

SECTION 13

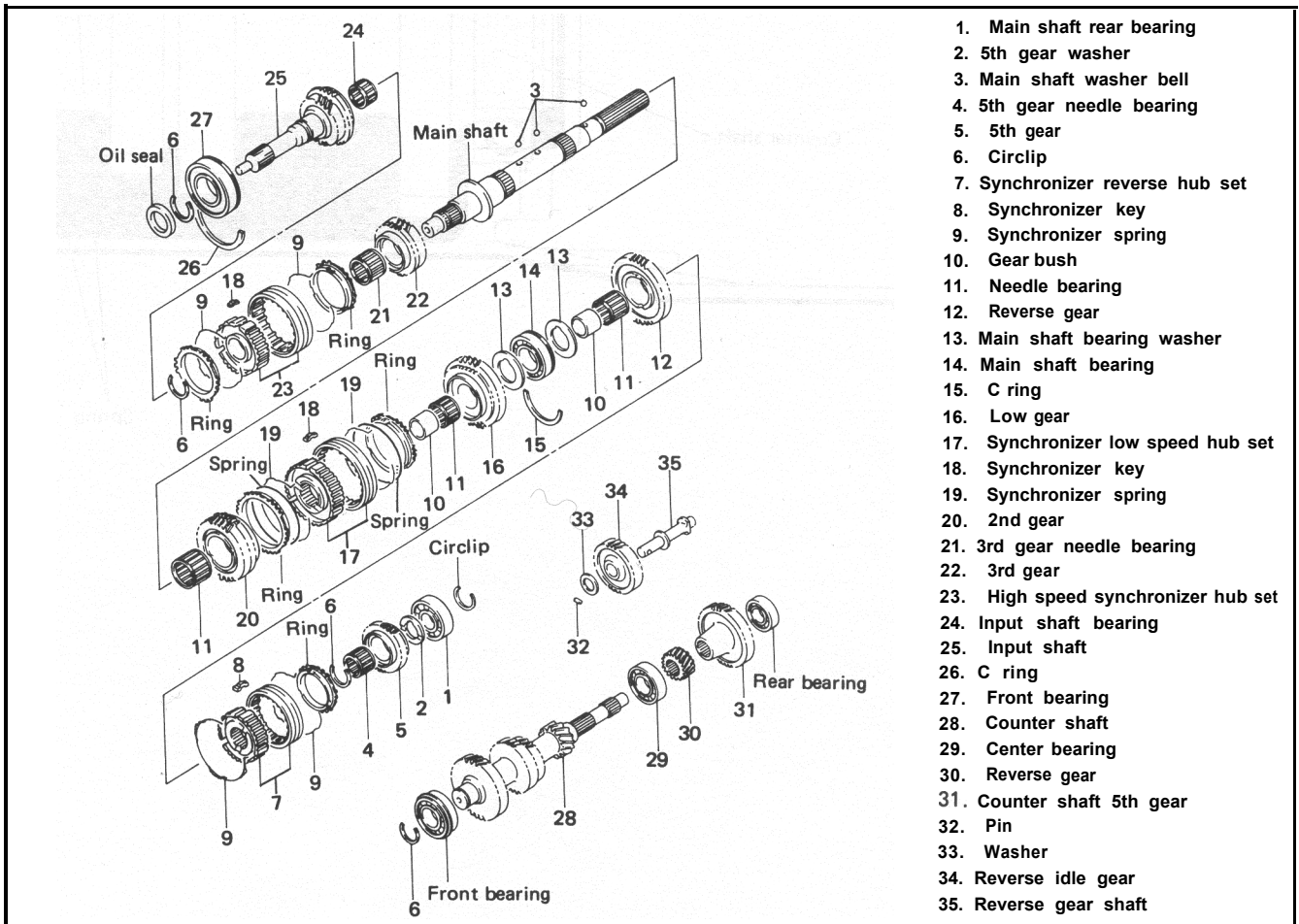
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TRANSMISSION

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13-1. GENERAL DESCRIPTION



1. Main shaft rear bearing
2. 5th gear washer
3. Main shaft washer bell
4. 5th gear needle bearing
5. 5th gear
6. Circlip
7. Synchronizer reverse hub set
8. Synchronizer key
9. Synchronizer spring
10. Gear bush
11. Needle bearing
12. Reverse gear
13. Main shaft bearing washer
14. Main shaft bearing
15. C ring
16. Low gear
17. Synchronizer low speed hub set
18. Synchronizer key
19. Synchronizer spring
20. 2nd gear
21. 3rd gear needle bearing
22. 3rd gear
23. High speed synchronizer hub set
24. Input shaft bearing
25. Input shaft
26. C ring
27. Front bearing
28. Counter shaft
29. Center bearing
30. Reverse gear
31. Counter shaft 5th gear
32. Pin
33. Washer
34. Reverse idle gear
35. Reverse gear shaft

Fig. 13-1

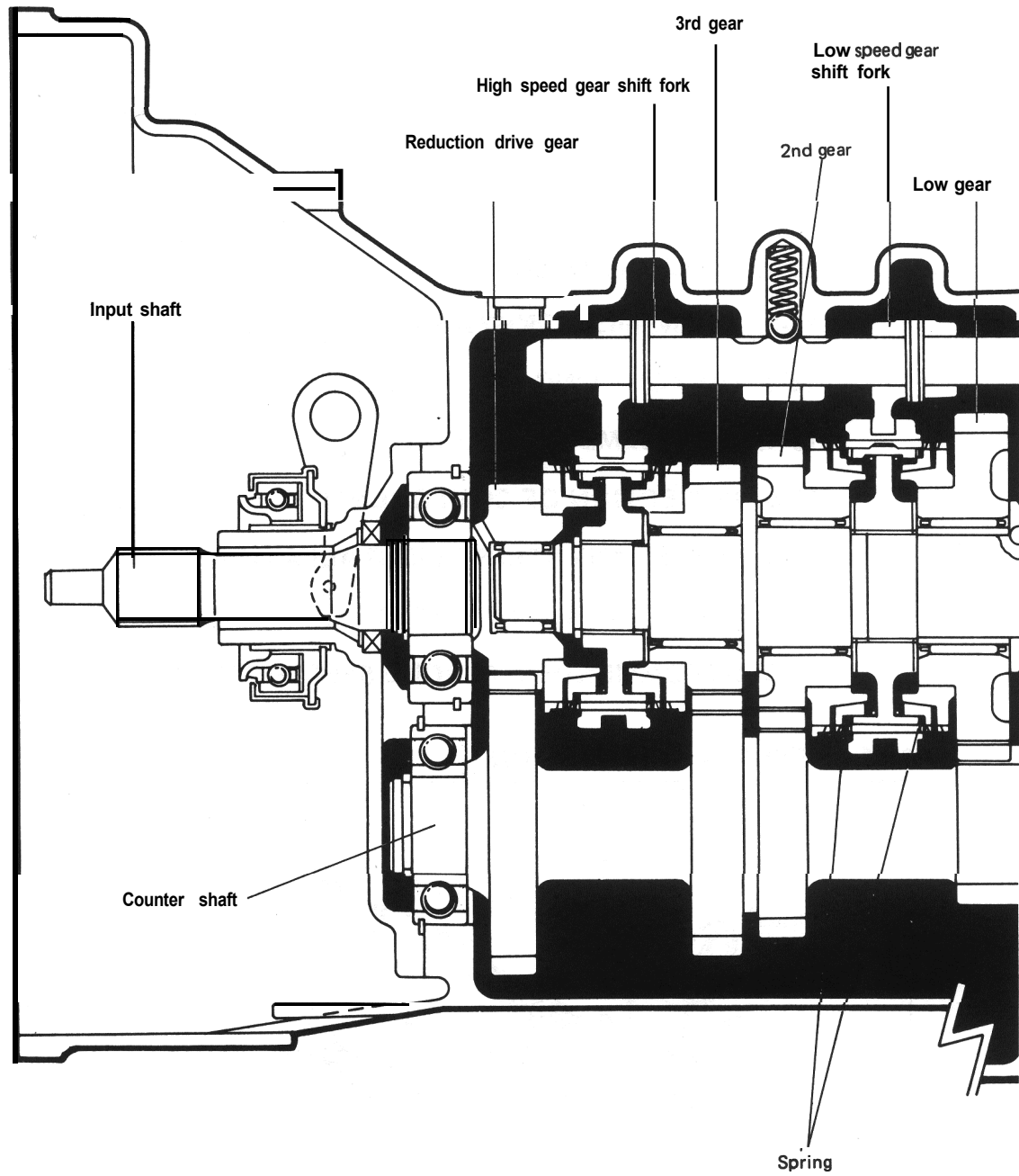
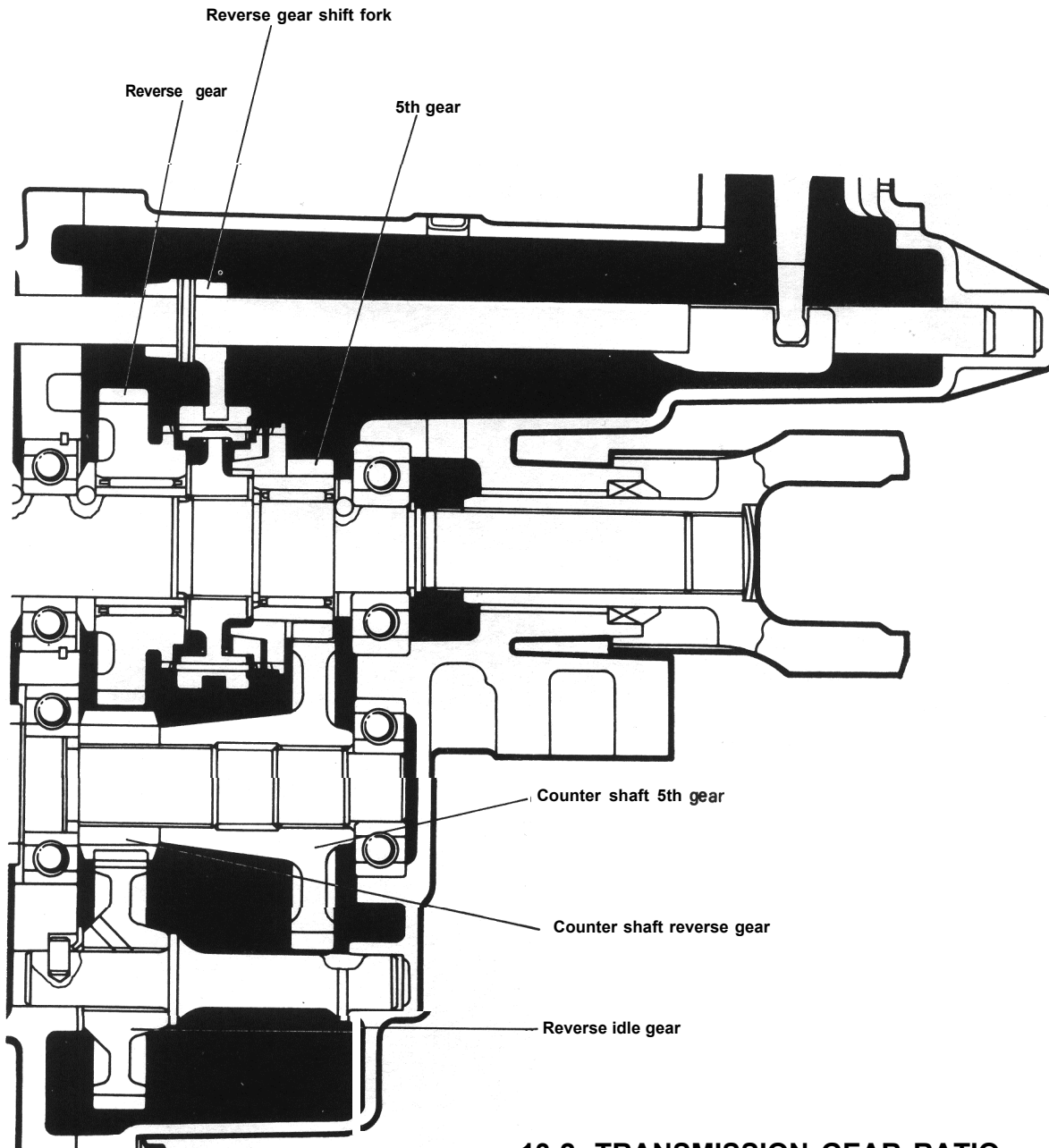


Fig. 13-2



13-2. TRANSMISSION GEAR RATIO

Primary gear ratio		35/23				—	35/23		
Primary speed ratio		1.521				—	1.521		
Secondary ratios		Shift position		Reverse	Low	Second	Third	Fourth	Fifth
		Gear ratio		41/18	36/15	32/25	29/31	—	25/44
		Speed ratio		2.277	2.400	1.280	0.935	—	0.568
Overall speed reduction ratio				3.466	3.652	1.947	1.423	1.000	0.864

13-3. DISMOUNTING

In Passenger Compartment

- 1) Loosen 4 bolts fastening gear shift lever boot No. 2 and move boot upward.



Fig. 13-2-1

- 2) Move gear shift boot No. 1 upward. Loosen gear shift lever case cover bolts (3 pcs) and draw gear shift lever out of lever case.

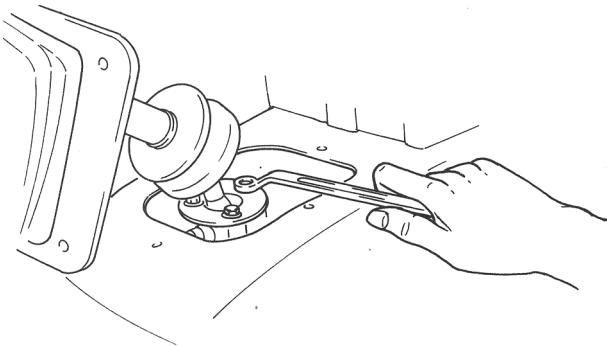


Fig. 13-2-2

In Engine Room

- 3) Disconnect negative (-) and positive (+) cords from battery terminals.
- 4) Disconnect back light and fifth switch lead wires at coupler respectively.
- 5) Disconnect Black/Yellow lead wire and positive (+) cord from starter motor.
- 6) Remove starter motor from transmission case and fuel hoses clamp from transmission case.

Under Engine

- 7) Remove drain plug to drain oil in transmission.
- 8) Disconnect clutch wire from clutch release lever.
- 9) Remove propeller shaft No. 1 (from transmission to transfer).
- 10) Remove propeller shaft No. 2 (from transfer to front differential).
- 11) Remove clutch housing lower plate from transmission case.

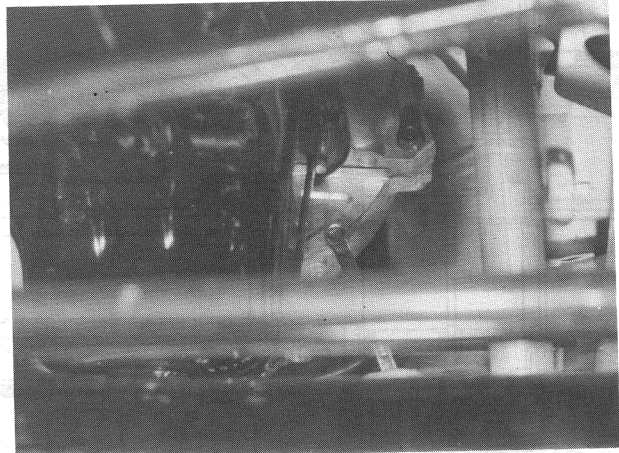


Fig. 13-2-3

- 12) Remove bolts and nuts fastening engine cylinder block and transmission case.
- 13) Remove pipe ① as shown in Fig. 13-24.

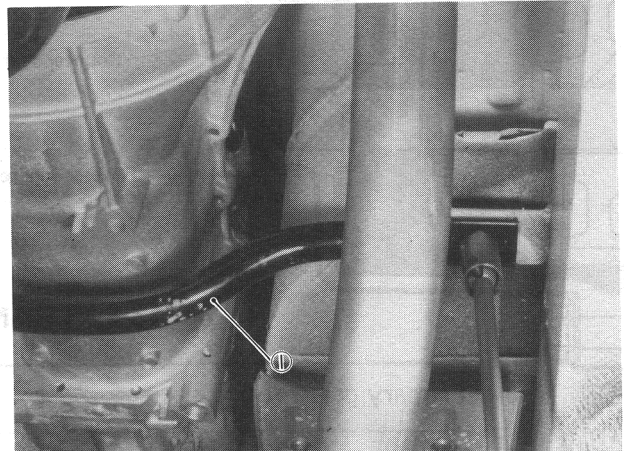


Fig. 13-2-4

- 14) Remove exhaust center pipe.
- 15) Remove transmission rear mounting bracket from chassis and transmission case.

NOTE:

Before starting to remove transmission, check around once again to be sure that there is no connection left undone.

- 16) Take down transmission.

13-4. DISASSEMBLY

Replacing Clutch Release Shaft Bush

- 1) Remove clutch release bearing from input shaft bearing retainer.

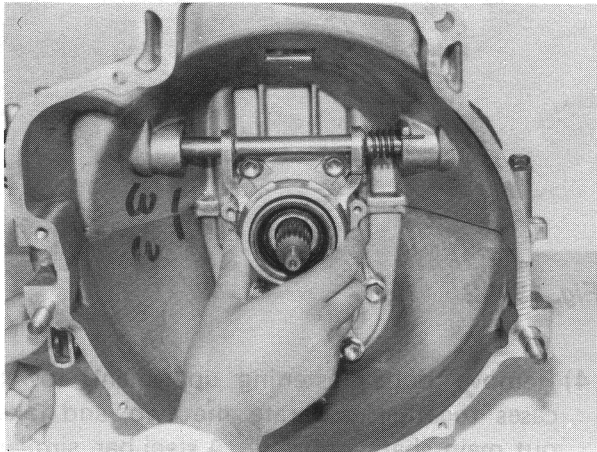


Fig. 13-3

- 2) Remove a part of spring from clutch release shaft lever.

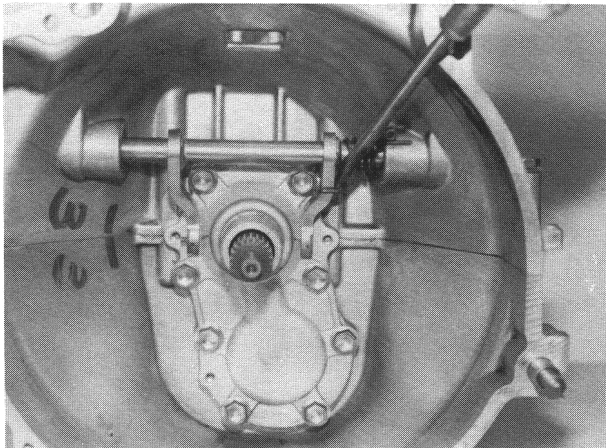


Fig. 13-3-1

- 3) Remove clutch release shaft spring from shaft. With special tool (A) applied in such a position as shown in Fig. 13-3-2, tap the end of special tool to take out bush and cap. Clutch release bush remover (A) (09925 48210)

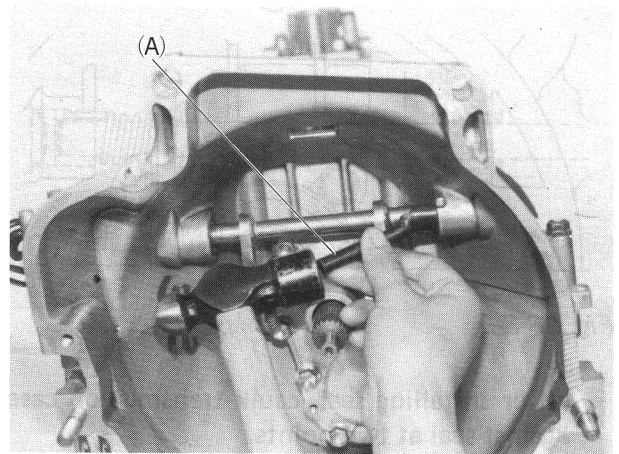


Fig. 13-3-2

- 4) Take out the other bush, too.

