

AUTOMATIC TRANSMISSION

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MAT00001-00000

SPECIFICATIONS

Item		Specifications	
Torque converter	Type	Three-element, one-stage, two-phase type	
	Stall torque ratio/Stall revolution speed	2.0/2300 - 2900 rpm	
	One-way clutch type	Sprag type	
Transmission type		A4L-B1	
Transmission spec.	Driving method	2WD	4WD
	Type	Three forward speeds, one reverse gear, planetary gear type	
	Control element	Wet type multiple clutch 3 sets	
		Band type brake 1 set	
		Wet type multiple brake 1 set	
		One-way clutch 1 piece	
	Gear ratio	1st gear: 2.730 2nd gear: 1.526 3rd gear: 1.000 4th gear: 0.696 reverse gear: 2.290	
	Final gear ratio	4.438	5.050
	Speedometer gear ratio	19/17	
	Oil pump	Internal gear type	
	Fluid to be used	ATF DEXRON® III (or II)	
	Drain and Refill liter	1.9	
	Fluid capacity liter	4.0	
	Cooling method	Water-cooled (radiator built-in type)	
Control system	Gear shift control method	Governor and throttle pressure shift control method	
	Automatic gear shift	Three forward speeds, full automatic shift	
	Manual control pattern	P—R—N—D4—3—2	

MAT00003-00000

INSTRUCTIONS

This section explains the removal/installation procedures for the transmission assembly from or to the vehicle.

For disassembling, checking and assembling procedures for the transmission assembly, refer to the separate Service Manual for Type A4L Series Automatic Transmission.

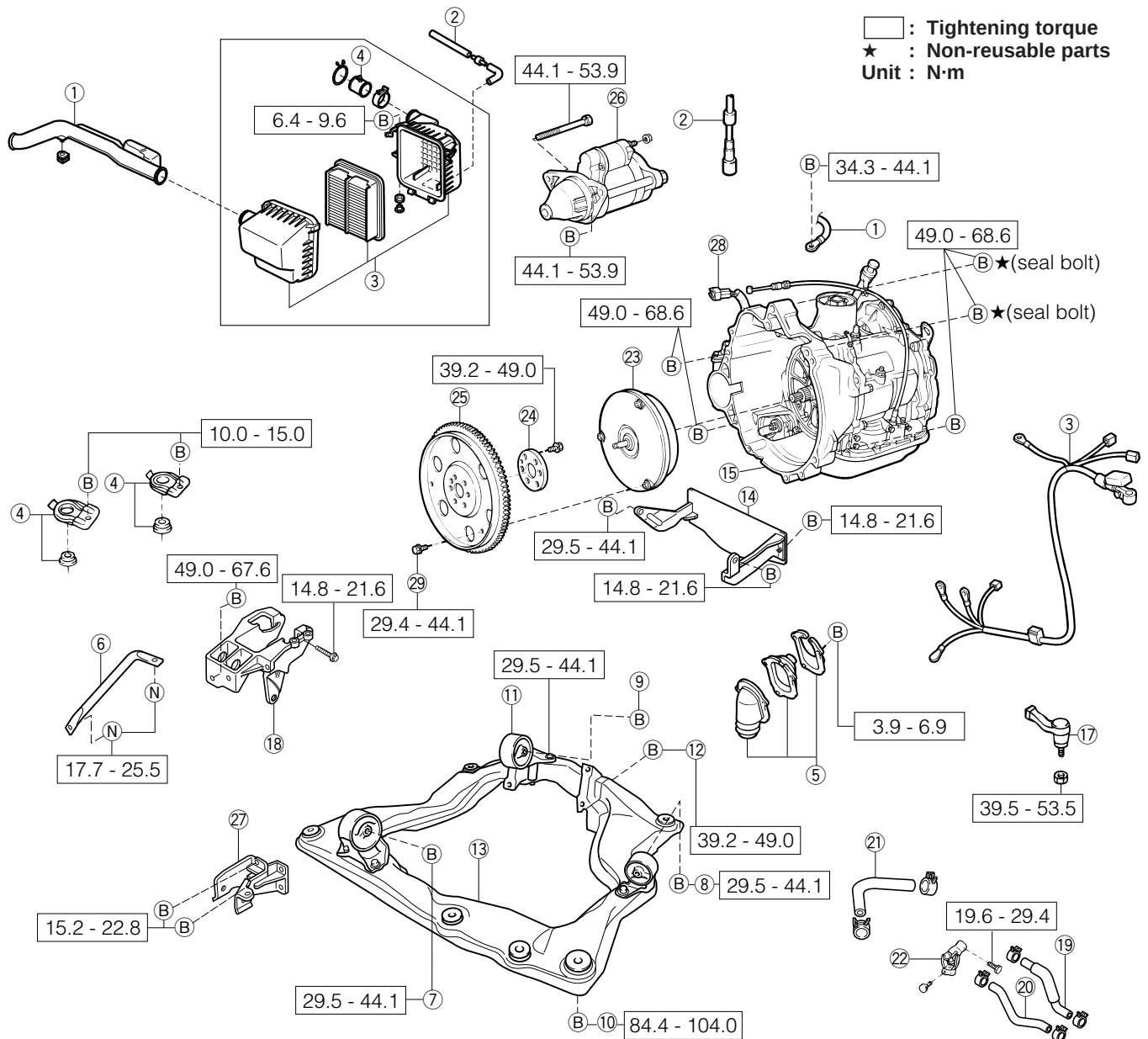
Service Manual:

