

# CLUTCH

## SECTION **CL**

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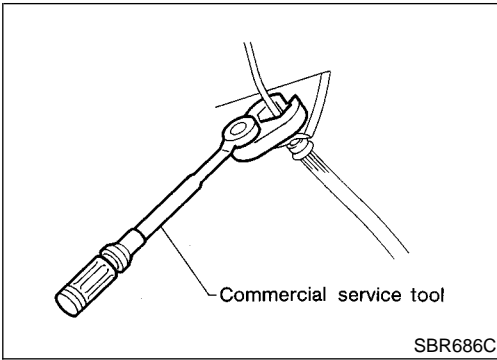
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# PRECAUTIONS

## Precautions



## Precautions

NECL0001

- 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.

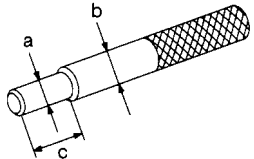
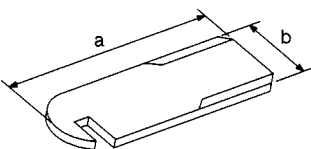
# PREPARATION

Special Service Tools

## Special Service Tools

NECL0002

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
ST20630000 (J26366) Clutch aligning bar	 <p>Installing clutch cover and clutch disc  <b>a: 15.9 mm (0.626 in) dia.</b>  <b>b: 22.8 mm (0.898 in) dia.</b>  <b>c: 55 mm (2.17 in)</b></p>
ST20050240 ( — ) Diaphragm spring adjusting wrench	 <p>Adjusting unevenness of diaphragm spring of clutch cover  <b>a: 150 mm (5.91 in)</b>  <b>b: 25 mm (0.98 in)</b></p>

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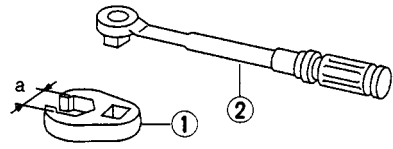
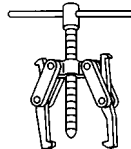
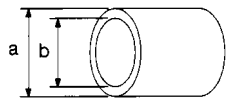
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## Commercial Service Tools

NECL0003

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>
Bearing puller	 <p>Removing release bearing</p>
Bearing drift	 <p>Installing release bearing  <b>a: 52 mm (2.05 in) dia.</b>  <b>b: 45 mm (1.77 in) dia.</b></p>

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# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

NVH Troubleshooting Chart

## NVH Troubleshooting Chart

NECL0027S01

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.

Reference page		CL-6	CL-7	CL-8	CL-9	EM-102.	CL-10	CL-12	CL-12	CL-12	CL-12	CL-12	CL-12	CL-12	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)	MASTER CYLINDER PISTON CUP (Damaged)	OPERATING 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	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	

