

CLUTCH

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Refer to Section MA (Clutch) for:

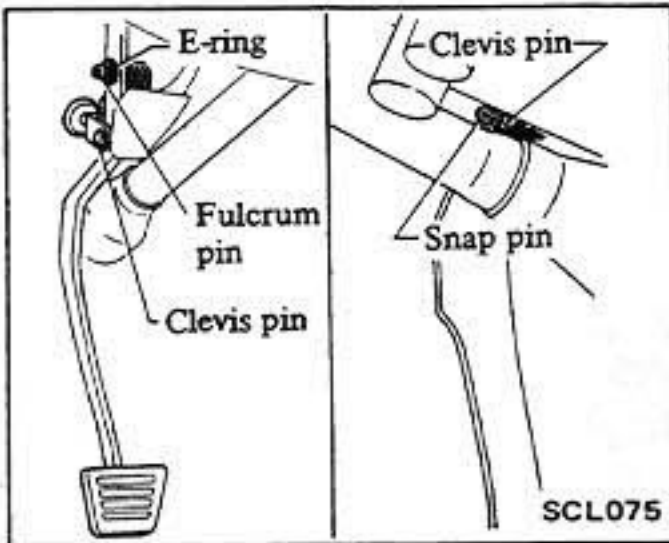
- CHECKING CLUTCH PEDAL HEIGHT AND FREE PLAY OR FREE TRAVEL

HYDRAULIC CLUTCH CONTROL

CLUTCH PEDAL

REMOVAL

1. Pry off snap pin and take out clevis pin.



2. After removing E-ring (160 series) or bolts and pedal shaft plates (61 series), remove or pull out fulcrum pin, then remove clutch pedal and return spring.

INSPECTION

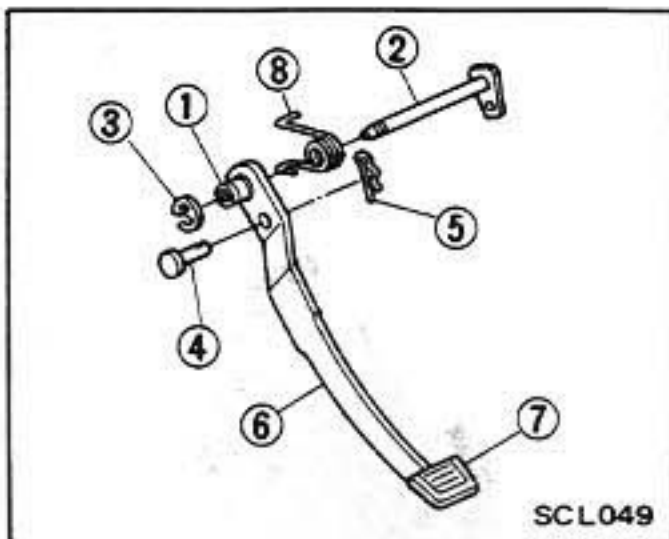
Inspect the following parts: If abnormalities are found, repair or replace the affected parts.

1. Clutch pedal bushing ① at boss, fulcrum pin ② and E-ring ③ (160 series)/pedal shaft plate ⑨ (61 series) for wear, deformation or damage.

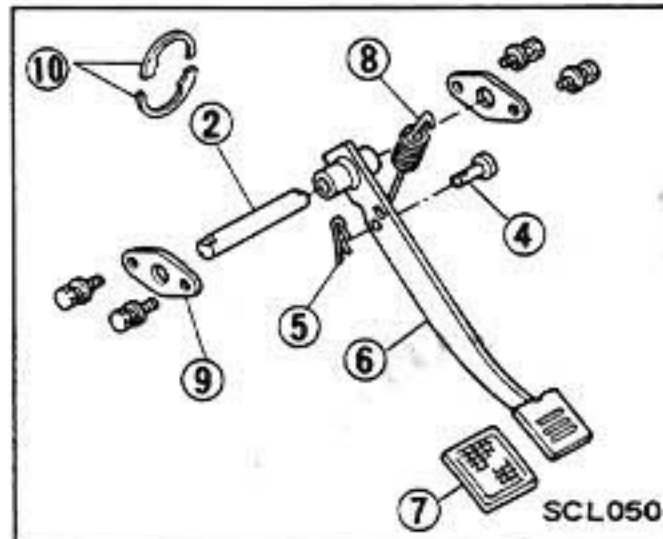
Bushing is press-fitted. If it shows sign of abnormality, replace pedal assembly.

2. Clevis pin ④ for wear or damage, and snap pin ⑤ for any deformation.
3. Pedal ⑥, pedal pad ⑦ and pedal stopper for deformation or damage.
4. Return spring ⑧ for fatigue or damage.

160 series



61 series



- | | |
|------------------------|-------------------------|
| 1 Clutch pedal bushing | 7 Pedal pad |
| 2 Fulcrum pin | 8 Return spring |
| 3 E-ring | 9 Pedal shaft plate |
| 4 Clevis pin | 10 Master cylinder shim |
| 5 Snap pin | |
| 6 Clutch pedal | |

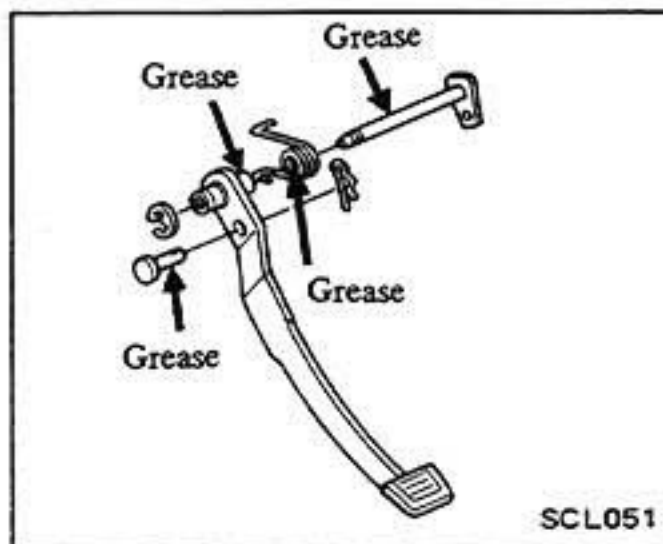
INSTALLATION

1. Install clutch pedal in reverse order of removal.

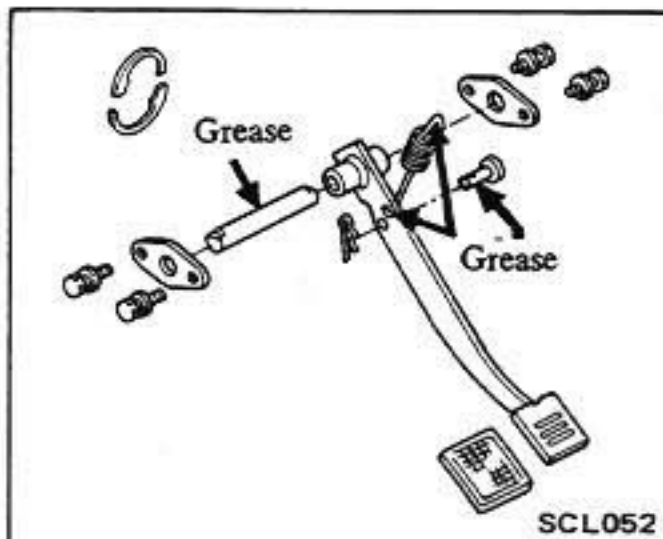
Observe the following:

- a. Apply grease to boss of clutch pedal (160 series), return spring, clevis pin and fulcrum pin.

