**PREPARATION**

**SST (SPECIAL SERVICE TOOLS)**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>09325–20010</td>
<td>Transmission Oil Plug</td>
<td>2JZ–GE M/T</td>
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<tr>
<td>09325–40010</td>
<td>Transmission Oil Plug</td>
<td>2JZ–GE A/T</td>
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<tr>
<td>09330–00021</td>
<td>Companion Flange Holding Tool</td>
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<tr>
<td>09330–50010</td>
<td>Propeller Shaft Center Bearing Replacer</td>
<td>2JZ–GE</td>
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<tr>
<td>09370–50010</td>
<td>Drive Line Angle Gauge</td>
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<tr>
<td>09608–12010</td>
<td>Front Hub &amp; Drive Pinion Bearing Replacer Set</td>
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<tr>
<td>(09608–00070)</td>
<td>Drive Pinion Rear Bearing Cone Replacer</td>
<td>Center support bearing</td>
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<td>09608–35014</td>
<td>Axle Hub &amp; Drive Pinion Bearing Tool Set</td>
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<tr>
<td>(09608–06040)</td>
<td>Front Hub Inner Bearing Cone Replacer</td>
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<tr>
<td>09922–10010</td>
<td>Variable Open Wrench</td>
<td>Adjusting nut</td>
</tr>
<tr>
<td>09950–00020</td>
<td>Bearing Remover</td>
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**RECOMMENDED TOOLS**

<table>
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<tr>
<th>Part Number</th>
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<tbody>
<tr>
<td>09905–00012</td>
<td>Snap Ring No. 1 Expander</td>
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## EQUIPMENT

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<tr>
<td>Torque wrench</td>
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<tr>
<td>Dial indicator</td>
<td></td>
</tr>
<tr>
<td>Vernier calipers</td>
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</table>
**PRECAUTION**

Be careful not to grip the propeller shaft tube too tightly in the vise as this will cause deformation.

**TROUBLESHOOTING**

Use the table to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, replace these parts.

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Parts Name</th>
<th>See Page</th>
</tr>
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<tbody>
<tr>
<td>Noise</td>
<td>Sleeve yoke spline worn</td>
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<tr>
<td></td>
<td>Spider bearing worn or stuck</td>
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<tr>
<td></td>
<td>Flexible rubber coupling worn</td>
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**PRECAUTION**

Be careful not to grip the propeller shaft tube too tightly in the vise as this will cause deformation.

**TROUBLESHOOTING**

Use the table to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, replace these parts.

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Parts Name</th>
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<th>PR-9</th>
<th>PR-10</th>
<th>PR-12</th>
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PROPELLER SHAFT

COMPONENTS

2JZ-GTE

Adjusting Washer
Adjusting Shim
Mount Upper Stopper
Heat Insulator
Center Floor Crossmember Brace
Sport Roof
Oxygen Sensor
Heat Insulator
Gasket
Exhaust Pipe
Dust Deflector
Dust Boot
Snap Ring
Propeller Shaft
Intermediate Shaft Sub-assembly
Snap Ring
Center Support Bearing

◆ Non-reusable part
PROPELLER SHAFT REMOVAL

1. REMOVE OXYGEN SENSOR
   (a) Remove the 2 bolts.
   (b) Remove the oxygen sensor and heat insulator

2. REMOVE EXHAUST PIPE
   (a) Remove the 2 bolts on the transmission side.
   (b) Remove the 2 bolts and nuts, and pipe support bracket.
   (c) Remove the 2 exhaust pipe support rings.
   (d) Remove the 2 exhaust pipe support O–rings.
   (e) Remove the exhaust pipe.
   (f) Remove the gasket.

3. REMOVE HEAT INSULATOR
   Remove the 4 nuts and heat insulator.

4. REMOVE CENTER FLOOR CROSSMEMBER BRACE
   Normal Roof:
   Remove the 4 bolts and crossmember brace.
   Sport Roof:
   Remove the 6 bolts and crossmember brace.

