DAIHATSU

TERIOS

J100

TO INDEX

TRANSFER

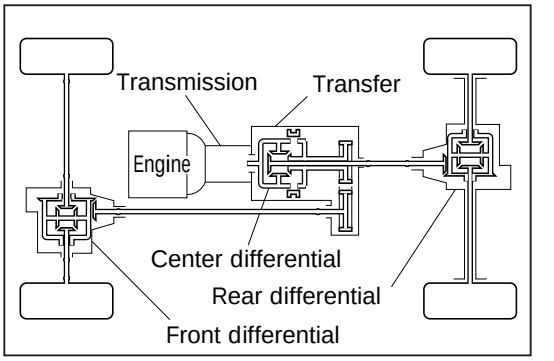
JTR00001-00000

TR

NO. 9710-JE

DESCRIPTION

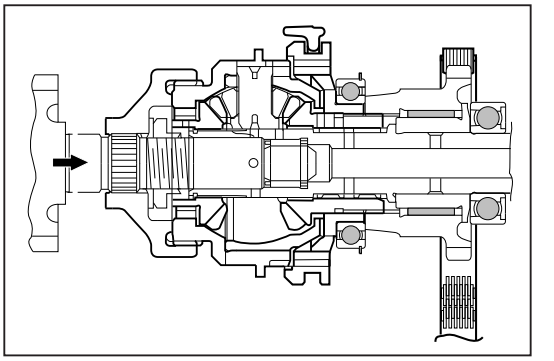
A driving system equipped with a center differential is employed.



JTR00002-00101

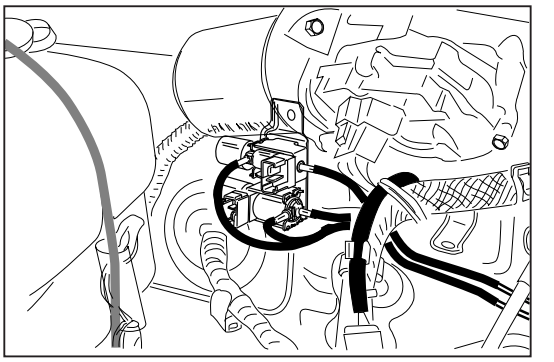
CENTER DIFFERENTIAL SYSTEM

The input power from the transmission of the driving system is always distributed to the front and rear wheels. The transfer system employs a negative pressure-driving actuator type, with a center differential lock mechanism.
The negative pressure which has been taken from the intake manifold is transmitted to a diaphragm type actuator provided inside the transfer case.



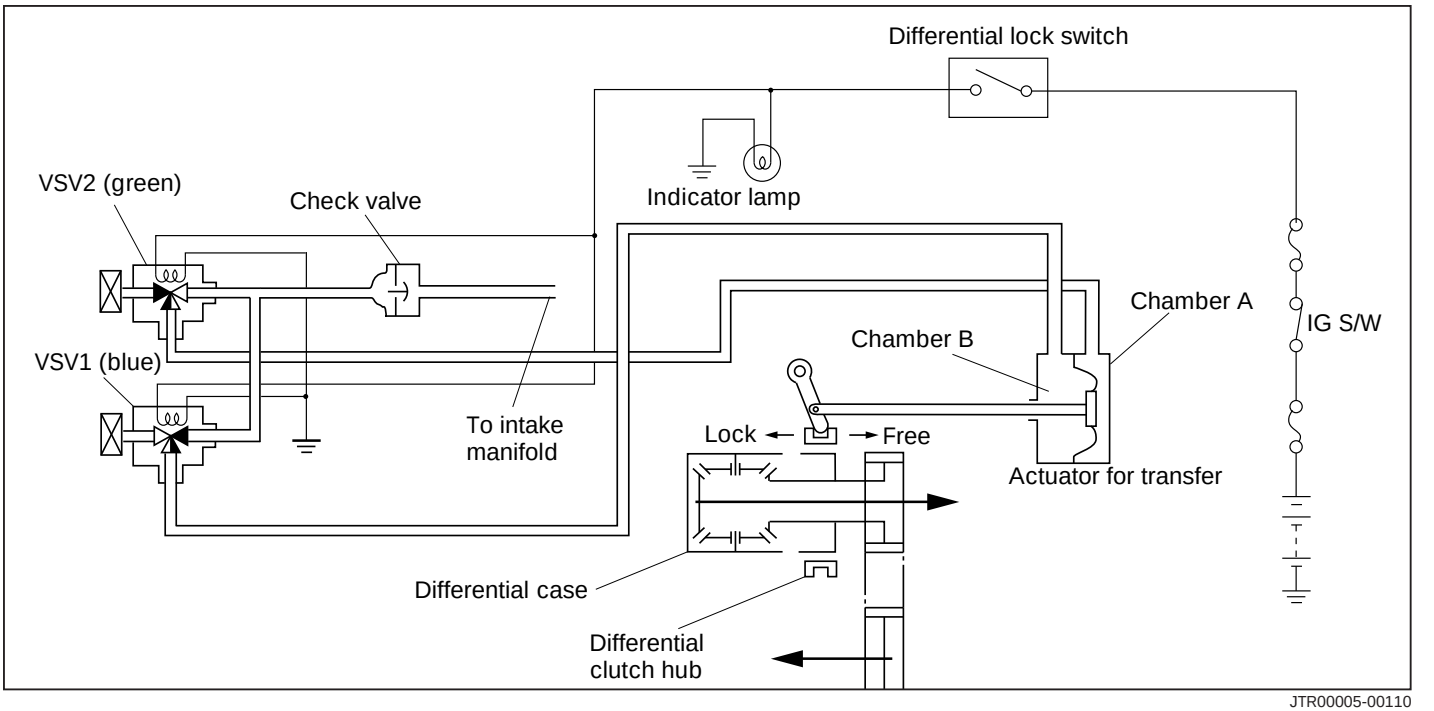
JTR00003-00102

The negative pressure is controlled by two VSV's. For improved response of the actuator, these VSV's have been installed in the engine compartment.



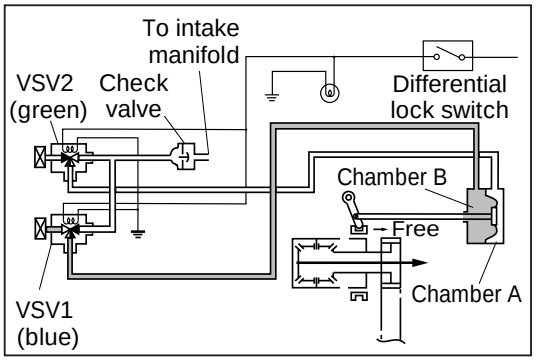
JTR00004-00103

OPERATION OF CENTER DIFFERENTIAL LOCK SYSTEM



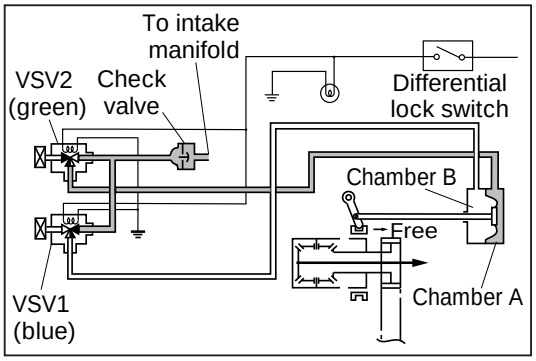
JTR00005-00110

1. When center differential lock switch is turned off.
   (1) The VSV1 and VSV2 become unenergized. Thus, the VSV1 is connected to the air filter side. As a result, the transfer actuator chamber B becomes equal to the atmospheric pressure.



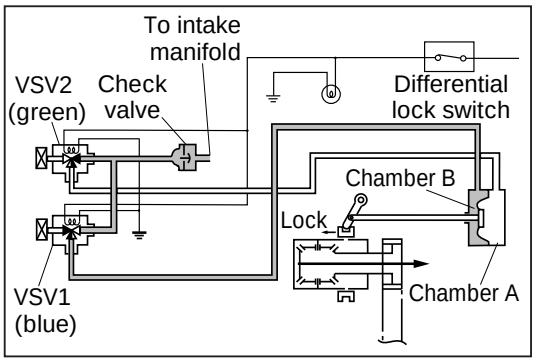
JTR00006-00111

   (2) On the other hand, the intake manifold negative pressure is transmitted to the check valve, VSV2, and then, transfer actuator chamber A. Consequently, the differential clutch hub assembly of the transfer moves backward. In this way, the center differential is switched to a free state.



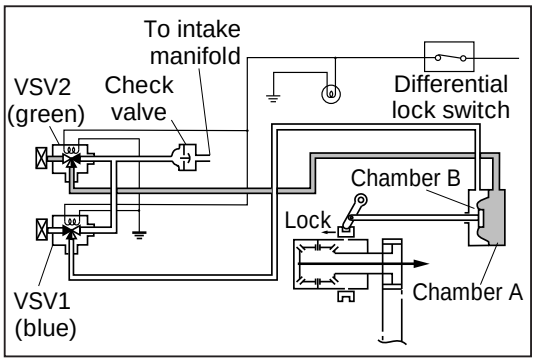
JTR00007-00112

2. When center differential lock switch is turned on.
   (1) A electric current flows into the VSV1 and VSV2. Thus, the intake manifold negative pressure is transmitted to the check valve, VSV1, and then, transfer actuator chamber B.