- TYPE A4L Series Automatic Transmission No. 9729 (Published in October, 1998)

MAT00004-00000

TRANSMISSION ASSEMBLY

COMPONENTS



- | | |
|---|--|
| ① Ground wire | ⑬ Front frame S/A |
| ② Speedometer drive cable
(Transmission side) | ⑭ Power train stiffener |
| ③ Engine No. 2 wire | ⑮ Transaxle Ay |
| ④ Radiator upper bracket | ⑯ Air cleaner Ay |
| ⑤ Steering shaft dust cover | ⑰ Tie-rod end S/A |
| ⑥ Stiffener | ⑱ Engine mounting rear bracket |
| ⑦ Bolt
(Engine mounting front bracket x insulator) | ⑲ Heater hose No. 1 |
| ⑧ Bolt
(Engine mounting left bracket x insulator) | ⑳ Heater hose No. 2 |
| ⑨ Bolt
(Engine mounting rear bracket x insulator) | ㉑ Fuel hose |
| ⑩ Bolt
(Front frame x body) | ㉒ Steering shaft universal joint |
| ⑪ Engine mounting rear insulator S/A | ㉓ Torque converter Ay |
| ⑫ Bolt (Steering gear bracket x front frame) | ㉔ Centering plate |
| | ㉕ Driveplate & ring gear sub assembly |
| | ㉖ Starter assembly |
| | ㉗ Engine mounting front bracket |
| | ㉘ Connector (Neutral start switch) |
| | ㉙ Bolt (Torque converter x driveplate) |

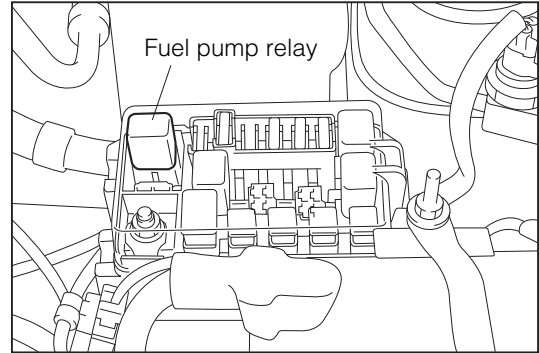
REMOVAL

CAUTION:

- When working on the fuel system, never allow any open flame to be brought near the working site.
- When disconnecting the fuel hose, take appropriate measures to prevent fuel from splashing.
- When disconnecting the oil cooler hose, take appropriate measures to prevent automatic fluid from splashing.
- When the cooling water is still hot, never open the radiator cap and drain plug nor disconnect the water hose.
- When the oil is still hot, never remove the drain plug of the transmission.

MAT00006-00000

1. Release the fuel pressure, following the procedure given below.
 - (1) Turn OFF the ignition switch.
 - (2) Remove the fuel pump relay.
 - (3) Start the engine. Keep the engine idling, until it dies out.
 - (4) Turn OFF the ignition switch. Then, install the fuel pump relay.
 - (5) Leave the engine, until it cools down.



MAT00007-00003

2. Disconnect the cable from the negative (–) terminal of the battery.

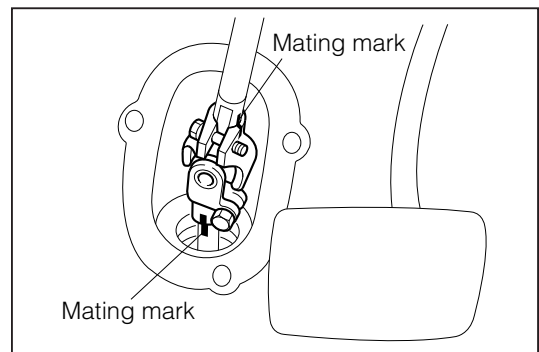
NOTE:

- It should be noted that the diagnosis results and the memory of the radio, etc. will be erased when the cable is disconnected from the negative (–) terminal of the battery.

3. Disconnect the throttle cable.
4. Remove the front bumper.
5. Drain the cooling water from the radiator.
6. Remove the radiator assembly.
7. Drain the automatic transmission fluid by removing the drain plug and gasket of the transmission.
8. Remove the front wheels.
9. Remove the stabilizer bar.
10. Remove the front exhaust pipe assembly.
11. Remove the transfer in the case of 4WD vehicles. (Refer to the TR section.)
12. Pull out the drive shafts at the transmission side.
13. Remove the shift selecting rod control cable.

