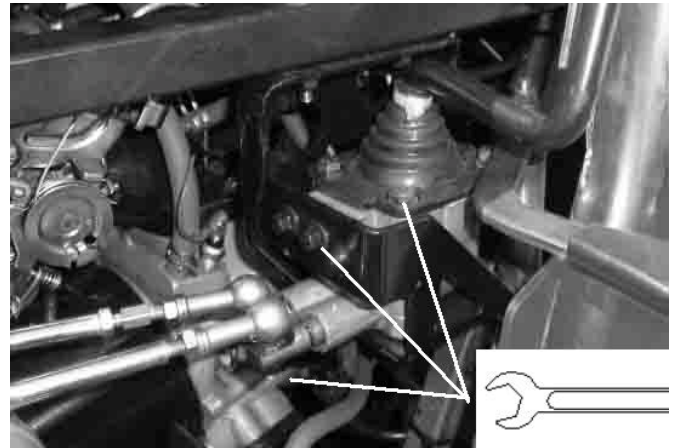


CHAPTER 6 TRANSMISSION

- 6.1 GEAR SHIFTER REMOVAL
- 6.2 GEAR SHIFTER DISASSEMBLY
- 6.3 GEAR SHIFTER ASSEMBLY
- 6.4 GEAR SHIFTER INSTALLATION
- 6.5 SHIFT LINKAGE ADJUSTMENT
- 6.6 ENGINE AND TRANSMISSION REMOVAL
- 6.7 ENGINE AND TRANSMISSION INSTALLATION
- 6.8 TRANSMISSION DISASSEMBLY
- 6.9 TRANSMISSION ASSEMBLY
- 6.10 TROUBLE SHOOTING CHECKLIST

6.1 SHIFTER REMOVAL

1. Remove parts that interfere with access to shift selector (seat, right side panel etc.).
2. Disconnect the two linkage rods from gear shift selector slides.
3. Remove five bolts attaching gear shift selector to the mounting bracket.
4. Lift gear selector out of mounting bracket and away from frame.



6.2 SHIFTER DISASSEMBLY

CAUTION

Wear eye protection during this procedure. Read each step completely before proceeding. Essential parts may be lost or damaged if you do not heed this caution!

1. Clamp shifter housing lightly in a soft jawed vice. Using a cross pattern, loosen each of the four screws holding the cover to the shifter housing. Loosen each screw only a few turns, then proceed to another screw.

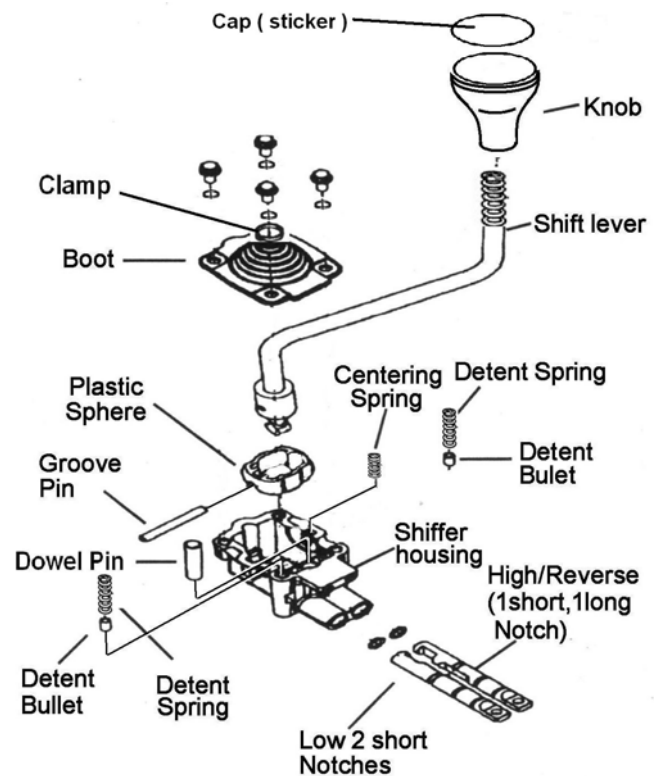
NOTE: These parts are under pressure from the internal springs.

