

SECTION **FFD**
FRONT FINAL DRIVE

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FFD

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PRECAUTIONS

PRECAUTIONS

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Precautions

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CAUTION:

- Before starting diagnosis of the vehicle, understand symptoms well. Perform correct and systematic operations.
- Check for the correct installation status prior removal or disassembly. When mating marks are required, be sure they do not interfere with the function of the parts they are applied to.
- Carry out an overhaul in a clean work place, Using a dust proof room is recommended.
- Before disassembly, using steam or white gasoline, completely remove sand and mud from the exterior the unit, preventing them from entering into the unit during disassembly or assembly.
- Check appearance of the disassembled parts for damage, deformation, and abnormal wear. If a malfunction is detected, replace it with a new one.
- Normally replace lock pins, oil seals, and bearings with new ones every times they are removed.
- In principle, tighten bolts or nuts gradually in several steps working diagonally from inside to outside. If tightening sequence is specified, observe it.
- Clean and flush the parts sufficiently and blow them dry.
- Be careful not to damage the sliding surfaces and mating surface.
- When applying sealant, remove the old sealant from the mounting surface; then remove any moisture, oil, and foreign materials from the application and mounting surfaces.
- Always use shop paper for cleaning the inside of components.
- Avoid using cotton gloves or a shop cloth to prevent entering of lint.
- During assembly, observe the specified tightening torque, and new differential oil, Vaseline, or multi-purpose grease, as specified for each vehicle, when necessary.

PREPARATION

PREPARATION

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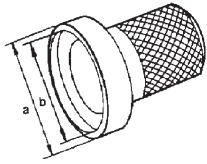
Special Service Tools

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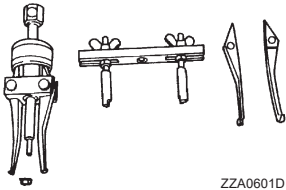
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
ST33400001 (J26082) Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.	Installing front oil seal Installing right side oil seal Installing oil seal
ST33290001 (J34286) Outer race puller	Removing side bearing outer race Removing side oil seal Removing front oil seal
ST3306S001 (—) Differential side bearing puller set 1.ST33051001 (J22888-20) Puller 2.ST33061000 (J8107-2) Base a: 28.5 mm (1.122 in) dia. b: 38 mm (1.50 in) dia.	Removing and installing side bearing
ST30031000 (J22912-01) Puller	Removing drive pinion bearing
ST33230000 (—) Drift a: 51 mm (2.01 in) dia. b: 41 mm (1.61 in) dia. c: 28mm (1.10 in) dia.	Installing side bearing inner race
KV31100300 (—) Pin punch	Removing and installing pinion mate shaft lock pin

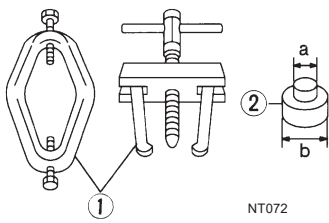
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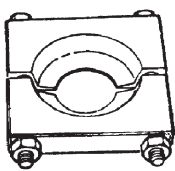
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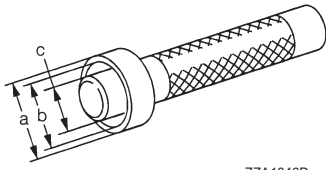
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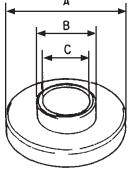
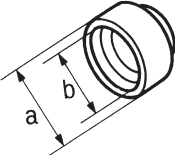
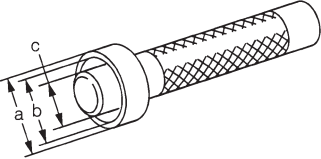
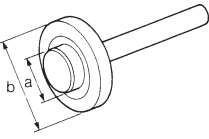
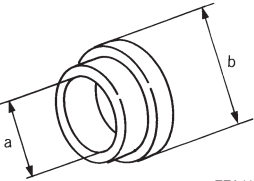
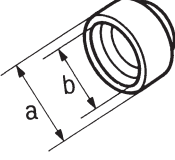
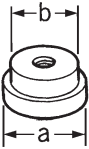


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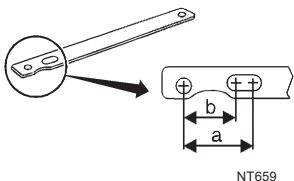
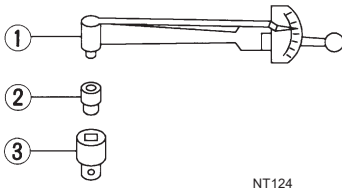