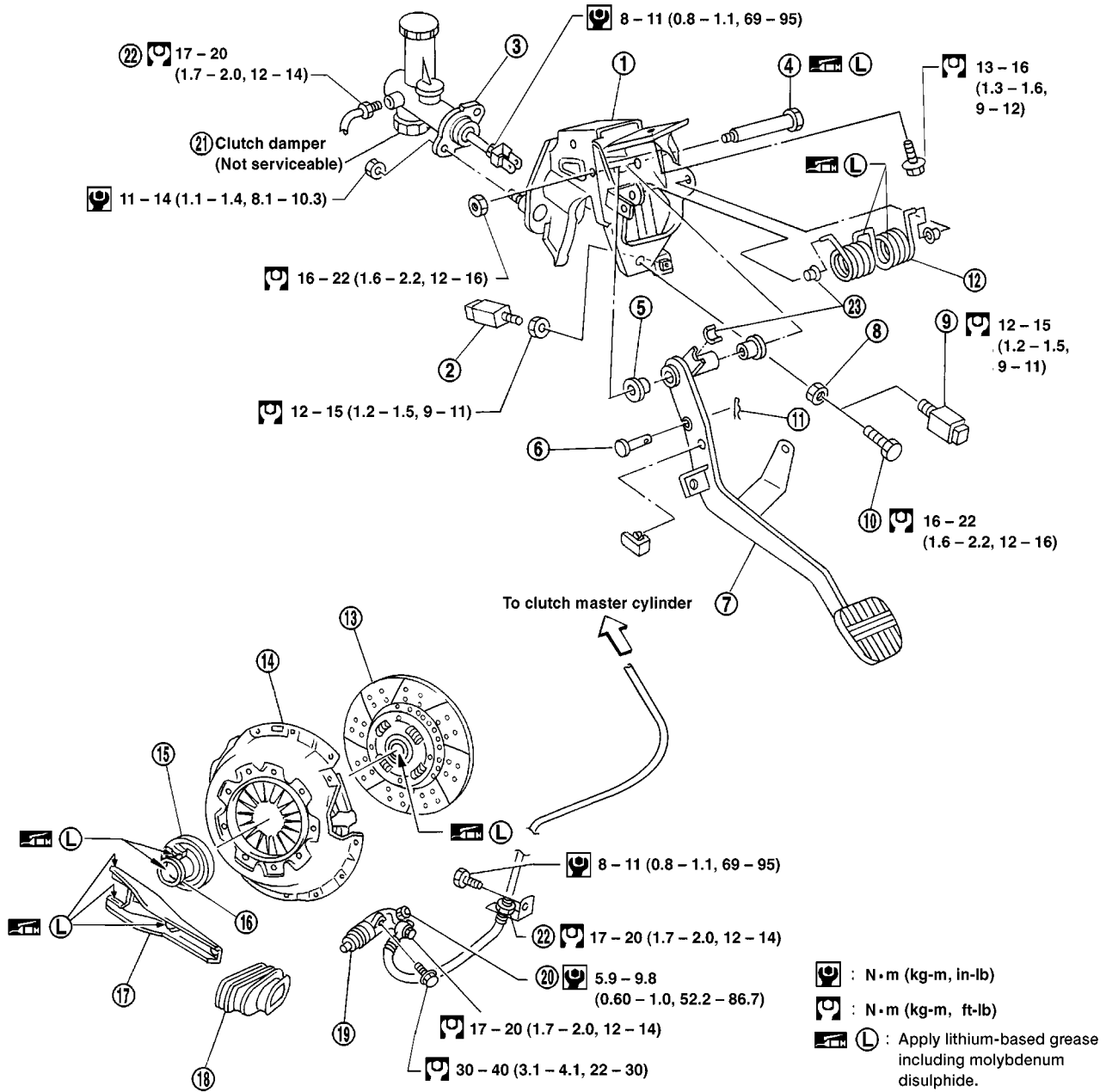
# CLUTCH SYSTEM — HYDRAULIC TYPE

Components

## Components

NECL0004

SEC. 300 • 305 • 306 • 465



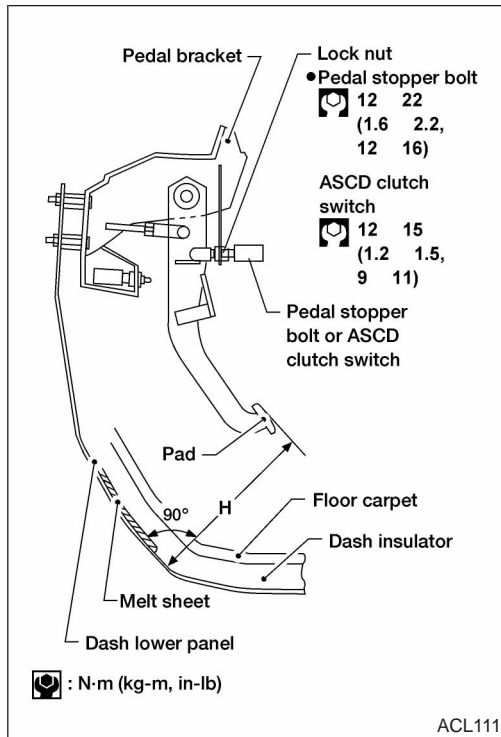
ACL112

- |                            |                            |                        |
|----------------------------|----------------------------|------------------------|
| 1. Clutch pedal bracket    | 9. ASCD cancel switch      | 17. Withdrawal lever   |
| 2. Clutch interlock switch | 10. Pedal stopper bolt     | 18. Dust boot          |
| 3. Clutch master cylinder  | 11. Snap pin               | 19. Operating cylinder |
| 4. Fulcrum pin             | 12. Assist spring          | 20. Air bleeder        |
| 5. Bushing                 | 13. Clutch disc            | 21. Clutch damper      |
| 6. Clevis pin              | 14. Clutch cover           | 22. Flare nut          |
| 7. Clutch pedal            | 15. Release bearing        | 23. Bushing            |
| 8. Lock nut                | 16. Release bearing sleeve |                        |

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# CLUTCH SYSTEM — HYDRAULIC TYPE

Inspection and Adjustment



## Inspection and Adjustment

### ADJUSTING CLUTCH PEDAL

NECL0005

NECL0005S01

1. Adjust pedal height with pedal stopper bolt or ASCD cancel switch.

#### Pedal height "H":

KA24DE: 221 – 231 mm (8.70 – 9.09 in)

