PROPELLER SHAFT

CONTENTS

E25AA--

GENERAL INFORMATION

E25BAAC

Both 2WD and 4WD are equipped with two-joint type propeller shafts.
2WD vehicles are equipped with lubrication free universal joints.
The universal joint of 4WD vehicle has a grease nipple for both front and rear propeller shaft.

SPECIFICATIONS

E25CA--

GENERAL SPECIFICATIONS
Vehicles for Europe

2WD

[Vehicles built up to May 1994]

Items	P02V P03V P03W	P12V P13V	P04V P04W	P14V	P05V P05W	P15V
Propeller shaft Type Length × O.D. mm (in.)	Two-joint type *1667 × 65 (26.3 × 2.6) *2477 × 65 (18.8 × 2.6)	Two-joint type 845 × 65 (33.3 × 2.6)	Two-joint type 644 × 75 (25.4 × 3.0)	Two-joint type 839 × 75 (33.0 × 3.0)	Two-joint type 570 × 75 (22.4 × 3.0)	Two-joint type 770 × 75 (30.3 × 3.0)
Universal joint Type Bearing Journal O.D mm (in.)	Cross type Lubrication-free needle roller bearing 14.7 (0.58)					

[Vehicles built from June 1994]

Items	P03V	P13V	P05V	P15V
Propeller shaft Type Length x O.D. mm (in.)	Two-joint type 603 x 65 (23.7 x 2.6)	Two-joint type 781 x 65 (30.7 x 2.6)	Two-joint type 570 x 75 (22.4 x 3.0)	Two-joint type 770 x 75 (30.3 x 3.0)
Universal joint Type Bearing Journal O.D. mm (in.)	Cross type Lubrication-free needle roller bearing 14.7 (0.58)			

NOTE
(1) *1 indicates vehicles with a manual transmission.
(2) *2 indicates vehicles with an automatic transmission.

4WD

Items	P23V P23W	P24V P24W	P25V P25W	P45V
Front propeller shaft Type Length × O.D. mm (in.)	Two-joint type 793 × 50.8 (31.2 × 2.0)			
Rear propeller shaft Type Length × O.D. mm (in.)	Two-joint type 321 × 75 (12.6 × 3.0)			Two-joint type 520 × 75 (20.5 × 3.0)
Universal joint Type Bearing Journal O.D. mm (in.)	Cross type Oiled needle roller bearing 14.7 (0.58)			

Vehicles for General Export

2WD

[Vehicles built up to May 1994]

Items	P01V P01W P02V	P02W	P12V P12W	P03V P03W	P05V P05W	P14V	P15V P15W
Propeller shaft Type	Two-joint type	Two-joint type	Two-joint type	Two-joint type	Two-joint type	Two-joint type	Two-joint type
Length x O.D. mm (in.)	726 x 65 (28.6 x 2.6)	667x 65 (26.3 x 2.6)	901 x 65 (35.5 x 2.6)	*1646 x 65 (25.4 x 2.6) *2477 x 65 (18.8 x 2.6)	*1549 x 75 (21.6 x 3.0) *2403 x 75 (15.9 x 3.0)	644 x 75 (25.4 x 3.0)	748 x 75 (29.4 x 3.0)
Universal joint Type Bearing Journal O.D. mm (in.)	Cross type Lubrication-free needle roller bearing 14.7 (0.58)						

Items	P13V P13W	P04W
Propeller shaft Type Length x O.D. mm (in.)	Two-joint type 845 x 65 (33.3 x 2.6)	Two-joint type 475 x 75 (18.7 x 3.0)
Universal joint Type Bearing Journal O.D. mm (in.)	Cross type Lubrication-free needle roller bearing 14.7 (0.58)	

NOTE
(1) *1 indicates vehicles with a manual transmission.
(2) *2 indicates vehicles with an automatic transmission.

