

# Rincon Big Red gear swap.

Pictures and procedures courtesy of "Honda Bob"  
and [ATV-Guru.com](http://ATV-Guru.com)

The final drive gear is 3 teeth larger and the forward and reverse gears are both 3 teeth smaller. This gives a 28% lower gear in forward and reverse. With stock 25 inch tires top speed drops from about 62 mph to 45 mph at the rev limiter. Larger 27 to 28 inch tires will increase the top speed about 5 mph to about 50 and still have a 20% gear reduction.



Stock gears on left and the new lower Big Red gears on right of each group. Bottom left is the final drive gear that goes on the final drive shaft. The final drive shaft goes through the engine cases to drive the front and rear drive shafts. The stock gear is a 38 tooth, the Big Red gear is a 41 tooth.

Top left is the final drive shaft thrust washer. There may be a slight bur in the case that can be easily cleaned up. Low mileage quads may not have a bur. The larger thrust washer protects the sub trans case better.

Top right is the forward final drive gear. The original is a 19 tooth, the Big Red gear is 16 tooth.

Bottom Right is the reverse gear. The original is a 16 tooth, the Big Red gear is 13 tooth.



The small 13 tooth Big Red reverse gear (on the right of each group) is combined with the shaft (one piece).

## Here are the necessary part #s

The prices are approximate and subject to change

The O-rings may not be necessary on a near new Rincon.

23621-HL1-A00 Gear, Final Drive 16T H/C 9044785 \$22.00

23722-HL1-A00 Gear A, Reverse Idle 13T H/C 9044819 \$43.00

23631-HL1-A00 Gear, Final Driven 41T H/C 9044793 \$38.00

90459-HN8-B40 Washer, Thrust 25x46x2 H/C 8785529 \$3.00

11345-HN8-000 Gasket, RR Cover H/C 7168339 \$15.00

11396-HN8-A60 Gasket, Alternator Cover H/C 8244295 \$11.00

91311-MB0-003 O-Ring 18.5 X 2.4 for drive shaft front

91305-KE1-000 O-Ring 19.4 X 2.3 for drive shaft rear

91305-HN8-003 O-Ring 17 X 3.6 for oil filler tube

94109-12000 Washer, drain plug 12mm

91305-GE1-920 O-Ring 9 X 1.8 for drain plug





# Rincon Big Red gear swap part 1

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Clean the bike thoroughly, you do not want dirt falling down into the open gear cases.



Secure Quad on lift, the back end can be raised if a lift is not available.  
Remove after market skid plate.



Support the main frame in line with the foot pegs.  
Make sure the support is forward enough for the oil to drain into a pan.

Support the rear sub frame with a small jack.

Note: The rear sub frame, dif assembly, shocks, A arms, etc. will be lowered down out of the way as an assembly.

Remove the rear wheels.



Remove left foot well and plastic engine cover.



Remove right foot well and plastic engine cover.

Note: some of the fasteners are screwed back in place to make reassembly easier.

Some fasteners like the skid plate hardware and foot well fasteners are grouped in a small container.

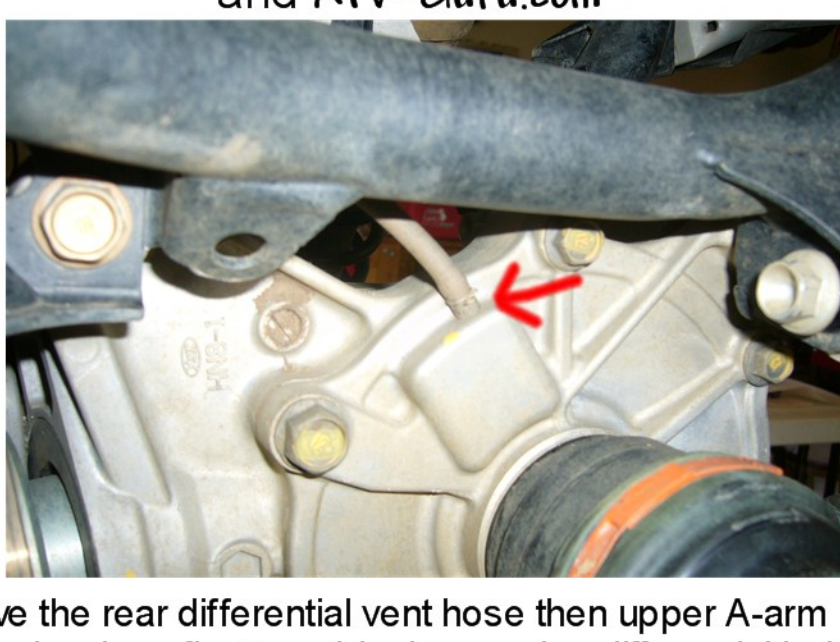
**Disconnect the battery.**

This is an important safety measure and standard practice.



