

DAIHATSU F300

TRANSMISSION & TRANSFER

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WFE90-TR001

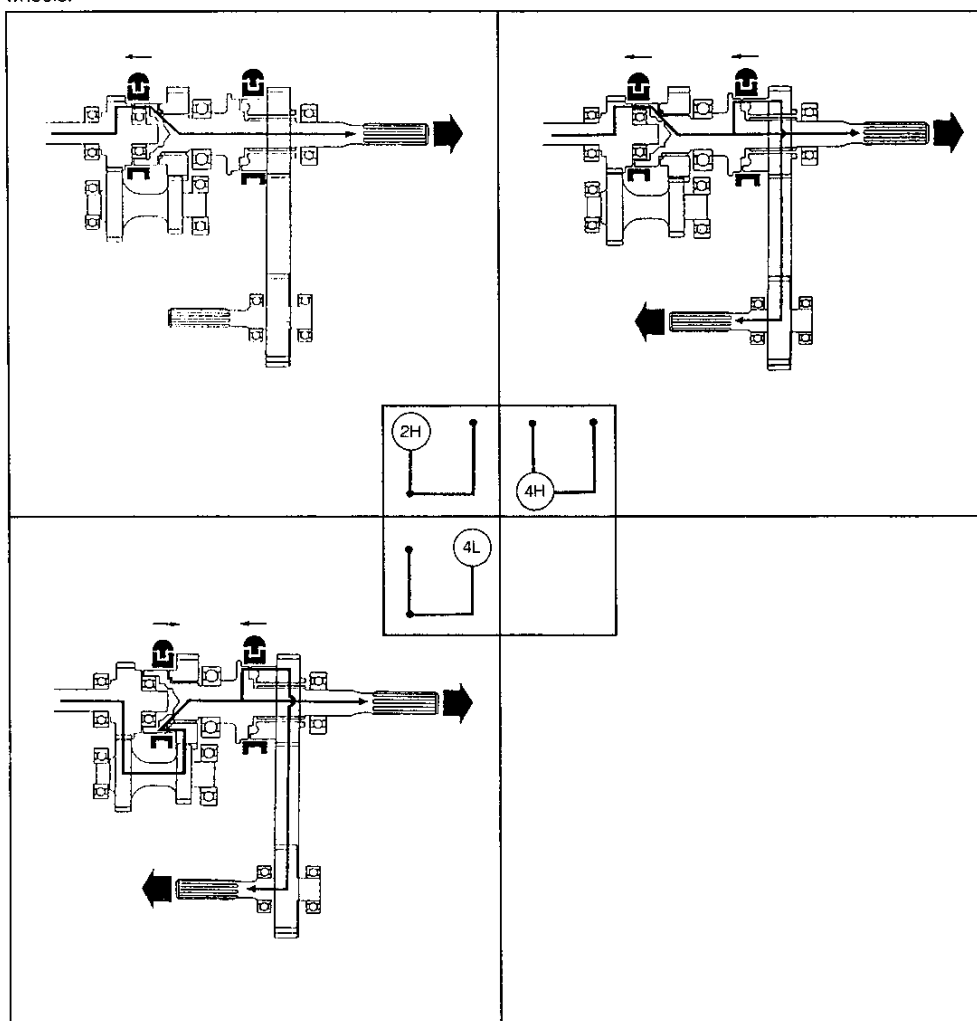
TRANSMISSION & TRANSFER

TRANSFER (PART TIME)

TRANSFER POWER TRANSMITTING MECHANISM

When the transfer shift lever is shifted into the 2H position, the power from the transmission output shaft is transmitted to the rear wheels through the transfer output rear shaft. Furthermore, when the transfer shift lever is shifted into the 4H position, the shift is made into the transfer front drive gear. Then, the power is transmitted to the transfer output front shaft through the transfer front drive chain, finally driving the front and rear wheels.

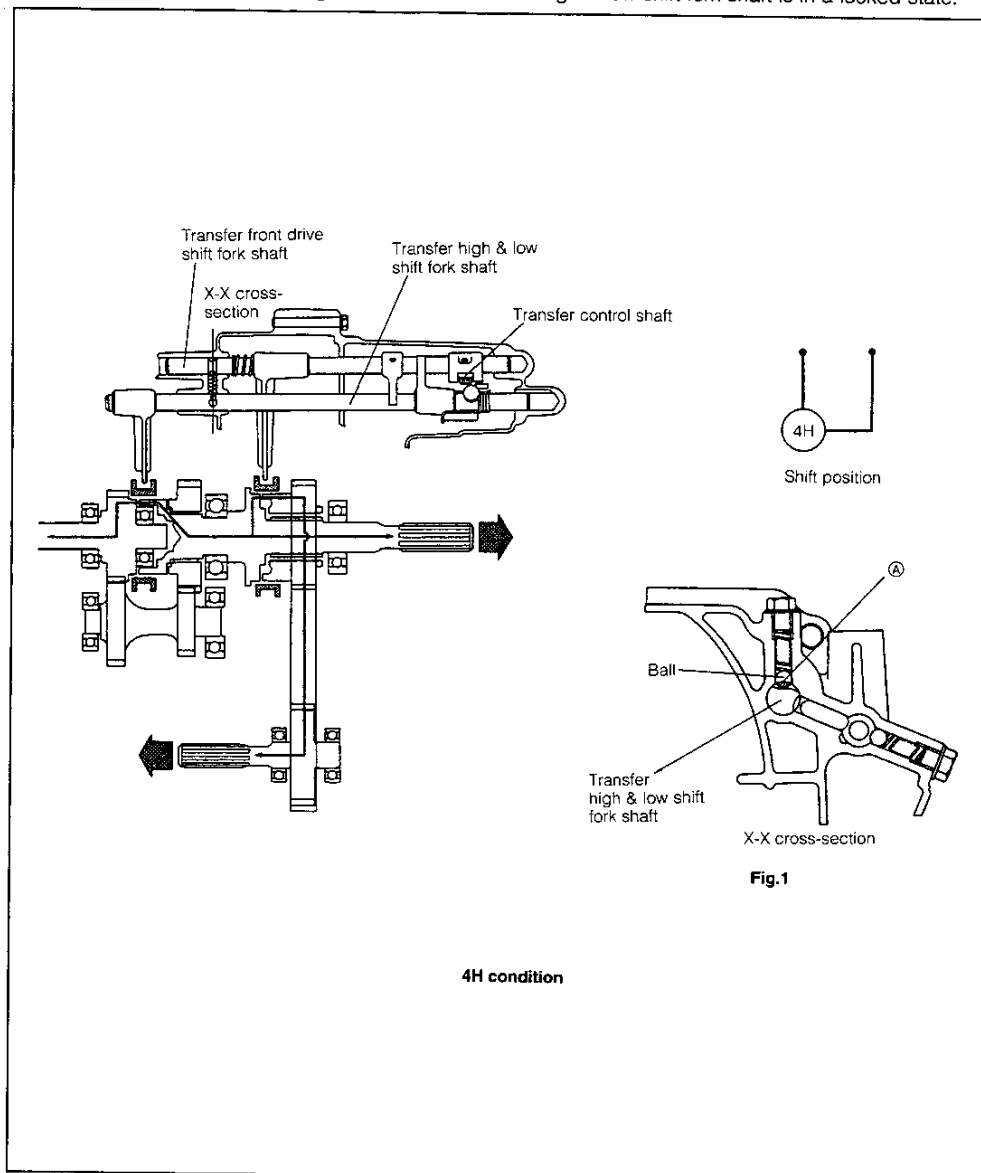
When the transfer shift lever is placed in the 4L position, the shift is made into the transfer low speed input gear. Then, the power is transmitted in the following sequence; the transfer countergear, transfer output rear shaft, transfer front drive chain and transfer output front shaft. Finally, the power drives the front and rear wheels.



WFE90-TR002

TRANSFER SHIFT & SELECT MECHANISM**4H→2H**

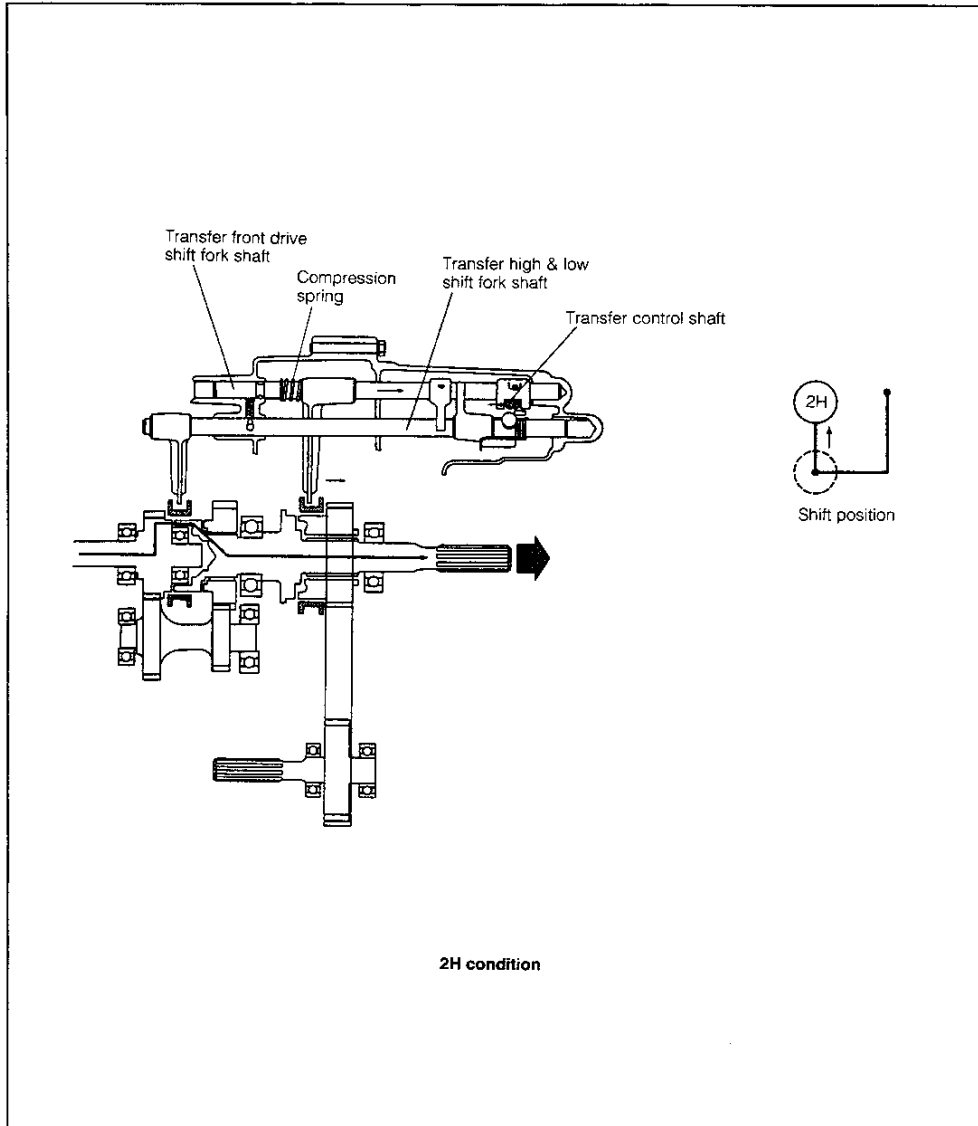
1. The transfer high & low shift fork shaft is pressed by a ball indicated in Fig. 1. Since this ball engagement is so deep that the center of the ball nearly reaches the outer contour of the transfer high & low shift fork shaft as shown by (A) in the figure below, the transfer high & low shift fork shaft is in a locked state.



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2. When the transfer control shaft is shifted from the 4H position to the 2H position, the transfer front drive shift fork shaft alone moves to the right, for the transfer high & low shift fork shaft is locked by the ball. If there is any difference in rotating torque between the front wheel and the rear wheel at this time, a wait mechanism (ie: Compression spring) functions owing to the resistance by a twisting torque between the front drive clutch hub and the front drive gear. As a result, the front drive shift fork is kept in the 4H condition. When the difference in rotating torque diminishes, the front drive shift fork is returned to the right by a spring tension, thus switching to the 2H condition.

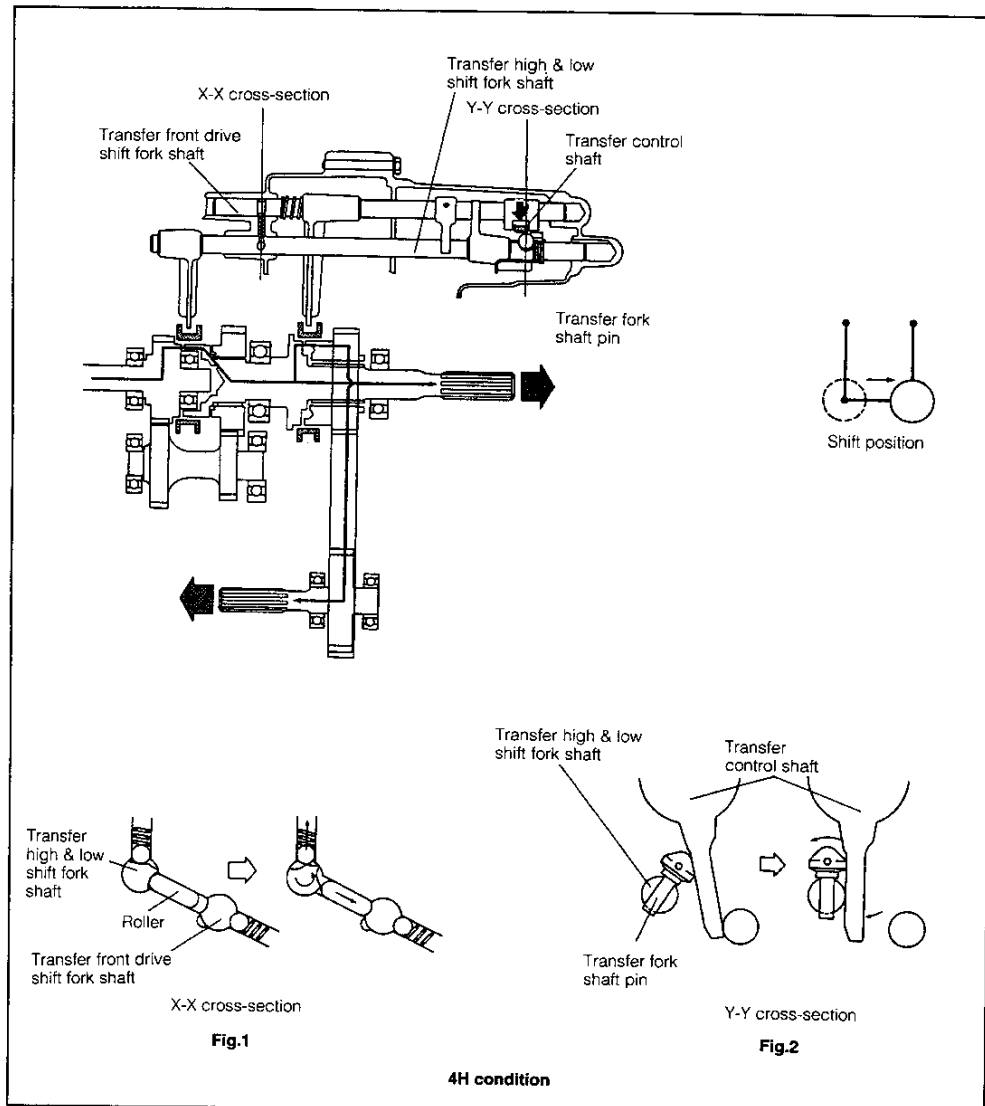


WFE9G-TR004

TRANSMISSION & TRANSFER

4H→4L

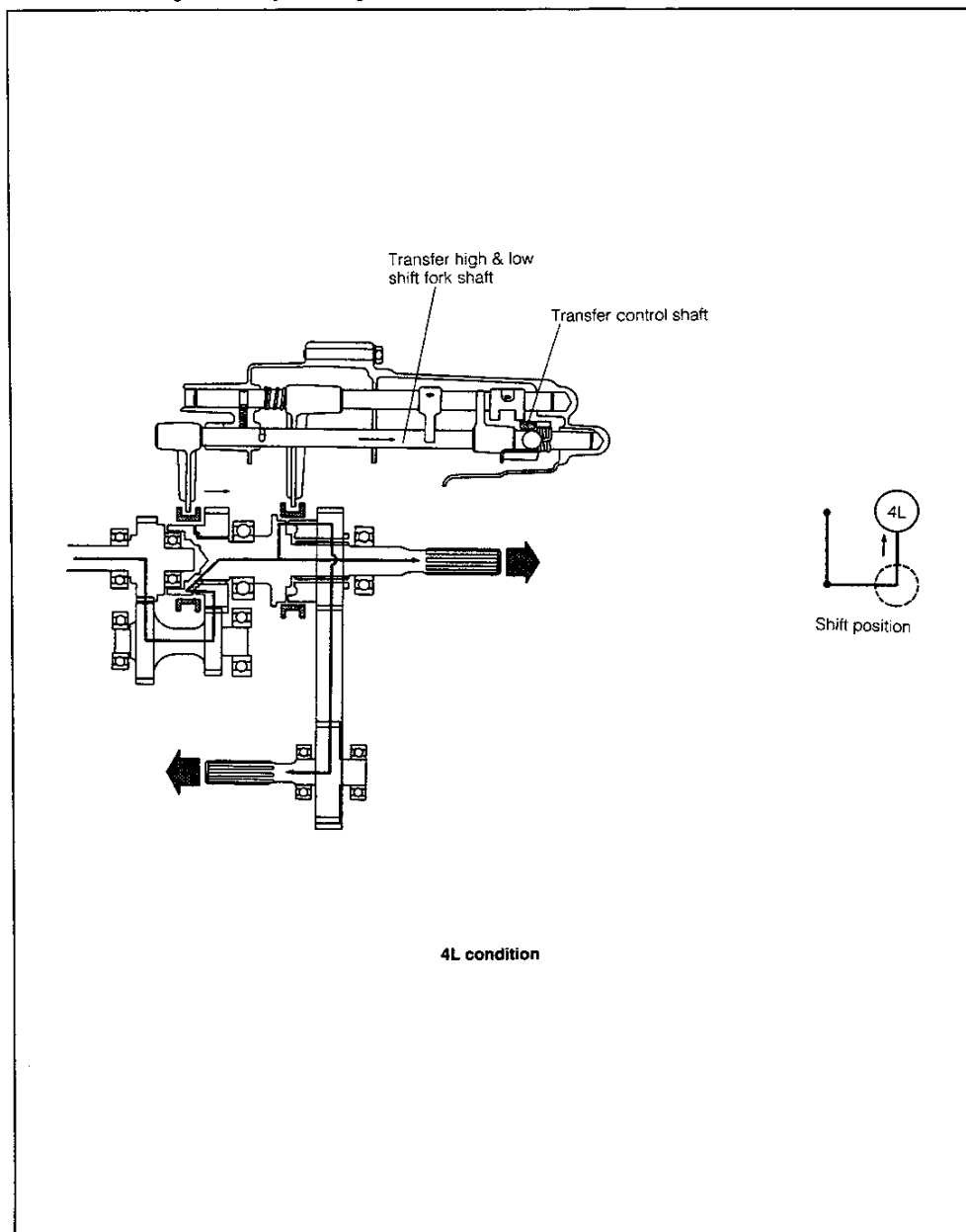
1. When the transfer control shaft is switched from the 4H direction to the 4L direction, the transfer shift lever moves downward. Thus, the transfer fork shaft pin is erected almost vertically as shown in Fig. 2 below. Inasmuch as the transfer fork shaft pin is secured to the transfer high & low shift fork shaft, the transfer fork shaft pin is erected almost vertically. Consequently, the transfer high & low shift fork shaft turns to the left, as shown in Fig. 1 below. Simultaneously the roller moves and fits into the groove of the transfer front drive fork shaft. As a result, the transfer front drive shift fork shaft is brought into a locked state.



WFE90-TR006

TRANSMISSION & TRANSFER

2. When the transfer control shaft is shifted to the 4L direction, the transfer high & low shift fork shaft alone moves to the right, thereby attaining the 4L condition.

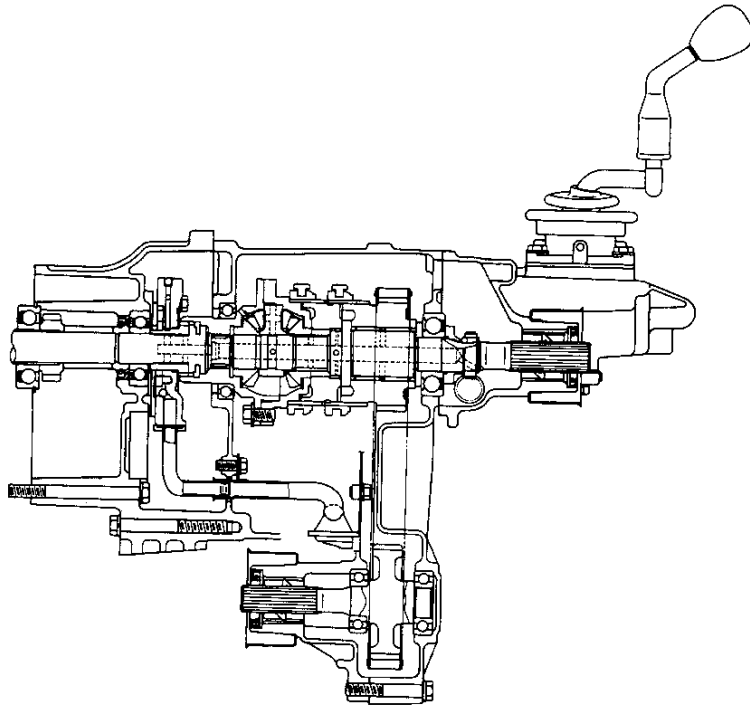


WFE90-TR006

TRANSFER (Full-time)

GENERAL

A full-time 4WD vehicle has been introduced in which a differential (center differential) is provided on the transfer rear output shaft in the transfer. This center differential absorbs any difference in rotation between the front wheels and the rear wheels which may occur while turning under the 4WD mode or which may be generated due to the difference in friction between the front tires and the rear tires.



Full-time 4WD

WFE90-TR007

TRANSMISSION & TRANSFER

TRANSFER (For full-time 4WD vehicle)

1. Gear specifications

Unit Nomenclature	Gear Nomenclature		Gear type	Number of teeth
Transfer (Full-time 4WD)	Differential side gear		Straight bevel gear	16
	Differential pinion		Straight bevel gear	10
	Sprocket	Drive gear	Spur gear	33
		Driven gear	Spur gear	33

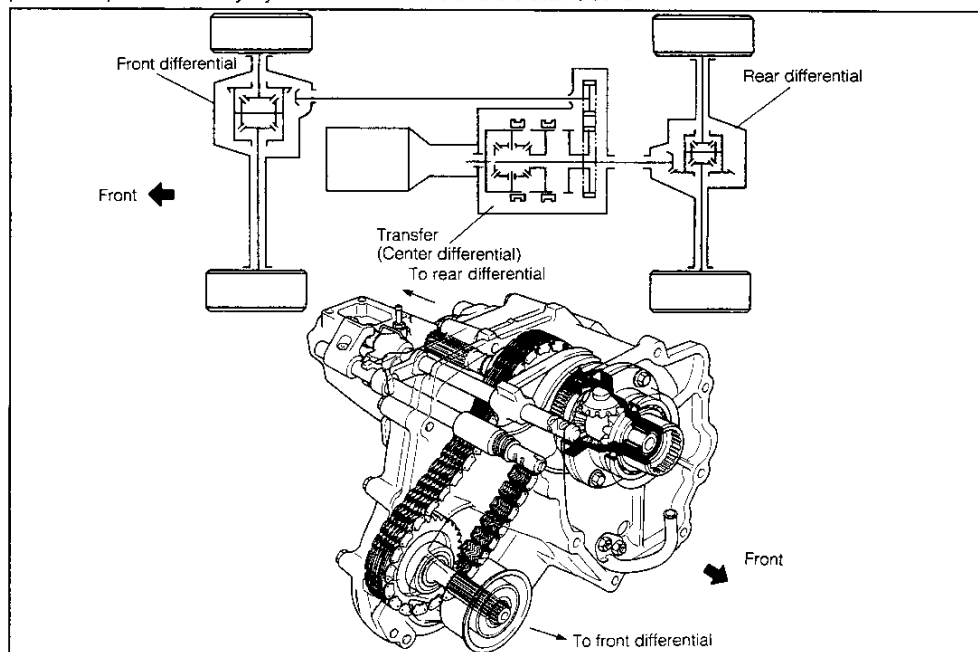
2. Speedometer gear specifications

Item		Type of engine
Speedometer	Number of drive gear teeth (Identification)	6
	Number of driven gear teeth (Identification)	24

WFE90-TR008

Power train system

The switching between the free position and the center differential lock position is performed by means of the clutch sleeve which is slided in a fore-&-aft direction by the shift fork. Moreover, the clutch section employs a dog type. Consequently, the switching between the center differential lock position and the free position is performed only by means of the slide of the clutch sleeve.

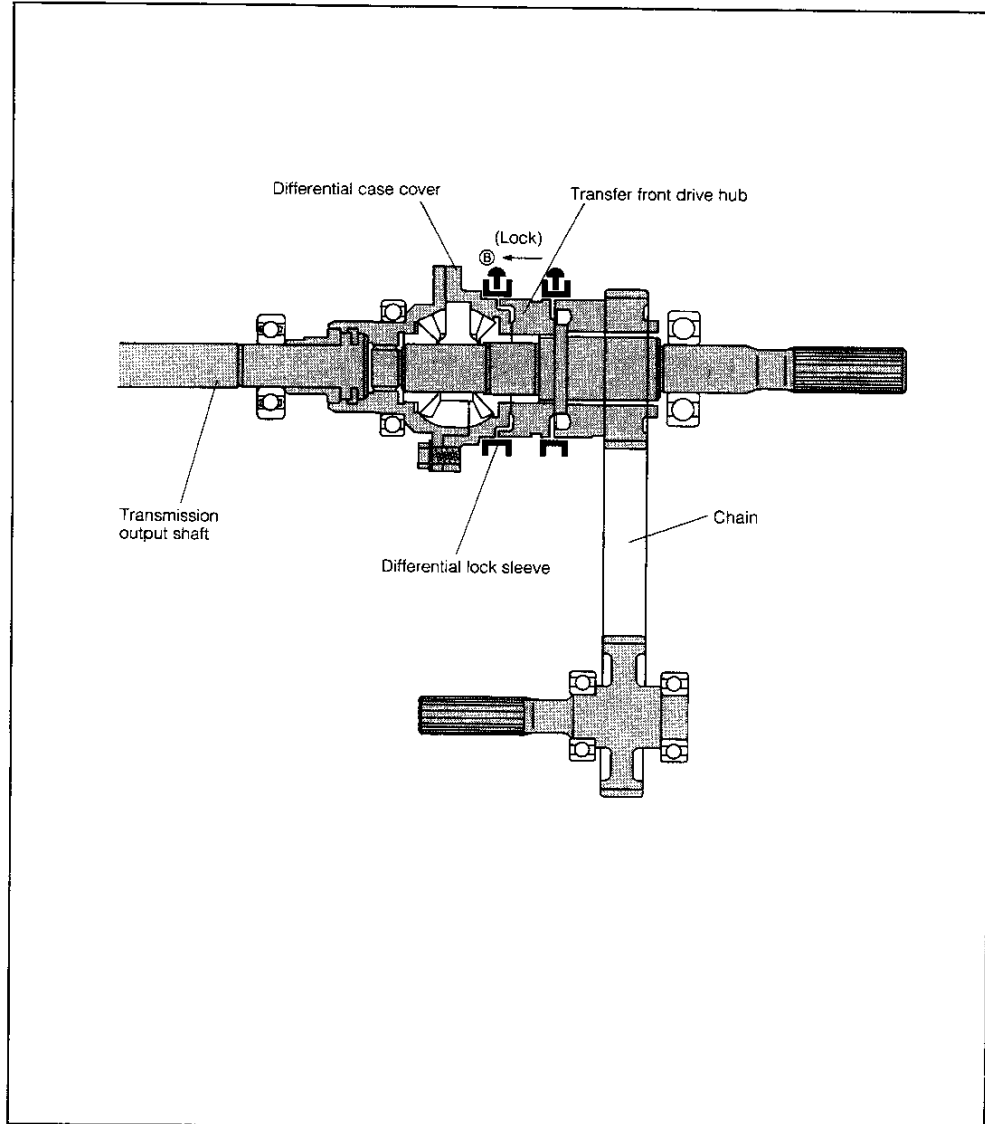


WFE90-TR008

Power transmitting route

1. When center differential is locked:

When the transfer shift lever is shifted into the "CENTER DIFF LOCK" position, the differential lock sleeve moves to the lock position ⑧. Consequently, the differential case cover is combined with the transfer front drive hub, thereby eliminating the differential function of the center differential. As a result, the power from the transmission output shaft is distributed evenly to the front and rear wheels under any condition. (This condition is the same as the 4WD running period of the part-time 4WD vehicle.)