[Vehicles built from June 1994]

Items		P06V	P16V P13V P13W	P03V	P15V P15W
Propeller shaft Type Length x O.D.	mm (in.)	Two-joint type 603 x 65 (23.7 x 2.6)	Two-joint type 781 x 65 (30.7 x 2.6)	Two-joint type 582 x 65 (22.9 x 2.6)	Two-joint type 748 X 75 (29.4 X 3.0)
Universal joint Type Bearing Journal O.D.	mm (in.)	Cross type Lubrication-free needle roller bearing 14.7 (0.58)			

4WD

Items	P23W, P24W
Front propeller shaft Type Length×O.D. mm (in.)	Two-joint type 793×50.8 (31.2×2.0)
Rear propeller shaft Type Length×O.D. mm (in.)	Two-joint type 321×75 (12.6×3.0)
Universal joint Type Bearing Journal O.D. mm (in.)	Cross type Oiled needle roller bearing 14.7 (0.58)

Vehicles for Australia

2WD

[Vehicles built up to June 1989]

Items	P03V – M/T P03W – M/T	P03V – A/T P03W – A/T	P13V – M/T	P13V – A/T	P04W – M/T	P04W – A/T	P05V
Propeller shaft Type	Two-joint type	Two-joint type	Two-joint type	Two-joint type	Two-joint type	Two-joint type	Two-joint type
Length×O.D. mm (in.)	667×65 (26.3 ×2.6)	501×65 (19.7×2.6)	845×65 (33.3×2.6)	700×65 (27.6×2.6)	644×75 (25.4×3.0)	475×65 (18.7×2.6)	570×75 (22.4×3.0)
Universal joint Type	Cross type						
Bearing	Lubrication-free needle roller bearing						
Journal O.D. mm (in.)	14.7 (0.58)						

[Vehicles built from July 1989 up to May 1994]

Items	P03V – M/T P03W – M/T	P03V – A/T P03W – A/T	P13V – M/T	P13V – A/T	P04W – M/T	P05V – M/T P04W – A/T	P15V – M/T
Propeller shaft Type	Two-joint type	Two-joint type	Two-joint type	Two-joint type	Two-joint type	Two-joint type	Two-joint type
Length×O.D. mm (in.)	667×65 (26.3 ×2.6)	501×65 (19.7×2.6)	845×65 (33.3×2.6)	700×65 (27.6×2.6)	644×75 (25.4×3.0)	549×79 (21.6×3.0)	748×75 (29.4×3.0)
Universal joint Type	Cross type						
Bearing	Lubrication-free needle roller bearing						
Journal O.D. mm (in.)	14.7 (0.58)						

Items		P14V – M/T	P14V – A/T	P05V – A/T	P15V – A/T
Propeller shaft Type		Two-joint type	Two-joint type	Two-joint type	Two-joint type
Length x O.D.	mm (in.)	839 x 75 (33.0 x 3.0)	674 x 75 (26.5 x 3.0)	403 x 75 (15.9 x 3.0)	603 x 75 (23.7 x 3.0)
Universal joint Type		Cross type			
Bearing		Lubrication-free needle roller bearing			
Journal O.D.	mm (in.)	14.7 (0.58)			

NOTE
(1) M/T: Manual transmission
(2) A/T: Automatic transmission

[Vehicles built from June 1994]

Items		P03V	P14V	P05V	P15V
Propeller shaft Type Length x O.D.	mm (in.)	Two-joint type *1603 x 65 (23.7 x 2.6) *2437 x 65 (17.2 x 2.6)	Two-joint type *1777 x 75 (30.6 x 3.0) *2615 x 75 (24.2 x 3.0)	Two-joint type *1549 x 75 (21.6 x 3.0) *2403 x 75 (15.9 x 3.0)	Two-joint type *1748 x 75 (29.4 x 3.0) *2603 x 75 (23.7 x 3.0)
Universal joint Type Bearing Journal O.D.	mm (in.)	Cross type Lubrication-free needle roller bearing 14.7 (0.58)			

NOTE
(1) *1 indicates vehicles with a manual transmission.
(2) *2 indicates vehicles with an automatic transmission.

