

Brought to you by Eris Studios
NOT FOR RESALE

CLUTCH SYSTEM

General Description

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CLUTCH SYSTEM

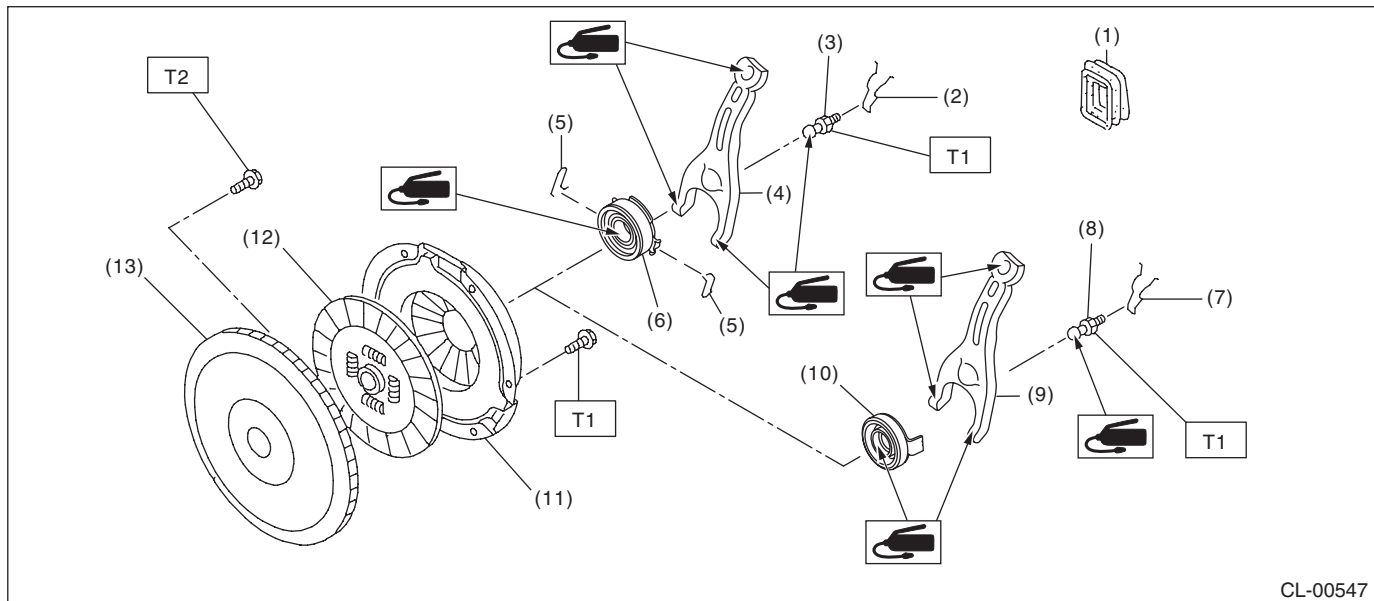
1. General Description

A: SPECIFICATION

Model		2.5 L non-turbo	2.5 L Turbo	
Transmission type		5MT		
Clutch cover	Type	Push type		
	Diaphragm set load	N (kgf, lbf)	5,688 (580, 1,279) 7,850 (800, 1,764)	
Clutch disc	Facing material		Woven (Non-asbestos)	
	O.D. × I.D. × thickness mm (in)	Clutch cover side	225 × 150 × 3.5 (8.86 × 5.9 × 0.138)	
		Flywheel side		230 × 155 × 3.5 (9.06 × 6.10 × 0.138)
	Splines outer diameter		mm (in) 25.2 (0.992), (Number of teeth: 24)	
	Depth of rivet head mm (in)	Clutch cover side	1.65 — 2.25 (0.065 — 0.089)	
		Flywheel side	1.35 — 1.95 (0.053 — 0.077)	
Limit of sinking		0.3 (0.012)		
Deflection limit		mm (in) 0.7 (0.028) at R = 110 (4.33)		
Clutch release lever ratio		1.6		
Release bearing		Grease-packed self-aligning		
Clutch pedal	Full stroke	mm (in) 130 — 135 (5.12 — 5.31)	135 — 140 (5.31 — 5.51)	
	Free play	mm (in) 4 — 11 (0.16 — 0.43)		
Flywheel	Type	Flexible		

B: COMPONENT

1. CLUTCH ASSEMBLY



CL-00547

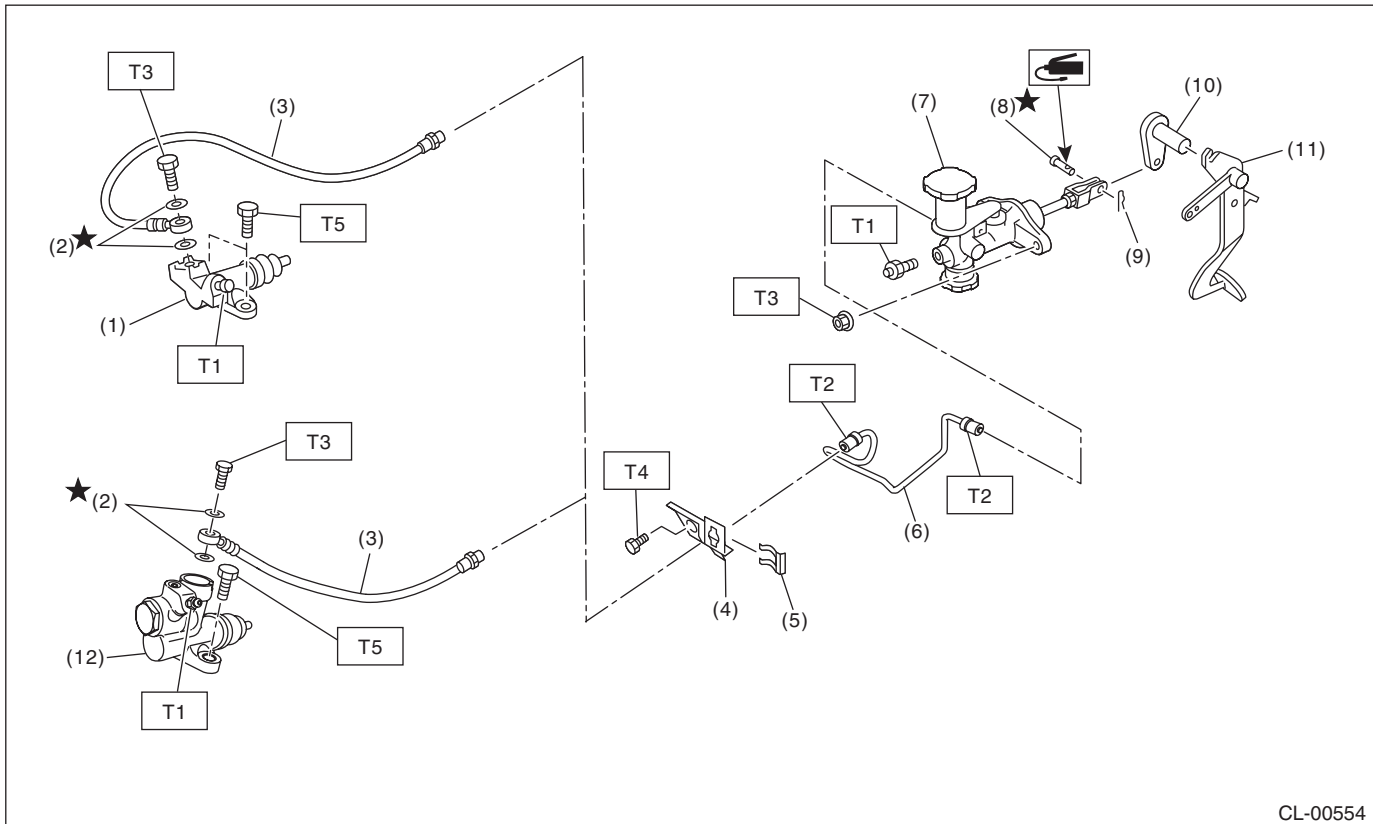
- | | | |
|---------------------------------------|------------------------------------|---------------|
| (1) Dust cover | (7) Lever spring (Turbo model) | (13) Flywheel |
| (2) Lever spring (Non-turbo model) | (8) Pivot (Turbo model) | |
| (3) Pivot (Non-turbo model) | (9) Release lever (Turbo model) | |
| (4) Release lever (Non-turbo model) | (10) Release bearing (Turbo model) | |
| (5) Clip (Non-turbo model) | (11) Clutch cover | |
| (6) Release bearing (Non-turbo model) | (12) Clutch disc | |

Tightening torque: N·m (kgf·m, ft·lb)

T1: 16 (1.6, 11.8)

T2: 72 (7.3, 52.8)

2. CLUTCH PIPE AND HOSE



CL-00554

- | | |
|---|---------------------------------------|
| (1) Operating cylinder
(Non-turbo model) | (7) Master cylinder ASSY |
| (2) Washer | (8) Clevis pin |
| (3) Clutch hose | (9) Snap pin |
| (4) Bracket | (10) Lever |
| (5) Clip | (11) Pedal |
| (6) Clutch pipe | (12) Operating cylinder (Turbo model) |

Tightening torque: N-m (kgf-m, ft-lb)

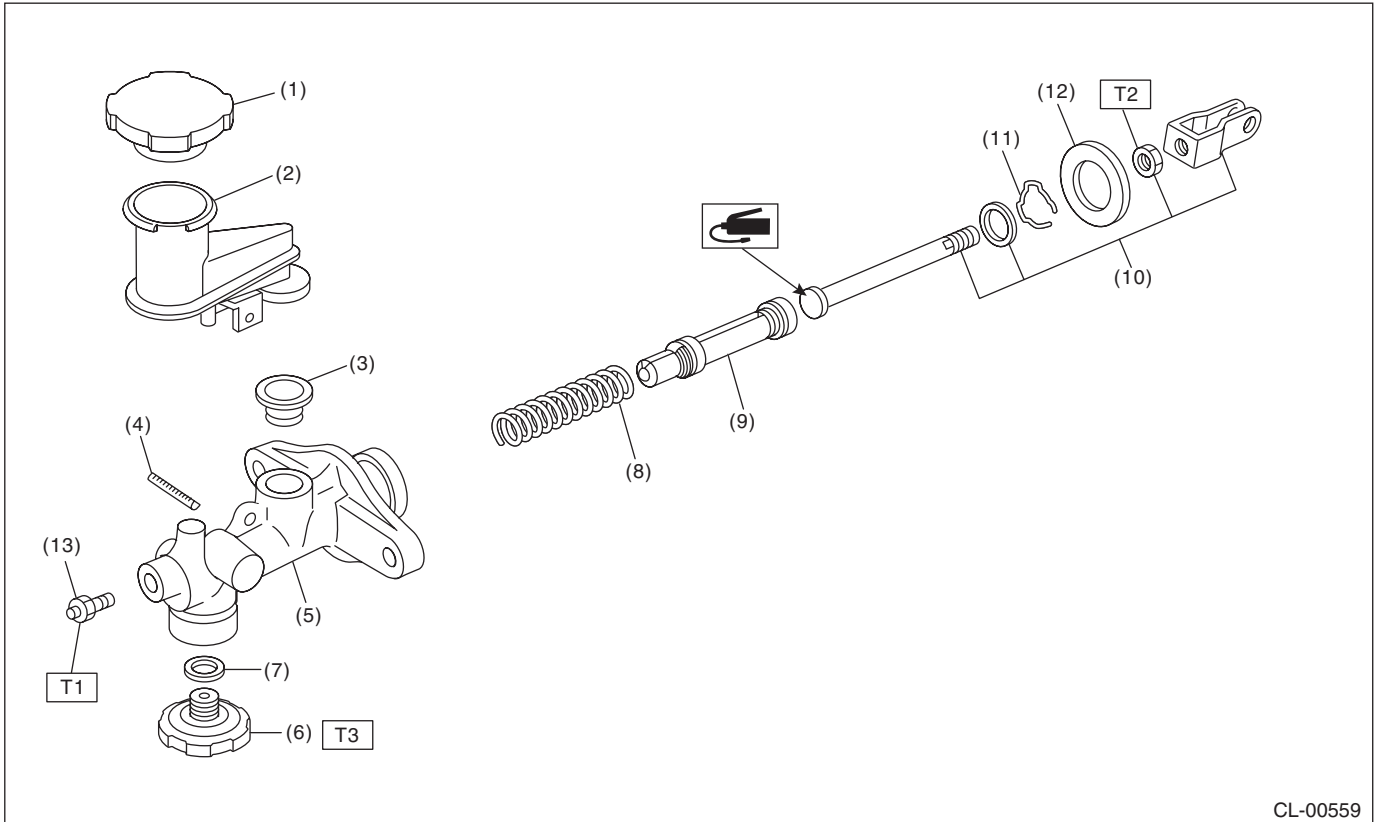
- T1: 7.8 (0.8, 5.8)**
T2: 15 (1.5, 11.1)
T3: 18 (1.8, 13.3)
T4: 25 (2.5, 18.4)
T5: 37 (3.8, 27.5)

