SECTION CL

CONTENTS

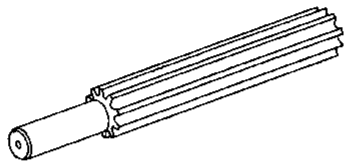
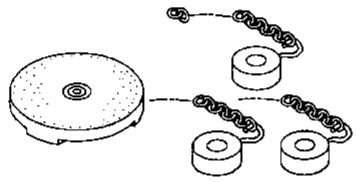
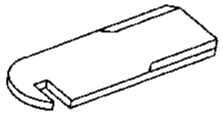
Precaution

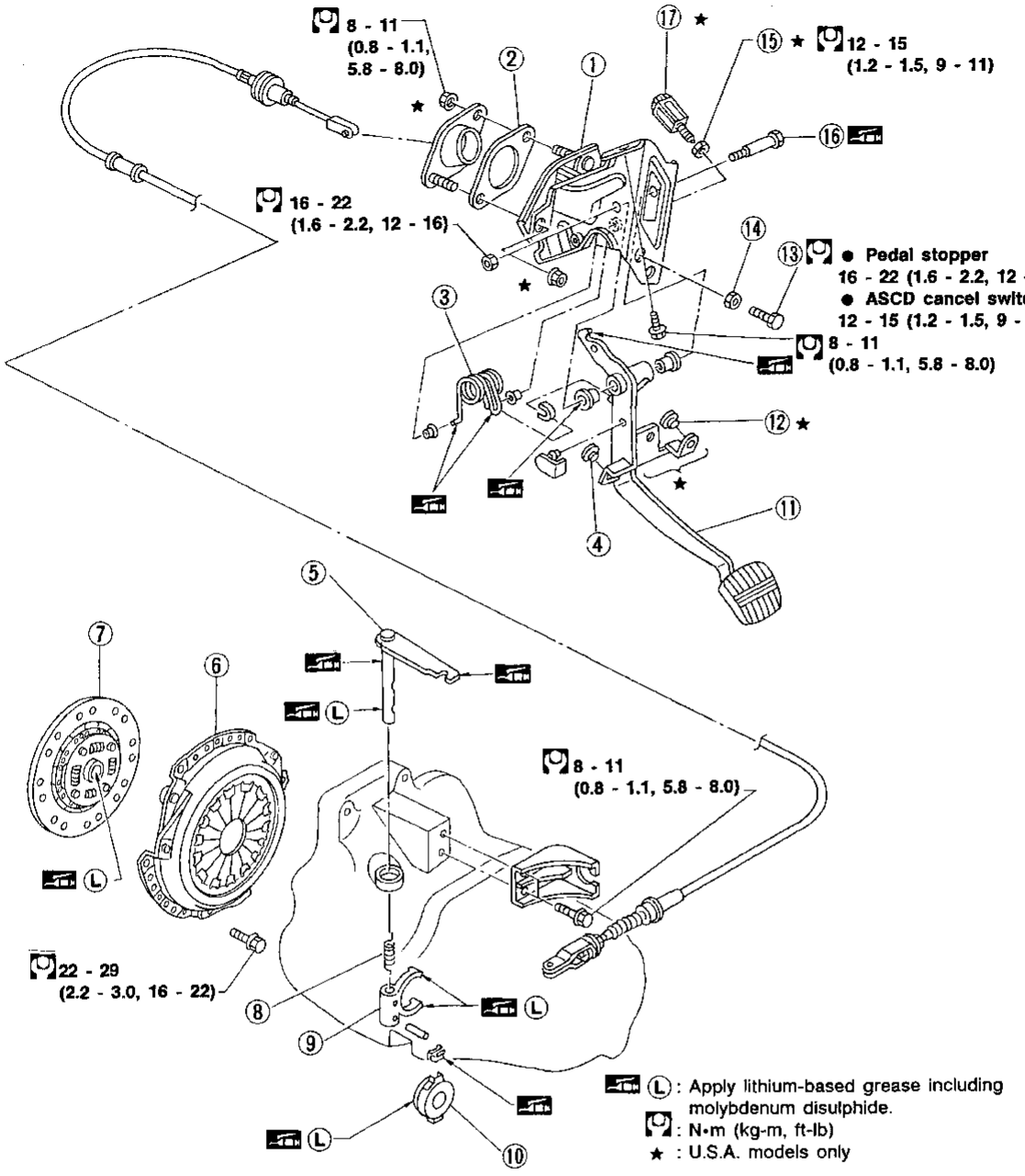
WARNING:

