SECTION CL

CLUTCH



# CONTENTS

# PRECAUTIONS

PFP:00001

## Caution

ECS008JC

- **Recommended fluid is brake fluid “DOT 3” or "DOT 4". Refer to** MA-18, "Fluids and Lubricants".
- **Never reuse drained brake fluid.**
- **Be careful not to splash brake fluid on painted areas.**
- **Use new brake fluid to clean or wash all parts of master cylinder and concentric slave cylinder.**
- **Never use mineral oils such as gasoline or kerosene. It will ruin the rubber parts of the hydraulic system.**
- **If manual transaxle is removed from the vehicle, always replace CSC (concentric slave cylinder). CSC insert is returned to original position to remove transaxle. Dust on clutch disc sliding parts may damage CSC seal and may cause fluid leak.**
- **Do not disassemble master cylinder and CSC.**

**WARNING:**

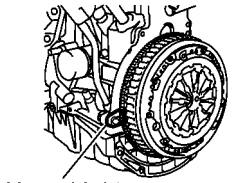
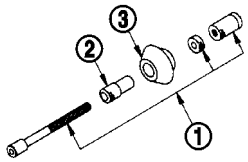
**After cleaning clutch disc, wipe it with a dust collector. Do not use compressed air.**

# PREPARATION

PFP:00002

## Special Service Tools

ECS008JD

| Tool number<br>(Renault tool number)<br>Tool name | | Description |
|---|---|---|
| KV10110910<br>Ring gear stopper<br>(For CR engine) |  <br>ZZA1005D | Removing and Installing clutch cover and flywheel |
| KV113B0060<br>(Mot. 582-01)<br>Ring gear stopper<br>(For K9K engine) |  <br>YCL036 | Removing and Installing clutch cover and flywheel |
| ST20050240<br>Diaphragm spring adjusting wrench |  <br>ZZA0508D | Inspecting diaphragm spring of clutch cover |
| EM07020000<br>Clutch aligner |  <br>PCIB0017E | Installing clutch cover and disc |

# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

PFP:00003

## NVH Troubleshooting Chart

ECS008SM

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.

### CLUTCH

| Reference page | | CL-5. | CL-7. | CL-8. | EM-69. | CL-9 | CL-10. | CL-10. | CL-10. | CL-10. | CL-10. | CL-10. | CL-10 | CL-10 | CL-12. | CL-12. | CL-12. | CL-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUSPECTED PARTS (Possible cause) | | CLUTCH PEDAL (Free play out of adjustment) | CLUTCH LINE (Air in line) | MASTER CYLINDER PISTON CUP (Damaged) | ENGINE MOUNTING (Loose) | RELEASE BEARING (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) |
| Symptom | Clutch grabs/chatters | | | | 1 | | | 2 | | | 2 | 2 | 2 | | | 2 | | |
| | Clutch pedal spongy | | 1 | 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 | 5 | 5 | 6 | |

# CLUTCH PEDAL

SMA for VIN >SJN**AK12U1107568

PFP:46540

ECS008JE

## On Board Inspection

### HEIGHT INSPECTION

1. Make sure clutch pedal height $H_1$ from upper surface of the dash panel is within the specified range.

   **Pedal height $H_1$**

   **: 164 - 174 mm (6.46 - 6.85 in) (CR engine)**

   **: 160 - 169 mm (6.30 - 6.65 in) (LHD with K9K engine)**

   **: 164 - 173 mm (6.46 - 6.81 in) (RHD with K9K engine)**

2. If pedal height $H_1$ is outside the specification, replace pedal assembly.
3. Make sure free play A at pedal pad top surface and pedal height $H_2$ when clutch is disengaged are within the ranges specified below.

   **A: Pedal free play at the pedal pad**

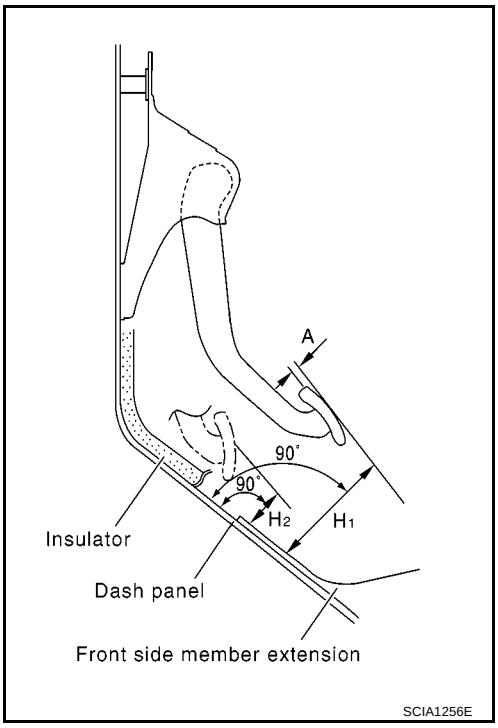
   **: 2 - 8 mm (0.08 - 0.31 in) (CR engine)**

