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< PRECAUTION >

# PRECAUTION

PRECAUTIONS

Precaution for Technicians Using Medical Electric

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#### OPERATION PROHIBITION

#### WARNING:

- Parts with strong magnet is used in this vehicle.
- Technicians using a medical electric device such as pacemaker must never perform operation on the vehicle, as magnetic field can affect the device function by approaching to such parts.

#### NORMAL CHARGE PRECAUTION

#### WARNING:

- If a technician uses a medical electric device such as an implantable cardiac pacemaker or an implantable cardioverter defibrillator, the possible effects on the devices must be checked with the device manufacturer before starting the charge operation.
- As radiated electromagnetic wave generated by PDM (Power Delivery Module) at normal charge operation may affect medical electric devices, a technician using a medical electric device such as implantable cardiac pacemaker or an implantable cardioverter defibrillator must not approach motor room [PDM (Power Delivery Module)] at the hood-opened condition during normal charge operation.

#### PRECAUTION AT TELEMATICS SYSTEM OPERATION

#### WARNING:

- If a technician uses implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), avoid the device implanted part from approaching within approximately 220 mm (8.66 in) from interior/exterior antenna.
- The electromagnetic wave of TCU might affect the function of the implantable cardiac pacemaker or the implantable cardioverter defibrillator (ICD), when using the service, etc.
- If a technician uses other medical electric devices than implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), the electromagnetic wave of TCU might affect the function of the device. The possible effects on the devices must be checked with the device manufacturer before TCU use.

#### PRECAUTION AT INTELLIGENT KEY SYSTEM OPERATION

#### WARNING:

- If a technician uses implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), avoid the device implanted part from approaching within approximately 220 mm (8.66 in) from interior/exterior antenna.
- The electromagnetic wave of Intelligent Key might affect the function of the implantable cardiac pacemaker or the implantable cardioverter defibrillator (ICD), at door operation, at each request switch operation, or at engine starting.
- If a technician uses other medical electric devices than implantable cardiac pacemaker or implantable cardioverter defibrillator (ICD), the electromagnetic wave of Intelligent Key might affect the function of the device. The possible effects on the devices must be checked with the device manufacturer before Intelligent Key use.

Point to Be Checked Before Starting Maintenance Work

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The high voltage system may starts automatically. It is required to check that the timer air conditioner and timer charge (during EVSE connection) are not set before starting maintenance work. NOTE:

If the timer air conditioner or timer charge (during EVSE connection) is set, the high voltage system starts automatically even when the power switch is in OFF state.

# Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS

#### **Revision: October 2013**

# PRECAUTIONS

#### < PRECAUTION >

system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

#### WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this FAX Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

#### PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

#### WARNING:

- When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery and wait at least three minutes before performing any service.

Pro	ecaution for Removing 12V Battery	INFOID:000000008746309	
1.	Check that EVSE is not connected.		Н
	If EVSE is connected, the air conditioning system may be automatically activated by the t	imer A/C func-	
2. 3.	Turn the power switch OFF $\rightarrow$ ON $\rightarrow$ OFF. Get out of the vehicle. Close all doors (including Check that the charge status indicator lamp does not blink and wait for 5 minutes or more.	) back door).	
	If the battery is removed within 5 minutes after the power switch is turned OFF, plural detected	DTCs may be	J
4.	Remove 12V battery within 1 hour after turning the power switch OFF $\rightarrow$ ON $\rightarrow$ OFF.		K
	<ul> <li>The 12V battery automatic charge control may start automatically even when the pow OFF state</li> </ul>	ver switch is in	
	<ul> <li>Once the power switch is turned ON → OFF, the 12V battery automatic charge control do approximately 1 hour.</li> <li>CAUTION:</li> </ul>	bes not start for	L
	<ul> <li>After all doors (including back door) are closed, if a door (including back door) is obattery terminals are disconnected, start over from Step 1.</li> <li>After turning the power switch OFF, if "Remote A/C" is activated by user operation</li> </ul>	opened before n, stop the air	Μ
_	conditioner and start over from Step 1.		Ν
Pro	ecautions for Drive Shaft	INFOID:000000008746310	
0b • N • P	serve the following precautions when disassembling and assembling drive shaft. lever disassemble joint sub-assembly because it is non-overhaul parts. Perform work in a location which is as dust-free as possible.		0

- Clean the parts, before disassembling and assembling.
- Prevent the entry of foreign objects during disassembly of the service location.
- Reassemble disassembled parts carefully in the correct order. If work is interrupted, a clean cover must be placed over parts.
- Use paper waste. Fabric shop cloths must not be used because of the danger of lint adhering to parts.
- Clean disassembled parts (except for rubber parts) with kerosene which shall be removed by blowing with air or wiping with paper waste.

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# < PREPARATION >

# PREPARATION

# PREPARATION

# **Special Service Tools**

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#### The actual shape of the tools may differ from those illustrated here.