4WD

Items		Specifications
Front propeller shaft Type Length×O.D.	mm (in.)	Two-joint type 793×50.8 (31.2×2.0)
Rear propeller shaft Type Length×O.D.	mm (in.)	Two-joint type 321×75 (12.6×3.0)
Universal joint Type Bearing Journal O.D.	mm (in.)	Cross type Oiled needle roller bearing 14.7 (0.58)

SERVICE SPECIFICATIONS

E25CB--

Items	Specifications
Standard Value	
Journal axial play mm (in.)	0.06 (0.0024)
Limit	
Propeller shaft runout (Dial indicator reading) mm (in.)	
Front	0.5 (0.020)
Rear	0.6 (0.024)

TORQUE SPECIFICATIONS

E25CC--

Items	Nm	kgm	ft.lbs.
Flange yoke attaching bolts	50 – 60	5.0 – 6.0	36 – 43
Drain plug (Automatic transmission)	18 – 22	1.8 – 2.2	13 – 16
Drain plug (Transfer case)	30 – 35	3.0 – 3.5	22 – 25

LUBRICANTS

E25CD--

Items	Specified lubricant	Quantity
Universal joint	Multipurpose grease SAE J310, NLGI No. 2	As required
Sleeve yoke surface		
2WD with a manual transmission and 4WD	Hypoid gear oil API classification GL-4 higher/ SAE viscosity 80W, 75W – 85W	As required
2WD with an automatic transmission	ATF "DEXRON" to "DEXRON II"	As required

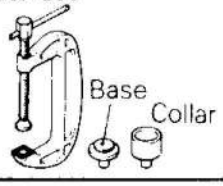
TROUBLESHOOTING

E25EA--

Symptom	Probable cause	Remedy	Reference page
Noise at start	Worn journal bearing Worn sleeve yoke spline	Replace	25 – 8
	Loose propeller shaft installation	Retighten	25 – 6
Noise and vibration at high speed	Unbalanced propeller shaft	Replace	25 – 7
	Improper snap ring selection	Adjust the clearance	25 – 10
	Worn journal bearing	Replace	25 – 7