   **: 5 mm (0.20 in) (K9K engine)**

   **Pedal height $H_2$ when clutch is disengaged**

   **: 100 mm (3.94 in) or more (CR engine)**

4. If free play A at pedal pad top surface and pedal height $H_2$ when clutch is disengaged are outside the specification, replace clutch pedal assembly.



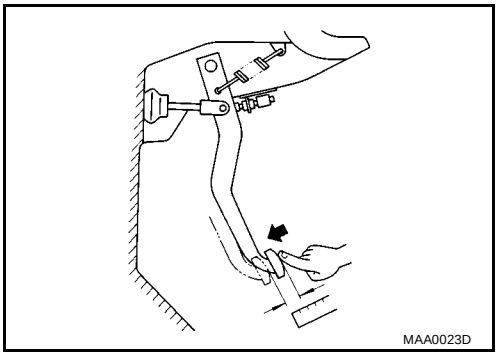

### PLAY INSPECTION

- Press the clutch pedal by hand until certain resistance can be felt. Using a scale, Make sure the free play is within the specified range.

  **Pedal free play**

  **: 2 - 8 mm (0.08 - 0.31 in) (CR engine)**

  **: 5 mm (0.20 in) (K9K engine)**

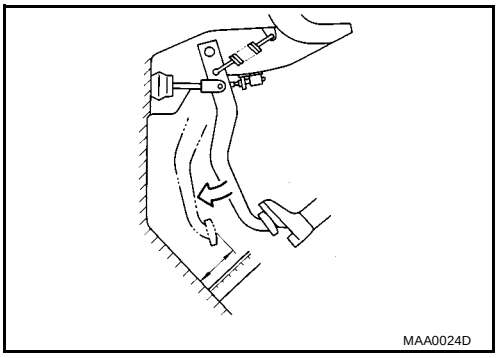



### CLEARANCE CHECK

1. Start the engine and let it idle.
2. Apply parking brake.
3. Depress the brake pedal.
4. Fully depress clutch pedal and shift to 1st gear.
5. Release clutch pedal gradually. Using a scale, check the clearance between the clutch pedal and floor panel to see if it is within the specified range.

   **Pedal height when the clutch disengages**

   **: 100 mm (3.94 in) or more (CR engine)**



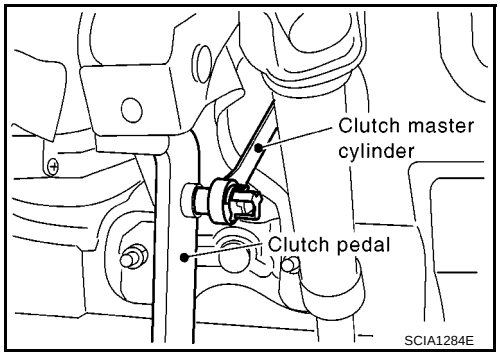

**NOTE:**
Pedal height at clutch disengagement varies slightly from the clutch engagement point. Despite this, pedal height at clutch engagement is commonly used for both cases in order to simplify the inspection.

## Removal and Installation

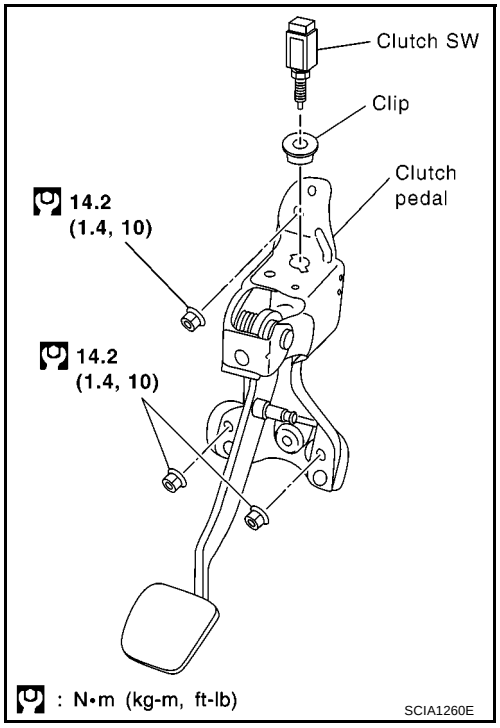
ECS008JF

### REMOVAL

1. Remove instrument panel under tray. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Unlock master cylinder rod end and separate master cylinder from clutch pedal.
3. Remove clutch switch harness clamp from pedal bracket.
4. Disconnect clutch switch connector.




