

## GENERAL INFORMATION

A two-joint propeller shaft was used for both the front and rear.

Rear propeller shaft is equipped with a carbon-fiber reinforced plastic (CFRP) tube.<Vehicles for Hong Kong, South Africa and Australia>

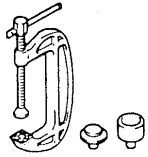
## SERVICE SPECIFICATIONS

Items		Standard value	Limit
Propeller shaft runout mm	Front	–	0.5
	Rear <Vehicles without CFRP propeller shaft>	–	0.4
Clearance between rear propeller shaft tube end and shaft mm <Vehicles with CFRP propeller shaft>		0.2 – 0.5	–
Clearance of snap ring groove mm		0 – 0.06	–

## LUBRICANT

Items	Specified lubricant	Quantity
Propeller shaft sleeve yoke	Hypoid gear oil SAE 75W-90 or 75W-85W or 80W conforming to API GL-4	As required

## SPECIAL TOOL

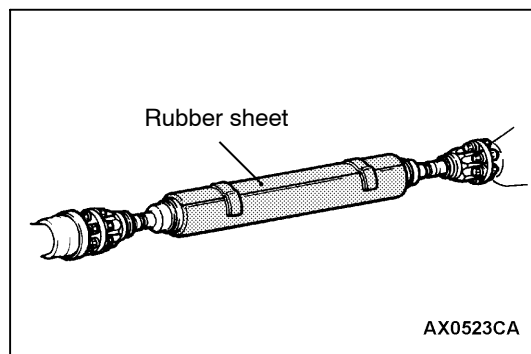
Tool	Number	Name	Use
	MB990840	Universal joint re- mover and installer	Disassembly and reassembly of the universal joint

## PROPELLER SHAFT

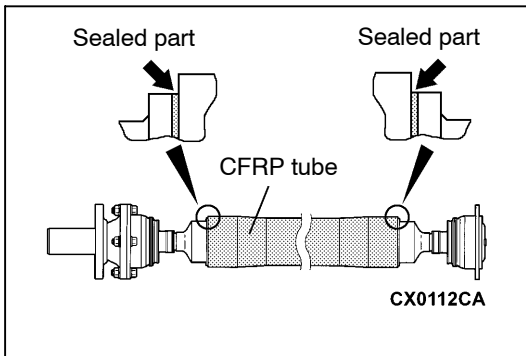
**Caution <Vehicles with CFRP propeller shaft>**

Observe the following precautions, as the rear propeller shaft uses a CFRP tube.

1. If a scratch is found on the propeller shaft tube, check that the tube is damaged by using a dye penetrant method.
2. If the tube is cracked, chipped or bent, replace the propeller shaft.
3. Be careful not to impact or damage the tube.
4. If the propeller shaft has been dropped accidentally, replace it.



5. In order to prevent damage, wrap a rubber sheet thicker than 10 mm or a special rubber sheet (parts No.: MR534563 – for short wheelbase/parts No.: MR534564 – for long wheelbase) around the propeller shaft tube during the operation.



6. Replace the propeller shaft if cracks or peelings are found at the sealed part.
7. It is recommended that a defective propeller shaft should be buried in the earth. Toxic material never leaks from the buried propeller shaft tube.

