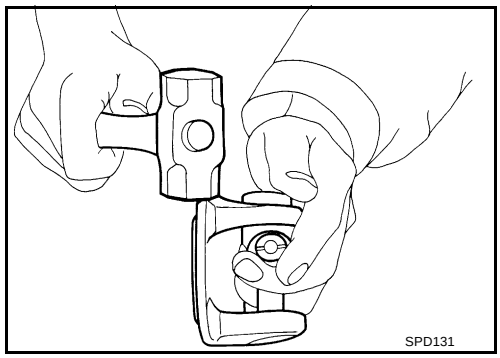
3. Push out and remove the journal bearings by lightly tapping the flange yoke with a hammer, taking care not to damage the journal or flange yoke hole.

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.

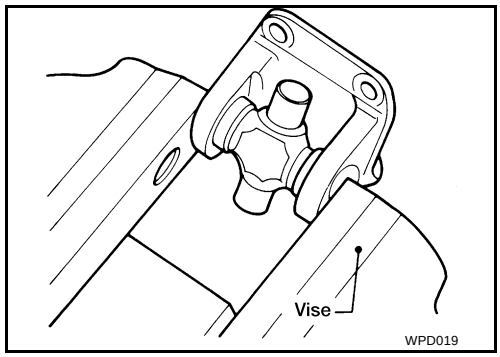


ASSEMBLY

Journal

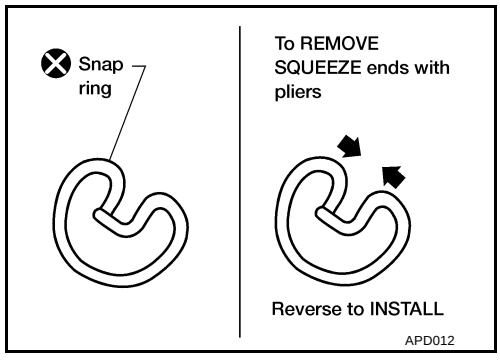
1. Assemble the journal bearings. Apply multipurpose grease on the bearing inner surface.

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

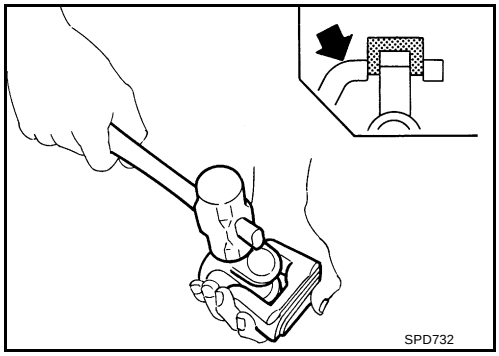


2. Select snap rings that will provide the specified play in an axial direction of the journal, and install them. Refer to PR-16, "Snap Ring" .

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

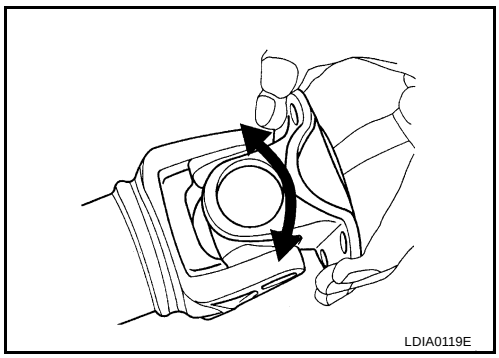


3. Adjust the thrust clearance between the bearing and snap ring to zero by tapping the yoke.



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

EDS0032R

APPEARANCE AND NOISE INSPECTION

Check the propeller shaft tube surface for dents or cracks. If damaged, replace the propeller shaft assembly.