5. Remove nuts (3), and remove clutch pedal assembly.




### INSPECTION AFTER REMOVAL

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

### INSTALLATION

- Install in the reverse order of removal.

# CLUTCH FLUID

PFP:00017

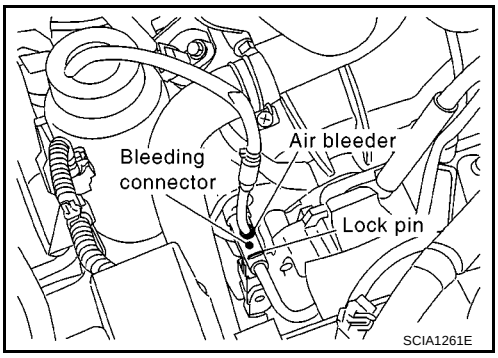
## Air Bleeding Procedure

ECS008JG

**CAUTION:**

- **Monitor fluid level in the reservoir tank to make sure it does not empty.**
- **Do not spill brake fluid onto painted surfaces. If it spills, wipe up immediately and wash the affected area with water.**
- **Bleed the bleeding connector.**

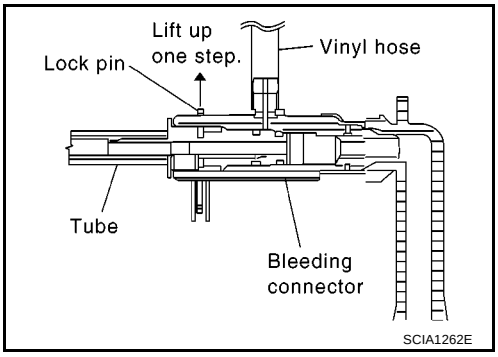
1. Fill the master cylinder reservoir tank with new brake fluid.
2. Remove rubber cap and connect a transparent vinyl hose to air bleeder of bleeding connector.



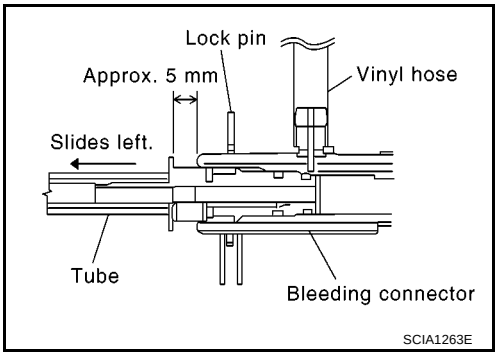

3. Lift tube side lock pin of bleeding connector up one step.

   **CAUTION:**
   **Do not remove lock pin.**
4. "Depress" and "release" the clutch pedal slowly and fully 15 times at an interval of 2 to 3 seconds and hold it.

   **CAUTION:**
   **Hold it to prevent releasing tube from bleeding connector when fluid pressure is applied in the tube.**




5. Slide tube 5 mm (0.20 in) to the direction shown by the arrow and drain clutch fluid.
6. Return tube to its original position.
7. Release clutch pedal and wait for 5 seconds.
8. Repeat steps 4 to 7 until no bubbles can be observed in the brake fluid.