# PREPARATION

# < PREPARATION >

# **Commercial Service Tools**

Tool name		Description	
Drive shaft puller		Removing drive shaft joint sub assembly	
	JPDIG0152ZZ		F
Sliding hammer		Removing drive shaft	
	ZZA0023D		
Ball joint remover		Removing hub bolt	
	PATP		
	NT146		
Power tool		Loosening nuts, screws and bolts	
	⊂¶ PIIB1407E		

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# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING < SYMPTOM DIAGNOSIS >

# SYMPTOM DIAGNOSIS NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

# NVH Troubleshooting Chart

Les abort below to find the square of the symptom. If personally repair or replace these parts

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Reference		I	FAX-32	I	FAX-9	I	FAX-7	FSU-9	I	<u>WT-46</u>	<u>WT-46</u>	I	<u>BR-503</u>	<u>ST-32</u>	
Possible cause and SUSPECTED PARTS		Excessive joint angle	Joint sliding resistance	Imbalance	Improper installation, looseness	Parts interference	Wheel bearing damage	FRONT SUSPENSION	FRONT AXLE	TIRE	ROAD WHEEL	DRIVE SHAFT	BRAKE	STEERING	
	DRIVE SHAFT	Noise	×	×				×	×	×	×	×		×	×
		Shake	×		×			×	×	×	×	×		×	×
	FRONT AXLE	Noise				×	×	×	×		×	×	×	×	×
Symptom		Shake				×	×	×	×		×	×	×	×	×
Symptom		Vibration				×	×	×	×		×		×		×
		Shimmy				×	×		×		×	×		×	×
		Judder				×			×		×	×		×	×
		Poor quality ride or handling				×	×		×		×	×			

 $\times$ : Applicable

< PERIODIC MAINTENANCE >

# PERIODIC MAINTENANCE FRONT WHEEL HUB AND KNUCKLE

#### Inspection

#### COMPONENT PART

Check that the mounting conditions (looseness, backlash) of each component and component conditions (wear, damage) are normal.

#### WHEEL HUB ASSEMBLY (BEARING-INTEGRATED TYPE)

Check the following items, and replace the part if necessary.

· Move wheel hub assembly in the axial direction by hand. Check there is no looseness of wheel bearing.

#### Axial end play : Refer to FAX-33, "Wheel Bearing".

- Rotate wheel hub assembly and check there is no unusual noise or other irregular conditions. If there is any of irregular conditions, replace wheel hub assembly.
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< PERIODIC MAINTENANCE >

# FRONT DRIVE SHAFT

# Inspection

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Check the following items, and replace the part if necessary.

• Check drive shaft mounting point and joint for looseness and other damage. CAUTION:

Replace entire drive shaft assembly when noise or vibration occurs from drive shaft.

• Check boot for cracks and other damage.

# < REMOVAL AND INSTALLATION >

# REMOVAL AND INSTALLATION FRONT WHEEL HUB AND KNUCKLE

# **Exploded View**

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# FRONT WHEEL HUB AND KNUCKLE

#### < REMOVAL AND INSTALLATION >

- Put matching marks (A) on the wheel hub assembly and the disc rotor before removing the disc rotor.
- Never drop disc rotor.



- Remove cotter pin and nut retainer, and then loosen wheel hub lock nut, using a hub lock nut wrench (A) [SST: KV40104000 ( — )].
  - PDIA1180J

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- Patch wheel hub lock nut with a piece of wood. Hammer the wood to disengage wheel hub assembly from drive shaft.
   CAUTION:
   Never place drive shaft joint at an extreme angle Also be
  - Never place drive shaft joint at an extreme angle. Also be careful not to overextend slide joint.
  - Never allow drive shaft to hang down without support for joint sub-assembly, shaft and the other parts.
     NOTE:

Use suitable puller, if wheel hub assembly and drive shaft cannot be separated even after performing the above procedure.

- 8. Remove wheel hub lock nut.
- 9. Separate steering knuckle from transverse link with power tool.
- 10. Suspend the drive shaft with suitable wire.
- 11. Remove wheel hub assembly and splash guard from steering knuckle with power tool.
- 12. Remove steering outer socket from steering knuckle. Refer to ST-42, "Removal and Installation".
- 13. Remove strut assembly from steering knuckle with power tool. Refer to <u>FSU-13</u>, "<u>Removal and Installa-</u> <u>tion</u>".
- 14. Remove hub bolts (1) from wheel hub assembly, using the ball joint remover (A) (commercial service tool).CAUTION:
  - · Remove hub bolt only when necessary.
  - Never hammer the hub bolt to avoid impact to the wheel hub assembly.
  - Pull out the hub bolt in a direction perpendicular to the wheel hub assembly.
- 15. Perform inspection after removal. Refer to FAX-11, "Inspection".



# INSTALLATION

Note the following, and install in the reverse order of the removal.

# FRONT WHEEL HUB AND KNUCKLE

#### < REMOVAL AND INSTALLATION >

- Place a washer (A) as shown in the figure to install the hub bolts (1) by using the tightening force of the nut (B).
   CAUTION:
  - Check that there is no clearance between wheel hub assembly, and hub bolt.
  - Never reuse hub bolt.
- Never reuse steering knuckle and transverse link fixing nut.
- Clean the matching surface of wheel hub lock nut and wheel hub assembly.

#### **CAUTION:**

Never apply lubricating oil to these matching surface.

