

SECTION

CL

CLUTCH

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NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

INFOID:000000004554578

Use the chart below to find the cause of the symptom. The numbers indicate the order of the inspection. If necessary, repair or replace these parts.

SUSPECTED PARTS (Possible cause)		CLUTCH PEDAL (Inspection and adjustment)	CLUTCH LINE (Air in line)	MASTER CYLINDER PISTON CUP (Damaged)	ENGINE MOUNTING (Loose)	CSC (Concentric Slave Cylinder) (Worn, dirty or damaged)	CLUTCH DISC (Out of true)	CLUTCH DISC (Runout is excessive)	CLUTCH DISC (Lining broken)	CLUTCH DISC (Dirty or burned)	CLUTCH DISC (Oily)	CLUTCH DISC (Worn out)	CLUTCH DISC (Hardened)	CLUTCH DISC (Lack of spline grease)	DIAPHRAGM SPRING (Damaged)	DIAPHRAGM SPRING (Out of tip alignment)	PRESSURE PLATE (Distortion)	FLYWHEEL (Distortion)
Reference		CL-5	CL-6	CL-10	EM-68	CL-16	CL-20										EM-122	
Symptom	Clutch grabs/chatters				1			2			2	2	2			2		
	Clutch pedal spongy		1	2		2												
	Clutch noisy					1												
	Clutch slips	1									2	2			3		4	5
	Clutch does not disengage	1	2	3		4	4	4	4	4	4			4	5	5	6	

PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

Service Notice or Precautions for Clutch

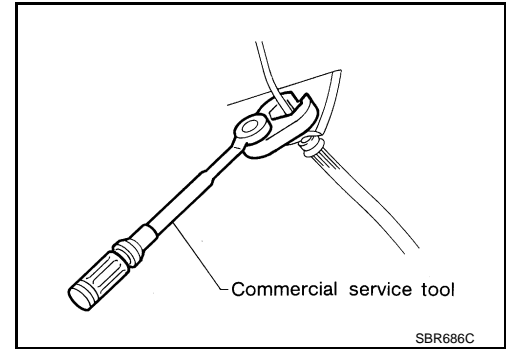
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WARNING:

After cleaning clutch disc, wipe it with a dust collector. Never use compressed air.

CAUTION:

- Recommended clutch fluid is brake fluid "DOT 3". Refer to [MA-14, "FOR NORTH AMERICA : Fluids and Lubricants"](#) (For North America) or [MA-15, "EXCEPT FOR NORTH AMERICA : Fluids and Lubricants"](#) (Except for North America).
- Never reuse drained clutch fluid.
- Keep painted surface on the body or other parts free of clutch fluid. If it spills, wipe up immediately and wash the affected area with water.
- When removing clutch tube, use a flare nut wrench.
- When installing clutch tube, use a flare nut torque wrench [Commercial service tool].
- Use new clutch fluid to clean or wash all parts of master cylinder.
- Never use mineral oils such as gasoline or kerosene. It will ruin the rubber parts of the hydraulic system.
- Never reuse CSC (Concentric Slave Cylinder) body and CSC tube. Because CSC slides back to the original position every time when removing transmission assembly. At this timing, dust on the sliding parts may damage a seal of CSC and may cause clutch fluid leakage. Refer to [CL-16, "Removal and Installation"](#).
- Never disassemble CSC body.



PREPARATION

< PREPARATION >


PREPARATION

PREPARATION

Special Service Tools

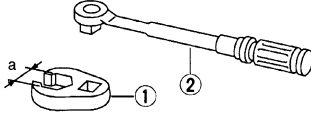
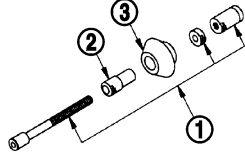
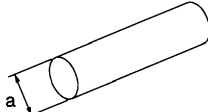
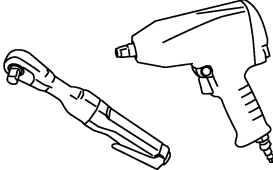
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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
ST20050240 (-) Diaphragm adjusting wrench	Adjusting unevenness of diaphragm spring lever
 <p>ZZA0508D</p>	

Commercial Service Tools

INFOID:000000004554581

Tool name	Description
Flare nut torque wrench 1. Flare nut crowfoot a: 10 mm (0.39 in) 2. Torque wrench	Installing clutch tube
 <p>S-NT360</p>	
Clutch aligner 1. Center shaft 2. Attachment 3. Guide	Installing clutch disc
 <p>PCIB0017E</p>	
Drift a: 10 mm (0.39 in) dia.	Removing bushing
 <p>S-NT063</p>	
Power tool	Loosening bolts and nuts
 <p>PBIC0190E</p>	

CLUTCH PEDAL

< ON-VEHICLE MAINTENANCE >

ON-VEHICLE MAINTENANCE

CLUTCH PEDAL

Inspection and Adjustment

INFOID:000000004554582

INSPECTION

1. Make sure that clevis pin (1) floats freely in the bore of clutch pedal. It should not be bound by clevis or clutch pedal.
 - a. If clevis pin is not free, make sure that clutch pedal position switch (2) is not applying pressure to clutch pedal causing clevis pin to bind. To adjust, loosen lock nut (3) and turn clutch pedal position switch.
 - b. Tighten lock nut. Refer to [CL-8, "Exploded View"](#).
 - c. Make sure that clevis pin floats in the bore of clutch pedal. It should not be bound by clutch pedal.
 - d. If clevis pin is still not free, remove clevis pin and check for deformation or damage. Replace clevis pin if necessary. Leave clevis pin removed for step 2.
2. Check clutch pedal stroke for free range of movement.
 - a. With clevis pin removed, manually move clutch pedal up and down to determine if it moves freely.
 - b. If any sticking is found, replace related parts (bushing, clutch pedal, etc.). Reassemble clutch pedal and again make sure that clevis pin floats freely in the bore of clutch pedal.
3. Check clutch hydraulic and system components (clutch master cylinder, CSC, etc.) for sticking or binding.
 - a. If any sticking or binding is found, repair or replace related parts as necessary.
 - b. If hydraulic system repair was necessary, bleed the clutch hydraulic system. Refer to [CL-6, "Air Bleeding Procedure"](#).

NOTE:

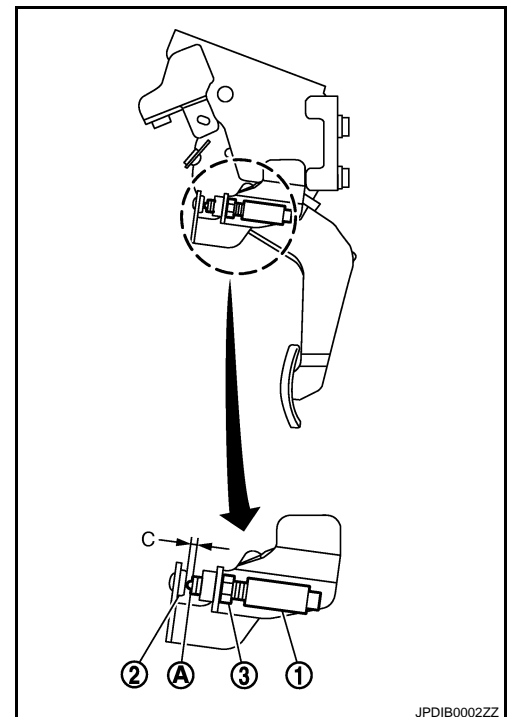
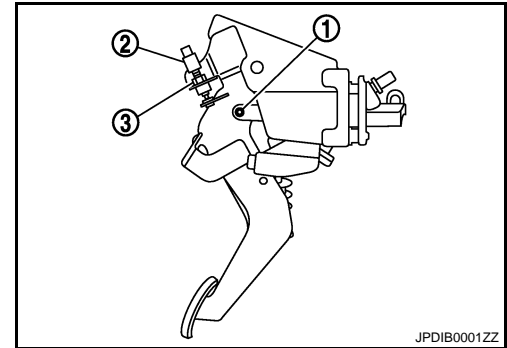
Do not use a vacuum assist or any other type of power bleeder on this system. Use of vacuum assist or power bleeder will not purge all the air from the system.

