
MANUAL TRANSMISSION AND CLUTCH MYT SERIES

SECTION 7C
CLUTCH

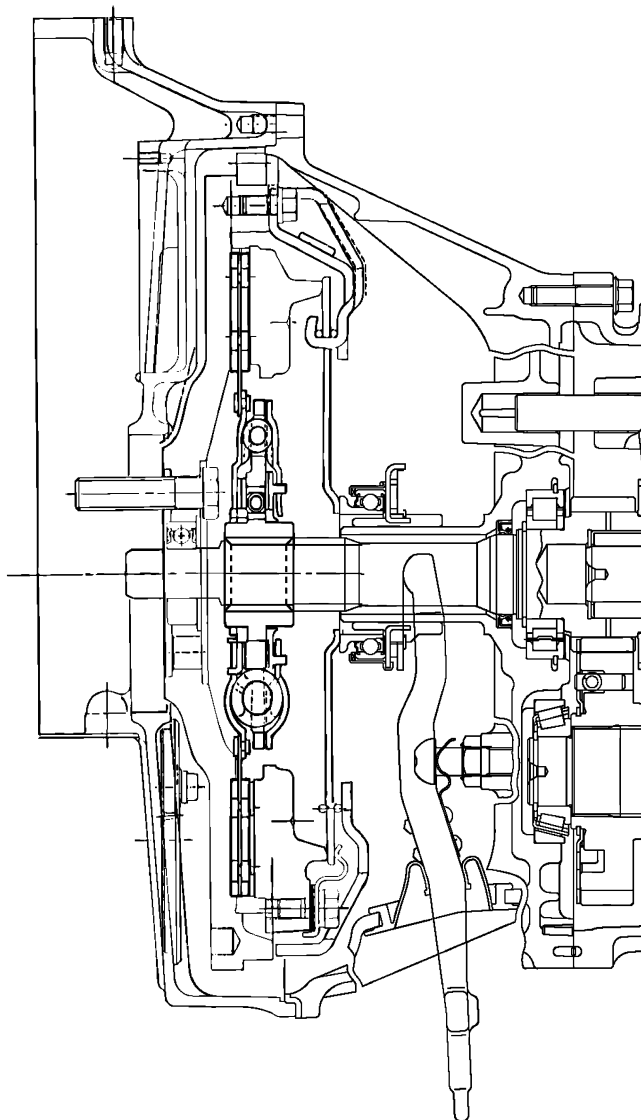
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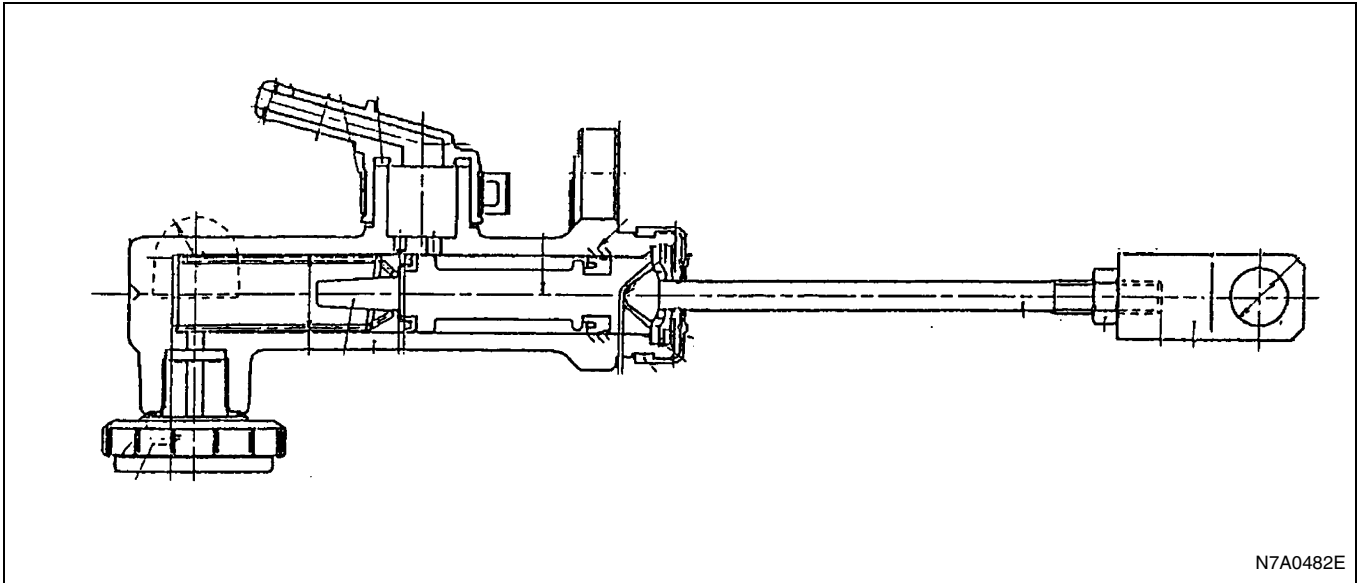
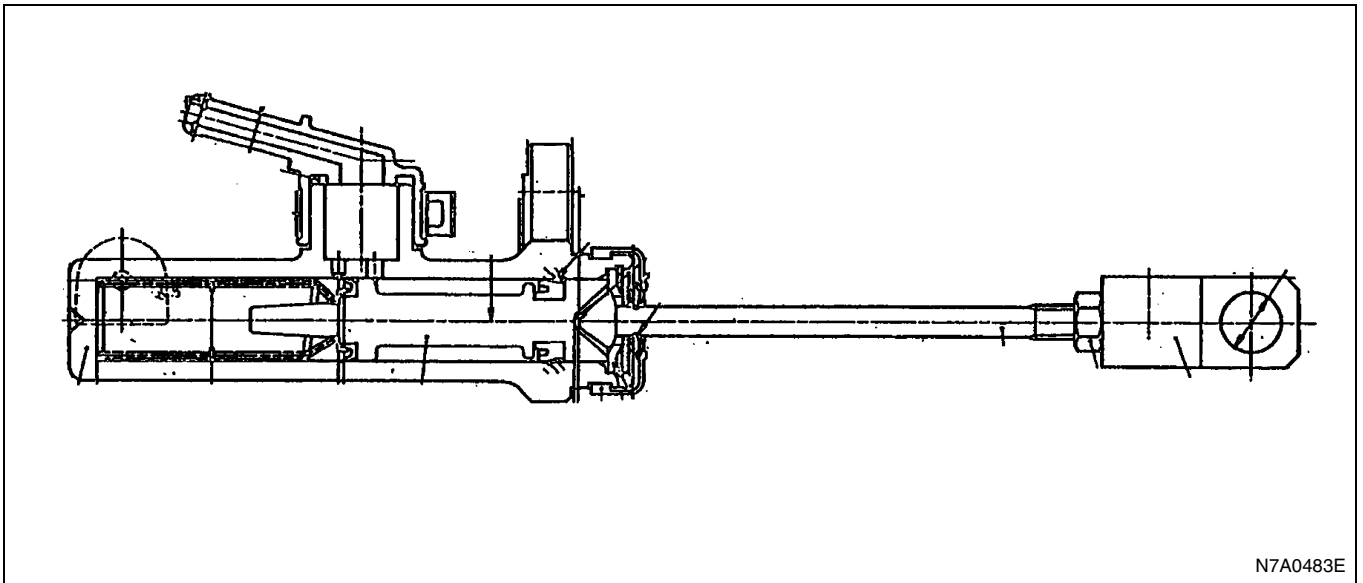
GENERAL DESCRIPTION

Clutch System

Clutch

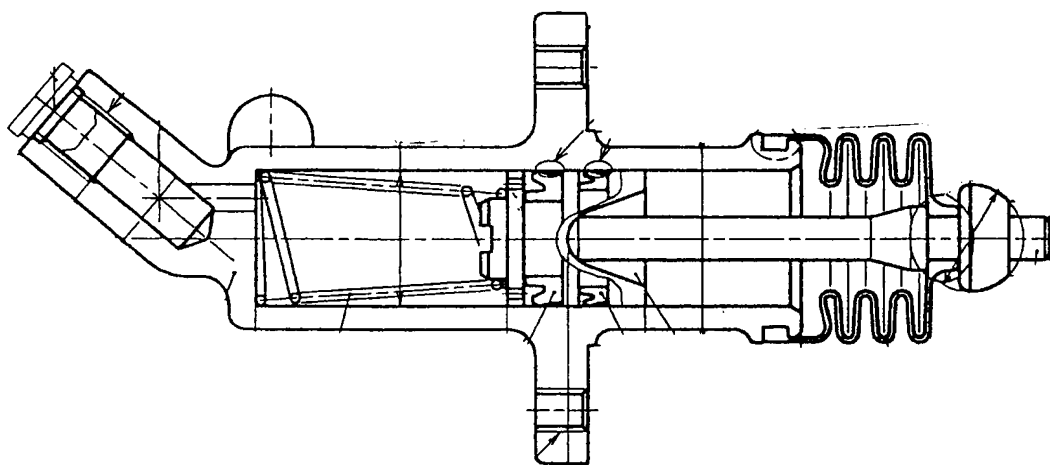


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Master Cylinder**Master Cylinder (without Booster)**

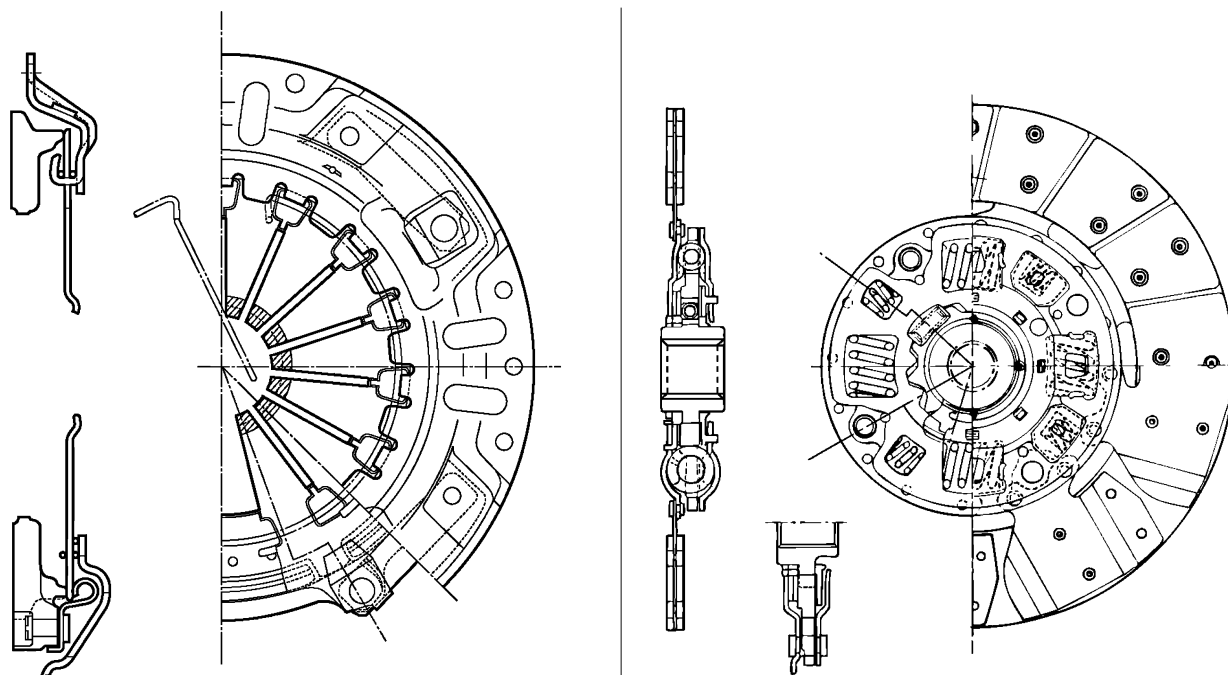
7C-4 CLUTCH

Slave Cylinder (Auto Adjustment Type)