• Clean the matching surface of drive shaft, wheel hub assembly. And then apply paste [service parts (440037S000)] to surface (A) of joint sub-assembly of drive shaft.

#### **CAUTION:**

Apply paste to cover entire flat surface of joint sub-assembly of drive shaft.

Amount paste : 1.0 – 3.0 g (0.04 – 0.10 oz)

- Use the following torque for tightening the wheel hub lock nut. Refer to <u>FAX-18, "Exploded View"</u>. **CAUTION:**
- Since the drive shaft is assembled by press-fitting, use the tightening torque for the wheel hub lock nut.
- Be sure to use torque wrench to tighten the wheel hub lock nut. Never use a power tool.

#### Never reuse wheel hub lock nut.

#### NOTE:

Wheel hub lock nut tightening torque does not over torque for avoiding axle noise, and does not less than torque for avoiding looseness.

- · Align the matching marks that have been made during removal when reusing the disc rotor.
- When installing a cotter pin (1) and nut retainer (2), securely bend the basal portion to prevent rattles. **CAUTION:**

#### Never reuse cotter pin.

- Perform the final tightening of each of parts under unladen conditions, which were removed when removing wheel hub assembly and steering knuckle.
- Perform inspection after installation. Refer to FAX-11, "Inspection".



# Inspection



# INSPECTION AFTER REMOVAL

Check the following items, and replace the part if necessary.

- · Check components for deformation, cracks, and other damage.
- Check boots of transverse link and steering outer socket ball joint for breakage, axial end play, and swing P torque.
- Transverse link: Refer to FSU-17, "Inspection".
- Steering outer socket: Refer to <u>ST-45, "Inspection"</u>.

#### INSPECTION AFTER INSTALLATION

1. Check wheel sensor harness for proper connection. Refer to <u>BRC-172. "FRONT WHEEL SENSOR :</u> <u>Exploded View"</u>.

# **FAX-11**

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# FRONT WHEEL HUB AND KNUCKLE

#### < REMOVAL AND INSTALLATION >

- 2. Check the wheel alignment. Refer to FSU-11, "Inspection".
- 3. Adjust neutral position of steering angle sensor. Refer to <u>BRC-80, "Work Procedure"</u>.

# < REMOVAL AND INSTALLATION >

# FRONT DRIVE SHAFT BOOT

# **Exploded View**

# LEFT SIDE

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#### **RIGHT SIDE**



< REMOVAL AND INSTALLATION >

# WHEEL SIDE

# WHEEL SIDE : Removal and Installation

#### REMOVAL

- 1. Remove tires with power tool. Refer to WT-49, "Exploded View".
- 2. Remove cotter pin and nut retainer, and then loosen wheel hub lock nut. Refer to <u>FAX-9</u>. "Removal and <u>Installation"</u>.
- Patch wheel hub lock nut with a piece of wood. Hammer the wood to disengage wheel hub assembly from drive shaft.
   NOTE:
   Use suitable nuller, if wheel hub assembly and drive shaft can-

Use suitable puller, if wheel hub assembly and drive shaft cannot be separated even after performing the above procedure.

- 4. Remove wheel hub lock nut. Refer to <u>FAX-9</u>, "Removal and <u>Installation"</u>.
- 5. Remove steering outer socket from steering knuckle. Refer to <u>ST-42, "Removal and Installation"</u>
- 6. Remove transverse link from steering knuckle with power tool. Refer to <u>FAX-9, "Exploded View"</u>.
- 7. Remove drive shaft from wheel hub assembly. **CAUTION:** 
  - Never place drive shaft joint at an extreme angle. Also be careful not to overextend slide joint.
  - Never allow drive shaft to hang down without support for joint sub-assembly, shaft and the other parts.
- 8. Remove boot bands, and then remove boot from joint sub-assembly.
- Screw drive shaft puller (A) (commercial service tool) into joint sub-assembly screw part to a length of 30 mm (1.18 in) or more. Support drive shaft with one hand and pull out joint sub-assembly from shaft.

#### CAUTION:

- Align drive shaft puller and drive shaft and remove them by pulling firmly and uniformly.
- If joint sub-assembly cannot be pulled out, try after removing drive shaft from vehicle. Refer to <u>FAX-24</u>, <u>"WHEEL SIDE : Disassembly and Assembly"</u>.

Clean the old grease on joint sub-assembly with paper waste.

- 10. Remove circular clip (1) from shaft.
- 11. Remove boot from shaft.

INSTALLATION

1.







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# < REMOVAL AND INSTALLATION >

2. Fill serration slot joint sub-assembly (1) with NISSAN genuine grease or equivalent until the serration slot and ball groove become full to the brim.

#### CAUTION:

After applying grease, use a paper waste to wipe off old grease that has oozed out.

- Install boot and boot bands to shaft. CAUTION:
  - Wrap serration on shaft with tape to protect the boot from damage.
  - Never reuse boot and boot band.
- 4. Remove the tape wrapped around the serration on shaft.
- 5. Position the circular clip (1) on groove at the shaft edge. **CAUTION:**

# Never reuse circular clip. NOTE:

Drive joint inserter is recommended when installing circular clip.

