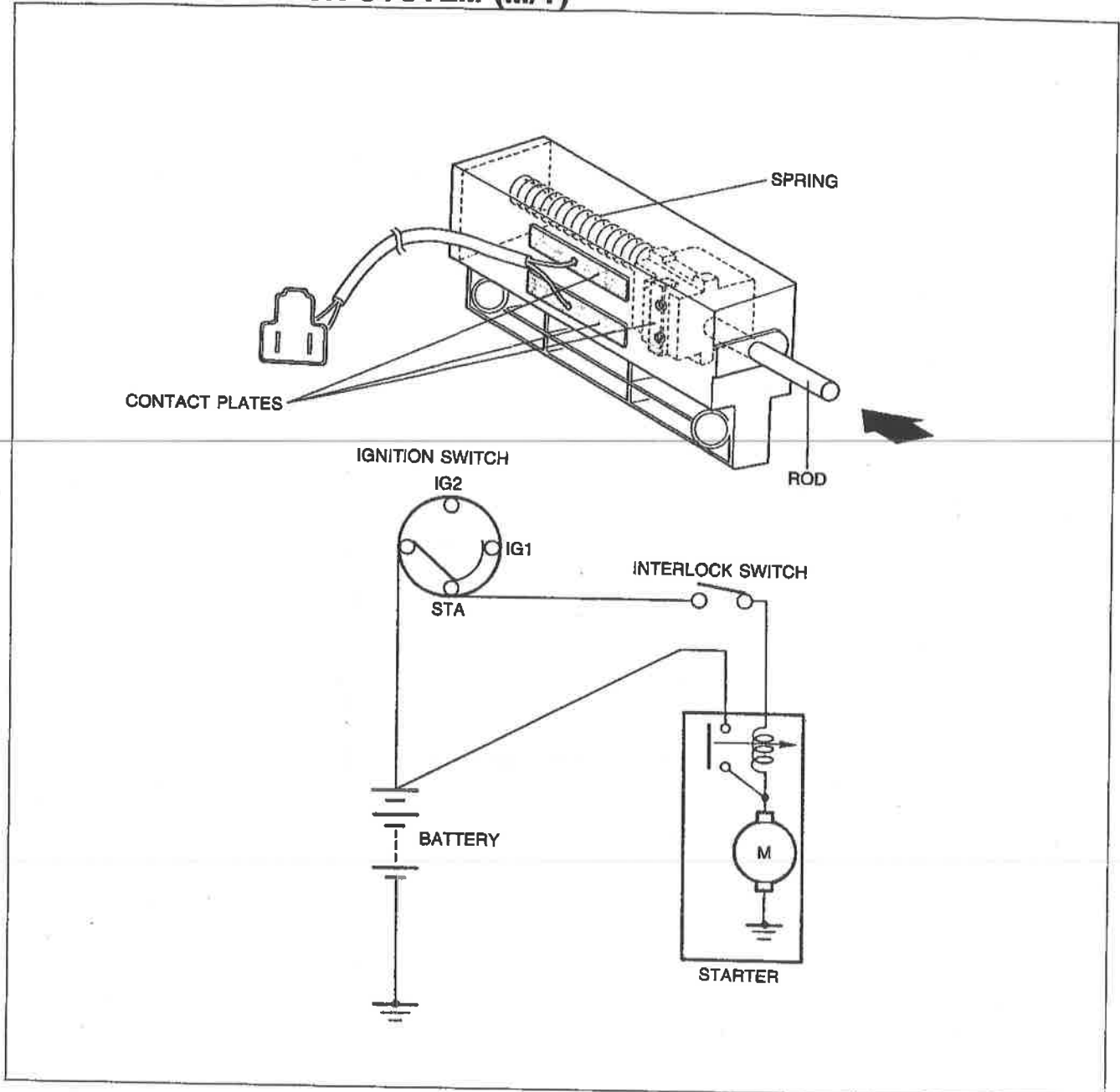


# CLUTCH

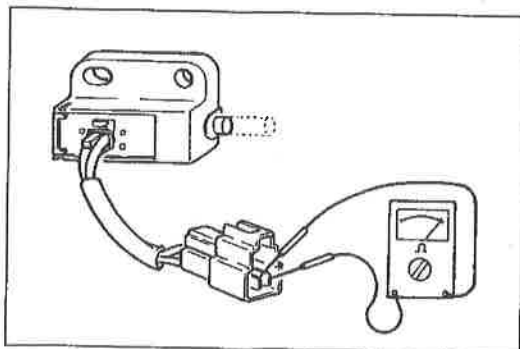
<b>INDEX</b> .....	H- 2
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<b>CLUTCH RELEASE CYLINDER</b> .....	H-12
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REMOVAL AND INSTALLATION.....	H-12
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OVERHAUL.....	H-13
<b>CLUTCH UNIT</b> .....	H-15
PREPARATION.....	H-15
REMOVAL AND INSTALLATION.....	H-16
<b>RELEASE BEARING</b> .....	H-18
INSPECTION.....	H-18
<b>CLUTCH COVER</b> .....	H-18
INSPECTION.....	H-18
<b>CLUTCH DISC</b> .....	H-18
INSPECTION.....	H-18
<b>FLYWHEEL</b> .....	H-19
INSPECTION.....	H-19

STARTER INTERLOCK SYSTEM (M/T)



9MU0GX-078

This system is similar to that of the inhibitor switch on an A/T vehicle. If the clutch pedal is not depressed during starting, battery power will not be supplied to the starter and it will not operate.



77U05X-016

**INTERLOCK SWITCH Inspection**

1. Disconnect the interlock switch connector.
2. Connect a circuit tester to the switch.
3. Check the continuity.

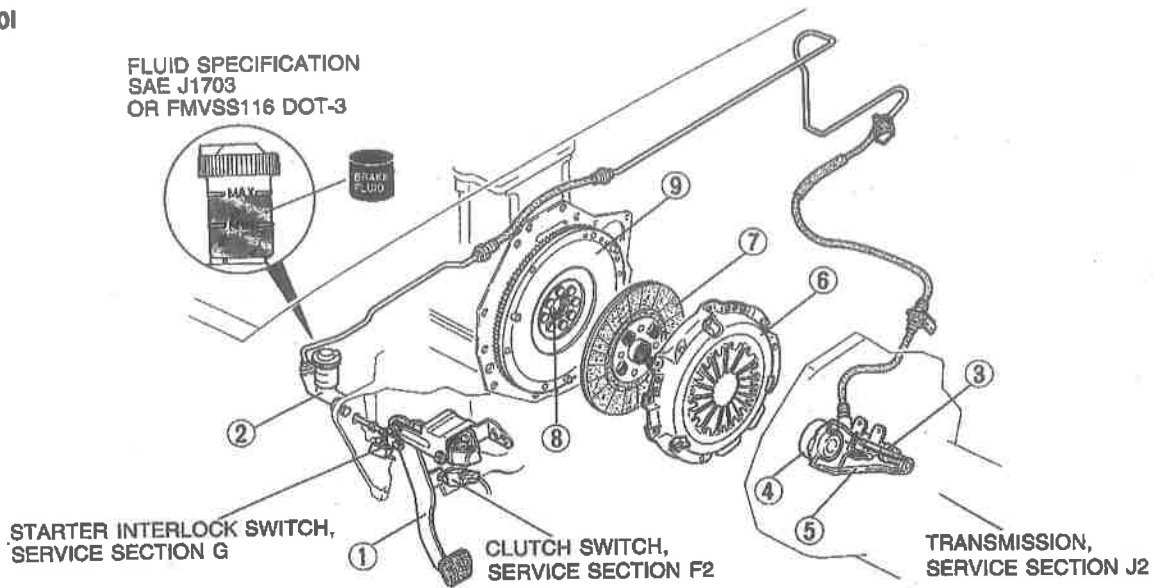
Pedal	Continuity
Depressed	Yes
Released	No

4. Replace the switch, if necessary.

### INDEX

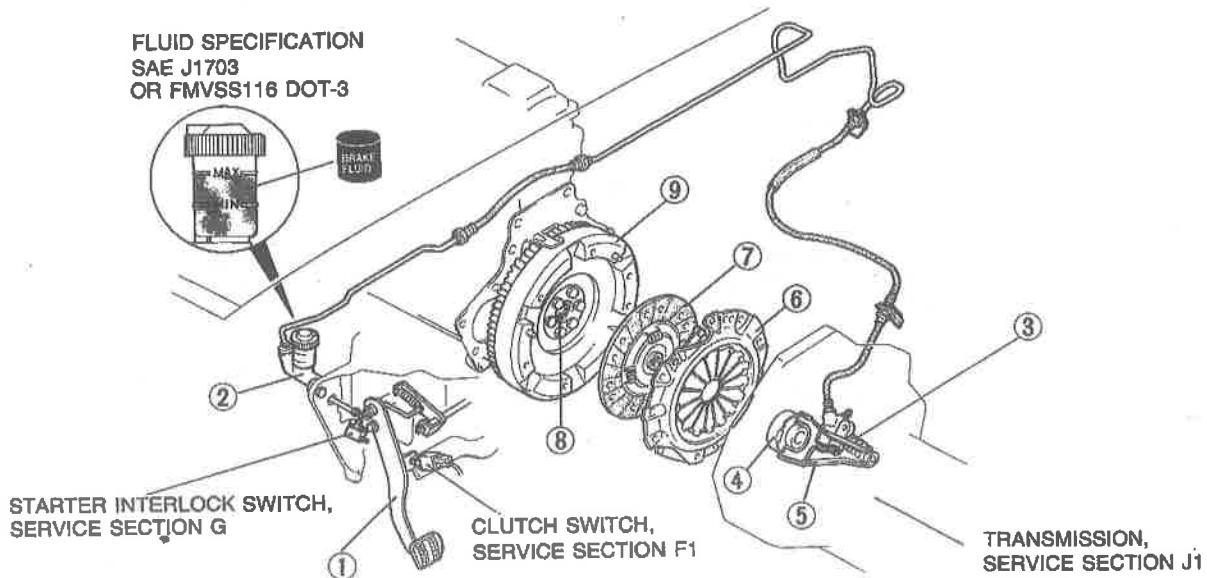
#### B2600i

FLUID SPECIFICATION  
SAE J1703  
OR FMVSS116 DOT-3



#### B2200

FLUID SPECIFICATION  
SAE J1703  
OR FMVSS116 DOT-3



2BUOHX-002

- |  |   |   |
|--|---|---|
| <p>1. Clutch pedal<br/>Adjustment..... page H- 5<br/>Removal, Inspection, and<br/>Installation..... page H- 6</p> <p>2. Clutch master cylinder<br/>Removal and<br/>Installation..... page H- 8<br/>Overhaul..... page H-10<br/>Air bleeding..... page H- 9</p> <p>3. Clutch release cylinder<br/>Removal and<br/>Installation..... page H-12<br/>Overhaul..... page H-13<br/>Air bleeding..... page H- 9</p> | <p>4. Release bearing<br/>Removal and<br/>Installation..... page H-16<br/>Inspection..... page H-18</p> <p>5. Release fork<br/>Removal and<br/>Installation..... page H-16</p> <p>6. Clutch cover<br/>Removal and<br/>Installation..... page H-16<br/>Inspection..... page H-18</p> | <p>7. Clutch disc<br/>Removal and<br/>Installation..... page H-16<br/>Inspection..... page H-18</p> <p>8. Pilot bearing<br/>B2200..... Section B1<br/>B2600i..... Section B2</p> <p>9. Flywheel<br/>Removal and<br/>Installation..... page H-16<br/>Inspection..... page H-19</p> |
|--|---|---|

OUTLINE

SPECIFICATIONS

Item		Model	B2600i	B2200	
Clutch control			Hydraulic		
Clutch cover	Type		Diaphragm spring		
	Set load	N (kg, lb)	5,494 (560, 1,232)	4,807 (490, 1,078)	
Clutch disc	Outer diameter	mm (in)	250 (9.84)	225 (8.86)	
	Inner diameter	mm (in)	160 (6.30)	150 (5.91)	
	Thickness	Pressure plate side	mm (in)	3.5 (0.14)	4.1 (0.16)
		Flywheel side	mm (in)	3.5 (0.14)	
Clutch pedal	Type		Suspended		
	Pedal ratio		6.0		
	Full stroke	mm (in)	135 (5.32)		
	Height	mm (in)	191–201 (7.52–7.91)	181–191 (7.13–7.52)	
Master cylinder inner diameter		mm (in)	15.87 (0.625)		
Release cylinder inner diameter		mm (in)	19.05 (0.750)		
Clutch fluid			SAE J1703 or FMVSS116 DOT-3		