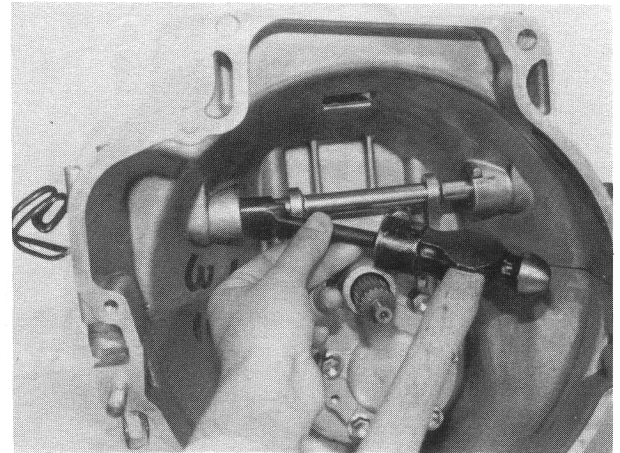


Fig. 13-3-3

- 5) Precautions on bush reinstallation:

- Make sure to apply grease to inside of bushes.
- Drive in bushes to the same level as inside surface of transmission case. Install cap and oil seal securely after greasing oil seal lip.

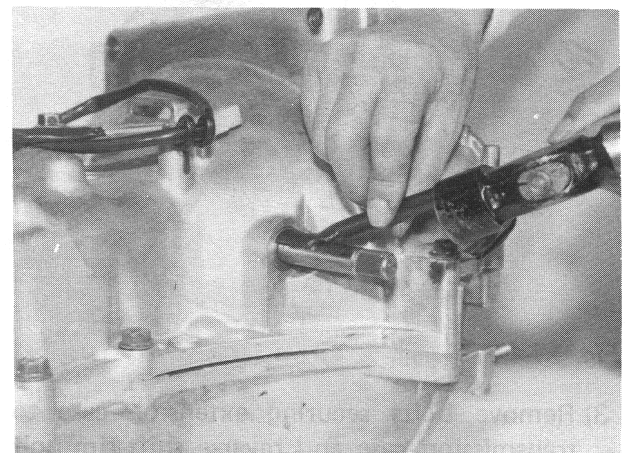


Fig. 13-3-4

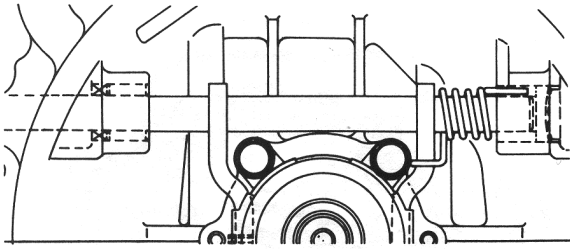


Fig. 13-3-5

- After installing seal, caulk transmission case against seal at two points.

Separating Upper Case from Lower Case

- 1) Remove clutch release bearing from transmission input shaft.

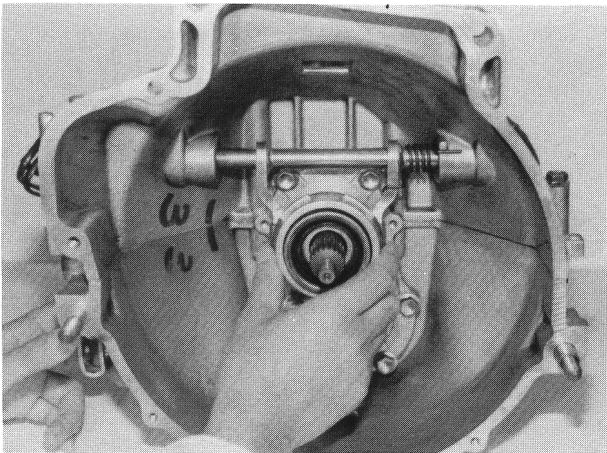


Fig. 13-4

- 2) Remove input shaft bearing retainer bolts and pull out retainer by using 3 conventional 6 mm bolts.

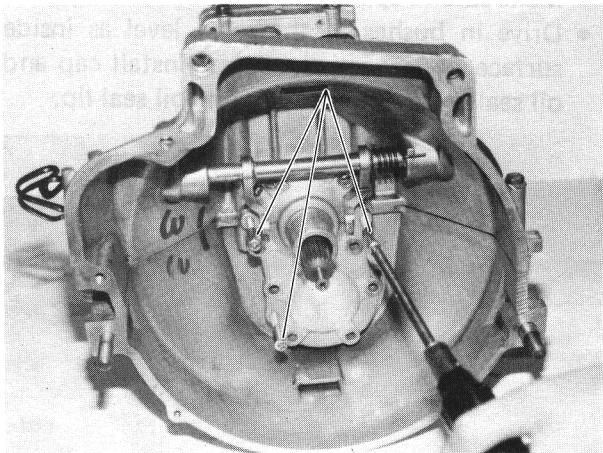


Fig. 13-4-1

- 3) Remove bolts securing extension case to transmission case and reverse shift rim bolt ①. Then take off extension case.

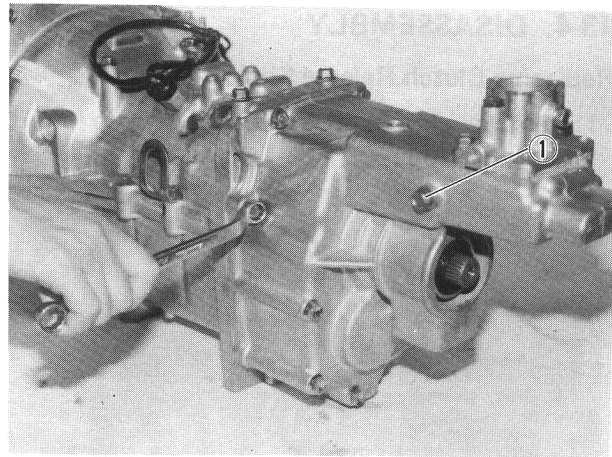


Fig. 13-4-2

- 4) Remove bolts fastening upper and lower cases together, separate the two, and take out main shaft assembly. A steel bar, similar in shape to screwdriver, may have to be used to pry two cases apart, as shown. In such a case, do not stick bar too far into between two mating faces, or faces may become damaged.

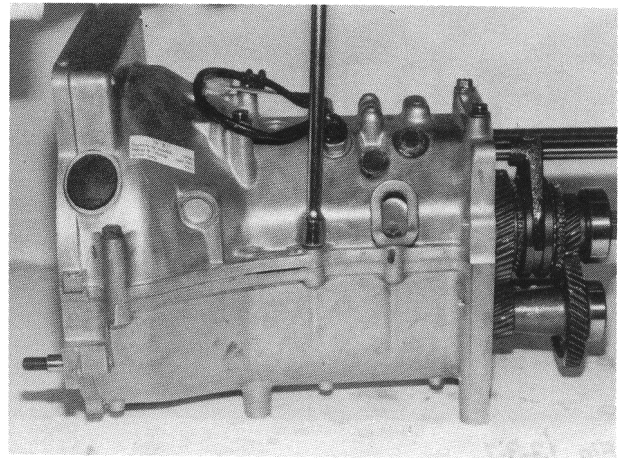


Fig. 13-5

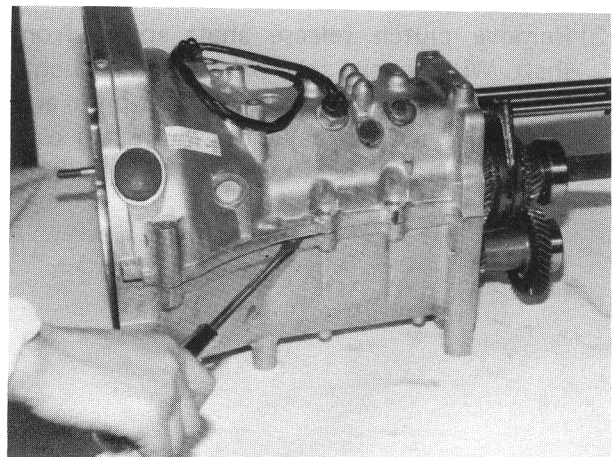


Fig. 13-5-1

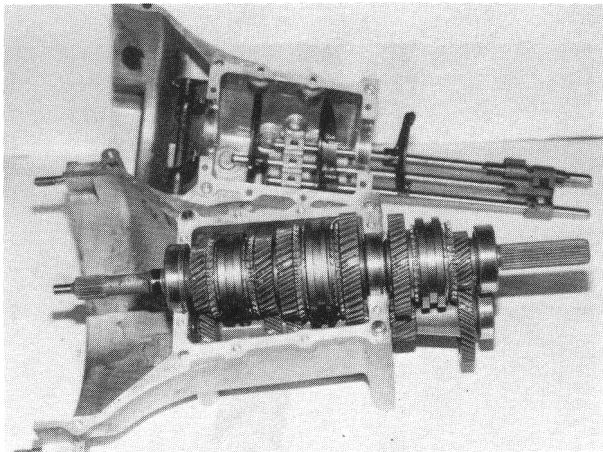


Fig. 13-5-2

Removing Countershaft

- 1) Remove reverse gear shaft with gear.

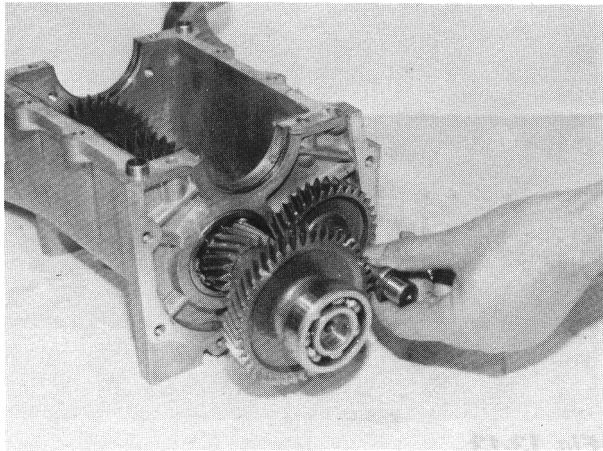


Fig. 13-6

- 2) Remove countershaft rear bearing.

Bearing puller (B) (09913-65135)

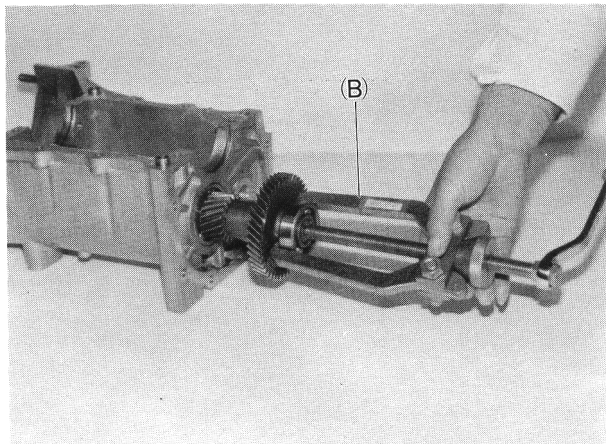


Fig. 13-7

- 3) Remove counter-shaft 5th gear and counter-shaft reverse gear.

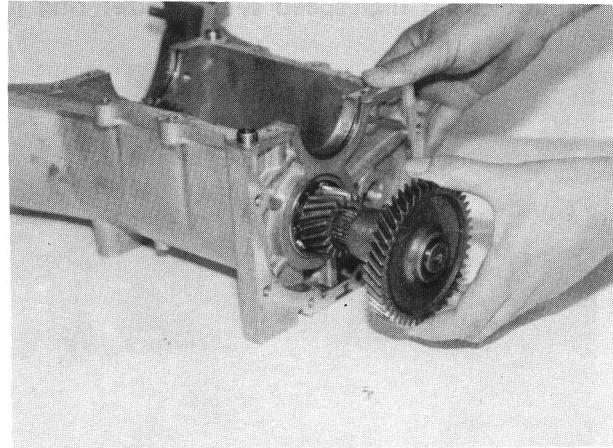


Fig. 13-8

- 4) Remove circlip from countershaft. Push out countershaft to extension case side by using hydraulic press, remove bearing, and take countershaft assembly out of case.

Bearing puller (B) (09913-65135)

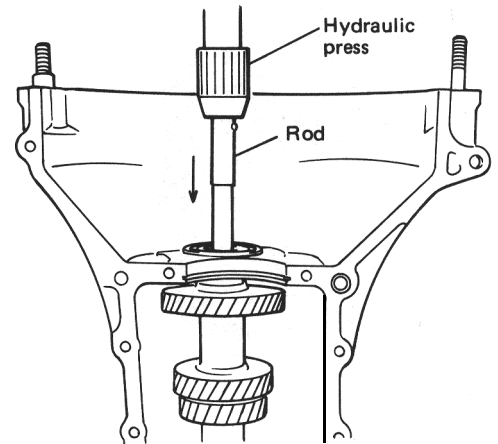


Fig. 13-9

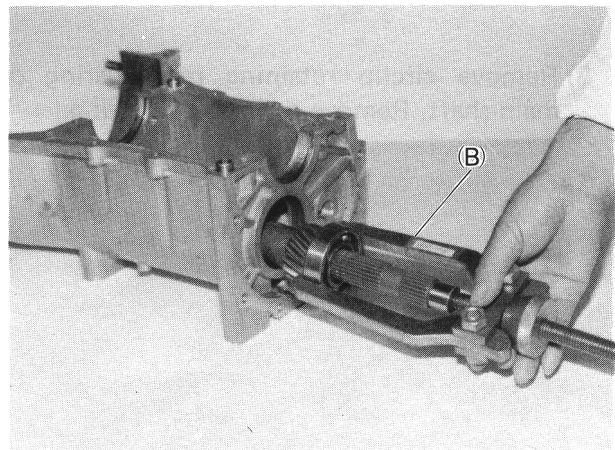


Fig. 13-9-1

Removing Main Shaft and Input Shaft

- 1) Take out input shaft by hand, taking care not to let high-speed synchronizer ring fall off.

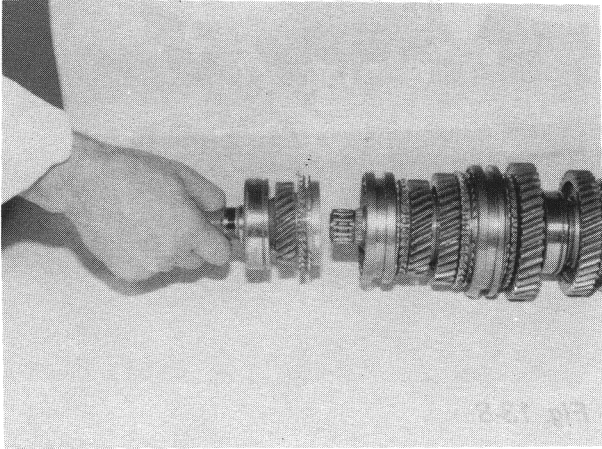


Fig. 13-10

- 2) Remove circlip retaining hub of high-speed synchronizer sleeve, and slide off sleeve hub, third driven gear and needle bearing from main shaft.

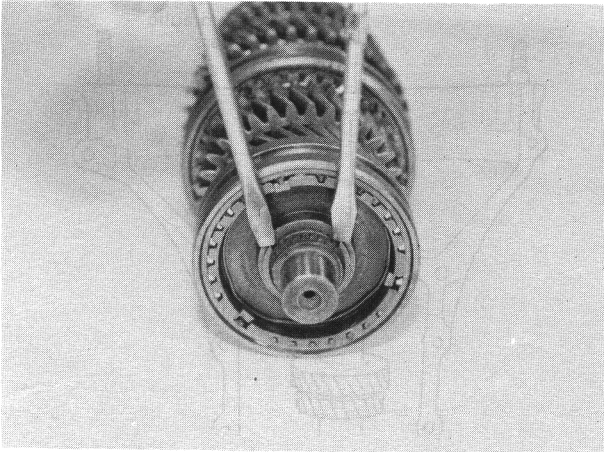


Fig. 13-1 1

- 3) Remove circlip retaining rear bearing on main shaft. Remove main shaft bearing.

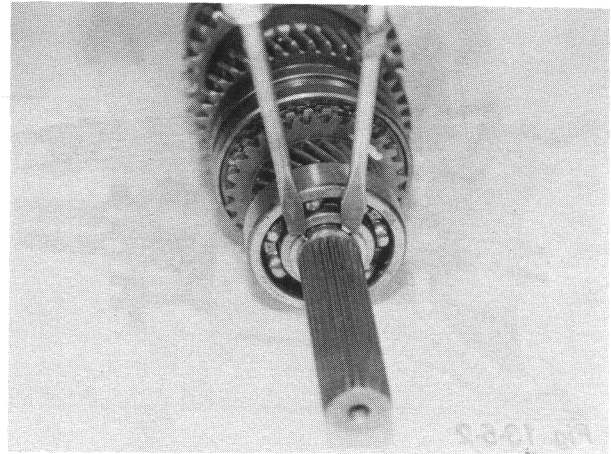


Fig. 13-12

Bearing puller (B) (09913-65135)

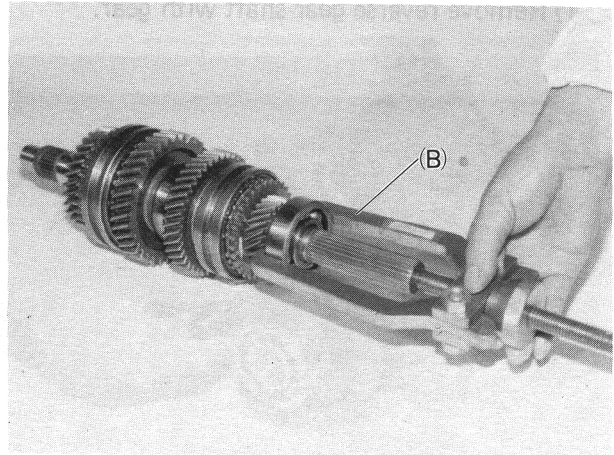


Fig. 13-13

- 4) From main shaft, take off 5th gear washer, ball, 5th gear, 5th speed synchronizer ring and 5th gear needle bearing,

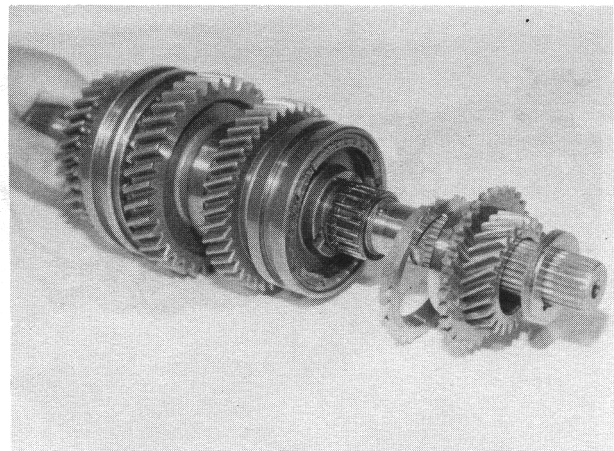


Fig. 13-14

5) Remove circlip retaining the reverse synchronizer hub on main **shaft**.

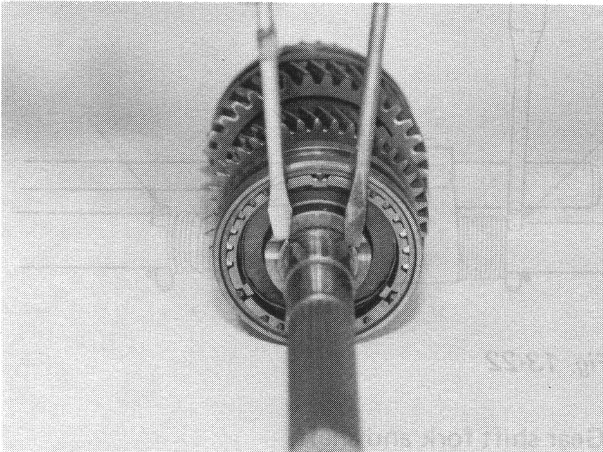


Fig. 13-15

6) Remove reverse synchronizer hub, reverse gear and reverse gear needle bearing.