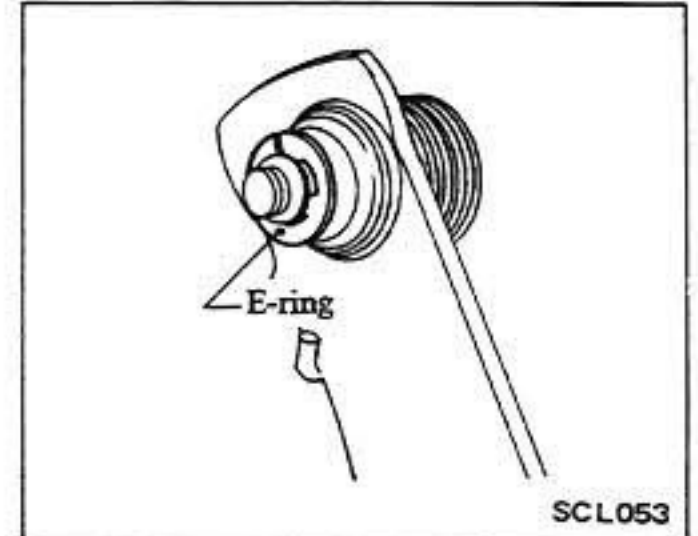
160 series



61 series



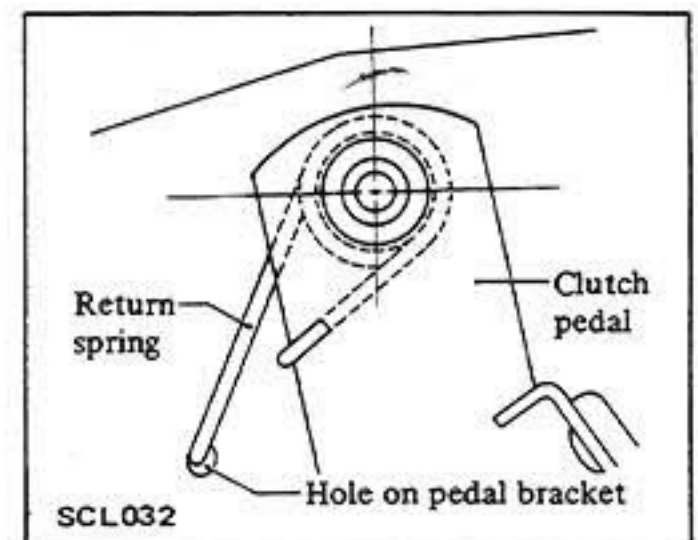
- b. Firmly attach E-ring to fulcrum pin (160 series).



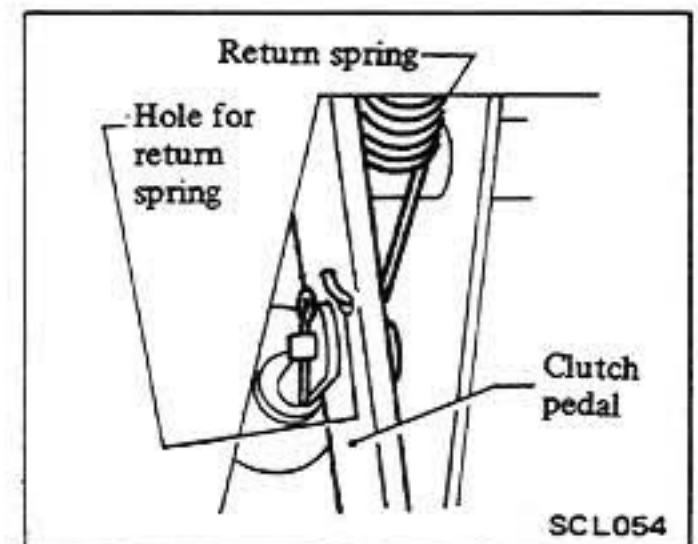
- c. Be sure to insert clevis pin from the opposite side of accelerator pedal (160 series)/the side of accelerator pedal (61 series) and attach snap pin securely.

- d. Install return spring as shown below.

160 series



61 series



2. After assembly, adjust clutch pedal height and free play.

Refer to Clutch Pedal Height and Free play (Section MA):

Ⓙ : 160 series

Pedal stopper bolt lock nut

8 - 11 N·m
(0.8 - 1.1 kg-m,
5.8 - 8.0 ft-lb)

Master cylinder push rod lock nut

8 - 12 N·m
(0.8 - 1.2 kg-m,
5.8 - 8.7 ft-lb)

61 series

Pedal stopper bracket fixing bolt

3.1 - 4.3 N·m
(0.32 - 0.44 kg-m,
2.3 - 3.2 ft-lb)

Master cylinder securing nut

8 - 12 N·m
(0.8 - 1.2 kg-m,
5.8 - 8.7 ft-lb)

2. Pull out clevis pin.
3. Disconnect clutch tube.
4. Remove master cylinder.

When disconnecting clutch tube, be sure to receive drained clutch fluid into a container. Use of rags is also suggested to keep adjacent parts and area clean.

CLUTCH MASTER CYLINDER

REMOVAL

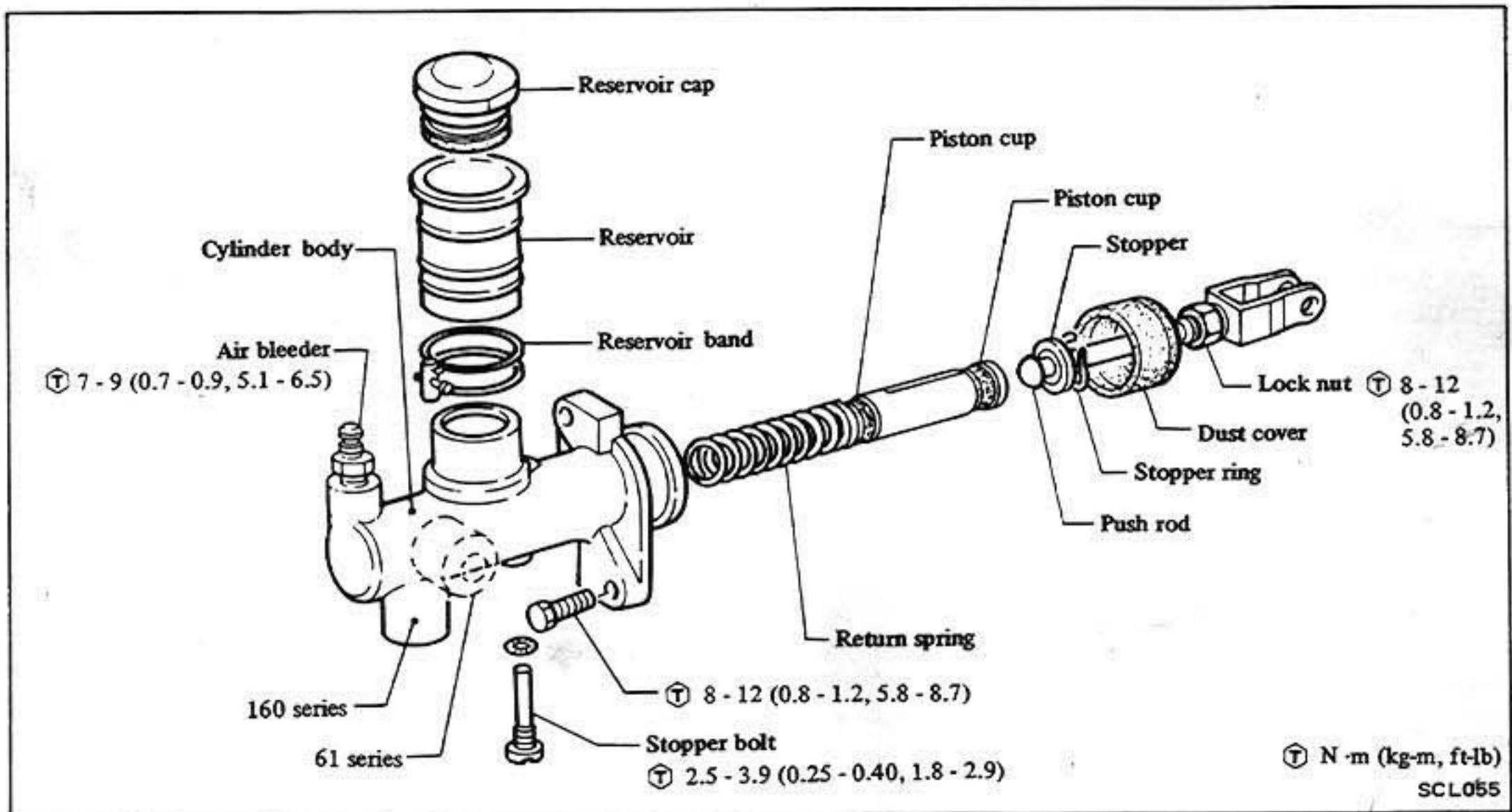
1. Remove snap pin from clevis pin.

