

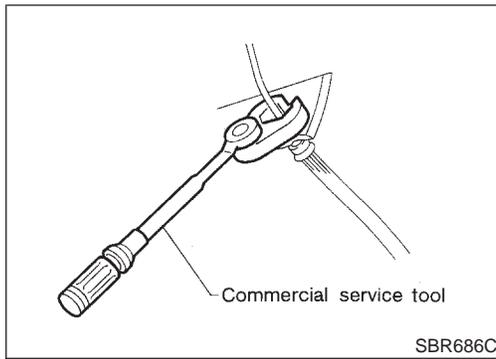
SECTION **CL**

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# PRECAUTIONS

## Precautions



## Precautions

NACL0001

- 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.

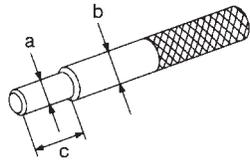
# PREPARATION

Special Service Tools

## Special Service Tools

NACL0002

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
ST20670000 ( — ) Clutch aligning bar	 <p>Installing clutch cover and clutch disc  <b>a: 15 mm (0.59 in) dia.</b>  <b>b: 23 mm (0.91 in) dia.</b>  <b>c: 30 mm (1.18 in)</b></p> <p>NT405</p>

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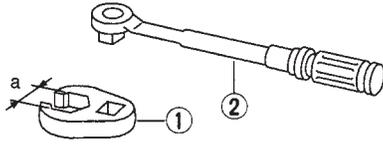
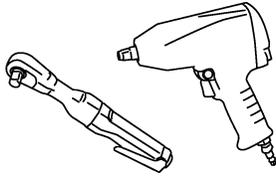
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## Commercial Service Tools

NACL0003

Tool name	Description
1 Flare nut crowfoot 2 Torque wrench	 <p>Removing and installing clutch piping  <b>a: 10 mm (0.39 in)</b></p> <p>NT360</p>
Power tool	 <p>Loosening bolts and nuts</p> <p>PBIC0190E</p>

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# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NACL0027

## NVH Troubleshooting Chart

### NVH Troubleshooting Chart

NACL0027S01

Use the chart below to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, repair or replace these parts.

## CLUTCH

NACL0027S01/01

Reference page	CL-6	CL-7	CL-8	CL-9	Refer to EM-63, "REMOVAL".	CL-10	CL-12	CL-13	CL-13	CL-13	CL-13										
SUSPECTED PARTS (Possible cause)	CLUTCH PEDAL (Free play out of adjustment)																				
	CLUTCH LINE (Air in line)		1																		
	MASTER CYLINDER PISTON CUP (Damaged)			2																	
	OPERATING CYLINDER PISTON CUP (Damaged)				2																
	ENGINE MOUNTING (Loose)					1															
	RELEASE BEARING (Worn, dirty or damaged)						1														
	CLUTCH DISC (Out of true)																				
	CLUTCH DISC (Runout is excessive)								2												
	CLUTCH DISC (Lining broken)																				
	CLUTCH DISC (Dirty or burned)																				
	CLUTCH DISC (Oily)														2						
	CLUTCH DISC (Worn out)																				
	CLUTCH DISC (Hardened)																				
	CLUTCH DISC (Lack of spline grease)																				
	DIAPHRAGM SPRING (Damaged)																				3
PRESSURE PLATE (Distortion)																					4
FLYWHEEL (Distortion)																					5
Symptom	Clutch grabs/chatters																				
	Clutch pedal spongy																				
	Clutch noisy																				
	Clutch slips																				
Clutch does not disengage																					