# CLUTCH MASTER CYLINDER

PFP:30610

## Removal and Installation

ECS008JH

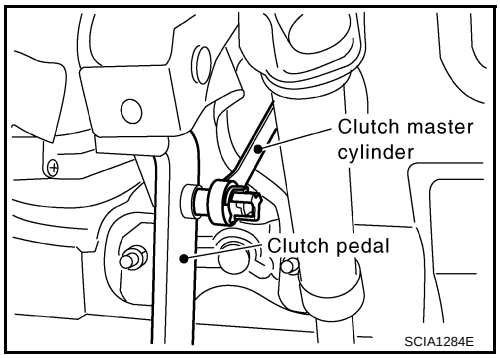
### REMOVAL

1. Drain brake fluid from reservoir tank and remove hose from the nipple.

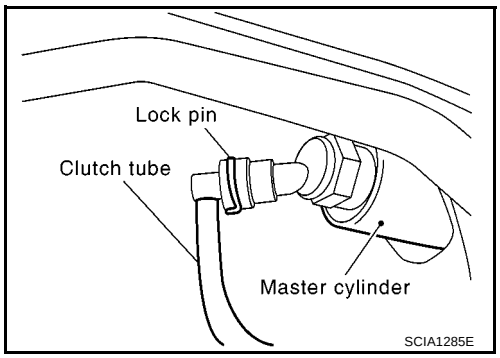
   **CAUTION:**

   **Do not spill brake fluid onto painted surfaces. If it spills, wipe up immediately and wash the affected area with water.**

2. Unlock master cylinder rod end in the passenger room and separate master cylinder from clutch pedal.

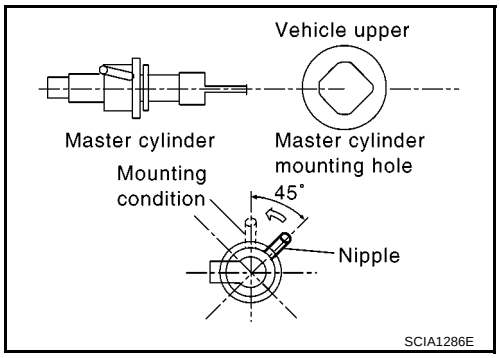



3. Remove lock pin from master cylinder and separate clutch tube.
4. Rotate master cylinder clockwise by 45° and remove from the vehicle.




### INSTALLATION

1. Tilt master cylinder clockwise by 45° and insert to the mounting hole. Rotate counter clockwise and secure it. At this time, nipple is upward of the vehicle.
2. After finishing work, perform clutch pedal height inspection and clutch piping air bleeding.
   - Refer to CL-5, "On Board Inspection" ,CL-7, "Air Bleeding Procedure"



