

# Max IV

## Rear Axle Replacement

For models after Serial Number 19089  
and all rear splined axle replacements.

10/8/03

Max IV Snap Ring Rear Axle replacement.doc

### Tools required:

9/16" Wrench	6" Extension	Steel Straight Edge
3/4" Wrench	Ratchet	Hammer
3/4" Socket	Drift Pin	9/16" Socket
Hex Wrench Set	Grease Gun	Tape Measure
Torque Wrench	Floor Jack	Jack Stands
Standard Screwdriver	Permatex <sup>®</sup> Anti-Seize	
Rubber Mallet	#271 Loctite <sup>®</sup> Threadlocker	
Heavy Duty Snap Ring Pliers (Recreatives P/N 45011 with tips P/N 45012)		

### Procedure

**Read through all instructions before you begin.**

1. Move the vehicle to a level surface.
2. Place the vehicle in reverse gear.
3. Remove the floorboards and engine cover. Disconnect the negative battery cable.
4. Raise the vehicle so the tires are off the ground.



**WARNING**

**Securely support the vehicle so there is no danger of it falling.**

5. Place the vehicle in NEUTRAL gear.
6. Remove the tire from the axle to be replaced.

## Rear Axle Replacement

### *Removal*

1. Measure the distance from the outer chassis rail to the edge of the outer rear sprocket. Write this measurement down as it will be needed later in order to realign the chain(s). (See Figure IA).



**CAUTION!**

**Failure to align the chains will result in vehicle damage.**

2. Loosen the rear chain adjuster assembly for the axle to be replaced. Loosen the jam nut on the rear adjuster bolt (protruding through the angle at the rear of the chassis) and then remove the adjuster nut. Tap or slide the adjuster bolt towards the front of the vehicle through the hole in the rear of the chassis. Then rotate the adjuster assembly up and out of the way.
3. Remove the rear chain (52 link) from the transmission and rear sprocket. Remove the center chain (116 link) from the rear sprocket and center sprocket. Remove the bolt from the end of the axle to be removed/replaced. Loosen the two set screws on the inner bearing (see Figure V).
4. Locate the four, 3/8" nuts and lock washers, which secure the outer bearing flange to the chassis. Remove these nuts and lock washers. Slide the axle out until the sprocket is in contact with the frame. Remove the bearing shims (thick and/or thin) on the end of the axle and set them aside. Keep track of these shims and the order in which they are on the axle. This will help in proper alignment during the assembly process.
5. Locate the inner sprocket snap ring (next to the inner most edge of the sprocket assembly). Using the proper snap ring pliers, loosen the snap ring and remove it from the axle.



**WARNING**

**Failure to use the proper snap ring pliers can result in serious injury.**

6. Remove the axle from the vehicle. The outer bearing, flange, locking collar, outer sprocket snap ring, and any sprocket shims should remain on the axle. Keep track of the sprocket shim(s) and their order on the axle. You may need to tap the axle out with a hammer by tapping on the back side of the wheel flange (the plate the wheel bolts to). The sprocket assembly will remain in the vehicle.

**Note:** Over time, there is a possibility of the axle becoming rusted to the inner bearing or sprocket assembly. In this case, the axle must be cut with a grinding wheel. After the axle is cut and removed, remove the bearing or sprocket assembly from the chassis (see the *Bearing Replacement* section or *Sprocket Replacement* Section of the service manual) and replace it with a new bearing or sprocket assembly if necessary.



**Always wear safety glasses when cutting metal objects.**

7. Once the axle is removed, place it on a table or bench and in a vise if possible. Remove the sprocket shim(s) and the outer sprocket snap ring using the proper snap ring pliers. Keep track of sprocket shim(s) as it will be used later during the installation. Loosen the set screw on the locking collar on the outer bearing. Unlock the locking collar using a hammer and a drift pin. To unlock the collar, place the drift pin in the locking hole (not the set screw hole) and tap it with the hammer so that the collar will spin in the same direction that the axle rotate when the vehicle is moving backwards. Once loose, slide the locking collar away from the bearing. Remove the bearing, flange, and locking collar from the axle.