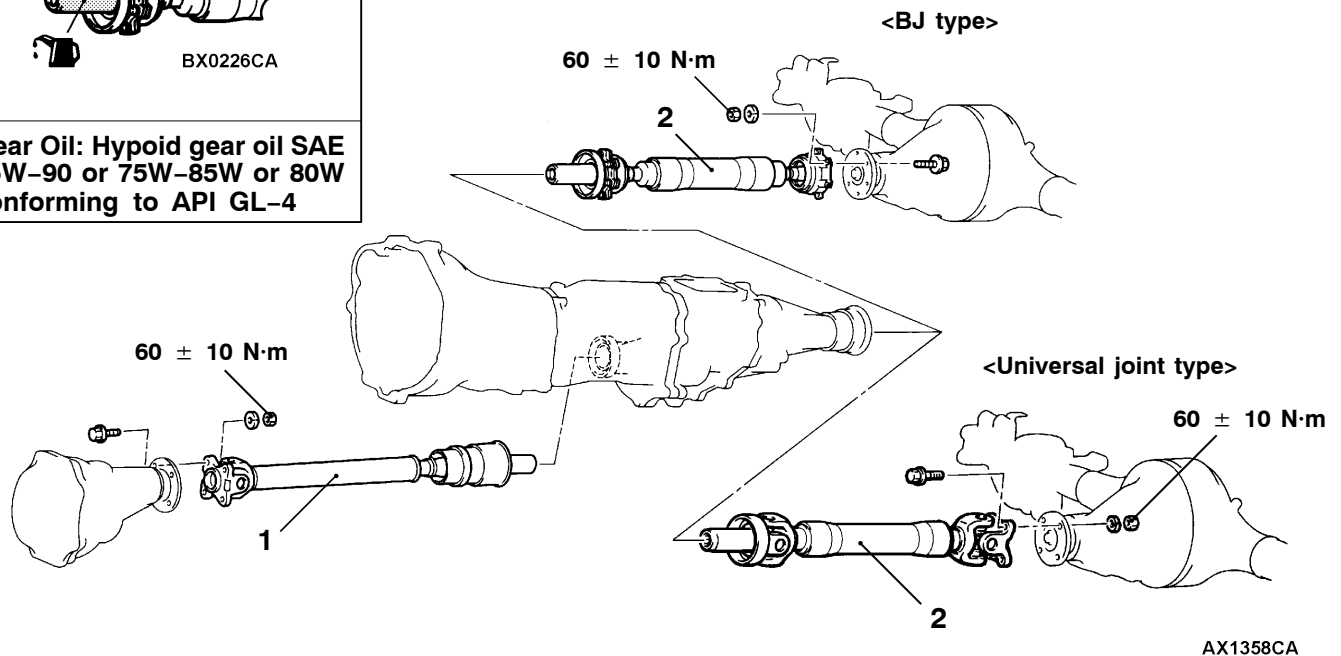
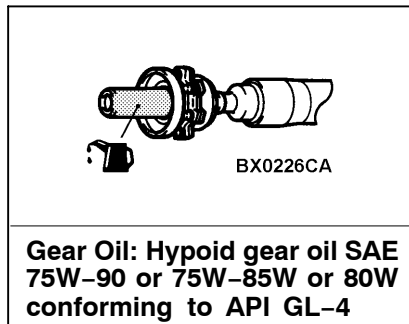
## REMOVAL AND INSTALLATION

### Pre-removal Operation

Wrap the rubber sheet around the rear propeller shaft (prior to the removal)

### Post-installation Operation

- Remove the the rubber sheet, which is wrapped around the rear CFRP propeller shaft, and then visually check for any cracks. (After the installation of the rear CFRP propeller shaft)
- Transfer Gear Oil Supply  
(After the front propeller shaft installation)  
(M/T: Refer to GROUP 22 – On-vehicle Service.)  
(A/T: Refer to GROUP 23 – On-vehicle Service.)

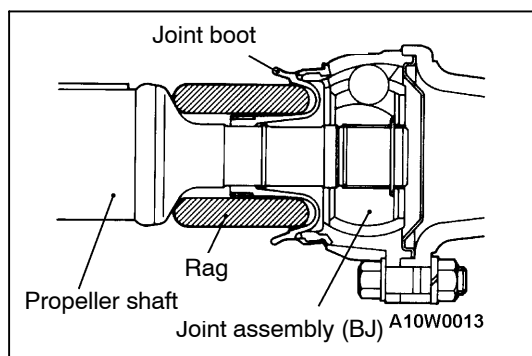


1. Front propeller shaft assembly
2. Rear propeller shaft assembly

## REMOVAL SERVICE POINTS

### ◀A▶ FRONT PROPELLER SHAFT ASSEMBLY REMOVAL

1. Set the transfer shift lever to “2H” range.
2. Drain the transfer gear oil.  
(M/T: Refer to GROUP 22 – On-vehicle Service.)  
(A/T: Refer to GROUP 23 – On-vehicle Service.)
3. Make mating marks on the differential companion flange and flange yoke.