PROPELLER SHAFT VIBRATION

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

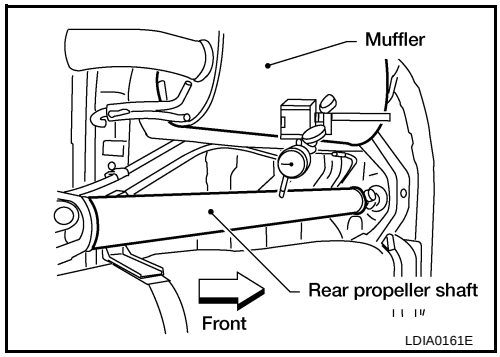
1. Measure the runout of the propeller shaft tube at several points by rotating the final drive companion flange with your hands.

   Propeller shaft runout limit

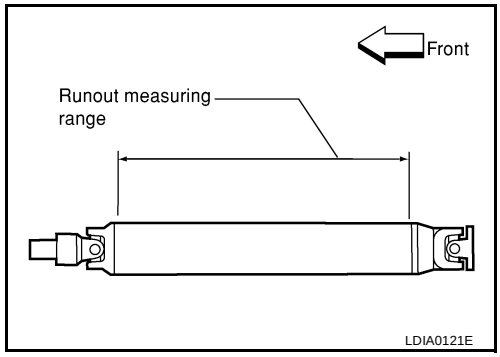
   2WD : 1.02 mm (0.040 in) or less

   4WD : 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 vehicle.