# Rincon Big Red gear swap part 2

Pictures and procedures courtesy of "Honda Bob" and ATV-Guru.com



Remove the rear differential vent hose then upper A-arm bolts. Must be done first to unblock removing differential bolts.



Remove the upper shock mount bolts



Remove the anti sway bar bolts



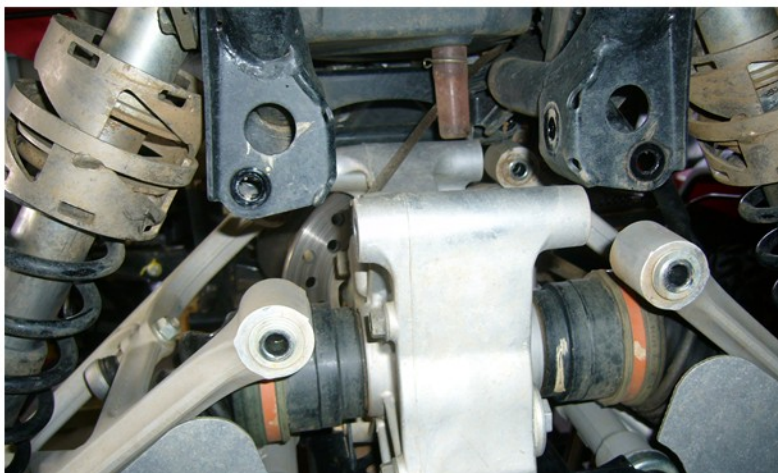
Remove the parking brake cable



Disconnect the rear brake hose mounting bracket



Support the rear dif with a small jack

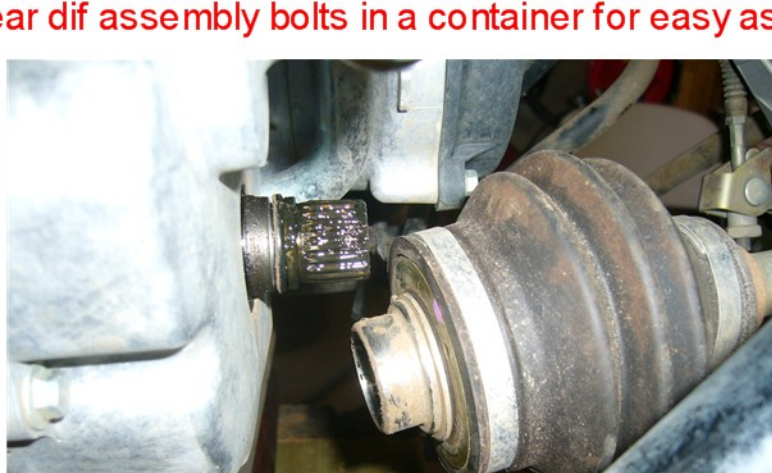


Remove both upper rear dif mounting bolts

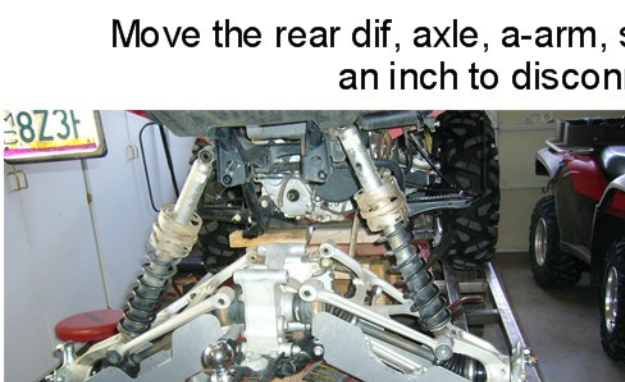


Remove the rear sub frame bolts

Put all the rear dif assembly bolts in a container for easy assembly



Move the rear dif, axle, a-arm, shock assembly to the rear about an inch to disconnect the drive shaft.