- Align both center axles of the shaft edge and joint sub-assembly. Then assemble shaft with joint sub-assembly holding circular clip.
- 7. Install joint sub-assembly (1) to shaft using plastic hammer. CAUTION:
  - Check circular clip is properly positioned on groove of the joint sub-assembly.
  - Confirm that joint sub-assembly is correctly engaged while rotating drive shaft.
- 8. Apply the specified amount of grease into the boot inside from large diameter side of boot.

```
Grease amount : Refer to FAX-33, "Drive Shaft".
```

9. Install the boot securely into grooves (indicated by "\*" marks) shown in the figure.

L : Boot installation length

# CAUTION:

If grease adheres to the boot mounting surface (indicated by "\*" marks) on the shaft or joint sub-assembly, boot may be removed. Remove all grease from the boot mounting surface.

10. To prevent the deformation of the boot, adjust the boot installation length to the specified value by inserting the suitable tool into inside of the boot from the large diameter side of the boot and discharging the inside air.

Boot installation length : Refer to <u>FAX-33, "Drive Shaft"</u>.

# CAUTION:

- If the boot installation length exceeds the standard, it may cause breakage of the boot.
- Be careful not to touch the inside of the boot with a tip of tool.









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#### < REMOVAL AND INSTALLATION >

11. Secure the large and small ends of the boot with boot bands using the boot band crimping tool (A) [SST: KV40107300 ( — )].

CAUTION:

Never reuse boot band.



• Secure boot band so that dimension (A) meets the specification as shown in the figure.

#### A : 7.0 mm (0.276 in) or less.

- Check that displacement does not occur when boot is rotated with the joint sub-assembly and shaft fixed.
   CAUTION:
  - Reinstall them using boot bands when boot installation positions become incorrect.
  - Never reuse boot band.
- Clean the matching surface of wheel hub lock nut and wheel hub assembly.
   CAUTION:

#### Never apply lubricating oil to these matching surface.

 14. Clean the matching surface of drive shaft, wheel hub assembly. And then apply paste [service parts (440037S000)] to surface (A) of joint sub-assembly of drive shaft.
 CAUTION:

Apply paste to cover entire flat surface of joint sub-assembly of drive shaft.

Amount paste : 1.0 – 3.0 g (0.04 – 0.10 oz)

- Insert drive shaft to wheel hub assembly, and then temporarily tighten wheel hub lock nut.
   CAUTION:
  - Be sure to use torque wrench to tighten the wheel hub lock nut. Never use a power tool.
  - Never reuse wheel hub lock nut.
- 16. Install transverse link to steering knuckle. Refer to FAX-9, "Exploded View".
- 17. Install steering outer socket to steering knuckle. Refer to ST-42, "Removal and Installation".
- 18. Use the following torque for tightening the wheel hub lock nut. Refer to <u>FAX-18</u>, "<u>Exploded View</u>". CAUTION:
  - Since the drive shaft is assembled by press-fitting, use the tightening torque for the wheel hub lock nut.
  - Be sure to use torque wrench to tighten the wheel hub lock nut. Never use a power tool. NOTE:

Wheel hub lock nut tightening torque does not over torque for avoiding axle noise, and does not less than torque for avoiding looseness.





#### < REMOVAL AND INSTALLATION >

**REDUCTION GEAR SIDE** 

- 19. When installing a cotter pin (1) and nut retainer (2), securely bend the basal portion to prevent rattles.
   CAUTION:
   Never reuse cotter pin.
- 20. Install tires. Refer to WT-49, "Exploded View".
- 21. Perform inspection after installation. Refer to <u>FAX-17, "Inspec-</u> tion".



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# **REDUCTION GEAR SIDE : Removal and Installation** INFOID:000000008746321 Ε Remove boot after drive shaft is removed from the vehicle. · For drive shaft removal and installation, follow the instructions bellow. - Left side: Refer to FAX-18, "LEFT SIDE : Removal and Installation". F - Right side: Refer to FAX-20, "RIGHT SIDE : Removal and Installation". • For drive shaft disassembly and assembly, refer to FAX-26, "REDUCTION GEAR SIDE : Disassembly and Assembly". Inspection INFOID:000000008746322 INSPECTION AFTER INSTALLATION Н 1. Check wheel sensor harness for proper connection. Refer to BRC-172, "FRONT WHEEL SENSOR : Exploded View". Check the wheel alignment. Refer to <u>FSU-11</u>, "Inspection". 3. Adjust neutral position of steering angle sensor. Refer to <u>BRC-80, "Work Procedure"</u>. Κ L Μ Ν

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# < REMOVAL AND INSTALLATION >

# FRONT DRIVE SHAFT

# **Exploded View**

LEFT SIDE



**RIGHT SIDE** 



- 1-7. Tightening order
- Support bearing bracket 8.
- 9. Retainer

- 10.
- Nut retainer 11.

- Front drive shaft Paste 440037S000
- ← Front

12. Cotter pin

# LEFT SIDE

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# LEFT SIDE : Removal and Installation

# REMOVAL

1. Remove tires with power tool. Refer to WT-49, "Exploded View".

#### **Revision: October 2013**

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#### < REMOVAL AND INSTALLATION >

- 2. Remove cotter pin and nut retainer, and then loosen wheel hub lock nut. Refer to <u>FAX-9</u>, "Removal and <u>Installation"</u>.
- 3. Patch wheel hub lock nut with a piece of wood. Hammer the wood to disengage wheel hub assembly from drive shaft. **NOTE:**

Use suitable puller, if wheel hub assembly and drive shaft cannot be separated even after performing the above procedure.

