

SECTION **CL**  
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# PRECAUTIONS

< SERVICE INFORMATION >

## SERVICE INFORMATION

### PRECAUTIONS

#### Precaution for Battery Service

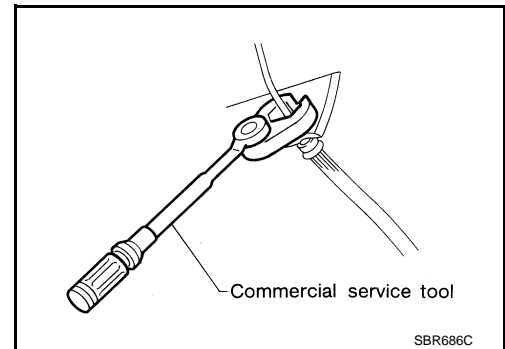
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Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

#### Service Notice or Precaution

INFOID:000000004657838

- Clutch fluid use refer to [MA-10, "Fluids and Lubricants"](#).
- Never reuse drained clutch fluid.
- Never splash clutch fluid on painted areas.
- When removing clutch tube, use a flare nut wrench [Commercial service tool].
- 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-11, "Removal and Installation"](#).
- Never disassemble CSC body.



#### **WARNING:**

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

# PREPARATION


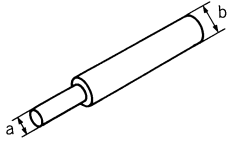
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## PREPARATION

### Special Service Tool


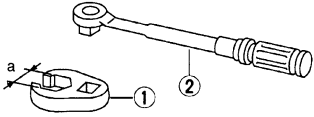
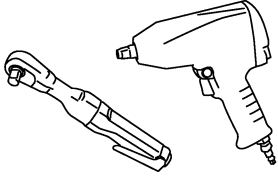
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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
ST20050240 ( — ) Diaphragm adjusting wrench  ZZA0508D	Adjusting unevenness of diaphragm spring of clutch cover
ST20670000 ( — ) Clutch aligning bar a: 15 mm (0.59 in) dia. b: 23 mm (0.91 in) dia.  ZZA1178D	Installing clutch disc

### Commercial Service Tool

INFOID:000000004657840

Tool name	Description
Pin punch Tip diameter: 4.5 mm (0.177 in) dia.  ZZA0515D	Removing and installing master cylinder spring pin
1. Flare nut crowfoot a: 10 mm (0.39 in) 2. Torque wrench  S-NT360	Removing and installing clutch piping
Power tool  PBIC0190E	Loosening bolts and nuts

# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

< SERVICE INFORMATION >

## NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

### NVH Troubleshooting Chart

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

Reference page		CL-5	CL-7	CL-9	CL-11	EM-101	CL-16										EM-123	
SUSPECTED PARTS (Possible cause)		CLUTCH PEDAL (Free play out of adjustment)	CLUTCH LINE (Air in line)	MASTER CYLINDER PISTON CUP (Damaged)	CSC (Concentric Slave Cylinder) (Worn, dirty or damaged)	ENGINE MOUNTING (Loose)	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)
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		5	5	5	5	5			5	6	6	7	

# CLUTCH PEDAL

< SERVICE INFORMATION >

## CLUTCH PEDAL

### On-Vehicle Inspection and Adjustment

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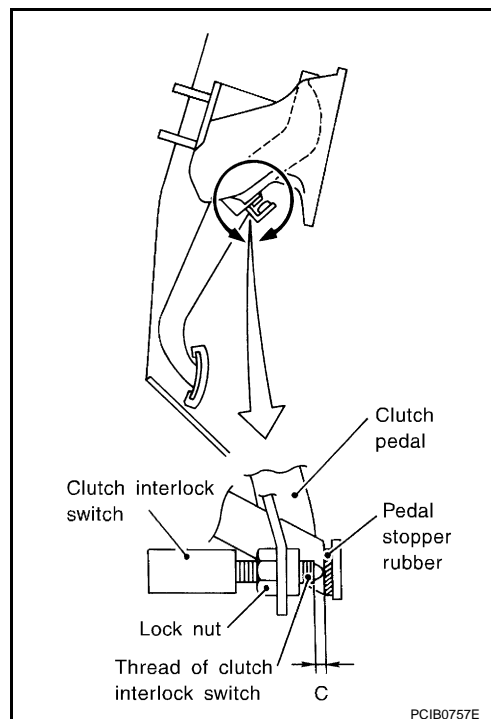
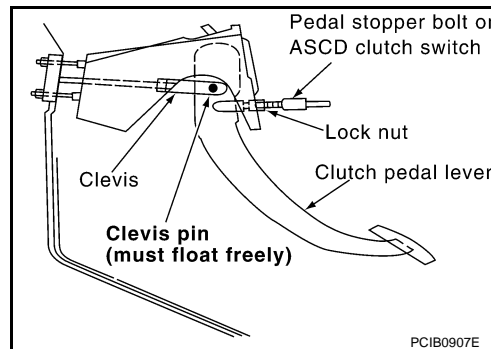
1. Check to see if the clevis pin floats freely in the bore of the clutch pedal. It should not be bound by the clevis or clutch pedal.
  - a. If the clevis pin is not free, check that the pedal stopper bolt or ASCD clutch switch is not applying pressure to the clutch pedal causing the clevis pin to bind. To adjust, loosen lock nut and turn pedal stopper bolt or ASCD clutch switch.
  - b. Tighten the lock nut. Refer to [CL-5. "Removal and Installation"](#).
  - c. Verify that the clevis pin floats in the bore of the clutch pedal. It should not be bound by the clutch pedal.
  - d. If the clevis pin is still not free, remove the clevis pin and check for deformation or damage. Replace clevis pin if necessary. Leave pin removed for step 2.
2. Check clutch pedal stroke for free range of movement.
  - a. With the clevis pin removed, manually move the clutch pedal up and down to determine if it moves freely.
  - b. If any sticking is noted, replace the related parts (clutch pedal assembly, bushing etc.). Re-assemble the clutch pedal and re-verify that the clevis pin floats freely in the bore of the clutch pedal.
3. Adjust clearance "C" while depressing clutch pedal fully. (With clutch interlock switch)