### ***Installation***

1. Inspect the paper flange gasket located between the outer steel bearing flanges. Replace if necessary. Reinstall the outer chassis bearing and flange, which was removed with the axle assembly, to the chassis. Be sure that the eccentric locking surface on the bearing is facing towards the outside of the vehicle and that the grease fitting on the outer flange is towards the top of the vehicle. Loosely install the lock washers and nuts onto the four, 3/8" bolts. These will be tightened down later.
2. Place the outer locking collar on the axle (the one from the outer chassis bearing). Make sure that the recessed portion on the locking collar is facing the vehicle body. Coat the axle shaft with Anti-Seize.
3. Insert the axle into the outer chassis bearing. Install the outer sprocket snap ring and sprocket shim(s) onto the end of the axle. Do not place the snap ring into the outer groove yet. Slide the axle through the sprocket assembly. Carefully slide the snap ring, appropriate sprocket shim(s), and sprocket assembly along the axle

shaft until the snap ring locks securely into the outer snap ring groove. With the sprocket shim(s) and sprocket assembly seated against the outer snap ring, install the inner snap ring, being sure that it locks securely into the inner snap ring groove. Place the shims removed in step 5 of the removal procedure (always use new thin shims) on the turned down portion of the axle (see Figure V). Slide the axle into the inner bearing.

4. With the axle in place, tighten down the four nuts, which were installed on the outer bearing flange assembly. These should be tightened down to 30 ft-lbs.



**CAUTION!**

**Failure to tighten down hardware will result in vehicle damage.**

5. Slide the axle in all of the way until the bearing shims are seated tightly against the inner bearing.
6. Double check the alignment by measuring from the outer chassis rail to the inner center sprocket (see Figure IA). This should be the same as the measurement for the outer rear sprocket that was written down in step 1. Also, double check the alignment of the 34 tooth (large) rear sprocket to the transmission sprocket. Lay a steel straight edge along the outside of the transmission sprocket and the outside edge of the large (34 tooth) rear sprocket (see Figure III). Add or remove thick or thin shims in order to gain proper alignment. Repeat this process with the straight edge on the inside edge of both sprockets (see Figure II).

**Note:** If there is a gap on one side of the 34 tooth sprocket while the other side is flush with the straight edge, move the axle so there is a smaller gap on between both sides of the 34 tooth sprocket and the straight edge. Sprocket thickness may vary due to machining tolerances.



**CAUTION!**

**Failure to align the chains will result in vehicle damage.**

7. Once the alignment of the 34 tooth rear sprocket and the transmission sprocket has been verified, measure from the outer chassis rail to the outer rear sprocket (see Figure 1A). If this is the same as the measurement written down in step 1 of the removal procedure, proceed to step 9. If not, use this new measurement and the same number of shims to align the center axle inner sprocket with the rear axle outer sprocket and then align the center axle outer sprocket with the front axle sprocket. Refer to the center and

front axle replacement sections in order to properly align these axles.

8. Secure the axle to the bearing using the bolt, lock washer, and flat washer as shown in Figure VI. Be sure to put #271 Loctite® on the bolt and tighten it down to 30 ft-lbs. Tighten down the two inner bearing set screws. Proceed to tighten down the outer bearing locking collar. Turn the collar by hand in the same direction that the axle rotates when the vehicle is moving forward. Rotate the collar while applying pressure in towards the bearing until the collar is snug on the bearing. Lock the collar down using a drift pin and hammer. To lock it, place the drift pin into the collar locking hole (not the set screw hole) and tap the collar with 4 or 5 firm taps to rotating it and tighten it. Tighten down the set screw with a hex wrench.
9. Grease the outer and inner bearings with one or two pumps of grease with a grease gun. Grease the sprocket assembly with 3 or 4 pumps of grease with a grease gun.



**CAUTION:**

**Too much grease in a bearing will damage the bearing seals.**

10. Reinstall the rear chain adjuster assembly to the rear of the chassis.
11. Now double check the alignment of the center (between the center and rear axles) and rear idler (on the short/primary chain) sprockets (adjuster sprocket). Measure from the outer chassis rail to the center (of the width) of the outer rear axle sprocket. With the idler sprocket bolt snug, measure from the outer chassis rail to the center of the center idler sprocket (see Figure IB). Move the shims for the idler sprocket around until you have the same measurement as the outer chassis rail to the center of the outer center axle sprocket. Now, snug all the hardware on the rear adjuster assembly. Using a straight edge, align both sides of the rear idler sprocket with the transmission output sprocket (see Figure IV). There should be a small gap (1/32" to 1/16") between the idler sprocket and the straight edge on both sides. Move the idler shims to obtain proper alignment.
12. Reinstall the chains. Adjust the chains as described in your owners manual. Be sure to tighten down all the hardware that was loosened on the rear idle assembly after adjusting the chains.