SPECIAL TOOL

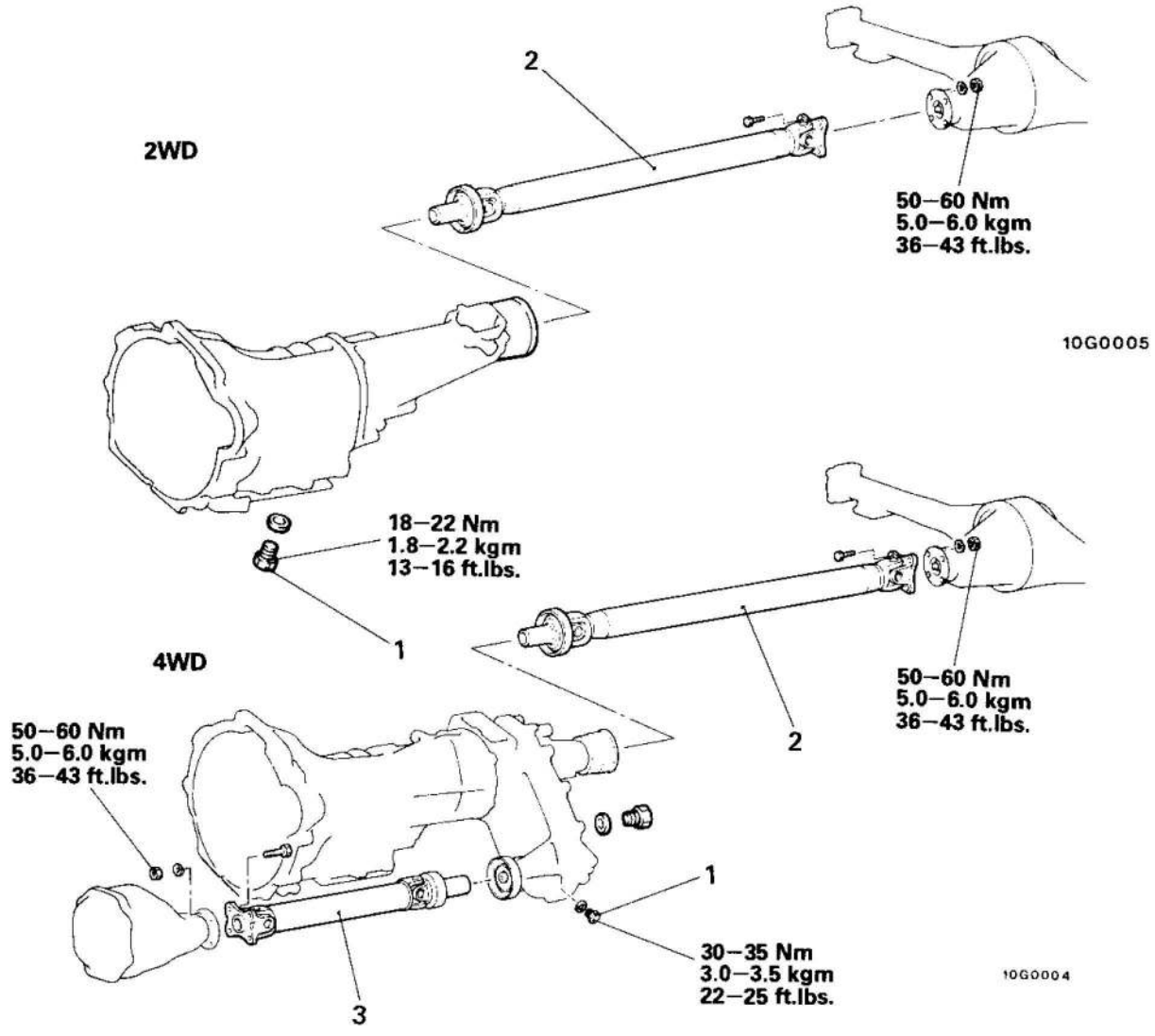
E25DA--

Tool (Number and name)	Use
MB990840 Universal joint remover and installer set 	Removal and installation of journal bearing

PROPELLER SHAFT

E25GA--

REMOVAL AND INSTALLATION



Rear propeller shaft removal steps

1. Drain plug (vehicles with automatic transmission)
◆◆ ◆◆2. Rear propeller shaft

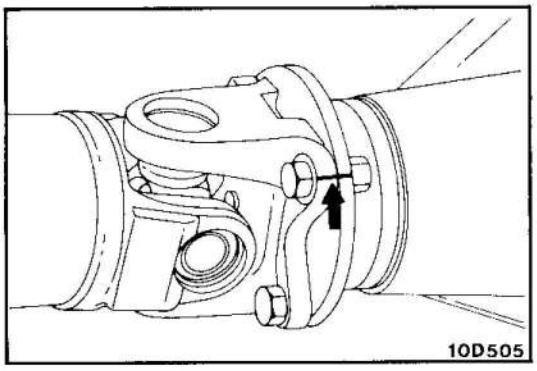
Front propeller shaft removal steps

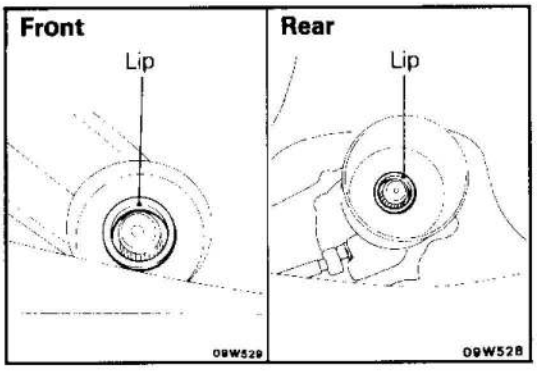
1. Drain plug
◆◆ ◆◆3. Front propeller shaft

