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# CONTENTS

<p><b>PRECAUTIONS AND PREPARATION</b>.....2</p> <p style="padding-left: 20px;">Precaution .....2</p> <p style="padding-left: 20px;">Special Service Tools.....2</p> <p><b>CLUTCH SYSTEM</b>.....3</p> <p><b>INSPECTION AND ADJUSTMENT</b>.....4</p> <p style="padding-left: 20px;">Adjusting Clutch Pedal.....4</p> <p><b>CLUTCH RELEASE MECHANISM</b> .....5</p>	<p><b>CLUTCH DISC AND CLUTCH COVER</b> ..... 6</p> <p style="padding-left: 20px;">Clutch Disc.....6</p> <p style="padding-left: 20px;">Clutch Cover and Flywheel.....7</p> <p><b>SERVICE DATA AND SPECIFICATIONS (SDS)</b> ..... 8</p> <p style="padding-left: 20px;">General Specifications .....8</p> <p style="padding-left: 20px;">Inspection and Adjustment..... 8</p>
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# PRECAUTIONS AND PREPARATION

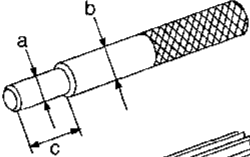
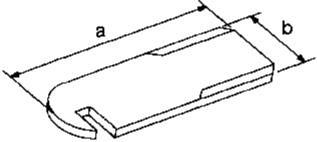
## Precaution

