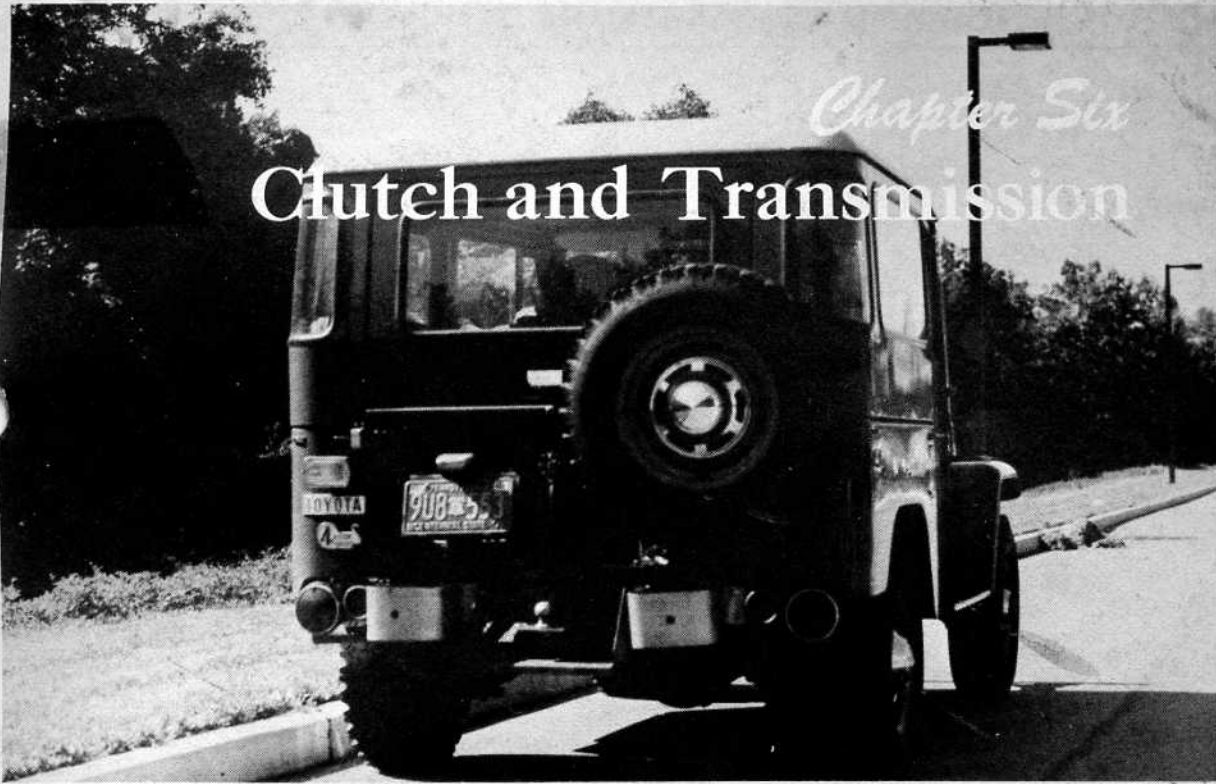


Chapter Six Clutch and Transmission



Manual Transmission

Linkage Adjustment

COLUMN SHIFT

1. Disconnect the two adjustable length shift rods at their adjustable ends.
2. Place the transmission shift levers in the Neutral position together with the column mounted shifter.
3. Adjust the length of the adjustable shift rods so that they can be connected without moving the column-mounted shifter or the transmission shift levers.
4. Road-test the vehicle to make sure that the linkage operates smoothly.

Removal and Installation

1. Jack up the vehicle and support it with jackstands.
2. Remove the transmission skid plate.
3. Drain the transmission and transfer case lubricant.
4. On the FJ 40 models only:
 - a. Remove the passenger seat.
 - b. Remove the fuel tank.
5. Remove the transmission cover (floor plate).
6. Disconnect the parking brake cable from the end of the parking brake lever.