MAT00008-00000

14. Removal of steering shaft universal joint assembly
 - (1) Put mating marks on the steering gear assembly, steering main shaft assembly and steering shaft universal joint assembly, respectively.
 - (2) Remove the steering shaft universal joint assembly.



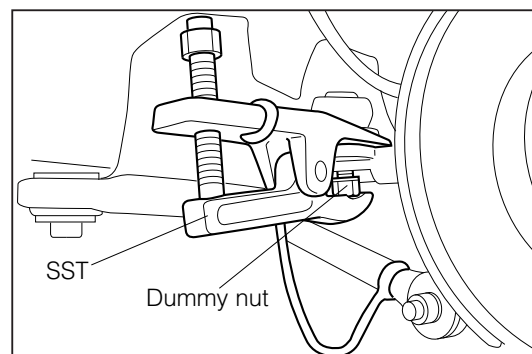
MAT00009-00004

15. Separate the steering knuckles from the tie-rod end sub-assemblies, using the following SSTs.

SST: 09661-87701-000

NOTE:

- Be sure to install a dummy nut when setting the SST so that the threaded portion of the tie-rod end may not be damaged.
- Be sure to suspend the SST by means of a cord.

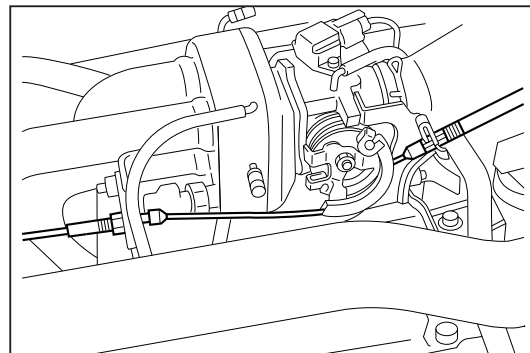


MAT00010-00005

16. Remove the throttle control cable assembly.
17. Remove the power steering oil reservoir.

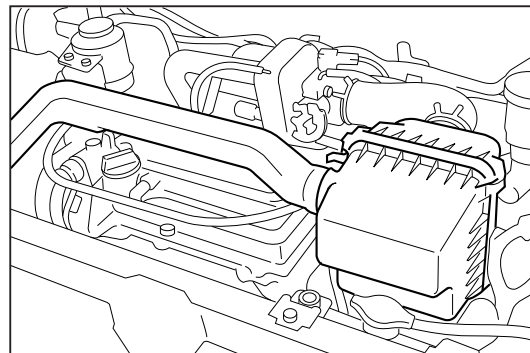
NOTE:

- Be very careful not to cut the pipe.



MAT00011-00006

18. Remove the air cleaner assembly.

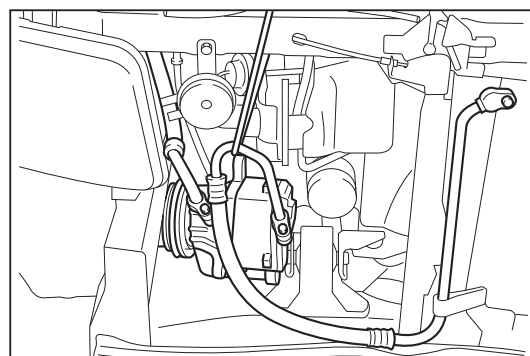


MAT00012-00007

19. Remove the magnet clutch compressor. Then, suspend the compressor, using a cord, etc.

NOTE:

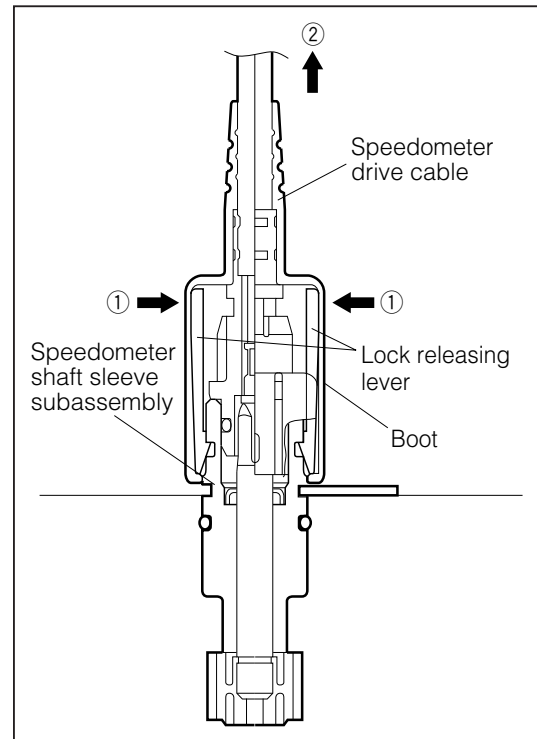
- Be very careful not to cut the pipe.



