COMPONENT REPLACEMENT

HUB REPLACEMENT

NOTICE: See NOTICE on page 1 of this section, regarding the fasteners in the following procedures for Locking Hub Replacement.

AUTOMATIC LOCKING HUBS

General Description (All Models)

The Automatic Locking Hub, shown in Fig. 3C-4K, engages or disengages to lock the front axle shaft to the hub of the front wheel. Engagement occurs whenever the vehicle is operated in four-wheel drive. Disengagement occurs whenever two-wheel drive has been selected and the vehicle is moved rearward. Disengagement will not occur when the vehicle is moved rearward if four-wheel drive is selected and the hub has already been engaged.

The outer clutch housing is splined to the wheel. The hub sleeve is splined to the front axle shaft. The clutch gear is splined to the hub sleeve. The drag sleeve is keyed to the wheel bearing retainer washer. Engagement occurs when the clutch gear is moved on the splines of the hub sleeve to engage the internal teeth of the outer clutch housing.

The cam surface of the steel inner cage forces the cam follower and clutch gear to move outward toward the cover and into engagement with the clutch teeth of the outer clutch housing. A lug on the inside of the drag sleeve retainer washer keys the washer to the spindle and two lock nuts retain this washer in position on the spindle. Cutouts in the drag sleeve engage the four tabs on the drag sleeve retainer washer to hold the drag sleeve in a fixed position with respect to the axle shaft. The one way clutch spring (called a brake band) is positioned over the serrated portion of the drag sleeve.

Engagement is accomplished (when four-wheel drive is selected) by the movement of the axle shaft, causing one of the tangs of the brake band to engage the steel outer cage and hold the cage while the cam follower moves the clutch gear into mesh with the outer clutch housing. One of the tangs of the brake band is used for engagement. The other tang is used to maintain free motion of the brake band relative to the drag sleeve during four-wheel drive operation (after the hub lock engages). Disengagement is accomplished (after two-wheel drive has been selected) by the reverse movement of the wheel causing the clutch gear, hub sleeve, and cam follower to rotate. The cam follower rotates away from the lugs of the plastic outer cage, allowing the follower to move to the disengaged condition. The release spring then moves the clutch gear out of mesh with the outer clutch housing to disengage the wheel from the axle shaft.

Preliminary Checking

Before disassembling a unit for complaint of abnormal noise, read the following:

- To obtain all-wheel drive, the transfer case lever must be placed in (4L) or (4H), at which time the hub locks will automatically engage.
- To unlock (free wheel) the hubs, shift the transfer case lever to (2H), then slowly reverse vehicle direction approximately ten feet.
- Incomplete shift from 2WD to 4WD, or disengagement of only one hub lock may cause an abnormal sound from the front axle. Shift to 4WD to stop the noise, then unlock the hubs as described above.
- To avoid breaking plastic parts, allow assembly to come to room temperature before disassembling.