7. Disconnect the speedometer cable from the transmission.

8. On vacuum-operated transfer cases, disconnect the vacuum hoses from the transfer case.

9. On models equipped with a column shift, remove the rod pins and cotter pins, and disconnect the intermediate rods.

10. Disconnect the High and Low gear shift rods from the transmission.

11. Disconnect the wires from the front wheel drive indicator switch.

12. Raise the transmission slightly and support it with a jack.

13. Disconnect both front and rear driveshafts from the transfer case.

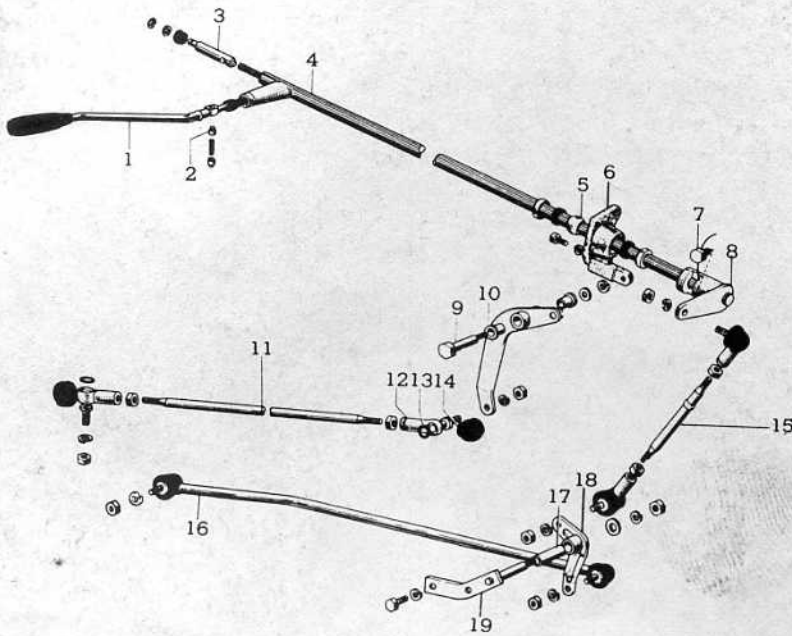
14. Remove the clutch housing skid plate.

15. Remove the bolts which attach the transmission to the clutch housing.

16. Slide the transmission toward the rear of the vehicle so that the input shaft clears the clutch housing.

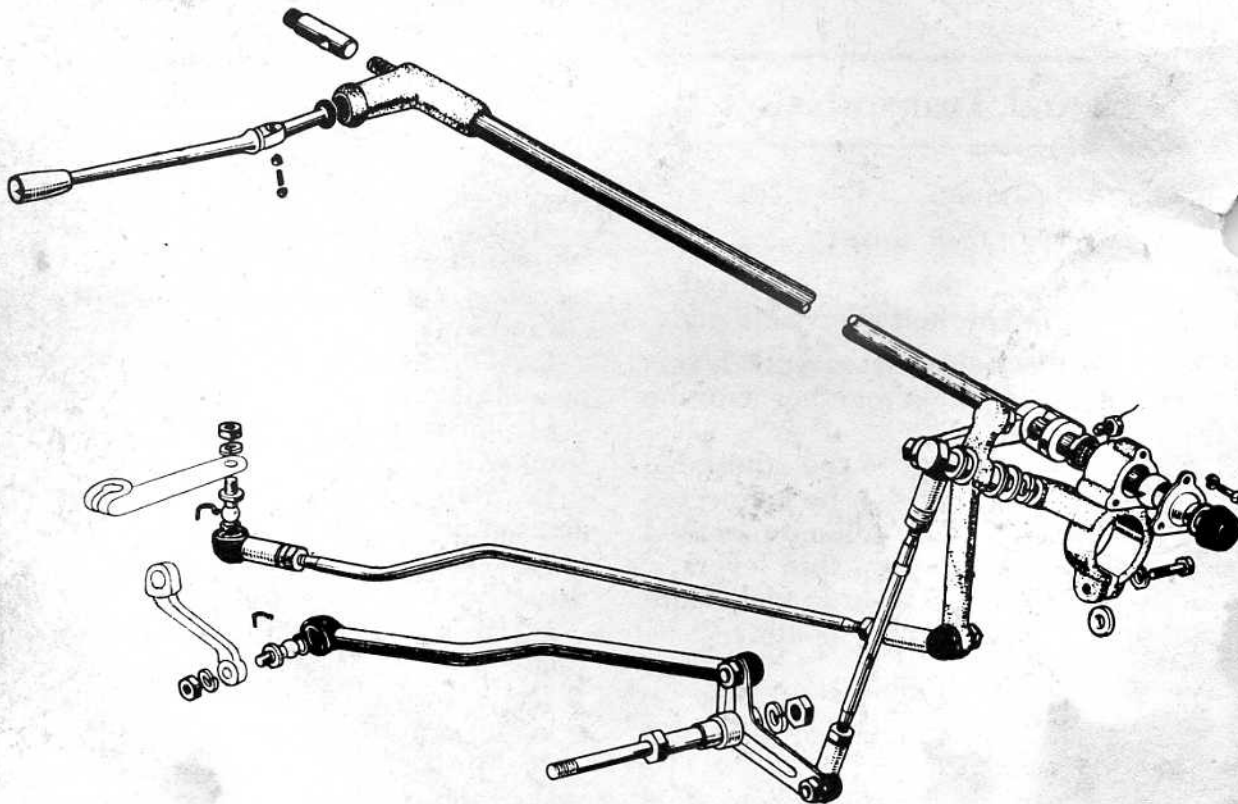
17. Remove the transmission and transfer case assembly from under the vehicle with the parking brake assembly attached.

