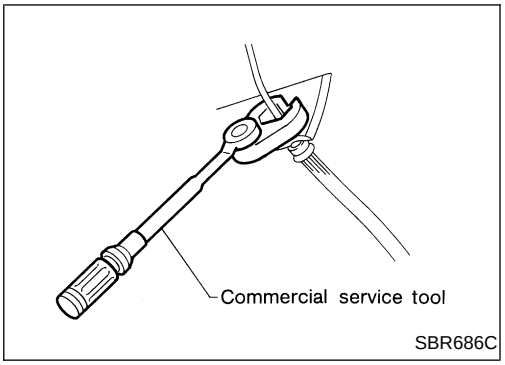
SECTION CL

CONTENTS



Precautions

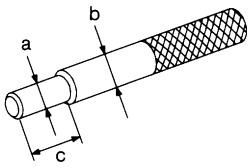
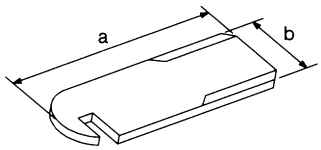
- **Recommended fluid is brake fluid DOT 3.**
- **Never reuse drained brake fluid.**
- **Be careful not to splash brake fluid on painted areas; it may cause paint damage. If brake fluid is splashed on painted areas, wash it away with water immediately.**
- **Use flare nut wrench when removing and installing clutch piping.**
- **Use new brake fluid to clean or wash all parts of master cylinder and operating cylinder.**
- **Never use mineral oils such as gasoline or kerosene. They will ruin the rubber parts of the hydraulic system.**

WARNING:

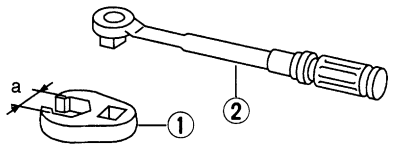
After cleaning clutch disc, wipe it with a dust collector. Do not use compressed air.

Special Service Tools

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	 NT405	Installing clutch cover and clutch disc **a: 15.8 mm (0.622 in) dia.** **b: 22.9 mm (0.902 in) dia.** **c: 45.0 mm (1.772 in)**
ST20050240 (—) Diaphragm spring adjusting wrench	 NT404	Adjusting unevenness of diaphragm spring of clutch cover **a: 150 mm (5.91 in)** **b: 25 mm (0.98 in)**

