CLUTCH 2-10

1. Clutch System

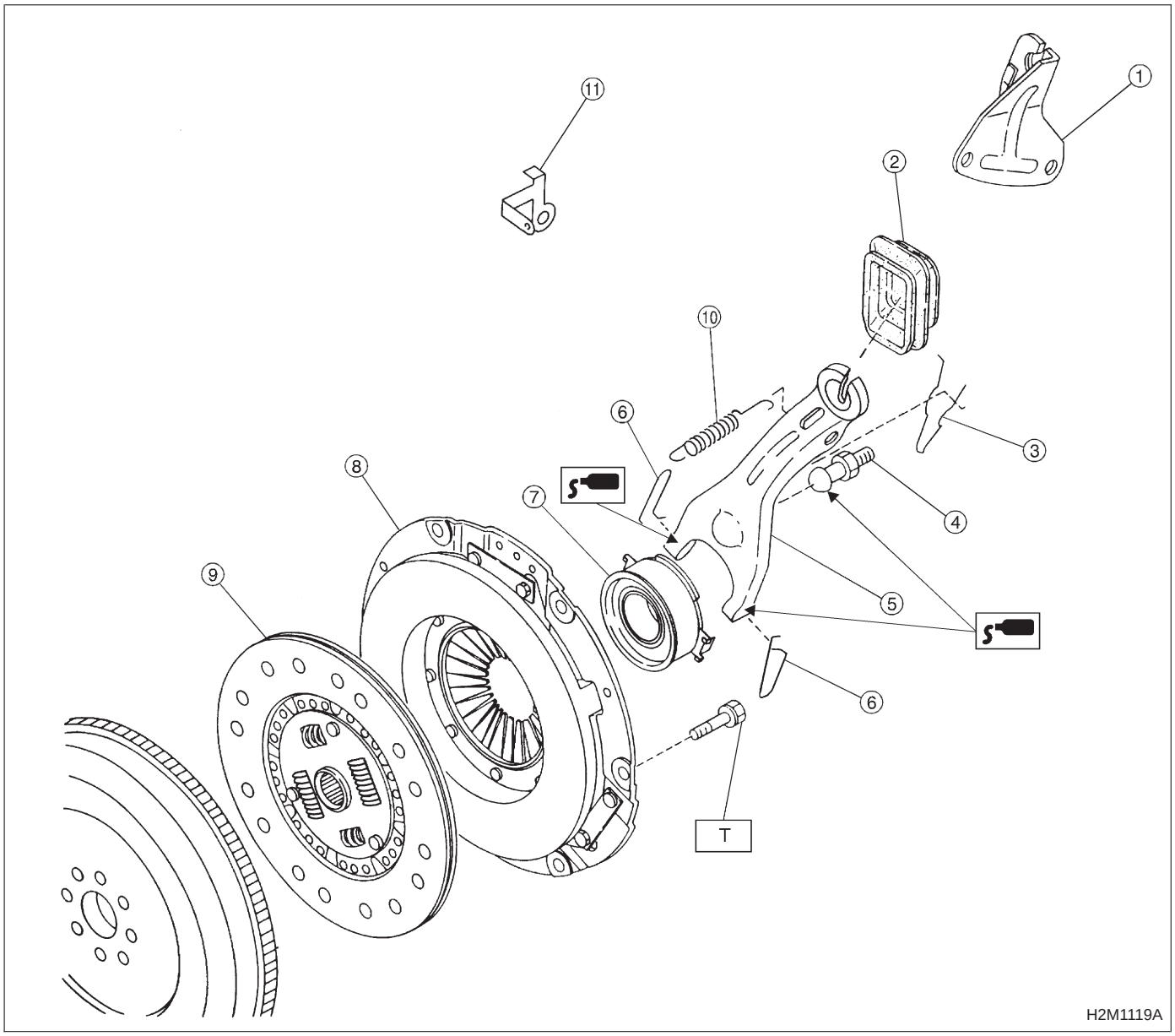
A: SPECIFICATIONS

		FWD	AWD
Clutch cover	Type	Push type	
	Diaphragm set load kg (lb)	440 (970)	450 (992)
Clutch disc	Facing material	Woven (Non asbestos)	
	O.D. x I.D. x thickness mm (in)	215 x 150 x 3.5 (8.46 x 5.91 x 0.138)	225 x 150 x 3.5 (8.86 x 5.91 x 0.138)
	Spline O.D. mm (in)	25.2 (0.992), (No. of teeth: 24)	
Clutch release lever ratio		3.0	
Release bearing		Grease-packed self-aligning	