2. Carefully pull the cover and shift lever from the shifter housing.
3. Set the shift cover lever assembly aside.
4. Remove the three springs from shifter housing.

NOTE: Do not tip shifter housing upside

down or detent bullets and stop pin may fall out. Check for signs of moisture in the shifter housing. Inspect shift boot closely if moisture is present in selector box.

6. Tap shifter housing, top down, against a hard, smooth, flat surface to jar the dowel pin and two detent bullets loose. Pulte



detent bullets and the dowel pin out of the shifter housing .

7. Remove the two slides, one at a time.

NOTE: The LH (low) slide has two short notches and the R H (high/rev) slide has one short and one long notch. The slides must be replaced in the proper channels.

8. Inspect O-rings for damage. Replace if any damage is found.

9. Flush housing with parts washer fluid or penetrating oil to remove all moisture.

10. Dry all parts and remove any corrosion with a wire brush.



6.3 SHIFTER ASSEMBLY

1. Grease and insert slides into shifter housing, taking care not to cut or tear O-ring in the process.

NOTE: The LH slide has two short notches and the R H side has one short and one long notch. The slides must be replaced in the proper channels for the shifter to function properly.

2. Replace detent bullets, dowel pin, and springs by reversing steps 5-7 of shift rod Disassembly.

3. Clamp shifter housing lightly in a soft jawed vise.

4. Apply grease to notches and the slides.

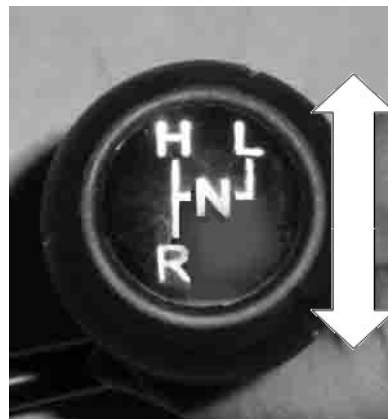
5. Carefully reattach shift cover lever assembly to shifter housing. Make sure slides are in neutral, or parts may be damaged.

6. Torque cover screws to 12 ft. lbs. (16Nm).

7. If re-install the knob, apply Loctite™ 406 and screw the knob in the lever firmly, install the gear shifter on the ATV. Put a new sticker on the knob in correct direction.



NOTE: If moisture or corrosion is found in the shift rod the boot should be replaced.



6.4 SHIFTER INSTALLATION

1. Place shift rod back into the mounting bracket and replace five bolts.
2. Reconnect linkage rods to shift rod slides. Adjust as required. See linkage adjustment procedures.
3. Replace remaining parts.

6.5 SHIFT LINKAGE ADJUSTMENT

Linkage rod adjustment is necessary when symptoms include:

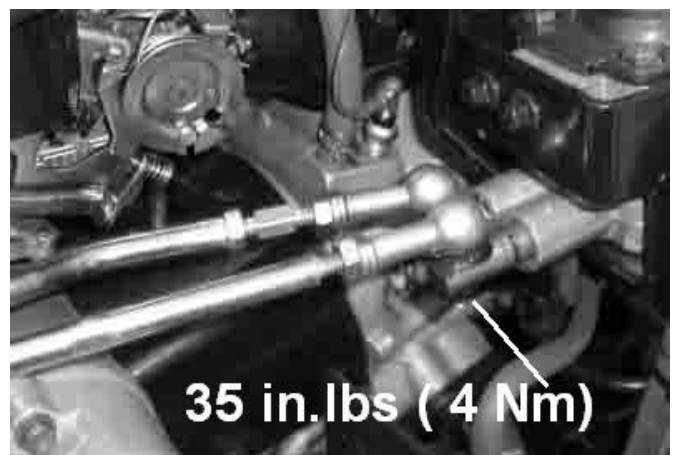
- Noise on deceleration
- Inability to engage a gear
- Excessive gear clash(noise)
- Shift selectors moving out of desired range

NOTE: When adjusting linkage, always adjust both linkage rods. The adjustment of one rod can prevent proper adjustment of the other rod. Remove necessary components to gain access to shift linkage rod ends.

1. Inspect shift linkage tie rod ends, and pivot bushings and replace if worn or damaged. Lubricate the tie rod ends with a light aerosol lubricant or grease.
2. Loosen all rod end adjuster jam nuts.
3. Note orientation of tie rod end studs with stud up or down. Remove both rod end studs from transmission bell cranks.
4. Be sure idle speed is adjusted properly.