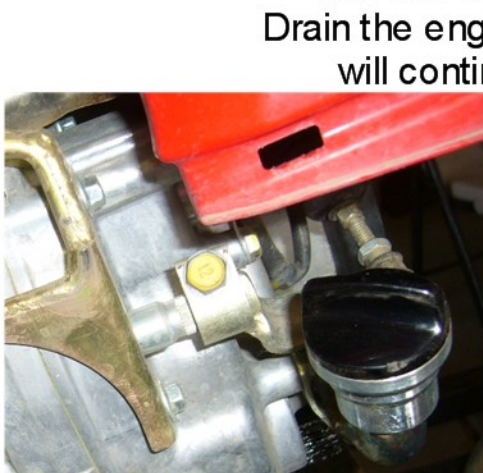


Lower the rear dif, axle, a-arm, shock assembly down



The rear brake hose remains connected

Drain the engine oil, note the torque converter will continue to drain for a few hours.

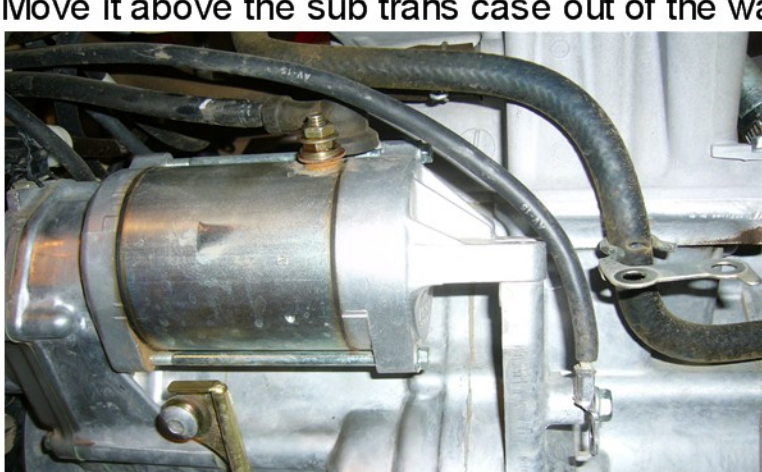


Remove the oil filler pipe

Make sure the trans is shifted into neutral and

remove the shift lever and cable.

Move it above the sub trans case out of the way.



Remove the starter wires and mounting bolts

Use a large screwdriver between the starter and case to pry the starter forward



Note the starter mounting bolts are screwed back into the engine case



# Rincon Big Red gear swap part 3

Pictures and procedures courtesy of "Honda Bob"  
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Disconnect the alternator wire connector, push the tab in  
to remove the connector from the frame



Pry the connector locking tab outward to disconnect the connector  
**The tight o-ring seal may require you to pry on the connector a bit**  
**Avoid pulling on the wires**



Disconnect the gear position sensor connector



Disconnect the oil temperature switch connector



Remove the pull starter



Loosen and remove pull starter pulley nut with pry bar holding engine.  
**Be careful not to damage the case with the pry bar.**

Remove the pull starter pulley



Remove the upper front dif bolt and spacer  
Remove the lower dif mount bolt and the two  
bolts holding the front dif mount to the frame.



Move the front dif forward about an inch to remove the front drive shaft.



# Rincon Big Red gear swap part 4

Pictures and procedures courtesy of "Honda Bob" and [ATV-Guru.com](http://ATV-Guru.com)



Remove the alternator case screws, the 4 screws inside the case have a sealing washer