- 4. Remove wheel hub lock nut. Refer to <u>FAX-9</u>, "Removal and <u>Installation"</u>.
- 5. Remove steering outer socket from steering knuckle. Refer to <u>ST-42, "Removal and Installation"</u>.
- 6. Remove transverse link from steering knuckle with power tool. Refer to <u>FAX-9, "Exploded View"</u>.
- Remove shaft assembly from wheel hub assembly. CAUTION:
  - Never place drive shaft joint at an extreme angle. Also be careful not to overextend slide joint.
  - Never allow drive shaft to hang down without support for joint sub-assembly, shaft and the other parts.
- Use the drive shaft attachment (A) [SST: KV40107500 ( )] and a sliding hammer (B) (commercial service tool) while inserting tip of the drive shaft attachment between shaft and reduction gear assembly, and then remove drive shaft from reduction gear assembly.

#### CAUTION:

- Never place drive shaft joint at an extreme angle when removing drive shaft. Also be careful not to overextend slide joint.
- Confirm that the circular clip is attached to the drive shaft.
- 9. Perform inspection after removal. Refer to FAX-32, "Inspection".

#### INSTALLATION

Note the following, and install in the reverse order of removal.

#### Reduction Gear Side

 Place the protector (A) [SST: KV38107900 ( — )] onto reduction gear assembly to prevent damage to the oil seal while inserting drive shaft. Slide drive shaft sliding joint and tap with a hammer to install securely.

# CAUTION:

#### Check that circular clip is completely engaged.

Perform inspection after installation. Refer to <u>FAX-32, "Inspection".</u>



Wheel Hub Side

• Clean the matching surface of wheel hub lock nut and wheel hub assembly. **CAUTION:** 

Never apply lubricating oil to these matching surface.



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#### < REMOVAL AND INSTALLATION >

 Clean the matching surface of drive shaft and wheel hub assembly. And then apply paste [service parts (440037S000)] to surface (A) of joint sub-assembly of drive shaft.
 CAUTION:

Apply paste to cover entire flat surface of joint sub-assembly of drive shaft.

Amount paste : 1.0 – 3.0 g (0.04 – 0.10 oz)



- Use the following torque for tightening the wheel hub lock nut. Refer to <u>FAX-18</u>, "Exploded View". CAUTION:
  - Since the drive shaft is assembled by press-fitting, use the tightening torque for the wheel hub lock nut.
  - Be sure to use torque wrench to tighten the wheel hub lock nut. Never use a power tool.

#### Never reuse wheel hub lock nut.

#### NOTE:

Wheel hub lock nut tightening torque does not over torque for avoiding axle noise, and does not less than torque for avoiding looseness.

- Align the matching marks that have been made during removal when reusing the disc rotor.
- When installing a cotter pin (1) and nut retainer (2), securely bend the basal portion to prevent rattles.

# CAUTION:

- Never reuse cotter pin.
  Perform the final tightening of each of parts under unladen conditions, which were removed when removing wheel hub assembly and steering knuckle.
- Perform inspection after installation. Refer to FAX-32, "Inspection".



# **RIGHT SIDE**

# **RIGHT SIDE : Removal and Installation**

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#### REMOVAL

- 1. Remove tires with power tool. Refer to <u>WT-49</u>, "Exploded View".
- 2. Remove cotter pin and nut retainer, and then loosen wheel hub lock nut. Refer to <u>FAX-9</u>. "Removal and <u>Installation</u>".
- 3. Patch wheel hub lock nut with a piece of wood. Hammer the wood to disengage wheel hub assembly from drive shaft. **NOTE:**

Use suitable puller, if wheel hub assembly and drive shaft cannot be separated even after performing the above procedure.

- 4. Remove wheel hub lock nut. Refer to <u>FAX-9</u>, "Removal and <u>Installation"</u>.
- 5. Remove steering outer socket from steering knuckle. Refer to <u>ST-42, "Removal and Installation"</u>.
- 6. Remove transverse link from steering knuckle with power tool. Refer to <u>FAX-9, "Exploded View"</u>.
- 7. Remove drive shaft from wheel hub assembly. **CAUTION:** 
  - Never place drive shaft joint at an extreme angle. Also be careful not to overextend slide joint.
  - Never allow drive shaft to hang down without support for joint sub-assembly, shaft and the other parts.
- 8. Remove retainer.



# < REMOVAL AND INSTALLATION >

- Remove drive shaft assembly from reduction gear assembly.
   CAUTION:
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   Never place drive shaft joint at an extreme angle when removing drive shaft. Also be careful not to overextend slide joint.
- 10. Remove support bearing bracket.
- 11. Perform inspection after removal. Refer to FAX-32, "Inspection".

#### INSTALLATION

Note the following, and install in the reverse order of removal.