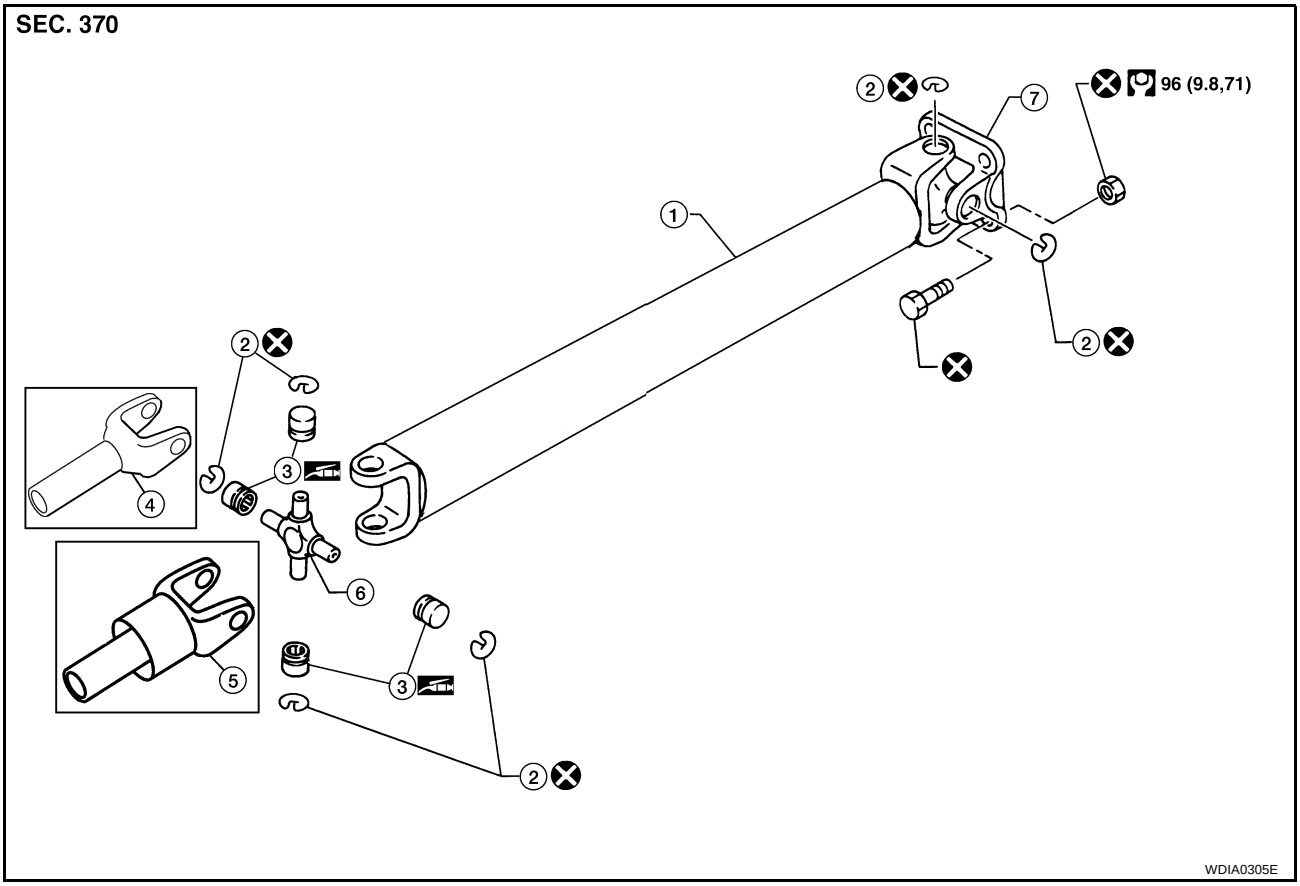


Removal and Installation

EDS0032S

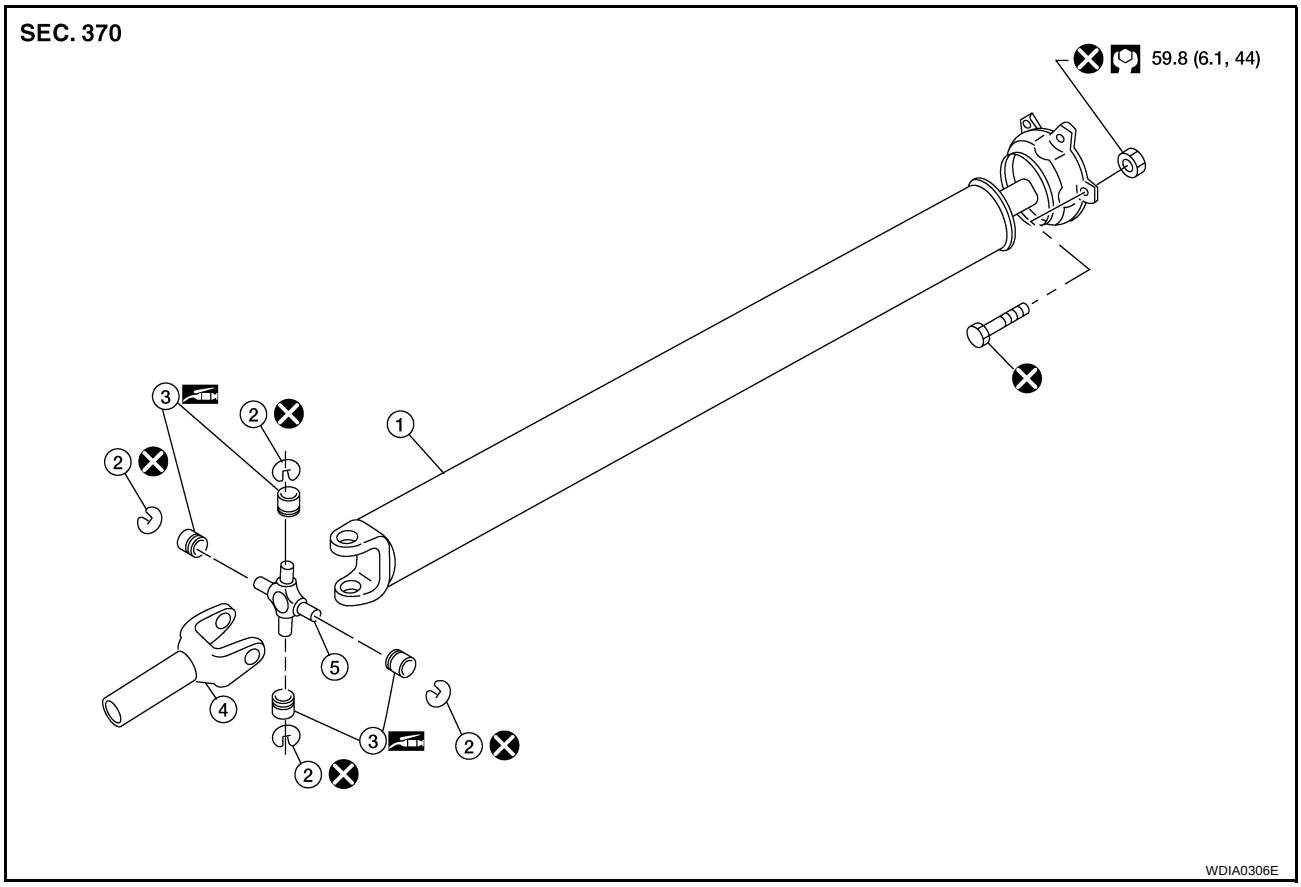
COMPONENTS

Model 2S1330



1. Propeller shaft
2. Snap ring
3. Journal bearing
4. Sleeve yoke (M/T models)
5. Sleeve yoke (A/T models)
6. Journal
7. Flange yoke

Model 2S1330-BJ100

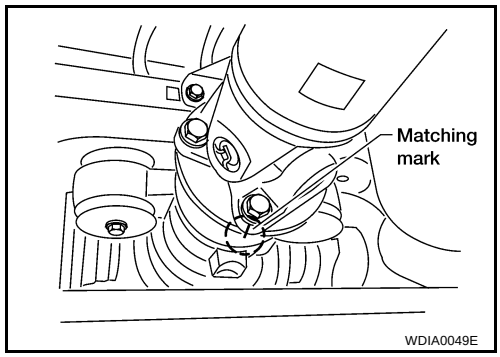


1. Propeller shaft
2. Snap ring
3. Journal bearing
4. Sleeve yoke
5. Journal

REMOVAL

1. Put the transmission in neutral and release the parking brake.
2. Put matching marks on the rear propeller shaft flange yoke and the rear final drive companion flange as shown.

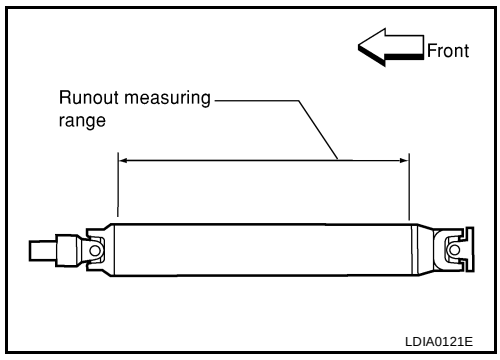
   CAUTION:
   For matching marks, use paint. Never damage the rear propeller shaft flange yoke or the companion flange.
3. Remove the bolts, then remove the propeller shaft from the rear final drive and transmission or transfer.



INSPECTION

- Inspect the propeller shaft runout. If runout exceeds the limit, replace the propeller shaft assembly.

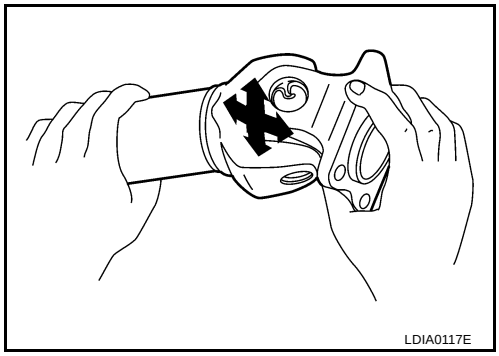
  Propeller shaft runout limit
  2WD : 1.02 mm (0.040 in) or less
  4WD : 0.6 mm (0.024 in) or less



- 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 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-3, "NVH Troubleshooting Chart" .