Remove the alternator case



Remove gear reduction shaft  
There are no shims on these shafts



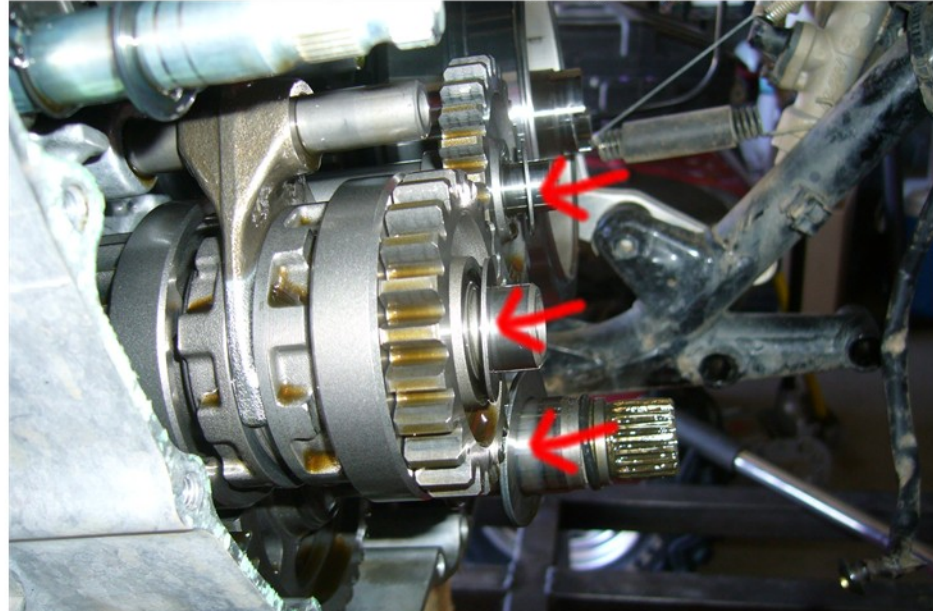
Remove the starter torque limiter



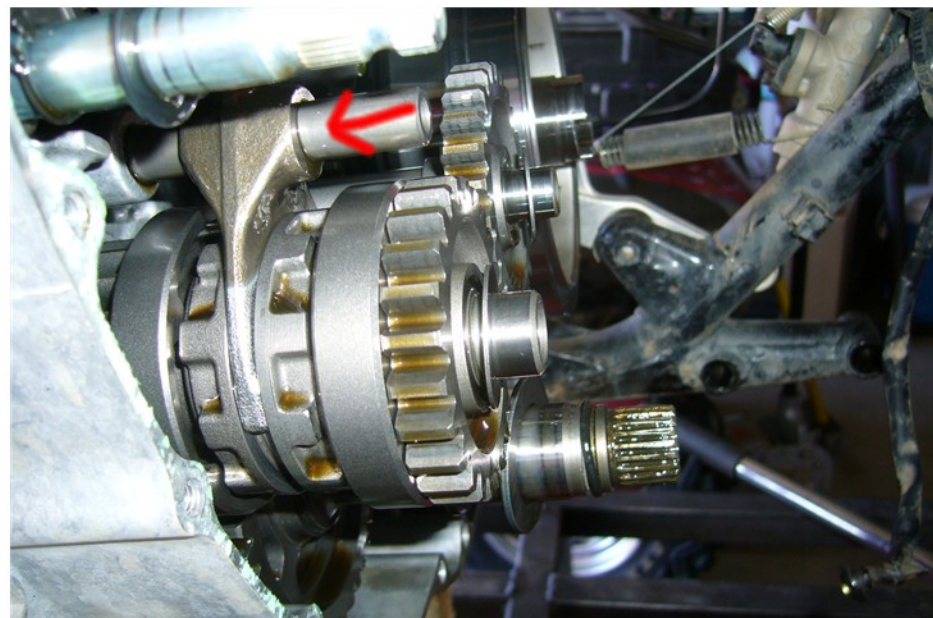
Remove the exhaust pipe clamp bolts and rotate the clamp inboard to clear the sub trans case



Remove the sub trans case, tap lightly if necessary



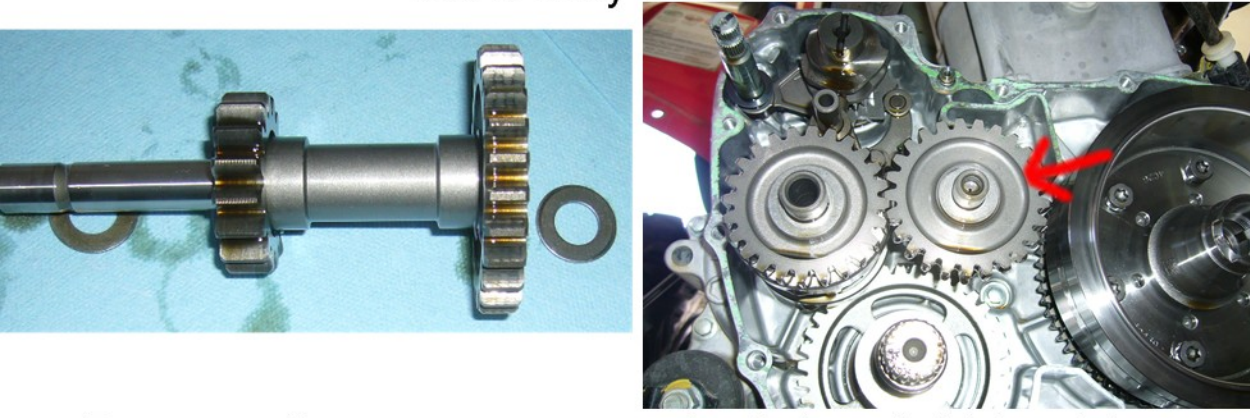
Note the shim on the forward shaft, reverse shaft and main shaft.



