Max II

Drive Train Service and Repair

Sections:

- Max II Bearing Replacement
- Max II Axle Replacement (Thru-Bolt & Setscrew)
- Max II Sprocket Replacement (Thru-Bolt & Setscrew, Jackshaft)
- Max II Snap Ring Center Axle Replacement
- Max II Snap Ring Center Sprocket Replacement
- Max II Snap Ring Front Axle
- Max II Snap Ring Rear Axle

MAX II

Axle Bearing Replacement

Max II bearing.doc 1/14/05

Tools Required:

9/16" Wrench 5/8" Wrench (Inner Bearing Only) 9/16" Socket 11/16" Socket (Inner Bearing Only) Ratchet Torque Wrench Pliers Grease Gun Floor Jack Jack Stands

Procedure:

- **1.** Move the vehicle to a level surface.
- 2. Place the gear shift lever in REVERSE gear.
- **3.** Remove the floorboard and raise the upper body. 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 with the bearing to be replaced.
- 7. Follow the removal procedure under the *Axle Replacement* section for the appropriate axle bearing to be replaced.
- 8. Upon removing the axle from the vehicle, determine which bearing needs to be replaced (inner chassis bearing or outer chassis bearing on a Max II with inner bearings, or the Oil-Lite® bushing or outer chassis bearing on a Max II with a stub shaft chassis). Follow the appropriate section to replace the bearing:

Part I - Outer chassis Bearing Replacement

Part II - Inner Chassis Bearing Replacement (serial # 14335 and higher) Part III - Oil-Lite® Bushing Replacement (serial # 14334 and lower)

Part I - Outer Chassis Bearing Replacement

- **1.** Set the new bearing into the inner bearing flange. Make sure that the eccentric locking surface on the bearing is positioned towards the outside of the vehicle (towards the tire).
- 2. Install the nuts and lock washers which were removed during the axle removal. Do not tighten the nuts down at this time.
- **3.** Follow the steps for the installation procedure in the *Axle Replacement* section for the appropriate axle to be installed. Begin with Step 2.

Part II - Inner Chassis Bearing Replacement (serial # 14335 and higher)

- **Note:** Be sure to install the correct inner bearing to match the end of the axle. For splined axle vehicles (models 500T, 600T, 800T, and 850T) with a serial number of 18910 or greater or if you are installing a new, 'turned down end' axle in a vehicle with a serial number between 15533 -18910, a new style "turned down" bearing must be used.
- Locate the two 7/16" nuts and lock washers which secure the inner chassis bearing and bearing flange to the inner chassis rail. Remove these nuts and lock washers. Remove the bearing/flange assembly from the vehicle.
- 2. Center up the new bearing as best as possible in the bearing flange. Place the new bearing/flange assembly in the vehicle making sure the grease fitting is towards the top of the vehicle.
- **3.** Install the two 7/16" nuts and lock washers which were removed in step 1. Tighten these down to 23 ft-lbs.

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

- **4.** Follow the installation procedure in the Axle Replacement section for the appropriate axle to be installed.
 - **Note:** The inner chassis bearing will rotate in the cast bearing flange allowing proper bearing alignment. You may have

to GENTLY tap the edge of the bearing to allow the axle to line up properly. Proper alignment is obtained when the axle will slide in and out of the inner bearing with ease.

CAUTION Do not grease the inner bearing. It has been pre-lubed by the manufacturer. Be certain that the axle and bearing are aligned.

Part III - Oil-Lite® Bushing Replacement (serial # 14334 and lower)

1. In the end of the axle (the end without the wheel flange), you will see a bronze bushing called an Oil-Lite® bushing. If the bushing is worn it will have to be replaced. Also locate the stub shaft on which the axle and Oil-Lite® bushing rides on. It will be a steel shaft protruding past the inner chassis rail towards the outside of the vehicle. If this appears to be worn, it will need to be replaced. Please follow the appropriate section to replace he Oil-Lite bushing and/or the stub shaft.

Section I - Oil-Lite® Bushing Replacement Section II - Stub Shaft Replacement

Section I - Oil-Lite® Bushing Replacement

Note: You will need a slide hammer and a 1/2" NPT 14 tap to properly and easily remove the Oil-Lite® bushing. Otherwise, it is recommended that the entire axle be replaced.

/\ CAUTION Failure to replace worn components will result in damage to the vehicle.

- **A.** Carefully thread the 1/2" NPT 14 tap into the bronze bushing. Attach the tap to the slide hammer and proceed to pull the bushing out of the axle.
- **B.** Clean the bored-out area of the axle to remove any foreign material or metal shavings.
- **C.** Carefully press the new bushing into the axle until it is flush with the end of the axle.
- **D.** Proceed to the axle installation procedure in the *Axle Replacement* section to install the axle.

Note: You may have to enlarge the bushing slightly in order to allow a proper fit onto the chassis stub shaft. Use a 3/4" reamer or some emery cloth, but only remove enough material to allow the axle to slide onto the stub shaft easily. Removing too much material will result in premature bushing wear.

NOTE Always wear safety glasses when using a reamer.

Section II - Chassis Stub Shaft Replacement

- **A.** Referring to the Axle Replacement section, remove both axles which ride on the stub shaft to be replaced.
 - **Note:** If the center axle stub shaft is to be replaced, the battery must be removed from the vehicle. If the rear axle stub shaft is to be replaced, the engine must be moved out of the way (see *Engine Removal and Installation*).
- **B.** Locate the cotter pin which locks the stub shaft onto the stub shaft boss on the inner chassis rail.
- **C.** Remove the cotter pin and GENTLY tap the stub shaft out of the chassis. Be careful not to fold over the ends of the shaft when tapping it out.
- **D.** Install the new stub shaft and secure it to the stub shaft boss with a new cotter pin.
- **E.** Refer to the installation procedure in the *Axle Replacement* section to install the appropriate axles.
- **F.** Reinstall the battery and/or the engine if removed.

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

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

NOTE A note provides key information to make procedures more clear and easier.



MAXIIAXLE.DOC

Axle Replacement

All Max II Axles Prior to Serial Number 19172, Front and Rear after Serial Number 19172, and all 450T models.

Refer to Max II Center Axle Replacement, Snap Ring Style Instructions for Center Axle Replacement on a Max II with Serial Number 19172 and Higher and all Snap Ring Style Center Axle Replacements.

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#271 Loctite® Thread locker

Propane Torch (splined axle)

Permatex® Anti-Seize

11/16" Wrench 9/16" Wrench 1/2" Wrench

> 1/2" Socket 9/16" Socket 5/8" Socket Torque Wrench Floor Jack Tape Measure

6" Extension Ratchet Hammer Drift Pin/Alignment Tool 3/16" Hex Wrench 5/32" Hex Wrench Standard Screwdriver Grease Gun Jack Stands

1/8" Hex Wrench

Procedure:

Tools Required:

- 1. Move the vehicle to a level surface.
- 2. Place the gear shift in REVERSE gear.
- Remove the floorboard and raise the upper body. Disconnect the negative 3. battery cable
- Raise the vehicle so the tires are off the ground. 4.

/I/WARNING Securely support the vehicle so there is no danger of it falling.

- 5. Place the vehicle in NEUTRAL gear.
- Remove the tire from the axle to be replaced. 6.
- Proceed to Part I for front axle replacement, Part II for center axle 7. replacement, and Part III for rear axle replacement.

Part I - Front Axle Replacement

Removal

Unbolt the disk brake caliper and mounting bracket assembly from the chassis. 1. The bracket is attached by two 5/16" bolts, one at the front and one at the rear of the mounting bracket. Be sure to keep track of any shims removed.



NOTE You must slide the left front axle in before removing the caliper. Measure the

distance from the inner chassis rail to the edge of the sprocket. Write this measurement down as it will be needed later in order to realign the chains. (See Figure IA). Refer to step 4 to loosen the inner locking collar. Repeat the procedure for the outer locking collar. Tap the axle in about 1/2" and pull disk brake caliper and mounting bracket off of the brake rotor. Proceed to step 5.

- 2. Pull the caliper and mounting bracket assembly up and slide it off the brake rotor.
- Measure the distance from the inner chassis rail to the edge of the 3. 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.

- 4. Loosen the set screw on the inner bearing locking collar (only on a Max II with a serial number of 14335 or higher) with the hex wrench. If your vehicle has a serial number of 18897 or later or if the axle has been replaced with a 'turned down end' splined axle, proceed to step 4a. If you do not have an inner bearing, you may proceed to step 5. 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 rotates when the vehicle is moving backwards. Once loose, slide the locking collar away from the bearing.
 - 4a. Locate the hex bolt threaded into the end of the axle. Remove this bolt from the end of the axle. Loosen the two set screws on the inner bearing (see Figure VI)
- 5. Using an 11/16" wrench and a 5/8" socket, remove the axle bolt from the disk and sprocket assembly. You may need to tap the bolt out of the axle with a drift pin. If you have splined axles and O-Ring chain, remove the two set screws in the sprocket hub and disk hub (S/N 17864 and later will have one large set screw). This will unlock the sprocket/disk from the axle.