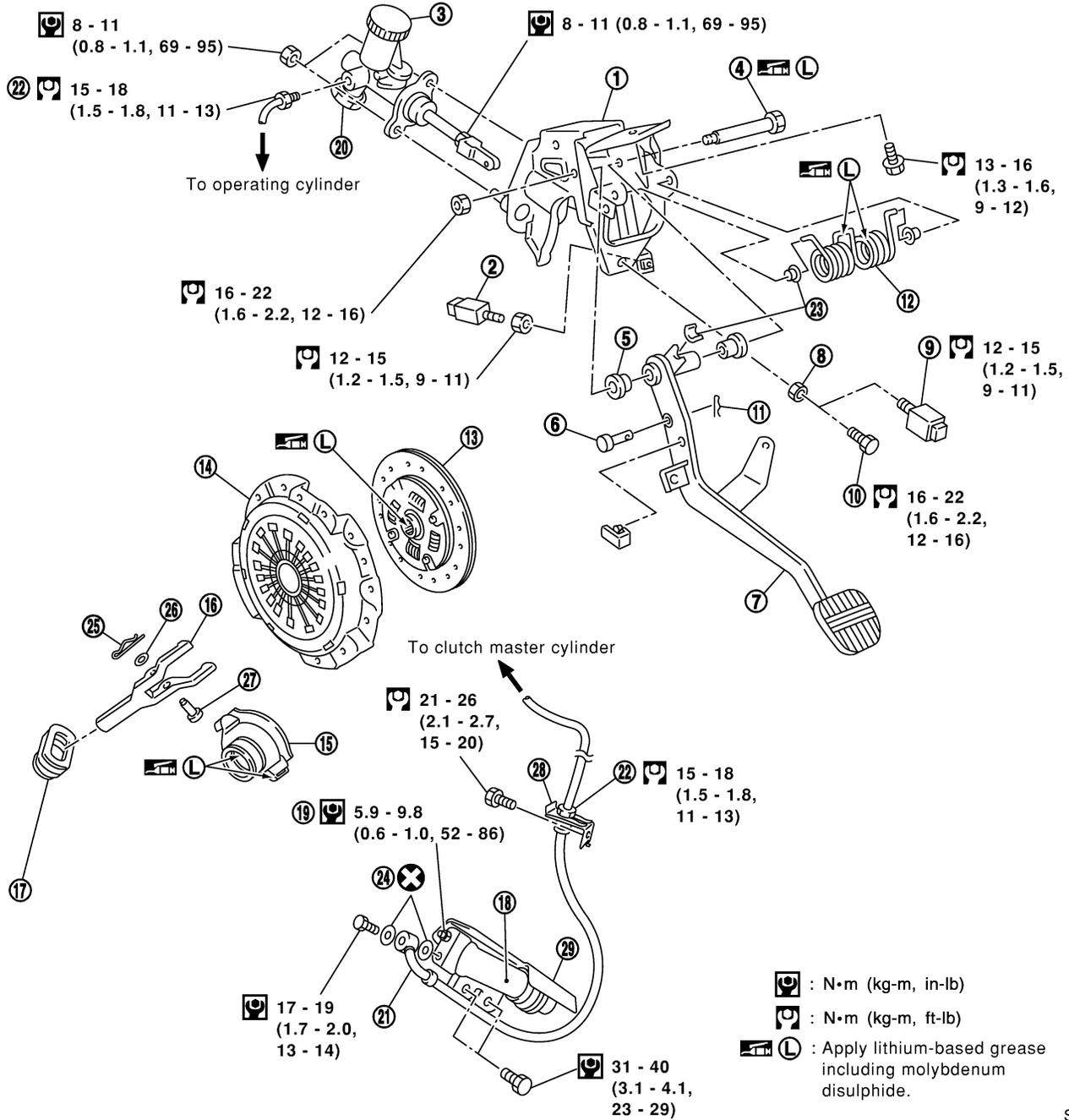
# CLUTCH SYSTEM — HYDRAULIC TYPE

Components

## Components

NACL0004

SEC. 300-305-306-465



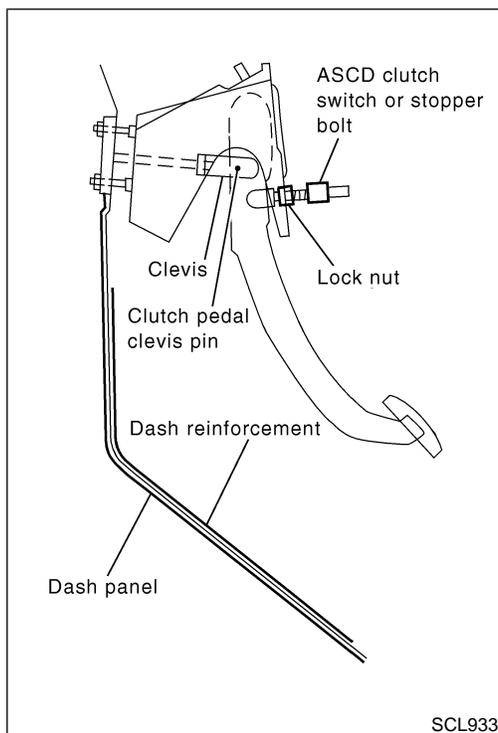
SCL910

- |                            |                                     |                            |
|----------------------------|-------------------------------------|----------------------------|
| 1. Clutch pedal bracket    | 11. Snap pin                        | 21. Clutch hose            |
| 2. Clutch interlock switch | 12. Assist spring                   | 22. Flare nut              |
| 3. Clutch master cylinder  | 13. Clutch disc                     | 23. Bushing                |
| 4. Fulcrum pin             | 14. Clutch cover                    | 24. Copper washer          |
| 5. Bushing                 | 15. Release bearing                 | 25. Snap pin               |
| 6. Clevis pin              | 16. Withdrawal lever                | 26. Washer                 |
| 7. Clutch pedal            | 17. Dust boot                       | 27. Withdrawal lever shaft |
| 8. Lock nut                | 18. Operating cylinder              | 28. Lock spring            |
| 9. ASCD clutch switch      | 19. Air bleeder                     | 29. Heat insulator         |
| 10. Pedal stopper bolt     | 20. Clutch damper (not serviceable) |                            |

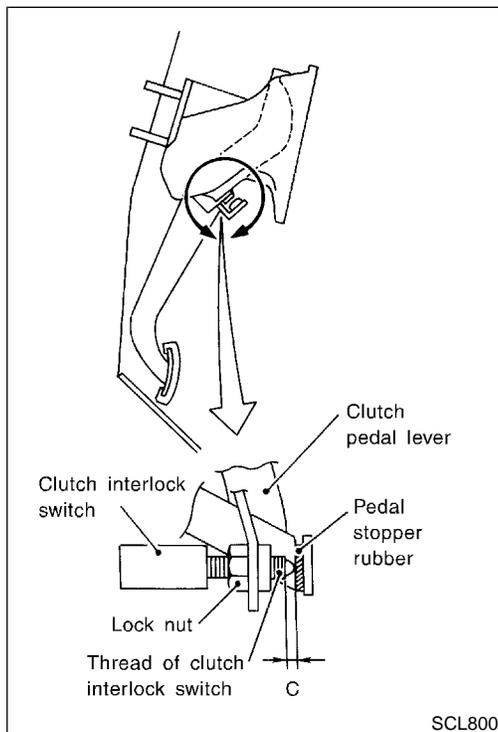
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# CLUTCH SYSTEM — HYDRAULIC TYPE

On-Vehicle Inspection and Adjustment



SCL933