NOTE: It is important to disconnect both rod ends from the transmission bell cranks. If one linkage rod is incorrectly adjusted, it can affect the adjustment of the other rod.

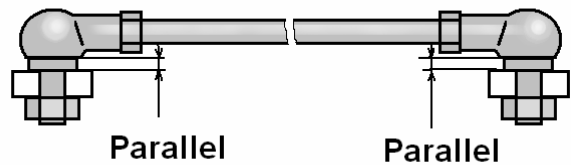
5. Place gear selector in neutral. Make sure the transmission bell cranks are engaged in the neutral position detents.
6. Be sure the shift linkage rod ends are firmly



attached to the gear selector slides. Adjust the low range (inside) rod so the rod end is centered on the transmission bell crank. Install the lock nut to the rod end and torque to **35 in.lbs (4 Nm)**.

7. Rotate the linkage rod clockwise until resistance is felt. Mark the rod so revolutions can be easily counted.
8. Rotate the linkage rod counterclockwise until the same resistance is felt, counting the revolutions as the rod is turned.
9. Turn the rod clockwise again one half of the revolutions counted in Step 8.
10. Tighten the rod end jam nuts securely while holding the rod end. The jam nuts must be tightened with both front and rear rod ends parallel to each other. If jam nuts are properly tightened, the rod should rotate freely 1/4 turn without binding.
11. Repeat steps 7-10 for the High/Reverse rod.

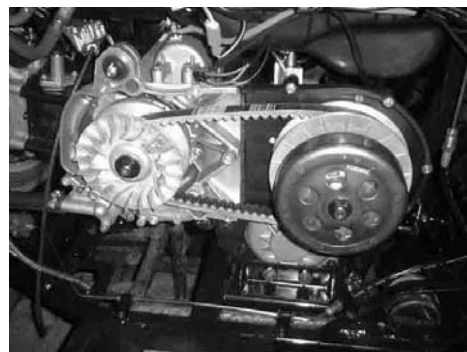
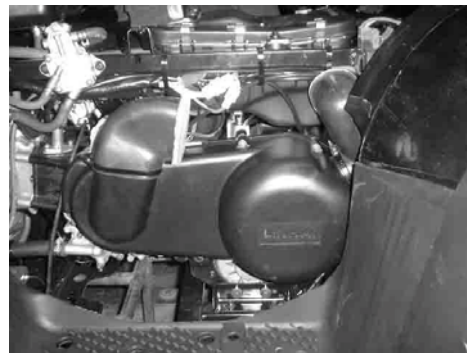
Mark for counter



6.6 ENGINE AND TRANSMISSION REMOVAL

1. Switch fuel valve to "OFF".
2. Remove seat, rack(s), plastic body work, air box and exhaust system .
3. Remove CTV outer cover, drive and driven clutches, feed and return hoses (refer to Engine chapters).
4. Remove shift rods.
5. Remove throttle cable wire connected to carburetor.
6. Disconnect engine from wiring harness completely.
7. Disconnect gear position indicator switches.
8. Remove fuel line connected to carburetor and drain line.

9. Loose all bolts on the brackets which

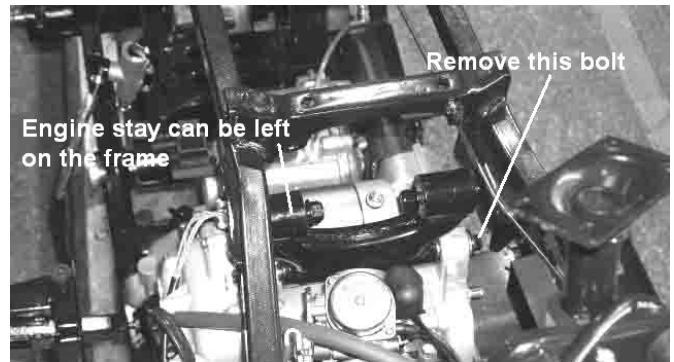


connect the engine/ transmission between the frame, except the 2 brackets between the engine and transmission and left them on the transmission. See picture.