**CAUTION:**

**Failure to properly adjust chains will result in vehicle damage.**

13. Reinstall the tire on the axle. Tighten down the lug nuts to 55 ft-lbs.
14. Reconnect the negative battery cable and install the floorboards and engine cover.



The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



**CAUTION:**

A CAUTION indicates special precautions that must be taken to avoid damage to the vehicle.



**WARNING**

Failure to follow WARNING instructions could result in severe injury or death to the vehicle operator, any passenger, or a bystander.

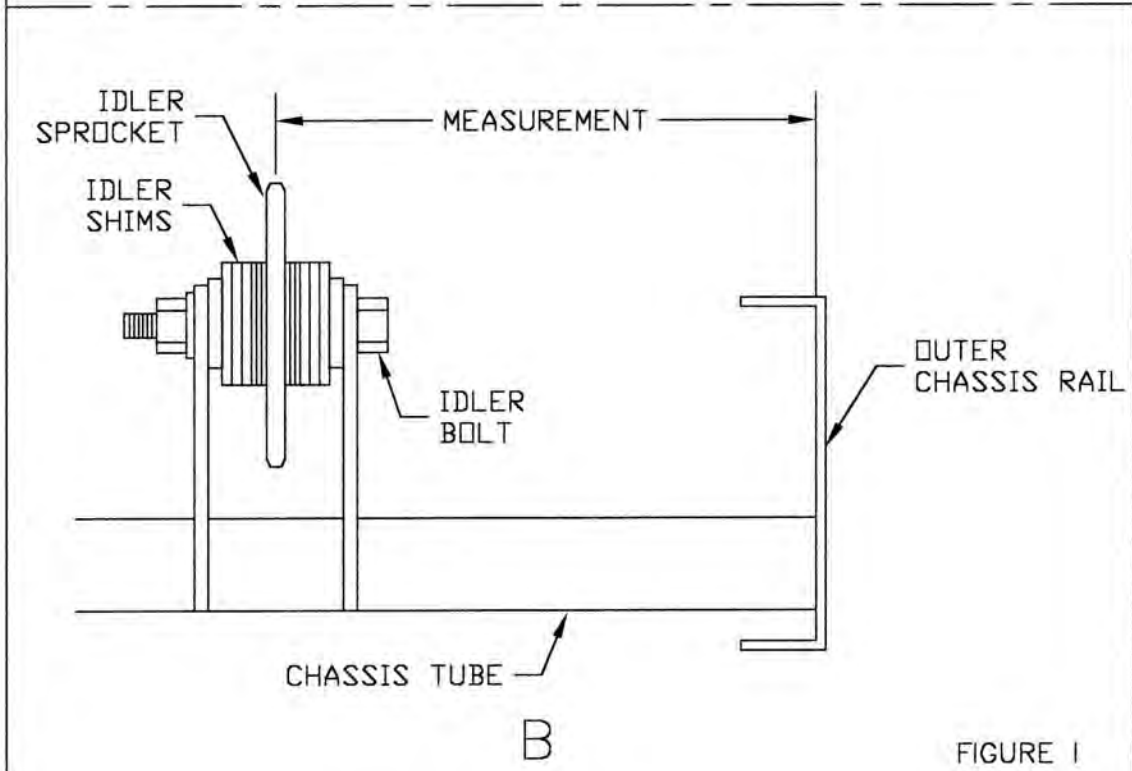
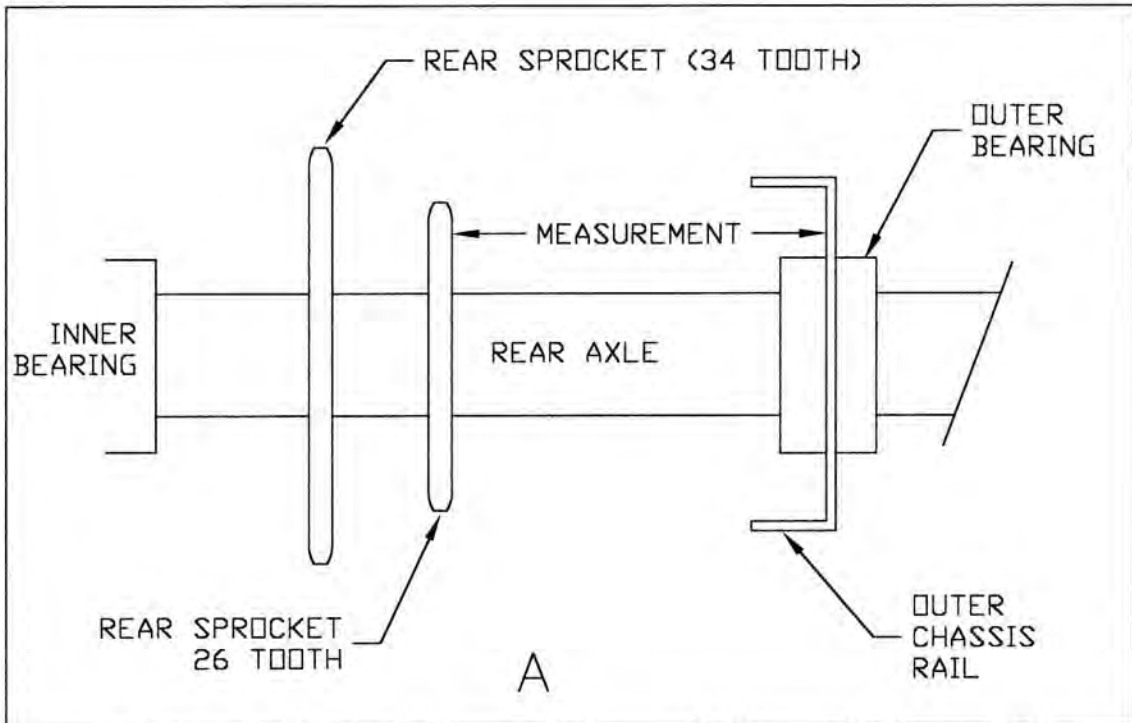