18. Install in the reverse order of removal, tightening the transmission mounting bolts to 55 ft lbs. Refill the transmission and transfer case with lubricant and check the operation of the clutch and shift linkage.



1. Shift lever
2. Shift lever pin
3. Control shaft upper shaft
4. Control shaft
5. Control shaft lower bushing
6. Control shaft lower bracket
7. Shift fork lockbolt
8. Control shift lever
9. Control select lever shaft
10. Bushing
11. Gear selecting rod
12. Connecting rod end
13. Hole snap-ring
14. Dust seal
15. Gear shifting rod No. 1
16. Gear shifting rod No. 3
17. Bushing
18. Shifting bellcrank
19. Shift link lever support

Column-mounted shifter linkage for the FJ 55 models



Column-mounted shifter linkage for the FJ 40 and 45 models

Clutch

The clutch installed in the Land Cruiser is a hydraulically-operated, coil pressure-spring, dry disc type.

The clutch is operated by a pedal

which is mechanically connected to a clutch master cylinder. When the pedal is depressed, the piston in the master cylinder is moved in the master cylinder bore. This movement compresses the fluid in the master cylinder creating hydraulic pressure which is transferred through a tube to the slave cylinder. The

slave cylinder is mounted to the clutch housing with its piston connected to the clutch release lever. The hydraulic pressure in the slave cylinder forces the slave cylinder piston to travel out of the cylinder bore and move the clutch release lever, disengaging the clutch.

Pedal Height and Free-Play Adjustment

The clutch pedal height adjustment should be made whenever the clutch does not engage or disengage properly or the clutch has been replaced.

1. Make sure that there is about 0.12

in. (0.21 in. on FJ 55) of play at the end of the clutch release fork between the slave cylinder piston and the fork. An adjusting nut and locknut on the end of the slave cylinder pushrod are provided for making the adjustment.

2. Adjust the pedal stopper bolt so that the pedal-to-toe board clearance is 9.6 in. (6.7 in. on FJ 55). Make this adjustment with the pushrod pin removed and the return spring installed.

3. Adjust the master cylinder piston rod length by turning the adjusting nut. Adjust the length so that, with the master cylinder piston rod in the fully released position, the pushrod pin can be inserted through the piston rod clevis easily and without moving the pushrod.

Removal and Installation

1. Remove the transmission and transfer case.

2. Loosen the clutch fork spring and remove the hole cover set plate and the hole cover.

3. Remove the clutch release fork.

4. Remove the clutch release bearing assembly.

5. Punch two matchmarks on the flywheel, clutch cover, and pressure plate and remove the six bolts attaching the clutch pressure plate assembly to the flywheel. Loosen the bolts alternately, a few turns at a time, to avoid distorting the cover and pressure plate assembly.