SCL800

## On-Vehicle Inspection and Adjustment

NACL0036

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 ASCD clutch switch or pedal stopper bolt is not applying pressure to the clutch pedal causing the clevis pin to bind. To adjust, loosen lock nut and turn ASCD clutch switch or pedal stopper bolt.
  - b. Tighten the lock nut.
  - 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 bracket, assist spring, 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)

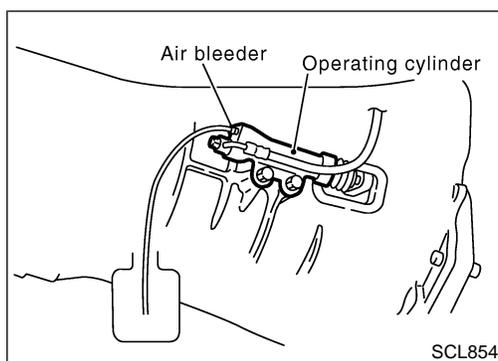
### Clearance C:

**0.1 - 1.0 mm (0.004 - 0.039 in)**

4. Check clutch hydraulic and system components (clutch master cylinder, clutch operating cylinder, clutch withdrawal lever, clutch release bearing, 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, "Air Bleeding Procedure".

### 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.



## Air Bleeding Procedure

=NACL0037

### CAUTION:

- Check the clutch fluid level of the reservoir for shortage.
- Keep clutch fluid away from the coating surface of the body or other parts. If it adheres, remove it quickly and flush the area with water.

1. Fill up master cylinder reservoir tank with new clutch fluid.
2. Connect a clear vinyl hose to air bleeder.
3. Carefully depress clutch pedal fully and release it. Repeat the cycle several times at an interval of 2 or 3 seconds.
4. While depressing clutch pedal, open air bleeder.
5. Close air bleeder.
6. Release clutch pedal, and wait for approx. 5 seconds.
7. Repeat steps 3 to 6 until no air is found in clutch fluid.