FIGURE 1

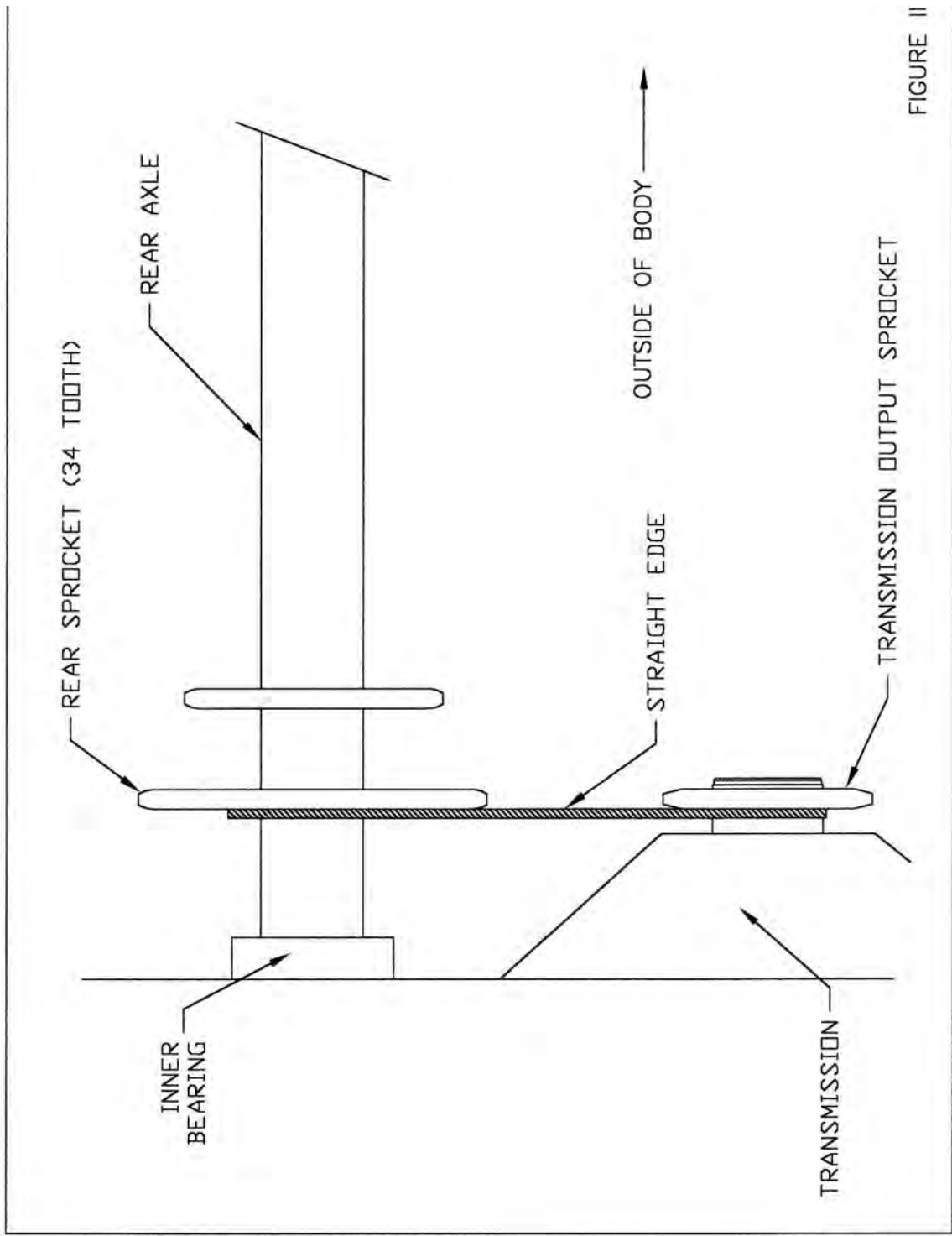


FIGURE II