B: SERVICE DATA

			FWD	AWD
Clutch pedal	Full stroke mm (in)		140 — 150 (5.51 — 5.91)	
Release lever	Stroke mm (in)		24 — 26 (0.94 — 1.02)	
	Play at release lever center mm (in)		3 — 4 (0.12 — 0.16)	
Clutch disc	Depth of rivet head mm (in)	Standard	1.3 — 1.9 (0.051 — 0.075)	
		Limit of sinking	0.3 (0.012)	
	Limit for deflection mm (in)		1.0 (0.039) at R = 102 (4.02)	1.0 (0.039) at R = 107 (4.21)

1. Clutch System



① Clutch cable bracket
② Clutch release lever sealing
③ Retainer spring
④ Pivot
⑤ Clutch release lever
⑥ Clip
⑦ Clutch release bearing
⑧ Clutch cover
⑨ Clutch disc
⑩ Return spring
⑪ Clutch return spring bracket

Tightening torque: N·m (kg-m, ft-lb)
T: 14.2 — 17.2 (1.45 — 1.75, 10.5 — 12.7)

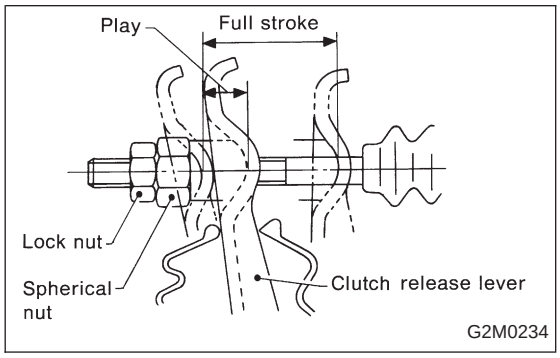
1. General

A: PRECAUTION

When servicing clutch system, pay attention to the following items.

1. MECHANICAL APPLICATION TYPE

1) Check the routing of clutch cable for smoothness.
2) Excessive tightness or looseness of clutch cable have a bad influence upon the cable durability.
3) Apply grease sufficiently to the connecting portion of clutch pedal.
4) Apply grease sufficiently to the release lever portion.
5) Position clutch cable through the center of toeboard hole and route it smoothly. Adjustment is done by moving the outer cable.
6) Make sure not to let the clutch chatter when starting forward or rearward. If clutch chattering occurs, readjust so that the bend of clutch outer cable becomes flatter.



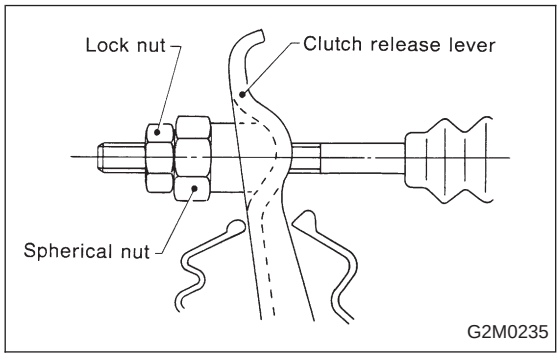
2. On-Car Services

1. MECHANICAL APPLICATION TYPE

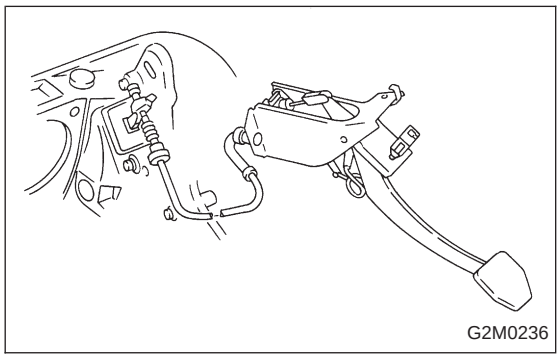
1) Adjust spherical nut so that the play is within the specified value at the lever end (center of spherical nut).