**Clearance C : 0.1 - 1.0 mm (0.004 - 0.039 in)**

4. Check clutch hydraulic and system components (clutch master cylinder, CSC, etc.) for sticking or binding.
  - a. If any sticking or binding noted, repair or replace related parts as necessary.
  - b. If hydraulic system repair was necessary, bleed the clutch hydraulic system. Refer to [CL-7. "Bleeding"](#).

**NOTE:**

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



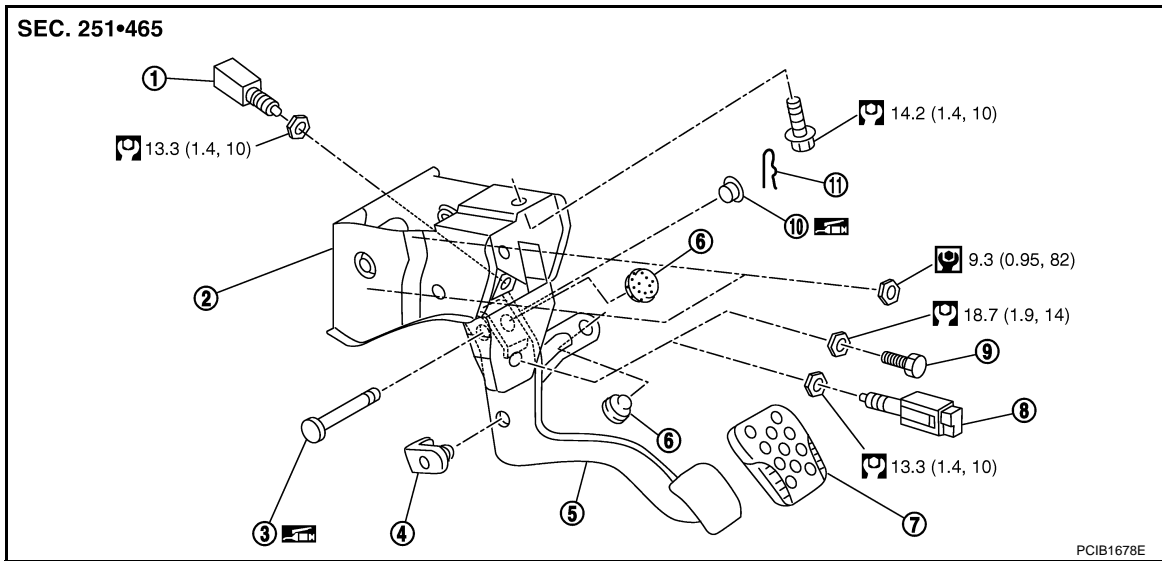
### Removal and Installation

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### COMPONENTS


# CLUTCH PEDAL

< SERVICE INFORMATION >



- |                            |                                   |                                      |
|----------------------------|-----------------------------------|--------------------------------------|
| 1. Clutch interlock switch | 2. Bracket                        | 3. Clevis pin                        |
| 4. Pedal stopper rubber    | 5. Clutch pedal                   | 6. Stopper rubber                    |
| 7. Pedal pad               | 8. ASCD clutch switch (With ASCD) | 9. Pedal stopper bolt (Without ASCD) |
| 10. Bushing                | 11. Snap pin                      |                                      |

Refer to [GI-8, "Component"](#), and the followings for the symbols in the figure.

 Apply lithium-based grease including molybdenum disulphide.

## REMOVAL

1. Remove kicking plate. Refer to [EI-30, "Removal and Installation \(for Coupe Models\)"](#) or [EI-31, "Removal and Installation \(for Roadster Models\)"](#).
2. Remove footrest. Refer to [EI-38, "Removal and Installation"](#).
3. Remove dash side finisher (LH). Refer to [IP-13, "Removal and Installation"](#).
4. Remove instrument driver panel lower. Refer to [IP-13, "Removal and Installation"](#).
5. Remove the clutch interlock switch and ASCD clutch switch (with ASCD) connectors and harness.
6. Remove the snap pin and clevis pin.
7. Remove the pedal bracket mounting bolt and nuts and then remove the clutch pedal assembly.

## INSPECTION AFTER REMOVAL

Check clutch pedal for bend, damage, or a cracked weld. If bend, damage, or a cracked weld is found, replace the clutch pedal assembly.

## INSTALLATION

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

- Tighten pedal stopper bolt lock nut or ASCD clutch switch lock nut to the specified torque after installing the clutch pedal assembly in the vehicle and adjusting the pedal free play. Refer to [CL-5, "On-Vehicle Inspection and Adjustment"](#).
- After installing the clutch interlock switch, adjust the switch position. Refer to [CL-5, "On-Vehicle Inspection and Adjustment"](#).