VG33E: 227 – 237 mm (8.94 – 9.33 in)

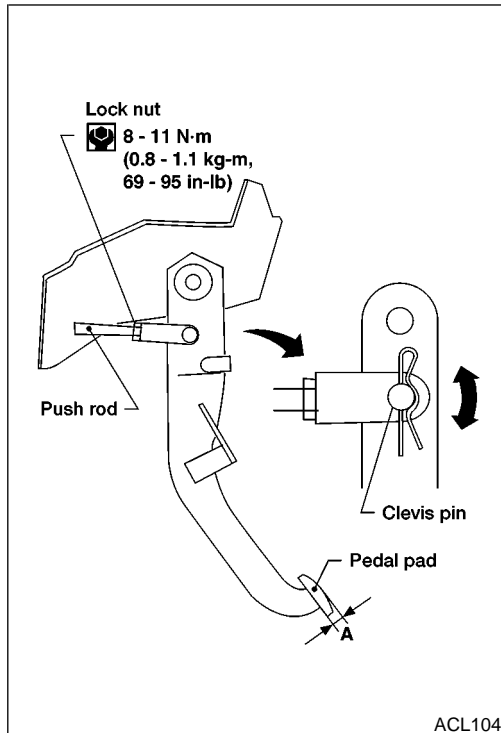
2. Adjust pedal free play with master cylinder push rod. Then tighten lock nut.

#### Pedal free play (measured at pedal pad) "A":

9 - 16 mm (0.35 - 0.63 in)

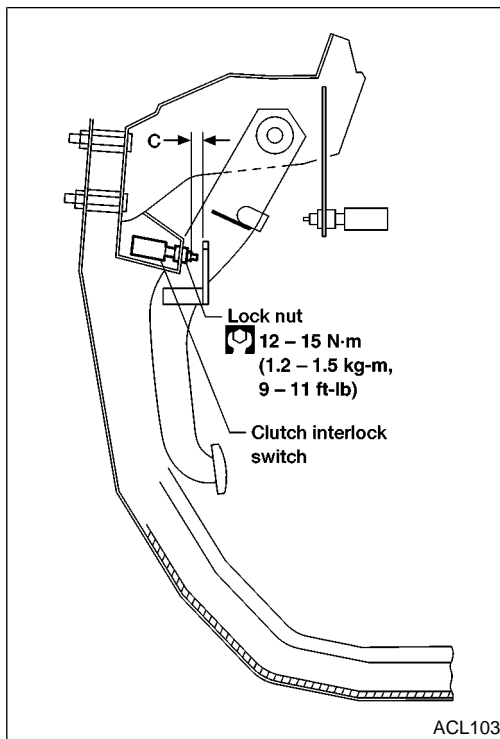
Pedal free play means the following total measured at position of pedal pad:

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



# CLUTCH SYSTEM — HYDRAULIC TYPE

Inspection and Adjustment (Cont'd)



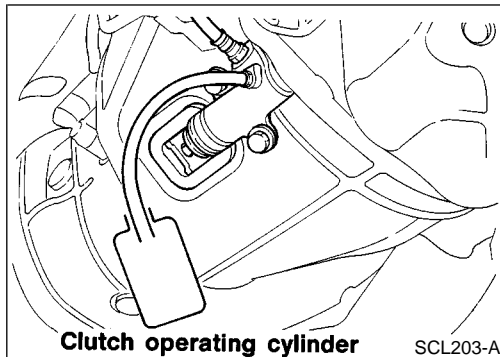
## — Models with Clutch Interlock System —

NECL0005S0101

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

### Clearance C:

0.1 - 1.0 mm (0.004 - 0.039 in)



## AIR BLEEDING PROCEDURE

NECL0005S02

**Bleed air according to the following procedure.**

**Bleed air from operating cylinder.**

- 1) Fill the master cylinder reservoir tank with new brake fluid.
- 2) Connect a transparent vinyl hose to the air bleeder.
- 3) Slowly depress the clutch pedal to its full stroke length and release it completely. Repeat this operation several times at 2 to 3 second intervals.
- 4) Open the air bleeder with the clutch pedal fully depressed.
- 5) Close the air bleeder.
- 6) Release the clutch pedal and wait at least 5 seconds.
- 7) Repeat steps 3 through 6 above until air bubbles no longer appear in the brake fluid