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

Special Service Tools

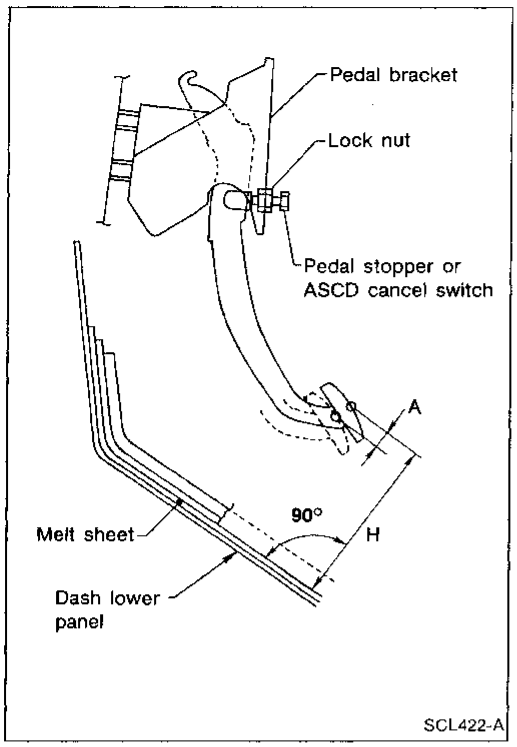
*: Special tool or commercial equivalent

Tool number (Kent-Moore No.) Tool name	Description	
KV30101000* (J33213) Clutch aligning bar	 NT061	Installing clutch cover and clutch disc
ST20050010 (—) Base plate ST20050100 (—) Distance piece	 NT058	Inspecting clutch cover diaphragm spring
ST20050240* (—) Diaphragm spring adjusting wrench	 NT060	Adjusting unevenness of clutch cover diaphragm spring



SCL569-A

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



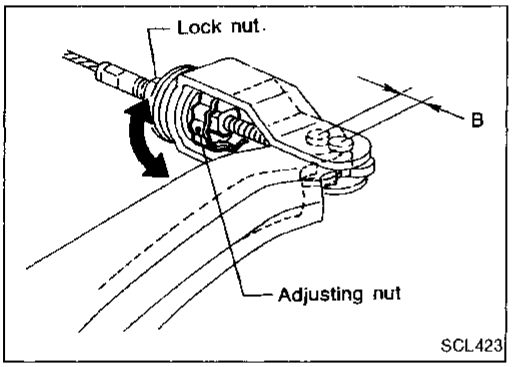
Adjusting Clutch Pedal

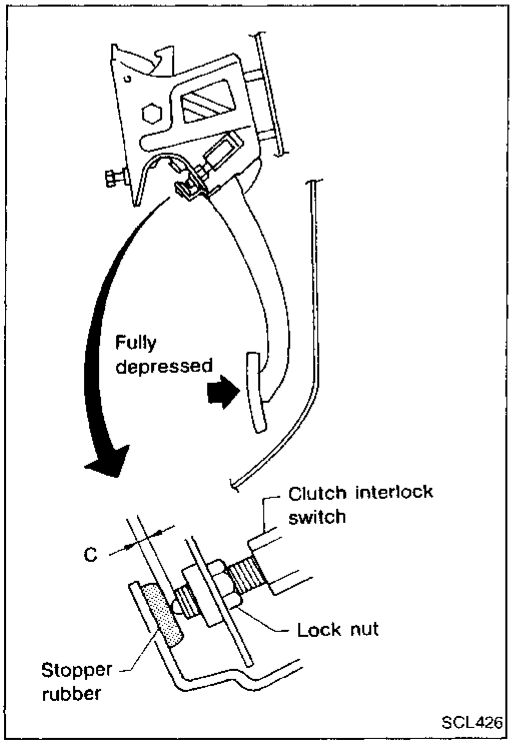
1. Adjust pedal height with pedal stopper or ASCD cancel switch.
   Pedal height "H":
   150 - 160 mm (5.91 - 6.30 in)
2. Adjust withdrawal lever play "B" according to the following procedure.