5. REMOVE PROPELLER SHAFT
   2JZ–GTE:
   (a) Using SST, loosen the adjusting nut until it can be turned by hand.
       SST 09922–10010
       HINT: Use 2 of the same type of SST.
   (b) Place the matchmarks on the differential companion flange and flexible coupling.
   (c) Remove the 3 bolts inserted in the differential companion flange.
       NOTICE: The bolts inserted in the propeller shaft companion flange should not be removed.
   (d) Separate the flexible coupling from the differential side.
       HINT: If the flexible coupling cannot be easily separated by hand, insert a screwdriver into the bolt hole of the flexible coupling, as shown in the illustration, then pry the coupling out.
       NOTICE: Do not bring the screwdriver blade in direct contact with the flexible coupling’s rubber portion.
(e) Place matchmarks on the transmission companion flange and propeller shaft flanges.
(f) Remove the 4 washers and nuts.

(g) Remove the 2 center support bearing set bolts and the adjusting washers.
   HINT: Some vehicles are not equipped with an adjusting washer.
   NOTICE: When removing the set bolts, support the center support bearing by hand so that the transmission and intermediate shaft, and propeller shaft and differential, remain in a straight line.

(h) Remove the propeller shaft from the transmission.
(i) Push the rear propeller shaft straight forward to compress the propeller shaft and pull out the propeller shaft from the centering pin of the differential.
   NOTICE: Press the propeller shaft straight ahead to keep the transmission and intermediate shaft aligned straight.

(j) Pull the propeller shaft out toward the vehicle’s rear.
   NOTICE: The intermediate shaft and propeller shaft should not be separated.

2JZ–GE:
(a) Remove the 2 center support bearing set bolts and the adjusting washers.
   HINT: Production vehicles are not equipped with adjusting washers.
   NOTICE: When removing the set bolts, support the center support bearing by hand so that the transmission and intermediate shaft, and propeller shaft and differential, remain in a straight line.

(b) Place the matchmarks on the differential companion flange and flexible coupling.
(c) Remove the 3 bolts inserted in the differential companion flange.
   NOTICE: The bolts inserted in the propeller shaft companion flange should not be removed.
(d) Separate the flexible coupling from the differential side.  
HINT: If the flexible coupling cannot be easily separated by hand, insert a screwdriver into the bolt hole of the flexible coupling, as shown in the illustration then pry the coupling out. 
NOTICE: Do not bring the screwdriver blade in direct contact with the flexible coupling’s rubber portion. 

(e) Pull the yoke from the transmission. 

(f) Install SST in the transmission to prevent oil leakage. 
SST 09325–20010 (M/T)  
09325–40010 (A/T) 

CENTER SUPPORT BEARING AND FLEXIBLE COUPLINGS INSPECTION 

1. INSPECT CENTER SUPPORT BEARING  
• Check for cracks in or damage to the cushion.  
• Check if the bearing turns smoothly.  
If the center support bearing is damaged, worn or does not turn smoothly, replace it.

2. INSPECT FLEXIBLE COUPLINGS  
• Check for cracks in or damage to rear flexible couplings.  
If the flexible coupling is damaged, replace the propeller shaft assembly.

3. INSPECT FLEXIBLE COUPLING CENTERING BUSHING  
• Check for damage to the bushing.  
If the bushing is damaged, replace the propeller shaft assembly.
CENTER SUPPORT BEARING REPLACEMENT

2JZ–GTE:

1. SEPARATE INTERMEDIATE SHAFT AND PROPELLER SHAFT
   (a) Place matchmarks on the intermediate shaft and propeller shaft.
   (b) Separate the intermediate shaft and propeller shaft.
   (c) Remove the dust boot from the propeller shaft.
      HINT: If the dust boot is reused, remove it after wrapping vinyl tape around the spline, so it will not be damaged.

2. REMOVE CENTER SUPPORT BEARING
   (a) Using a snap ring expander, remove the snap ring.
   (b) Using SST, remove the center support bearing with dust deflector.
      SST 09950–00020

3. INSPECT RUNOUT OF INTERMEDIATE SHAFT AND PROPELLER SHAFT
   Maximum runout:
   0.8 mm (0.031 in.)
   If the runout is greater than the maximum, replace the propeller shaft assembly.