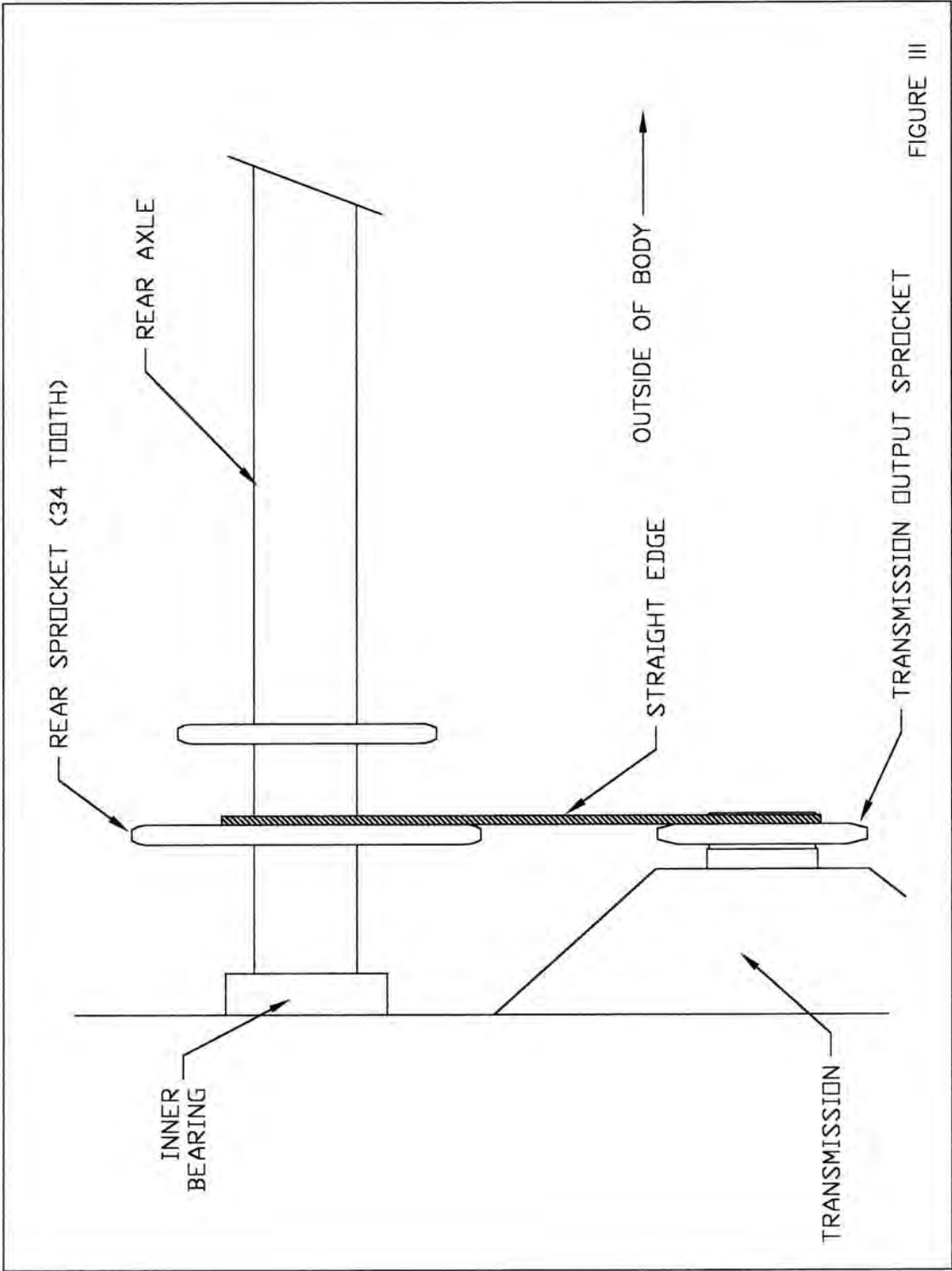


FIGURE III