General Description

CLUTCH SYSTEM

3. MASTER CYLINDER

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CL-00559

- (1) Reservoir cap
- (2) Reservoir tank
- (3) Oil seal
- (4) Straight pin
- (5) Master cylinder
- (6) Clutch damper

- (7) Gasket
- (8) Return spring
- (9) Piston
- (10) Push rod ASSY
- (11) Piston stop ring
- (12) Seat

- (13) Breather screw

Tightening torque: N·m (kgf·m, ft·lb)

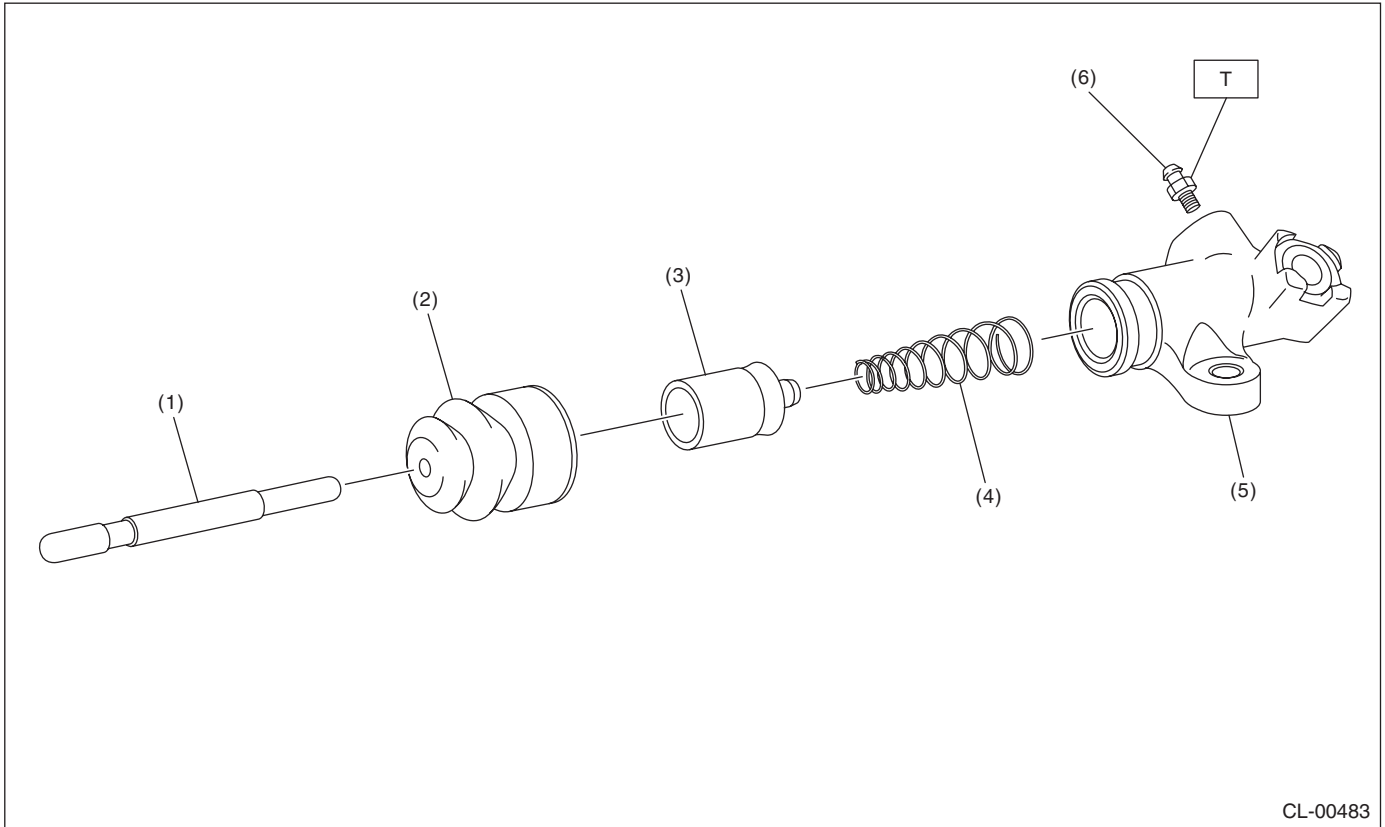
T1: 7.8 (0.8, 5.8)

T2: 10 (1.0, 7.4)

T3: 46.6 (4.8, 34.4)

4. OPERATING CYLINDER

Non-turbo model



CL-00483

- | | |
|--------------|------------------------|
| (1) Push rod | (4) Piston spring |
| (2) Boot | (5) Operating cylinder |
| (3) Piston | (6) Breather screw |

Tightening torque: N·m (kgf·m, ft·lb)

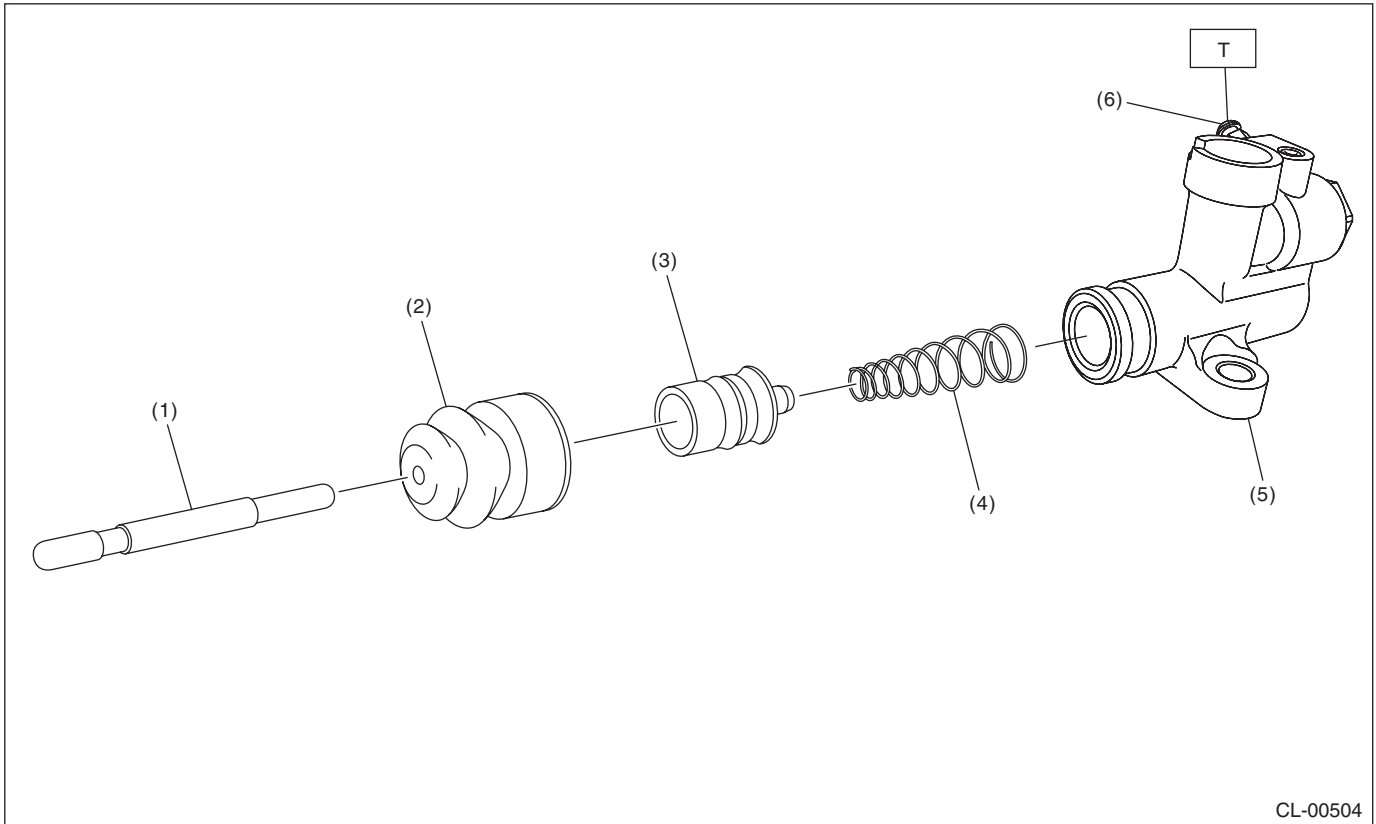
T: 7.8 (0.8, 5.8)

General Description

CLUTCH SYSTEM

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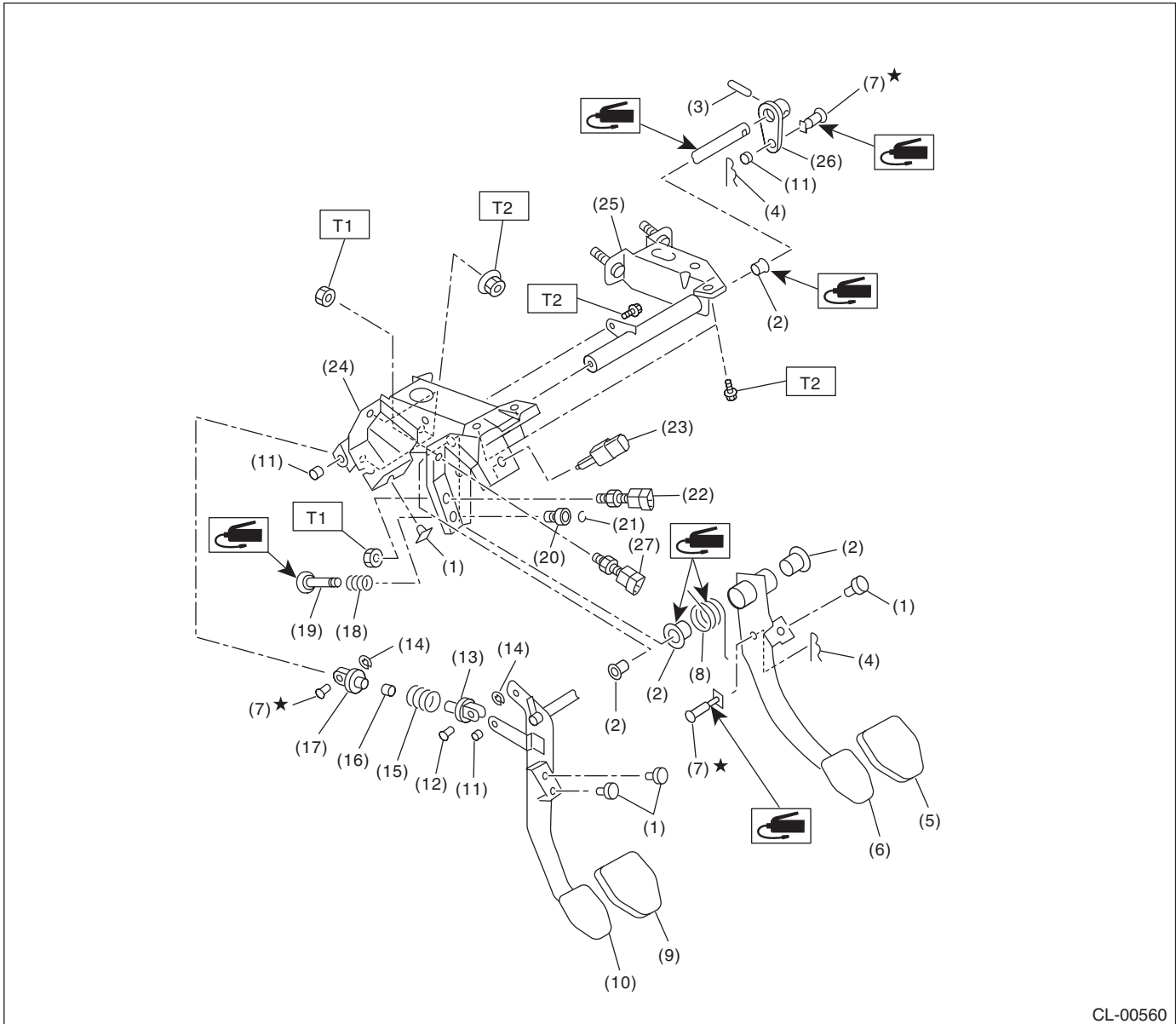
Turbo model



- | | |
|--------------|------------------------|
| (1) Push rod | (4) Piston spring |
| (2) Boot | (5) Operating cylinder |
| (3) Piston | (6) Breather screw |

Tightening torque: N·m (kgf·m, ft·lb)
T: 7.8 (0.8, 5.8)

5. CLUTCH PEDAL



CL-00560

- | | | |
|------------------------|---|--|
| (1) Stopper | (13) Assist rod A | (23) Stop light switch |
| (2) Bushing | (14) Clip | (24) Pedal bracket |
| (3) Spring pin | (15) Assist spring | (25) Clutch master cylinder bracket |
| (4) Snap pin | (16) Assist bushing | (26) Lever |
| (5) Brake pedal pad | (17) Assist rod B | (27) Clutch switch (Starter interlock) |
| (6) Brake pedal | (18) Spring S | |
| (7) Clevis pin | (19) Rod S | |
| (8) Brake pedal spring | (20) Bushing S | |
| (9) Clutch pedal pad | (21) Clip | |
| (10) Clutch pedal | (22) Clutch switch
(Model with cruise control) | |
| (11) Bushing C | | |
| (12) Clutch clevis pin | | |

Tightening torque: N·m (kgf·m, ft·lb)

T1: 8 (0.8, 5.8)

T2: 18 (1.8, 13.3)

General Description

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CLUTCH SYSTEM

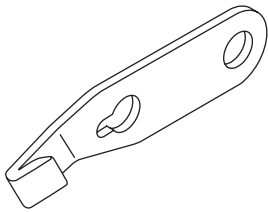
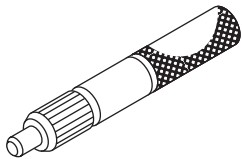
C: CAUTION

- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly and replacement.
- Vehicle components are extremely hot after driving. Be wary of receiving burns from heated parts.
- Use SUBARU genuine fluid, grease etc. or equivalent. Do not mix fluid, grease, etc. of different grades or manufacturers.

- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or rigid racks at the specified points.
- Apply grease onto sliding or revolving surfaces before installation.
- Before installing O-rings or snap rings, apply sufficient amount of fluid to avoid damage and deformation.
- Before securing a part in a vise, place cushioning material such as wood blocks, aluminum plate or cloth between the part and the vise.
- Keep fluids away from the vehicle body. If any fluid contacts the vehicle body, immediately flush the area with water.

D: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>ST-498497100</p>	498497100	CRANKSHAFT STOPPER	Used for stopping rotation of the flywheel when loosening/tightening bolts, etc.
 <p>ST-499747100</p>	499747100	CLUTCH DISC GUIDE	Used when installing the clutch disc to the flywheel.

2. GENERAL TOOL

TOOL NAME	REMARKS
Circuit tester	Used for measuring resistance, voltage and ampere.
Dial gauge	Used for measuring clutch disc run-out.
Depth gauge	Used for measuring clutch disc wear.

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2. Clutch Disc and Cover

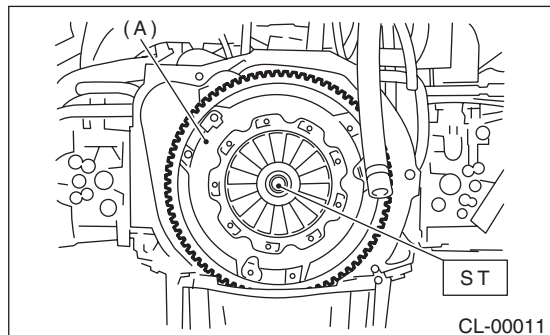
A: REMOVAL

1) Remove the transmission assembly from vehicle body.

<Ref. to 5MT-24, REMOVAL, Manual Transmission Assembly.>

2) Attach the ST on the flywheel.

ST 499747100 CLUTCH DISC GUIDE



(A) Clutch cover

3) Remove the clutch cover and clutch disc.

NOTE:

- Take care not to allow oil to touch the clutch disc face.
- Do not disassemble the clutch cover or clutch disc.

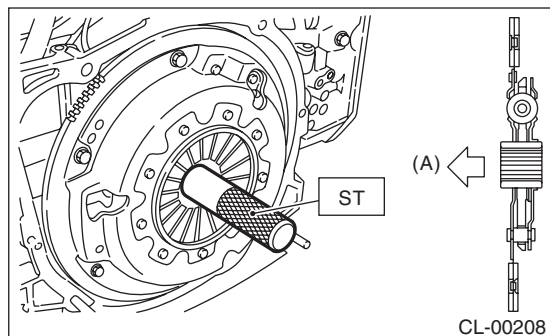
B: INSTALLATION

1) Insert the ST into the clutch disc and attach to the flywheel by inserting the ST end into pilot bearing.

NOTE:

When installing the clutch disc, be careful to attach in the correct direction.

ST 499747100 CLUTCH DISC GUIDE



(A) Flywheel side

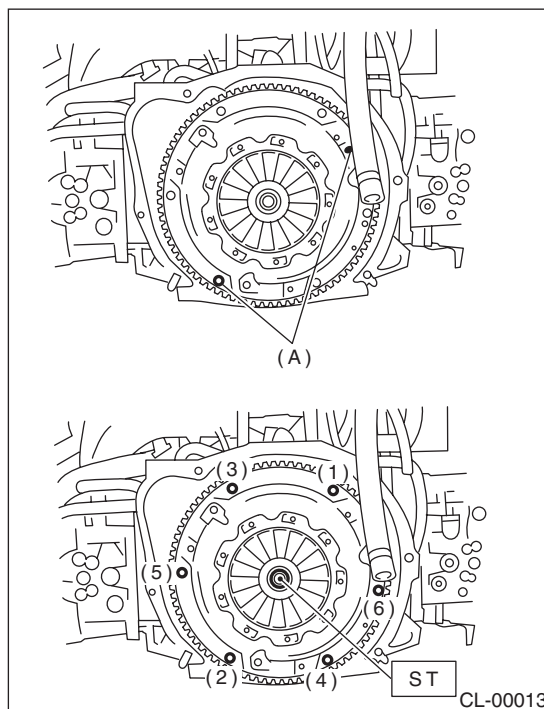
2) Install the clutch cover to the flywheel and tighten the bolts to the specified torque.

NOTE:

- When installing the clutch cover to the fly wheel, position the clutch cover so that the distance between unbalance marks (● paint marks) is at least 120°. (The unbalance marks ● indicate the directions of residual unbalance.)
- Note the front and rear of the clutch disc when installing.
- Temporarily tighten the bolts by hand. Each bolt should be tightened to the specified torque in a crisscross order.

Tightening torque:

16 N·m (1.6 kgf·m, 11.8 ft·lb)



(A) Unbalance mark (paint)

3) Remove the ST.

ST 499747100 CLUTCH DISC GUIDE

4) Install the transmission assembly.

<Ref. to 5MT-27, INSTALLATION, Manual Transmission Assembly.>

CLUTCH SYSTEM

C: INSPECTION

1. CLUTCH DISC

1) Facing wear:

Measure the depth from the facing surface to the rivet head. Replace if the face is worn locally or worn down to less than the specified value.

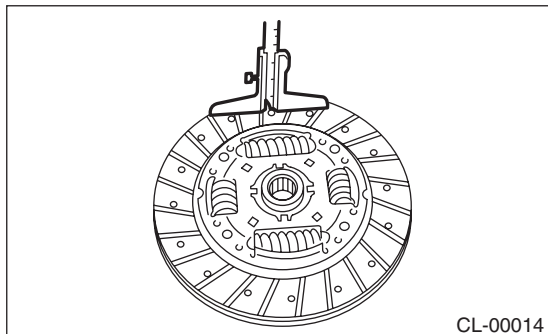
Depth to rivet head:

Limit of sinking

0.3 mm (0.012 in)

NOTE:

Do not wash the clutch disc with any type of cleaning fluid.

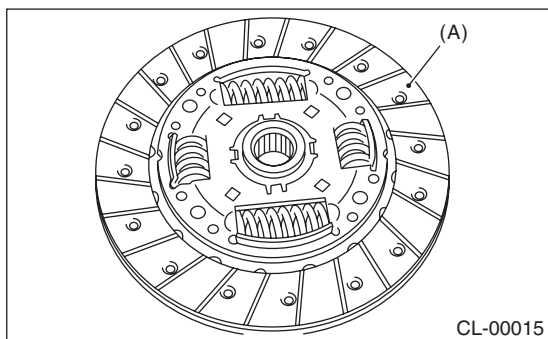


2) Hardened facing

Replace the clutch disc.

3) Oil soakage on facing

Replace the clutch disc and inspect the transmission front oil seal, transmission case mating surface, engine rear oil seal and other locations for oil leakage.



(A) Clutch facing

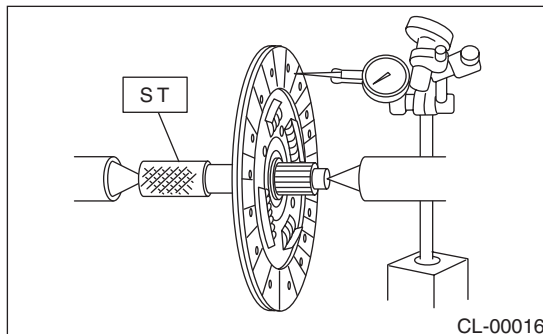
4) Deflection on facing:

If deflection exceeds the specified value at the outer circumference of the facing, replace the clutch disc.

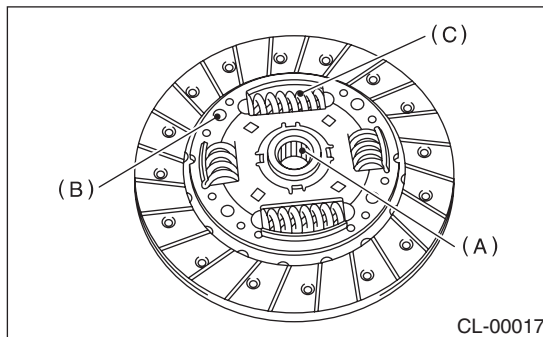
ST 499747100 CLUTCH DISC GUIDE

Limit for deflection:

0.7 mm (0.028 in) at R = 110 mm (4.33 in)



5) If there is spline wear, loose rivets, failed torsion springs, etc., replace the clutch disc.



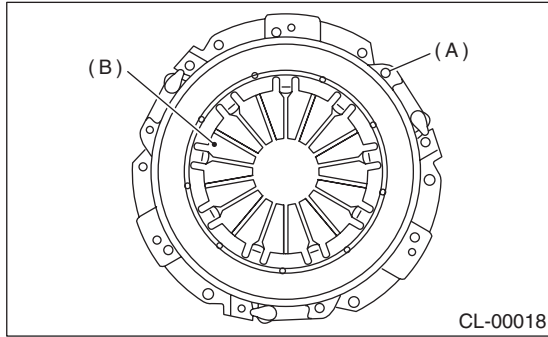
- (A) Spline
- (B) Rivet
- (C) Torsion spring

2. CLUTCH COVER

NOTE:

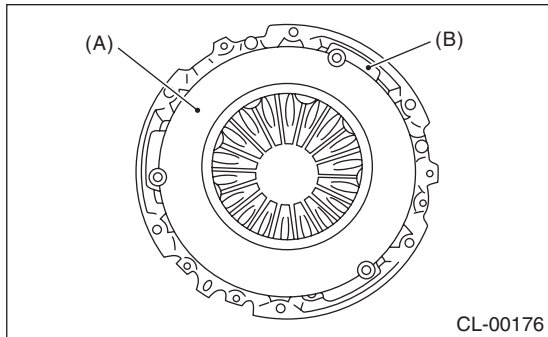
Visually check the following items without disassembling, and replace or repair if defective.

- 1) Loose thrust rivet
- 2) Damaged or worn bearing contact area at the center of diaphragm spring



- (A) Thrust rivet
- (B) Diaphragm spring

- 3) Damaged or worn disc contact surface of the pressure plate
- 4) Loose strap plate installation area
- 5) Worn diaphragm sliding area

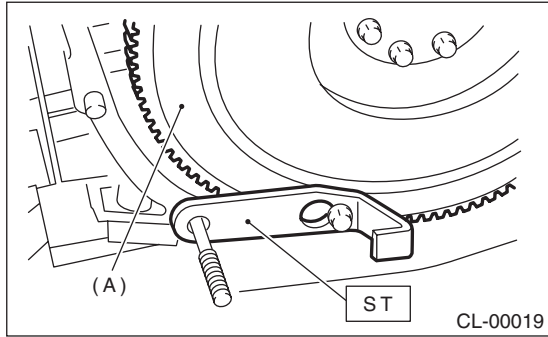


- (A) Pressure plate
- (B) Strap plate

3. Flywheel

A: REMOVAL

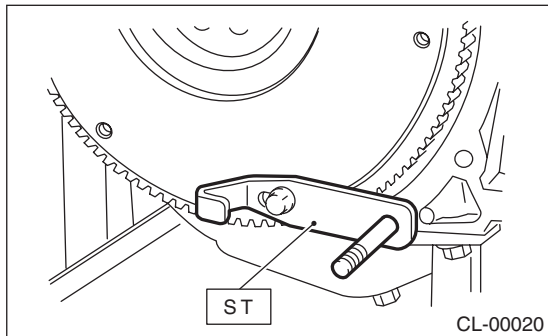
- 1) Remove the transmission assembly. <Ref. to 5MT-24, REMOVAL, Manual Transmission Assembly.>
- 2) Remove the clutch cover and clutch disc. <Ref. to CL-9, REMOVAL, Clutch Disc and Cover.>
- 3) Using the ST, remove the flywheel.
ST 498497100 CRANKSHAFT STOPPER



(A) Flywheel

B: INSTALLATION

- 1) Install the flywheel and ST.
ST 498497100 CRANKSHAFT STOPPER



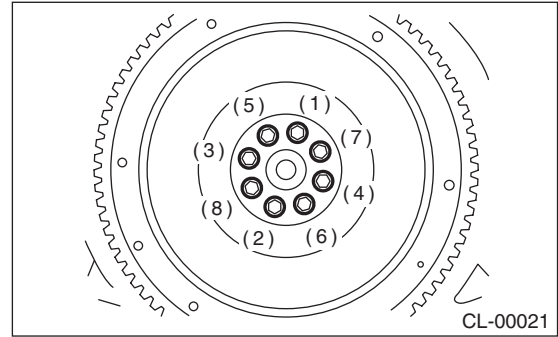
- 2) Tighten the flywheel mounting bolts to the specified torque.