2 brackets between the engine and transmission



10. Remove right and left side engine mount bolts, and remove engine from engine stay.



11. Remove front drive shaft (4WD, see chapter 5).

12. Remove lower left bracket, rear bracket and right mount bolts .(M 10x1.25x70)

13. Remove transmission from frame and remove drive shaft.

6.7 ENGINE AND TRANSMSSION INSTALL

Transmission

1. Position transmission in frame, Align rear drive shaft and slide shaft into the yoke.
2. Install all brackets, loosely install new fasteners.
3. Tighten fasteners in “right -left– rear” order.

NOTE: While tightening, it is important to turn the rear drive shaft by hand to check the position of transmission. If the rear drive axle can not turn freely, it is necessary to loose (but not remove) the fasteners to re-position the transmission by tightening the fasteners in



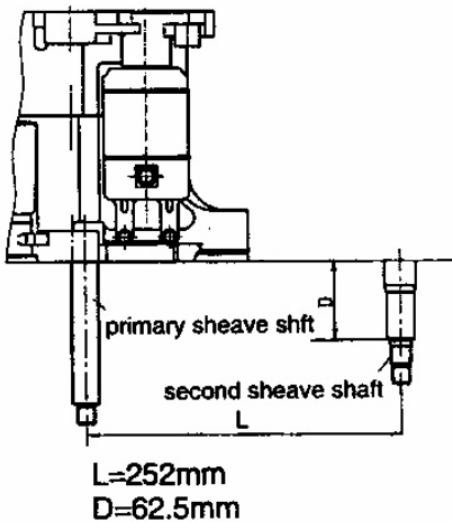
different order.

Transmission Mounting Bolts Torque: **25 ft. lbs. (35 kg.m)**.

4. Drive in a new roll pin.

Engine

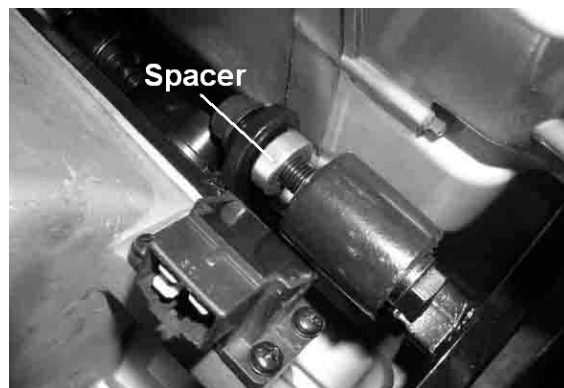
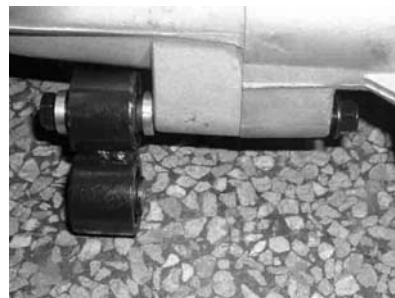
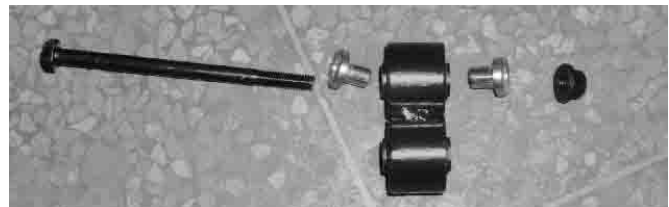
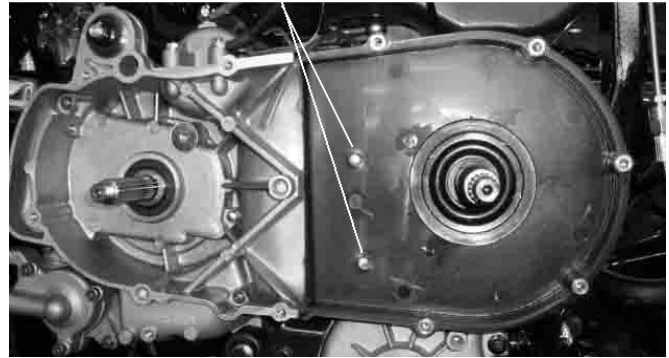
5. Position Engine in frame, Install all brackets, loosely install new fasteners, but not tighten fasteners.
6. Make sure those spacers are in correct position.
7. Install rear inside cover components on transmission (in new model there is no removable rear inside cover).
8. Link engine and transmission together with engine mount jig, (center distance of engine shaft and transmission main shaft is **252 mm** and distance of side surface and shaft shoulder **62.5 mm**)



9. Tighten engine mounting fasteners in top-to bottom order.
10. Remove jig.
14. Install both drive and driven clutches and outer CVT cover.