### WARNING:

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

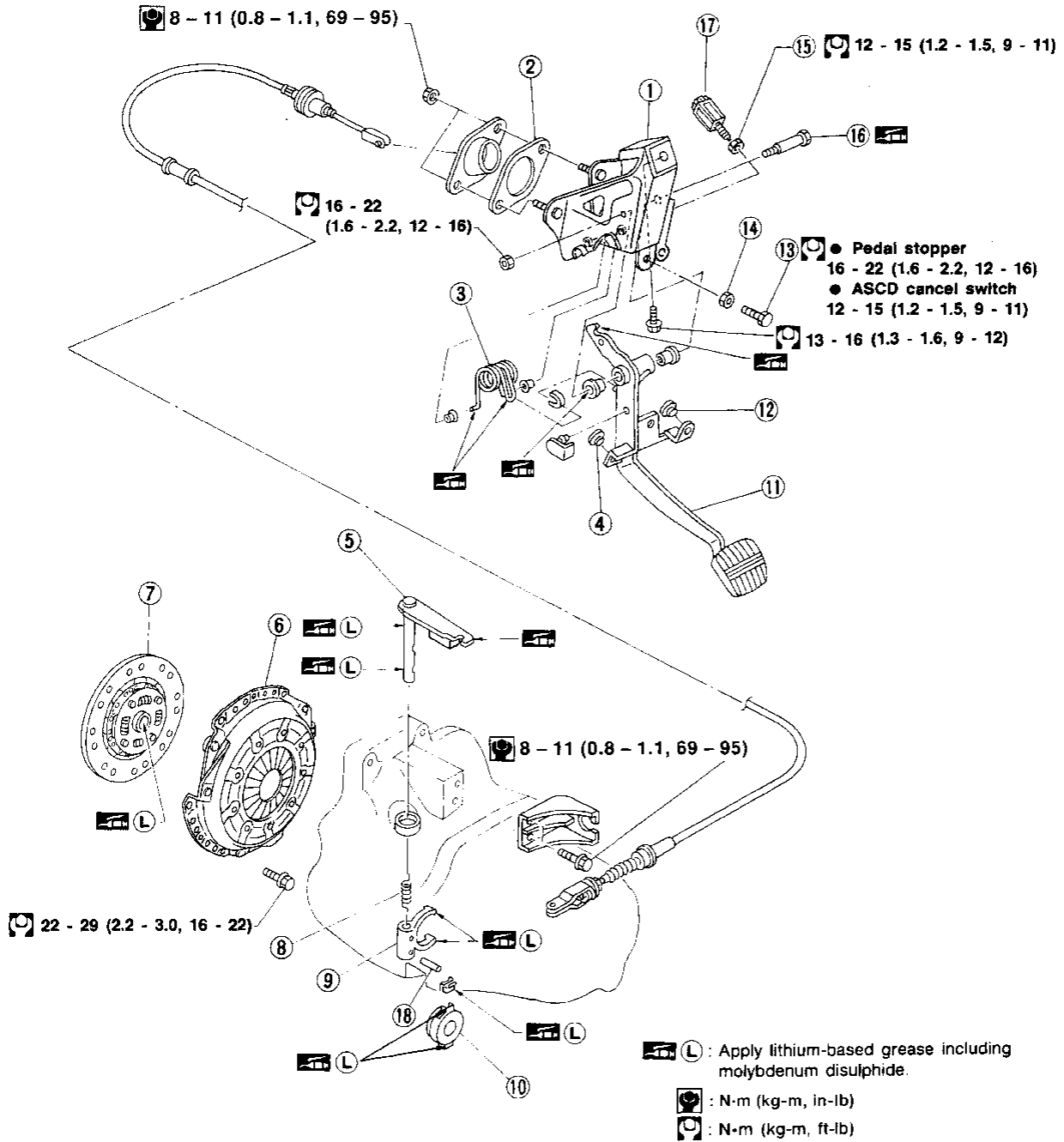
## Special Service Tools

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
KV30101600 (New) KV30101000 (Former) (J33213) Clutch aligning bar	<div style="display: flex; justify-content: space-between;"> <div data-bbox="558 617 602 638">New</div> <div data-bbox="1015 604 1393 625">Installing clutch cover and clutch disc</div> </div>  <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div data-bbox="558 827 630 848">Former</div> <div data-bbox="1015 863 1289 947"> <p><b>a: 15.9 mm (0.626 in) dia.</b>  <b>b: 17.9 mm (0.705 in) dia.</b>  <b>c: 40 mm (1.57 in)</b></p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div data-bbox="444 926 505 947">NT645</div> </div>
ST20050240 ( — ) Diaphragm spring adjusting wrench	<div style="display: flex; justify-content: space-between;"> <div data-bbox="591 989 906 1129">  </div> <div data-bbox="1015 978 1458 1031">                     Adjusting unevenness of clutch cover diaphragm spring                 </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div data-bbox="444 1136 505 1157">NT404</div> <div data-bbox="1015 1104 1224 1157"> <p><b>a: 150 mm (5.91 in)</b>  <b>b: 25 mm (0.98 in)</b></p> </div> </div>

# CLUTCH SYSTEM

SEC. 300-307-465



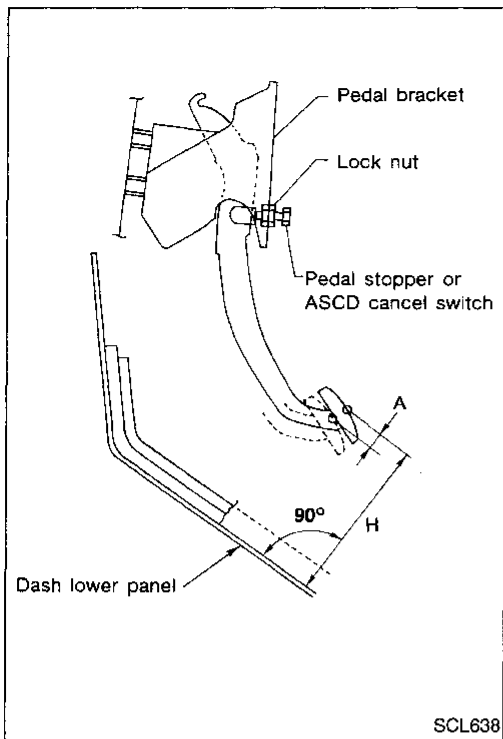
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- ① Clutch pedal bracket
- ② Insulator
- ③ Assist spring
- ④ Stopper rubber
- ⑤ Withdrawal lever
- ⑥ Clutch cover