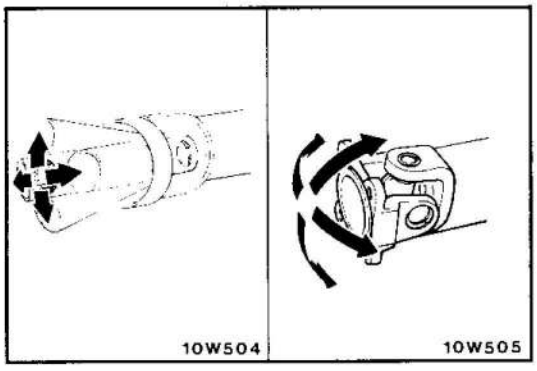
NOTE
(1) Reverse the removal procedures to reinstall.
(2) ◆◆ : Refer to "Service Points of Removal".
(3) ◆◆ : Refer to "Service Points of Installation".

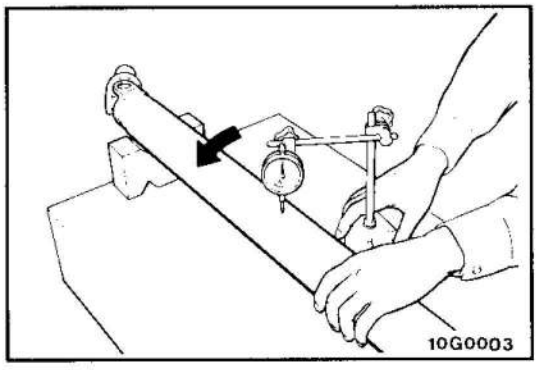
Pre-removal Operation
- Draining of automatic transmission fluid (Refer to GROUP 23 AUTOMATIC TRANSMISSION– Service Adjustment Procedures.)
- Draining of transfer gear oil (Refer to GROUP 22 MANUAL TRANSMISSION– Service Adjustment Procedures.)

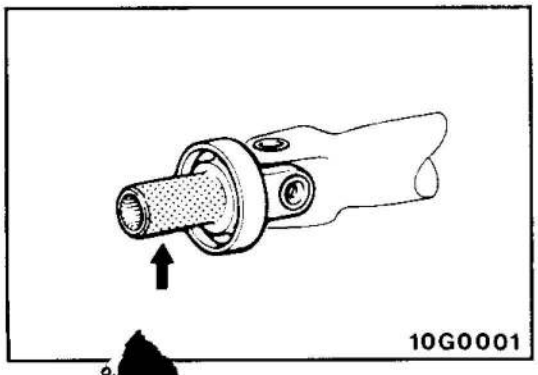
Post-installation Operation
- Filling automatic transmission fluid (Refer to GROUP 23 AUTOMATIC TRANSMISSION– Service Adjustment Procedures.)
- Filling transfer gear oil (Refer to GROUP 22 MANUAL TRANSMISSION– Service Adjustment Procedures.)











SERVICE POINTS OF REMOVAL E25GBAD

2. REMOVAL OF REAR PROPELLER SHAFT/3.FRONT PROPELLER SHAFT

(1) On the 4WD place the transfer lever in "2H".
(2) To remove the front propeller shaft on free wheel hub equipped vehicles, place the free wheel hubs in the FREE position.
(3) Make mating marks on the flange yoke and the differential companion flange.

Caution

1. **Do not lower the rear of manual transmission vehicles as this may cause the transmission oil to flow out.**
2. **Be careful not to damage the lip of the transmission oil seal or the lip of the transfer oil seal.**
3. **Do not allow foreign matter to enter the transmission or transfer.**

INSPECTION E25GCAD

- Check the sleeve yoke and flange yoke for wear, damage or cracks.
- Check the propeller shaft yokes for wear, damage or cracks.
- Check the propeller shaft for bends, twisting or damage.
- Check the universal joints for smooth operation in all directions.

- Measure the propeller shaft runout with a dial indicator.