ADJUSTMENT

1. Adjust clutch interlock switch (1) position so that clearance between stopper rubber (2) and thread end (A) of clutch interlock switch with clutch pedal depressed is clearance "C".

Clearance "C" : Refer to [CL-23, "Clutch Pedal"](#).

2. After adjusting clearance "C", tighten lock nut (3) to the specified torque. Refer to [CL-8, "Exploded View"](#).



CLUTCH FLUID

< ON-VEHICLE MAINTENANCE >

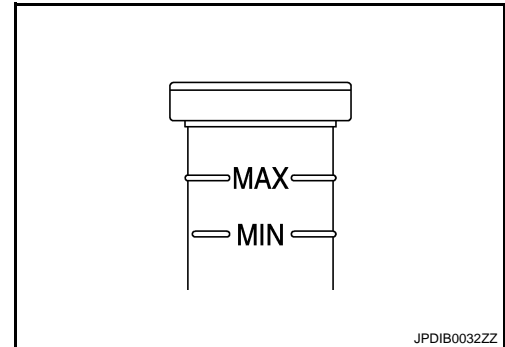
CLUTCH FLUID

Inspection

INFOID:000000004554583

FLUID LEVEL

- Check that the fluid level in the reservoir tank is within the specified range (MAX – MIN lines).
- Visually check for any fluid leakage around the reservoir tank.
- Check the clutch system for any leakage if the fluid level is extremely low (lower than MIN).



FLUID LEAKAGE

- Check clutch line (tubes and hoses) for cracks, deterioration or other damage. Replace any damaged parts.
- Check for fluid leakage by fully depressing clutch pedal while engine is running.

CAUTION:

If leakage occurs around joints, retighten or, if necessary, replace damaged parts.

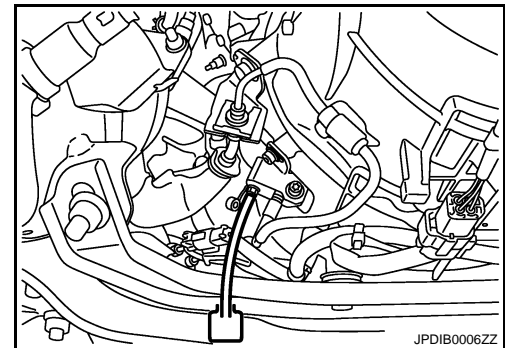
Draining

INFOID:000000004672422

CAUTION:

Keep painted surface on the body or other parts free of clutch fluid. If it spills, wipe up immediately and wash the affected area with water.

1. Connect a transparent vinyl hose to air bleeder valve.
2. Depress clutch pedal and loosen air bleeder valve to gradually discharge clutch fluid.



Refilling

INFOID:000000004672423

CAUTION:

Keep painted surface on the body or other parts free of clutch fluid. If it spills, wipe up immediately and wash the affected area with water.

1. Check that there is no foreign material in reservoir tank and then fill with new clutch fluid.

CAUTION:

Never reuse drained clutch fluid.

2. Loosen air bleeder valve, slowly depress clutch pedal to the full stroke and then release clutch pedal.
3. Repeat this operation at intervals of 2 or 3 seconds until new clutch fluid is discharged.
4. Tighten air bleeder valve with the clutch pedal depressed.
5. Perform the air bleeding. Refer to [CL-6, "Air Bleeding Procedure"](#).

Air Bleeding Procedure

INFOID:000000004554584

CAUTION:

- Monitor clutch fluid level in reservoir tank to make sure it does not empty.
- Keep painted surface on the body or other parts free of clutch fluid. If it spills, wipe up immediately and wash the affected area with water.

CLUTCH FLUID

< ON-VEHICLE MAINTENANCE >

NOTE:

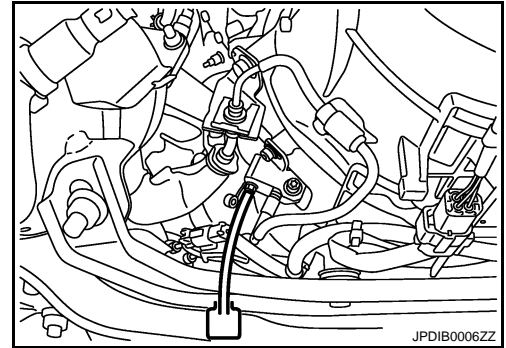
Do not use a vacuum assist or any other type of power bleeder on this system. Use of vacuum assist or power bleeder will not purge all the air from the system.

1. Fill master cylinder reservoir tank with new clutch fluid.

CAUTION:

Never reuse drained clutch fluid.

2. Connect a transparent vinyl hose to air bleeder valve.
3. Depress clutch pedal slowly and fully several times at an interval of 2 to 3 seconds and hold it.
4. With clutch pedal depressed, loosen air bleeder valve to release air.
5. Tighten air bleeder valve.
6. Release clutch pedal and wait for 5 seconds.
7. Repeat steps 3 to 6 until no bubbles can be observed in clutch fluid.
8. Tighten air bleeder valve to the specified torque. Refer to [CL-16, "Exploded View"](#).
9. Check that the fluid level in the reservoir tank is within the specified range after air bleeding. Refer to [CL-6, "Inspection"](#).



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CLUTCH PEDAL

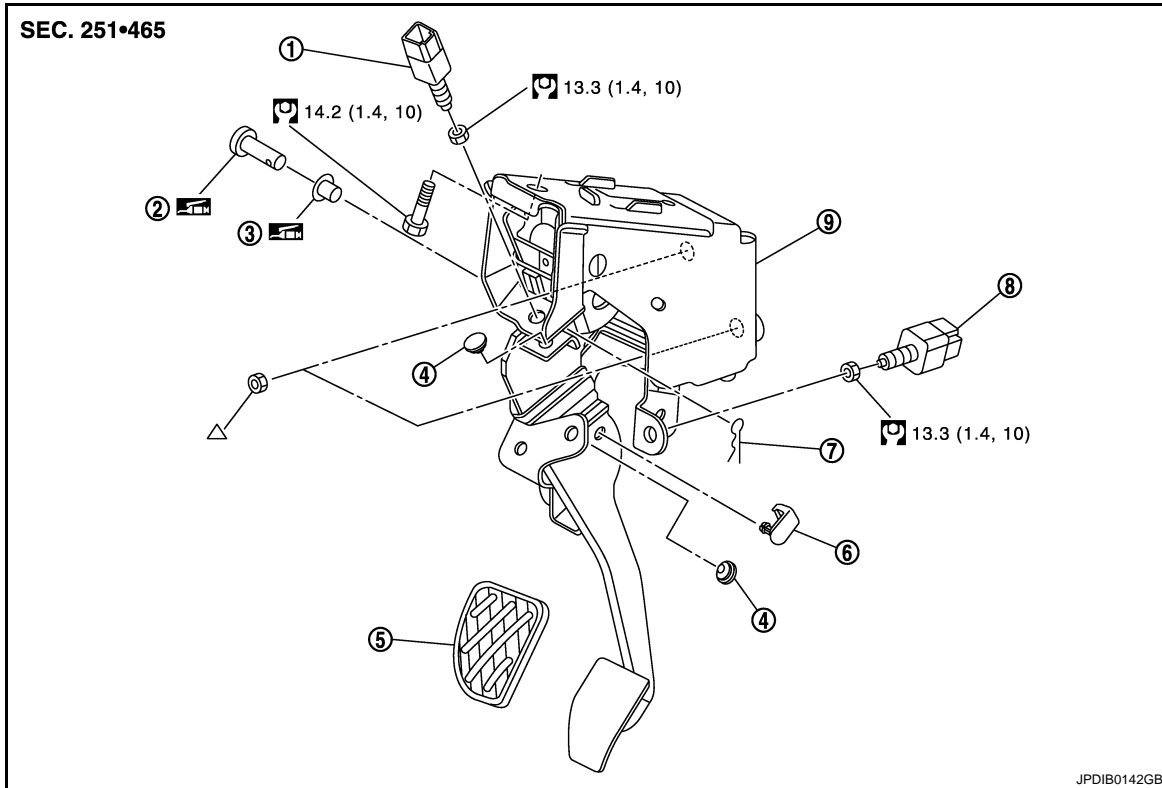
< ON-VEHICLE REPAIR >

ON-VEHICLE REPAIR


CLUTCH PEDAL

Exploded View

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- | | | |
|---------------------------------|----------------------------|-------------------------|
| 1. Clutch pedal position switch | 2. Clevis pin | 3. Bushing |
| 4. Stopper rubber | 5. Pedal pad | 6. Pedal stopper rubber |
| 7. Snap pin | 8. Clutch interlock switch | 9. Clutch pedal |

 Apply lithium-based grease including molybdenum disulphide.