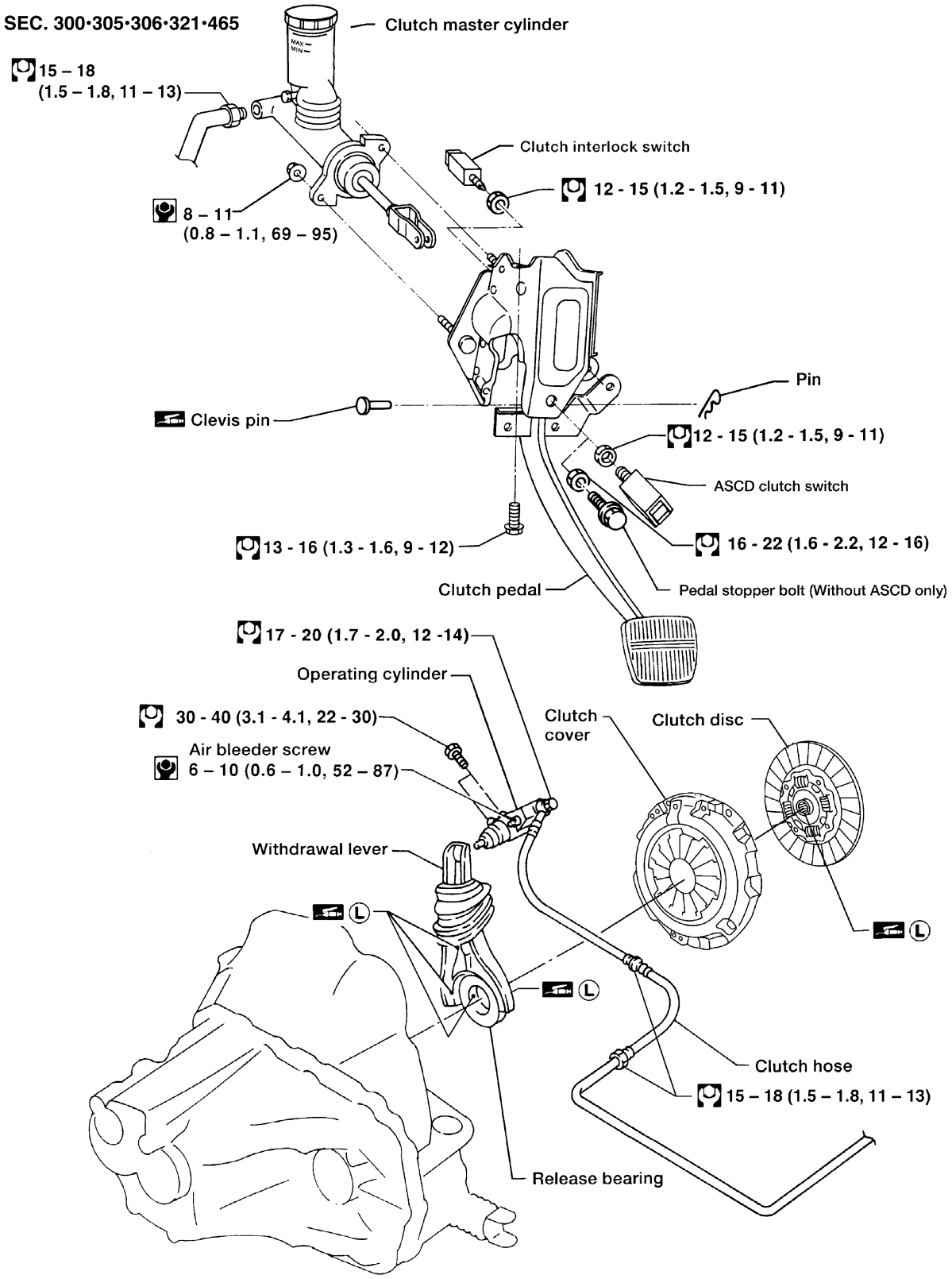
Commercial Service Tools

Tool name	Description	
① Flare nut crowfoot ② Torque wrench	 NT360	Removing and installing clutch piping **a: 10 mm (0.39 in)**

NVH Troubleshooting Chart

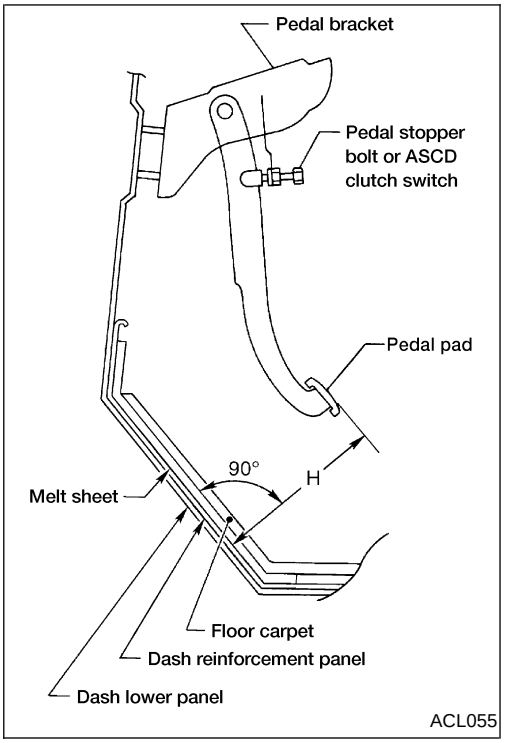
Use the chart below to help you find the cause of the symptom. The numbers indicate the order of inspection. If necessary, repair or replace these parts.

