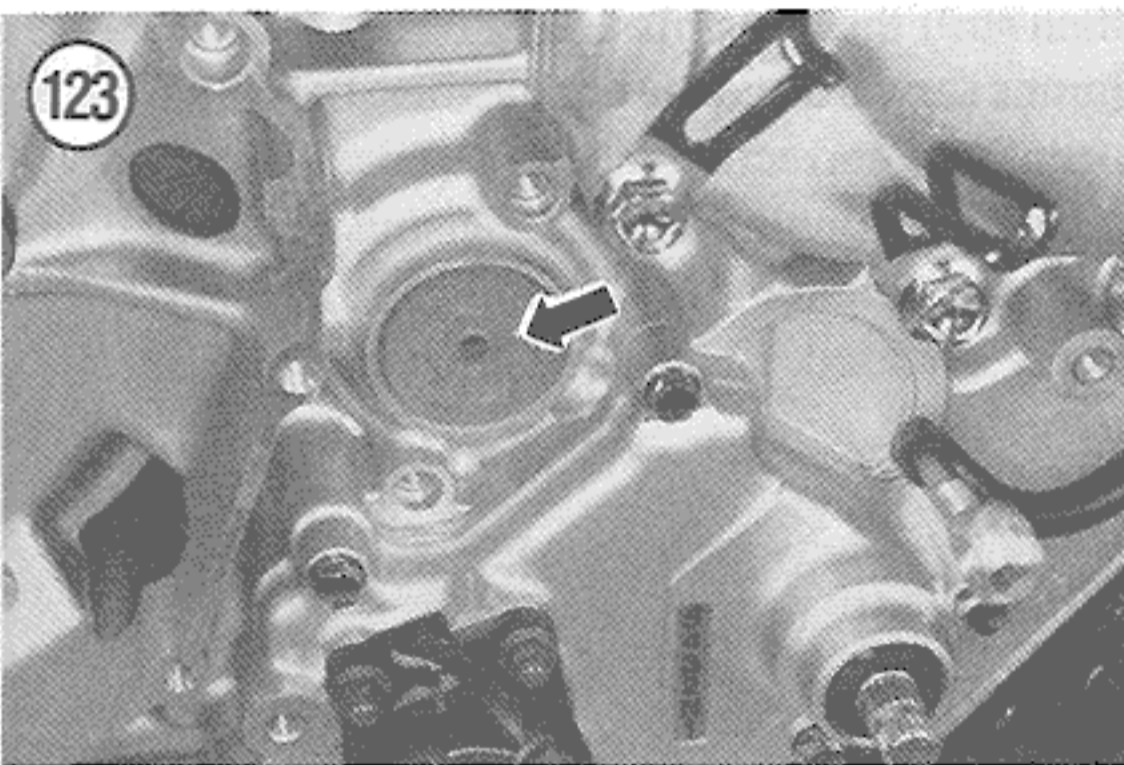


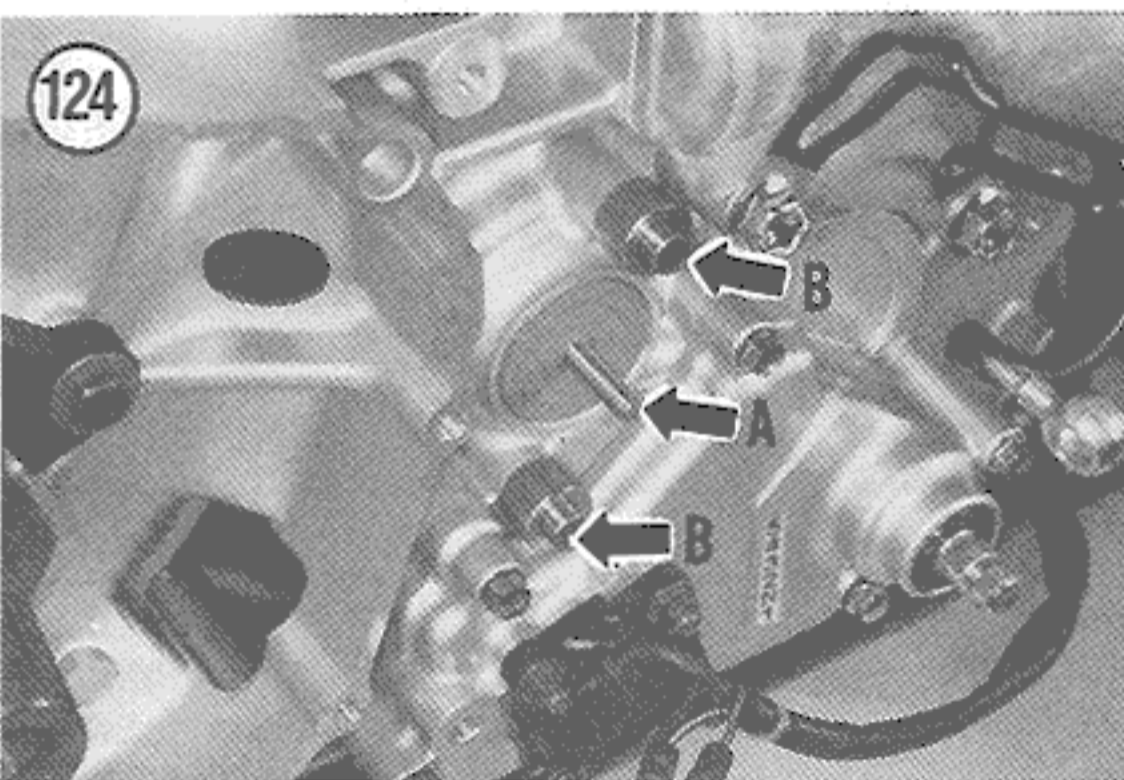
4. Clean the clutch master cylinder cover of all dirt and foreign matter.
5. Turn the front wheel so that the clutch master cylinder is level. On models with riser handlebars, loosen the clutch master cylinder mounting bolts and reposition the master cylinder on the handlebar so that the reservoir is level, then tighten the mounting bolts.
6. Cover the area underneath the clutch master cylinder (wheel, fender and forks) with a heavy cloth to protect the parts from the accidental spilling of hydraulic fluid.



CAUTION

Wash spilled hydraulic fluid from any plastic, painted or plated surface immediately as it will destroy the finish. Clean with soapy water and rinse completely.

7. Unscrew and remove the clutch master cylinder top cover (A, **Figure 111**) and diaphragm.
8. Fill the master cylinder with hydraulic fluid.