Note: The set screws secured with Loctite® in each hub. You must apply heat (400°F for 5 minutes) to these before removal.

/ WARNING Use caution while applying heat to parts. Do not use heat near any fuel lines or near the battery or an explosion may occur. Do not touch any heated parts until they have cooled.

- Locate the three 3/8" nuts and lock washers which secure the outer bearing 6. flange to the chassis. Remove these nuts and lock washers.
- 7. Remove the axle from the vehicle. The outer bearing, flange, and locking collar should remain 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). If you have an axle with a 'turned down' end, keep track of the thick/thin axle shims and the order of which they were on the axle. This will allow proper socket alignment during the assembly process.
- **NOTE** If the axle will not come out, you may have to loosen the chains. Please refer to your Operators Manual for chain tensioning instructions and location of the chain adjusters. To loosen the chain, carefully use a screwdriver to "un-ratchet" the chain adjuster.



NOTE Over time, there is a possibility of the axle becoming rusted to the inner bearing or sprocket/disk 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.

/I WARNING Always wear safety glasses when cutting metal objects.

8. Once the axle is removed, place it on a table or bench and in a vise if possible. Loosen the set screw on the locking collar. 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 rotates 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

- 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 three, 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. If you do not have inner bearings, this will be the only locking collar you have. Coat the axle shaft with Anti-Seize.
- NOTE If you are installing a new splined axle in a Max II with a serial number of 18896 or earlier, you need to replace the inner bearing prior to installing the new axle. Please refer to the *Bearing Replacement* section in order to install the appropriate inner axle bearing.
- 3. Insert the axle into the outer chassis bearing. If you do not have inner bearings, grease the brass bushing in the end of the axle and slide the axle through the sprocket assembly and onto the stub shaft on the chassis. If you have inner bearings, slide the axle through the sprocket assembly or sprocket and disk assembly if your vehicle has splined axles, and place the inner bearing locking collar on the end of the axle with the recessed portion facing the bearing (make sure that the set screw on the sprocket/disk hub will be on the same spline as the holes in the axle shaft and that the sprocket and disk hubs are oriented correctly as shown in Figure II if your vehicle has splined axles). If your vehicle has a serial number of 18897 or greater install the shims removed in step 7. If you are replacing an axle with a 'turned down end' axle, place two thick shims on the axle end. This will give a good base point for sprocket alignment. Slide the axle into the inner bearing. If you did not loosen the chains in step 7 of the removal procedure and the sprocket assembly will not line up with the axle, loosen the chains as described in step 7.

4. With the axle in place, tighten down the three nuts which were installed on the outer bearing flange assembly. These should be tightened down to 23 ft-lbs.

/I\CAUTION Failure to tighten down hardware will result in vehicle damage.

5. Place the axle bolt into the sprocket and through the axle. Tighten the nut down to 30 ft-lbs. If you have splined axles, line up the sprocket/disk hub with the correct axle hole (see Figure II).

/ CAUTION Failure to tighten down hardware will result in vehicle damage.

- **6.** Slide the caliper on the left front brake disk if the left front axle was removed. Do not bolt it to the chassis at this time.
- 7. Slide the axle and sprocket assembly in or out of the vehicle until you obtain the same measurement as written down from step 3 of the removal procedure. This will give you proper chain alignment. If you are installing a new splined axle or reinstalling a splined axle with serial number of 18897 or greater, slide the axle all the way in until the shims are seated against the inner bearing. Measure for sprocket alignment and add or remove shims until the same measurement as written down is obtained. Always make sure the axle is in towards the center of the vehicle when taking the measurements with the shim setup. All chains and sprockets must be aligned properly. If the chains are not aligned, equipment failure will result. Double check the alignment by measuring from the inner chassis rail to the inner center sprocket (see Figure IB). This should be the same as the measurement for the front sprocket that was written down in step 3. Double set screw each hub in place (S/N 17864 and later or any new sprocket will have one large set screw). Be sure to put #271 Loctite® on the set screw threads.

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

- 8.
 - If you are installing a new splined axle or reinstalling a splined axle in a vehicle with a serial number of 18897 or greater, proceed to step 8a. Tighten the outer chassis bearing locking collar. Use the following procedure: Turn the collar by hand in the same direction that the axle rotates when the vehicle is moving forward. Rotate the collar until it is snug on the bearing. Lock the collar using a hammer and drift pin. To lock the collar, place the drift pin in the locking hole (not the set screw hole) and tap it with a hammer (in the same direction as mentioned above) with 4 or 5 firm taps. Tighten down the set screw using a hex wrench. On vehicles with an inner bearing, repeat this procedure on the inner bearing. Be sure that the inner locking collar set screw will sit square on a high or low point of the axle spline if your vehicle is equipped with splined axles.
 - 8a. If you are installing a new splined axle or reinstalling an axle on a vehicle with a serial number of 18897 or greater, secure the axle to the bearing using a bolt, lock washer, and thick flat washer as shown in Figure VI. Be sure to put some #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 as described in step 8 above. Then move on to step 9.

9. Grease the outer (and inner if applicable) bearing with one or two pumps of grease with a grease gun.

/ CAUTION Too much grease in a bearing will damage the bearing seals.

10. Reinstall the disk brake caliper onto the brake rotor (right front axle only). Be sure to replace any shims that were removed. Install the hardware and tighten until the nuts are just snug. make sure that the top of the caliper mounting bracket is centered between the inner brake pad plate and the outer caliper plate. Tighten down the nuts to 10 ft-lbs.

WARNING Failure to install the brake caliper properly can cause loss of control of the vehicle.

11. Adjust the chains as described in your owner's manual.

/ CAUTION Failure to properly adjust chains will result in vehicle damage.

- 12. Reinstall the tire on the axle. Tighten down the lug nuts to 55 ft-lbs.
- **13.** Reconnect the negative battery cable and lower the upper body. Install the roll bar pins (if so equipped) and install the floorboard.
- **WARNING** Failure to install the roll bar pins will affect the performance of the roll bar in the case of a roll over.

Part II - Center Axle Replacement

Refer to *Max II Snap Ring Style Center Axle Instructions* for all models after Serial Number 19171 and all snap ring style center axle replacements

Removal

Note: If your vehicle has inner bearings, you must remove the battery from the vehicle to access the inner locking collar on the right center axle. Simply remove the two wing nuts on the battery hold down strap and disconnect the positive battery cable. Lift the battery from the chassis.

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

/!\ CAUTION Failure to align the chains will result in vehicle damage.

- 2. Loosen the set screw on the inner bearing locking collar (only on a Max II with a serial number of 14335 or higher) with the hex wrench. If your vehicle has a serial number of 18897 or later or if the axle has been replaced with a 'turned down end' splined axle, proceed to step 2a. If you do not have an inner bearing, you may proceed to step 3. 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 rotates when the vehicle is moving backwards. Once loose, slide the locking collar away from the bearing.
 - **2a.** Locate the hex bolt threaded into the end of the axle. Remove this bolt from the end of the axle. Loosen the two set screws on the inner bearing (see Figure VI)

3. Using an 11/16" wrench and a 5/8" socket, remove the axle bolt from the sprocket assembly. You may need to tap the bolt out of the axle with a drift pin. If you have O-Ring chain and splined axles, remove the two set screws in the sprocket hub (S/N 17864 and later will have one large set screw). This will unlock the center sprocket assembly from the axle.



NOTE There are two set screws secured with Loctite® in each hub. You must apply heat (400°F for 5 minutes) to these before removal.

/\WARNING Use caution while applying heat to parts. Do not use heat near any fuel lines or near the battery or an explosion may occur. Do not touch any heated parts until they have cooled.

- 4. Locate the three, 3/8" nuts and lock washers which secure the outer bearing flange to the chassis. Remove these nuts and lock washers.
- 5. Remove the axle from the vehicle. The outer bearing, flange, and locking collar should remain 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). If you have an axle with a 'turned down' end, keep track of the thick/thin axle shims and the order of which they were on the axle. This will allow proper socket alignment during the assembly process.
- **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.

/!\ WARNING Always wear safety glasses when cutting metal objects.

Note: If the axle will not come out, you may have to loosen the chains. Please refer to your Operators Manual for chain tensioning instructions and location of the chain adjusters.

Final Drive Chains:

To loosen the chain, carefully use a screwdriver to "un-ratchet" the front and rear chain adjusters.

Center Drive Chains:

Loosen the four clamping bolts holding the jack shaft adjuster plate to the chassis bulkhead. These bolts are NOT the vertical and horizontal studs protruding through the bulkhead. After loosening the clamping bolts (two on each jack shaft adjuster plate), loosen the nuts on the four protruding studs on the chassis. Be sure to note the location of each stud in the respective slot in the bulkhead and the amount of turns each nut is loosened. This will allow for proper alignment after the new axle is installed.