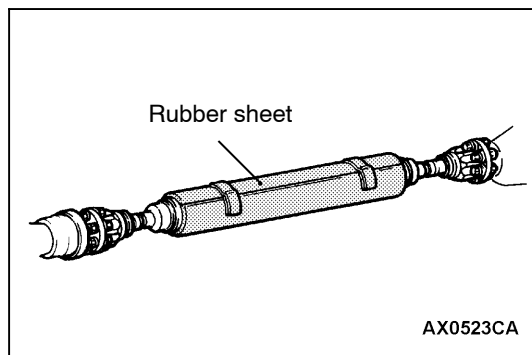


4. Wrap a rag around the joint boot, and then remove the front propeller shaft assembly.

#### Caution

**When removing the propeller shaft, be careful not to damage the joint boot by pinching it.**

5. Cover the transfer to prevent the entrance of foreign material.



### ◀B▶ REAR PROPELLER SHAFT ASSEMBLY REMOVAL <Vehicles with CFRP propeller shaft>

1. Ensure that the rear propeller shaft assembly is wrapped by the rubber sheet. <Vehicles with CFRP propeller shaft>

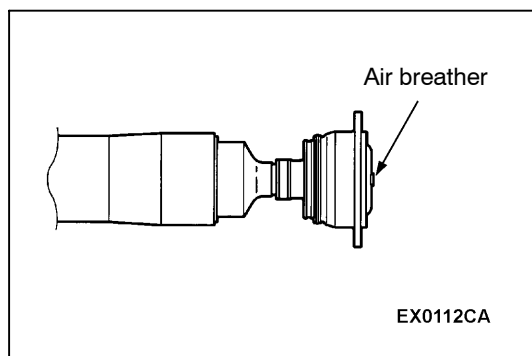
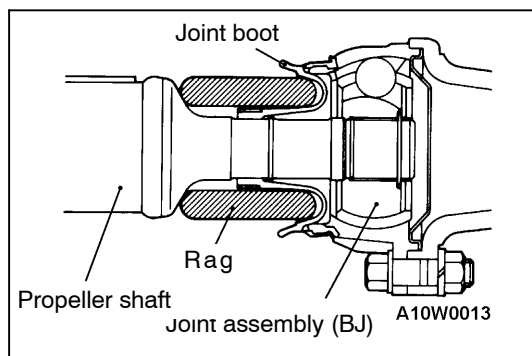
#### Caution

**Ensure that the rubber sheet is wrapped around the rear propeller shaft assembly to avoid damage.**

2. Make mating marks on the differential companion flange and the BJ assembly outer race.
3. Wrap a rag around the joint boot, and then remove the rear propeller shaft assembly.

#### Caution

**(1) When removing the propeller shaft, be careful not to damage the joint boot by pinching it.**

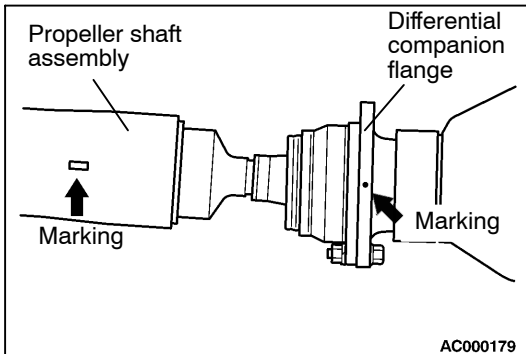
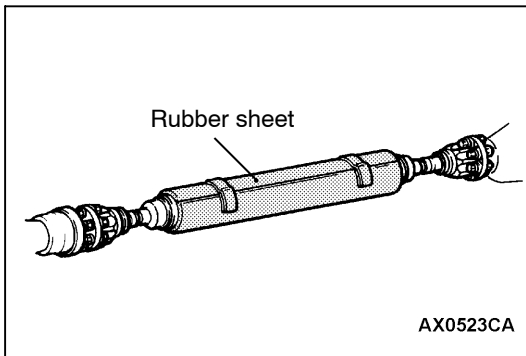


**(2) The air breather is located at the rear end of the rear propeller shaft. Be careful not to drop the air breather into the BJ.**