# CLUTCH FLUID

< SERVICE INFORMATION >

## CLUTCH FLUID

### Bleeding

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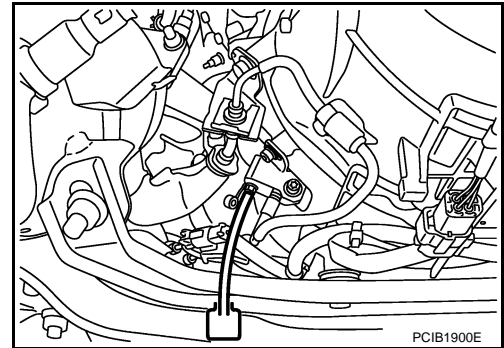
#### CAUTION:

- Monitor fluid level in the reservoir tank to make sure it does not empty.
- Never spill clutch fluid onto painted surfaces. If it spills, wipe up immediately and wash the affected area with water.

#### NOTE:

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

1. Fill the master cylinder reservoir tank with new clutch fluid.
2. Connect a transparent vinyl hose to the 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, open air bleeder valve to release air.
5. Close 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 the clutch fluid.
8. Tighten air bleeder valve to the specified torque. Refer to [CL-11, "Removal and Installation"](#).



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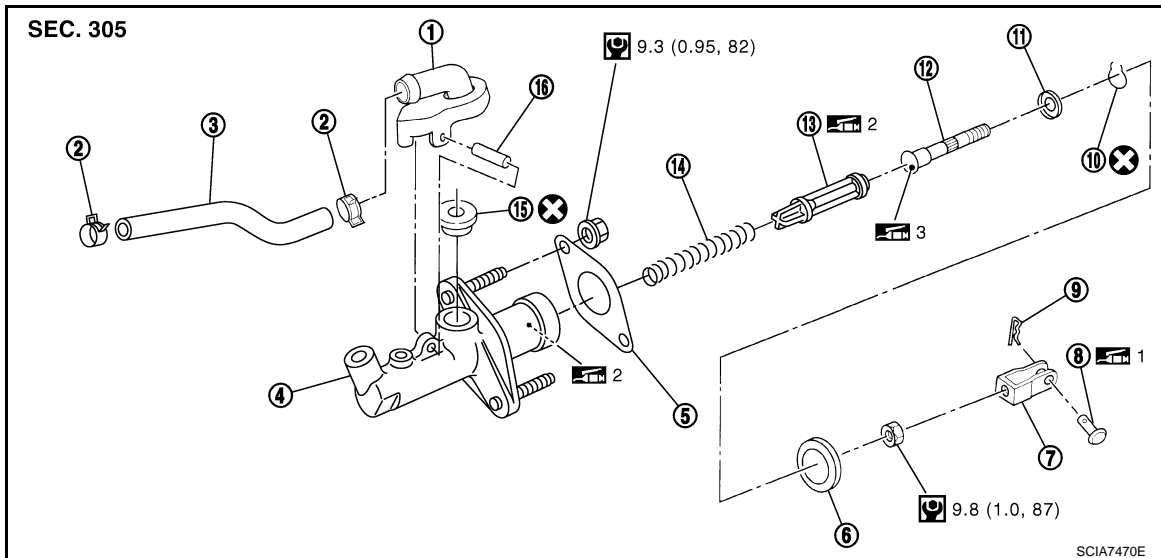
# CLUTCH MASTER CYLINDER

< SERVICE INFORMATION >

## CLUTCH MASTER CYLINDER


### Component


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- |                     |                   |                    |
|---------------------|-------------------|--------------------|
| 1. Nipple           | 2. Clamp          | 3. Reservoir hose  |
| 4. Cylinder body    | 5. Packing        | 6. Seat            |
| 7. Clevis           | 8. Clevis pin     | 9. Snap pin        |
| 10. Stopper ring    | 11. Stopper       | 12. Push rod       |
| 13. Piston assembly | 14. Return spring | 15. Reservoir seal |
| 16. Spring pin      |                   |                    |

Refer to [GI-8, "Component"](#), and the followings for the symbols in the figure.

 1: Apply lithium-based grease including molybdenum disulphide.

 2: Apply rubber lubricant.

 3: Apply silicone grease

### Removal and Installation

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#### REMOVAL

1. Remove kicking plate. Refer to [EI-30, "Removal and Installation \(for Coupe Models\)"](#) or [EI-31, "Removal and Installation \(for Roadster Models\)"](#).
2. Remove footrest. Refer to [EI-38, "Removal and Installation"](#).
3. Remove dash side finisher. Refer to [IP-13, "Removal and Installation"](#).
4. Remove instrument driver panel lower. Refer to [IP-13, "Removal and Installation"](#).
5. Remove snap pin and clevis pin from the clevis, and separate it from clutch pedal.
6. Remove hoodledge cover. Refer to [EI-16, "Removal and Installation"](#).
7. Drain clutch fluid in reservoir tank and then remove reservoir hose.

#### **CAUTION:**

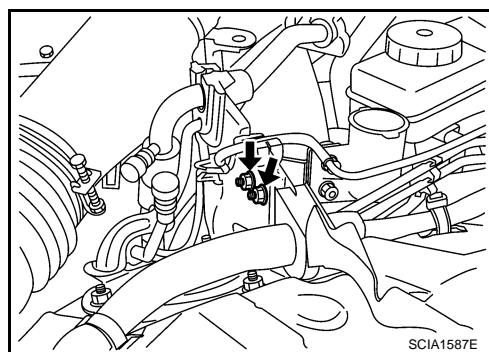
**Never spill clutch fluid onto painted surfaces. If it spills, wipe up immediately and wash the affected area with water.**



# CLUTCH MASTER CYLINDER

## < SERVICE INFORMATION >

8. Remove reservoir tank mounting nut and then remove reservoir tank.
9. Remove clutch tube using a flare nut wrench.
10. Remove mounting nuts and then remove packing and master cylinder assembly.