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PREPARATION

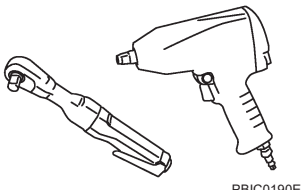
Tool number (Kent-Moore No.) Tool name	Description
ST30032000 (—) Inner race adaptor A: 80mm (3.15 in) dia. B: 38 mm (1.50 in) dia. C: 31 mm (1.22 in) dia.	 <p style="text-align: center;">SDIA0217J</p> Installing drive pinion bearing inner race Installing side shaft and bearing
KV38102510 (—) Drift a: 71 mm (2.80 in) dia. b: 65 mm (2.56 in) dia.	 <p style="text-align: center;">ZZA0838D</p> Installing front oil seal
ST33210000 (—) Drift a: 44 mm (1.73 in) dia. b: 34.5 mm (1.36 in) dia. c: 22 mm (0.87 in) dia.	 <p style="text-align: center;">ZZA1046D</p> Installing left side oil seal
ST37820000 (—) Drift a: 39 mm (1.54 in) dia. b: 72 mm (2.83 in) dia.	 <p style="text-align: center;">ZZA0836D</p> Installing drive pinion bearing outer race
KV31103000 (—) Drift a: 49 mm (1.93 in) dia. b: 70 mm (2.76 in) dia.	 <p style="text-align: center;">ZZA1113D</p> Installing side bearing outer race
ST1982000 (—) Drift a: 70 mm (2.76 in) dia. b: 50 mm (1.97 in) dia.	 <p style="text-align: center;">ZZA0838D</p> Installing side shaft oil seal
ST35321000 (—) Drift a: 49 mm (1.93 in) dia. b: 41 mm (1.61 in) dia.	 <p style="text-align: center;">ZZA1000D</p> Installing side bearing inner race

PREPARATION

Tool number (Kent-Moore No.) Tool name	Description	
KV10109900 (—) Flange wrench a: 100 mm (3.94 in) dia. b: 54 mm (2.13 in) dia.	 <p style="text-align: center; font-size: small;">NT659</p>	A B C
ST3127S000 (J25765-A) Preload gauge 1. GG91030000 (J25765) Torque wrench 2. HT62940000 (—) Socket adapter (1/2") 3. HT62900000 (—) Socket adapter (3/8")	 <p style="text-align: center; font-size: small;">NT124</p>	FFD E F G

Commercial Service Tools

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Tool name	Description	
Power tool	 <p style="text-align: center; font-size: small;">PBIC0190E</p>	H I J K L M

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

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NVH Troubleshooting Chart

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

			Reference page														
			FFD-20	FFD-25	FFD-20	FFD-15	RFD-16	MA-25									
			Possible cause and suspected parts														
Symptom	Differential	Noise	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
			Rough gear tooth	Improper gear contact	Tooth surfaces worn	Incorrect backlash	Companion flange excessive runout	Improper gear oil	PROPELLER SHAFT	AXLE AND SUSPENSION	TIRES	ROAD WHEEL	DRIVE SHAFT	BRAKES	STEERING		
									NVH in PR section.	NVH in FAX, RAX, FSU and RSU sections.	NVH in WT section.	NVH in WT section.	NVH in FAX section.	NVH in BR section.	NVH in PS section.		

×: Applicable

FRONT OIL SEAL

FRONT OIL SEAL

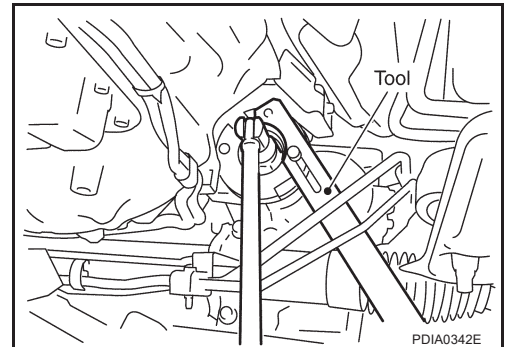
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Removal and Installation

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1. Remove the front propeller shaft. Refer to [PR-13, "Removal and Installation"](#).
2. Remove drive pinion lock nut using tool.