CAUTION:

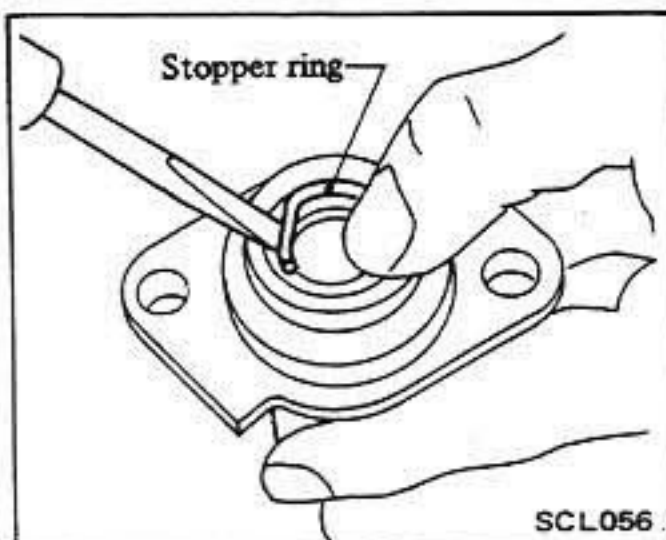
When disconnecting clutch tube, use Tool GG94310000.

Never use an open end wrench or adjustable wrench.

DISASSEMBLY



1. Remove dust cover and take off stopper ring.



2. Then, the push rod and stopper can be taken out.
3. Loosen stopper bolt and take it out.
4. The piston, spring seat, and return spring can be taken out.

Discard piston cup and dust cover.

CAUTION:

Never detach reservoir. If it is removed for any reason, discard it and install new one.

INSPECTION

CAUTION:

To clean or wash all parts of master cylinder, clean brake fluid must be used. Never use mineral oils such as gasoline and kerosene. It will ruin the rubber parts of the hydraulic system.

1. Check cylinder bore and piston for score or rust and if found, replace.
2. Check cylinder bore and piston for wear. If the clearance between

cylinder bore and piston exceeds specified value, replace piston assembly or master cylinder assembly.

Clearance between cylinder bore and piston:
 Less than 0.15 mm
 (0.0059 in)

3. Check condition of piston cup and dust cover. Always replace them after disassembly.
4. Check all recesses, openings and internal passages to ensure that they are clean and free from foreign matter.

ASSEMBLY

1. Apply rubber grease to cylinder body, sliding part and piston cup.
2. Install piston assembly to cylinder body.

Be careful not to damage piston cup.

3. Make sure that master cylinder operates normally.
4. Make sure that piston can move maximum stroke smoothly.

ⓧ : Stopper bolt
 2.5 - 3.9 N·m
 (0.25 - 0.40 kg·m,
 1.8 - 2.9 ft·lb)

INSTALLATION

Install clutch master cylinder in reverse order of removal. Observe the following:

1. Bleed air out of hydraulic system. Refer to Bleeding Clutch system.
2. Adjust pedal height and pedal free play. Refer to Checking Clutch Pedal Height and Free Play (Section MA).

ⓧ : Master cylinder to dash panel securing nut
 8 - 12 N·m
 (0.8 - 1.2 kg·m,
 5.8 - 8.7 ft·lb)
 Clutch tube flare nut
 15 - 18 N·m
 (1.5 - 1.8 kg·m,
 11 - 13 ft·lb)
 Push rod lock nut
 8 - 12 N·m
 (0.8 - 1.2 kg·m,
 5.8 - 8.7 ft·lb)

CAUTION:
 When connecting clutch tube, use Tool GG94310000.

When tightening flare nut, hold pipe by hand to prevent it from twisting.

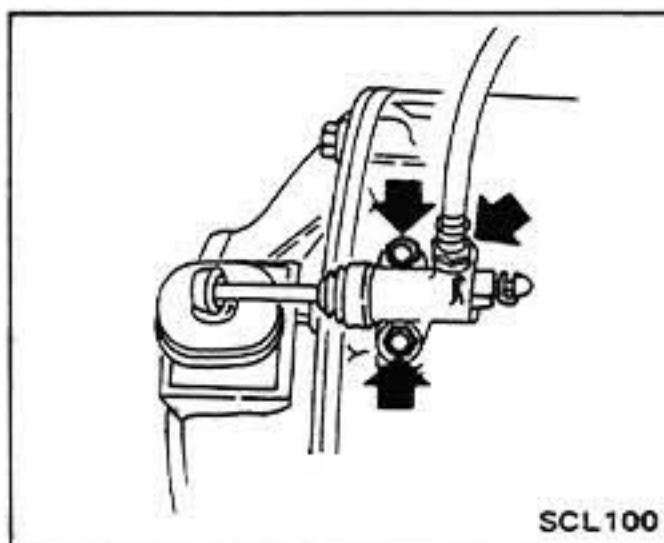
OPERATING CYLINDER

REMOVAL

1. Disconnect clutch hose from operating cylinder.

When disconnecting clutch hose, be sure to receive drained clutch fluid into a container. Use of rags is also suggested to keep adjacent parts and area clean.

2. Remove operating cylinder.

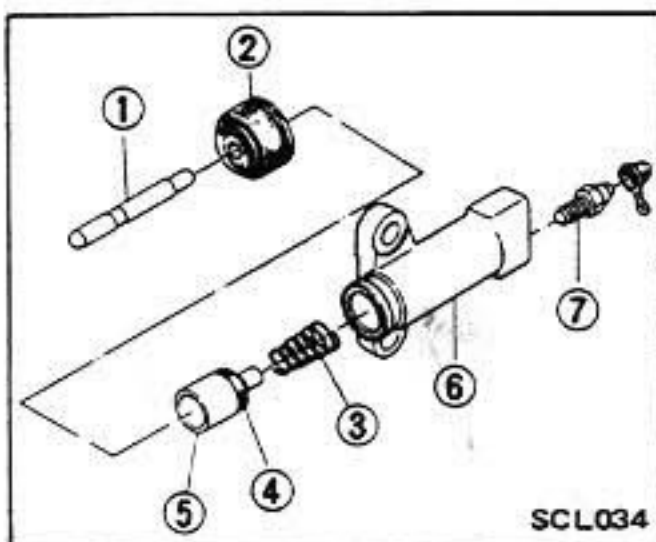


DISASSEMBLY

1. Remove dust cover and push rod.
2. Remove piston and piston cup as an assembly.

Discard piston cup and dust cover.

3. Remove bleeder screw.



- | | |
|-----------------|----------------------|
| 1 Push rod | 5 Piston |
| 2 Dust cover | 6 Operating cylinder |
| 3 Piston spring | 7 Bleeder screw |
| 4 Piston cup | |

INSPECTION

Visually inspect all disassembled parts and replace parts which are worn or damaged.

CAUTION:
 To clean or wash all parts of operating cylinder, clean brake fluid must be used.
 Never use mineral oils such as gasoline and kerosene. It will ruin the rubber parts of the hydraulic system.

1. Check cylinder bore and piston for score or rust and, if found, replace.
2. Check cylinder bore and piston for wear. If clearance between cylinder bore and piston is more than the specified value, replace piston or operating cylinder assembly.

Clearance between cylinder bore and piston:
 Less than 0.15 mm
 (0.0059 in)

3. Check condition of piston cup and dust cover. Always replace them after disassembly.
4. Check bleeder hole to be sure that it is clean.

ASSEMBLY

Assemble operating cylinder in reverse order of disassembly. Observe the following:

1. Prior to assembly, dip a new piston cup in clean brake fluid. To install piston cup on piston, pay particular attention to its direction.
2. Dip cylinder and piston in clean brake fluid before assembly.

INSTALLATION

Install operating cylinder in reverse order of removal. Observe the following:

Bleed air thoroughly from clutch hydraulic system. Refer to Bleeding Clutch system.

- a. When operating cylinder is installed on clutch housing without disconnecting clutch hose from operating cylinder, loosen bleeder screw so that push rod moves lightly.

b. Exercise care not to warp or twist clutch hose. Be sure to install clutch hose away from exhaust tube.

- Ⓣ : Bleeder screw
6 - 10 N·m
(0.6 - 1.0 kg-m,
4.3 - 7.2 ft-lb)
- Operating cylinder
securing bolts
30 - 40 N·m
(3.1 - 4.1 kg-m,
22 - 30 ft-lb)
- Clutch hose to operating
cylinder
17 - 20 N·m
(1.7 - 2.0 kg-m,
12 - 14 ft-lb)

CLUTCH LINE

INSPECTION

Check clutch lines (tube and hose) for evidence of cracks, deterioration or other damage. Replace if necessary.

If leakage occurs at or around joints, retighten and, if necessary, replace damaged parts.

REMOVAL

CAUTION:

When disconnecting clutch tube, use Tool GG94310000.

Never use an open end wrench or adjustable wrench.