CAUTION:

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

Disassembly and Assembly

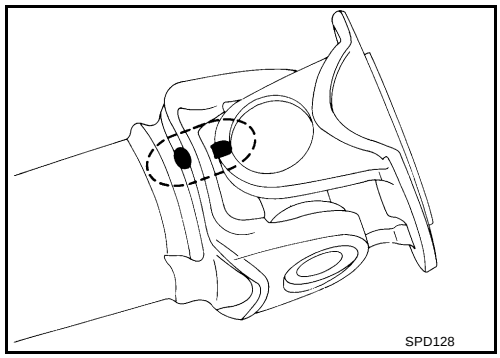
EDS0032T

DISASSEMBLY

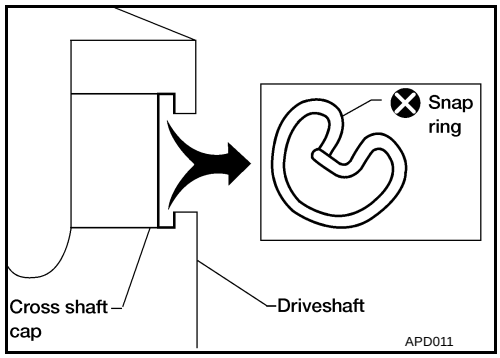
Journal

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.

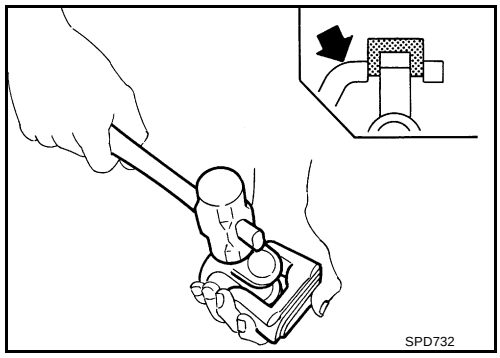


2. Remove the snap rings.



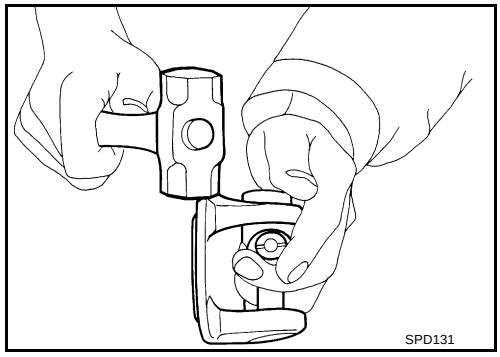
3. Push out and remove the journal bearings by lightly tapping the flange yoke with a hammer, taking care not to damage the journal or flange yoke hole.

   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.

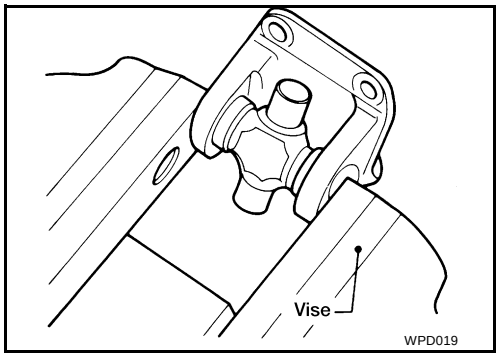


ASSEMBLY

Journal

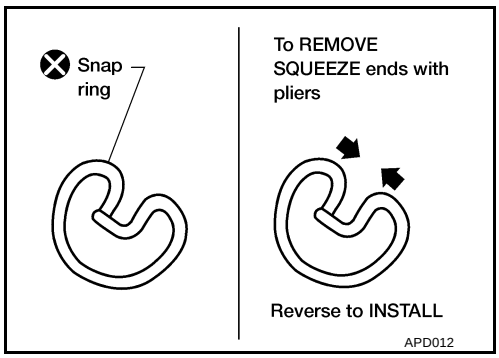
1. Assemble the journal bearings. Apply multipurpose grease on the bearing inner surface.