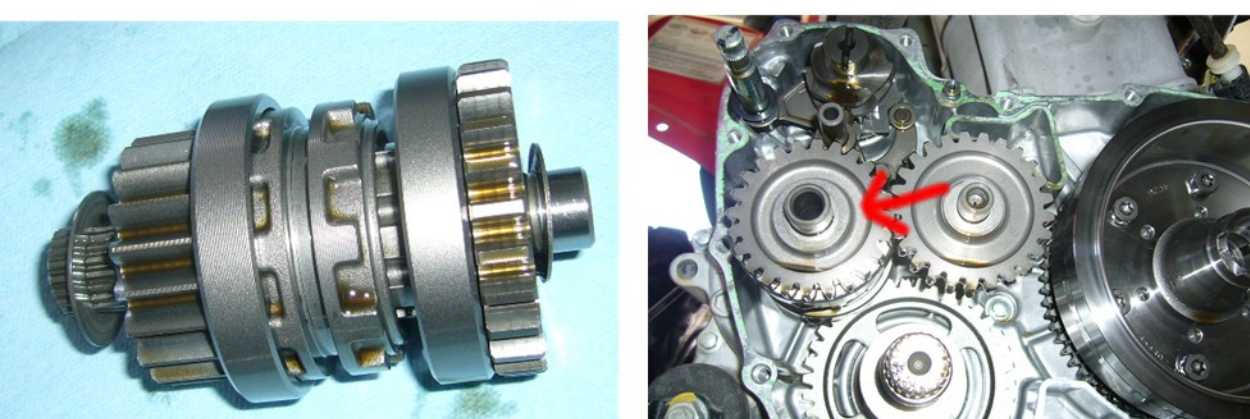
Remove the shift fork shaft and shift fork



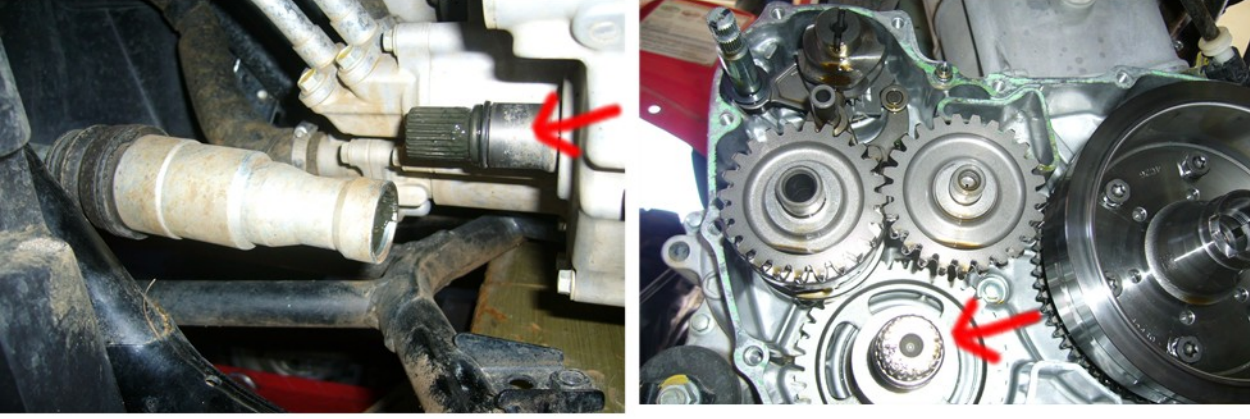
Note the numbers face to the rear on the shift fork but it may not matter



Remove the reverse gear shaft, top right in picture



Remove the forward / reverse shaft assembly, top left gear set in picture



Clean the front section of the main shaft and remove the main shaft, bottom shaft in picture



# Rincon Big Red gear swap part 5

Pictures and procedures courtesy of "Honda Bob" and ATV-Guru.com



Gasket removal is available at the local auto parts store.