When disconnecting clutch hose/tube, be sure to receive drained clutch fluid into a container. Use of rags is also suggested to keep adjacent parts and area clean.

1. Disconnect clutch tube from clutch hose at clutch hose bracket.
2. Remove lock spring, then disengage hose from bracket.
3. Disconnect clutch hose from operating cylinder.
4. Disconnect clutch tube from master cylinder.

INSTALLATION

Wipe the opening ends of hydraulic line to remove any foreign matter before making connections.

1. Install clutch tube.
 - (1) Connect clutch tube to master cylinder with flare nut.
 - (2) Then tighten flare nut.

When tightening flare nut, hold pipe by hand to prevent it from twisting.

- Ⓣ : Clutch tube to master
cylinder
15 - 18 N·m
(1.5 - 1.8 kg-m,
11 - 13 ft-lb)

2. Install clutch hose on operating cylinder in place.

- Ⓣ : Clutch hose to operating
cylinder
17 - 20 N·m
(1.7 - 2.0 kg-m,
12 - 14 ft-lb)

3. Engage opposite end of hose with clutch hose bracket. Install lock spring fixing hose to bracket.

Exercise care not to warp or twist clutch hose.

4. Connect clutch tube to hose with flare nut and tighten it.

- Ⓣ : Flare nut
15 - 18 N·m
(1.5 - 1.8 kg-m,
11 - 13 ft-lb)

5. Check distance between clutch line and adjacent parts (especially between hose and exhaust tube).
6. Bleed air out of hydraulic system. Refer to Bleeding Clutch System.

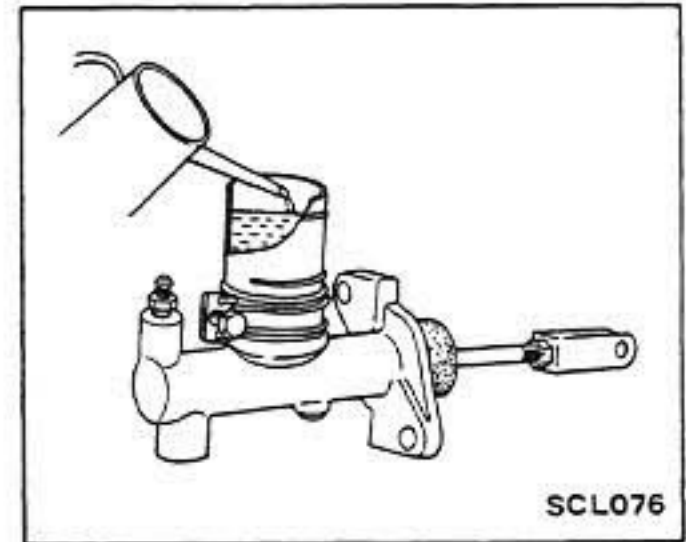
CAUTION:

When tightening flare nut, use Tool GG94310000.

BLEEDING CLUTCH SYSTEM

The hydraulic clutch system must be bled whenever clutch line has been disconnected or air has entered it.

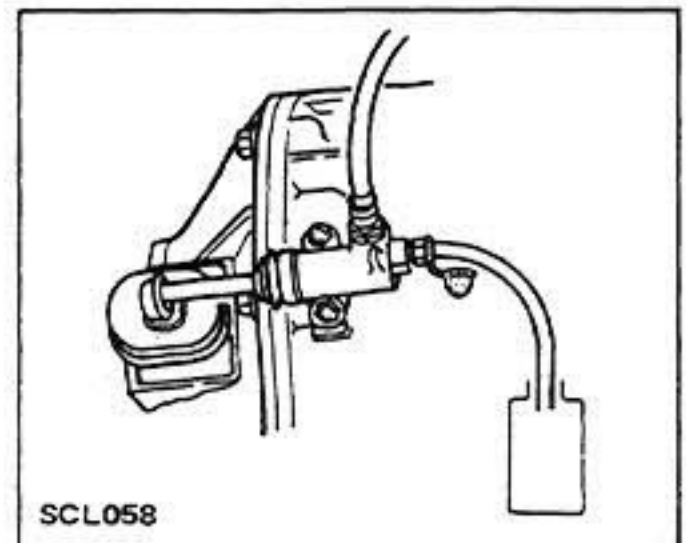
1. Remove reservoir cap and top up with recommended brake fluid.



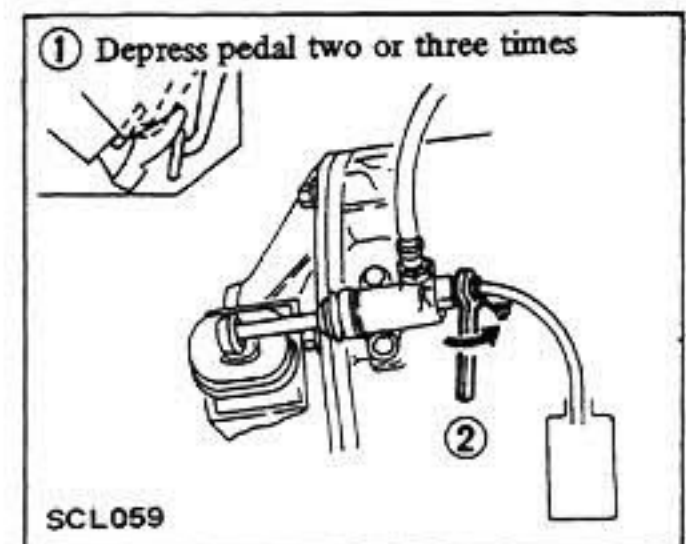
2. First bleed clutch master cylinder by following procedures 3 to 8 for operating cylinder.

3. Thoroughly clean mud and dust from bleeder screw of operating cylinder so that outlet hole is free from any foreign material. Install bleeder hose (vinyl hose) on bleeder screw.

Place the other end of it in a container filled with brake fluid.



4. Have a co-worker depress clutch pedal two or three times. With clutch pedal depressed fully, loosen bleeder screw to bleed air out of clutch system.



5. Close bleeder screw quickly as clutch pedal is on down stroke.

Clutch Unit – CLUTCH

6. Allow clutch pedal to return slowly with bleeder screw closed.
7. Repeat steps 4 through 6 until no air bubble shows in the vinyl hose.
8. Depress and release clutch pedal several times; then, check for external hydraulic leaks at connections.
 - a. Brake fluid containing air is white and has visible air bubbles.
 - b. Brake fluid containing no air runs out of bleeder screw in a solid stream without air bubbles.
 - c. Pay close attention to clutch fluid level in reservoir during bleeding

operation.

- d. Add brake fluid to reservoir only up to the specified level. Do not overfill.

CAUTION:

- a. Do not reuse brake fluid drained during bleeding operation.
- b. Exercise care not to splash brake fluid on exterior finish as it will damage the paint.
- c. When tightening flare nut, use Tool GG94310000.

Ⓣ : Bleeder screw

Master cylinder

7 - 9 N·m

(0.7 - 0.9 kg-m,

5.1 - 6.5 ft-lb)