CAUTION:
Take care not to twist the cable during adjustment

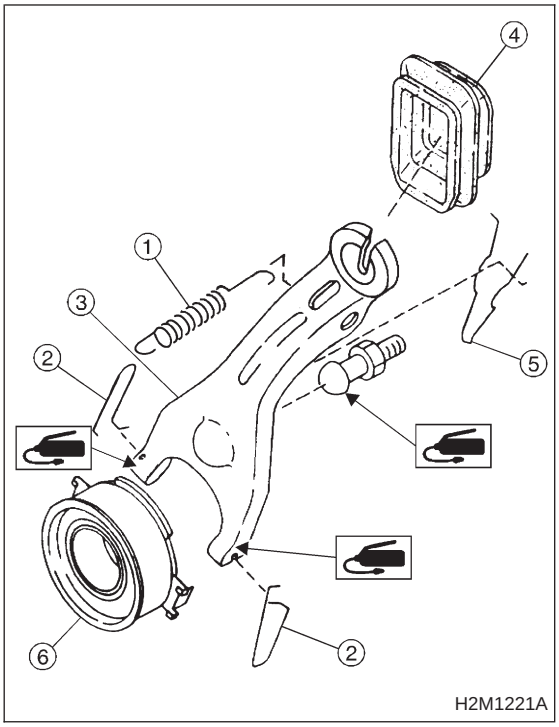
Play: 3 — 4 mm (0.12 — 0.16 in)
Full stroke: 24 — 26 mm (0.94 — 1.02 in)



2) Upon completion of adjustment, securely lock spherical nut with lock nut.



3) Depress clutch pedal to assure there is no abnormality in the clutch system.



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3. Release Bearing and Lever

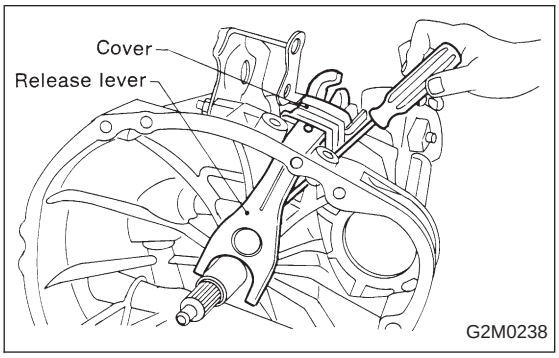
A: REMOVAL

1. MECHANICAL APPLICATION TYPE

1) Remove release lever return spring ①.
2) Remove the two clips ② from clutch release lever ③ and remove release bearing ⑥.

CAUTION:
Be careful not to deform clips.

3) Remove release lever seal ④.



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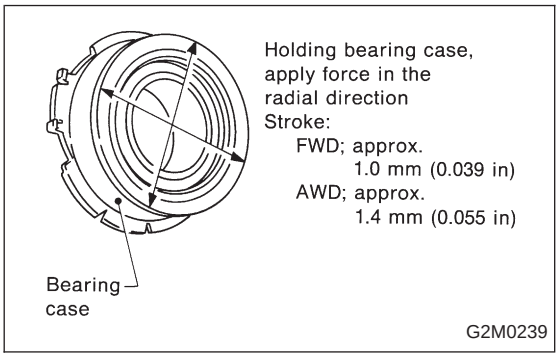
4) Remove release lever retainer spring from release lever pivot with a screwdriver by accessing it through clutch housing release lever hole. Then remove release lever.

B: INSPECTION

1. RELEASE BEARING

CAUTION:
Since this bearing is grease sealed and is of a nonlubrication type, do not wash with gasoline or any solvent when servicing the clutch.

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



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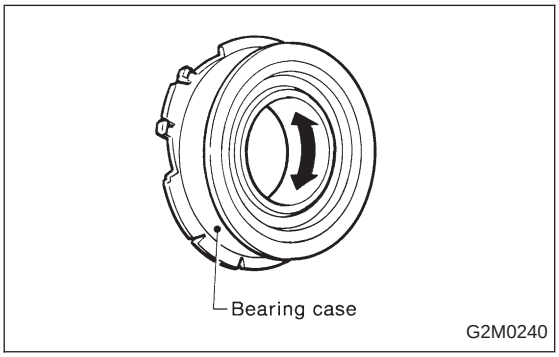
2) Check the bearing for smooth rotation by applying pressure in the thrust direction.
3) Check wear and damage of bearing case surface contacting with lever.