MAT00013-00008

20. Removal of speedometer drive cable assembly

- (1) Hold the lever over the boot ①, then pull the lock releasing lever inside the boot toward the cable side ②.

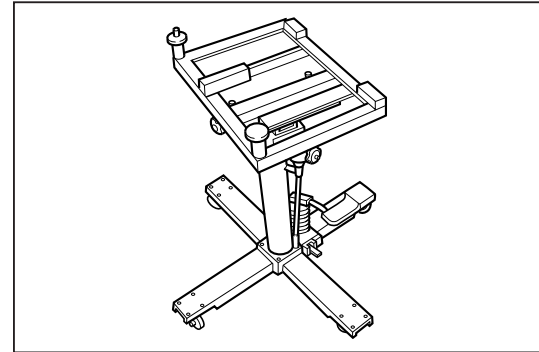


MAT00014-00009

21. Removal of front frame subassembly

- (1) Disconnect the connector of the engine wire harness from the engine control computer and pull the connector toward the engine compartment.
- (2) Separate the engine wires from the vehicle by detaching the connectors, clamps, etc.
- (3) Disconnect the ground wires of each harness, engine section and transmission section.
- (4) Positively secure the following SST on a high-transmission jack.

SST: 09994-87201-000



MAT00015-00010

NOTE:

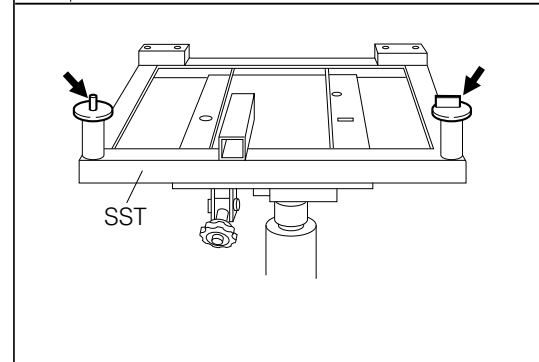
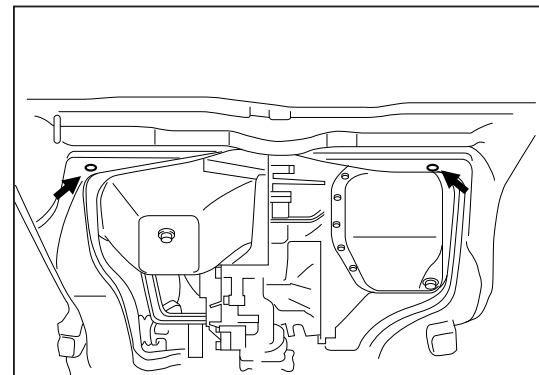
- In cases where no high-transmission jack is used, be sure to positively secure the SST on a rigid rack, etc. Then, the following operations should be carried out by moving the vehicle (two-post lift) up and down.

- (5) Operate the high-transmission jack so that the SST may be set to the front frame subassembly. (Set the protruding section of the SST to the bolt hole (the hole located at the vehicle rear side among the two holes) for attaching the stabilizer bar bracket (right side).)

NOTE:

- Be sure to wind a vinyl tape, etc. around the protruding section of the SST so as to prevent the bolt hole from being damaged.

- (6) Remove the attaching bolts and nuts of the front frame subassembly.



MAT00016-00011

- (7) Remove the front frame subassembly together with the engine assembly and transmission assembly from the vehicle by operating the high-transmission jack.

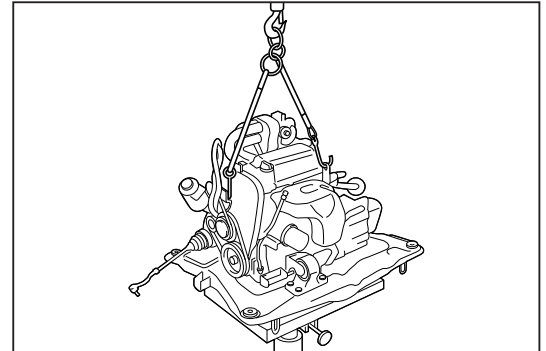
NOTE:

- Be sure to perform the removal operation slowly while making sure that no connector, hose, etc. remains connected and there is no binding, etc.
- Care must be exercised so that the front frame assembly may not interfere with the drive shaft and lower arm.

MAT00017-00000

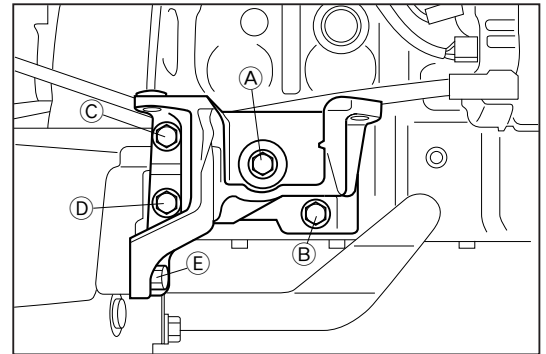
22. Removal of rear mount bracket

- (1) Support the engine, using a chain block.
 (2) Remove the bolts connecting the insulator to the rear mount bracket.