Tool number : KV10109900 (—)

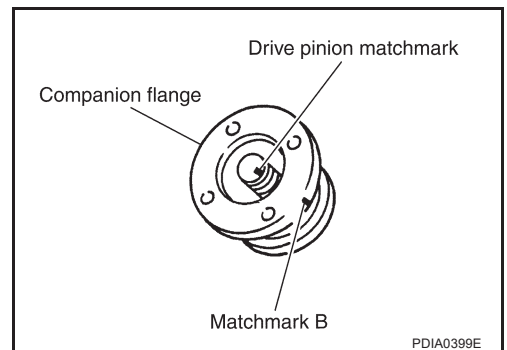


3. Put a matchmark on the end of the drive pinion corresponding to the B position matchmark on the final drive companion flange.

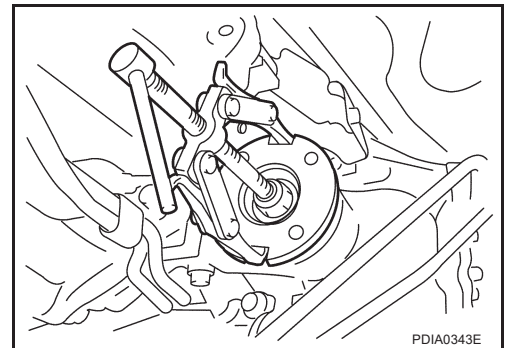
CAUTION:

For matchmark, use paint. Never damage drive pinion.

The matchmark B on the final drive companion flange indicates the maximum vertical runout position.

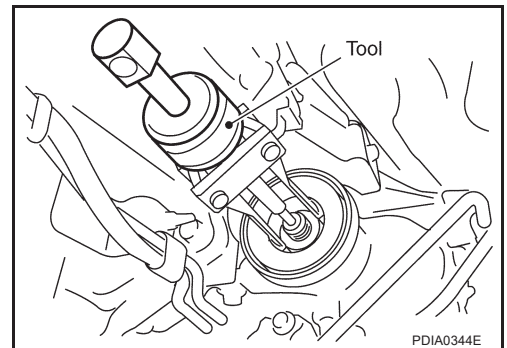


4. Remove the companion flange using puller (commercial service tool).



5. Remove the front oil seal using tool.

Tool number : ST33290001 (J34286)



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FRONT OIL SEAL

INSTALLATION

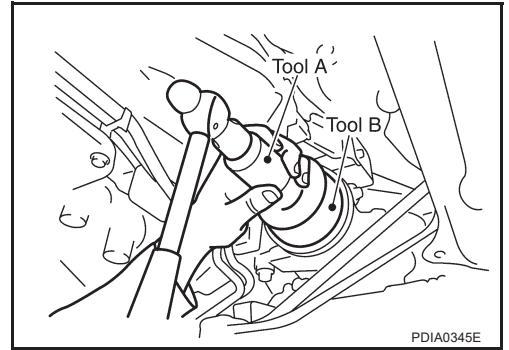
1. Apply multi-purpose grease to sealing lips of the oil seal. Drive the oil seal into the differential case using tool so that the front oil seal flush with the carrier case end.

Tool number **A: ST33400001 (J26082)**
 B: KV38102510 (—)

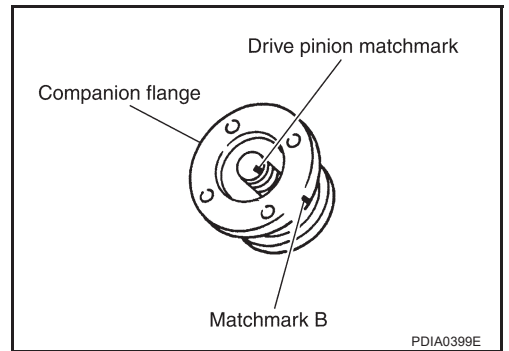
NOTE:

When installing the front oil seal, be careful not to get it inclined.

Do not reuse the front oil seal. Always replace it with a new one.



2. Install the companion flange while align the matchmark of the drive pinion with the matchmark B of the companion flange.
3. Apply oil to the drive pinion threads and the seating surface of drive pinion lock nut.



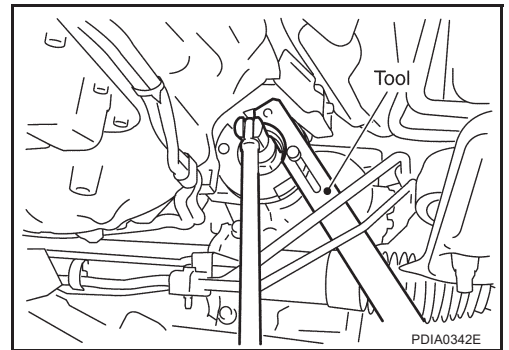
4. Install drive pinion lock nut using tool.

