

# CLUTCH

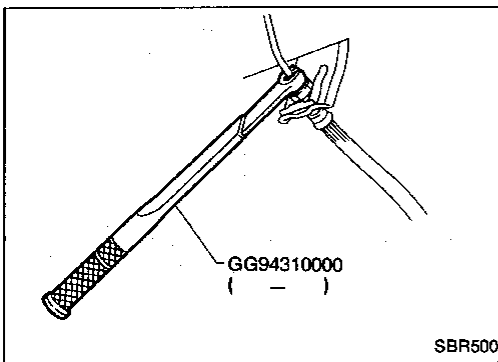
## SECTION **CL**

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## PRECAUTIONS AND PREPARATION



### Precautions

- Recommended fluid is brake fluid "DOT 3".
- Never reuse drained brake fluid.
- Be careful not to splash brake fluid on painted areas.
- When removing and installing clutch piping, use Tool.
- Use new brake fluid to clean or wash all parts of master cylinder, operating cylinder and clutch damper.
- Never use mineral oils such as gasoline or kerosene. It will ruin the rubber parts of the hydraulic system.

### WARNING:

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

### Special Service Tools

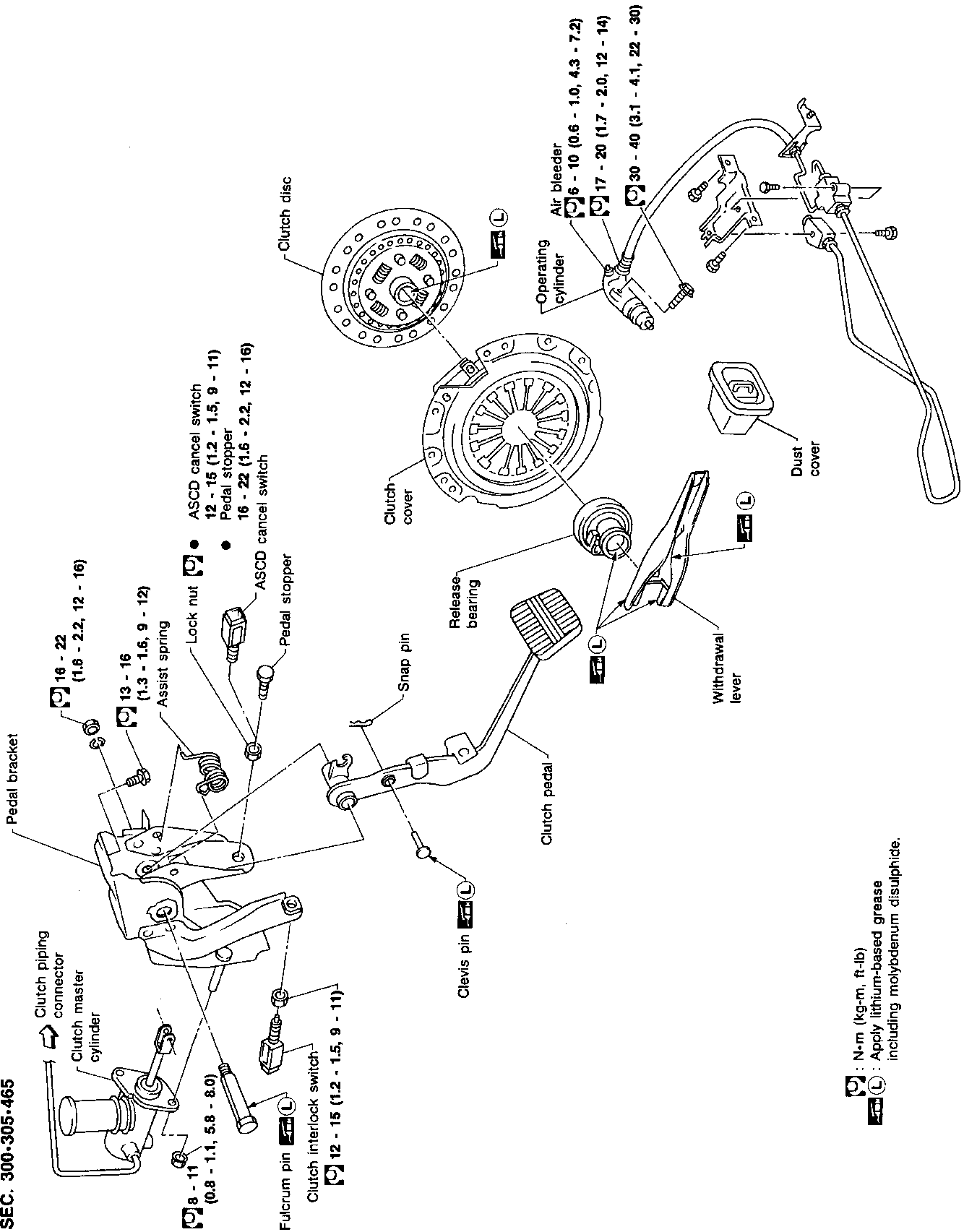
Tool number (Kent-Moore No.) Tool name	Description
GG94310000 ( — ) Flare nut torque wrench	<p>NT406</p> <p>a: 10 mm (0.39 in)</p>
ST20600000 (J26366) Clutch aligning bar	<p>NT405</p> <p>a: 15.9 mm (0.626 in) dia. b: 22.8 mm (0.898 in) dia. c: 55 mm (2.17 in)</p>
ST20050240 ( — ) Diaphragm spring adjusting wrench	<p>NT404</p> <p>a: 150 mm (5.91 in) b: 25 mm (0.98 in)</p>