Operating cylinder

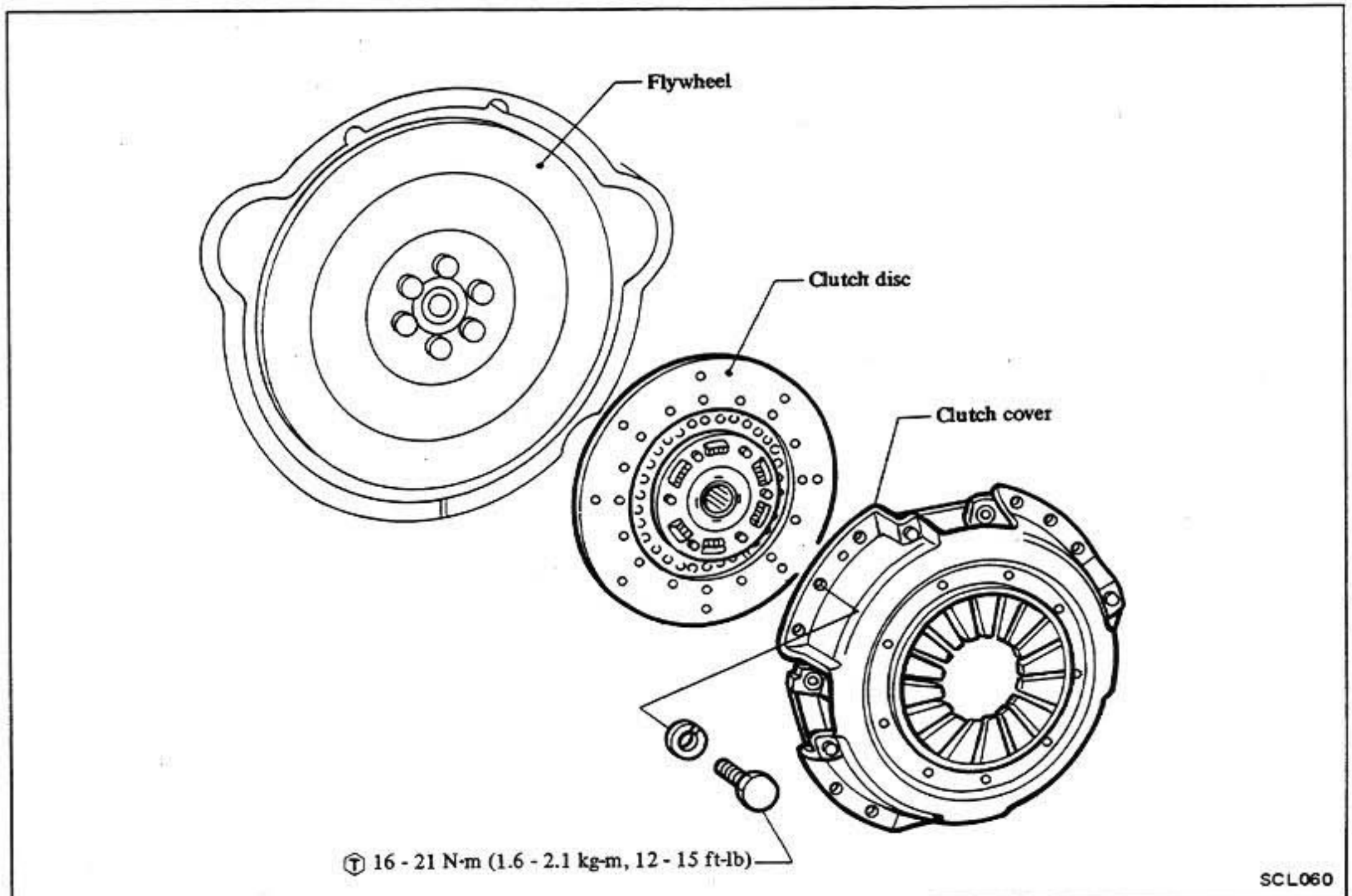
6 - 10 N·m

(0.6 - 1.0 kg-m,

4.3 - 7.2 ft-lb)

CLUTCH UNIT

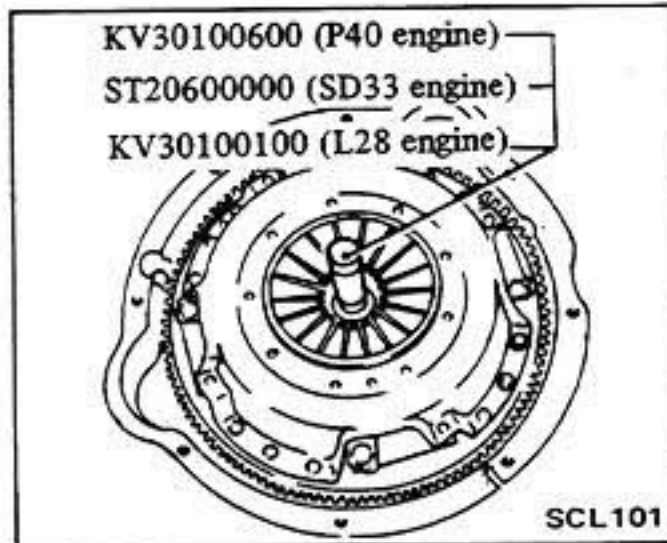
CLUTCH DISC AND COVER



SCL060

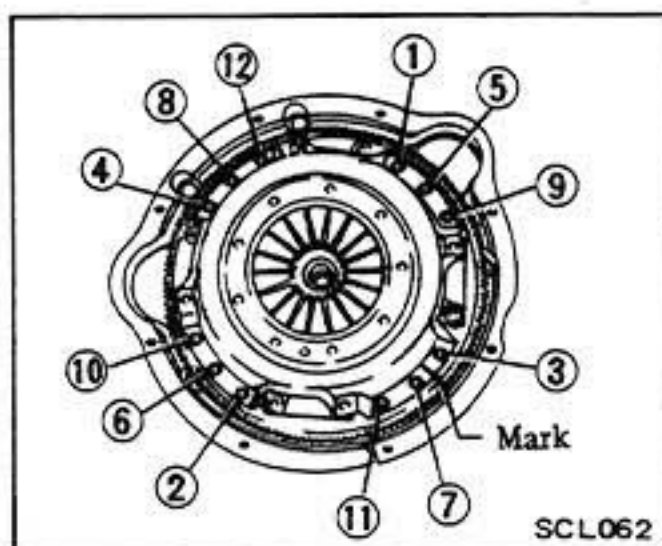
REMOVAL

1. Remove transmission from engine. Refer to Removal (Section MT).
2. Insert Tool into clutch disc hub.



3. Loosen bolts attaching clutch cover to flywheel, one turn each at a time, until spring pressure is released. Be sure to turn them out in a crisscross fashion.

Mark relationship between clutch cover and flywheel before loosening bolts.



4. Remove clutch disc and cover assembly.

INSPECTION

Wash all disassembled parts except disc assembly in suitable cleaning solvent to remove dirt and grease before making inspection and adjustment.

Flywheel and pressure plate

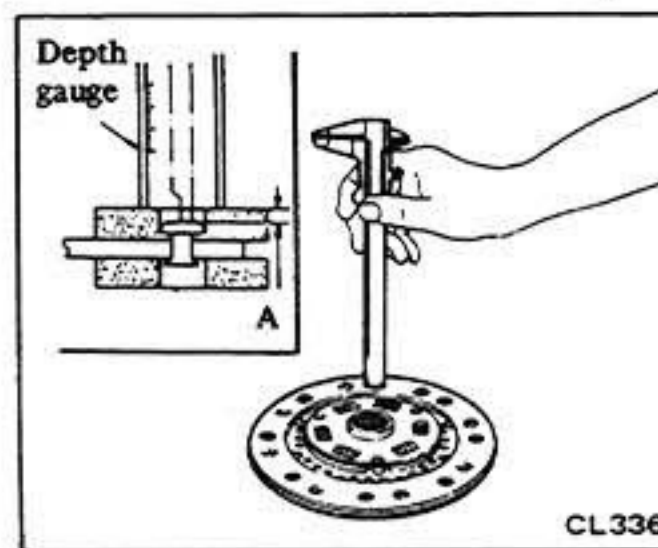
Check friction surface of flywheel and pressure plate for scoring or roughness. Slight roughness may be smoothed by using fine emery cloth. If surface is deeply scored or grooved, the part should be replaced.

Clutch disc assembly

Inspect clutch disc for worn or oily facings, loose rivets and broken or loose torsional springs.

1. If facings are oily, disc should be replaced. In this case, inspect transmission front cover oil seal, pilot bushing, engine rear oil seals and other points for oil leakage.
2. The disc should also be replaced when facings are worn locally or worn down to the specified limit.

Wear limit of facing "A":
Less than 0.3 mm (0.012 in)

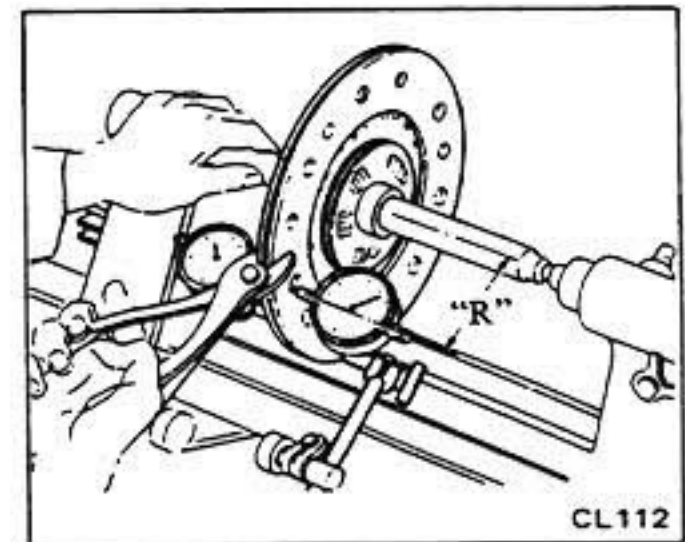


3. Check disc plate for runout whenever the old disc or a new one is installed.
4. If runout exceeds the specified value at outer circumference of facing, replace or repair disc.