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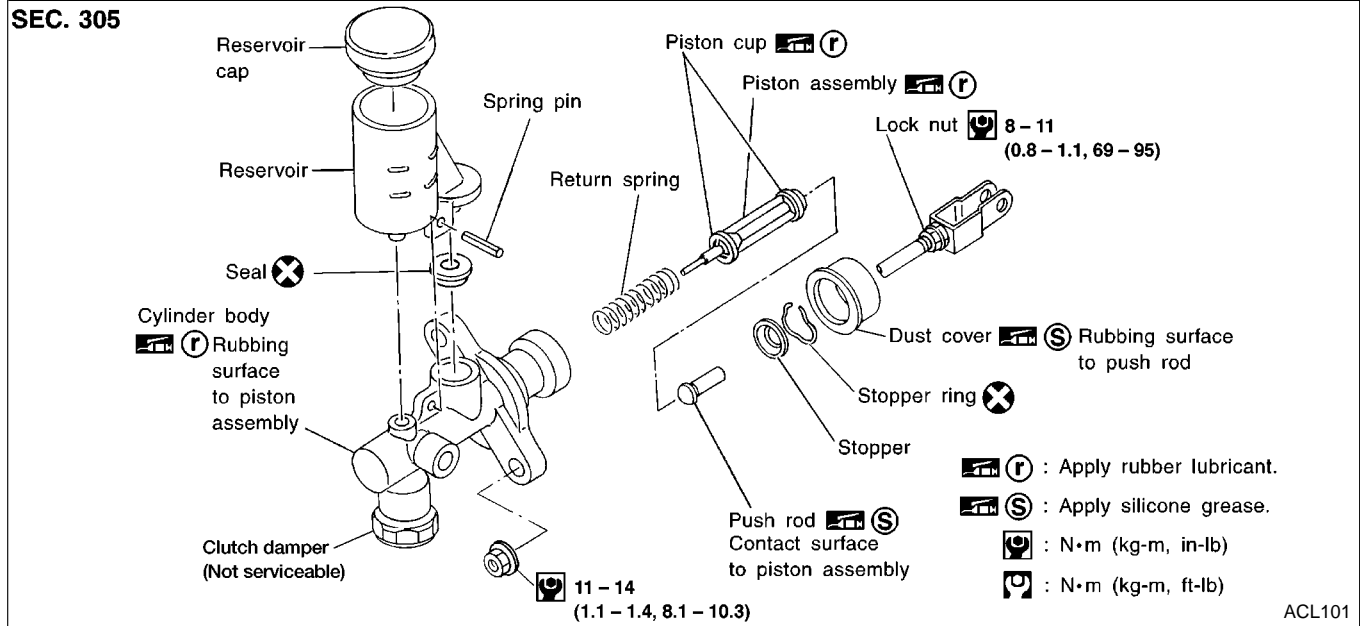
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# CLUTCH MASTER CYLINDER

Components

## Components

NECL0006



## Disassembly and Assembly

NECL0007

- Use a screwdriver to remove stopper ring while pushing push rod into cylinder.
- When installing stopper ring, tap in lightly while pushing push rod into cylinder.

## Inspection

NECL0008

Check the following items, and replace if necessary.

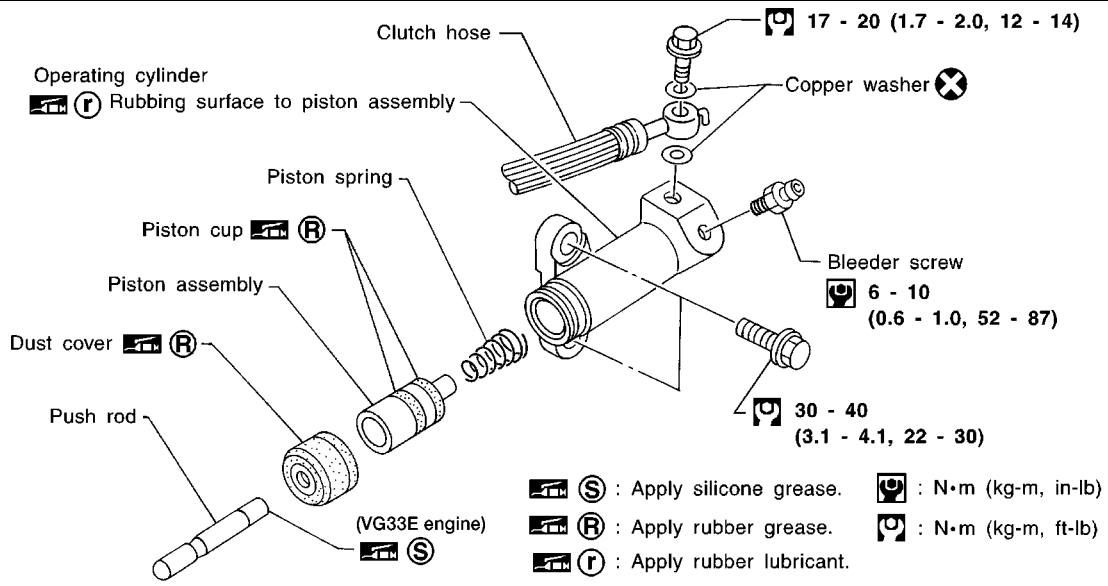
- Rubbing surface of cylinder and piston, for uneven wear, rust or damage
- Piston with piston cup, for wear or damage
- Return spring, for wear or damage
- Dust cover, for cracks, deformation or damage
- Reservoir, for deformation or damage