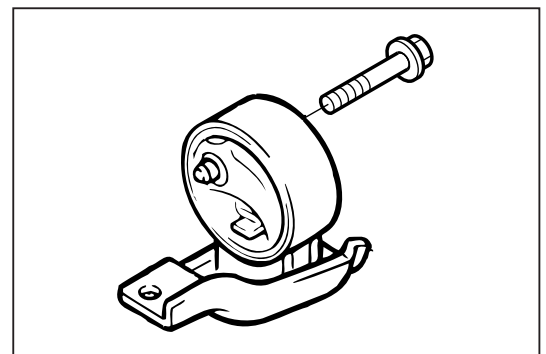
MAT00018-00012

- (3) Remove the bolts (A) - (E).
 (4) Remove the rear mount bracket.



MAT00019-00013

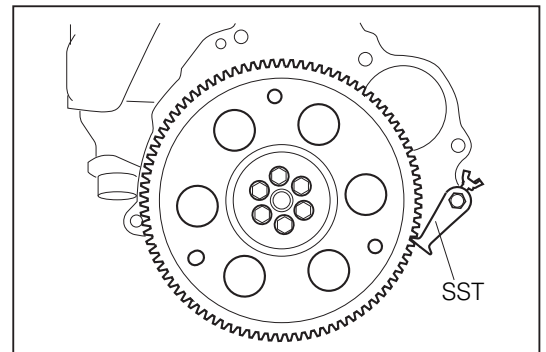
23. Remove the bolts connecting the insulator to the left mount bracket.
 24. Remove the four bolts connecting the engine assembly to the transmission assembly.
 25. Remove the power train stiffener.
 26. Remove the transmission assembly.
 27. Removal of torque converter.
 (1) Remove the three attaching bolts of the torque converter.
 (2) Remove the torque converter.