Maximum runout
(Total indicator reading):
275 TBL: 1.3 mm (0.051 in)
240 TBL: 0.7 mm (0.028 in)
"R" (from hub center):
275 TBL: 132.5 mm (5.22 in)
240 TBL: 115.0 mm (4.53 in)

CAUTION:

When repairing disc plate, never hold it forcibly with pliers or bend it excessively; otherwise facing will be damaged.



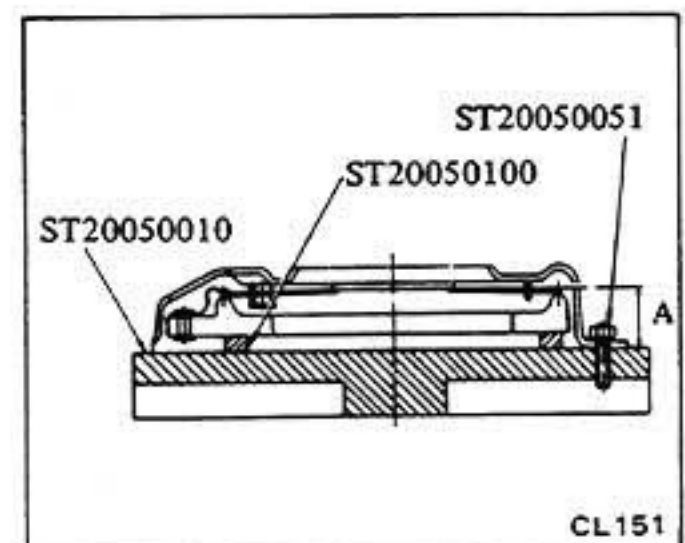
5. Check fit of disc hub on transmission main drive gear splines for smooth sliding. If splines are worn, clutch disc or main drive gear should be replaced; that is, backlash exceeds the specified value at outer edge of clutch disc.

Backlash:
Less than 0.4 mm (0.016 in)

Clutch cover assembly

1. Check end surface of diaphragm spring for wear. If excessive wear is found, replace clutch cover assembly.
2. Measure height of diaphragm springs as outlined below:

- (1) Place Tool ST20050100 on Tool ST20050010 and then tighten clutch cover assembly on base plate by using Tool ST20050051.



Clutch Unit – CLUTCH

(2). Measure height "A" at several points with a vernier caliper depth gauge.

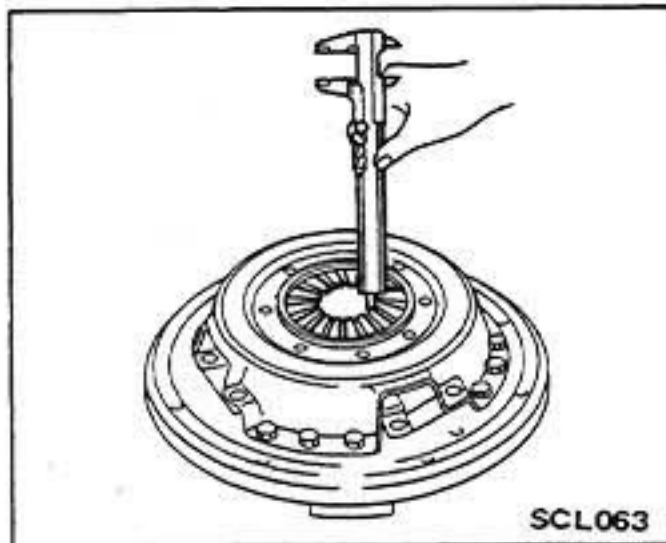
Diaphragm spring height "A":

D275K models:

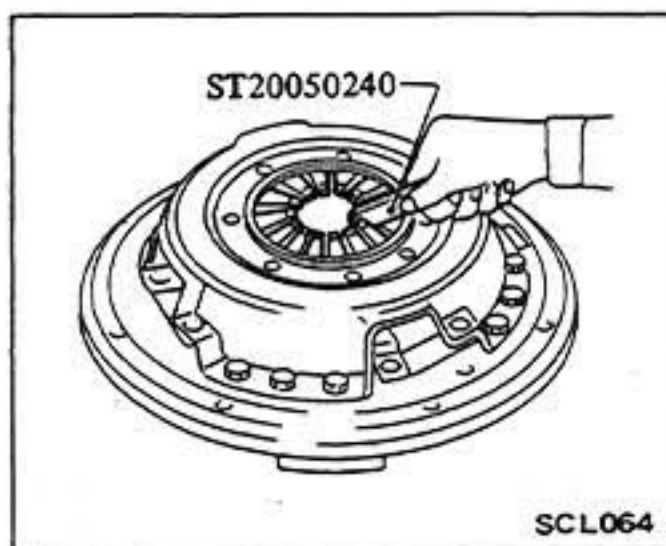
44.0 - 46.0
(1.732 - 1.811 in)

D240K models:

37.5 - 39.5 mm
(1.476 - 1.555 in)



If height "A" of spring end is beyond specified value, adjust spring height with Tool ST20050240. If necessary, replace clutch cover assembly.



Also, unevenness of diaphragm spring toe height should be within the specified limit.

Maximum unevenness of diaphragm spring toe height:
0.7 mm (0.028 in)

If unevenness of diaphragm spring toe height is beyond specified value, adjust spring height with Tool ST20050240.

3. Inspect thrust rings for wear or damage. As these parts are invisible from outside, shake cover assembly up

and down to listen for chattering noise, or lightly hammer on rivets for a slightly cracked noise. Any of these noises indicates need of replacement as a complete assembly.

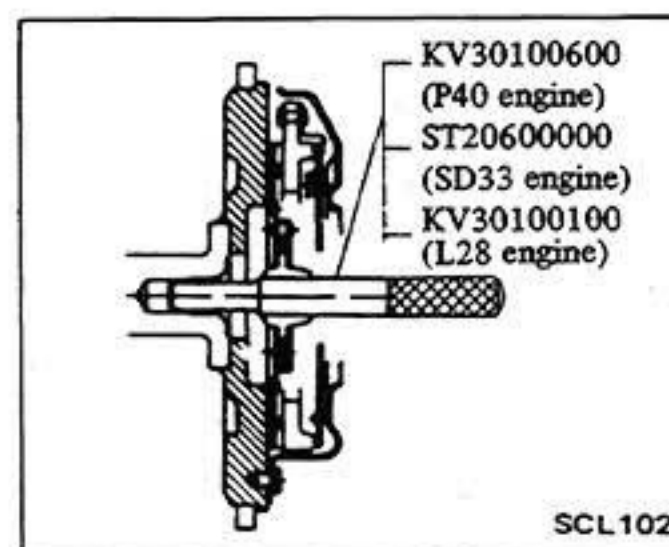
INSTALLATION

1. Apply a light coat of grease (including molybdenum disulphide) to transmission main drive gear splines. Slide clutch disc on main drive gear several times. Remove clutch disc and wipe off excess lubricant pushed off by disc hub.

Take special care to prevent grease or oil from getting on clutch facing.

2. Reinstall clutch disc and clutch cover assembly. Support clutch disc and cover assemblies with Tool KV30100600 (P40 engine), ST20600000 (SD33 engine) or KV30100100 (L28 engine).

Be sure to keep disc facings, fly-wheel and pressure plate clean and dry.