△: Refer to [CL-10, "Exploded View"](#) for the tightening torque.

Refer to [GI-4, "Components"](#) for symbols not described on the above.

Removal and Installation

INFOID:000000004554586

REMOVAL

1. Remove kicking plate inner and dash side finisher LH. Refer to [INT-14, "Removal and Installation"](#).
2. Remove instrument lower panel LH. Refer to [IP-12, "Removal and Installation"](#).
3. Disconnect clutch pedal position switch and clutch interlock switch connectors and then remove clip of harness from clutch pedal.
4. Remove snap pin and clevis pin from clevis.
5. Remove clutch pedal position switch, clutch interlock switch, and pedal pad from clutch pedal.
6. Remove stopper rubbers and pedal stopper rubber from clutch pedal using a suitable remover.
7. Remove clutch pedal from the vehicle.
8. Remove bushing from clutch pedal using a suitable drift [Commercial service tool].

INSTALLATION

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

- Apply recommended grease to bushing.
- Apply recommended grease to clevis pin.

CLUTCH PEDAL

< ON-VEHICLE REPAIR >

Inspection and Adjustment

INFOID:000000004554587

INSPECTION AFTER REMOVAL

Check the following items and replace clutch pedal if necessary.

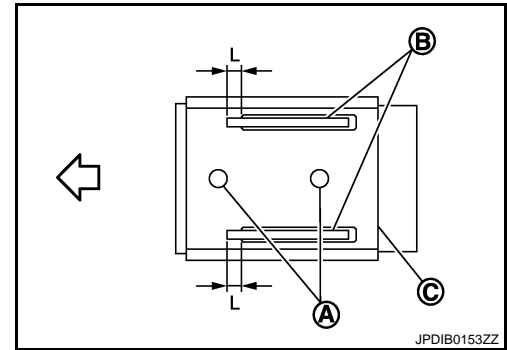
- Check clutch pedal upper rivets (A) for deformation.

⇐ : Vehicle front

- Check the lapping length "L" of sub-bracket (B) and slide plate (C).

Lapping length "L" : More than 5 mm (0.20 in)

- Check clutch pedal for bend, damage, and cracks on the welded parts.



INSPECTION AFTER INSTALLATION

Check the clutch pedal free play. Refer to [CL-5, "Inspection and Adjustment"](#).

ADJUSTMENT AFTER INSTALLATION

Adjust the clutch interlock switch position. Refer to [CL-5, "Inspection and Adjustment"](#).

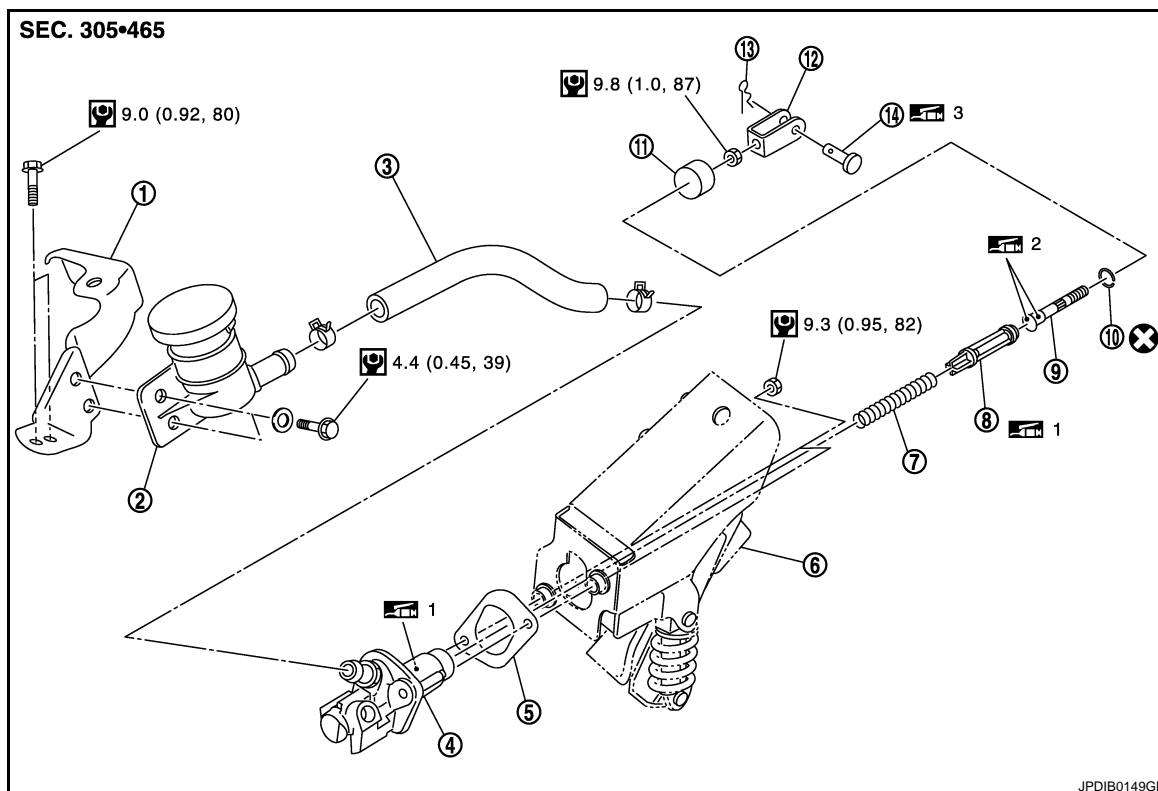
CLUTCH MASTER CYLINDER

< ON-VEHICLE REPAIR >

CLUTCH MASTER CYLINDER

Exploded View

INFOID:000000004554588



- | | | |
|--------------------|-------------------|-----------------|
| 1. Bracket | 2. Reservoir tank | 3. Hose |
| 4. Master cylinder | 5. Packing | 6. Clutch pedal |
| 7. Return spring | 8. Piston | 9. Push rod |
| 10. Stopper ring | 11. Boot | 12. Clevis |
| 13. Snap pin | 14. Clevis pin | |

1: Apply rubber lubricant.

2: Apply silicone grease.

3: Apply lithium-based grease including molybdenum disulphide.

Refer to [GI-4, "Components"](#) for symbols not described on the above.

Removal and Installation

INFOID:000000004554589

CAUTION:

Keep painted surface on the body or other parts free of clutch fluid. If it spills, wipe up immediately and wash the affected area with water.

REMOVAL

1. Drain clutch fluid. Refer to [CL-6, "Draining"](#).
2. Remove brake master cylinder cover. Refer to [EXT-20, "Removal and Installation"](#).
3. Remove brake booster pressure sensor. Refer to [BR-34, "Removal and Installation"](#).