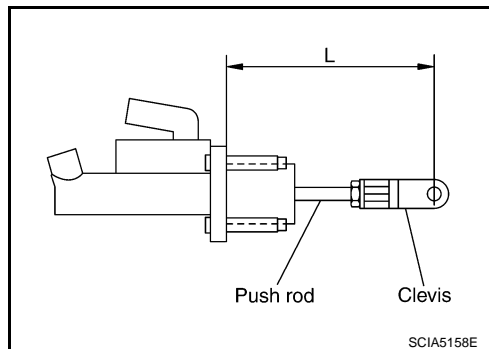


## INSTALLATION

1. Check position of clevis and push rod. If measurement is outside the standard length, adjust position of clevis and push rod.

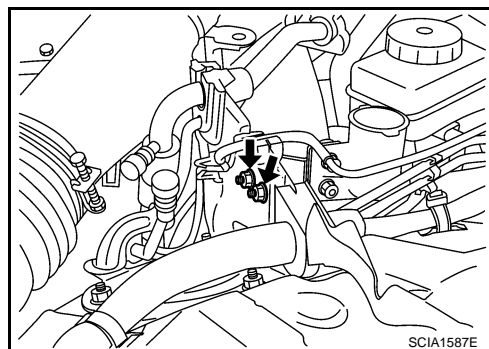
**Length "L" : 111.0 ± 0.5 mm (4.37 ± 0.02 in)**

2. Install packing and master cylinder assembly and tighten mounting nuts to the specified torque. Refer to [CL-8, "Component"](#).
3. Connect clutch tube to master cylinder assembly and temporarily tighten flare nut.
4. Tighten clutch tube flare nut to the specified torque using a flare nut torque wrench [Commercial service tool]. Refer to [CL-15, "Removal and Installation"](#).
5. Install clevis to the clutch pedal, and fix clevis with clevis pin.
6. Install snap pin to the clevis pin.
7. Install reservoir hose to the nipple. Install the reservoir tank to the vehicle, and then tighten mounting nuts to the specified torque.



 **5.8 N-m (0.59 Kg-m, 51 in-lb)**

8. After completing this procedure, inspect and adjust for clutch pedal and then bleed the clutch hydraulic system. Refer to [CL-5, "On-Vehicle Inspection and Adjustment"](#) and [CL-7, "Bleeding"](#).
9. Install hoodledge cover.
10. Install instrument driver panel lower. Refer to [IP-13, "Removal and Installation"](#).
11. Install dash side finisher. Refer to [IP-13, "Removal and Installation"](#).
12. Install footrest. Refer to [EI-38, "Removal and Installation"](#).
13. Install kicking plate. Refer to [EI-30, "Removal and Installation \(for Coupe Models\)"](#) or [EI-31, "Removal and Installation \(for Roadster Models\)"](#).



## Disassembly and Assembly

INFOID:000000004657847

## DISASSEMBLY

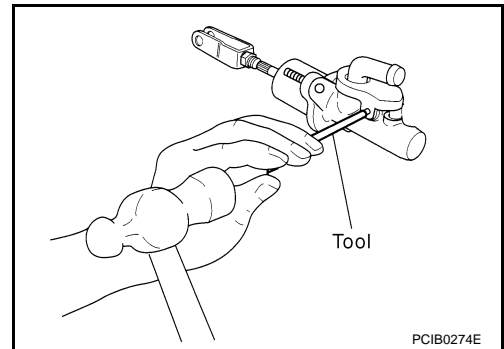
# CLUTCH MASTER CYLINDER

## < SERVICE INFORMATION >

1. Remove spring pin, nipple and reservoir seal from cylinder body using a pin punch [Commercial service tool].
2. Loosen push rod lock nut. Remove clevis and lock nut.
3. Remove the seat from the cylinder body.
4. Remove the stopper ring and stopper, and then remove the push rod, piston assembly and return spring from the cylinder body.

### **CAUTION:**

**Restrain the push rod while doing this because there is a danger the piston assembly will fly out of the cylinder body.**



## 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 pin hole
- Damaged or deformed nipple or reservoir tank
- Settling of the spring
- Cracked and deformed seat

## ASSEMBLY

1. Apply rubber lubricant to internal surface of the cylinder body, sliding surface of piston assembly, and the piston cup. Insert return spring and piston assembly to the cylinder body.
2. Apply silicone grease to the push rod and install the stopper before installing the stopper ring.

### **CAUTION:**

- **Never reuse stopper ring.**
- **Restrain the push rod while doing this because there is a danger the piston assembly will fly out of the master cylinder.**

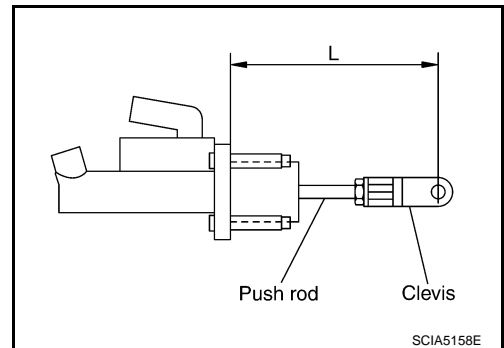
3. Install seat to the cylinder body.
4. Install clevis to push rod.
5. Check and adjust the position of clevis and push rod. After adjusting "L", tighten lock nut to the specified torque. Refer to [CL-8. "Component"](#).