Engine Mounting Bolts Torque: **25 ft. lbs. (35 kg.m)**.

These 2 holes are only for jig use. Don't install any bolts after assembled.

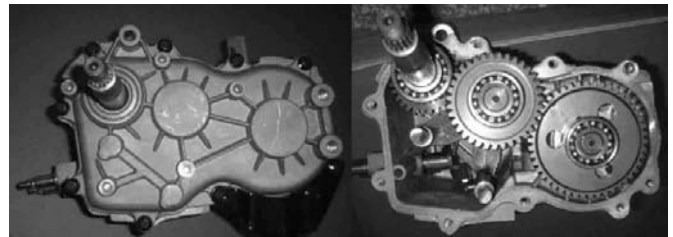


6.8 TRANSMISSION DISASSEMBLY

1. Place gears in neutral.
2. Remove gear position indicator switches.

IMPORTANT: The gear position indicator switches must be removed prior to disassembly.

3. Remove the transmission cover bolts.
4. Carefully remove the cover with a soft face hammer tap on the cover bosses.
5. Remove bearing and helical gear.



6. Remove input shaft, reverse shaft, and both shift fork shafts as an assembly.

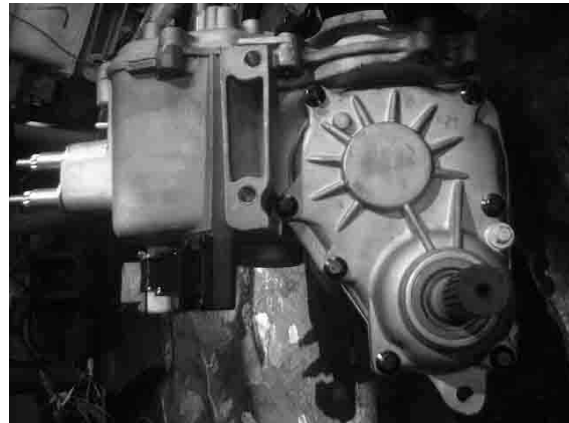


7. Remove pinion shaft retainer plate and pinion shaft.

8. Remove front drive output housing cover screws.



9. Note position of shim washers and thrust button.
10. Remove shafts as an assembly.
11. Clean all components and inspect for wear.
12. Inspect engagement dogs of gears and replace if edges are rounded.
13. Inspect gear teeth for wear, cracks, chips or broken teeth.
14. Remove seals from transmission case.



IMPORTANT: New seals should be installed after the transmission is completely assembled.

15. Inspect bearings for smooth operation. Check for excessive play between inner and outer race.



6.9 TRANSMISSION ASSEMBLY

1. Install sprocket on front output shaft with sprocket step side inward as shown (only for 4X4).



2. Assemble front (only for 4X4).and rear output shafts

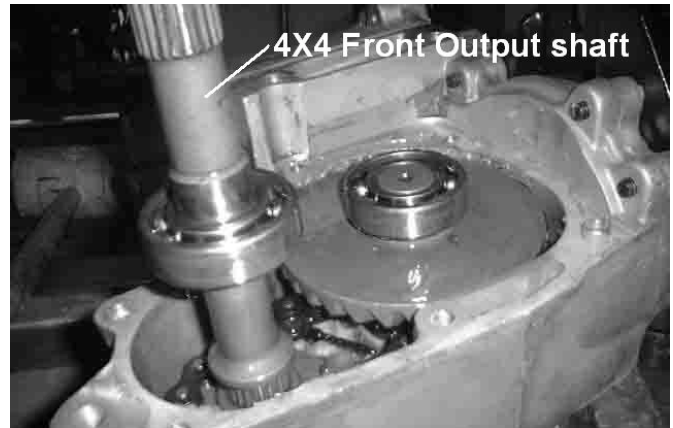


3. a. (4X4) Install front and rear output shafts with chain as an assembly.
3. b. (2X4) Install rear output shaft.