CLUTCH MASTER CYLINDER

< ON-VEHICLE REPAIR >

4. Remove mounting bolts (↔) and then remove reservoir tank assembly from the vehicle.

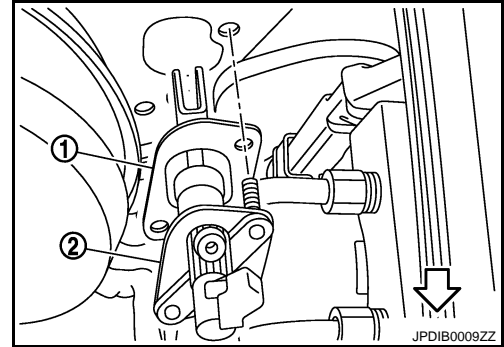
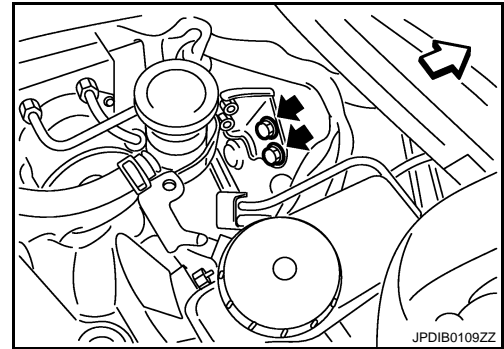
↔ : Vehicle front

5. Remove hose and clips from reservoir tank and master cylinder.
6. Remove reservoir tank mounting bolts and washers and then remove bracket from reservoir tank.
7. Remove clutch tube from master cylinder using a flare nut wrench.
8. Remove snap pin and clevis pin from clevis and then separate clevis from clutch pedal.
9. Remove master cylinder mounting nuts and then remove packing (1) and master cylinder assembly (2) from the vehicle.

↔ : Vehicle front

CAUTION:

Never damage packing, brake booster, and dash lower.



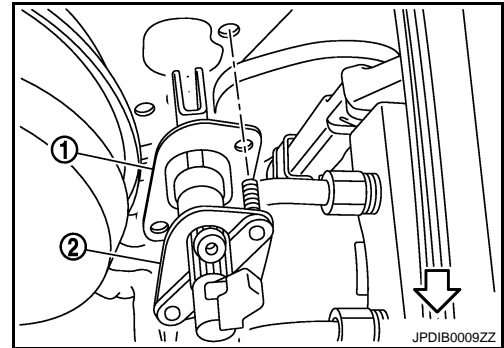
INSTALLATION

1. Install packing (1) and master cylinder assembly (2) to the vehicle.

↔ : Vehicle front

CAUTION:

• **Never damage packing, brake booster, and dash lower.**



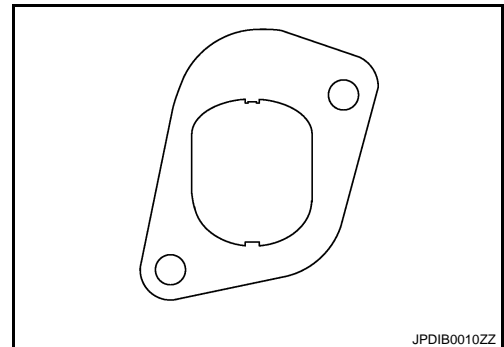
• **Be careful with the orientation of packing. The figure is the view from the vehicle forward.**

2. Tighten master cylinder mounting nuts to the specified torque.
3. Connect clutch tube to master cylinder and then temporarily tighten clutch tube flare nut using a flare nut wrench.
4. Set clevis to clutch pedal.
5. Apply recommended grease to clevis pin and then install clevis pin to clevis.
6. Install snap pin to clevis pin.
7. Tighten clutch tube flare nut to the specified torque using a flare nut torque wrench [Commercial service tool]. Refer to [CL-14, "Exploded View"](#).

CAUTION:

Never damage flare nut and clutch tube.

8. Install washers to reservoir tank mounting bolts.
9. Install bracket to reservoir tank and then tighten reservoir tank mounting bolts to the specified torque.



CLUTCH MASTER CYLINDER

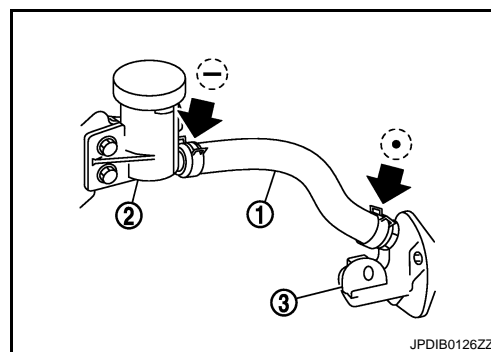
< ON-VEHICLE REPAIR >

10. Install hose (1) and clips to reservoir tank (2) and master cylinder (3).

← : Painted mark

CAUTION:

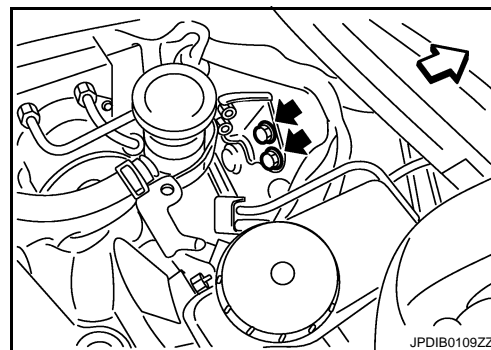
Set hose with painted mark facing upward.



11. Install reservoir tank assembly to the vehicle and then tighten mounting bolts (↔) to the specified torque.

↔ : Vehicle front

12. Install brake booster pressure sensor. Refer to [BR-34, "Removal and Installation"](#).
13. Install brake master cylinder cover. Refer to [EXT-20, "Removal and Installation"](#).
14. Fill clutch fluid. Refer to [CL-6, "Refilling"](#).

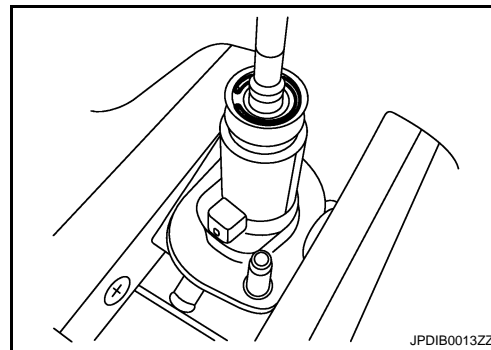


Disassembly and Assembly

INFOID:000000004554590

DISASSEMBLY

1. Remove clevis and push rod lock nut from push rod.
2. Remove boot from master cylinder.
3. Remove stopper ring from master cylinder while holding push rod.
4. Remove push rod, piston, and return spring from master cylinder.



ASSEMBLY

1. Apply rubber lubricant to the internal surface of master cylinder, the sliding surface and piston cup of piston.
2. Install return spring and piston to master cylinder.
3. Apply silicon grease to push rod.
4. Install push rod to master cylinder.
5. Install stopper ring to master cylinder while holding push rod.
CAUTION:
Never reuse stopper ring.
6. Install boot to master cylinder.
7. Install push rod lock nut and clevis to push rod.

CLUTCH MASTER CYLINDER

< ON-VEHICLE REPAIR >

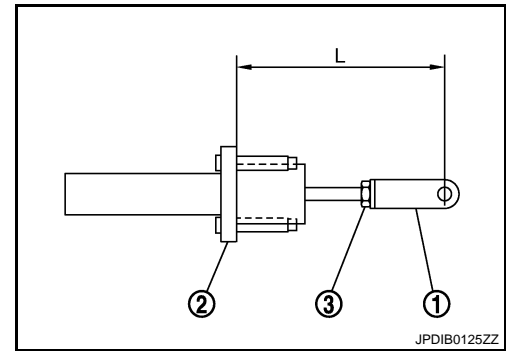
- Adjust the length "L" between clevis (1) and master cylinder (2) to the standard value.

Length "L" between clevis and master cylinder : Refer to [CL-23, "Clutch Master Cylinder"](#).

NOTE:

Clutch pedal height is controlled with position of clevis and master cylinder.

- Tighten push rod lock nut (3) to the specified torque.



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Inspection and Adjustment

INSPECTION AFTER DISASSEMBLY

Check for any of the conditions shown below. If any malfunction is found, replace the part concerned.