**Length "L" : 111.0 ± 0.5 mm (4.37 ± 0.02 in)**

6. Install reservoir seal and nipple to cylinder body. Install spring pin using a pin punch [Commercial service tool].

### **CAUTION:**

**Never reuse reservoir seal.**



# CSC (CONCENTRIC SLAVE CYLINDER)

< SERVICE INFORMATION >

## CSC (CONCENTRIC SLAVE CYLINDER)

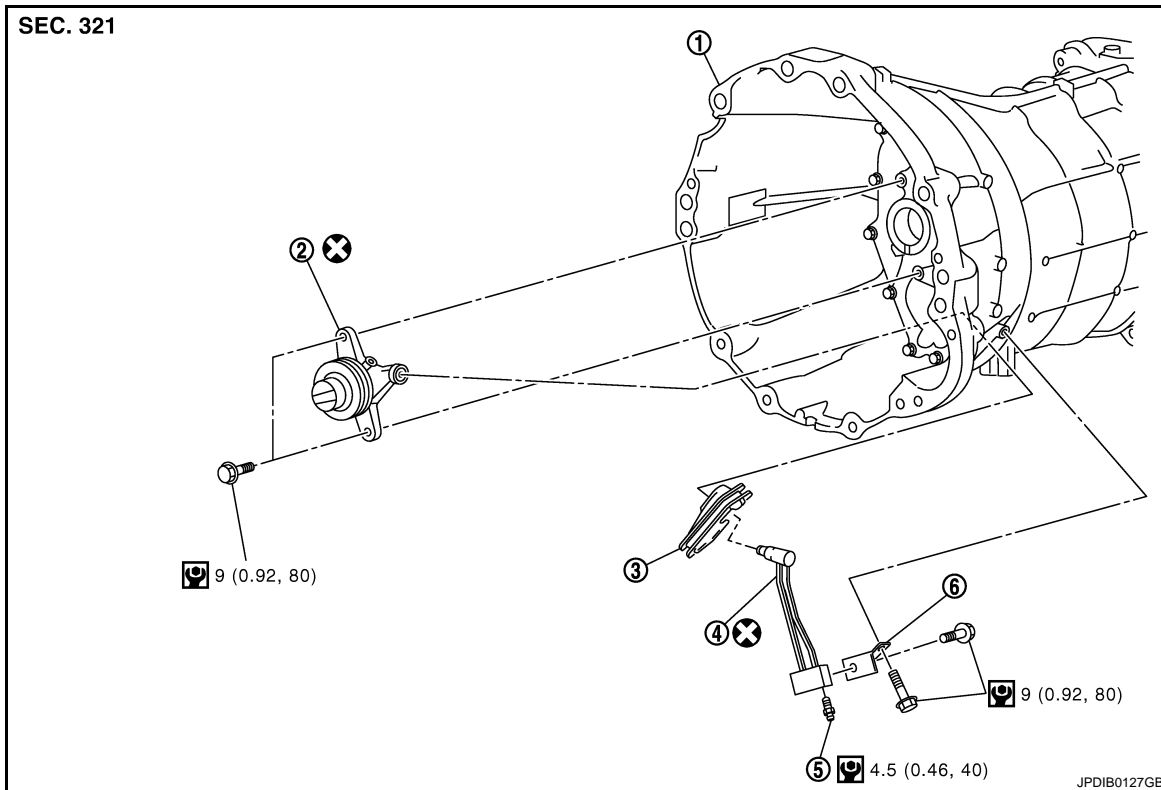
### Removal and Installation

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#### 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.

### COMPONENTS

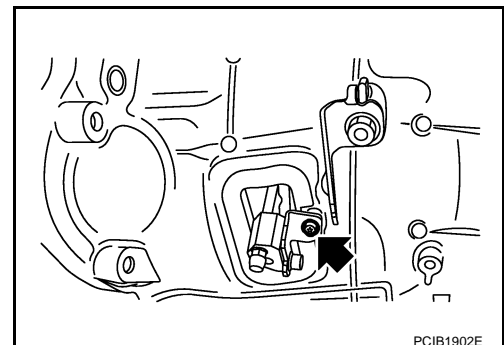


- |   |   |               |
|---|---|---------------|
| 1. Transmission assembly                | 2. CSC (Concentric Slave Cylinder) body | 3. Dust cover |
| 4. CSC (Concentric Slave Cylinder) tube | 5. Air bleeder valve                    | 6. Bracket    |

Refer to [GI-8, "Component"](#) for the symbols in the figure.

### REMOVAL

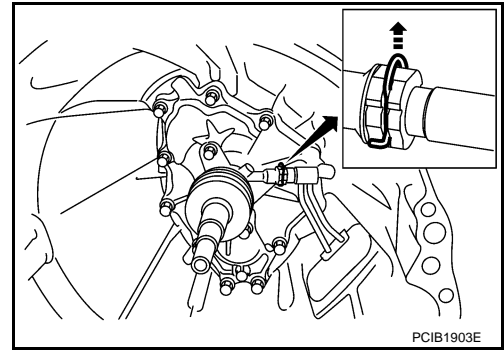
1. Remove transmission assembly from the vehicle. Refer to [MT-19, "Removal and Installation"](#).
2. Remove CSC tube mounting bolt.