4. Before installing the cover make sure the sealing surfaces are clean and dry, and shafts are fully seated in the transmission case. Apply silicon glue to mating surfaces.
5. Reinstall cover and torque bolts in a criss-cross pattern in 3 steps to **18 ft. lbs. (25 Nm)**.

6. Install new front (only for 4X4) and rear output shaft seals.



- 7. Install pinion shaft with bearing .
- 8. Install retainer plate with flat side toward bearing.
- 9. Apply Loctite™ 242(Blue) to screw threads and torque screws to 18 ft-lb. (25Nm).



10. Assemble shafts with chain and shift forks.

11. Carefully install high/reverse shaft assembly and gear cluster as a unit into their respective bearing case areas. Tap with a soft face hammer to seat shaft assemblies.



NOTE: Make sure shift shaft pins are properly positioned in the slot on selector arms.

NOTE: Be sure gear indicator switch(es) are removed from transmission case before installing shafts.

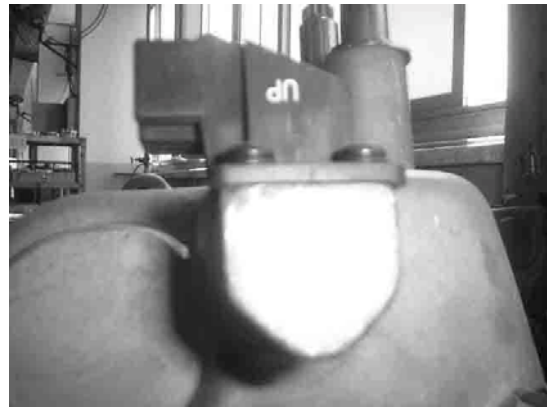
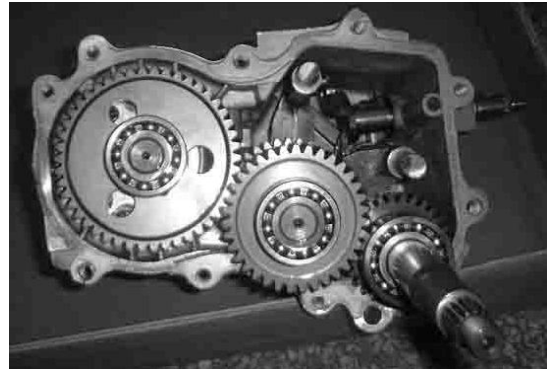
12. Install output shaft and gear assembly along with sprocket and chain.



13. Prior to reinstalling the cover make sure the mating cover surfaces are clean and

dry, and shafts are fully seated in transmission case. Apply silicon to mating surfaces.

14. Reinstall main cover and torque bolts in a cross pattern in 3 step to **18 ft.lbs. (25Nm)**.
15. Install new input shaft seal.
16. Install drain plug with a new sealing washer. Torque drain plug to **14 ft.lb. (19Nm)**.
17. Install transmission and add 80W/90 oil in the recommended amount. Refer to Maintenance Chapter.
18. Install gear indicator switches. Apply Loctite™ 242 (blue) to threads of switch screws and torque to **13-16 in. lbs. (1.5-1.9 Nm)**.



6.10 TROUBLE SHOOTING CHECKLIST

Check the following items when shifting difficulty is encountered

- Idle speed adjustment
- Transmission oil type/quality
- Driven clutch (CVT) deflection
- Loose fasteners on rod ends
- Loose fasteners on gear shift box
- Worn rod ends, clevis pins, or pivot arm bushings
- Linkage rod adjustment and rod end positioning
- Shift selector rail travel
- *Worn, broken or damaged internal transmission components