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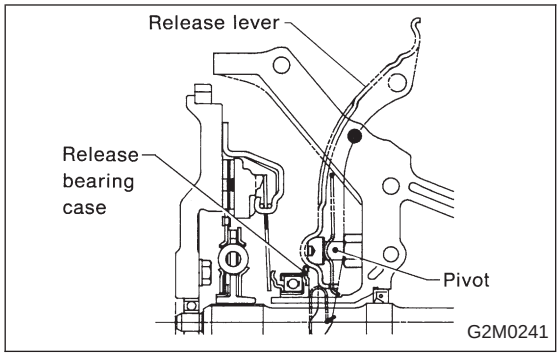
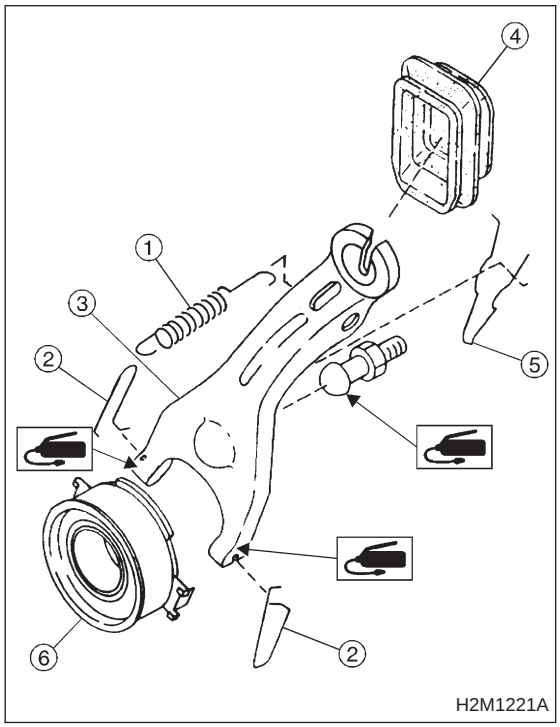


2. RELEASE LEVER

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

C: INSTALLATION

CAUTION:
Before or during assembling, lubricate the following points with a light coat of grease.
- **Inner groove of release bearing**
- **Contact surface of lever and pivot**
- **Contact surface of lever and bearing**
- **Transmission main shaft spline (Use grease containing molybdenum disulphide.)**

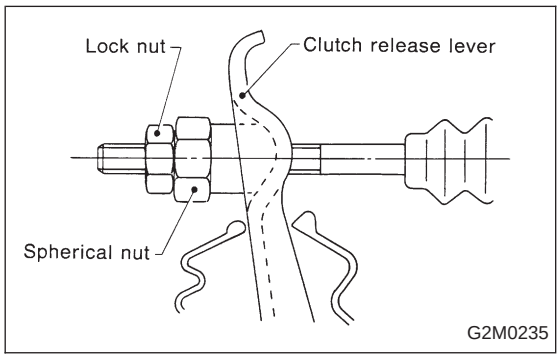


1. MECHANICAL APPLICATION TYPE

1) While pushing release lever ③ to pivot and twisting it to both sides, fit retainer spring ⑤ onto the constricted portion of pivot.

NOTE:
Confirm that retainer spring is securely fitted by observing it through the main case hole.

2) Install release bearing ⑥ and fasten it with two clips ②.
3) Install release lever sealing ④.

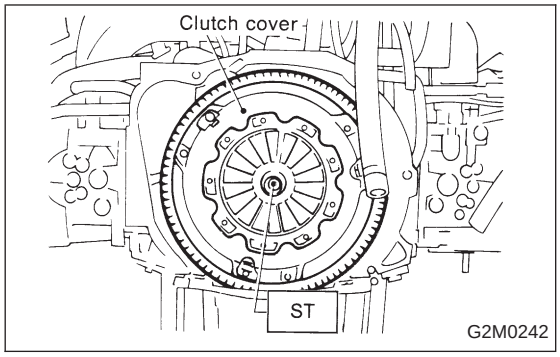


4) After remounting engine and transmission on body, make adjustment of the clutch release lever end play.

CAUTION:
Take care not to twist the cable during adjustment.

5) Install release lever return spring.

NOTE:
Hook up the left hook side of the return spring with the lever.



4. Clutch Disc and Cover

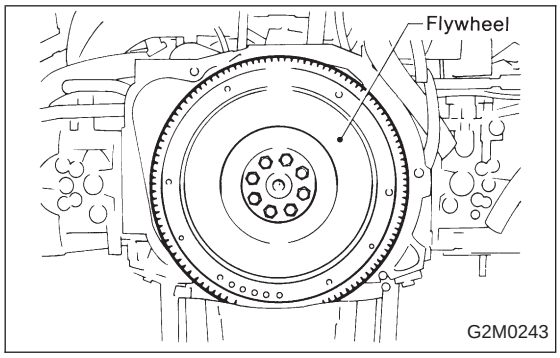
A: REMOVAL

1) Install ST on flywheel.

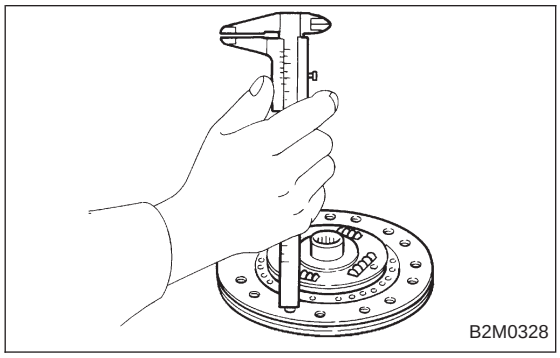
ST 498497100 CRANKSHAFT STOPPER

2) Remove clutch cover and clutch disc.