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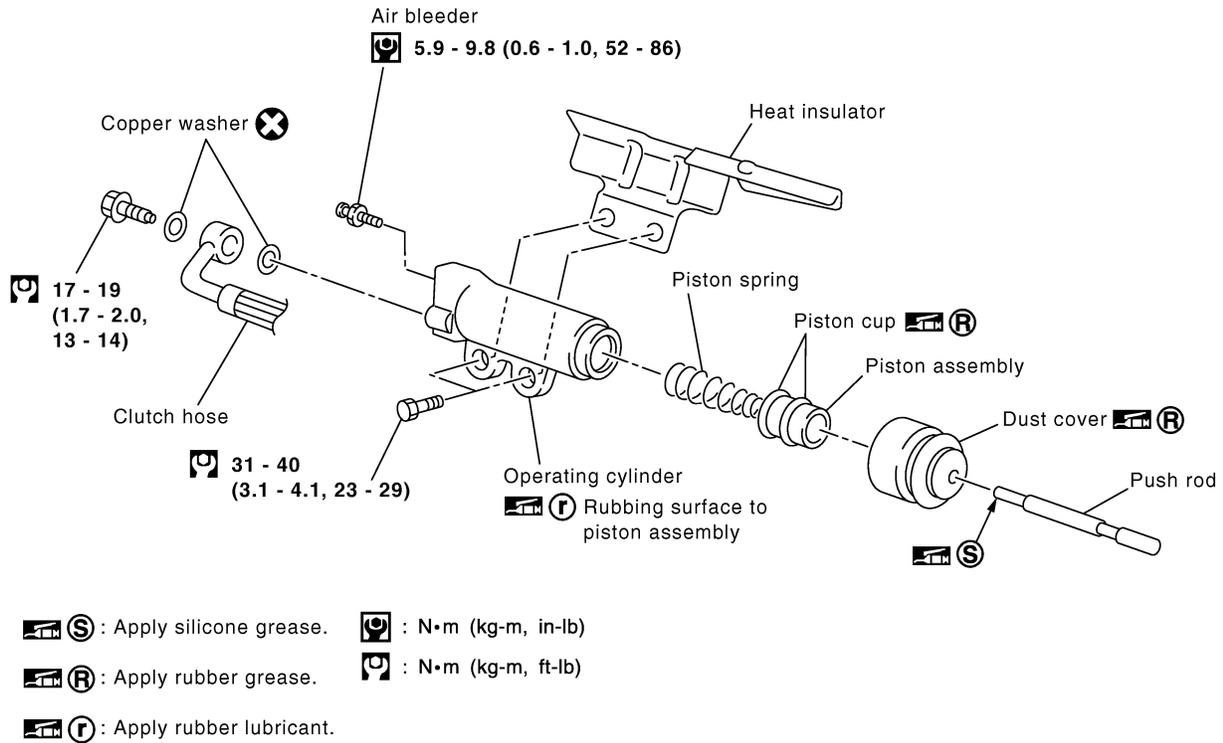
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## Components

NACL0009

SEC. 306



SCL855-B

## Inspection

NACL0010

Check the following items, and replace if necessary.

- Rubbing surface of cylinder and piston, for uneven wear, rust or damage
- Piston with piston cup, for wear or damage
- Piston spring, for wear or damage
- Dust cover, for cracks, deformation or damage