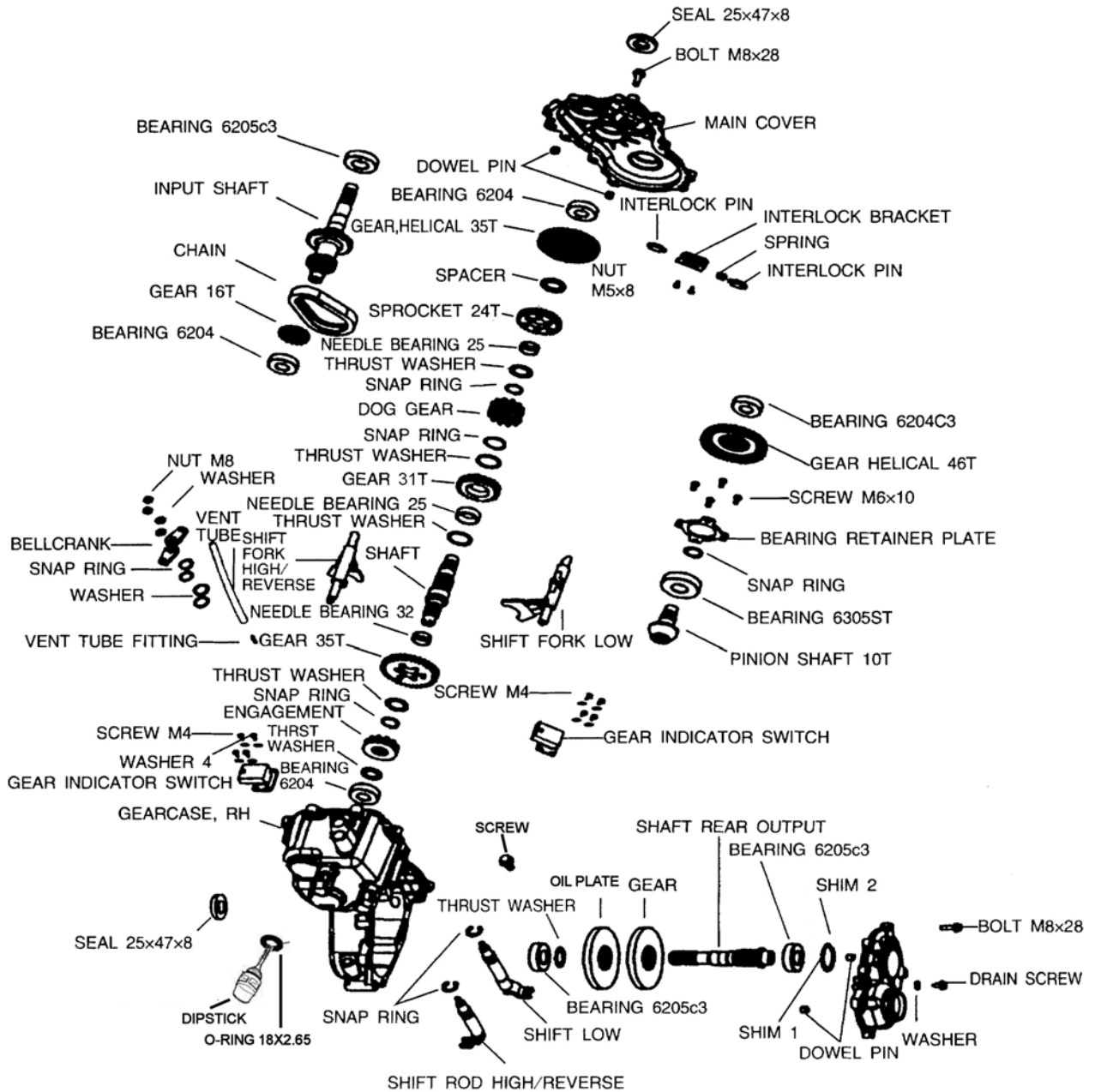
Check the following items when transmission locked

- Gear shifter malfunction (Selector lever end come out from slides notches), engage the Hi and Lo Gear at the same time.

***NOTE :** To determine if shifting difficulty or problem is caused by an internal transmission problem , isolate the transmission by disconnecting linkage rods from transmission bell cranks . Manually select each gear range at the transmission bell crank, and test ride vehicle. If it functions properly, the problem is outside the transmission.

If transmission problem remains, disassemble transmission and inspect all gear dogs for wear (rounding), damage. Inspect all bearings, circlips, thrust washers and shafts for wear.

2X4 TRANSMISSION EXPLODED VIEW



4X4 TRANSMISSION EXPLODED VIEW