CAUTION:
● Take care not to allow oil on the clutch disc facing.
● Do not disassemble either clutch cover or clutch disc.



3) Remove flywheel.



B: INSPECTION

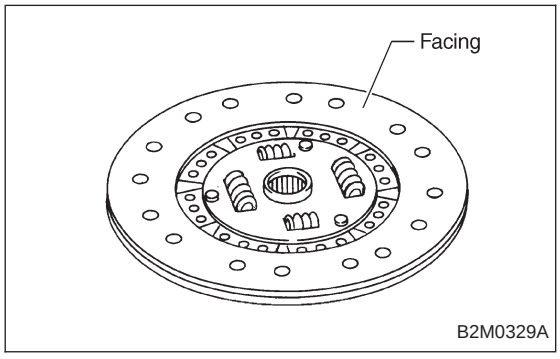
1. CLUTCH DISC

1) Facing wear

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

Depth of rivet head
Standard value
1.3 — 1.9 mm (0.051 — 0.075 in)
Limit of sinking
0.3 mm (0.012 in)

CAUTION:
Do not wash clutch disc with any cleaning fluid.

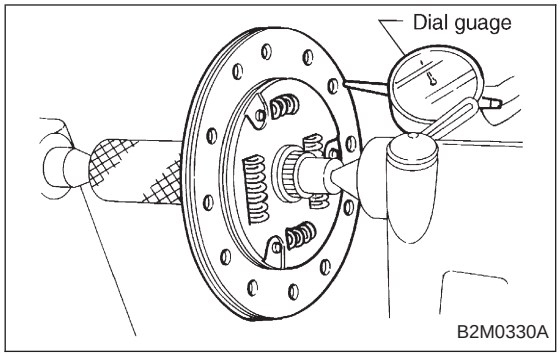


2) Hardened facing

Correct by using emery paper or replace.

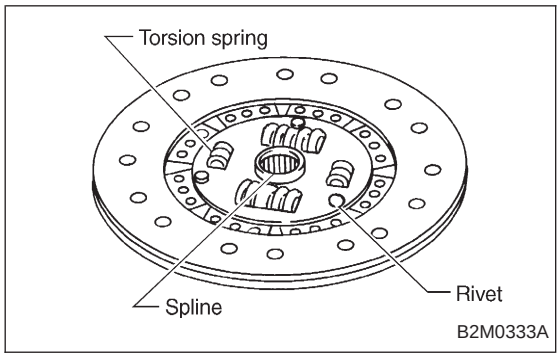
3) Oil soakage on facing

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

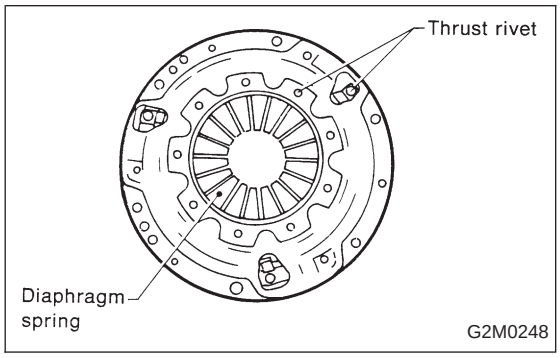


4) Deflection on facing
If deflection exceeds the specified value at the outer circumference of facing, repair or replace.

Limit for deflection:
FWD model: 1.0 mm (0.039 in) at R = 102 mm (4.02 in)
AWD model: 1.0 mm (0.039 in) at R = 107 mm (4.21 in)

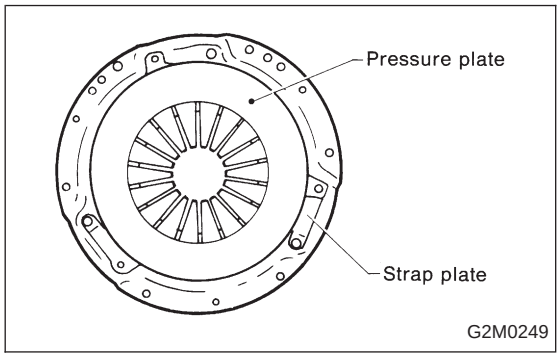


5) Worn spline, loose rivets and torsion spring failure
Replace defective parts.