1BU0HX-001

TROUBLESHOOTING GUIDE

Problem	Possible Cause	Remedy	Page
<b>Slipping</b>	Clutch disc facing worn excessively	Replace	H-16
	Clutch disc facing surface hardened or oil on surface	Repair or replace	H-16
	Pressure plate damaged	Repair or replace	H-16
	Diaphragm spring weakened or weakened	Replace	H-16
	Insufficient clutch pedal play	Adjust	H- 5
	Clutch pedal sticking	Repair or replace	H- 6
	Flywheel damaged	Repair or replace	H-16
<b>Faulty disengagement</b>	Excessive runout or damaged clutch disc	Replace	H-16
	Clutch disc splines rusted or worn	Remove rust or replace	H-16
	Oil on facing	Repair or replace	—
	Diaphragm spring weakened	Replace	H-16
	Excessive clutch pedal play	Adjust	H- 5
	Insufficient clutch fluid	Add fluid	H- 2
	Leakage of clutch fluid	Locate and repair or replace	—
<b>Clutch vibrates when accelerating</b>	Oil on facing	Repair or replace	H-16
	Torsion spring weakened	Replace	H-16
	Clutch disc facing hardened or damaged	Repair or replace	H-16
	Clutch disc facing rivets loose	Replace	H-16
	Pressure plate damaged or excessive runout	Replace	H-16
	Flywheel surface hardened or damaged	Repair or replace	H-16
	Loose or worn engine mount	Tighten or replace	—
<b>Clutch pedal sticking</b>	Pedal shaft not properly lubricated	Lubricate or replace	H- 6
<b>Abnormal noise</b>	Clutch release bearing damaged	Replace	H-16
	Poor lubrication of release bearing sleeve	Lubricate or replace	H-16
	Torsion spring weakened	Replace	H-16
	Excessive crankshaft end play	Repair	Refer to Section B
	Pilot bearing worn or damaged	Replace	H-16
	Worn pivot points of release fork	Repair or replace	H-16

2BU0HX-003

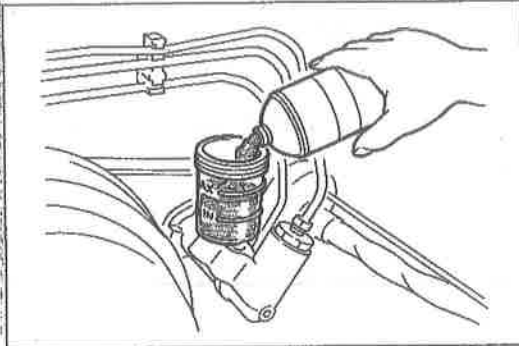
## CLUTCH FLUID

PREPARATION  
SST

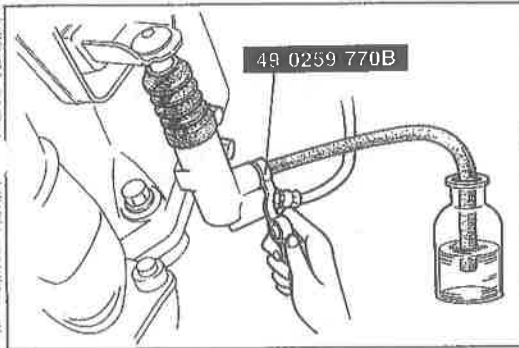
49 0259 770B  
Wrench, flare nut



9MU0HX-005



9MU0HX-006



9BU0HX-005

## REPLACEMENT

**Note**

The fluid in the reserve tank must be maintained at the 3/4 level or higher during replacement.

**Caution**

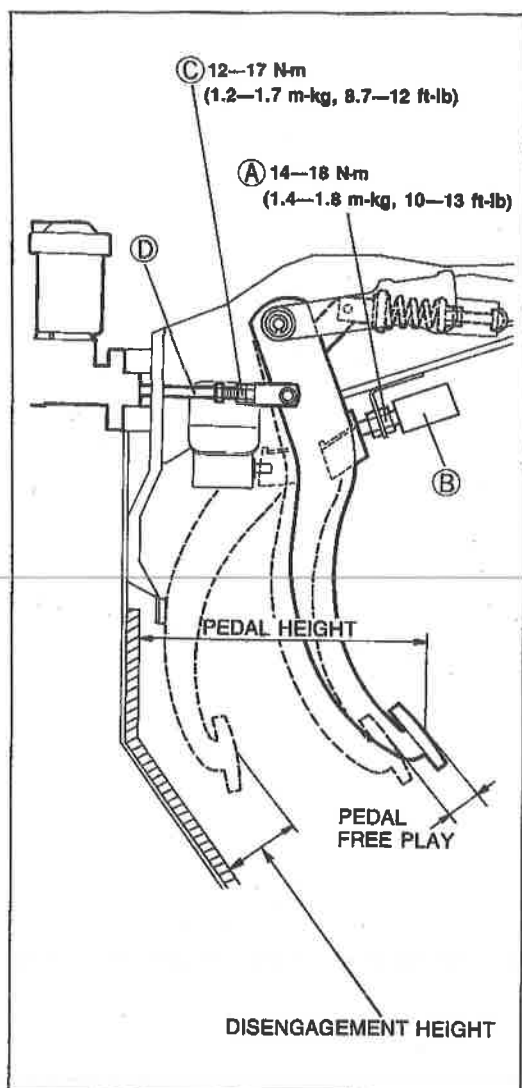
- a) Be careful not to spill clutch fluid on a painted surface. If this should happen, wash it off immediately.
- b) Do not mix different brands of clutch fluid.
- c) Do not reuse the clutch fluid which was drained out.

1. Draw the fluid from the reserve tank with a suction pump.
2. Remove the bleeder cap from the clutch release cylinder and attach a vinyl hose to the bleeder plug.
3. Place the other end of the vinyl hose in a container.
4. Slowly pump the clutch pedal several times.
5. With the clutch pedal depressed, loosen the bleeder screw with the **SST** to let fluid escape. Close the bleeder screw with the **SST**.
6. Repeat Steps 4 and 5 until only clean fluid is seen.
7. Tighten the bleeder screw.

**Tightening torque:**

**5.9—6.9 N·m (60—70 cm·kg, 52—61 in·lb)**

8. Add fluid to the MAX mark.
9. Check for correct clutch operation.



9BU0HX-006

## CLUTCH PEDAL

### ADJUSTMENT

#### Clutch Pedal Height

##### Inspection

Measure the distance from the upper surface of the pedal pad to the carpet.

##### Pedal height

**B2600l: 191—201mm (7.52—7.91 in)**

**B2200 : 181—191mm (7.13—7.52 in)**  
(With carpet)

If necessary, adjust the pedal height.

##### Adjustment

1. Loosen locknut (A) and turn clutch switch (B) until the height is correct.
2. Tighten locknut (A).

##### Tightening torque:

**14—18 N·m (1.4—1.8 m·kg, 10—13 ft·lb)**

3. After the adjustment, inspect the pedal free play.

#### Clutch Pedal Free Play

##### Inspection

Depress the clutch pedal by hand until clutch resistance is felt.

**Pedal free play: 0.6—3.0mm (0.02—0.12 in)**

**Total pedal free play: 5—13mm (0.20—0.51 in)**

If necessary, adjust the pedal free play.

##### Adjustment

1. Loosen locknut (C) and turn push rod (D) until pedal free play is correct.
2. Check that the disengagement height from the upper surface of the pedal height to the carpet is correct when the pedal is fully depressed.

##### Minimum disengagement height

**B2600l: 71mm (2.80 in)**

**B2200 : 66mm (2.60 in)**

(With carpet)

3. Tighten locknut (C).

##### Tightening torque:

**12—17 N·m (1.2—1.7 m·kg, 8.7—12 ft·lb)**

4. After adjustment, inspect the pedal height.

## CLUTCH PEDAL

### REMOVAL, INSPECTION, AND INSTALLATION

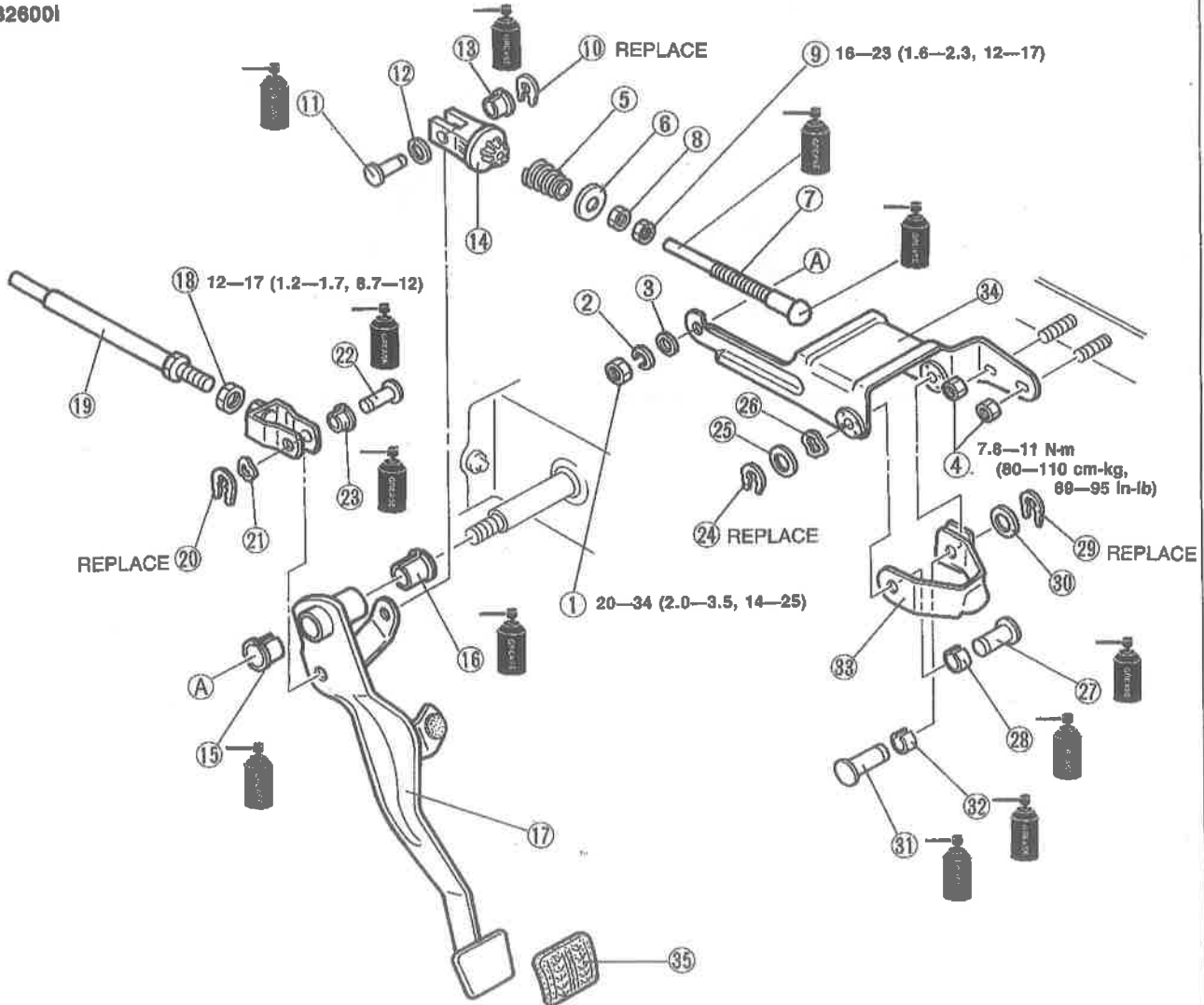
Remove in the order shown in the figure.

Inspect all parts and repair or replace as necessary.  
Install in the reverse order of removal.

#### Note

Apply white grease to the bushings and pins when installing.