6. Once the axle is removed, place it on a table or bench and in a vise if possible. Loosen the set screw on the locking collar. 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

rotates 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. 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 three, 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. If you do not have inner bearings, this will be the only locking collar you have. Coat the axle shaft with Anti-Seize.
- **NOTE** If you are installing a new splined axle in a Max II with a serial number of 18896 or earlier, you need to replace the inner bearing prior to installing the new axle. Please refer to the *Bearing Replacement* section in order to install the appropriate inner axle bearing.
 - 3. Insert the axle into the outer chassis bearing. If you do not have inner bearings, grease the brass bushing in the end of the axle and slide the axle through the sprocket assembly and onto the stub shaft on the chassis. If you have inner bearings, slide the axle through the sprocket assembly or sprocket and disk assembly if your vehicle has splined axles, and place the inner bearing locking collar on the end of the axle with the recessed portion facing the bearing (make sure that the set screw on the sprocket/disk hub will be on the same spline as the holes in the axle shaft and that the sprocket and disk hubs are oriented correctly as shown in Figure II if your vehicle has splined axles). If your vehicle has a serial number of 18897 or greater install the shims removed in step 5. If you are replacing an axle with a 'turned down end' axle, place two thick shims on the axle end. This will give a good base point for sprocket alignment. Slide the axle into the inner bearing. If you did not loosen the chains in step 5 of the removal procedure and the sprocket assembly will not line up with the axle, loosen the chains as described in step 5.
 - 4. With the axle in place, tighten down the three nuts which were installed on the outer bearing flange assembly. These should be tightened down to 23 ft-lbs.

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

5. Place the axle bolt into the sprocket and through the axle. Tighten the nut down to 30-foot pounds. If you have splined axles, line up the sprocket hub with the correct axle hole (see Figure II). Double set screw the sprocket hub in place (S/N 17864 and later or any new sprocket will have one large set screw).

/ CAUTION Failure to tighten down hardware will result in vehicle damage.

6. Slide the axle and sprocket assembly in or out of the vehicle until you obtain the same measurement as written down from step 1 of the removal procedure. This will give you proper chain alignment. If you are installing a new splined axle or reinstalling a splined axle with serial number of 18897 or greater, slide the axle all the way in until the shims are seated against the inner bearing. Measure for sprocket alignment and add or remove shims until the same measurement as written down is obtained. Always make sure the axle is in towards the center of the vehicle when taking the measurements with the shim setup. All chains and sprockets must be aligned properly. If the chains are not aligned, equipment failure will result. Double check the alignment by measuring from the inner chassis rail to the inner center sprocket (see Figure IB). This should be the same as the measurement for the front sprocket that was written down in step 1. Double set screw each hub in place (S/N 17864 and later or any new sprocket will have one large set screw). Be sure to put #271 Loctite® on the set screw threads.

/ CAUTION Failure to align the chains will result in vehicle damage.

- 7. If you are installing a new splined axle or reinstalling a splined axle in a vehicle with a serial number of 18897 or greater, proceed to step 7a. Tighten the outer chassis bearing locking collar. Use the following procedure: Turn the collar by hand in the same direction that the axle rotates when the vehicle is moving forward. Rotate the collar until it is snug on the bearing. Lock the collar using a hammer and drift pin. To lock the collar, place the drift pin in the locking hole (not the set screw hole) and tap it with a hammer (in the same direction as mentioned above) with 4 or 5 firm taps. Tighten down the set screw using a hex wrench. On vehicles with an inner bearing, repeat this procedure on the inner bearing. Be sure that the inner locking collar set screw will sit square on a high or low point of the axle spline if your vehicle is equipped with splined axles.
 - 7a. If you are installing a new splined axle or reinstalling an axle on a vehicle with a serial number of 18897 or greater, secure the axle to the bearing using a bolt, lock washer, and thick flat washer as shown in Figure VI. Be sure to put some #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 as described in step 8 above. Then move on to step 8.
- **8.** Grease the outer (and inner if applicable) bearing with one or two pumps of grease with a grease gun.

/ CAUTION Too much grease in a bearing will damage the bearing seals.

9. Adjust the chains as described in your owner's manual. If the center drive chains were loosened, tighten them back to the original tension using the same amount of turns in which each bolt was loosened. Make sure that the stud is in the same location in reference to the bulkhead slot as it was when the nut was loosened. Tighten down the four clamping bolts to 23 ft-lbs.

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

10. If the battery was removed, it may be reinstalled at this time.

- **11.** Reinstall the tire on the axle. Tighten down the lug nuts to 55 ft-lbs.
- **12.** Reconnect the negative battery cable and lower the upper body. Install the roll bar pins (if so equipped) and install the floorboard.

WARNING Failure to install the roll bar pins will affect the performance of the roll bar in the case of a roll over.

Part III - Rear Axle Replacement

Removal

- **NOTE** If the left rear axle is to be replaced, the engine must be moved in order to access the axle bolt easily. Simply remove the drive belt. Remove the four, 3/8" bolts which secure the engine motor mount to the chassis. Slide and rotate the engine and motor mount forward and counterclockwise. This will make the left rear axle bolt (or set screw on splined axles) visible and easily accessible.
 - 1. Measure the distance from the inner chassis rail to the edge of the 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 set screw on the inner bearing locking collar (only on a Max II with a serial number of 14335 or higher) with the hex wrench. If your vehicle has a serial number of 18897 or later or if the axle has been replaced with a 'turned down end' splined axle, proceed to step 2a. If you do not have an inner bearing, you may proceed to step 3. 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 rotates when the vehicle is moving backwards. Once loose, slide the locking collar away from the bearing.
 - **2a.** Locate the hex bolt threaded into the end of the axle. Remove this bolt from the end of the axle. Loosen the two set screws on the inner bearing (see Figure VI)
- **3.** Using an 11/16" wrench and a 5/8" socket, remove the axle bolt from the disk and sprocket assembly. You may need to tap the bolt out of the axle with a drift pin. If you have splined axles and O-Ring chain, remove the two set screws in the sprocket hub (S/N 17864 and later will have one large set screw). This will unlock the sprocket assembly from the axle.

Note: There are two set screws secured with Loctite® in each hub. You must apply heat (400^oF for 5 minutes) to these before removal.

WARNING Use caution while applying heat to parts. Do not use heat near any fuel lines or near the battery or an explosion may occur. Do not touch any heated parts until they have cooled.

4. Locate the three, 3/8" nuts and lock washers which secure the outer bearing flange to the chassis. Remove these nuts and lock washers.

- 5. Remove the axle from the vehicle. The outer bearing, flange, and locking collar should remain 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). If you have an axle with a 'turned down' end, keep track of the thick/thin axle shims and the order of which they were on the axle. This will allow proper socket alignment during the assembly process.
- **NOTE** If the axle will not come out, you may have to loosen the chains. Please refer to your *Operators Manual* for chain tensioning instructions and location of the chain adjusters. To loosen the chain, carefully use a screwdriver to "un-ratchet" the chain adjuster.
- **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.

WARNING Always wear safety glasses when cutting metal objects.

6. Once the axle is removed, place it on a table or bench and in a vise if possible. Loosen the set screw on the locking collar. 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 rotates 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. 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 three, 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. If you do not have inner bearings, this will be the only locking collar you have. Coat the axle shaft with Anti-Seize.
- **NOTE** If you are installing a new splined axle in a Max II with a serial number of 18896 or earlier, you need to replace the inner bearing prior to installing the new axle. Please refer to the *Bearing Replacement* section in order to install the appropriate inner axle bearing.
 - **3.** Insert the axle into the outer chassis bearing. If you do not have inner bearings, grease the brass bushing in the end of the axle and slide the axle through the sprocket assembly and onto the stub shaft on the chassis. If you have inner bearings, slide the axle through the sprocket assembly or sprocket and disk assembly if your vehicle has splined axles, and place the inner bearing locking collar on the end of the axle with the recessed portion facing the bearing (make sure that the set screw on the

sprocket/disk hub will be on the same spline as the holes in the axle shaft and that the sprocket and disk hubs are oriented correctly as shown in Figure II if your vehicle has splined axles). If your vehicle has a serial number of 18897 or greater install the shims removed in step 5. If you are replacing an axle with a 'turned down end' axle, place two thick shims on the axle end. This will give a good base point for sprocket alignment. Slide the axle into the inner bearing. If you did not loosen the chains in step 5 of the removal procedure and the sprocket assembly will not line up with the axle, loosen the chains as described in step 5.

4. With the axle in place, tighten down the three nuts which were installed on the outer bearing flange assembly. These should be tightened down to 23 ft-lbs.

/ CAUTION Failure to tighten down hardware will result in vehicle damage.

5. Place the axle bolt into the sprocket and through the axle. Tighten the nut down to 30-foot pounds. If you have splined axles, line up the sprocket hub with the correct axle hole (see Figure II). Double set screw the sprocket hub in place (S/N 17864 and later or any new sprocket will have one large set screw).

/CAUTION Failure to tighten down hardware will result in vehicle damage.