N7A0484E

Pressure Plate Assembly and Clutch Disk Assembly



N7A0485E

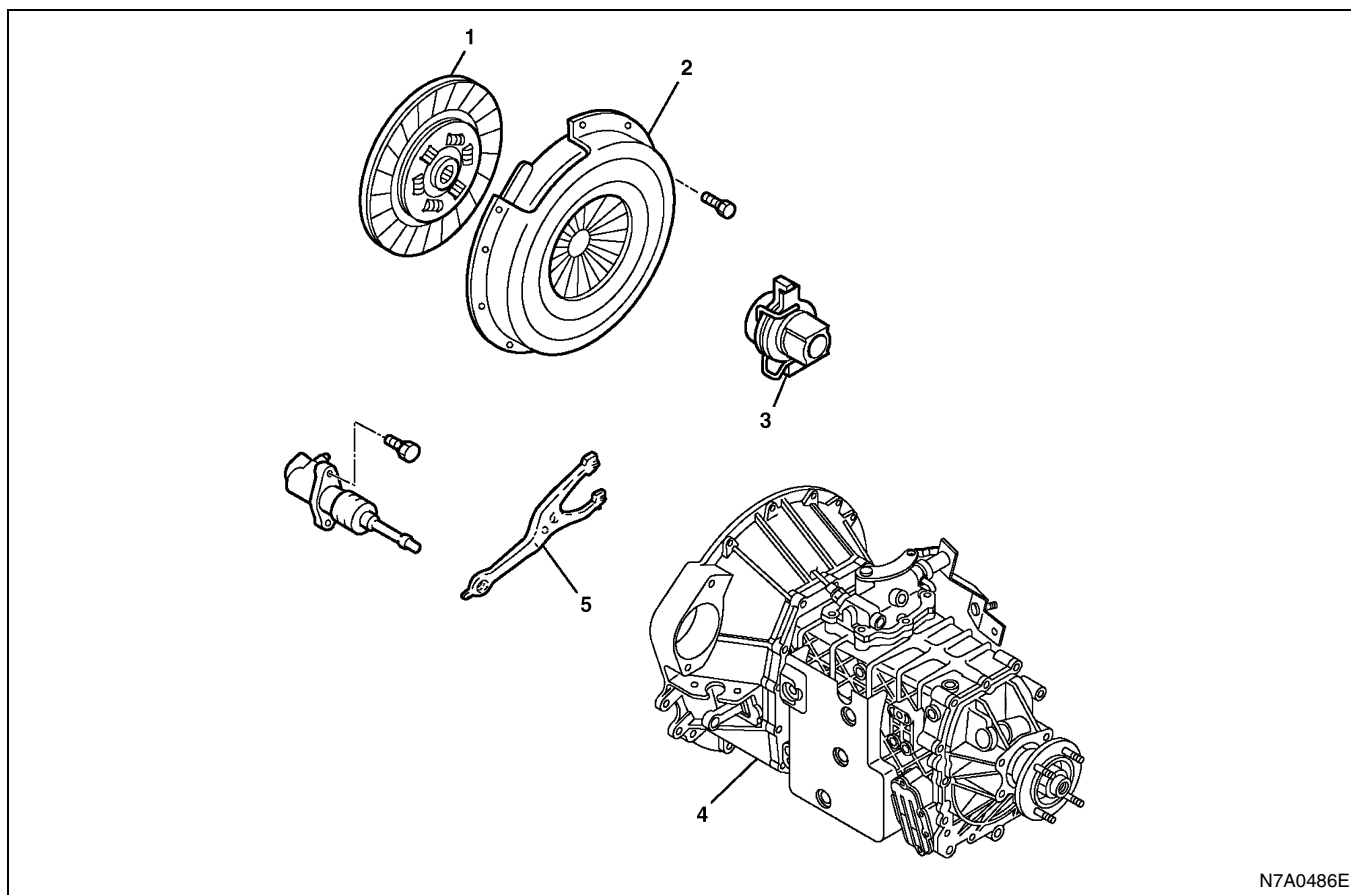
Troubleshooting

Trouble	Cause	Treatment
Dragging	Hydraulic line leakage.	Repair.
	Air in line.	Bleed air.
	Master cylinder and/or slave cylinder seals worn.	Replace seals.
	Driven plate worn or warped.	Replace.
	Diaphragm spring weak or tip of finger worn.	Replace.
	Driven plate sticking on spline.	Apply grease or replace.
	Release bearing worn or damaged.	Replace.
	Clutch pedal excessive free play.	Readjust.
Slippage	Driven plate facing worn or oil soaked.	Replace.
	Diaphragm spring weak.	Replace.
	Pressure plate and/or flywheel warped.	Repair or replace.
	Clutch pedal lack of free play.	Readjust.
Shudder (Chattering)	Engine mounting loose or broken.	Tighten or replace.
	Driven plate facing warped.	Replace.
	Driven plate surface of facing hardened.	Replace.
	Driven plate facing oil soaked.	Replace and check oil leakage.
	Driven plate damper spring weakened or broken.	Replace.
	Pressure plate and/or flywheel warped.	Repair or replace.
Noisy	Release bearing binding.	Repair or replace, apply grease.
	Release bearing worn or broken.	Replace.
	Release bearing insufficiently lubricated.	Replace.
	Driven plate damper springs weakened or broken.	Replace driven plate.
	Pilot bearing worn or broken.	Replace.
	Driven plate rivet loosened.	Replace driven plate.
	Ball stud insufficiently lubricated.	Lubricate with grease.
	Clutch pedal lack of free play.	Readjust.
	Clutch pedal shaft insufficiently lubricated.	Repair or replace.
Pedal is Hard to Push	Hydraulic line blocked or crimped.	Clean out or replace.
	Clutch booster malfunction.	Repair or replace.
	Clutch pedal shaft insufficiently lubricated.	Repair or replace.

ON-VEHICLE SERVICE

Clutch Assembly

Components



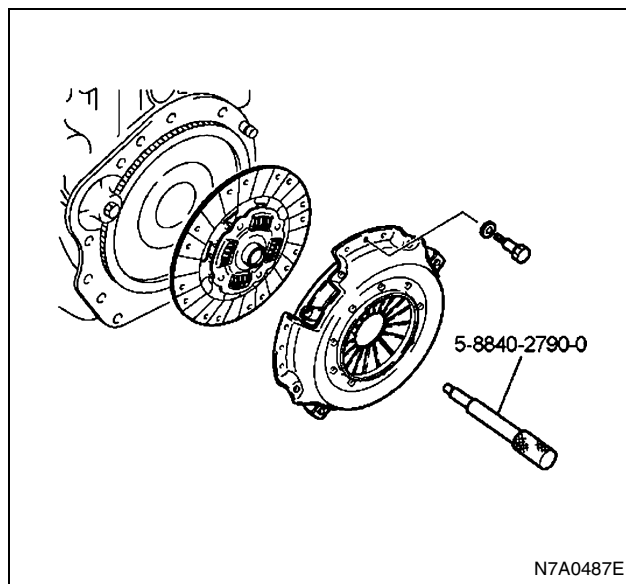
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Legend

- | | |
|-----------------------------|--------------------------|
| 1. Driven plate assembly | 4. Transmission assembly |
| 2. Pressure plate assembly | 5. Shift fork |
| 3. Release bearing assembly | |

Removal

1. Remove the transmission assembly from the vehicle.
 - Refer to TRANSMISSION ASSEMBLY.
2. Remove the pressure plate assembly.
3. Remove the driven plate assembly.
 - Use pilot aligner 5-8840-2790-0 to prevent the driven plate assembly from falling.
 - Mark the flywheel and clutch cover for alignment when installing.



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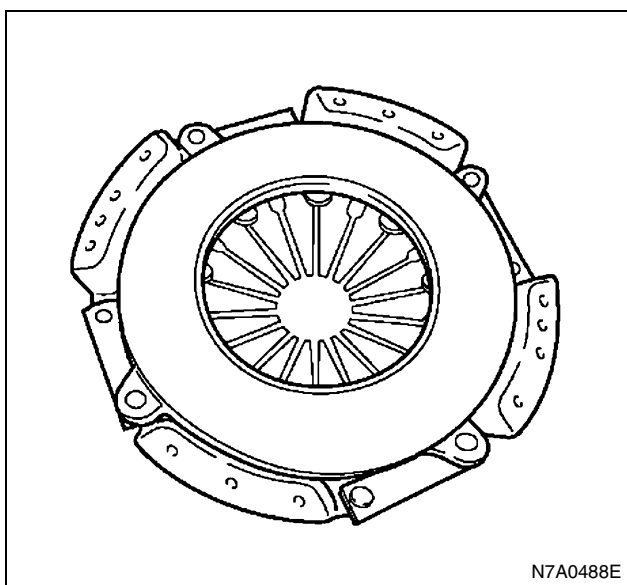
4. Remove the release bearing.
5. Remove the shift fork.

Inspection

Make the necessary adjustment, repairs, and part replacement if excessive wear or damage is found during inspection.

Pressure Plate Assembly

- Visually inspect the pressure plate friction surface for excessive wear and heat cracks. If excessive wear or deep heat cracks are present, the pressure plate assembly must be replaced.



Pressure Plate Warpage

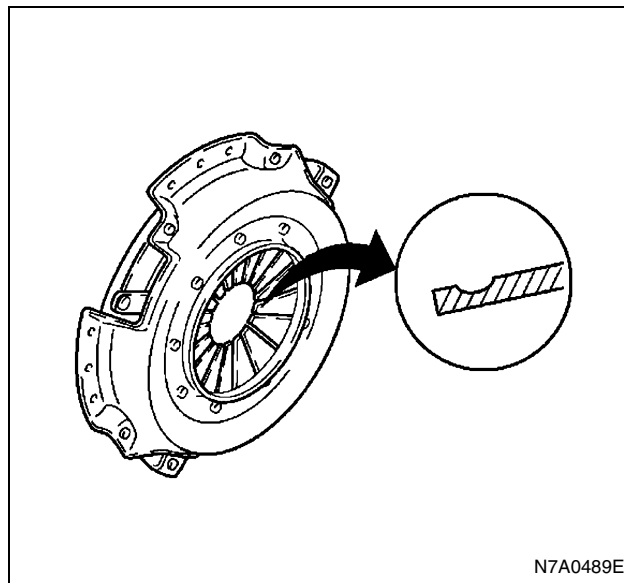
- Use a straight gauge and a filler gauge to measure the pressure plate friction surface flatness in four directions. If any of the measured values exceed the specified limit, the pressure plate assembly must be replaced.