Reduction Gear Side

- · Install support bearing bracket.
- Temporarily tighten support bearing bracket mounting bolts, then tighten them to specified torque. Refer to FAX-18, "Exploded View".
- Set retainer so that notch is on upper side. Temporarily tighten mounting bolts, then tighten them to specified torque. Refer to <u>FAX-18</u>, "Exploded View".
   CAUTION:

#### Never reuse retainer.

- Place the protector (A) [SST: KV38107900 ( )] onto reduction gear assembly to prevent damage to the oil seal while inserting drive shaft. Slide drive shaft sliding joint and tap with a hammer to install securely.
- Perform inspection after installation. Refer to <u>FAX-32, "Inspection".</u>



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Wheel Hub Side

• Clean the matching surface of wheel hub lock nut and wheel hub assembly. CAUTION:

#### Never apply lubricating oil to these matching surface.

• Clean the matching surface of drive shaft and wheel hub assembly. And then apply paste [service parts (440037S000)] to surface (A) of joint sub-assembly of drive shaft.

#### **CAUTION:**

Apply paste to cover entire flat surface of joint sub-assembly of drive shaft.

Amount paste : 1.0 – 3.0 g (0.04 – 0.10 oz)



- Use the following torque for tightening the wheel hub lock nut. Refer to <u>FAX-18</u>, "Exploded View".
   CAUTION:
  - Since the drive shaft is assembled by press-fitting, use the tightening torque for the wheel hub lock nut.
  - Be sure to use torque wrench to tighten the wheel hub lock nut. Never use a power tool.
  - Never reuse wheel hub lock nut.

#### NOTE:

Wheel hub lock nut tightening torque does not over torque for avoiding axle noise, and does not less than torque for avoiding looseness.

• Align the matching marks that have been made during removal when reusing the disc rotor.

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#### < REMOVAL AND INSTALLATION >

• When installing a cotter pin (1) and nut retainer (2), securely bend the basal portion to prevent rattles. **CAUTION:** 

#### Never reuse cotter pin.

- Perform the final tightening of each of parts under unladen conditions, which were removed when removing wheel hub assembly and steering knuckle.
- Perform inspection after installation. Refer to FAX-32, "Inspection".



# FRONT DRIVE SHAFT < UNIT DISASSEMBLY AND ASSEMBLY > UNIT DISASSEMBLY AND ASSEMBLY

# FRONT DRIVE SHAFT

# **Exploded View**

LEFT SIDE







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# < UNIT DISASSEMBLY AND ASSEMBLY >

- 7. Snap ring
- 10. Support bearing
- <⊐ Wheel side</li>

8. Housing

9. Dust shield

# WHEEL SIDE

# WHEEL SIDE : Disassembly and Assembly

## DISASSEMBLY

1. Fix shaft with a vise. CAUTION:

#### Protect shaft when fixing with a vise using aluminum or copper plates.

- 2. Remove boot bands, and then remove boot from joint sub-assembly.
- Screw drive shaft puller (A) (commercial service tool) into joint sub-assembly screw part to a length of 30 mm (1.18 in) or more. Support drive shaft with one hand and pull out joint sub-assembly from shaft.

#### CAUTION:

- Align drive shaft puller and drive shaft and remove them by pulling firmly and uniformly.
- If joint sub-assembly cannot be removed after five or more unsuccessful attempts, replace shaft and joint sub assembly as a set.
- 4. Remove circular clip from shaft.
- 5. Remove boot from shaft.
- 6. Perform inspection after disassembly. Refer to <u>FAX-32</u>, "Inspection".

#### ASSEMBLY

- 1. Clean the old grease on joint sub-assembly with paper waste.
- Fill serration slot joint sub-assembly (1) with NISSAN genuine grease or equivalent until the serration slot and ball groove become full to the brim. CAUTION:

# After applying grease, use a paper waste to wipe off old grease that has oozed out.



- 3. Install boot and boot bands to shaft. CAUTION:
  - Wrap serration on shaft with tape (A) to protect the boot from damage.
  - Never reuse boot and boot band.
- 4. Remove the tape wrapped around the serration on shaft.





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## < UNIT DISASSEMBLY AND ASSEMBLY >

 Position the circular clip (1) on groove at the shaft edge. CAUTION: Never reuse circular clip.

#### NOTE:

Drive joint inserter is recommended when installing circular clip.

- Align both center axles of the shaft edge and joint sub-assembly. Then assemble shaft with joint sub-assembly holding circular clip.
- 7. Install joint sub-assembly to shaft using plastic hammer. CAUTION:
  - Check circular clip is properly positioned on groove of the joint sub-assembly.
  - Confirm that joint sub-assembly is correctly engaged while rotating drive shaft.
- 8. Apply the specified amount of grease into the boot inside from large diameter side of boot.

#### Grease amount : Refer to FAX-33, "Drive Shaft".

- 9. Install the boot securely into grooves (indicated by "\*" marks) shown in the figure.
  - L : Boot installation length

#### CAUTION:

If grease adheres to the boot mounting surface (indicated by "\*" marks) on the shaft or joint sub-assembly, boot may be removed. Remove all grease from the boot mounting surface.

10. To prevent the deformation of the boot, adjust the boot installation length to the specified value by inserting the suitable tool into inside of the boot from the large diameter side of the boot and discharging the inside air.