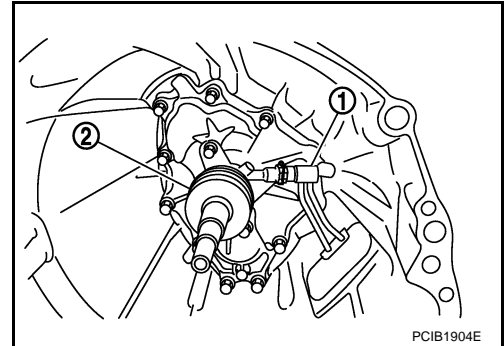
# CSC (CONCENTRIC SLAVE CYLINDER)

## < SERVICE INFORMATION >

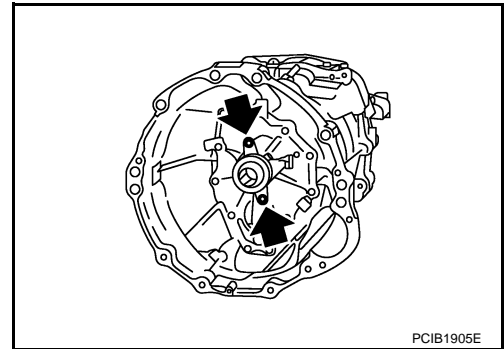
3. Pull up the lock pin of CSC body.



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 from CSC tube.



7. Remove CSC body from transmission case.

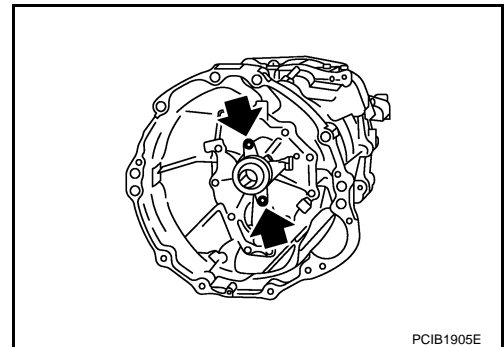


## INSTALLATION

1. Install CSC body to transmission case and then tighten mounting bolts to the specified torque. Refer to "COMPONENTS".

### **CAUTION:**

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



# CSC (CONCENTRIC SLAVE CYLINDER)

## < SERVICE INFORMATION >

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.

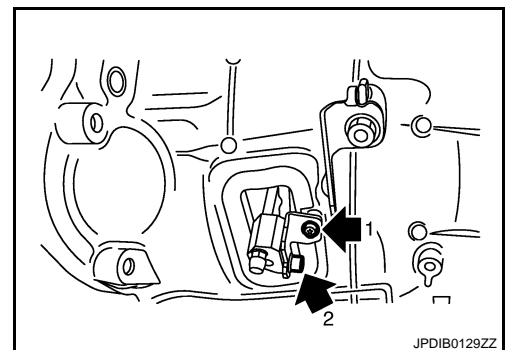
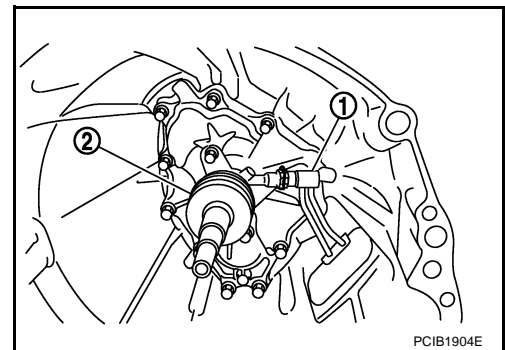
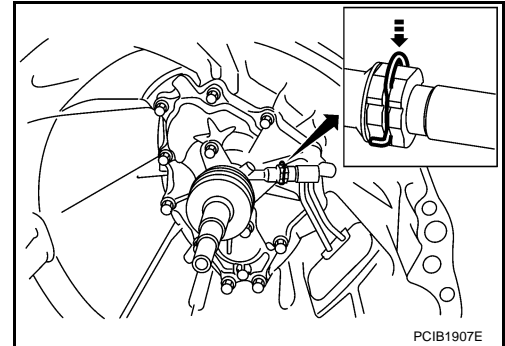
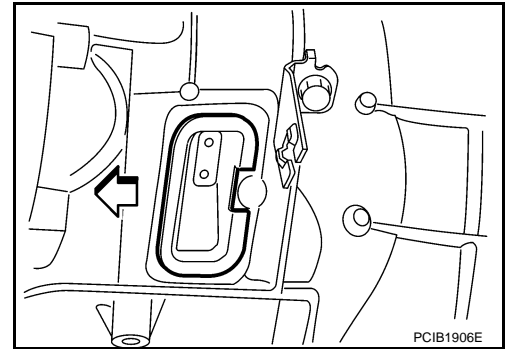
**CAUTION:**

- Never reuse CSC tube.
- Be sure not to 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 mounting bolts and then tighten mounting bolt to the specified torque in the order shown in the figure. Refer to "COMPONENTS".



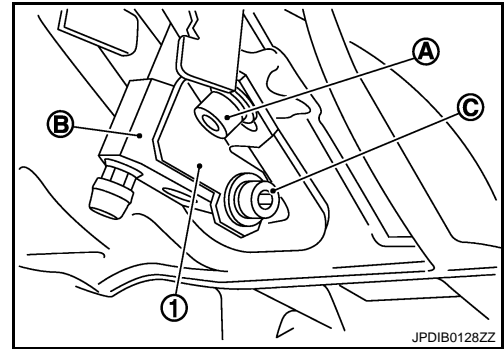
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## CSC (CONCENTRIC SLAVE CYLINDER)

### < SERVICE INFORMATION >

- Check that CSC tube's (B) and bracket (1) are fit tightly before tightening the mounting bolts (A).
  - Tighten the mounting bolt (A) 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 (C).
7. Install transmission assembly to the vehicle. Refer to [MT-19. "Removal and Installation"](#).
  8. Bleed the air from the clutch hydraulic system, Refer to [CL-7. "Bleeding"](#).