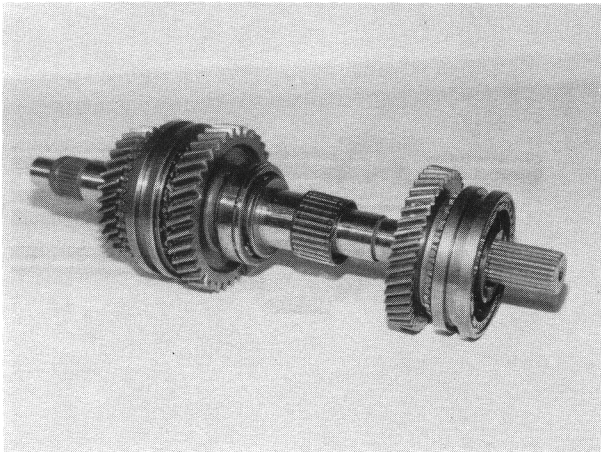


Fig. 13-16

7) Remove bearing washer and reverse gear bush on main shaft by using hydraulic press.

NOTE:

During this removal, watch out for a ball which may fall off. It must not be lost. Also, ball bearing should not be removed together with above washer and bush.

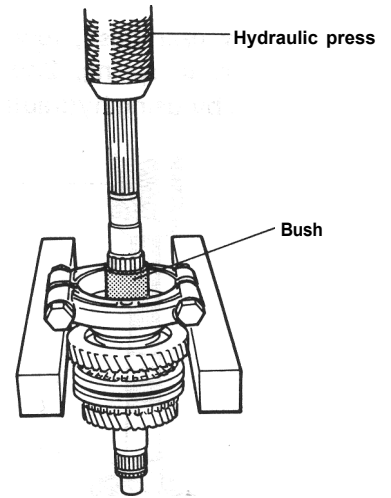


Fig. 13-17

8) Remove ball and main shaft (center) bearing by using hydraulic press.

NOTE:

In the state as shown below, there is a ball in washer which is located under bearing. Be sure to prevent it from falling off and getting lost.

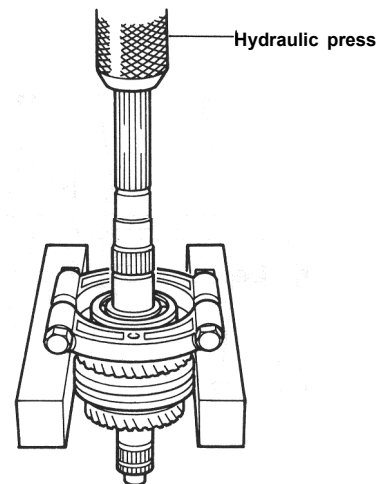


Fig. 13-18

9) Remove low gear, needle bearing, synchronizer ring and spring on main shaft.

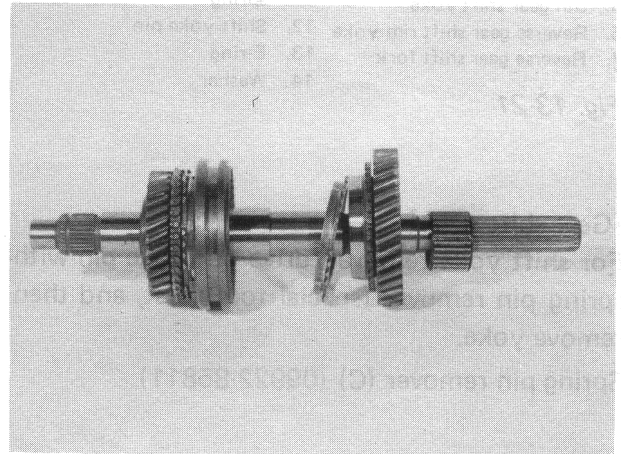


Fig. 13-19

10) Remove low gear bush, low speed synchronizer hub, ring, spring, 2nd gear and 2nd gear bearing by using hydraulic press.

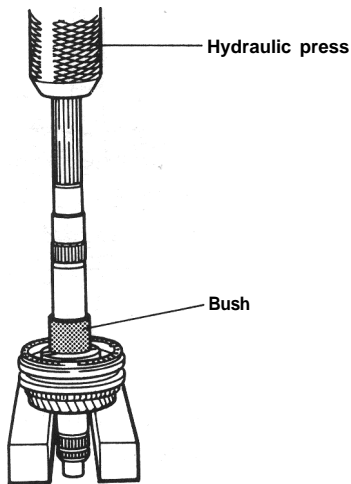
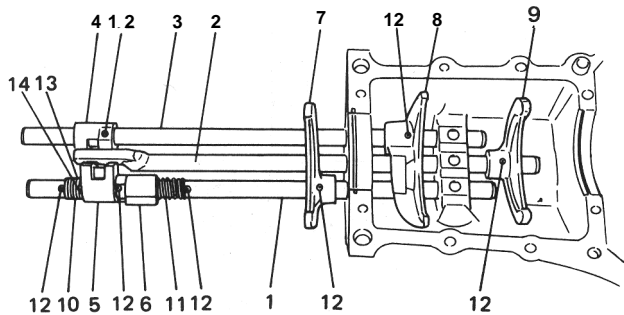


Fig. 13-20

Removing Shift Yokes, Forks and Shafts



- | | |
|--------------------------------|-----------------------------------|
| 1. Reverse gear shift shaft | 8. Low speed gear shift fork |
| 2. High speed gear shift shaft | 9. High speed gear shift fork |
| 3. Low speed gear shift shaft | 10. 5th select return spring |
| 4. Low speed gear shift yoke | 11. Reverse gear shift rim spring |
| 5. 5th gear shift yoke | 12. Shift yoke pin |
| 6. Reverse gear shift rim yoke | 13. E-ring |
| 7. Reverse gear shift fork | 14. Washer |

Fig. 13-21

[Gear shift yoke]

For shift yoke removal, drive out yoke pin with spring pin remover (special tool) first, and then remove yoke.

Spring pin remover (C) (09922-85811)

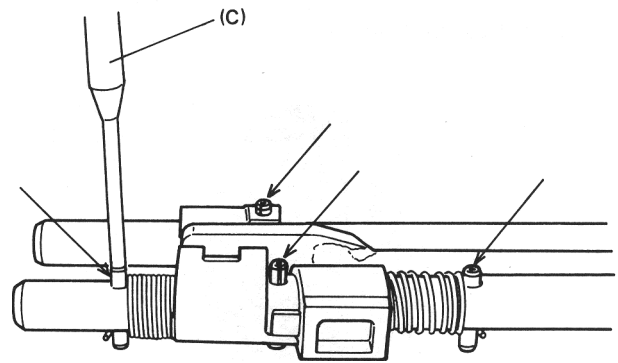


Fig. 13-22

[Gear shift fork and shaft]

Before starting removal, make sure that all shift fork shafts in place are in neutral position and remove each fork and shaft according to following 1), 2) and 3).

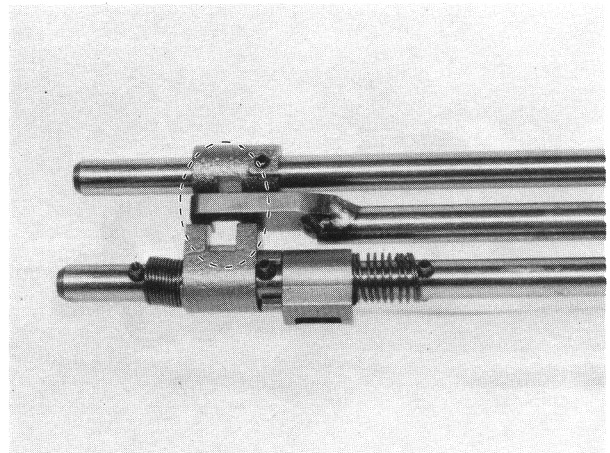


Fig. 13-23 Neutral position

1) Pull out reverse gear shift shaft. As this shaft comes out, locating ball and spring will jump out of hole; do not let them fly away.

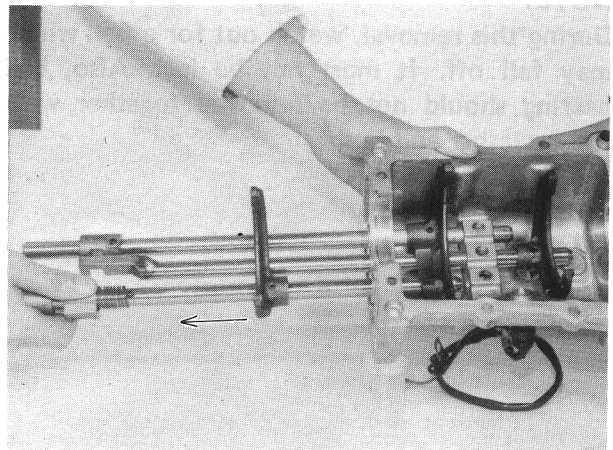


Fig. 13-24

- Using the same special tool (C), mentioned above, drive out yoke pin on high speed gear shift fork, and pull out shift shaft. As in above case, be careful not to let locating ball, interlock ball and spring fly away.

CAUTION:

When removing yoke pin, be sure not to drive it out so far as to contact case. Or it will cause damage to case.

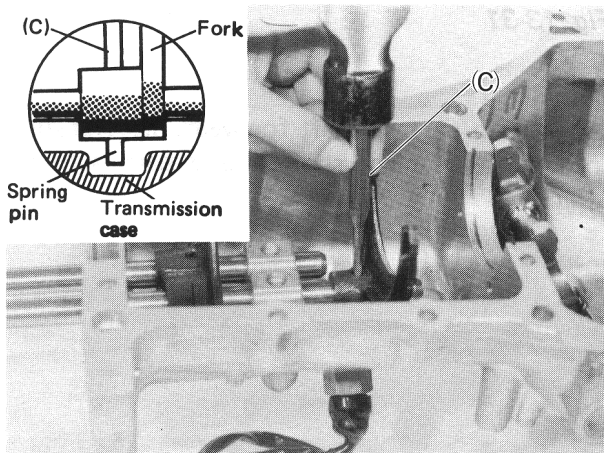


Fig. 13-25

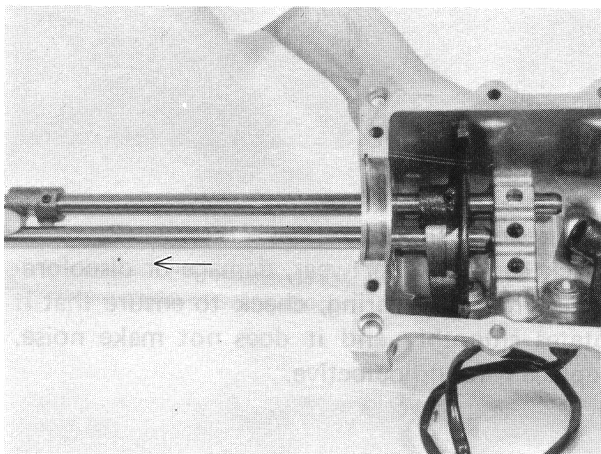


Fig. 13-26

- Drive yoke pin out of low speed gear shift fork as in above step 2) and pull out fork shaft and fork.

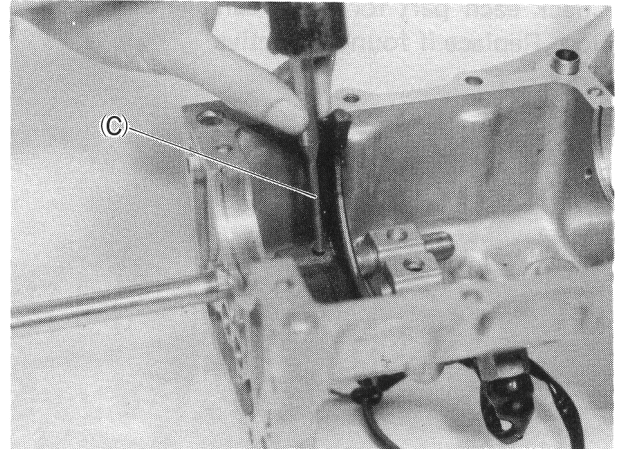


Fig. 13-27

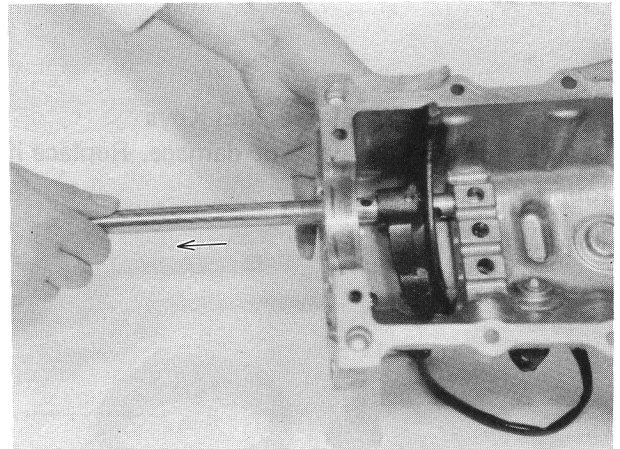


Fig. 13-28

13-5. INSPECTION OF COMPONENTS

Gears

Check each part for wear, damage or discoloration. Replace if found defective.

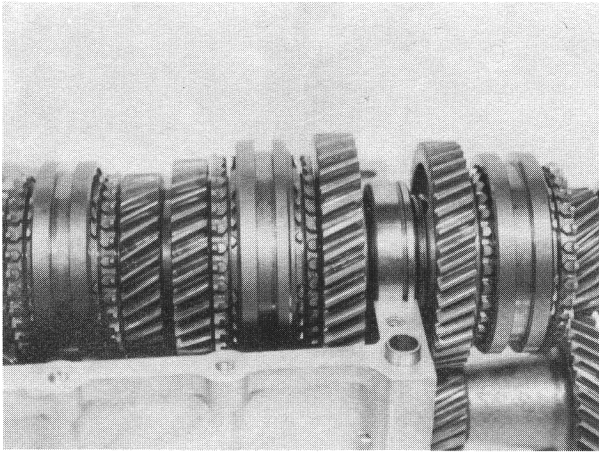


Fig. 13-29

Synchronizer Hubs, Sleeves and Keys

Check each part for wear or damage. Replace if found defective.

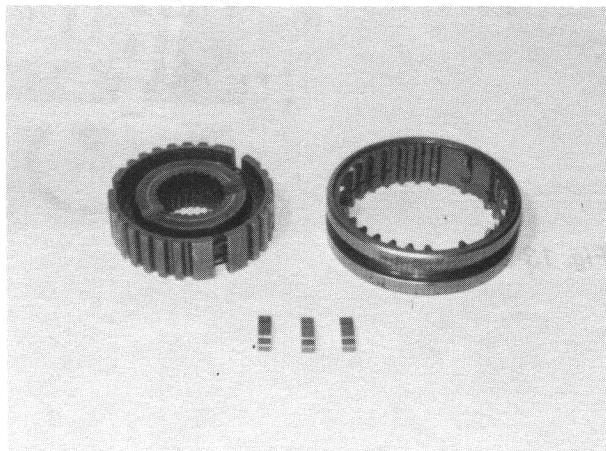


Fig. 13-30

Shift Forks and Sleeves

Check contact surfaces for wear or damage. Measure clearance between fork and sleeve.

Maximum clearance	1.0 mm (0.039 in)
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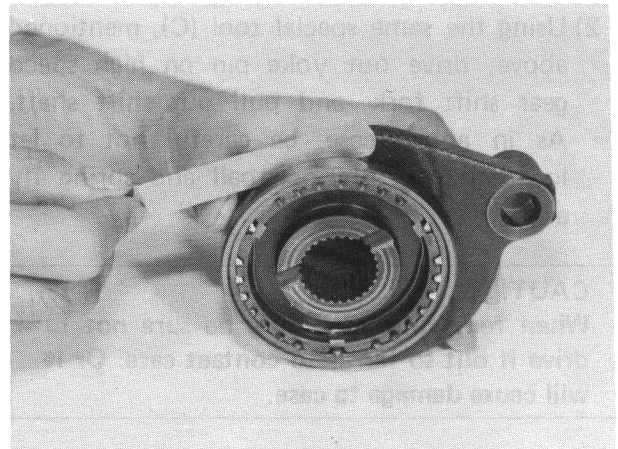


Fig. 13-31

Main Shaft

Check each part of shaft for wear, discoloration or damage. Replace shaft if any part is found defective.

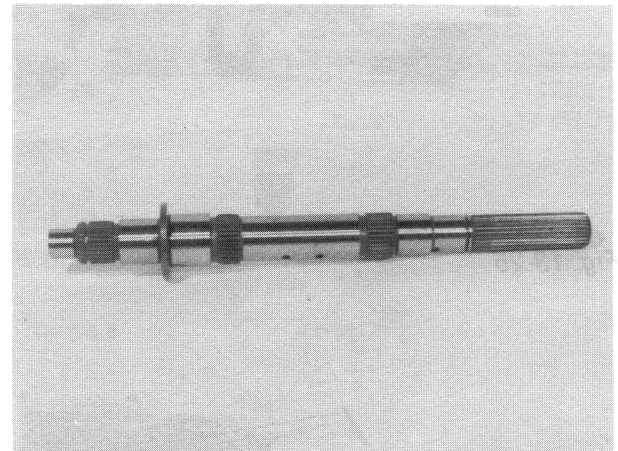


Fig. 13-32

Bearings and Bushes

Check each part for wear, damage or discoloration. With ball bearing, check to ensure that it rotates smoothly and it does not make noise. Replace if found defective.

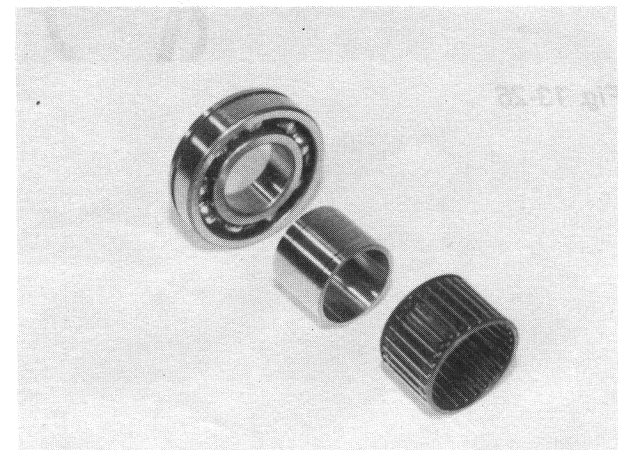


Fig. 13-33

Input Shaft

Referring to Fig. 13-34, inspect cone ① and toothed ring ② for wear and damage.

Inspect gear teeth ③ and splines ④ for wear and damage.

If any part of input shaft inspected as above is found excessively worn or badly damaged, replace shaft.

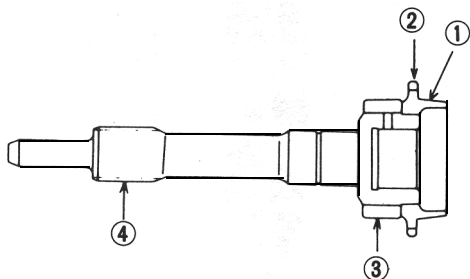


Fig. 13-34

Combination of Gear and Synchronizer Ring

Fit ring to cone of each gear, and measure clearance between the two at peripheral teeth, as shown in Fig. 13-35. If clearance exceeds service limit, replacement is necessary.