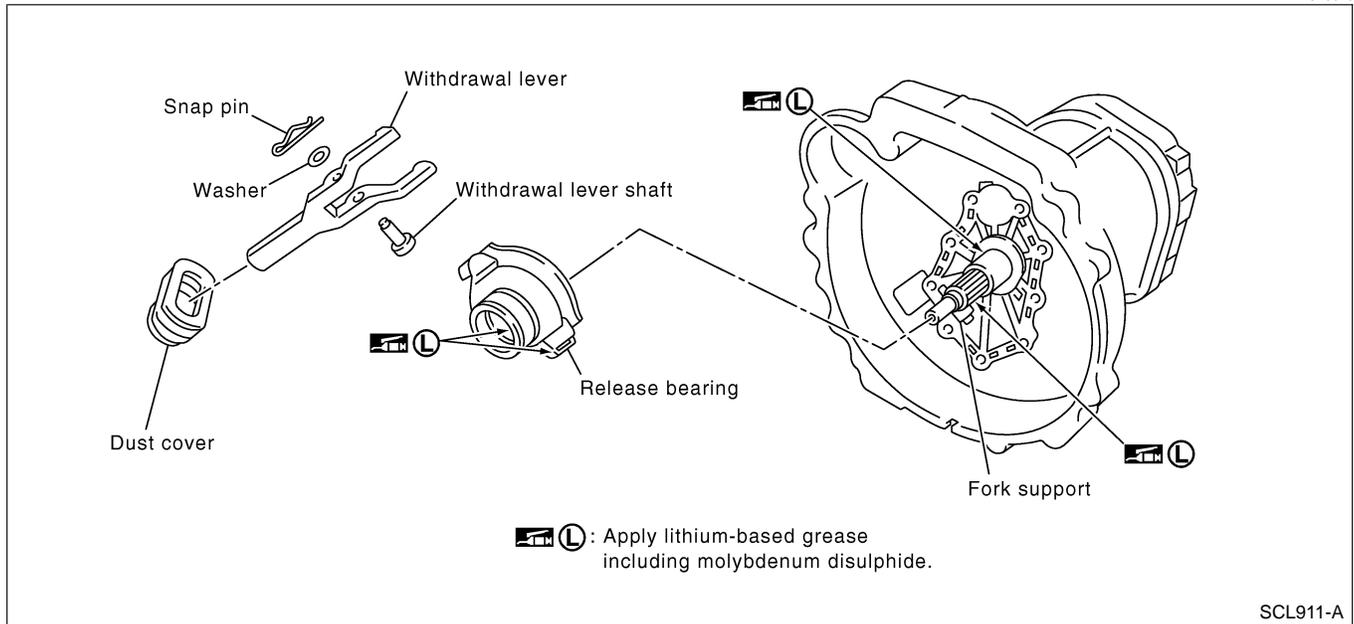
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# CLUTCH RELEASE MECHANISM

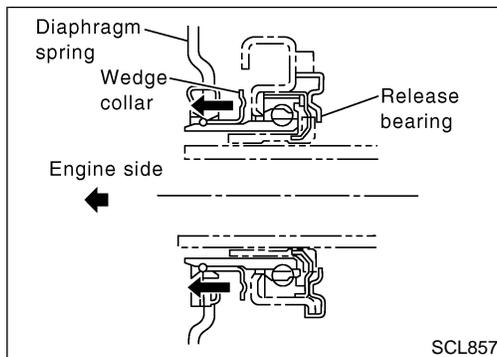
Components

## Components

NACL0013



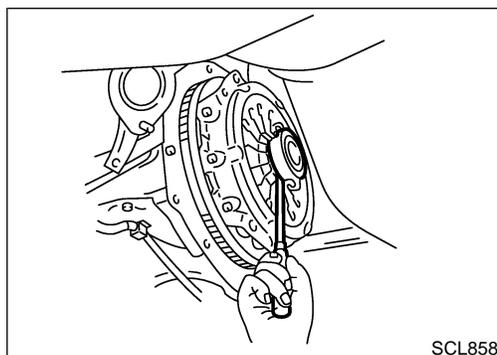
**CAUTION:**  
Keep the clutch disc facing, pressure plate and flywheel free of oil and grease.



## Removal

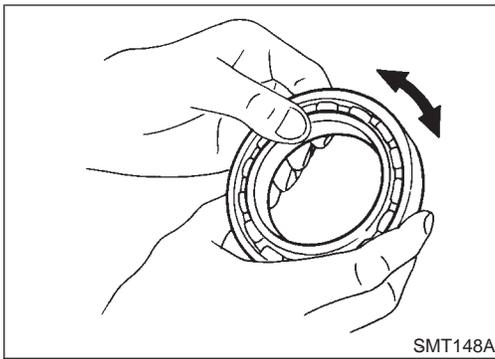
NACL0029

1. Remove manual transmission from the vehicle. Refer to MT-7, "Removal and Installation".
2. Remove withdrawal lever from inside clutch housing.
3. Press wedge collar on clutch cover toward the engine.
4. Using a flat-head screwdriver or the like, remove release bearing from clutch cover.