JTR00008-00113

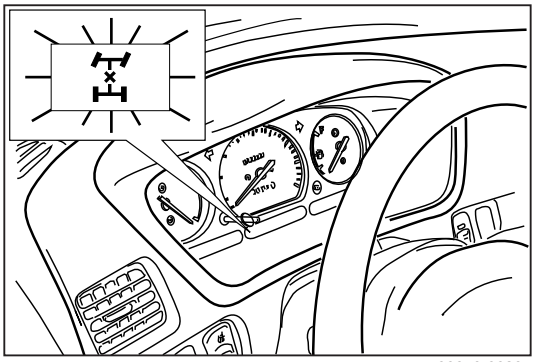
   (2) On the other hand, the VSV2 is connected to the air filter. As a result, the transfer actuator chamber A becomes equal to the atmospheric pressure. Consequently, the differential clutch hub assembly of the transfer moves forward, thus engaging with the differential case subassembly. In this way, the center differential becomes in a locked state.



JTR00009-00114

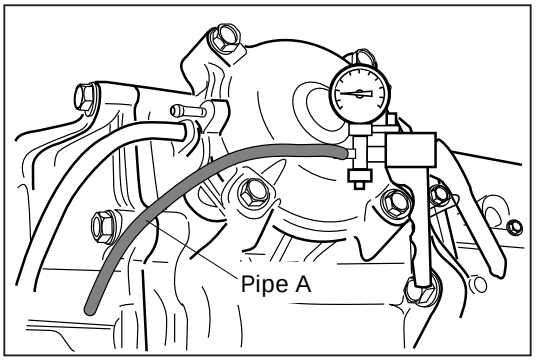
IN-VEHICLE INSPECTION

1. Turn the ignition switch to the “ON” position.
2. Check to see if the indicator will illuminate when the differential lock switch is turned on.
   NOTE:
   - If not, check the indicator valve.
3. Turns off the differential lock switch.



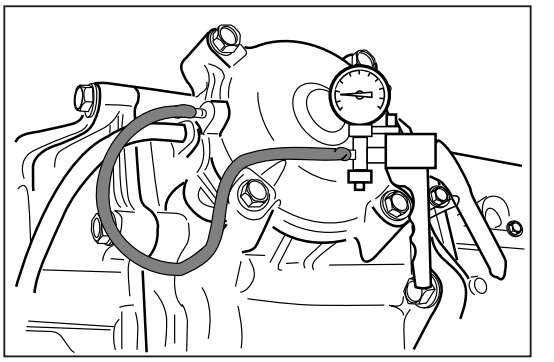
JTR00010-00201

4. Disconnect the pipe A. Then, Connect a MityVac to the pipe A.
5. Start the engine.
6. Check to see if the MityVac indicates a negative pressure while keeping the engine revolution speed at idling.



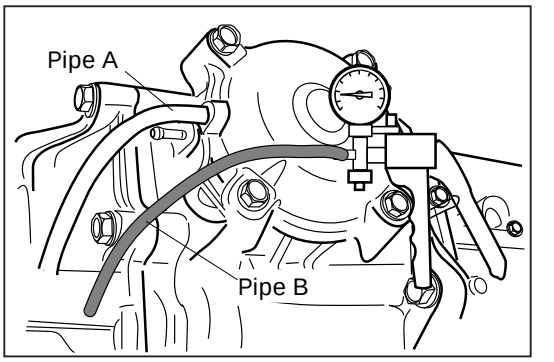
JTR00011-00202

7. Connect the MityVac to the diaphragm with a suitable pipe.
8. Set the MityVac to –200 mmHg manually.
9. Hold the negative pressure of the MityVac at –200 mmHg for about 10 seconds.
   NOTE:
   - If the diaphragm exhibits damage, deterioration and so forth, the negative pressure will rapidly return to positive pressure.



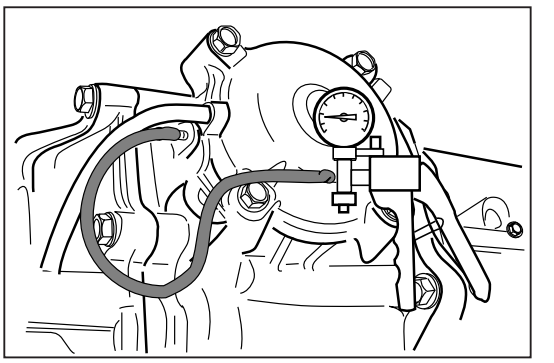
JTR00012-00203

10. Disconnect the pipe B.
11. Connect the MityVac to the pipe B.
12. Start the engine. Turns on the differential lock switch.
13. Check to see if the MityVac indicates a negative pressure while keeping the engine revolution speed at idling.



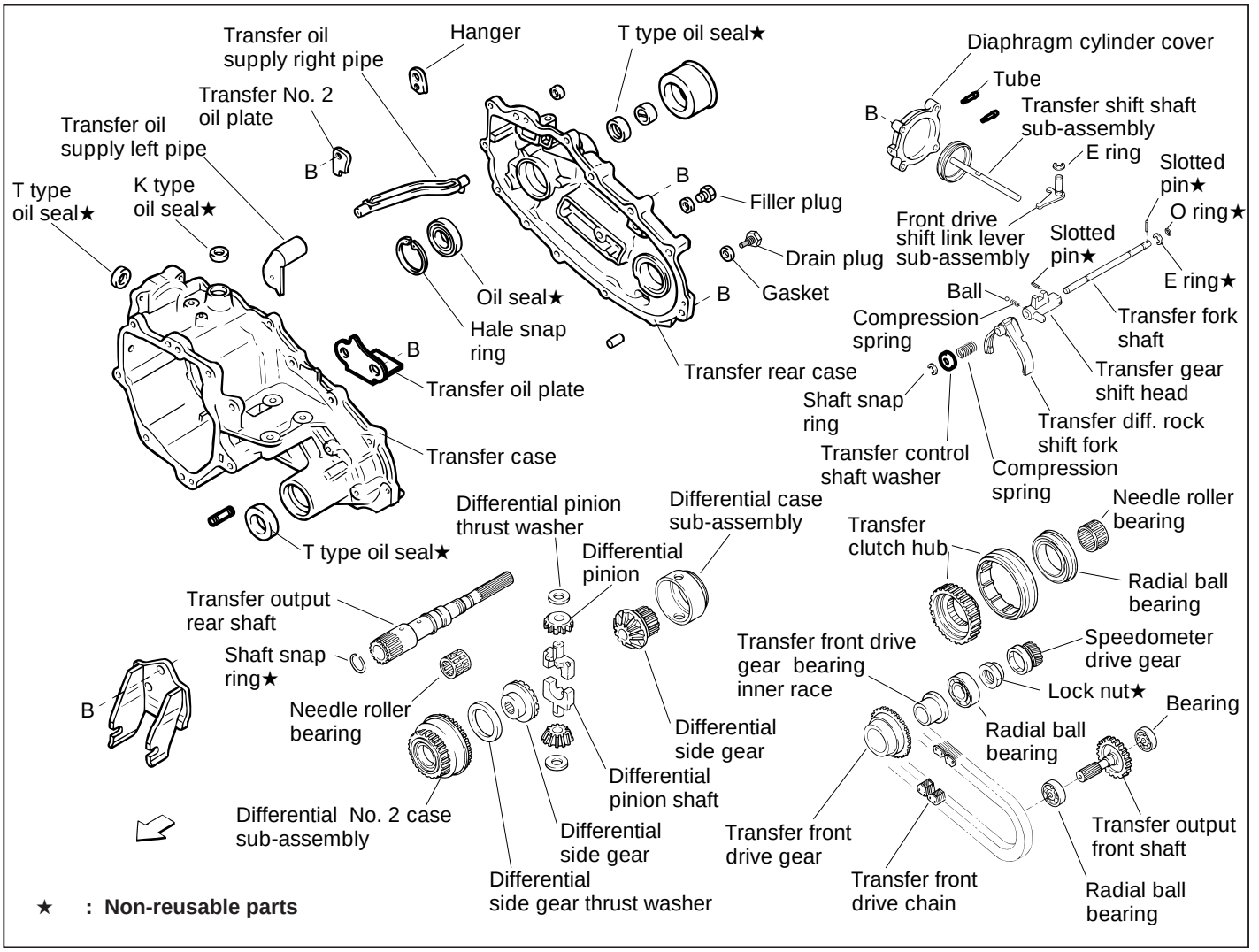
JTR00013-00204

14. Connect the MityVac to the diaphragm with a suitable pipe.
15. Set the MityVac to –200 mmHg manually.
16. Hold the negative pressure of the MityVac at –200 mmHg for about 10 seconds.
    NOTE:
    - If the diaphragm exhibits damage, deterioration and so forth, the negative pressure will rapidly return to positive pressure.



JTR00014-00205

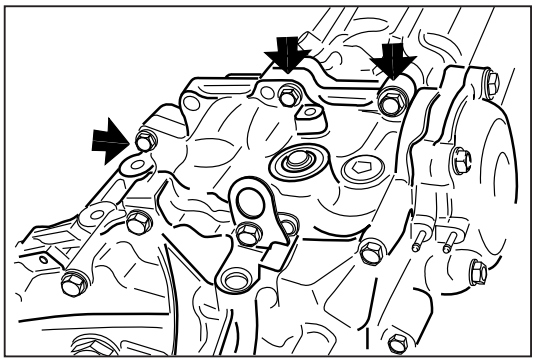
COMPONENTS



JTR00015-00301

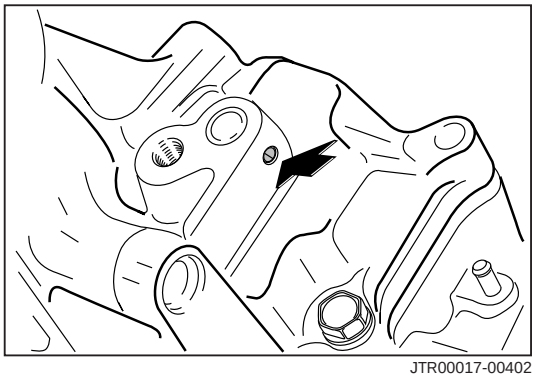
REMOVAL

1. Remove the transmission & transfer assembly from the vehicle. Refer to MT and AT section of the service manual.
2. Remove the transfer from the transmission by removing the attaching bolts.
   NOTE:
   - Never reuse the removed gasket.