# CSC (CONCENTRIC SLAVE CYLINDER)

PFP:30500

## Removal and Installation

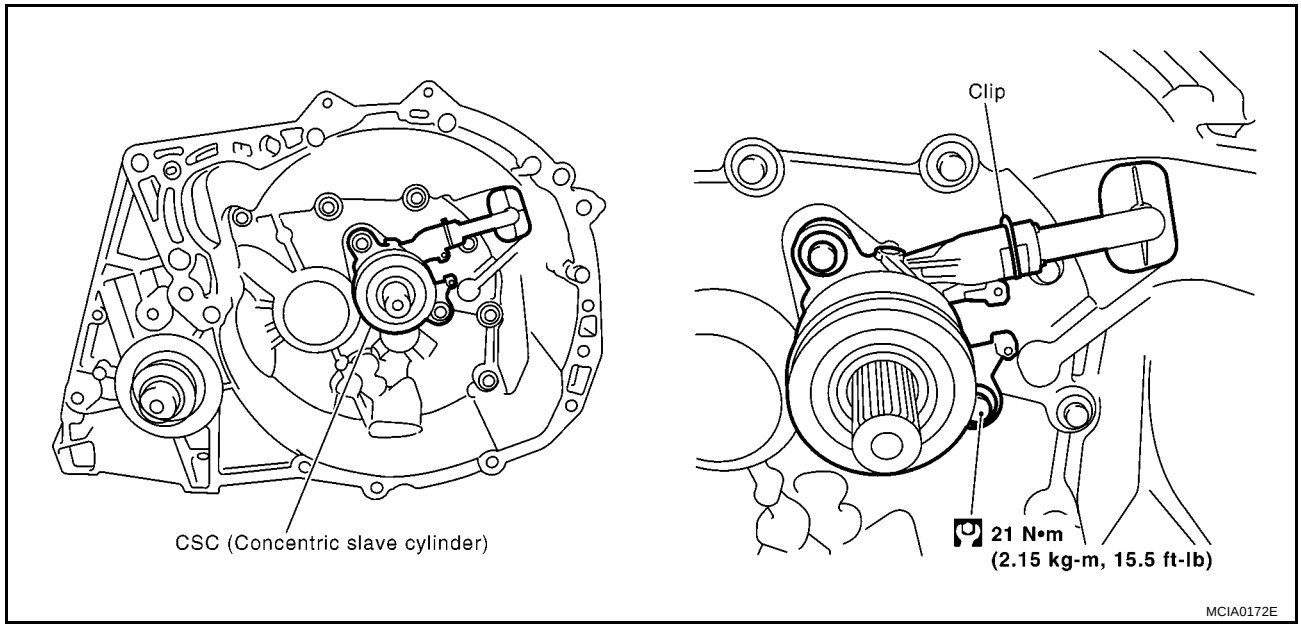
ECS00CW5

**CAUTION:**

- **Do not spill brake fluid onto painted surfaces.**
  **If it spills, wipe up immediately and wash the affected area with water.**
- **If manual transaxle is removed from the vehicle, always replace CSC (concentric slave cylinder). CSC insert is returned to original position to remove transaxle. Dust on clutch disc sliding parts may damage CSC seal and may cause brake fluid leak.**

### REMOVAL

1. Remove manual transaxle. Refer to MT-7, "REMOVAL AND INSTALLATION" (JH3) or MT-37, "REMOVAL AND INSTALLATION" (JR5).
2. Remove bolts and CSC from manual transaxle.




### INSPECTION

**NOTE:**

- Cannot disassemble CSC and release bearing because they are integral parts. Replace them as an assembly.

### Inspect for the following, and replace parts if necessary

- CSC: damage, foreign material, wear or pinholes on the cylinder outer surface.
- Release bearing: damage, incorrect rotation direction, or has poor aligning function, and dust seal is deformed or cracked.

### INSTALLATION

1. Install new CSC to manual transaxle. Tighten to the specified torque.

   **Tightening torque**

   **: 21 N·m (2.15 kg-m, 15.5 ft- lb)**

   **CAUTION:**
   **Do not insert and operate CSC because piston and stopper of CSC components may fall off.**
2. Install manual transaxle to the vehicle. Refer to MT-7, "REMOVAL AND INSTALLATION" (JH3) or MT-37, "REMOVAL AND INSTALLATION" (JR5).
3. Bleed air from the clutch piping. Refer to CL-7, "Air Bleeding Procedure" .