(1) Push withdrawal lever by hand until resistance is felt, and then tighten adjusting nut.

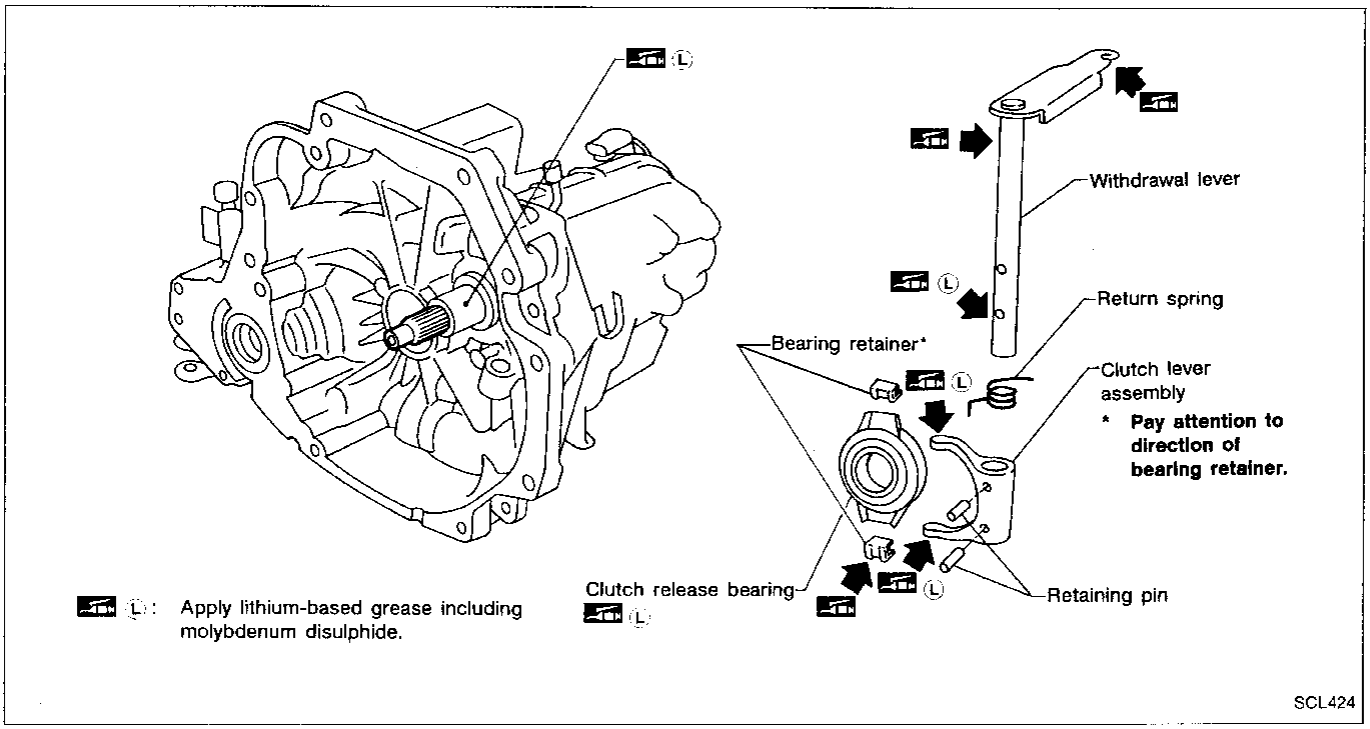
(2) Turn back adjusting nut 2.5 to 3.5 turns, and then tighten lock nut.
   Withdrawal lever play "B":
   2.5 - 3.5 mm (0.098 - 0.138 in)
   Lock nut:
   [O]: 3 - 4 N·m (0.3 - 0.4 kg-m, 2.2 - 2.9 ft-lb)