B28001

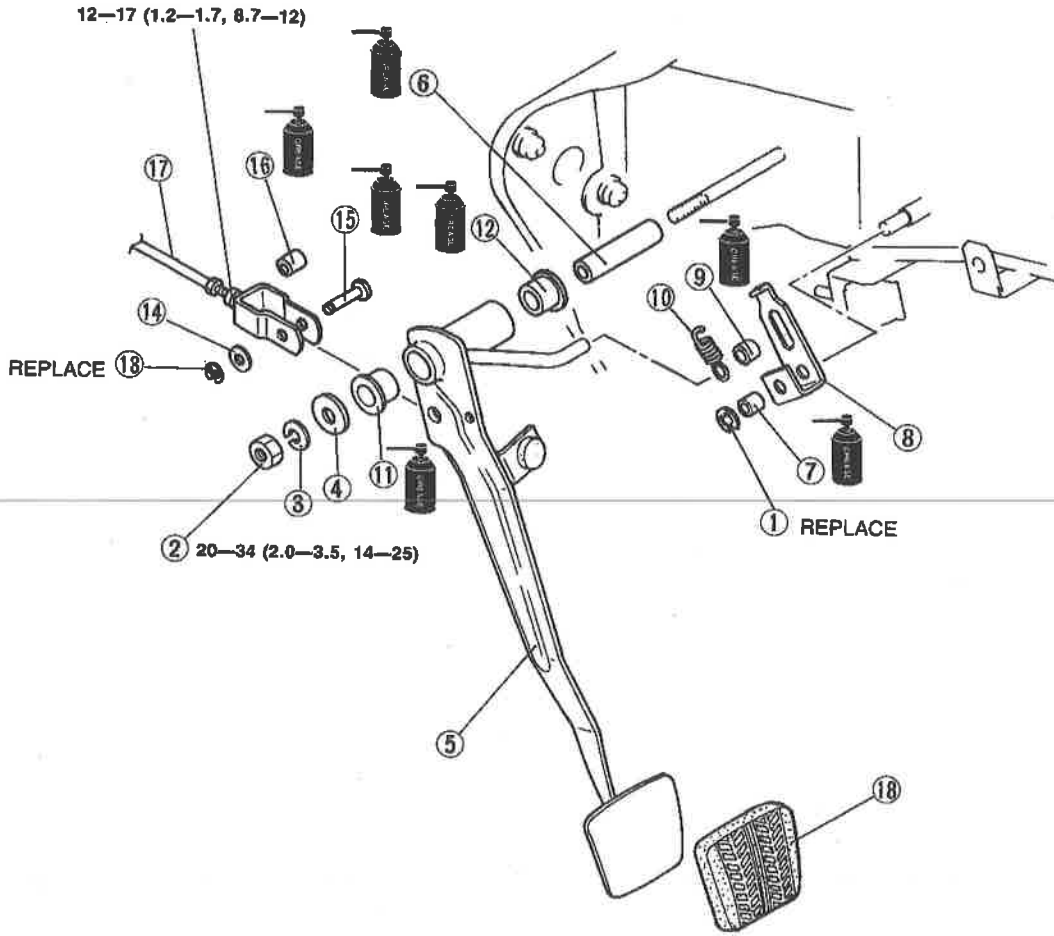


N·m (m·kg, ft·lb)

0BU0HX-001

- |                          |                          |                     |
|--------------------------|--------------------------|---------------------|
| 1. Nut                   | 14. Spring seat          | 25. Spacer          |
| 2. Lock washer           | 15. Bushing              | 26. Wave washer     |
| 3. Spacer                | 16. Bushing              | 27. Pin             |
| 4. Nut                   | 17. Clutch pedal         | 28. Bushing         |
| 5. Assist spring         | Adjustment..... page H-5 | Inspect for wear    |
| Adjustment..... page H-7 | 18. Nut                  | 29. Clip            |
| 6. Spring seat           | 19. Push rod             | 30. Spacer          |
| 7. Clutch pedal rod      | Inspect for damage or    | 31. Pin             |
| 8. Assist spring nut     | bending                  | 32. Bushing         |
| 9. Locknut               | 20. Clip                 | 33. Assist lever    |
| 10. Clip                 | 21. Wave washer          | 34. Assist bracket  |
| 11. Pin                  | 22. Pin                  | 35. Pedal pad       |
| 12. Spacer               | 23. Bushing              | Inspect for wear or |
| 13. Bushing              | 24. Clip                 | damage              |

B2200



N-m (m-kg, ft-lb)  
0BU0HX-002

- |                     |                         |                               |
|---------------------|-------------------------|-------------------------------|
| 1. Clip             | 8. Clutch assist lever  | 16. Spacer                    |
| 2. Nut              | 9. Assist lever bushing | 17. Push rod                  |
| 3. Washer           | 10. Spring              | Inspect for damage or bending |
| 4. Spacer           | 11. Bushing             | 18. Pedal pad                 |
| 5. Clutch pedal     | 12. Bushing             | Inspect for wear or damage    |
| Adjustment..... H-5 | 13. Clip                |                               |
| 6. Spacer           | 14. Spacer              |                               |
| 7. Bushing          | 15. Pin                 |                               |

### Adjustment (B2600I)

#### Assist spring

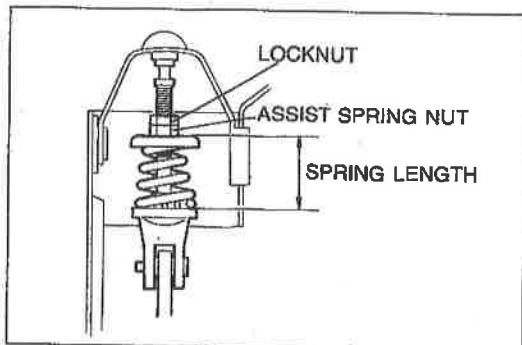
1. Turn the assist spring nut until the spring length is correct.

**Standard spring length:**  
36.5—37.5mm (1.44—1.48 in)

2. Tighten the locknut.

**Tightening torque:**  
16—23 N-m (1.6—2.3 m-kg, 12—17 ft-lb)

**Clutch pedal height and free play**  
Refer to page H-5.



9MU0HX-010



### CLUTCH MASTER CYLINDER

#### PREPARATION LIST

49 0259 770B

Wrench, flare nut



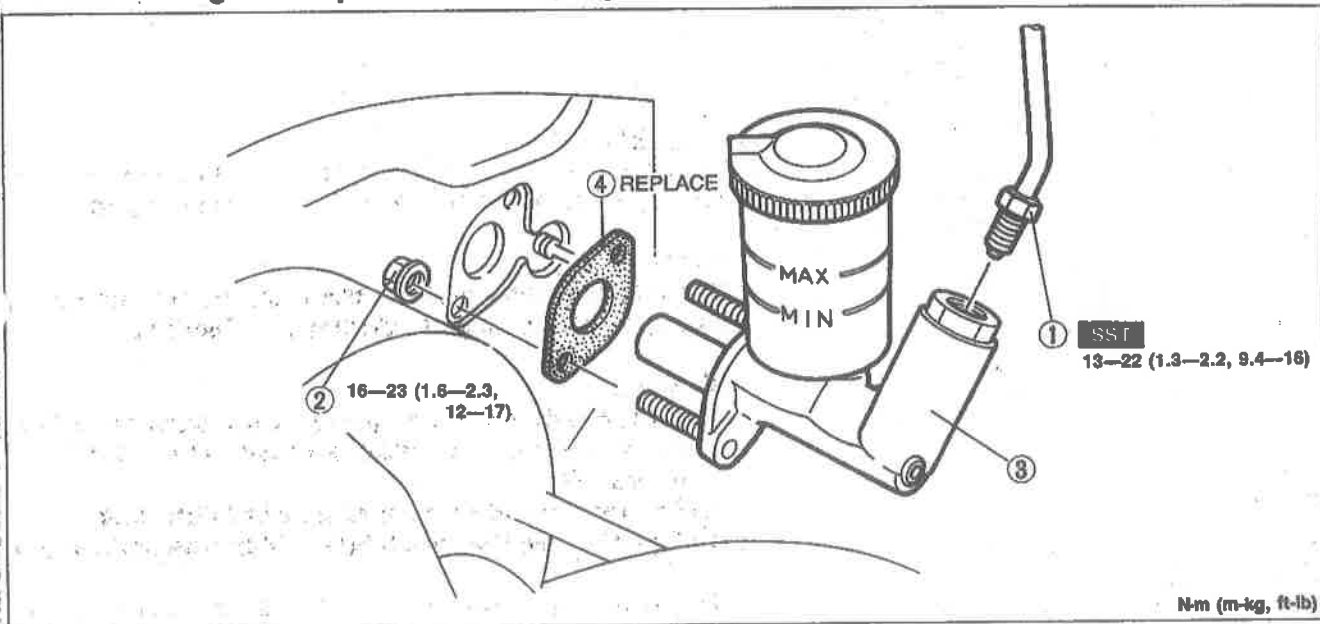
9MU0HX-011

#### REMOVAL AND INSTALLATION

Remove in the order shown in the figure, referring to **Removal note**.  
Install in the reverse order of removal, referring to **Installation note**.

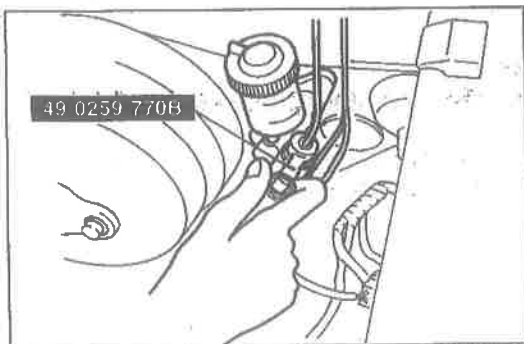
#### Caution

**Clutch fluid will damage painted surfaces. Be sure to use a container or rags to collect it. If fluid does get on a painted surface, wipe it off immediately with a rag.**



- 1. Clutch pipe  
Removal..... page H- 8  
Installation..... page H- 9
- 2. Nut

- 3. Clutch master cylinder  
Overhaul..... page H-10  
Check for fluid leakage  
from the cylinder bore.  
AIR BLEEDING  
..... page H- 9
- 4. Gasket

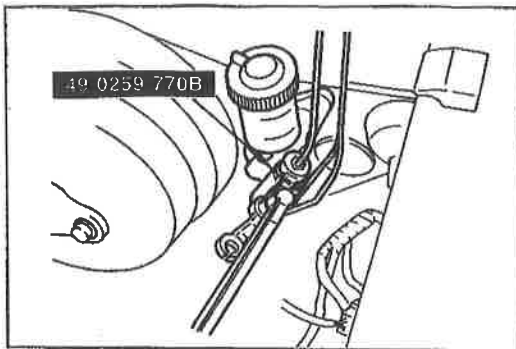


9MU0HX-013

#### Removal note

##### Clutch pipe

Disconnect the clutch pipe with the **SST**.



1BU0HX-002

### Installation note

#### Clutch pipe

Tighten the clutch pipe with the **SST**.

#### Tightening torque:

**13—22 N·m (1.3—2.2 m·kg, 9.4—16 ft·lb)**

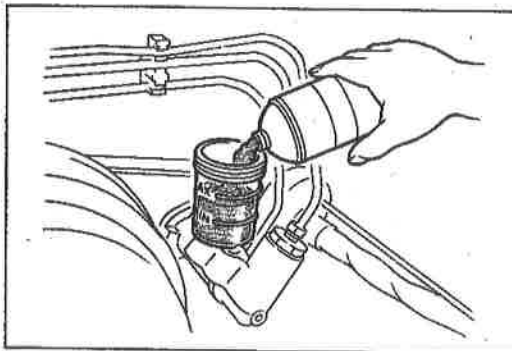
#### Air Bleeding

After installation, bleed the clutch system.  
(Refer to below.)

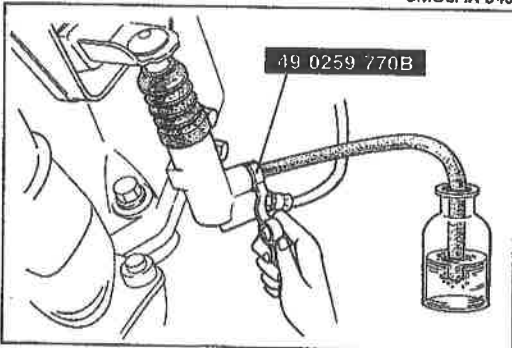
#### Inspection and Adjustment

#### Clutch pedal height and free play

Refer to page H-5



9MU0HX-049



9BU0HX-012

### AIR BLEEDING

The clutch hydraulic system must be bled to remove air introduced whenever a hydraulic line is disconnected.

#### Note

**The fluid in the reserve tank must be maintained at the 3/4 level or higher during air bleeding.**

#### Caution

- a) **Clutch fluid will damage a painted surface. If fluid does get on a painted surface, wipe it off immediately.**
- b) **Do not mix different brands of clutch fluid.**
- c) **Do not reuse the clutch fluid which was drained out.**

1. Remove the bleeder cap from the clutch release cylinder and attach a vinyl hose to the bleeder plug.
2. Insert the other end of the vinyl hose in a clear container.
3. Slowly pump the clutch pedal several times.
4. While depressing the pedal, loosen the bleeder screw with the **SST** to let fluid and air escape. Close the bleeder screw with the **SST**.
5. Repeat Steps 3 and 4 until no air bubbles are seen in the fluid.
6. Tighten the bleeder screw.