WARNING

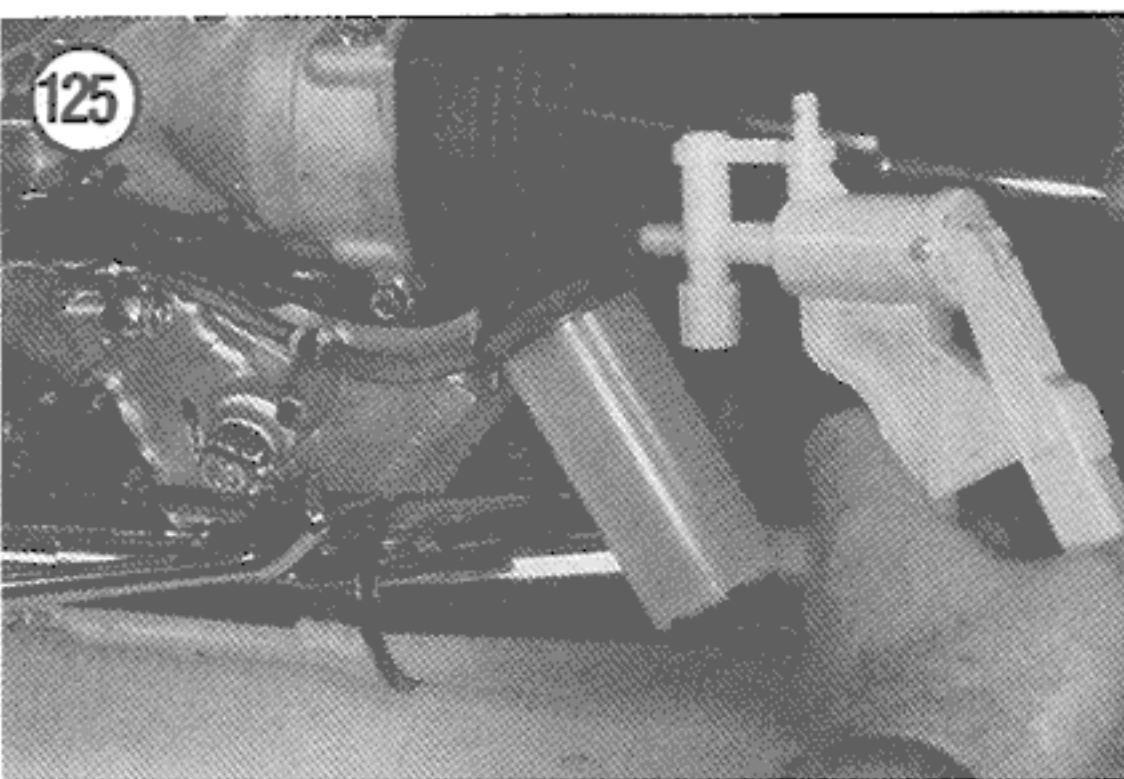
Use DOT 3 or DOT 4 hydraulic fluid from a sealed container. Do not intermix different brands of fluid. Do not use a silicone base DOT 5 brake fluid as it can damage the clutch components leading to clutch system failure.

NOTE

When bleeding the clutch, check the fluid level in the clutch master cylinder often. If the reservoir runs dry, air will enter the system. If this occurs, the entire procedure must be repeated.

- 9A. If using a vacuum pump, perform the following:

- a. Operate the vacuum pump (**Figure 125**) several times to create a vacuum in the attached hose.
- b. Open the bleed valve 1/4 turn to allow air and fluid to be extracted through the line. When the flow of air and fluid starts to slow down, close the bleed valve.
- c. Operate the clutch lever several times and release it.
- d. Refill the master cylinder reservoir as necessary.



- e. Repeat these steps until there is a solid feel when operating the clutch lever and there are no bubbles being released from the system.
- 9B. If a vacuum pump is not being used, perform the following:
- a. Operate the clutch lever several times until resistance is felt, then hold it in its applied position. If the system was opened or drained completely, there will be no initial resistance at the clutch lever.
 - b. Open the bleed valve 1/4 and allow the lever to travel to its limit, then close the bleed valve and release the clutch lever.
 - c. Operate the clutch lever several times and release it.
 - d. Refill the master cylinder reservoir as necessary.
 - e. Repeat these steps until there is a solid feel when operating the clutch lever and there are no bubbles being released from the system.

NOTE

If you are flushing the system, continue with Step 9 until the fluid being drawn from the system is clean.

- 10. Remove the vacuum pump or container and hose from the system. Snap the bleed valve dust cap onto the bleed valve.
- 11. If necessary, add fluid to correct the level in the reservoir. It should be to the upper level line (**Figure 126**).
- 12. Install the diaphragm and cover. Tighten the screws securely.

13. If the master cylinder was repositioned on the handlebar, reinstall it onto its original mounting position. Then tighten the upper clamp bolt first, then the lower bolt to the torque specification listed in **Table 2**.

14. Recheck the feel of the clutch lever. It should be firm and offer the same resistance each time it's operated. If the lever feels spongy, check all of the hoses for leaks and bleed the system again.