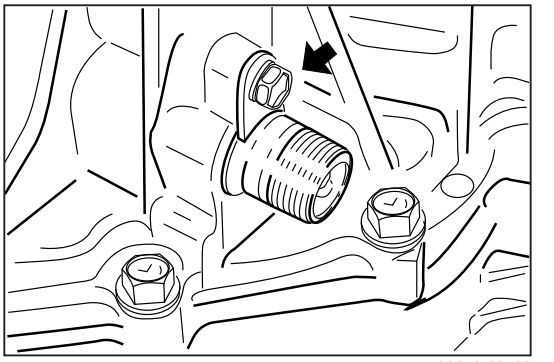
JTR00016-00401

3. Drive off the slotted pin of the transfer fork shaft.



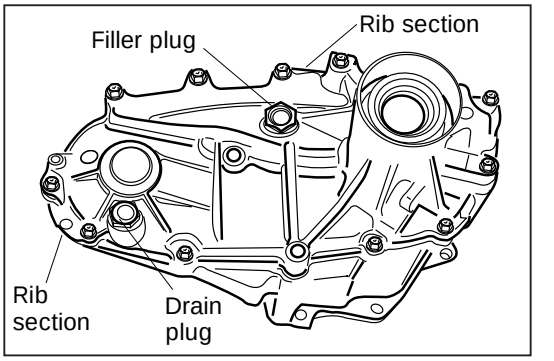
JTR00017-00402

4. Remove the speedometer shaft sleeve by removing the bolt.



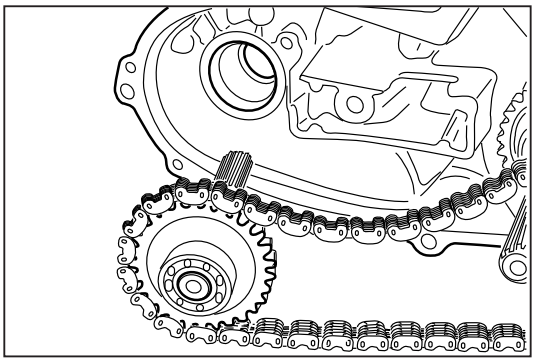
JTR00018-00403

5. Remove the drain plug.
6. Remove the filler plug.
7. Remove the transfer case by removing the attaching bolts.
   NOTE:
   - While lightly tapping the transfer case at the rib sections, using a plastic hammer or the like, remove the transfer case.



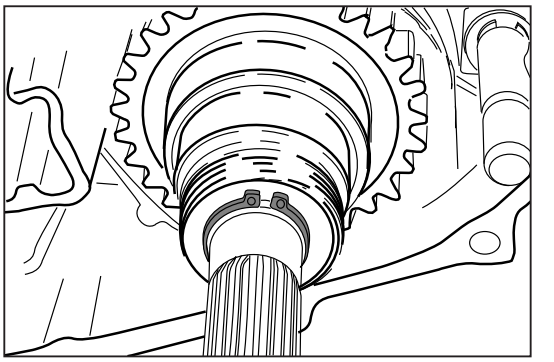
JTR00019-00404

8. Remove the transfer output front shaft with the radial ball bearings.



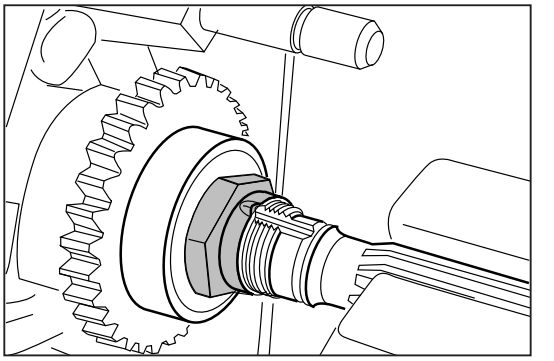
JTR00020-00405

9. Detach the snap ring of the speedometer drive gear.
10. Remove the speedometer drive gear.



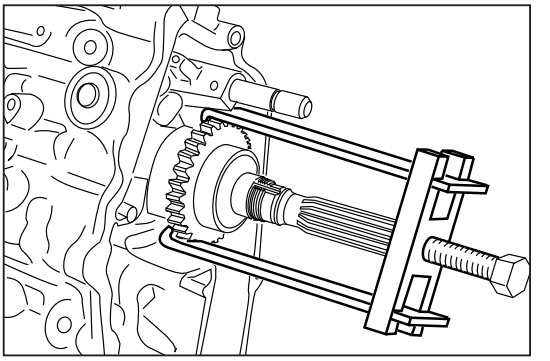
JTR00021-00406

11. Remove the lock nut of the radial ball bearing in the transfer output rear shaft.
    NOTE:
    - Release the staking of the lock nut, using a suitable chisel and a hammer.
    - Prior to loosen the nut, grab the shaft by the vise with the soft metal for not rotating.
      (Be careful not to damage the shaft.)
    - Never reuse the removed nut.



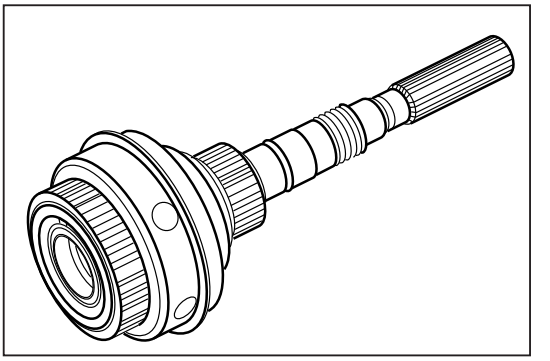
JTR00022-00407

12. Remove the radial ball bearing in combination with the gear, using the following SST.
    SST: 09306-87602-000



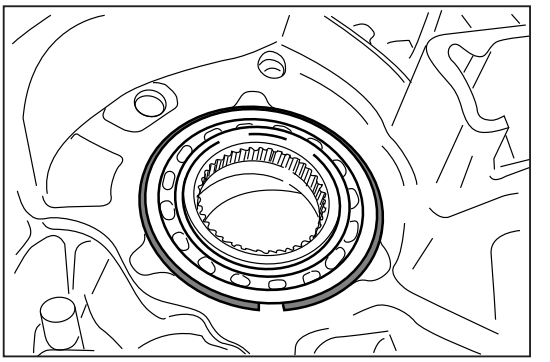
JTR00023-00408

13. Remove the transfer output rear shaft with differential gear.



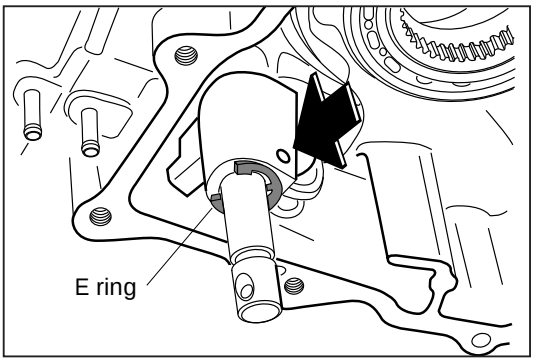
JTR00024-00409

14. Remove the ring retainer of the bearing.
15. Remove the radial ball bearing with the transfer clutch inner hub from the transfer case.



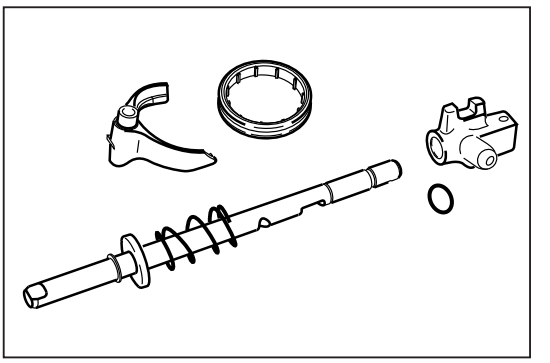
JTR00025-00410

16. Drive off the slotted pin of the transfer gear shift head.
17. Remove the E ring.



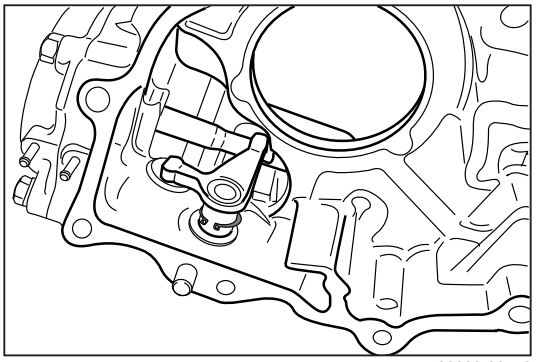
JTR00026-00411

18. Remove the following parts.
    (1) Transfer fork shaft
    (2) Compression spring
    (3) Transfer control shaft washer
    (4) Shaft snap ring
    (5) O ring
    (6) Transfer differential lock shift fork
    (7) Transfer clutch outer hub
    (8) Transfer gear shift head