NOTE:

Tighten the flywheel attachment bolts gradually. Each bolt should be tightened to the specified torque in crisscross order.

Tightening torque:

72 N·m (7.3 kgf-m, 53.1 ft-lb)



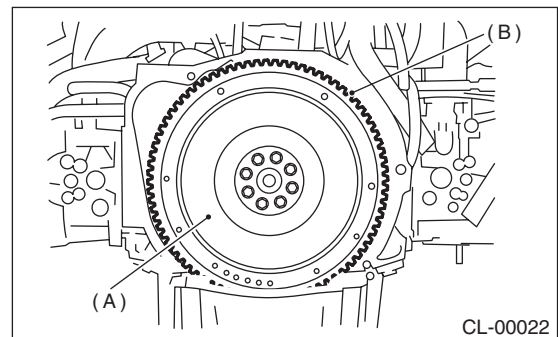
- 3) Install the clutch disc and cover. <Ref. to CL-9, INSTALLATION, Clutch Disc and Cover.>
- 4) Install the transmission assembly. <Ref. to 5MT-27, INSTALLATION, Manual Transmission Assembly.>

C: INSPECTION

CAUTION:

Because this bearing is grease-sealed and is a non-lubrication type, do not wash with gasoline or solvents.

- 1) If there is damage or defectiveness in the facing sliding surface or ring gear, replace the flywheel.



(A) Flywheel
(B) Ring gear

- 2) Smoothness of rotation

Rotate the ball bearing while applying pressure in the thrust direction.

- 3) If noise or excessive play is noted, replace the flywheel.

4. Release Bearing and Lever

A: REMOVAL

1) Remove the transmission assembly from vehicle body.

<Ref. to 5MT-24, REMOVAL, Manual Transmission Assembly.>

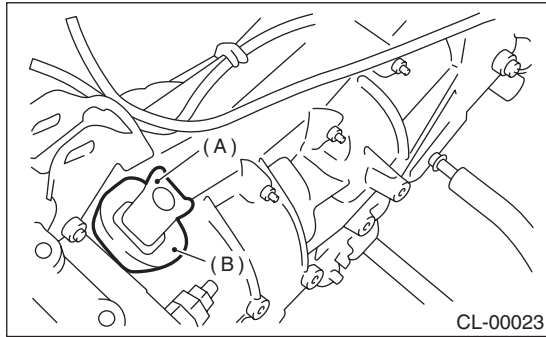
2) Remove the two clips from the release lever and remove the release bearing. (Non-turbo model)

CAUTION:

Be careful not to deform the clips.

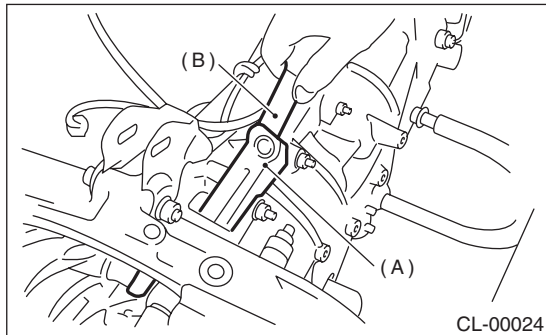
3) Remove the release bearing from the release lever. (Turbo model)

4) Remove the dust cover.



(A) Release lever
 (B) Dust cover

5) Remove the lever spring from the pivot with a screwdriver by accessing it through the clutch housing release lever hole. Then remove the release lever.



(A) Release lever
 (B) Screwdriver

B: INSTALLATION

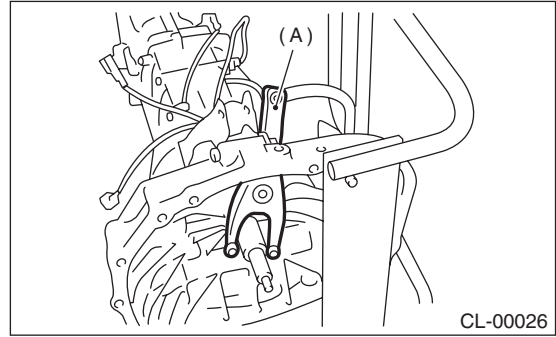
NOTE:

Apply the specified grease to lubricate the following points before installation.

- Contact surface of lever and pivot
- Contact surface of lever and bearing
- Transmission main shaft spline (Use grease containing molybdenum disulphide.)

1) Apply grease (KOPR-KOTE: Part No. 003603001) to the contact point of the release lever and operating cylinder.

2) While pushing the release lever to the pivot and twisting it to both sides, fit the lever spring onto the raised portion of the pivot. (Non-turbo model)



(A) Release lever

NOTE:

Observing from the main case hole, check that the lever spring is installed securely.

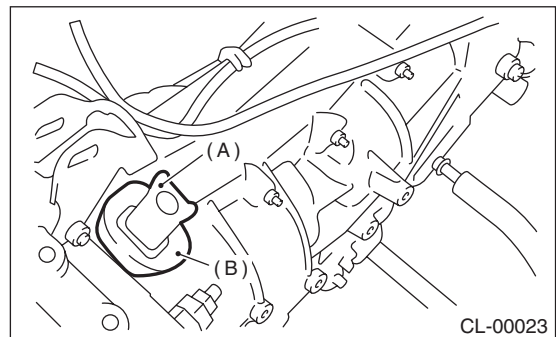
3) Hook the release bearing to the release lever, and fit the lever spring onto the raised portion of the pivot, while pushing the release lever to the pivot and twisting it to both sides. (Turbo model)

NOTE:

Observing from the main case hole, check that the lever spring is installed securely.

4) Install the release bearing and fasten it with two clips. (Non-turbo model)

5) Install the dust cover.



(A) Release lever
 (B) Dust cover

CLUTCH SYSTEM

- 6) Check the bearing for smooth movement by operating the release lever.
- 7) Install the transmission assembly.
<Ref. to 5MT-27, INSTALLATION, Manual Transmission Assembly.>

C: INSPECTION

1. RELEASE BEARING

CAUTION:

Since this bearing is grease-sealed and is a non-lubrication type, do not wash with gasoline or any other solvent when servicing the clutch.

- 1) Check the bearing for smooth movement by applying force to the bearing in the radial direction.

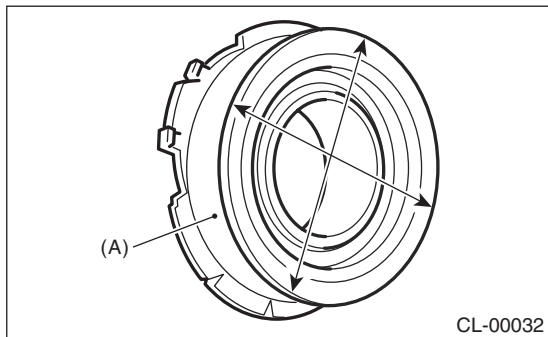
Radial direction stroke:

Non-turbo model

1.4 mm (0.055 in)

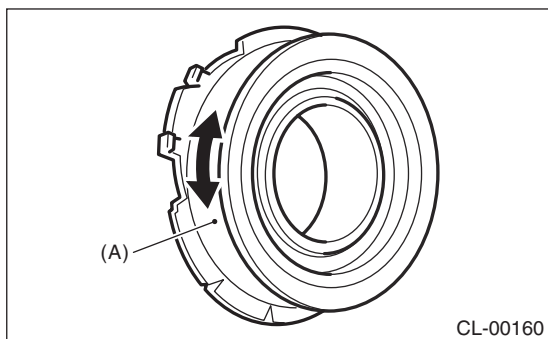
Turbo model

1.6 mm (0.063 in)



(A) Bearing case

- 2) While applying force to the bearing in the rotational direction, check the bearing for smooth rotation.

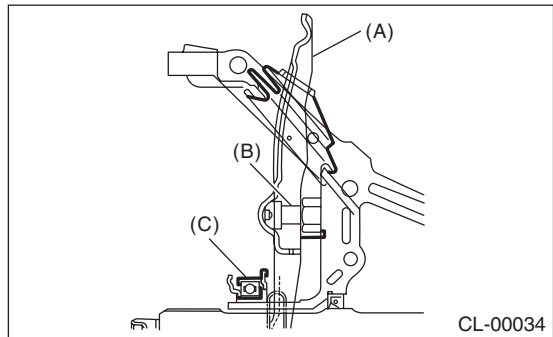


(A) Bearing case

- 3) Check for wear and damage at the bearing case surface in contact with the lever.

2. RELEASE LEVER

Check the pivot portion of the lever and the contact area with the release bearing case for wear.



- (A) Release lever
- (B) Pivot
- (C) Release bearing

5. Operating Cylinder

A: REMOVAL

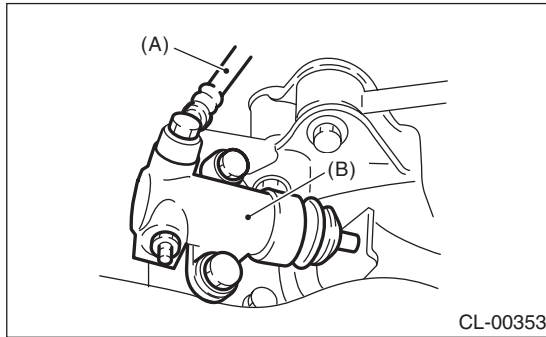
NOTE:

The illustration below is suitable for every model. Perform the same procedures for the other models.

- 1) Remove the air intake chamber. (Non-turbo model)
 <Ref. to IN(H4SO)-7, REMOVAL, Air Intake Chamber.>
- 2) Remove the intercooler. (Turbo model)
 <Ref. to IN(H4DOTC)-11, REMOVAL, Intercooler.>
- 3) Disconnect the clutch hose from the operating cylinder.

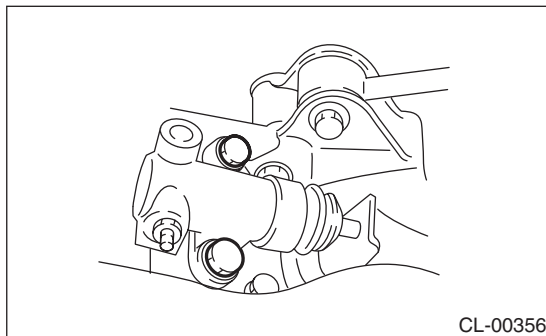
CAUTION:

- Cover the hose joint to prevent the clutch fluid from flowing out.
- Do not loosen or remove the cap bolt. (Turbo model)



- (A) Clutch hose
- (B) Operating cylinder

- 4) Remove the operating cylinder from the transmission.



B: INSTALLATION

NOTE:

The illustration below is suitable for every model. Perform the same procedures for the other models.

- 1) Install in the reverse order of removal.

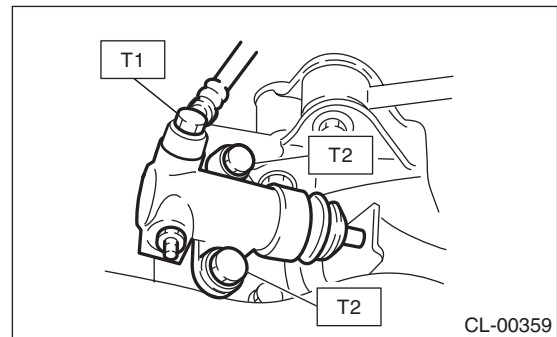
NOTE:

Before installing the operating cylinder, apply grease (KOPR-KOTE: Part No. 003603001) to the contact point of the release lever and operating cylinder.

Tightening torque:

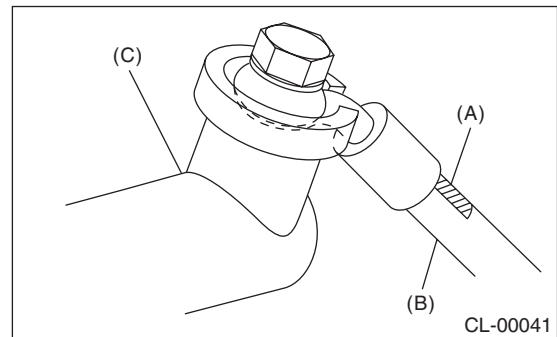
T1: 18 N·m (1.8 kgf-m, 13.3 ft-lb)

T2: 37 N·m (3.8 kgf-m, 27.3 ft-lb)



NOTE:

- Be sure to install the clutch hose with the mark side facing upward.
- Be careful not to twist the clutch hose during installation.