Clearance between gear and ring		
	Standard	Service limit
Low and High speed	1.0 – 1.4 mm (0.039 – 0.055 in.)	0.5 mm (0.019 in.)
5th speed	1.2 – 1.6 mm (0.047 – 0.063 in.)	0.5 mm (0.019 in.)

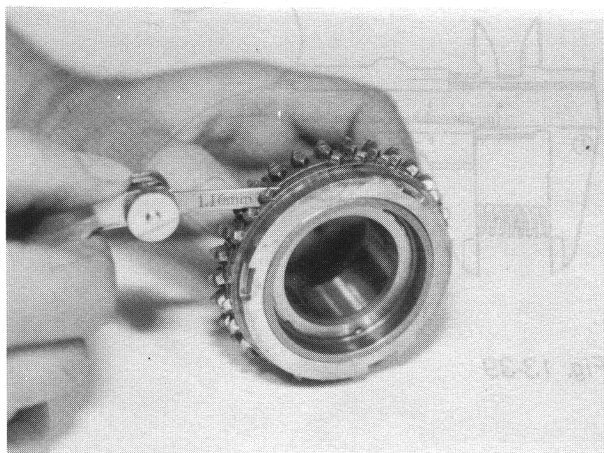


Fig. 13-35

Inspect external cone (of gear) and internal cone (of ring) for abnormal wear. Be sure that contact patterns on these surfaces indicate uniform full-face contact, and that surfaces are free from any wavy wear. A badly worn member must be replaced.

Proper synchronizing action on gear shifting can be expected only when ring-to-gear clearance (Fig. 13-35) and condition of cone surfaces, among other things, are satisfactory.

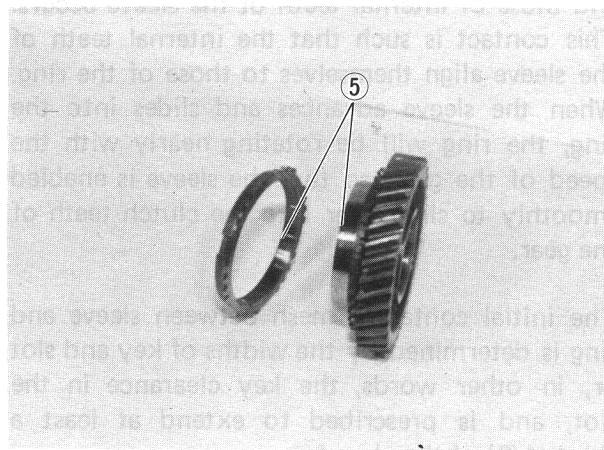


Fig. 13-36 ⑤ Checking contacting surface

Chamfered Tooth Ends of Ring (External Teeth) and Sleeve (Internal Teeth)

Synchronizer ring and hub have three slots each, in which keys are carried as backed by expanding springs, so that the hub and its two rings, one on each end, are capable of running together. Since the sleeve is engaged by its internal teeth with the hub as if the two were splined together, the sleeve, too, runs with the hub and rings.

In meshing action, the sleeve is pushed (by the shifter fork) to one side, so that it slides axially on the hub, pushing the ring toward the cone surface of the gear. This push is transmitted by three keys, which are lightly gripped by the sleeve.

By friction between the gear cone and ring cone (internal), the ring begins to rotate but is copposed by the hub because of keys. In other words, the ring is at this time twisted, while the sleeve is advancing further to push the ring fully against the gear cone, Since the ring is unable to slide along any further, the sleeve lets go off the keys and rides over to the ring. At this moment, the initial contact between the chamfered ends of teeth of the ring and those of internal teeth of the sleeve occurs. This contact is such that the internal teeth of the sleeve align themselves to those of the ring. When the sleeve advances and slides into the ring, the ring will be rotating nearly with the speed of the gear, so that the sleeve is enabled smoothly to slide over into the clutch teeth of the gear.

The initial contactor mesh between sleeve and ring is determined by the widths of key and slot or, in other words, the key clearance in the slot, and is prescribed to extend at least a third (1/3) of the chamfer.

With the synchronizer properly assembled on the shaft, push in and twist each synchronizer to see if one-third mesh occurs or not; if not, it means that the overall wear (which is the sum of wears of slots, keys and chamfered tooth ends) is excessive and, in such a case, the entire synchronizer assembly must be replaced.

Mesh of chamfered tooth ends of synchronizer ring and sleeve	Contact extending about 1/3 of chamfered face from apex
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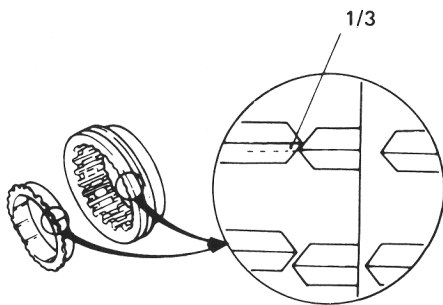


Fig. 13-37

Synchronizer Rings

Inspect each synchronizer ring for wear of its key slots by measuring width of each slot. If width reading exceeds limit, replace ring.

Key slot width of synchronizer ring	Standard	Service limit
	10.1 mm (0.397 in.)	10.4 mm (0.409 in.)

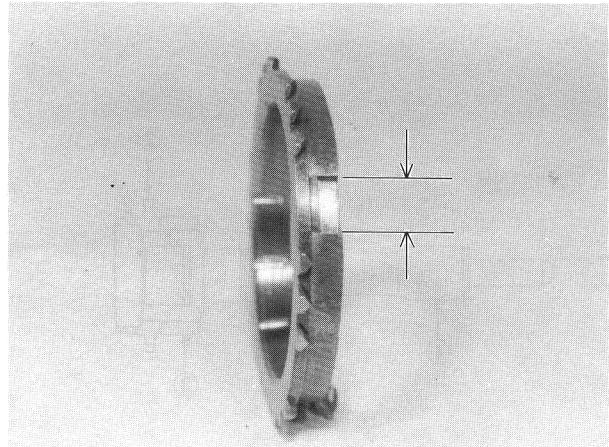


Fig. 73-38

Fork Shaft Locating Springs

If "gears slipping out of mesh" has been complained, check these springs for strength by measuring their free length, and replace them if their free lengths are less than service limit.

Spring No.	Standard	Service limit
Free length	25.5 mm (1.004 in.)	21.0 mm (0.826 in.)

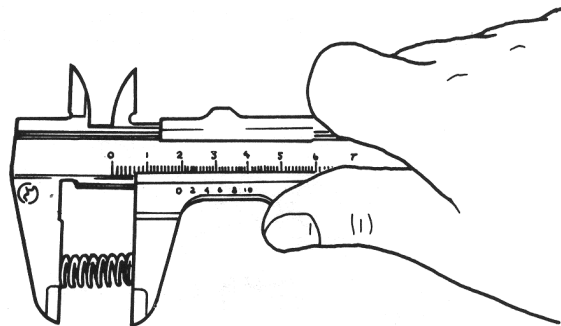


Fig. 73-39

Gear Shift Shafts

Check the part of shaft as indicated in below figure for uneven wear. Replace shaft if uneven wear is noted.

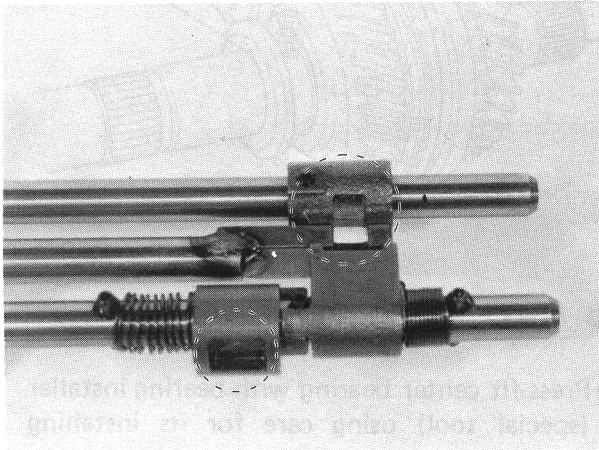


Fig. 13-40

Extension Case Bush

Check bush press-fitted in extension case for wear by measuring radial clearance between bush bore and sliding yoke. If sliding yoke rattles in bush because of advanced wear it will cause propeller shaft to rattle. For this reason, an extension case found to allow its sliding yoke to rattle in excess of service limit must be replaced; replacement of bush alone is not permissible.

Rattle of sliding yoke in extension case bush	Standard	Service limit
	0.025 – 0.089 mm (0.0010 – 0.0035 in.)	0.2 mm (0.0078 in.)

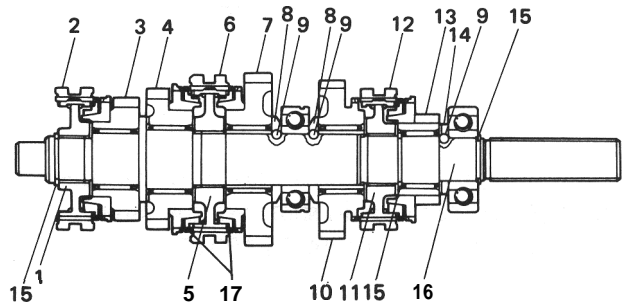
13-6. IMPORTANT STEPS IN INSTALLATION

NOTE:

- Before installation, wash each part and apply specified gear oil to sliding faces of bearing and gear.
- Use new circlips on shaft for reinstallation. Don't reuse used circlips.
- Tighten each fastening bolt and nut according to specified torque data listed on the last page of this section.

Main Shaft and Input Shaft

Install each parts by reversing respective removal procedures. Be careful for installing direction of each washer, gear, synchronizer hub and sleeve. Refer to figure below. Make sure to install each ball on main shaft.



- | | |
|-----------------------------------|---------------------------------|
| 1. High speed synchronizer hub | 6. Washer |
| 2. High speed synchronizer sleeve | 9. Ball |
| 3. 3rd gear | 10. Reverse gear |
| 4. 2nd gear | 11. Reverse synchronizer hub |
| 5. Low speed synchronizer hub | 12. Reverse synchronizer sleeve |
| 6. Low speed synchronizer sleeve | 13. 5th gear |
| 7. Low gear | 14. 5th gear washer |
| | 15. Circlip |
| | 16. Main shaft |
| | 17. Spring |

Fig. 13-4 1

1) Install 2nd gear bearing, 2nd gear, spring, synchronizer ring and low speed synchronizer hub/sleeve onto main shaft, using care for installing direction of synchronizer sleeve.

After putting on each synchronizer, be sure that 3 keys mounted on hub fit snugly into slots cut in ring.

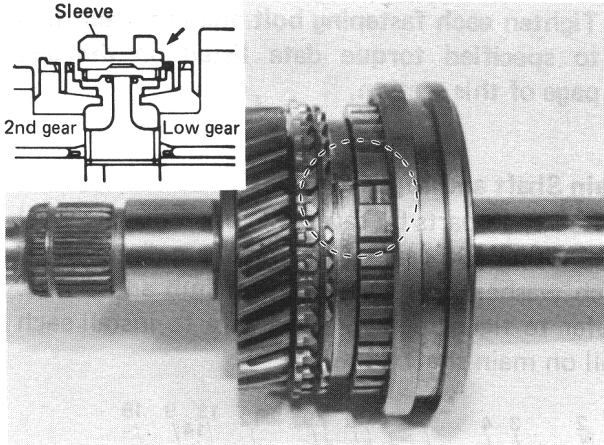


Fig. 13-42

Then using hydraulic press, press-fit low gear bush. 2 bushes on main shaft are the same.
Bearing installer (D) (09925-18010)

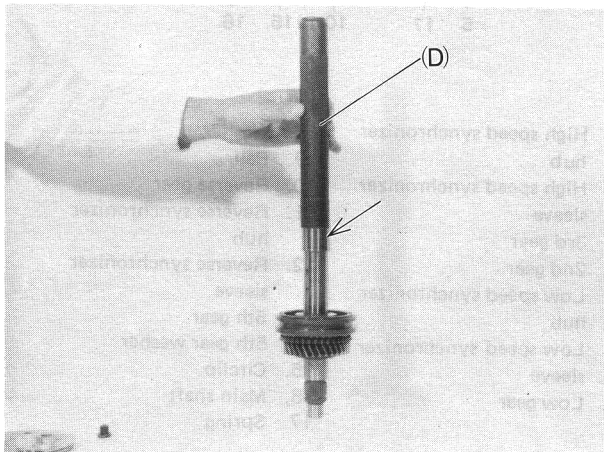


Fig. 13-43

2) Install low gear needle bearing, spring, synchronizer ring, low gear, ball and washer onto main shaft.

Fit ball into hole in shaft and install washer so that its slot ① comes over ball ③.

To direct washer correctly, bring its circumference chamfered side ② to main shaft center bearing.

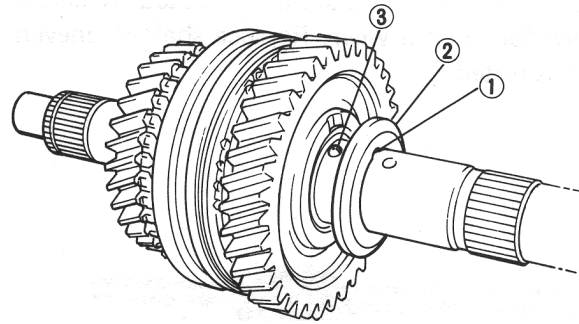


Fig. 13-44

3) Press-fit center bearing with bearing installer (special tool) using care for its installing direction.

Bearing installer (D) (09925-18010)

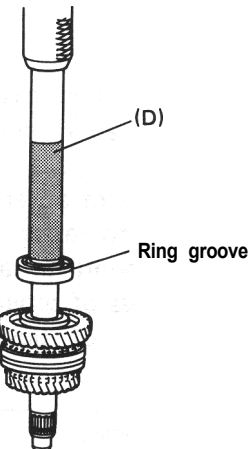


Fig. 13-45

4) Install ball and washer.

As figure shows, install washer so that its circumference chamfered side faces center bearing ① and its slot ② comes over ball ③.

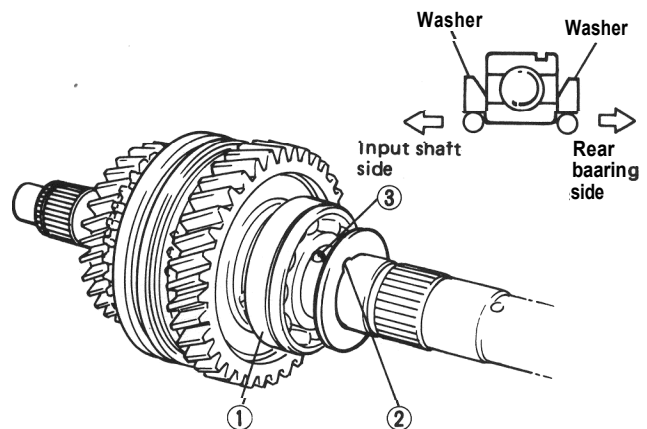


Fig. 13-46

- 5) Press-fit reverse gear bush, preventing ball installed in step 4) from coming off.
 Bearing installer (D) (09925-I 8010)

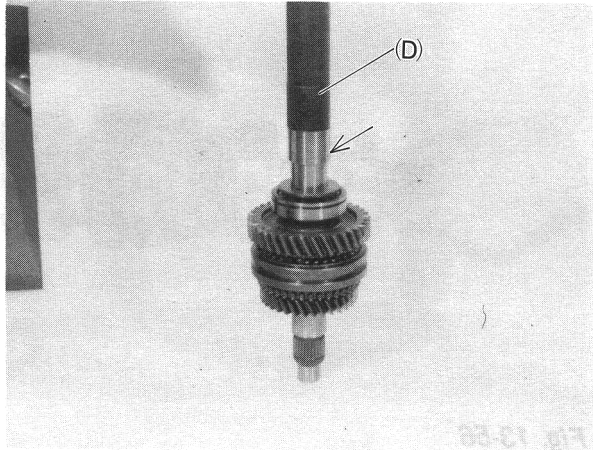


Fig. 13-47

- 6) Install reverse gear bearing, reverse gear and reverse synchronizer hub/sleeve. For proper direction, make sure to install hub so that the side whose inside boss ① is smaller in diameter and longer is directed to main shaft rear bearing, and sleeve so that the side whose inside is stepped ② is also directed to main shaft rear bearing.

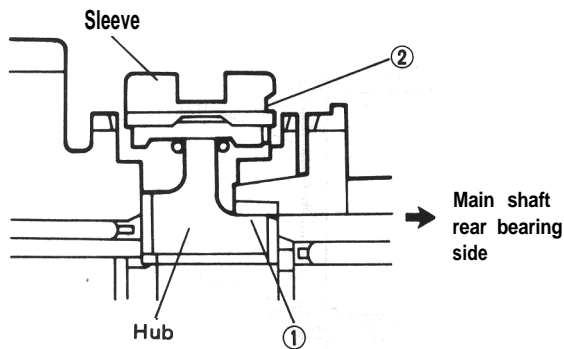


Fig. 13-48

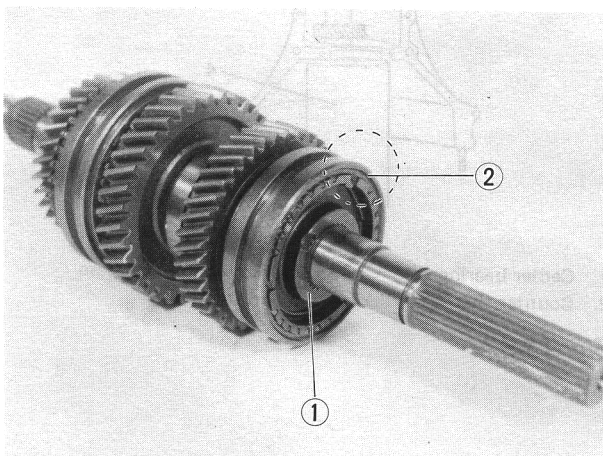


Fig. 1349

- 7) Fit reverse hub circlip into groove in main shaft.

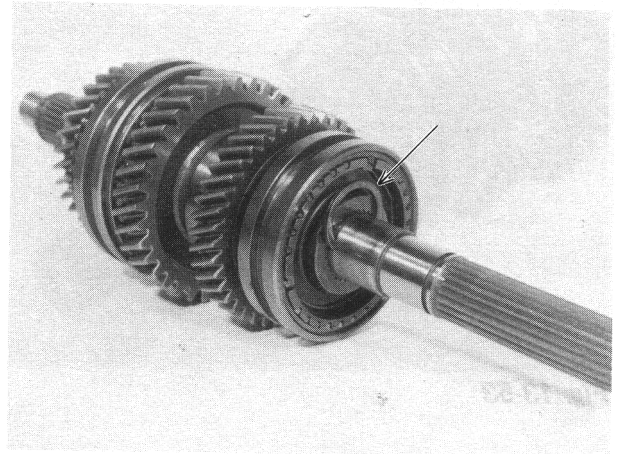


Fig. 13-50

- 8) Install 5th gear bearing, 5th gear synchronizer ring and 5th gear. Then install ball and washer, making oil groove of washer face 5th gear.