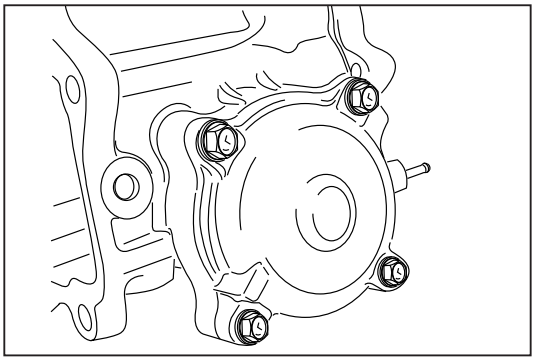
JTR00027-00412

19. Remove front drive shift link lever sub-assembly and E ring.



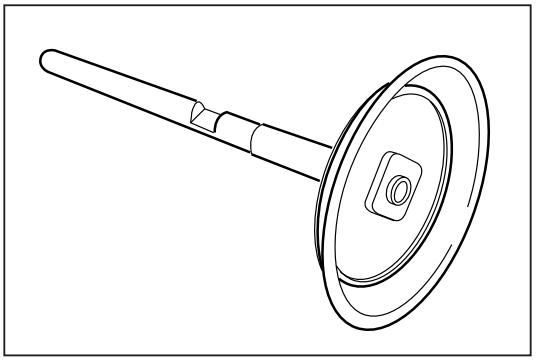
JTR00028-00413

20. Remove the diaphragm cylinder cover.



JTR00029-00414

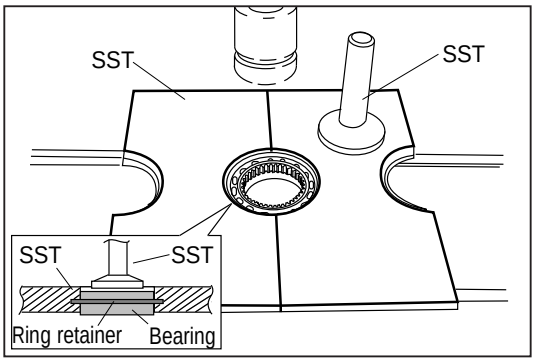
21. Remove the transfer shift shaft sub-assembly from the diaphragm cylinder.



JTR00030-00415

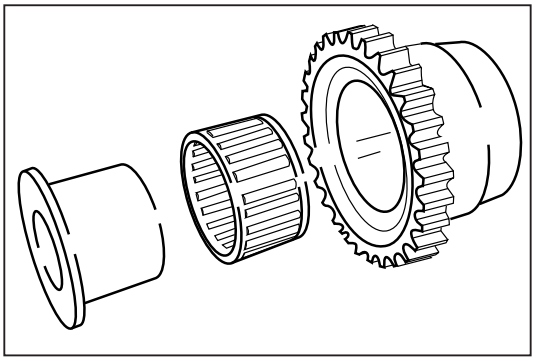
DISASSEMBLY

1. Disassemble the transfer clutch inner hub and the radial ball bearing, using the following SST in conjunction with a press.
   SST: 09310-87102-000
   09253-87202-000



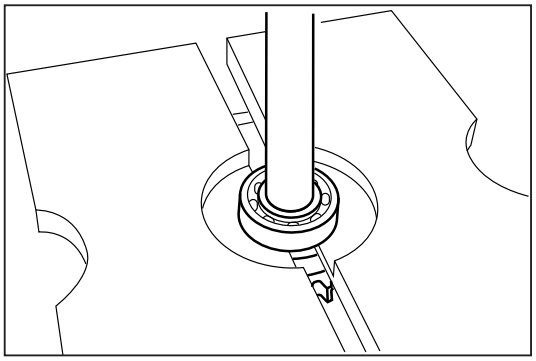
JTR00031-00501

2. Disassemble the following parts.
   (1) Transfer front drive gear
   (2) Needle roller bearing
   (3) Transfer front drive gear bearing inner race



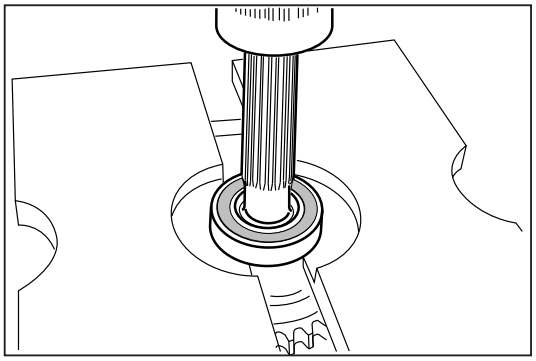
JTR00032-00502

3. Disassemble the rear bearing from the transfer output front drive shaft, using the following SST in conjunction with a press.
   SST: 09253-87101-000
   09301-87601-000



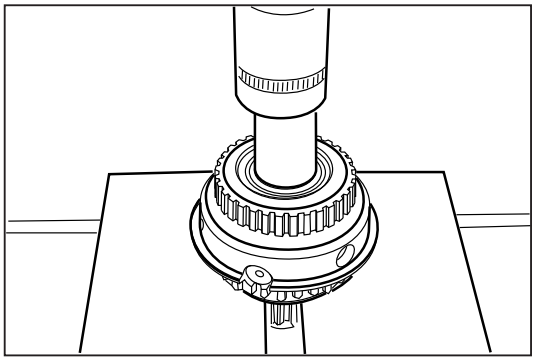
JTR00033-00503

4. Disassemble the front bearing from the transfer output front drive shaft, using the following SST in conjunction with a press.
   SST: 09253-87101-000



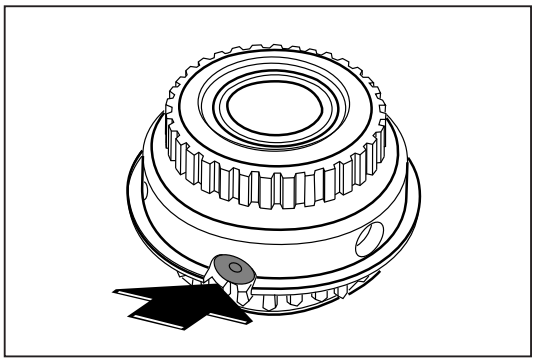
JTR00034-00504

5. Remove the transfer output rear shaft and needle roller bearing from the differential case sub-assembly, using the following SST, in conjunction with a press.
   SST: 09238-87202-000



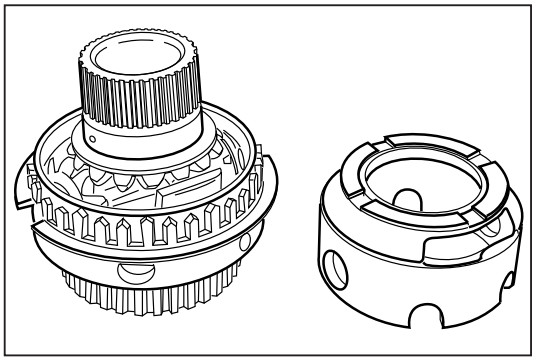
JTR00035-00505

6. Push the differential pinion shafts by pushing it with your fingers.



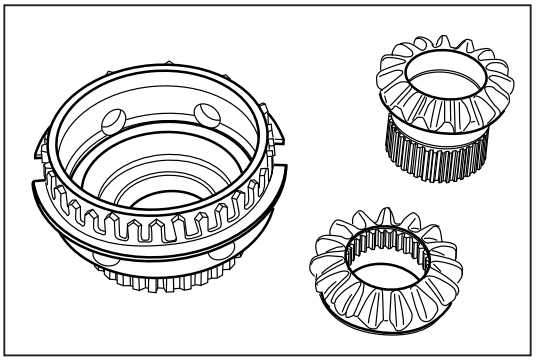
JTR00036-00506

7. Remove the differential case No. 2 case sub-assembly.



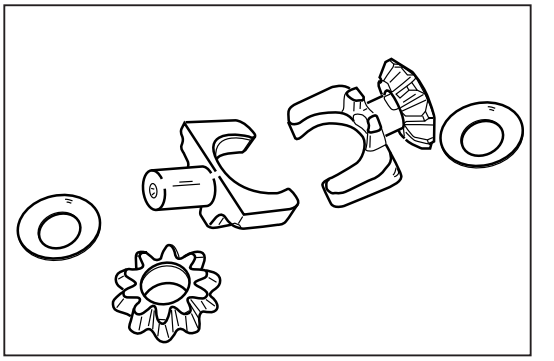
JTR00037-00507

8. Remove the following parts from the differential case.
   (1) Differential side gear No. 2
   (2) Differential side gear



JTR00038-00508

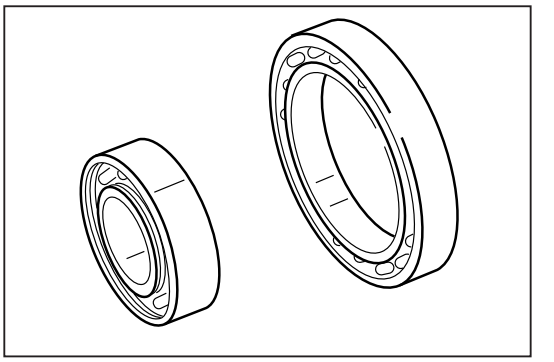
   (3) Differential pinion shafts
   (4) Differential pinions
   (5) Differential pinion thrust washers



JTR00039-00509

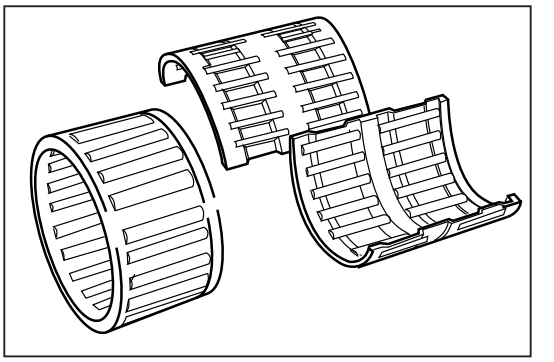
INSPECTION

1. Bearings
   Visually inspect the roller and roller guide surface for seizure due to poor oil lubrication and so forth.