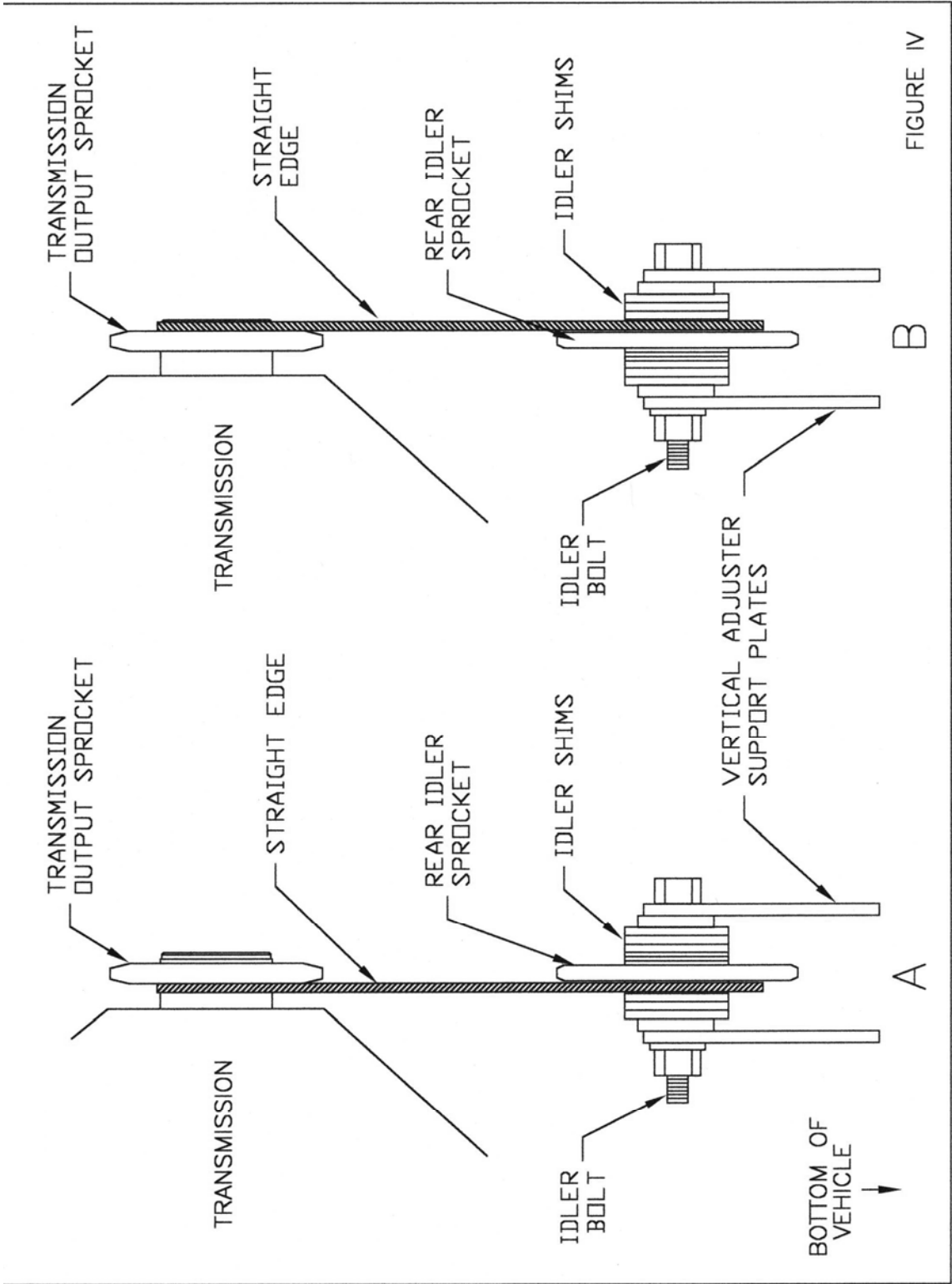


FIGURE IV