Pressure Plate Warpage

Limit : 0.3 mm (0.012 in)

Clutch Cover

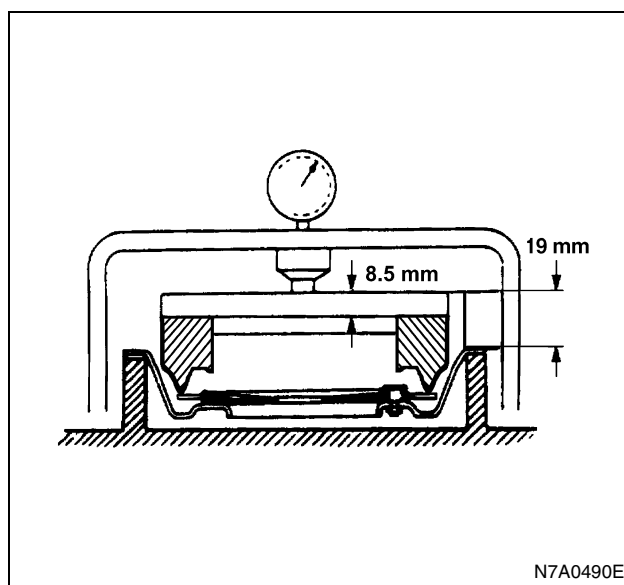
- Visually inspect the entire clutch cover for excessive wear, cracking, and other damage. The pressure plate assembly must be replaced if any of these conditions are present.



Clutch Set Force

1. Invert the pressure plate.
2. Place on the pressure plate, a new clutch disk, or a spacer of 8.5 mm (0.33 in) in place of the clutch disk.
3. Compress the pressure plate assembly until the dimension becomes 19 mm (0.748 in).
4. Note the pressure plate gauge reading.

Clutch Set Force :	
Set Force	Engine Model
8,340 N (850 kg / 1,874 lb)	4HF1, 4HG1, 4HF1-II
9,500 N (970 kg / 2,139 lb)	4HG1-T, 4HE1-TC-N, 4HK1-TC
6,200 N (633 kg / 1,396 lb)	4JH1-TC-S



Diaphragm Spring Finger Height

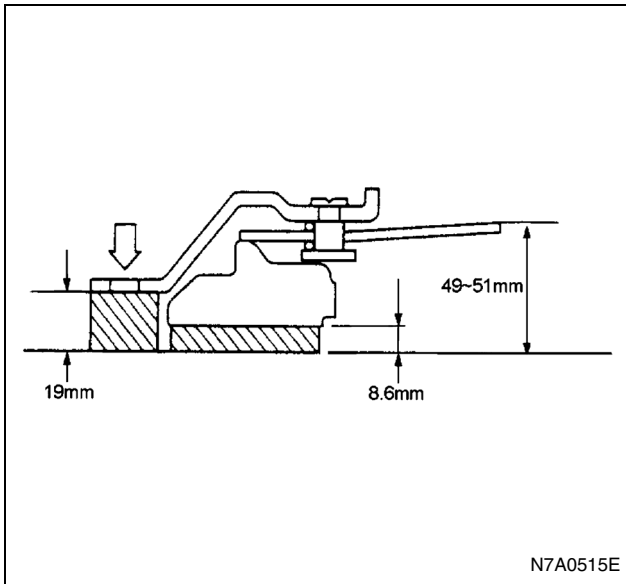
1. Place a spacer of 8.5 mm (0.33 in) under the pressure plate.

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2. Compress the pressure plate assembly and the diaphragm spring until the distance "B" becomes specified. There are two ways to do this.
 - a. Use a bench press to press down on the pressure plate assembly from the top.
 - b. Tighten the pressure plate assembly fixing bolts.
3. Measure the distance between the base and the top of the diaphragm spring.

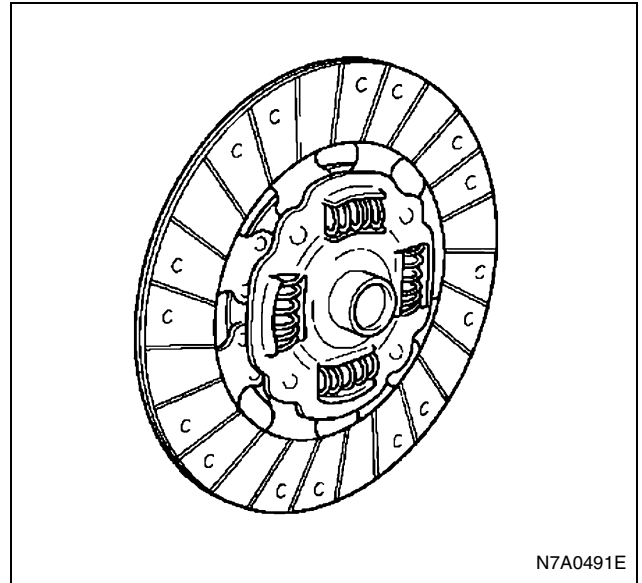
Spring Finger Height

Standard : 49.0 — 51.0 mm (1.929 — 2.008 in)



Driven Plate Assembly

- Visually inspect the torsion spring for looseness, breakage, and weakening. If any of these conditions are found, the driven plate assembly must be replaced.
- Visually inspect the facing surfaces for cracking and excessive scorching.
- Visually inspect the facing surfaces for the presence of oil or grease. If any of these conditions are found, the facing must be cleaned or the driven plate assembly replaced.
- Check that the driven plate moves smoothly on the transmission top gear shaft spline. Minor ridges on the top gear shaft spline may be removed with an oil stone.



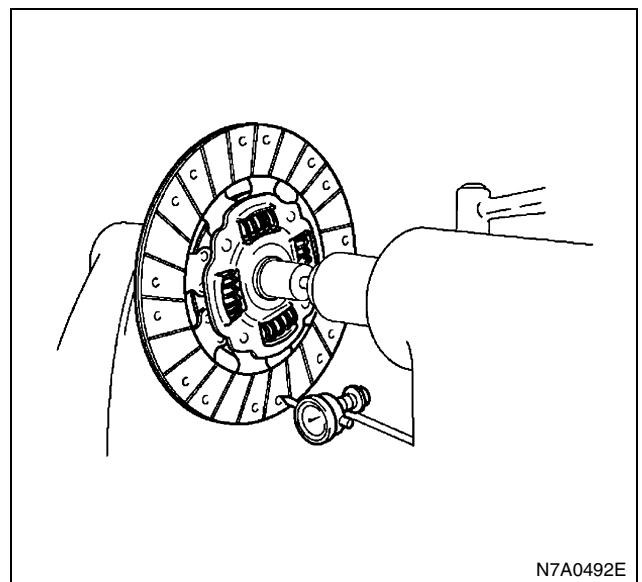
Driven Plate Warpage

1. Insert pilot aligner 5-8840-2790-0 into the driven plate spline hub. The pilot aligner must be held perfectly horizontal.
2. Set a dial indicator to the driven plate outside circumference.
3. Slowly turn the driven plate, and read the dial indicator.
4. If the measured value exceeds the specified limit, replace the driven plate assembly.

Driven Plate Warpage

Standard : 0.7 mm (0.028 in) or less

Limit : 1.0 mm (0.039 in)



Driven Plate Spline Free Play

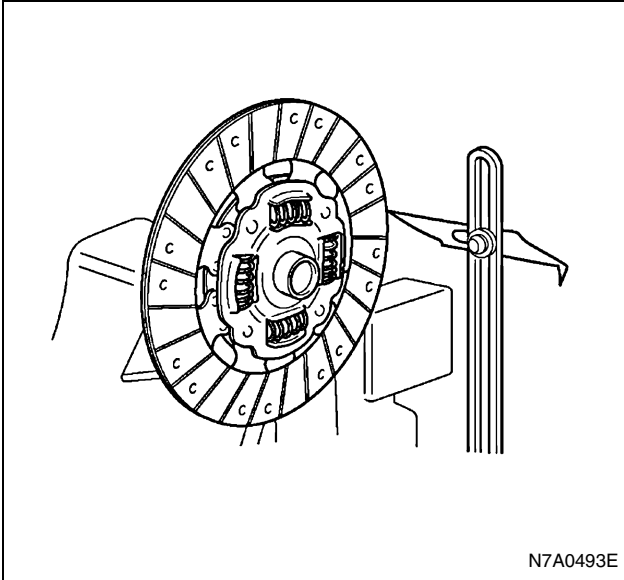
1. Install the driven plate to the transmission top gear shaft spline.
2. Set a surface gauge to the driven plate outside circumference.
3. Slowly turn the driven plate. Measure the spline rotation free play.

If the measured value exceeds the specified limit, replace the driven plate assembly.

Driven Plate Spline Free Play

Standard : 0.5 mm (0.020 in) or less

Limit : 1.0 mm (0.039 in)



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Driven Plate Rivet Head Depression

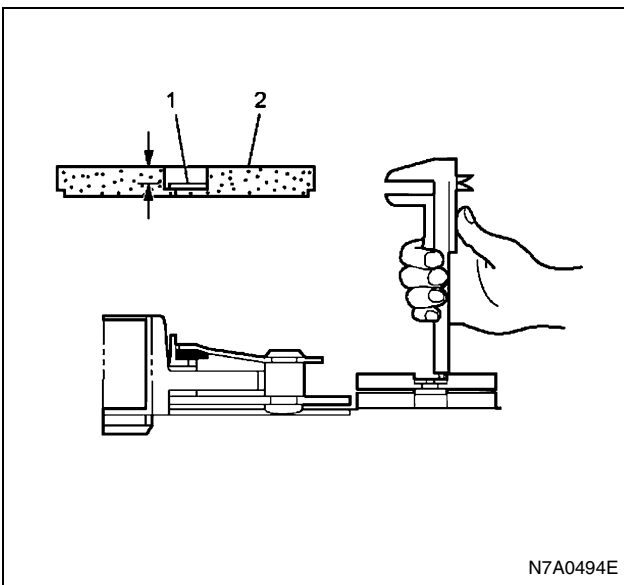
- Use the depth gauge to measure the rivet head depression (1) from the facing surface (2).
- Be sure to measure the rivet head depression (1) on both sides of the driven plate (2).
- If the measured value exceeds the specified limit, replace the driven plate assembly.

Facing Rivet Head Depression

Standard : 1.4 — 2.0 mm (0.055 — 0.078 in) (Flywheel side)

1.7 — 2.3 mm (0.067 — 0.090 in) (Transmission side)

Limit : 0.2 mm (0.008 in)

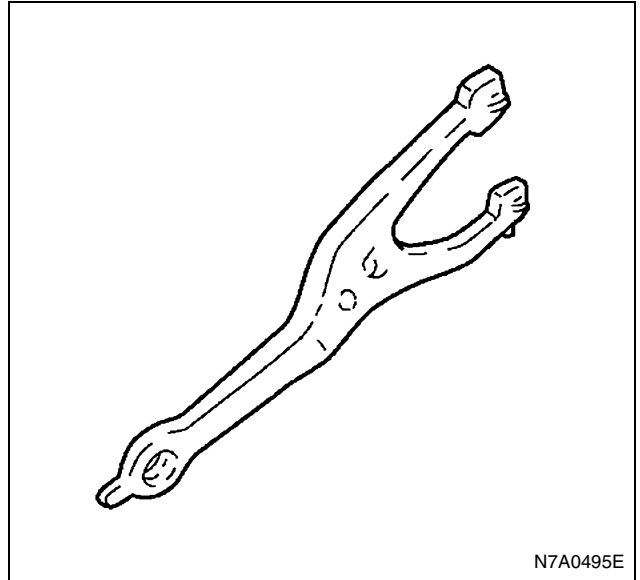


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Shift Fork

- Inspect the wear and damage on the release bearing and facing surface.