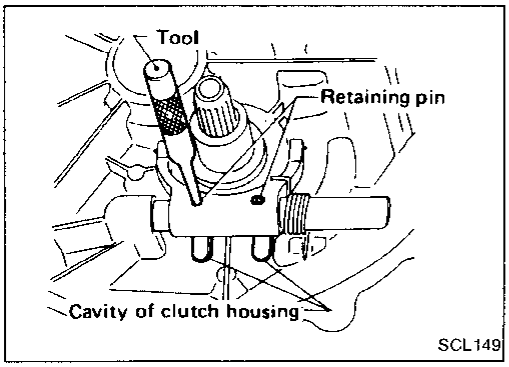
3. As a final check, measure pedal free travel at center of pedal pad.
   Pedal free travel "A":
   10.8 - 15.1 mm (0.425 - 0.594 in)

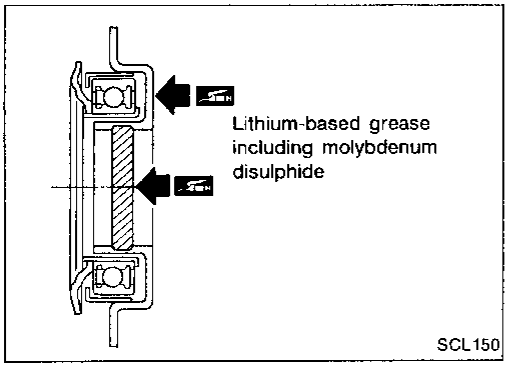




4. U.S.A. models only
   Adjust clearance "C" between stopper rubber and threaded end of clutch interlock switch while depressing clutch pedal fully.
   Clearance "C":
   0.1 - 1.0 mm (0.004 - 0.039 in)







REMOVAL AND INSTALLATION

- Remove release bearing by pulling bearing retainers outward.
- Align retaining pin with cavity of clutch housing and tap out retaining pin.