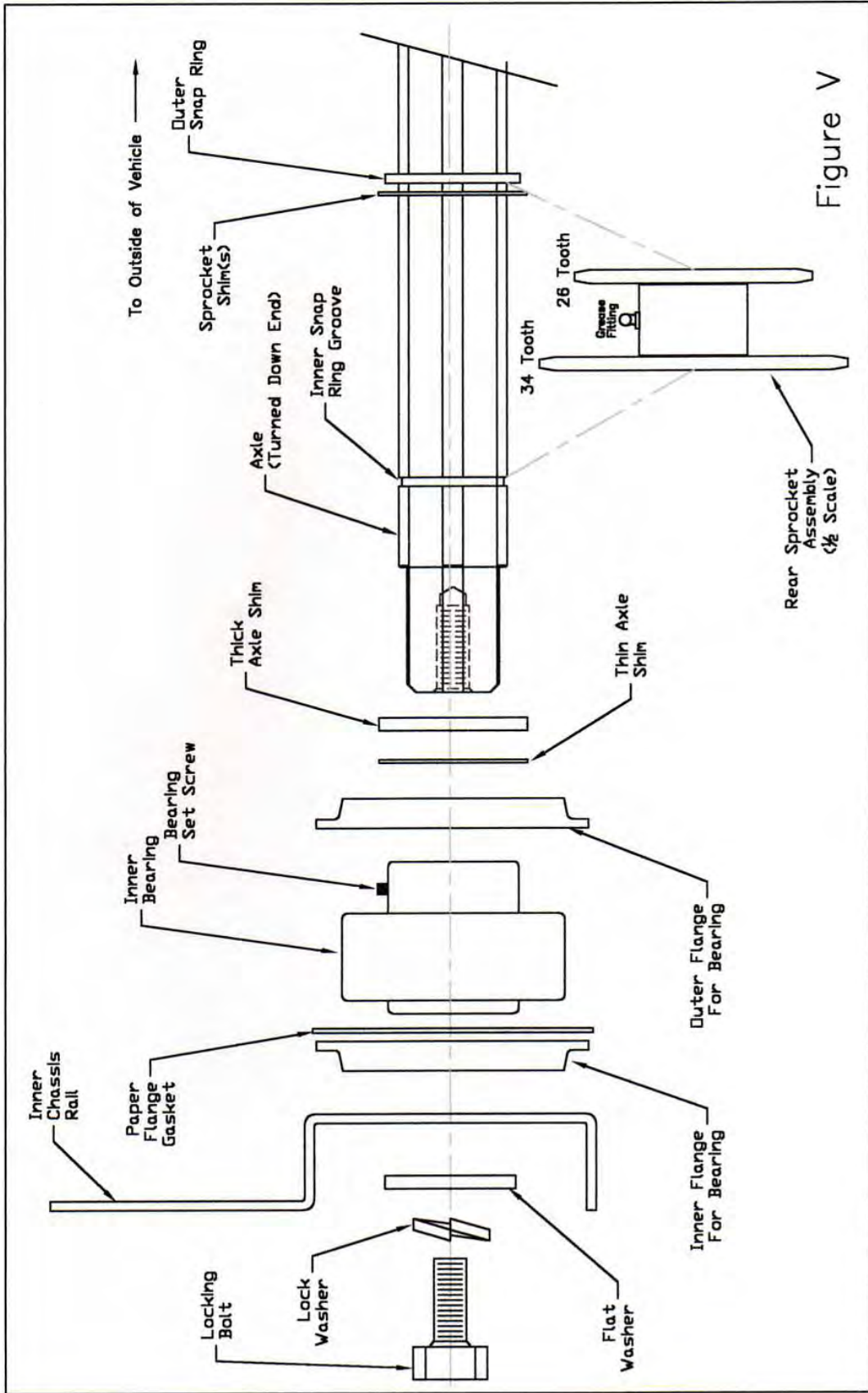


Figure V

IVaxleadjustfigV.DWG