**(3) Be careful not to impact or damage the propeller shaft.**

**(4) If the propeller shaft has been dropped accidentally, replace it. <Vehicles with CFRP propeller shaft>**

4. Cover the transfer to prevent the entrance of foreign material.



## INSTALLATION SERVICE POINTS

### ►A◄ REAR PROPELLER SHAFT ASSEMBLY INSTALLATION <Vehicles with CFRP propeller shaft>

Ensure that the rubber sheet is wrapped around the rear propeller shaft assembly. <Vehicles with CFRP propeller shaft>

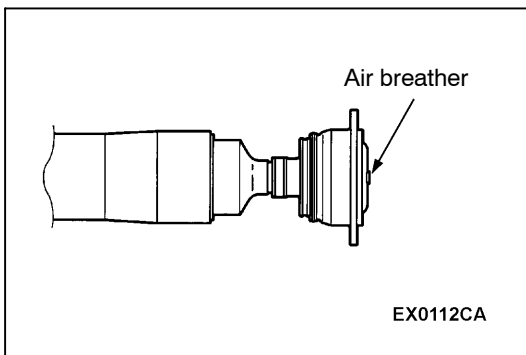
#### Caution

**Ensure that the rubber sheet is wrapped around the rear propeller shaft assembly to avoid damage. Also, do not impact or damage the rear propeller shaft.**

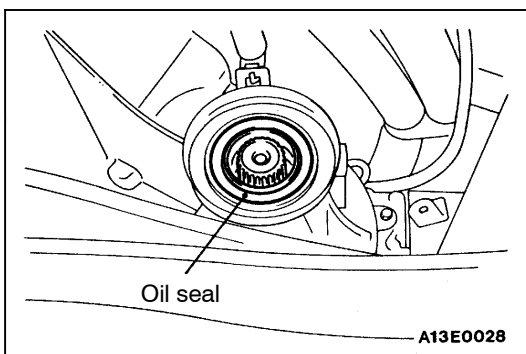
- (1) When reusing the propeller shaft, align the mating marks and install the propeller shaft.
- (2) When the rear propeller shaft assembly is installed, position it so that the marking on the propeller shaft assembly is closest to that on the differential companion flange (within 30° for BJ type propeller shaft, within 45° for universal joint type propeller shaft).

#### Caution

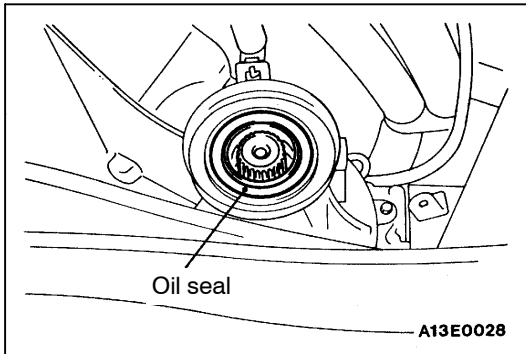
- (1) Wipe out oil and grease on the threads of the mounting bolts and nuts before tightening, or they will loosen.
- (2) Be careful not to impact or damage the propeller shaft.
- (3) If the propeller shaft has been dropped accidentally, replace it. <Vehicles with CFRP propeller shaft>



- (4) The air breather is located at the rear end of the rear propeller shaft. Be careful not to drop the air breather into the BJ. <BJ type propeller shaft>



- (5) Do not damage the oil seal lips of the transfer.

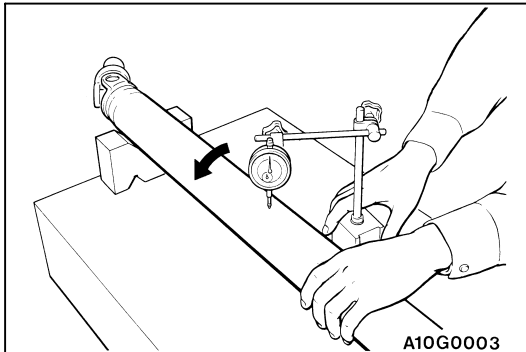


## ►B◄ FRONT PROPELLER SHAFT ASSEMBLY INSTALLATION

When reusing the propeller shaft, align the mating marks and install the propeller shaft.

### Caution

1. Do not damage the oil seal lips of the transfer.
2. Wipe out oil and grease on the threads of the mounting bolts and nuts before tightening, or they will loosen.