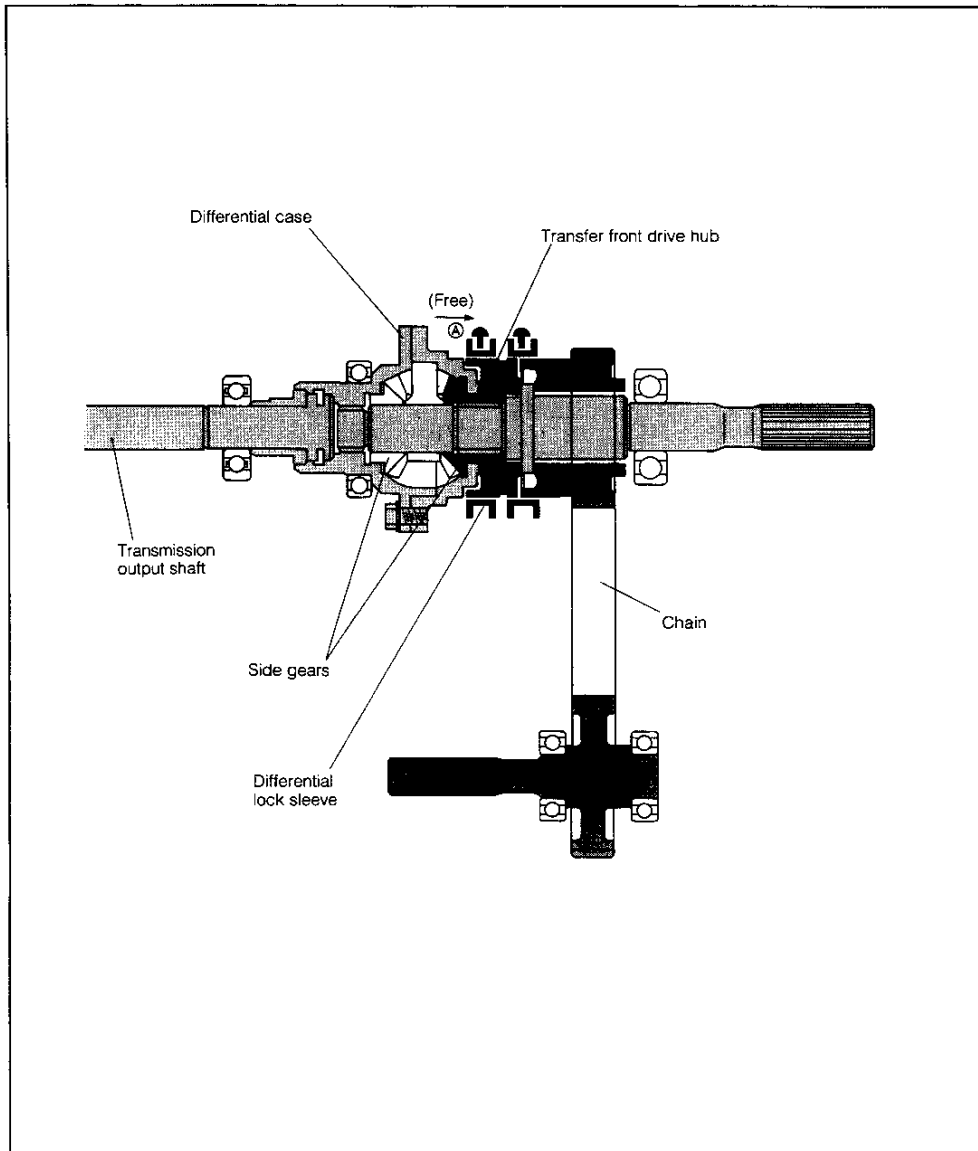


WFE90-TR010

TRANSMISSION & TRANSFER

2. When center differential is free:

When the transfer shift lever is shifted into the "FULLTIME" position, the power from the transmission output shaft is transmitted to the rear wheels in the same way as the center differential locked state. However, since the differential lock sleeve moves to the free position (A), the differential case is disengaged from the transfer front drive hub. As a result, the differential function of the center differential becomes operative.



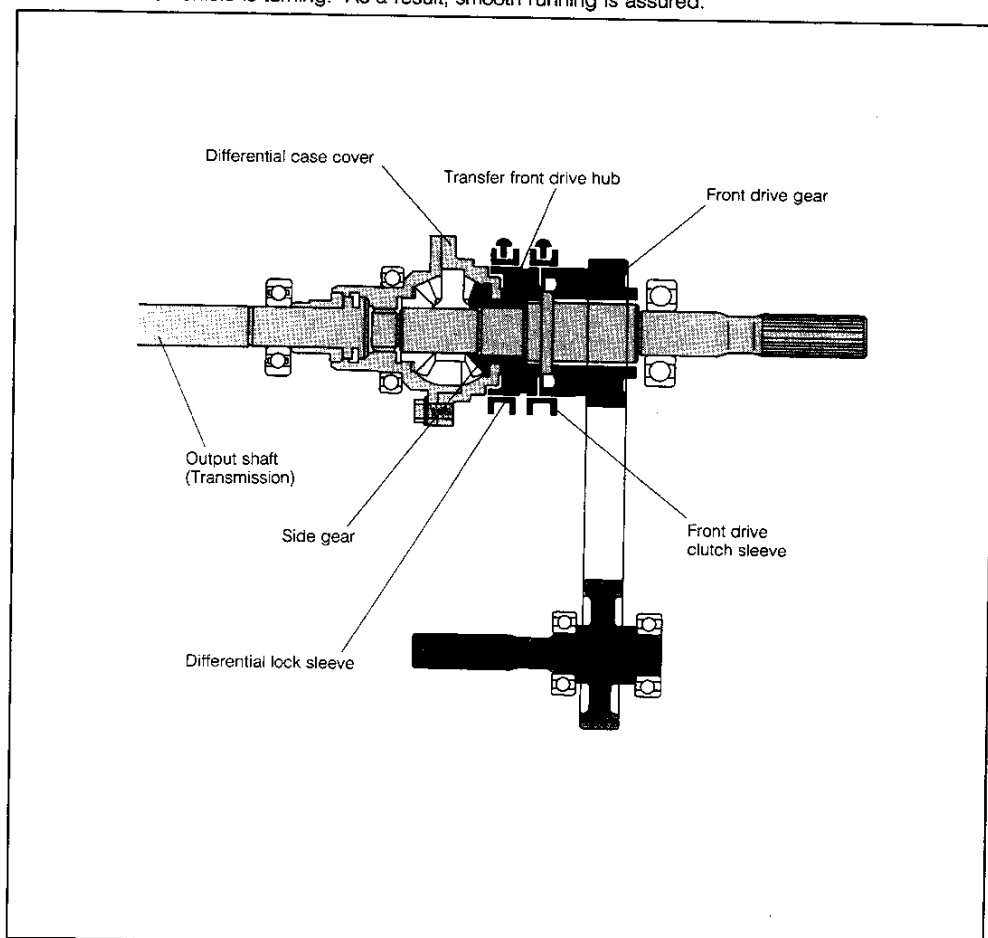
WFE90-TR011

CONSTRUCTION**1. Center differential**

The construction is the same as that of the hitherto- employed differential. The center differential is spline-connected to the output shaft of the transmission through the transfer input hub. These components transmit the driving power of the transmission output shaft to the center differential. Moreover, the transfer output shaft is spline- connected to the side gear in the center differential indicated at the left side of the figure below. Therefore, the driving power is transmitted to the rear wheels. The side gear indicated at the right side of the figure below is spline-connected to the transfer front drive hub. The driving power from the side gear is transmitted to the front drive gear by the front drive clutch sleeve. Consequently, the driving power is transmitted to the front wheels.

(1) Function of center differential

When the center differential operates in the free state as indicated in the figure below, the center differential section absorbs any difference in rotation between the front wheels and the rear wheels while the vehicle is turning. As a result, smooth running is assured.

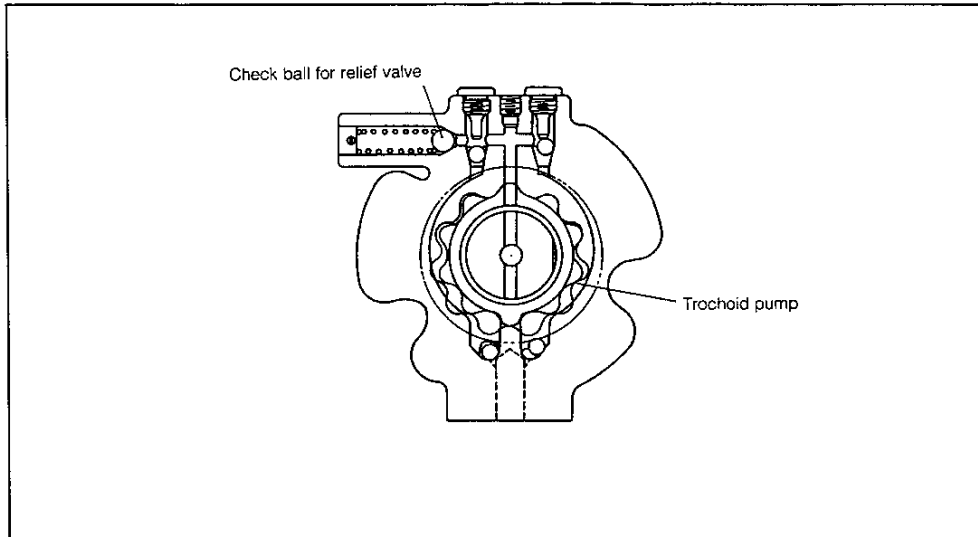


WFE90-TR012

TRANSMISSION & TRANSFER

2. Transfer oil pump body subassembly

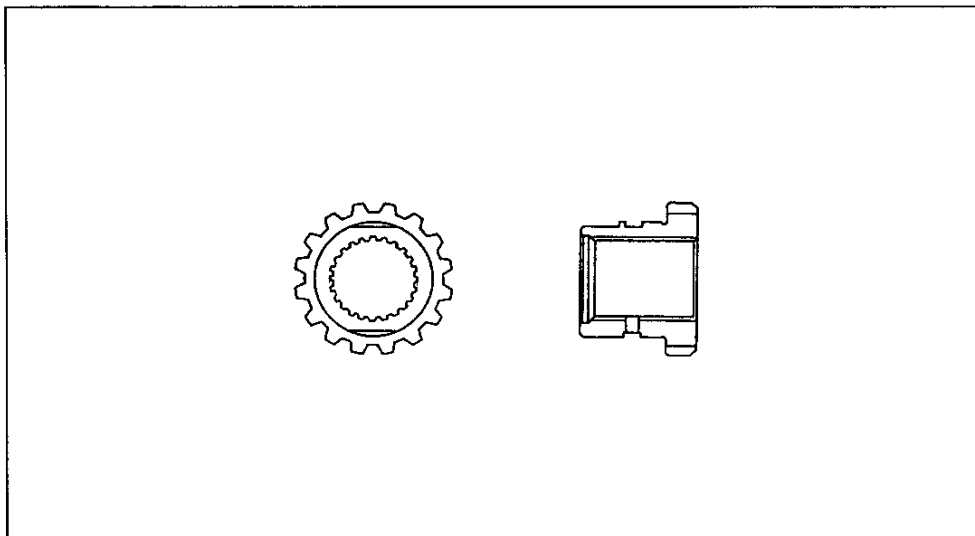
The transfer oil pump body subassembly is installed to the transmission output rear shaft. The transfer oil pump body subassembly forcibly lubricates each of the differential gear section, needle roller bearing and rear output bush.



WFE90-TR013

3. Transfer input hub

The transfer input hub is provided to transmit the driving power from the transmission output rear shaft to the center differential. The transfer input hub is spline-connected to the transmission output rear shaft and differential case.

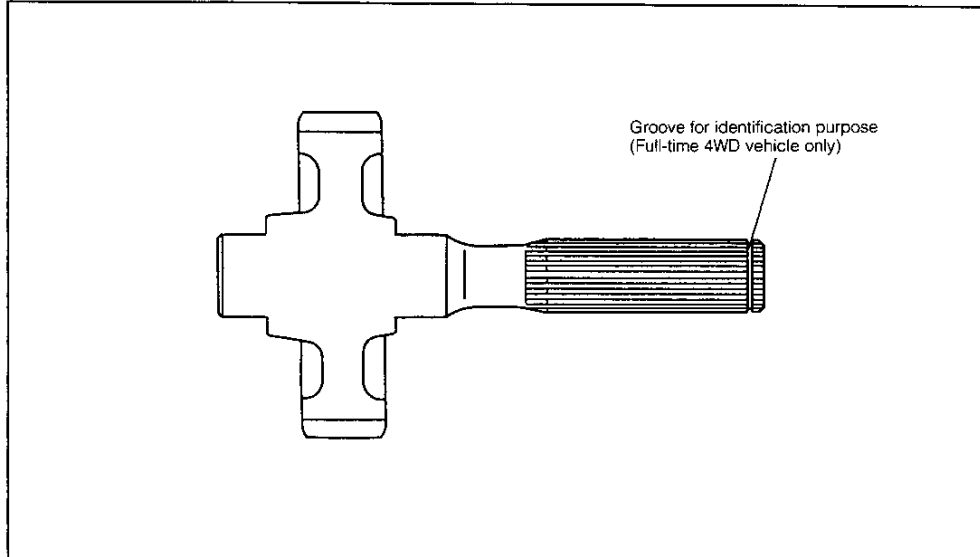


WFE90-TR014

TRANSMISSION & TRANSFER

4. Transfer output front shaft

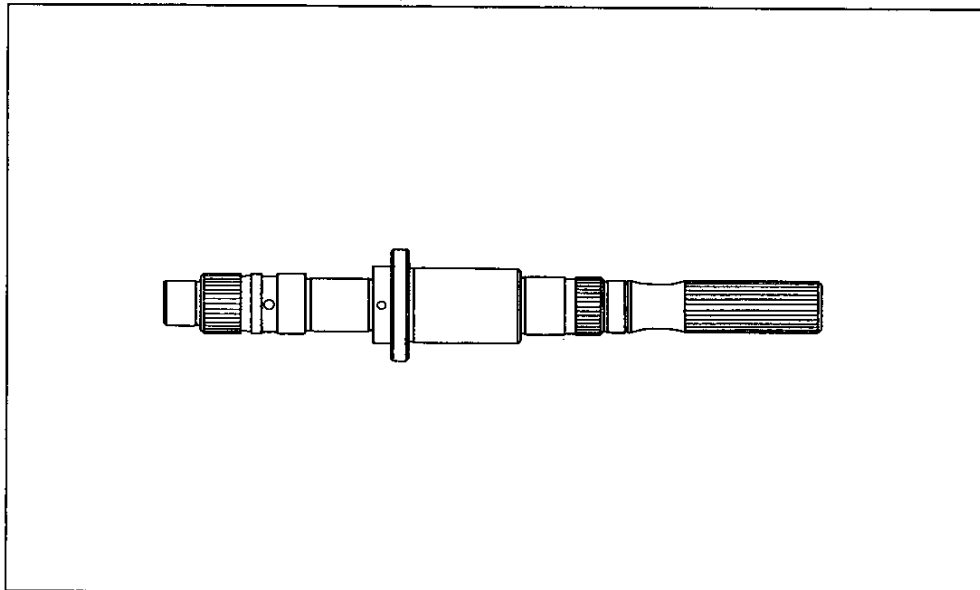
The shape of the tooth is different from that for the part-time 4WD vehicle. A groove is provided at the shaft section for the purpose of distinguishing this part from that for the part-time 4WD vehicle.



WFE90-TR015

5. Transfer output rear shaft

The shape is different from that for the part-time 4WD vehicle.



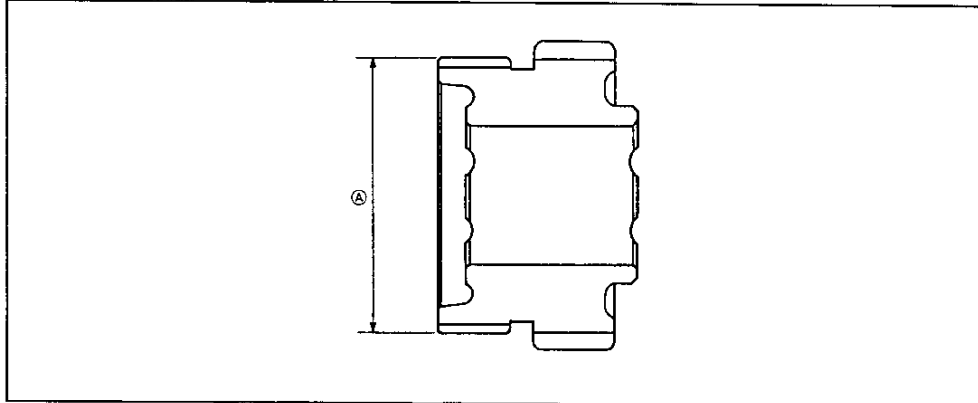
WFE90-TR016

TRANSMISSION & TRANSFER

6. Transfer front drive gear

The shape of the tooth is different from that for the part-time 4WD vehicle.

As for the tooth profile, the transfer front drive gear employs a spur gear. The transfer front drive gear comes in three kinds because of installation requirements.



WFE90-TR017

Transfer front drive gear specifications

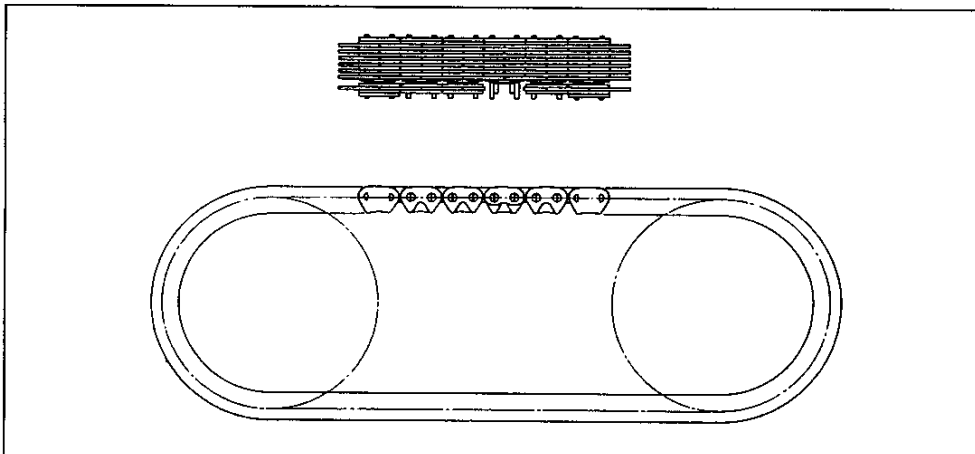
Unit: mm

Dimension A	Classification
87.28 - 87.34	2
87.18 - 87.24	1
87.08 - 87.14	3

WFE90-TR018

7. Transfer front drive chain

The transfer front drive chain adopts a random chain for the full-time 4WD vehicle.

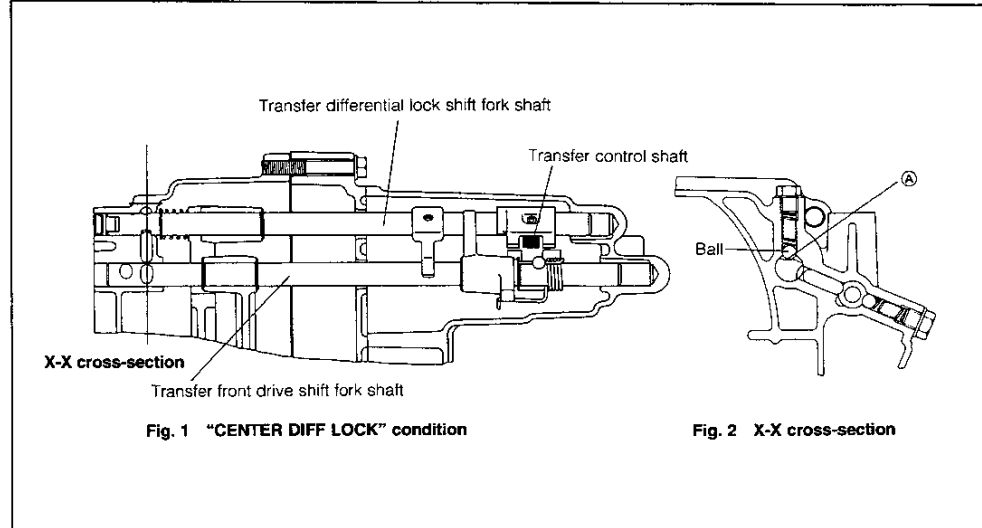


WFE90-TR019

SHIFT & SELECT MECHANISM

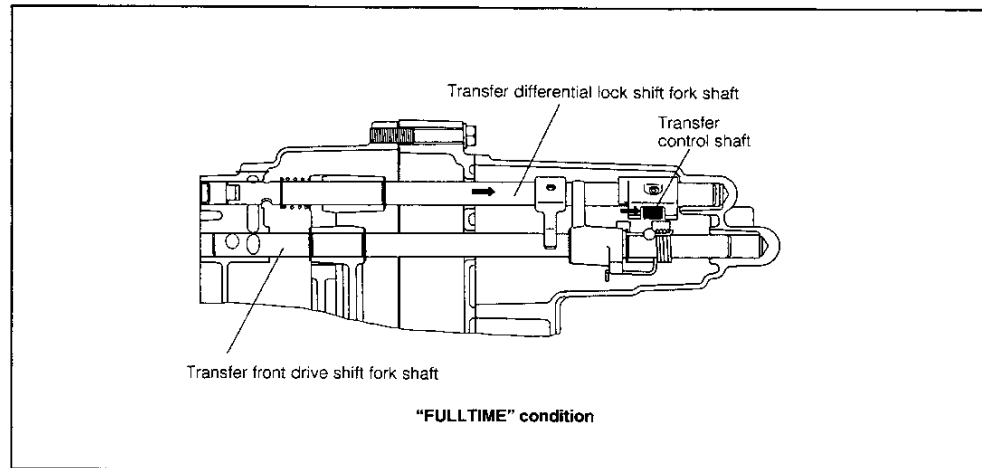
1. When shifting from "CENTER DIFF LOCK" to "FULLTIME":

The ball in Fig. 2 is pressed by the spring and it is held down to the groove (j) in the figure below) of the transfer front drive shift fork shaft. Consequently, the transfer front drive shift fork shaft is locked.



WF890-TR020

When the transfer control shaft is shifted from the "CENTER DIFF LOCK" position to the "FULLTIME" position, the transfer front drive shift fork shaft is locked by the ball. Thus, the differential lock shift fork shaft alone moves to the right. At this time, if there is any difference in rotating torque between the front wheels and the rear wheels, the wait mechanism functions between the transfer front drive hub and the differential case owing to the twisting torque resistance. As a result, the transfer differential lock shift fork is held in the "CENTER DIFF LOCK" state. When the difference in rotating torque diminishes, the transfer differential lock shift fork returns to the right by a spring tension, thus switching to the "FULLTIME" condition.



WF890-TR021

TRANSMISSION & TRANSFER

Switching transfer from 4WD to 2WD during towing

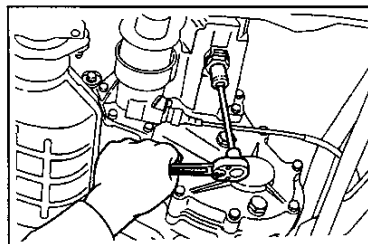
It becomes necessary to switch the full-time 4WD vehicle to the 2WD condition when the vehicle is towed or it is placed on the rollers of a speedometer tester during speedometer check or the like.

On the full-time 4WD Rocky, it is possible to switch it to the 2WD condition, following the procedure given below. (However, this procedure is described for the switching at the time of towing or vehicle inspections. Therefore, never drive the vehicle always under the 2WD mode.)

WFE90-TR022

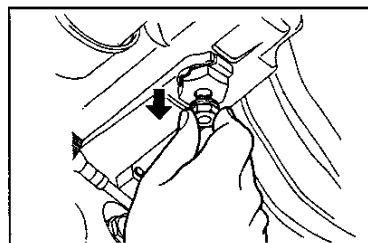
1. Procedure for switching from 4WD to 2WD

- (1) Jack up the vehicle.
- (2) Loosen the bolt located at the lower section of the retainer in the right figure.



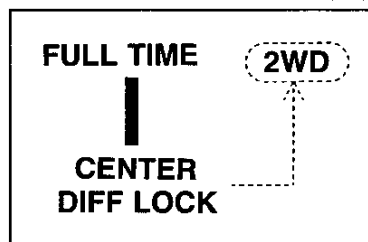
WFE90-TR023

- (3) Pull down the bolt which was loosened in the step (2) as far as it will go, as indicated in the right figure.



WFE90-TR024

- (4) Operate the transfer control lever as indicated in the right figure so as to switch to the 2WD condition.

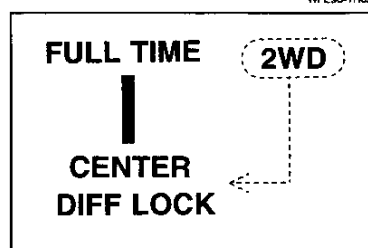


WFE90-TR025

2. Procedure for switching from 2WD to 4WD

Switch the transfer control lever to the "DIFF LOCK" position. Tighten the bolt.

Tightening Torque: 29.4 - 44.1 N·m (3.0 - 4.5 kgf·m)

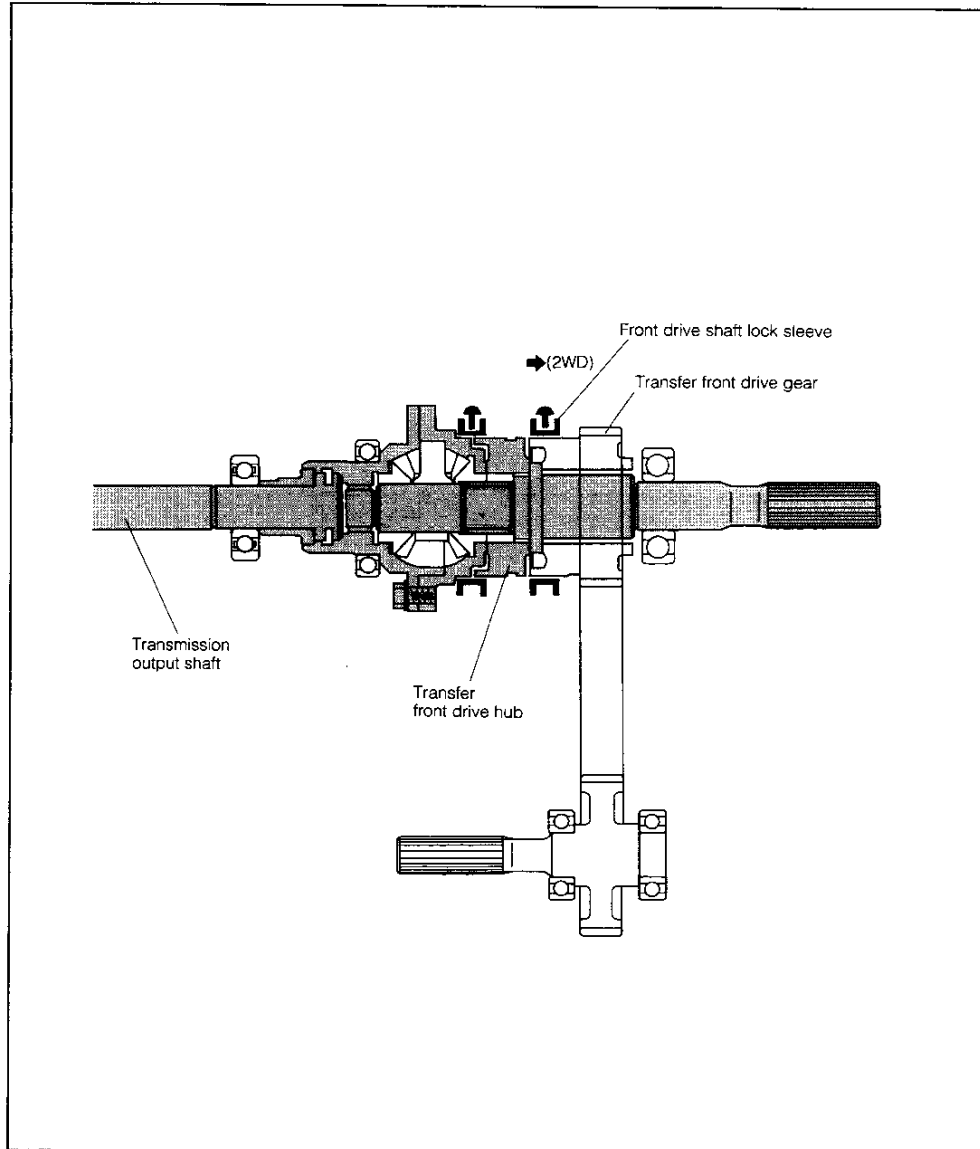


WFE90-TR026

TRANSMISSION & TRANSFER

Power transmitting route during 2WD

When the transfer shift lever is shifted to the 2WD position for the purpose of towing or speedometer check on the rollers of a speedometer tester, the front drive shaft lock sleeve moves to the right. Consequently, the transfer front drive hub is disengaged from the transfer front drive gear. Namely, the power from the manual transmission output shaft is not transmitted to the front wheels, thus switching to the 2WD condition where only the rear wheels are driven.