Tool number **: KV10109900 (—)**

CAUTION:

Do not reuse the drive pinion lock nut. Always replace it with a new one.

5. Install the front propeller shaft. Refer to [PR-13, "Removal and Installation"](#) .



SIDE OIL SEAL

SIDE OIL SEAL

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Removal and Installation

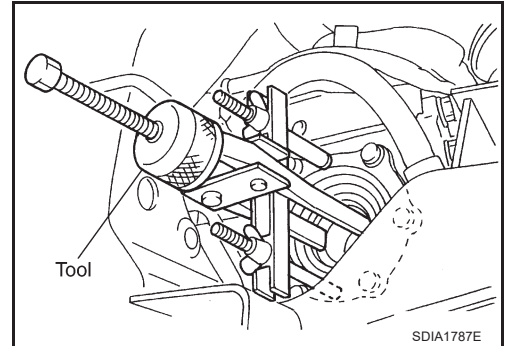
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REMOVAL

Right Side:

1. Remove the front drive shaft. Refer to [FAX-20, "Right Side"](#).
2. Remove the side oil seal using tool.

Tool number : ST33290001 (J34286)



Left Side:

1. Remove the front final drive assembly from vehicle. Refer to [FFD-10, "Removal and Installation"](#).
2. Remove the front drive shaft. Refer to [FAX-19, "Left Side"](#).
3. Remove the side oil seal using tool.

Tool number : ST33290001 (J34286)

INSTALLATION

Right Side:

1. Apply multi-purpose grease to sealing lips of side oil seal.
2. Using tool press-fit side oil seal so that its surface comes face to face with the end surface of the case.

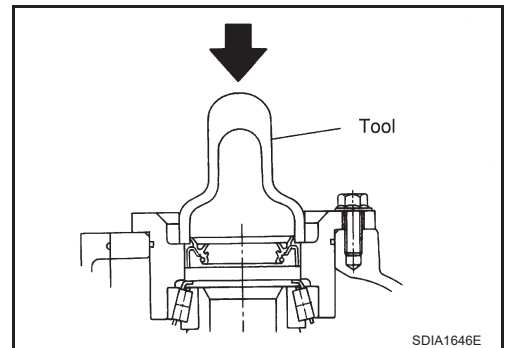
Tool number : ST33400001 (J26082)

CAUTION:

When installing the side oil seal, be careful not to get it inclined.

Do not reuse the side oil seal. Always replace the oil seal with a new ones.

3. Install the front drive shaft. Refer to [FAX-20, "Right Side"](#).



Left Side:

1. Apply multi-purpose grease to sealing lips of side oil seal.
2. Using tool, press-fit side oil seal so that its surface comes face to face with the end surface of the case.

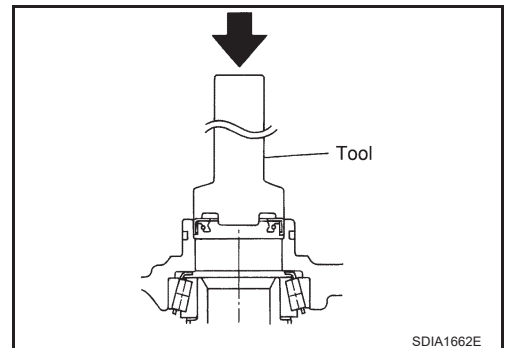
Tool number : ST33210000 (—)

CAUTION:

When installing the side oil seal, be careful not to get it inclined.

Do not reuse the side oil seal. Always replace the oil seal with a new ones.

3. Install the front drive shaft. Refer to [FAX-19, "Left Side"](#).
4. Install the front final drive assembly. Refer to [FFD-10, "Removal and Installation"](#).