MAT00020-00028

28. Remove the drive plate (21) while preventing it from turning by means of the SST.

SST: 09210-87701-000



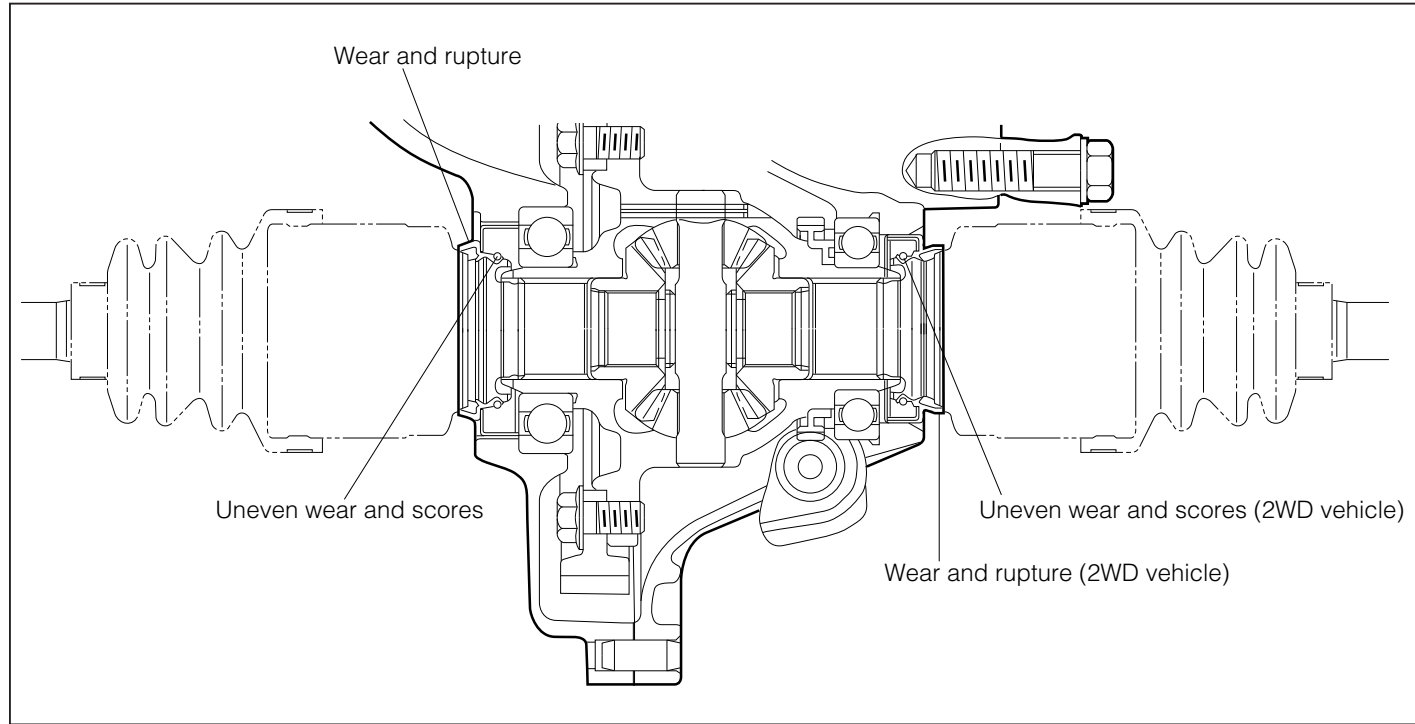
MAT00022-00014

INSPECTION

1. Ensure that the following sections exhibit no oil leakage.
 - (1) Oil seal section of input shaft
 - (2) Mating surface between converter housing and transmission case
 - (3) Mating surface between transmission case and transmission rear cover
2. Check the oil seal at the drive shaft attaching section.
 - (1) Main lip section for uneven wear and scores
 - (2) Sub-lip section for wear and rupture

NOTE:

- In cases where any abnormality is found in the steps 1 to 2 above, refer to the separate Service Manual (No. 9727) for Type A3L Series Automatic Transmission.



MAT00023-00015

INSTALLATION

NOTE:

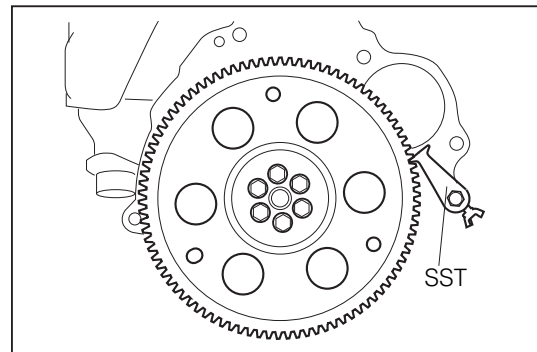
- In principle, reverse the disassembling procedure to perform the installation.
The following shows the main points of the installation.

MAT00024-00000

1. Points for assembling of drive plate
 - (1) Install the drive plate while preventing it from turning by means of the following SST.
- SST: 09210-87701-000
Tightening Torque: 39.2 - 49.0 N·m

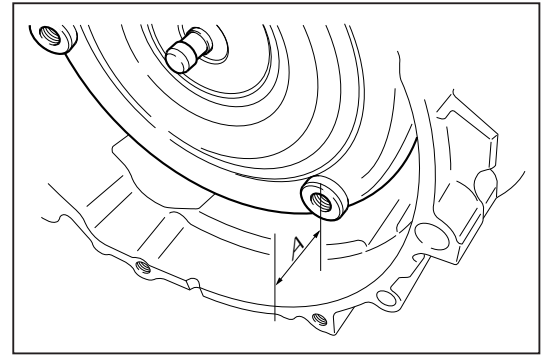
CAUTION:

- Never use any bolt other than the specified bolts.



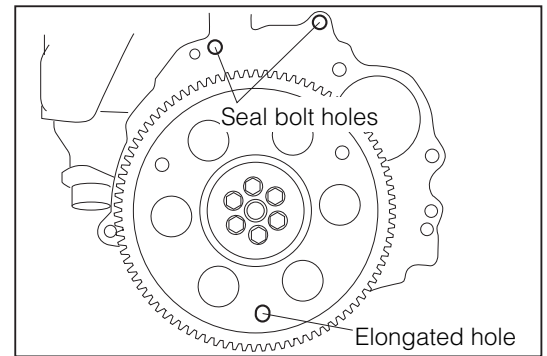
MAT00025-00016

2. Points for assembling of torque converter
 - (1) Insert the torque converter into the transmission assembly while turning the torque converter. Then, ensure that the torque converter has been inserted positively.
 Specified Value: Dimension A at least 29 mm
 (The dimension A is a distance from the edge surface of the housing to the drive plate attaching surface of the torque converter.)
 - (2) Apply MP grease to the tip end section of the torque converter.



MAT00026-00017

3. Points for connecting between engine assembly and transmission assembly
 - (1) Clean the seal bolt holes of the engine block.
 - (2) Set the drive plate so that the reference hole (elongated hole) of the drive plate may come to the down side.
 - (3) Assemble the transmission to the engine straight, while aligning the knock pin positions. At this time, care must be exercised so that no excessive bending force may be applied to the input shaft of the transmission.
 - (4) Tighten the four direct-connecting bolts of the transmission and engine to the specified torque.
 Tightening Torque: 49.0 - 69.0 N·m



MAT00025-00016

NOTE:

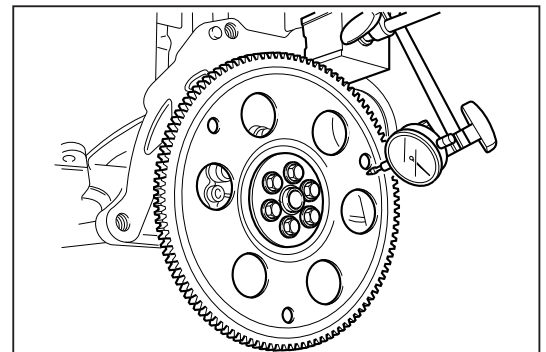
- Be sure to use the two bolts with seal at the upper side.
- Be sure to use new bolts with seal.