- ⑦ Clutch disc
- ⑧ Return spring
- ⑨ Clutch lever
- ⑩ Release bearing
- ⑪ Clutch pedal
- ⑫ Stopper rubber

- ⑬ Pedal stopper or ASCD cancel switch
- ⑭ Lock nut
- ⑮ Lock nut
- ⑯ Fulcrum pin
- ⑰ Clutch interlock switch
- ⑱ Spring pin

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## Adjusting Clutch Pedal

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

**Pedal height "H":**  
153 - 163 mm (6.02 - 6.42 in)

2. Adjust withdrawal lever play "B" according to the following procedure.

**CAUTION:**

**When clutch cable is replaced with a new one, fully depress clutch pedal 50 times as a break-in procedure (to pre-stretch the clutch cable). Then, adjust the cable as follows.**

- a. Push withdrawal lever by hand until resistance is felt, and then tighten adjusting nut.
- b. Turn back adjusting nut 2.5 to 3.5 turns, and then tighten lock nut.

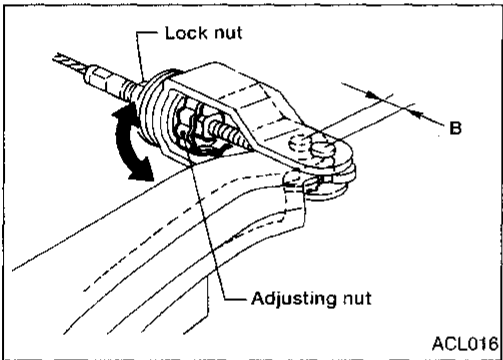
**Withdrawal lever play "B":**  
2.5 - 3.5 mm (0.098 - 0.138 in)

**Lock nut:**

☞: 3 - 4 N·m (0.3 - 0.4 kg·m, 26 - 35 in·lb)

3. As a final check, measure pedal free travel at center of pedal pad.

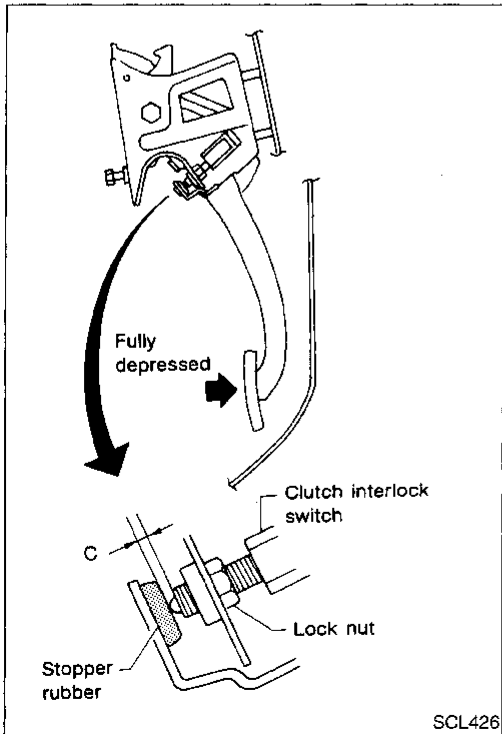
**Pedal free travel "A":**  
11.0 - 15.0 mm (0.433 - 0.591 in)