4. INSPECT SPIDER BEARING
   • Check if the spider bearing rotates smoothly.
   • Check if there is any play in the spider bearing.
   If necessary, replace the propeller shaft assembly.

5. INSTALL CENTER SUPPORT BEARING
   (a) Using SST and a press, install the center support bearing.
      SST 09330–50010
(b) Using SST and a press, insert a new dust deflector until it almost touches the rubber of the center support bearing. SST 09608–12010 (09608–00070), 09608–35014 (09608–06040)

(c) Using SST and a press, install the dust deflector to the end. SST 09330–50010

(d) Using a snap ring expander, install a new snap ring.

6. ASSEMBLE INTERMEDIATE SHAFT AND PROPELLER SHAFT

(a) Install the dust boot.

NOTICE: Assemble after wrapping vinyl tape around the spline so it will not damage the boot.

(b) Apply grease to the spline.

Grease:
Molybdenum disulphide lithium base, NLGI No.2.

(c) Align the matchmarks and assemble the intermediate shaft and propeller shaft.

(d) Cover the adjusting nut with the dust boot.

(e) Tighten the adjusting nut fully by hand.

2JZ–GE:

1. SEPARATE PROPELLER SHAFT AND INTERMEDIATE SHAFT

(a) Place the matchmarks on the flanges.

(b) Remove the 4 bolts, washers and nuts.
2. REMOVE CENTER SUPPORT BEARING FROM INTERMEDIATE SHAFT
   (a) Using a hammer and chisel, loosen the staked part of the nut.
   (b) Using SST to hold the flange, remove the nut.
       SST 09930–00021
   (c) Remove the 2 washers.
   (d) Place matchmarks on the flange and intermediate shaft.
   (e) Using a brass bar and hammer, remove the flange, 2 washers
       and center support bearing from the intermediate shaft.

3. INSPECT RUNOUT OF INTERMEDIATE SHAFT AND PROPELLER SHAFT
   Maximum runout:
   0.8 mm (0.031 in.)
   If the runout is greater than the maximum, replace the propeller shaft assembly.

4. INSPECT SPIDER BEARING
   • Check if the spider bearing rotates smoothly.
   • Check if there is any play in the spider bearing.
   If necessary, replace the propeller shaft assembly.

5. INSTALL CENTER SUPPORT BEARING ON INTERMEDIATE SHAFT
   HINT: Install the center support bearing in the direction, as shown and install the 2 washers.
6. INSTALL FLANGE ON INTERMEDIATE SHAFT
(a) Coat the spline of the intermediate shaft with MP grease.
(b) Place the flange on the shaft and align the matchmarks.
   HINT: If replacing either the center flange or intermediate
   shaft, reassemble them so that the front yoke of the inter-
   mediate shaft and the rear yoke of the propeller shaft are fac-
   ing in the same direction.
(c) Install the 2 washers.
(d) Using SST to hold the flange, press the bearing into position
   by tightening down a new nut.
   SST 09330–00021
   Torque: 181 N·m (1,850 kgf·cm, 134 ft·lbf)
(e) Loosen the nut.
(f) Torque the nut again.
   Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)
(g) Using a hammer and punch, stake the shaft.

7. INSTALL PROPELLER SHAFT
(a) Align the matchmarks on the flanges and connect the flanges
    with 4 bolts, washers and nuts.
    HINT: If replacing either the center flange or intermediate
    shaft, reassemble them so that the front yoke of the inter-
    mediate shaft and the rear yoke of the propeller shaft are fac-
    ing in the same direction.
(b) Torque the 4 bolts and nuts.
    Torque: 74 N·m (750 kgf·cm, 54 ft·lbf)

