LoMax™ 205

CASE & 3:1 GEAR SET

Manufactured by JB CONVERSIONS, INC.
Phone: 337-625-2379

Installation Instructions for the
GM NP205 Transfer Case

Part No. 2800
Instruction Rev: 2007.08.16

Kit Components:
1. (1) 42x25 tooth Intermediate Gear
2. (1) 19 tooth Input Gear, 32-internal spline
3. (1) 19 tooth Hi Range F/O Gear
4. (2) 35 tooth Lo Range Gear
5. (1) Ductile Iron Case – GM pass. side F/O
6. (1) Ductile Iron Inspection Cover

Optional Components:
1. Master Rebuild Kit
2. 32-spline front output shaft

Instructions:

1. Drain the transfer case and remove the shift rail linkage plate.
2. Remove the locknut retaining the front output flange followed by the flange itself.
3. Remove the rear tail cone. Remove the bolts holding the rear bearing retainer to the main case. Do not remove the snap ring on the rear output shaft located at the bearing.


4. Pull the rear output shaft and rear retainer out of the main case. The slider ring can be pulled out the case at this point. The shift fork will remain in the case for now.


5. Remove the snap ring from the input shaft. Push or tap the input shaft in toward the case. Remove it completely after it has passed through the front bearing. Remove the bearing by tapping it outward from within the case.


6. Remove the bolts holding the aluminum rear bearing retainer and the steel intermediate shaft cover plate. Remove the retainer and cover plate.


7. Remove the four bolts holding the front bearing retainer to the case. Remove the front output shaft/gear assembly from the case by tapping it rearward from the front of the case.


8. Remove the slider ring and the high range front output gear from the case. Then remove the two hex caps in the top of the case followed by the springs and detent balls. You can use a magnet and punch to remove the balls which are located below the springs.


9. Use a punch to drive out the two ¼" shift rail pin access hole plugs. They will fall into the case and can be removed and discarded. You may need to move the shift rails to line up the roll pins with the holes in the case. Use a small tipped punch to drive the roll pins inward and out of both shift forks.


10. Remove the short shift rail followed by the long shift rail. You may to rotate the rails either direction while pulling them through the forks. Steady each fork from within the case as you pull the rail from outside the case.

11. Remove the idler shaft nut and washer.
12. Use a punch or dead blow hammer to drive the idler shaft from the case.

13. Move the intermediate gear over to the side and lift it out of the case.

14. It is recommended to install new bearings and races into the new LoMax intermediate gear. You will need to retain the internal sleeve located between the two tapered roller bearings. Also, keep your intermediate gear shims. A supplemental shim pack is included with the LoMax kit for use if necessary.
15. Drive out the two plugs in the side of the case. Slide out the two long rail pins.

Reassembly:

1. Install new bearing races into the intermediate gear.

2. Lay the new LoMax case on the work bench with the front side facing up.
3. Place the new intermediate gear onto the tapered roller bearing.
4. Place the steel sleeve onto the top of the bearing. Place the original shims onto the top of the sleeve. Add the additional shims onto the top of the original shims. This will intentionally yield too much end play.

5. Place the 2nd tapered roller bearing into the top race in the intermediate gear. Slide the intermediate gear/bearings into the case via the inspection opening.


6. Move the case to the edge of the bench so that the intermediate shaft can be pushed up through the case. Pushing the shaft up from below allows you to look into the bore to check alignment of the sleeve and shims as the intermediate shaft passes through them. It is easy to use a punch or screwdriver to move the shims and/or sleeve as needed to line up with the shaft as it is pushed up through the gear.
7. When the intermediate shaft is as far in as possible (by hand), turn the case upright and use a dead blow hammer to knock the intermediate shaft in the rest of the way.