### Commercial Service Tools

Tool name	Description
Bearing puller	<p>NT077</p> <p>Removing release bearing</p>
Bearing drift	<p>NT063</p> <p>a: 50 mm (1.97 in) dia.</p> <p>Installing release bearing</p>

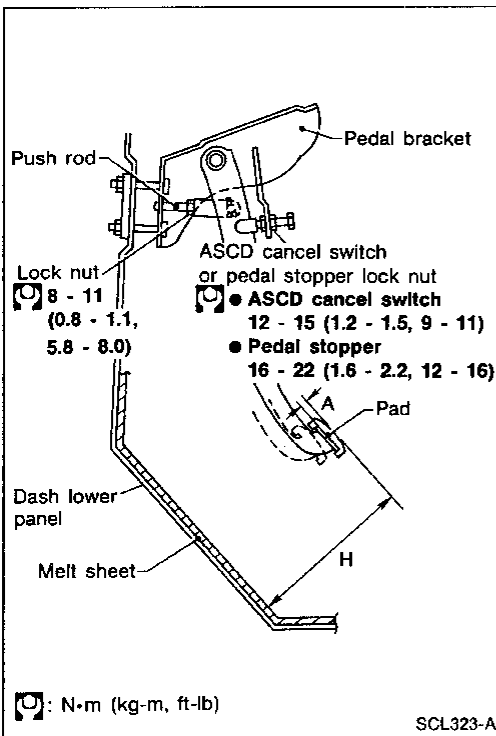
# CLUTCH SYSTEM

SEC. 300-305-465



: N·m (kg·m, ft·lb)  
 : Apply lithium-based grease including molybdenum disulphide.

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## Adjusting Clutch Pedal

1. Adjust pedal height with pedal stopper or ASDC cancel switch.

**Pedal height "H":**

**192 - 202 mm (7.56 - 7.95 in)**

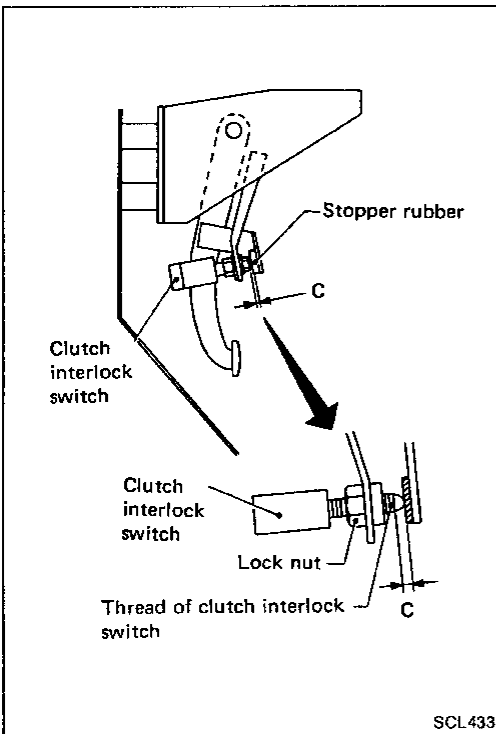
2. Adjust pedal free play with master cylinder push rod. Then tighten lock nut.

**Pedal free play "A":**

**1.0 - 3.0 mm (0.039 - 0.118 in)**

**Pedal free play means the following total measured at position of pedal pad:**

- **Play due to clevis pin and clevis pin hole in clutch pedal.**
3. Make sure that clevis pin can be rotated smoothly. If not, readjust pedal free play with master cylinder push rod.