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

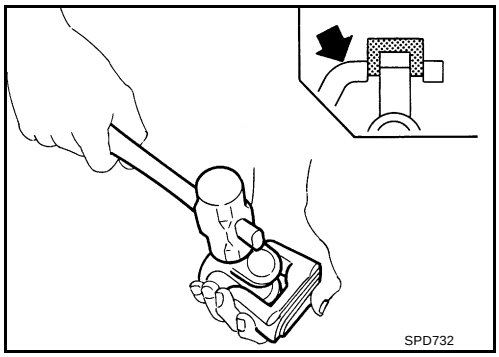


2. Select snap rings that will provide the specified play in an axial direction of the journal, and install them. Refer to PR-16, "Snap Ring" .

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

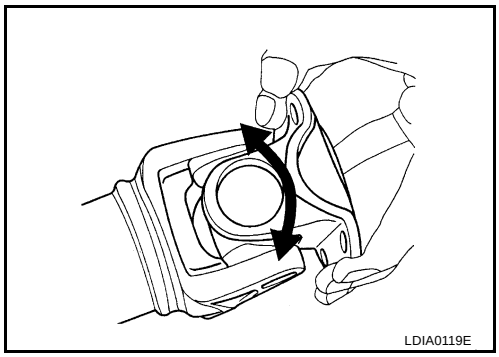


3. Adjust the thrust clearance between the bearing and snap ring to zero by tapping the yoke.



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

   Joint flex effort : 2.26 N·m (0.23 kg-m, 20 in-lb) or less



SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specifications

EDS0032U

2WD Model

Applied model	VQ40DE	
	M/T	A/T
Propeller shaft model	2S1330 (aluminum)	
Number of joints	2	
Coupling method with rear final drive	Flange type	
Coupling method with transmission	Sleeve type	
Shaft length (Spider to spider)	1178.8 mm (46.41 in)	1262.80 (49.72 in)
Shaft outer diameter	102.5 mm (4.00 in)	
Journal axial play	0.02 mm (0.0008 in) or less	
Propeller shaft runout limit	1.02 mm (0.040 in) or less	
Propeller shaft joint flex effort	2.26 N·m (0.23 kg-m, 20 in-lb) or less	

4WD Model

Applied model		VQ40DE	
		C200	M226
Front	Propeller shaft model	2F1310	
	Number of joints	2	
	Coupling method with front final drive	Flange type	
	Coupling method with transfer	Flange type	
	Shaft length (Spider to spider)	696 mm (27.40 in)	
	Shaft outer diameter	63.5 mm (2.50 in)	
	Journal axial play	0.02 mm (0.0008 in) or less	
	Propeller shaft runout 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	
Rear	Propeller shaft model	2S1330-BJ100 (steel)	
	Number of joints	2	
	Coupling method with rear final drive	Flange type	
	Coupling method with transmission	Sleeve type	
	Shaft length (Spider to spider)	804.9 mm (31.69 in)	774.9 mm (30.51 in)
	Shaft outer diameter	76.2 mm (3.00 in)	
	Journal axial play	0.02 mm (0.0008 in) or less	
	Propeller shaft runout limit	0.6 mm (0.024 in) or less	
	Propeller shaft joint flex effort	2.26 N·m (0.23 kg-m, 20 in-lb) or less	

Snap Ring

EDS0032V

Model 2F1310, 2S1330-BJ100 (steel)

Unit: mm (in)

Thickness	Color	Part Number*
1.99 (0.0783)	White	37146-C9400
2.02 (0.0795)	Yellow	37147-C9400
2.05 (0.0807)	Red	37148-C9400
2.08 (0.0819)	Green	37149-C9400
2.11 (0.0831)	Blue	37150-C9400
2.14 (0.0843)	Light brown	37151-C9400
2.17 (0.0854)	Black	37152-C9400
2.20 (0.0866)	No paint	37153-C9400

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

Model 2S1330 (aluminum)

Unit: mm (in)

Thickness	Color	Part Number*
1.499 - 1.537 (0.0590 - 0.0605)	Black	37146-EA500
1.524 - 1.562 (0.0600 - 0.0615)	Black	37147-EA500
1.549 - 1.588 (0.0610 - 0.0625)	Black	37148-EA500
1.600 - 1.638 (0.0630 - 0.0645)	Black	37149-EA500

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