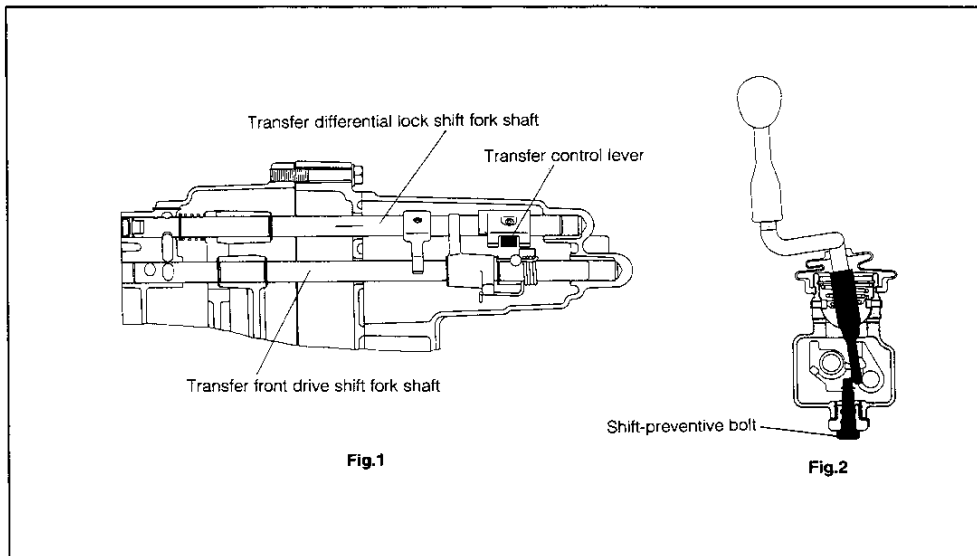


WFE90-TR027

TRANSMISSION & TRANSFER

SHIFT & SELECT MECHANISM (during 2WD operation)

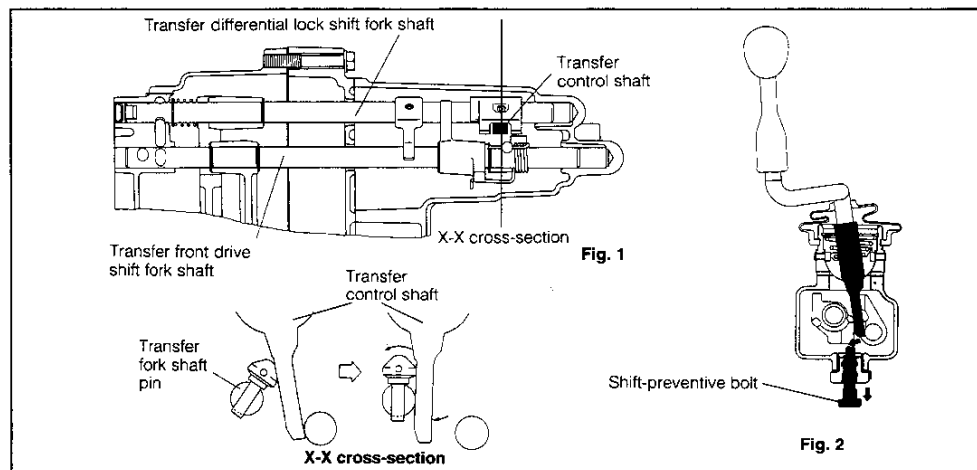
Normally, the right-&-left movement of the transfer shift lever is restricted by the shift-preventive bolt as indicated in Fig. 2. Therefore, the transfer shift lever operates the differential lock shift fork shaft only.



WFE90-TR028

Here, when the shift-preventive bolt is loosened and pulled down as far as it will go, the shift lever can move in a right-&-left direction as indicated in Fig. 2 below.

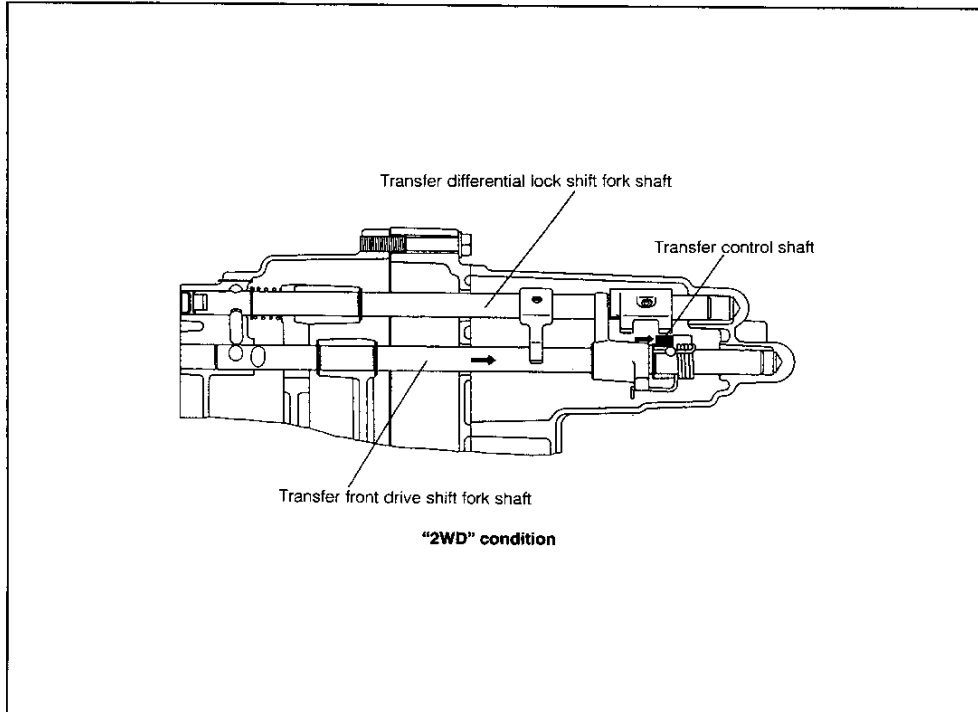
Moreover, when the transfer shift lever is shifted as indicated in the figure below, the transfer fork shaft pin secured to the transfer front drive shift fork shaft erects almost vertically. Consequently, the transfer control shaft turns to the left, as indicated in Fig. 1 below. Simultaneously, the roller moves and fits into the groove of the differential lock shift fork shaft. As a result, the differential lock shift fork shaft is brought into a locked state.



WFE90-TR028

TRANSMISSION & TRANSFER

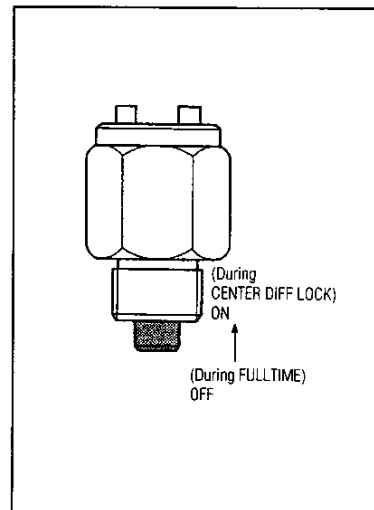
When the transfer control shaft is shifted as indicated in the figure below, the transfer front drive shift fork shaft alone moves to the right, thus switching to the 2WD condition.



WFE90-TR030

Position Switch

The switch is turned "ON" when the differential lock shift fork shaft is moved from the "FULLTIME" side to the "CENTER DIFF LOCK" side.



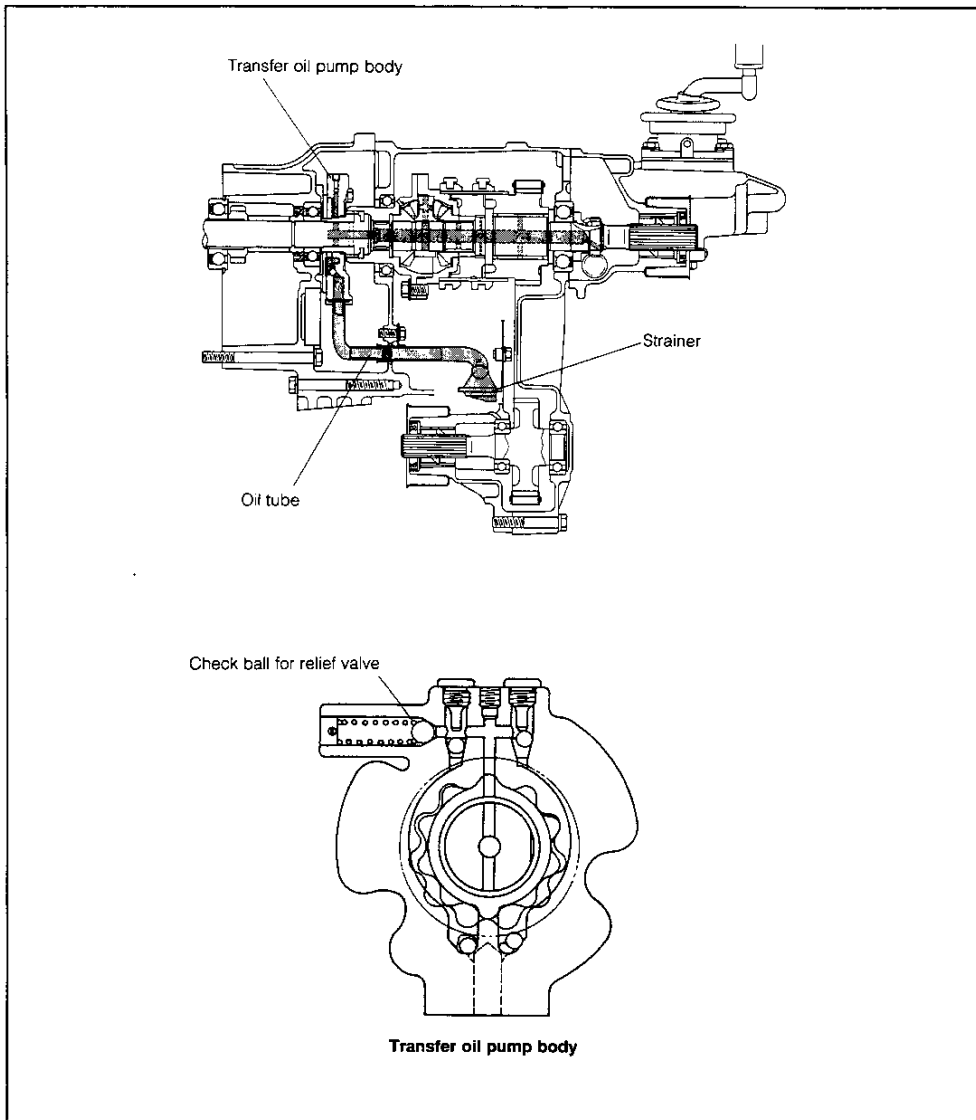
WFE90-TR031

TRANSMISSION & TRANSFER

LUBRICATING MECHANISM

The trochoid type oil pump driven by the transmission output shaft forcibly lubricates the bearing, center differential, rear output bush and so forth of the transfer equipped with the center differential (for the full-time 4WD vehicle).

The lubrication of the oil pump is performed as follows: The oil is filtered by a strainer and sucked through the oil tube by the pump. Then, the oil is distributed to lubricate each section after its pressure has been regulated to a constant level by a relief valve.



WFE90-TR032

FILLING PORT OF TRANSFER OIL

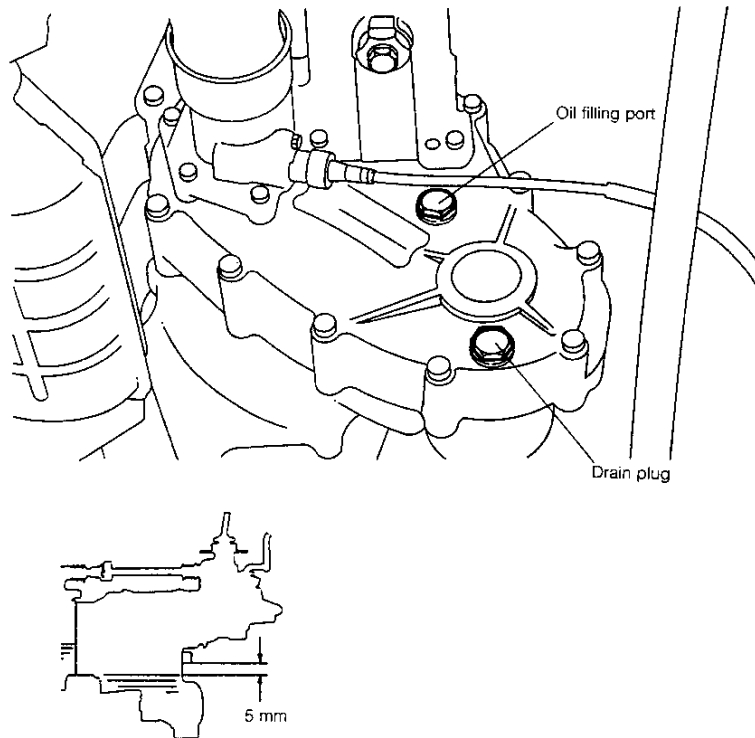
The oil filling port is provided at the lower side of the rear output retainer.

When changing the oil, drain the oil from the drain plug located at the lower/back side of the transfer. Fill oil from the oil filling port up to the following level.

Transfer oil to be used

Ammix super transmission gear oil multi SAE75W-85
(equivalent to API classification GL-3)

Oil amount: 1.7 L (total amount)



WFE90-TR033

TRANSMISSION & TRANSFER

Transmission and transfer gear ratio specifications

[]: General specification

Transmission	Gear ratio	1st gear	3.752
		2nd gear	2.182
		3rd gear	1.428 [1.529]
		4th gear	1.000
		5th gear	0.865
		Reverse gear	3.942
	Oil used	Kind	API GL-3 or GL-4 SAE 75W-85 or 75W-90
		Capacity	1.7L
Transfer	Gear ratio	High gear	1.000
		Low gear	1.754 (part time only)
	Oil used	Kind	API GL-3 or GL-4 SAE 75W-85 or 75W-90
		Capacity	1.4L

WFE90-TR034

Transmission and transfer teeth number

[]: General specification

Transmission	Input shaft gear		23
	Counter gear	Driven gear	34
		1st gear	13
		2nd gear	21
		3rd gear	30 [29]
		5th gear	41
		Reverse gear	12
	Output gear	1st gear	33
		2nd gear	31
		3rd gear	29 [30]
		5th gear	24
		Reverse gear	32
	Reverse idle gear		23
Transfer	Input shaft gear		33
	Counter gear	Driven gear	32
		Low gear	21
	Output shaft gear		38
	Sprocket	Driven gear	33
		Drive gear	33

WFE90-TR035

TROUBLE SHOOTING

Symptom	Possible causes	Checking points
Noise emitted from gear Slipping out of gear	Malfunctioning control-related components	Check control-related components.
Abnormal noise from bearing	Bearing seizure, Abnormal wear	Check bearing and gear for seizure.
Hard shifting	Malfunctioning control-related components	Check control-related components.
	Improper contact of synchronizer rings	Check synchronizer rings.

WFE90-TR036

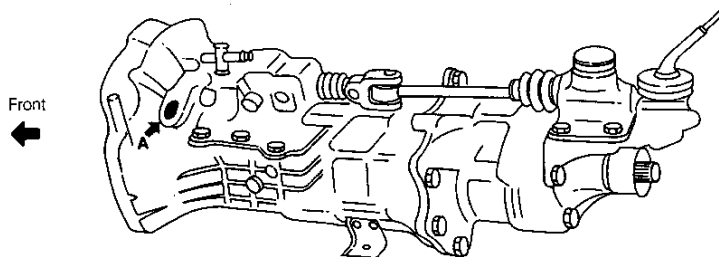
TRANSMISSION & TRANSFER

TRANSMISSION & TRANSFER

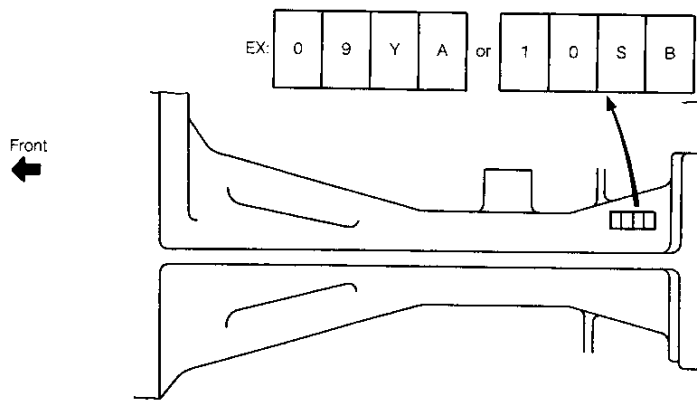
1. The Ferroza models are available with either a full-time transmission with transfer assembly or a part-time transmission with transfer assembly; the latter being used only in conventional models. The coating colors for identification between the full-time transmission with transfer assembly and the part-time transmission with transfer assembly are as follows:

A: Identification marking position

A	European	Australian	General
Part time	Blue	←	Pink
Full time	White	←	←

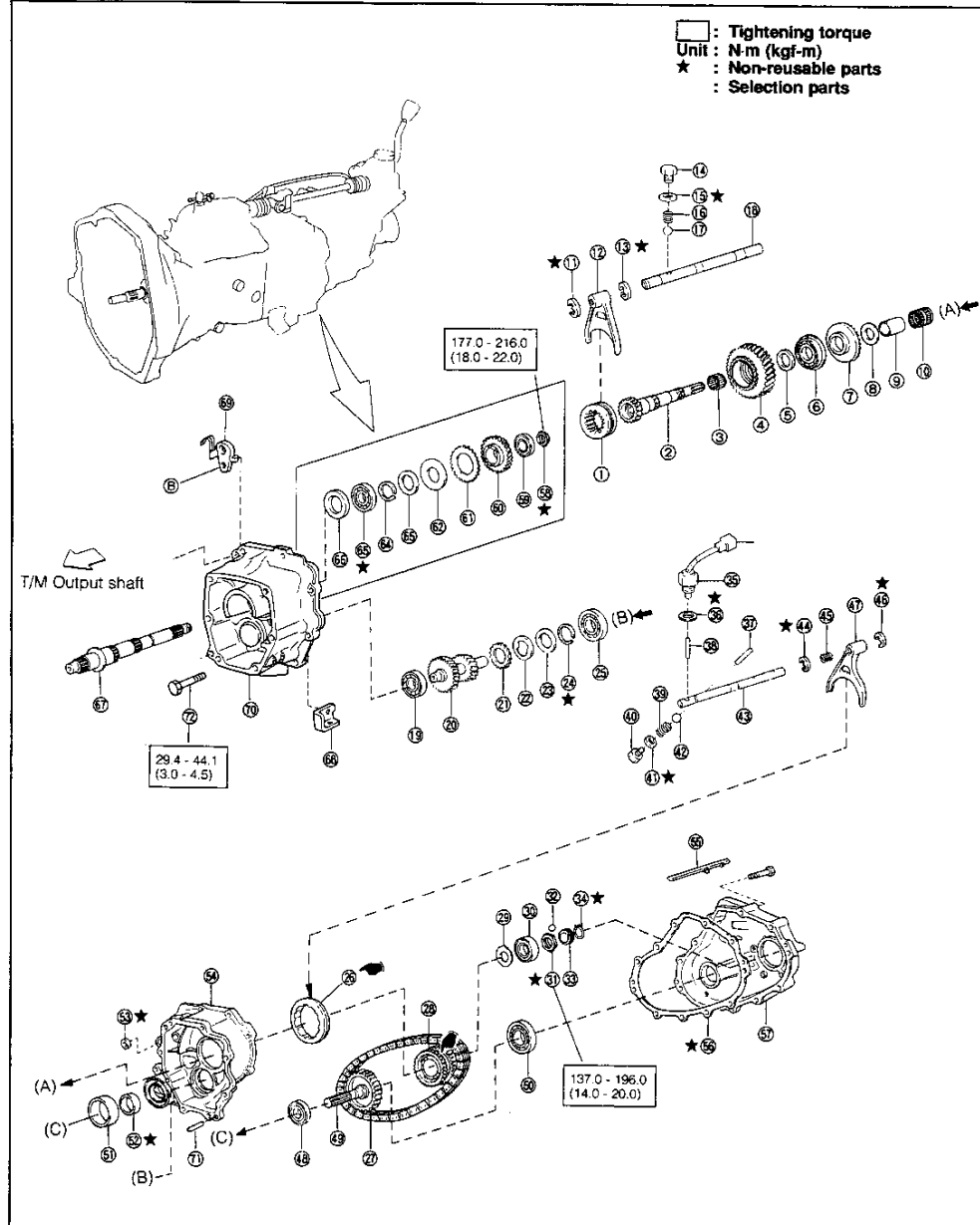


B: Lot number inscription position



WFE90-TR037

TRANSFER (PART TIME) COMPONENTS



WFE90-TR036

TRANSMISSION & TRANSFER

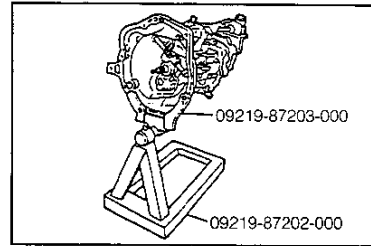
- | | |
|--|--|
| ① Transfer high & low clutch sleeve | ②⑦ Roller |
| ② Transfer output rear shaft | ②⑧ Roller |
| ③ Needle roller bearing | ②⑨ Spring |
| ④ Transfer low speed output gear | ④⑩ Bolt |
| ⑤ Transfer output gear thrust washer | ④⑪ Gasket |
| ⑥ Radial ball bearing | ④⑫ Ball |
| ⑦ Front drive clutch hub | ④⑬ Transfer front drive shift fork shaft |
| ⑧ Transfer output shaft spacer No. 2 | ④⑭ "E" ring |
| ⑨ Transfer front drive gear bearing inner race | ④⑮ Spring |
| ⑩ Needle roller bearing | ④⑯ "E" ring |
| ⑪ "E" ring | ④⑰ Transfer front drive shift fork |
| ⑫ Transfer high & low shift fork | ④⑱ Radial ball bearing |
| ⑬ "E" ring | ④⑲ Transfer output front shaft |
| ⑭ Bolt | ④⑳ Radial ball bearing |
| ⑮ Gasket | ④㉑ Extension housing dust deflector |
| ⑯ Spring | ④㉒ Oil seal |
| ⑰ Ball | ④㉓ Tight plug |
| ⑱ Transfer high & low shift fork shaft | ④㉔ Transfer front case subassembly |
| ⑲ Radial ball bearing | ④㉕ Transfer oil supply pipe |
| ⑳ Transfer counter gear | ④㉖ Transfer case gasket |
| ㉑ Sub-gear No. 2 | ④㉗ Transfer rear case |
| ㉒ Washer plate | ④㉘ Lock nut |
| ㉓ Conical spring washer | ④㉙ Bearing |
| ㉔ Snap ring | ④㉚ Transfer low speed input gear |
| ㉕ Radial ball bearing | ④㉛ Sub-gear No. 1 |
| ㉖ Transfer front drive gear sleeve | ④㉜ Washer plate |
| ㉗ Transfer front drive chain | ④㉝ Conical spring washer |
| ㉘ Transfer front drive gear | ④㉞ Snap ring |
| ㉙ Transfer output gear thrust washer | ④㉟ Radial ball bearing |
| ㉚ Radial ball bearing | ④㊱ Oil seal |
| ㉛ Lock nut | ④㊲ Transmission output shaft |
| ㉜ Ball | ④㊳ Exhaust pipe support bracket |
| ㉝ Speedometer drive gear | ④㊴ Engine hanger |
| ㉞ Snap ring | ④㊵ Transfer adapter subassembly |
| ㉟ Transmission position detecting switch | ④㊶ Straight pin |
| ㊱ Gasket | ④㊷ Hexagon bolt |

TRANSFER REMOVAL

1. Install the transmission with transfer on the overhaul stand, using the following SSTs.

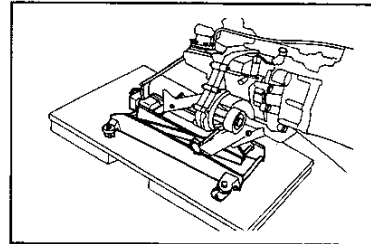
SST: 09219-87202-000

09219-87203-000



WFES0-TR040

2. Place a wooden plate(s) or any other suitable materials on the overhauling stand, as shown in the diagram at right.
3. Support the transfer front case and transfer rear case with a transmission jack.

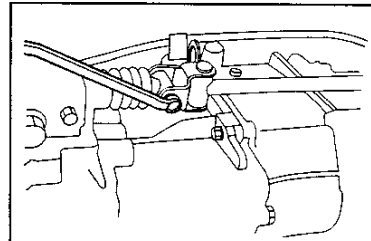


WFES0-TR041

4. Remove the control shaft with installed the shift lever retainer subassembly by removing the hexagon bolt.

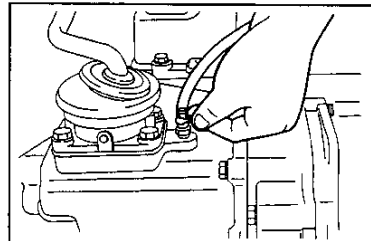
NOTE:

- When disconnecting the control shaft from the shift & select No. 1 shaft, care must be exercised as to the "O" ring which may be detached during the removal.



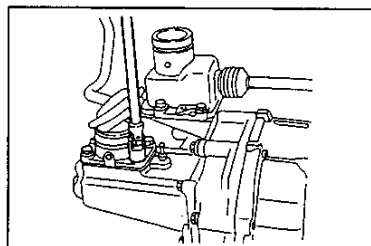
WFES0-TR042

5. Remove the breather hose by detaching a clip.



WFES0-TR043

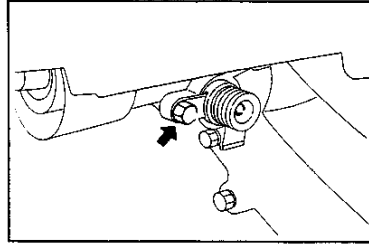
6. Remove the transfer shift lever retainer and gasket by removing the four bolts.
(As for the disassembly/assembly and inspection for the removed parts, see page TR-59.)



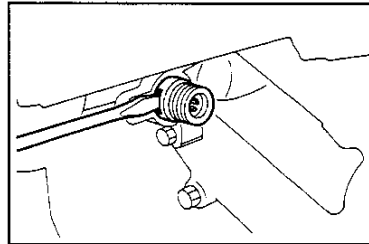
WFES0-TR044

TRANSMISSION & TRANSFER

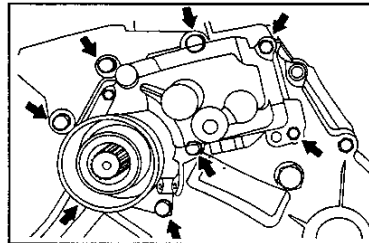
7. Remove the speedometer sleeve lock plate by removing the bolt.



8. Remove the speedometer sleeve, using the standard tool of flat driver arrow to remove the speedometer sleeve.



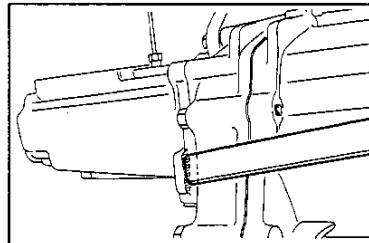
9. Removal of transfer output shaft bearing retainer
(1) Remove the eight bolts.



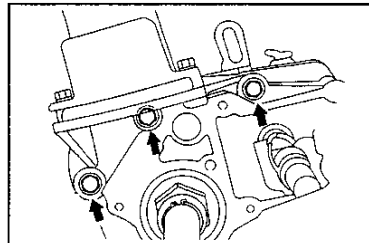
- (2) Remove the transfer output shaft bearing retainer by tapping the both right and left ribs section, using the wooden bar with plastic hammer lightly.
(3) Remove the gasket.

NOTE:

- Never reuse the removed gasket.



10. Remove the control shaft lower No. 1 bracket with installed the shift & select shaft and control shaft by removing the two hexagon bolts and the bolt.

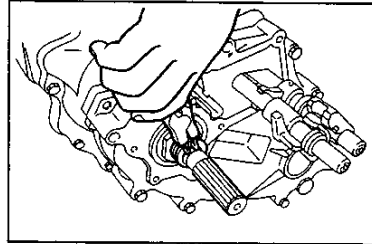


TRANSMISSION & TRANSFER

11. Detach the snap ring. Remove the speedometer driven gear and ball.

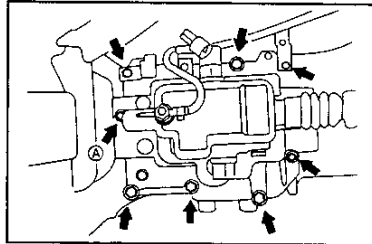
NOTE:

- Never reuse the removed snap ring.



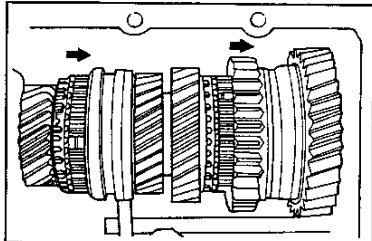
WFE90-TR050

12. Remove the transmission case cover subassembly by removing the seven bolts and the reamer bolt (A).



WFE90-TR051

13. Interlock the 1st gear and the 3rd gear.



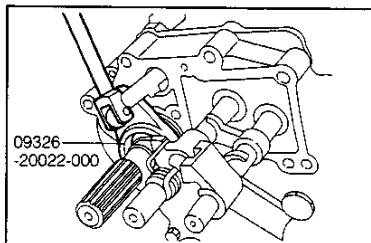
WFE90-TR052

14. Raise the lock section of the lock nut.
15. Remove the lock nut from the transfer output rear shaft, using the following SST.

SST: 09326-20022-000

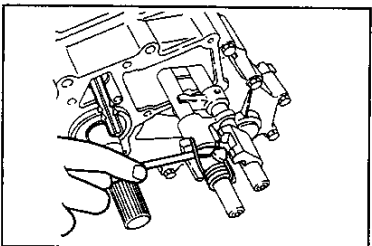
NOTE

- Never reuse the removed lock nut.



WFE90-TR053

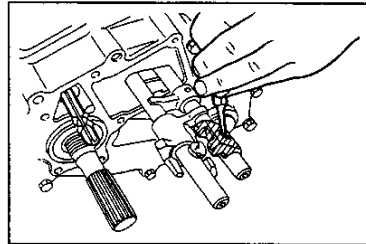
16. Remove the torsion bar spring, using the standard tool of flat driver.