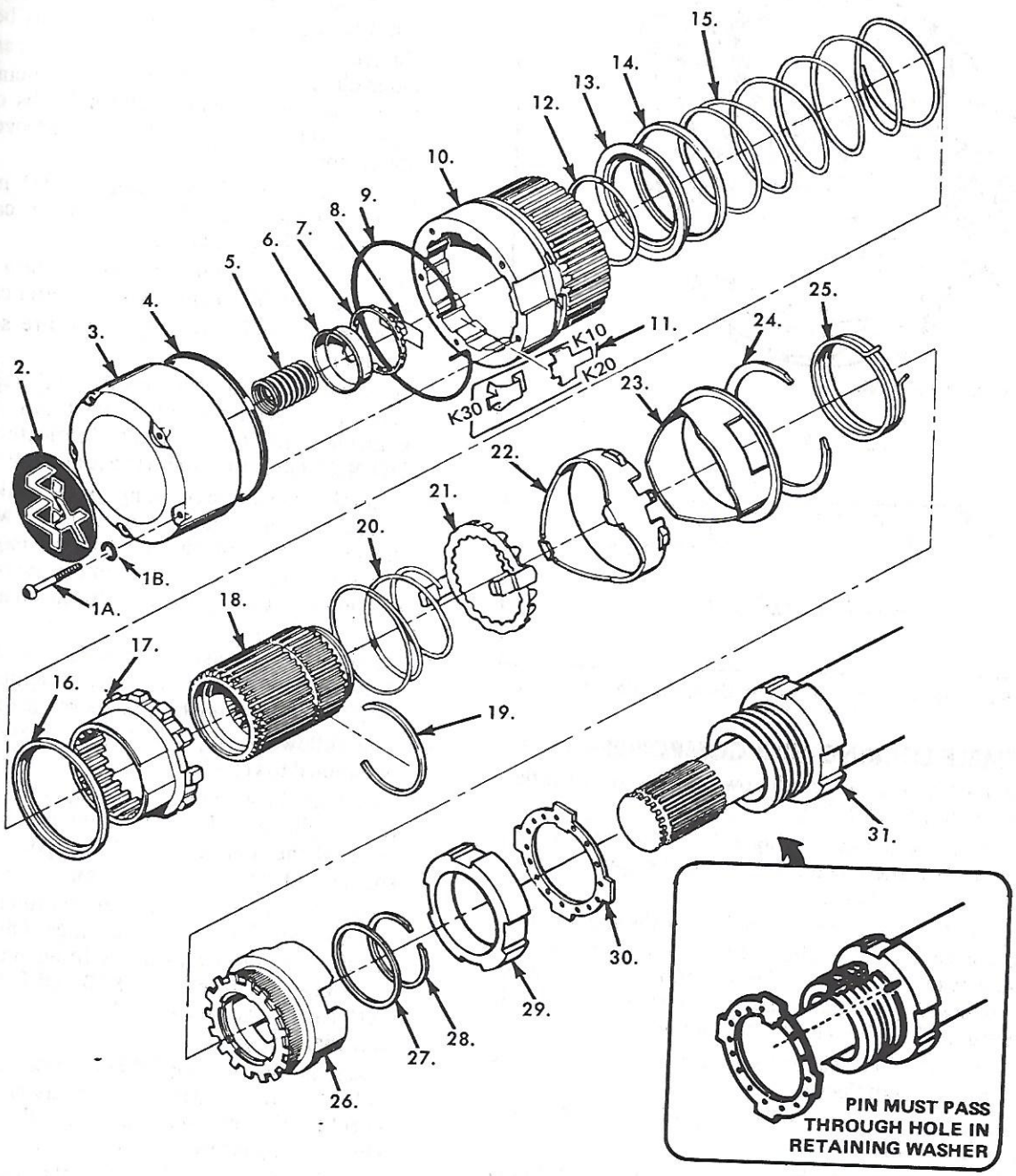
Removal of Hub Lock Assembly

1. Remove the five screws (item #1, Fig. 3C-4K) which retain the cover (#3) to the outer clutch housing (#10).
2. Remove the cover, seal (#4), seal bridge (#11), and bearing components (#5, 6, 7, 8).
3. Use needle-nose pliers to compress the wire retaining ring (#9), and pull the remaining components from the wheel.

DISASSEMBLE LOCKING HUB COMPONENTS

1. Remove the snap ring (#28) from the groove of the hub sleeve (#18).
2. Turn the clutch gear (#17) until it drops into engagement with the outer clutch housing (#10). Lift and cock the drag sleeve (#26) to unlock the tangs of the brake band (#25) from the window of the inner cage (#23) and remove drag sleeve and brake assembly.

   It is important that the brake band should never be removed from the drag sleeve. The spring tension of the brake band can be changed if the coils are over-expanded and this could affect the operation of the hub.
3. Remove the snap ring (#24) from the groove in the outer clutch housing.
4. Use a small screwdriver to pry the plastic outer cage (#22) free from the inner cage (#23) while the inner cage is being removed.
5. Use a small screwdriver to pry the plastic outer cage tabs free from the groove in the outer clutch housing. Remove outer cage.
6. Remove the clutch sleeve (#18) and attached components from the outer clutch housing.
7. Compress the return spring (#15) and hold the spring in the compressed condition with fabricated clamps as shown in Fig. 3C-5K. After the clamps are installed position the entire assembly in a bench vise so that the vise holds both ends of the clutch sleeve. Remove the retaining ring (#12).
8. With the clutch sleeve assembly still in the vise, remove the clamps holding the return spring. Slowly open the vise to permit releasing of the return spring in a controlled manner. Remove the retainer seat, spring and spring support washers (#13, 14) from the hub sleeve.
9. Remove the C-type retaining ring (#19) from the clutch sleeve. It is necessary to position the sleeve assembly so that the C-ring ends are aligned with the legs of the cam follower, allowing removal between the two legs.
10. Remove the conical spring (#20) from between the cam follower and the clutch gear.
11. Separate the cam follower (#21) from the clutch gear (#17).