Reference page		CL-5	CL-6	CL-7	CL-8	Refer to EM section	CL-9	CL-11	CL-11	CL-11	CL-11	CL-11	CL-11	CL-11	CL-11	CL-12	CL-12	CL-12	CL-12
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)	CLUTCH COVER (Distortion)	FLYWHEEL (Discoloration)
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	



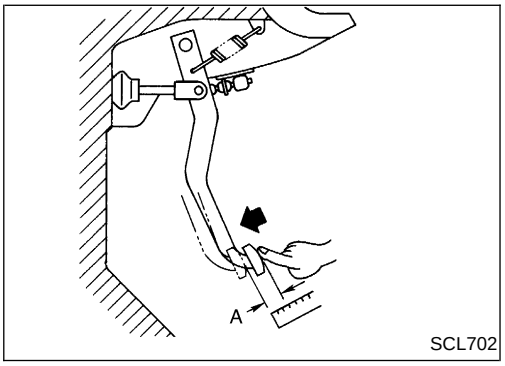
: Apply lithium-based grease including molybdenum disulphide.
: N•m (kg-m, ft-lb)
: N•m (kg-m, in-lb)

WCL020

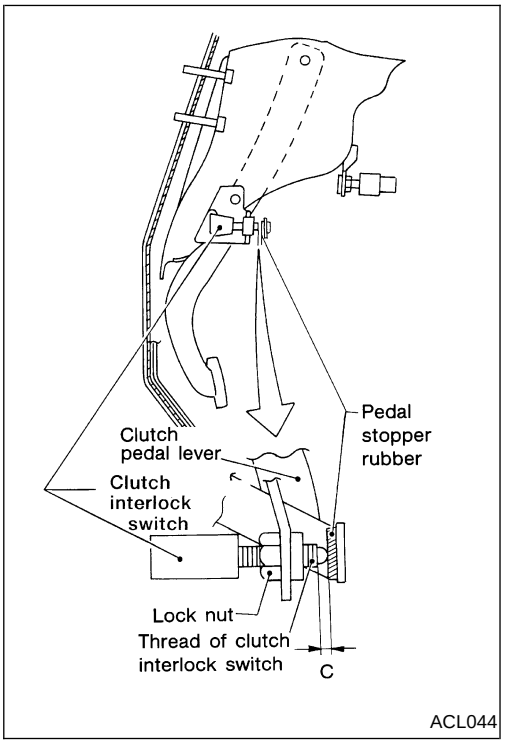


Adjusting Clutch Pedal

1. Adjust pedal height with pedal stopper bolt or ASCD clutch switch.
   Pedal height "H":
   168 - 178 mm (6.61 - 7.01 in)

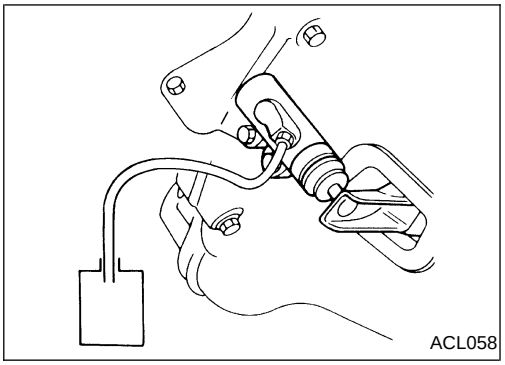


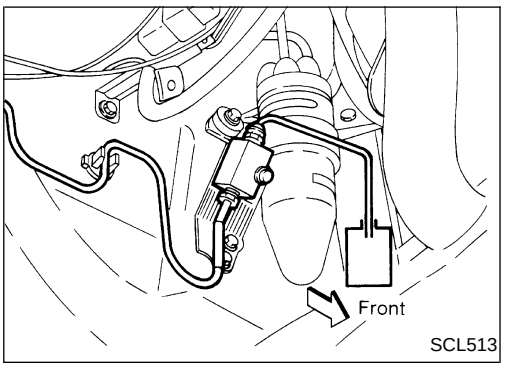
2. Adjust pedal free play with master cylinder push rod. Then tighten lock nut.
   Pedal free play "A":
   9 - 16 mm (0.35 - 0.63 in)
- Push or step on the clutch pedal until resistance is felt, and check the distance the pedal moves.