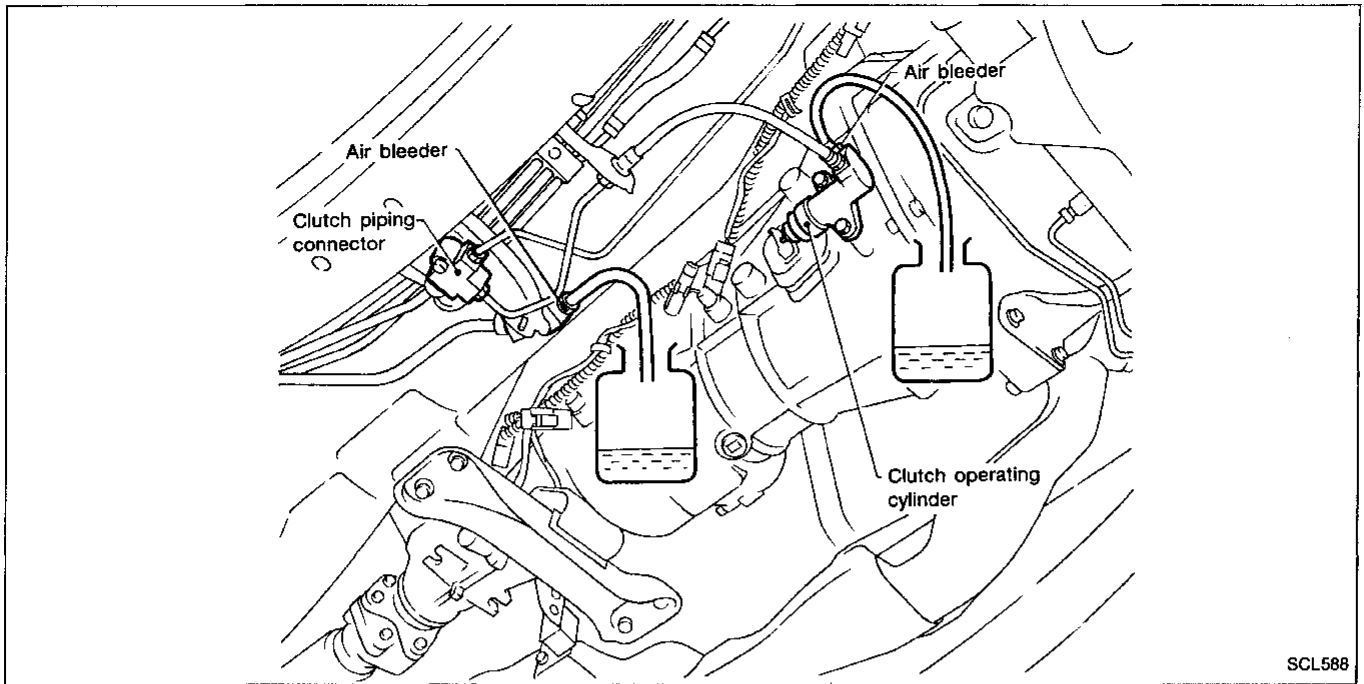
— U.S.A. model only —

3. Adjust clearance "C" shown in the figure while fully depressing clutch pedal.

**Clearance C:**

**0.3 - 1.0 mm (0.012 - 0.039 in)**

# INSPECTION AND ADJUSTMENT



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## Bleeding Procedure

1. Bleed air from clutch operating cylinder according to the following procedure.

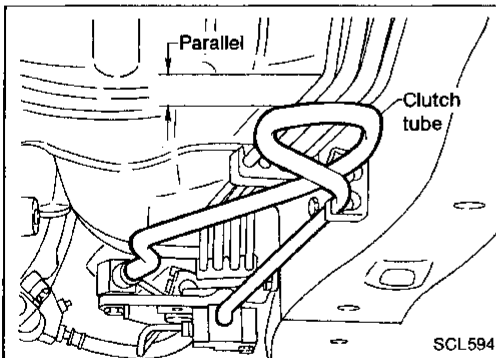
**Carefully monitor fluid level at master cylinder during bleeding operation.**

- a. Top up reservoir with recommended brake fluid.
  - b. Connect a transparent vinyl tube to air bleeder valve.
  - c. Fully depress clutch pedal several times.
  - d. With clutch pedal depressed, open bleeder valve to release air.
  - e. Close bleeder valve.
  - f. Repeat steps c through e above until brake fluid flows from air bleeder valve without air bubbles.
2. Bleed air from clutch piping connector according to the above same procedure.
  3. Repeat the above bleeding procedures 1 and 2 several times.