15. Test the clutch by starting the engine with the transmission in NEUTRAL. Pull the clutch in and then shift the transmission into first gear. If the bike jumps forward and the engine dies, the clutch has not been bled correctly. When the bike is stopped with the engine running and the transmission in first gear, the bike should move smoothly as the clutch lever is being released. Bleed the clutch assembly again, if necessary.

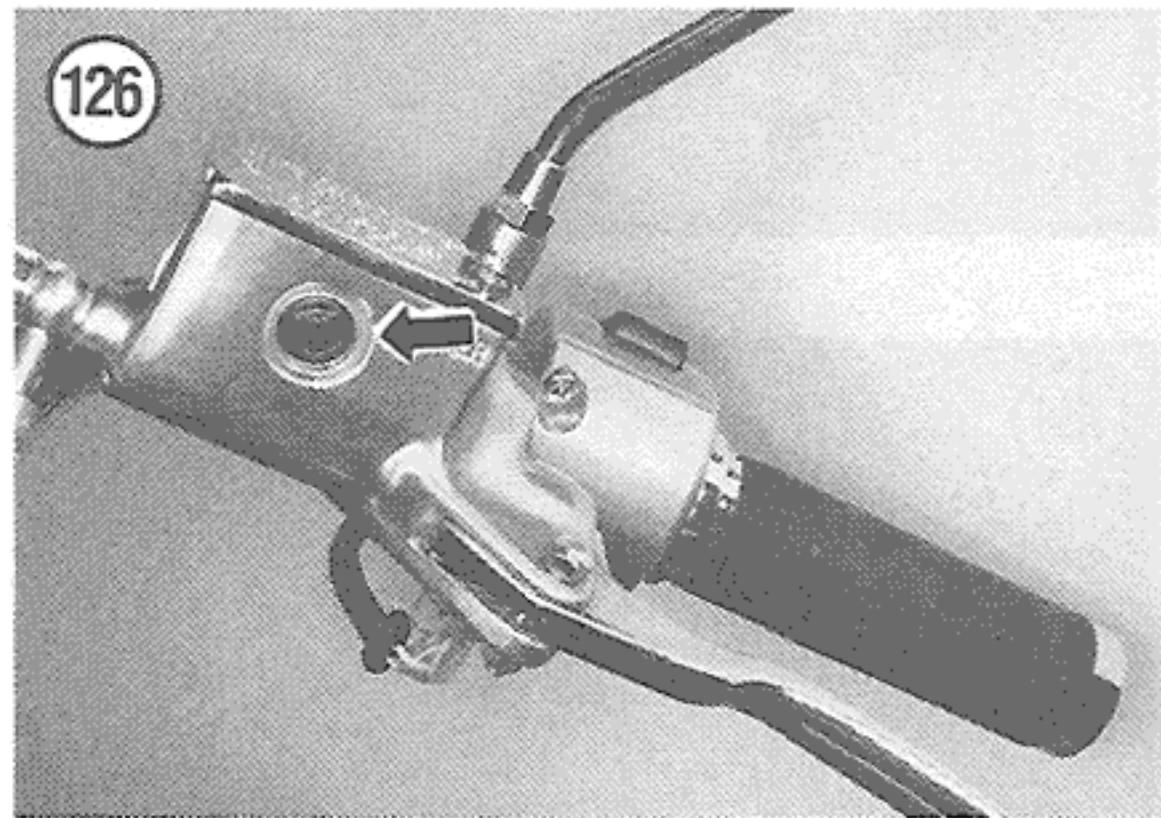


Table 1 GENERAL CLUTCH SPECIFICATIONS

Item	New mm (in.)	Service limit mm (in.)
Clutch plate warp	—	0.10 (0.004)
Clutch spring free length		
No. A	—	27.6 (1.09)
No. B	—	20.0 (0.79)
Number of clutch plates		
Steel clutch plates	9	—
Friction plates		
No. 1	9	
No. 2	1	
Friction plate thickness		
No. 1 (quantity 9)	2.72-2.88 (0.107-0.113)	2.42 (0.095)
No. 2 (quantity 1)	3.45-3.55 (0.136-0.140)	3.15 (0.124)
Friction plate claw width		
No. 1 (quantity 9)	15.8-16.0 (0.622-0.630)	15.2 (0.600)
No. 2 (quantity 1)	15.9-16.0 (0.626-0.630)	15.2 (0.600)
Clutch master cylinder		
Bore inside diameter	14.000-14.043 (0.5512-0.5529)	— —
Piston outer diameter	13.957-13.984 (0.5495-0.5506)	— —
Clutch slave cylinder		
Bore inside diameter	35.700-35.762 (1.4055-1.4079)	— —
Piston outer diameter	35.650-35.675 (1.4035-1.4045)	— —

Table 2 CLUTCH TIGHTENING TORQUES

Item	N.m	in.-lb.	ft.-lb.
Clutch hub nut	90-110	—	66-81
Clutch spring bolts	8-12	71-106	—
Clutch master cylinder clamp bolts	8-12	71-106	—
Clutch hose banjo bolts	20-25	—	15-18

CHAPTER SEVEN

TRANSMISSION AND INTERNAL SHIFT MECHANISM

To gain access to the transmission and internal gearshift components, it is necessary to remove the engine and separate the crankcase as described in Chapter Four and Chapter Five. Once the crankcase has been disassembled, the transmission, shift drum and shift fork assemblies can be removed from the crankcase.

These overhaul procedures refer to the transmission countershaft and mainshaft. The mainshaft is connected to the clutch and the countershaft is connected to the secondary bevel gear assembly attached to the left-hand side of the crankcase.

Transmission ratios are listed in **Table 1** and service specifications for the internal shift mechanism are listed in **Table 2**. **Table 1** and **Table 2** are found at the end of this chapter.

TRANSMISSION

Removal/Installation

Removal and installation of the transmission mainshaft and countershaft are described under

Crankcase Disassembly and Crankcase Assembly in Chapter Five.