- Correct a slight stepped wear or surface roughness with an oil stone.
Replace the shift fork if unrecoverable damage is found.
- Inspect the wear and damage on the surface of the support bolt.



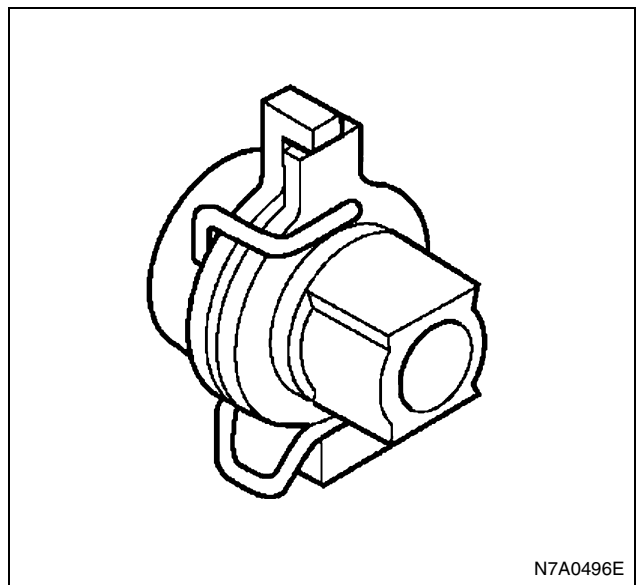
N7A0495E

Release Bearing

- Inspect the looseness, noise, damage, etc. or wear of the inside diameter. If any abnormality is found, replace the part.

Caution:

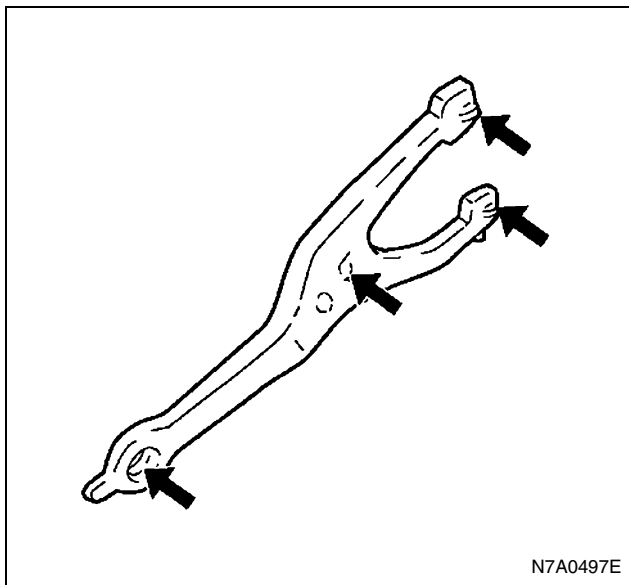
Never wash the release bearing because this part is sealed with grease.



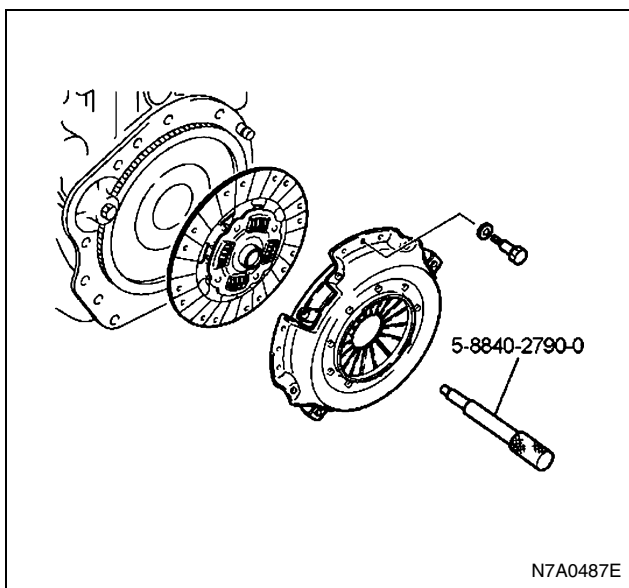
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Installation

1. Install the shift fork after applying the MO-NO2 type grease to the contact surfaces of the shift fork.
2. Install the release bearing to the transmission front part.



3. Install the clutch disk assembly.
4. Install the pressure plate assembly.
 - Clean the facing surfaces and pressure plate surface of the flywheel and the driven plate.
 - Install the driven plate assembly to the flywheel using pilot aligner 5-8840-2790-0.



- Install the pressure plate assembly, adjusting to knock pins (A) of the flywheel. And tighten the pins slowly and equally in numerical order.

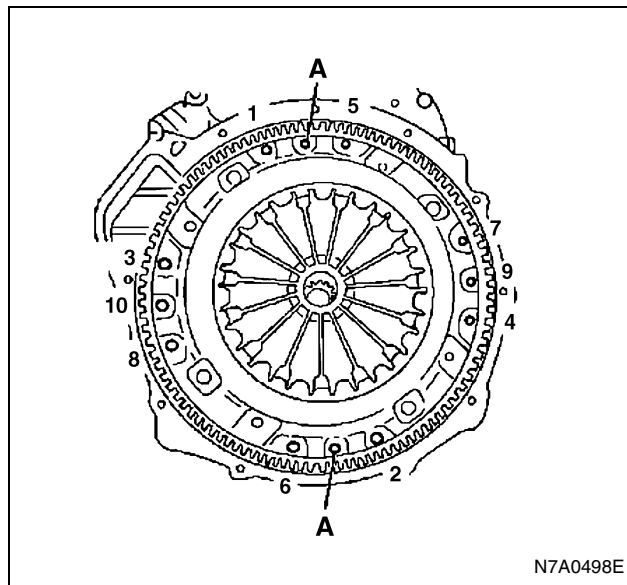
Tighten:

Pressure plate to 40 N·m (4.1 kg·m / 30 lb·ft)

- When installing a new pressure plate assembly, make sure to remove the wiring after the tightening.

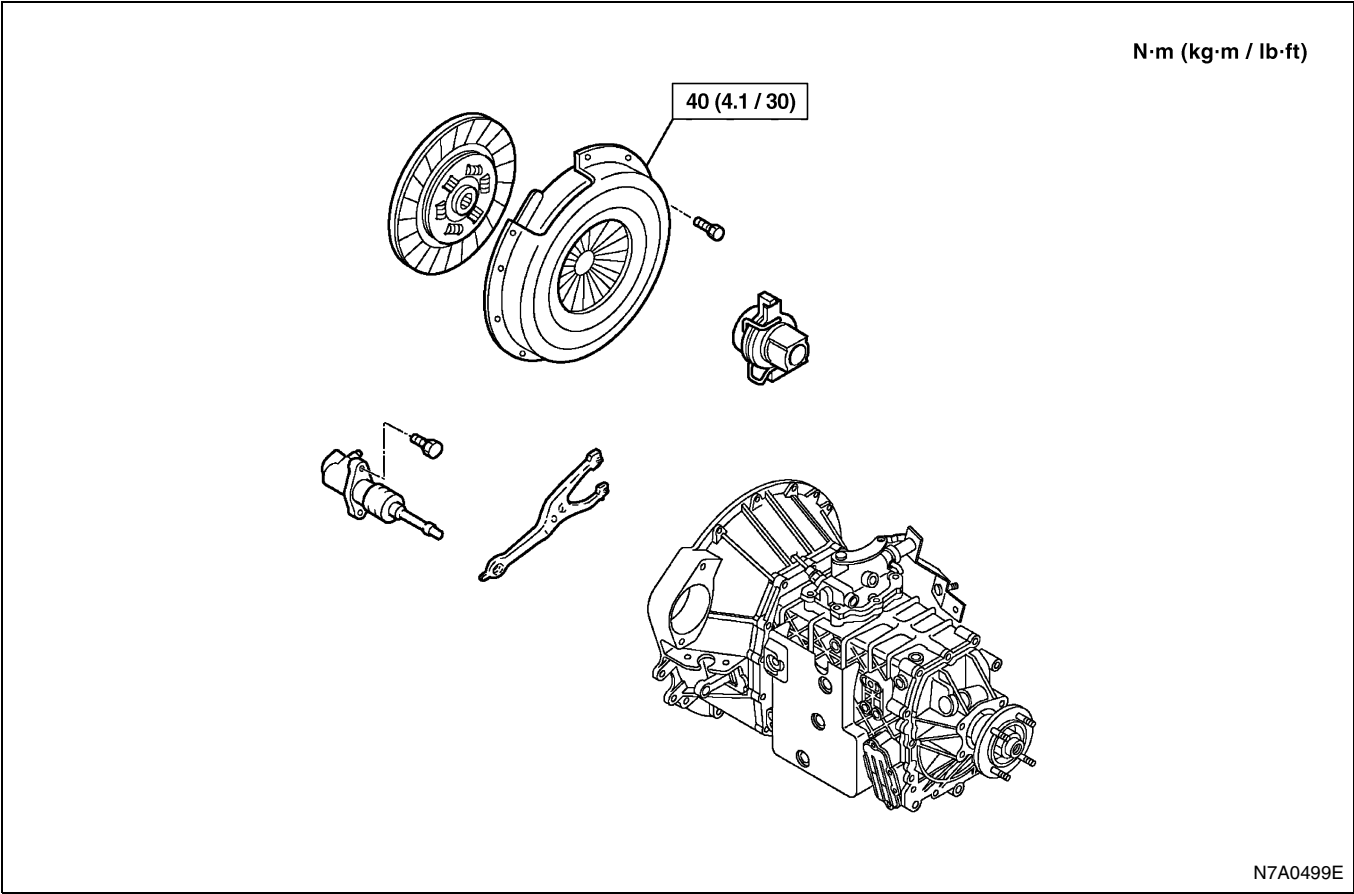
Caution:

Do not beat with hammer when removing the aligner.