#### Tightening torque:

**5.9—6.9 N·m (60—70 cm·kg, 52—61 in·lb)**

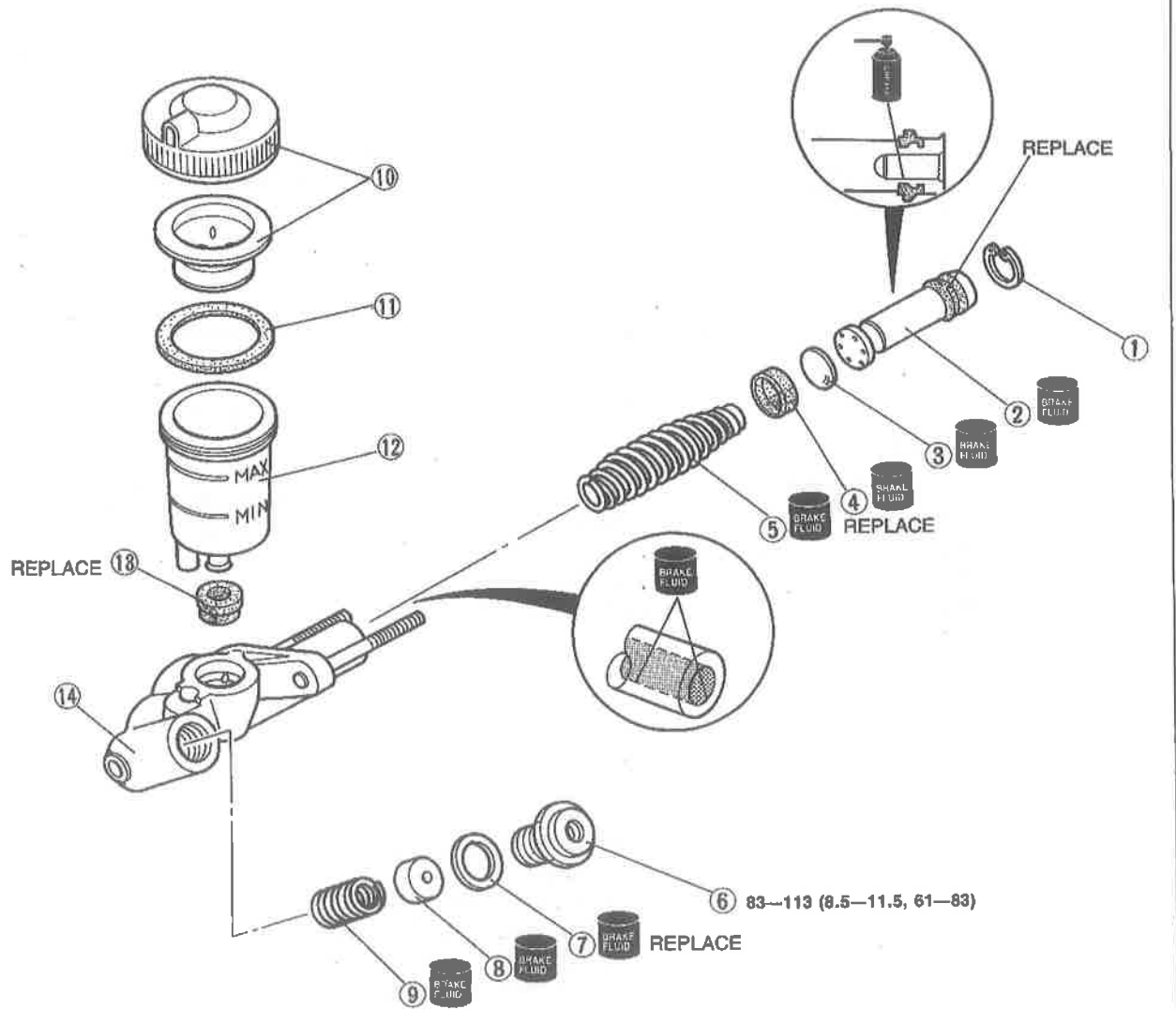
7. Check for correct clutch operation.
8. Verify that there is no fluid leakage.

### OVERHAUL

Disassemble in the order shown in the figure, referring to **Disassembly note**.  
 Inspect all parts and repair or replace as necessary.  
 Assemble in the reverse order of disassembly, referring to **Assembly note**.

### Caution

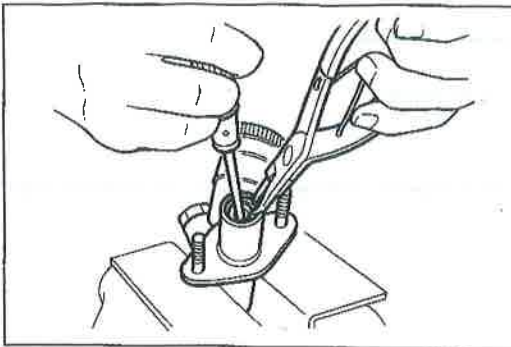
**Clean the disassembled parts in solvent and blow through all ports and passages with compressed air.**



N-m (m-kg, ft-lb)

0BU0HX-003

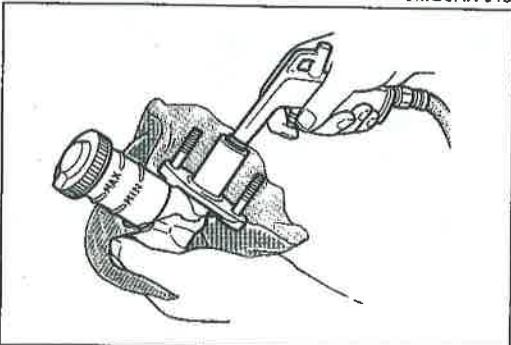
- |   |   |  |
|---|---|--|
| 1. Snap ring<br>Removal..... page H-11<br>Installation..... page H-12   | 3. Spacer   | 10. Tank cap baffle  |
| 2. Piston and secondary cup assembly<br>Removal..... page H-11<br>Inspect for wear, scoring, or cracks<br>Installation..... page H-11 | 4. Primary cup                                    | 11. Packing  |
|   | 5. Return spring                                  | 12. Reserve tank   |
|   | 6. Joint bolt                                     | 13. Bushing  |
|   | 7. Packing  | 14. Master cylinder body<br>Inspect cylinder bore for scoring or corrosion |
|   | 8. One-way valve piston<br>Removal..... page H-11 |  |
|   | 9. Return spring                                  |  |



9MU0HX-018



9MU0HX-019



9MU0HX-020

### Disassembly note

#### Snap ring

#### Note

**Do not damage the push rod contact surface of the piston.**

Press down on the piston and remove the snap ring with snap-ring pliers.

### Piston and secondary cup assembly

#### Caution

**Hold a rag over the master cylinder to prevent the piston and secondary cup assembly from jumping out.**

Remove the piston and secondary cup assembly, spacer, and primary cup by applying compressed air through the clutch pipe installation hole.

### One-way valve piston and return spring

#### Caution

**Hold a rag over the master cylinder to prevent the piston and spring from jumping out.**

Remove the piston by applying compressed air through the cylinder bore.

### Assembly note

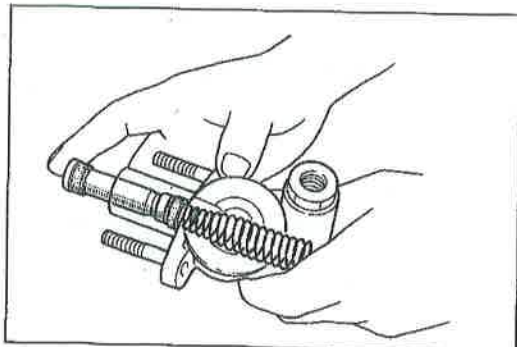
#### Caution

- Before assembly, make sure all parts are completely clean.**
- Do not mix different brands of clutch fluid.**
- Do not reuse the clutch fluid which was drained out.**
- Apply the specified clutch fluid to the piston and secondary cup assembly, spacer, primary cup, and cylinder bore before assembly.**
- Replace parts with new ones whenever specified to do so.**

9MU0HX-021

### Piston and secondary cup assembly

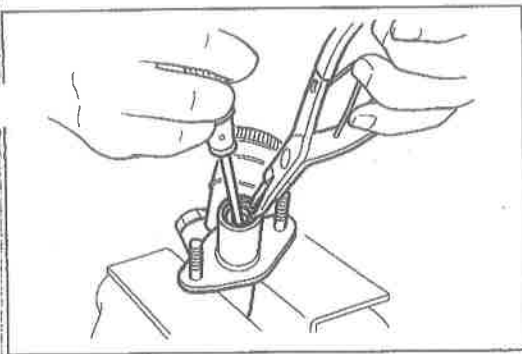
Install the spring, primary cup, spacer, and piston and secondary cup assembly, noting the proper direction of the parts. (Refer to page H-10.)



9BU0HX-014

# H

## CLUTCH MASTER CYLINDER, CLUTCH RELEASE CYLINDER



9MU0HX-023

### Snap ring

#### Note

Do not damage the push rod contact surface of the piston.

While pressing the piston, install the snap ring.

## CLUTCH RELEASE CYLINDER

### PREPARATION SST

49 0259 770B

Wrench, flare nut



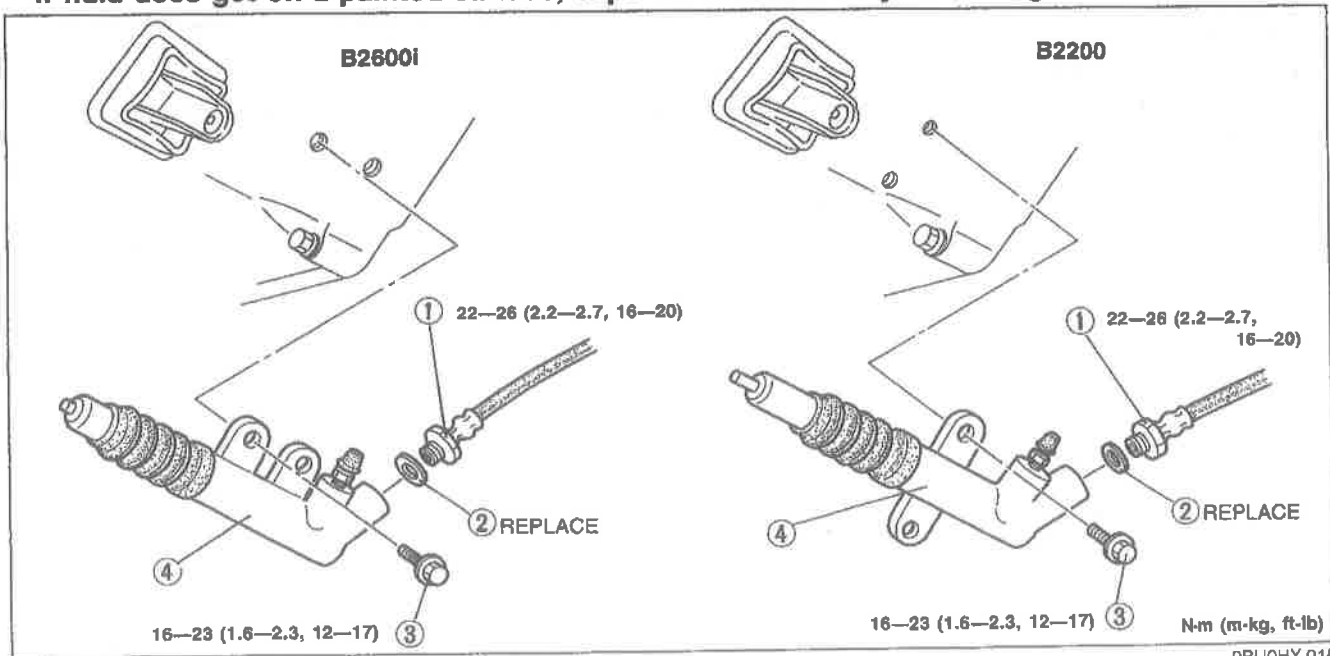
9MU0HX-024

### REMOVAL AND INSTALLATION

Remove in the order shown in the figure, referring to **Removal note**.  
Install in the reverse order of removal, referring to **Installation note**.

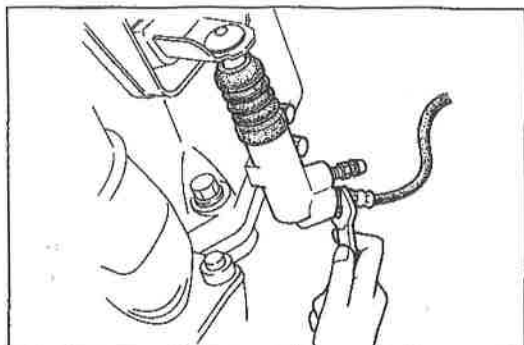
#### Caution

Clutch fluid will damage painted surfaces. Be sure to use a container or rags to collect it.  
If fluid does get on a painted surface, wipe it off immediately with a rag.



- 1. Flexible hose
  - Removal ..... page H-13
  - Installation ..... page H-13
- 2. Packing
- 3. Bolt

- 4. Clutch release cylinder
  - Remove boot and check for fluid leakage
  - Overhaul..... page H-13
  - AIR BLEEDING ..... page H- 9

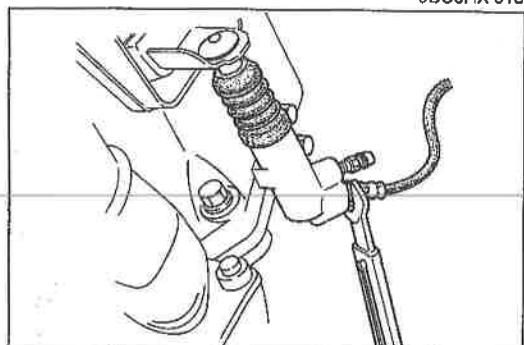


9BU0HX-016

**Removal note****Flexible hose****Caution**

- a) After disconnecting the flexible hose, plug the flexible hose to avoid fluid leakage.
- b) The flexible hose must not be twisted.

Disconnect the flexible hose.



9BU0HX-017

**Installation note****Flexible hose**

Tighten the flexible hose.

**Tightening torque:**

22—26 Nm (2.2—2.7 m-kg, 16—20 ft-lb)

**Air Bleeding**

After installation, bleed the clutch system.  
(Refer to page H-9.)