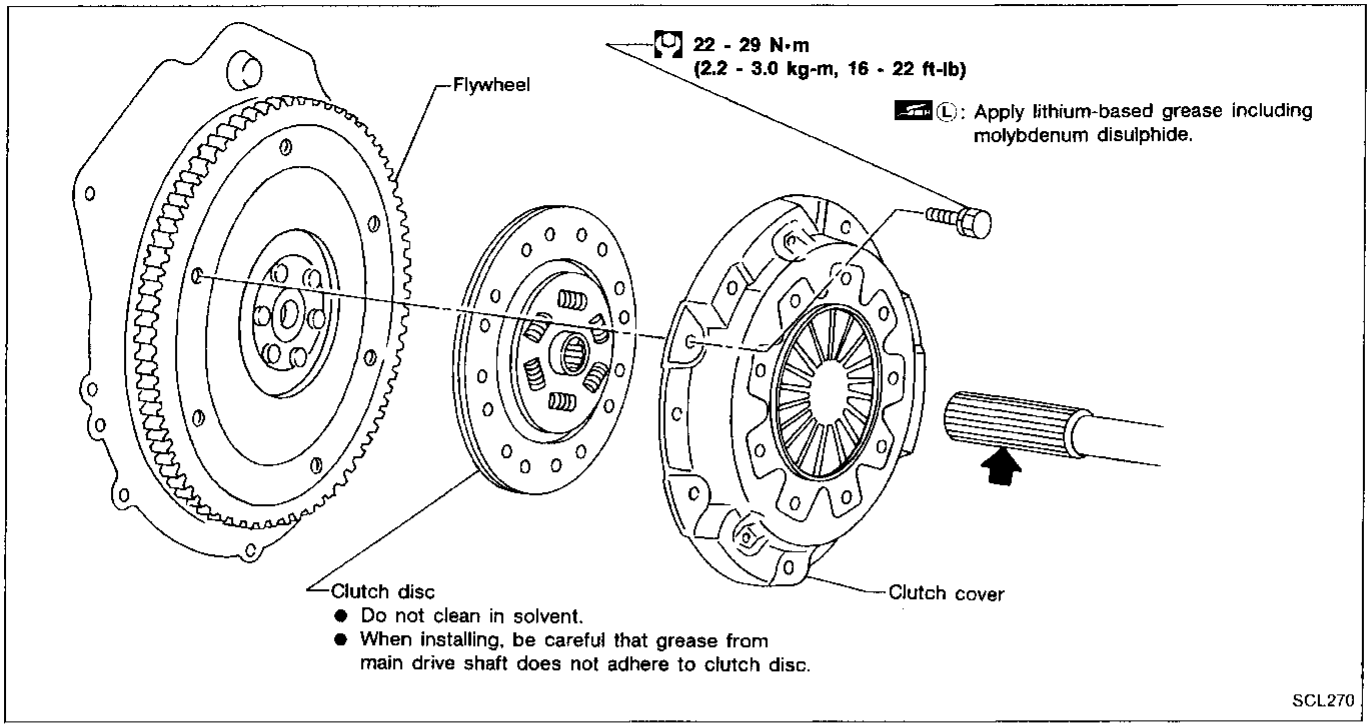
INSPECTION

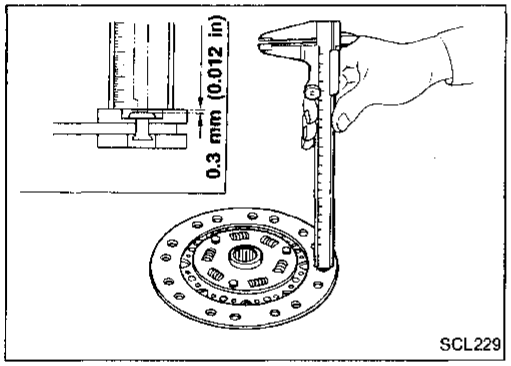
Check the following items, and replace if necessary.

- 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.**



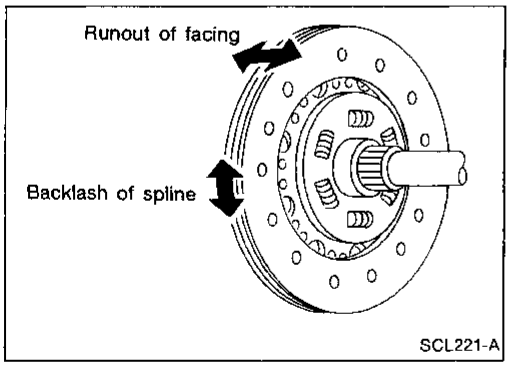


Clutch Disc

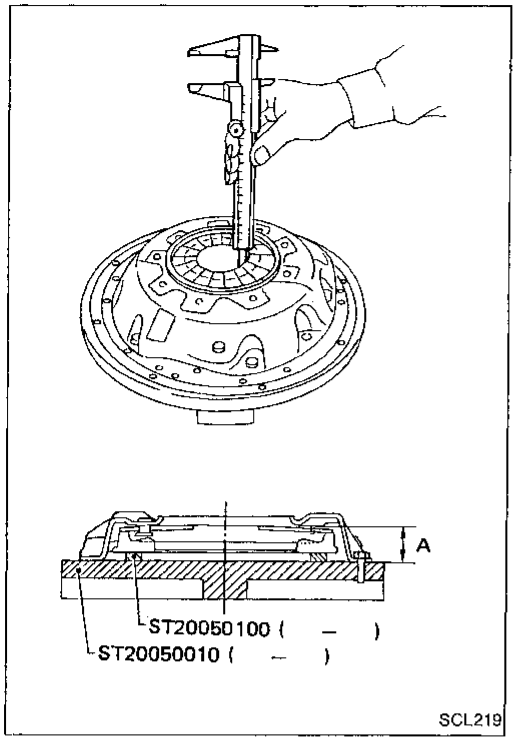
INSPECTION

Check clutch disc for wear of facing.