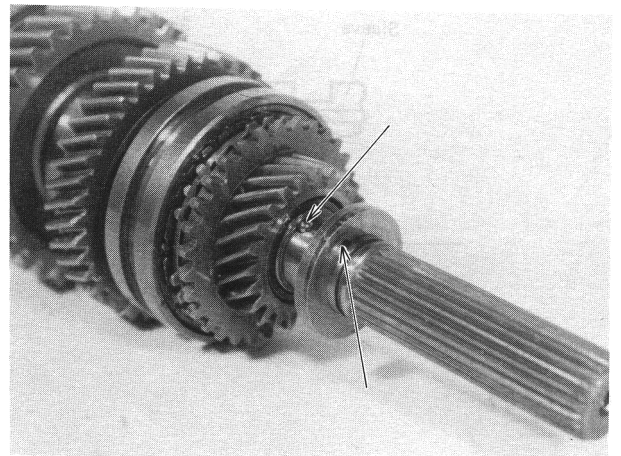


Fig. 13-51

- 9) Press-fit main shaft rear bearing and fit circlip into groove in main shaft.
 Bearing installer (D) (09925-18010)

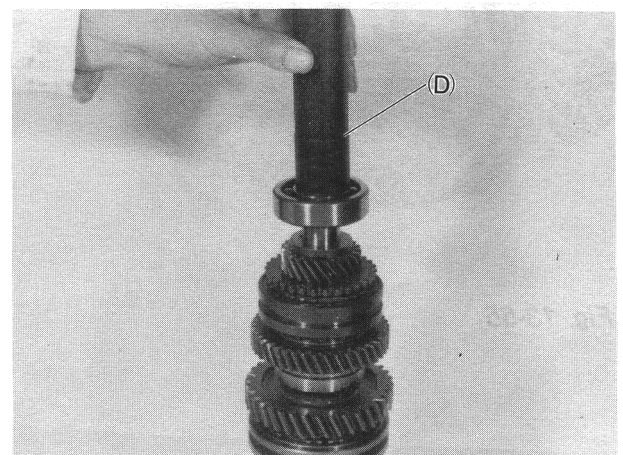


Fig. 13-52

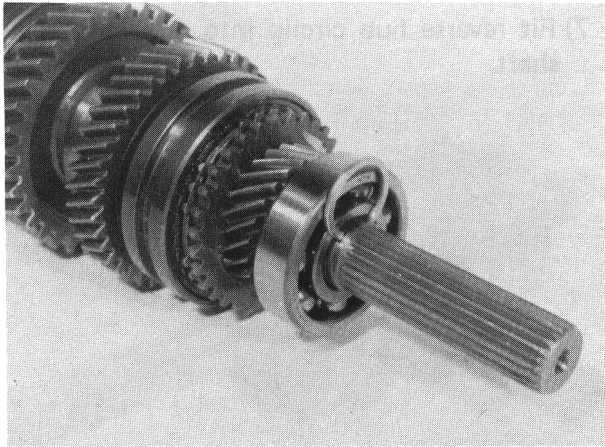


Fig. 13-53

10) Install 3rd gear bearing, 3rd gear, high speed synchronizer ring and hub/sleeve. When installing hub, direct the side with larger outer diameter boss to 3rd gear side. Then fit circlip into groove in main shaft.

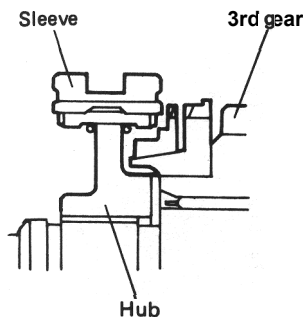


Fig. 13-54

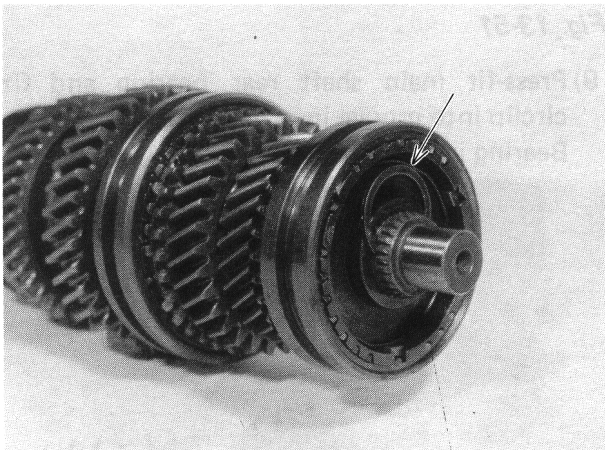


Fig. 13-55

11) Install synchronizer ring, needle bearing and input shaft.

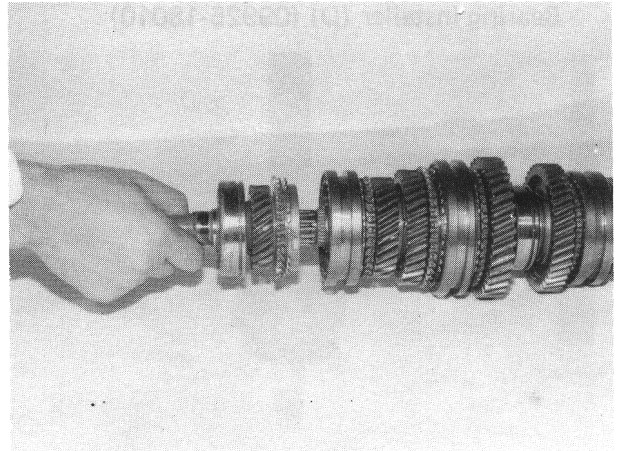
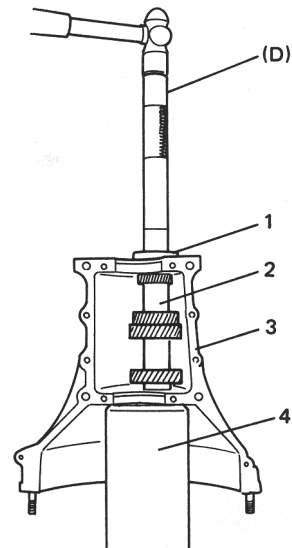


Fig. 13-56

Counter Shaft and Reverse Idle Gear

1) Drive counter shaft front bearing into lower case. Then using plastic hammer, drive counter shaft into front bearing a little. In the above state, using bearing installer (special tool), drive center bearing onto counter shaft and into lower case.

Bearing installer (D) (09925-18010)



1. Center bearing
2. Counter shaft

3. Transmission lower case
4. Wood stand

Fig. 13-57

2) Fit counter shaft front circlip into groove in shaft.

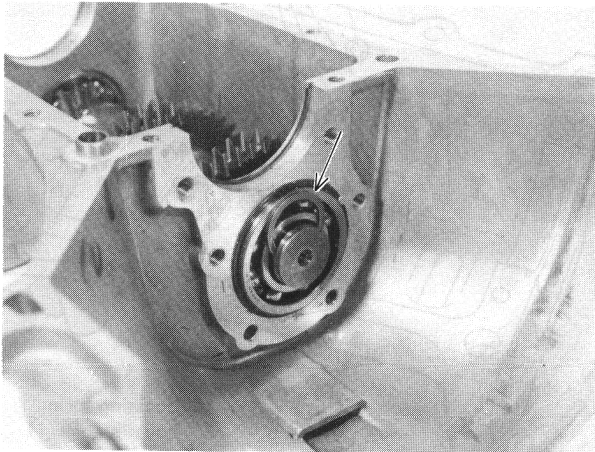


Fig. 13-58

3) Install counter shaft reverse gear and 5th gear onto counter shaft. And then drive counter shaft rear bearing onto it.

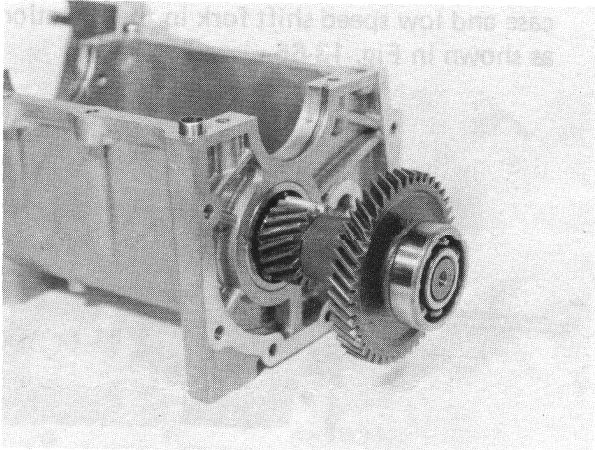


Fig. 13-59

4) Install idle gear and washer onto reverse gear shaft and pin into it. Install above as assembled into lower case with pin ① and washer tongue ② aligned as shown below.

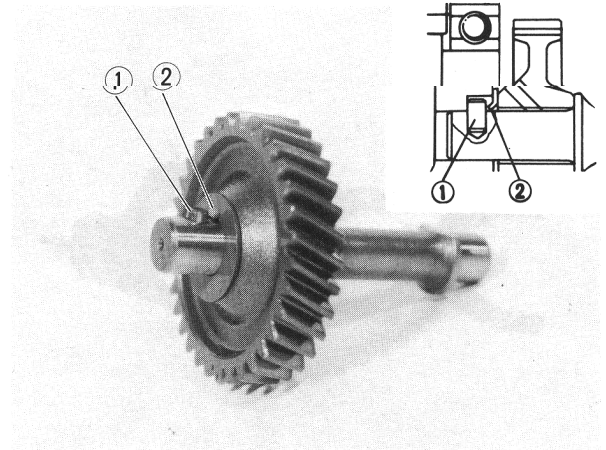


Fig. 13-60

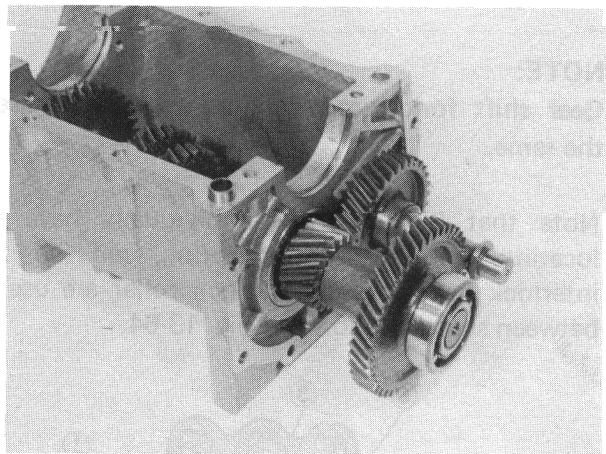


Fig. 13-61

Shifter Forks, Shafts and Yokes [Forks and Shafts]

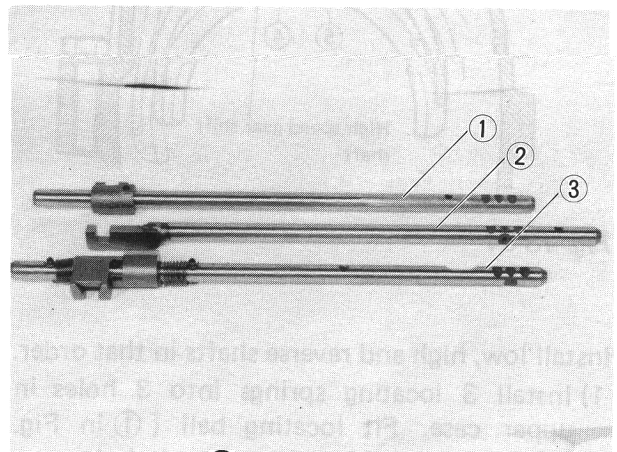


Fig. 13-62

- ① Low speed gear shift shaft
- ② High speed gear shift shaft
- ③ Reverse gear shift shaft

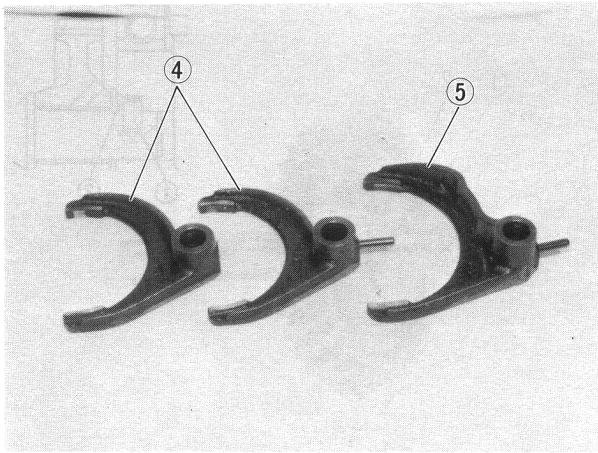


Fig. 13-63

- ④ High and reverse gear shift fork
- ⑤ Low speed gear shift fork

NOTE:

Gear shift forks used for high and reverse are the same.

Note that 3 shift shafts individually have a locating ball and locating spring, and that 2 interlock balls and an interlock roller are used between shafts as shown in Fig. 13-64.

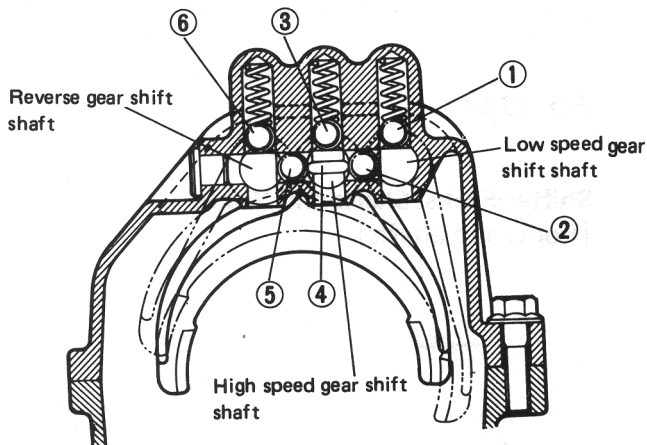


Fig. 13-64

Install low, high and reverse shafts in that order.

- 1) Install 3 locating springs into 3 holes in upper case. Fit locating ball (① in Fig. 13-64) on top of locating spring in hole.

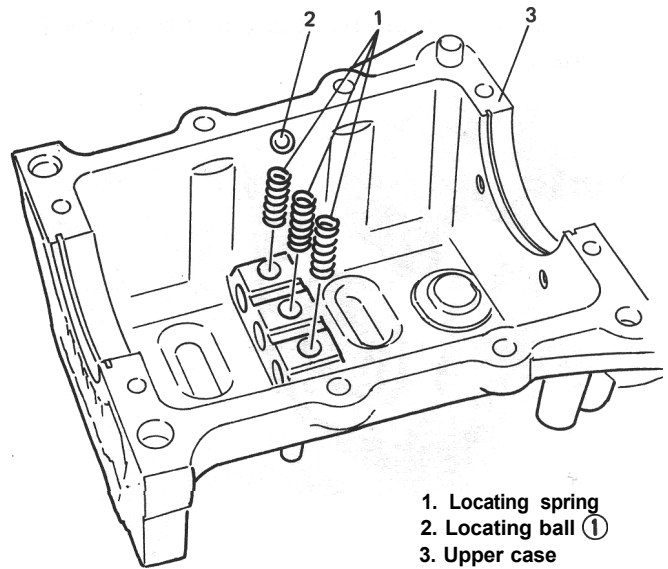


Fig. 13-65

- 1. Locating spring
- 2. Locating ball ①
- 3. Upper case

- 2) Insert low speed gear shift shaft into upper case and low speed shift fork in the direction as shown in Fig. 13-66.

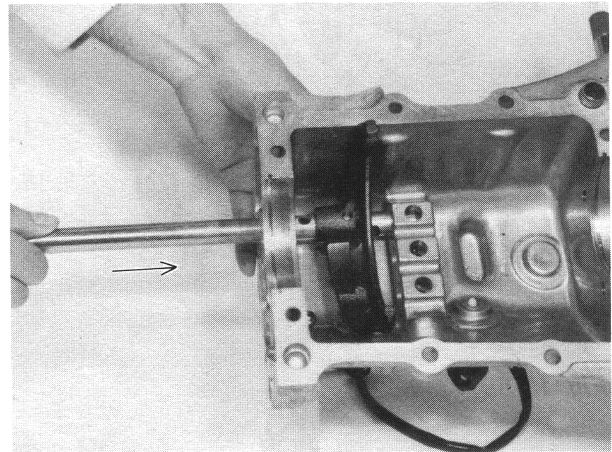


Fig. 13-66

- 3) As shown below, push down low speed gear shift shaft locating ball to pass shaft over it and keep inserting shaft until locating ball fits in center slot of 3 continuous slots in shaft.
Drive shift yoke pin into fork and shaft.

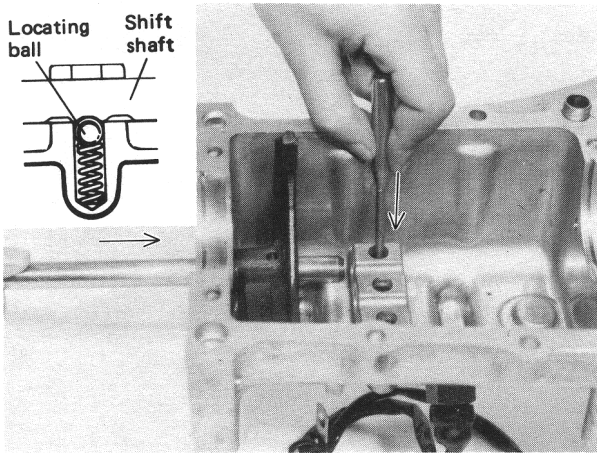


Fig. 13-67

- 4) Install interlock ball (② in Fig. 1364) and locating ball (③ in Fig. 13-64) in upper case. After installing interlock roller (④ in Fig. 1364) in high speed gear shift shaft and insert shaft into upper case as described in 2) and 3).

Fork should be installed in such direction as shown in Fig. 13-68. Then drive shift yoke pin until it becomes flush with outer surface of fork.

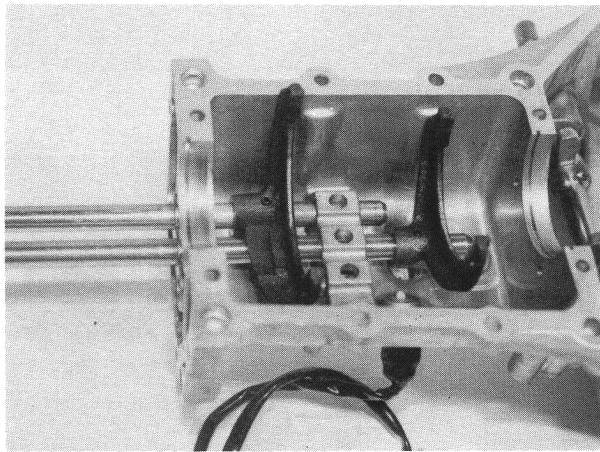


Fig. 13-68

- 5) Install interlock ball (⑤ in Fig. 1364) and locating ball (⑥ in Fig. 13-64) into upper case. Then insert reverse gear shift shaft into upper case as described in 2) and 3).

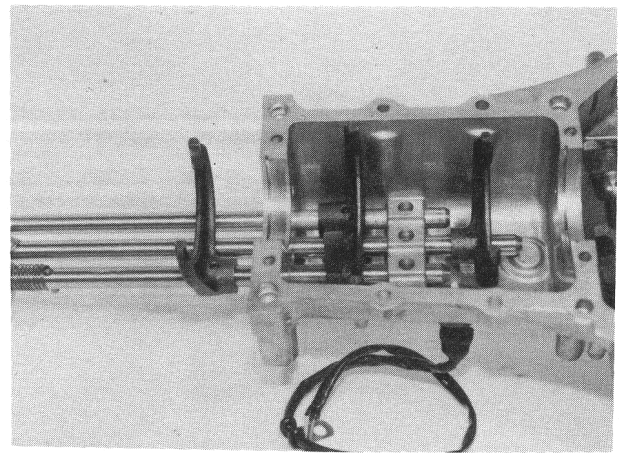


Fig. 13-69

[Yokes]

- 1) Install low speed gear shift yoke as shown below, using care for its direction.

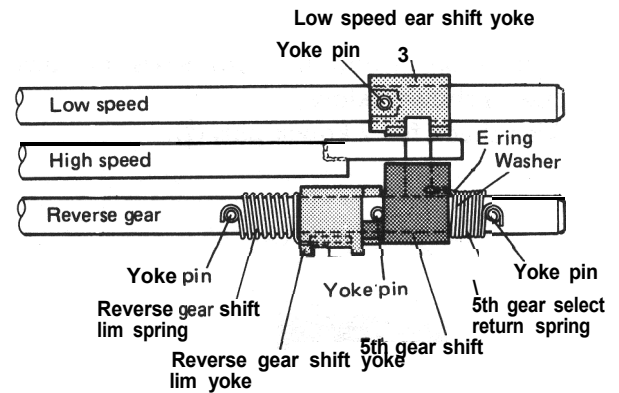


Fig. 13-70

- 2) Install reverse gear shift yoke and 5th gear shift yoke as shown below. Use care for installing direction of each part. Between 2 springs, shorter one is 5th select return spring.