# CLUTCH DISC, CLUTCH COVER AND FLYWHEEL

PFP:30100

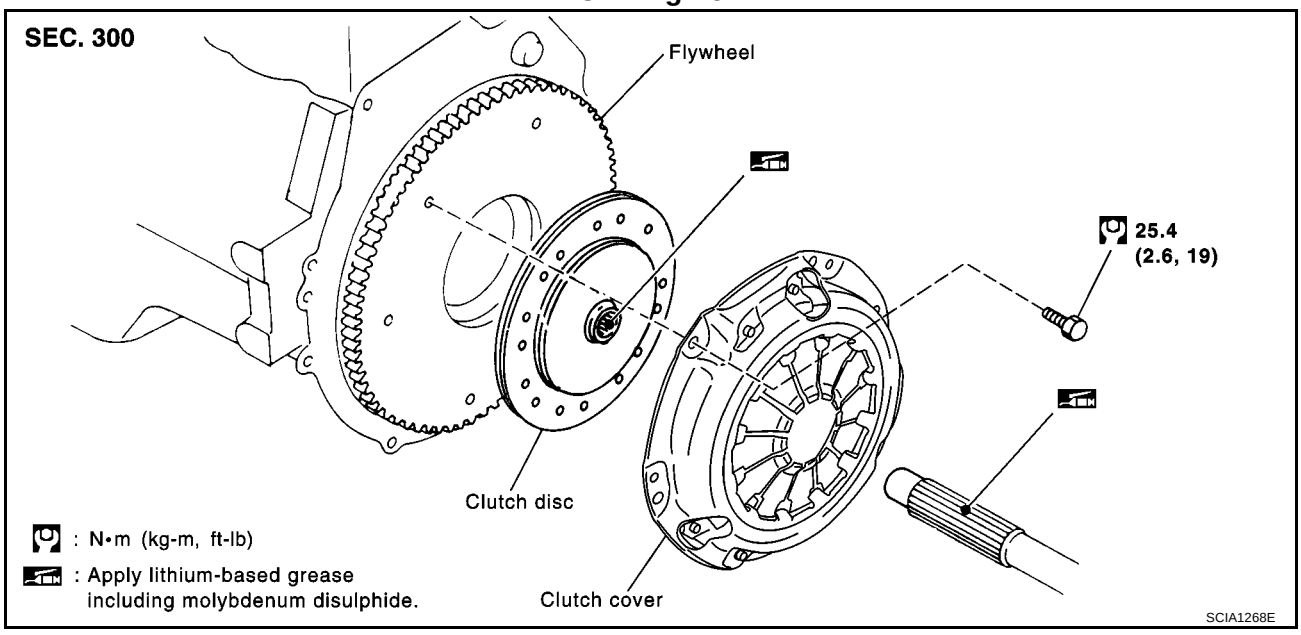
## Removal and Installation

ECS008JJ

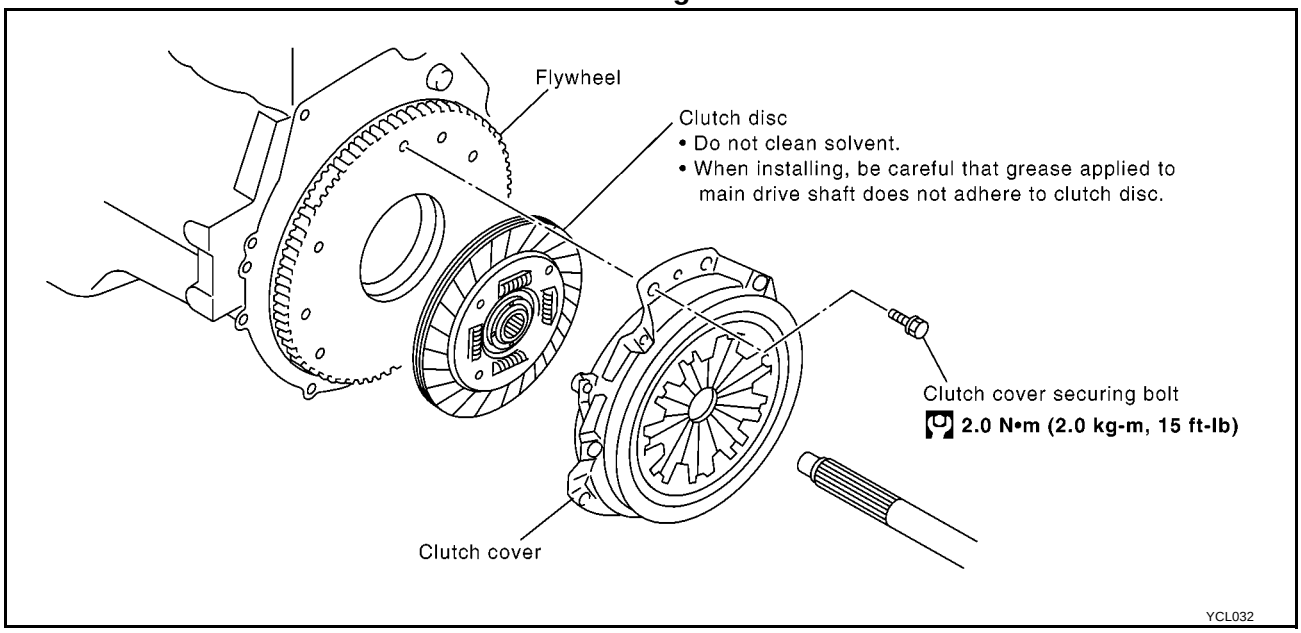
**CAUTION:**

- **If manual transaxle is removed from the vehicle, always replace CSC (concentric slave cylinder). CSC insert is returned to original position to remove transaxle. Dust on clutch disc sliding parts may damage CSC seal and may cause brake fluid leak.**
- **Be careful not to bring any grease into contact with the clutch disc facing, pressure plate surface, or flywheel surface.**

**CR Engine**



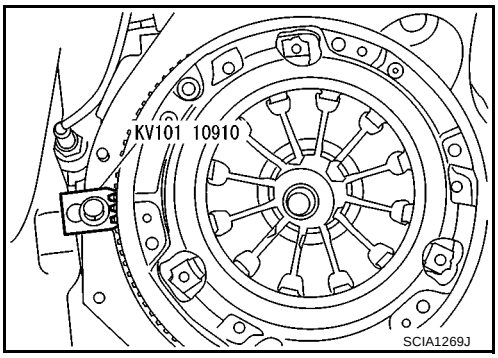

**K9K Engine**



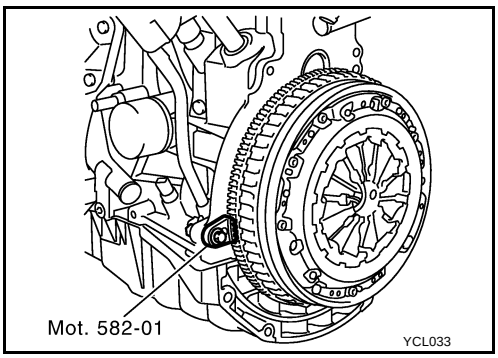
## REMOVAL

1. Remove manual transaxle from the vehicle. Refer to MT-7, "REMOVAL AND INSTALLATION" (JH3) or MT-37, "REMOVAL AND INSTALLATION" (JR5).
2. Install a rear gear stopper adapter (SST).