**OVERHAUL**

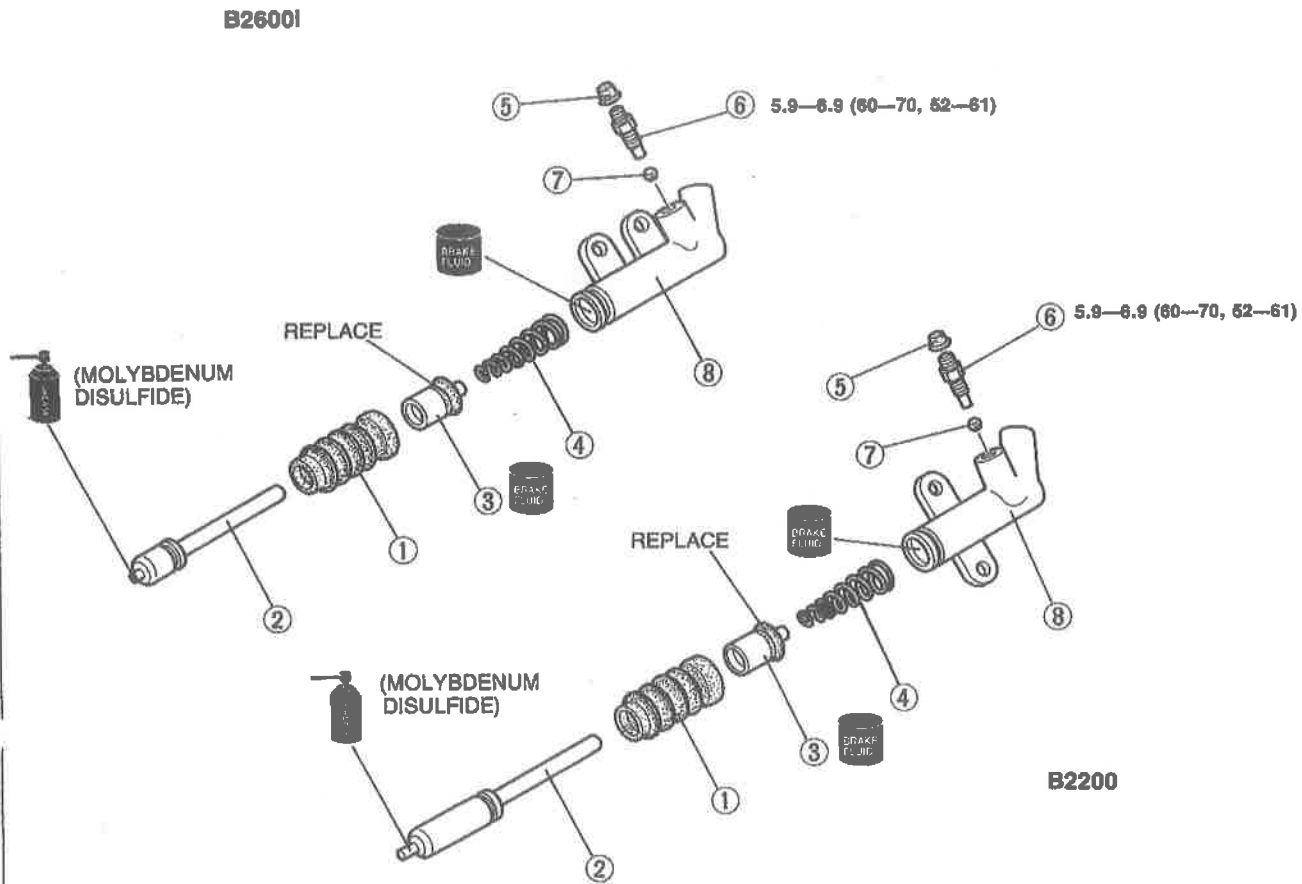
Disassemble in the order shown in the figure, referring to **Disassembly note**.  
Inspect all parts and repair or replace as necessary.  
Assemble in the reverse order of disassembly.

**Caution**

- a) Clean the disassembled parts in solvent and blow through all ports and passages with compressed air.
- b) Before assembly, make sure all parts are completely clean.
- c) Apply the specified clutch fluid to the piston and cup assembly and cylinder bore before assembly.

2BU0HX-006

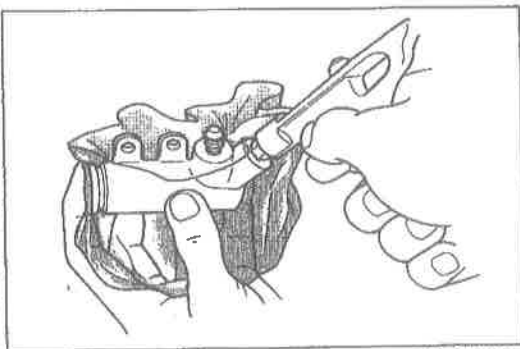
## CLUTCH RELEASE CYLINDER



N-m (cm-kg, in-lb)

9BU0HX-018

- |                            |                  |                           |
|----------------------------|------------------|---------------------------|
| 1. Boot                    | 4. Spring        | 8. Release cylinder body  |
| 2. Push rod                | 5. Bleeder cap   | Inspect cylinder bore for |
| 3. Piston and cup assembly | 6. Bleeder screw | scoring or corrosion      |
| Removal..... page H-14     | 7. Steel ball    |                           |
| Inspect for wear, scoring, |                  |                           |
| or cracks                  |                  |                           |



9BU0HX-019

### Disassembly note Piston and cup assembly






#### Caution

Hold a rag over the release cylinder to prevent the piston and cup assembly from jumping out.

Remove the piston and cup assembly by applying compressed air through the flexible hose installation hole.

CLUTCH UNIT

PREPARATION  
SST

<p>49 E011 1A0</p> <p>Brake set, ring gear</p> 	<p>49 E011 103</p> <p>Shaft (Part of 49 E011 1A0)</p> 	<p>49 E011 104</p> <p>Collar (Part of 49 E011 1A0)</p> 
<p>49 E011 105</p> <p>Stopper (Part of 49 E011 1A0)</p> 	<p>49 SE01 310A</p> <p>Center tool, clutch disc</p> 	<p>2BU0HX-004</p>

2BU0HX-004

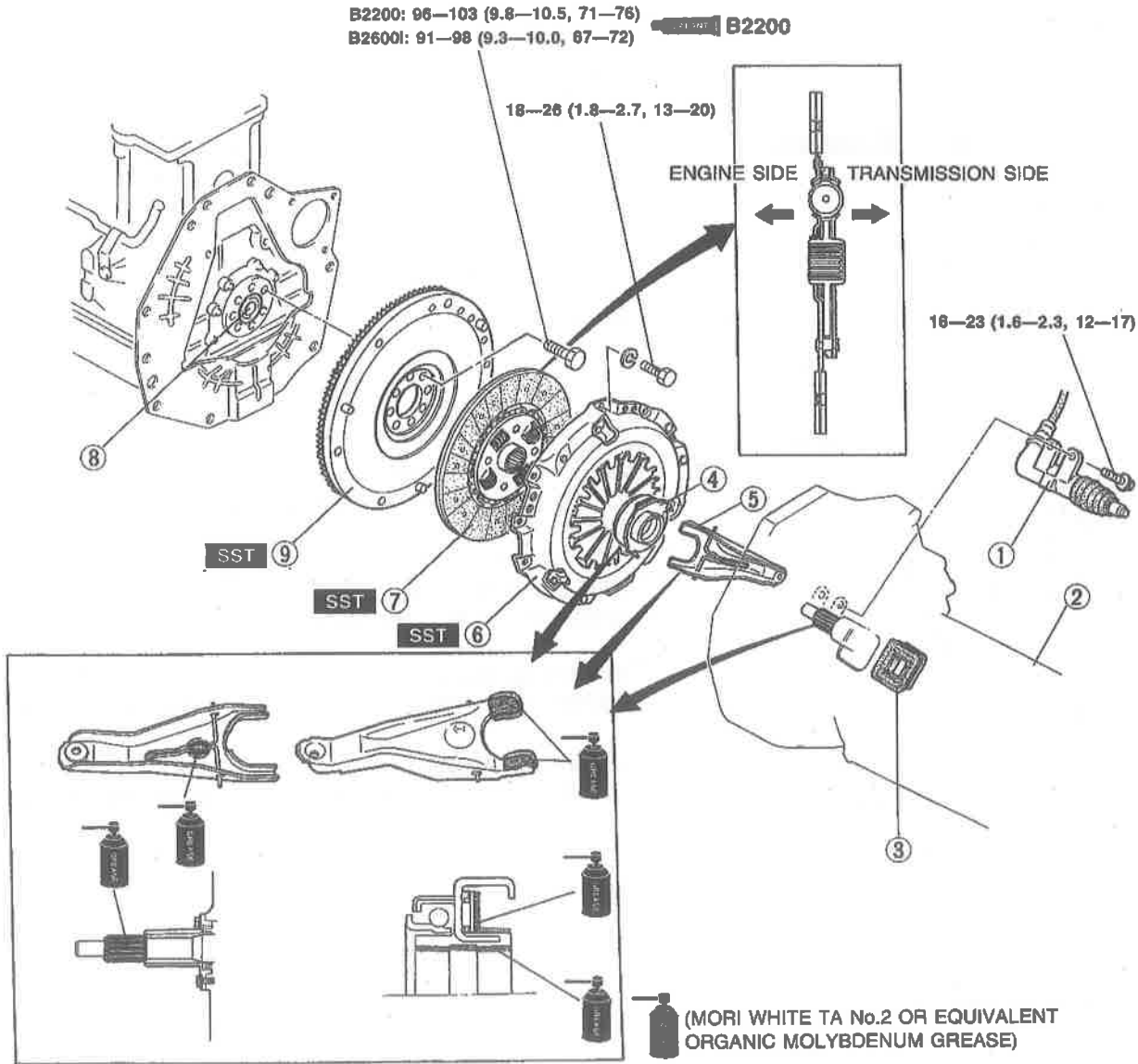


### REMOVAL AND INSTALLATION

Remove in the order shown in the figure, referring to **Removal note**.  
Install in the reverse order of removal, referring to **Installation note**.

#### Note

- a) Remove the clutch release cylinder with the flexible hose connected.
- b) Do not remove the pilot bearing unless necessary.



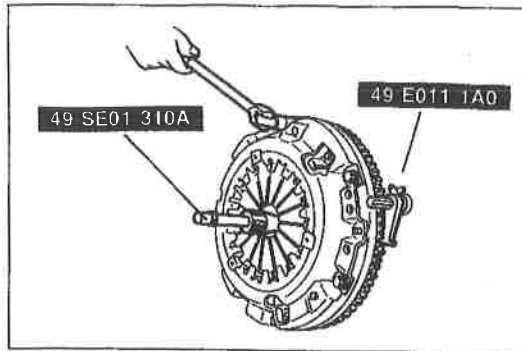
N-m (m-kg, ft-lb)

2BU0HX-005

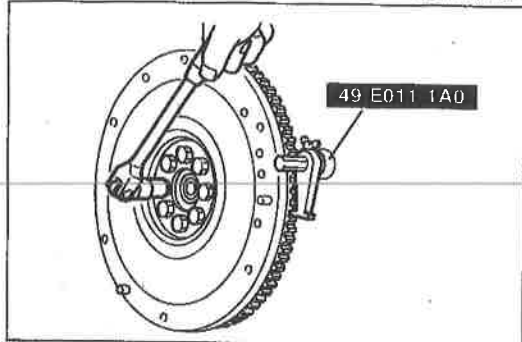
1. Clutch release cylinder
2. Transmission  
Service..... Section J1 or J2
3. Boot
4. Release bearing  
Inspection ..... page H-18
5. Release fork

6. Clutch cover  
Removal..... page H-17  
Inspection ..... page H-18  
Installation..... page H-18
7. Clutch disc  
Removal..... page H-17  
Inspection ..... page H-18  
Installation..... page H-17

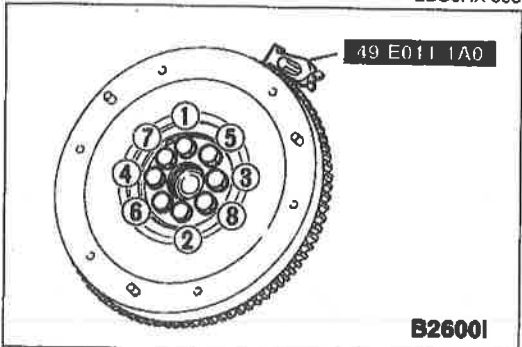
8. Pilot bearing  
B2200 ..... Section B1  
B2600i ..... Section B2
9. Flywheel  
Removal..... page H-17  
Inspection ..... page H-19  
Installation..... page H-17



2BU0HX-007

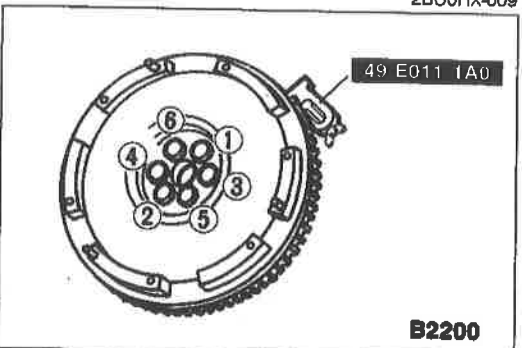


2BU0HX-008



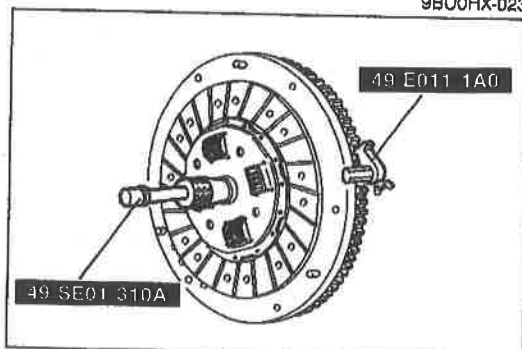
B2600I

2BU0HX-009



B2200

9BU0HX-023



9BU0HX-024

## Removal note

### Clutch cover and disc

1. Install the **SST** or equivalent.
2. Loosen each bolt one turn at a time in a crisscross pattern until spring tension is released. Then remove the clutch cover and disc.