5. Install the transmission assembly.
 - Refer to TRANSMISSION ASSEMBLY.

Fixing Torque

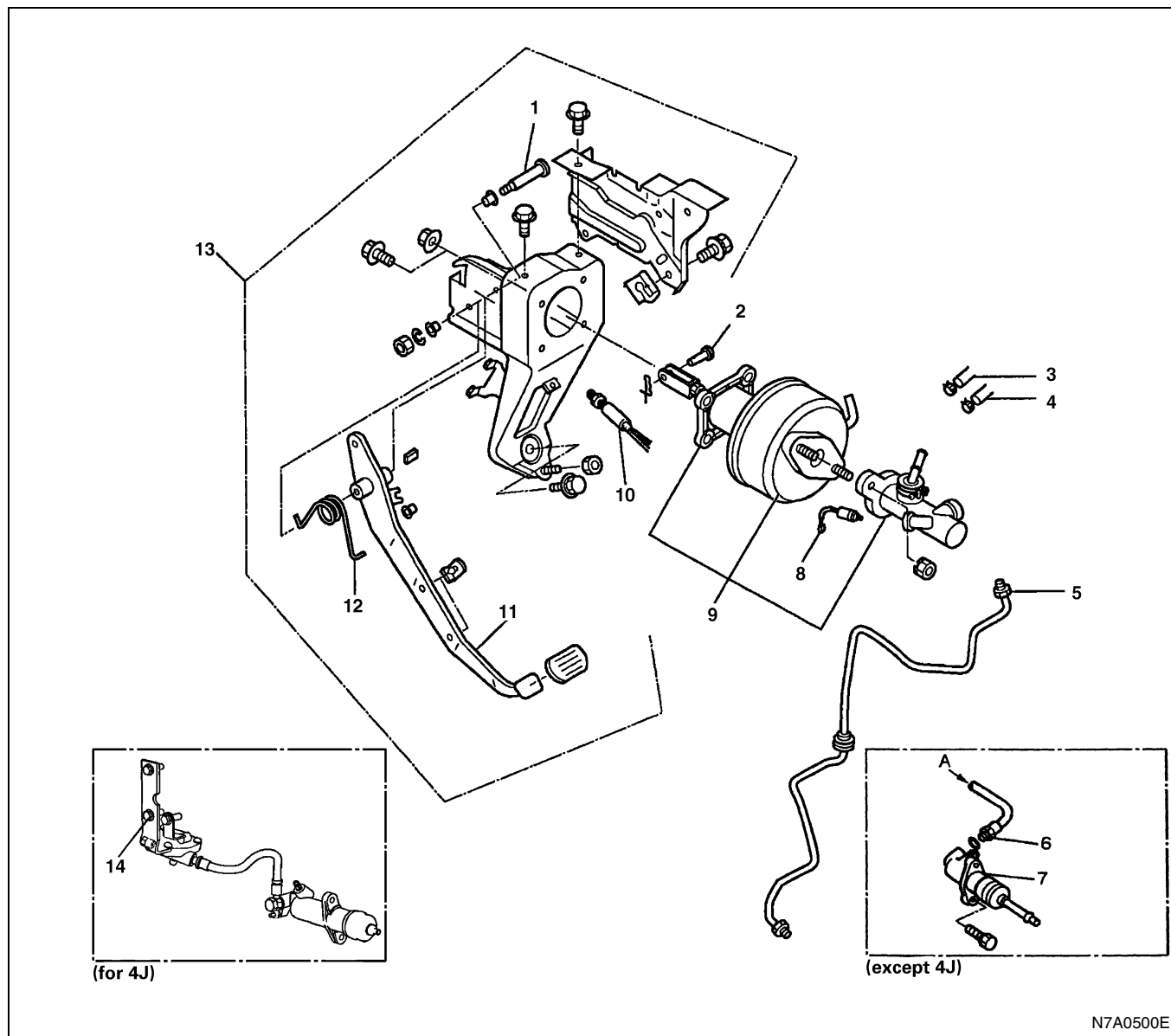


Special Tools

Illustration	Tool Number / Description / Remarks
 5884027900	5-8840-2790-0 / Clutch Pilot Aligner

Clutch Control

Components



Legend

- | | |
|-------------------|--|
| 1. Pin | 8. Pressure switch connector |
| 2. Clevis pin | 9. Clutch booster and master cylinder assembly |
| 3. Vacuum hose | 10. Clutch switch |
| 4. Oil hose | 11. Clutch pedal |
| 5. Clutch pipe | 12. Return spring |
| 6. Flexible hose | 13. Clutch pedal and bracket assembly |
| 7. Slave cylinder | 14. Damper cylinder |

Removal

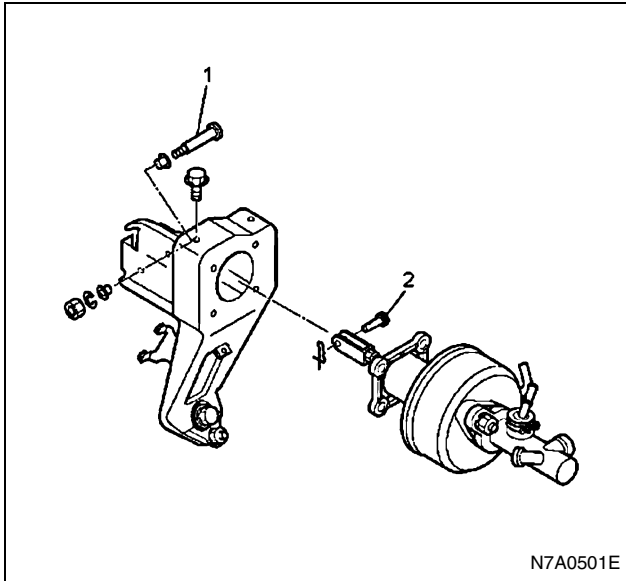
- Drain the brake fluid before removal.

Caution:

Do not let brake fluid contact painted surface. Wash it off immediately.

1. Remove the oil hose and clutch pipe.

2. Remove the vacuum hose.
3. Remove the clutch pedal and bracket assembly.
4. Remove the clutch switch.
5. Remove pin (1).
6. Remove clevis pin (2).



7. Remove the return spring.
8. Remove the clutch pedal.
9. Remove the clutch booster & spacer, and master cylinder assembly.
 - Removal of the master cylinder can be done only by removing the meter cluster.

Inspection

Make necessary adjustment, repairs, and part replacement if excessive wear or damage is found during inspection.

Installation

1. Install the clutch booster, spacer and master cylinder assembly.
 - Tighten the lock nut where the distance between the center of the clevis pin hole and the installation surface is 156.5 — 157.5 mm (6.161 — 6.201 in).

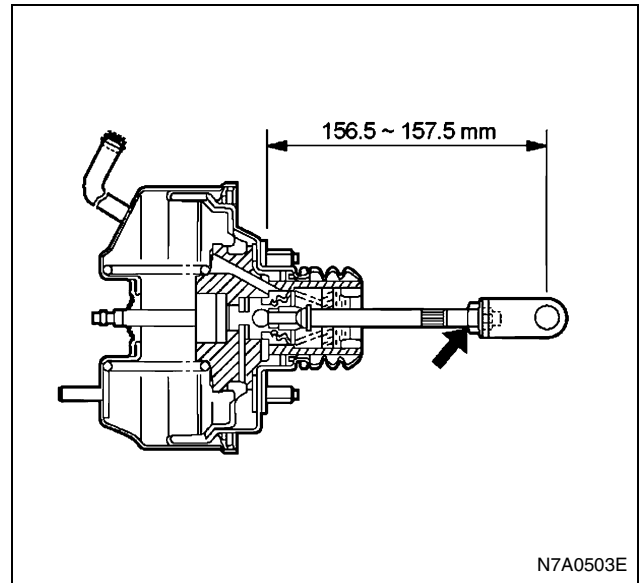
Tighten:

Lock nut to 26 N·m (2.6 kg·m / 19 lb·ft)

- Install the clutch booster, spacer and master cylinder assembly to the clutch pedal bracket.

Tighten:

Nut to 13 N·m (1.3 kg·m / 10 lb·ft)



2. Install the pressure switch connector.
3. Install the clutch pedal.
4. Install the return spring.
5. Install the clevis pin.
6. Install the pin.
7. Install the clutch switch.
8. Install the clutch pedal and bracket assembly.

Tighten:

Clutch bracket bolts to 37 N·m (3.8 kg·m / 27 lb·ft)

- The clutch pedal adjustment is not necessary if the length of the clutch booster operation rod is adjusted when installing the clutch booster.
The length of the clutch booster operation rod:
The distance between the installation surface and the center of the clevis pin hole is 156.5 — 157.5 mm (6.161 — 6.200 in).
- Check the clutch pedal play.
- Adjust the clearance between the pedal and the clutch switch bolt, to the measured value.

Clutch Pedal Height (A)

160 — 170 mm (6.299 — 6.693 in) (Reference value)

Pedal Stroke (B)

159 — 169 mm (6.260 — 6.653 in) (Reference value)

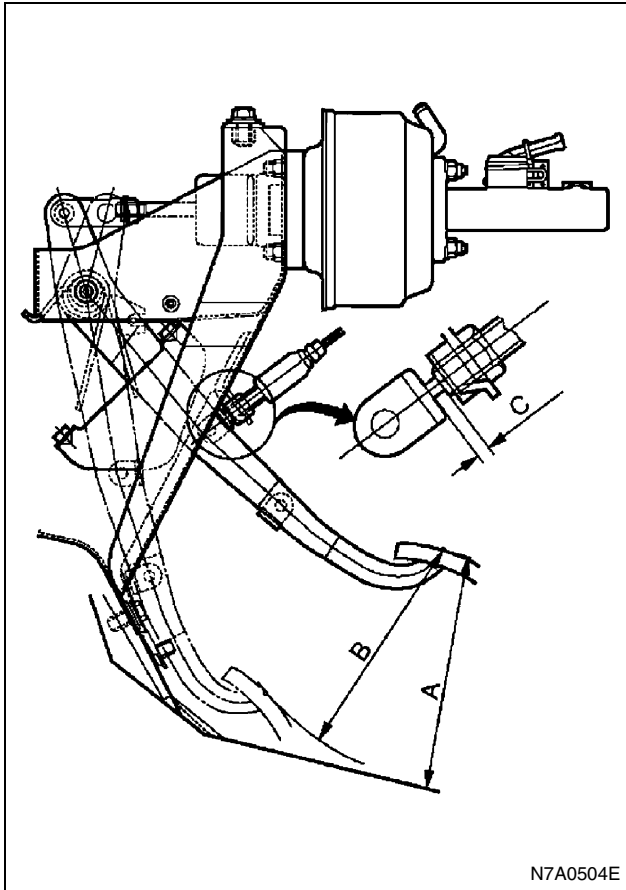
Clutch Pedal Play

15 — 25 mm (0.590 — 0.984 in) (Reference value)

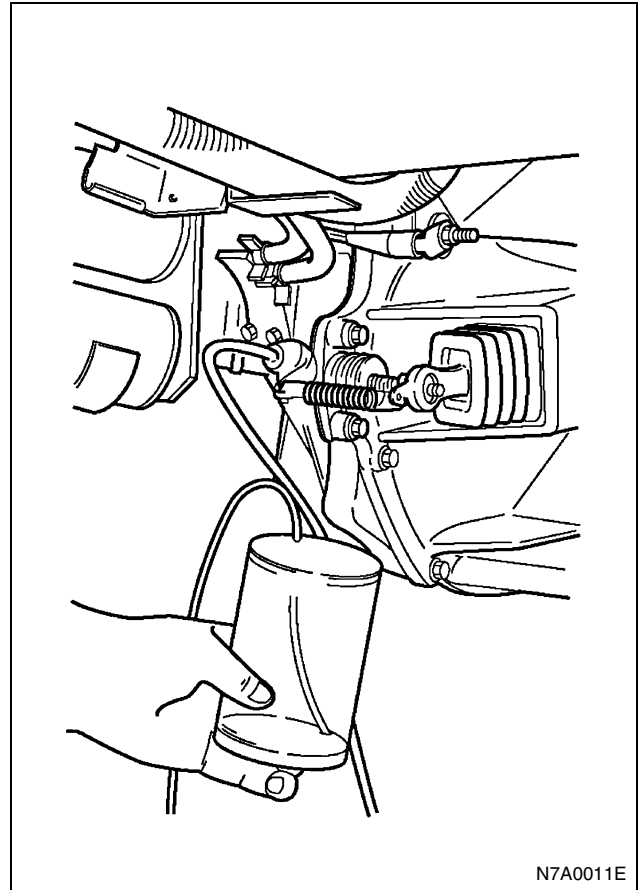
Pedal and Clutch Switch

Bolt Clearance (C)

0.5 — 1.0 mm (0.020 — 0.039 in)



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9. Install the vacuum hose.
10. Install the oil hose and clutch pipe.