**CR Engine**




**K9K Engine**



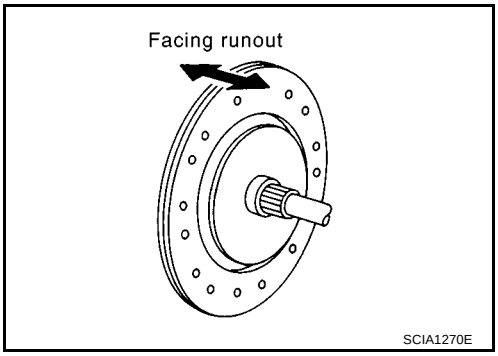

3. Loosen clutch cover mounting bolts evenly. Remove clutch cover and clutch disc.

## INSPECTION AND ADJUSTMENT AFTER REMOVAL (CR ENGINE)

### Clutch Disc

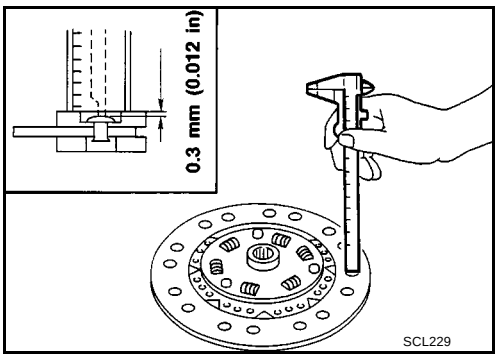
- Measure circumferential runout relative to the clutch disc center spline. If it is outside the specification, replace the clutch disc.

**Runout limit/diameter of the area to be measured:**
**: 0.7 mm (0.028 in) or less/170 (6.69 in) mm dia.**



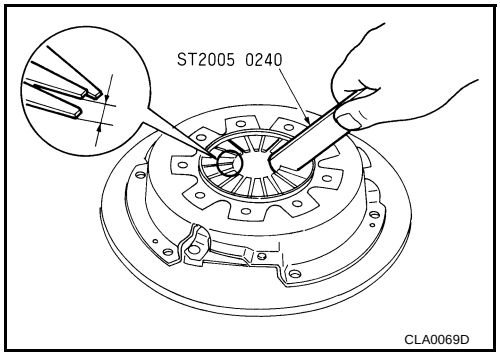

- Using calipers, measure the depth to the clutch disc facing rivet heads. If it exceeds the allowable wear limit, replace the clutch disc.

**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 a diaphragm adjusting wrench (SST).




**Tolerance for diaphragm spring lever unevenness**

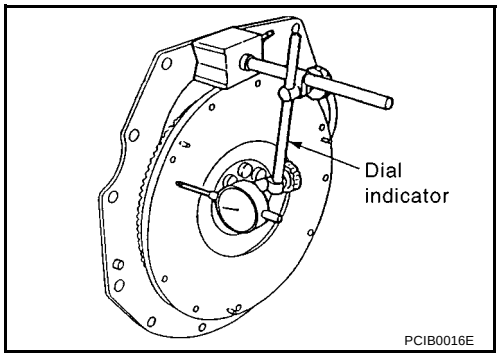
**: 0.7 mm (0.028 in)**

- Check clutch cover thrust ring for wear or breakage. If wear or breakage is found, replace clutch cover assembly.

  **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 the assembly.

## Flywheel Runout

Using a dial gauge, measure runout at the flywheel clutch contact surface. If runout is outside the specification, replace the flywheel. If a trace of burn or discoloration is found on the surface, repair it with sandpaper.