WFE90-TR054

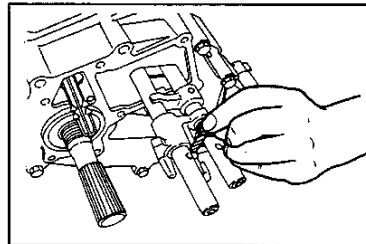
TRANSMISSION & TRANSFER

17. Drive out the slotted pin of the transfer front drive shift head.
Remove the transfer front drive shift head.



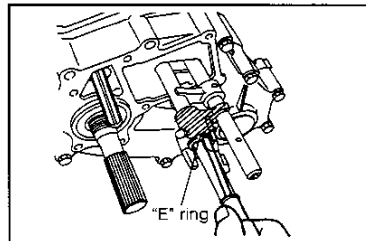
WFE90-TR055

18. Remove the transfer fork shaft pin.



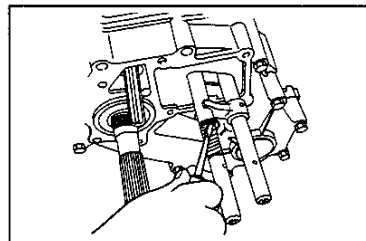
WFE90-TR056

19. Remove the "E" ring. Remove the transfer high & low shift head.



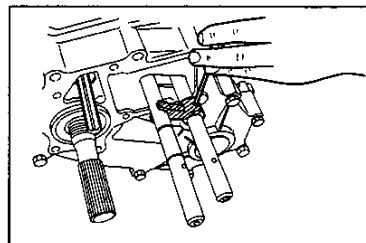
WFE90-TR057

20. Remove the "E" ring.



WFE90-TR058

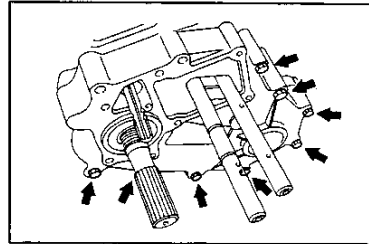
21. Drive out the slotted pin of the transfer front drive shift head No. 2. Remove the transfer front drive shift head No. 2.



WFE90-TR059

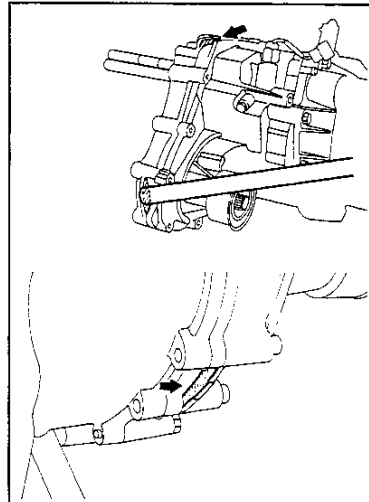
TRANSMISSION & TRANSFER

22. Remove the transfer rear case by removing the eight bolts.



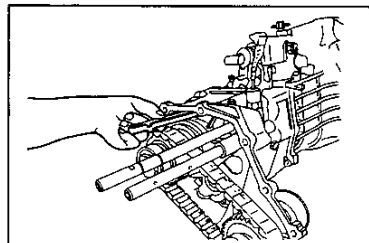
WFES0-TR060

23. Remove the transfer rear case by lightly tapping the ribs section using the wooden bar with plastic hammer.



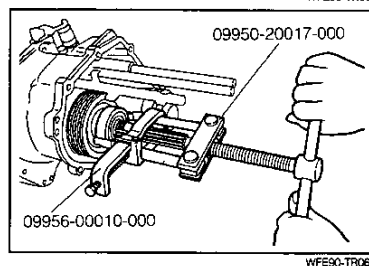
WFES0-TR061

24. Remove the gasket and transfer oil supply pipe.



WFES0-TR062

25. Remove the bearing, using the following SSTs.
SST: 09950-20017-000
SST: 09956-00010-000



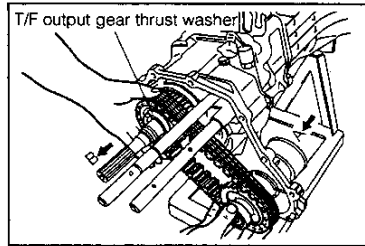
WFES0-TR063

TRANSMISSION & TRANSFER

26. Remove the transfer output gear thrust washer.
27. Remove the transfer front drive chain and transfer output gear together with the transfer output front shaft.

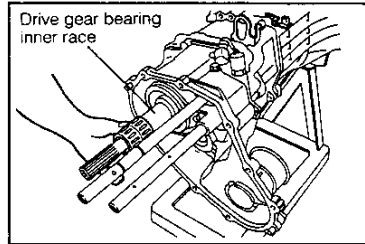
NOTE:

- Lightly tapping the transfer front shaft A with a plastic hammer.
- Pull out the transfer output rear shaft and transfer front shaft with installed the transfer front drive chain toward you B.



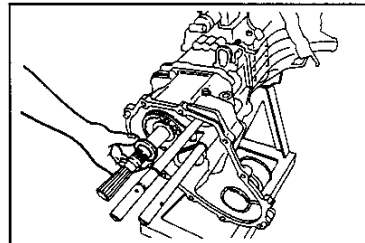
WFE90-TR064

28. Remove the needle roller bearing and transfer front drive gear bearing inner race.



WFE90-TR065

29. Remove the transfer output gear thrust washer.

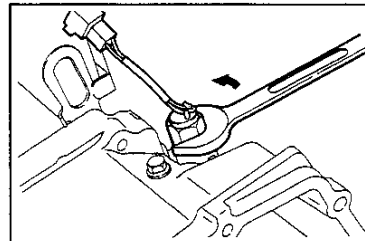


WFE90-TR066

30. Remove the transmission position detect switch and gasket.

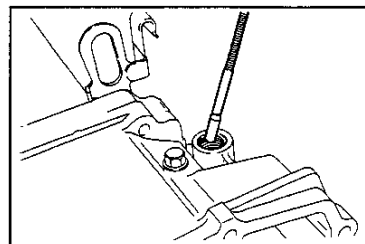
NOTE:

- Never reuse the removed gasket.



WFE90-TR067

31. Remove the roller, using the standard tool of magnet hand.



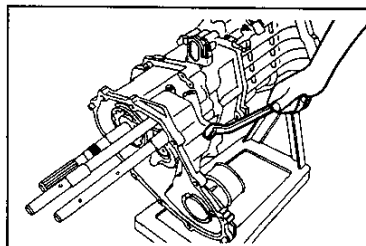
WFE90-TR068

TRANSMISSION & TRANSFER

32. Remove the lock bolt of the transfer front drive shift fork shaft and gasket.

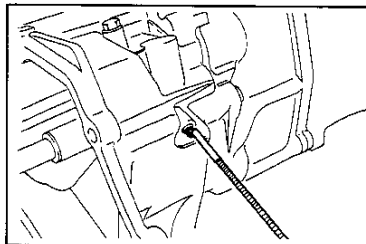
NOTE:

- Never reuse the removed gasket.



WFE90-TR069

33. Remove the compression spring and ball, using the standard tool of magnet hand.

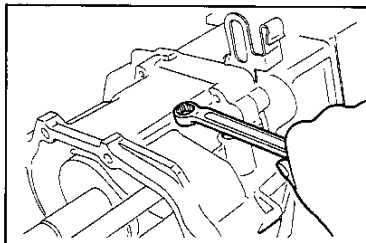


WFE90-TR070

34. Remove the lock bolt of the transfer high & low shift fork shaft and gasket.

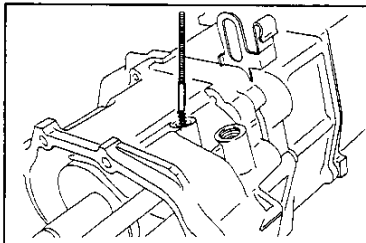
NOTE:

- Never reuse the removed gasket.



WFE90-TR071

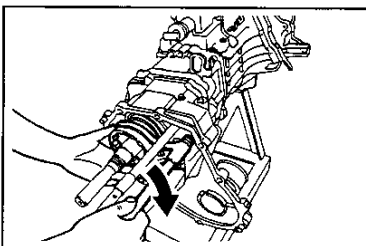
35. Remove the compression spring and ball, using the standard tool of magnet hand.



WFE90-TR072

36. Turn the transfer front drive shift fork shaft 180 degree and then, remove the following parts in a set.

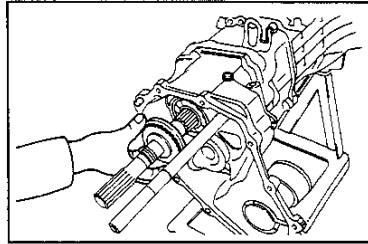
- Transfer front drive gear sleeve
- Transfer front drive shift fork
- Transfer front drive shift fork shaft
- Needle roller bearing
- Transfer front drive gear bearing inner race



WFE90-TR073

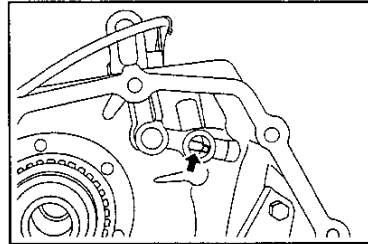
TRANSMISSION & TRANSFER

37. Remove the transfer front drive clutch hub and transfer output shaft spacer.
(As for the inspection for the removed parts, see page TR-41.)



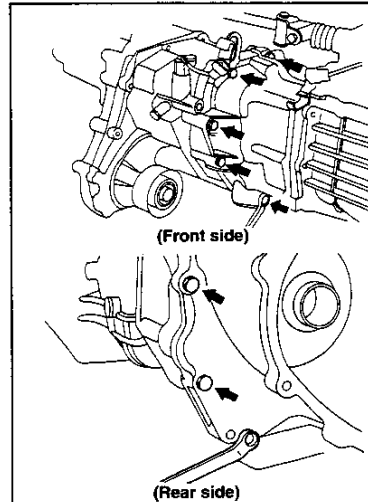
WFE90-TR074

38. Remove the roller, using the common tool of magnet hand.



WFE90-TR075

39. Remove the transfer front case by removing the seven bolts.

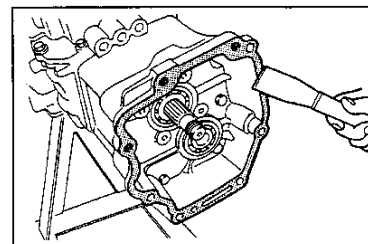


WFE90-TR076

40. Remove the gasket on the transfer adapter, using the gasket scraper.

NOTE:

- Be very careful not to scratch the attaching surface.



WFE90-TR077

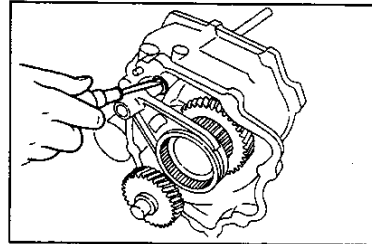
TRANSMISSION & TRANSFER

41. Remove the two "E" rings at the front and rear that retain the transfer high & low shift fork in the thrust direction.

NOTE:

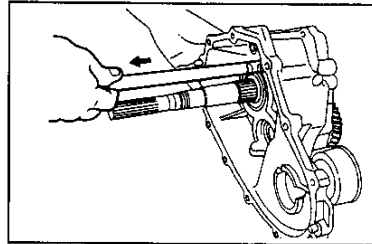
- Never reuse the removed "E" rings.

42. Remove the transfer high & low shift fork.



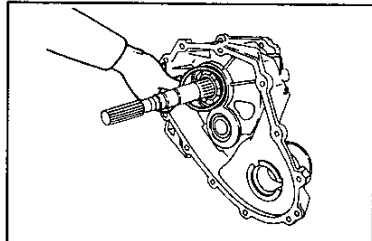
WFE90-TR078

43. Pull out the transfer high & low shift fork shaft toward you.



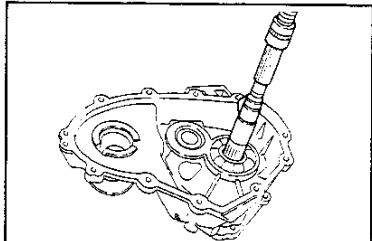
WFE90-TR079

44. Detach the stop ring of the transfer output rear shaft bearing.



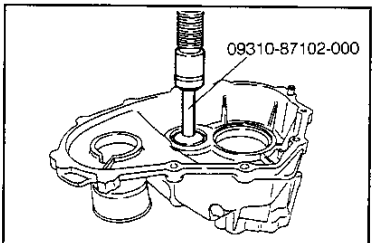
WFE90-TR080

45. Remove the transfer output rear shaft, using a press.



WFE90-TR081

46. Press the transfer counter shaft, using the following SST.
SST: 09310-87102-000



WFE90-TR082

TRANSMISSION & TRANSFER

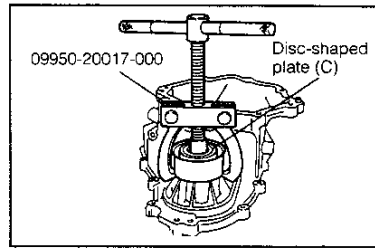
47. Set the disc-shaped plate (C) on the oil seal, using the following SST. Remove the dust deflector.

SST: 09950-20017-000
(Disc-shaped plate (C) that is a part of 09950-20017-000)

48. Remove the oil seal with a screwdriver.

CAUTION:

- Never reuse the removed oil seal.



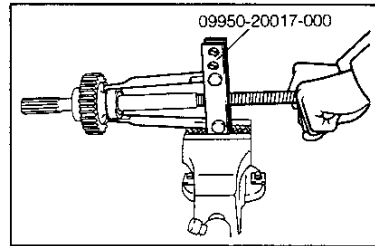
WFE90-TR063

DISASSEMBLY OF TRANSFER OUTPUT FRONT SHAFT

1. Set the following SST in a vice with transfer output front shaft installed.

Remove the bearing at the rear side of the transfer output front shaft, using the following SST.

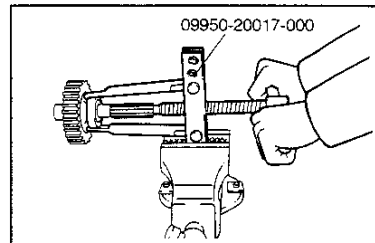
SST: 09950-20017-000



WFE90-TR064

Remove the bearing at the front side of the transfer output front shaft.

SST: 09950-20017-000

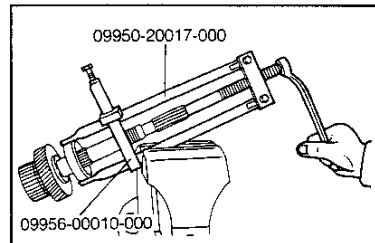


WFE90-TR085

DISASSEMBLY OF TRANSFER OUTPUT REAR SHAFT

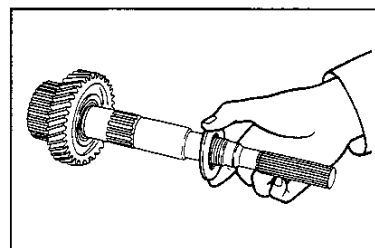
1. Remove the bearing from the transfer output rear shaft, using the following SSTs.

SST: 09950-20017-000
09956-00010-000



WFE90-TR086

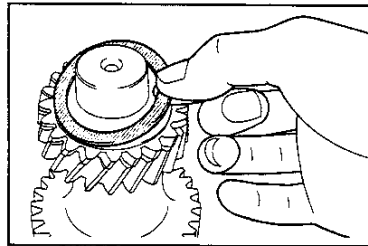
2. Remove the transfer output gear thrust washer from the transfer output rear shaft.



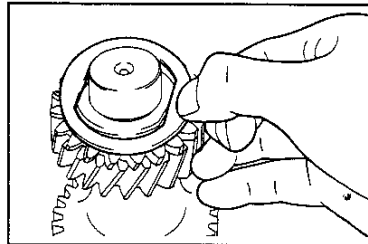
WFE90-TR087

TRANSMISSION & TRANSFER

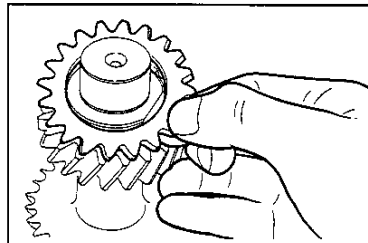
3. Remove the conical spring washer.



4. Remove the washer plate.

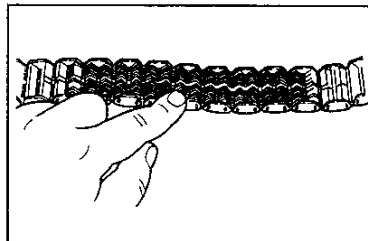


5. Remove the sub gear No. 2.

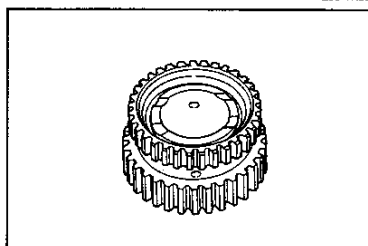


INSPECTION (FRONT DRIVE CHAIN)

1. Check the contacting surface of the transfer front drive chain with each gear for damage.



2. Transfer front drive gear
(1) Check the contacting surface of the transfer front drive gear with the transfer front drive chain for damage.



TRANSMISSION & TRANSFER

3. Measure the dimension of the transfer front drive gear and the differential lock sleeve shown in the right figure. Make sure that the clearance (A) between this gear and the differential lock sleeve may conform to the specification.

Specified Value: 0.03 - 0.19 mm

- (1) The outer diameter dimension of the transfer front drive gear has been machined in accordance with the bore dimension of the differential lock sleeve. If either part exceeds the specified value above, be certain to replace them as a set.

CAUTION:

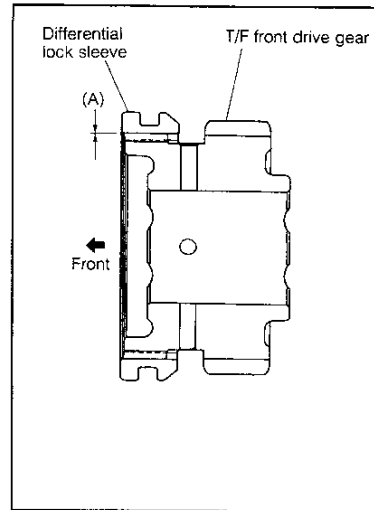
- If either part which has exceeded the specified value should be used against this caution, it would cause slipping-out-of-gear and or emanation of abnormal noise.

- (2) With the differential lock sleeve assembled to the transfer front drive gear, measure the tilt width at the section (B) of the differential lock sleeve.

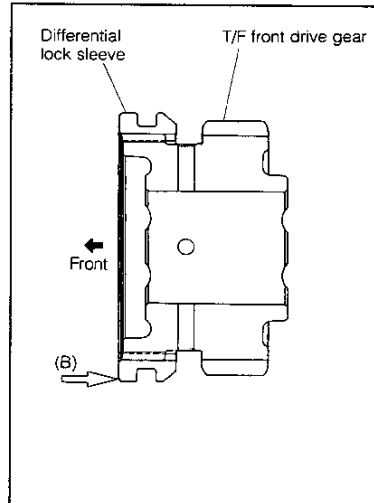
Specified Value: Not to exceed 0.5 mm

NOTE:

- If the tilt width of the differential lock sleeve exceeds the above specified value, be certain to replace those parts of the transfer front drive gear and differential lock sleeve as a set.



WFEG0-TR097



WFEG0-TR098

Unit: mm

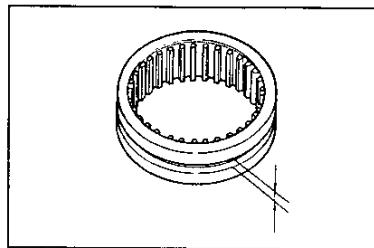
Classification /No.	Bore dimension	Outer dimension
	Differential lock sleeve	T/F front drive gear
2	87.371 - 87.47	87.28 - 87.34
1	87.271 - 87.37	87.18 - 87.24
3	87.17 - 87.27	87.08 - 87.14

INSPECTION (TRANSFER HIGH & LOW CLUTCH SLEEVE)

1. Using vernier calipers, measure the installation width of the transfer high & low clutch sleeve with the transfer high & low shift fork.

Unit: mm

Part name	Item	Specified value	Allowable limit
Transfer high & low clutch sleeve		7.05 - 7.12	7.3



WFEG0-TR099

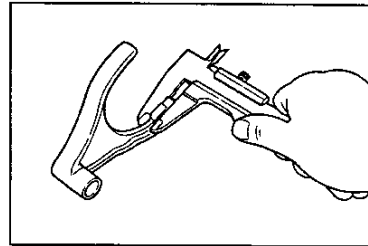
TRANSMISSION & TRANSFER

2. Transfer high & low shift fork

Using vernier calipers, measure the contact width of the transfer high & low shift fork with the transfer high & low sleeve.

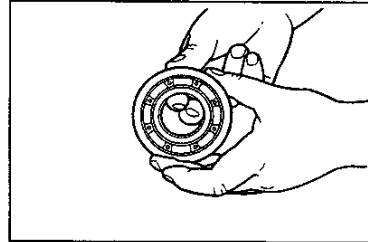
Unit: mm

Part name \ Item	Specified value	Allowable limit
Transfer high & low shift fork	6.80 - 7.00	6.3



WFE90-TR100

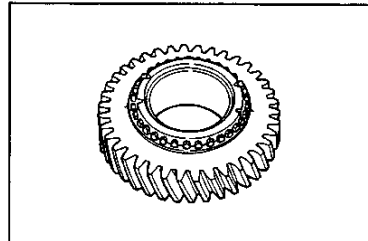
3. Rotate the bearing inner race by applying a force with your finger. Check to see if the bearing inner race rotates smoothly without any binding.



WFE90-TR101

4. Transfer low speed output gear

Check transfer low speed output gear for wear or damage.



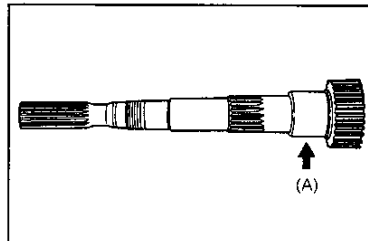
WFE90-TR102

5. Transfer output rear shaft

Measure the (A) section, transfer output rear shaft, using the micrometer.

Unit: mm

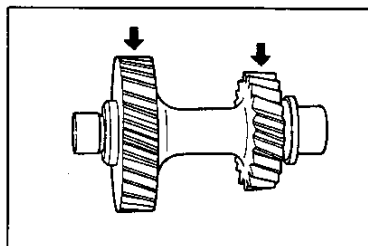
Measuring point \ Item	Specified value	Allowable limit
Section (A) in right figure	41.975 - 41.991	41.960



WFE90-TR103

6. Transfer counter gear

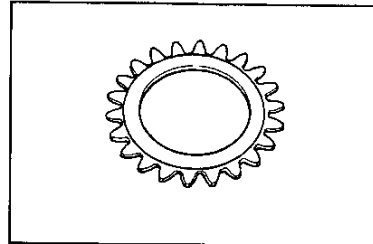
Check transfer counter gear for wear or damage.



WFE90-TR104

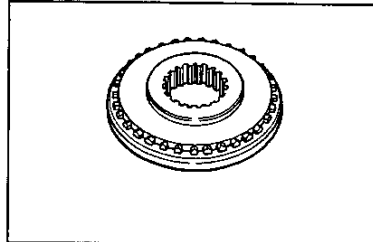
TRANSMISSION & TRANSFER

7. Sub gear No. 2
Check sub gear No. 2 for wear or damage and deformation.



WFE90-TR105

8. Transfer front drive clutch hub
Check transfer front drive clutch hub for damage.

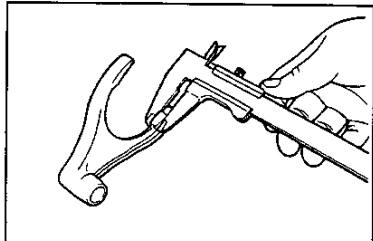


WFE90-TR106

9. Transfer front drive shift fork
Check the contact width transfer front drive shift fork with the transfer front drive gear sleeve.

Unit: mm

Nomenclature	Specified value	Allowable limit
Dimension of transfer front drive shift fork, as shown in right figure	6.8 - 6.9	6.3



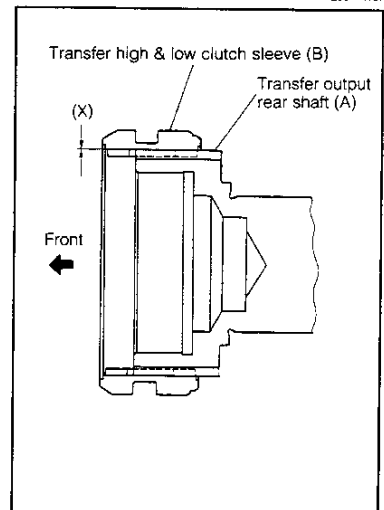
WFE90-TR107

10. Measure the dimension (A) of the transfer output and (B) of the transfer high & low clutch sleeve as shown in the right figure. Make sure that the clearance (X) between this shaft and the sleeve may confirm to the specification.
Specified Value: 0.03 - 0.19 mm

(1) The outer diameter dimension of the transfer output rear shaft has been machined in accordance with the bore dimension of the transfer high & low clutch sleeve. If either part exceeds the specified value above, be certain to replace them as a set.

CAUTION:

- If either part which has exceed the specified value should be used against this caution, it would cause slipping-out of gear and or emanation of abnormal noise.



WFE90-TR108

TRANSMISSION & TRANSFER

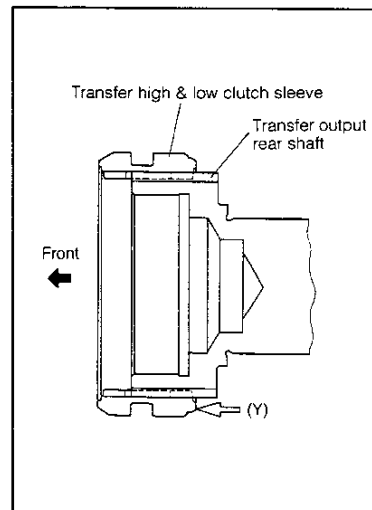
- (2) With the transfer high & low clutch sleeve assembled to the transfer output rear shaft, measure the tilt width at the section (Y) of the transfer high & low clutch sleeve.
Specified Value: Not to exceed 0.5 mm

NOTE:

- If the tilt width of the transfer high & low clutch sleeve exceeds the above specified value, be certain to replace those parts of the transfer output rear shaft and transfer high & low clutch sleeve as a set.

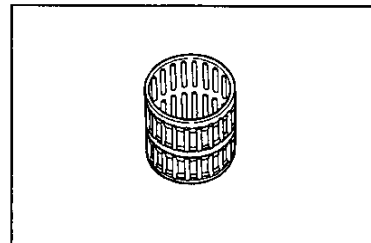
Unit: mm

Classification /No.	Bore dimension	Outer dimension
	T/F high & low clutch sleeve	T/F output rear shaft
2	69.871 - 69.97	69.78 - 69.84
1	69.771 - 69.87	69.68 - 69.74
3	69.67 - 69.77	69.58 - 69.64



WFE90-TR109

11. Needle roller bearing
Check to see if any foreign matter is caught needle roller bearing and that the bearing exhibits any damage.

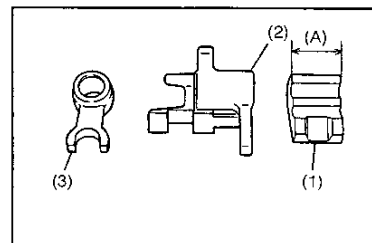


WFE90-TR110

12. Inspection (Transfer shift head-related parts)
(1) Check the following parts for damage.
(1) Transfer front drive shift head No. 2
(2) Transfer high & low shift head
(3) Transfer front drive shift head

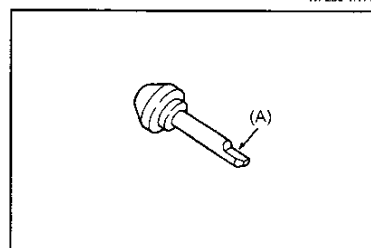
NOTE:

- Do not install the front drive shift head No. 2 for full time, as the (A) section for part time is shorter than full time.



WFE90-TR111

- (2) Check the section (A) of the transfer fork shaft pin shown in the right figure for wear.



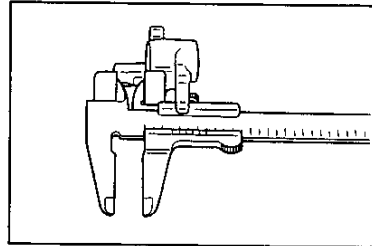
WFE90-TR112

TRANSMISSION & TRANSFER

- (3) Measure the contact width of the transfer high & low shift head with the transfer control shaft, using vernier calipers.

Unit: mm

Part name \ Item	Specified value	Allowable limit
Transfer high & low shift head	16.000 - 16.070	16.2

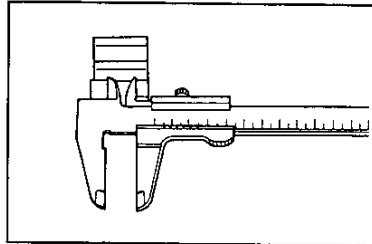


WFE90-TR113

- (4) Measure the contact width of the transfer front drive shift head with the transfer control shaft, using vernier caliper.