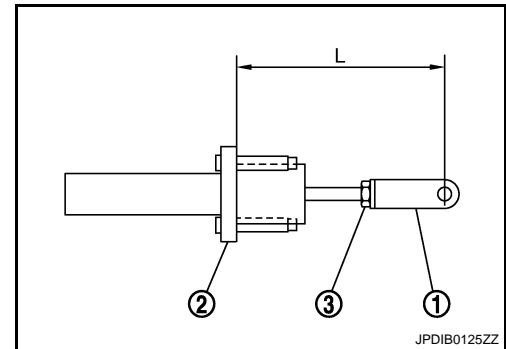
- Damaged cylinder internal wall, foreign matter, wear, corrosion, or pinhole.
- Damaged or deformed reservoir tank.
- Settling of return spring.
- Cracked or deformed boot.
- Cracked or deformed packing.

ADJUSTMENT BEFORE INSTALLATION

- Check the length "L" between clevis (1) and master cylinder (2).

Length "L" between clevis and master cylinder : Refer to [CL-23, "Clutch Master Cylinder"](#).

- If measurement is outside the standard value, adjust the length "L" between clevis and master cylinder to the standard value.
- Tighten push rod lock nut (3) to the specified torque.



INSPECTION AFTER INSTALLATION

- Check the fluid level and fluid leakage. Refer to [CL-6, "Inspection"](#).
- Check the clutch pedal free play. Refer to [CL-5, "Inspection and Adjustment"](#).

ADJUSTMENT AFTER INSTALLATION

- Adjust the clutch interlock switch position. Refer to [CL-5, "Inspection and Adjustment"](#).
- Perform the air bleeding. Refer to [CL-6, "Air Bleeding Procedure"](#).

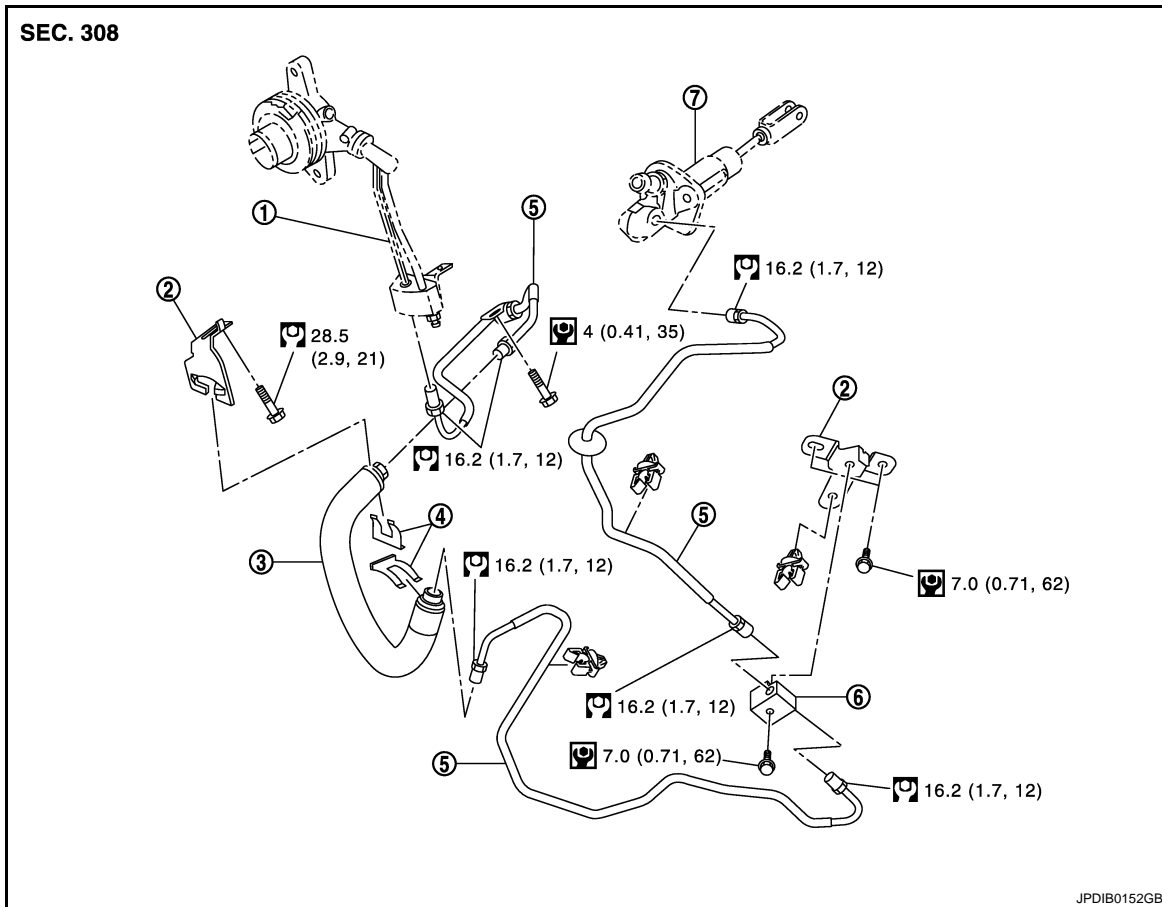
CLUTCH PIPING

< ON-VEHICLE REPAIR >

CLUTCH PIPING

Exploded View

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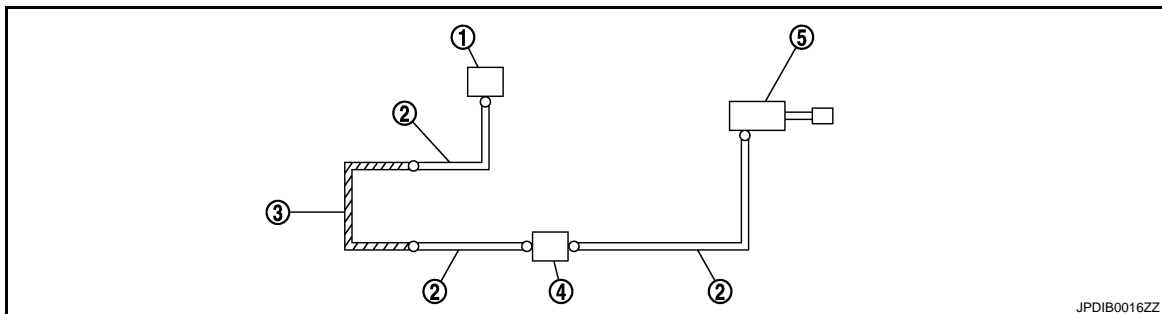


- | | | |
|--|----------------|----------------|
| 1. CSC (Concentric Slave Cylinder) as-
sembly | 2. Bracket | 3. Clutch hose |
| 4. Lock plate | 5. Clutch tube | 6. Connector |
| 7. Master cylinder assembly | | |

Refer to [GI-4. "Components"](#) for the symbols in the figure.

Hydraulic Layout

INFOID:000000004554593



- | | | |
|--|-----------------------------|----------------|
| 1. CSC (Concentric Slave Cylinder) as-
sembly | 2. Clutch tube | 3. Clutch hose |
| 4. Connector | 5. Master cylinder assembly | |

CLUTCH PIPING

< ON-VEHICLE REPAIR >

Removal and Installation

INFOID:000000004554594

CAUTION:

Keep painted surface on the body or other parts free of clutch fluid. If it spills, wipe up immediately and wash the affected area with water.

REMOVAL

Note the following, and refer to [CL-14, "Exploded View"](#) for removal procedure.

- Drain clutch fluid. Refer to [CL-6, "Draining"](#).
- Remove clutch tube using a flare nut wrench.

CAUTION:

Never damage flare nut and clutch tube.

INSTALLATION

Note the following, and refer to [CL-14, "Exploded View"](#) for installation procedure.

- To fix clutch hose on bracket, position clutch hose clasp on the emboss of bracket and drive lock plate vertically from above.