## Components

NECL0009

### SEC. 306



ACL109

## Inspection

NECL0010

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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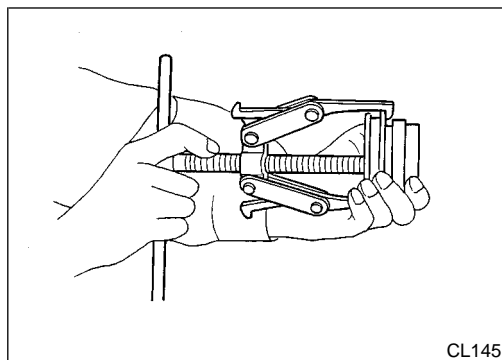
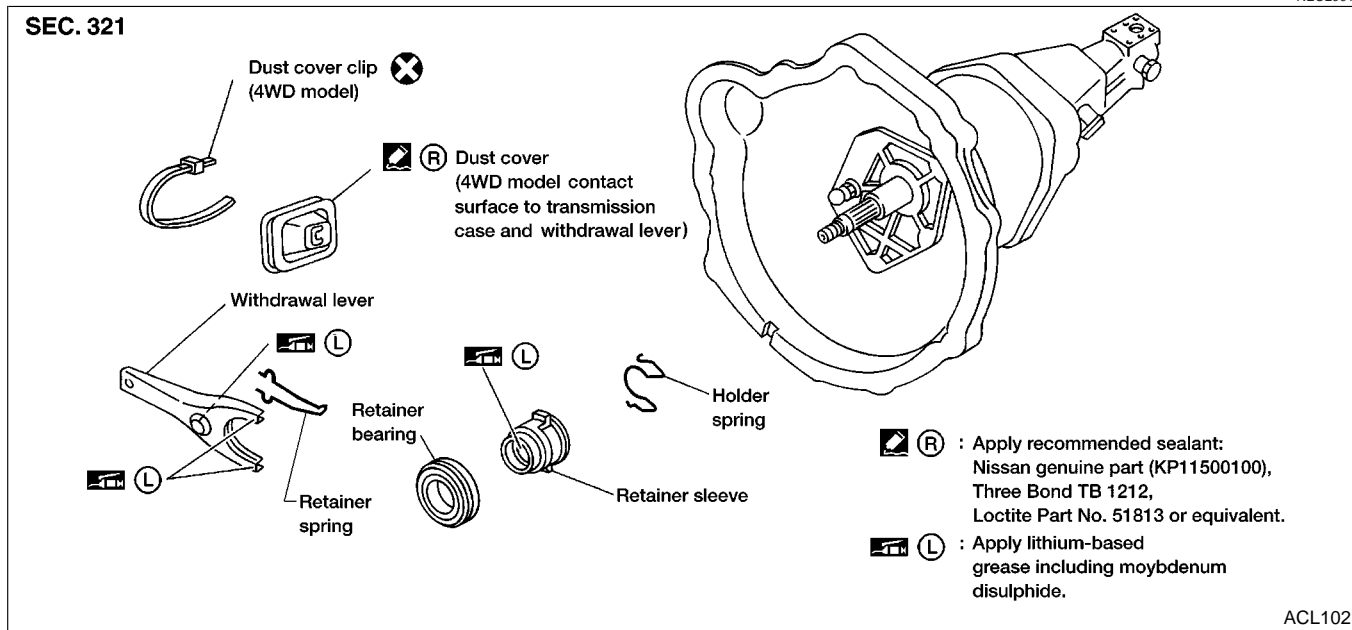
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# CLUTCH RELEASE MECHANISM