- (A) Mark
- (B) Clutch hose
- (C) Operating cylinder

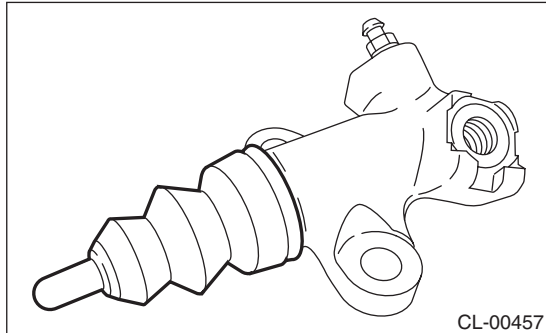
- 2) After bleeding air from the operating cylinder, ensure that the clutch operates properly. <Ref. to CL-21, Clutch Fluid Air Bleeding.>

C: DISASSEMBLY

NOTE:

The illustration below is suitable for every model. Perform the same procedures for the other models.

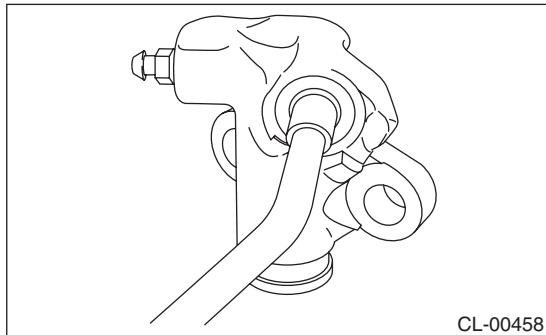
- 1) Remove the boots and push rod assembly.



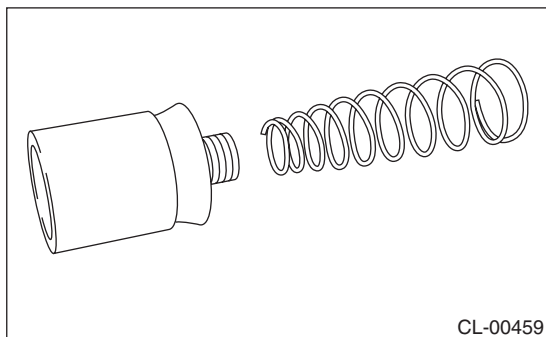
- 2) Apply compressed air through clutch hose at attaching port.

NOTE:

Face the piston port down and place a piece of wood underneath to prevent the piston from popping out.



- 3) Separate the piston and piston spring.



D: ASSEMBLY

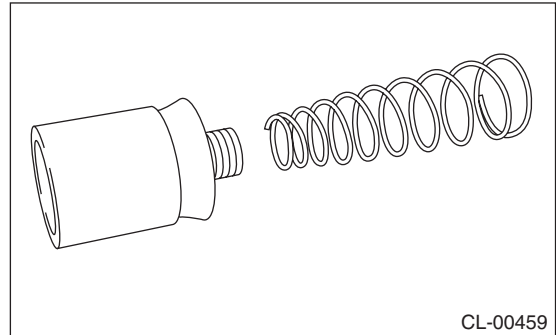
NOTE:

- During assembly, apply hydraulic oil to all parts.
- The illustration below is suitable for every model. Perform the same procedures for the other models.

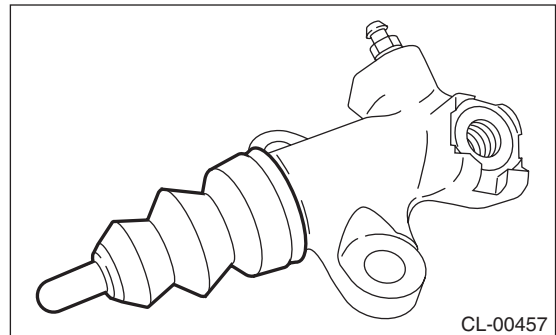
Recommended clutch fluid:

New FMVSS No. 116 DOT3 or DOT4 brake fluid

- 1) Install the piston spring to the piston.



- 2) Insert piston to the operating cylinder.
- 3) Install push rod to the boot.
- 4) Install boot and push rod to the operating cylinder.



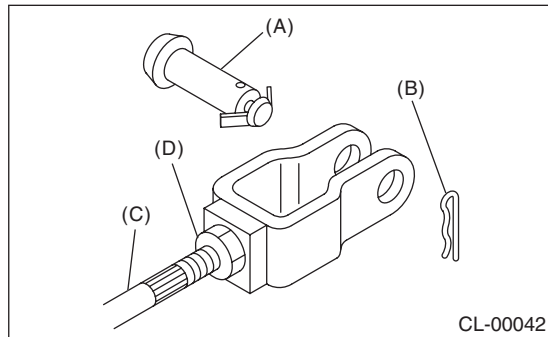
E: INSPECTION

- 1) Check the operating cylinder for damage. If operating cylinder is damaged, replace it.
- 2) Check the operating cylinder for fluid leakage or damage on the boot. If any leakage or damage is found, replace the operating cylinder.

6. Master Cylinder

A: REMOVAL

- 1) Thoroughly drain the brake fluid from the reservoir tank.
- 2) Remove the snap pin and clevis pin, and then separate the push rod of the master cylinder from clutch pedal.

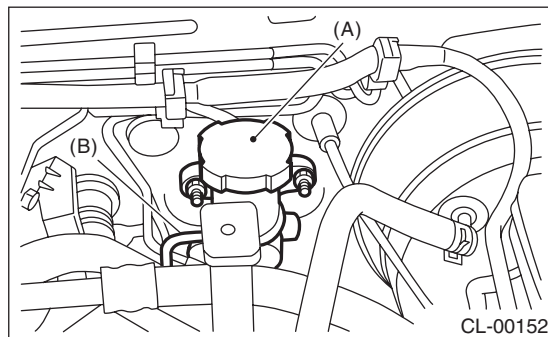


- (A) Clevis pin
- (B) Snap pin
- (C) Push rod
- (D) Lock nut

- 3) Remove the air intake chamber. (Non-turbo model) <Ref. to IN(H4SO)-7, REMOVAL, Air Intake Chamber.>
- 4) Remove the intercooler. (Turbo model) <Ref. to IN(H4DOTC)-11, REMOVAL, Intercooler.>
- 5) Remove the clutch pipe from the master cylinder.
- 6) Remove the master cylinder and reservoir tank as a unit.

CAUTION:

Be careful not to spill the brake fluid. Brake fluid spilled on the vehicle body will harm the paint surface; wash it off with water and wipe clean quickly if spilled.



- (A) Master cylinder
- (B) Clutch pipe

B: INSTALLATION

- 1) Install the master cylinder to the vehicle body, and connect the clutch pipe to the master cylinder.

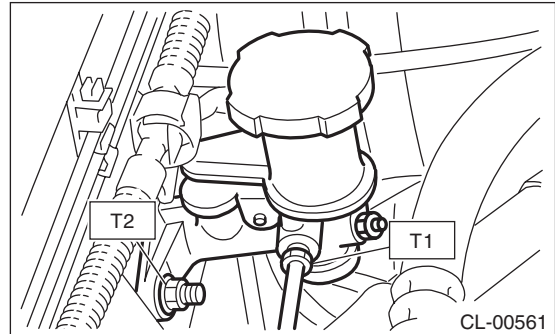
NOTE:

Check that the pipe is routed properly.

Tightening torque:

T1: 15 N·m (1.5 kgf·m, 11.1 ft·lb)

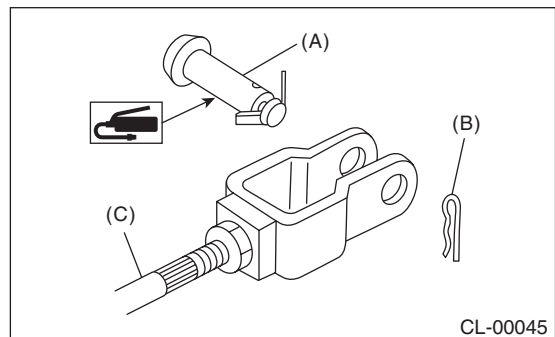
T2: 18 N·m (1.8 kgf·m, 13.3 ft·lb)



- 2) Connect the push rod of the master cylinder to the clutch pedal, and install the clevis pin and snap pin.

NOTE:

Apply grease to the clevis pin.



- (A) Clevis pin
- (B) Snap pin
- (C) Push rod

- 3) After bleeding air from the clutch system, ensure that the clutch operates properly. <Ref. to CL-21, Clutch Fluid Air Bleeding.>
- 4) Install the air intake chamber. (Non-turbo model) <Ref. to IN(H4SO)-7, INSTALLATION, Air Intake Chamber.>
- 5) Install the intercooler. (Turbo model) <Ref. to IN(H4DOTC)-12, INSTALLATION, Intercooler.>

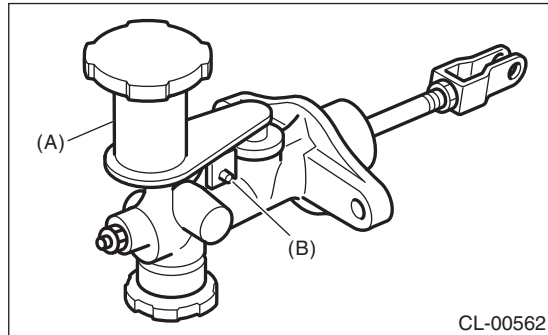
Master Cylinder

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CLUTCH SYSTEM

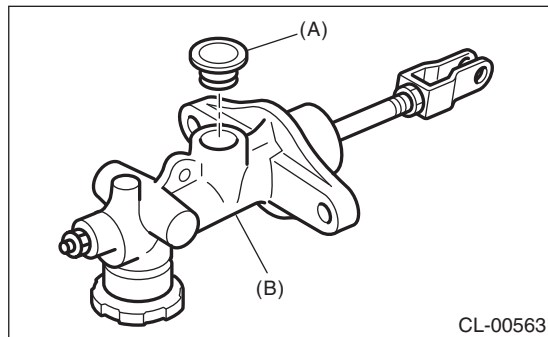
C: DISASSEMBLY

1) Remove the straight pin and reservoir tank.



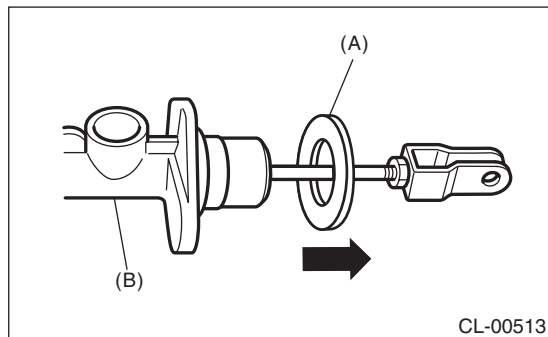
- (A) Reservoir tank
- (B) Straight pin

2) Remove the oil seal.



- (A) Oil seal
- (B) Master cylinder

3) Move the seat towards the rear.



- (A) Seat
- (B) Master cylinder

4) Remove the piston stop ring.

CAUTION:

When removing the piston stop ring, be careful to prevent the rod, washer, piston and return spring from coming out.

5) Remove the clutch damper.

D: ASSEMBLY

1) Install the clutch damper.

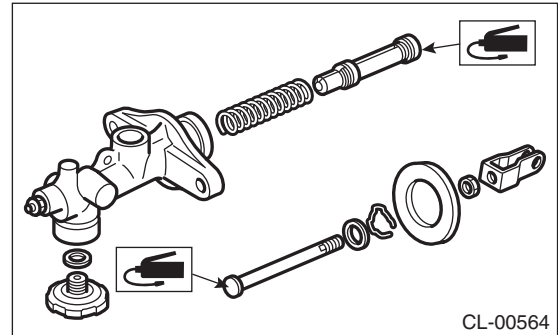
Tightening torque:

46.6 N·m (4.8 kgf-m, 34.4 ft-lb)

2) Apply a coat of grease to the contact surfaces of the push rod and piston before installation.

Grease:

SILICONE GREASE G-40M (Part No. 004404003)



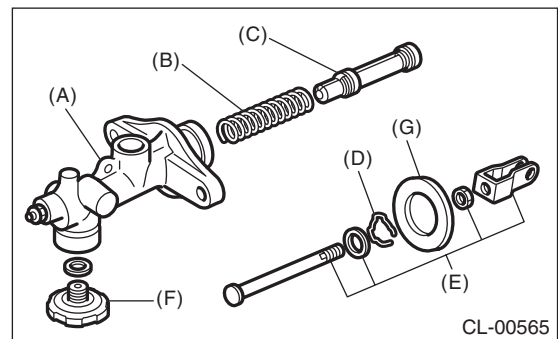
3) Assemble in the reverse order of disassembly.

Tightening torque:

10 N·m (1.0 kgf-m, 7.4 ft-lb)

E: INSPECTION

If any damage, deformation, wear, swelling, rust or other faults are found on the cylinder, piston, push rod, reservoir tank, return spring, gasket, clutch damper, seat or hose, replace the faulty part.