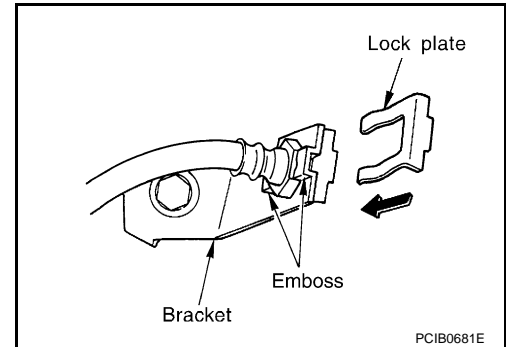
CAUTION:

- Never bend or twist clutch hose.
- Never scratch or damage clutch hose.
- Tighten clutch tube flare nut to the specified torque using a flare nut torque wrench [Commercial service tool].

CAUTION:

Never damage flare nut and clutch tube.

- Fill clutch fluid. Refer to [CL-6, "Refilling"](#).



Inspection and Adjustment

INFOID:000000004554595

INSPECTION AFTER INSTALLATION

Check the fluid level and fluid leakage. Refer to [CL-6, "Inspection"](#).

ADJUSTMENT AFTER INSTALLATION

Perform the air bleeding. Refer to [CL-6, "Air Bleeding Procedure"](#).

CSC (CONCENTRIC SLAVE CYLINDER)

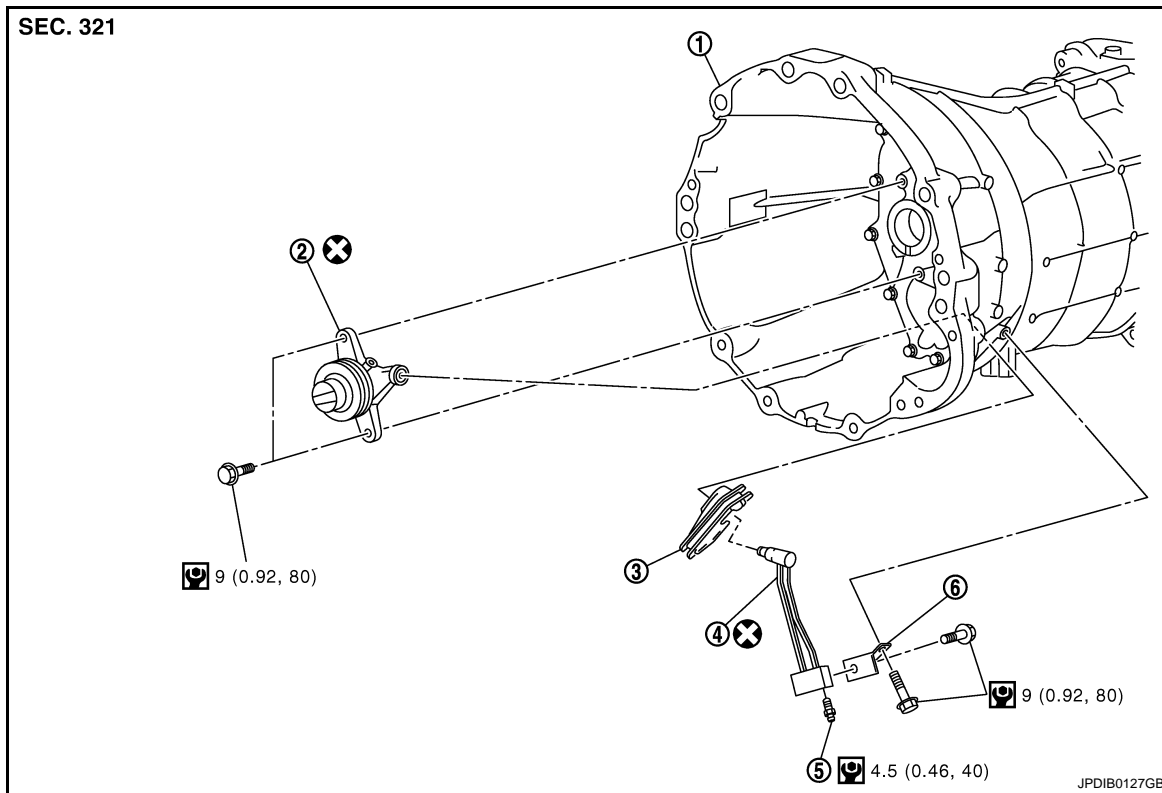
< REMOVAL AND INSTALLATION >

REMOVAL AND INSTALLATION

CSC (CONCENTRIC SLAVE CYLINDER)

Exploded View

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- | | | |
|---|---|---------------|
| 1. Transmission assembly | 2. CSC (Concentric Slave Cylinder) body | 3. Dust cover |
| 4. CSC (Concentric Slave Cylinder) tube | 5. Air bleeder valve | 6. Bracket |

Refer to [GI-4, "Components"](#) for the symbols in the figure.

Removal and Installation

INFOID:000000004554597

CAUTION:

- **Never reuse CSC (Concentric Slave Cylinder) body and CSC tube. Because CSC slides back to the original position every time when removing transmission assembly. At this timing, dust on the sliding parts may damage a seal of CSC and may cause clutch fluid leakage.**
- **Never disassemble CSC body.**
- **Keep painted surface on the body or other parts free of clutch fluid. If it spills, wipe up immediately and wash the affected area with water.**

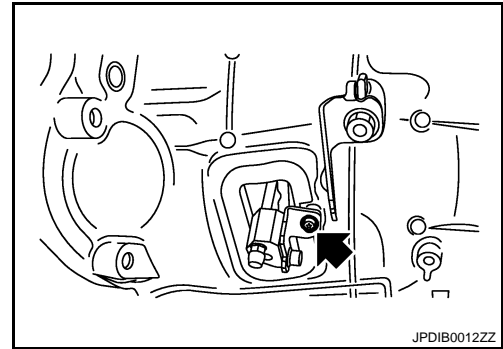
REMOVAL

1. Remove transmission assembly from the engine. Refer to [TM-31, "WITHOUT S-MODE : Removal and Installation"](#) (Without S-MODE) or [TM-34, "WITH S-MODE : Removal and Installation"](#) (With S-MODE).

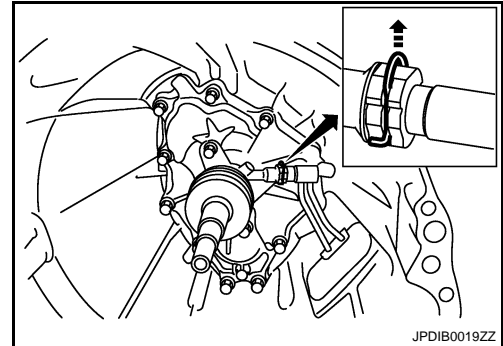
CSC (CONCENTRIC SLAVE CYLINDER)

< REMOVAL AND INSTALLATION >

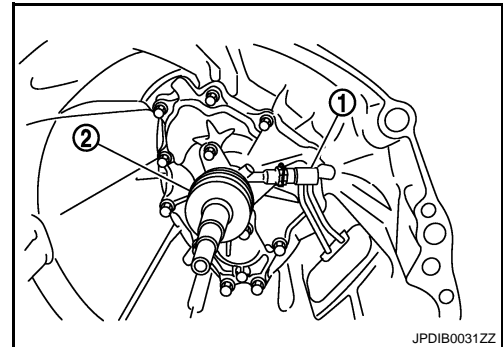
2. Remove mounting bolt (←).



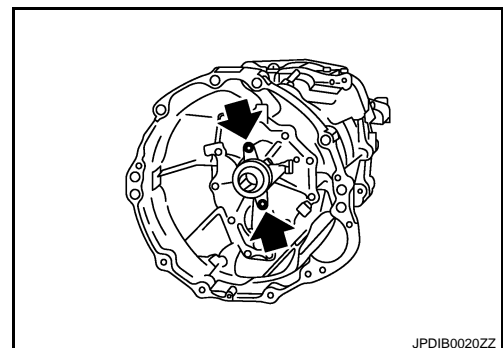
3. Pull up the lock pin of the CSC body.



4. Pull out the CSC tube (1) from the CSC body (2).
5. Remove CSC tube and dust cover from transmission case.
6. Remove air bleeder valve and bracket from CSC tube.