Limit:

Front propeller shaft	**0.5 mm (0.020 in.)**
Rear propeller shaft	**0.6 mm (0.024 in.)**

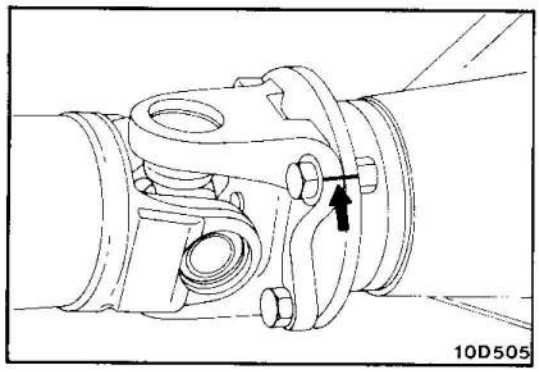
SERVICE POINTS OF INSTALLATION E25GDAD

3. INSTALLATION OF FRONT PROPELLER SHAFT/2.REAR PROPELLER SHAFT

(1) Apply the specified hypoid gear oil to the sleeve yoke.

Specified gear oil:

2WD with a manual transmission and 4WD
Hypoid gear oil API classification GL-4 or higher/SAE viscosity 80W, 75W – 85W
2WD with an automatic transmission
ATF "DEXRDN" or "DEXRON II"



(2) With the mating marks in alignment, install the propeller shaft to the companion flange.

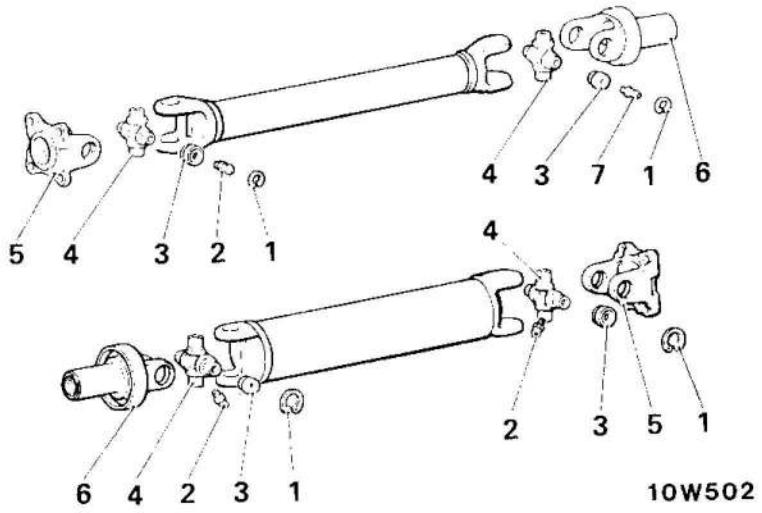
Caution
Degrease the thread of the mounting bolts and nuts before tightening these parts. Otherwise, they could become loose.

DISASSEMBLY AND REASSEMBLY

E25GE--

Front propeller shaft

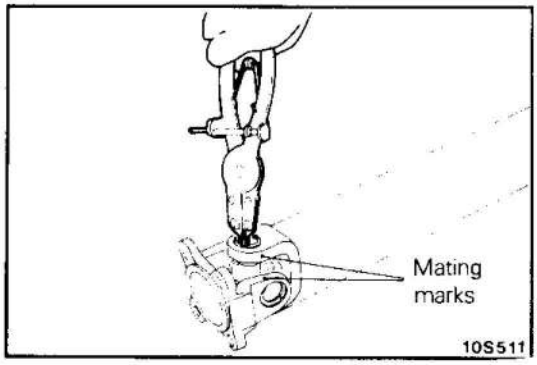
Rear propeller shaft



Disassembly steps

- ◆◆ Adjustment of journal end play
- ◆◆ 1. Snap ring
- 2. Grease nipple <4WD>
- ◆◆ ◆◆ 3. Journal bearing
- ◆◆ 4. Journal
- 5. Flange yoke
- 6. Sleeve yoke
- 7. Grease nipple (Vehicles built up to May 1989) Plug (Vehicles built from June 1989)

NOTE
(1) Reverse the disassembly procedures to reassemble.
(2) ◆◆: Refer to "Service Points of Disassembly".
(3) ◆◆: Refer to "Service Points of Reassembly".