3. Adjust clearance "C" shown in the figure while depressing clutch pedal fully.
   Clearance "C":
   0.1 - 1.0 mm (0.004 - 0.039 in)

Adjusting Clutch Pedal (Cont'd)





Bleeding Procedure

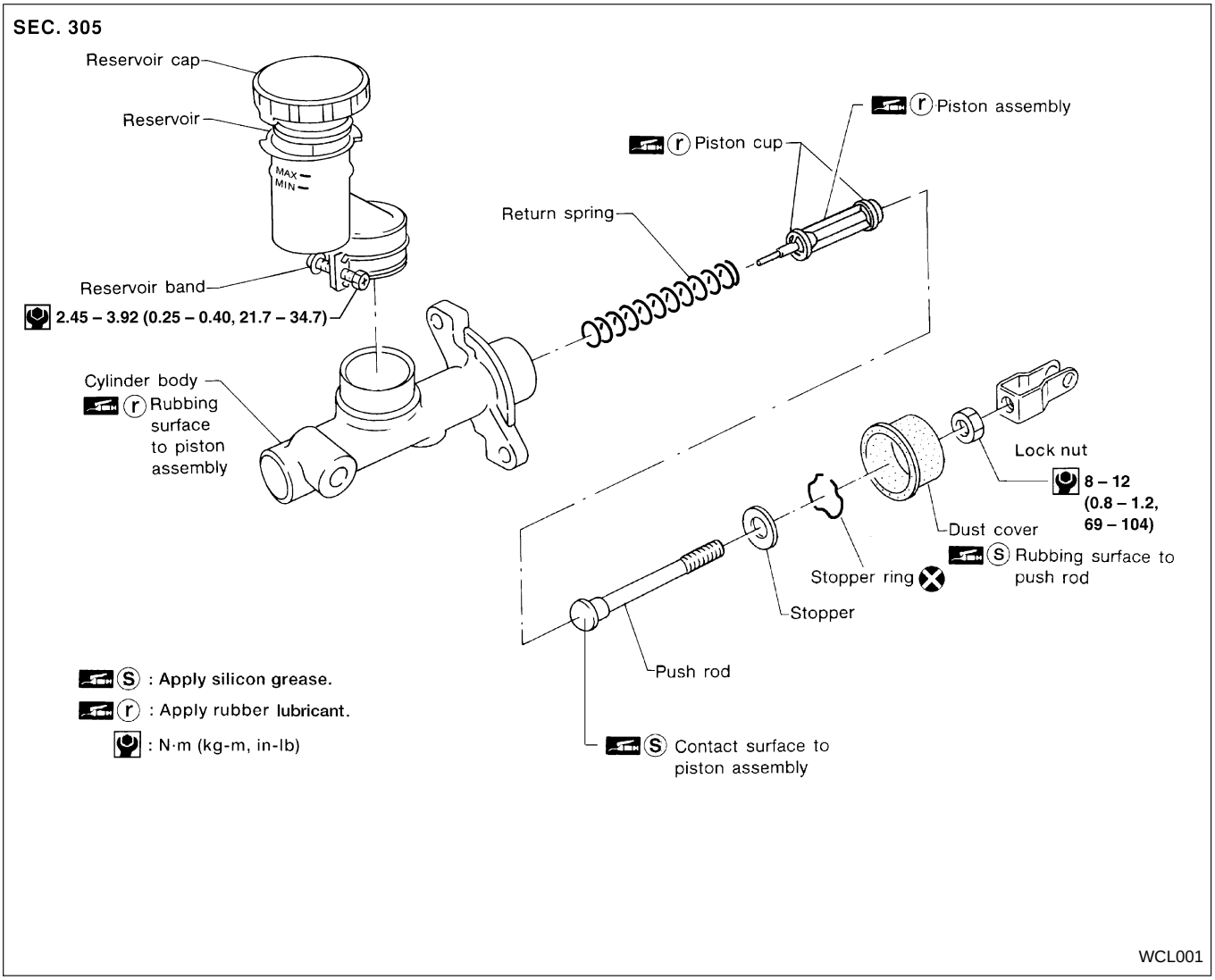
Bleed air from clutch piping connector and then operating cylinder.

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

Tightening torque of air bleeder screw:

: 6 - 10 N·m (0.6 - 1.0 kg-m, 52 - 87 in-lb)

Clutch Master Cylinder



DISASSEMBLY AND ASSEMBLY

- 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.