PROPELLER SHAFT INSTALLATION
1. INSTALL PROPELLER SHAFT
(a) Apply grease to the flexible coupling centering bushings.
   Grease:
   Molybdenum disulphide lithium base, NLGI No. 1 or
   No. 2.
   2JZ–GTE:
   (a) Align the matchmarks on the flanges and connect the flanges
       with the 4 nuts and washers.
   (b) Torque the 4 nuts.
       Torque: 56 N·m (570 kgf·cm, 41 ft·lbf)
   (c) Insert the propeller shaft from the vehicle’s rear and connect
       the transmission and differential.
       NOTICE: Support the center support bearing by hand so
       that the transmission and intermediate shaft, and propell-
       er shaft and differential, remain in a straight line.
(d) Temporarily install the center support bearing set bolts with the adjusting washers.
HINT: Use the adjusting washers which were removed.
(e) Align the matchmarks and install the propeller shaft on the differential with the 3 bolts, washers and nuts.
NOTICE: Bolts should be inserted from the propeller shaft side.
Torque: 79 N·m (805 kgf·cm, 58 ft.lbf)

If using a new propeller shaft
w/ Phasemarks:
Install the propeller shaft phasemarks and differential phase marks so that their respective alignment phasemarks match. If the propeller shaft phasemarks and differential phase marks do not align, install the propeller shaft and differential alignment phasemarks as close together as possible.
w/o Phasemarks:
Install the propeller shaft.
(See page PR–13)

(f) Torque the 2 center support bearing set bolts.
Torque: 49 N·m (500 kgf·cm, 36 ft.lbf)
HINT: Adjust the center support bearing to keep the dimension, as shown with the vehicle in the unladen condition. Under the same condition, check if the center line of the center support bearing is at right angles to the shaft axial direction.

(g) Using SST, torque the adjusting nut.
SST 09922–10010
Torque: 50 N·m (515 kgf·cm, 37 ft.lbf)
HINT: Use torque wrench with a fulcrum length of 34.5 cm (13.6 in.)
2JZ–GE:
(a) Remove SST.
(b) Insert the propeller shaft to the transmission.
(c) Insert the propeller shaft from the vehicle's rear and connect the transmission and differential.

**NOTICE:** Support the center support bearing by hand so that the transmission and intermediate shaft, and propeller shaft and differential, remain in a straight line.

(d) Temporarily install the center support bearing set bolts with the adjusting washers.
**HINT:** Use the adjusting washers which were removed.

(e) Align the matchmarks and install the propeller shaft on the differential with the 3 bolts, washers and nuts.

**NOTICE:** Bolts should be inserted from the propeller shaft side.
**Torque:** 79 N·m (805 kgf·cm, 58 ft·lbf)

If using a new propeller shaft
**w/ Phase marks:**
Install the propeller shaft phasemarks and differential phasemarks so that their respective alignment phasemarks match. If the propeller shaft phasemarks and differential phasemarks do not align, install the propeller shaft and differential alignment phasemarks as close together as possible.

**w/o Phase marks:**
Install the propeller shaft.
(See page PR–13)

(f) Torque the 2 center support bearing set bolts.

**Torque:** 49 N·m (500 kgf·cm, 36 ft·lbf)

**HINT:** Adjust the center support bearing to keep the dimension, as shown with the vehicle in the unladen condition. Under the same condition, check if the center line of the center support bearing is at right angles to the shaft axial direction.
2. **INSPECT PROPELLER SHAFT JOINT ANGLE**  
(See page PR–17)  
**NOTICE:** The joint angle should be checked when the propeller shaft is removed and installed.