## INSPECTION

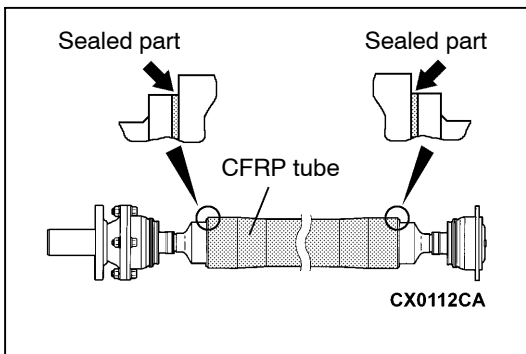
### PROPELLER SHAFT RUNOUT

#### Limit:

Front propeller shaft: 0.5 mm

Rear propeller shaft

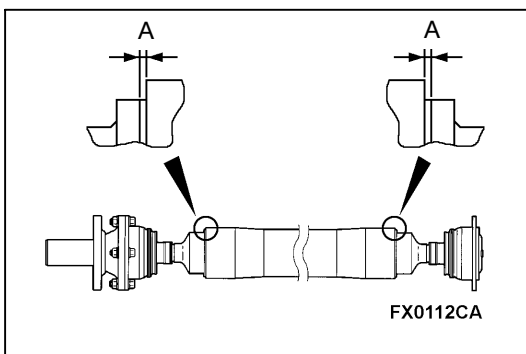
<Vehicles without CFRP propeller shaft>: 0.4 mm



## REAR PROPELLER SHAFT

### <Vehicles with CFRP propeller shaft>

1. Replace the propeller shaft if cracks or peelings are found at the sealed part.
2. Check the tube for cracks, chips or bends and replace the propeller shaft if damage is found. If defective, check for damage by a dye penetrant method.

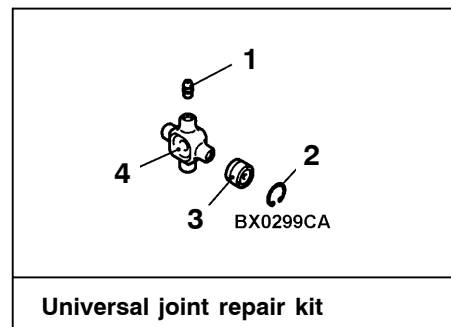
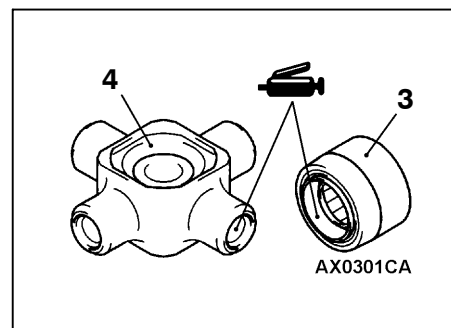
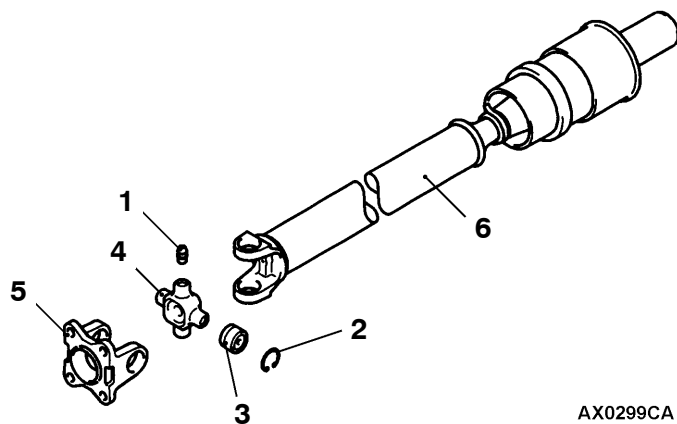