Components

## Components

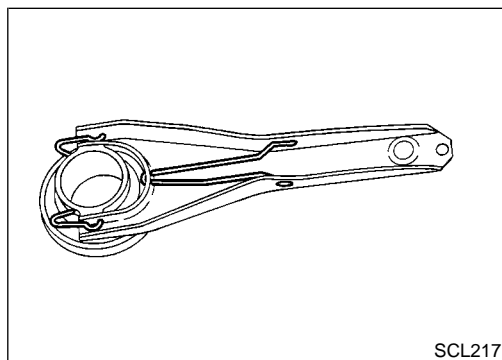
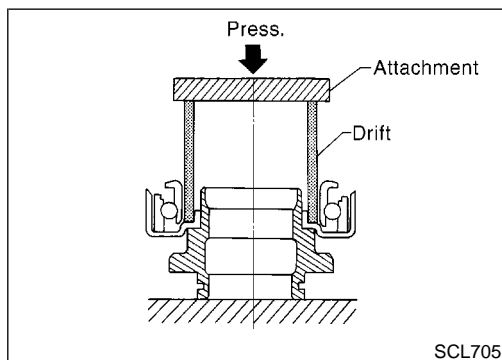
NECL0013



## Removal and Installation

NECL0014

- Remove release bearing.
- Install release bearing with suitable drift.
- Install retainer spring and holder spring.



# CLUTCH RELEASE MECHANISM

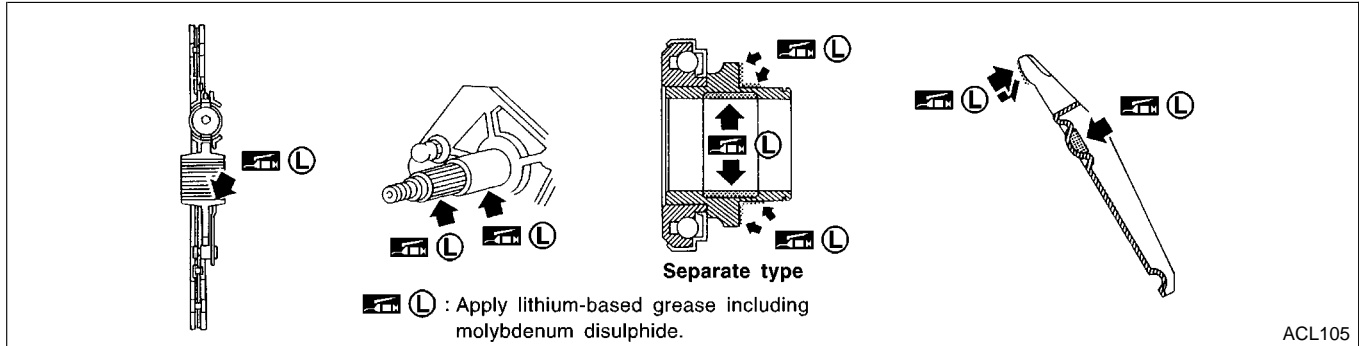
Inspection

## Inspection

NECL0015

Check the following items, and replace if necessary.

- Release bearing, to see that it rolls freely and is free from noise, cracks, pitting or wear
- Release sleeve and withdrawal lever rubbing surface, for wear, rust or damage



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## Lubrication

NECL0016

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

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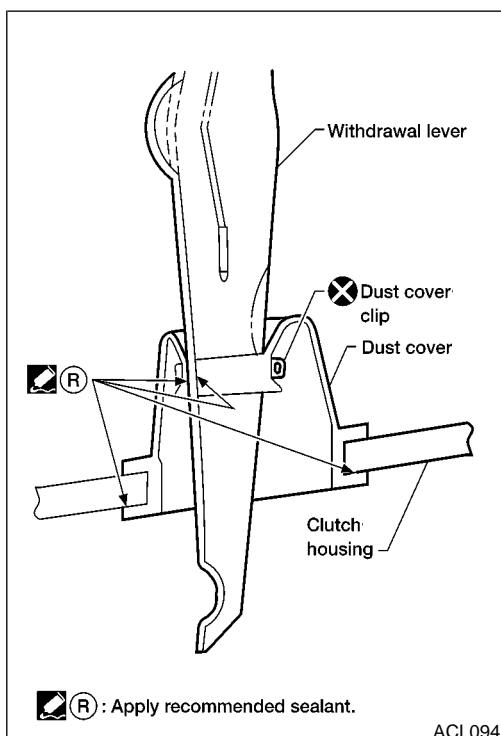
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## Waterproof — for 4WD Model

NECL0017

- Apply recommended sealant to contact surface of dust cover to transmission case and withdrawal lever and then install dust cover clip.