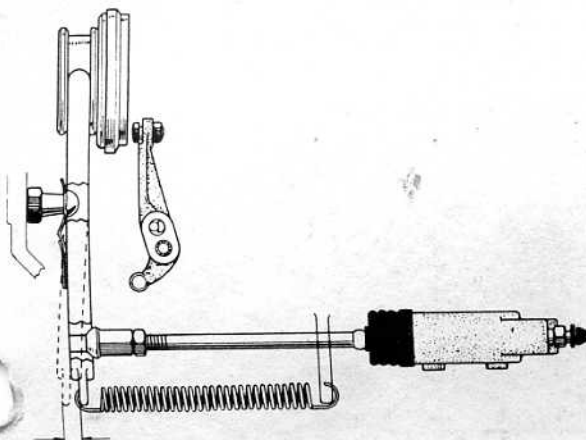
6. Remove the pressure plate assembly and the disc from the flywheel. Be careful that the disc doesn't fall out from behind the pressure plate unexpectedly, causing injury.

7. Install the clutch in the reverse order of removal, taking note of the following:

8. Be sure to align the matchmarks on the clutch cover, pressure plate and the flywheel, installing the clutch assembly in the exact position from which it was removed.

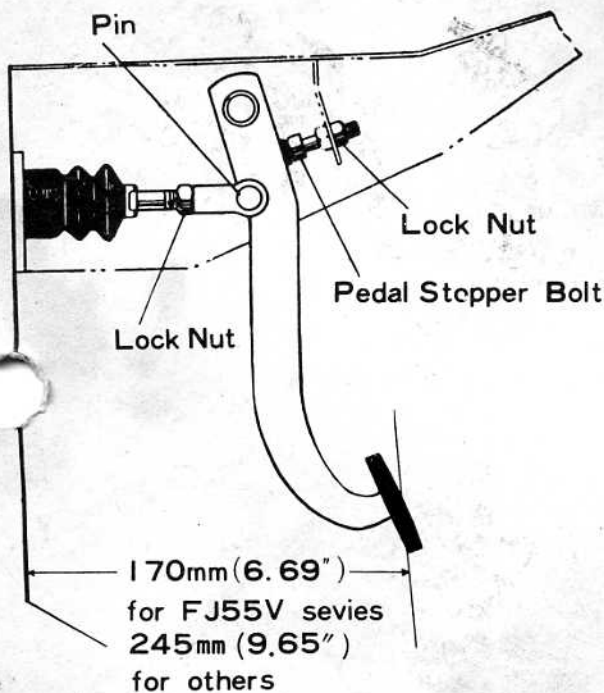
9. Center the clutch disc by using a clutch pilot tool or a discarded transmission input shaft. Position the tool into the end of the input shaft front bearing and bolt the clutch to the flywheel.

NOTE: Bolt the clutch assembly to the flywheel by tightening the attaching bolts two or three turns at a time in an alternating pattern to



5.3mm (0.21") for FJ55V series
3.0mm (0.12") for others

Clearance adjustment between the slave cylinder pushrod and the clutch fork



170mm (6.69")
for FJ55V series
245mm (9.65")
for others

Clutch pedal height adjustment

avoid bending or distorting the cover or pressure plate. Tighten the attaching bolts to 11-16 ft lbs.

10. Apply a light coating of multipurpose grease to the release bearing hub and release fork contact points. Also, pack the groove inside the clutch hub with grease.

NOTE: Never clean the bearing in any type of solvent. Clean by wiping the outside of the bearing with a cloth.

11. Adjust the clutch pedal height and the release for free-play.

2. Disconnect the fluid line from the master cylinder.

3. Remove the clutch pedal return spring.

4. Remove the master cylinder pushrod pin from the clevis attaching the pushrod to the clutch pedal.

5. Remove the three attaching bolts securing the master cylinder to the dashboard and remove the master cylinder assembly from the vehicle.