3. Measure clearance (A) between the tube end and the shaft.

**Standard value (A) : 0.2 – 0.5 mm**

4. If the standard value is not met, replace the rear propeller shaft.

# DISASSEMBLY AND REASSEMBLY FRONT PROPELLER SHAFT



## Disassembly steps



1. Grease fitting
2. Snap ring
3. Journal bearing

4. Journal
5. Flange yoke
6. Propeller shaft

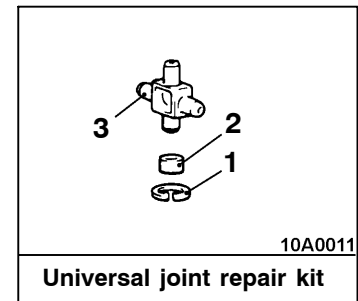
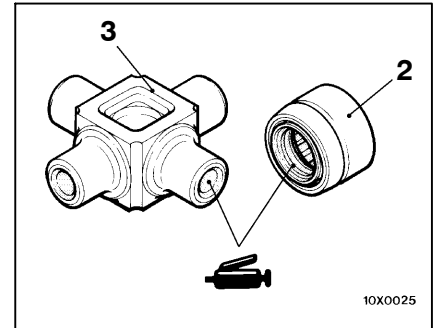
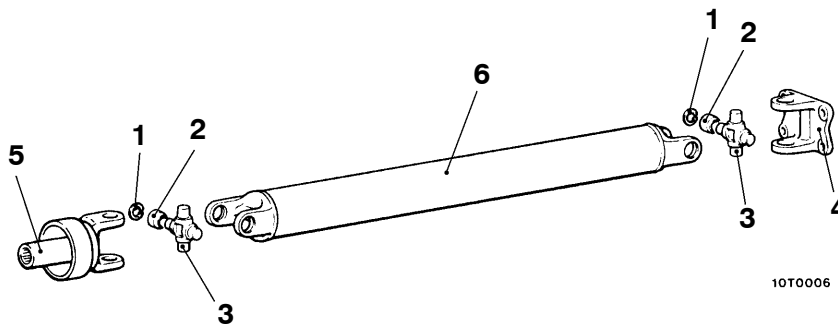
## REAR PROPELLER SHAFT

<BJ type propeller shaft>

### Caution

BJ type propeller shaft is non-serviceable.

<Universal joint type propeller shaft>



Universal joint repair kit

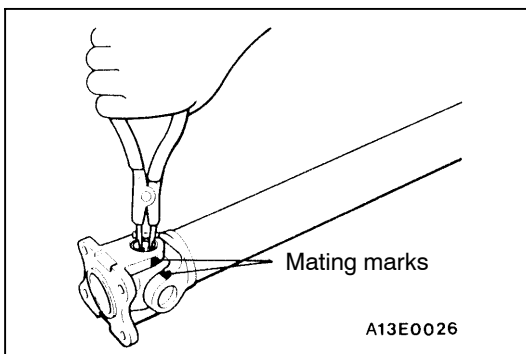
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### Disassembly steps



1. Snap ring
2. Journal bearing
3. Journal

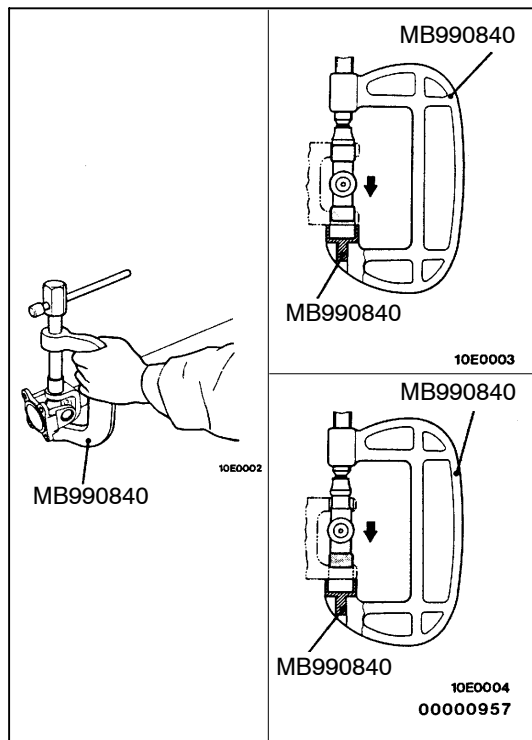
4. Flange yoke
5. Sleeve yoke
6. Propeller shaft



## DISASSEMBLY SERVICE POINTS

### ◀A▶ SNAP RING REMOVAL

Make mating marks on the flange yoke, sleeve yoke and propeller shaft. Then, remove the snap rings.