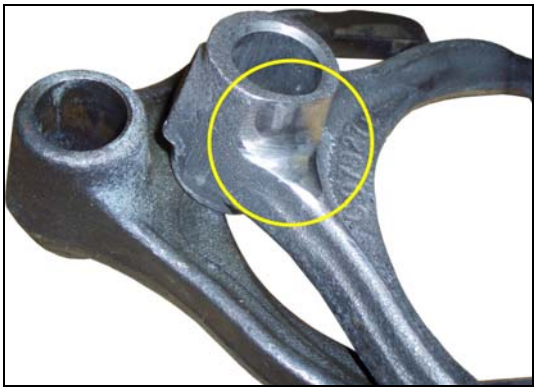

8. Do not seal the cover plate with RTV until the final end play setting is achieved. The cover should be torqued to 15-25 ft-lb.
9. Install the washer and intermediate shaft nut and torque to 90-130 ft-lbs.. Measure the end play in the intermediate gear with a dial indicator. Remove the nut/washer and drive out the intermediate shaft.

10. Adjust the shim pack (per the measurements taken in step 10) to remove the end play so that the final setting is 0.000" end play. DO NOT set the shim pack to produce excessive preload on the tapered roller bearings. Repeat the above procedures to reinstall the intermediate gear.
11. Insert both rail pins into the case (lubricated). Make sure the rail pins can slide easily in the bores.

12. Start the long shift rail into the case from the front with the detent notches facing upward. Position the fork in the case so that the rail can pass through it. Notice the fork is positioned with the offset facing inward (see photo in step 15 for view). Push the rail to the neutral (center detent) position.
13. Install the input bearing into the front of the case.

14. Install the input gear from the back of the case and secure it with the snap ring.

15. Start the short shift rail into the case from the front with the detent notches facing upward. Position the fork in the case so that the rail can pass through it. Notice the fork is positioned with the offset facing inward. Place the rail in the neutral position. NOTE: Minimal grinding is required on the fork as shown in yellow in the photo on the right.



16. Using a punch, install the roll pins into the shift forks securing them to the rails. Visually check the alignment of the fork and rail holes before driving in the roll pins. Tip: it may be easier to start the roll pin into the fork before trying to install the fork in the case.

17. Install the front output shaft bearing into the case including the snap ring on the bearing. Install the aluminum bearing retainer onto the bearing to hold it in place. Do not RTV on this retainer yet.

18. Support the case on the bench with the front face down. Place the thrust washer onto the top of the bearing (inside the case). **NOTE:** Apply oil to both sides of the thrust washer.
19. Place the new LoMax gear onto the bearing with the clutch teeth facing upward. **NOTE:** Apply oil to the inside of the gear and to both faces.

20. Place the slide ring onto the gear in the case (within the shift fork).

21. Remove the snap ring, thrust plate, and dowel pin from the original front output shaft.

22. Then remove the original gear from the shaft. The needle bearings may fall off of the shaft as you lift the gear.

23. Install the needle bearings onto the front output shaft using grease to hold them in place. Notice there are two rows of bearings with a spacer in between the two rows. Wipe the bore of the new LoMax gear with gear oil and slide it onto the front output shaft.

24. Install the small pin into the front output shaft.

25. Install the thrust plate onto the shaft followed by the snap ring.

26. Lubricate the shaft with gear oil and Lower the front output shaft assembly into the case. The shaft should pass through the slide ring, gear, thrust washer, and bearing installed in steps 18-20. Apply RTV to the bearing retainer and bolt it to the case (20-40 ft-lb.). Use gaskets if you wish.

27. Remove the front retainer temporarily installed previously, apply RTV, and reinstall. Torque bolts to 20-40 ft-lb.. Next install the rubber star washer over the threaded end of the shaft followed by the end yoke or flange. The flange/yoke nut should be torqued to 190 ft-lbs..

28. Remove the output shaft snap ring and slide the steel bearing housing up and off of the shaft.

29. When you lift up the housing, the needle bearings will fall out.
30. Remove the ball bearing from the top of the bearing housing.
31. Trim the oil vane with a grinder or saw. Remove 1/4" of material.