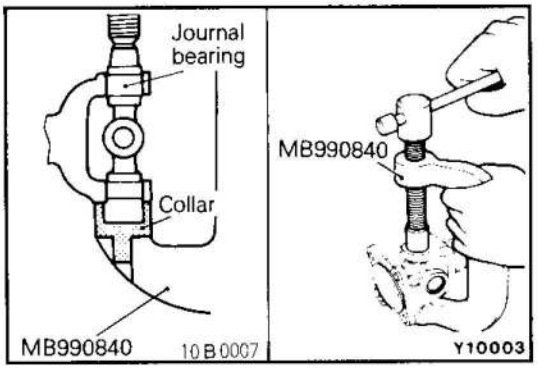


SERVICE POINTS OF DISASSEMBLY

E25GFAF

1. REMOVAL OF SNAP RING

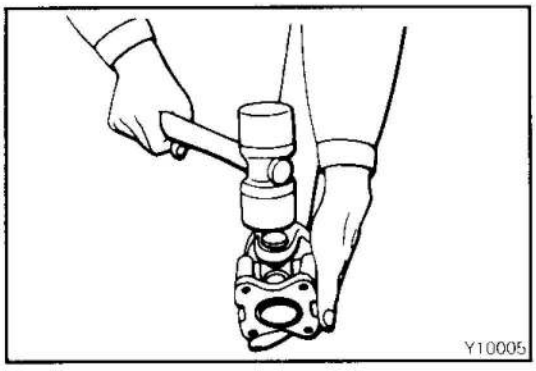
(1) Make mating marks on the yokes of the universal joint that is to be disassembled.
(2) Remove the snap rings from the yoke with snap ring pliers.



3. REMOVAL OF JOURNAL BEARING

Force out the journal bearings from the propeller shaft yoke with a special tool by the following procedures.

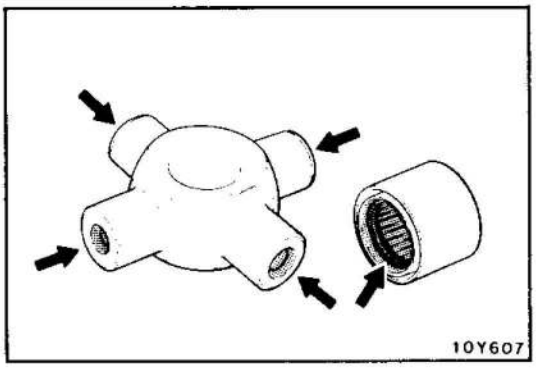
1 Install collar to the special tool properly.
2 Press a journal bearing by using the special tool to force out the journal bearing on opposite side.



3 Remove the journal bearing from the yoke.

NOTE
If the journal bearing is hard to remove, strike the yoke with a plastic hammer.

4 Press the journal shaft using the special tool to remove the remaining bearing, and remove the yoke.

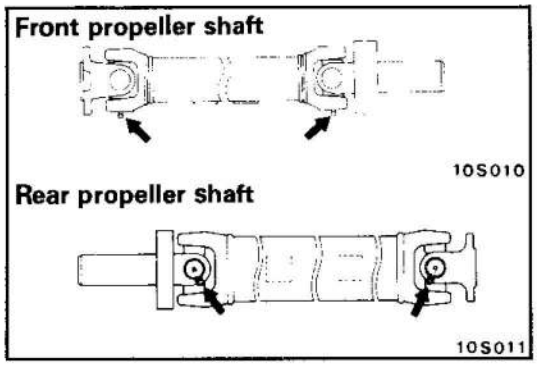


SERVICE POINTS OF REASSEMBLY E25GHAD

4. REASSEMBLY OF JOURNAL/3.JOURNAL BEARING

(1) Apply specified grease to the following parts of universal joint kit:
1 Shafts and grease sumps of journal
2 Dust seal lips
3 Needle roller of bearings