**—MODELS WITH CLUTCH INTERLOCK SYSTEM—**

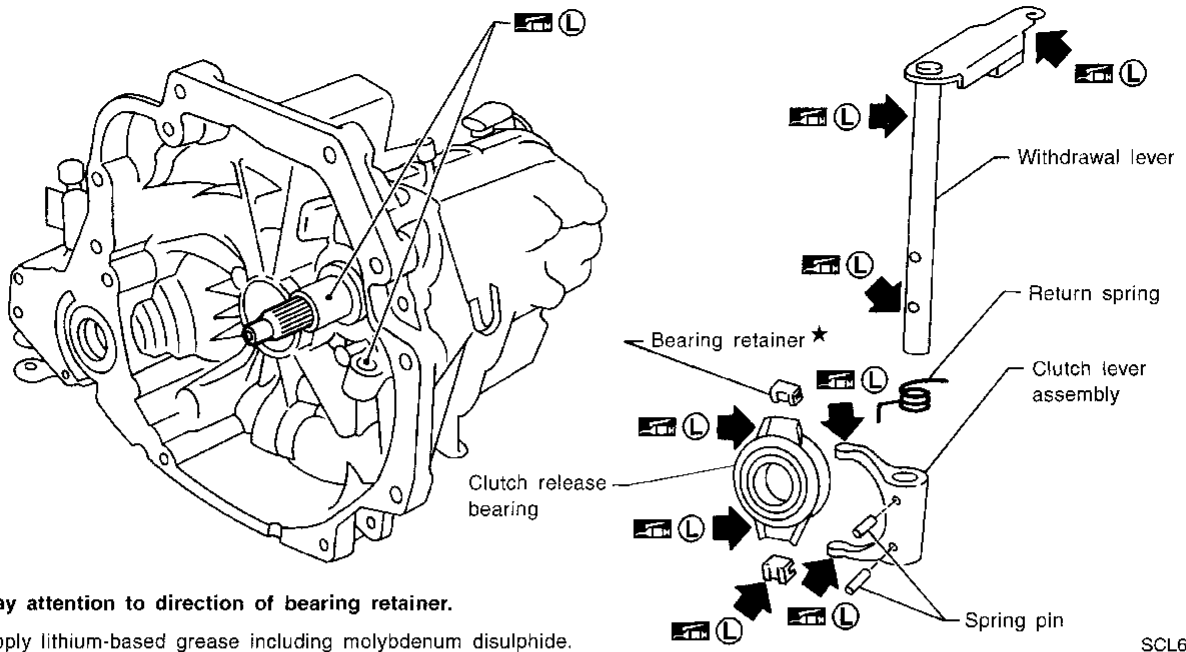
4. Adjust clearance "C" shown in the figure while fully depressing clutch pedal.

**Clearance "C":**  
0.3 - 1.0 mm (0.012 - 0.039 in)

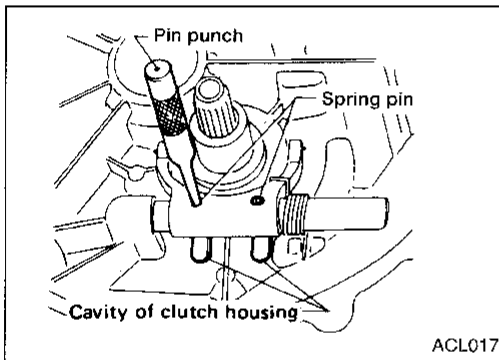


# CLUTCH RELEASE MECHANISM

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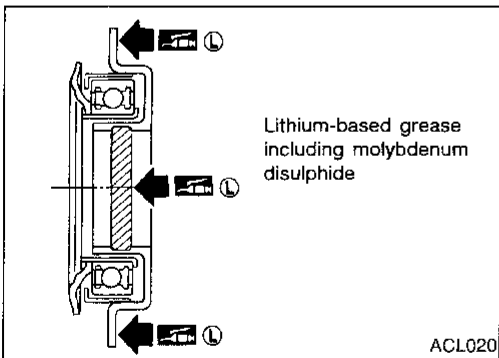


## Clutch Release Mechanism

### REMOVAL AND INSTALLATION

- Remove release bearing by pulling bearing retainers outward.
- Align spring pin with cavity of clutch housing and tap out spring pin.
- To install, reverse removal procedure.

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### 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