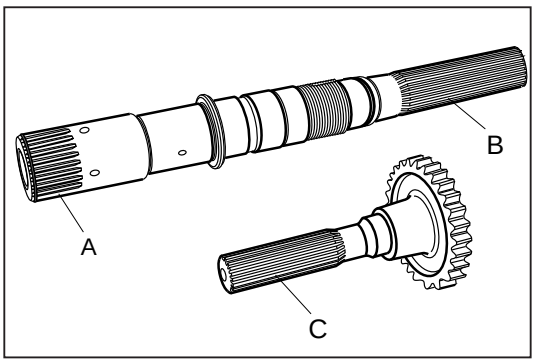
JTR00040-00601

2. Needle roller bearings
   Check the roller outer periphery of the needle roller bearing for damage by scratching it by your fingernails. Also, visually inspect the roller outer periphery for seizure due to poor oil lubrication or use of deteriorated oil.



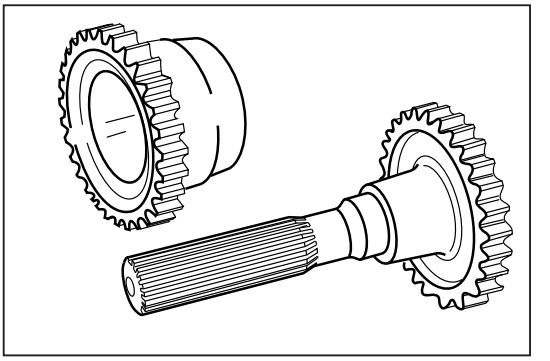
JTR00041-00602

3. Check the fitting section (A) and spline section (B) of the transfer output rear shaft and the spline section (C) of the transfer output front shaft for damage or abnormal wear.



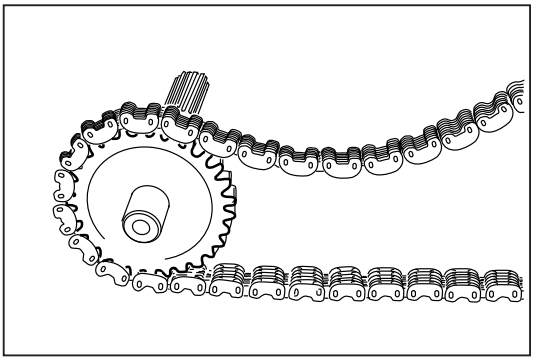
JTR00042-00603

4. Visually inspect the transfer front drive gear and the transfer output front shaft gear for damage or wear.



JTR00043-00604

5. Visually inspect the transfer front drive chain for damage or wear.

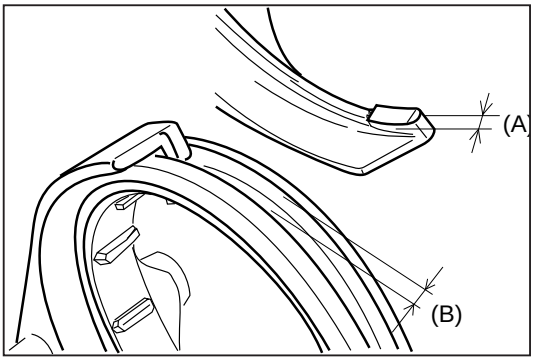


JTR00044-00605

6. Check the contact surface between the differential lock shift fork (A) and the transfer clutch outer hub (B).

Unit: mm

	Specified value	Allowable limit
(A)	$7^{-0.1}_{-0.2}$	6.7
(B)	$7.2^{+0.06}_{+0}$	7.3

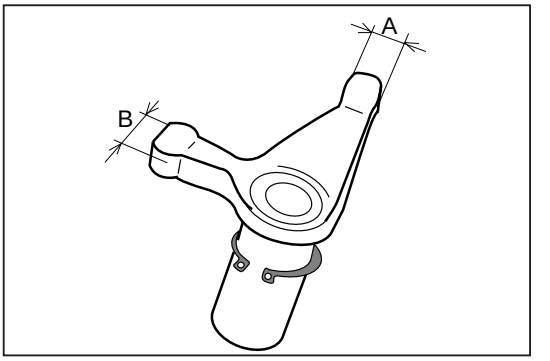


JTR00045-00606

7. Measure the outer diameter of the shaft and socket section.
   If the measured valve does not conform to the specification, replace the parts.
   Also inspect the snap ring for damage or wear.

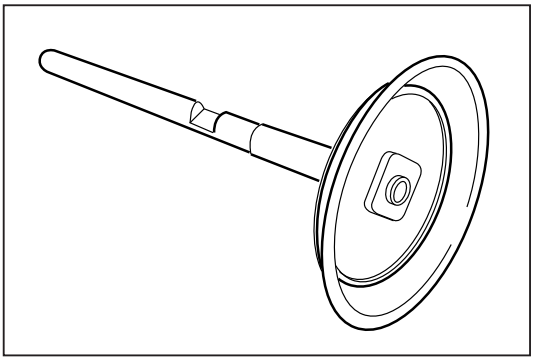
Unit: mm

	Specified value	Allowable limit
(A)	$12^{-0}_{-0.1}$	11.8
(B)	$12^{-0}_{-0.1}$	11.8
Outer diameter of the shaft	$14^{-0.13}_{-0.063}$	←



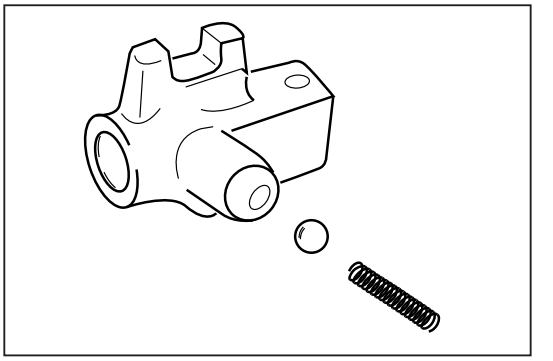
JTR00046-00607

8. Visually inspect the transfer shift shaft for damage or wear.
   NOTE:
   - Also inspect the diaphragm for damage.



JTR00047-00608

9. Visually inspect the transfer gear shift head for damage or wear
   NOTE:
   - Also inspect the ball and compression spring for damage or wear.

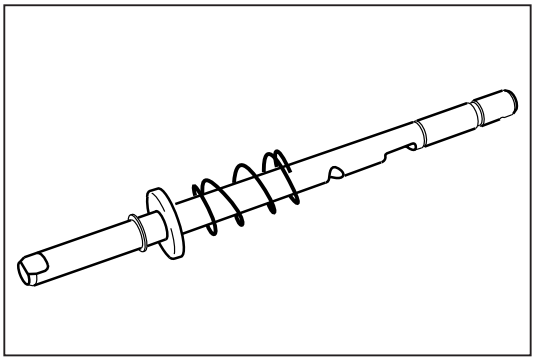


JTR00048-00609

10. Measure the outer diameter of the transfer fork shaft.
    If the measured value does not conform to the specification, replace the shaft.
    Also inspect the compression spring and the transfer control shaft washer for damage or wear.

Unit: mm

Specified value	$12\ ^{+0}_{-0.043}$

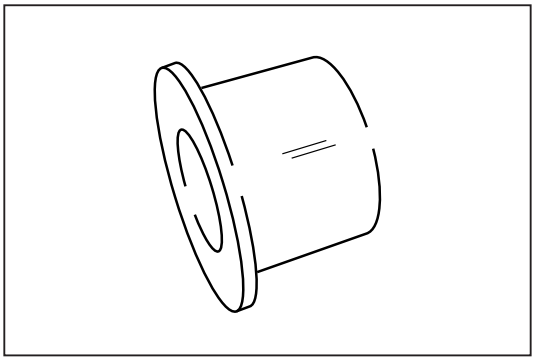


JTR00049-00610

11. Measure the outer and inner diameter of the transfer front drive gear bearing inner race.

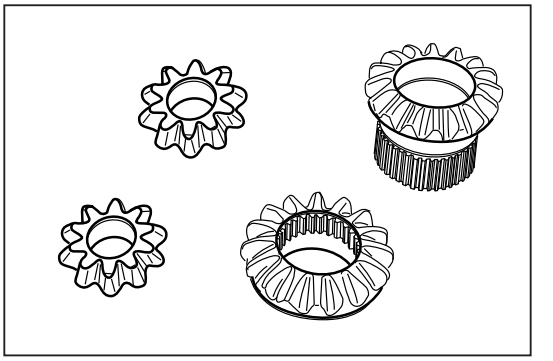
Unit: mm

	Specified value	Allowable limit
Inner diameter	$26\ ^{+0.02}_{+0.002}$	26.020
Outer diameter	$38\ ^{-0}_{-0.014}$	38.986



JTR00050-00611

12. Visually inspect the differential pinion for damage or wear.
13. Visually inspect the differential side gear for damage or wear.