32. Use grease to reinstall the needle bearings into the housing.
33. Remove the snap ring, thrust plate, dowel pin, and thrust washer from the original rear output shaft.

34. Remove the original gear from the shaft. The needle bearings may fall off of the shaft as you lift the gear.


35. Inspect the lower thrust washer and replace if necessary.


36. Install the needle bearings onto the rear output shaft (above the thrust washer) using grease to hold them in place. Notice there are two rows of bearings with a spacer in between the two rows. Wipe the bore of the new LoMax gear with gear oil and slide it onto the front output shaft.


37. Install the upper thrust washer and dowel pin.


38. Install the thrust plate followed by the snap ring.


39. Lower the steel bearing housing onto the output shaft. Install the plastic speedometer gear onto the shaft.


40. Tap the ball bearing into the steel housing followed by the snap ring.
41. Align the slider ring into the shift fork. The slider ring must fit into the clutch teeth on the back of the input gear.

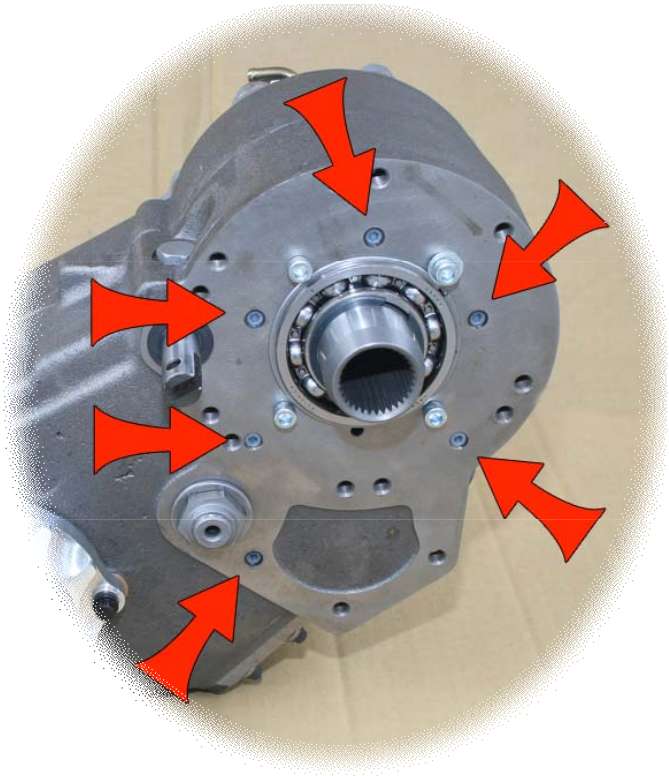

42. Install the needle bearings into the rear output shaft. Be sure the spacer and retaining ring are above the needle bearings. Use grease to hold the needle bearings into place.

43. Apply RTV to the mounting face of the steel bearing housing. Use a gasket if you wish.
44. Lower the output shaft assembly onto the case. Make sure the clutch teeth on the output gear engage with the slide ring internal teeth.
45. Bolt the steel housing to the new case (20-40 ft-lb.).
46. Bolt the tail housing onto the rear bearing housing (20-40 ft-lb.).

47. Install the poppet balls, springs, and threaded caps.

48. Install hole plugs into the two side holes and 2 top holes. **NOTE:** Install the drain and fill plugs.
49. Apply RTV to the mounting surface of the inspection cover and install (15-25 ft-lbs).

50. Depending on transmission application, some of the bolt holes on the front of the LoMax case may not be used. Several of the threaded holes on the front of the LoMax case are "thru" drilled. Unused, thru-drilled holes should be plugged with the nylon inserts supplied in the kit. Use RTV on the threads of each plug before installing them into the new case. Failure to complete this step will result in fluid loss. See photo for example. **Your application may vary.**



NOTE: The 4 allen head bolts in the photo above are installed for shipping only. Remove prior to installation if present.