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## Remarks

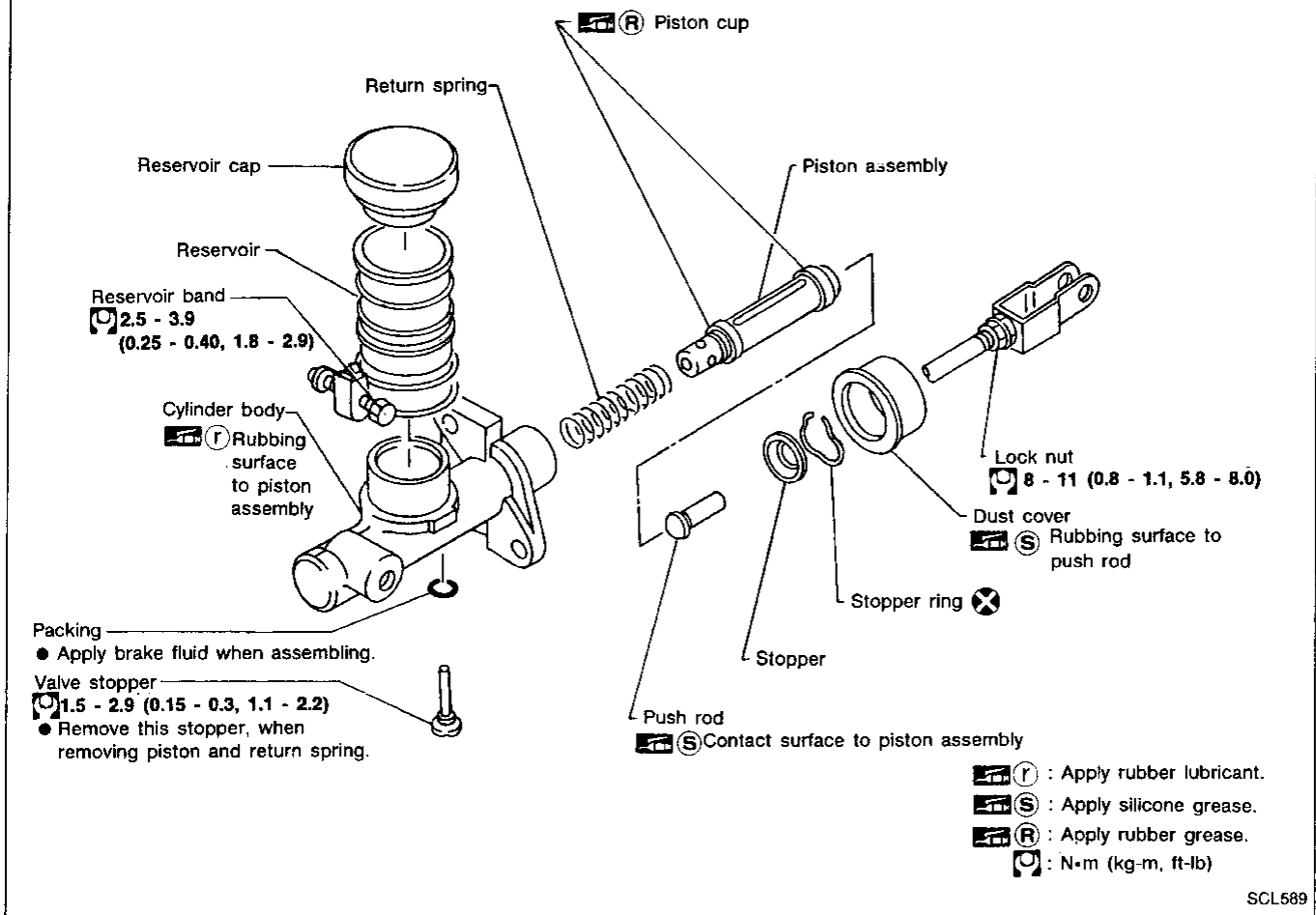
When replacing clutch tube, install new one parallel to body floor panel. If not, air bleeding might be difficult.



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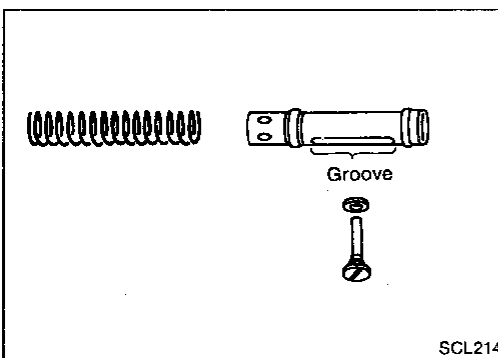
## Clutch Master Cylinder

SEC. 305



### DISASSEMBLY AND ASSEMBLY

- Push piston into cylinder body with screwdriver when removing and installing valve stopper.



- Align groove of piston assembly and valve stopper when installing valve stopper.
- Check direction of piston cups.