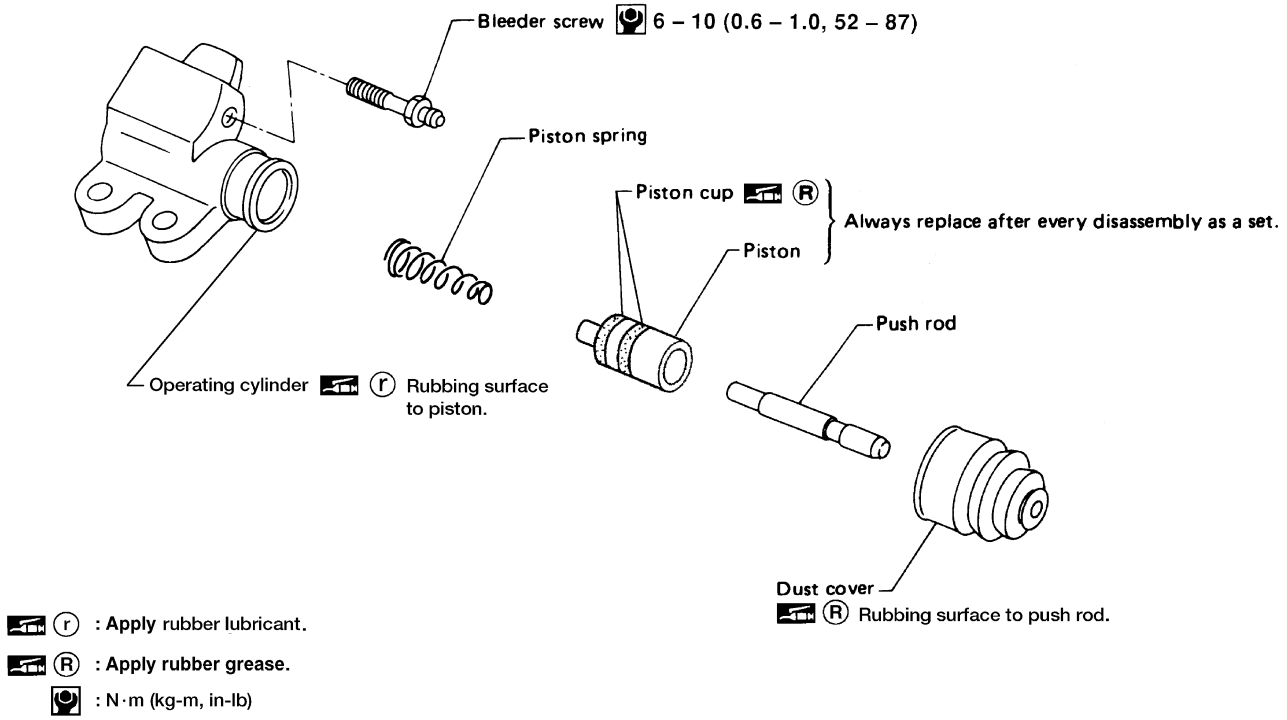
INSPECTION

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

Operating Cylinder

SEC. 306



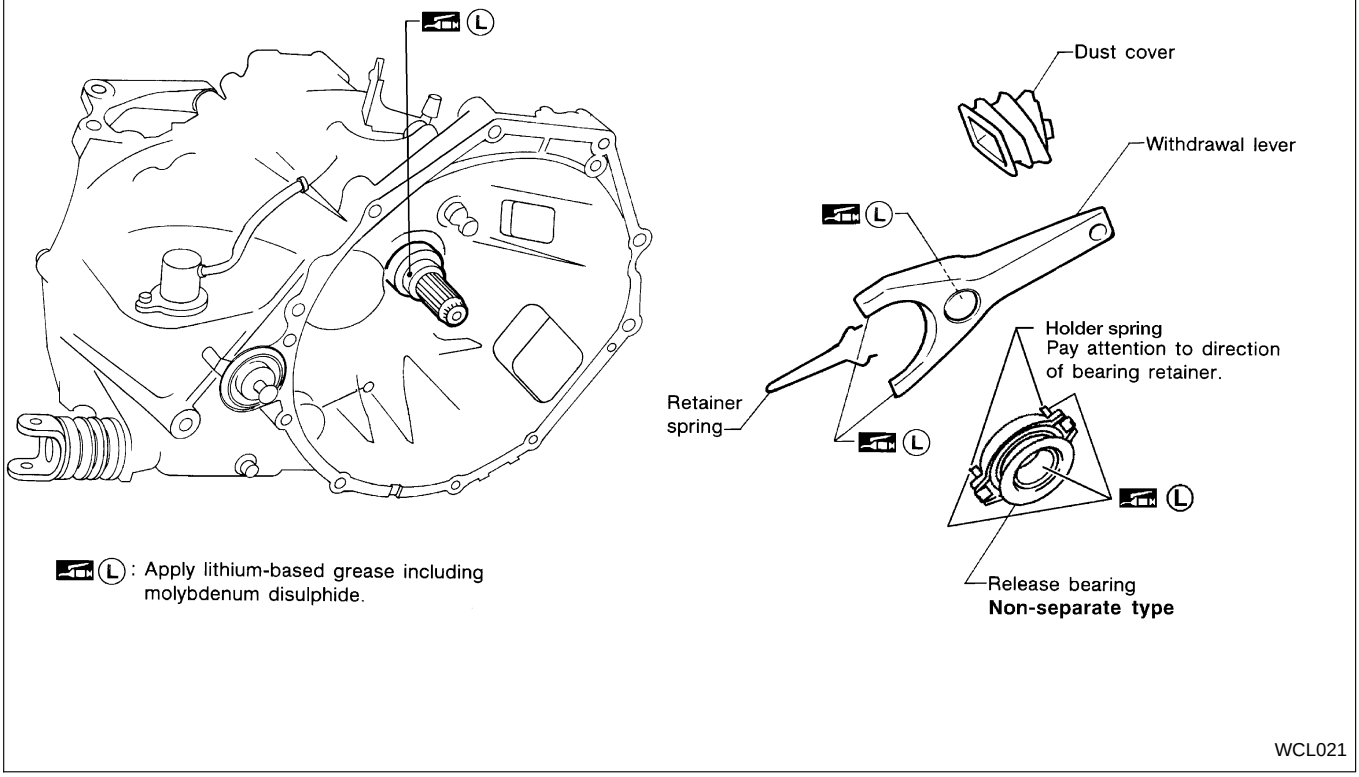
WCL002

INSPECTION

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

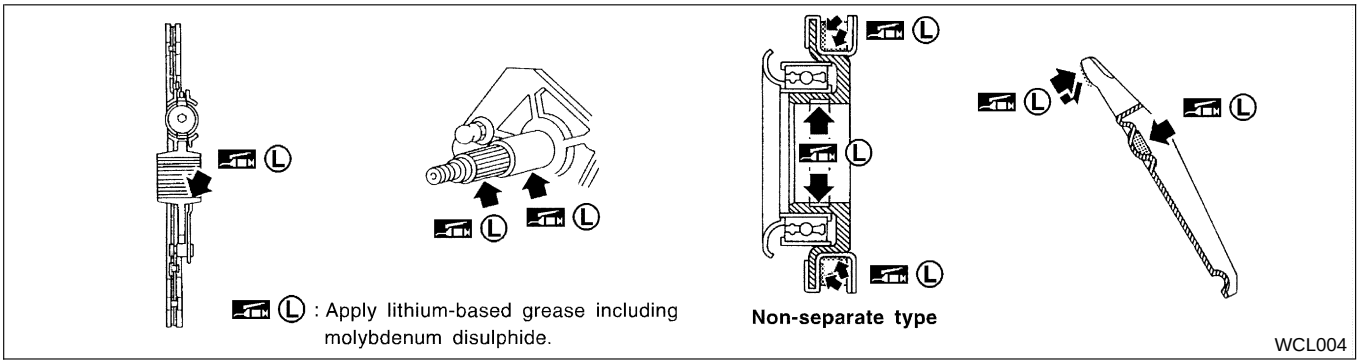