It will soften the gasket making it much easier to remove without damaging the case.

Don't get it on your hands, the stator, or wiring.

Wear eye protection and apply several applications as necessary

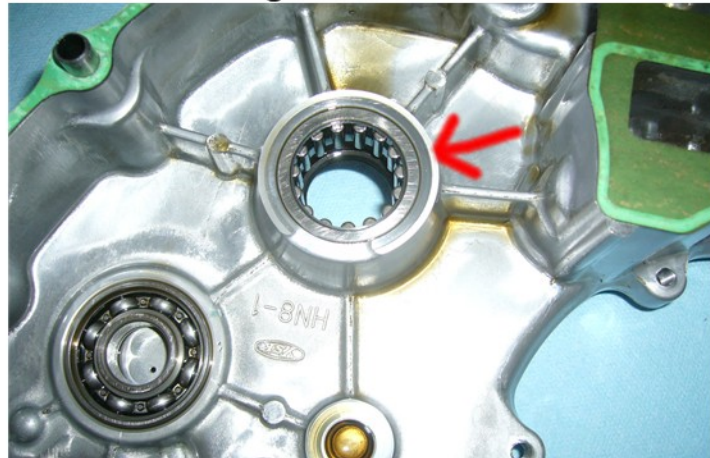
Clean the gasket material from the engine case

Clean the old gasket material from the alternator case

Clean the old gasket material from both sides of the sub trans case



Note the new larger main shaft thrust washer



There might be a slight bur on the case from the old smaller thrust washer. Clean up is necessary



The larger thrust washer on right protects the case better



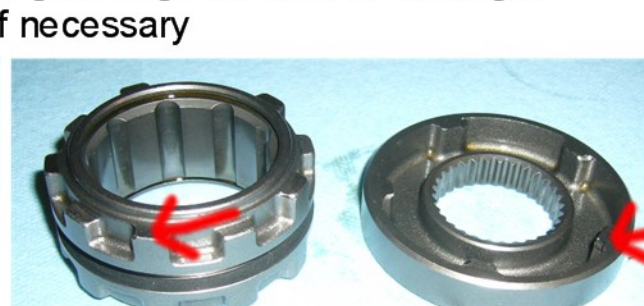
Replace the 38 tooth gear on the main shaft with the 41 tooth gear, install the larger thrust washer



Grease the front main shaft seal and install the main shaft



Check the forward and reverse gear dogs for wear or damage, replace if necessary



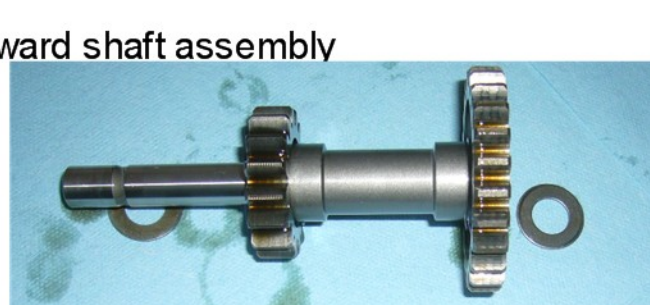
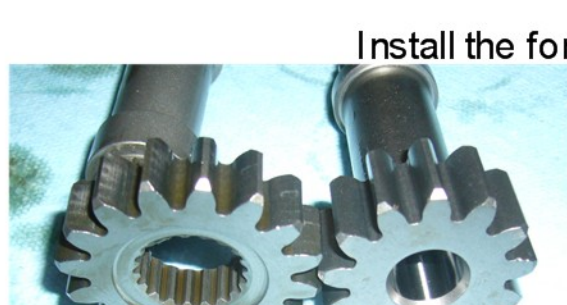
Note: This 06 Rincon had reverse gear dog damage due to an improperly adjusted shift cable. It would grind unless shifted quickly into reverse



Replace the 19 tooth gear with the 16 tooth on the front of the forward shaft note there is a shim on each end of the shaft.