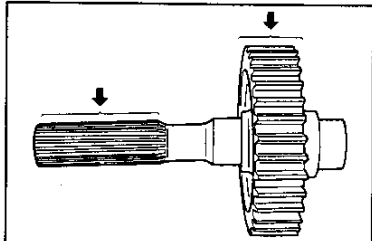
Unit: mm

Part name \ Item	Specified value	Allowable limit
Transfer front drive shift head	16.000 - 16.070	16.2



WFE90-TR114

13. Transfer output front shaft
Check for wear or damage.

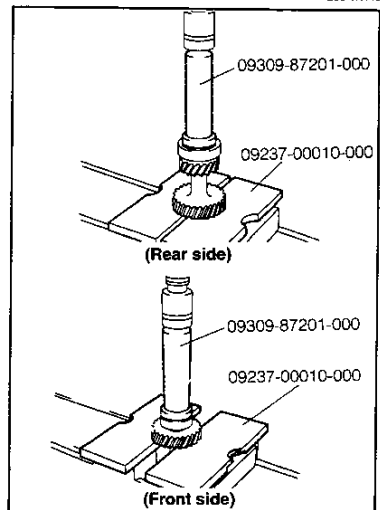


WFE90-TR115

ASSEMBLY

(TRANSFER OUTPUT FRONT SHAFT BEARING)

1. Press the radial bearing into the transfer output front shaft, using the following SSTs.
SST: 09309-87201-000
09237-00010-000

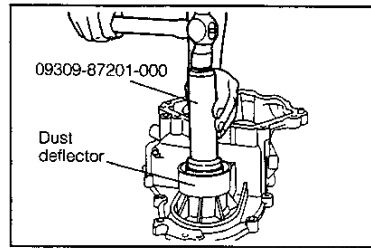


WFE90-TR116

TRANSMISSION & TRANSFER

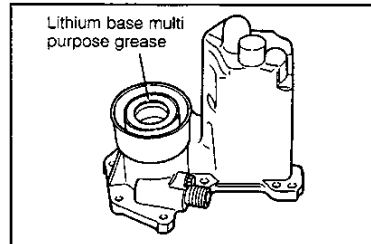
ASSEMBLY

1. Drive a new dust deflector into position, using a hammer.
For this installation, place a wooden block on the dust deflector so that the deflector may not be deformed.
2. Press a new oil seal, using the following SST.
SST: 09309-87201-000



WFE90-TR117

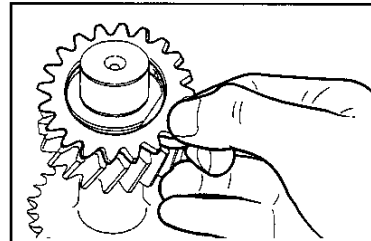
3. Apply lithium base multi purpose grease to the lip section of the oil seal.



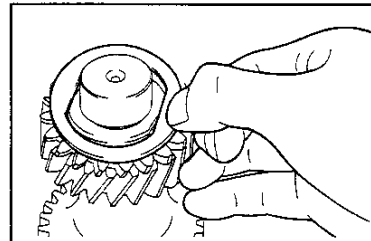
WFE90-TR118

ASSEMBLY OF TRANSFER COUNTER GEAR

1. Install the sub gear No. 2.



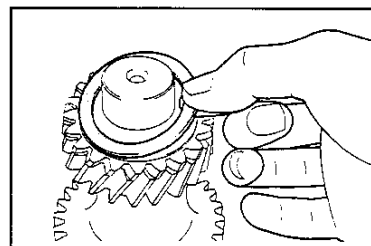
2. Install the washer plate.



3. Install the conical spring washer.

CAUTION:

- Ensure that the conical spring washer must be installed with its expanded side facing toward the sub gear No. 2.

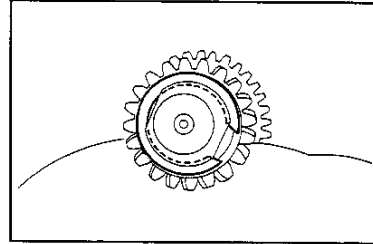


TRANSMISSION & TRANSFER

4. Install the new snap ring, using the standard tool of snap ring plier.

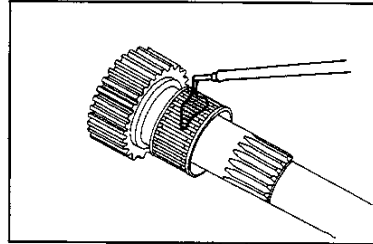
NOTE:

- Ensure that the snap ring should be installed to the groove section of the transfer counter gear securely.

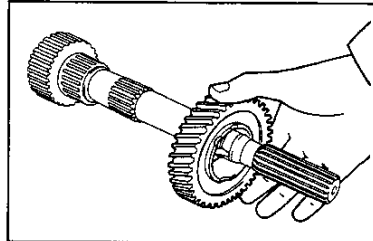


ASSEMBLY OF TRANSFER OUTPUT REAR SHAFT

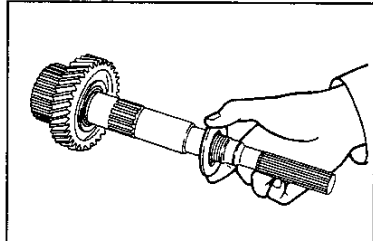
1. Apply the gear oil to the needle roller bearing and then, install to the transfer output rear shaft.



2. Install the transfer low speed output gear as shown in the right figure illustration.

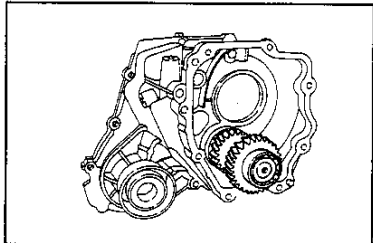


3. Install the transfer output gear thrust washer to the transfer output rear shaft.



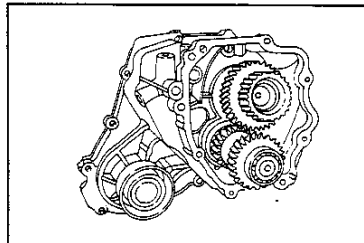
TRANSFER INSTALLATION

1. Temporarily install the transfer counter gear to the transfer front case.



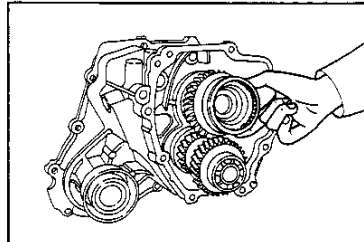
TRANSMISSION & TRANSFER

2. Install the transfer output rear shaft to the transfer front case.



WFE90-TR127

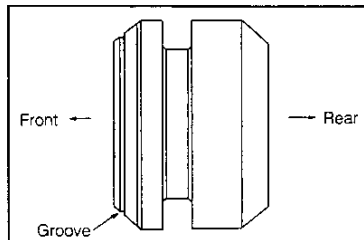
3. Install the transfer high & low clutch sleeve to the transfer output rear shaft.



WFE90-TR128

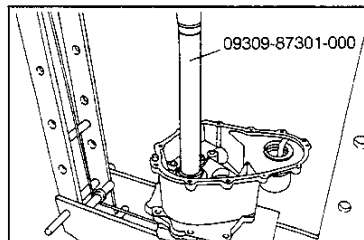
NOTE:

- Be sure to install the sleeve in such a direction that the grooved section, as indicated in the right figure, comes at the front side (transfer low speed output gear side).



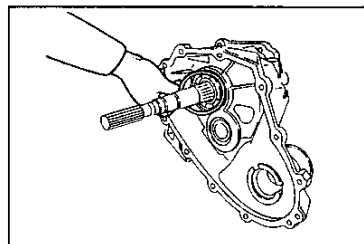
WFE90-TR129

4. Rotate the transfer front case through 180 degrees.
5. Temporarily press the transfer output rear shaft bearing into position using the following SST:
SST: 09309-87301-000



WFE90-TR130

6. Attach the stop ring of the transfer output rear shaft bearing.



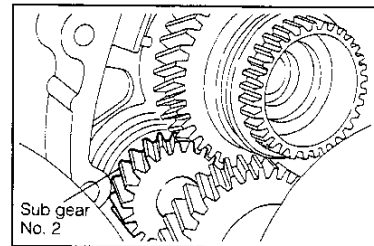
WFE90-TR131

TRANSMISSION & TRANSFER

7. Turn over the transfer front case.

CAUTION:

- Ensure that the gear must be engaged between subgear No. 2 of the transfer counter shaft and transfer low speed output gear.
- If the above operation should fail to be performed, failure to observe this caution may cause deformation of the transfer counter shaft subgear No. 2.

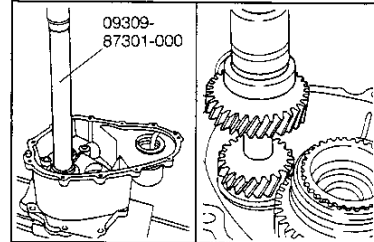


WFE90-TR132

8. Press the transfer output shaft rear bearings into position using the following SST:

SST: 09309-87301-000

9. Press the transfer counter gear.

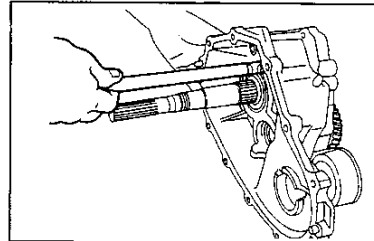


WFE90-TR133

10. Insert the transfer high & low shift fork shaft into the transfer front case.

CAUTION:

- Ensure that the transfer high & low shift fork shaft is longer than the transfer front drive shift fork shaft, prior to install the shaft.



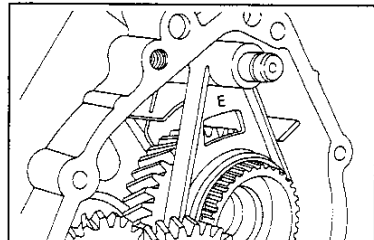
WFE90-TR134

11. Installation of the transfer high & low shift fork

- (1) Insert the transfer high & low shift fork shaft into the hole of the transfer high & low shift fork.

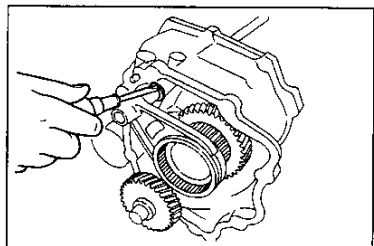
CAUTION:

- Ensure that the E-marking on the transfer high & low shift fork faces toward the front side.



WFE90-TR135

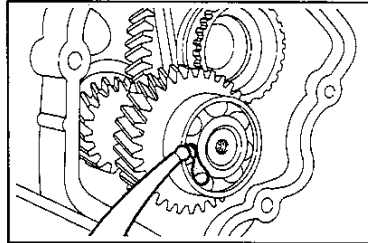
- (2) Install the new two "E" rings on both rear and front of the transfer high & low shift fork.



WFE90-TR136

TRANSMISSION & TRANSFER

12. Apply the gear oil to the radial ball bearing of the transfer counter shaft.



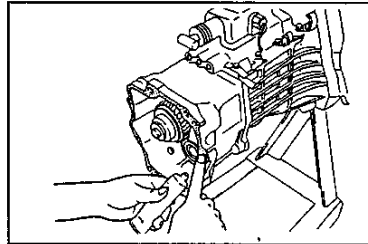
13. Remove the remaining gasket on the transfer adapter with gasket scraper.

NOTE:

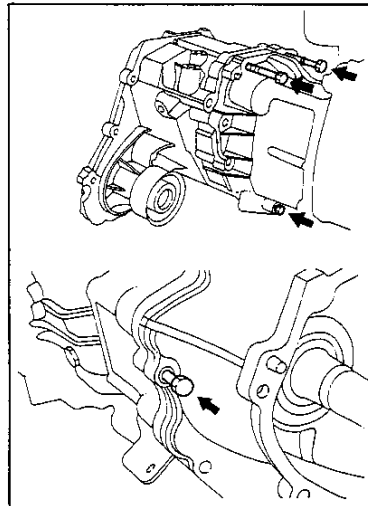
- Be very careful not to scratch the attaching surface.

Apply the following bond to the transfer front case attaching surface of the transfer adapter and the threaded portion of the attaching screw.

Bond: Three Bond 1216 (Three Bond made)



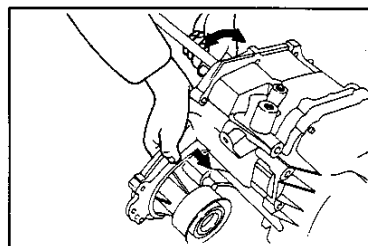
14. Installation of the transfer front case
(1) With using the two to four dummy bolts, temporarily install the transfer front case to the transfer adapter.



- (2) Brought the transfer front case into carefully/slowly contact with the transfer adapter, while rotating the transfer rear output shaft with clockwise or counterclockwise directions.

CAUTION:

- Be carefully to proceed this jos.
- If this operation should fail to be performed, failure to observe this caution may cause deformation of subgear No. 1.



- (3) Remove the dummy bolts.

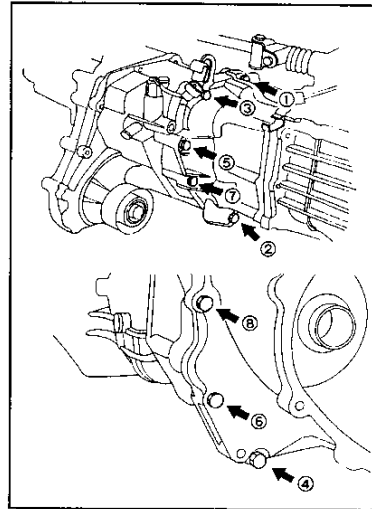
Apply the following bond to the threaded section of the attaching bolts and then tighten the transfer front case subassembly with the eight bolts.

Bond: Three Bond 1216 (Three Bond made)

Tightening Torque: 29.4 - 44.1 N·m (3.0 - 4.5 kgf·m)

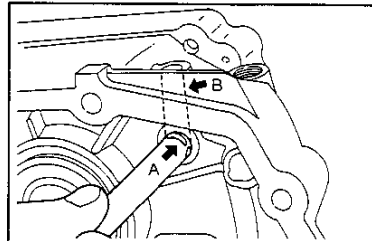
NOTE:

- Be sure to tighten the bolts alternately and diagonally. (The illustration at the right figure indicates a typical example of the tightening sequence.)



WFE90-TR141

15. Pull the transfer high & low shift fork shaft until the cut-out section A meet with swelling section of the transfer front case B.



WFE90-TR142

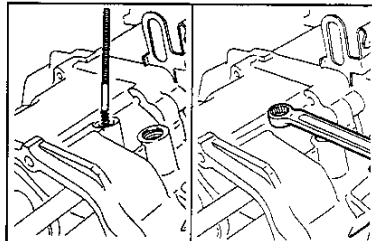
16. Insert the transfer high & low shift fork shaft with the present condition to the transfer front case.

17. Install the ball and compression spring in this sequence.

18. Tighten the bolts, using a new gasket.

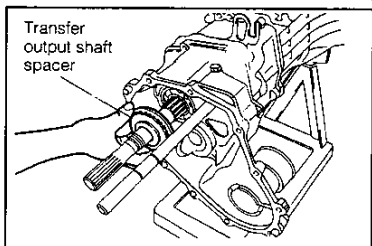
Tightening Torque: 18.6 - 30.4 N·m (1.9 - 3.1 kgf·m)

19. Insert the roller, using the standard tool of magnet hand.



WFE90-TR143

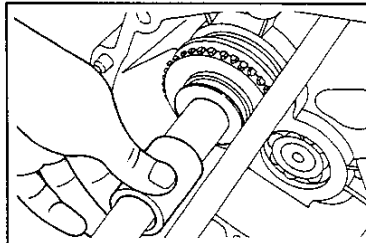
20. Install the transfer front drive clutch hub and transfer output shaft spacer.



WFE90-TR144

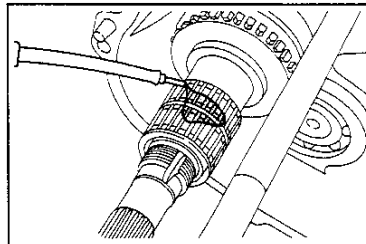
TRANSMISSION & TRANSFER

21. Install the transfer output shaft space No. 2 (A) and transfer front drive gear bearing inner race (B) to the transfer output rear shaft.



WFE90-TR145

22. Apply the gear oil to the outer periphery of the transfer front drive gear bearing inner race and needle roller bearing.
23. Install the needle roller bearing to the transfer output rear shaft.

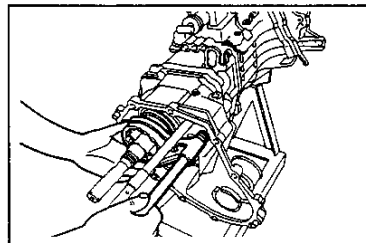


WFE90-TR146

24. Install the transfer front drive gear sleeve, transfer front drive shift fork and transfer front drive shift fork shaft in a set.

CAUTION:

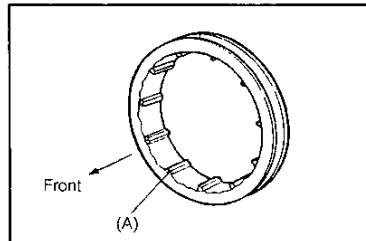
- Use the new two "E" rings.



WFE90-TR147

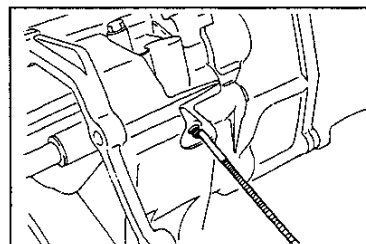
NOTE:

- The transfer front drive gear sleeve should be installed in the correct direction as indicated in the right figure.
- Be sure to install the sleeve in such a direction that the gear chamfered section (A) as indicated in the right figure, comes at the front side (transmission case side).



WFE90-TR148

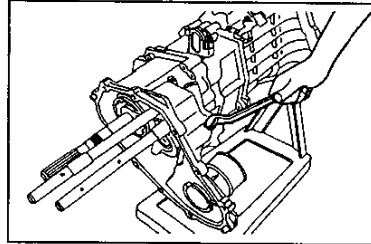
25. Install the ball and compression spring to the transfer front case in this sequence.



WFE90-TR149

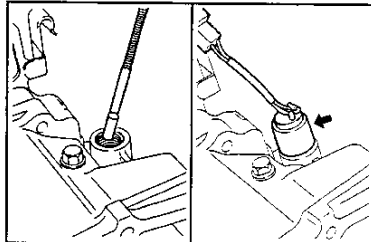
TRANSMISSION & TRANSFER

26. Tighten the bolt with a new gasket.
Tightening Torque: 18.6 - 30.4 N·m (1.9 - 3.1 kgf·m)



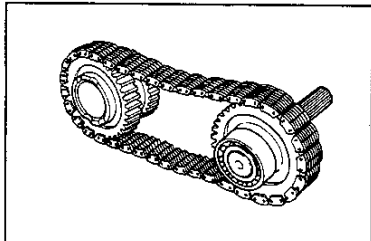
WFE90-TR150

27. Install the roller.
28. Tighten the transmission position detect switch with a new gasket.
Tightening Torque: 29.4 - 49.0 N·m (3.0 - 5.0 kgf·m)



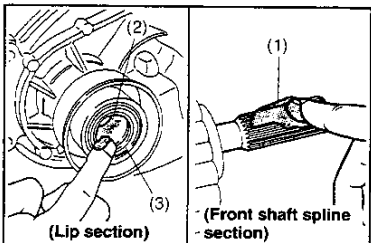
WFE90-TR151

29. Install the front drive chain to the following parts.
(1) Transfer output gear
(2) Transfer output front shaft



WFE90-TR152

30. Apply the lithium based multi purpose grease to the following sections.
(1) Outer periphery of the spline section in the transfer output shaft
(2) Inner periphery of the bush
(3) Lip section of the oil seal



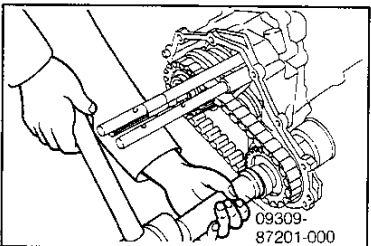
WFE90-TR153

31. Install the front drive chain with the related parts to the transfer front case, using following SST with a plastic hammer.

SST: 09309-87201-000

NOTE:

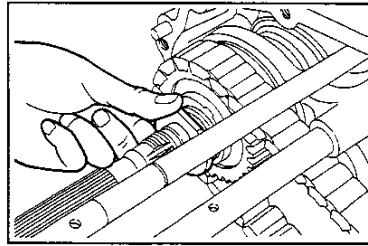
- Be very careful to not damage the lip section of the oil seal during the installation.



WFE90-TR154

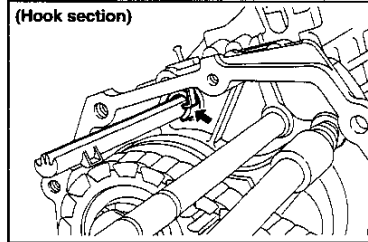
TRANSMISSION & TRANSFER

32. Apply the gear oil to the attaching surface of the transfer front drive gear.
33. Install the transfer output gear thrust washer.



WFEB0-TR155

34. Install the oil supply pipe to the transfer front case.
CAUTION:
 - Be sure to securely insert the transfer oil supply pipe as far as it will go. Failure to observe this caution may cause seizure of the transfer.



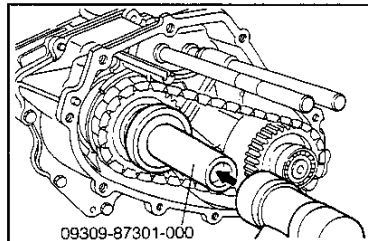
(Hook section)

WFEB0-TR156

35. Install the bearing to the transfer output shaft and rear shaft with a plastic hammer alternately, using the following SST.
SST: 09309-87301-000

CAUTION:

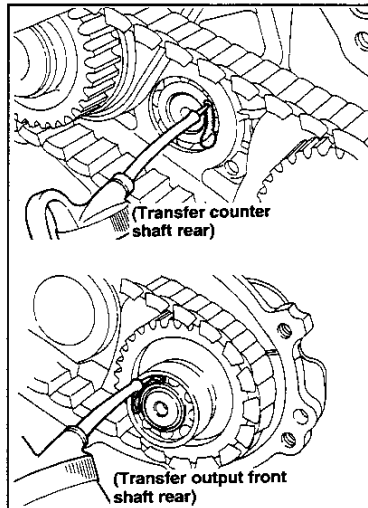
- Ensure that the seal surface of the bearing comes in the transfer rear case. Failure to observe this caution may cause seizure of the bearing.



09309-87301-000

WFEB0-TR157

36. Apply the gear oil to the following bearings at the rear side.
 - Transfer counter gear
 - Transfer output front shaft

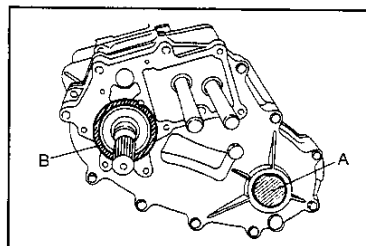


WFEB0-TR158

TRANSMISSION & TRANSFER

37. Install the transfer rear case with a new gasket interposed.
NOTE:

- Be sure to securely install the transfer rear case alternately and evenly in the A and B sections with a plastic hammer.

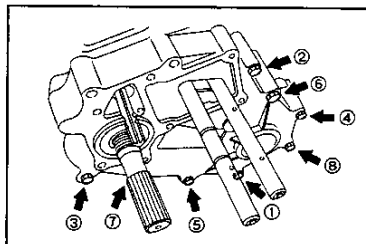


WFE90-TR159

38. Tighten the transfer rear case with the eight bolts.
Tightening Torque: 29.4 - 44.1 N·m (3.0 - 4.5 kgf-m)

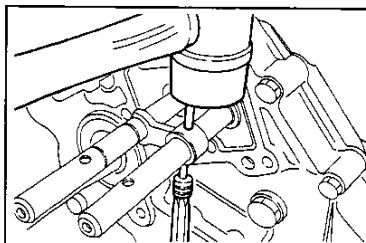
NOTE:

- Be sure to tighten the bolts alternately and diagonally (the right figure illustration indicates a typical example of tightening sequence)



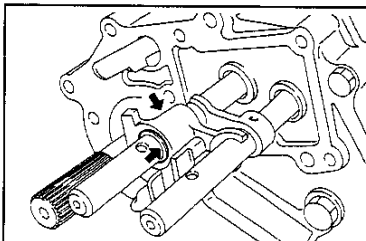
WFE90-TR160

39. Lightly drive a new slotted pin into transfer front drive shift head No. 2 in advance.
40. Insert transfer front drive shift head No. 2 into the transfer front drive shift fork shaft, then insert a pin punch, as a guide, and install the slotted pin lightly tapping it with a hammer.



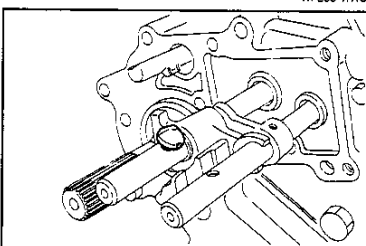
WFE90-TR161

41. Attach the new E-ring to the transfer high & low shift fork shaft.
42. Install the transfer high & low shift head to the shaft.



WFE90-TR162

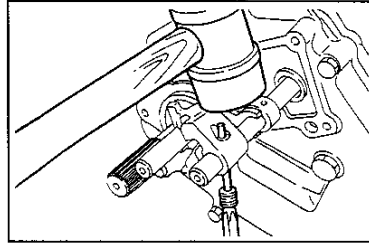
43. Attach the new E-ring on the transfer high & low shift fork shaft.
44. Insert the transfer fork shaft pin into the transfer high & low shift fork shaft.



WFE90-TR163

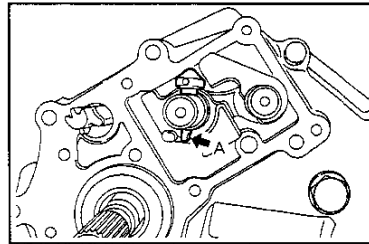
TRANSMISSION & TRANSFER

45. Lightly drive the new slotted pin into the front drive shift head in advance slotted pin.
46. Insert the transfer front drive shift head into the transfer front drive shift fork shaft, then insert a pin punch, as a guide, and install the slotted pin lightly tapping it from above with a plastic hammer.



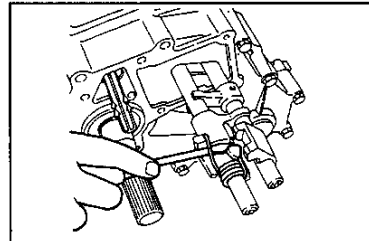
WFE90-TR164

47. Install the transfer fork shift pin.
CAUTION:
 - The cut section (A) of the transfer fork shaft pin should be faced toward the transfer front drive shift head during the installation, as shown in the right figure.
 - Failure to observe this caution may cause trouble in the transfer operation.



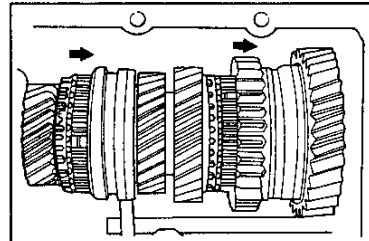
WFE90-TR165

48. Install the torsion spring.



WFE90-TR166

49. Interlock the 1st and 3rd gears.

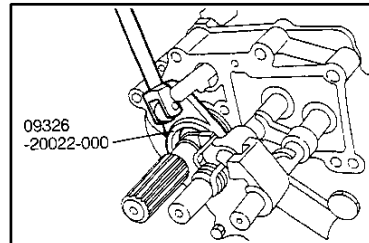


WFE90-TR167

50. Tighten the transfer output rear shaft by means of the lock nut. Proceed to stake the lock nut with a chisel or the like, using the following SST.

SST: 09326-20022-000

Tightening Torque: 137.0 - 196.0 N·m
(14.0 - 20.0 kgf·m)

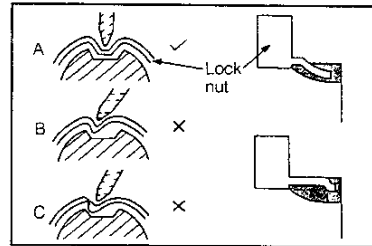


WFE90-TR168

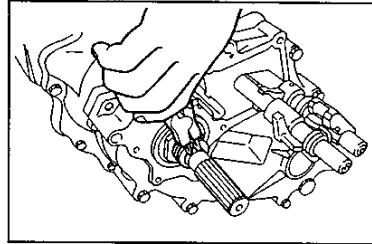
TRANSMISSION & TRANSFER

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, as shown in the right figure A.
- Poor staking may cause abnormal noise or gear disengagement as shown in the right figure B and C.

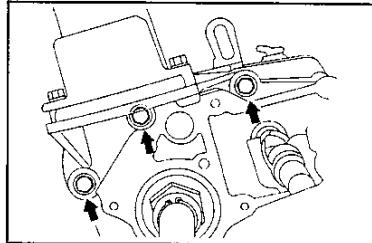


51. Install the ball and speedometer drive gear onto the transfer output rear shaft. Secure them with the new snap ring.



52. Install control shaft lower No. 1 bracket with installed the shift & select shaft and control shaft with the two hexagon bolts and the bolt.