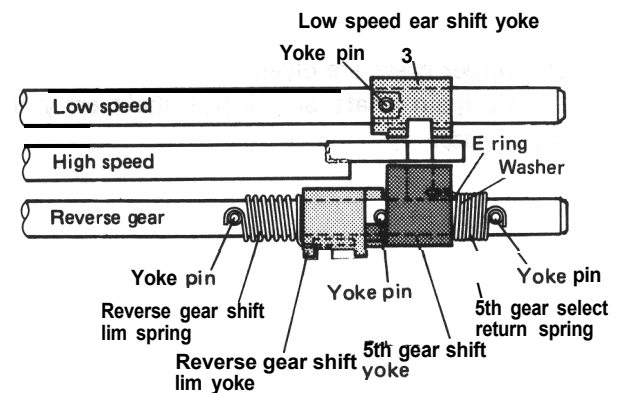


Fig. 13-71

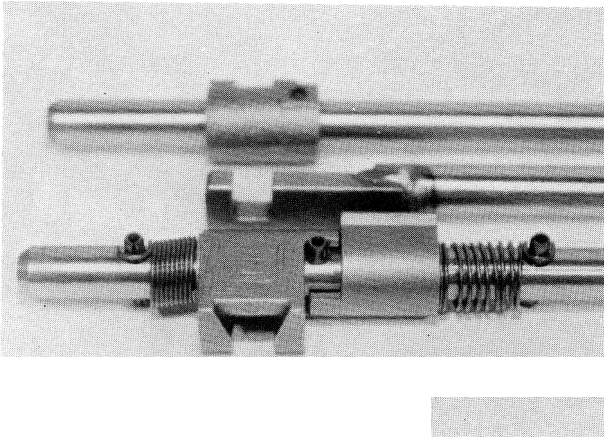


Fig. 13-72

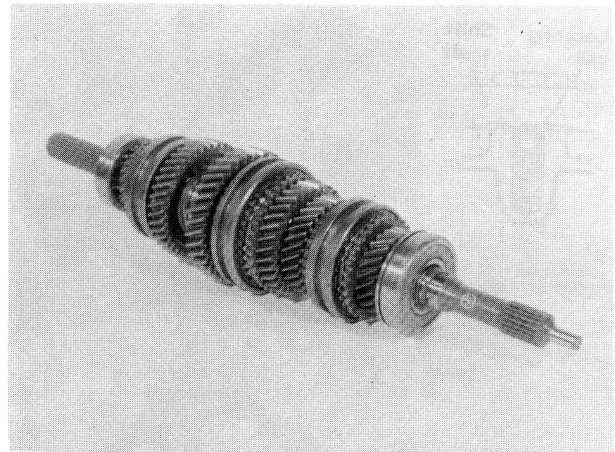


Fig. 13-74 Main shaft and input shaft assembly

Transmission Lower Case and Upper Case

- 1) With counter shaft ass'y, reverse idle gear and reverse gear shaft installed in lower case, check to ensure that bearing stopper rings ① are fitted in both sides of lower case as shown below. Also check for 2 knock pins ②.

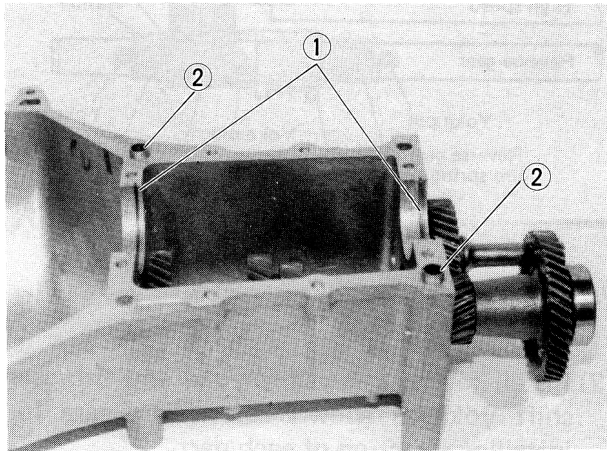


Fig. 13-73

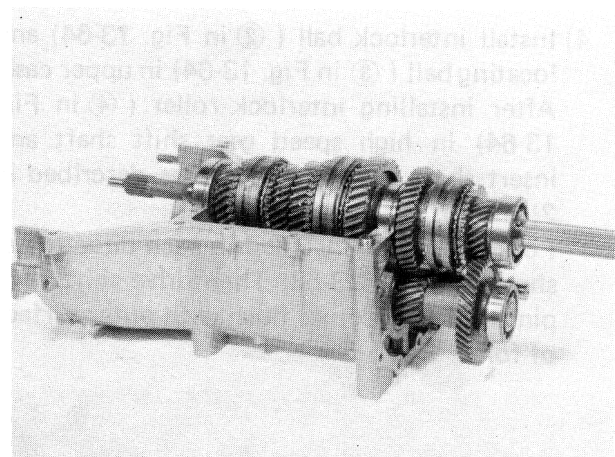


Fig. 13-75

- 2) Make sure that mating surfaces of both lower and upper cases are clean.
- 3) Install main shaft and input shaft ass'y in lower case.

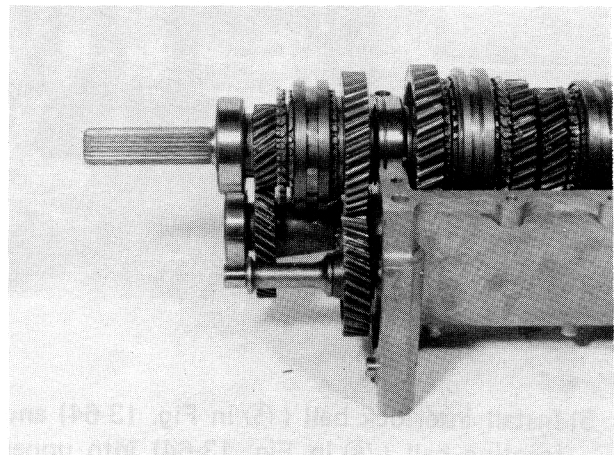


Fig. 13-76

- 4) Uniformly apply sealant (SUZUKI BOND NO. 1215, 99000-31110) to mating surface of lower case.

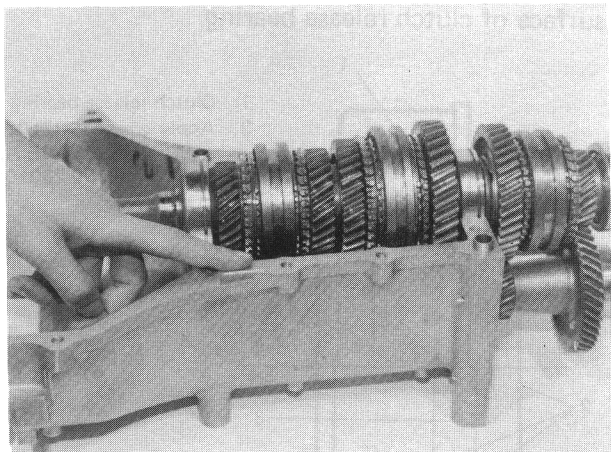


Fig. 13-77

- 5) Install upper case to lower case by matching 3 shift forks with 3 grooves in synchronizer sleeve on main shaft respectively.

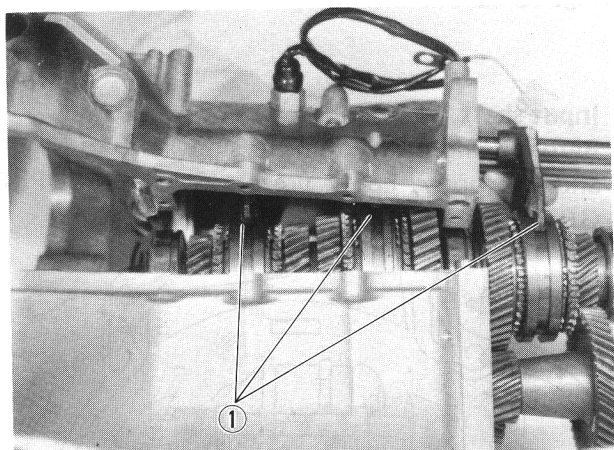


Fig. 13-78 ① Shift forks

- 6) Tighten case bolts to specification.

Tightening torque for transmission case bolts	N·m	kg·m	lb·ft
	18 - 28	1.8 - 2.8	13.5 - 20.0

Extension Case

- 1) Check to ensure that knock pins ① are fitted.

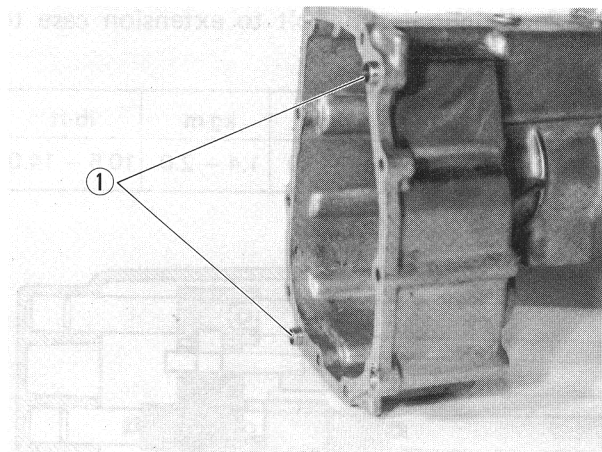


Fig. 13-79

- 2) Apply grease (SUZUKI SUPER GREASE A 99000-25010) to oil seal lip.
3) Clean surface of extension case to mate with transmission case and uniformly apply sealant (SUZUKI BOND No. 1215, 99000-31110).

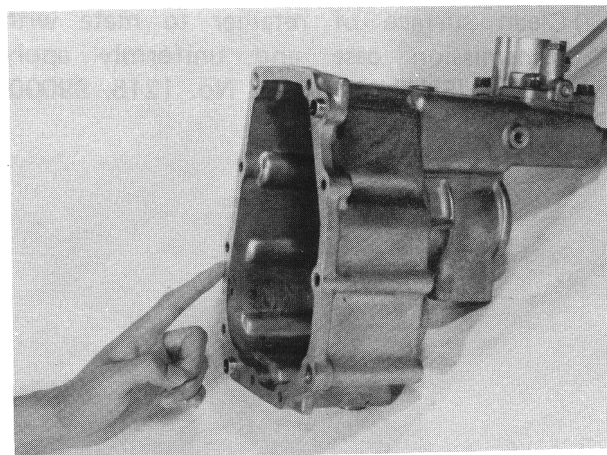


Fig. 13-80

- 4) Make sure that 3 shift shafts are in neutral position as shown in Fig. 13-23.
5) Install extension case to transmission case.
6) Tighten case bolts to specification.

Tightening torque for extension case bolts	N·m	kg·m	lb·ft
	18 - 28	1.8 - 2.8	13.5 - 20.0

7) Apply thread lock agent (THREAD LOCK CEMENT SUPER "1333B" 99000-32020) to thread of reverse gear shift rim bolt, And tighten rim bolt to extension case to specified torque.

Tightening torque for reverse gear shift rim bolt	N·m	kg·m	lb-ft
	14 - 20	1.4 - 2.0	10.5 - 14.0

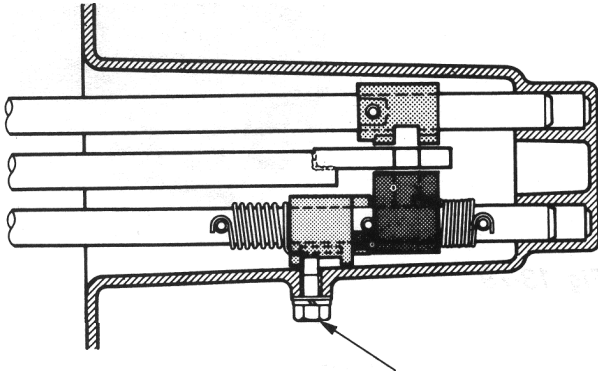


Fig. 13-81

Input Shaft Bearing Retainer

- 1) Apply grease (SUZUKI SUPER GREASE A 99000-25010) to oil seal lip.
- 2) Clean surface of retainer to mate with transmission case and uniformly apply sealant (SUZUKI BOND No. 1215, 99000-31110).

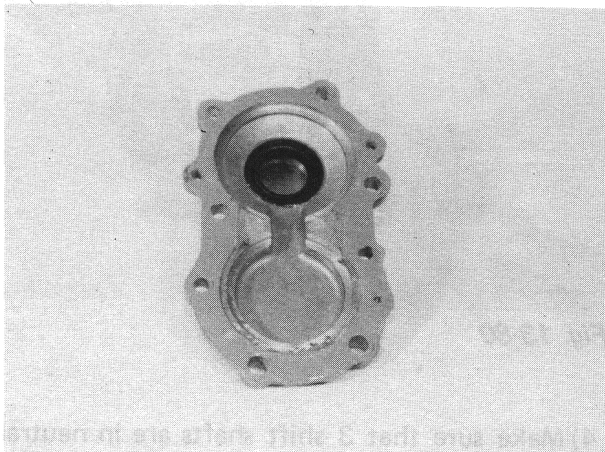


Fig. 13-82

3) Tighten retainer bolts to specification.

Tightening torque for retainer bolts	N·m	kg·m	lb-ft
	18 - 28	1.8 - 2.8	13.5 - 20.0

- 4) Check transmission input shaft for easy rotation by hand.
- 5) Check each select and shift shaft for operation.

Clutch Release Bearing

Before installing bearing, apply grease (SUZUKI SUPER GREASE A 99000-25010) to inner surface of clutch release bearing.

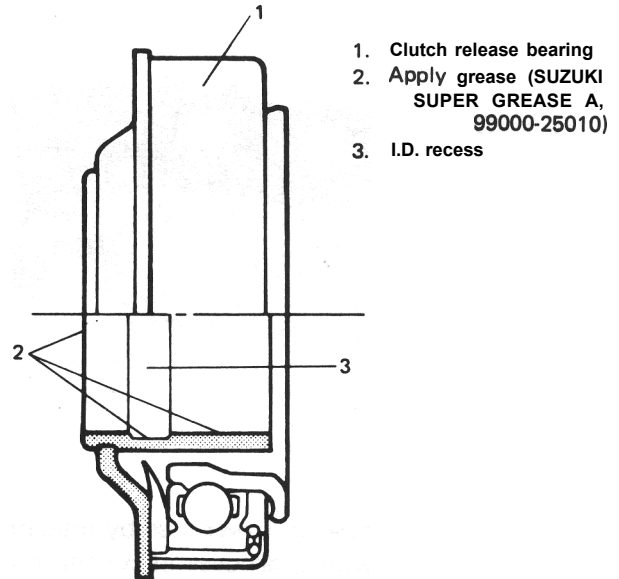


Fig. 13-83

Input shaft

Before remounting transmission ass'y to engine and car body, apply grease (SUZUKI SUPER GREASE I, 99000-25210) to input shaft.

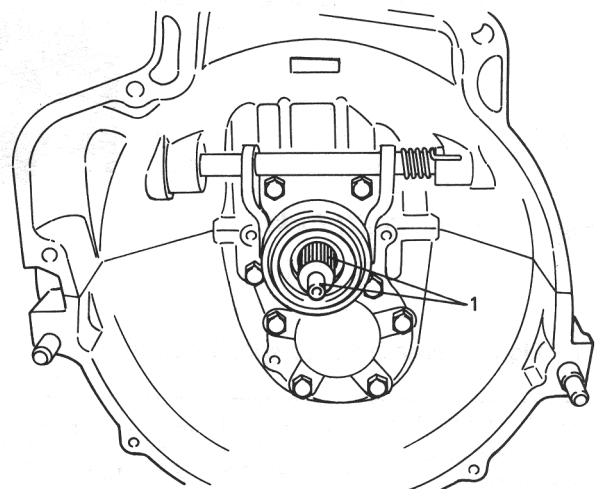


Fig. 13-84

1. Apply grease

Others

Upon completion of reassembly and installation of transmission ass'y in car body, pour specified amount of transmission oil into transmission, and check carefully for oil leakage. Refer to p. 13-25 for oil to be used and specified amount.

13-7. MAINTENANCE SERVICES

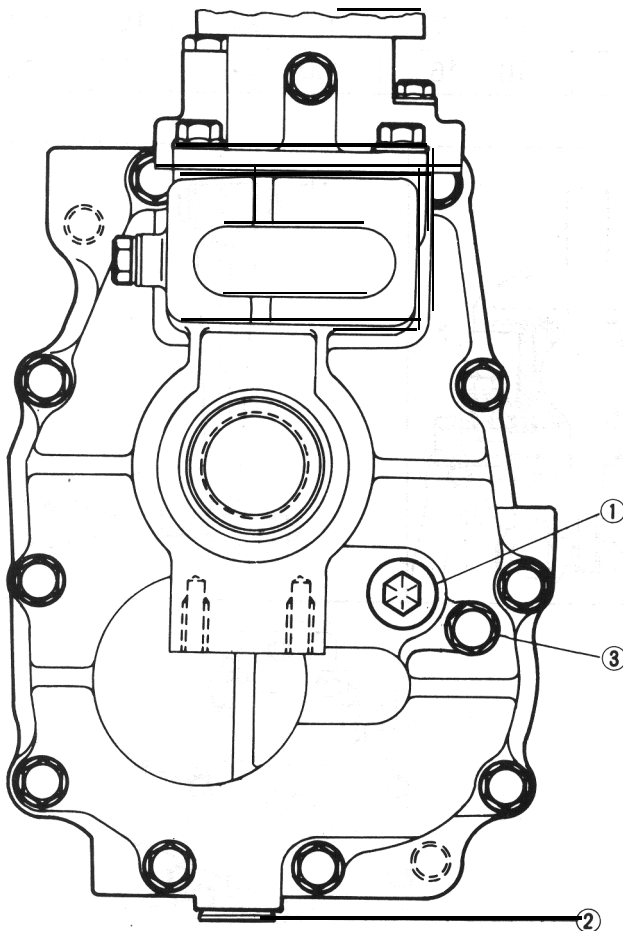
Transmission Oil

Before changing oil, check for oil leakage first and correct defects, if any. Fill specified new oil in specified amount.

Oil capacity	1.3 litres (2.75/2.29 US/Imp. pt.)
Oil specification	Gear oil, SAE 80W-90, 75W-80 or 75W-90

It is highly recommended to use SAE 75W-90 gear oil.

For viscosity chart, refer to P. I-20.



- ① Oil filler plug
- ② Oil drain plug
- ③ Oil level plug

Fig. 13-85

After filling transmission with oil, torque oil filler and drain plugs to specification.