3. Install clutch cover assembly. Each bolt should be tightened one turn at a time in a crisscross fashion.

⊕ : Clutch cover bolt

16 - 21 N·m
(1.6 - 2.1 kg·m,
12 - 15 ft·lb)

4. Remove clutch aligning bar.
5. Reinstall transmission. Refer to Installation (Section MT).

RELEASE BEARING

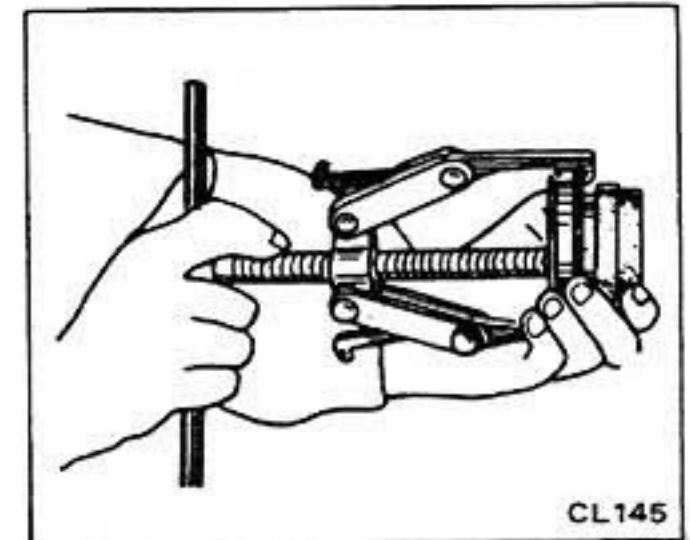
REMOVAL

1. Remove transmission from engine. Refer to Removal (Section MT).

2. Remove withdrawal lever, release bearing and sleeve as an assembly from transmission case front cover.

3. Disconnect holder spring from bearing sleeve.

4. Take clutch release bearing out from bearing sleeve, using a universal puller and a suitable adapter.



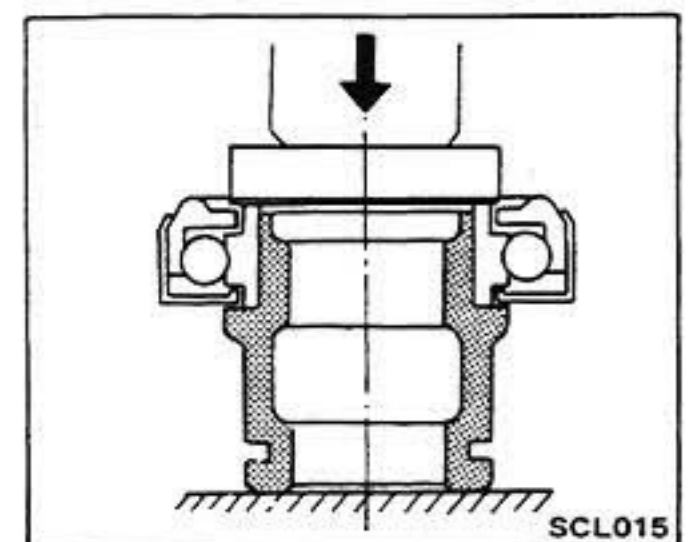
INSPECTION

Check for abnormal wear on contact surface of withdrawal lever, ball pin and bearing sleeve.

Hold bearing inner race and rotate outer race while applying pressure to it. If the bearing rotation is rough or noisy, replace bearing.

INSTALLATION

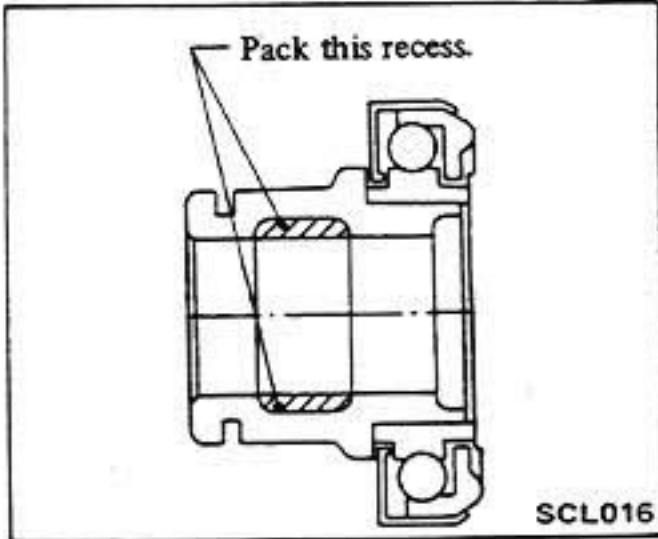
1. Assemble release bearing on sleeve, using a press.



Do not depress outer race.

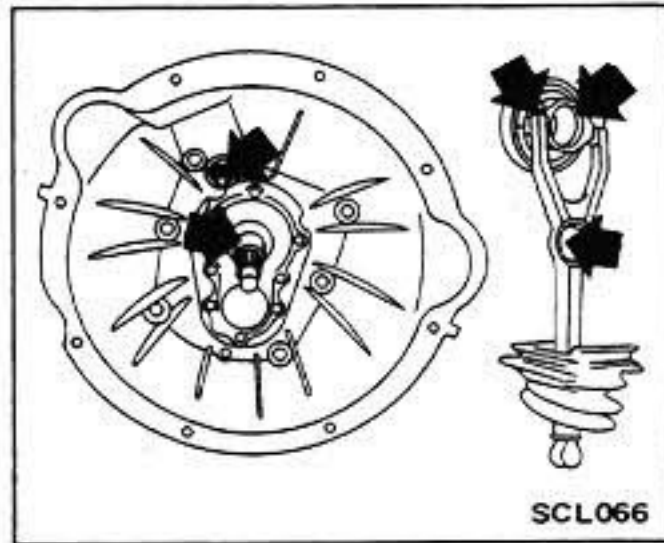
2. Before or during assembly, lubricate the following points with a light coat of multi-purpose grease.

(1) Inner groove of release bearing sleeve.



(2) Contact surfaces of withdrawal lever, lever ball pin and bearing sleeve.
 (3) Bearing sleeve sliding surface of transmission case front cover.

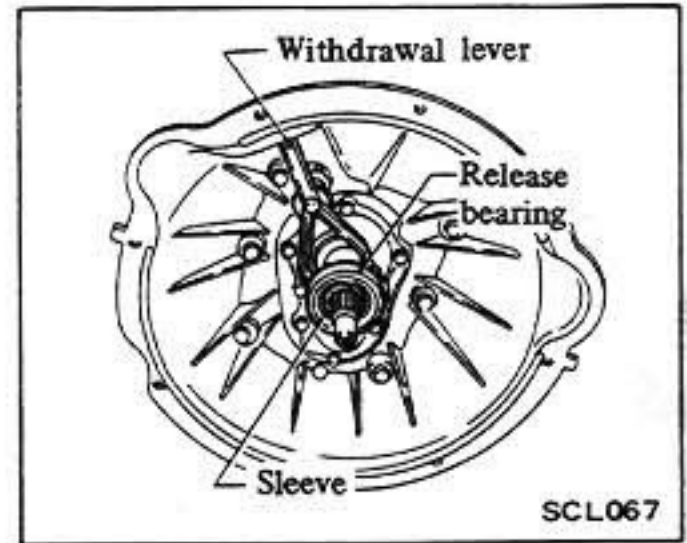
(4) Transmission main drive gear splines. (Use grease including molybdenum disulphide.)



A small amount of grease should be coated to the above points. If too much lubricant is applied, it will run out on the friction plates when hot, resulting in damaged clutch disc facings.

3. Install withdrawal lever, release bearing and sleeve as an assembly in

position, after connecting them with holder spring.



4. Reinstall transmission. Refer to Installation (Section MT).

PILOT BUSHING

Refer to Crankshaft (Section EM) for replacing pilot bushing.

SERVICE DATA AND SPECIFICATIONS

GENERAL SPECIFICATIONS

CLUTCH CONTROL SYSTEM

Type of clutch control	Hydraulic
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CLUTCH MASTER CYLINDER

Inner diameter	mm (in)	15.88 (5/8)
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CLUTCH OPERATING CYLINDER

Type	Non-adjustable	
Inner diameter	mm (in)	19.05 (3/4)

CLUTCH DISC

Model Item	P40 engine equipped models	SD33 and L28 engine equipped models
Type	275TBL	240TBL
Facing size mm (in) Outer dia. x Inner dia. x Thickness	275 x 180 x 3.5 (10.83 x 7.09 x 0.138)	240 x 150 x 3.5 (9.45 x 5.91 x 0.138)
Thickness of disc assembly		
Free mm (in)	8.15 - 8.85 (0.3209 - 0.3484)	8.6 - 9.2 (0.339 - 0.362)
Installed mm (in)/N (kg, lb)	7.6 - 8.0 (0.299 - 0.315)/ 5,394 (550, 1,213)	7.7 - 8.3 (0.303 - 0.327)/ 4,904 (500, 1,103)
Number of torsion springs	6	

CLUTCH COVER

Item \ Model	P40 engine equipped models	SD33 and L28 engine equipped models
Type	D275K	D240K
Installed load N (kg, lb)	5,394 (550, 1,213)	4,904 (500, 1,103)

CLUTCH COVER

Model	D275K	D240K
Diaphragm spring height mm (in)	44.0 - 46.0 (1.732 - 1.811)	37.5 - 39.5 (1.476 - 1.555)
Maximum unevenness of diaphragm spring toe height mm (in)	0.7 (0.028)	