SEC. 321



INSPECTION

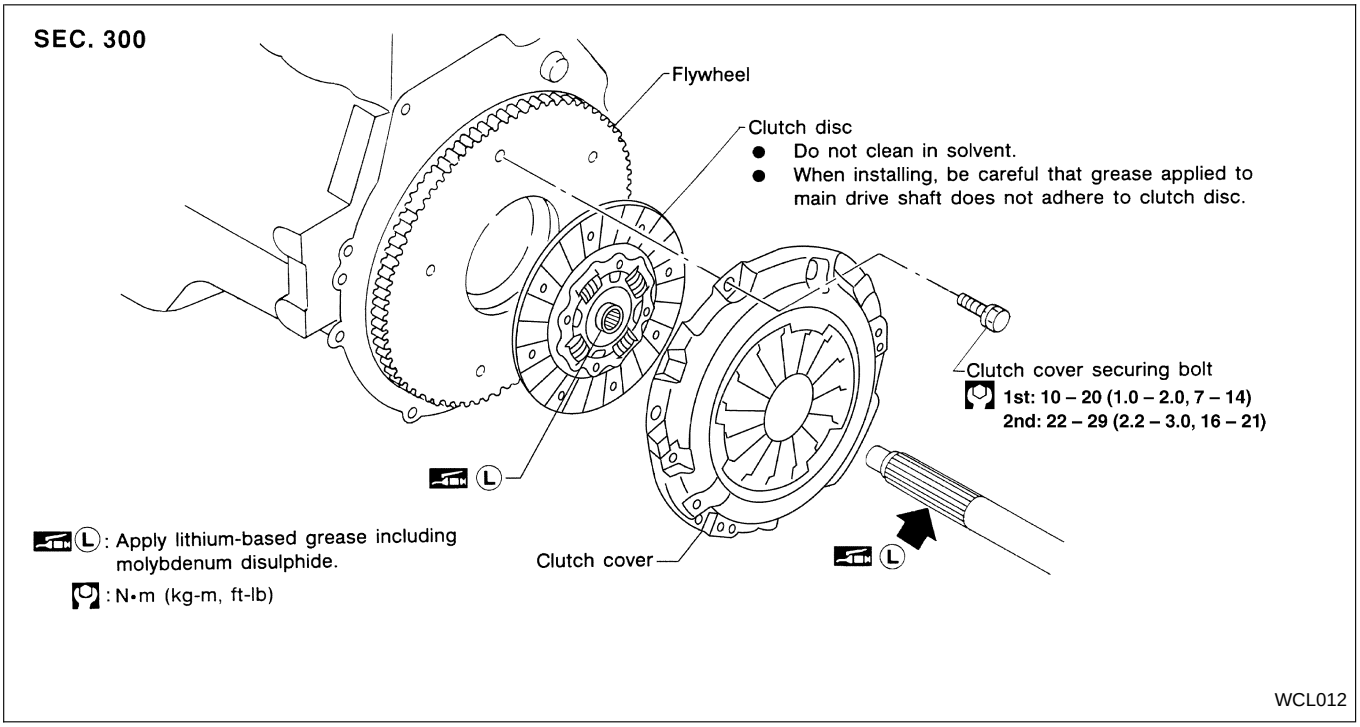
Check the following items, and replace if necessary:

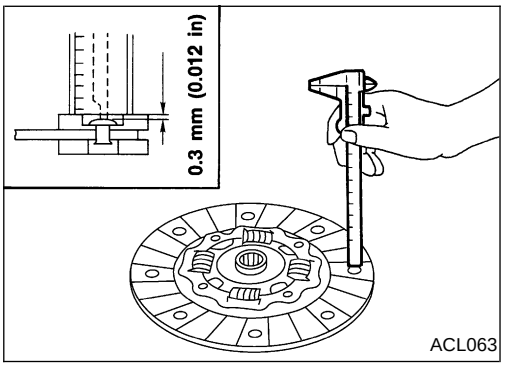
- Release bearing, to see that it rolls freely and is free from noise, cracks, pitting or wear
- Release sleeve and withdrawal lever rubbing surface, for wear, rust or damage

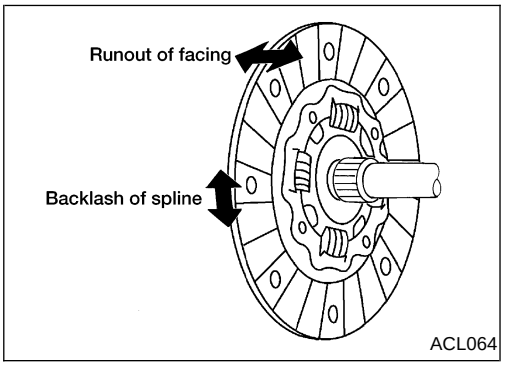


LUBRICATION

- Apply recommended grease to contact surface and rubbing surface.
- **Too much lubricant might damage clutch disc facing.**
- **Wipe lubricant from surface end of spline.**