**Recommended sealant: Nissan genuine part (KP115-00100), Three Bond TB1212, Loctite Part Number 51813 or equivalent**



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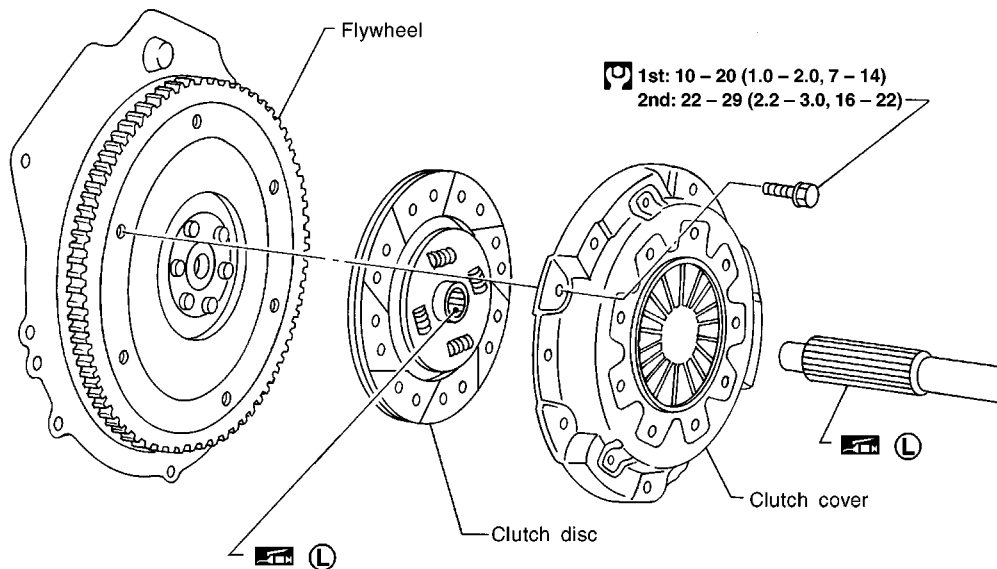
# CLUTCH DISC, CLUTCH COVER AND FLYWHEEL

Components

## Components

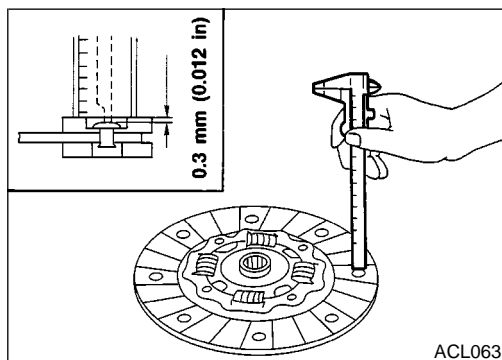
NECL0018

SEC. 300

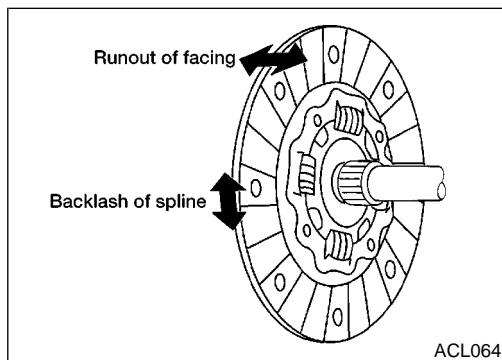


- Do not clean clutch disc surface with solvent.
  - When installing, be careful that grease from main drive shaft does not adhere to clutch disc.
- : Apply lithium-based grease including molybdenum disulphide.  
 : N•m (kg-m, ft-lb)

ACL100



ACL063



ACL064

## Inspection and Adjustment

### CLUTCH DISC

NECL0019

NECL0019S01

Check the following items, and replace if necessary.

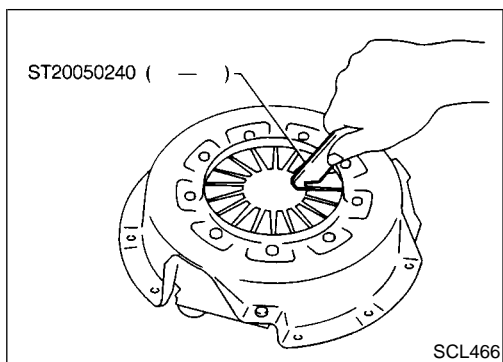
- Clutch disc, for burns, discoloration, oil or grease leakage
- Clutch disc, for wear of facing

**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:**  
**1.0 mm (0.039 in)**  
**Distance of runout check point (from hub center):**  
**Model 240: 115 mm (4.53 in)**  
**Model 250: 120 mm (4.72 in)**

# CLUTCH DISC, CLUTCH COVER AND FLYWHEEL

Inspection and Adjustment (Cont'd)



## CLUTCH COVER AND FLYWHEEL

NECL0019S02

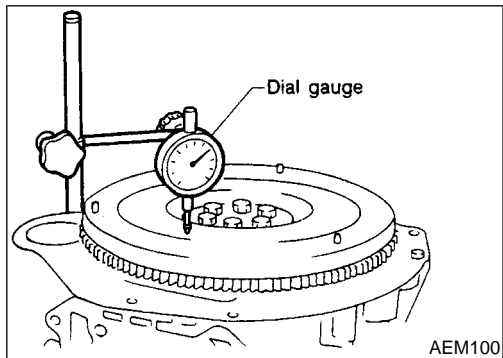
- Check clutch cover, installed on vehicle, for uneven diaphragm spring toe height.