Preliminary Inspection

After the transmission shaft assemblies have been removed from the crankcase, clean and inspect the assemblies prior to disassembling them. Place the assembled shaft into a large can or plastic bucket and thoroughly clean with a petroleum based solvent such as kerosene and a stiff brush. Dry with compressed air or let it sit on rags to drip dry. Repeat for the other shaft assembly.

1. After they have been cleaned, visually inspect the components of the assemblies for excessive wear. Any burrs, pitting or roughness on the teeth of a gear will cause wear on the mating gear. Minor roughness can be cleaned up with an oilstone but there's little point in attempting to remove deep scars.

NOTE

Defective gears should be replaced. It is a good idea to replace the mating gear

on the other shaft even though it may not show as much wear or damage.

2. Carefully check the engagement dogs. If any are chipped, worn, rounded or missing, the affected gear must be replaced.
3. Rotate the transmission bearings in both crankcase halves by hand. Check for roughness, noise and radial play. Any bearing that is suspect should be replaced as described in this chapter.
4. If the transmission shafts are satisfactory and are not going to be disassembled, apply assembly oil or engine oil to all components and reinstall them in the crankcase as described in Chapter Five.

NOTE

When disassembling the transmission, pay attention to any additional shims that may have been added by a previous owner. These may have been added to take up the tolerance of worn components and must be reinstalled in the same position since the shims have developed a wear pattern. If new parts are going to be installed these shims

may be eliminated. This is something you must determine upon reassembly.

Transmission Service Notes

1. As you remove a part from the shaft set it in the exact order of removal and in the same position from which it was removed. Refer to **Figure 1** for the mainshaft and **Figure 2** for the countershaft. This is an easy way to remember the correct relationship of all parts.
2. The circlips are a tight fit on the transmission shafts. Replace all circlips during reassembly.
3. Circlips will turn and fold over making removal and installation difficult. To ease replacement, open the circlips with a pair of circlip pliers while at the same time holding the back of the circlip with a pair of pliers and remove them. Repeat for installation.