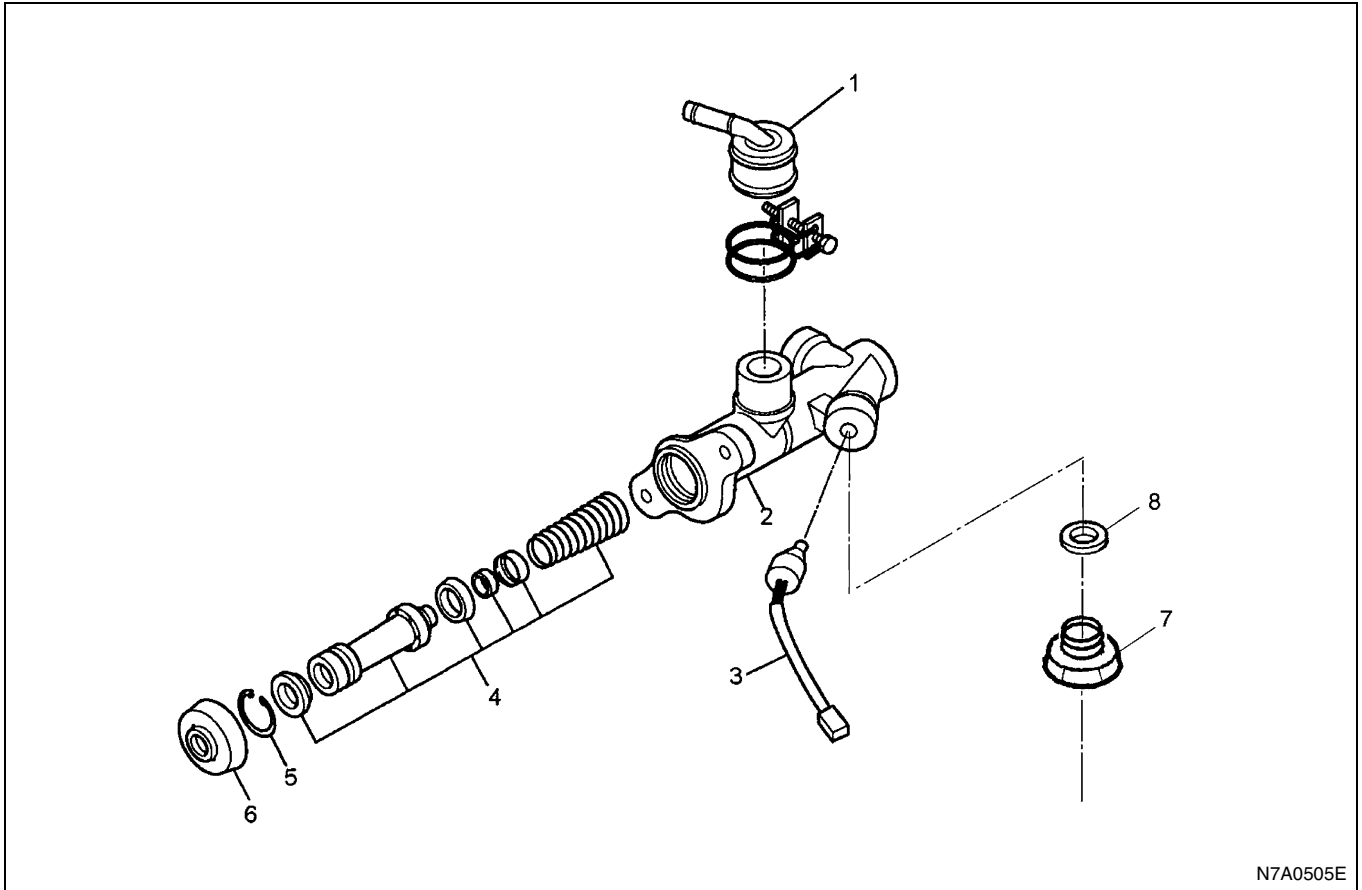
Bleeding of Slave Cylinder

- After the installation, make sure to perform the bleeding of the slave cylinder conforming to the following procedure.
- a. Refill brake fluid to the maximum level of the reservoir.
 - b. Connect a vinyl tube to the bleeder screw, and insert the other end of the vinyl tube into a transparent container.
 - c. Pump the clutch pedal several times and hold it depressed.
 - d. Loosen the bleeder screw on the clutch slave cylinder to bleed air in the fluid. Tightening the bleeder screw, slowly return the clutch pedal.
 - e. Repeat steps (c) and (d) until the air in the fluid is completely bled.
 - f. After bleeding the air, securely tighten the bleeder screw and install the bleeder cap.
 - g. Refill brake fluid to the maximum level of the reservoir.

UNIT REPAIR

Master Cylinder

Components



N7A0505E

Legend

- | | |
|--------------------|--------------------|
| 1. Hose joint | 5. Snap ring |
| 2. Cylinder body | 6. Dust cover |
| 3. Pressure switch | 7. Damper Cylinder |
| 4. Piston assembly | 8. Washer |

Removal

Caution:

Press down the piston with your fingers or shop cloth to prevent it from jumping out.

1. Remove the pressure switch (3).
2. Remove the hose joint (1).
3. Remove the dust cover (6).
4. Remove the snap ring (5).
5. Remove the piston assembly (4).
6. Remove the cylinder body (2).

Inspection

Make the necessary adjustments, repairs, and parts replacements if excessive wear or damage is found during inspection.

Cylinder body

- Check the fluid return port for clogging.
- Internal parts

- Replace the parts indicated in the figure with new ones.

Clearance of cylinder body and piston

- Check the cylinder body for stepped wear, corrosion and damage, and measure the inside diameter.

Cylinder body inside diameter

Standard : Limit $\phi 20.64$ mm (0.8126 in)

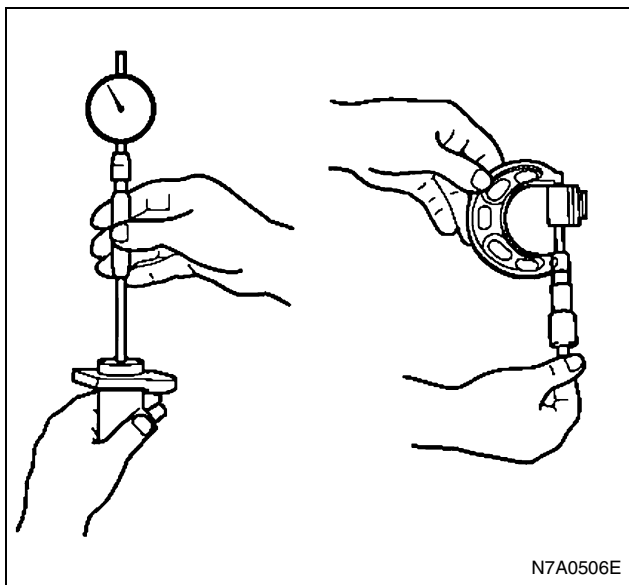
- Check the piston for damage, rust and wear.
- Measure the clearance between the cylinder body and the piston.

Clearance between cylinder body and piston

Standard : 0.03 — 0.11 mm (0.0012 — 0.0043 in)

Limit : 0.12 mm (0.0047 in)

- If the wear limit is exceeded, replace the master cylinder assembly with a new one.



Installation

1. Cylinder body
 - Immerse the cylinder body in clean brake fluid.
2. Install the piston of the piston assembly after applying rubber grease.

Caution:

Do not damage the piston assembly when installing.

3. Install the snap ring.
4. Install the dust cover.
5. Install the hose joint.

Tighten:

Hose joint to 4.5 N·m (0.45 kg·m / 3.25 lb·ft)

6. Install the pressure switch.
 - Apply liquid gasket to the switch screw, and install to the master cylinder.

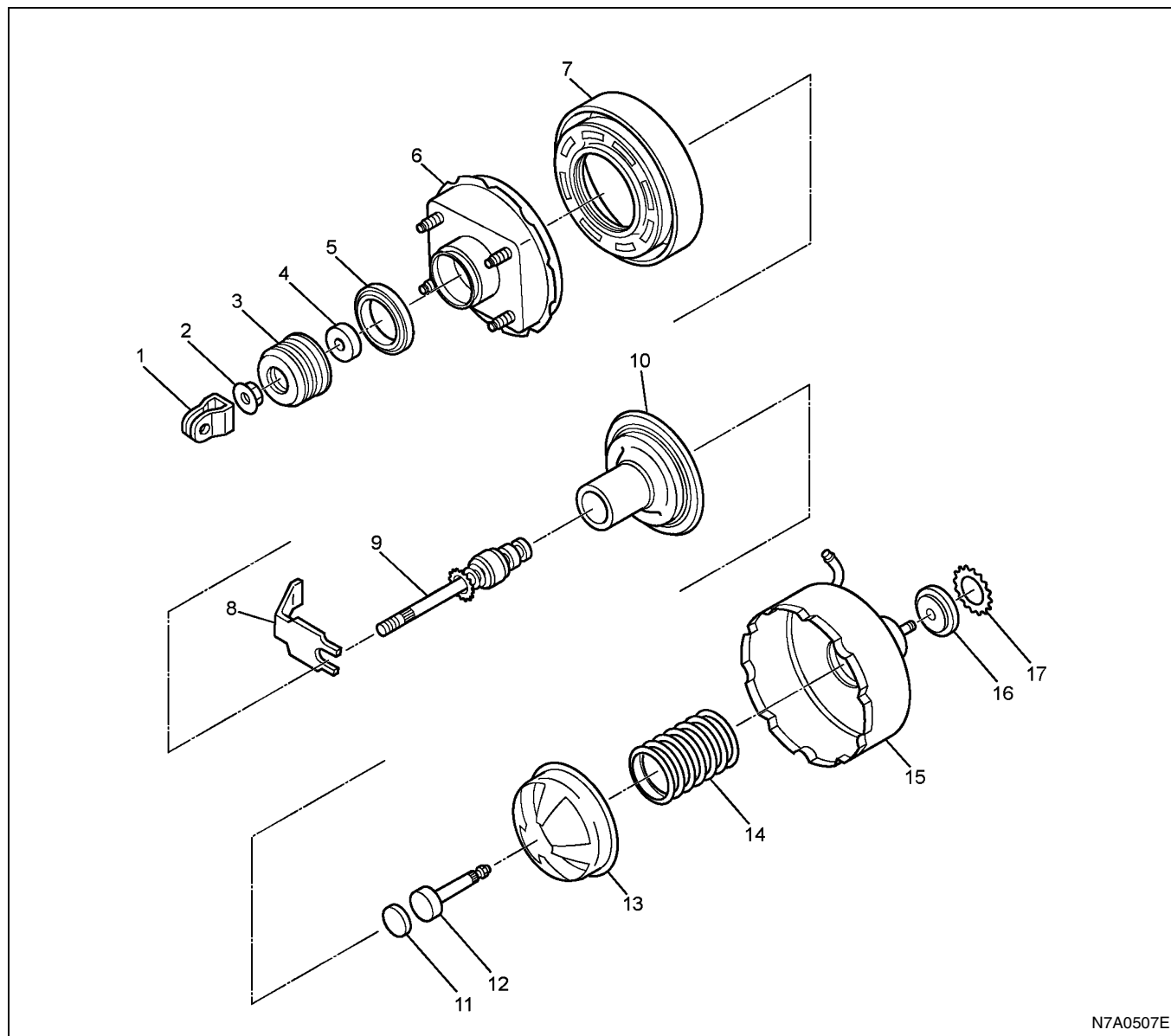
Liquid Gasket : LOCTITE 575

Tighten:

Pressure switch to 2.5 N·m (0.25 kg·m / 1.81 lb·ft)

Clutch Booster

Components



N7A0507E

Legend

- | | |
|------------------------------------|-------------------------------------|
| 1. Clevis master cylinder push rod | 10. Piston sub assembly booster |
| 2. Nut | 11. Disk reaction |
| 3. Boots | 12. Rod sub assembly booster piston |
| 4. Separator air cleaner | 13. Retainer rod |
| 5. Seal booster body No. 2 | 14. Spring booster piston return |
| 6. Body assembly booster No. 2 | 15. Body assembly booster No. 1 |
| 7. Diaphragm booster | 16. Seal booster body No. 1 |
| 8. Key valve stopper | 17. Ring circular |
| 9. Valve sub assembly booster air | |

Removal

Before disassembling, mark the front shell and rear shell for alignment.