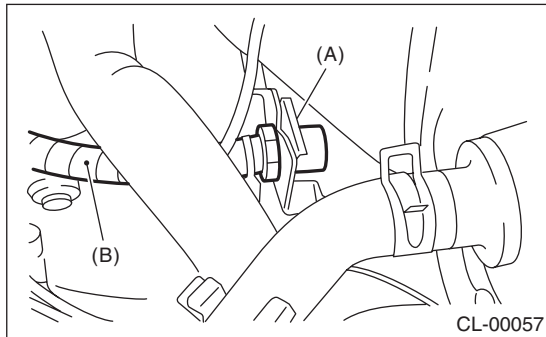


- (A) Master cylinder body
- (B) Return spring
- (C) Piston
- (D) Piston stop ring
- (E) Push rod ASSY
- (F) Clutch damper
- (G) Seat

7. Clutch Pipe and Hose

A: REMOVAL

- 1) Remove the air intake chamber and air intake duct. (Non-turbo model) <Ref. to IN(H4SO)-7, REMOVAL, Air Intake Chamber.> <Ref. to IN(H4SO)-8, REMOVAL, Air Intake Duct.>
- 2) Remove the intercooler. (Turbo model) <Ref. to IN(H4DOTC)-11, REMOVAL, Intercooler.>
- 3) Drain the clutch fluid. <Ref. to CL-20, Clutch Fluid.>
- 4) Disconnect the clutch pipe from the clutch hose and master cylinder.
- 5) Pull out the clamp, then disconnect the clutch hose from the bracket.



- (A) Clamp
- (B) Clutch hose

- 6) Remove the hose from operating cylinder.
- 7) Remove the bracket.

B: INSTALLATION

Install in the reverse order of removal.

NOTE:

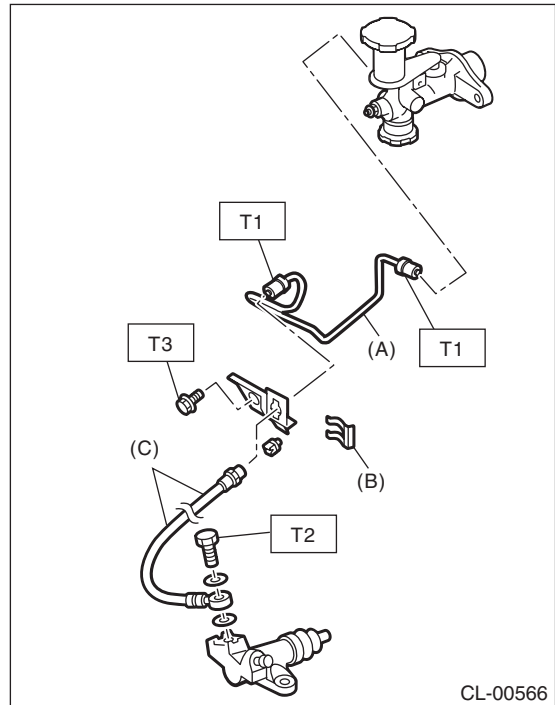
- Bleed air from the clutch fluid. <Ref. to CL-21, Clutch Fluid Air Bleeding.>
- The illustration below is suitable for every model. Perform the same procedures for the other models.

Tightening torque:

T1: 15 N·m (1.5 kgf-m, 11.1 ft-lb)

T2: 18 N·m (1.8 kgf-m, 13.3 ft-lb)

T3: 25 N·m (2.5 kgf-m, 18.4 ft-lb)



- (A) Clutch pipe
- (B) Clip
- (C) Clutch hose

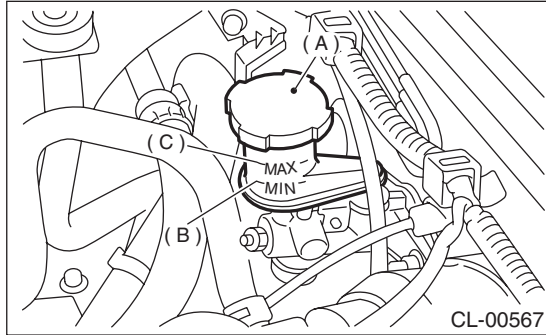
C: INSPECTION

Check pipes and hoses for cracks, breakage or damage. Check joints for fluid leakage. If any cracks, breakage, damage or leakage is found, repair or replace the defective pipe or hose.

8. Clutch Fluid

A: INSPECTION

- 1) Park the vehicle on a level surface.
- 2) Inspect the fluid level using the scale on the outside of the reservoir tank. If the level is below "MIN", add fluid to bring it up to "MAX", and also inspect for leakage.



- (A) Reservoir tank
 (B) MIN. level
 (C) MAX. level

B: REPLACEMENT

CAUTION:

- Use new FMVSS No. 116 DOT3 or DOT4 brake fluid.
- Cover the breather with cloth to prevent brake fluid from being splashed on surrounding parts when loosening the breather.
- Avoid mixing different brands of brake fluid to prevent the quality of fluid from degrading.
- Be careful not to allow dirt or dust to enter the reservoir tank.

NOTE:

- During bleeding operation, keep the clutch reservoir tank filled with brake fluid to prevent entry of air.
 - Clutch pedal must be operated very slowly.
 - Bleed air from the oil line with help of a co-worker.
 - The amount of brake fluid required is approximately 70 mℓ (2.4 US fl oz, 2.5 Imp fl oz) for total clutch system.
- 1) Remove the air intake chamber. (Non-turbo model) <Ref. to IN(H4SO)-7, REMOVAL, Air Intake Chamber.>
 - 2) Remove the intercooler. (Turbo model) <Ref. to IN(H4DOTC)-11, REMOVAL, Intercooler.>
 - 3) Drain the brake fluid from the reservoir tank.
 - 4) Refill the reservoir tank with recommended brake fluid.

Recommended brake fluid:

New FMVSS No. 116 DOT3 or DOT4 brake fluid

- 5) If necessary, bleed air from the clutch fluid. <Ref. to CL-21, Clutch Fluid Air Bleeding.>

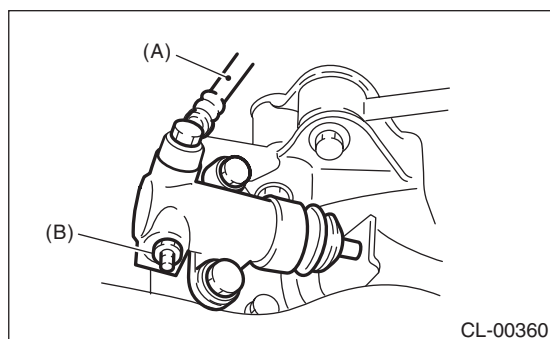
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9. Clutch Fluid Air Bleeding

A: PROCEDURE

NOTE:

- Bleed air from the oil line with help of a co-worker.
 - The illustration below is suitable for every model. Perform the same procedures for the other models.
- 1) Remove the air intake chamber. (Non-turbo model) <Ref. to IN(H4SO)-7, REMOVAL, Air Intake Chamber.>
 - 2) Remove the intercooler. (Turbo model) <Ref. to IN(H4DOTC)-11, REMOVAL, Intercooler.>
 - 3) Fit one end of a vinyl tube into the air breather of the operating cylinder, and put the other end into a brake fluid container.

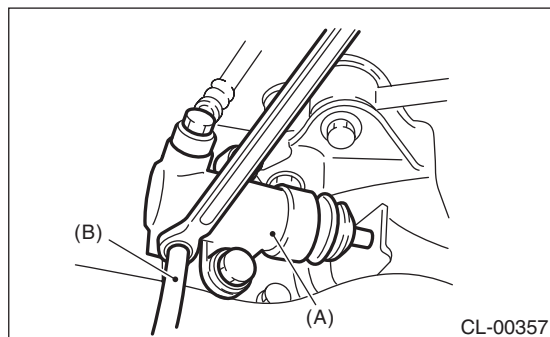


- (A) Clutch hose
- (B) Air breather

- 4) Slowly depress the clutch pedal and keep it depressed. Then open the air breather to discharge air together with the fluid. Release the air breather for 1 or 2 seconds. Next, with the breather closed, slowly release the clutch pedal.

CAUTION:

Cover the breather with cloth to prevent brake fluid from being splashed on surrounding parts when loosening the breather.

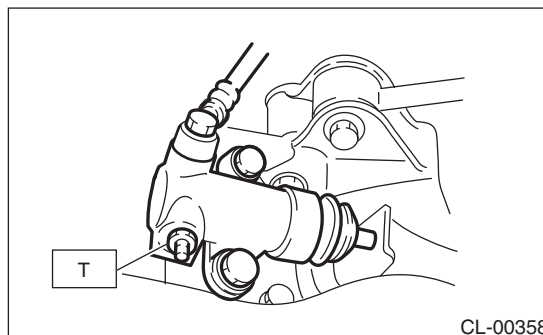


- (A) Operating cylinder
- (B) Vinyl tube

- 5) Repeat procedure 4), until there are no more air bubbles in the vinyl tube.
- 6) Tighten the air breather.

Tightening torque:

T:7.8 N·m (0.8 kgf-m, 5.8 ft-lb)



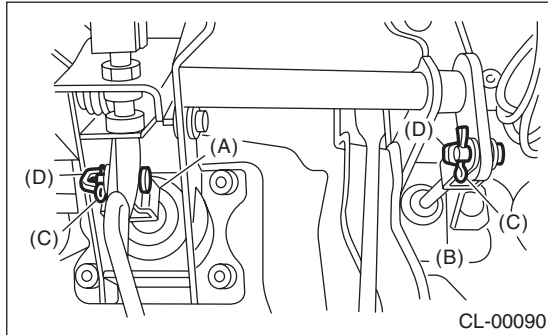
- 7) After stepping on the clutch pedal, make sure that there are no leaks evident in the entire clutch system.
- 8) After bleeding the air from clutch system, ensure that the clutch operates properly.
- 9) Install the air intake chamber. (Non-turbo model) <Ref. to IN(H4SO)-7, INSTALLATION, Air Intake Chamber.>
- 10) Install the intercooler. (Turbo model) <Ref. to IN(H4DOTC)-12, INSTALLATION, Intercooler.>

CLUTCH SYSTEM

10. Clutch Pedal

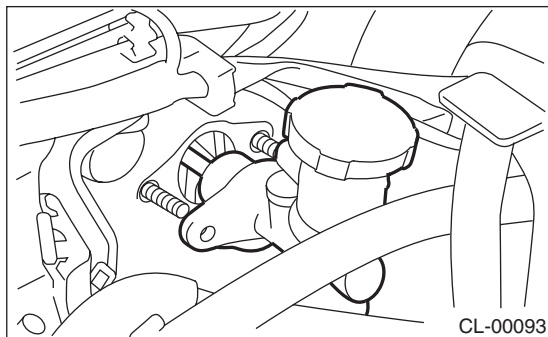
A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the steering column. <Ref. to PS-16, REMOVAL, Tilt Steering Column.>
- 3) Disconnect the connector from the stop light switch and clutch switch.
- 4) Remove the snap pins from clevis pins which secure the lever to the push rod and operating rod.
- 5) Pull out the clevis pins which secures the lever to the push rod and operating rod.



- (A) Operating rod
- (B) Push rod
- (C) Snap pin
- (D) Clevis pin

- 6) Remove the air intake chamber. (Non-turbo model) <Ref. to IN(H4SO)-7, REMOVAL, Air Intake Chamber.>
- 7) Remove the intercooler. (Turbo model) <Ref. to IN(H4DOTC)-11, REMOVAL, Intercooler.>
- 8) Remove the nut which secures the clutch master cylinder.



- 9) Remove the bolts and nuts which secure the brake pedal and clutch pedal, and remove the pedal assembly.

B: INSTALLATION

- 1) Install in the reverse order of removal.

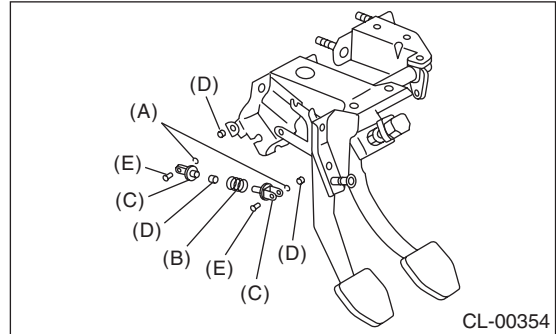
CAUTION:

Always use a new clevis pin.

- 2) Adjust the clutch pedal after installation. <Ref. to CL-23, ADJUSTMENT, Clutch Pedal.>
- 3) Adjust the clutch switch (starter interlock). <Ref. to CL-27, ADJUSTMENT, Clutch Switch.>

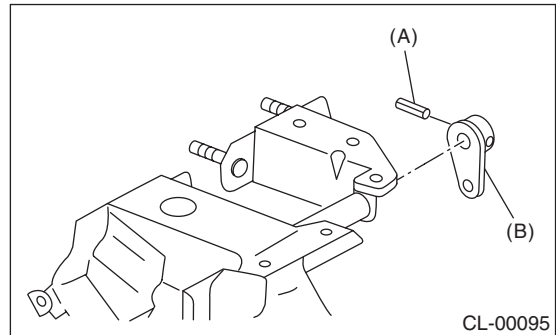
C: DISASSEMBLY

- 1) Remove the clip, assist spring, rod and bushing.