# CLUTCH RELEASE MECHANISM

Inspection

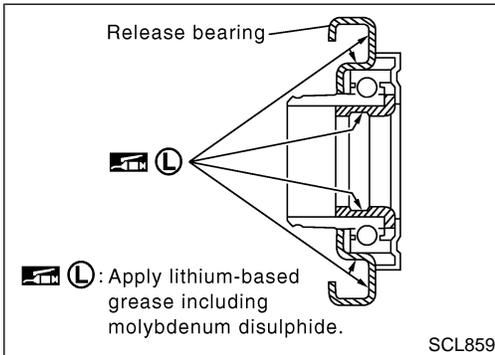


## Inspection

Check the following items, and replace the part, if necessary.

- Release bearing seizure, damages, and rough rotation.
- Abnormal wear on contact surfaces of release bearing or withdrawal lever.
- Dust cover cracks.

NACL0030



## Installation

1. Apply clutch sleeve grease to the areas shown by the arrows in the figure.
2. Install the release bearing to main drive shaft.
3. Install withdrawal lever to fork support, and secure it with withdrawal lever shaft, washer, and snap pin.
4. Operate withdrawal lever to check sliding parts for smooth movement.

NACL0031

### CAUTION:

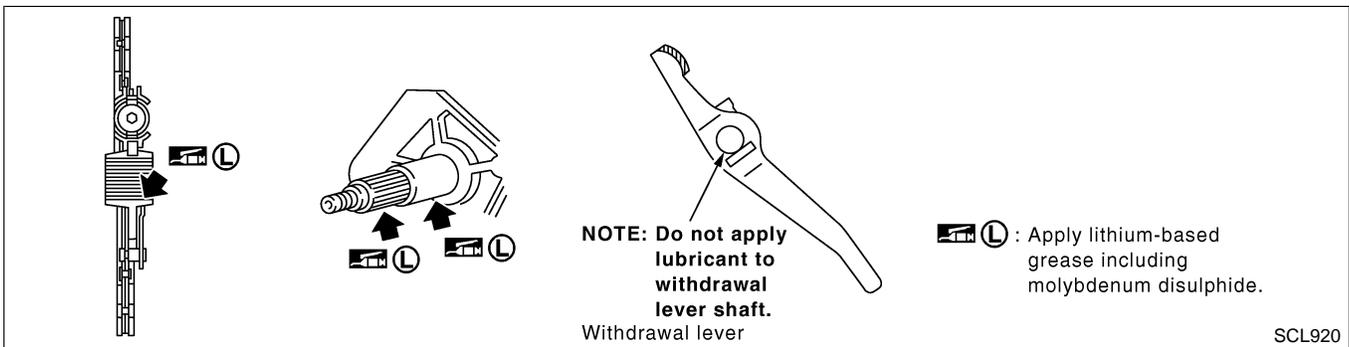
**Remove excessive grease coming-out.**

5. Install manual transmission.  
Refer to MT-7, "Removal and Installation".

## Lubrication

- Apply recommended grease to contact surface and rubbing surface.
- Too much lubricant might damage clutch disc facing.

NACL0016



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# CLUTCH DISC, CLUTCH COVER AND FLYWHEEL

## Components

NACL0032

**SEC. 300**

**Clutch disc**

- Do not clean in solvent.
- When installing, be careful that grease applied to main drive shaft does not adhere to clutch disc.

**Washer**

**Clutch cover securing bolt**

**Clutch cover**

**Flywheel**

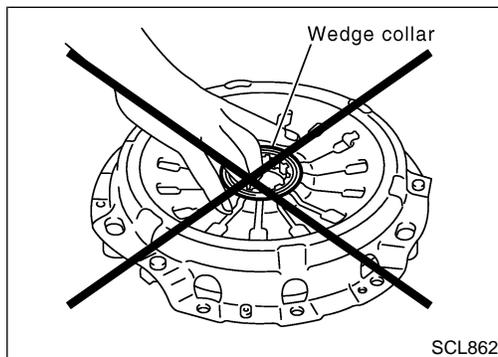
**First step: 10 - 19**  
(1.0 - 2.0, 8 - 14)