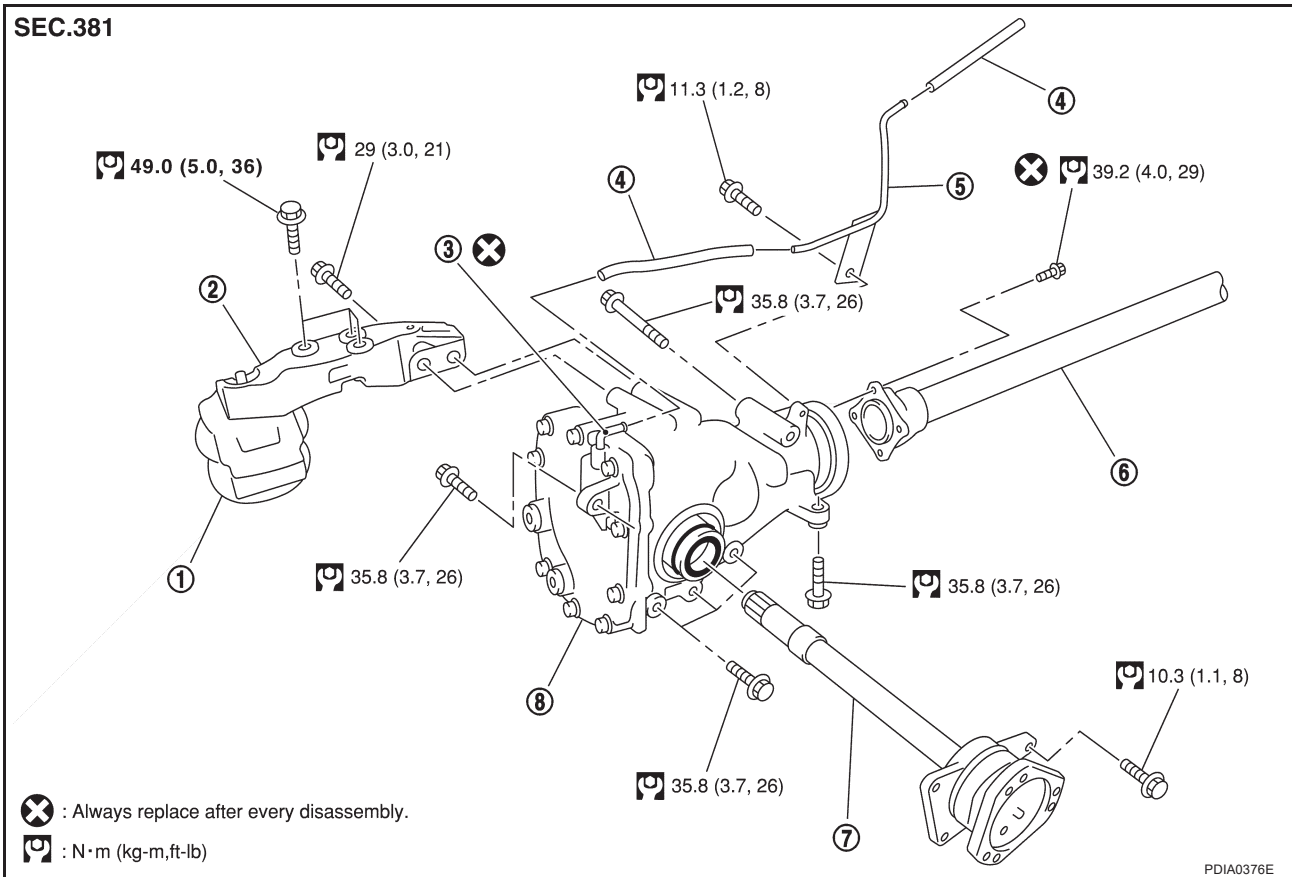
FRONT FINAL DRIVE ASSEMBLY

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FRONT FINAL DRIVE ASSEMBLY

Removal and Installation

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|------------------|-------------------------------|--------------------|
| 1. Insulator | 2. Engine mounting bracket | 3. Breather joint |
| 4. Breather hose | 5. Breather tube | 6. Propeller shaft |
| 7. Side shaft | 8. Front final drive assembly | |

REMOVAL

1. Remove the three engine mounting bracket upper bolts.
2. Remove the right bank catalytic converter. Refer to [EM-26, "Removal and Installation"](#).
3. Remove the stabilizer assembly. Refer to [FSU-34, "STABILIZER BAR"](#).
4. Remove the steering gearbox mounting bolts. Refer to [PS-15, "POWER STEERING GEAR AND LINKAGE"](#).
5. Remove both of the front drive shaft. Refer to [FAX-16, "FRONT DRIVE SHAFT"](#).
6. Remove the side shaft assembly.
7. Remove the front suspension member. Refer to [FSU-35, "FRONT SUSPENSION MEMBER"](#).
8. Remove the front propeller shaft. Refer to [PR-13, "FRONT PROPELLER SHAFT"](#).
9. Remove the differential breather hose clamp bolt. Refer to [FFD-11, "REMOVAL AND INSTALLATION"](#).
10. Remove the mounting bolts and front final drive assembly from the vehicle.

INSTALLATION

Install in the reverse order of removal.