Tightening Torque: 29.4 - 44.1 N·m (3.0 - 4.5 kgf·m)

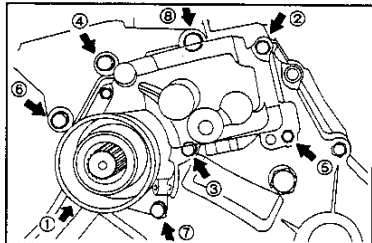


53. Install the transfer rear output bearing retainer with the new gasket interposed. Tighten the eight bolts.

Tightening Torque: 14.7 - 21.6 N·m (1.5 - 2.2 kgf·m)

NOTE:

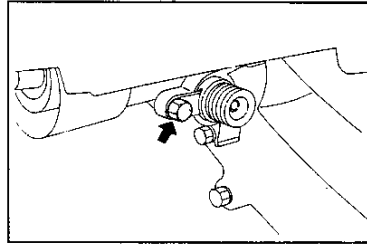
- Apply gear oil to the contact sections of the transfer rear output shaft bearing retainer with the transfer high & low shift fork shaft and the transfer front drive shift fork shaft.
- Be sure to tighten the bolts alternately and diagonally (The illustration at the right figure indicates a typical example of the tightening sequence).
- Apply the following bond to the threaded section of the bolts.
Three band 1324 (three bond made)



TRANSMISSION & TRANSFER

54. Apply the gear oil to the outer periphery of the O-ring and the speedometer sleeve, prior to install.
55. Install the speedometer sleeve with the speedometer sleeve lock plate and a bolt.

Tightening Torque: 6.9 - 9.8 N·m (0.7 - 1.0 kgf-m)



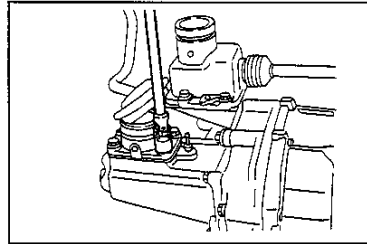
WFE90-TR173

56. With a new gasket used, install the transfer shift lever retainer with the four bolts and, tighten them.

Tightening Torque: 14.7 - 21.6 N·m (1.5 - 2.2 kgf-m)

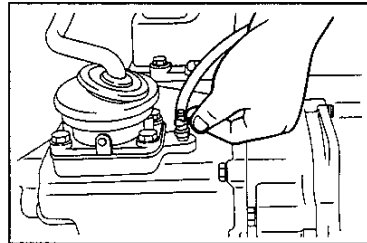
NOTE:

- Apply the 1324 bond (three bond made) to the thread sections of the bolt, prior to install.



WFE90-TR174

57. Install the breather hose by attaching a clip.

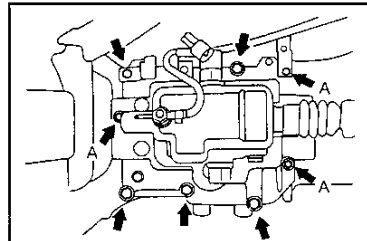


WFE90-TR175

58. Install the transmission case cover subassembly and tighten them.

Tightening Torque: 14.7 - 21.6 N·m (1.5 - 2.2 kgf-m)

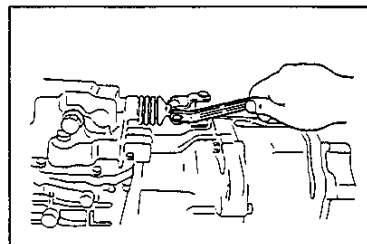
A-section 6.9 - 9.8 N·m (0.7 - 1.0 kgf-m)



WFE90-TR176

59. Apply lithium base multi purpose grease to the shift & select No. 1 shaft installing hole of the control shaft. Install the control shaft and the shift & select No. 1 shaft with the new hexagon bolt.

Tightening Torque: 14.7 - 21.6 N·m (1.5 - 2.2 kgf-m)



WFE90-TR177

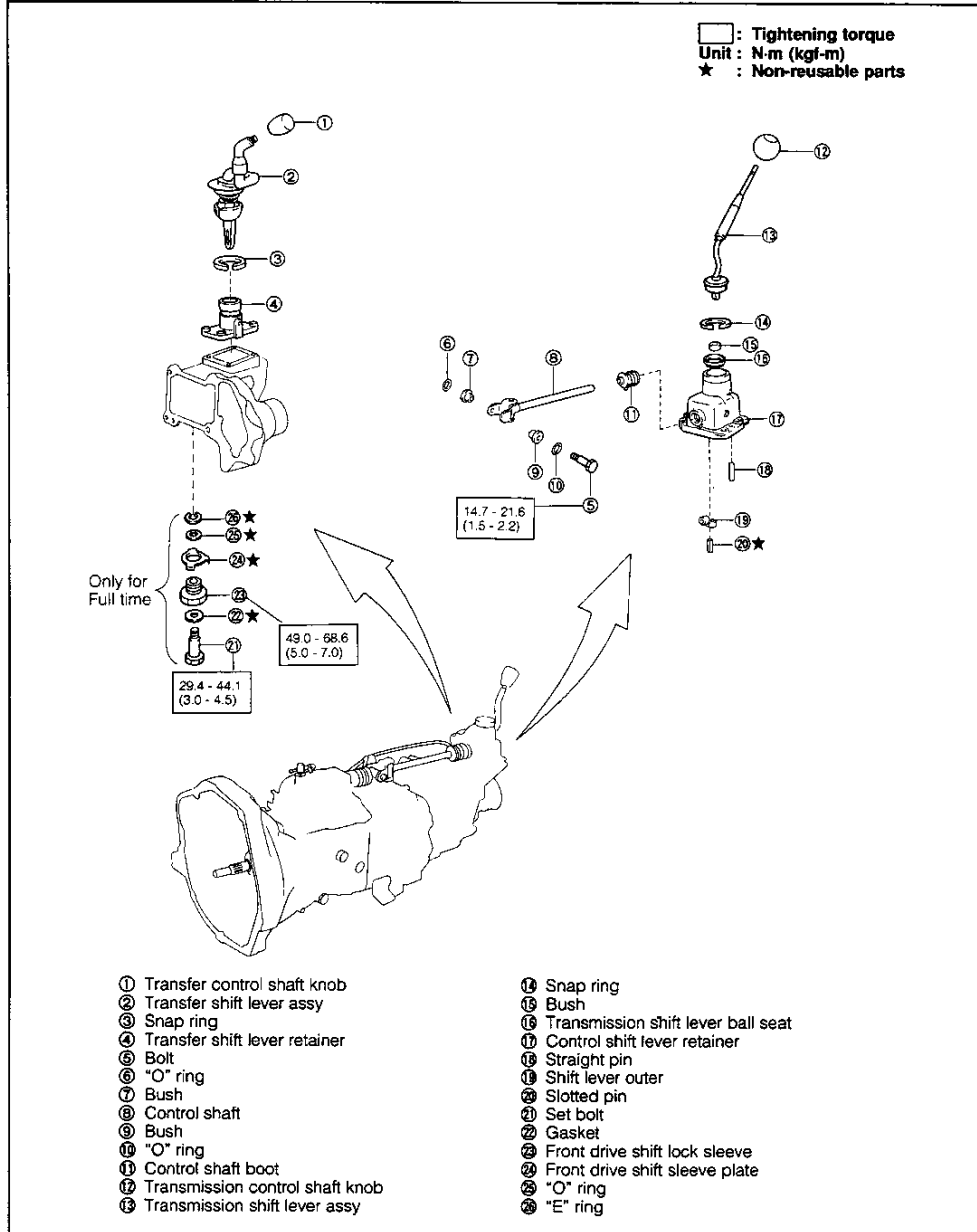
TRANSMISSION & TRANSFER

60. Remove the transmission assy with transfer from the over-haul stand and then, install them to the vehicle (see page MT-121 to MT-125).
61. Fill in the transmission and transfer oil through the oil filler plugs, when the transmission assy with transfer installed completely.
 - Oil: API GL-3 or GL-4
 - SAE75W-85 or 75W-90
 - Oil Capacity: 1.4 L

WFE90-TR178

TRANSMISSION & TRANSFER

CONTROL LEVER-RELATED (PART AND FULL TIME) COMPONENTS

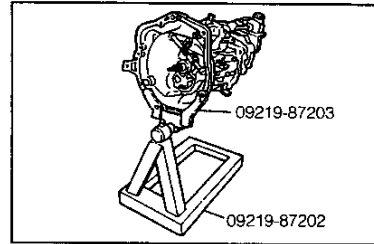


WFE90-TR179

TRANSMISSION & TRANSFER

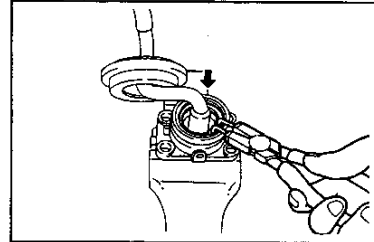
REMOVAL

1. Remove the transmission assembly with transfer from the vehicle (see page MT-32 to MT-36).
2. Install the transmission with transfer on the overhaul stand, using the following.
SST: 09219-87202-000
09219-87203-000



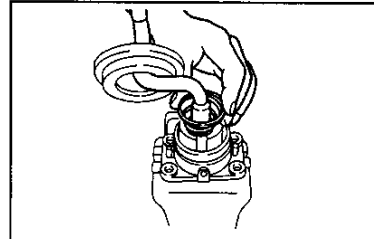
WFES0-TR180

3. Detach the hole snap ring, while the transfer shift lever is being lowered.



WFES0-TR181

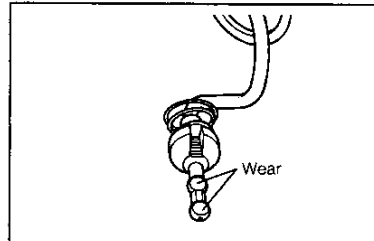
4. Remove the transfer shift lever with the conical spring installed.



WFES0-TR182

INSPECTION

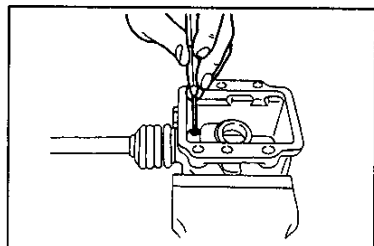
1. Check the forward end of the transfer shift lever for wear.



WFES0-TR183

INSTALLATION

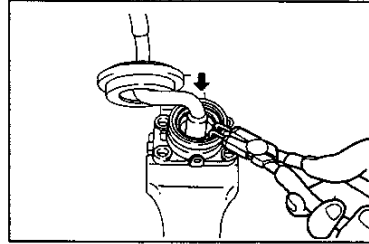
1. Apply lithium base multi purpose grease of the transfer shift lever.



WFES0-TR184

TRANSMISSION & TRANSFER

2. Install the transfer shift lever with the hole snap ring to the transfer shift lever retainer subassembly, while the conical spring is being lowered.
3. Visually check that the hole snap ring must be installed securely into the groove section of the transfer shift lever retainer subassembly.



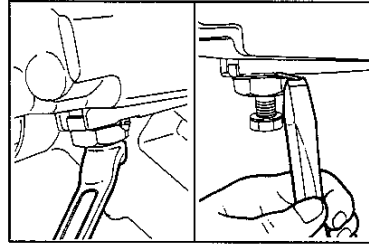
WFE90-TR185

REMOVAL OF SET BOLT (ONLY FOR FULL TIME)

1. Remove the shift lever retainer subassembly (see page TR-27).
2. Loosen the set bolt and pull it out downward.
3. Raise the front drive shift sleeve plate using a chisel or any other suitable tool.

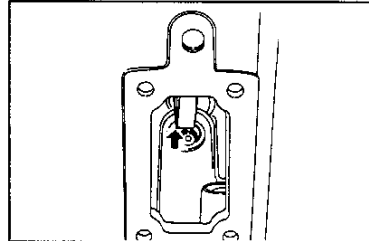
NOTE:

- Never reuse the removed front drive shift sleeve plate.



WFE90-TR186

4. Remove the speedometer sleeve. (see page TR-28).
5. Remove the transfer rear output bearing retainer (see page TR-28).
6. Remove the "E" ring, using the standard tool of plier.



WFE90-TR187

7. Set the transfer rear output shaft bearing retainer in a vice.
8. Remove the front drive shift lock sleeve and front drive shift sleeve plate.

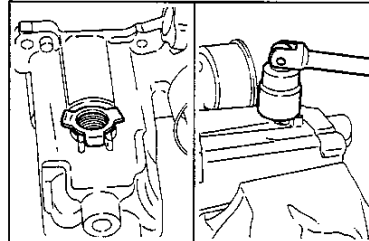
NOTE:

- Never reuse the removed front drive shift sleeve plate.

9. Remove the "O" ring from the drive shift lock sleeve.

CAUTION:

- Never reuse the "O" ring.



WFE90-TR188

INSTALLATION OF SET BOLT

1. Apply gear oil to a new O-ring, and install to the groove section of the front drive shift lock sleeve.

NOTE:

- Be careful not to damage the O-ring.

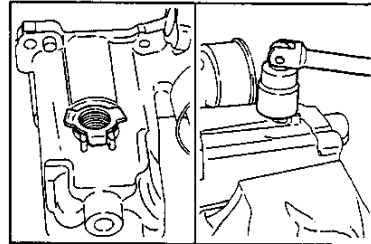
2. Apply the THREE BOND 1324 (made by THREE BOND) to threaded section of the front drive shift lock sleeve.

WFE90-TR189

TRANSMISSION & TRANSFER

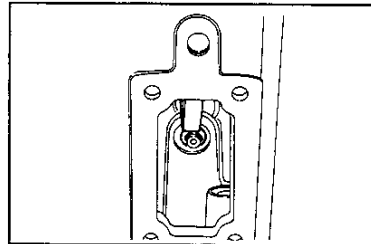
3. Place the new front drive shift sleeve plate to the transfer rear output shaft bearing retainer.
4. With the new gasket used, tighten the front drive shift lock sleeve.

Tightening Torque: 49.0 - 68.6 N-m (5.0 - 7.0 kgf-m)



WFE90-TR190

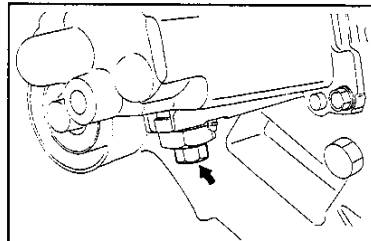
5. Install the new E-ring using pliers or any other suitable tools.
6. Securely bend the front drive shift sleeve plate along the bolt surface of the front drive shift lock sleeve.



WFE90-TR191

7. Install the transfer rear output bearing retainer with the new gasket interposed (see page TR-55).
8. Install the speedometer sleeve (see page TR-56).
9. Install the shift lever retainer subassembly (see page TR-56).
10. Tighten the set bolt.

Tightening Torque: 29.4 - 44.1 N-m (3.0 - 4.5 kgf-m)



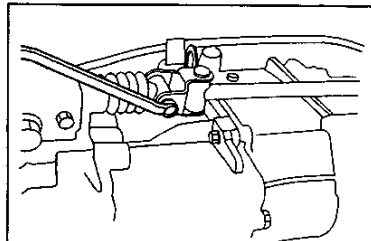
WFE90-TR192

DISASSEMBLY OF SHIFT & SELECT SHAFT No. 1

1. Remove the control shaft with installed the shift lever retainer subassembly by removing the hexagon bolt.

NOTE:

- When disconnecting the control shaft from the shift & select No.1 shaft, care must be exercised as to the "O" ring which may be detached during the removal.

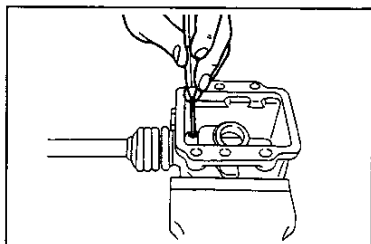


WFE90-TR193

2. Drive off the slotted pin of the shift outer lever.

CAUTION:

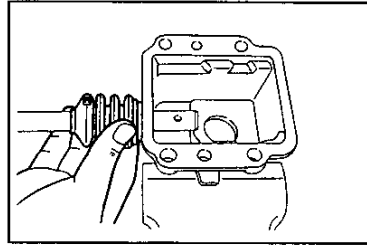
- Never reuse the removed slotted pin.



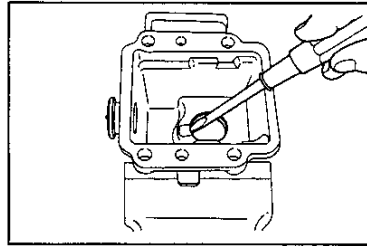
WFE90-TR194

TRANSMISSION & TRANSFER

3. Remove the control shaft and control shaft boot.

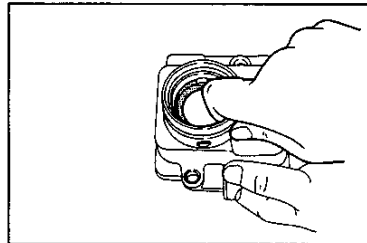


4. Remove the T/M shift lever ball seat.



ASSEMBLY OF SHIFT & SELECT SHAFT No. 1

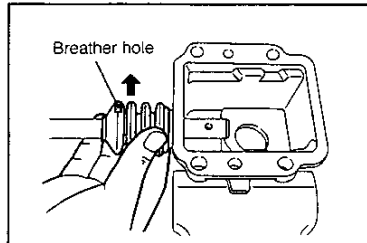
1. Install the T/M shift lever ball seat with your fingers.
2. Apply lithium-based multi-purpose grease to the inner surface of the seat.



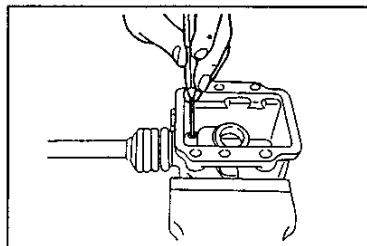
3. Install the control shaft and control shaft boot.

NOTE:

- Install the control shaft boot in such a way that the breather hole of the control shaft boot may face toward the transmission case side (lower side).



4. Drive the new slotted pin of the shift outer lever into position.
5. Connect the shift a select No. 1 shaft and control shaft.



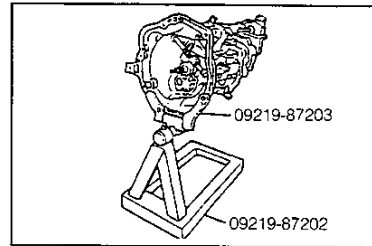


TRANSMISSION & TRANSFER

- | | |
|---|---|
| ① Transmission output shaft | ⑬ Differential case cover |
| ② Oil seal | ⑭ Needle roller bearing |
| ③ Radial ball bearing | ⑮ Transfer front drive hub A/y |
| ④ Transfer oil pump body A/y | ⑯ Transfer output rear shaft |
| ⑤ Transfer input hub | ⑰ Transfer front drive gear A/y |
| ⑥ Lock nut | ⑱ Transfer front drive chain |
| ⑦ Transfer oil strainer | ⑲ Transfer output gear thrust washer |
| ⑧ Transfer oil pump cover | ⑳ Ball |
| ⑨ Exhaust pipe support bracket | ㉑ Speedometer drive gear |
| ⑩ Tight plug | ㉒ Snap ring |
| ⑪ "T" type oil seal | ㉓ Radial ball bearing |
| ⑫ Transfer front case | ㉔ Radial ball bearing |
| ⑬ Transmission position detect switch | ㉕ Transfer output front shaft |
| ⑭ Gasket | ㉖ Bearing |
| ⑮ Roller | ㉗ Transfer case gasket |
| ⑯ Bolt | ㉘ Transfer rear case |
| ⑰ Compression spring | ㉙ Output shaft bearing rear retainer gasket |
| ⑱ Ball | ㉚ Control shaft lower bracket |
| ⑲ Roller | ㉛ Output shaft bearing rear retainer |
| ㉑ E ring | ㉜ Clip |
| ㉒ Transfer diff lock shift fork | ㉝ No. 1 hose |
| ㉓ Transfer high & low shift head | ㉞ Clip |
| ㉔ Transfer diff lock shift No. 1 head | ㉟ Union |
| ㉕ Slatted pin | ㊱ T type oil seal |
| ㉖ Transfer front drive shift fork | ㊲ Transfer shift lever retainer gasket |
| ㉗ Compression No. 1 spring | ㊳ Transfer shift lever retainer |
| ㉘ Transfer front drive shift fork shaft | ㊴ Hole snap ring |
| ㉙ E ring | ㊵ Transfer shift lever A/y |
| ㉚ Transfer high & lower shift head | ㊶ Shift lever knob S/A |
| ㉛ E ring | ㊷ Gasket |
| ㉜ Torsion spring | ㊸ Front drive shift lock sleeve |
| ㉝ Pin for shift fork shaft | ㊹ Front drive shift lock sleeve plate |
| ㉞ Needle roller bearing | ㊺ O ring |
| ㉟ Bearing | ㊻ E ring |
| ㊱ Differential case S/A | ㊼ Shift outer lever |
| ㊲ Differential side gear thrust washer | ㊽ Control shaft No. 2 boot |
| ㊳ Differential side gear | ㊾ Shift lever retainer S/A |
| ㊴ Differential pinion thrust washer | ㊿ Shift lever ball seat |
| ㊵ Differential pinion | ① Hole snap ring |
| ㊶ Differential pinion shaft | ② Shift lever A/y |
| ㊷ Differential side gear | ③ Engine hanger |
| ㊸ Differential side gear thrust washer | |

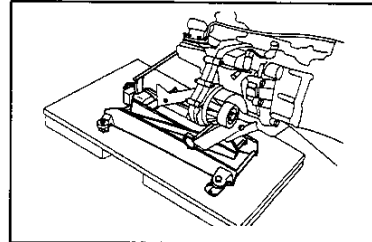
TRANSFER REMOVAL

1. Remove the transmission and transfer assembly from the vehicle (see pages MT-32 to MT-36).
2. Mount the transmission and transfer assembly on an overhauling stand, using the following SST:



WF690-TR202

3. Support the transmission and transfer assembly with a transmission jack or any other suitable tools.

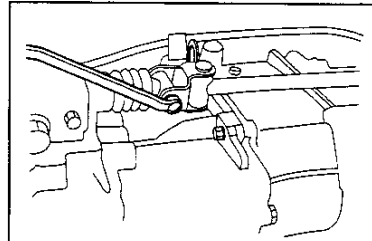


WF690-TR203

4. Remove the control shaft with installed the shift lever retainer subassembly by removing the hexagon bolt.

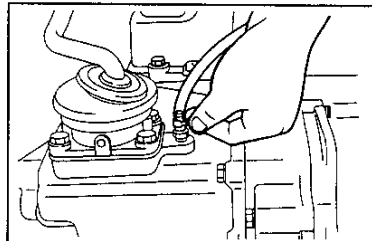
CAUTION:

- When disconnecting the control shaft from the shift & select No. 1 shaft, care must be exercised as to the "O" ring which may be detached during the removal.



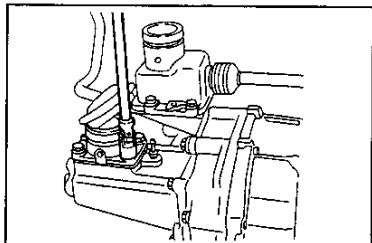
WF690-TR204

5. Disconnect the breather hose by detaching a clip.



WF690-TR205

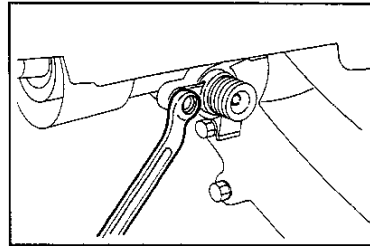
6. Remove the transfer shift lever retainer and gasket by removing the four bolts.



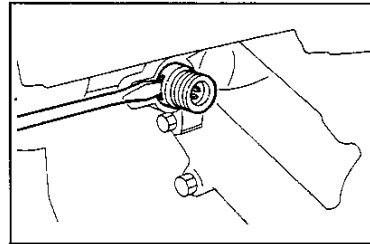
WF690-TR206

TRANSMISSION & TRANSFER

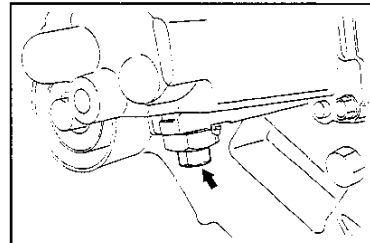
7. Remove the speedometer sleeve lock plate by removing a bolt.



8. Lift up the speedometer sleeve, using the flat drive.



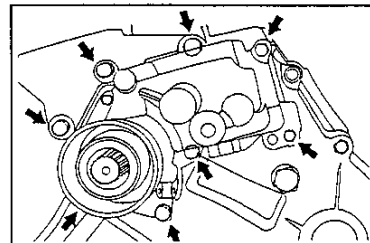
9. Removal of transfer output shaft bearing retainer
(1) Loosen the set bolt and pull it out downward with your fingers.



- (2) Remove the eight bolts and gasket.

NOTE:

- Never reuse the removed gasket.

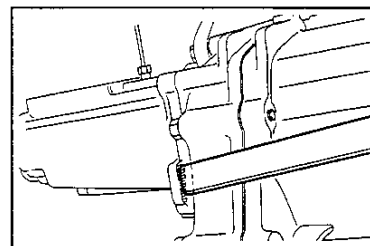


- (3) Lightly tapping the rib sections alternately, using the plastic hammer or the like.

- (4) Remove the gasket.

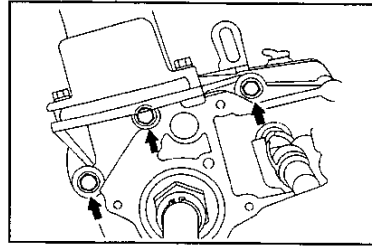
CAUTION:

- Never reuse the removed gasket.



TRANSMISSION & TRANSFER

10. Remove the control shaft lower bracket No. 1 with installed the shift lever retainer and control shaft by removing the two hexagon bolt and the bolt.

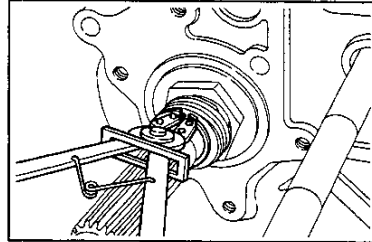


WFE90-TR212

11. Detach the snap ring. Remove the speedometer driven gear and ball.

CAUTION:

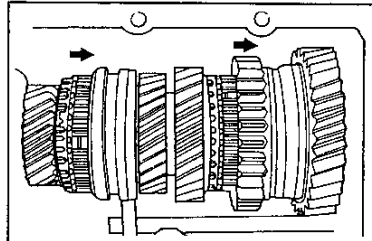
- Never reuse the removed snap ring.



WFE90-TR213

12. Remove the transmission case cover subassembly by removing the seven bolts and the reamer bolt (see page TR-60).

13. Interlock the 1st gear and the 3rd gear.



WFE90-TR214

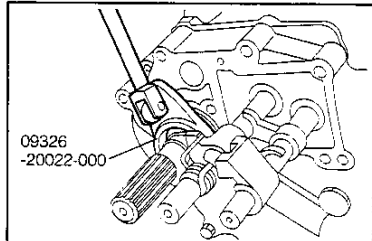
14. Raise the lock section of the lock nut.

CAUTION:

- Never reuse the removed lock nut.

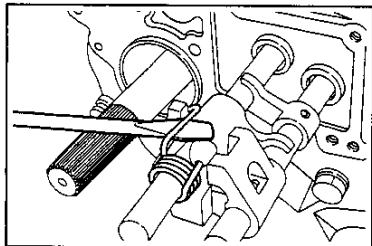
15. Remove the lock nut from the transfer output rear shaft, using the following SST.

SST: 09326-20022-000



WFE90-TR215

16. Remove the torsion bar spring, using the standard tool of minus driver.



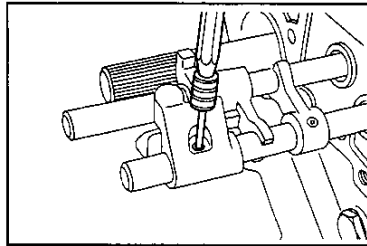
WFE90-TR216

TRANSMISSION & TRANSFER

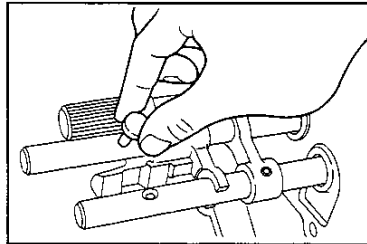
17. Drive out the slotted pin of the transfer front drive shift head.
Remove the transfer front drive shift head.

CAUTION:

- Never reuse the removed slotted pin.



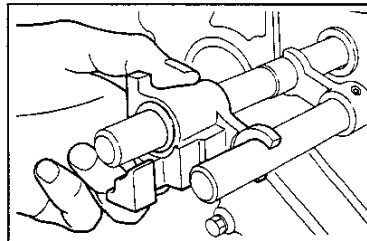
18. Remove the transfer fork shaft pin.



19. Remove the "E" ring, using the standard tool of driver.
Remove the transfer high & low shift head.

CAUTION:

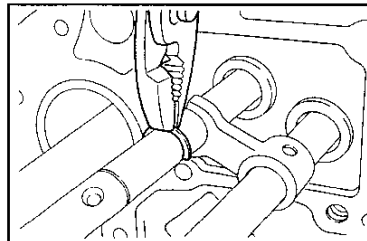
- Never reuse the removed "E" ring.



20. Remove the "E" ring, using the standard tool of driver or plier.

CAUTION:

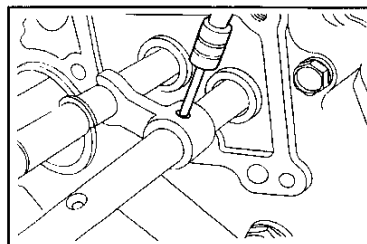
- Never reuse the "E" ring.



21. Drive out the slotted pin of the transfer front drive shift head No. 2. Remove the transfer front drive shift head No. 2.

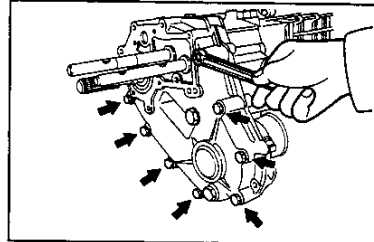
CAUTION:

- Never reuse the removed slotted pin.