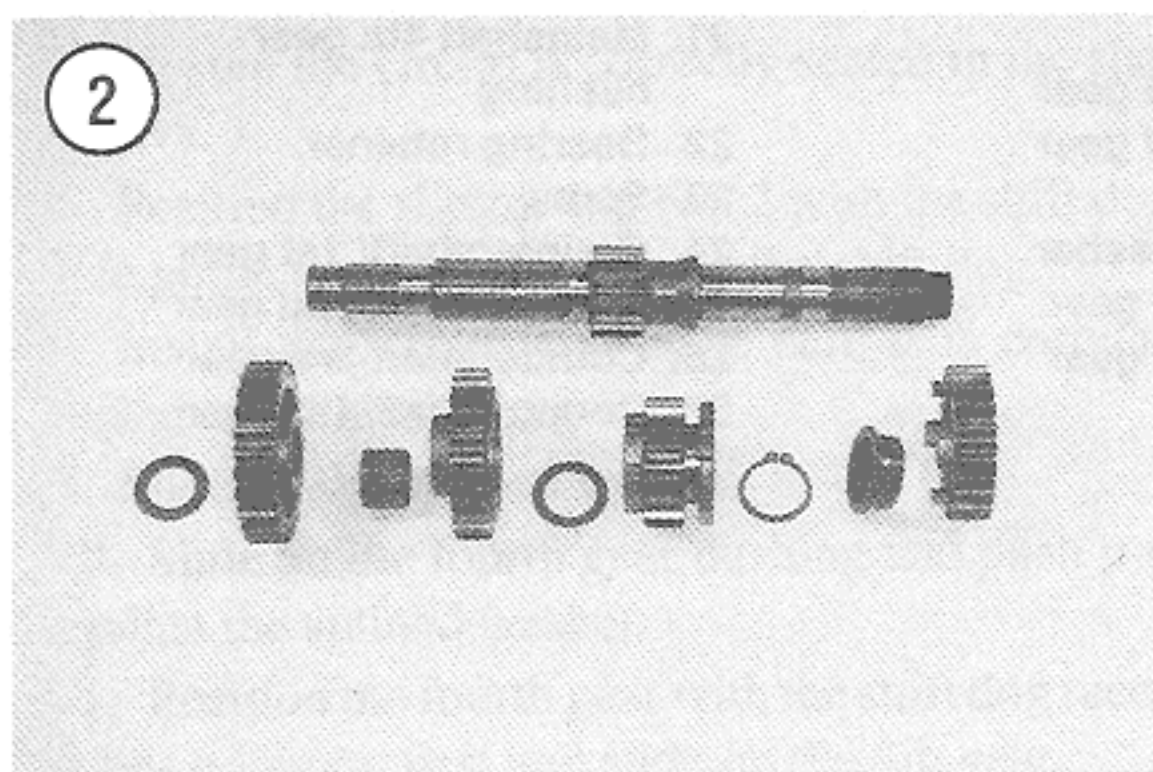