1A. Machine Screw
1B. O-Ring Seal
2. Cover Plate
3. Cover
4. Sealing Ring
5. Bearing Race Spring
6. Bearing Inner Race
7. Bearing
8. Bearing Retainer Clip
9. Wire Retaining Ring
10. Outer Clutch Housing
11. (K10-20) Seal Bridge-Retainer
(K30) Assembly Aid-Retainer
12. Retaining Ring
13. Spring Support Washer
14. Spring Retainer
15. Return Spring
16. Spring Retainer
17. Clutch Gear
18. Hub Sleeve
19. "C" Type Retaining Ring
20. Conical Spring
21. Cam Follower
22. Outer Cage
23. Inner Cage
24. Snap Ring
25. Brake Band
26. Drag Sleeve and Detent
27. Small Spacer
28. Retaining Ring
29. Lock Nut
30. Drag Sleeve Retainer Washer
31. Adjusting Nut, Wheel Bearing

Fig. 3C-4K--Automatic Locking Hubs

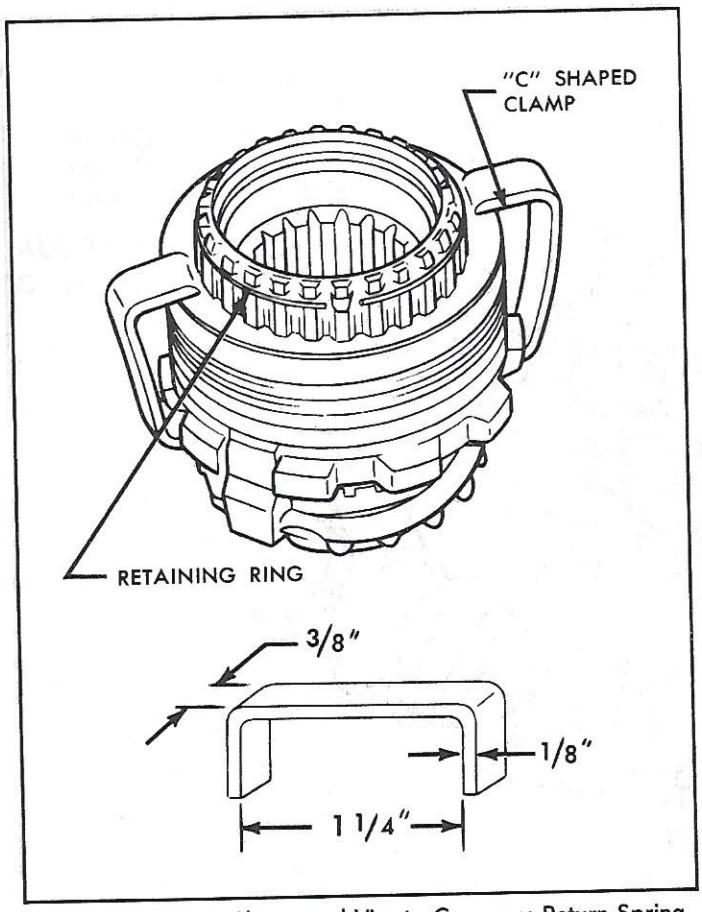


Fig. 3C-5K--Using Clamp and Vise to Compress Return Spring

REASSEMBLE LOCKING HUB COMPONENTS

1. Snap the tangs of the cam follower (#21) over the flats of the clutch gear (#17).
2. Compress the conical spring (#20) and slide it into position with the large diameter of the spring located against the clutch gear.
3. Position the clutch gear assembly over the splines of the hub sleeve ((#18). The teeth of the cam follower should be located at the end of the hub sleeve which has no splines. The clutch gear and spring should slide freely over the splines of the hub sleeve.
4. Assemble the "C" shaped retainer ring (#19) in the groove of the hub sleeve.
5. Assemble a spring retainer (#14, 16) over each end of the return spring (#15).
6. Position one end of the return spring with retainer (#16) against the shoulder of the clutch gear.
7. Place the spring support washer (#13) against the retainer on the end of the return spring. Compress the return spring and assemble the retainer ring (#12) in the groove of the hub sleeve. Two "C" shaped clamps may be used to retain the return spring while the retainer ring is being assembled. Refer to Fig. 3C-4K.
8. The two "C" shaped clamps may be fabricated from 3/8" (9.5mm) wide by 3/32" or 1/8" (2.4-3.2mm) thick stock. The distance between the two legs of the clamps should be approximately 1-1/4" (31.8mm).
9. Place the components assembled in steps 1 through 7 into the outer housing (#10). The cam follower should be positioned with the two legs directed outboard.
10. Screw three of the cover screws (#1) into three holes of the outer clutch housing. These screws will support the component to permit the clutch hub to drop down so that the tangs of brake band (#25) may be assembled.