Tightening torque for oil drain and filler plug	N·m	kg·m	lb·ft
	18-28	1.8-2.8	13.5-20.0
Tightening torque for oil level plug	10-16	1.0-1.6	7.5-11.5

NOTE:

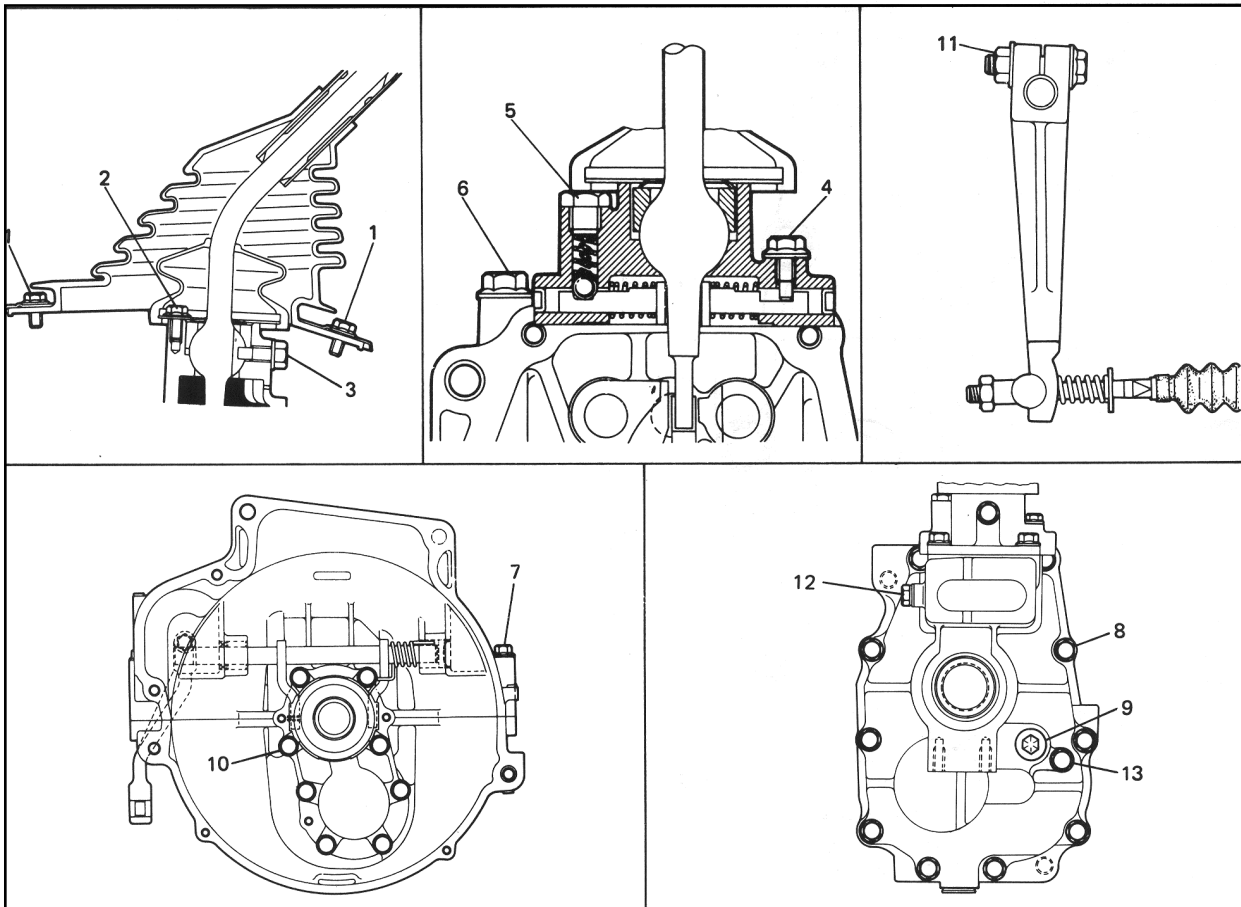
Whenever car was hoisted for any other service work than oil change, also be sure to check for oil leakage.

When installing oil drain and filler plugs to transmission case, apply sealant (SUZUKI BOND No.1215, 99000-31110) to thread part of plug.

13-8. RECOMMENDED TORQUE SPECIFICATION

Be sure to torque each bolt and nut according to specification given below, whenever loosened. If specified torque for particular bolt or nut is not included in the list, refer to page O-13.

System	Fastening parts	Tightening torque		
		N·m	kg·m	lb·ft
Gear shifting control	1. Gear shift control boot cover bolt	4 – 7	0.4 – 0.7	3.0 – 5.0
	2. Gear shift lever case cover bolt	4 – 7	0.4 – 0.7	3.0 – 5.0
	3. Control lever locating bolt	14 – 20	1.4 – 2.0	10.5 – 14.0
	4. Low speed select pin bolt	4 – 7	0.4 – 0.7	3.0 – 5.0
	5. Reverse select pin screw	25 – 35	2.5 – 3.5	18.5 – 25.0
	6. Gear shift lever case bolt	18 – 28	1.8 – 2.8	13.5 – 20.0
Transmission	7. Transmission case bolt	18 – 28	1.8 – 2.8	13.5 – 20.0
	8. Extension case bolt	18 – 28	1.8 – 2.8	13.5 – 20.0
	9. Transmission oil filler and drain plug	18 – 28	1.8 – 2.8	13.5 – 20.0
	10. Input shaft bearing retainer bolt	18 – 28	1.8 – 2.8	13.5 – 20.0
	11. Clutch release arm nut	10 – 16	1.0 – 1.6	7.5 – 11.5
	12. Reverse gear shift rim bolt	14 – 20	1.4 – 2.0	10.5 – 14.0
	13. Transmission oil level plug	10 – 16	1.0 – 1.6	7.5 – 11.5



2) Fit counter shaft front circlip into groove in shaft.

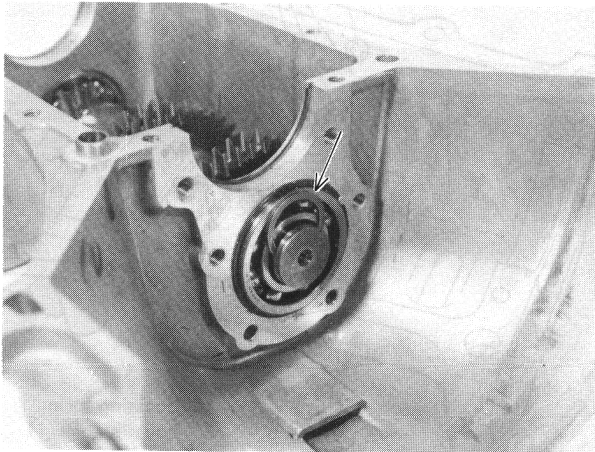


Fig. 13-58

3) Install counter shaft reverse gear and 5th gear onto counter shaft. And then drive counter shaft rear bearing onto it.

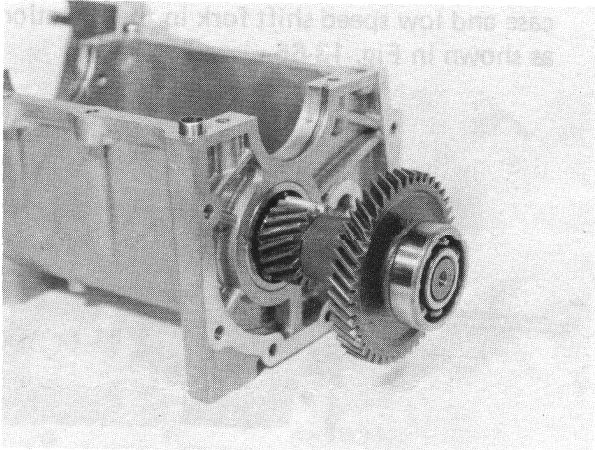


Fig. 13-59

4) Install idle gear and washer onto reverse gear shaft and pin into it. Install above as assembled into lower case with pin ① and washer tongue ② aligned as shown below.

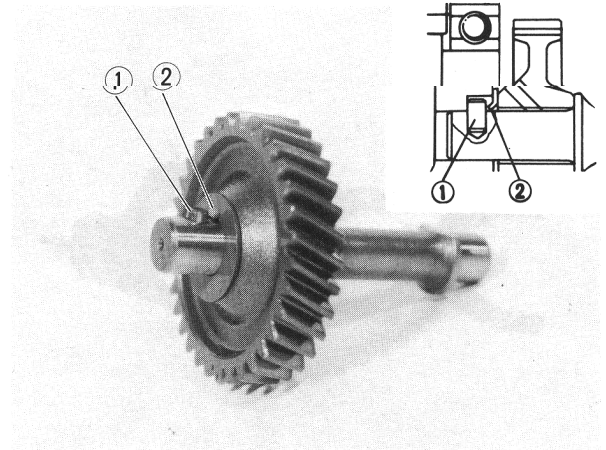


Fig. 13-60

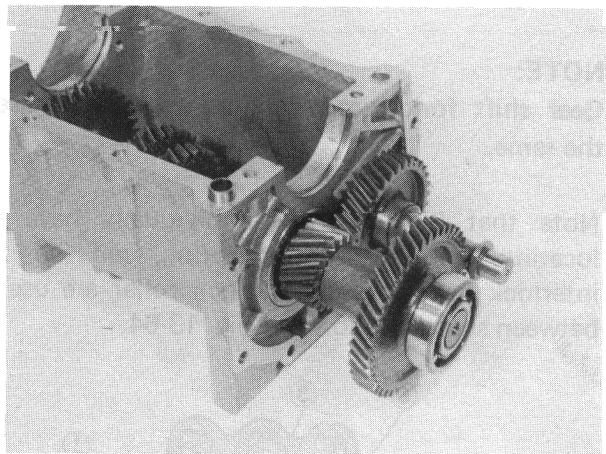


Fig. 13-61

Shifter Forks, Shafts and Yokes [Forks and Shafts]

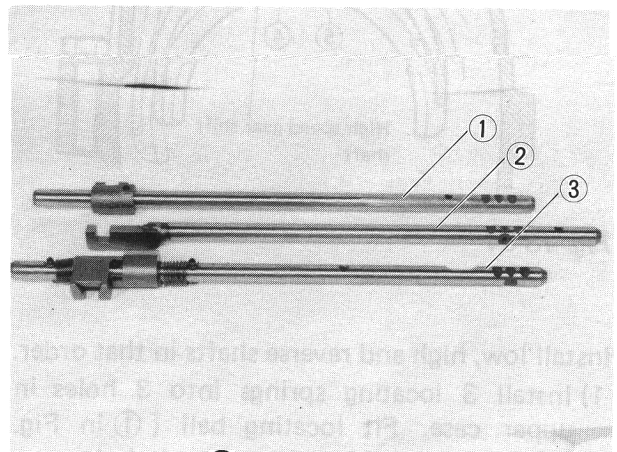


Fig. 13-62

- ① Low speed gear shift shaft
- ② High speed gear shift shaft
- ③ Reverse gear shift shaft

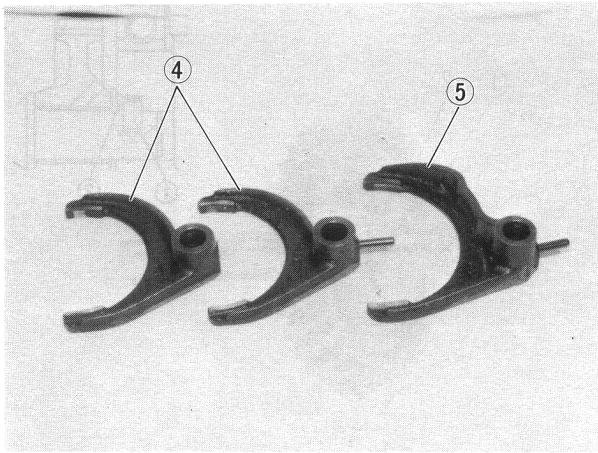


Fig. 13-63 ④ High and reverse gear shift fork
 ⑤ Low speed gear shift fork

NOTE:

Gear shift forks used for high and reverse are the same.

Note that 3 shift shafts individually have a locating ball and locating spring, and that 2 interlock balls and an interlock roller are used between shafts as shown in Fig. 13-64.

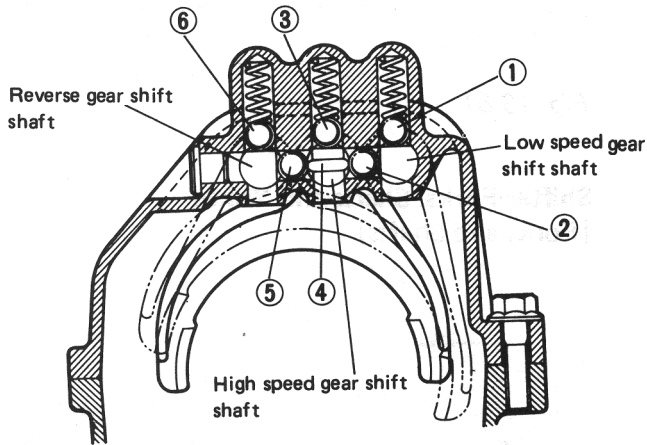


Fig. 13-64

Install low, high and reverse shafts in that order.

- 1) Install 3 locating springs into 3 holes in upper case. Fit locating ball (① in Fig. 13-64) on top of locating spring in hole.

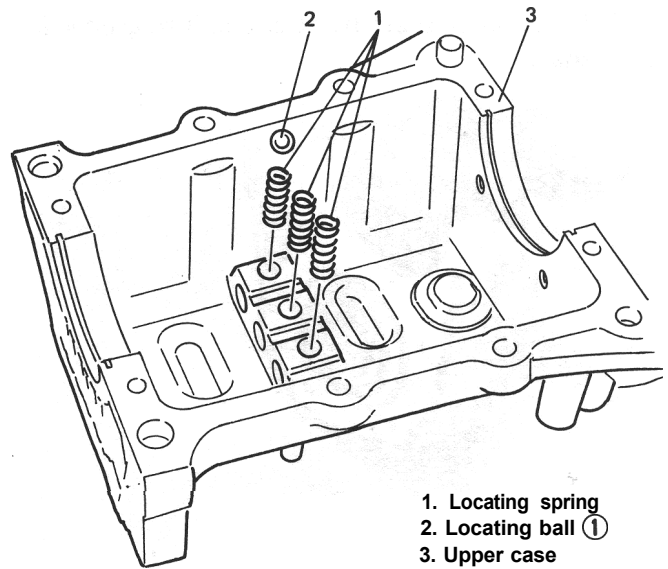


Fig. 13-65

1. Locating spring
2. Locating ball ①
3. Upper case

- 2) Insert low speed gear shift shaft into upper case and low speed shift fork in the direction as shown in Fig. 13-66.

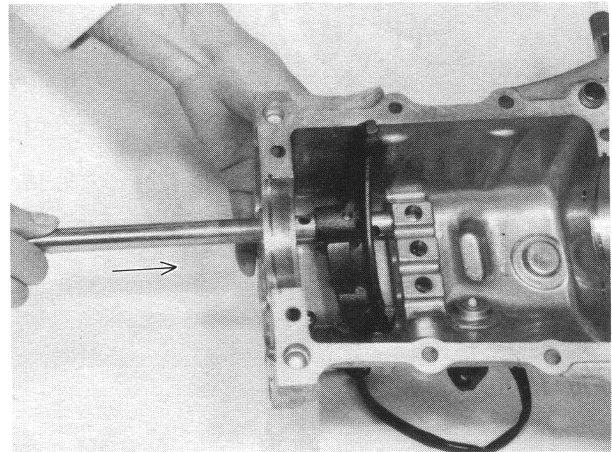


Fig. 13-66

- 3) As shown below, push down low speed gear shift shaft locating ball to pass shaft over it and keep inserting shaft until locating ball fits in center slot of 3 continuous slots in shaft.
 Drive shift yoke pin into fork and shaft.

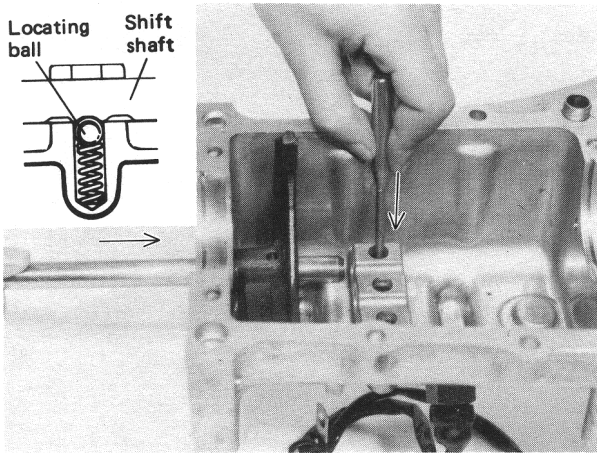


Fig. 13-67

- 4) Install interlock ball (② in Fig. 1364) and locating ball (③ in Fig. 13-64) in upper case. After installing interlock roller (④ in Fig. 1364) in high speed gear shift shaft and insert shaft into upper case as described in 2) and 3).

Fork should be installed in such direction as shown in Fig. 13-68. Then drive shift yoke pin until it becomes flush with outer surface of fork.

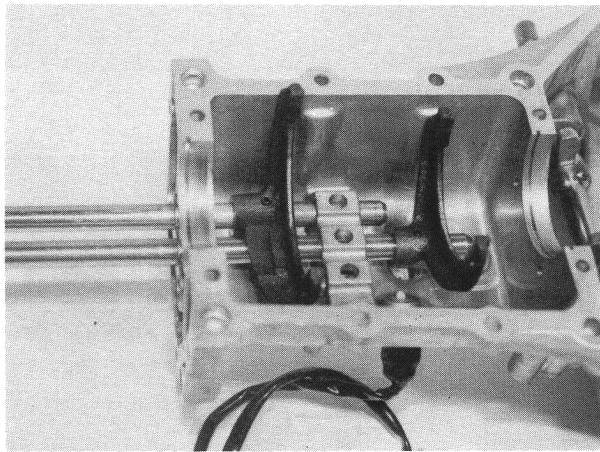


Fig. 13-68

- 5) Install interlock ball (⑤ in Fig. 1364) and locating ball (⑥ in Fig. 13-64) into upper case. Then insert reverse gear shift shaft into upper case as described in 2) and 3).

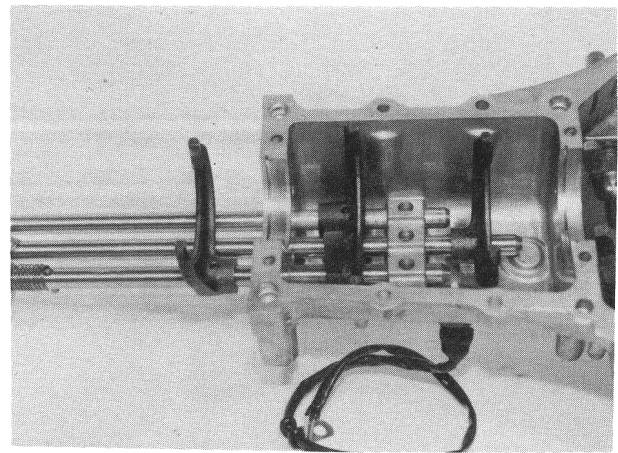


Fig. 13-69

[Yokes]

- 1) Install low speed gear shift yoke as shown below, using care for its direction.

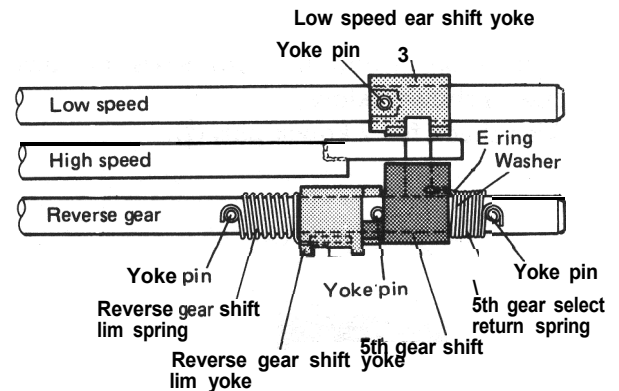


Fig. 13-70

- 2) Install reverse gear shift yoke and 5th gear shift yoke as shown below. Use care for installing direction of each part. Between 2 springs, shorter one is 5th select return spring.