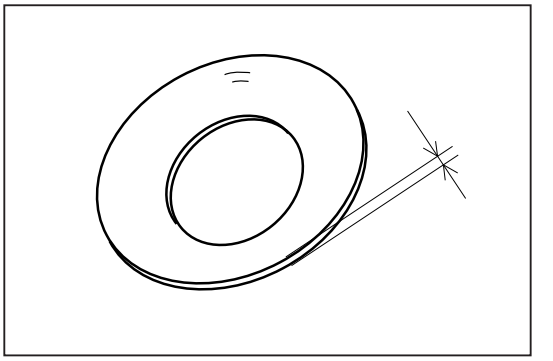


JTR00051-00613

14. Measure the thickness of the differential pinion thrust washer.

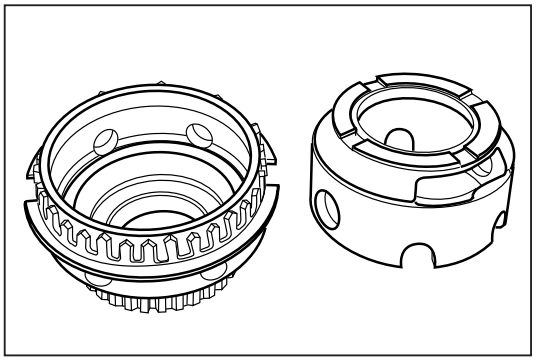
Unit: mm

Specified value	0.8 ± 0.06
Allowable limit	0.74



JTR00052-00614

15. Visually inspect the differential case sub-assembly for damage or wear.

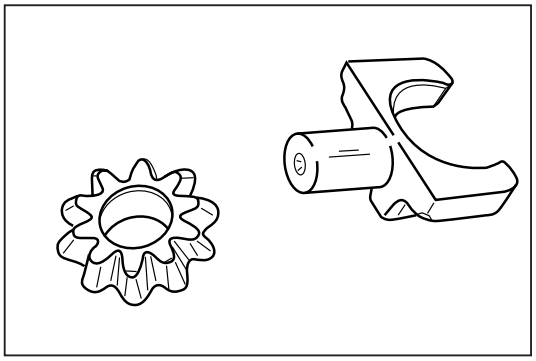


JTR00053-00615

16. Measure the outer diameter of the differential pinion shaft.
17. Measure the inner diameter of the differential pinion.

Unit: mm

		Specified value	Allowable limit
Pinion	Inner diameter	$15^{+0.06}_{+0.03}$	15.06
Pinion Shaft	Outer diameter	$15^{-0.016}_{-0.043}$	14.943

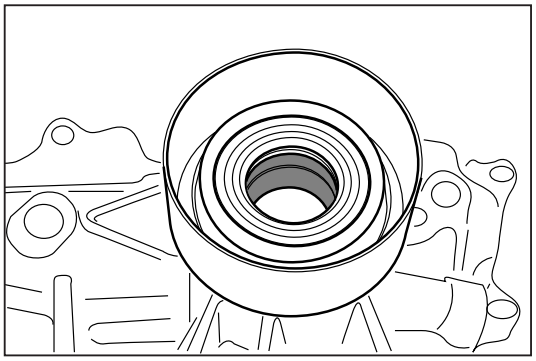


JTR00054-00617

18. Measure the inner diameter of the transfer front and rear output shaft bearing.
    NOTE:
    - If the measured value does not conform to the specification, replace the transfer case.

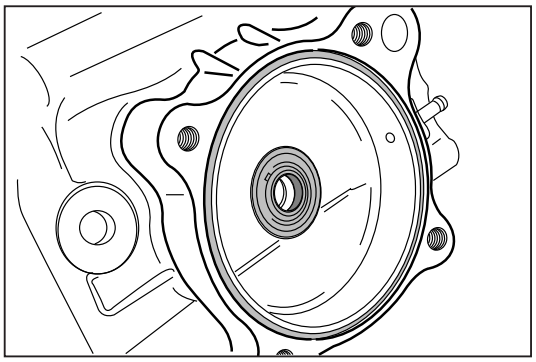
Unit: mm

		Inner diameter specified value
Output front shaft bearing	Front	$25^{-0}_{-0.010}$
	Rear	$17^{-0}_{-0.008}$
Output rear shaft bearing	Front	$50^{-0}_{-0.012}$
	Rear	$25^{-0}_{-0.010}$



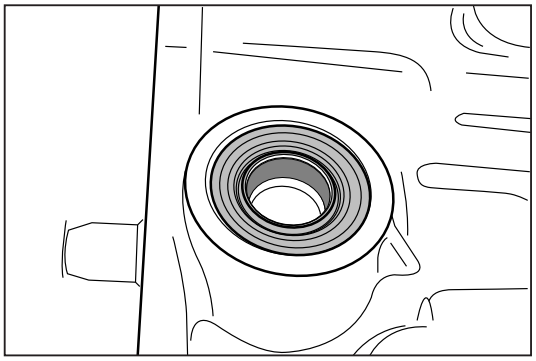
JTR00055-00618

19. Visually inspect the type T oil seal in the diaphragm cylinder for damage or wear.
    NOTE:
    - Replace the oil seal if it exhibits damage or wear.



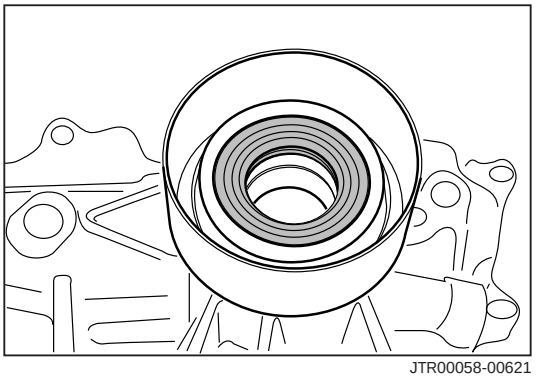
JTR00056-00619

20. Visually inspect the type K oil seal of the front drive shift link lever for damage or wear.
    NOTE:
    - Replace the oil seal if it exhibits damage or wear.

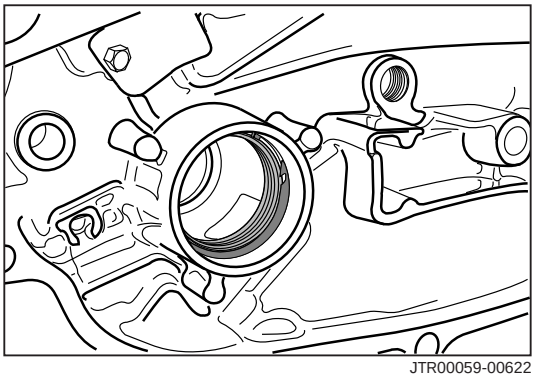


JTR00057-00620

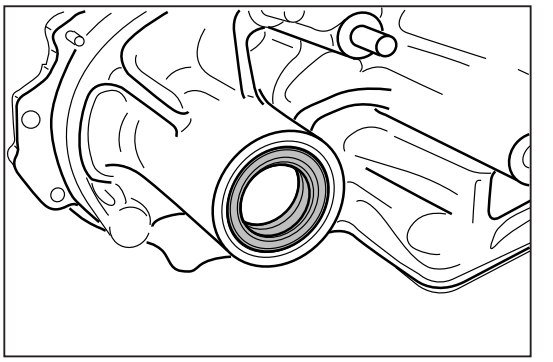
21. Visually inspect the type T oil seal of the transfer output rear shaft for damage or wear.
    NOTE:
    - Replace the oil seal if it exhibits damage or wear.
      SST: 09308-10010-000
           09309-87201-000


JTR00058-00621

22. Visually inspect the transfer rear drive output shaft inner oil seal for damage or wear.
    NOTE:
    - Replace the oil seal if it exhibits damage or wear.


JTR00059-00622

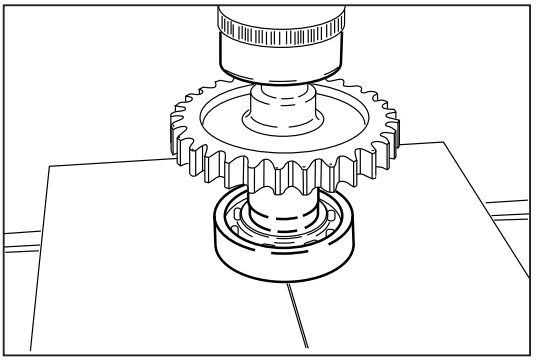
23. Visually inspect the type T oil seal of the transfer output front shaft for damage or wear.
    NOTE:
    - Replace the oil seal if it exhibits damage or wear.
      SST: 09308-10010-000
           09309-87201-000


JTR00060-00623

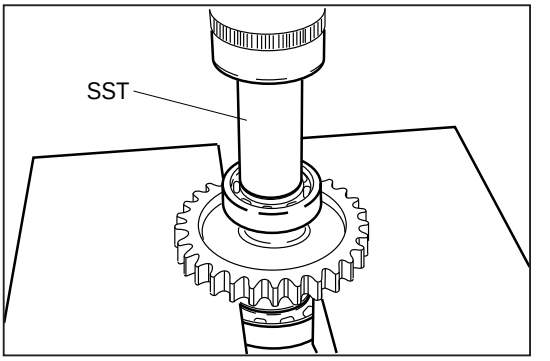
ASSEMBLY

NOTE:
- Prior to the assembly, clean the transfer case and the parts by removing any dirt or the like. And then, apply gear oil to the all parts.