- (5) Tighten the union bolts of the torque converter and drive plate, while making sure that the torque converter turns lightly.
 Tightening Torque: 29.5 - 44.1 N·m

CAUTION:

- Never use any bolt other than the specified bolts.

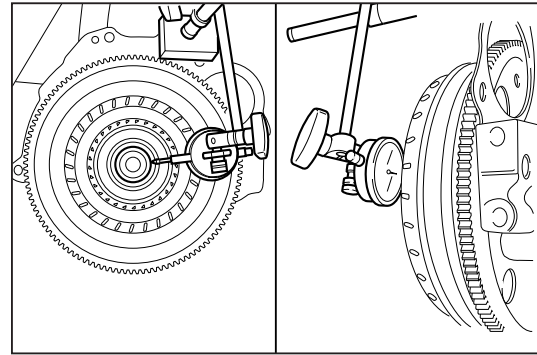
4. Check the drive plate and torque converter
 - (1) Set a dial gauge as indicated in the right figure. Check the drive plate for runout.
 Specified Value: Not to exceed 0.25 mm



MAT00030-00021

- (2) Install the torque converter to the drive plate. Check the shaft for runout.

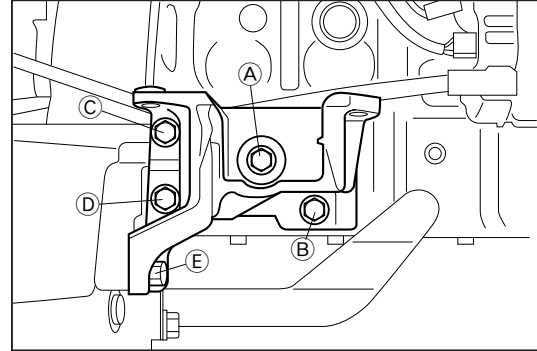
Specified Value: Runout not to exceed 0.3 mm



MAT00027-00022

5. Points for installation of rear mount bracket
- (1) Temporarily tighten the bolt (A) to the engine block.
 - (2) Tighten the bolts (B), (C) and (D) to the specified torque.

Tightening Torque: 49.0 - 67.6 N·m

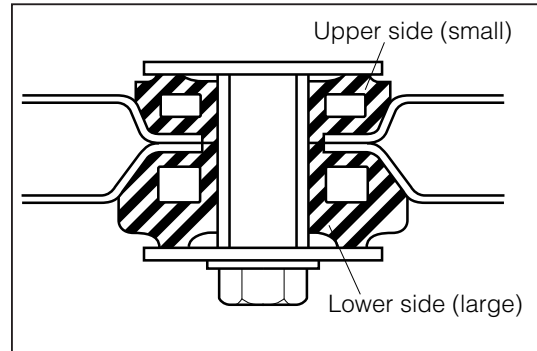


MAT00028-00019

6. Points for installation of front frame
- (1) Attach the bolt, while facing the cushion rubber in the direction indicated in the right figure.

CAUTION:

- Make sure that the cushion rubber is installed in the correct directions of up and down sides as well as front and reverse sides.



MAT00029-00020

7. Points for connection of throttle cable
- (1) Reset the automatic adjusting mechanism, following the procedure given below.

NOTE:

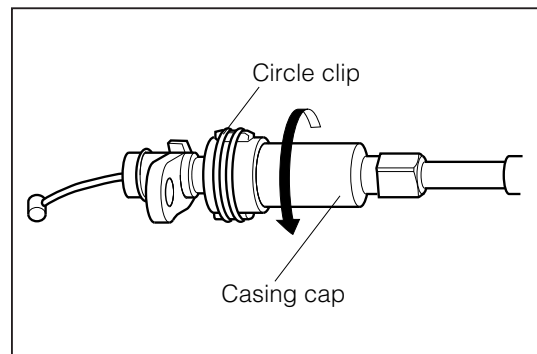
- Be very careful not to apply any lateral force to the casing cap when turning and pulling the casing cap, using pliers, etc. If a lateral force is applied, the casing cap section may be damaged (broken).

- ① Turn the casing cap approximately 60° - 90°. (The circle clip expands.)