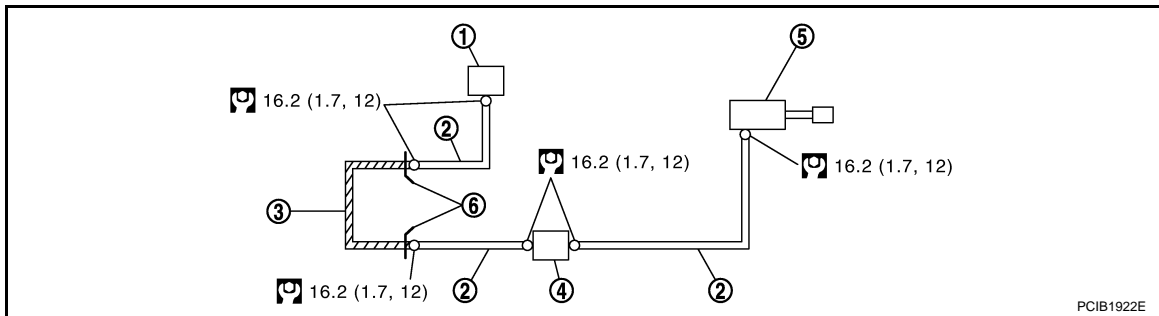
# CLUTCH PIPING

< SERVICE INFORMATION >

## CLUTCH PIPING

### Removal and Installation

INFOID:000000004657849



1. CSC (Concentric Slave Cylinder) assembly
2. Clutch tube
3. Clutch hose
4. Connector
5. Master cylinder assembly
6. Lock plate

Refer to [GI-8. "Component"](#), for the symbol in the figure.

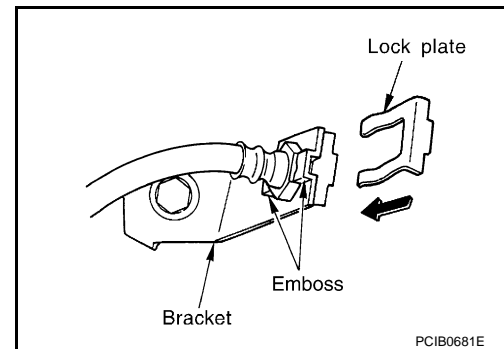
Carefully observe the following steps during clutch tube removal and installation.

- Do not spill clutch fluid onto painted surfaces. If it spills, wipe up immediately and wash the affected area with water.
- When fixing clutch hose to bracket, align clutch hose metal fittings with bracket positioning emboss and lock plate to secure. At this time, prevent twisting or damage of clutch hose. In addition, be careful not to 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.**

- After installation, bleed the clutch hydraulic system. Refer to [CL-7. "Bleeding"](#).



# CLUTCH DISC, CLUTCH COVER

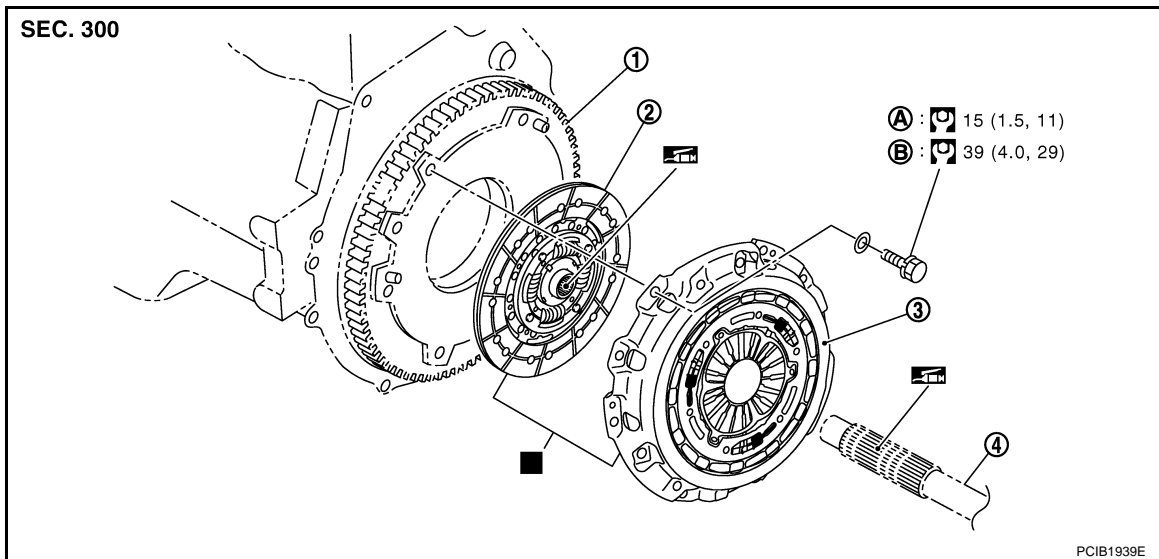
< SERVICE INFORMATION >

## CLUTCH DISC, CLUTCH COVER

### Removal and Installation

INFOID:000000004657850

### COMPONENTS



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

Refer to [GI-8, "Component"](#), and the followings for the symbols in the figure.

■: Replace the parts as a set.