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### LUBRICATION

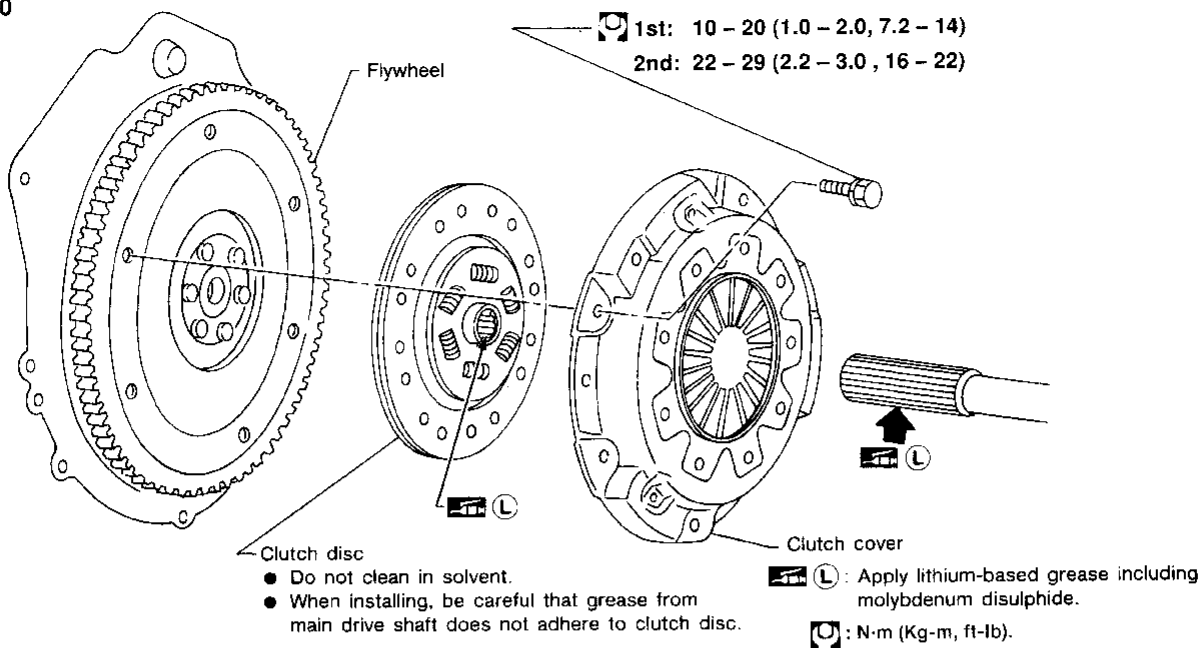
- Apply recommended grease to contact surface and rubbing surface.
- **Too much lubricant may damage clutch disc facing.**

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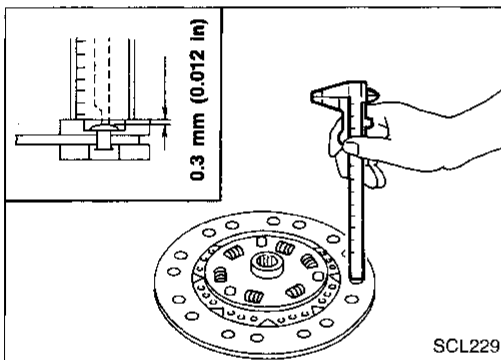
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# CLUTCH DISC AND CLUTCH COVER

SEC. 300



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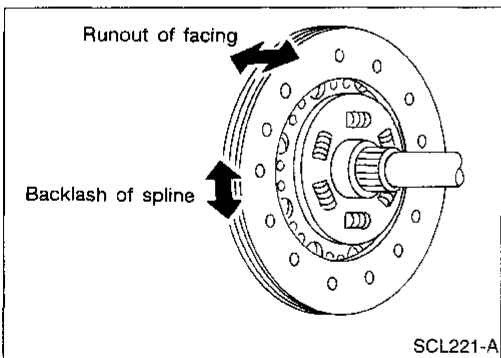
## Clutch Disc