6. Slide the axle and sprocket assembly in or out of the vehicle until you obtain the same measurement as written down from step 1 of the removal procedure. This will give you proper chain alignment. If you are installing a new splined axle or reinstalling a splined axle with serial number of 18897 or greater, slide the axle all the way in until the shims are seated against the inner bearing. Measure for sprocket alignment and add or remove shims until the same measurement as written down is obtained. Always make sure the axle is in towards the center of the vehicle when taking the measurements with the shim setup. All chains and sprockets must be aligned properly. If the chains are not aligned, equipment failure will result. Double check the alignment by measuring from the inner chassis rail to the inner center sprocket (see Figure IB). This should be the same as the measurement for the front sprocket that was written down in step 1. Double set screw each hub in place (S/N 17864 and later or any new sprocket will have one large set screw). Be sure to put #271 Loctite® on the set screw threads.

/ CAUTION Failure to align the chains will result in vehicle damage.

7. If you are installing a new splined axle or reinstalling a splined axle in a vehicle with a serial number of 18897 or greater, proceed to step 7a. Tighten the outer chassis bearing locking collar. Use the following procedure: Turn the collar by hand in the same direction that the axle rotates when the vehicle is moving forward. Rotate the collar until it is snug on the bearing. Lock the collar using a hammer and drift pin. To lock the collar, place the drift pin in the locking hole (not the set screw hole) and tap it with a hammer (in the same direction as mentioned above) with 4 or 5 firm taps. Tighten down the set screw using a hex wrench. On vehicles with an inner bearing, repeat this procedure on the inner bearing. Be sure that the inner locking collar set screw will sit square on a high or low point of the axle spline if your vehicle is equipped with splined axles.

- **7a.** If you are installing a new splined axle or reinstalling an axle on a vehicle with a serial number of 18897 or greater, secure the axle to the bearing using a bolt, lock washer, and thick flat washer as shown in Figure VI. Be sure to put some #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 as described in step 8 above. Then move on to step 8.
- **8.** Grease the outer (and inner if applicable) bearing with one or two pumps of grease with a grease gun.

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

9. Adjust the chains as described in your owner's manual.

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

10. If the engine mount was removed from the chassis, slide the engine mount back into position. Install the four 3/8" bolts through the mount and into the rubber chassis mounts. Before tightening these bolts down, make sure that the drive clutch on the engine is square and in proper alignment with the driven clutch on the transmission (see the *Clutch and Drive Belt* section of the service manual). Reinstall the drive belt and be sure it has the proper tension. Tighten down the bolts to 20 ft-lbs.

/ CAUTION Failure to tighten down hardware will result in vehicle damage.

- **11.** Reinstall the tire on the axle. Tighten down the lug nuts to 55 ft-lbs.
- **12.** Reconnect the negative battery cable and lower the upper body. Install the roll bar pins (if so equipped) and install the floorboard.

WARNING Failure to install the roll bar pins will affect the performance of the roll bar in the case of a roll over.

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 <u>could result in severe injury or death</u> the vehicle operator, any passenger, or a bystander.

NOTE A note provides key information to make procedures more clear and easier.



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FIGURE I



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Figure II



MAX II

Sprocket Replacement

All Max II Sprockets Prior to Serial Number 19172, Front and Rear after Serial Number 19172 and all 450T models.

Refer to *Max II Center Sprocket Replacement, Snap Ring Style* Instructions For Center Sprocket Replacement on a Max II with Serial Number 19172 and Higher and all Snap Ring Style Center Sprocket Replacements.

Tools Required:

1/2" Deep Socket 9/16" Wrench Ratchet Torque Wrench Pliers 9/16" Socket Grease Gun Floor Jack Jack Stands 12" Steel Straight Edge Standard Screwdriver

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Procedure:

- **1.** Move the vehicle to a level surface.
- 2. Place the gear shift lever in REVERSE gear.
- **3.** Remove the floorboard and raise the upper body. 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. If you are changing a jackshaft sprocket assembly, you may proceed to step 8.
- 6. Remove the tire from the axle with the sprocket to be replaced.
- 7. Follow the removal procedure under the *Axle Replacement* section for the appropriate sprocket to be replaced.
- 8. Please follow the appropriate section for sprocket replacement.
 - Part I Front sprocket replacement.
 - Part II Center sprocket replacement.
 - Part III Rear sprocket replacement.
 - Part IV Jack shaft sprocket replacement.

NOTE All figures show standard chain Max II models. Refer to the notes for O-ring chain models.

Part I - Front Sprocket Replacement

- 1. Once the axle has been removed (see the *Axle Replacement section* for the front axle), unwrap the front drive chain from the sprocket assembly and lift the sprocket out of the vehicle.
- 2. Inspect the chain as well as the parking/auxiliary brake system for wear. It is common for a loose or worn-out chain to cause sprocket failure. Replace any worn items if necessary.

CAUTION Failure to replace worn parts will result in damage to the vehicle.

3. Wrap the chain around the new sprocket assembly. Proceed to the front axle installation section of the *Axle Replacement* section of the manual.

Part II - Center Sprocket Replacement

1. Once the axle has been removed (see the *Axle Replacement* section for the center axle), inspect the chains for wear. A loose or worn chain will cause sprocket wear.

\bigwedge CAUTION Failure to replace worn parts will result in damage to the vehicle.

2. In order to remove the center sprocket assembly from the vehicle, you clamping bolts holding the jack shaft adjuster plate to the chassis bulkhead (if they were not loosened during the axle removal procedure). These bolts are NOT the vertical and horizontal studs protruding through the bulkhead. After loosening the clamping bolts (2 on each adjuster plate), loosen the nuts on the four protruding studs on the chassis with a 1/2" socket. These must be loosened until the stud is flush with the top of the nut. Take note of the location of each stud in the respective bulkhead slot and the amount of turns each nut is loosened. This will allow for proper alignment after the new sprocket is installed.

/ CAUTION Failure to align the chains will result in vehicle damage.

- **3.** Unwrap the three chains from the center sprocket assembly. With the jackshaft loose, you can now lift the center sprocket assembly from the vehicle.
- **4.** Wrap the chains around the new sprocket assembly. Proceed to the center axle installation section of the *Axle Replacement* section of the manual.

Part III - Rear Sprocket Replacement

- **1.** Once the axle has been removed (see the *Axle Replacement* section for the rear axle), unwrap the rear drive chain from the sprocket assembly and lift the sprocket out of the vehicle.
- 2. Inspect the rear chain for wear. It is common for a loose or worn-out chain to cause sprocket failure. Replace any worn items if necessary.

/CAUTION Failure to replace worn parts will result in damage to the vehicle.

3. Wrap the chain around the new sprocket assembly. Proceed to the rear axle installation section of the *Axle Replacement* section of the manual.

Part IV - Jack Shaft Sprocket Replacement

- **1.** Remove the battery from the vehicle. Set it aside in a safe place.
- 2. Loosen the four clamping bolts holding the jack shaft adjuster plate to the chassis bulkhead. These bolts are NOT the vertical and horizontal studs protruding through the bulkhead. After loosening the clamping bolts (2 on each adjuster plate), remove the nuts on the four protruding studs on the chassis with a 1/2" socket. Take note of the location of each stud in the respective bulkhead slot and the amount of turns each nut is loosened. This will allow for proper initial alignment after the new sprocket is installed.

/\CAUTION Failure to align the chains will result in vehicle damage.

3. Find the master links on the two chains which run on the jack shaft sprocket assembly. Remove the master link retaining clips with a pair of pliers. Remove the master links from the chains. You may need to carefully pry the link apart with a standard screwdriver. Take note on which side of the chains the retaining clips are located. The master links must be reassembled with the retaining clips on the proper side of the chains.

CAUTION Master link retaining clips must be installed on their original side of the chain. Otherwise, the chains will bind.

- 4. Locate the two cotter pins on either end of the jack shaft assembly. Remove these with a pair of pliers.
- 5. Move the assembly down and towards the rear of the vehicle until the steel shaft inside the jack shaft sprocket assembly is visible through the small round hole in the battery tray area. There is a similar hole on the outer bulkhead wing (where the outer jack shaft adjuster plate mounts). Once lined up, use your finger to push the steel shaft in towards the battery tray area. Remove the shaft from the chassis bulkhead. Be sure to keep track of the shaft's orientation (inner most and outer most ends) and the placement of the shims. This will allow proper initial alignment of the new jack shaft sprocket assembly.

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

6. Lift out the jack shaft sprocket assembly. After removal, inspect the steel shaft and the chains for wear. Replace if necessary.

CAUTION Failure to replace worn parts will result in damage to the vehicle.

7. Install the new jack shaft sprocket assembly into the vehicle. Slide the steel shaft into the jack shaft sprocket assembly making sure to install it in the same orientation as it was removed. Also be sure to install the shims

in their proper location on the shaft. It is recommended that two new cotter pins be used.

- 8. Snug the clamping bolts on the jack shaft adjusting plates by hand. Reinstall the lock nuts, washers, and plates onto the adjusting studs. Turn the nuts onto the studs using the same amount of turns as it took to remove them. Also keep the stud in the same position in the bulkhead slot as it was when the nut was removed.
- **9.** Using a 12" steel straight edge, square the 27-tooth jack shaft sprocket (the large one labeled #50 jack shaft sprocket in the Figures) with the output sprocket on the transmission. Check the sprockets by laying the straight edge on both sides as well as above and below the jack shaft and transmission sprocket hub. See Figures 1 through 4 (Figure 1 shows straight edge on top of hubs and on the outer side of the sprockets, Figure 2 shows the straight edge on top of the hubs and on the inner side of the sprockets, Figure 3 shows the straight edge on the bottom of the hubs and on the inner side of the sprockets). Please note that the right side of the vehicle is shown, use the same procedure for the left side of the vehicle.