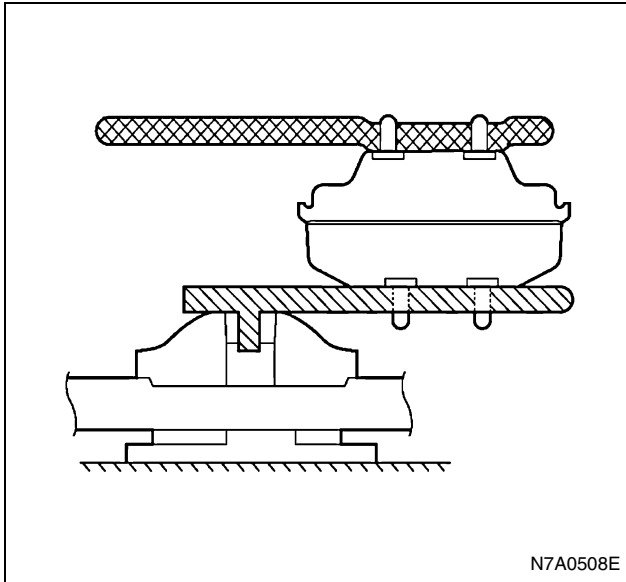
1. Remove the clevis master cylinder push rod.
2. Remove the nut.
3. Remove the boots.
4. Remove the separator air cleaner.
5. Remove the body assembly booster No. 2 (rear shell).

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- Separate the rear shell from the front shell using handle 9-8523-1733-0 and support plate 5-8840-2056-0.

Caution:

Make sure to prevent the diaphragm spring from jumping out.



6. Remove the body assembly booster No. 1 (front shell).
7. Remove the spring booster piston return.
8. Remove the retainer rod.
9. Remove the rod sub assembly booster piston.
10. Remove the disk reaction.
11. Remove the diaphragm booster.
12. Remove the key valve stopper.
13. Remove the valve sub assembly booster air.
14. Remove the piston sub assembly booster.
15. Remove the link circular.
16. Remove the seal booster body No. 2.
17. Remove the seal booster body No. 1.

Inspection

Inspect the parts by washing and drying. Replace the damaged parts with new ones.

Caution:

Use trichlene or metachlene (commercial product) for metal parts, and clean alcohol for rubber and resin parts, respectively.

Installation

Apply silicone grease to each sliding part.

- Seal mating part and lip part of the rear shell
- Internal & external surface of the diaphragm plate, and outer circumference of the valve body
- Seal of the front shell, sliding surface of the push rod and outer circumference of the valve booster control

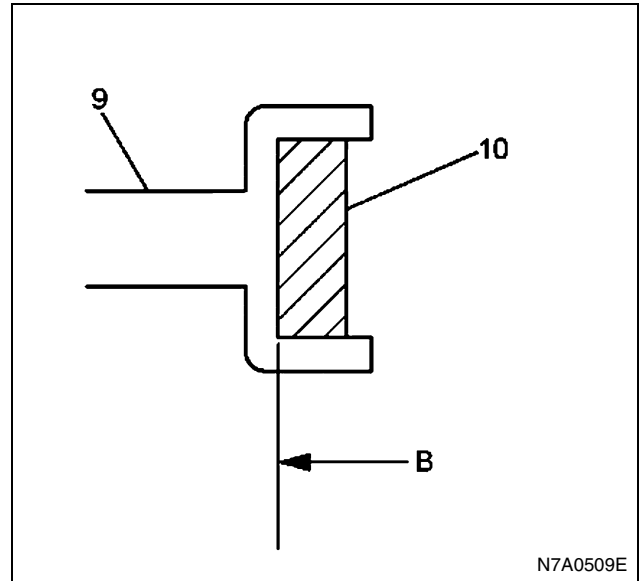
1. Install seal booster body No. 1.

2. Install body assembly booster No. 2.
3. Install the piston sub assembly booster.
4. Install the valve sub assembly booster air.
5. Install the key valve stopper.
6. Install the diaphragm booster.

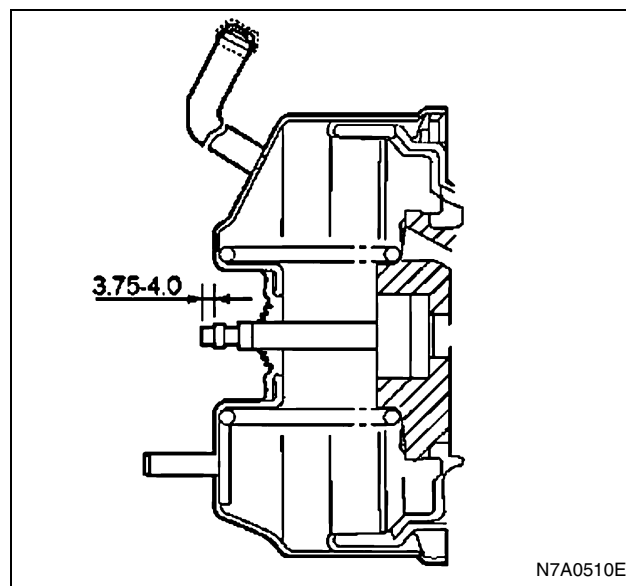
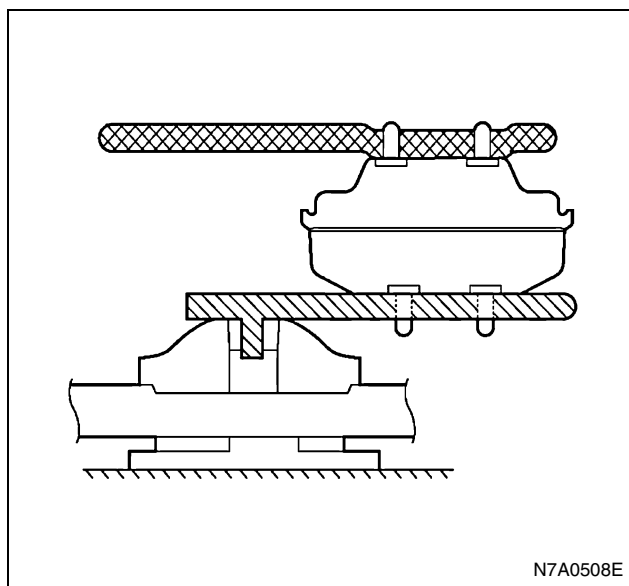
Caution:

Never tear the diaphragm. Make sure that the reaction disk is securely inserted to the surface B. (Bleed the air from the outer circumference.)

7. Install the disk reaction (10).



8. Install the rod sub assembly booster piston (9).
 9. Install the retainer rod.
 10. Install the spring booster piston return.
 11. Install seal booster body No. 1.
 12. Install the link circular.
 13. Install body assembly booster No. 1 (front shell).
- Installation has to be done using handle 9-8523-1733-0 and support plate 5-8840-2056-0.
 - When installing, the marks on the rear shell and the front shell, which were put when disassembling, has to mate with each other.



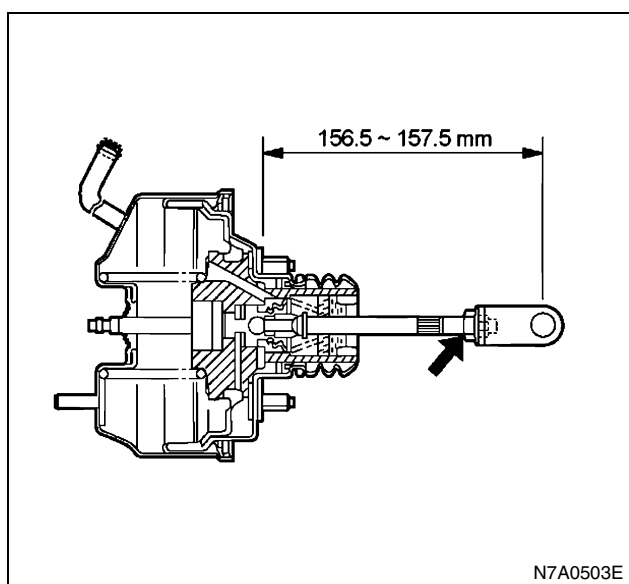
14. Install the separator air cleaner.
15. Install the boots.
16. Install the nut.
17. Install and adjust the clevis master cylinder push rod.
 - Adjust the distance between the center of the pin hole of the clevis yoke and the installation surface, and tighten the lock nut.

Dimension between the center of the pin hole of the clevis yoke and the rear shell.

156.5 — 157.5 mm (6.161 — 6.201 in)

Tighten:

Lock nut to 26 N·m (2.6 kg·m / 19 lb·ft)



Adjustment of the rod sub assembly booster piston

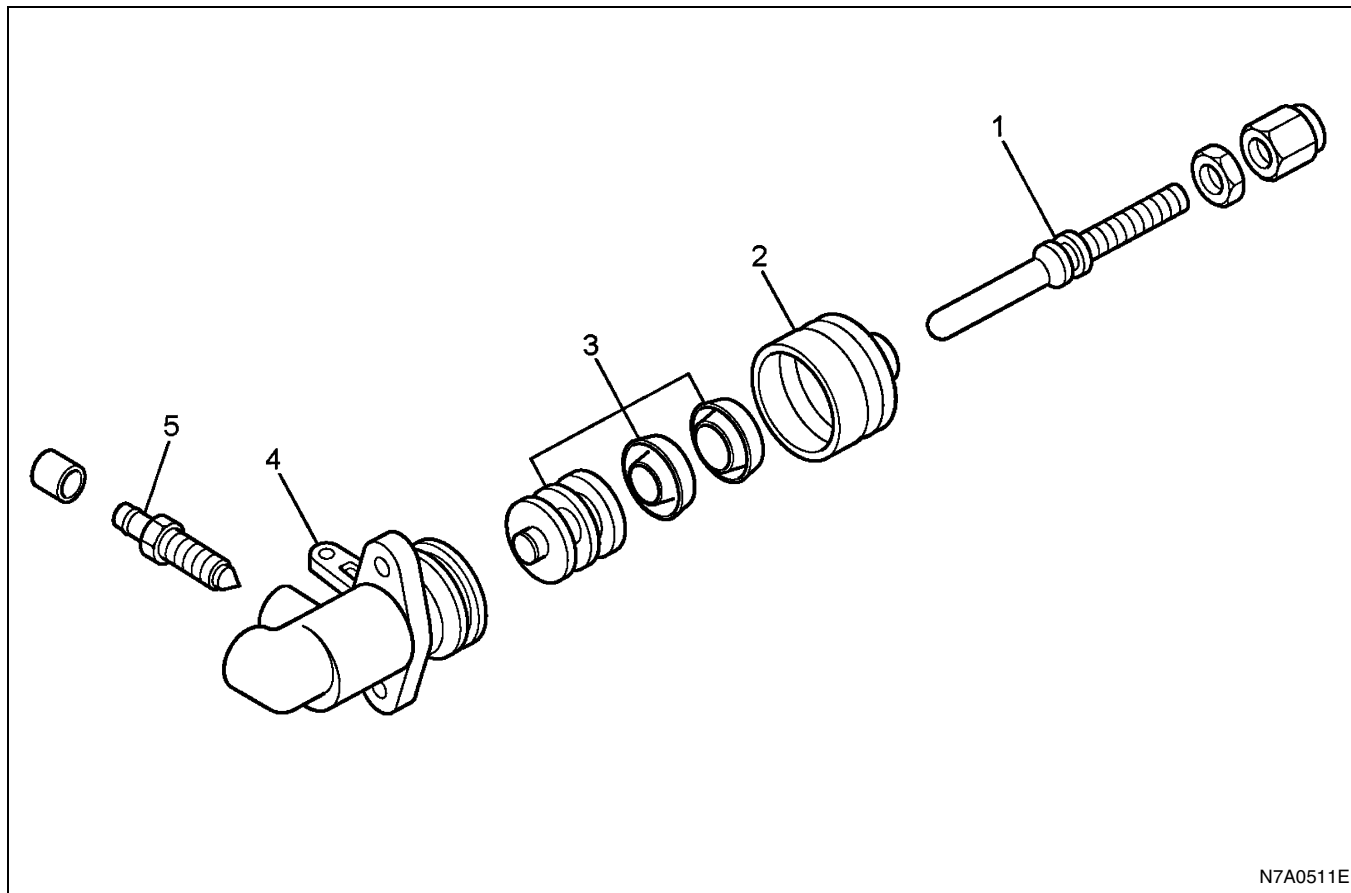
- After assembling the clutch booster, adjust the length between the top of the push rod and the surface of the rear shell.