3. **INSTALL CROSSMEMBER BRACE**  
Normal Roof:  
Install the center floor crossmember brace and torque the 4 bolts.  
**Torque:** 13 N·m (130 kgf·cm, 8 ft·lbf)  
Sport Roof:  
Install the center floor crossmember brace and torque the 6 bolts.  
**Torque:** 13 N·m (130 kgf·cm, 8 ft·lbf)

4. **INSTALL HEAT INSULATOR**  
Install the heat insulator and torque the 4 nuts.  
**Torque:** 5.4 N·m (55 kgf·cm, 48 in·lbf)

5. **INSTALL EXHAUST PIPE**  
(a) Install a new gasket.  
(b) Insert the exhaust pipe.  
(c) Install the exhaust pipe to the 2 exhaust pipe support rings.  
(d) Install the exhaust pipe to the 2 exhaust pipe support O–rings.  
(e) Temporary install the pipe support bracket to the transmission with 2 bolts.  
(f) Install the exhaust pipe with the 2 bolts and new 2 nuts.  
**Torque:** 58 N·m (590 kgf·cm, 43 ft·lbf)  
(g) Torque the 2 bolts.  
**Torque:** 37 N·m (380 kgf·cm, 27 ft·lbf)

6. **INSTALL OXYGEN SENSOR**  
(a) Install the oxygen sensor with heat insulator.  
**NOTICE:** After installing the oxygen sensor, check that the wire is not twisted.  
(b) Torque the 2 nuts.  
**Torque:** 44 N·m (450 kgf·cm, 34 ft·lbf)
JOINT ANGLE INSPECTION AND ADJUSTMENT

NOTICE: When doing operations which involve the removal and installation of the propeller shaft, always check the joint. Make adjustments if necessary.

1. STABILIZE PROPELLER SHAFT AND DIFFERENTIAL
   (a) Turn the propeller shaft several times by hand to stabilize the center support bearing and flexible couplings.
   (b) Using a jack, raise and lower the differential to stabilize the differential mounting cushion.

2. CHECK JOINT ANGLE OF NO.2 JOINT AND NO.3 JOINT
   (a) Using SST, measure the installation angle of the intermediate shaft and propeller shaft.
      SST 09370–50010
      HINT: The SST should be directly underneath the tube.
   (b) Using SST, measure the installation angle of the differential.
      SST 09370–50010
      HINT: Measure the installation angle by placing the SST in the position, as shown in the illustration.
(c) Calculate the No.2 joint angle.
   **No.2 joint angle:**
   \[
   A - B = -1^\circ 09' \pm 36'
   \]
   A: Intermediate shaft installation angle
   B: Propeller shaft installation angle

(d) Calculate the No.3 joint angle.
   **No.3 joint angle:**
   \[
   B - C = 44' \pm 36'
   \]
   B: Propeller shaft installation angle
   C: Differential installation angle

If the measured angle is not within the specification, adjust it with the center support bearing adjusting washer, differential mount upper stopper and adjusting shim.
ADJUSTMENT CHART

HOW TO READ THIS CHART
Take measurements, then calculate the No.2 and No 3 joint angle.
Mark the calculated values on the chart and read the coordinates.
Replace the adjusting washer, shim and mount upper stopper in accordance with the coordinates read and adjust the joint angles.

Example
Measurements (Installation angle):
- Intermediate shaft 1° 50’
- Propeller shaft 2° 14’
- Differential 2° 15’
Joint angle:
- NO.2 1° 50’ – 2° 14’ = –24’
- NO.3 2° 14’ – 2° 15’ = –1’

Adjustment:
- Center support bearing
  Standard parts 4 mm – 2 mm = 2 mm
  Use adjusting washers which are 2 mm (0.079 in.) thicker.
- Differential
  Use adjusting shims which are 1.6 mm (0.063 in.) thicker.
HINT:
- Maintain the same thickness for the adjusting washers and adjusting shims on both the left and right sides.
- If a washer, stopper and shim of the exact thickness are not available, use the parts which are nearest in thickness.

NOTICE: Check the joint angle once again after making the adjustment.
## SERVICE SPECIFICATIONS

### SERVICE DATA

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<tr>
<td>No.2 joint</td>
<td>–1° 09’ ± 36’</td>
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<tr>
<td>No.3 joint</td>
<td>44’ ± 36’</td>
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### TORQUE SPECIFICATIONS

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<td>Exhaust pipe support bracket X Transmission</td>
<td>37</td>
<td>380</td>
<td>27</td>
</tr>
</tbody>
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( ): For use without SST