NOTE #50 Sprocket refers to the 27-tooth sprocket on O-ring chain models.

- **10.** Tighten the adjusting nuts in order to square the two sprockets with each other on both sides as well as on top and bottom of the hubs. Be sure that the adjusting nuts, washers, and plates (on top of bulkhead) are touching the bulkhead at all times when taking measurements.
- 11. Once the two sprockets are square with each other, look to see if the two sprockets are in line with each other. If they are, proceed to the next step. If not, perform the following: Measure the amount the jack shaft assembly will need to be moved and in which direction (in or out of the chassis). Loosen the clamping bolts. Remove the adjusting nuts keeping track of the amount of turns each one takes to remove it. Remove the cotter pins and remove the jack shaft assembly. Add or remove shims as needed in order to line up the sprockets (if you need additional shims, contact your dealer or Recreatives Industries). Reinstall the adjusting lock nuts, washers and plates as well as the two cotter pins. Refer back to step 8 in this section and repeat the alignment process.

/ CAUTION Failure to align chains will result in vehicle damage.

12. Once it is certain that the transmission and jack shaft are square and in line with each other, bend over the ends on the two cotter pins.

CAUTION Failure to secure hardware will result in vehicle damage.

13. Using the straight edge, check the alignment of the center axle center sprocket (labeled #60 center axle sprocket in the figures) and the 21-tooth jack shaft sprocket (labeled #60 jack shaft sprocket in the figures). Check this on the front and back side of the sprocket hub. See Figure 5 and 6 (Figure 5 shows the straight edge on the back side of the jack shaft and center axle center sprocket hubs, Figure 6 shows the straight edge on the front side of the jack shaft and center axle center sprocket hubs). If you

need to square the two sprockets, turn the adjusting nuts in or out in order to gain proper squareness and double check the transmission and the 27 tooth jack shaft sprockets as performed in step 9.

NOTE The #60 jackshaft sprocket refers to the 21-tooth jack shaft sprocket on O-ring chain models. The #60 center axle sprocket refers to the center axle center sprocket on all models.

14. If the center axle center sprocket does not line up with the new jack shaft, the axle and sprocket assembly must be moved in or out of the vehicle to gain proper alignment. Measure the amount the axle assembly has to be moved (in or out) and move all three axles on that side in the same manner (see Figures IA and IB in the *Axle Replacement* section for the measurement of the center sprockets and front and rear sprockets). This will keep all chains properly aligned. Refer to the *Axle Replacement* section and move each axle appropriately.

/I/ CAUTION Failure to align the chains will result in vehicle damage.

15. Wrap the chains around the sprockets which were removed in step 3. Install the master links making sure that each retaining clip is on the same side of the chain as when it was removed. If you are installing new chains on the jack shaft, you may have to loosen the adjuster plates and back off the adjusting nuts to get the new chain(s) on the jack shaft. Again, be sure to keep track of the amount of turns each adjusting nut is loosened.

CAUTION Master link retaining clips must be installed on their original side of the chain. Otherwise, the chains will bind.

16. Grease the new jack shaft sprocket assembly with 4 or 5 pumps of grease with a grease gun.

CAUTION Failure to lubricate moving parts will result in damage to the vehicle.

17. Tighten the jack shaft chains using the same amount of turns for each vertical adjusting stud and for each horizontal adjusting stud. Also make sure that each stud is in the same location in respect to the bulkhead slot as it was when the nut was loosened and aligned. If the chains need further tightening, refer to your owner's manual on adjusting the appropriate chains. Tighten down the clamping bolts on the jack shaft adjuster plate to 23 ft-lbs.

/!\ CAUTION Failure to tighten down hardware will result in vehicle damage.

- **18.** Reinstall the battery.
- **19.** Lower the upper body and reinstall the roll bar pins if so equipped. Install the floorboard.

WARNING Failure to install the roll bar pins will affect the performance of the roll bar in the case of a roll over.

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

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

NOTE A note provides key information to make procedures more clear and easier.









FIGURE VI

MAX II

Center Axle Replacement Snap Ring Style

All Max II with Serial Number 19172 and above and all Snap Ring Style replacements. *Except 450T Models*

Tools Required:

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equileur	
6" Extension	#271 Loctite® Thread locker
9/16" Wrench	Ratchet
Hammer	Permatex [®] Anti-Seize
Drift Pin	3/16" Hex Wrench
9/16" Socket	5/32" Hex Wrench
Standard Screwdriver	Heavy Duty Snap Ring Pliers
	(Recreatives P/N 45011 with tips P/N 45012)
Torque Wrench	Grease Gun
Floor Jack	Jack Stands
Tape Measure	1/8" Hex Wrench

Procedure:

- **1.** Move the vehicle to a level surface.
- 2. Place the gearshift in REVERSE gear.
- **3.** Remove the floorboard and raise the upper body. 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.
- 7. Remove the battery from the vehicle. Simply remove the two wing nuts on the battery hold down strap and disconnect the positive battery cable. Lift the battery from the chassis.

NOTE If you are replacing a non-snap ring style axle with a snap ring style axle assembly, follow the standard axle replacement instructions to remove your old axle and use these instructions, beginning with the *Installation* section to install the new snap ring style axle.

Center Axle Replacement

Removal

- **1.** Follow the appropriate section in the *Max II Sprocket Replacement Instructions* and remove the jackshaft from the same side of the vehicle as the center axle to be replaced.
- 2. Measure the distance from the inner chassis rail to the edge of the inner sprocket. Write this measurement down as it will be needed later in order to realign the chain(s). (See Figure IB)

/ CAUTION Failure to align the chains will result in vehicle damage.

- **3.** Locate the hex bolt threaded into the end of the axle. Remove this bolt from the end of the axle. Loosen the two set screws on the inner bearing (see Figure III)
- 4. Locate the three, 3/8" nuts and lock washers which secure the outer bearing flange to the chassis. Remove these nuts and lock washers.
- 5. Locate the inner sprocket snap ring (next to the inner most edge of the sprocket assembly). Using the <u>proper</u> snap ring pliers, loosen the snap ring and slide it as far towards the inside of the vehicle as possible.
- 6. While sliding the axle out of the vehicle remove the axle shims from the turned down end of the axle. This will allow proper sprocket alignment during the assembly process. Also, using the <u>proper</u> snap ring pliers, carefully remove the inner sprocket snap ring from the axle. Remove the axle from the vehicle. The outer bearing, flange, locking collar, sprocket shim(s), and outer snap ring should remain on the axle. Keep track of the sprocket shim(s) and their order on the axle. If there is corrosion between the sprocket and 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).
- **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.

/!\ WARNING Always wear safety glasses when cutting metal objects.

Note: If the axle will not come out, you may have to loosen the chains. Please refer to your *Operators Manual* for chain tensioning instructions and location of the chain adjusters.

Final Drive Chains To loosen the chain, carefully use a screwdriver to "un-ratchet" the front and rear chain adjusters.

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 <u>proper</u> 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 rotates 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

- Slide the locking collar, outer bearing flange, and outer bearing onto the axle. Make sure they are facing the correct way. Install the outer snap ring to the outer axle snap ring groove. Install the appropriate sprocket shim(s) (see the *Snap Ring Style Center Sprocket Replacement* instructions).
 Note: Vehicles with a S/N 20253 or higher or any new splined center axle will not use sprocket shims.
- 2. Coat the axle shaft with Anti-Seize.
- **NOTE** If you are installing a new splined axle in a Max II with a serial number of 18896 or earlier, you need to replace the inner bearing prior to installing the new axle. Please refer to the *Bearing Replacement* section in order to install the appropriate inner axle bearing. Use 2 thick axle shims to start and add or remove to obtain the proper alignment.
 - **3.** Insert the axle into the chassis. Slide the sprocket (with the grease fitting towards the inside of the vehicle) onto the axle. Install the inner snap ring onto the axle followed by the appropriate axle shims (removed in step 6). Slide the axle into the inner bearing. Move the sprocket towards the outside of the vehicle until it is seated firmly against the sprocket shim(s) and outer snap ring. If you did not loosen the chains in step 6 of the removal procedure and the sprocket assembly will not line up with the axle, loosen the chains as described in step 6.
 - 4. With the axle in place, install and tighten down the three nuts and lock washers which were removed from 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. Install the inner snap ring to the inner snap ring groove on the axle.

CAUTION Failure to install hardware properly will result in vehicle damage.

6. Slide the axle all the way in until the shims are seated against the inner bearing. Measure for sprocket alignment and add or remove shims until the same measurement as written down is obtained.

NOTE You will need to unlock the inner snap ring and move it in towards the center of the vehicle in order to slide the axle out to add or remove the axle shims. If this still does not allow for enough room, loosen the outer chassis bearing flange bolts to gain more clearance.