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



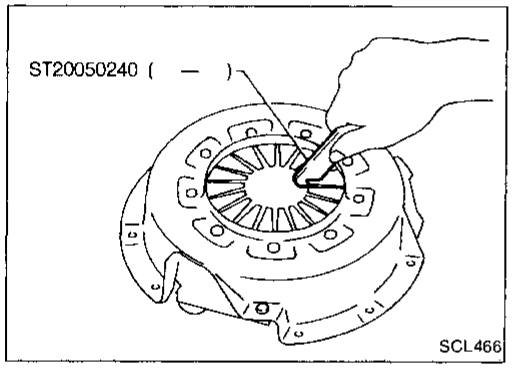
- Check clutch disc for backlash of spline and runout of facing.
  Maximum backlash of spline (at outer edge of disc):
  MODEL 190 0.8 mm (0.031 in)
  MODEL 215 0.9 mm (0.035 in)
  Runout limit:
  1.0 mm (0.039 in)
  Distance of runout check point (from hub center):
  MODEL 190 90 mm (3.54 in)
  MODEL 215 102.5 mm (4.04 in)
- Check clutch disc for burns, discoloration or oil or grease leakage. Replace if necessary.



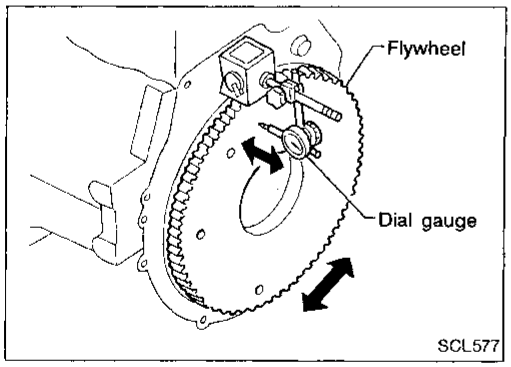
Clutch Cover and Flywheel

INSPECTION AND ADJUSTMENT

- Set Tool and check height and unevenness of diaphragm spring.
- Set 0.4 mm (0.016 in) feeler gauges on distance pieces (ST20050100) when checking model 190 for diaphragm spring heights.
  Diaphragm spring height "A":
  MODEL 190 29 - 31 mm (1.14 - 1.22 in)
  MODEL 215 30.5 - 32.5 mm (1.201 - 1.280 in)
- Check thrust rings for wear or damage by shaking cover assembly and listening for chattering noise, or lightly hammering on rivets for a slightly cracked noise. Replace clutch cover assembly if necessary.
- Check pressure plate and clutch disc contact surface for slight burns or discoloration. Repair pressure plate with emery paper.
- Check pressure plate and clutch disc contact surface for deformation or damage. Replace if necessary.

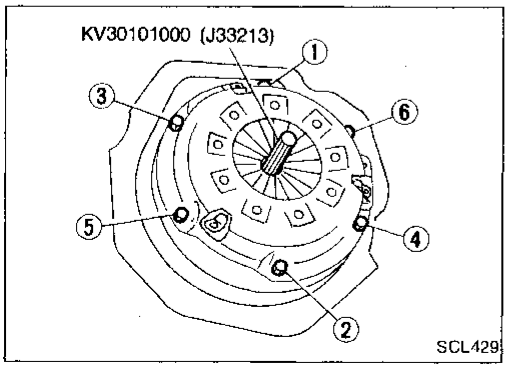


- Adjust unevenness of diaphragm spring with Tool.
  Uneven limit:
  0.7 mm (0.028 in)



FLYWHEEL INSPECTION

- Check contact surface of flywheel for slight burns or discoloration. Clean flywheel with emery paper.
- Check flywheel runout.
  Runout (Total indicator reading):
  Flywheel
  Refer to EM section. (Inspection — CYLINDER BLOCK)



INSTALLATION

- Insert Tool into clutch disc hub when installing clutch cover and disc.
- Tighten bolts in numerical order.
- Be careful not to allow grease to contaminate clutch facing.

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	8.0 - 8.4 (0.315 - 0.331) with 3,923 N (400 kg, 882 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*	150 - 160 (5.91 - 6.30)
Pedal free travel	10.8 - 15.1 (0.425 - 0.594)
Withdrawal lever play	2.5 - 3.5 (0.098 - 0.138)

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

CLUTCH COVER

Unit: mm (in)

Model	190	215
Diaphragm spring height	29 - 31 (1.14 - 1.22)	30.5 - 32.5 (1.201 - 1.280)
Uneven limit of diaphragm spring toe height "A"	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)