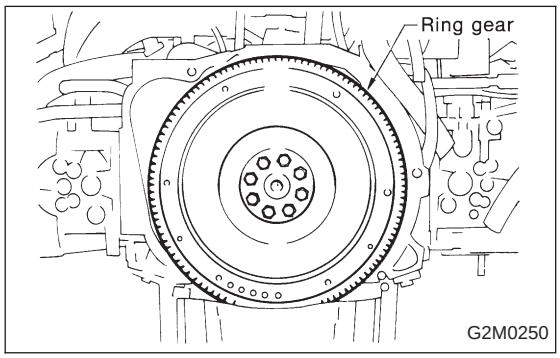


2. CLUTCH COVER

Visually check for the following items without disassembling, and replace or repair if defective.
1) Loose thrust rivet.
2) Damaged or worn bearing contact area at center of diaphragm spring.



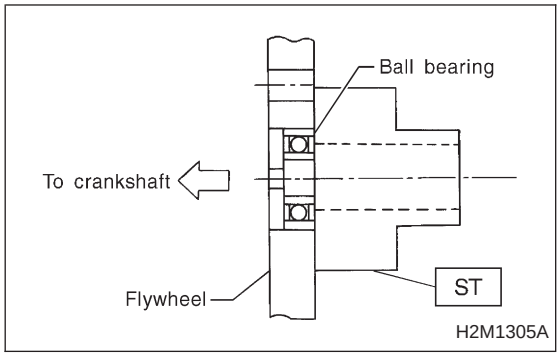
3) Damaged or worn disc contact surface of pressure plate.
4) Loose strap plate setting bolt.
5) Worn diaphragm sliding surface.



3. FLYWHEEL

CAUTION:
Since this bearing is grease sealed and is of a nonlubrication type, do not wash with gasoline or any solvent.

1) Damage of facing and ring gear
If defective, replace flywheel.

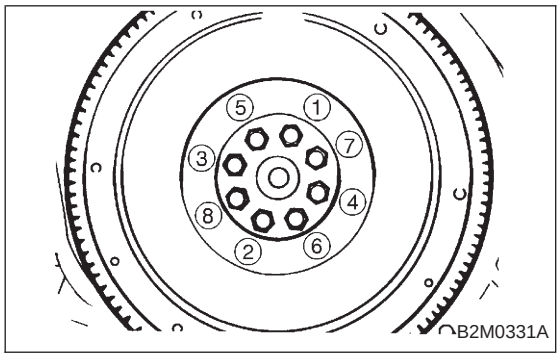


2) Smoothness of rotation
Rotate ball bearing applying pressure in thrust direction.

If noise or excessive play is noted, replace ball bearing as follows:

(1) Drive out ball bearing from flywheel.
(2) Press bearing into flywheel until bearing end surface is flush with clutch disc contact surface of flywheel. Do not press inner race.

ST 899754112 SNAP RING PRESS



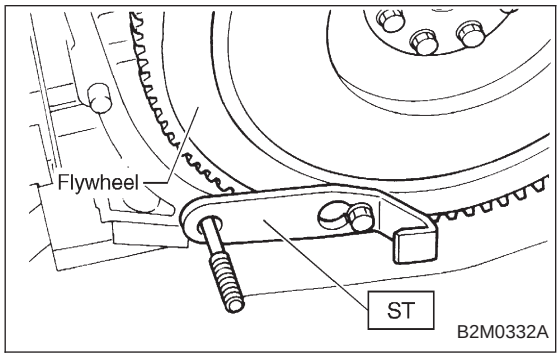
C: INSTALLATION

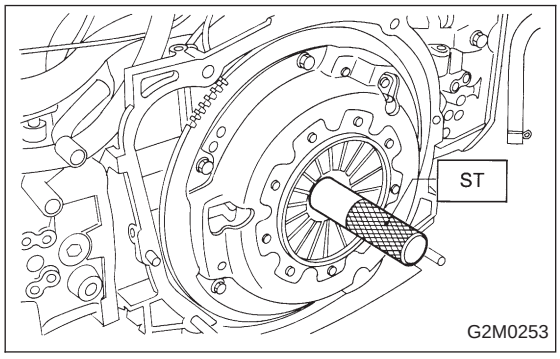
1) Install flywheel.
2) Install ST, and tighten the flywheel attaching bolts to the specified torque.