### Flywheel

1. Hold the flywheel with the **SST** or equivalent.
2. Remove the flywheel.

## Installation note

### Flywheel

1. Remove any old sealant from the bolts and bolt holes. If old sealant can not be removed from the bolt, replace it. (B2200)
2. Apply sealant to the bolt threads. (B2200)
3. Install the flywheel and **SST** or equivalent.
4. Tighten the bolts in the pattern shown.

### Tightening torque

B2600i: 91—98 N·m (9.3—10.0 m·kg, 67—72 ft·lb)

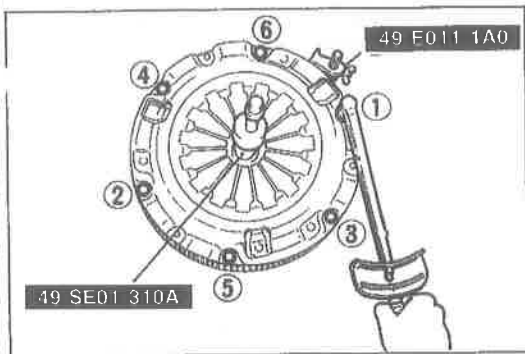
### Tightening torque

B2200: 96—103 N·m (9.8—10.5 m·kg, 71—76 ft·lb)

## Clutch disc

1. Clean the clutch disc splines and main drive gear splines, then apply Mori White TA No.2 or equivalent organic molybdenum grease.
2. Set the clutch disc into position with the **SST**.

# H CLUTCH UNIT, RELEASE BEARING, CLUTCH COVER, CLUTCH DISC



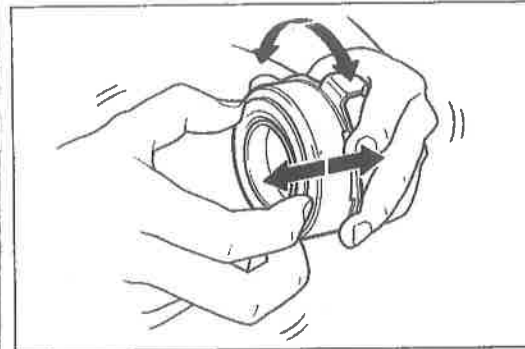
2BU0HX-010

## Clutch cover

1. Align the dowel holes with the flywheel dowels.
2. Tighten the bolts evenly and gradually in the pattern shown with the **SST** or equivalent.

## Tightening torque:

**18—26 N·m (1.8—2.7 m·kg, 13—20 ft·lb)**



9MU0HX-040

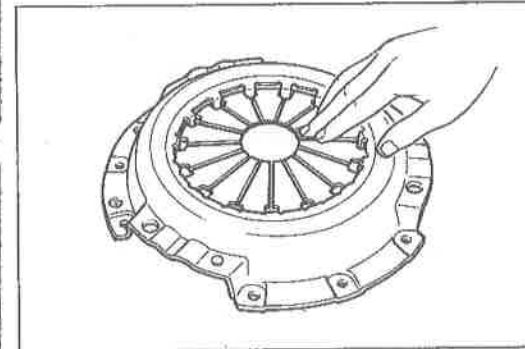
## RELEASE BEARING

### INSPECTION

Turn the bearing while applying force in the axial direction. If the bearing sticks or has excessive resistance, replace it.

### Note

**The clutch release bearing is a sealed bearing and must not be washed in solvent.**



9MU0HX-041

## CLUTCH COVER

### INSPECTION

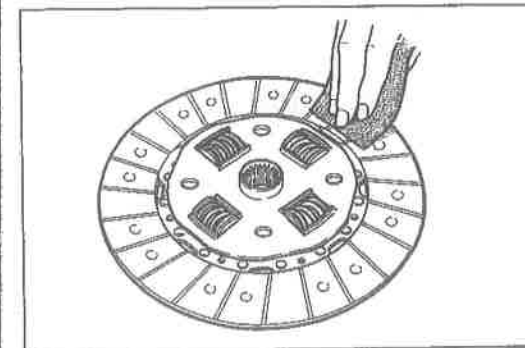
1. Inspect the contact surface of the clutch disc for scoring, cracks, or burning, repair or replace as necessary.

### Note

**Minor scoring or burning should be removed with emery paper.**

2. Inspect the contact surface of the clutch release bearing for wear or cracks.

If there is wear or cracks, replace the clutch cover.



9MU0HX-042

## CLUTCH DISC

### INSPECTION

1. Inspect the lining surface for burning or oil contamination. Replace it if it is badly burned or oil soaked.

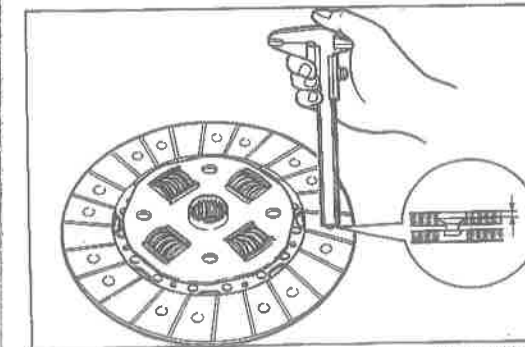
### Note

**Use sandpaper if the trouble is minor.**

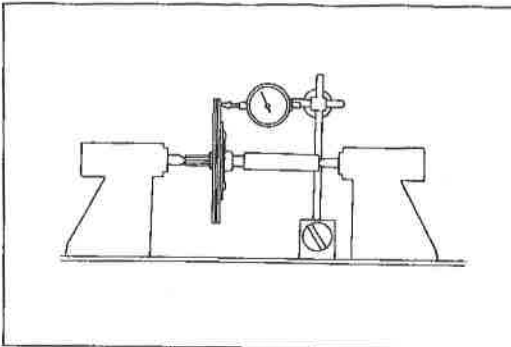
2. Inspect for loose facing rivets or torsion springs. Replace the clutch disc if any are loose.

3. Measure the thickness of the lining at a rivet head on both sides with vernier calipers. Replace it if less than minimum.

**Minimum thickness: 0.3mm (0.012 in)**



9MU0HX-043



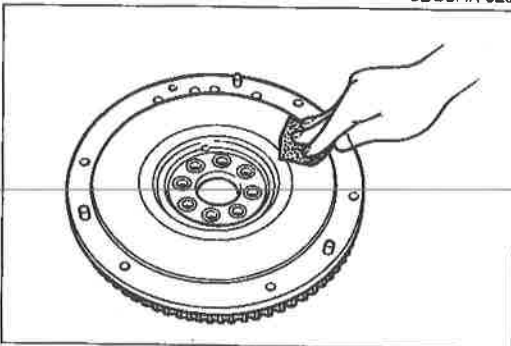
9BU0HX-025

4. Measure the clutch disc runout with a dial indicator. Replace the clutch disc if runout is excessive.

**Maximum runout**

**B2600i: 1.0mm (0.039 in)**

**B2200 : 0.7mm (0.028 in)**



9MU0HX-046

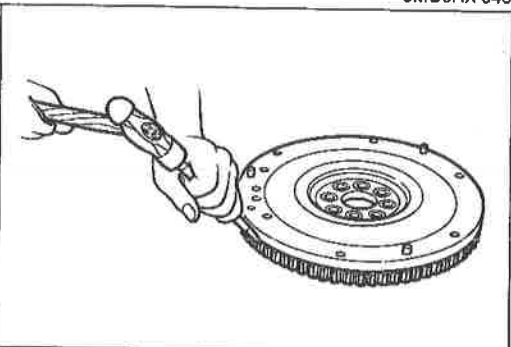
## FLYWHEEL

### INSPECTION

1. Inspect the contact surface of the clutch disc for scoring, cracks, or burning, repair or replace as necessary.

**Note**

**Minor scoring or burning should be removed with emery paper.**



1BU0HX-003

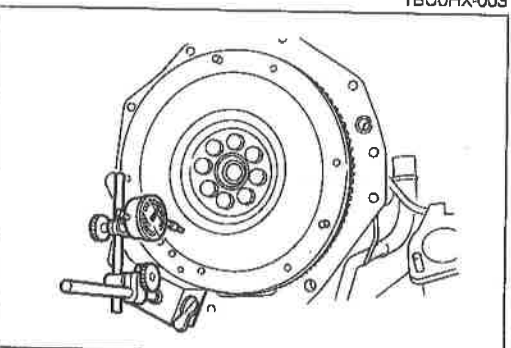
2. Inspect the ring gear teeth for wear or damage. If necessary, replace the ring gear as follows:

- (1) Heat the ring gear with a blowtorch. Tap around the gear to remove it from the flywheel.

- (2) Heat the new ring gear to **250—300°C (482—572°F)**; then fit it onto the flywheel.

**Note**

**The beveled side of the ring gear must face the engine side.**

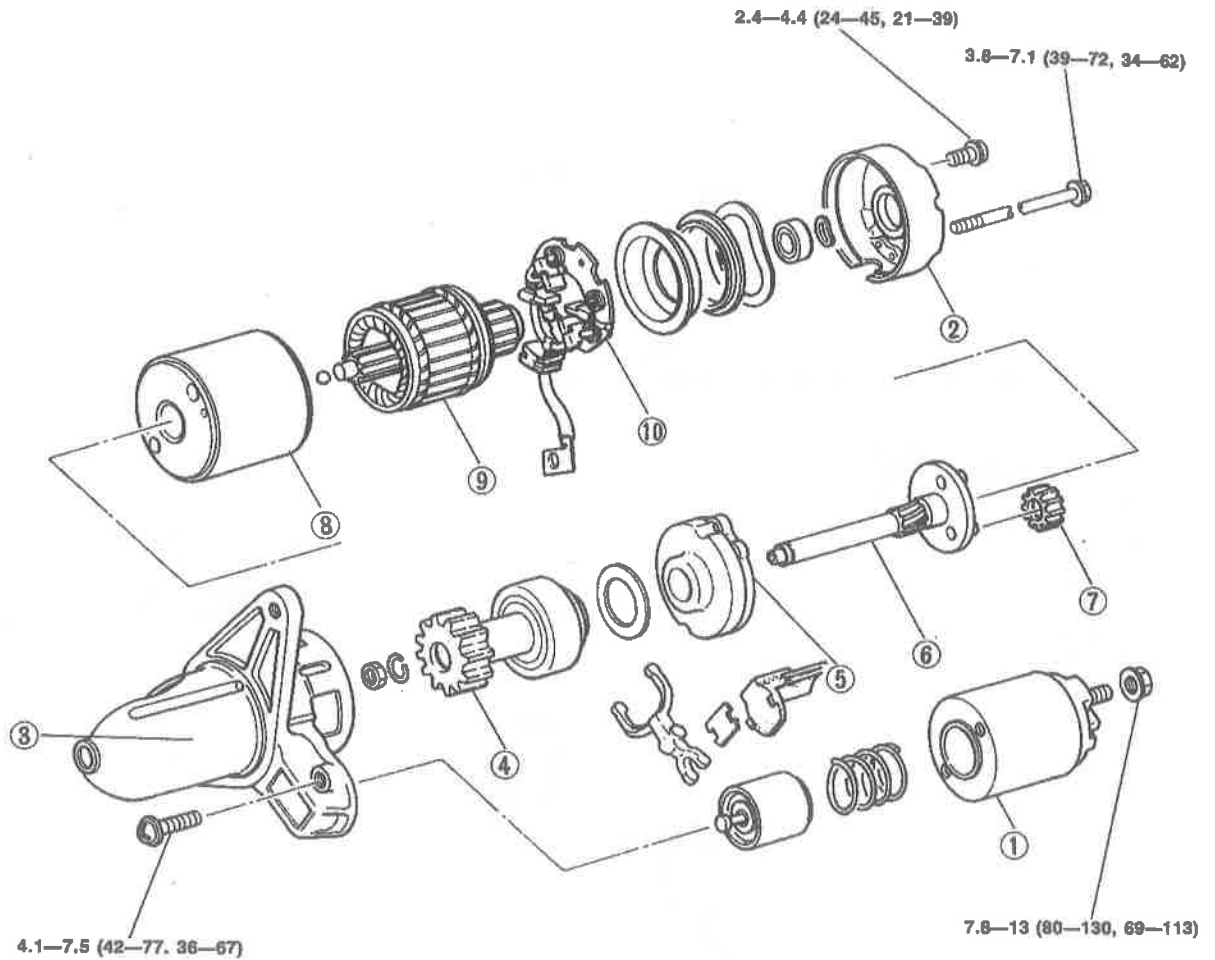


9MU0HX-048

3. Measure the flywheel runout with a dial indicator. Replace the flywheel if runout is excessive.

**Maximum runout: 0.2 mm (0.008 in)**

F2 (CARBURETOR, EGI) A/T  
(COAXIAL REDUCTION TYPE 1.4 kW)