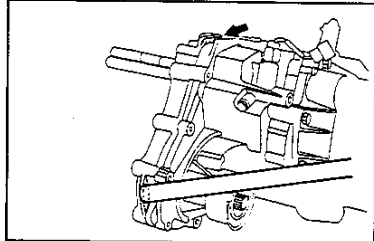
TRANSMISSION & TRANSFER

22. Remove the transfer rear case by removing the eight bolts.

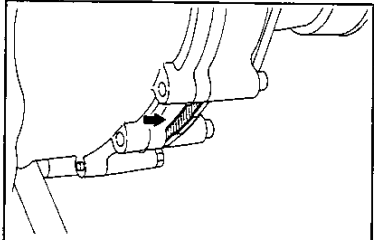


WFE90-TR222

23. Lightly tapping the ribs section, using the plastic hammer or the like.



WFE90-TR223



WFE90-TR224

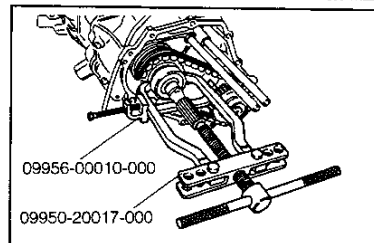
24. Remove the gasket of the transfer rear case.

CAUTION:

- Never reuse the removed gasket.

25. Remove the bearing of the transfer rear output shaft, using the following SSTs.

SST: 09950-20017-000
09956-00010-000



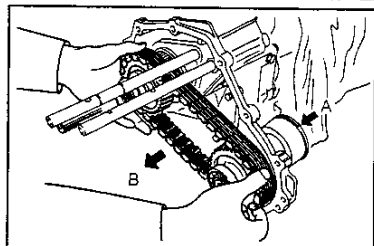
WFE90-TR225

26. Remove the transfer output gear thrust washer.

27. Remove the transfer front drive chain and transfer output front drive gear together with the transfer output front shaft.

NOTE:

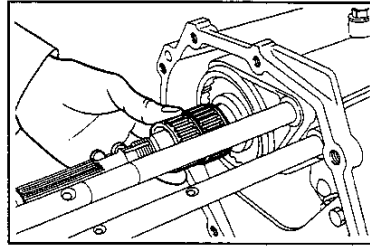
- Lightly tapping the transfer rear output shaft with a plastic hammer (A), pull out the output shaft toward you, with the transfer front drive chain (B).



WFE90-TR226

TRANSMISSION & TRANSFER

28. Remove the needle roller bearing from the transfer output rear shaft.



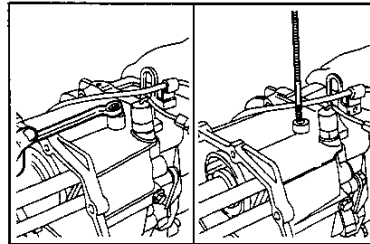
WFE90-TR227

29. Remove the bolt and gasket.

CAUTION:

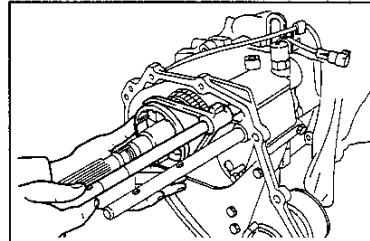
- Never reuse the removed gasket.

Remove the compression spring and roller (small size), using the standard tool of magnet hand.



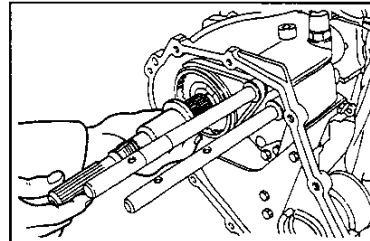
WFE90-TR228

30. Remove the following parts in a set.
- (1) "E" ring (2 pieces)
 - (2) Transfer front drive shift fork
 - (3) Transfer front drive shift fork shaft
 - (4) Differential lock sleeve
 - (5) Transfer front drive hub



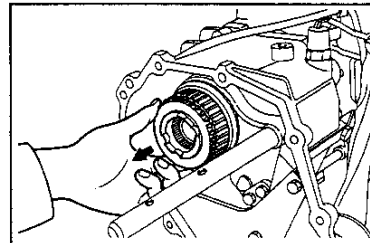
WFE90-TR229

31. Remove the transfer rear output shaft with the tow-split needle roller bearing installed.



WFE90-TR230

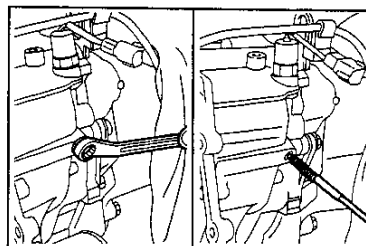
32. Remove the transfer front drive hub.



WFE90-TR231

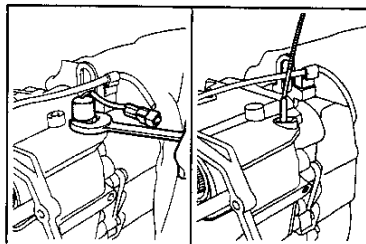
TRANSMISSION & TRANSFER

33. Remove the bolt and gasket.
CAUTION:
 • Never reuse the removed gasket.
34. Remove the compression spring and ball, using the standard tool of magnet hand.



WFE90-TR232

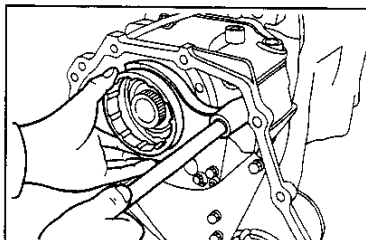
35. Remove the transmission position detect switch assembly and gasket.
CAUTION:
 • Never reuse the removed gasket.



WFE90-TR233

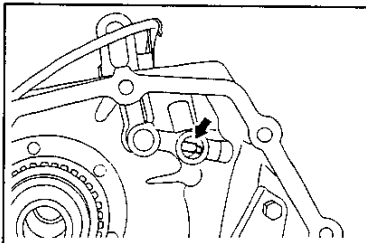
36. Remove the roller (large size), using the standard tool of magnet hand.

37. Remove the following parts in a set.
 (1) Differential lock shift fork shaft
 (2) "E" ring (2 pieces)
 (3) Compression spring
 (4) Differential lock sleeve
 (5) Transfer high & low shift fork



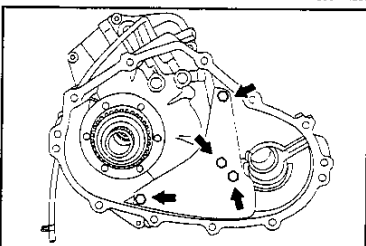
WFE90-TR234

38. Using a magnet band, remove the small-sized roller from the fitting hole provided between the differential lock shift fork shaft of the transfer front case and the transfer front drive shift fork shaft.



WFE90-TR235

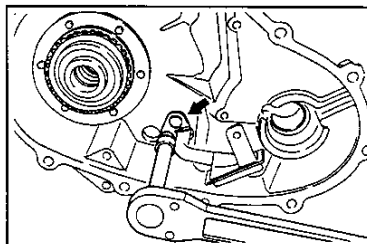
39. Remove the transfer oil pump cover by removing the four bolts.



WFE90-TR236

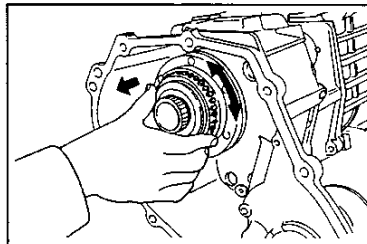
TRANSMISSION & TRANSFER

40. Remove the transfer oil strainer by removing the two bolts.



WFES90-TR237

41. Remove the differential assy toward you.

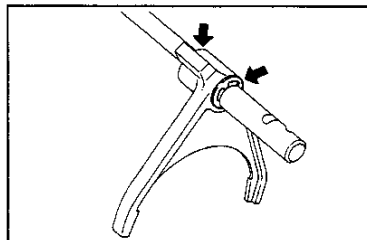


WFES90-TR238

42. Remove the transfer front drive shift fork by detaching the two "E" rings.

NOTE:

- Never reuse the removed "E" rings.

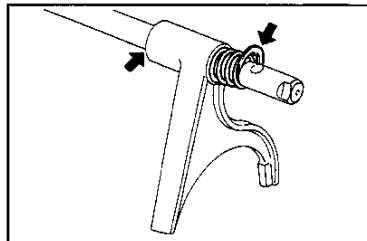


WFES90-TR239

43. Remove the transfer high & low shift fork by detaching the two "E" rings and compression spring.

NOTE:

- Never reuse the removed "E" rings.

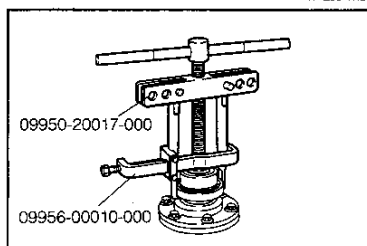


WFES90-TR240

DISASSEMBLY OF DIFFERENTIAL ASSY

1. Set the differential assembly in a vice.
2. Remove the radial ball bearing in combination with the following SSTs.

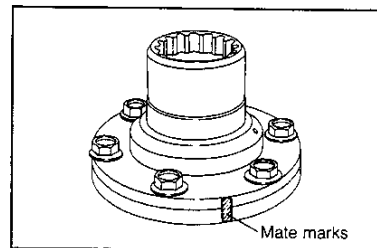
SST: 09950-20017-000
09956-00010-000



WFES90-TR241

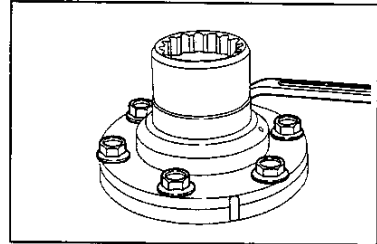
TRANSMISSION & TRANSFER

- Put mate marks between differential case and differential case cover, as guide during installation.



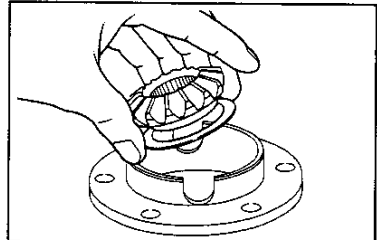
WFE90-TR242

- Remove the differential case subassembly by removing the six bolts.



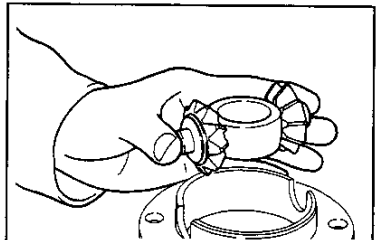
WFE90-TR243

- Remove the differential side gear and differential side gear thrust washer.



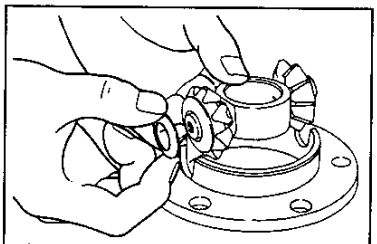
WFE90-TR244

- Remove the differential pinion shaft with install the differential pinion and differential pinion thrust washer in a set.



WFE90-TR245

- Remove the differential pinion and differential pinion thrust washer.



WFE90-TR246

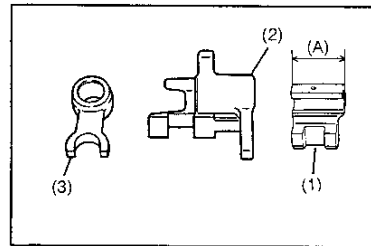
TRANSMISSION & TRANSFER

INSPECTION

1. Check the following parts for damage.
 - (1) Transfer front drive shift head No. 2
 - (2) Transfer high & low shift head
 - (3) Transfer front drive shift head

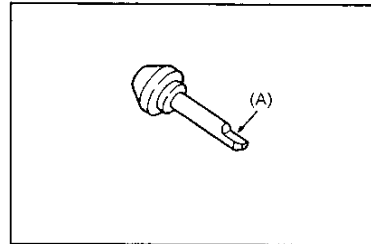
NOTE:

- Do not install the front drive shift head No. 2 for part time, as the (A) section for full time is longer than part time.



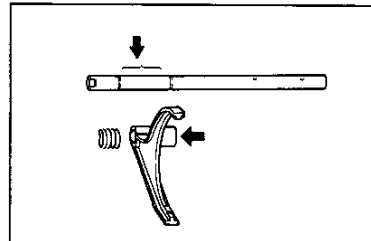
WFE90-TR247

2. Check the section (A) of the transfer fork shaft pin shown in the right figure for wear.



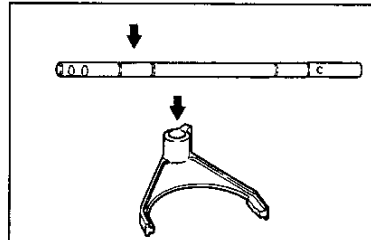
WFE90-TR248

3. Visually check the differential lock shift fork shaft, the transfer high & low shift fork, and the compression spring, for damage, inner/outer surface scratches, etc.



WFE90-TR249

4. Visually check the mating surface between the outer surface of the transfer front drive shift fork shaft and the transfer front drive shift fork for any damage such as scratches.

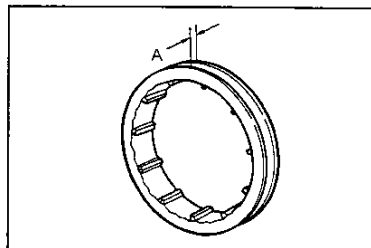


WFE90-TR250

5. Measure the contact wider (A) of the differential sleeve lock with the transfer front drive shift fork, using vernier caliper.

Unit: mm

	Specified value	Allowable limit
Differential sleeve lock	7.000 - 7.058	7.3



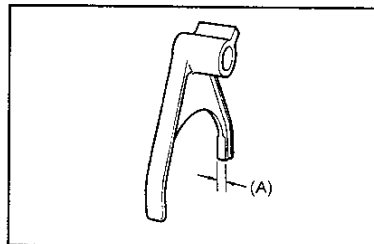
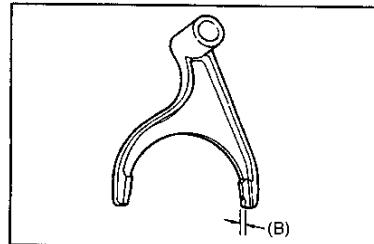
WFE90-TR251

TRANSMISSION & TRANSFER

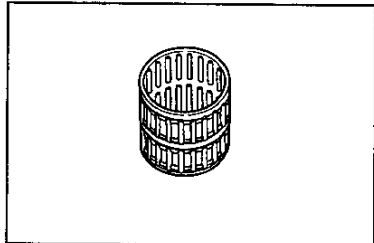
6. Measure the contact width of the transfer front drive shift fork (A) and transfer differential lock shift (B).

Unit: mm

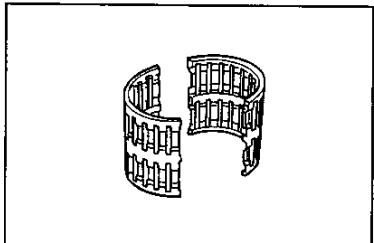
	Specified value	Allowable limit
(A) Transfer front drive shift fork	6.8 - 6.9	6.3
(B) Transfer differential lock shift	6.8 - 6.9	6.3



7. Check to see if any foreign matter is caught in the needle roller bearing and that the bearing exhibits any damage.



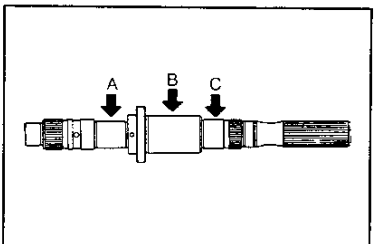
8. Check to see if any foreign matter is caught in the needle roller bearing and that the bearing exhibits any damage.



9. Measure the following parts of the transfer output rear shaft.

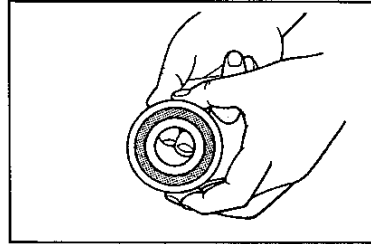
Unit: mm

Measuring point	Item	Specified value	Allowable limit
Section (A) in right figure		25.991 - 26.000	25.941 - 25.950
Section (B) in right figure		37.975 - 37.991	37.925 - 37.941
Section (C) in right figure		27.955 - 28.0045	27.905 - 27.9545



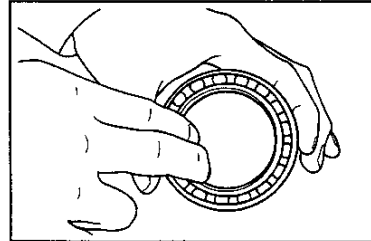
TRANSMISSION & TRANSFER

10. Rotate the bearing inner race by applying a force with your finger. Check to see if the bearing inner race rotates smoothly without any binding.



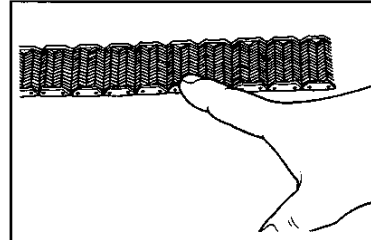
WFE90-TR257

11. Rotate the bearing inner race by applying a force with your finger. Check to see if the bearing inner race rotates smoothly without any binding.



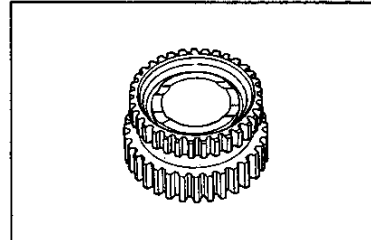
WFE90-TR258

12. Check the contacting surface of the transfer front drive chain with each gear for damage.



WFE90-TR259

13.
(1) Check the contacting surface of the transfer front drive gear with the transfer front drive chain for damage.



WFE90-TR260

14. Measure the dimension of the transfer front drive hub and the differential lock sleeve shown in the right figure. Make sure that the clearance (A) between this gear and the differential lock sleeve may conform to the specification.
Specified Value: 0.03 - 0.19 mm

T/F Front Drive hub:

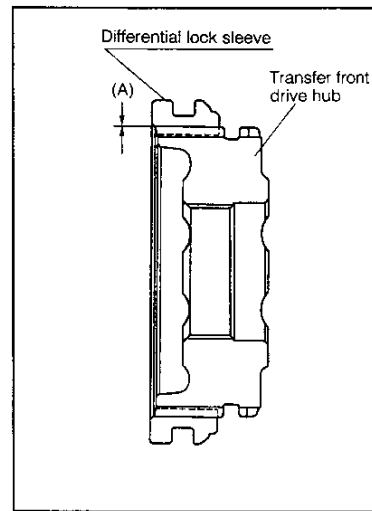
Unit: mm

Classification/No.	Outer dimension
2	87.28 - 87.34
1	87.18 - 87.24
3	87.08 - 87.14

Differential lock sleeve

Unit: mm

Classification/No.	Bore dimension
2	87.371 - 87.470
1	87.271 - 87.370
3	87.170 - 87.270



WFE90-TR261

- (1) The outer diameter dimension of the transfer front drive hub has been machined in accordance with the bore dimension of the differential lock sleeve. If either part exceeds the specified value above, be certain to replace them as a set.

CAUTION:

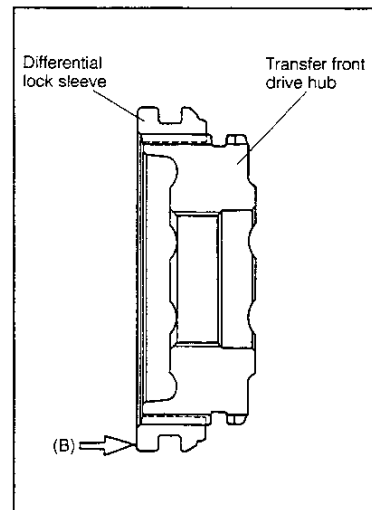
- If either part which has exceeded the specified value should be used against this caution, it would cause slipping-out-of-gear and or emanation of abnormal noise.

- (2) With the differential lock sleeve assembled to the transfer front drive hub, measure the tilt width at the section (B) of the differential lock sleeve.

Specified value: Not to exceed 0.5 mm

NOTE:

- If the tilt width of the differential lock sleeve exceeds the above specified value, be certain to replace those parts of the transfer front drive hub and differential lock sleeve as a set.



WFE90-TR263

TRANSMISSION & TRANSFER

15. Measure the dimension of the transfer front drive gear and the differential lock sleeve shown in the right figure. Make sure that the clearance (A) between this gear and the differential lock sleeve may conform to the specification.

Specified Value: 0.03 - 0.19 mm

- (1) The outer diameter dimension of the transfer front drive gear has been machined in accordance with the bore dimension of the differential lock sleeve. If either part exceeds the specified value above, be certain to replace them as a set.

CAUTION:

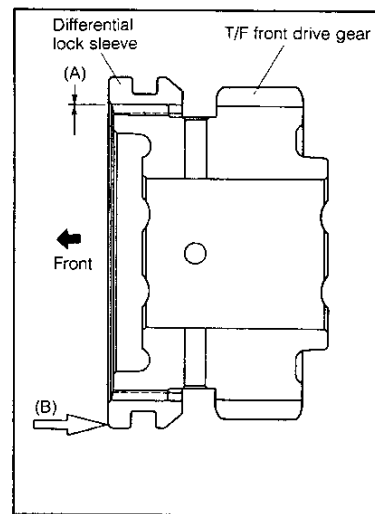
- If either part which has exceeded the specified value should be used against this caution, it would cause slipping-out-of-gear and or emanation of abnormal noise.

- (2) With the differential lock sleeve assembled to the transfer front drive gear, measure the tilt width at the section (B) of the differential lock sleeve.

Specified Value: Not to exceed 0.5 mm

NOTE:

- If the tilt width of the differential lock sleeve exceeds the above specified value, be certain to replace those parts of the transfer front drive gear and differential lock sleeve as a set.

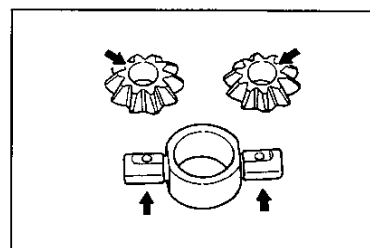


WFE90-TR264

Unit: mm

Classification /No.	Bore dimension	Outer dimension
	Differential lock sleeve	T/F front drive gear
2	87.371 - 87.47	87.28 - 87.34
1	82.71 - 87.37	87.18 - 87.24
3	87.17 - 87.27	87.08 - 87.14

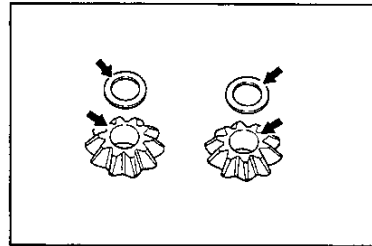
16. Visually check the differential pinion shaft and the differential pinion to scan for damage, or wear, etc.



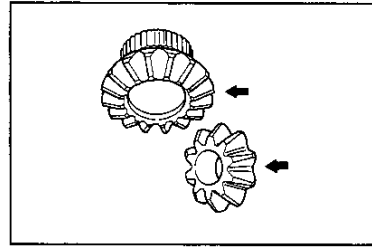
WFE90-TR265

TRANSMISSION & TRANSFER

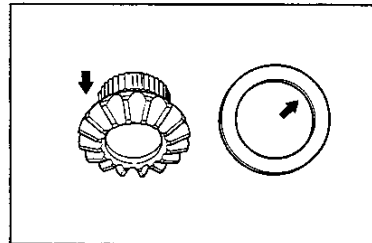
17. Visually check the differential pinion gear and the differential pinion thrust washer for damage, unusual wear, etc.



18. Visually check the contact surface between the differential sidegear and the differential pinion gear for damage, unusual wear, etc.

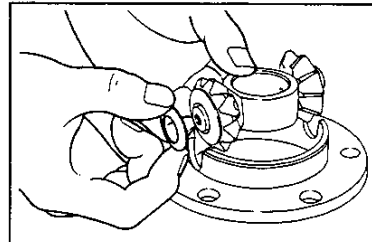


19. Visually check the differential sidegear and the differential sidegear thrust washer for damage, unusual wear, etc.

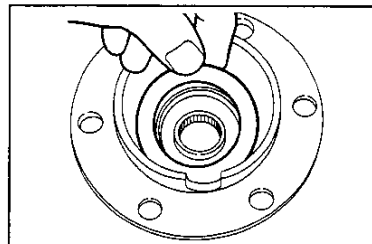


ASSEMBLY OF DIFFERENTIAL ASSY

1. Install the differential pinion thrust washer and differential pinion to the differential pinion shaft.

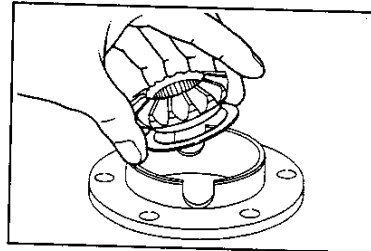


2. Install the differential side gear thrust washer to the differential case cover and differential case.



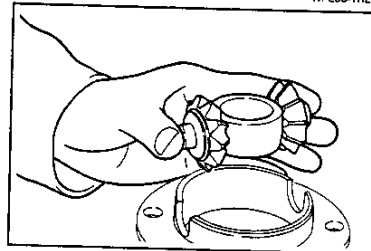
TRANSMISSION & TRANSFER

3. Install the differential side gear to the differential case cover and differential case.



4. Install the following parts to the differential case cover in a set.

- (1) Differential pinion shaft
- (2) Differential pinion
- (3) Differential pinion thrust washer

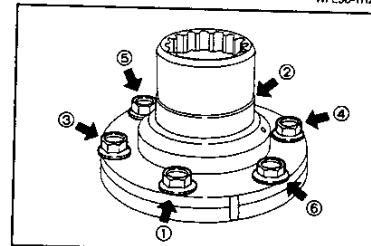


5. Install the differential case to the differential case cover and tighten them with six bolts.

Tightening Torque: 78.5 - 88.3 N·m (8.0 - 9.0 kgf·m)

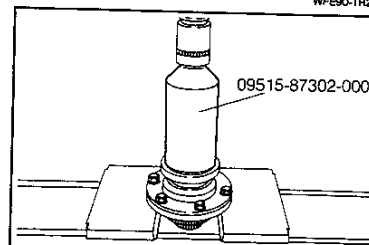
CAUTION:

- Be sure to tighten the bolts alternately and diagonally.
- Match the pair marks put during the disassembly of differential prior to install the differential case cover to the differential.



6. Press the radial ball bearing to the differential assembly, using the following SST.

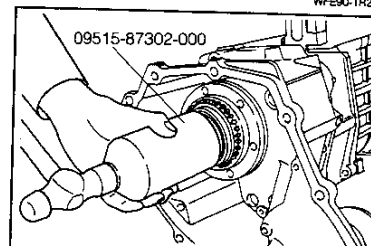
SST: 09515-87302-000



INSTALLATION

1. Installation of differential assembly.
 - (1) Lightly tap the differential assembly so as to drive it into the transfer front case, using a plastic hammer in conjunction with the following SST.

SST: 09515-87302-000



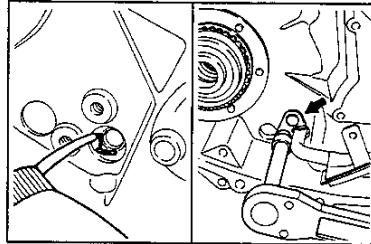
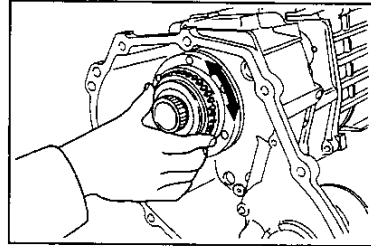
- (2) Stop the aforesaid operation. Then, while turning the differential either clockwise or counterclockwise, align the spline fitting section of the differential assembly and transfer input hub, using the feeling of your fingers.
- (3) Install the differential assembly in the transfer front case, while repeating the operations described in the steps (1) and (2) above.

NOTE:

- If the operation described above should be performed improperly, it would cause damage to the spline of the differential assembly and transfer input hub.

2. Apply the gear oil to the oil seal section of the transfer oil strainer and then, tighten them with the two bolts.

Tightening Torque: 14.7 - 21.6 N·m (1.5 - 2.2 kgf·m)

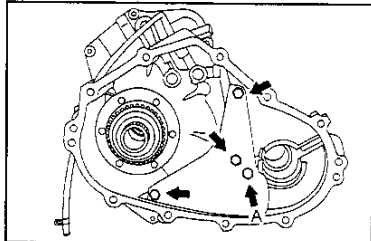


3. Install the transfer oil pump cover and then, tighten them with the four bolts.

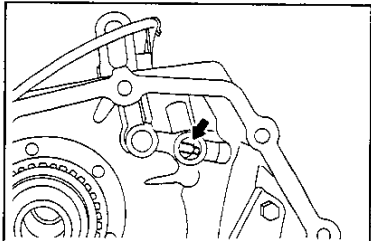
Tightening Torque:

17.7 - 21.6 N·m (1.8 - 2.2 kgf·m)

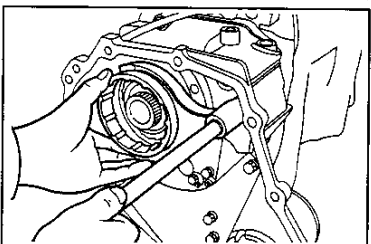
A ... 14.7 - 21.6 N·m (1.5 - 2.2 kgf·m)



4. Using a magnet hand, reinsert the small-sized roller into the fitting hole provided between the differential lock shift fork shaft of the transfer front case and the transfer front drive shift fork shaft.