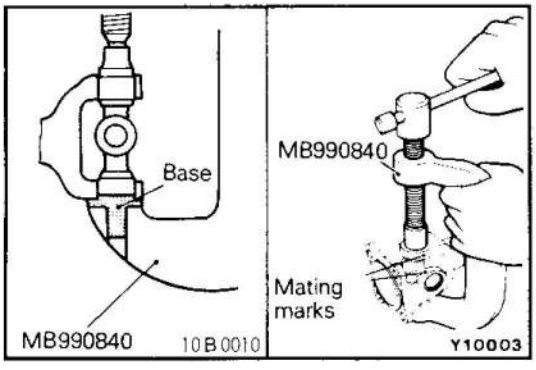
Specified grease: Multipurpose grease SAE J310, NLGI No.2



Caution
Use of excessive amounts of grease may result in difficulty in assembling unit and incorrect selection of snap rings.

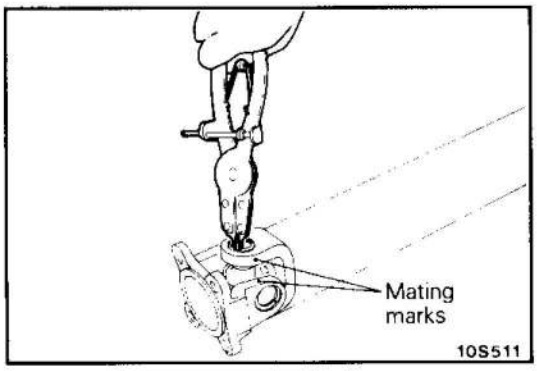
(2) With the grease nipple directed as shown in the illustration, install the journal properly.

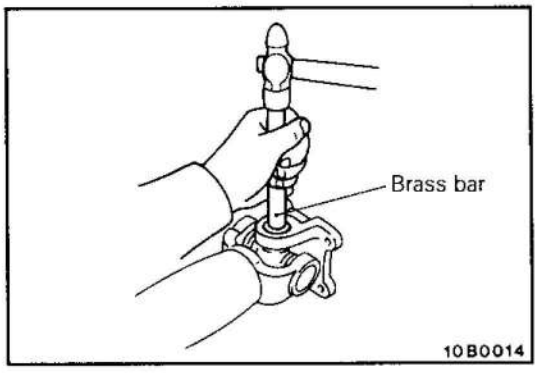
NOTE
When plugged, lubrication is accomplished by removing the plug and the front grease nipple.
After applying grease, the grease nipple should be replaced and the plug reinstalled.

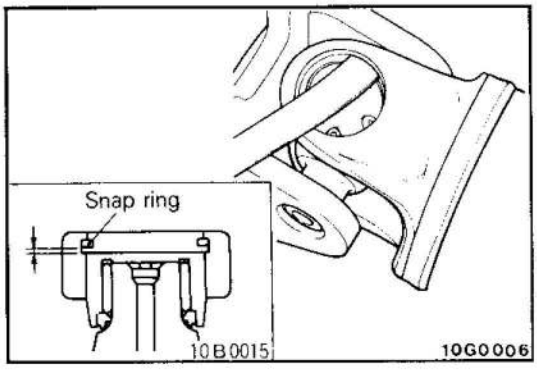


(3) Press fit the journal bearings to the yoke with the special tool according to the following procedures.
1 Align the mating marks on the yoke and propeller shaft.
2 Install the base to the special tool properly.
3 Insert both bearings in the yoke, and hold and press fit them with the special tool.

NOTE
The guide of base stops the bearings at predetermined position.







- **ADJUSTMENT OF JOURNAL END PLAY**

(1) Install the snap rings of the same thickness onto both sides of each yoke with the snap ring pliers.

(2) Press the bearing and journal into one side with the brass bar.

(3) Measure the clearance shown in the illustration with a feeler gauge. If the clearance exceeds the standard value, the snap rings should be replaced.

Standard value: 0.06 mm (0.0024 in.)