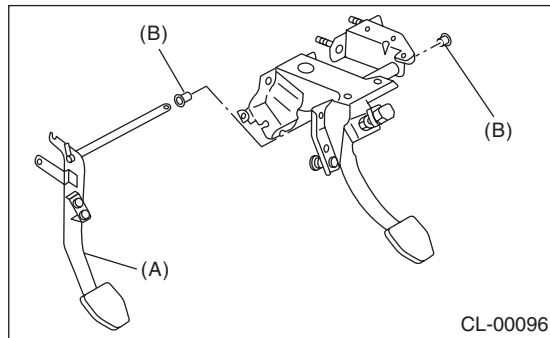
- (A) Clip
- (B) Assist spring
- (C) Assist rod
- (D) Bushing
- (E) Clevis pin

- 2) Remove the spring pin and lever.



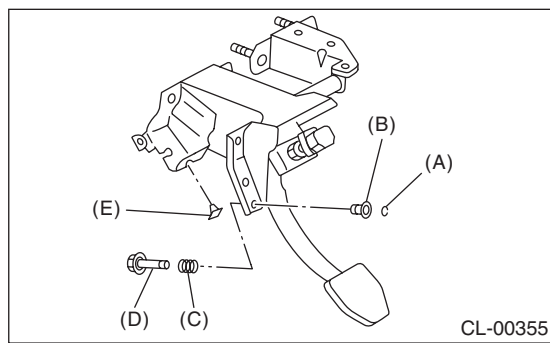
- (A) Pin
- (B) Lever

3) Remove the clutch pedal and bushings.



- (A) Clutch pedal
- (B) Bushing

4) Remove the stopper, clip, O-ring and rod S, and remove the spring and bushing S.



- (A) Clip
- (B) Bushing S
- (C) Spring S
- (D) Rod S
- (E) Stopper

5) Remove the stopper from the clutch pedal.

6) Remove the clutch pedal pad. (Non-turbo model)

D: ASSEMBLY

1) Install the stopper, etc., temporarily to the pedal bracket.

2) Clean the clutch pedal and brake pedal bushing holes, apply grease, and install the bushings.

3) Align the holes of the pedal bracket, clutch pedal and brake pedal, and install the brake pedal return spring, assist rod, spring and bushing.

NOTE:

Clean the inside of the bushings and apply grease before installing the spacer.

E: INSPECTION

Move the clutch pedal pads in the lateral direction with a force of approximately 10 N (1 kgf, 2 lbf) to check that the clutch pedal deflection is within the service limit.

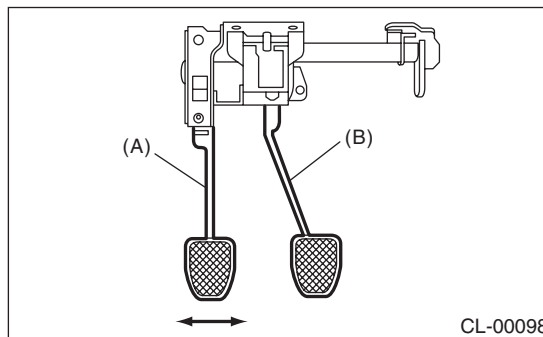
CAUTION:

If the play exceeds the service limit, replace the bushing with a new part.

Deflection of the clutch pedal:

Service limit

5.0 mm (0.197 in) or less



- (A) Clutch pedal
- (B) Brake pedal

F: ADJUSTMENT

1) Turn the lock nut until the full stroke of clutch pedal becomes within the specification.

CAUTION:

When adjusting the full stroke of clutch pedal, do not turn the clutch switch.

NOTE:

If the lock nut cannot adjust the full stroke of clutch pedal to the specified value, adjust it by turning the master cylinder push rod.

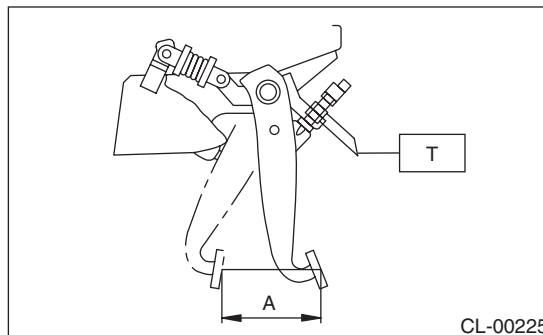
Clutch pedal full stroke A:

130 — 135 mm (5.12 — 5.31 in) (Non-turbo model)

135 — 140 mm (5.31 — 5.51 in) (Turbo model)

Tightening torque (Clutch switch lock nut):

T:8 N·m (0.8 kgf·m, 5.9 ft·lb)



Clutch Pedal

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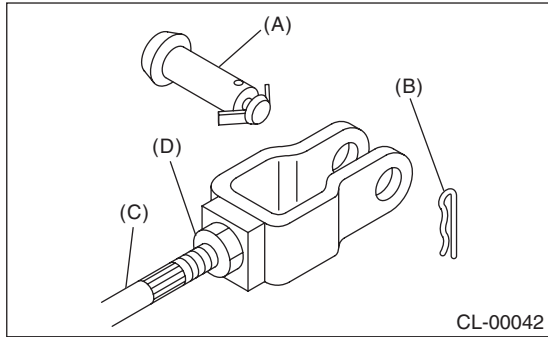
CLUTCH SYSTEM

2) If the full stroke is not within the specified range, adjust it by loosening the clutch stopper nut (for models without cruise control) or clutch switch lock nut (for models with cruise control).

Tightening torque:

8 N·m (0.8 kgf·m, 5.9 ft·lb)

3) Loosen the push rod lock nuts.

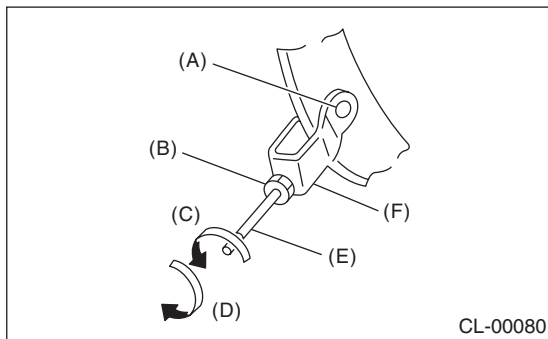


- (A) Clevis pin
- (B) Snap pin
- (C) Push rod
- (D) Push rod lock nut

4) Rotate the push rod to adjust.

(1) Make sure that the clutch pedal contacts the stopper bolt side (for models without cruise control) or clutch switch side (for models with cruise control) when the pedal is released.

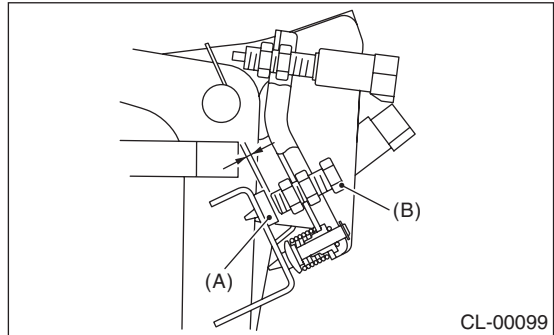
(2) Make sure that the clutch pedal contacts the clutch pedal bracket stopper when the clutch pedal is at the maximum stroke position.



- (A) Clevis hole
- (B) Push rod lock nut
- (C) In the shorter direction
- (D) In the longer direction
- (E) Push rod
- (F) Clevis

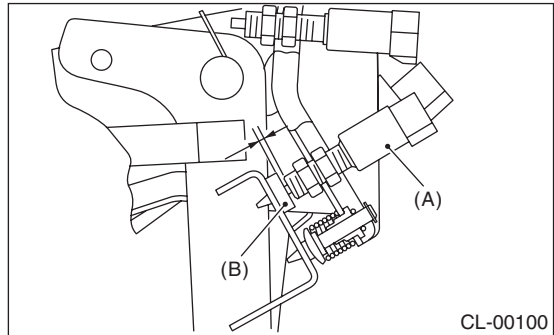
5) Turn the push rod to shorten until a clearance is gained on the stopper bolt side (for models without cruise control) or clutch switch side (for models with cruise control).

• Models without cruise control



- (A) Stopper
- (B) Stopper bolt

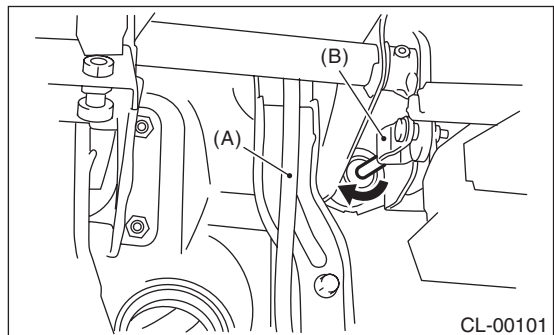
• Models with cruise control



- (A) Clutch switch
- (B) Stopper

6) Turn the push rod to lengthen until the clutch pedal contacts the stopper bolt (for models without cruise control) or clutch switch (for models with cruise control).

7) Turn further in the direction that will shorten the push rod (arrow direction shown in figure) by 270°.



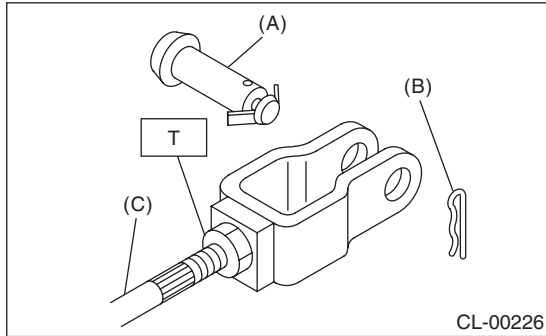
- (A) Accelerator pedal
- (B) Clevis

8) Check that the clevis pin moves smoothly by moving it in the left and right directions.

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9) Tighten the push rod lock nut.

Tightening torque (Push rod lock nut):
T:10 N·m (1.0 kgf-m, 7.4 ft-lb)



- (A) Clevis pin
- (B) Snap pin
- (C) Push rod

10) Depress and release the clutch pedal two or three times to ensure that the clutch pedal and release lever operate smoothly. If the clutch pedal and release lever do not operate smoothly, bleed air from the clutch hydraulic system. <Ref. to CL-21, Clutch Fluid Air Bleeding.>

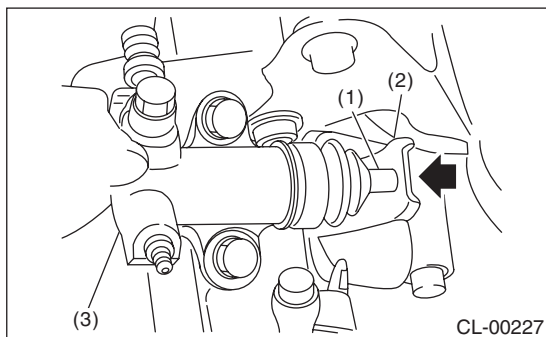
11) Measure the clutch pedal full stroke length again to ensure that it is within specifications. If it is not within specifications, repeat adjustment procedures again from the beginning.

Clutch pedal full stroke:

130 — 135 mm (5.12 — 5.31 in) (Non-turbo model)

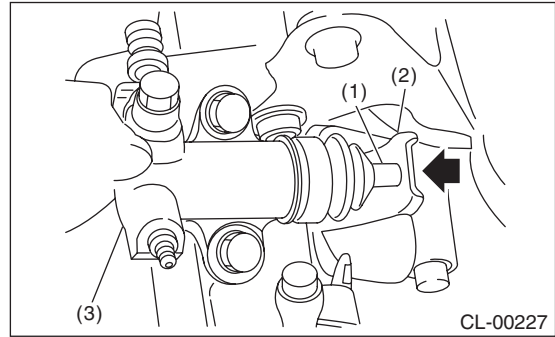
135 — 140 mm (5.31 — 5.51 in) (Turbo model)

12) Push the release lever until the operating cylinder push rod retracts. Make sure that the clutch fluid level in the reservoir tank increases. If the clutch fluid level increases, the hydraulic clutch is properly adjusted; If the fluid level does not increase or the push rod does not retract, replace the master cylinder with a new part. <Ref. to CL-17, Master Cylinder.>



- (1) Push rod
- (2) Release lever
- (3) Operating cylinder

13) Push the release lever until the operating cylinder push rod retracts. Check that the clutch fluid level in the reservoir tank increases.



- (1) Push rod
- (2) Release lever
- (3) Operating cylinder

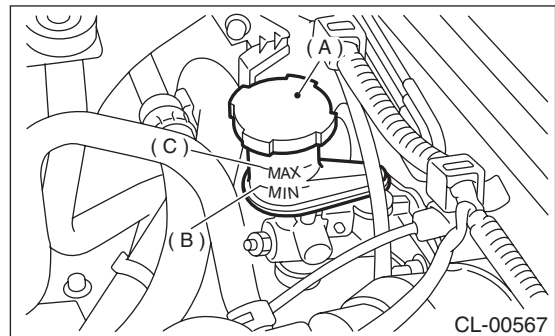
14) If the clutch fluid level increases, hydraulic clutch play is correct.

15) If the clutch fluid level does not increase or push rod does not retract, readjust the clutch pedal.