### 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):**

**MODEL 190 0.8 mm (0.031 in)**

**MODEL 215 0.9 mm (0.035 in)**

**Runout limit:**

**1.0 mm (0.039 in)**

**Distance of runout check point (from hub center):**

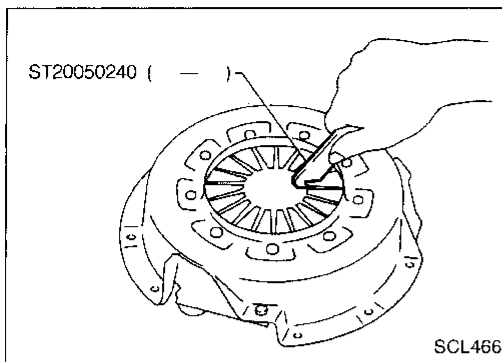
**MODEL 190 90 mm (3.54 in)**

**MODEL 215 102.5 mm (4.04 in)**

### INSTALLATION

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

# CLUTCH DISC AND CLUTCH COVER



## Clutch Cover and Flywheel

### INSPECTION AND ADJUSTMENT

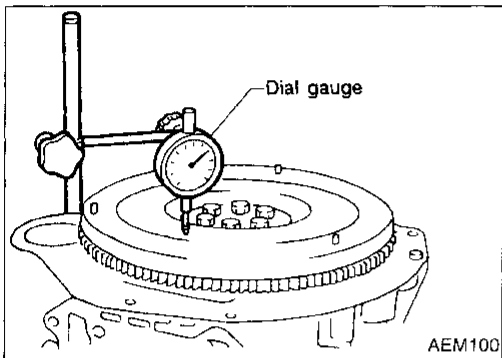
- Check clutch cover, installed on vehicle, for uneven diaphragm spring toe height.  
**Uneven limit:**  
**0.7 mm (0.028 in)**
- If out of limit, adjust the height with Tool.

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### FLYWHEEL INSPECTION

#### 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.

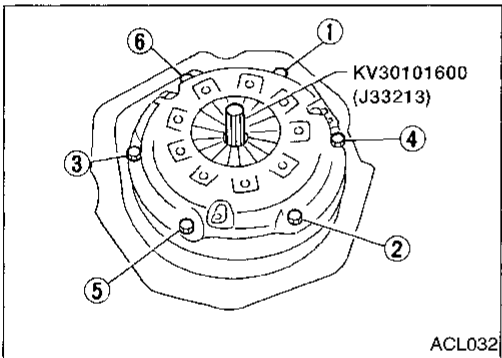
#### Maximum allowable runout:

Refer to EM section ("Inspection", "CYLINDER BLOCK").

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### 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, 7.2 - 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)

## General Specifications

### CLUTCH CONTROL SYSTEM

Type of clutch control	Mechanical type
------------------------	-----------------

### CLUTCH COVER

Engine	GA16DE	SR20DE
Model	190	215
Full-load N (kg, lb)	3,825 (390, 860)	4,413 (450, 992)

### CLUTCH DISC

Unit: mm (in)

Engine	GA16DE	SR20DE
Model	190	215
Facing size (Outer dia. x inner dia. x thickness)	190 x 132 x 3.5 (7.48 x 5.20 x 0.138)	215 x 140 x 3.5 (8.46 x 5.51 x 0.138)
Thickness of disc assembly with load	7.6 - 8.0 (0.315 - 0.331) with 3,825 N (390 kg, 860 lb)	7.6 - 8.0 (0.299 - 0.315) with 3,923 N (400 kg, 882 lb)

## Inspection and Adjustment

### CLUTCH PEDAL

Unit: mm (in)

Pedal height "H" <sup>1</sup>	153 - 163 (6.02 - 6.42)
Pedal free travel "A" (at pedal pad)	11.0 - 15.0 (0.433 - 0.591)
Withdrawal lever play "B"	2.5 - 3.5 (0.098 - 0.138)
Clearance "C" (between pedal stopper rubber and clutch inter- lock switch) <sup>2</sup>	0.3 - 1.0 (0.012 - 0.039)

<sup>1</sup>: Measured from surface of dash lower panel to surface of pedal pad.

<sup>2</sup>: Clutch pedal fully depressed.

### CLUTCH COVER

Unit: mm (in)

Model	190	215
Diaphragm spring height	29.7 - 31.7 (1.169 - 1.248)	30.5 - 32.5 (1.201 - 1.280)
Uneven limit of diaphragm spring toe height	0.7 (0.028)	

### CLUTCH DISC

Unit: mm (in)

Model	190	215
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)	90 (3.54)	102.5 (4.04)
Maximum backlash of spline (at outer edge of disc)	0.8 (0.031)	0.9 (0.035)