6. Install the master cylinder in the reverse order of removal and bleed the hydraulic system.

CLUTCH MASTER CYLINDER

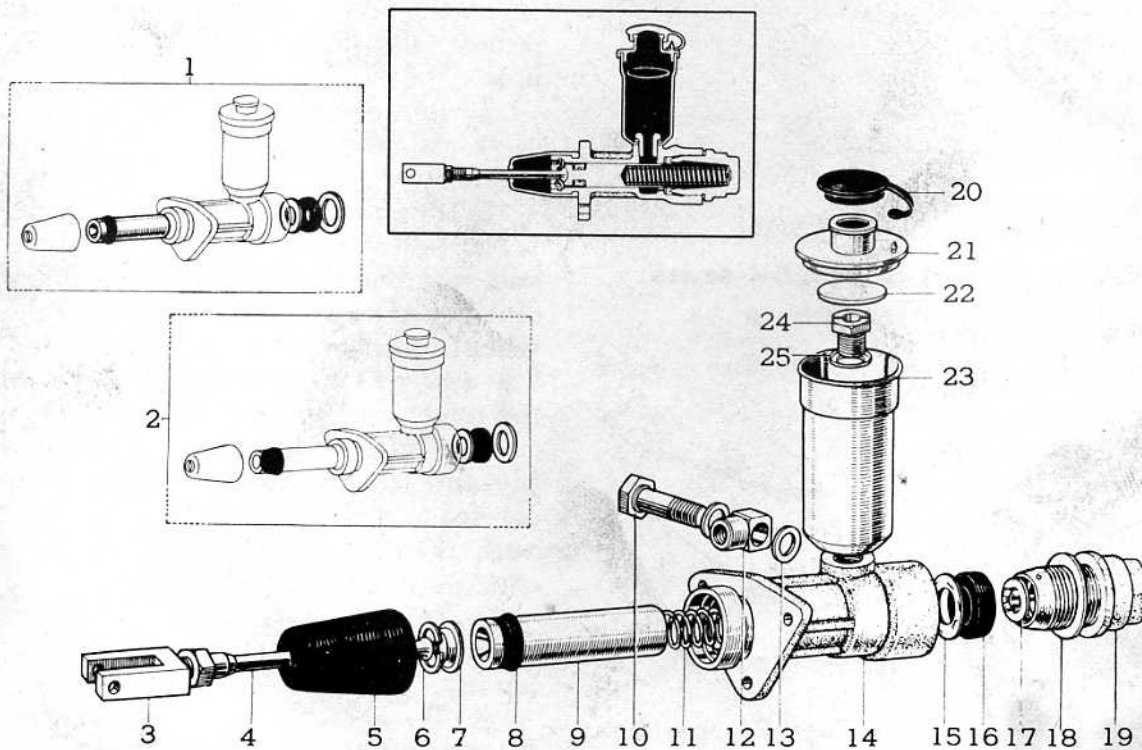
Removal and Installation

1. Plug the air vent of the master cylinder reservoir.

Overhaul

1. With the master cylinder removed from the vehicle, remove the reservoir cap and pour out any remaining fluid.

2. Loosen the reservoir set bolt and remove the reservoir.



Exploded view of the clutch master cylinder

- | | |
|--|-------------------------------|
| 1. Clutch master cylinder kit | 14. Master cylinder body |
| 2. Clutch master cylinder piston cup kit | 15. Piston cup spacer |
| 3. Pushrod clevis | 16. Cylinder cup |
| 4. Pushrod | 17. Spring seat |
| 5. Master cylinder boot | 18. Gasket |
| 6. Hole snap-ring | 19. Master cylinder cap |
| 7. Piston stop plate | 20. Reservoir filler cap |
| 8. Cylinder cup | 21. Reservoir cap |
| 9. Master cylinder piston | 22. Float |
| 10. Union bolt | 23. Master cylinder reservoir |
| 11. Piston return spring | 24. Reservoir set bolt |
| 12. Union | 25. Set-bolt washer |
| 13. Gasket | |