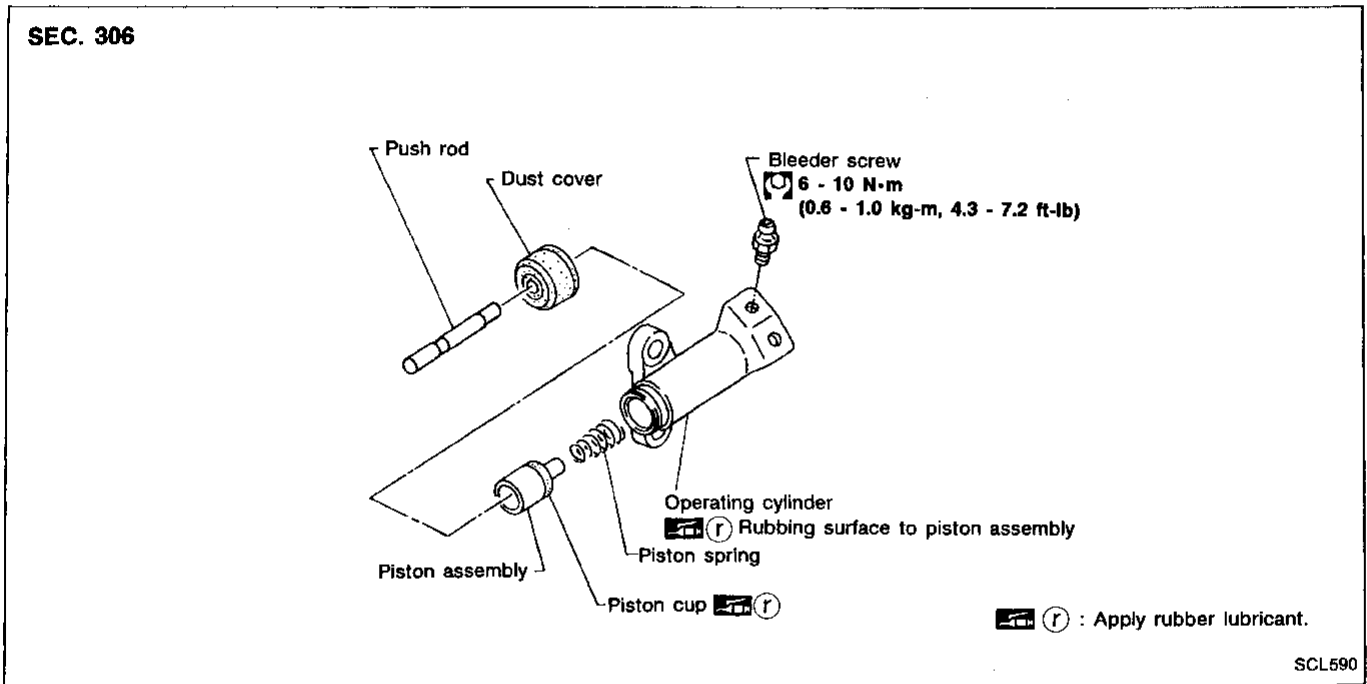
# HYDRAULIC CLUTCH CONTROL

## Clutch Master Cylinder (Cont'd)

### INSPECTION

- Check cylinder and piston rubbing surface for uneven wear, rust or damage. Replace if necessary.
- Check piston with piston cup for wear or damage. Replace if necessary.
- Check return spring for wear or damage. Replace if necessary.
- Check reservoir for deformation or damage. Replace if necessary.
- Check dust cover for cracks, deformation or damage. Replace if necessary.

### Operating Cylinder

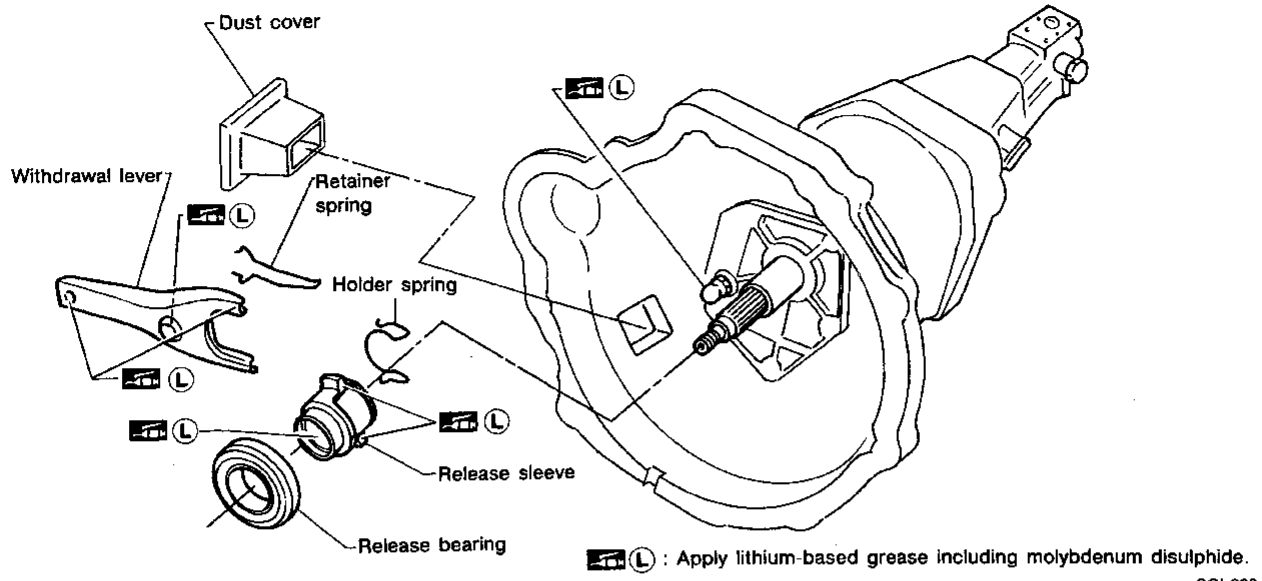


### INSPECTION

- Check rubbing surface of cylinder for wear, rust or damage. Replace if necessary.
- Check piston with piston cup for wear or damage. Replace if necessary.
- Check piston spring for wear or damage. Replace if necessary.
- Check dust cover for cracks, deformation or damage. Replace if necessary.