Always make sure the axle is in towards the center of the vehicle and the inner snap ring is in the inner snap ring groove when taking the measurements with the shim setup. All chains and sprockets must be aligned properly. If the chains are not aligned, equipment failure will result. Double check the alignment by measuring from the inner chassis rail to the inner center sprocket (see Figure IB). This should be the same as the measurement for the sprocket that was written down in step 2. Once this measurement is obtained and the sprockets are in line, re-tighten down the outer flange nuts as stated in step 4. Be sure the inner snap ring is seated in the inner snap ring groove.

CAUTION Failure to align the chains will result in vehicle damage. CAUTION Failure to install hardware properly will result in vehicle damage.

- 7. Secure the axle to the inner bearing using a bolt, lock washer, and thick flat washer as shown in Figure III. Be sure to put some #271 Loctite® on the bolt and tighten it down to 30 ft-lbs. Tighten down the two inner bearing set screws.
- 8. Tighten the outer chassis bearing locking collar. Use the following procedure: Turn the collar by hand in the same direction that the axle rotates when the vehicle is moving forward. Rotate the collar until it is snug on the bearing. Lock the collar using a hammer and drift pin. To lock the collar, place the drift pin in the locking hole (not the set screw hole) and tap it with a hammer (in the same direction as mentioned above) with 4 or 5 firm taps. Tighten down the setscrew using a hex wrench.
- **9.** Grease the outer and inner bearing with one or two pumps of grease with a grease gun. Also, grease the sprocket assembly with 5 or 6 pumps of grease.

/\ CAUTION Too much grease in a bearing will damage the bearing seals.

- **10.** Reinstall the jackshaft assembly as described in the *Max II Sprocket Replacement Instructions.*
- **11.** Adjust the chains as described in your owner's manual.

/\ CAUTION Failure to properly adjust chains will result in vehicle damage.

12. Reinstall the battery.

- 13. Reinstall the tire on the axle. Tighten down the lug nuts to 55 ft-lbs.
- **14.** Reconnect the battery cables and lower the upper body. Install the roll bar pins (if so equipped) and install the floorboard.

WARNING Failure to install the roll bar pins will affect the performance of the roll bar in the case of a roll over.

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 <u>could result in severe injury or death</u> the vehicle operator, any passenger, or a bystander.

NOTE A note provides key information to make procedures more clear and easier.



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FIGURE I





MAX II

Center Sprocket Replacement Snap Ring Style

All Max II with Serial Number 19172 and above and all Snap Ring Style replacements. *Except 450T Models*

Tools Required:

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6" Extension	#271 Loctite® Thread locker
9/16" Wrench	Ratchet
Hammer	Permatex [®] Anti-Seize
Drift Pin	3/16" Hex Wrench
9/16" Socket	5/32" Hex Wrench
Standard Screwdriver	Heavy Duty Snap Ring Pliers
	(Recreatives P/N 45011 with tips P/N 45012)
Torque Wrench	Grease Gun
Floor Jack	Jack Stands
Tape Measure	1/8" Hex Wrench

Procedure:

- **1.** Move the vehicle to a level surface.
- 2. Place the gear shift lever in REVERSE gear.
- **3.** Remove the floorboard and raise the upper body. 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. If you are changing a jackshaft sprocket assembly, you may proceed to *Part I*.
- 6. Remove the tire from the axle with the sprocket to be replaced.
- 7. If replacing a center sprocket or axle, follow the removal procedure under the *Snap Ring Style Center Axle Replacement* section. If replacing or removing a jackshaft sprocket assembly, proceed to Part II of these instructions.

Part I - Center Sprocket Replacement

- 1. Once the axle has been removed, lift the sprocket assembly out of the vehicle.
- 2. Inspect all the chains for wear. It is common for a loose or worn-out chain to cause sprocket failure. Replace any worn items if necessary.

CAUTION Failure to replace worn parts will result in damage to the vehicle.

- On the bench, install the snap ring into the outer snap ring groove of the axle and slide on the sprocket shim(s), which were removed from the axle. Slide the new sprocket assembly onto the axle so the sprocket hub sits tight against the sprocket shim(s) and outer snap ring. Install the inner snap ring. Using a feeler gauge, determine the amount of gap between the inner snap ring and the sprocket hub. There should be no more than 0.030" and no less than 0.010". Add or remove sprocket shims to obtain the proper gap.
 Note: Vehicles with a S/N 20253 or higher or any new splined center axle will not use sprocket shims.
- 4. Remove the snap rings and sprocket assembly from the axle. Proceed to the installation section of the *Snap Ring Style Center Axle Replacement* instructions.

Part II- Jack Shaft Sprocket Replacement

Removal

- **1.** Remove the battery from the vehicle. Set it aside in a safe place.
- 2. Loosen the four clamping bolts holding the jack shaft adjuster plate to the chassis bulkhead. These bolts are NOT the vertical and horizontal studs protruding through the bulkhead. After loosening the clamping bolts (2 on each adjuster plate), remove the nuts on the four protruding studs on the chassis with a 1/2" socket. Take note of the location of each stud in the respective bulkhead slot and the amount of turns each nut is loosened. This will allow for proper initial alignment after the new sprocket is installed.

/I CAUTION Failure to align the chains will result in vehicle damage.

3. Find the master links on the two chains which run on the jack shaft sprocket assembly. Remove the master link retaining clips with a pair of pliers. Remove the master links from the chains. You may need to carefully pry the link apart with a standard screwdriver. Take note on which side of the chains the retaining clips are located. The master links must be reassembled with the retaining clips on the proper side of the chains.

CAUTION Master link retaining clips must be installed on their original side of the chain. Otherwise, the chains will bind.

- 4. Locate the two cotter pins on either end of the jack shaft assembly. Remove these with a pair of pliers.
- 5. Move the assembly down and towards the rear of the vehicle until the steel shaft inside the jack shaft sprocket assembly is visible through the small round hole in the battery tray area. There is a similar hole on the outer bulkhead wing (where the outer jack shaft adjuster plate mounts). Once lined up, use your finger to push the steel shaft in towards the battery tray area. Remove the shaft from the chassis bulkhead. Be sure to keep track of the shaft's orientation (inner most and outer most ends) and the placement of the shims. This will allow proper initial alignment of the new jack shaft sprocket assembly.

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

6. Lift out the jack shaft sprocket assembly. After removal, inspect the steel shaft and the chains for wear. Replace if necessary.

CAUTION Failure to replace worn parts will result in damage to the vehicle.

Installation

- 7. Install the new jack shaft sprocket assembly into the vehicle. Slide the steel shaft into the jack shaft sprocket assembly making sure to install it in the same orientation as it was removed. Also be sure to install the shims in their proper location on the shaft. It is recommended that two new cotter pins be used.
- 8. Snug the clamping bolts on the jack shaft adjusting plates by hand. Reinstall the lock nuts, washers, and plates onto the adjusting studs. Turn the nuts onto the studs using the same amount of turns as it took to remove them. Also keep the stud in the same position in the bulkhead slot as it was when the nut was removed.
- **9.** Using a 12" steel straight edge, square the 27-tooth jack shaft sprocket (the large one labeled #50 jack shaft sprocket in the Figures) with the output sprocket on the transmission. Check the sprockets by laying the straight edge on both sides as well as above and below the jack shaft and transmission sprocket hub. See Figures I through IV (Figure 1I shows straight edge on top of hubs and on the outer side of the sprockets, Figure II shows the straight edge on top of the hubs and on the inner side of the sprockets, Figure III shows the straight edge on the bottom of the hubs and on the inner side of the sprockets, Figure III shows the straight edge on the bottom of the hubs and on the inner side of the sprockets, and Figure IV shows the straight edge on the bottom of the hubs and on the outer side of the sprockets). Please note that the right side of the vehicle is shown, use the same procedure for the left side of the vehicle.

NOTE #50 Sprocket refers to the 27-tooth sprocket.

- **10.** Tighten the adjusting nuts in order to square the two sprockets with each other on both sides as well as on top and bottom of the hubs. Be sure that the adjusting nuts, washers, and plates (on top of bulkhead) are touching the bulkhead at all times when taking measurements.
- 11. Once the two sprockets are square with each other, look to see if the two sprockets are in line with each other. If they are, proceed to the next step. If not, perform the following: Measure the amount the jack shaft assembly will need to be moved and in which direction (in or out of the chassis). Loosen the clamping bolts. Remove the adjusting nuts keeping track of the amount of turns each one takes to remove it. Remove the cotter pins and remove the jack shaft assembly. Add or remove shims as needed in order to line up the sprockets (if you need additional shims, contact your dealer or Recreatives Industries). Reinstall the adjusting lock nuts, washers and plates as well as the two cotter pins. Refer back to step 8 in this section and repeat the alignment process.

CAUTION Failure to align chains will result in vehicle damage.

12. Once it is certain that the transmission and jackshaft are square and in line with each other, bend over the ends on the two cotter pins.

/ CAUTION Failure to secure hardware will result in vehicle damage.