7. Remove CSC body from transmission case.



INSTALLATION

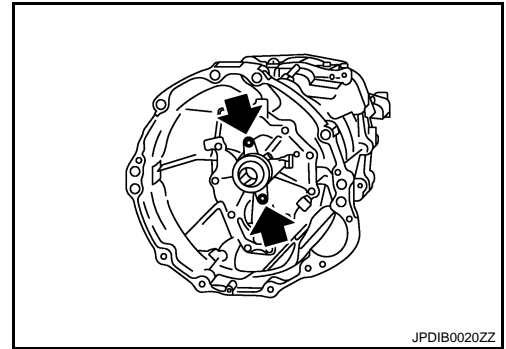
CSC (CONCENTRIC SLAVE CYLINDER)

< REMOVAL AND INSTALLATION >

1. Install CSC body to transmission case and then tighten mounting bolts (↔) to the specified torque.

CAUTION:

- Never reuse CSC body.
- Never insert and operate CSC body because piston and stopper of CSC body components may fall off.



2. Install dust cover to transmission case.

↔ : Vehicle front

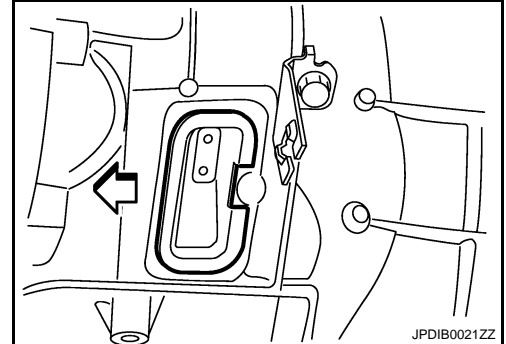
CAUTION:

Be careful with the orientation of dust cover.

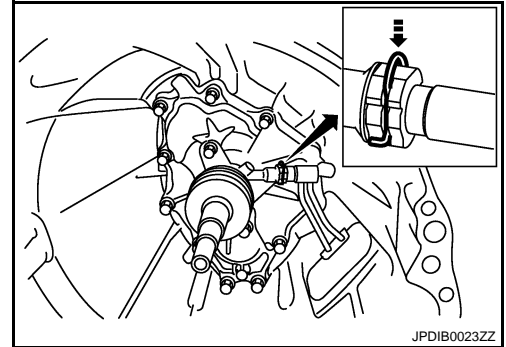
3. Insert CSC tube to dust cover.

CAUTION:

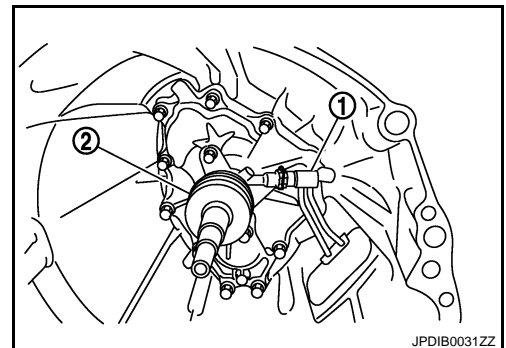
- Never reuse CSC tube.
- Never damage O-ring of CSC tube.



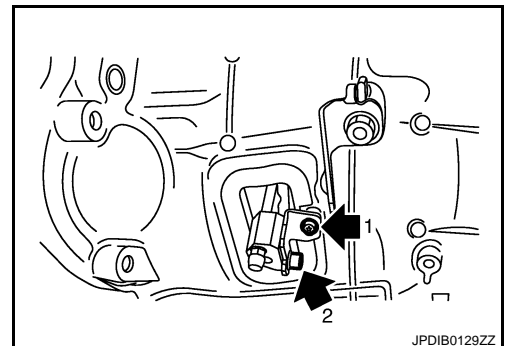
4. Press down the lock pin of the CSC body.



5. Insert the CSC tube (1) into the connector of the CSC body (2) until it clicks.



6. Install bracket and mounting bolts (↔) and then tighten mounting bolts to the specified torque in the numerical order as shown in the figure.



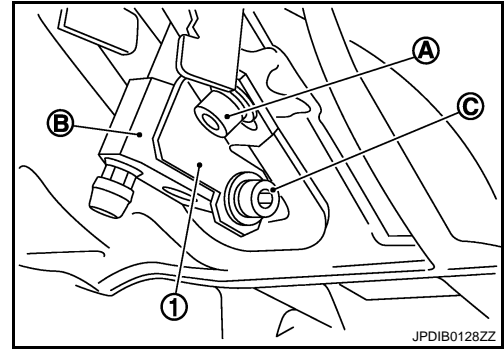
CSC (CONCENTRIC SLAVE CYLINDER)

< REMOVAL AND INSTALLATION >

CAUTION:

- Check that CSC tube's (B) and bracket (1) are fit tightly before tightening the mounting bolt (A).
- Tighten the mounting bolt within the range of bracket's mounting hole.
- After replacing the CSC tube, the mounting bolt (C) is still temporary tightening. Never forget tightening the mounting bolt.

7. Install air bleeder valve to CSC tube and then tighten air bleeder valve to the specified torque.
8. Install transmission assembly to the engine. Refer to [TM-31, "WITHOUT S-MODE : Removal and Installation"](#) (Without S-MODE) or [TM-34, "WITH S-MODE : Removal and Installation"](#) (With S-MODE).



Inspection and Adjustment

INFOID:000000004563246

INSPECTION AFTER INSTALLATION

Check the fluid level and fluid leakage. Refer to [CL-6, "Inspection"](#).

ADJUSTMENT AFTER INSTALLATION

Perform the air bleeding. Refer to [CL-6, "Air Bleeding Procedure"](#).

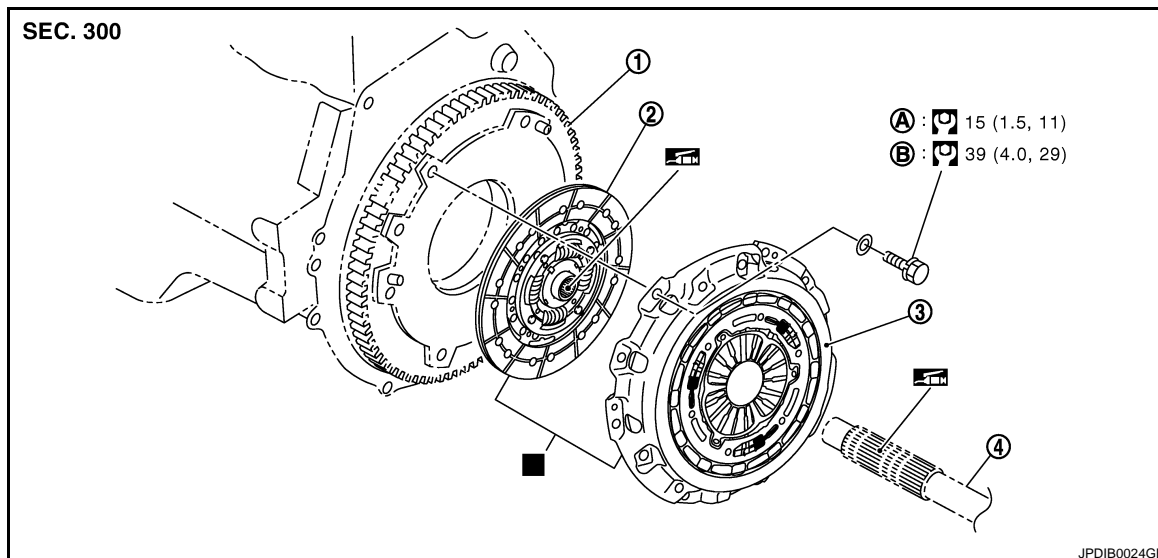
CLUTCH DISC AND CLUTCH COVER

< REMOVAL AND INSTALLATION >

CLUTCH DISC AND CLUTCH COVER

Exploded View

INFOID:000000004554599



- | | | |
|--------------------|----------------|-----------------|
| 1. Flywheel | 2. Clutch disc | 3. Clutch cover |
| 4. Main drive gear | | |
| A. First step | B. Final step | |

■ : Replace the parts as a set.

■ : Apply lithium-based grease including molybdenum disulphide.