N·m (cm·kg, in·lb)

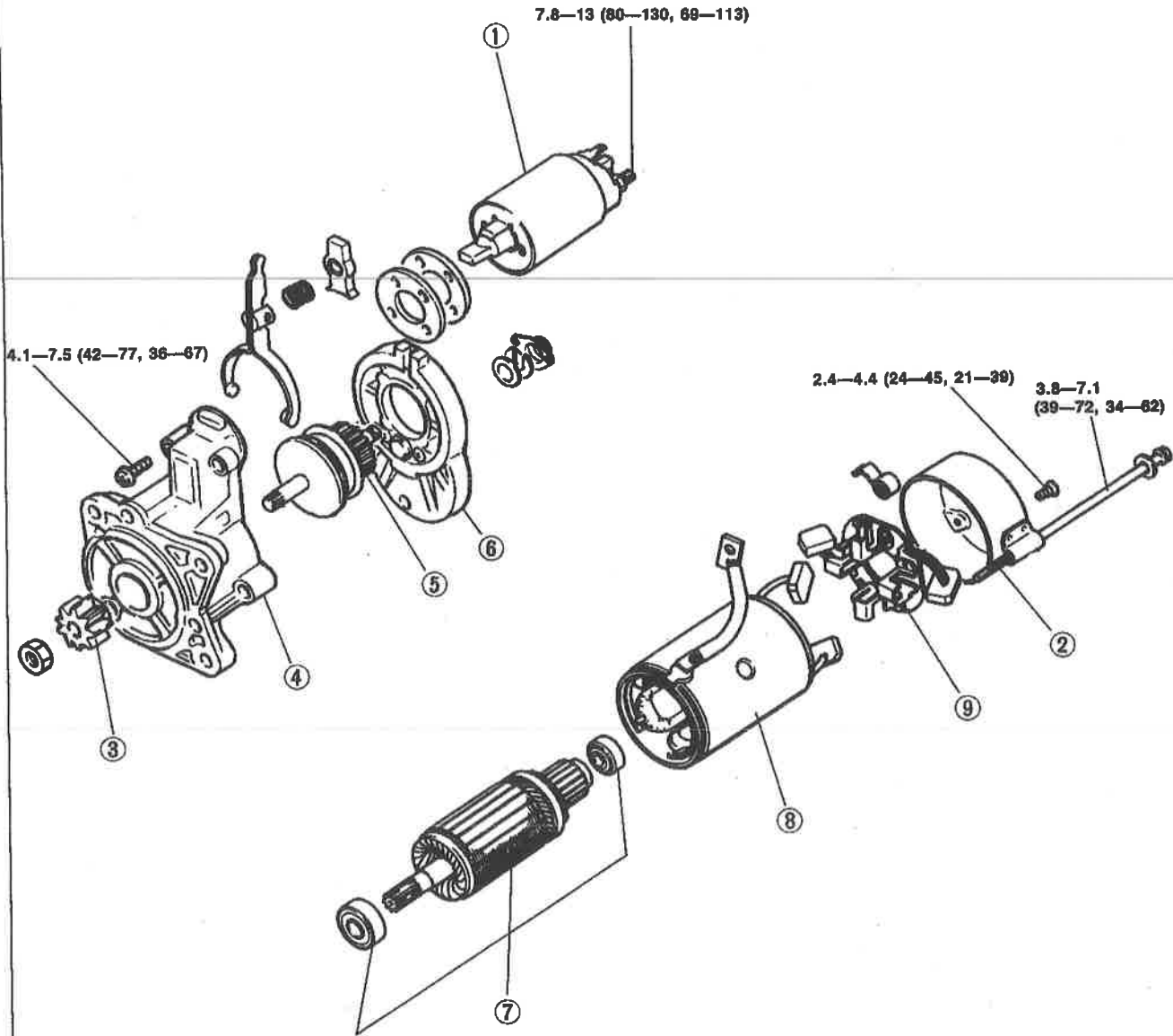
1BU0GX-015

- 1. Magnetic switch  
Inspection..... page G-38
- 2. Rear housing
- 3. Front cover
- 4. Drive pinion
- 5. Internal gear
- 6. Gear shaft

- 7. Planetary gear
- 8. Magnet coil  
Inspection..... page G-38
- 9. Armature  
Inspection..... page G-37
- 10. Brush holder assembly  
Inspection..... page G-39

STARTING SYSTEM

G6 (M/T, A/T)  
 (REDUCTION TYPE M/T 1.2 kW, A/T 1.4 kW)

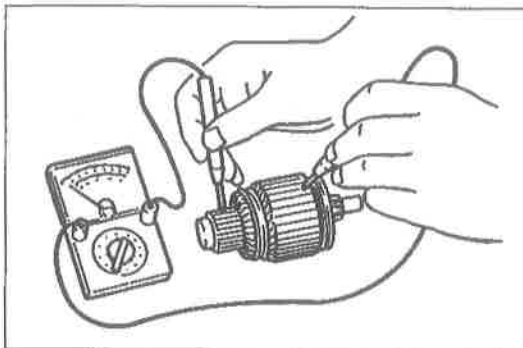


N·m (cm·kg, in·lb)

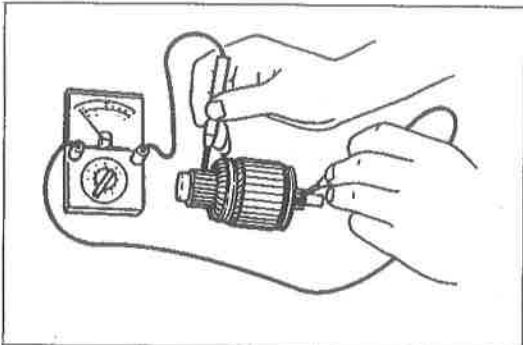
1BU0GX-016

- 1. Magnetic switch  
 Inspection..... page G-38
- 2. Rear housing
- 3. Drive pinion
- 4. Front cover
- 5. Reduction gear
- 6. Center bracket

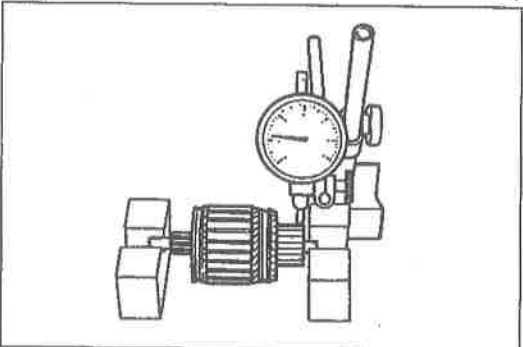
- 7. Armature  
 Inspection..... page G-37
- 8. Field coil  
 Inspection..... page G-38
- 9. Brush holder assembly  
 Inspection..... page G-39



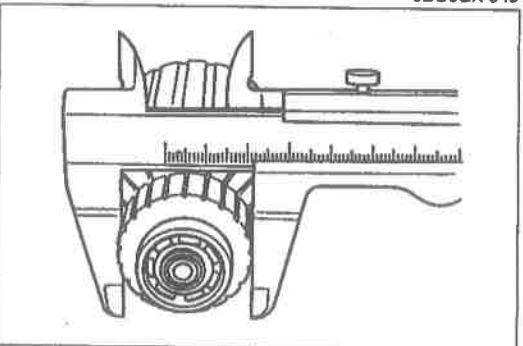
67U05X-048



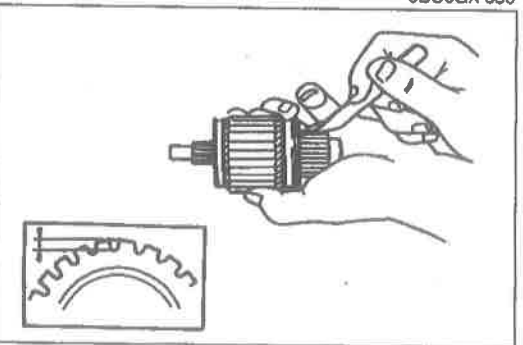
67U05X-049



0BU0GX-049



0BU0GX-050



9MU0GX-075

## INSPECTION

### Armature

1. Ground of armature coil  
Check for continuity between the commutator and the core with a circuit tester. Replace the armature if there is continuity.
2. Insulation of armature coil  
Check for continuity between the commutator and the shaft with a circuit tester. Replace the armature if there is continuity.
3. Vibration of the commutator
  - (1) Place the armature on V blocks, and measure the vibration by using a dial gauge.
  - (2) If the vibration is at limit or more, repair with a lathe so that it becomes standard or replace the armature.

Engine	F2 (Carburetor, EGI)	G6
Standard vibration mm (in)	0.05 (0.002)	0.03 (0.001)
Limit mm (in)	0.1 (0.004)	0.05 (0.002)

### Note

**Before checking, be sure that there is no play in the bearings.**

4. Outer diameter of the commutator  
Replace the armature if the outer diameter of the commutator is grind limit or less.
5. Roughness of the commutator surface  
If the commutator surface is dirty, wipe it with a cloth; if it is rough, repair it by using a lathe or fine sandpaper.

Engine	F2 (Carburetor, EGI) M/T	F2 (Carburetor, EGI) A/T	G6 M/T	G6 A/T
Grind limit mm (in)	31.4 (1.24)	28.8 (1.13)	27.4 (1.08)	31.4 (1.24)

6. Segment groove depth  
If the depth of the mold between segments is limit depth or less, undercut the grooves by standard depth.

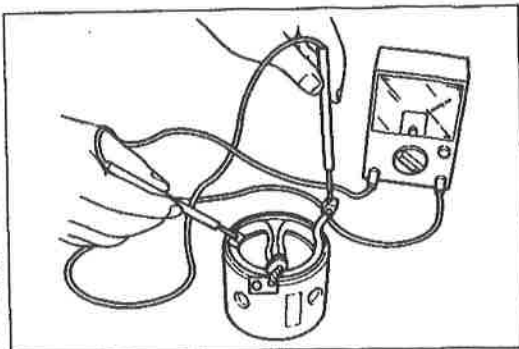
**Standard depth: 0.5—0.8mm (0.020—0.031 in)**

**Limit depth: 0.2mm (0.008 in)**

**Field Coil**

## 1. Wiring damage

- (1) Check for continuity between the connector and brushes by using a circuit tester.
- (2) Replace the yoke assembly if there is no continuity.



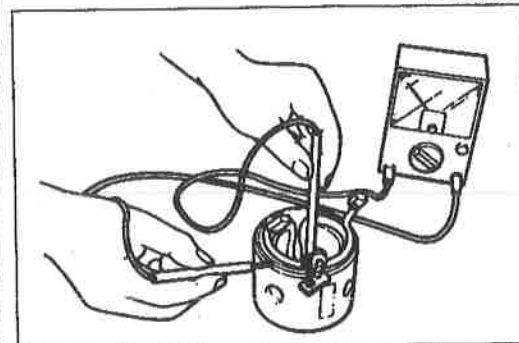
4BG05X-085

## 2. Ground of the field coil

- (1) Check for continuity between the connector and yoke by using a circuit tester.
- (2) Repair or replace the yoke assembly if there is continuity.

## 3. Installation of the field coil

Replace the yoke assembly if the field coil is loose.

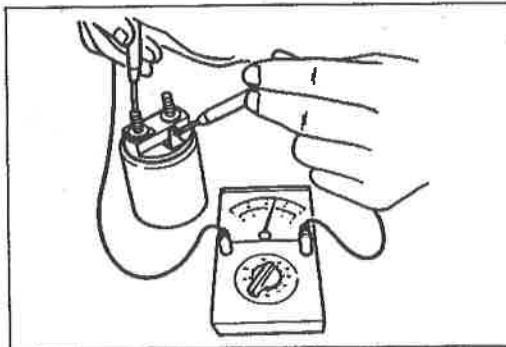


4BG05X-086

**Magnetic Switch**

## 1. Wiring damage (S terminal — M terminal).

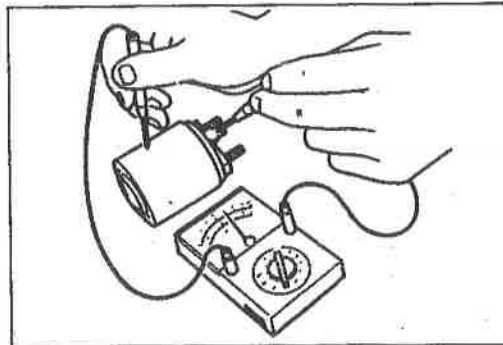
Check for continuity between the S terminal and the M terminal with a circuit tester. Replace the magnetic switch if there is no continuity.



67U05X-053

## 2. Wiring damage (S terminal — body)

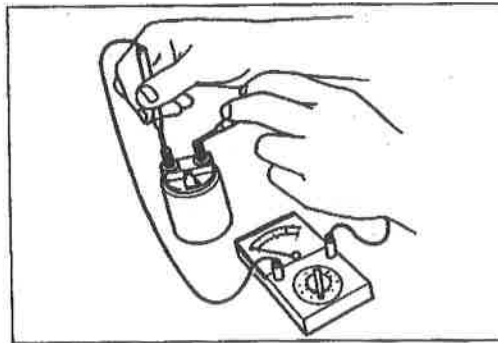
Check for continuity between the S terminal and the body with a circuit tester. Replace the magnetic switch if there is no continuity.