- **13.** Using the straight edge, check the alignment of the center axle center sprocket and the 21-tooth jack shaft sprocket (labeled #60 jack shaft sprocket in the figures). Check this on the front and backside of the sprocket hub. See Figure 5 and 6 (Figure 5 shows the straight edge on the back side of the jack shaft and center axle center sprocket hubs, Figure 6 shows the straight edge on the front side of the jack shaft and center axle center axle center axle center axle center axle center sprocket hubs). If you need to square the two sprockets, turn the adjusting nuts in or out in order to gain proper squareness and double check the transmission and the 27 tooth jack shaft sprockets as performed in step 9.
- 14. If the center axle center sprocket does not line up with the new jack shaft, the axle and sprocket assembly must be moved in or out of the vehicle to gain proper alignment. Measure the amount the axle assembly has to be moved (in or out) and move all three axles on that side in the same manner (see Figures IA and IB in the *Axle Replacement* section for the measurement of the center sprockets and front and rear sprockets). This will keep all chains properly aligned. Refer to the appropriate *Axle Replacement* section and move each axle appropriately.

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

15. Wrap the chains around the sprockets which were removed in step 3. Install the master links making sure that each retaining clip is on the same side of the chain as when it was removed. If you are installing new chains on the jack shaft, you may have to loosen the adjuster plates and back off the adjusting nuts to get the new chain(s) on the jack shaft. Again, be sure to keep track of the amount of turns each adjusting nut is loosened.

CAUTION Master link retaining clips must be installed on their original side of the chain. Otherwise, the chains will bind.

16. Grease the new jack shaft sprocket assembly with 4 or 5 pumps of grease with a grease gun.

CAUTION Failure to lubricate moving parts will result in damage to the vehicle.

17. Tighten the jack shaft chains using the same amount of turns for each vertical adjusting stud and for each horizontal adjusting stud. Also make sure that each stud is in the same location in respect to the bulkhead slot as it was when the nut was loosened and aligned. If the chains need further tightening, refer to your owner's manual on adjusting the appropriate chains. Tighten down the clamping bolts on the jack shaft adjuster plate to 30 ft-lbs.

/I\CAUTION Failure to tighten down hardware will result in vehicle damage.

- **18.** Continue on to Step 11 of the *Center Axle Replacement Snap Ring Style* to finish if you replaced an axle. Otherwise continue on with Step 19.
- **19.** Reinstall the battery.

20. Lower the upper body and reinstall the roll bar pins if so equipped. Install the floorboard.

WARNING Failure to install the roll bar pins will affect the performance of the roll bar in the case of a roll over.

CAUTION	A CAUTION indicates special precautions that must be taken to avoid damage to the vehicle.
WARNING	Failure to follow WARNING instructions <u>could result in severe injury or death</u> the vehicle operator, any passenger, or a bystander.
NOTE A not	te provides key information to make procedures more clear and easier.







MAX II

Front Axle Replacement **Snap Ring Style**

Max II with Serial Number 20253 and above and all Snap Ring Style Axle replacements. **Except 450T Models**

Tools Required:

Maxiifrontsnapringaxle.doc 6/13/08

6" Extension	#271 Loctite® Thread locker
9/16" Wrench	Ratchet
Hammer	Permatex [®] Anti-Seize
Drift Pin	3/16" Hex Wrench
9/16" Socket	5/32" Hex Wrench
Standard Screwdriver	Heavy Duty Snap Ring Pliers
	(Recreatives P/N 45011 with tips P/N 45012)
Torque Wrench	Grease Gun
Floor Jack	Jack Stands
Tape Measure	1/8" Hex Wrench

Tape Measure

Procedure:

- 1. Move the vehicle to a level surface.
- 2. Place the gearshift in REVERSE gear.
- 3. Remove the floorboard and raise the upper body. Disconnect the negative battery cable
- Raise the vehicle so the tires are off the ground. 4.

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.
- If you are replacing a non-snap ring style axle with a snap ring style axle assembly, NOTE follow the standard splined axle replacement instructions to remove your old axle and use these instructions, beginning with the *Installation* section to install the new snap ring style axle.

Removal

- 1. Unbolt the disk brake caliper and mounting bracket assembly from the chassis. The bracket is attached by two 5/16" bolts, one at the front and one at the rear of the mounting bracket. Be sure to keep track of any shims removed.
- **2.** Pull the caliper and mounting bracket assembly up and slide it off the brake rotor.
- **3.** Measure the distance from the inner chassis rail to the edge of the 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.

- **4.** Locate the hex bolt threaded into the end of the axle. Remove this bolt from the end of the axle. Loosen the two set screws on the inner bearing (see Figure IV)
- 5. Locate the three, 3/8" nuts and lock washers which secure the outer bearing flange to the chassis. Remove these nuts and lock washers.
- 6. Locate the sprocket snap rings (on either side of the sprocket assembly). Using the <u>proper</u> snap ring pliers, loosen the inner snap ring and slide it away from the sprocket as far towards the inside of the vehicle as possible. Also, locate the brake disk snap rings. Using the <u>proper</u> snap ring pliers, slide the inner brake disk snap ring towards the inside of the vehicle.
- 7. Slide the axle out of the vehicle with the outer bearing attached. While sliding the axle out of the vehicle remove the axle shims from the turned down end of the axle. Keep track of these shims as this will allow proper sprocket alignment during the assembly process. Also, using the <u>proper</u> snap ring pliers, carefully remove the sprocket snap rings and the inner brake disk snap ring from the axle. Remove the axle from the vehicle. The outer bearing, flange, locking collar, sprocket shim(s), and outer snap ring should remain on the axle. If there is corrosion between the sprocket or disk and 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).
- **NOTE** If the axle will not come out, you may have to loosen the chains. Please refer to your *Operators Manual* for chain tensioning instructions and location of the chain adjusters. To loosen the chain, carefully use a screwdriver to "un-ratchet" the chain adjuster.
- **NOTE** Over time, there is a possibility of the axle becoming rusted to the inner bearing or sprocket/disk 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.

/ WARNING Always wear safety glasses when cutting metal objects.

8. Once the axle is removed, remove the outer brake disk snap ring. Place the axle on a table or bench and in a vise if possible. Loosen the set screw on the locking

collar. 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 rotates 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. Reinstall the outer chassis bearing flange (without grease fitting), which was removed with the axle assembly, to the chassis.
- 2. Slide the locking collar, outer bearing flange (with grease fitting), and outer bearing onto the axle. Make sure they are facing the correct way. Install the outer brake disk snap ring to the outer axle snap ring groove.
- **NOTE** If you are installing a new splined axle in a Max II with a serial number of 18896 or earlier, you need to replace the inner bearing prior to installing the new axle. Please refer to the *Bearing Replacement* section in order to install the appropriate inner axle bearing. Use 2 thick axle shims to start and add or remove to obtain the proper alignment.
- **NOTE** If you are installing a snap ring style splined axle in a Max II with a set screw style brake disk and front sprocket, you will need to add shims in between the set screw style brake disk and the outer brake disk snap ring (see Figure IV). Also, you may have to file away and weld spatter in the area where the brake disk will contact the shims. Use enough shims to allow the brake disk to be about 0.030" away from inner brake disk snap ring. This is best performed on the bench before installing the axe into the vehicle.
 - **3.** Coat the axle shaft with Anti-Seize.
 - 4. Insert the axle into the chassis. Slide the brake disk (with the disk offset towards the outside of the vehicle) onto the axle. Install the inner brake disk snap ring onto the axle followed by the outer sprocket snap ring. Slide the sprocket onto the axle (with the sprocket offset towards the outside of the vehicle) followed by the inner sprocket snap ring. Slide on the appropriate axle shims (removed in step 7). Slide the axle into the inner bearing.
 - 5. Install the left front brake caliper over the brake disk if working on the left side.
 - 6. Slide the brake disk towards the outer brake disk snap ring (and shims if necessary). Move the inner brake disk snap ring and outer sprocket snap ring into their appropriate snap ring grooves on the axle. Move the sprocket towards the outside of the vehicle until it is seated firmly against the outer snap ring. If you did not loosen the chains in step 7 of the removal procedure and the sprocket assembly will not line up with the axle, loosen the chains as described in step 7.
 - 7. With the axle in place, install and tighten down the three nuts and lock washers which were removed from 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.

8. Slide the inner sprocket snap ring to the inner snap ring groove on the axle.

CAUTION

Failure to install hardware properly will result in vehicle damage.

9. Slide the axle all the way in until the shims are seated against the inner bearing. Double check sprocket alignment and add or remove shims until the same measurement as written down in step 3 is obtained.

NOTE You will need to unlock the snap rings and move the brake disk and sprocket in towards the center of the vehicle in order to slide the axle out to add or remove the axle shims. clearance.

Always make sure the axle is in towards the center of the vehicle and the inner snap ring is in the inner snap ring groove when taking the measurements with the shim setup. All chains and sprockets must be aligned properly. If the chains are not aligned, equipment failure will result. Double check the alignment by measuring from the inner chassis rail to the inner center sprocket Be sure the snap rings are seated in the inner snap ring grooves.

/!\ CAUTION Failure to align the chains will result in vehicle damage.

CAUTION Failure to install hardware properly will result in vehicle damage.