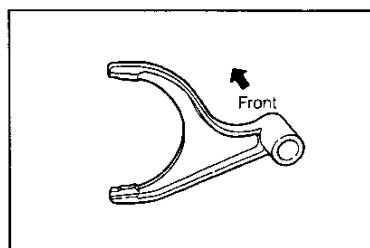
5. Install the following parts in a set.
 - (1) Transfer differential lock shift fork
 - (2) Differential lock sleeve
 - (3) Compression spring
 - (4) New "E" ring (2 pieces)
 - (5) Differential lock shift fork shaft.



TRANSMISSION & TRANSFER

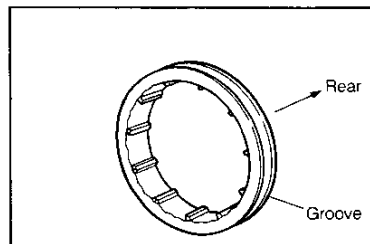
NOTE:

- The shape of R section of the transfer differential lock shift fork faces toward the upside as shown in the right figure illustration.



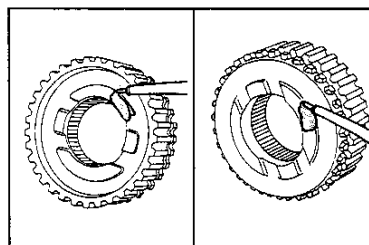
WFES0-TR281

- Ensure that the groove section of the differential lock sleeve comes at the transfer rear case.



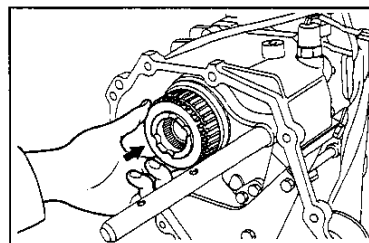
WFES0-TR282

6. Apply gear oil on both end sections of the transfer front drive hub as shown in the right figure illustration.



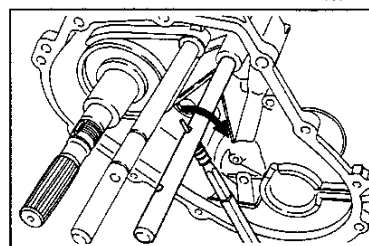
WFES0-TR283

7. Install the transfer front drive hub.



WFES0-TR284

8. Turn the differential lock shift fork shaft 180 degrees, using the pin punch or the like.



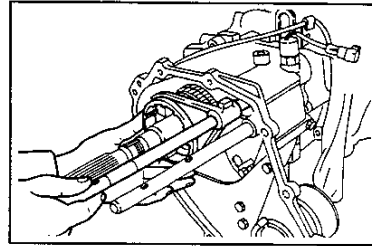
WFES0-TR285

TRANSMISSION & TRANSFER

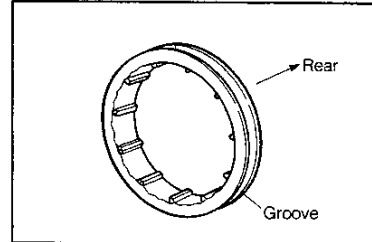
9. Install the following parts in a set.
 - (1) Differential lock sleeve
 - (2) Transfer front drive shift fork shaft
 - (3) Transfer front drive shift fork
 - (4) New "E" rings (2 pieces)

NOTE:

- Ensure that the groove section of the differential lock sleeve comes at the transfer rear case.

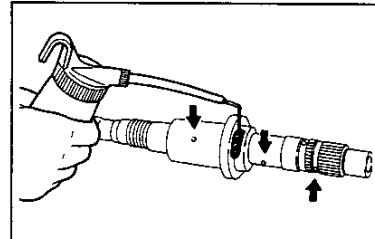


WFE90-TR286



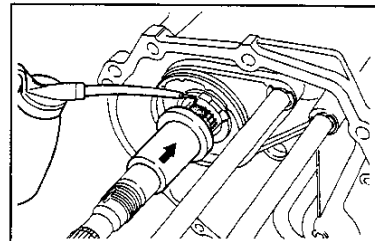
WFE90-TR287

10. Fully apply gear oil to the oil hole in the transfer rear output shaft.



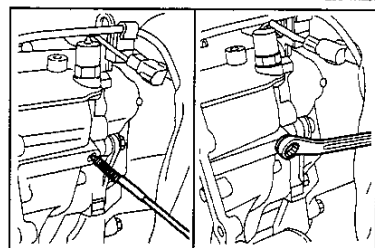
WFE90-TR288

11. Apply gear oil to the outer periphery of the two-split needle roller bearing, and insert it together with the transfer rear output shaft into the differential assembly.



WFE90-TR289

12. Turn the differential lock shift fork shaft 180 degree.
13. Install the roller and compression spring.
14. With the new gasket used, install the bolt and tighten it.
Tightening Torque: 18.6 - 30.4 N·m (1.9 - 3.1 kgf-m)

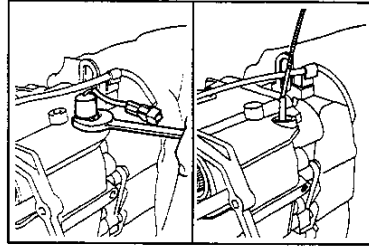


WFE90-TR290

TRANSMISSION & TRANSFER

15. Install the roller (long size).
16. With the new gasket used, install the transmission position detect switch assembly and tighten it.

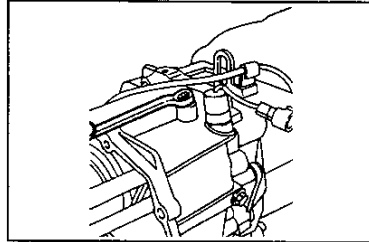
Tightening Torque: 29.4 - 49.0 N·m (3.0 - 5.0 kgf·m)



WFE90-TR291

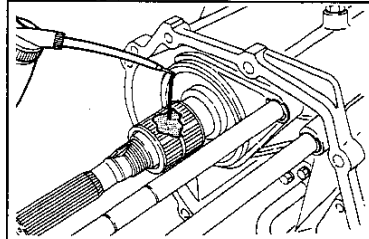
17. Install the ball and compression spring.
18. With the new gasket used, install the bolt and tighten it.

Tightening Torque: 18.6 - 30.4 N·m (1.9 - 3.1 kgf·m)



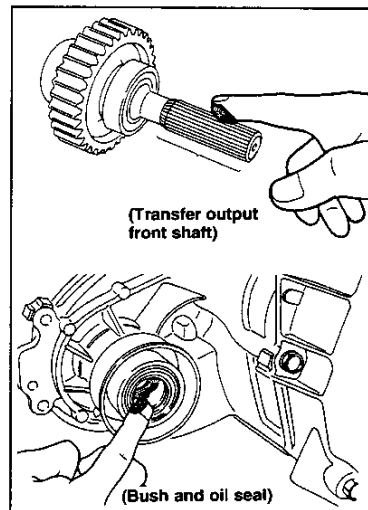
WFE90-TR292

19. Apply gear oil to the outer surface of the needle roller bearing, and mount it on the transfer rear output shaft.



WFE90-TR293

20. Apply lithium-based multi-purpose grease to the following parts.
 - (A) Spline section of the transfer output front shaft
 - (B) Lip section of the oil seal
 - (C) Inner surface of the bush



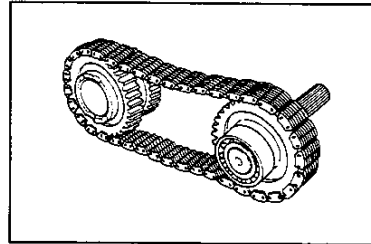
WFE90-TR294

TRANSMISSION & TRANSFER

21. Install the transfer front drive chain and transfer front drive gear together with the transfer output front shaft.

NOTE:

- The front drive chain can be installed in any direction.
- Be careful not to damage the lip section of the oil seal during the installation.



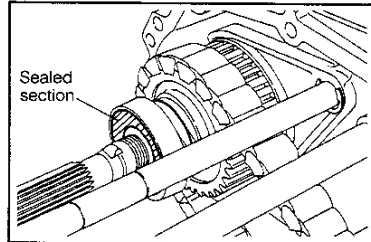
WFES90-TR295

22. Install the transfer output gear thrust washer to the transfer output rear shaft.

23. Temporarily install the bearing to the transfer output rear shaft.

CAUTION:

- Sealed section of the bearing faces toward the transfer rear case.
- If the above installation should fail to be performed, failure to observe this caution may cause seizure or gear noise.



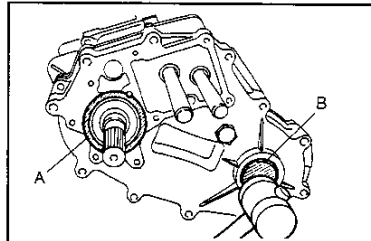
WFES90-TR296

24. Apply gear oil to each of the bearings.

25. Install the transfer rear case with the new gasket interposed.

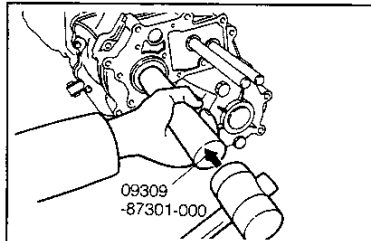
NOTE:

- Lightly tapping the transfer rear case A, B sections evenly and alternately, using the plastic hammer.



WFES90-TR297

26. Install the bearing, using the following SST:
SST: 09309-87301-000

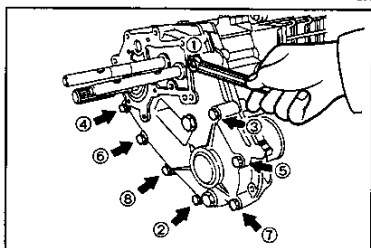


WFES90-TR298

27. Tighten the transfer rear case with the eight bolts.
Tightening Torque: 29.4 - 44.1 N·m (3.0 - 4.5 kgf·m)

NOTE:

- Be sure to tighten the bolts alternately and diagonally.
(The illustration at the right figure indicates a typical example of the tightening sequence.)



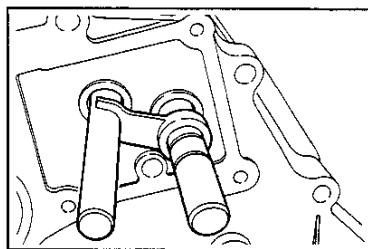
WFES90-TR299

TRANSMISSION & TRANSFER

28. Install the transfer front drive shift head No. 2.

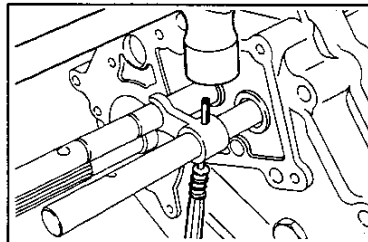
NOTE:

- Apply the gear oil to the outer periphery of the differential lock shift fork shaft and transfer front drive shift fork shaft, prior to install the transfer front drive shift head No.2.



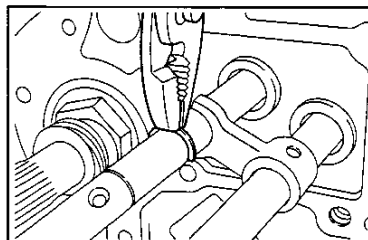
WFE90-TR300

29. Drive the new slotted pin into the position, using the pin punch as shown in the right figure illustration.



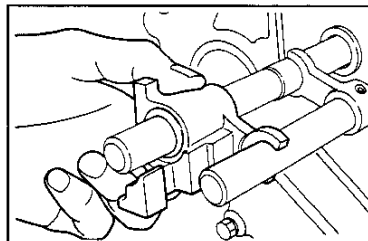
WFE90-TR301

30. Install the new E-ring to the transfer front drive shift fork shaft.



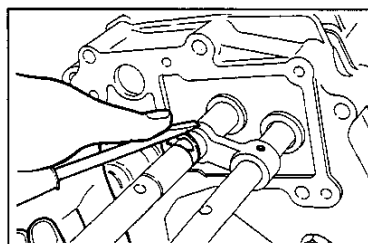
WFE90-TR302

31. Install the transfer high & low shift head.



WFE90-TR303

32. Install the new E-ring on the transfer front drive shift.



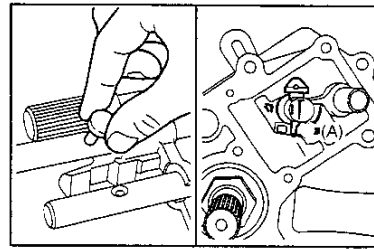
WFE90-TR304

TRANSMISSION & TRANSFER

33. Insert the transfer fork shaft pin into the transfer front drive shift fork shaft.

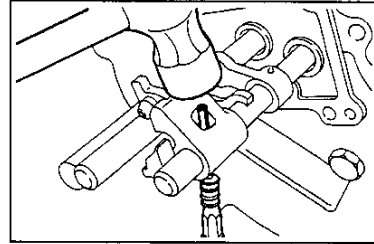
NOTE:

- Make sure that the cut-out section (A) of transfer fork shaft pin comes toward the transfer front drive shift head No. 2.



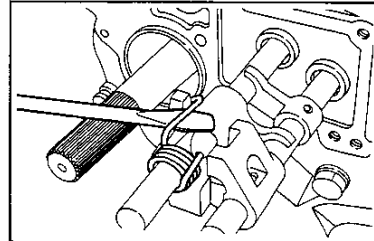
WF90-TR305

34. Drive the new slotted pin into the position, using the pin punch as shown in the right figure illustration.



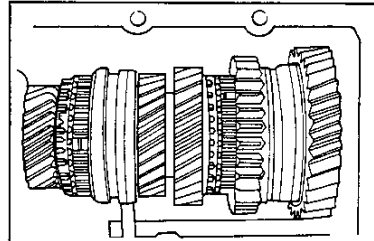
WF90-TR306

35. Install the torsion bar spring, using the standard tool of flat drive.



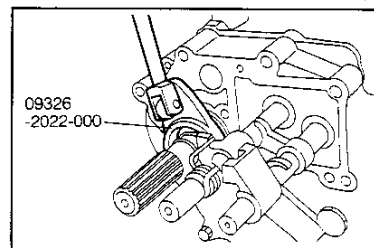
WF90-TR307

36. Interlock the 1st gear and the 3rd gear.



WF90-TR308

37. Tighten the lock nut using the following SST:
 SST: 09326-20022-000
 Tightening Torque: 137.0 - 196.0 N·m
 (14.0 - 20.0 kgf-m)

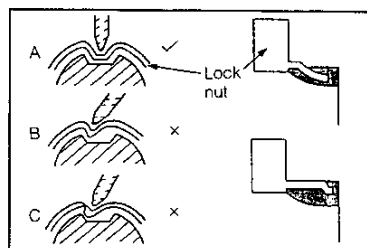


WF90-TR309

TRANSMISSION & TRANSFER

NOTE:

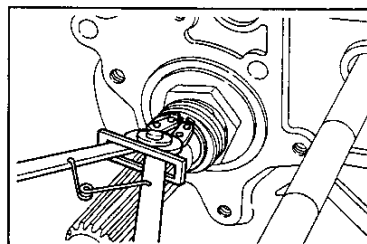
- When staking the lock nut, point a suitable staking tool toward the transmission output shaft rear axis center and stake to lock nut securely as shown in the right figure A.
- Poor staking may cause abnormal noise as shown in the right figure illustration B and C.



WFE90-TR310

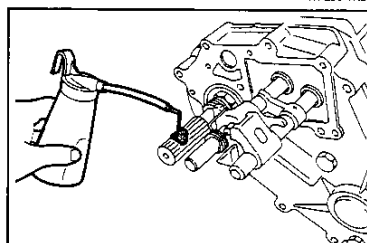
38. Install the speedometer driven gear and ball into the position.

39. Install the new snap ring.



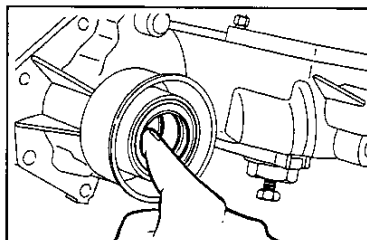
WFE90-TR311

40. Apply lithium-based multi-purpose grease to the spline section of the transfer rear output shaft.



WFE90-TR312

41. Apply the THREE BOND 1324 (made by THREE BOND) to the threads of the bolts.
42. Apply lithium-based multi-purpose grease to the lip section of the oil seal and an inner surface of the bush.

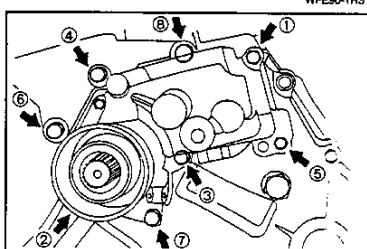


WFE90-TR313

43. Install the transfer rear output bearing retainer with the new gasket interposed, and tighten the retainer with eight bolts.
Tightening Torque: 14.7 - 21.6 N·m (1.5 - 2.2 kgf·m)

NOTE:

- Be sure to tighten the bolts alternately and diagonally. (The illustration at the right figure indicates a typical example of tightening sequence.)

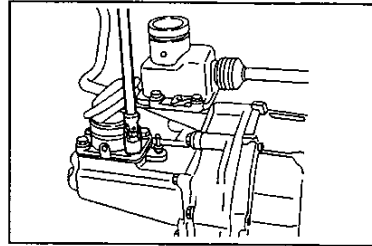


WFE90-TR314

TRANSMISSION & TRANSFER

44. Apply the THREE BOND 1324 (made by THREE BOND) to the section of the bolts.
45. Mount the transfer shift lever retainer subassembly with the new gasket interposed, and tighten the subassembly with four bolts.

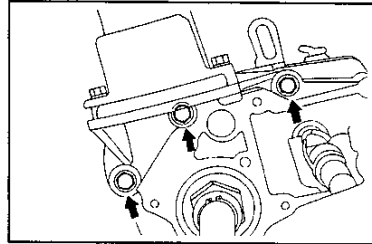
Tightening Torque: 14.7 - 21.6 N·m (1.5 - 2.2 kgf·m)



WFE90-TR315

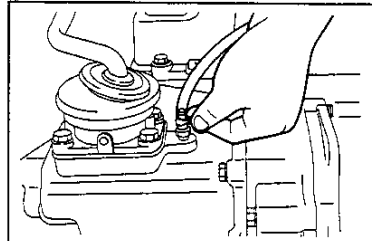
46. Install the control shaft lower bracket No. 1 with installed the control shift lever retainer subassembly with the two hexagon bolt and the bolt and tighten them.

Tightening Torque: 29.4 - 44.1 N·m (3.0 - 4.5 kgf·m)



WFE90-TR316

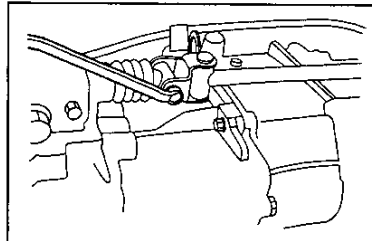
47. Connect the breather hose with a clip.



WFE90-TR317

48. Apply the THREE BOND 1324 (made by THREE BOND) to the threads of the bolts.
49. Install down the shift lever retainer subassembly with the hexagon bolt.

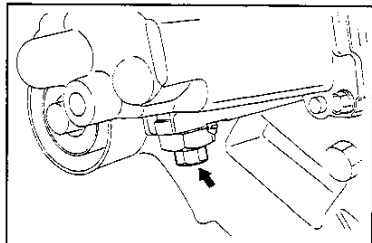
Tightening Torque: 14.7 - 21.6 N·m (1.5 - 2.2 kgf·m)



WFE90-TR318

50. Tighten the set bolt.

Tightening Torque: 29.4 - 44.1 N·m (3.0 - 4.5 kgf·m)

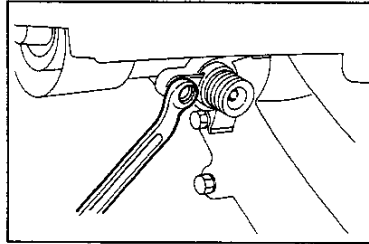


WFE90-TR319

TRANSMISSION & TRANSFER

51. Install the speedometer sleeve on the transfer rear output bearing retainer, and tighten the sleeve using the speedometer sleeve lock plate and bolts.

Tightening Torque: 6.9 - 9.8 N·m (0.7 - 1.0 kgf-m)



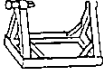
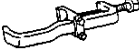
WFE90-TR320

52. Remove the transmission assembly with transfer from the overhauling stand, and install to the vehicle (see pages MT-121 to MT-125 for the remounting procedure).

WFE90-TR321

TRANSMISSION & TRANSFER

SSTs

Shape	Part No.	Part Name
	09219-87202-000	Engine overhaul stand
	09219-87203-000	Valve guide bush remover & replacer
	09309-87201-000	Transmission bearing replacer
	09309-87301-000	Output shaft bearing replacer
	09310-87102-000	Counter shaft rear bearing replacer
	09950-20017-000	Universal puller
	09956-00010-000	Tightening piece

WFEB0-TR322

TRANSMISSION & TRANSFER

SERVICE SPECIFICATIONS

TRANSFER (PART TIME)

Unit: mm

Item			Specified value	Allowable limit	Remarks
Transfer high & low clutch sleeve installation width with the transfer high & low shift fork			7.05 - 7.12	7.3	
Transfer high & low shift fork			6.80 - 7.00	6.3	
Transfer front drive gear	Class	2	87.28 - 87.34	—	Outer diameter
		1	87.18 - 87.24	—	
		3	87.08 - 87.14	—	
Differential lock sleeve	Class	2	87.371 - 87.47	—	Bore diameter
		1	87.271 - 87.37	—	
		3	87.17 - 87.27	—	
Transfer front drive gear × Differential lock sleeve clearance			0.03 - 0.19	—	
Differential lock sleeve tilt width (Assembled to the transfer front drive gear)			—	Not to exceed 0.5	
Transfer output rear shaft			41.975 - 41.991	41.960	
Front drive gear sleeve contact width of front drive shift fork			6.8 - 6.9	6.3	
Transfer output rear shaft	Class	2	69.78 - 69.84	—	Outer diameter
		1	69.68 - 69.74	—	
		3	69.58 - 69.64	—	
Transfer high & low clutch sleeve	Class	2	69.871 - 69.97	—	Bore diameter
		1	69.771 - 69.87	—	
		3	69.67 - 69.77	—	
Transfer output rear shaft × Transfer high & low clutch sleeve clearance			0.03 - 0.19	—	
Transfer high & low clutch sleeve tilt width (Assembled to the transfer output rear shaft)			—	Not to exceed 0.5	—
Contact width of transfer high & low shift head			16.000 - 16.070	16.200	—
Contact width of transfer front drive shift head			16.000 - 16.070	16.200	—

WFE90-TR323

TRANSFER (FULL TIME)

Contact width of differential lock sleeve	7.000 - 7.058	7.300	—
Contact width of transfer front drive shift fork	6.8 - 6.9	6.3	
Contact width of differential lock shift	6.8 - 6.9	6.3	

WFE90-TR324

TRANSMISSION & TRANSFER

TRANSFER (FULL TIME)

Unit: mm

Unit: mm

Transfer output rear shaft	Section (A)		25.991 - 26.000	25.941 - 25.950	
	Section (B)		37.975 - 37.991	37.925 - 37.941	
	Section (C)		27.955 - 28.0045	27.905 - 27.9545	
Transfer front drive hub	Class	2	87.28 - 87.34		
		1	87.18 - 87.24		
		3	87.08 - 87.14		
Differential lock sleeve	Class	2	87.371 - 87.470		
		1	87.271 - 87.370		
		3	87.170 - 87.270		
Transfer front drive hub x Differential lock sleeve clearance			0.03 - 0.19	—	—
Differential lock sleeve tilt width (Assembled to the transfer front drive hub)			—	Not to exceed 0.5	—
Transfer front drive gear	Class	2	87.28 - 87.34	—	Outer diameter
		1	87.18 - 87.24	—	
		3	87.08 - 87.14	—	
Differential lock sleeve	Class	2	87.371 - 87.47		Bore diameter
		1	87.271 - 87.37		
		3	87.17 - 87.27		
Transfer front drive gear x Differential lock sleeve clearance			0.03 - 0.19	—	
Differential lock sleeve tilt width (Assembled to the transfer front drive gear)			—	Not to exceed 0.5	

WFE90-TR325

TRANSMISSION & TRANSFER

TIGHTENING TORQUE

TRANSFER (PART TIME)

Tightening component	Tightening torque		
	kgf-m	ft-lb	N-m
T/F adapter case x T/M case	3.0 - 4.5	21.7 - 32.5	29.4 - 44.1
T/F low speed input gear x Lock nut	18.0 - 22.0	130.0 - 159.0	177.0 - 216.0
T/F front case x T/F adapter case	3.0 - 4.5	21.7 - 32.5	29.4 - 44.1
Bolt for transfer high & low shift fork shaft x T/F front case	1.9 - 3.1	13.7 - 22.4	18.6 - 30.4
Bolt for T/F front drive shift fork shaft x T/F front case	1.9 - 3.1	13.7 - 22.4	18.6 - 30.4
Transposition detect switch x T/F front case	3.0 - 5.0	21.7 - 36.2	29.4 - 49.0
T/F rear case x T/F front case	3.0 - 4.5	21.7 - 32.5	29.4 - 44.1
T/F rear output shaft x Lock nut	14.0 - 20.0	101.0 - 145.0	137.0 - 196.0
Output shaft bearing retainer x T/F rear case	1.5 - 2.2	10.8 - 15.9	14.7 - 21.6
Speedometer sleeve lock plate x Output shaft bearing retainer	0.7 - 1.0	5.1 - 7.2	6.9 - 9.8
Control shaft lower No. 1 bracket x T/F rear case	3.0 - 4.5	21.7 - 32.5	29.4 - 44.1
T/F shift lever retainer x Output shaft bearing retainer	1.5 - 2.2	10.8 - 15.9	14.7 - 21.6
Control shift lever retainer x Control shaft lower No. 1 bracket	1.5 - 2.2	10.8 - 15.9	14.7 - 21.6
Control shaft x Shift & select shaft No. 1	3.0 - 4.5	21.7 - 32.5	29.4 - 44.1

WFEB90-TR326

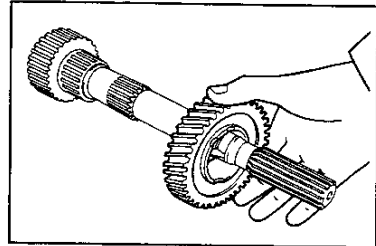
TRANSFER (FULL TIME)

Tightening component	Tightening torque		
	kgf-m	ft-lb	N-m
T/F oil pump body x T/F adapter case	1.5 - 2.2	10.8 - 15.9	14.7 - 21.6
T/F oil strainer tube x T/F oil pump body	0.7 - 1.0	5.1 - 7.2	6.9 - 9.8
T/F oil pump body x Lock nut	18.0 - 22.0	130.0 - 159.0	177.0 - 216.0
T/F oil stainer x T/F adapter case	1.5 - 2.2	10.8 - 15.9	14.7 - 21.6
T/F oil pump cover x T/F adapter case	1.5 - 2.2	10.8 - 15.9	14.7 - 21.6
Bolt for differential lock shift fork shaft x T/F front case	1.9 - 3.1	13.7 - 22.4	18.6 - 30.4
Bolt for transfer front drive shift fork shaft x T/F front case	1.9 - 3.1	13.7 - 22.4	18.6 - 30.4
T/F output rear shaft x Lock nut	14.0 - 20.0	101.0 - 145.0	137.0 - 196.0
T/F front drive shift lock sleeve x Output shaft bearing retainer	5.0 - 7.0	36.2 - 50.6	49.0 - 68.6
Bolt for shift preventive x T/F front drive shift lock sleeve	3.0 - 4.5	21.7 - 32.5	29.4 - 44.1

WFEB90-TR327

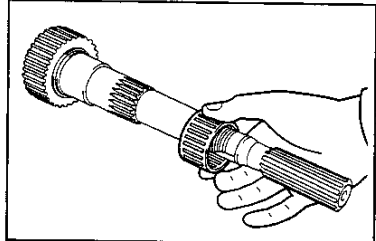
TRANSMISSION & TRANSFER

3. Remove the transfer low speed output gear from the transfer output rear shaft.



WFE90-TR088

4. Remove the needle roller bearing from the transfer output rear shaft.

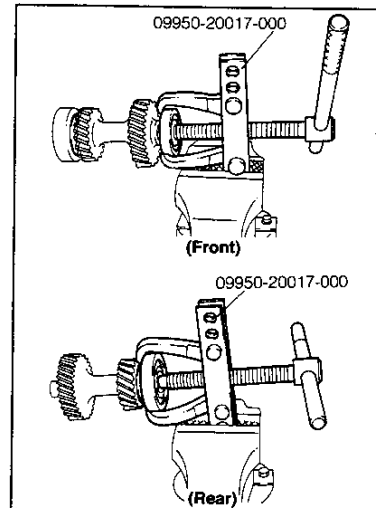


WFE90-TR089

DISASSEMBLY OF TRANSFER COUNTER GEAR

1. Set the SST in a vice with the transfer counter gear installed. Remove the front and rear bearings.

SST: 09950-20017-000

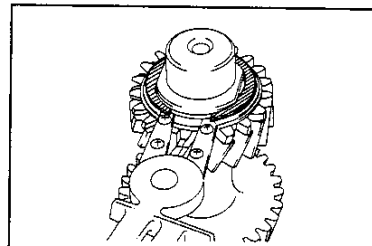


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2. Remove the snap ring, using the standard tool of snap ring plier.

NOTE:

- Never reuse the removed snap ring.



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