CAUTION:

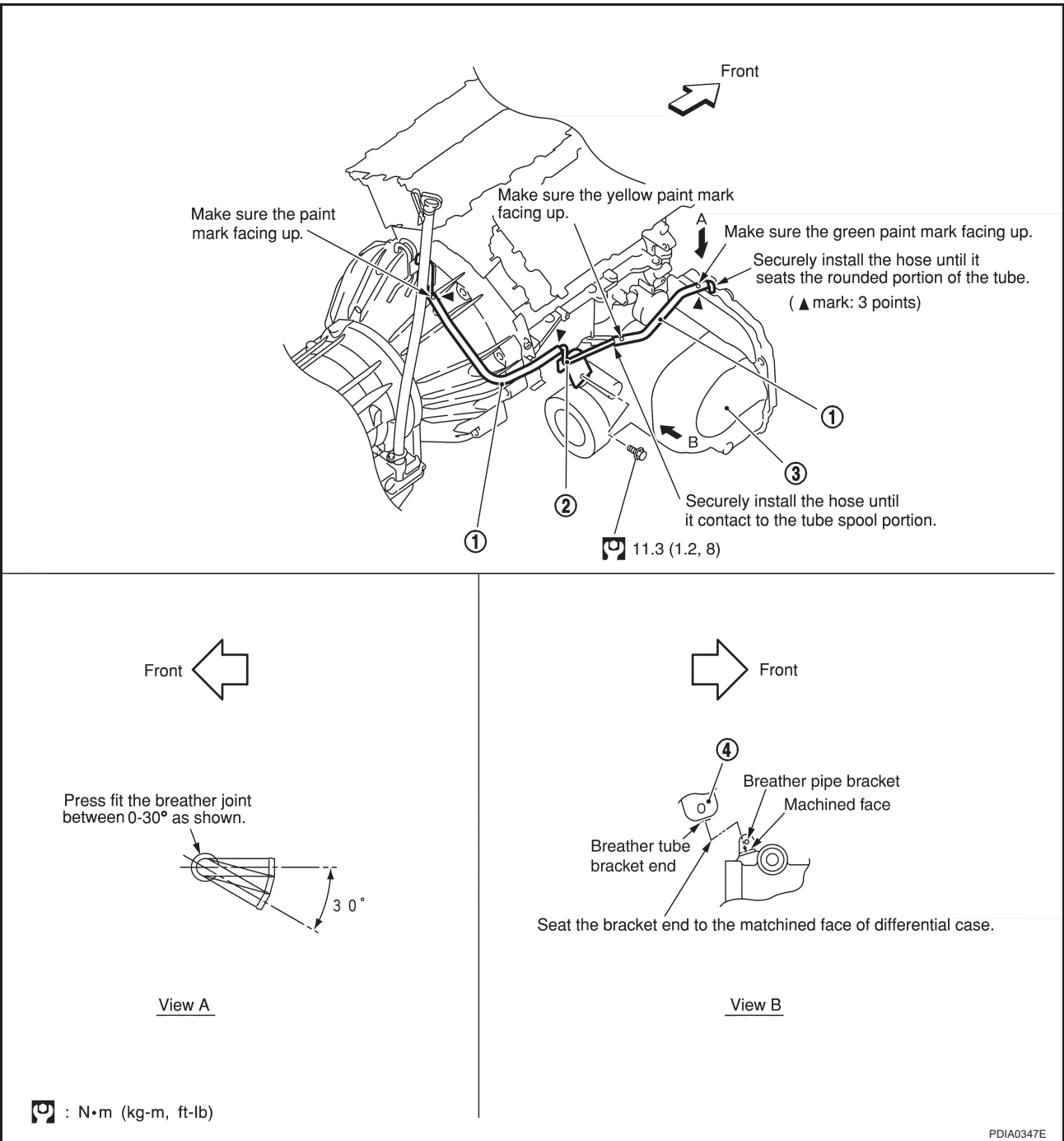
When installing the side shaft, apply multi-purpose grease to contact surface of side shaft and side shaft oil seal.

After installation, check the final drive oil level. Refer to [MA-11, "RECOMMENDED FLUIDS AND LUBRICANTS"](#).

FRONT FINAL DRIVE ASSEMBLY

ADS00027

Front Final Drive Breather Hose REMOVAL AND INSTALLATION



- 1. Breather hose
- 2. Breather tube
- 3. Front final drive assembly
- 4. Breather pipe bracket

NOTE:

Refer to illustration above for front final drive breather hose routing.

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