16) Check the fluid level using the scale on the outside of the reservoir tank. If the level is below "MIN", fill fluid up to "MAX" level.

Recommended clutch fluid:

New FMVSS No. 116 DOT3 or DOT4 brake fluid



- (A) Reservoir tank
- (B) MIN. level
- (C) MAX. level

11. Clutch Switch

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the instrument panel lower cover.
- 3) Disconnect the connector of clutch switch.
- 4) Remove the clutch switches.

B: INSTALLATION

1. CLUTCH SWITCH (CRUISE CONTROL)

- 1) Move the clevis pin of push rod to left and right, retain it at the position where it moves smoothly, and measure the clutch pedal stroke.

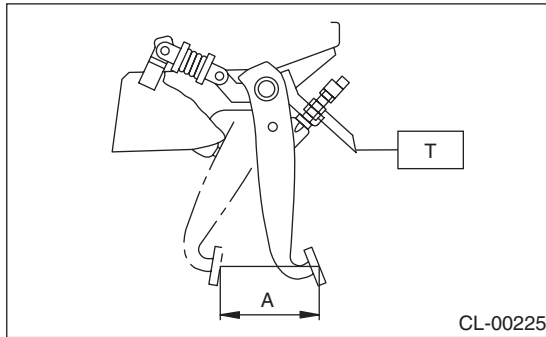
Clutch pedal full stroke A:

130 — 135 mm (5.12 — 5.31 in) (Non-turbo model)

135 — 140 mm (5.31 — 5.51 in) (Turbo model)

Tightening torque:

T: 8 N·m (0.8 kgf-m, 5.9 ft-lb)



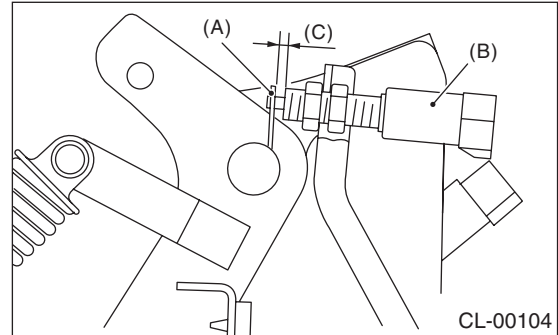
- 2) If the clutch pedal stroke is out of specification, adjust the stroke. <Ref. to CL-23, ADJUSTMENT, Clutch Pedal.>
- 3) Connect the clutch switch connector.

2. CLUTCH SWITCH (STARTER INTERLOCK)

- 1) Fully depress the clutch and hold it.
- 2) Install the clutch pedal plate and clutch switch so that the gap between them is 3 — 3.5 mm (0.12 — 0.14 in), and then tighten the lock nut.

Tightening torque:

8 N·m (0.8 kgf-m, 5.9 ft-lb)



- (A) Plate
- (B) Clutch switch
- (C) 3 × 3.5 mm (0.12 × 0.14 in)

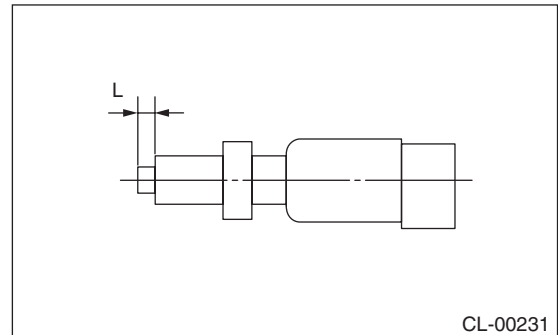
- 3) Connect the clutch switch connector.
- 4) Make sure that engine does not start with clutch pedal not depressed.
- 5) Make sure that engine starts with clutch pedal fully depressed.

C: INSPECTION

- 1) If the clutch switch (cruise control) does not operate properly (or if it does not stop at the specified position), replace it with a new part.

Specified position L:

2 + 1.5 mm (0.079 + 0.059 in)

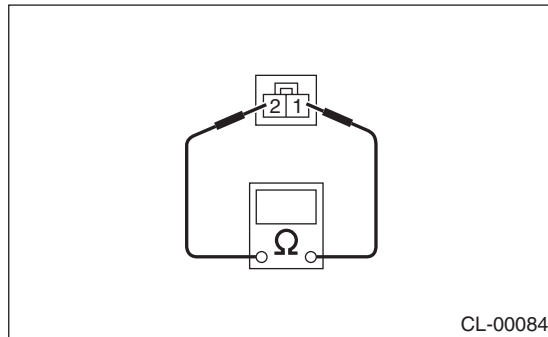


2) Check the clutch switch for continuity. If the resistance is not at the standard value, replace the switch.

- (1) Disconnect the clutch switch connector.
- (2) Measure the resistance between terminal 1 and 2 of the switch.

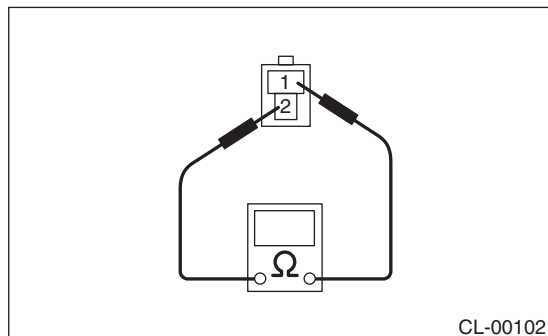
• Clutch switch (Cruise control)

Condition	Terminal No.	Specified resistance
When clutch pedal is depressed	No. 1 — No. 2	1 M Ω or more
When the clutch pedal is not depressed	No. 1 — No. 2	Less than 1 Ω



• Clutch switch (starter interlock)

Condition	Terminal No.	Specified resistance
When clutch pedal is depressed	No. 1 — No. 2	Less than 1 Ω
When the clutch pedal is not depressed	No. 1 — No. 2	1 M Ω or more

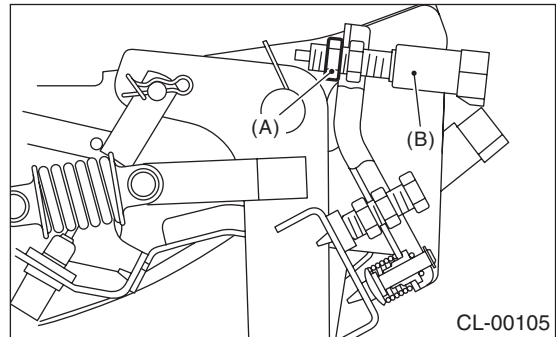


3) Make sure that engine does not start with clutch pedal not depressed. If the engine starts, adjust the clutch switch and inspect the starter interlock circuit.

4) Make sure that engine starts with clutch pedal fully depressed. If the engine does not start, adjust the clutch switch and inspect the starter interlock circuit.

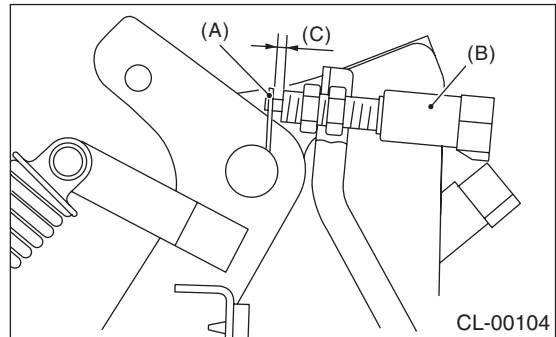
D: ADJUSTMENT

1) Loosen the lock nut of clutch switch (starter interlock).



- (A) Lock nut
- (B) Clutch switch (starter interlock)

2) Fully depress the clutch and hold it.
 3) Adjust the gap of the clutch pedal plate and the clutch switch to be 3 — 3.5 mm (0.12 — 0.14 in).



- (A) Plate
- (B) Clutch switch (starter interlock)
- (C) 3 × 3.5 mm (0.12 × 0.14 in)

4) Tighten the lock nut.

Tightening torque:
8 N·m (0.8 kgf·m, 5.9 ft·lb)

CLUTCH SYSTEM

12. General Diagnostic Table

A: INSPECTION

1. CLUTCH

Symptom	Possible cause	Corrective action
<p>1. Clutch slippage. It is hard to perceive clutch slippage in the early stage, but pay attention to the following symptoms.</p> <ul style="list-style-type: none"> • Engine speeds up when shifting. • High-speed driving is not possible; especially rapid acceleration is not possible and vehicle speed does not increase in proportion to the increase in engine speed. • Power drops particularly when ascending a slope, and there is a burning smell of the clutch plate. • Method of testing: Park the vehicle and fully apply the parking brake. Disengage the clutch and shift the transmission gear into the 1st. Gradually increase the engine speed while gradually allowing the clutch to engage. The clutch function is satisfactory if the engine stalls. However, the clutch is slipping if the vehicle does not move forward and the engine does not stall. 	(a) Oil on the clutch face	Replace.
	(b) Worn clutch face	Replace.
	(c) Deteriorated diaphragm spring	Replace.
	(d) Warped pressure plate or flywheel	Correct or replace.
	(e) Defective release bearing holder	Correct or replace.
<p>2. Clutch drags. As a symptom of this trouble, a harsh scratching noise occurs and control becomes difficult when shifting gears. The symptom becomes more apparent when shifting into the 1st gear. However, because most trouble of this sort is due to a defective synchronization mechanism, perform the following tests.</p> <ul style="list-style-type: none"> • Method of testing: <Ref. to CL-29, DIAGNOSTIC DIAGRAM OF CLUTCH DRAG, INSPECTION, General Diagnostic Table.> <p>The problem is caused by insufficient disengagement of the clutch if an abnormal noise occurs during this test.</p>	(a) Worn or rusty clutch disc hub spline	Replace the clutch disc.
	(b) Excessive deflection of clutch disc face	Correct or replace.
	(c) Seized crankshaft pilot needle bearing	Replace.
	(d) Cracked clutch disc face	Replace.
	(e) Stuck clutch disc (smeared by oil or water)	Replace.
<p>3. Clutch chatters. Clutch chattering is an unpleasant vibration to the whole vehicle when the vehicle is just started with clutch partially engaged.</p>	(a) Adhesion of oil on the clutch face	Replace the clutch disc.
	(b) Weak or broken damper spring	Replace the clutch disc.
	(c) Poor contact of the disc surface or excessively worn disc	Replace the faulty clutch disc.
	(d) Warped pressure plate or flywheel	Correct or replace.
	(e) Loose disc rivets	Replace the clutch disc.
	(f) Loose engine mounting	Retighten or replace mounting.
	(g) Improper adjustment of the pitching stopper	Adjust.

General Diagnostic Table

CLUTCH SYSTEM

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Symptom	Possible cause	Corrective action
4. Noisy clutch Noise occurs when the clutch is disengaged, engaged, or partially engaged.	(a) Broken, worn or insufficiently lubricated release bearing	Replace the release bearing.
	(b) Insufficient lubrication of the pilot bearing	Apply grease or replace the pilot bearing.
	(c) Loose clutch disc hub	Replace the clutch disc.
	(d) Loose damper spring retainer	Replace the clutch disc.
	(e) Deteriorated or broken damper spring	Replace the clutch disc.
5. Clutch grabs suddenly. When starting the vehicle with the clutch partially engaged, the clutch engages suddenly and the vehicle jumps instead of making a smooth start.	(a) Grease or oil on facing	Replace the clutch disc.
	(b) Deteriorated cushioning spring	Replace the clutch disc.
	(c) Worn or rusted spline of clutch disc or main shaft	Take off rust, apply grease or replace clutch disc or main shaft.
	(d) Deteriorated or broken damper spring	Replace the clutch disc.
	(e) Loose engine mounting	Retighten or replace mounting.
	(f) Deteriorated diaphragm spring	Replace.

2. CLUTCH PEDAL

Symptom	Corrective action
Insufficient pedal play	Adjust the free play of the pedal.
Insufficient clutch pedal free play	Adjust the free play of the pedal.
Excessively worn and damaged pedal shaft and/or bushing	Replace the bushing or shaft with a new part.

3. DIAGNOSTIC DIAGRAM OF CLUTCH DRAG

Step	Check	Yes	No
1 CHECK GEAR NOISE. 1) Start the engine. 2) Disengage the clutch and shift quickly from neutral to reverse in idling condition.	Is there any abnormal noise from the transmission gear?	Go to step 2.	Clutch is normal.
2 CHECK GEAR NOISE. Disengage the clutch at idle and shift from neutral to reverse within 0.5 — 1.0 seconds.	Is there any abnormal noise from the transmission gear?	Go to step 3.	Defective transmission or excessive clutch drag torque. Inspect pilot bearing, clutch disc, transmission and clutch disc hub spline.
3 CHECK GEAR NOISE. 1) Disengage the clutch at idle and shift from neutral to reverse within 0.5 — 1.0 seconds. 2) With the clutch disengaged, shift from neutral to reverse, reverse to neutral several times.	Is there any abnormal noise from the transmission gear?	Inadequate clutch disengage. Inspect the clutch disc, clutch cover, clutch release, and clutch pedal free play.	Clutch and fly-wheel seizure. Inspect the clutch disc and the spline of the clutch disc hub.

General Diagnostic Table

CLUTCH SYSTEM

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