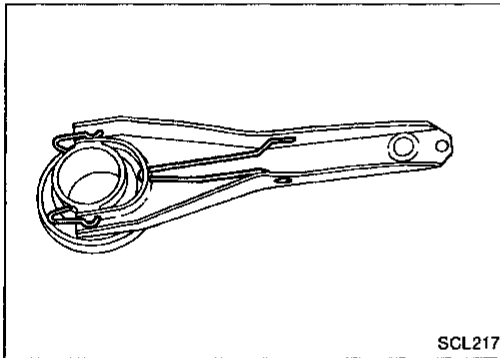
# CLUTCH RELEASE MECHANISM

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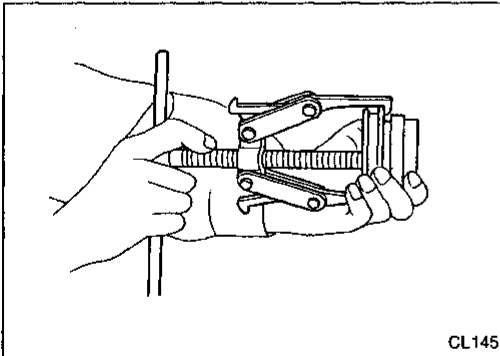
## REMOVAL AND INSTALLATION

- Install retainer spring and holder spring.



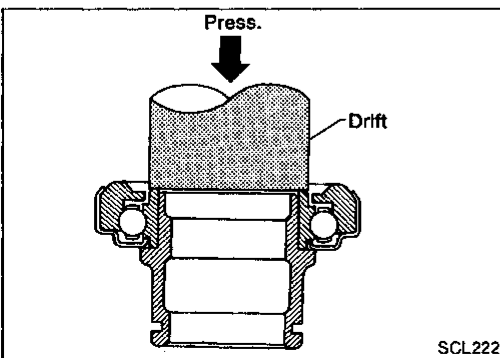
SCL217

- Remove release bearing.



CL145

- Install release bearing with suitable drift.



SCL222



# CLUTCH RELEASE MECHANISM

## INSPECTION

- Check release bearing to see that it rolls freely and is free from noise, cracks, pitting or wear. Replace if necessary.
- Check release sleeve and withdrawal lever rubbing surface for wear, rust or damage. Replace if necessary.