Refer to [GI-4, "Components"](#) for symbols not described on the above.

Removal and Installation

INFOID:000000004554600

CAUTION:

- Never reuse CSC (Concentric Slave Cylinder) body and CSC tube. Because CSC slides back to the original position every time when removing transmission assembly. At this timing, dust on the sliding parts may damage a seal of CSC and may cause clutch fluid leakage. Refer to [CL-16, "Removal and Installation"](#).
- Never bring any grease to the clutch disc facing, pressure plate surface and flywheel surface.
- Never clean clutch disc using solvent.

If flywheel is removed, align dowel pin with the smallest hole of flywheel. Refer to [EM-113, "Disassembly and Assembly"](#).

REMOVAL

1. Remove transmission assembly from the engine. Refer to [TM-31, "WITHOUT S-MODE : Removal and Installation"](#) (Without S-MODE) or [TM-34, "WITH S-MODE : Removal and Installation"](#) (With S-MODE).
2. Remove clutch cover mounting bolts and washers using a power tool [Commercial service tool].
3. Remove clutch cover and clutch disc.

CAUTION:

Never drop clutch disc.

INSTALLATION

1. Clean clutch disc and main drive gear splines to remove grease and powder arisen from abrasion.
2. Apply recommended grease to clutch disc and main drive gear splines.

CAUTION:

Be sure to apply grease to the points specified. Otherwise, noise, poor disengagement, or damage to the clutch may result. Excessive grease may cause slip or judder. And if it adheres to seal of CSC body, it cause clutch fluid leakage. Wipe out excess grease. Wipe out any grease oozing from the parts.

CLUTCH DISC AND CLUTCH COVER

< REMOVAL AND INSTALLATION >

3. Install clutch disc using a clutch aligner [Commercial service tool].

CAUTION:

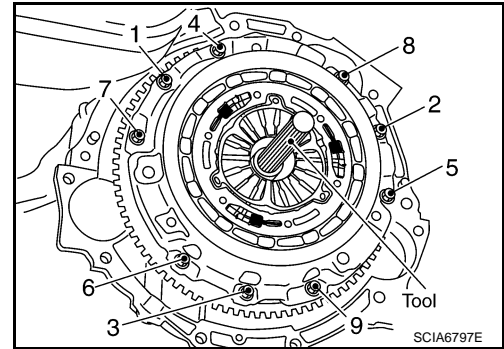
If either clutch disc or clutch cover is needed to be replaced, replace them as a set.

4. Install washers to clutch cover mounting bolts.
5. Install clutch cover and then temporarily tighten clutch cover mounting bolts.

CAUTION:

If either clutch disc or clutch cover is needed to be replaced, replace them as a set.

6. Tighten clutch cover mounting bolts to the specified torque evenly in two steps in the numerical order as shown in the figure.
7. Install transmission assembly to the engine. Refer to [TM-31, "WITHOUT S-MODE : Removal and Installation"](#) (Without S-MODE) or [TM-34, "WITH S-MODE : Removal and Installation"](#) (With S-MODE).



Inspection

INFOID:000000004554601

INSPECTION AFTER REMOVAL

CLUTCH DISC

- Measure circumferential runout relative to clutch disc center spline. If it is outside the specification, replace clutch disc and clutch cover as a set.

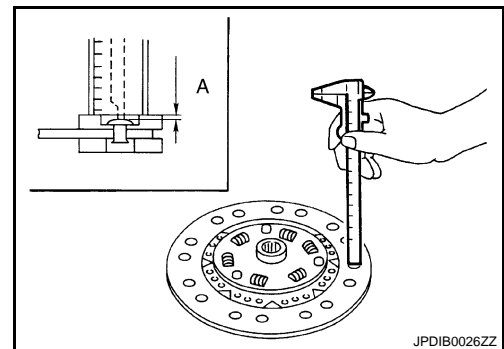
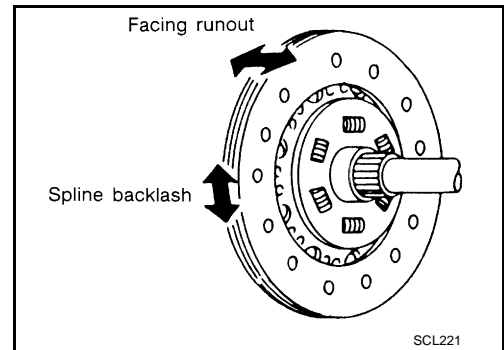
Runout limit/diameter of the area to be measured : Refer to [CL-23, "Clutch Disc"](#).

- Measure backlash to clutch disc spline and main drive gear spline at the circumference of clutch disc. If it is outside the specification, replace clutch disc and clutch cover as a set.

Maximum allowable spline backlash (at outer edge of disc) : Refer to [CL-23, "Clutch Disc"](#).

- Measure the depth "A" to clutch disc facing rivet heads using a calipers. If it exceeds the allowable wear limit, replace clutch disc and clutch cover as a set.

Facing wear limit (depth to the rivet head) "A" : Refer to [CL-23, "Clutch Disc"](#).



CLUTCH COVER

- Check clutch cover thrust ring for wear or breakage. If wear or breakage is found, replace clutch disc and clutch cover as a set.

NOTE:

- Worn thrust ring will generate a beating noise when tapped at the rivet with a hammer.
- Broken thrust ring will make a clinking sound when cover is shaken up and down.
- If a trace of burn or discoloration is found on the clutch cover pressure plate to clutch disc contact surface, repair the surface with sandpaper. If surface is damaged or distorted, replace clutch disc and clutch cover as a set.

INSPECTION AFTER INSTALLATION

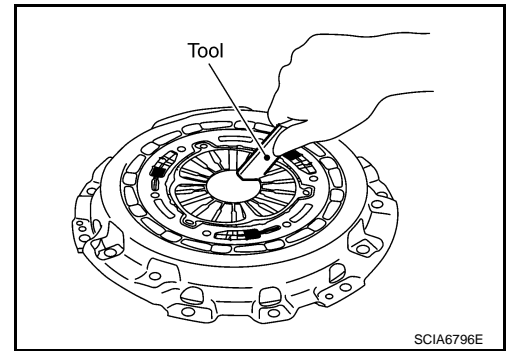
CLUTCH COVER

CLUTCH DISC AND CLUTCH COVER

< REMOVAL AND INSTALLATION >

Check diaphragm spring lever claws for unevenness with the lever still on the vehicle. If they exceed the tolerance, adjust lever height using the diaphragm adjusting wrench [SST: ST20050240 (-)].

Tolerance for diaphragm spring lever unevenness : Refer to CL-23, "Clutch Cover".



SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Clutch Control System

INFOID:0000000004554602

Type of clutch control	Hydraulic
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Clutch Pedal

INFOID:0000000004554603

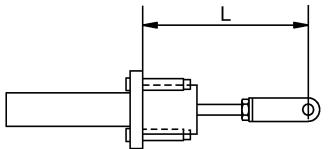
Unit: mm (in)

Clearance "C" between pedal stopper rubber and clutch interlock switch threaded while clutch pedal is fully depressed.	0.1 – 1.0 (0.004 – 0.039)
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Clutch Master Cylinder

INFOID:0000000004554604

Unit: mm (in)

Cylinder inner diameter	17.46 (11/16)
Length "L" between clevis and master cylinder	133.55 ± 0.5 (5.26 ± 0.020)
 <p>JPDIB0029ZZ</p>	

Clutch Disc

INFOID:0000000004554605

Unit: mm (in)

Facing size (Outer dia. × Inner dia. × Thickness)	240 × 160 × 3.8 (9.45 × 6.30 × 0.150)
Runout limit/diameter of the area to be measured	1.0 (0.039) / 230 (9.06) dia.
Maximum allowable spline backlash (at outer edge of disc)	1.0 (0.039)
Facing wear limit (depth to the rivet head) "A"	0.3 (0.012)

Clutch Cover

INFOID:0000000004554606

Tolerance for diaphragm spring lever unevenness	0.8 mm (0.031 in) or less
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