☑: Apply lithium-based grease including molybdenum disulphide

### 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-11, "Removal and Installation"](#).
- Never bring any grease into contact with the clutch disc facing, pressure plate surface and flywheel surface.
- If flywheel is removed, align dowel pin with the smallest hole of flywheel. Refer to [EM-106, "Disassembly and Assembly"](#).
- When installing, be careful that grease applied to main drive gear does not adhere to clutch disc.
- Never clean clutch disc using solvent.

### REMOVAL

1. Remove transmission assembly from the vehicle. Refer to [MT-19, "Removal and Installation"](#).
2. Loosen clutch cover mounting bolts with power tool [Commercial service tool]. Remove clutch cover and clutch disc.

### CAUTION:

**Never drop clutch disc.**

### INSPECTION AND ADJUSTMENT AFTER REMOVAL

#### Clutch Disc



# CLUTCH DISC, CLUTCH COVER

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- Measure circumference runout relative to the 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

: 1.0 mm (0.039 in)/230 mm (9.06 in) dia.

- Measure backlash for clutch disc spline and main drive shaft spline at the circumference of the clutch disc. If it is outside the specified range, replace clutch disc and clutch cover as a set.

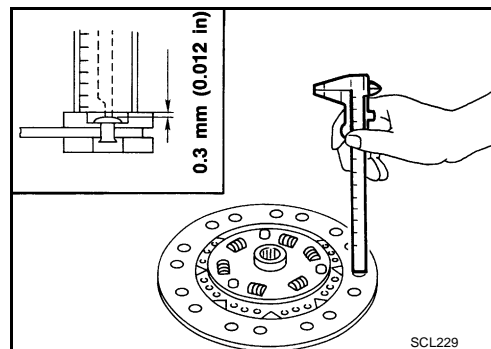
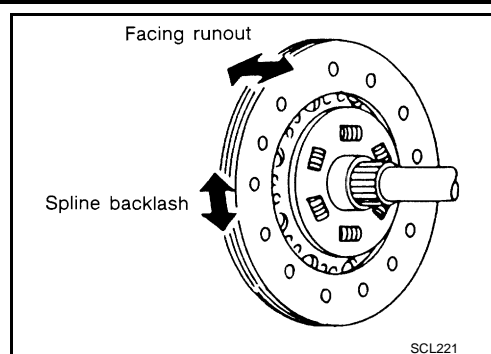
### Maximum backlash of spline

: 1.0 mm (0.039 in)

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

### Facing wear limit (depth to the rivet head)

: 0.3 mm (0.012 in)



## Clutch Cover

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 ( — )].

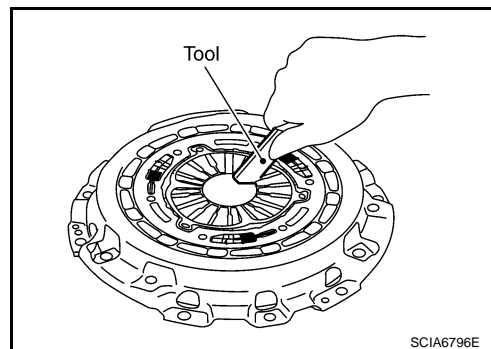
### Tolerance for diaphragm spring lever unevenness

: 0.8 mm (0.031 in)

- 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.



## INSTALLATION

1. Apply recommended grease to clutch disc and main drive gear spline.

#### 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 off excess grease. Wipe off any grease oozing from the parts.

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## CLUTCH DISC, CLUTCH COVER

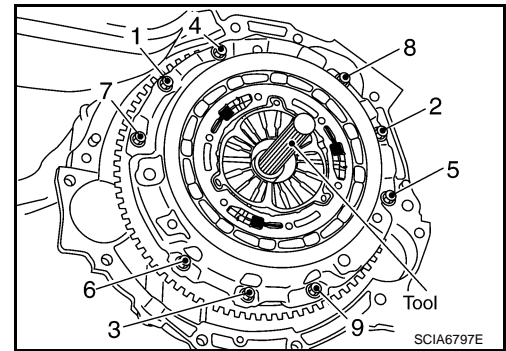
### < SERVICE INFORMATION >

2. Install clutch disc and clutch cover. Pre-tighten mounting bolts and install clutch aligning bar [SST: ST20670000 ( — )].

**CAUTION:**

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

3. Tighten clutch cover mounting bolts evenly in two steps in the order shown in the figure. Refer to "Removal and Installation".
4. Install transmission assembly. Refer to [MT-19, "Removal and Installation"](#).



# SERVICE DATA AND SPECIFICATIONS (SDS)

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## SERVICE DATA AND SPECIFICATIONS (SDS)

### Clutch Control System

INFOID:000000004657851

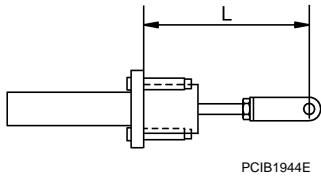
Type of clutch control	Hydraulic
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### Clutch Master Cylinder

INFOID:000000004657852

Unit: mm (in)

Inner diameter	17.46 (11/16)
Standard length "L" between clevis and push rod	111.0 ± 0.5 (4.37 ± 0.02)



### Clutch Disc

INFOID:000000004657853

Unit: mm (in)

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

### Clutch Cover

INFOID:000000004657854

Set-load	10,300 N (1,050.6 kg, 2,315.4 lb)
Diaphragm spring lever height	44.6 - 46.8 mm (1.756 - 1.843 in)
Uneven limit of diaphragm spring toe height	0.8 mm (0.031 in) or less

### Clutch Pedal

INFOID:000000004657855

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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