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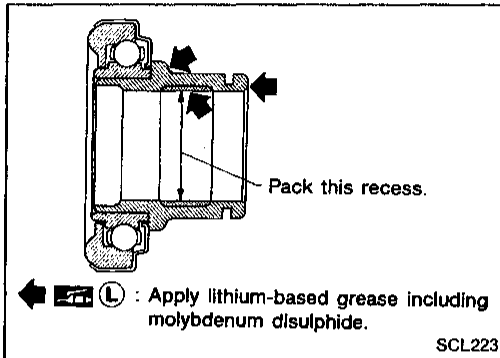
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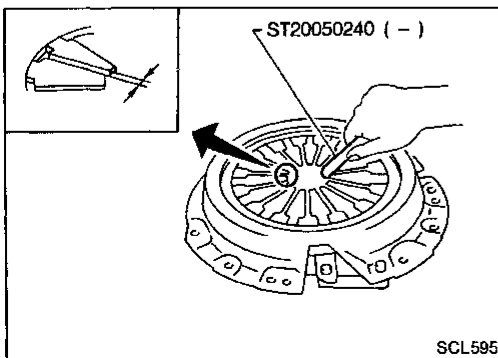
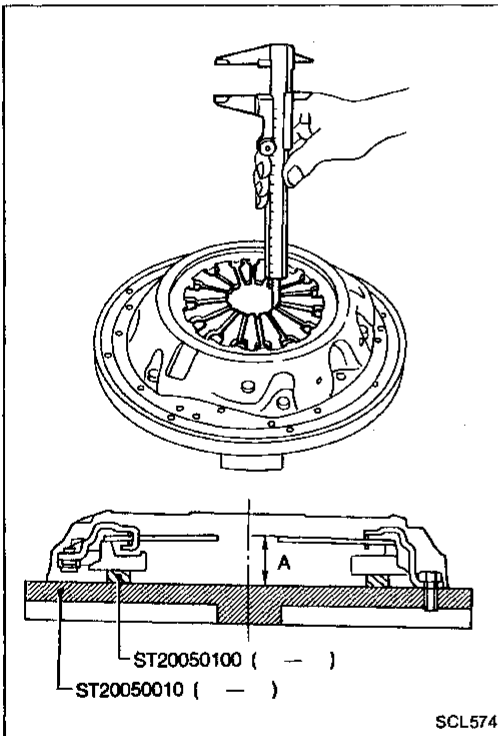
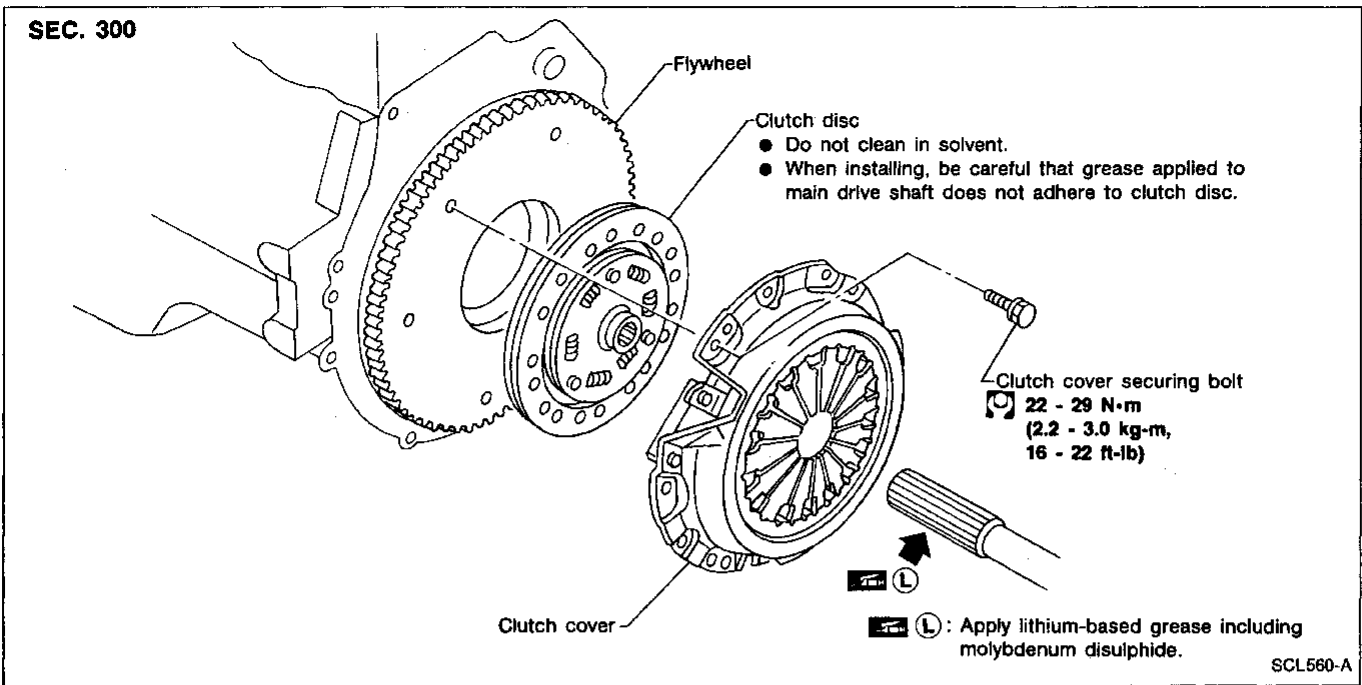


## LUBRICATION

- Apply recommended grease to contact surface and rubbing surface.

**Too much lubricant might damage clutch disc facing.**

# CLUTCH DISC AND CLUTCH COVER



## Clutch Cover and Flywheel

### INSPECTION AND ADJUSTMENT

- Check clutch cover installed on vehicle for unevenness of diaphragm spring toe height. If out of limit, adjust the height with Tool.

- Adjust unevenness of diaphragm spring with Tool.  
**Uneven limit:**  
0.7 mm (0.028 in)

# CLUTCH DISC AND CLUTCH COVER

## Clutch Cover and Flywheel (Cont'd)

### FLYWHEEL INSPECTION

- Check contact surface of flywheel for slight burns or discoloration. Repair flywheel with emery paper.
- Check flywheel runout.