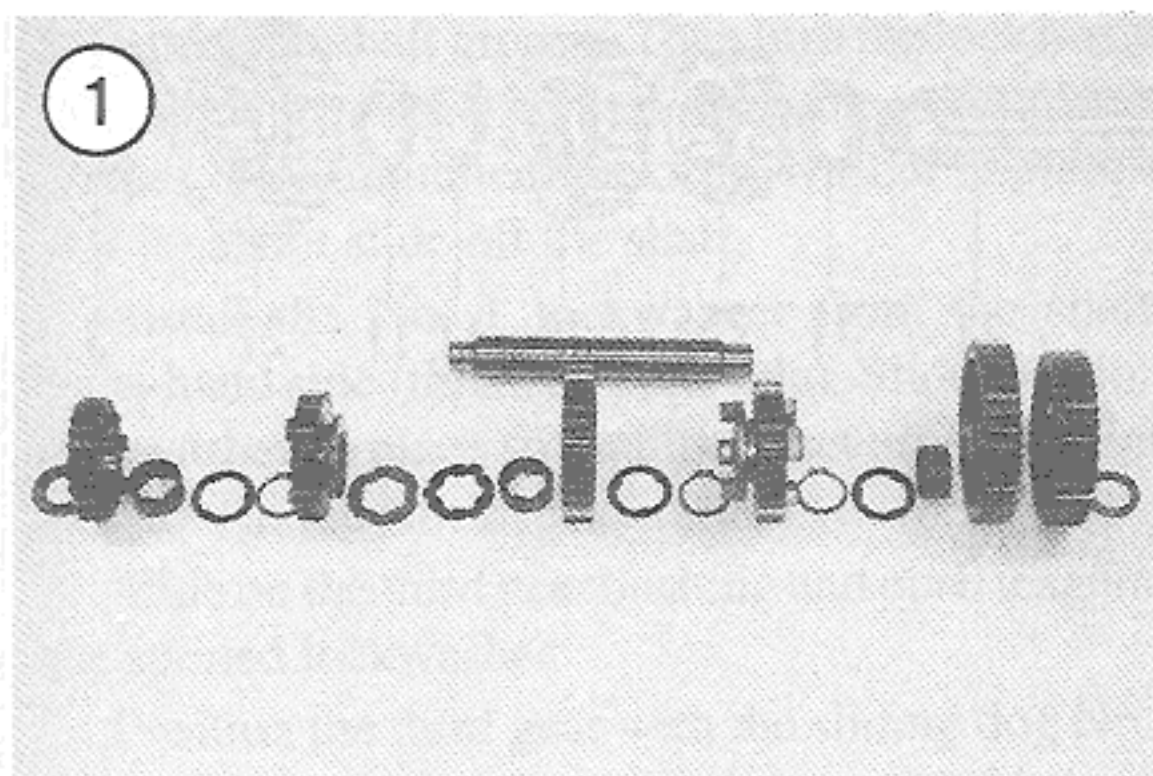
1987-1996 Models