Oil the needle bearings

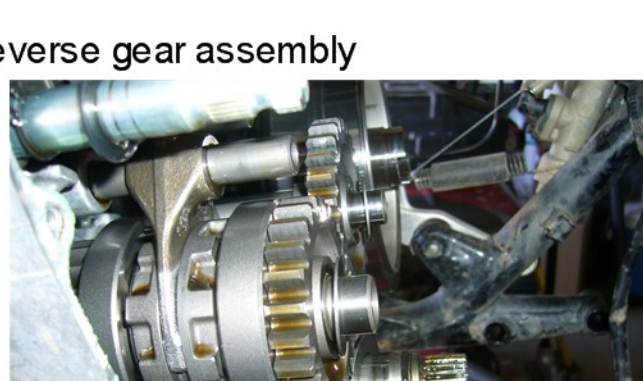
Install the forward shaft assembly



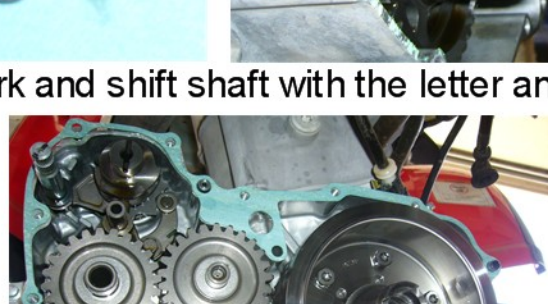
Replace the 16 tooth gear with the 13 tooth reverse gear

Note there is a shim on each end of the shaft

Install the reverse gear assembly



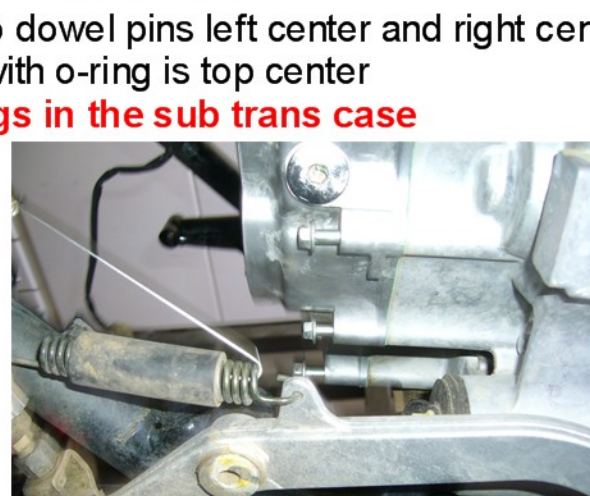
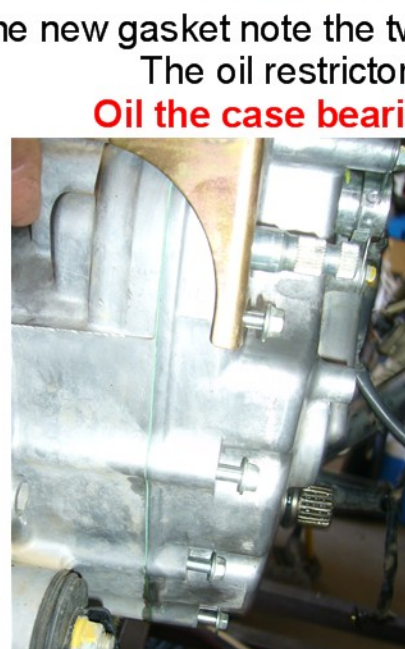
Install the shift fork and shift shaft with the letter and number facing aft.



Install the new gasket note the two dowel pins left center and right center

The oil restrictor with o-ring is top center

**Oil the case bearings in the sub trans case**



Grease the main shaft seal and install the sub trans case.

The bolts will stick out about 1/4 inch when installed in the proper holes.

**Torque bolts to 7 ft lb or 84 in lb.**

Note: **Tighten the bolts in a crisscross pattern in several steps, be careful not to over tighten the small 6mm bolts.**



# Rincon Big Red gear swap part 6

Pictures and procedures courtesy of "Honda Bob" and [ATV-Guru.com](http://ATV-Guru.com)



Oil the case bearings



Install the starter reduction gear in the sub trans case



Install the starter torque limiter and gear reduction shaft in the alternator case



Grease the seal and install the alternator case  
Note: the magnets will make the case difficult to install



The screws will stick out about 1/4 inch when installed in the proper holes, the idle speed cable bracket goes on the top hole.

Fuel injected models do not have idle speed cable.