**Runout (Total indicator reading):**  
**Less than 0.15 mm (0.0059 in)**

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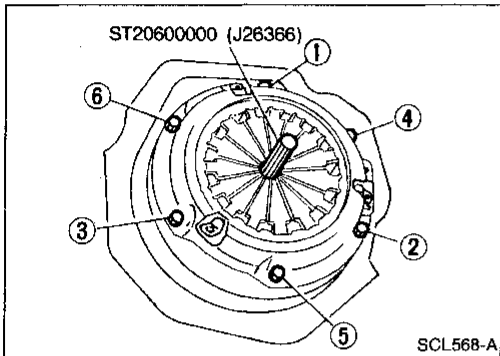
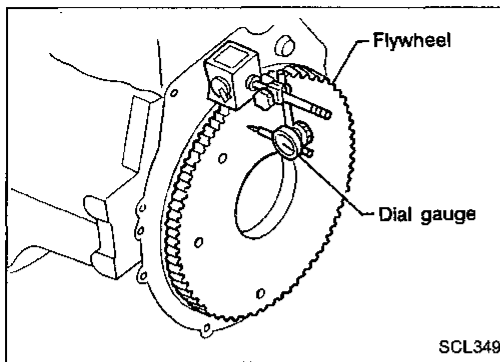
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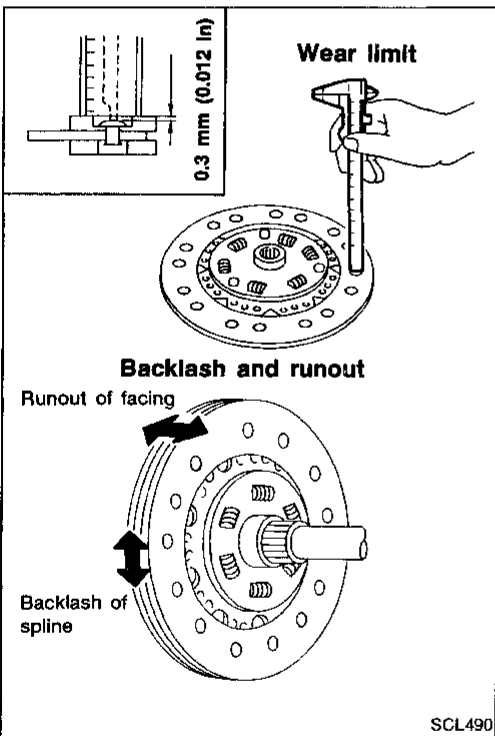
### INSTALLATION

- Insert Tool into clutch disc hub when installing clutch cover and disc.
- Tighten clutch cover fixing bolts in numerical order by 2 steps.

#### Tightening torque:

**First step 20 N·m (2.0 kg-m, 14 ft-lb)**

**Final step 22 - 29 N·m (2.2 - 3.0 kg-m, 16 - 22 ft-lb)**



### Clutch Disc

#### INSPECTION

- Check clutch disc for wear of facing.
  - Wear limit of facing surface to rivet head:**  
**0.3 mm (0.012 in)**
- Check for backlash of spline and runout of facing.
  - Maximum backlash of spline (at outer edge of disc):**  
**0.9 mm (0.035 in)**
  - Runout limit:**  
**1.0 mm (0.039 in)**
  - Distance of runout check point (from hub center):**  
**107.5 mm (4.23 in)**
- Check clutch disc for burns, discoloration or oil or grease leakage. Replace if necessary.

#### INSTALLATION

- Apply recommended grease to contact surface of spring portion.

**Too much lubricant might damage clutch disc facing.**

# SERVICE DATA AND SPECIFICATIONS (SDS)

## General Specifications

### CLUTCH CONTROL SYSTEM

Type of clutch control	Hydraulic
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### CLUTCH MASTER CYLINDER

Inner diameter	mm (in)	15.87 (5/8)
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### CLUTCH OPERATING CYLINDER

Inner diameter	mm (in)	19.05 (3/4)
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### CLUTCH DISC

Unit: mm (in)

Model	225
Facing size (Outer dia. x inner dia. x thickness)	225 x 150 x 3.5 (8.86 x 5.91 x 0.138)
Thickness of disc assembly With load	7.6 - 8.0 (0.299 - 0.315) with 5,394 N (550 kg, 1,213 lb)

### CLUTCH COVER

Model	225	
Full load	N (kg, lb)	5,394 (550, 1,213)

## Inspection and Adjustment

### CLUTCH PEDAL

Unit: mm (in)

Pedal height "H"	192 - 202 (7.56 - 7.95)
Pedal free play (At pedal pad)	1.0 - 3.0 (0.039 - 0.118)
Clearance between pedal stopper rubber and threaded end of clutch interlock	0.3 - 1.0 (0.012 - 0.039)

\*: Measured from surface of melt sheet to pedal pad

### CLUTCH COVER

Unit: mm (in)

Model	225
Uneven limit of diaphragm spring toe height	0.7 (0.028)

### CLUTCH DISC

Unit: mm (in)

Model	225
Wear limit of facing surface to rivet head	0.3 (0.012)
Runout limit of facing	1.0 (0.039)
Distance of runout check point (from the hub center)	107.5 (4.23)
Maximum backlash of spline (at outer edge of disc)	0.9 (0.035)