1. Press the radial ball bearing (Front) to the transfer output front shaft.


JTR00061-00701

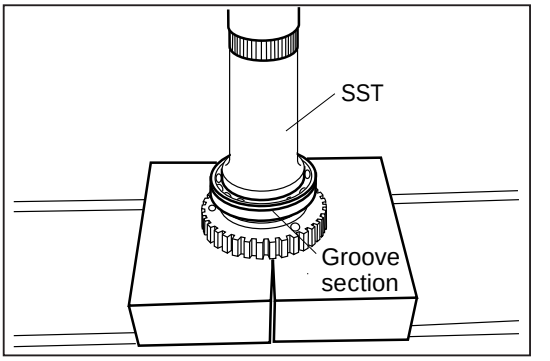
2. Press the radial ball bearing (Rear) to the transfer output front shaft, using the following SST.
   SST: 09238-87202-000



JTR00062-00702

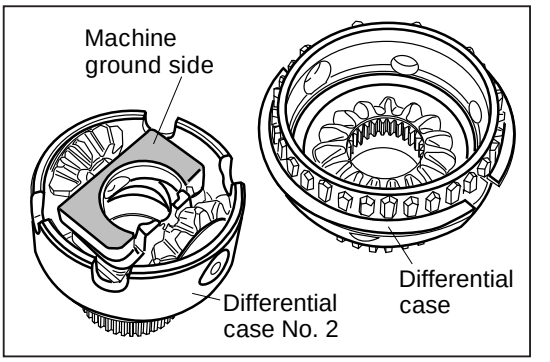
3. Press the radial ball bearing to the transfer inner hub, using the following SST.
   SST: 09388-20010-000

   NOTE:
   - Make sure that the groove section of the redial ball bearing comes upper side.



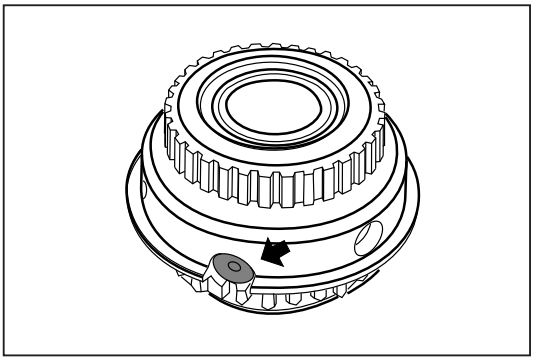
JTR00063-00703

4. Install the differential side gear to the differential case.
5. Install the differential pinion shafts, the differential pinions and the differential pinion thrust washers to the differential case No. 2.
   NOTE:
   - Make sure that the machine-ground side of the differential pinion shaft section faces toward differential side gear.

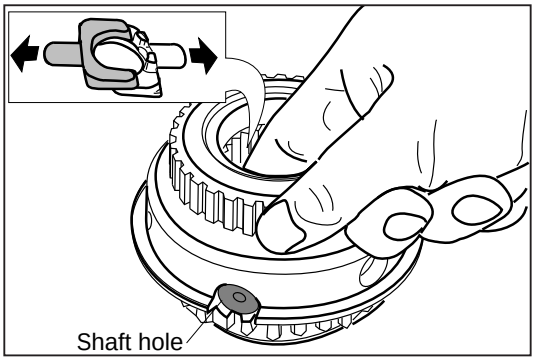


JTR00064-00705

6. Align the pinion shafts and shaft holes. Then, Insert the differential case sub-assembly to the differential case No. 2.

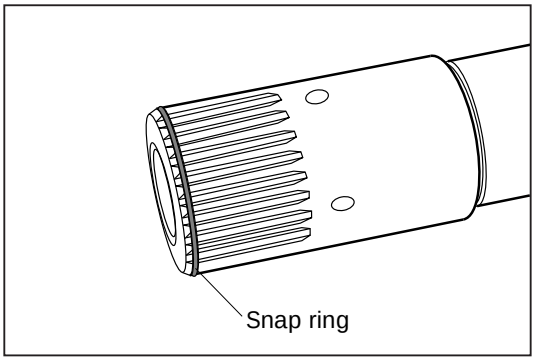

JTR00065-00706

7. Push the pinion shaft in the shaft hole with finger to the differential case outside so as to the transfer output rear shaft can go through.



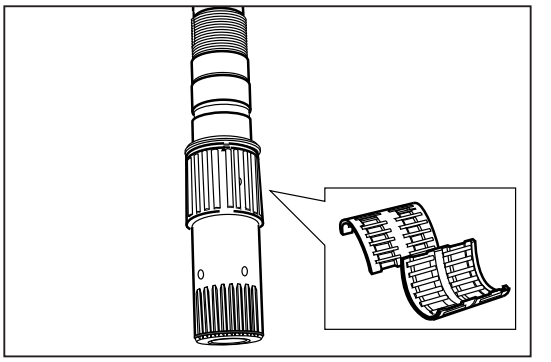
JTR00066-00707

8. Install the new snap ring to the transfer output rear shaft.

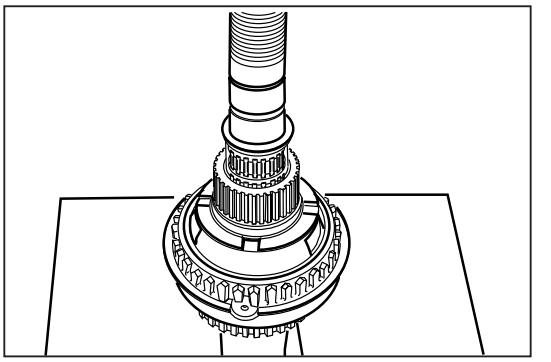


JTR00067-00708

9. Install the needle roller bearing to the transfer output rear shaft with applying the gear oil for not to fall off.
   Oil: API GL-3, SAE75W-85

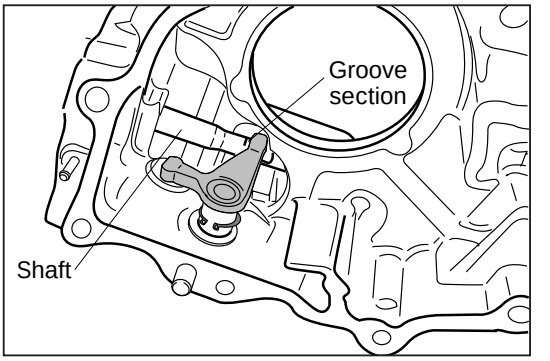

JTR00068-00709

10. Insert the transfer output front shaft with the needle roller bearing to the differential case assembly, using a press.
    NOTE:
    - Make sure that the transfer output rear shaft rotates smoothly when inserting has been done.


JTR00069-00710

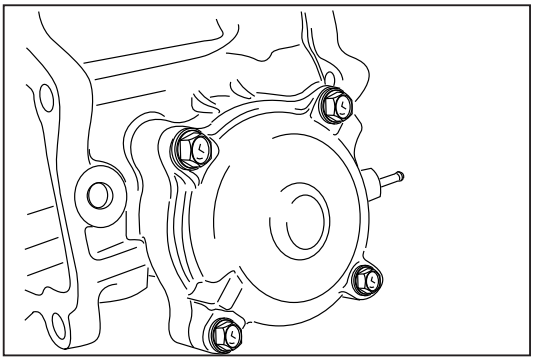
INSTALLATION

1. Install the transfer shift shaft sub-assembly to the diaphragm cylinder.
2. Install the front drive shift link lever to the transfer case.
   NOTE:
   - Make sure that the drive shift link lever is fitted securely in the groove.

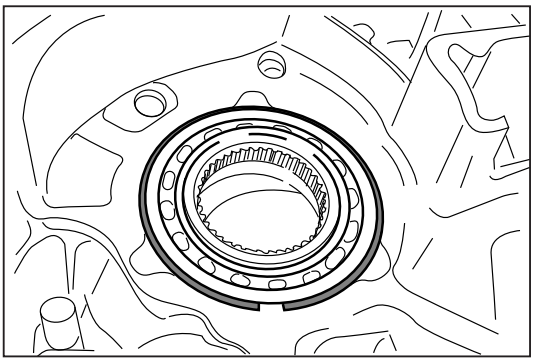


JTR00070-00802

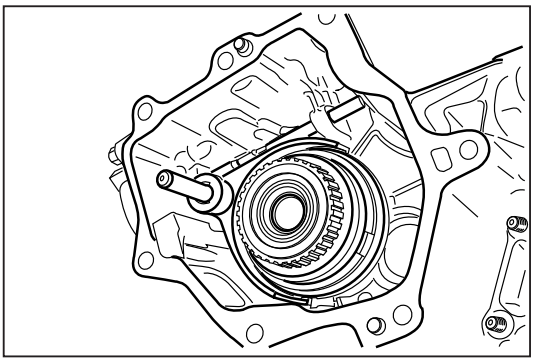
3. Install the diaphragm cylinder cover to the diaphragm cylinder and tighten the bolts.
   Tightening Torque: 14.7 - 21.6 N·m (1.5 - 2.2 kgf-m)


JTR00071-00803

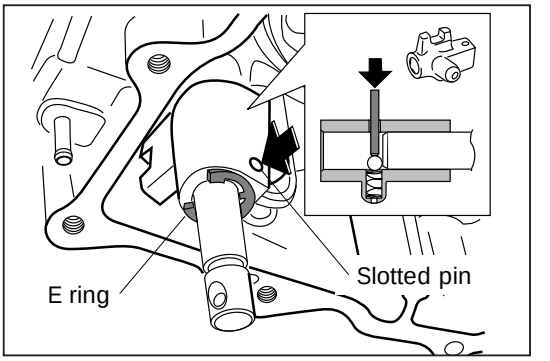
4. Install the radial ball bearing with the transfer clutch inner hub to the transfer case.
5 Install the snap ring to the radial ball bearing.
   NOTE:
   - Make sure that the snap ring is fitted securely in the groove.


JTR00072-00805

6. Insert the transfer output rear shaft and center differential assembly to the transfer clutch inner hub.
7. Install the transfer clutch outer hub to the transfer clutch inner hub.
8. Install the differential lock shift fork to the transfer clutch outer hub.
9. Insert the transfer fork shaft with the compression spring and transfer control shaft washer to the differential lock shift fork.
10. Insert the transfer fork shaft with the transfer differential lock shift fork. to the transfer case.