ST 498497100 CRANKSHAFT STOPPER

Tightening torque:
69 — 75 N·m (7.0 — 7.6 kg-m, 51 — 56 ft-lb)

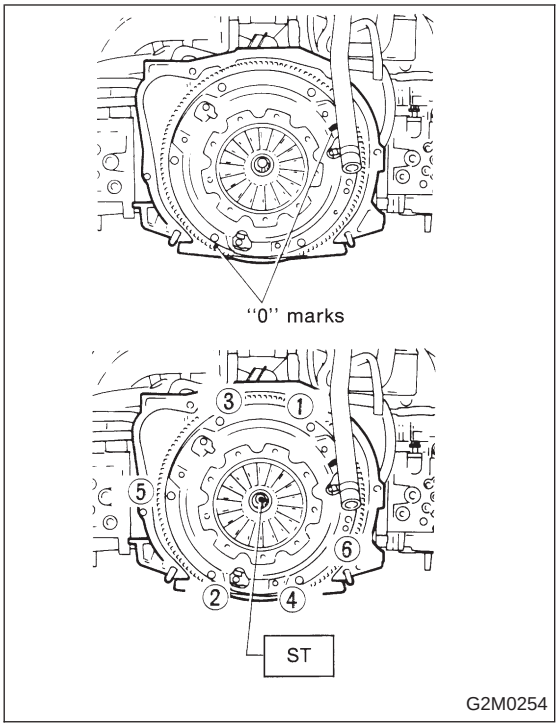
NOTE:
Tighten flywheel installing bolts gradually. Each bolt should be tightened to the specified torque in a crisscross fashion.





3) Insert ST into the clutch disc and install them on the flywheel by inserting the ST end into the pilot bearing.

ST 499747000 CLUTCH DISC GUIDE (FWD model)
ST 499747100 CLUTCH DISC GUIDE (AWD model)



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

NOTE:

- When installing the clutch cover on the flywheel, position the clutch cover so that there is a gap of 120° or more between “0” marks on the flywheel and clutch cover. (“0” marks indicate the directions of residual unbalance.)
- Note the front and rear of the clutch disc when installing.
- Tighten clutch cover installing bolts gradually. Each bolt should be tightened to the specified torque in a crisscross fashion.

Tightening torque:
14.2 — 17.2 N·m
(1.45 — 1.75 kg-m, 10.5 — 12.7 ft-lb)

5) Remove ST.

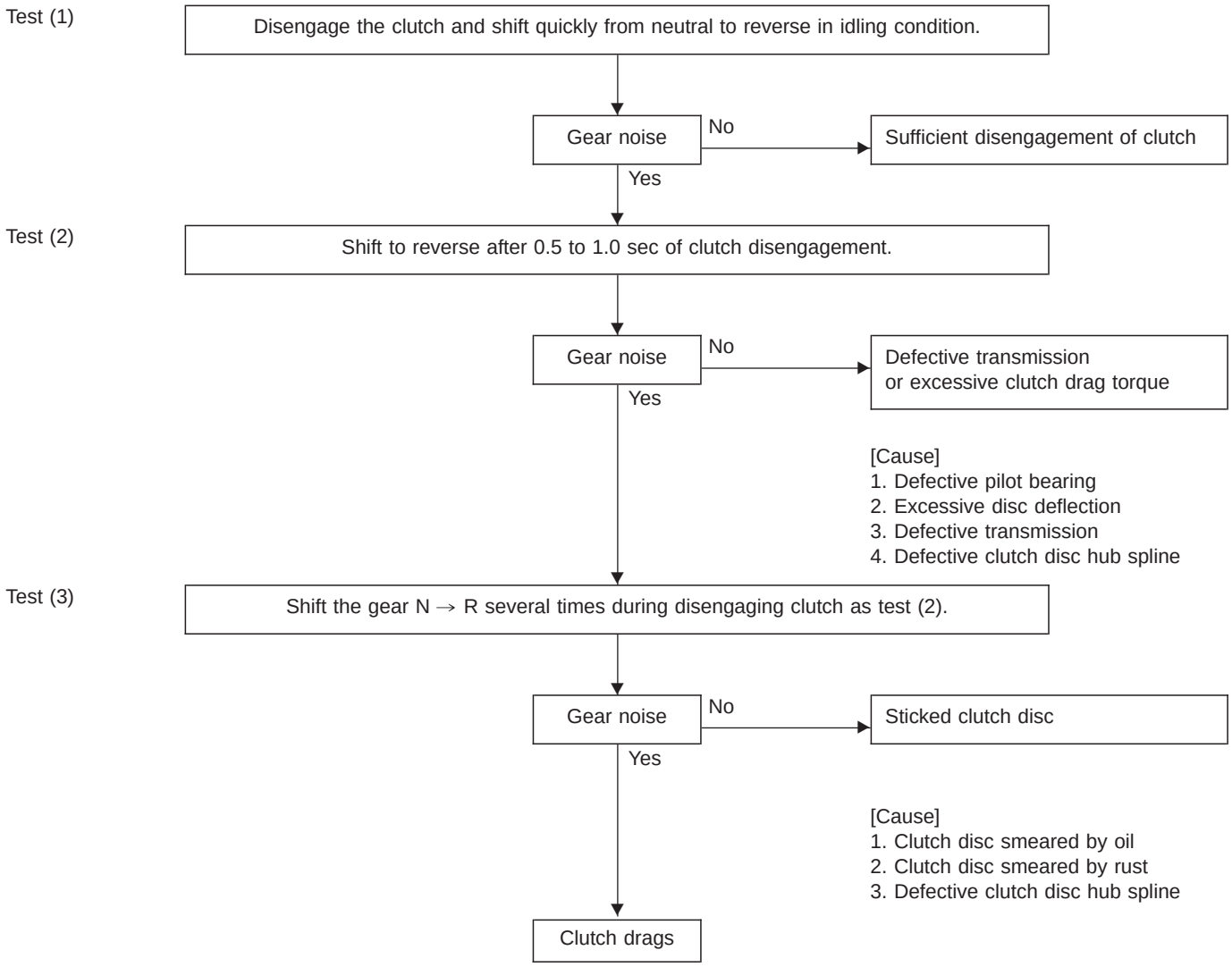
ST 499747000 CLUTCH DISC GUIDE (FWD model)
ST 499747100 CLUTCH DISC GUIDE (AWD model)