Dimension between the top of the push rod and the rear shell

3.75 — 4.0 mm (0.15 — 0.16 in)

Slave Cylinder

Components



N7A0511E

Legend

- | | |
|--------------------|------------------|
| 1. Push rod | 4. Cylinder body |
| 2. Boots | 5. Bleeder screw |
| 3. Piston assembly | |

Removal

1. Remove the push rod (1).
2. Remove the boots (2).
3. Remove the piston assembly (3).
4. Remove the bleeder screw (5)
5. Remove the cylinder (4).

Inspection

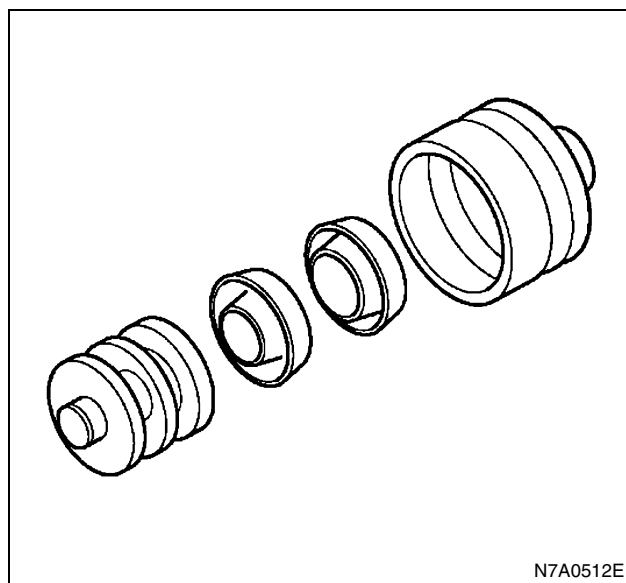
Inspect the removed parts by washing. Replace the damaged parts with new ones.

Cylinder body

- Check the fluid return port for clogging.

Internal parts

- Replace the parts indicated in the figure with new ones.



N7A0512E

Clearance between the cylinder body and the piston

- Check the internal surface of the cylinder body for stepped wear, corrosion and damage, and measure the inside diameter.

Inside diameter of the cylinder body.

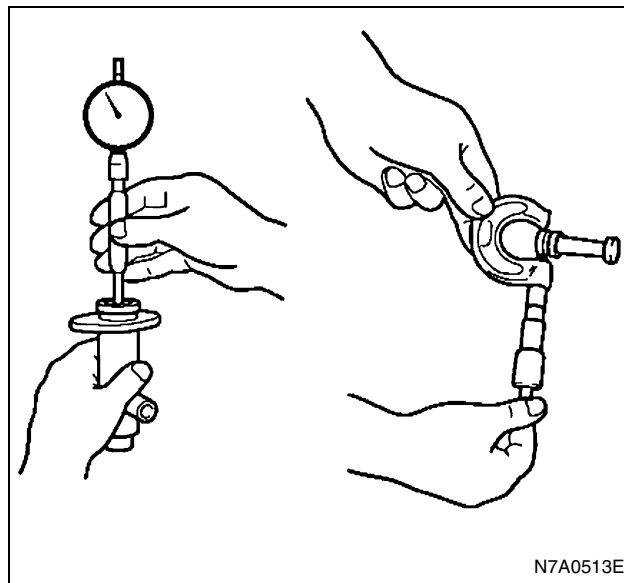
Standard inside diameter : $\phi 25.4$ mm (1.0 in)

- Check the piston for damage, rust and wear.
- Measure the clearance between the cylinder body and the piston.

Standard inside diameter : 0.02 — 0.10 mm (0.00078 — 0.0039 in)

Limit : 0.11 mm (0.0043 in)

- If the limit value is exceeded, replace the slave cylinder assembly.



N7A0513E

Installation

1. Assemble the cylinder body.
2. Assemble the bleeder screw.
3. Assemble the piston assembly.
 - Before assembling, apply a thin coat of rubber grease to the piston.

Caution:

Make sure not to damage the piston assembly when assembling.

4. Assemble the boots.
5. Assemble the push rod.

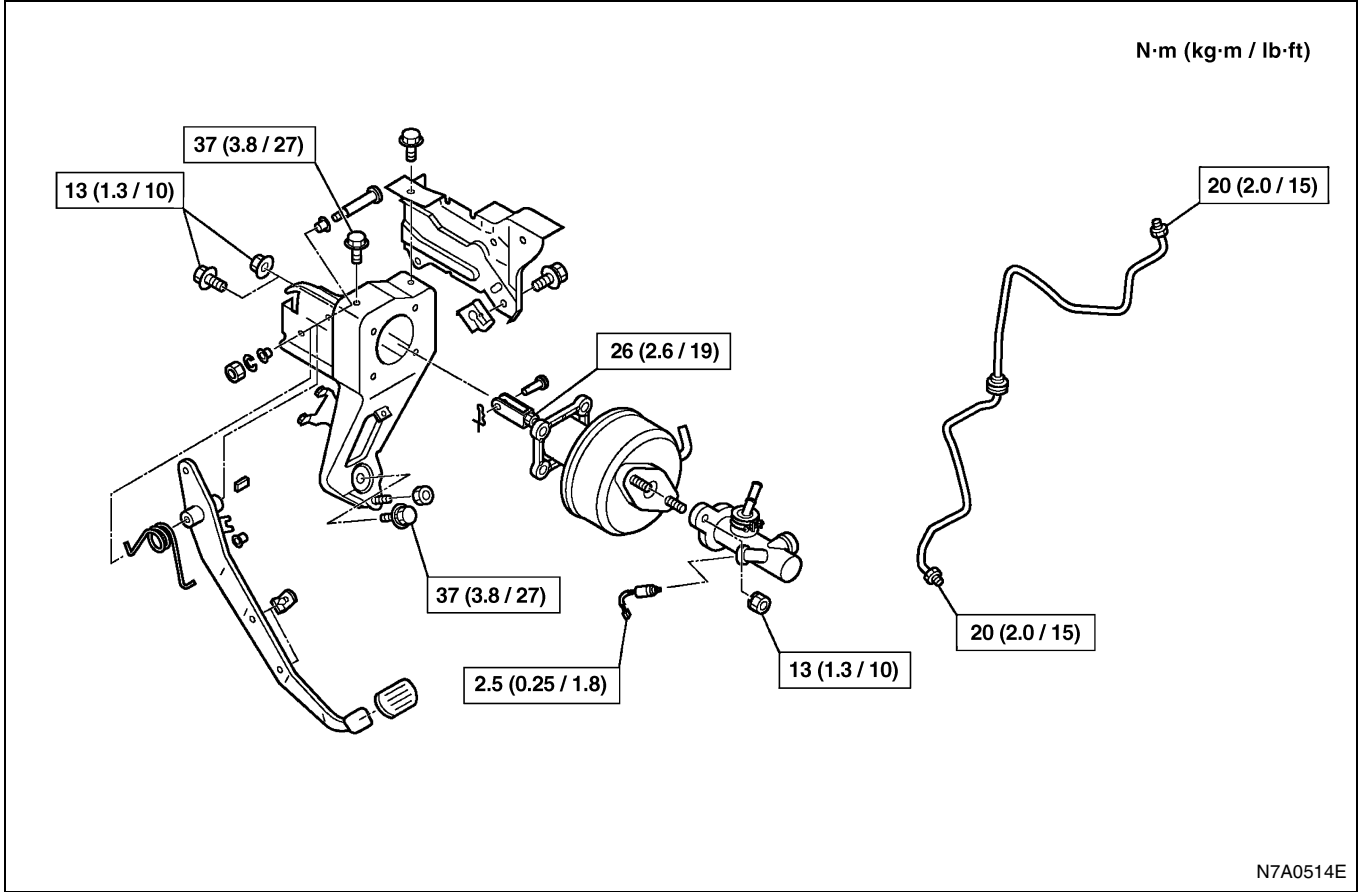
Specifications

PRESSURE PLATE	Spring Shape	Diaphragm Spring	
	Outer Circumference	373 mm (14.685 in)	
	Installation Force	Set Force	Engine Model
		8,340 N (850 kg / 1,874 lb)	4HF1, 4HG1, 4HF1-II
		9,500 N (970 kg / 2,139 lb)	4HG1-T, 4HE1-TC-N, 4HK1-TC
		6,200 N (633 kg / 1,396 lb)	4JH1-TC-S
	Spring Finger Installation Height	49 — 51 mm (1.93 — 2.01 in)	
CLUTCH DISK	Outside Diameter × Inside Diameter	300 × 190 mm (11.81 × 7.48 in)	
	Assembly Thickness: When free	8.9 mm (0.35 in)	
	Assembly Thickness: When compressed	8.5 mm (0.33 in)	
CLUTCH PEDAL	Clutch Pedal Height	160 — 170 mm (6.29 — 6.69 in)	
	Clutch Pedal Stroke	159 — 169 mm (6.25 — 6.65 in)	
	Clutch Pedal Free Play	15 — 25 mm (0.59 — 0.98 in)	
MASTER CYLINDER	Inside Diameter	$\phi 20.64$ mm (0.81 in) (with Booster)	
		$\phi 19.05$ mm (0.74 in) (without Booster)	

7C-22 CLUTCH

CLUTCH BOOSTER	Diaphragm Valid Diameter	$\phi 130$ mm (5.11 in)
SLAVE CYLINDER	Inside Diameter	$\phi 25.4$ mm (1.00 in)

Fixing Torque



Special Tools

Illustration	Tool Number / Description / Remarks
 9852317330	9-8523-1733-0 / Handle
 5884020560	5-8840-2056-0 / Support Plate