Clutch Disc

INSPECTION

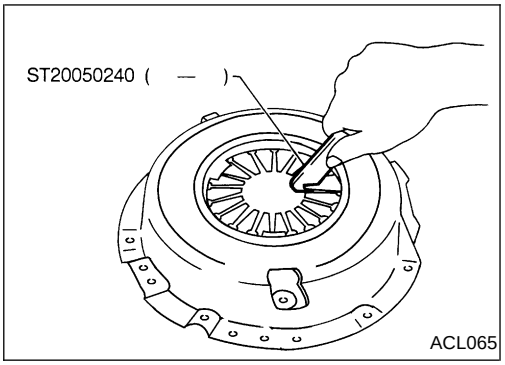
Check the following items, and replace if necessary:

- 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):
  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)

INSTALLATION

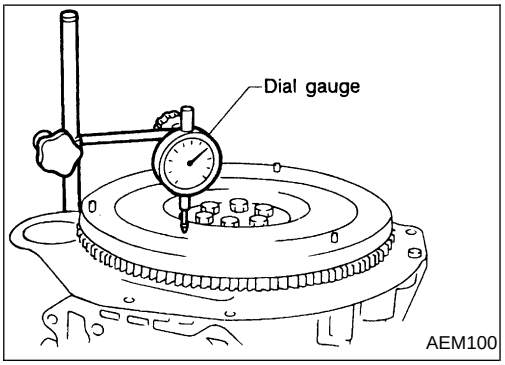
- Apply recommended grease to contact surface of splines.
- **Too much lubricant might damage clutch facing.**



Clutch Cover and Flywheel

INSPECTION AND ADJUSTMENT

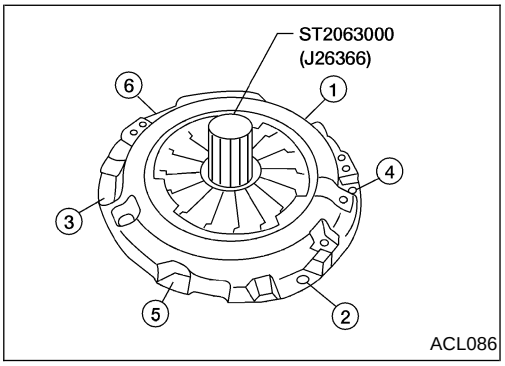
- Check clutch cover while installed on vehicle, for uneven diaphram spring toe height.
  Uneven limit:
  0.7 mm (0.028 in)
- If out of limit, adjust the height with Tool.



FLYWHEEL INSPECTION

CAUTON:
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 section (“Inspection”, “CYLINDER BLOCK”).



INSTALLATION

- 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 - 21 ft-lb)

General Specifications

CLUTCH CONTROL SYSTEM

Type of clutch control	Hydraulic

CLUTCH MASTER CYLINDER

Inner diameter	mm (in)	15.87 (5/8)

CLUTCH OPERATING CYLINDER

Inner diameter	mm (in)	19.05 (3/4)

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	7.9 - 8.3 (0.311 - 0.327) with 4,904 N (500 kg, 1,103 lb)

CLUTCH COVER

Model		225
Full-load	N (kg, lb)	5,394 (550, 1,212)

Inspection and Adjustment

CLUTCH PEDAL

Unit: mm (in)

Pedal height "H"*1	168 - 178 (6.61 - 7.01)
Pedal free play "A" (at pedal pad)	9 - 16 (0.35 - 0.63)
Clearance "C" (between pedal stopper rubber and clutch interlock switch)*2	0.1 - 1.0 (0.004 - 0.039)

*1: Measured from surface of dash reinforcement panel
*2: Clutch pedal fully depressed

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 hub center)	107.5 (4.23)
Maximum backlash of spline (at outer edge disc)	0.9 (0.035)

CLUTCH COVER

Unit: mm (in)

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

NOTES