67U05X-054

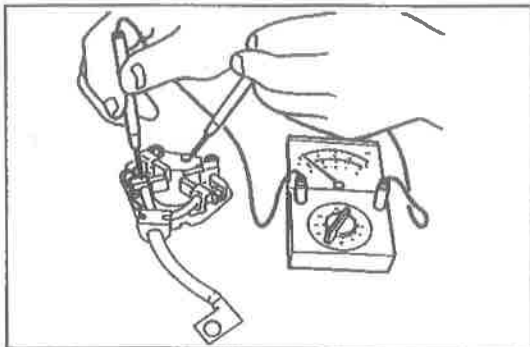
## 3. Ground of magnetic switch

Check for continuity between the M and B terminals with a circuit tester. Replace the magnetic switch if there is continuity.



67U05X-055

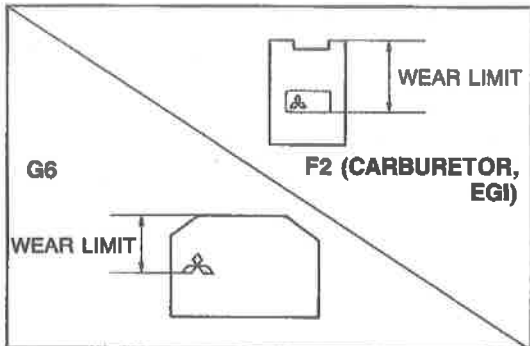




9MU0GX-076

### Brush and Brush Holder Insulation of brush holder

Check for continuity between the insulated brush and the plate with a circuit tester. Replace the brush holder if there is continuity.

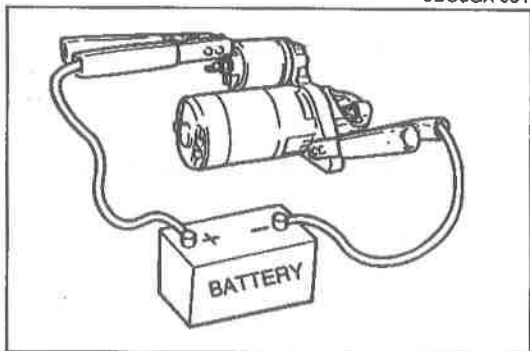


0BU0GX-051

### Brush

If the brushes are worn beyond the wear limit or if the wear is near the limit, replace the brushes.

Type	F2 (Carburetor, EGI) M/T	F2 (Carburetor, EGI) A/T	G6 M/T	G6 A/T
Standard mm (in)	17.0 (0.669)	17.5 (0.689)	16.0 (0.630)	17.0 (0.669)
Minimum mm (in)	11.5 (0.453)	10.0 (0.394)	9.0 (0.354)	11.5 (0.453)



0BU0GX-052

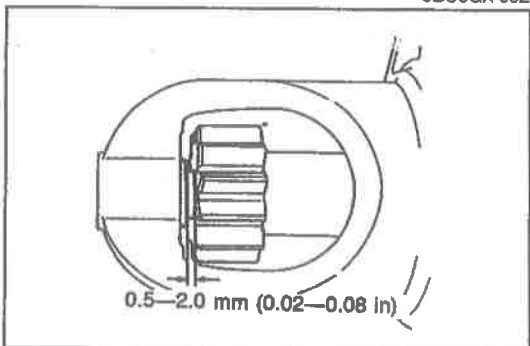
### CHECKING OPERATION

#### Magnetic Switch

Make the following tests:

#### Pull-out test [F2 (Carburetor, EGI) A/T and G6 (M/T, A/T)]

Check that the pinion is pulled out when 12V are connected to the S terminal and the body is grounded.

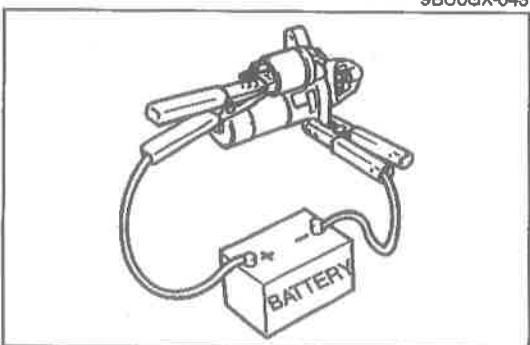


9BU0GX-043

Measure the pinion gap while the pinion is pulled out.

**Specification: 0.5—2.0mm (0.02—0.08 in)**

Adjust the pinion gap with an adjust washer (drive housing front cover—magnetic switch) if it is not within specification.

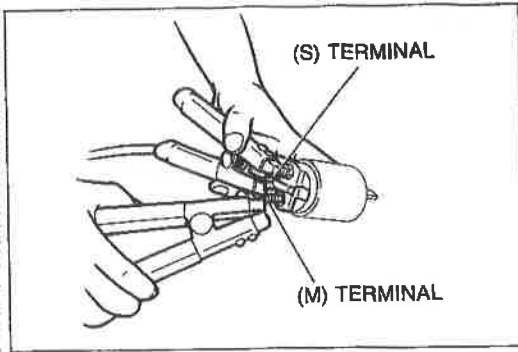


0BU0GX-053

#### Return test [F2 (Carburetor, EGI) A/T and G6 (M/T, A/T)]

1. Disconnect the motor wire from the M terminal, and then connect the battery power to the M terminal and ground the body.
2. Pull out the overrunning clutch with a screwdriver. Check that the overrunning clutch returns to its original position when released.

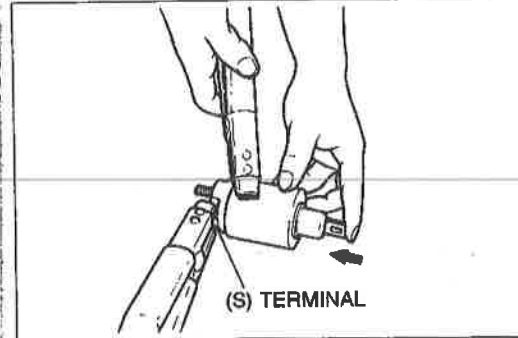
**STARTING SYSTEM**



08U0GX-054

**Pull-In Test [F2 (Carburetor, EGI) M/T]**

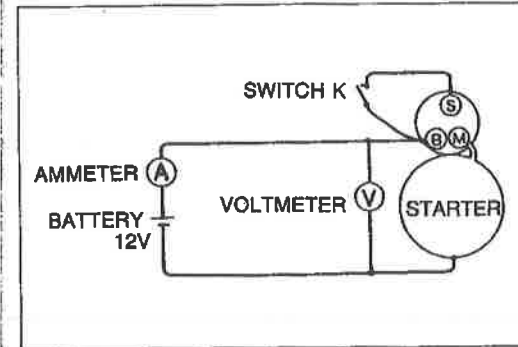
1. Connect the positive battery terminal to the magnetic switch (S) terminal.
2. Ground the magnetic switch (M) terminal.
3. Make sure the plunger is pulled into the switch.



08U0GX-055

**Hold-In Test [F2 (Carburetor, EGI) M/T]**

1. Connect the positive battery terminal to the magnetic switch (S) terminal.
2. Ground the magnetic switch body.
3. Push the plunger into the switch.
4. Make sure the plunger stays in the in position.



08U0GX-056

**No-Load Test**

1. After adjusting the pinion gap, form a test circuit with a voltmeter and an ammeter.

**Note**

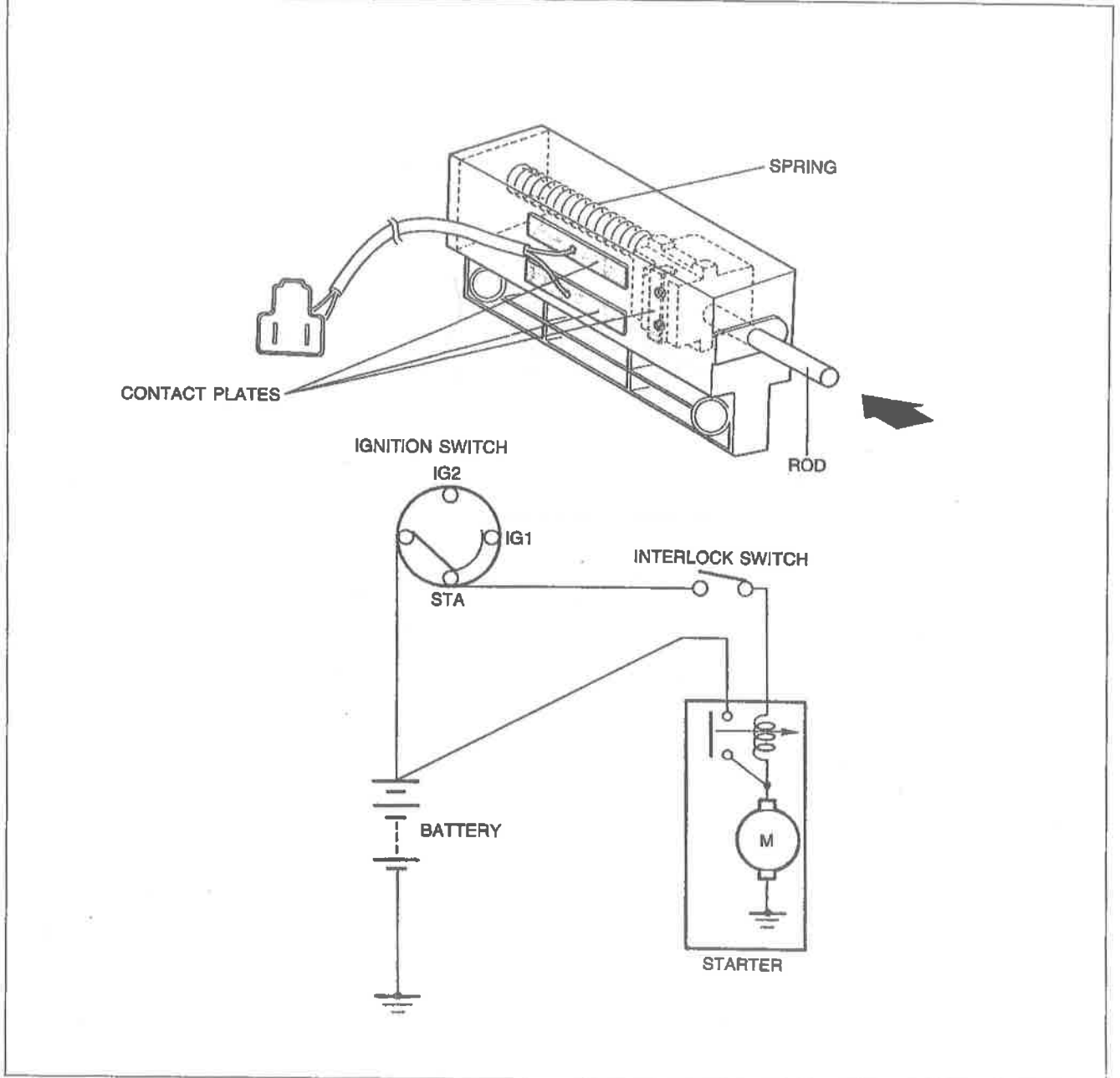
**Use heavy gauge wires and tighten each terminal fully.**

2. Close switch K to run the starter.
3. Check for the following:

Engine	[F2 (Carburetor, EGI) M/T]	[F2 (Carburetor, EGI) A/T]	G6 M/T	G6 A/T
Type (kW)	0.95	1.4	1.2	1.4
Voltage (V)	11.5	11.0	11.5	11.5
Current (A)	60 max.	90 max.	90 max.	100 max.
Gear shaft speed (rpm)	6,600 min.	3,000 min.	4,000 min.	3,000 min

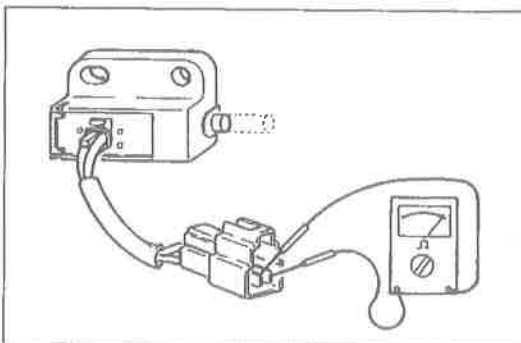
4. If any abnormality is noted, check for the cause according to "Inspection".

STARTER INTERLOCK SYSTEM (M/T)



9MU0GX-078

This system is similar to that of the inhibitor switch on an A/T vehicle. If the clutch pedal is not depressed during starting, battery power will not be supplied to the starter and it will not operate.



77U05X-016

**INTERLOCK SWITCH Inspection**

1. Disconnect the interlock switch connector.
2. Connect a circuit tester to the switch.
3. Check the continuity.

Pedal	Continuity
Depressed	Yes
Released	No

4. Replace the switch, if necessary.