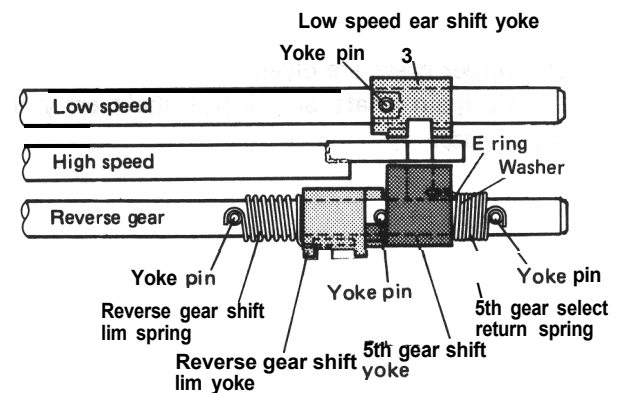


Fig. 13-71

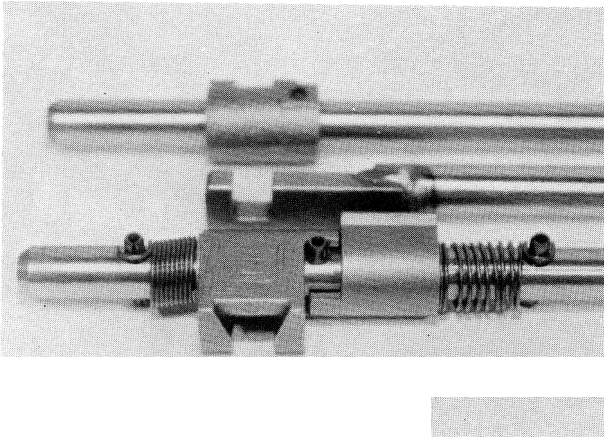


Fig. 13-72

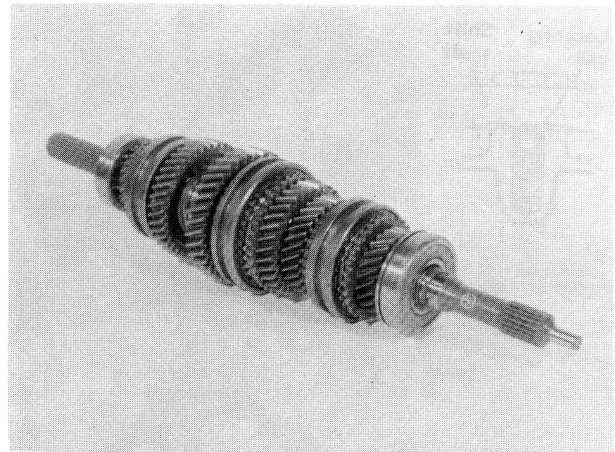


Fig. 13-74 Main shaft and input shaft assembly

Transmission Lower Case and Upper Case

- 1) With counter shaft ass'y, reverse idle gear and reverse gear shaft installed in lower case, check to ensure that bearing stopper rings ① are fitted in both sides of lower case as shown below. Also check for 2 knock pins ②.

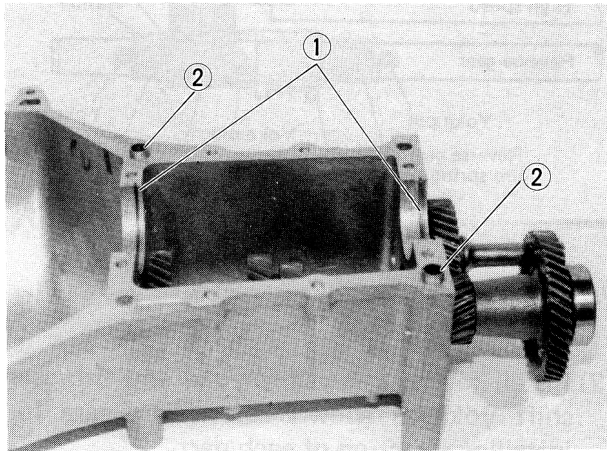


Fig. 13-73

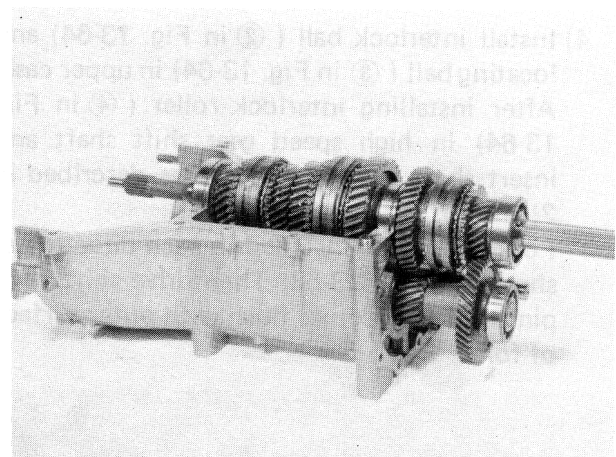


Fig. 13-75

- 2) Make sure that mating surfaces of both lower and upper cases are clean.
- 3) Install main shaft and input shaft ass'y in lower case.

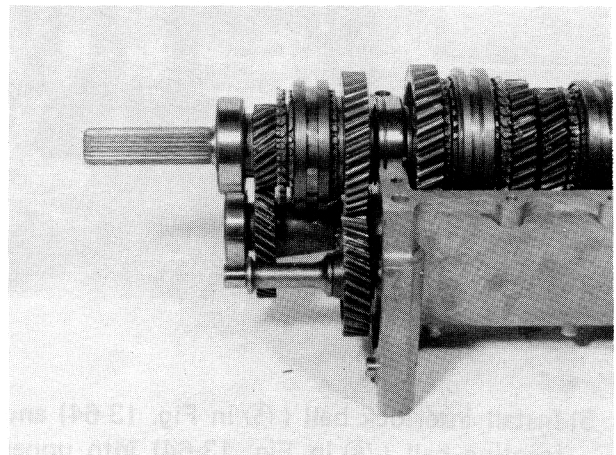


Fig. 13-76

- 4) Uniformly apply sealant (SUZUKI BOND NO. 1215, 99000-31110) to mating surface of lower case.

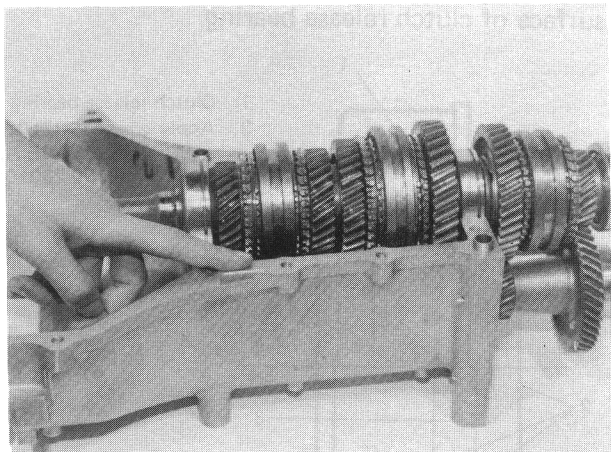


Fig. 13-77

- 5) Install upper case to lower case by matching 3 shift forks with 3 grooves in synchronizer sleeve on main shaft respectively.

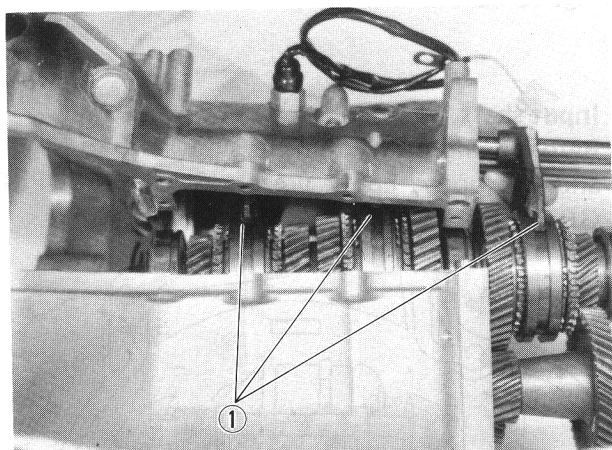


Fig. 13-78 ① Shift forks

- 6) Tighten case bolts to specification.

Tightening torque for transmission case bolts	N·m	kg·m	lb·ft
	18 - 28	1.8 - 2.8	13.5 - 20.0

Extension Case

- 1) Check to ensure that knock pins ① are fitted.

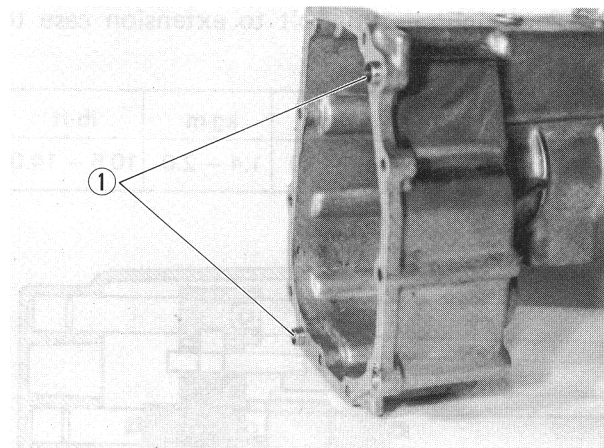


Fig. 13-79

- 2) Apply grease (SUZUKI SUPER GREASE A 99000-25010) to oil seal lip.
3) Clean surface of extension case to mate with transmission case and uniformly apply sealant (SUZUKI BOND No. 1215, 99000-31110).

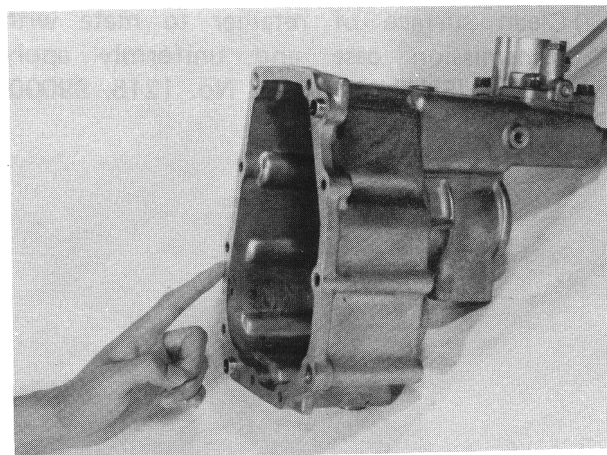


Fig. 13-80

- 4) Make sure that 3 shift shafts are in neutral position as shown in Fig. 13-23.
5) Install extension case to transmission case.
6) Tighten case bolts to specification.

Tightening torque for extension case bolts	N·m	kg·m	lb·ft
	18 - 28	1.8 - 2.8	13.5 - 20.0

7) Apply thread lock agent (THREAD LOCK CEMENT SUPER "1333B" 99000-32020) to thread of reverse gear shift rim bolt, And tighten rim bolt to extension case to specified torque.

Tightening torque for reverse gear shift rim bolt	N·m	kg·m	lb-ft
	14 - 20	1.4 - 2.0	10.5 - 14.0

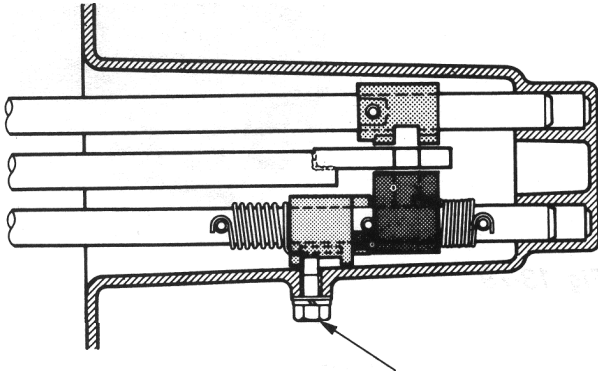


Fig. 13-81

Input Shaft Bearing Retainer

- 1) Apply grease (SUZUKI SUPER GREASE A 99000-25010) to oil seal lip.
- 2) Clean surface of retainer to mate with transmission case and uniformly apply sealant (SUZUKI BOND No. 1215, 99000-31110).

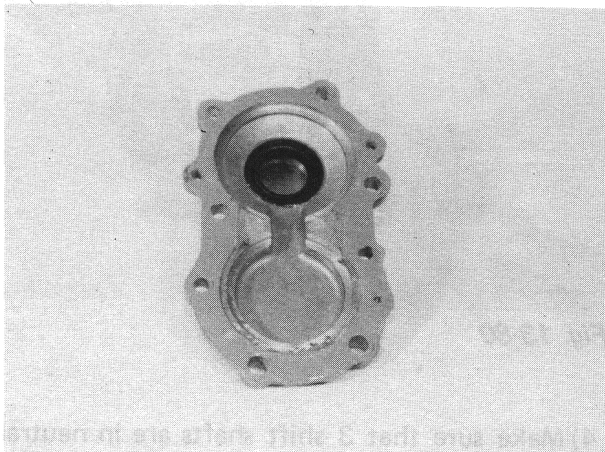


Fig. 13-82

3) Tighten retainer bolts to specification.

Tightening torque for retainer bolts	N·m	kg·m	lb-ft
	18 - 28	1.8 - 2.8	13.5 - 20.0

- 4) Check transmission input shaft for easy rotation by hand.
- 5) Check each select and shift shaft for operation.

Clutch Release Bearing

Before installing bearing, apply grease (SUZUKI SUPER GREASE A 99000-25010) to inner surface of clutch release bearing.

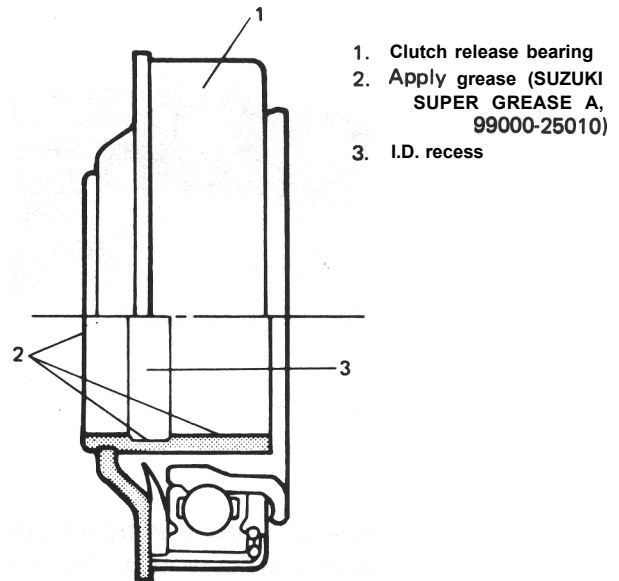


Fig. 13-83

Input shaft

Before remounting transmission ass'y to engine and car body, apply grease (SUZUKI SUPER GREASE I, 99000-25210) to input shaft.

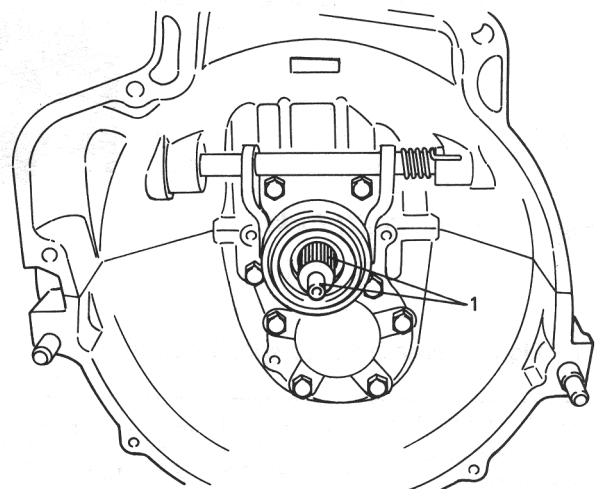


Fig. 13-84

1. Apply grease

Others

Upon completion of reassembly and installation of transmission ass'y in car body, pour specified amount of transmission oil into transmission, and check carefully for oil leakage. Refer to p. 13-25 for oil to be used and specified amount.

13-7. MAINTENANCE SERVICES

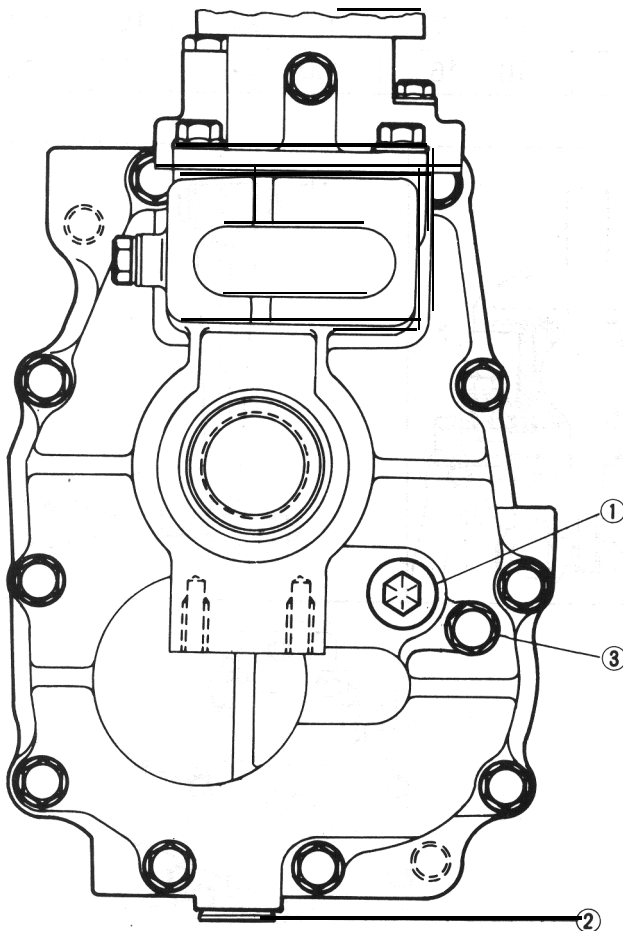
Transmission Oil

Before changing oil, check for oil leakage first and correct defects, if any. Fill specified new oil in specified amount.

Oil capacity	1.3 litres (2.75/2.29 US/Imp. pt.)
Oil specification	Gear oil, SAE 80W-90, 75W-80 or 75W-90

It is highly recommended to use SAE 75W-90 gear oil.

For viscosity chart, refer to P. I-20.



- ① Oil filler plug
- ② Oil drain plug
- ③ Oil level plug

Fig. 13-85

After filling transmission with oil, torque oil filler and drain plugs to specification.

Tightening torque for oil drain and filler plug	N·m	kg·m	lb·ft
	18-28	1.8-2.8	13.5-20.0
Tightening torque for oil level plug	10-16	1.0-1.6	7.5-11.5

NOTE:

Whenever car was hoisted for any other service work than oil change, also be sure to check for oil leakage.

When installing oil drain and filler plugs to transmission case, apply sealant (SUZUKI BOND No.1215, 99000-31110) to thread part of plug.

13-8. RECOMMENDED TORQUE SPECIFICATION

Be sure to torque each bolt and nut according to specification given below, whenever loosened.
If specified torque for particular bolt or nut is not included in the list, refer to page O-13.

System	Fastening parts	Tightening torque		
		N·m	kg·m	lb·ft
Gear shifting control	1. Gear shift control boot cover bolt	4 – 7	0.4 – 0.7	3.0 – 5.0
	2. Gear shift lever case cover bolt	4 – 7	0.4 – 0.7	3.0 – 5.0
	3. Control lever locating bolt	14 – 20	1.4 – 2.0	10.5 – 14.0
	4. Low speed select pin bolt	4 – 7	0.4 – 0.7	3.0 – 5.0
	5. Reverse select pin screw	25 – 35	2.5 – 3.5	18.5 – 25.0
	6. Gear shift lever case bolt	18 – 28	1.8 – 2.8	13.5 – 20.0
Transmission	7. Transmission case bolt	18 – 28	1.8 – 2.8	13.5 – 20.0
	8. Extension case bolt	18 – 28	1.8 – 2.8	13.5 – 20.0
	9. Transmission oil filler and drain plug	18 – 28	1.8 – 2.8	13.5 – 20.0
	10. Input shaft bearing retainer bolt	18 – 28	1.8 – 2.8	13.5 – 20.0
	11. Clutch release arm nut	10 – 16	1.0 – 1.6	7.5 – 11.5
	12. Reverse gear shift rim bolt	14 – 20	1.4 – 2.0	10.5 – 14.0
	13. Transmission oil level plug	10 – 16	1.0 – 1.6	7.5 – 11.5