**Torque bolts to 7 ft lb or 84 in lb.**



The 4 screws with the sealing washers go inside the alternator case.

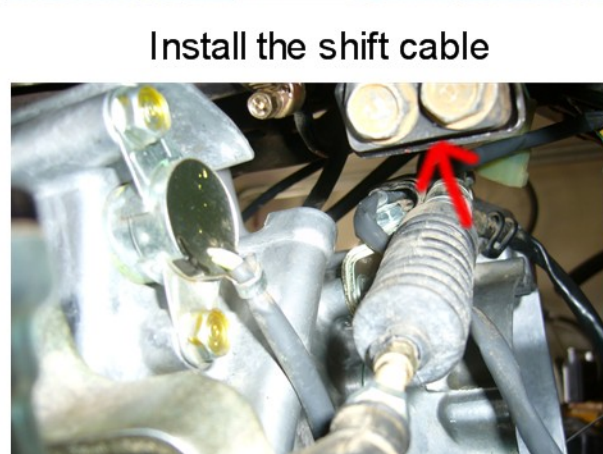
**Torque bolts to 7 ft lb or 84 in lb.**



Install the ground cable to the alternator case.



Install the shift cable



Install the exhaust pipe clamp.



Install the pull starter pulley, **torque to 80 ft/lb.**

**Hold the engine with a bar. Do not damage case!**



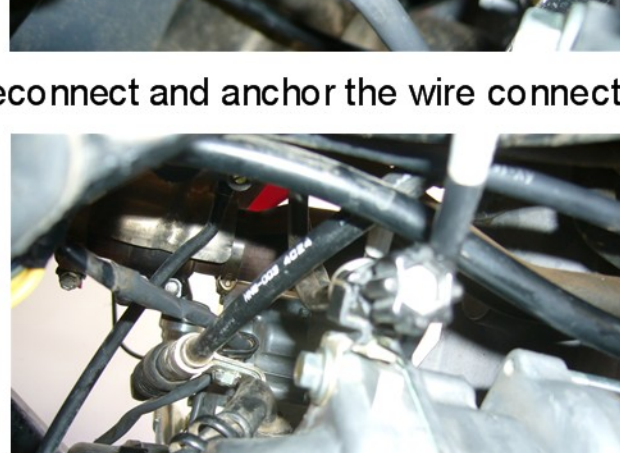
Install the starter



Snap the wire harness connector closed.



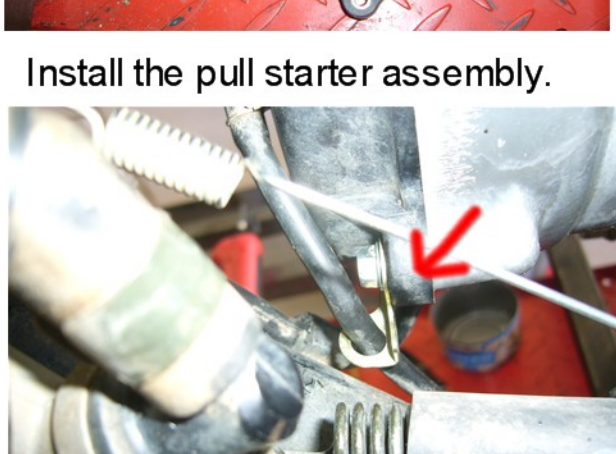
Reconnect and anchor the wire connectors



Route and secure the wiring, note the wire around and behind the shift cable.



Install the pull starter assembly.



Install the float bowl drain hose. Fuel injected models do not have this.



# Rincon Big Red gear swap part 7

Pictures and procedures courtesy of "Honda Bob" and ATV-Guru.com



Grease the drive shaft splines, I use Ford wheel bearing grease with Moly.



Install the front drive shaft and front dif bolts.



**Don't forget the spacer on the top dif mount.**

**It helps to have a buddy assist in installing the rear section.**



The shocks and upper A-arms will need to be held into position as the rear section is raised to install the drive shaft.



Install the top dif bolts and rear sub frame section bolts.  
After the dif bolts are tightened the A-arm bolts can be installed.



Connect the rear dif vent hose.



Install the shock bolts.



Install the sway bar bolts.



Connect the rear brake hose bracket.  
Install the skid plate and wheels.  
Install the right and left foot well.

Use the disassembly instructions as a check list.

**Add engine oil and a new oil filter.**

Reconnect the battery.

End of installation.