#### Boot installation length : Refer to FAX-33, "Drive Shaft".

#### **CAUTION:**

- If the boot installation length exceeds the standard, it may cause breakage of the boot.
- Be careful not to touch the inside of the boot with a tip of tool.
- Secure the large and small ends of the boot with boot bands using the boot band crimping tool (A) [SST: KV40107300 ( — )].

# CAUTION:

Never reuse boot band.





# < UNIT DISASSEMBLY AND ASSEMBLY >

· Secure boot band so that dimension (A) meets the specification as shown in the figure.

#### : 7.0 mm (0.276 in) or less. Α

- 12. Check that displacement does not occur when boot is rotated with the joint sub-assembly and shaft fixed. CAUTION:
  - Reinstall them using boot bands when boot installation positions become incorrect.
  - Never reuse boot band.

# REDUCTION GEAR SIDE

# REDUCTION GEAR SIDE : Disassembly and Assembly

# DISASSEMBLY

Left Side

1. Fix shaft with a vise. **CAUTION:** 

# Protect shaft using aluminum or copper plates when fixing with a vise.

- Remove boot bands, and then remove boot from housing.
- 3. Put matching marks on housing and shaft, and then pull out housing from shaft. CAUTION:

# Use paint or an equivalent for matching marks. Never scratch the surfaces.

4. Put matching marks (A) on the spider assembly and shaft. **CAUTION:** 

Use paint or an equivalent for matching marks. Never scratch the surfaces.



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shaft. Remove boot from shaft.

5. Remove snap ring (1), and then remove spider assembly from

- Remove dust shield from housing.
- 8. Remove circular clip from housing.
- Perform inspection after disassembly. Refer to <u>FAX-32</u>, "Inspection".



**Right Side** 

 Fix shaft with a vise. **CAUTION:** 

# Protect shaft using aluminum or copper plates when fixing with a vise.

- 2. Remove boot bands, and then remove boot from housing.
- 3. Put matching marks on housing and shaft, and then pull out housing from shaft. CAUTION:

Use paint or an equivalent for matching marks. Never scratch the surfaces.

# **FAX-26**



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## < UNIT DISASSEMBLY AND ASSEMBLY >

 Put matching marks (A) on the spider assembly and shaft.
 CAUTION: Use paint or an equivalent for matching marks. Never scratch the surfaces.



- 5. Remove snap ring (1), and then remove spider assembly from shaft.
- 6. Remove boot from shaft.

- 7. Remove support bearing, follow the procedure described below.
- a. Remove dust shield from housing.

b. Remove snap ring (1).

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# < UNIT DISASSEMBLY AND ASSEMBLY >

- c. Press out support bearing from housing.
- d. Remove dust shield from housing.
- 8. Perform inspection after disassembly. Refer to <u>FAX-32, "Inspec-</u> <u>tion"</u>.



#### ASSEMBLY

#### Left Side

- 1. Clean the old grease on housing assembly with paper waste.
- 2. Install dust shield to housing. CAUTION: Never reuse dust shield.
- Install circular clip to housing. CAUTION: Never reuse circular clip.
- 4. Install new boot and boot bands to shaft. CAUTION:
  - Wrap serration on shaft with tape (A) to protect boot from damage.
  - Never reuse boot and boot bands.
- 5. Remove the tape wrapped around the serration on shaft.



6. To install the spider assembly (1), align it with the matching marks (A) on the shaft (2) during the removal, and direct the serration mounting surface (B) to the shaft.



- Secure spider assembly onto shaft with snap ring (1).
   CAUTION: Never reuse snap ring.
- 8. Apply the appropriate amount of grease to spider assembly and sliding surface.
- 9. Assemble the housing onto spider assembly, and apply the balance of the specified amount grease.

#### Grease amount : Refer to FAX-33, "Drive Shaft".

10. Align matching marks put during the removal of housing.



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# < UNIT DISASSEMBLY AND ASSEMBLY >

- 11. Install boot securely into grooves (indicated by "\*" marks) shown in the figure.
  - L : Boot installation length

# **CAUTION:**

If grease adheres to the boot mounting surface (with "\*" marks) on shaft or housing, boot may be removed. Remove all grease from the surface.

12. To prevent the deformation of the boot, adjust the boot installation length to the value by inserting the suitable tool into the inside of boot from the large diameter side of boot and discharging inside air.

# Boot installation length : Refer to FAX-33, "Drive Shaft".

#### CAUTION:

- If the boot installation length exceeds the standard, it may cause breakage of the boot.
  Be careful not to touch the inside of the boot with the tip of tool.
- 13. Install boot bands securely.

# Never reuse boot bands.

a. Put boot band in the groove on drive shaft boot. Then fit pawls into holes to temporary installation. **NOTE:** 

For the large diameter side, fit projection (A) and guide slit (B) at first.

b. Pinch projection on the band with suitable pliers to tighten band.





- 14. Check that displacement does not occur when boot is rotated with the housing assembly fixed. CAUTION:
  - If displacement occurs, reinstall band.
  - Never reuse boot band.