**Uneven limit:**

**KA24DE: 0.7 mm (0.028 in)**

**VG33E: 0.5 mm (0.0020 in)**

- If out of limit, adjust the height with Tool.



## FLYWHEEL INSPECTION

NECL0019S03

**CAUTION:**

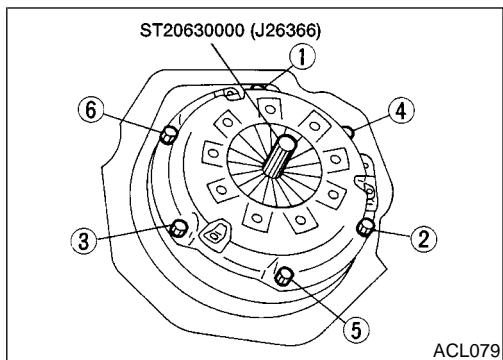
**Do not allow any magnetic materials to contact the ring gear teeth.**

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

- Check flywheel runout.

**Maximum allowable runout:**

**Refer to EM-113, "Flywheel/Drive Plate Runout" .**




## Installation


NECL0020

- Apply recommended grease to contact surface of splines.
- **Too much lubricant may damage clutch disc facing.**
- Insert Tool into clutch disc hub when installing clutch cover and disc.
- Be careful not to allow grease to contaminate clutch facing.
- Tighten bolts in numerical order, in two steps.

**First step:**

 : 10 - 20 N·m (1.0 - 2.0 kg·m, 7 - 14 ft·lb)

**Final step:**

 : 22 - 29 N·m (2.2 - 3.0 kg·m, 16 - 22 ft·lb)

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# SERVICE DATA AND SPECIFICATIONS (SDS)

## Clutch Control System

<b>Clutch Control System</b>	
Type of clutch control	Hydraulic

NECL0028

## Clutch Master Cylinder (with clutch damper)

Inner diameter	15.87 mm (5/8 in)
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NECL0021

## Clutch Operating Cylinder

Inner diameter	19.05 mm (3/4 in)
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NECL0022

## Clutch Disc

	Unit: mm (in)	
	240	250
Model	240	250
Engine	KA24DE	VG33E
Facing size (Outer dia. x inner dia. x thickness)	240 x 150 x 3.5 (9.45 x 5.91 x 0.138)	250 x 160 x 3.5 (9.84 x 6.30 x 0.138)
Thickness of disc assembly with load	7.75 - 8.25 (0.305 - 0.3248) with 4,094 N (500 kg, 1,103 lb)	8.1 - 8.5 (0.3189 - 0.3346) with 6,473 N (660 kg, 1,455 lb)
Wear limit of facing surface to rivet head	0.3 (0.012)	0.3 (0.012)
Runout limit of facing	1.0 (0.039)	1.0 (0.039)
Distance of runout check point (from hub center)	115 (4.53)	120 (4.72)
Maximum backlash of spline (at outer edge of disc)	1.0 (0.039)	1.0 (0.039)

NECL0029

Unit: mm (in)

## Clutch Cover

		Unit: mm (in)	
Engine		KA24DE	VG33E
Model		240	250
Set-load	2WD	4,904 N (500 kg, 1,103 lb)	4,658 N (475 kg, 1,047 lb)
	4WD	4,904 N (500 kg, 1,103 lb)	4,658 N (475 kg, 1,047 lb)
Diaphragm spring height		37.5 - 39.5 (1.476 - 1.555)	36.5 - 38.5 (1.437 - 1.516)
Uneven limit of diaphragm spring toe height		0.7 (0.028)	0.5 (0.020)

NECL0030

Unit: mm (in)

## Clutch Pedal

		Unit: mm (in)	
Engine		KA24DE	VG33E
Pedal height "H"		221 - 231 (8.70 - 9.09)	227 - 237 (8.94 - 9.33)
Pedal free play "A" (at pedal pad)		9 - 16 (0.35 - 0.63)	9 - 16 (0.35 - 0.63)
Clearance "C" between pedal stopper bracket and clutch pedal position switch (with clutch pedal fully depressed.)		0.1 - 1.0 (0.004 - 0.039)	0.1 - 1.0 (0.004 - 0.039)

NECL0031

Unit: mm (in)

\*: Measured from surface of dash lower panel to pedal pad.