**Final step: 35 - 44**  
(3.5 - 4.5, 26 - 32)

**L** : Apply lithium-based grease including molybdenum disulphide.

**N** : N•m (kg-m, ft-lb)

SCL861



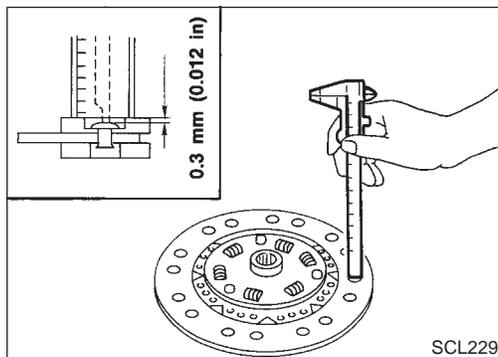
## Removal

NACL0033

1. Remove manual transmission from the vehicle. Refer to MT-7, "Removal and Installation".
2. Remove release bearing from clutch cover.
3. Loosen mounting bolts on the clutch cover evenly, and remove clutch cover and clutch disc.

### CAUTION:

Do not hold the wedge collar when handling the clutch cover.



## Inspection and Adjustment

NACL0019

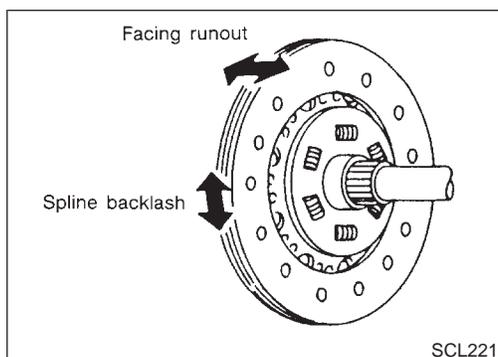
### CLUTCH DISC

NACL0019S01

Check the following items, and replace if necessary.

- Clutch disc, for burns, discoloration, oil or grease leakage
- Clutch disc, for wear of facing

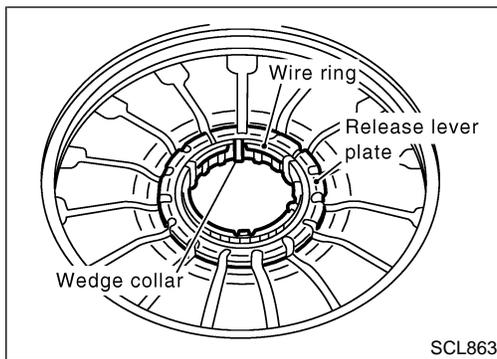
**Wear limit of facing surface to rivet head:**  
**0.3 mm (0.012 in)**



- Clutch disc, for backlash of spline and runout of facing
- Maximum backlash of spline (at outer edge of disc):**  
**1.0 mm (0.039 in)**
- Runout limit:**  
**Less than 0.7 mm (0.028 in)**
- Distance of runout check point (from hub center):**  
**120 mm (4.72 in)**

# CLUTCH DISC, CLUTCH COVER AND FLYWHEEL

Inspection and Adjustment (Cont'd)



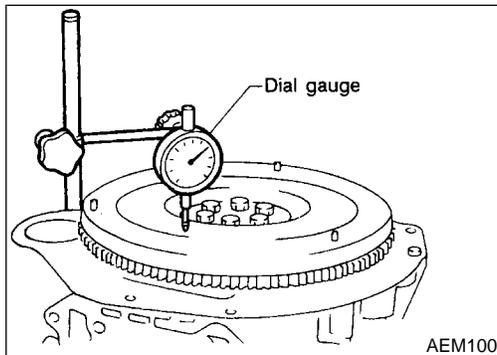
## CLUTCH COVER

NACL0019S04

- Check parts (wedge collar and wiring) contacting the release bearing. If any worn or damaged parts are found, replace the clutch cover as an assembly.
- Check release lever plate for looseness. If necessary, replace clutch cover as an assembly.
- Check thrust ring of the clutch cover for wear or bending. If necessary, replace clutch cover as an assembly.
- If seizure mark or discoloration is found with the mating surfaces between pressure plate and clutch disc of clutch cover, repair them with sand-paper. If surfaces are distorted or damaged, replace clutch cover as an assembly.

## REFERENCE:

- If thrust ring is worn, chattering noise is heard when the riveted area is lightly hit with a hammer.
- If thrust ring is bent, jangling noise is heard when cover is swung up and down.