Four-Speed Transmission

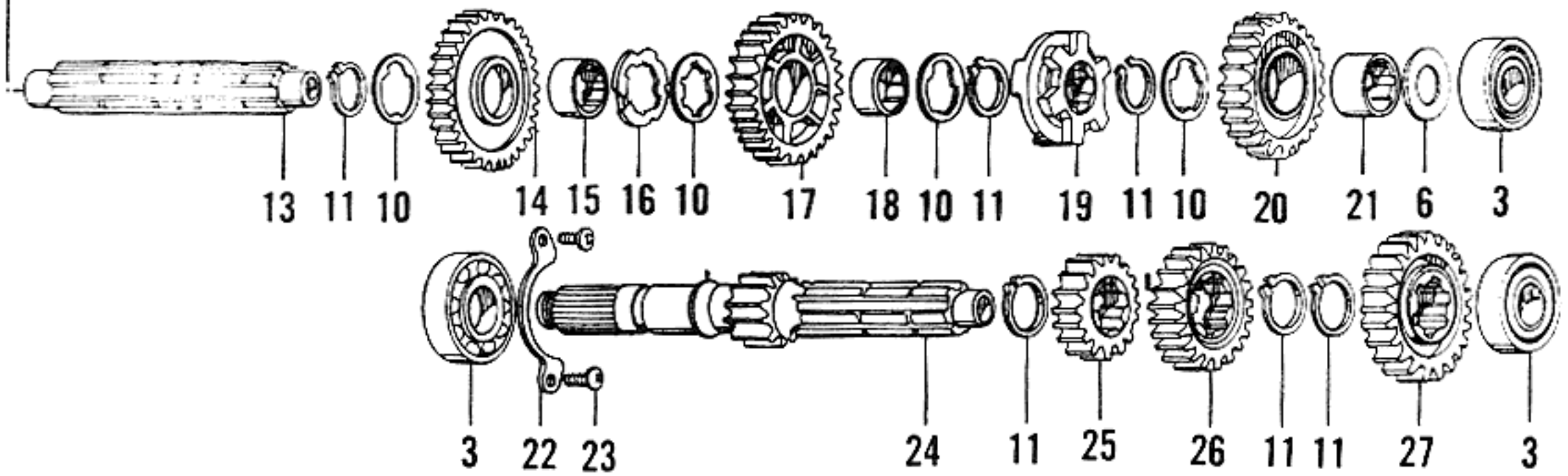
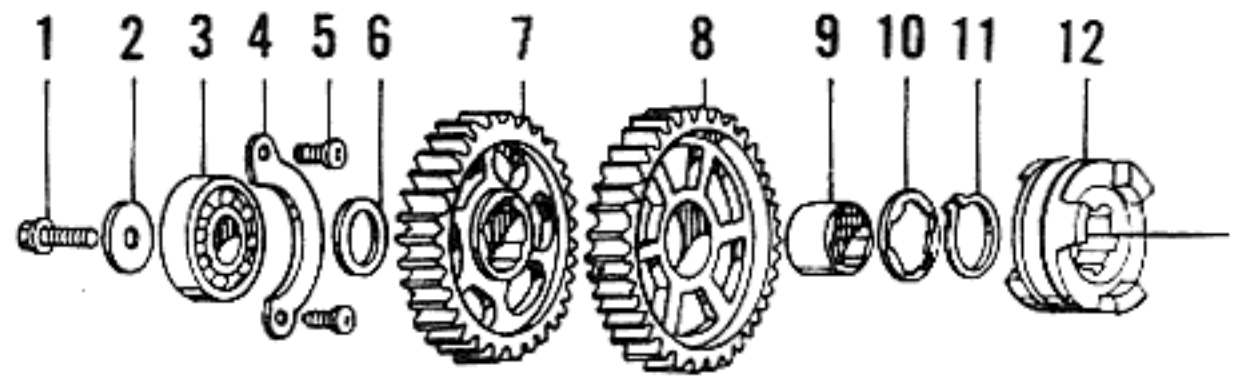
Mainshaft disassembly

Refer to **Figure 3** for this procedure.

1. If not cleaned in the *Preliminary Inspection* sequence, place the assembled shaft into a large can or plastic bucket and thoroughly clean with solvent and a stiff brush. Dry with compressed air or let it sit on rags to dry.
2. Slide off the washer and the reduction gear.
3. Slide off the first gear and first gear bushing.
4. Slide off the splined washer and remove the circlip.
5. Slide off the sliding dog No. 1.
6. Remove the circlip and slide off the splined washer.
7. Slide off the second gear and second gear bushing.
8. From the other end of the shaft, remove the washer.
9. Slide off the Fourth gear and Fourth gear bushing.
10. Slide off the splined washer and remove the circlip.
11. Slide off the sliding dog No. 2.
12. Remove the circlip and slide off the splined washer.
13. Slide off the third gear and third gear bushing.
14. Slide the No.1 lockwasher off the shaft.



3

TRANSMISSION (4-SPEED 1987-1996)

1. Bolt (short)
2. Washer
3. Bearing
4. Bearing retainer
5. Screw
6. Washer
7. Reduction gear
8. Mainshaft 1st gear
9. Mainshaft 1st gear bushing
10. Splined washer

11. Circlip
12. Sliding dog No. 1
13. Mainshaft
14. Mainshaft 2nd gear
15. Mainshaft 2nd gear bushing
16. Tanged lockwasher
17. Mainshaft 3rd gear
18. Mainshaft 3rd gear bushing

19. Sliding dog No. 2
20. Mainshaft 4th gear
21. Mainshaft 4th gear bushing
22. Bearing retainer
23. Screw
24. Countershaft/ 1st gear
25. Countershaft 2nd gear
26. Countershaft 3rd gear
27. Countershaft 4th gear