1. Clutch System

Condition	Possible cause and testing	Corrective action
1. Clutch slippage	It is hard to perceive clutch slippage in the early stage, but pay attention to the following symptoms.	
	(a) Engine revs up when shifting. (b) High speed driving is impossible; especially rapid acceleration impossible and vehicle speed does not increase in proportion to an increase in engine speed. (c) Power falls, particularly when ascending a slope, and there is a smell of burning of the clutch facing. ● Method of testing: Put the car in stationary condition with parking brake fully applied. Disengage the clutch and shift the transmission gear into the first. Gradually allow the clutch to engage while gradually increasing the engine speed. The clutch function is satisfactory if the engine stalls. However, the clutch is slipping if the car does not start off and the engine does not stall.	
	(a) No clutch pedal play	Readjust.
	(b) No release lever end play	Readjust.
	(c) Clutch facing smeared by oil	Replace.
	(d) Worn clutch facing	Replace.
	(e) Deteriorated diaphragm spring	Replace.
	(f) Distorted pressure plate or flywheel	Correct or replace.
	(g) Defective release bearing holder	Correct or replace.
	(h) Defective pedal and cable system	Correct or replace.
2. Clutch drags	As a symptom of this trouble, a harsh scratching noise develops and control becomes quite difficult when shifting gears. The symptom becomes more apparent when shifting into the first gear. However, because much trouble of the this sort is due to defective synchronization mechanism, carry out the test as described after. ● Method of testing: Refer to diagnostic diagram on page after.	
	It may be judged as insufficient disengagement of clutch if any noise occurs during this test.	
	(a) Excessive clutch pedal play	Readjust.
	(b) Excessive clutch release lever play	Readjust.
	(c) Worn or rusty clutch disc hub spline	Replace clutch disc.
	(d) Excessive deflection of clutch disc facing	Correct or replace.
	(e) Seized crankshaft pilot needle bearing	Replace.
	(f) Malfunction of pedal and cable system	Correct or replace.
	(g) Cracked clutch disc facing	Replace.
	(h) Sticked clutch disc (smeared by oil or water)	Replace.
3. Clutch chatters	Clutch chattering is an unpleasant vibration to the whole body when the vehicle is just started with clutch partially engaged.	
	(a) Improper clutch cable routing	Correct.
	(b) Adhesion of oil on the facing	Replace clutch disc.
	(c) Weak or broken torsion spring	Replace clutch disc.
	(d) Defective facing contact or excessive disc	Replace clutch disc. defection
	(e) Warped pressure plate or flywheel	Correct or replace.
	(f) Loose disc rivets	Replace clutch disc.
	(g) Loose engine mounting	Retighten or replace mounting.
	(h) Improper adjustment of pitching stopper	Adjustment.

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

1. DIAGNOSTIC DIAGRAM OF CLUTCH DRAG



[Cause]
1. Cracked clutch disc facing
2. Damaged or worn clutch cover
3. Malfunction of clutch release system
4. Insufficient clutch release amount
5. Excessive clutch pedal play