## FLYWHEEL INSPECTION

NACL0019S03

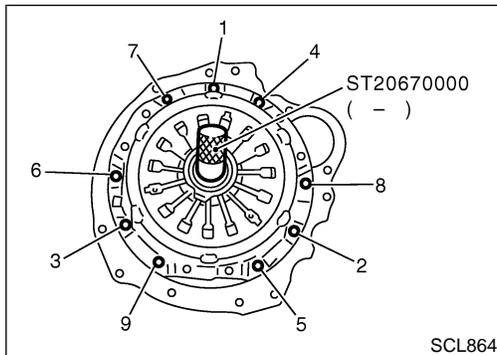
### CAUTION:

Do not allow any magnetic materials to contact the ring gear teeth.

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

### Maximum allowable runout:

Refer to EM-76, "Flywheel/Drive plate Runout".



## Installation

NACL0035

1. Apply specified Nissan clutch grease to clutch disc and spline of main drive shaft.

### CAUTION:

Always apply grease. If no grease is applied, it may cause abnormal noise, insufficient disengagement, or damage to the clutch. Also, always remove excessive grease. If grease is applied excessively, it may cause sliding or juddering.

2. Install clutch disc and clutch cover. Tighten mounting bolts temporarily, and install clutch aligning bar (SST).
3. Tighten clutch cover mounting bolts evenly in the order shown in the figure by two steps.

### 1st step:

: 10 - 19 N·m (1.0 - 2.0 kg·m, 8 - 14 ft·lb)

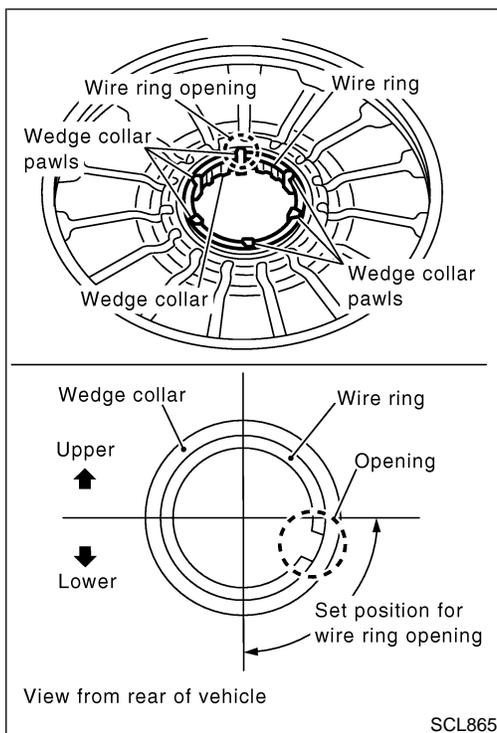
### Final step:

: 35 - 44 N·m (3.5 - 4.5 kg·m, 26 - 32 ft·lb)

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# CLUTCH DISC, CLUTCH COVER AND FLYWHEEL

Installation (Cont'd)



4. Check that the wire ring of clutch cover is installed securely to wedge collar pawls.
5. Turn flywheel so that the wire ring opening is positioned as shown in the figure.

**CAUTION:**

**Always perform alignment of the wire ring opening. If transmission is installed without alignment, it may cause clutch disengagement failure or clutch pedal operation failure.**

6. Install manual transmission.  
Refer to MT-7, "Removal and Installation".

# SERVICE DATA AND SPECIFICATIONS (SDS)

Clutch Control System

## Clutch Control System

NACL0028

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

## Clutch Master Cylinder (With damper)

NACL0021

Inner diameter	15.87 mm (5/8 in)
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## Clutch Operating Cylinder

NACL0022

Inner diameter	19.05 mm (3/4 in)
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## Clutch Disc

NACL0023  
Unit: mm (in)

Model	250
Facing size (Outer dia. x inner dia. x thickness)	250 × 160 × 3.5 (9.84 × 6.30 × 0.138)
Thickness of disc assembly With load	7.9 - 8.3 (0.311 - 0.327) with 7,355 N (750 kg, 1,654 lb)
Wear limit of facing surface to rivet head	0.3 (0.012)
Runout limit of facing	0.7 (0.028)
Distance of runout check point (from hub center)	120 (4.72)
Maximum backlash of spline (at outer edge of disc)	1.0 (0.039)

## Clutch Cover

NACL0024  
Unit: mm (in)

Model	250
Set-load	7,355 N (750 kg, 1,654 lb)
Diaphragm spring height	48.2 - 50.2 (1.898 - 1.976)
Uneven limit of diaphragm spring toe height	0.6 (0.024)

## Clutch Pedal

NACL0025  
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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## NOTES