- **10.** Secure the axle to the inner bearing using a bolt, lock washer, and thick flat washer as shown in Figure III. Be sure to put some #271 Loctite® on the bolt and tighten it down to 30 ft-lbs. Tighten down the two inner bearing set screws.
- 11. Tighten the outer chassis bearing locking collar. Use the following procedure: Turn the collar by hand in the same direction that the axle rotates when the vehicle is moving forward. Rotate the collar until it is snug on the bearing. Lock the collar using a hammer and drift pin. To lock the collar, place the drift pin in the locking hole (not the set screw hole) and tap it with a hammer (in the same direction as mentioned above) with 4 or 5 firm taps. Tighten down the setscrew using a hex wrench.
- **12.** Grease the outer and inner bearing with one or two pumps of grease with a grease gun. Also, grease the sprocket assembly with 5 or 6 pumps of grease (if the sprocket has a grease fitting).

/\ CAUTION Too much grease in a bearing will damage the bearing seals.

13. Reinstall the disk brake caliper onto the brake rotor. Be sure to replace any shims that were removed. Install the hardware and tighten until the nuts are just snug. Make sure that the top of the caliper mounting bracket is centered between the inner brake pad plate and the outer caliper plate. Tighten down the nuts to 10 ft-lbs.

/I WARNING Failure to install the brake caliper properly can cause loss of control of the vehicle.

14. Adjust the chains as described in your owner's manual.

/ CAUTION Failure to properly adjust chains will result in vehicle damage.

- **15.** Reinstall the tire on the axle. Tighten down the lug nuts to 55 ft-lbs.
- **16.** Reconnect the negative battery cable and lower the upper body. Install the roll bar pins (if so equipped) and install the floorboard.

WARNING



Failure to install the roll bar pins will affect the performance of the roll bar in the case of a roll over.

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FIGURE I



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MAX II

Rear Axle Replacement Snap Ring Style

Max II with Serial Number 20253 and above and all Snap Ring Style Axle replacements. *Except 450T Models*

Tools Required:

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1	
6" Extension	#271 Loctite® Thread locker
9/16" Wrench	Ratchet
Hammer	Permatex [®] Anti-Seize
Drift Pin	3/16" Hex Wrench
9/16" Socket	5/32" Hex Wrench
Standard Screwdriver	Heavy Duty Snap Ring Pliers
	(Recreatives P/N 45011 with tips P/N 45012)
Torque Wrench	Grease Gun
Floor Jack	Jack Stands
Tape Measure	1/8" Hex Wrench
-	

Procedure:

- **1.** Move the vehicle to a level surface.
- 2. Place the gearshift in REVERSE gear.
- **3.** Remove the floorboard and raise the upper body. 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.



TE If you are replacing a non-snap ring style axle with a snap ring style axle assembly, follow the standard axle replacement instructions to remove your old axle and use these instructions, beginning with the *Installation* section to install the new snap ring style axle.

Rear Axle Replacement

Removal

- **NOTE** If the left rear axle is to be replaced, the engine must be moved in order to access the axle bolt easily. Simply remove the drive belt. Remove the four, 3/8" bolts which secure the engine motor mount to the chassis. Slide and rotate the engine and motor mount forward and counterclockwise. This will make the left rear sprocket and inner bearing visible and easily accessible.
 - 1. Measure the distance from the inner chassis rail to the edge of the 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. Locate the hex bolt threaded into the end of the axle. Remove this bolt from the end of the axle. Loosen the two set screws on the inner bearing (see Figure IV)
- **3.** Locate the three, 3/8" nuts and lock washers which secure the outer bearing flange to the chassis. Remove these nuts and lock washers.
- 4. Locate the sprocket snap rings (on either side of the sprocket assembly). Using the <u>proper</u> snap ring pliers, loosen the inner snap ring and slide it away from the sprocket as far towards the inside of the vehicle as possible.
- 5. Slide the axle out of the vehicle with the outer bearing attached. While sliding the axle out of the vehicle remove the axle shims from the turned down end of the axle. Keep track of these shims as this will allow proper sprocket alignment during the assembly process. Also, using the <u>proper</u> snap ring pliers, carefully remove the sprocket snap rings from the axle. Remove the axle from the vehicle. The outer bearing, flange, locking collar, and outer snap ring should remain on the axle. If there is corrosion between the sprocket and 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).
- **NOTE** If the axle will not come out, you may have to loosen the chains. Please refer to your *Operators Manual* for chain tensioning instructions and location of the chain adjusters. To loosen the chain, carefully use a screwdriver to "un-ratchet" the chain adjuster.
- **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.

/I WARNING Always wear safety glasses when cutting metal objects.

6. Once the axle is removed, remove the outer sprocket snap ring. Place the axle on a table or bench and in a vise if possible. Loosen the set screw on the locking collar. 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 rotates when the vehicle is moving backwards. Once loose, slide the locking collar from the bearing. Remove the bearing, flange, and locking collar from the axle.

Installation

- 1. Slide the locking collar, outer bearing flange, and outer bearing onto the axle. Make sure they are facing the correct way. Install the outer snap ring to the outer axle snap ring groove
- 2. Coat the axle shaft with Anti-Seize.
- **NOTE** If you are installing a new splined axle in a Max II with a serial number of 18896 or earlier, you need to replace the inner bearing prior to installing the new axle. Please refer to the *Bearing Replacement* section in order to install the appropriate inner axle bearing. Use 2 thick axle shims to start and add or remove to obtain the proper alignment.
 - **3.** Insert the axle into the chassis. Slide the sprocket, with the grease fitting towards the inside of the vehicle (or the set screw hole if re-using a set screw style sprocket), onto the axle. Install the inner snap ring onto the axle followed by the appropriate axle shims (removed in step 6). Slide the axle into the inner bearing. Move the sprocket towards the outside of the vehicle until it is seated firmly against the outer snap ring. If you did not loosen the chains in step 6 of the removal procedure and the sprocket assembly will not line up with the axle, loosen the chains as described in step 6.
 - 4. With the axle in place, install and tighten down the three nuts and lock washers which were removed from 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. Install the inner snap ring to the inner snap ring groove on the axle.

/I CAUTION Failure to install hardware properly will result in vehicle damage.

- 6. Slide the axle all the way in until the shims are seated against the inner bearing. Measure for sprocket alignment and add or remove shims until the same measurement as written down is obtained.
- **NOTE** You will need to unlock the inner snap ring and move it in towards the center of the vehicle in order to slide the axle out to add or remove the axle shims. If this still does not allow for enough room, loosen the outer chassis bearing flange bolts to gain more clearance.

Always make sure the axle is in towards the center of the vehicle and the inner snap ring is in the inner snap ring groove when taking the measurements with the shim setup. All chains and sprockets must be aligned properly. If the chains

are not aligned, equipment failure will result. Double check the alignment by measuring from the inner chassis rail to the edge of the rear sprocket (see Figure IA). This should be the same as the measurement for the sprocket that was written down in step 2. Once this measurement is obtained and the sprocket is in line, re-tighten down the outer flange nuts as stated in step 4. Be sure the inner snap ring is seated in the inner snap ring groove.

/ CAUTION Failure to align the chains will result in vehicle damage.

CAUTION Failure to install hardware properly will result in vehicle damage.

- 7. Secure the axle to the inner bearing using a bolt, lock washer, and thick flat washer as shown in Figure III. Be sure to put some #271 Loctite® on the bolt and tighten it down to 30 ft-lbs. Tighten down the two inner bearing set screws.
- 8. Tighten the outer chassis bearing locking collar. Use the following procedure: Turn the collar by hand in the same direction that the axle rotates when the vehicle is moving forward. Rotate the collar until it is snug on the bearing. Lock the collar using a hammer and drift pin. To lock the collar, place the drift pin in the locking hole (not the set screw hole) and tap it with a hammer (in the same direction as mentioned above) with 4 or 5 firm taps. Tighten down the setscrew using a hex wrench.
- **9.** Grease the outer and inner bearing with one or two pumps of grease with a grease gun. Also, grease the sprocket assembly with 5 or 6 pumps of grease.

/ CAUTION Too much grease in a bearing will damage the bearing seals.

10. Adjust the chains as described in your owner's manual.

/ CAUTION Failure to properly adjust chains will result in vehicle damage.

- 11. If the engine mount was removed from the chassis, slide the engine mount back into position. Install the four 3/8" bolts through the mount and into the rubber chassis mounts. Before tightening these bolts down, make sure that the drive clutch on the engine is square and in proper alignment with the driven clutch on the transmission (see the *Clutch and Drive Belt* section of the service manual). Reinstall the drive belt and be sure it has the proper tension. Tighten down the bolts to 20 ft-lbs.
- 12. Reinstall the tire on the axle. Tighten down the lug nuts to 55 ft-lbs.
- **13.** Reconnect the battery cables and lower the upper body. Install the roll bar pins (if so equipped) and install the floorboard.

WARNING Failure to install the roll bar pins will affect the performance of the roll bar in the case of a roll over.

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

CAUTION

/i\

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

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

NOTE A note provides key information to make procedures more clear and easier.



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FIGURE I