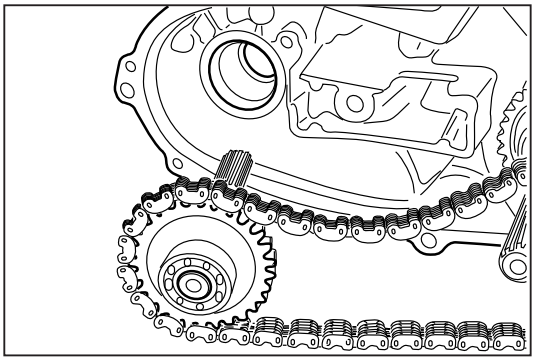

JTR00073-00810

11. Install the compression spring and ball to the transfer gear shift head.
12. With the ball pushed down by means of a suitable rod from the hole section of the head, insert the transfer gear shift head to the transfer fork shaft.
13. Drive new slotted pin to the transfer gear shift head.
    Install the new E ring.



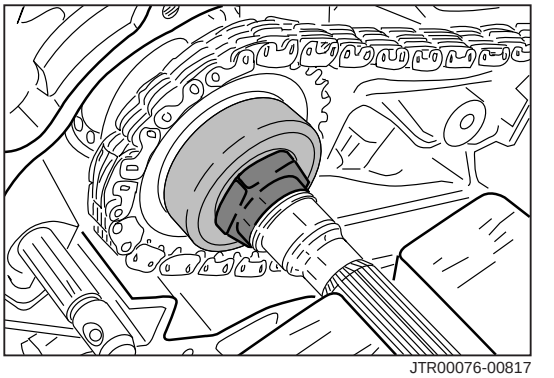
JTR00074-00813

14. Insert the transfer front drive gear to the transfer output rear shaft.
15. Install the transfer output front shaft with the chain to the transfer case.
    NOTE:
    - Prior to the installation, make sure that the chain is set to the both gears.
      (After the installation, the chain will not be able to set.)

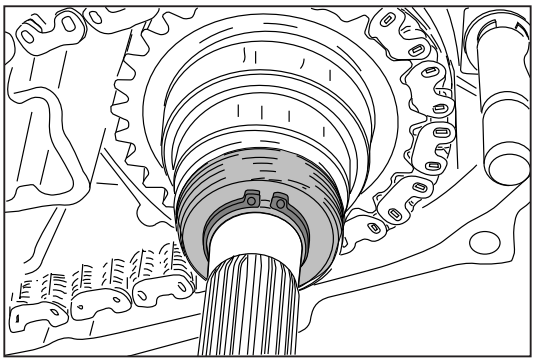

JTR00075-00815

16. Install the radial ball bearing to the transfer output rear shaft.
17. Install new lock nut to the transfer output rear shaft and tighten the lock nut.
    Tightening Torque:
    225.6 - 264.8 N·m (23.0 - 27.0 kgf-m)

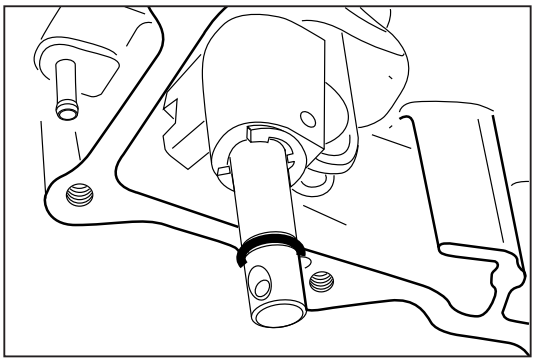
    NOTE:
    - When staking the lock nut, point a suitable staking tool toward the transfer output rear shaft axis center and stake to lock nut securely.
    - Prior to install new lock nut, grab the shaft by the vise with the soft metal for not rotating.


JTR00076-00817

18. Insert the speedometer drive gear to the transfer output rear shaft.
19. Install new snap ring of the speedometer drive gear.
    NOTE:
    - Make sure that the snap ring is fitted securely in the groove.

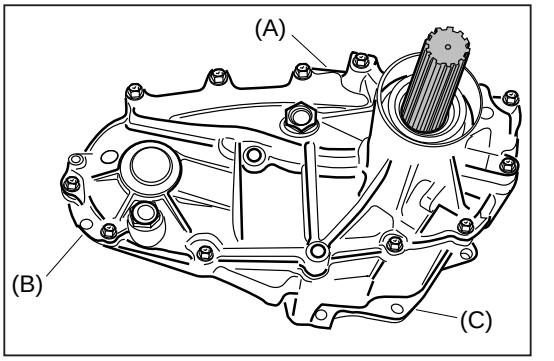

JTR00077-00819

20. Install new “O” ring to the transfer fork shaft.
    NOTE:
    - Prior to the installation of a new “O” ring, wind a suitable vinyl sheet around the transfer fork shaft and apply gear oil to the “O” ring installing section.


JTR00078-00820

21. Apply the liquid gasket interposed, assemble the transfer case and transfer case No. 2 by tapping it evenly and lightly at the rib sections (A), (B) and (C) by means of a plastic hammer or the like.
22. Tighten the transfer case with the bolts.
    Tightening Torque: 14.7 - 21.6 N·m (1.5 - 2.2 kgf-m)

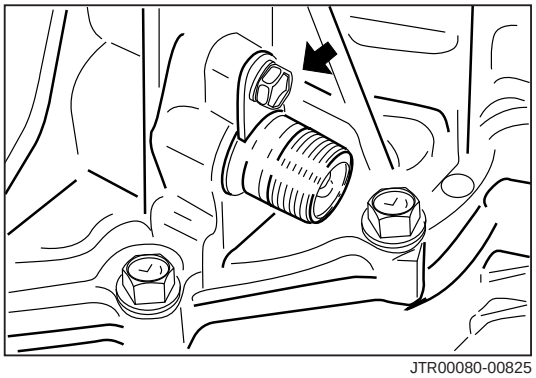
    NOTE:
    - Be sure to tighten the bolts evenly and diagonally.
    - Prior to the tightening of the bolts, apply Three Bond 1216 to the threaded portions of the bolts.



JTR00079-00822

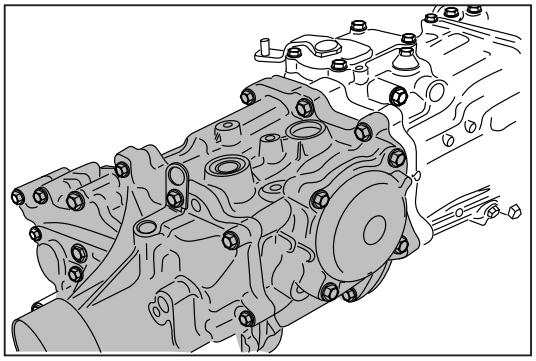
23. Apply gear oil to the “O” ring prior to the insertion of the speedometer shaft sleeve.
24. Insert the speedometer shaft sleeve into the output shaft bearing rear retainer.
25. Tighten the speedometer sleeve lock plate with a bolt.
    Tightening Torque: 5.9 - 8.8 N·m (0.6 - 0.9 kgf-m)

26. Tighten the transfer drain plug with new gasket.
    Tightening Torque: 29.4 - 49.0 N·m (3.0 - 5.0 kgf-m)



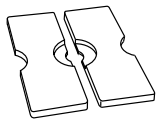
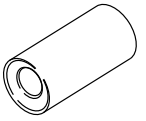
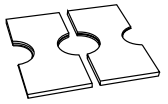
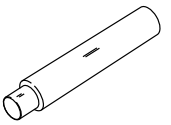
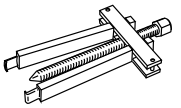
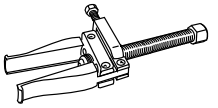
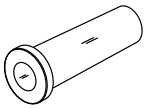
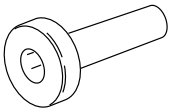
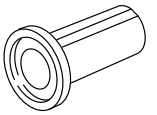
JTR00080-00825

27. Install the transfer assembly to the transmission. (Refer to the MT or AT section of the service manual.)
28. Fill the transfer with oil.
29. Tighten the transfer filler plugs with new gasket.
    Tightening Torque: 29.4 - 49.0 N·m (3.0 - 5.0 kgf-m)



JTR00081-00828

SSTs

Shape	Part No. and name	Purpose	See page
	09253-87101-000 Transfer output front shaft bearing anvil	Removal of bearing	TR–9
	09238-87202-000 Transfer output front shaft rear bearing replacer	Removal of output rear shaft Assembling bearing	TR–9 TR–15
	09253-87202-000 Transfer clutch inner hub bearing anvil	Removal of bearing	TR–8
	09301-87601-000 Tool, clutch guide	Removal of bearing	TR–9
	09306-87602-000 Transfer output rear shaft bearing replacer	Removal of bearing	TR–7
	09308-10010-000 Oil seal puller	Removal of oil seal	TR–14
	09309-87201-000 Transfer output shaft oil seal replacer	Assembling oil seal	TR–14
	09310-87102-000 Transfer clutch inner hub bearing puller	Removal of bearing	TR–8
	09388-20010-000 Transfer clutch inner hub bearing replacer	Removal of bearing	TR–15

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TIGHTENING TORQUE

Tightening components	Tightening torque		Reference
	N·m	kgf-m	
Diaphragm cylinder cover × Diaphragm cover	14.7 - 21.6	1.5 - 2.2	
Radial ball bearing × Transfer output rear shaft	225.6 - 264.8	23.0 - 27.0	
Transfer case × Transfer case No. 2	14.7 - 21.6	1.5 - 2.2	
Speedometer sleeve × Transfer case	5.9 - 8.8	0.6 - 0.9	
Transfer filler plug × Transfer case	29.4 - 49.0	3.0 - 5.0	
Transfer drain plug × Transfer case	29.4 - 49.0	3.0 - 5.0	

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