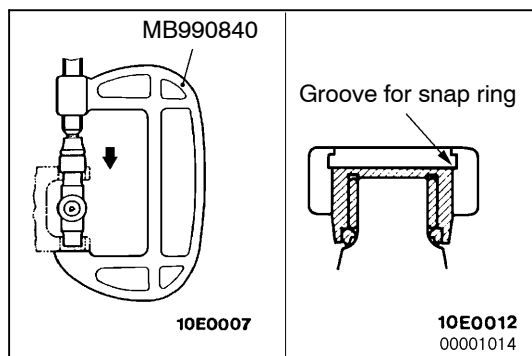


## ◀B▶ JOURNAL BEARING REMOVAL

1. Using the special tools, press in the journal bearing to remove the journal bearing on the opposite side.
2. Set the special tools reverse to press in the journal. Then, pull out the journal bearing pressed in step 1.

### Caution

**Do not tap the journal bearing to remove. Tapping the journal bearing will upset the balance of the propeller shaft.**



## REASSEMBLY SERVICE POINTS

### ▶A◀ JOURNAL BEARING INSTALLATION

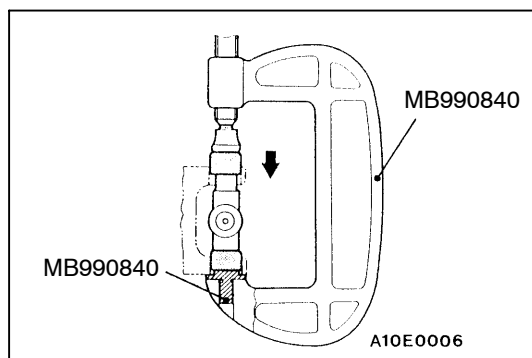
1. Using the special tool, press in the journal bearing to the yoke until the snap ring groove can be seen completely.

2. Using the special tools, press in the journal bearing on the opposite side to the yoke.

### Caution

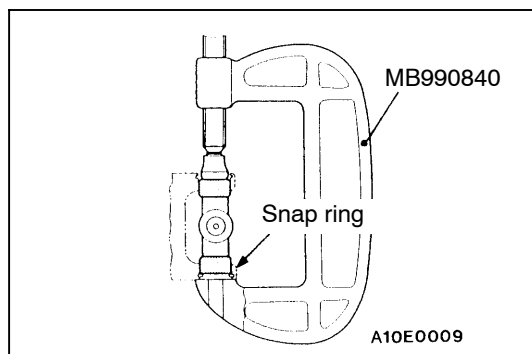
**Press in the journal bearing straight, or the journal could damage the inside of the journal bearing.**

3. Align the mating marks on the yoke and propeller shaft. On the propeller shaft side, install the journal bearing in the same steps of 1 and 2.

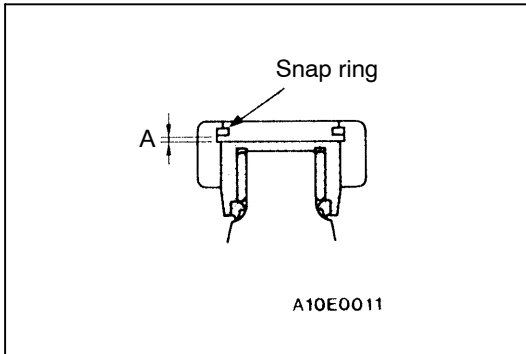


### ▶B◀ SNAP RING INSTALLATION

1. Install the snap ring to one side of the journal.
2. Using the special tool, press in the journal bearing toward the snap ring from the opposite side which the snap ring has been installed on.







3. Install the snap ring on the opposite side and measure the clearance of the snap ring groove with a thickness gauge.

**Standard value (A) : 0 – 0.06 mm**

**Caution**

**Always use snap rings of the same thickness on both sides.**

4. If the standard value(s) are not met, use other snap rings to adjust the clearance.

Items	Thickness mm	Identification colour
Front propeller shaft, Rear propeller shaft	1.28	–
	1.31	Yellow
	1.34	Blue
	1.37	Purple
Rear propeller shaft	1.40	Brown