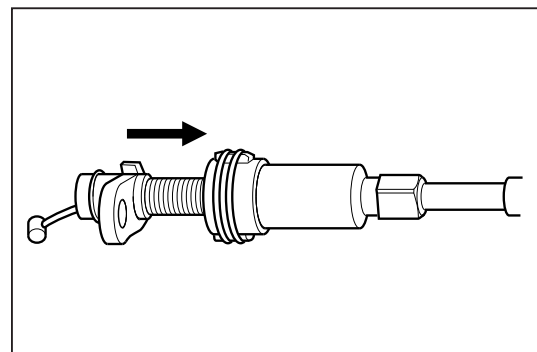
NOTE:

- When pliers, etc. are used, be sure to clamp the hexagon staked section of the casing cap.

- ② Pull the casing cap, until it comes in contact with the stopper.

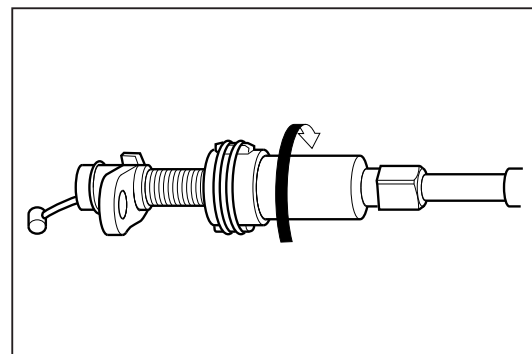


MAT00032-00023



MAT00033-00024

- ③ Turn the casing cap in the direction reverse to that in Step ①. (The circle clip closes and the casing clip is secured.)



MAT00034-00025

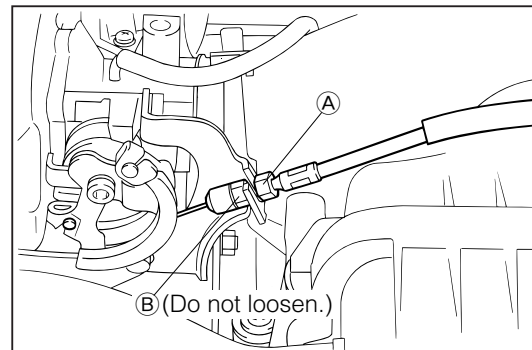
- (2) Positively insert the cable into the U-shaped groove of the throttle body bracket as far as it will go. Then, tighten the nut ①.

CAUTION:

- Never loosen the nut ②. This nut is glue-locked (not adjustable).

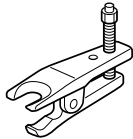
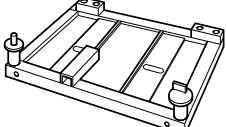
NOTE:

- Fully depress the accelerator pedal or turn the throttle link until it comes in contact with the full-open stopper. At this time, make sure that you can hear a clicking sound and the throttle cable play has been automatically adjusted.



MAT00035-00026

SSTs

Shape	Part No. and name	Purpose
	09611-87701-000 Tie-rod end puller	Removal of tie-rod end
	09994-87201-000 Engine frame holder	Removal and installation of engine

MAT00036-00027

TIGHTENING TORQUE

Tightening components	Tightening torque	
	N·m	kgf·m
Throttle cable × Cable bracket	6.9 - 9.8	0.7 - 1.0
Installation of air cleaner assembly	6.3 - 9.8	0.64 - 0.96
Installation of steering shaft universal joint	19.6 - 29.4	2.0 - 3.0
Connection of ground wire	34.3 - 44.1	3.5 - 4.5
Installation of radiator upper bracket	10.2 - 15.3	1.04 - 1.56
Installation of steering shaft dust cover	3.9 - 6.9	0.4 - 0.7
Installation of tie-rod end subassembly	31.9 - 46.6	3.25 - 4.75
Steering gear bracket × Front frame	39.2 - 49.0	4.0 - 5.0
Front frame × Body	84.3 - 103.9	8.6 - 10.6
Power train stiffener × Engine assembly (front side)	29.4 - 44.1	3.0 - 4.5
Power train stiffener × Engine assembly (rear side)	14.7 - 21.6	1.5 - 2.2
Power train stiffener × Transmission assembly	14.7 - 21.6	1.5 - 2.2
Engine mounting front bracket × Engine assembly	15.3 - 22.9	1.56 - 2.34
Engine mounting front bracket × Insulator	44.1 - 53.9	4.5 - 5.5
Engine mounting rear bracket × Engine assembly	49.0 - 68.6	5.0 - 7.0
Engine mounting rear bracket × Transmission assembly	49.0 - 68.6	5.0 - 7.0
Engine mounting left bracket × Insulator	44.1 - 53.9	4.5 - 5.5
Engine mounting rear bracket × Insulator	44.1 - 53.9	4.5 - 5.5
Engine assembly × Transmission assembly	49.0 - 68.6	5.0 - 7.0
Engine crank edge × Centering plate	39.2 - 49.0	4.0 - 5.0
Drive plate × Torque converter	29.4 - 44.1	3.0 - 4.5
Starter	44.1 - 53.9	4.5 - 5.5

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