**Flywheel surface runout**

**: EM-92, "FLYWHEEL RUNOUT" .**

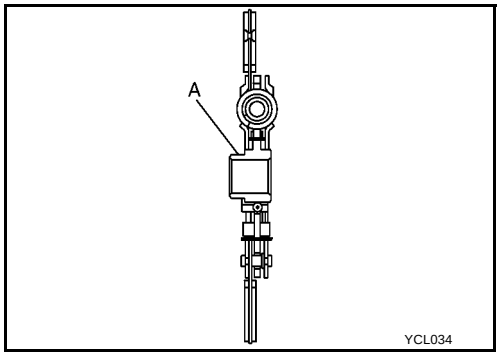
**CAUTION:**

**Measure it at flywheel outer face (not on knock pin and clutch cover mounting hole).**

## INSPECTION AND ADJUSTMENT AFTER REMOVAL (K9K ENGINE)

### Clutch Disc

- The hubs of the clutch discs are nickle plated to improve their sliding performance.
- Clean the splines of the clutch shaft and install the assembly without lubricant.
- Degrease the friction face of the flywheel.
- Install the clutch disc (offset (A) from the hub on the flywheel side).




**CAUTION:**

**Reworking on the clutch face is not permitted.**

### Flywheel Runout

Replace the flywheel if it has been damaged.

## INSTALLATION

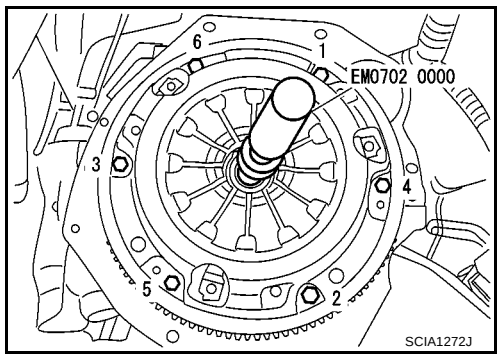
1. Clean input shaft spline by removing grease and dust from wear.
2. Apply recommended Grease to clutch disk and input shaft spline.

   **NOTE:**

   Applied amount of grease is 0.4 g. Film pressure is 1 mm (0.04 in) or less.
3. Insert clutch disc to input shaft. Wipe off any grease oozing from the parts.

   **CAUTION:**
   - **Excessive grease may cause slip or judder. And if it adheres to CSC seal, it cause clutch fluid leak. Wipe off excess grease.**
   - **If grease is not applied, it may cause noise, poor disengagement, or damage to the clutch. Be sure to apply grease.**

4. Install clutch disc and clutch cover. Pre-tighten mounting bolts and install a clutch aligner (SST).
5. Tighten clutch cover attaching bolts evenly in two steps in the order shown in the figure. (CR engine)




**Tightening torque**

| | |
|---|---|
| **First step** | **: 9.9 - 19 N·m (1.0 - 2.0 kg-m, 8 - 14 ft-lb)** |
| **Final step** | **: 22 - 29 N·m (2.2 - 3.0 kg-m, 17 - 21 ft-lb)** |

Tighten clutch cover attaching bolts order shown in the figure. (K9K engine)

6. Install manual transaxle. Refer to MT-7, "REMOVAL AND INSTALLATION" (JH3) or MT-37, "REMOVAL AND INSTALLATION" (JR5).

# SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

## Clutch Pedal

SMA for VIN >SJN**AK12U1107568

ECS008JK

Unit mm (in)

| Engine type | CR | K9K |
|---|---|---|
| Pedal height | 164 - 174(6.46 - 6.85) | 160 - 169 (6.30 - 6.65) (LHD models)<br>164 - 173 (6.46 - 6.81) (RHD models) |
| Pedal height at clutch disengagement | 100 (3.94) or more | — |
| Pedal free play | 2 - 8 (0.08 - 0.31) | 5 (0.20) |

## Clutch Disc

ECS008JL

Unit: mm (in)

| Engine type | CR | K9K |
|---|---|---|
| Size | 180 (7.09) dia. | 215 (8.46) dia. |
| Wear limit (depth to rivet head) | 0.3 (0.012) | — |
| Runout limit/diameter of the area to be measured | 0.7 (0.028) or less / 170 (6.69) dia. | — |

## Clutch Cover

ECS008JM

Unit: mm (in)

| Engine type | CR | K9K |
|---|---|---|
| Size | 190 (7.48) dia. | — |
| Diaphragm spring lever height | 32.0 - 34.0 (1. 26 - 1.34) | — |
| Uneven limit diaphragm spring toe height | 0.7 (0.028) or less | — |

## Clutch Control System

ECS008SO

| Type of clutch control | Hydraulic |
|---|---|

## Clutch Master Cylinder

ECS008SP

Unit: mm (in)

| Engine type | CR | K9K |
|---|---|---|
| Inner diameter | 15.87 (5/8) | 17.46 (11/16) |