INSPECTION AND ADJUSTMENT

CLUTCH PEDAL

Unit: mm (in)

Item \ Model	160 series	61 series
Pedal height "H"	190 - 196 (7.48 - 7.72)	181 - 187 (7.13 - 7.36)
Pedal free play "A"	1 - 5 (0.04 - 0.20)	
Withdrawal lever play "C"	0 (0) [Non-adjustable]	

PILOT BUSHING

Item \ Model	P40 engine equipped models	SD33 and L28 engine equipped models
Inserted distance of pilot bushing mm (in)	0.6 (0.024)	2.8 (0.110)

TIGHTENING TORQUE

Unit	N-m	kg-m	ft-lb
Pedal stopper bolt lock nut (160 series)	8 - 11	0.8 - 1.1	5.8 - 8.0
Pedal stopper bracket fixing bolt (61 series)	3.1 - 4.3	0.32 - 0.44	2.3 - 3.2
Master cylinder push rod lock nut	8 - 12	0.8 - 1.2	5.8 - 8.7
Master cylinder stopper bolt	2.5 - 3.9	0.25 - 0.40	1.8 - 2.9
Master cylinder securing nut	8 - 12	0.8 - 1.2	5.8 - 8.7
Master cylinder bleeder screw	7 - 9	0.7 - 0.9	5.1 - 6.5
Clutch tube flare nut	15 - 18	1.5 - 1.8	11 - 13
Operating cylinder bleeder screw	6 - 10	0.6 - 1.0	4.3 - 7.2
Operating cylinder securing bolt	30 - 40	3.1 - 4.1	22 - 30
Clutch hose to operating cylinder securing nut	17 - 20	1.7 - 2.0	12 - 14
Clutch cover securing bolt	16 - 21	1.6 - 2.1	12 - 15

CLUTCH MASTER CYLINDER

Clearance between cylinder bore and piston mm (in)	Less than 0.15 (0.0059)
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CLUTCH OPERATING CYLINDER

Clearance between cylinder bore and piston mm (in)	Less than 0.15 (0.0059)
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CLUTCH DISC

Unit: mm (in)

Model	275TBL	240TBL
Wear limit of facing surface to rivet head	0.3 (0.012)	
Runout limit	1.3 (0.051)	0.7 (0.028)
Distance of runout checking point (From the hub center)	132.5 (5.22)	115.0 (4.53)
Maximum backlash of spline (At outer edge of disc)	0.4 (0.016)	

TROUBLE DIAGNOSES AND CORRECTIONS

CLUTCH SLIP

Slipping of clutch may be noticeable when any of the following symptoms is encountered during operation.

- (1) Vehicle will not respond to engine speed during acceleration.
- (2) Insufficient vehicle speed.
- (3) Lack of power during uphill driving.
- (4) Increasing of fuel consumption.

Some of the above conditions may also be attributable to engine problem. First determine whether engine or clutch is causing the problem.

If slipping clutch is left unheeded, wear and/or overheating will occur on clutch facing to such an extent that it is no longer serviceable.

TO TEST FOR SLIPPING CLUTCH, proceed as follows:

Inspection

Insure that parking brake is engaged. Disengage clutch and shift transmission gears into TOP. Gradually increase engine speed while simultaneously engaging clutch. If engine stops while clutch is being engaged, clutch is functioning properly. If vehicle does not move and the engine does not stop, clutch is slipping.

Probable cause	Corrective action
<ul style="list-style-type: none"> ● Clutch facing hardened or wet with oil ● Clutch facing excessively worn 	Repair or replace. Replace. (Replace if engine/transmission oil seal is faulty.)
<ul style="list-style-type: none"> ● Diaphragm spring weak or damaged ● Flywheel or pressure plate warped 	Replace. Repair or replace.
<ul style="list-style-type: none"> ● Particles in return port of master cylinder; Piston fails to return to its original position 	Clean or replace faulty parts.
<ul style="list-style-type: none"> ● Clutch tube deformed or crushed 	Replace.

CLUTCH DRAGS

Dragging clutch is particularly noticeable when shifting gears, especially into low gear.

TO TEST FOR DRAGGING CLUTCH, proceed to inspection.

Inspection

Disengage clutch and shift gears into Reverse. Shift gears into Neutral, gradually increasing engine speed. After a short intermission, shift gears into Reverse. If noise is heard while gears are being shifted, clutch is dragging.

Probable cause	Corrective action
<ul style="list-style-type: none"> ● Clutch disc hub splines worn or rusted 	Replace (or remove rust) and coat with grease.
<ul style="list-style-type: none"> ● Oil leakage at master cylinder, operating cylinder, tube or hose 	Replace faulty parts.
<ul style="list-style-type: none"> ● Air in hydraulic system 	Bleed air.
<ul style="list-style-type: none"> ● Insufficient pedal stroke 	Adjust.
<ul style="list-style-type: none"> ● Clutch disc runout or warped 	Replace.
<ul style="list-style-type: none"> ● Diaphragm spring fatigued 	Replace.
<ul style="list-style-type: none"> ● Piston cup deformed or damaged 	Replace.
<ul style="list-style-type: none"> ● Lack of grease on pilot bushing 	Coat with grease.
<ul style="list-style-type: none"> ● Clutch facing wet with oil 	Replace. (Replace if engine/transmission oil seal is faulty.)

Trouble Diagnoses and Corrections – CLUTCH

CLUTCH CHATTERS

Clutch chattering is usually noticeable when vehicle is just rolled off with clutch partially engaged.

Probable cause	Corrective action
<ul style="list-style-type: none">● Oil on clutch facing● Diaphragm spring fatigued● Clutch facing hardened● Clutch facing warped● Pressure plate worn or warped● Engine mounting loose or rubber deteriorated● Clutch facing rivets loose	Replace. Replace. Replace. Repair or replace. Replace. Tighten or replace. Replace.

NOISY CLUTCH

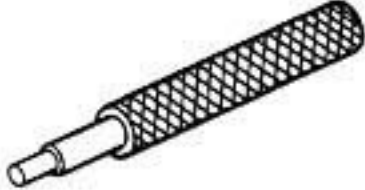
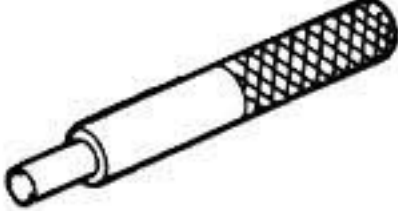

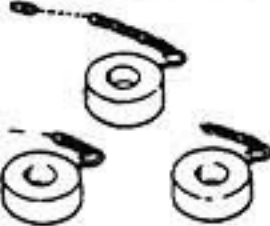
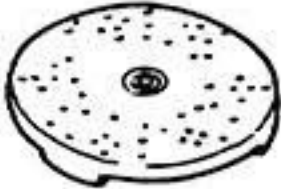



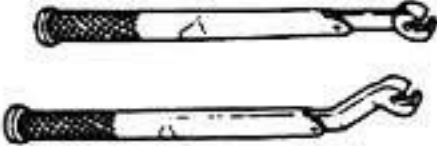
Probable cause	Corrective action
<ul style="list-style-type: none">● Release bearing/sleeve damaged or improperly lubricated● Pilot bushing worn, jammed or damaged● Clutch facing rivets loose● Disc plate cracked● Clutch disc torsion springs fatigues	Replace. Replace. Replace. Replace. Replace.

RABBIT-HOPPING CLUTCH

When “rabbit-hopping” of clutch occurs, vehicle will not roll off smoothly from a standing start or clutch will be engaged before clutch pedal is fully depressed.

Probable cause	Corrective action
<ul style="list-style-type: none">● Oil on clutch facing● Clutch facing worn or rivets loose● Flywheel/pressure plate warped or worn● Mounting bolts on engine or power train loose● Diaphragm spring fatigued	Replace. Replace. Replace. Tighten. Replace.

SPECIAL SERVICE TOOLS

Tool number	Tool name	Engine application		
		P40	SD33	L28
KV30100600	Clutch aligning bar 	X	–	–
ST20600000	Clutch aligning bar 	–	X	–
KV30100100	Clutch aligning bar 	–	–	X
ST20050100	Distance piece 	X	X	X
ST20050010	Base plate 	X	X	X
ST20050051	Set bolt 	X	X	X
ST20050240	Diaphragm spring adjusting wrench 	X	X	X
ST16610001	Pilot bushing puller 	X	X	X
GG94310000	Flare nut torque wrench 	X	X	X