Right Side

- 1. Install support bearing, follow the procedure described below.
- a. Install dust shield to housing. CAUTION:

Never reuse dust shield.

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# < UNIT DISASSEMBLY AND ASSEMBLY >

 b. Press support bearing (1) onto housing to using the suitable tool (A).
 CAUTION: Never reuse support bearing.



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d. Install dust shields. CAUTION: Never reuse dust shields.

Install snap ring (1).

Never reuse snap ring.

**CAUTION:** 

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- 2. Clean the old grease on housing assembly with paper waste.
- 3. Install new boot and boot bands to shaft. CAUTION:
  - Wrap serration on shaft with tape (A) to protect boot from damage.
  - Never reuse boot and boot bands.
- 4. Remove the tape wrapped around the serration on shaft.



# < UNIT DISASSEMBLY AND ASSEMBLY >

5. To install the spider assembly (1), align it with the matching marks (A) on the shaft (2) during the removal, and direct the serration mounting surface (B) to the shaft.



6. Secure spider assembly onto shaft with snap ring (1). CAUTION:

#### Never reuse snap ring.

- 7. Apply the appropriate amount of grease to spider assembly and sliding surface.
- 8. Assemble the housing onto spider assembly, and apply the balance of the specified amount grease.

#### Grease amount : Refer to FAX-33, "Drive Shaft".

- 9. Align matching marks put during the removal of housing.
- 10. Install boot securely into grooves (indicated by "\*" marks) shown in the figure.

L : Boot installation length

#### **CAUTION:**

If grease adheres to the boot mounting surface (with "\*" marks) on shaft or housing, boot may be removed. Remove all grease from the surface.

11. To prevent the deformation of the boot, adjust the boot installation length to the value by inserting the suitable tool into the inside of boot from the large diameter side of boot and discharging inside air.

#### Boot installation length : Refer to FAX-33, "Drive Shaft".

#### CAUTION:

- If the boot installation length exceeds the standard, it may cause breakage of the boot.
- Be careful not to touch the inside of the boot with the tip of tool.
- 12. Install boot bands securely. CAUTION:

#### Never reuse boot bands.

a. Put boot band in the groove on drive shaft boot. Then fit pawls into holes to temporary installation. **NOTE:** 

For the large diameter side, fit projection (A) and guide slit (B) at first.

b. Pinch projection on the band with suitable pliers to tighten band.



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# < UNIT DISASSEMBLY AND ASSEMBLY >

- c. Insert the tip of band into the lower part of pawl (marked with dotted circle) as shown in the figure.
- 13. Check that displacement does not occur when boot is rotated with the housing assembly fixed.

# CAUTION:

- If displacement occurs, reinstall band.
- Never reuse boot band.



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# Inspection

# INSPECTION AFTER REMOVAL

Check the following items, and replace the part if necessary.

- Move joint up/down, left/right, and in the axial directions. Check for motion that is not smooth and for significant looseness.
- Check boot for cracks, damage, and leakage of grease.
- Check the support bearing bracket for cracks, deformation and other damage.

#### INSPECTION AFTER DISASSEMBLY

Check the following items, and replace the part if necessary.

#### Shaft

Check shaft for runout, cracks, or other damage.

#### Joint Sub-Assembly

Check the following:

- Joint sub-assembly for rough rotation and excessive axial looseness.
- The inside of the joint sub-assembly for entry of foreign material.
- · Joint sub-assembly for compression scars, cracks, and fractures inside of joint sub-assembly.
- Replace joint sub-assembly if there are any non-standard conditions of components.

#### Housing and spider assembly

Replace housing and spider assembly if there is scratching or wear of housing roller contact surface or spider roller contact surface.

#### NOTE:

Housing and spider assembly are used in a set.

#### Support Bearing (Right Side)

Check bearing rolls freely and is free from noise, cracks, pitting or wear. Replace support bearing if there are any non-standard conditions.

Support Bearing Bracket (Right Side)

Check for support bearing bracket, cracks, or damage. Replace support bearing bracket if there are any non-standard conditions.

# INSPECTION AFTER INSTALLATION

- 1. Check the wheel alignment. Refer to FSU-11, "Inspection".
- 2. Adjust neutral position of steering angle sensor. Refer to BRC-80, "Work Procedure".

# SERVICE DATA AND SPECIFICATIONS (SDS)

#### < SERVICE DATA AND SPECIFICATIONS (SDS)

# SERVICE DATA AND SPECIFICATIONS (SDS) SERVICE DATA AND SPECIFICATIONS (SDS)

# Wheel Bearing

Item	Standard				
Axial end play	0.05 mm (0.002 in) or less				
Drive Shaft		INFOID:00000008746330	FA〉		
ltem	Star	ndard			
nem	Wheel side	Reduction gear side	E		
Grease quantity	88 – 108 g (3.11 – 3.80 oz)	153 – 166 g (5.40 – 5.85 oz)			
Boots installed length*	95.4 mm (3.756 in)	94 mm (3.70 in)	F		
*: For measuring position, refer to FAX-	24, "WHEEL SIDE : Disassembly	and Assembly" (Wheel side), FAX-			

26. "REDUCTION GEAR SIDE : Disassembly and Assembly" (Reduction gear side).

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