11. Carefully work the plastic outer cage (#22) into the outer clutch housing with the ramps facing toward the cam follower. The small external tabs of the plastic cage should be located in the wide groove of the outer clutch housing.
12. Assemble the steel inner cage (#23) into the outer cage, aligning the tab of the outer cage with the "window" of the inner cage.
13. Assemble the retaining ring (#24) into the groove of the outer clutch housing above the outer cage.
14. The brake band and drag sleeve are serviced as an assembly. 1052750
    In the event that the original lubricant has been removed or contaminated, Part No. ~~14050324~~, or equivalent, MUST be used to lubricate this assembly. DO NOT USE any other type lubricant.
15. Assemble one of the two tangs of the brake band (#25) on each side of the lug of the outer cage which is located in the window of the steel inner cage. It will be necessary to cock these parts to engage the tangs in this position as the drag sleeve is positioned against the face of the cam follower.
16. Remove the three screws and rest the end of the hub sleeve on a suitable support. Assemble the washer (#27) and snap ring (#28) above the drag sleeve.
    The following steps may be completed as hub is assembled to vehicle.
17. Assemble the wire retaining ring (#9) in the groove in the unsplined end of the outer clutch housing. The tangs of the retainer ring should point away from the splined end of the clutch housing.
18. Hold the tangs of the wire retainer together and assemble Item #11 over the tangs. This holds the wire retainer ring in a clamped condition in the groove of the outer clutch housing. For K10 and K20, assemble the "O" ring in the groove of the outer clutch housing and over seal bridge.
19. Assemble the bearing (#7) over the inner race (#6). Lubricate the bearing as it is assembled with light wheel bearing grease. The steel balls should be visible when bearing is properly assembled.
20. Snap the bearing retainer clip (#8) into the hole in the outer race.
21. Assemble the bearing and retainer assembly in the end of the hub sleeve. Assemble the seal ring (#4) over the outer clutch housing.
22. Assemble the bearing race spring (#5) into the bore in the cover.
23. Assemble the cover and spring assembly. Align the hole in the cover to the holes in the outer clutch housing and assemble the five screws.
24. For K10 and K20, assemble the 0-ring over the seal

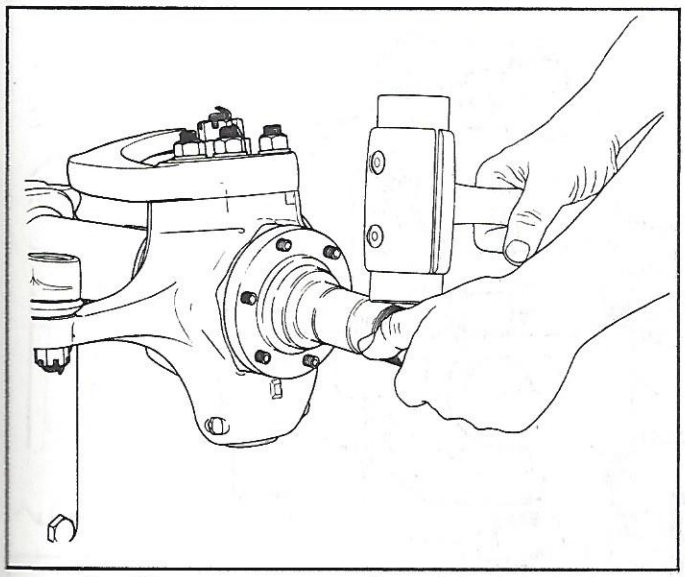


Fig. 3C-6K--Removing Spindle and Thrust Washer

bridge (Item #11) to prevent it from jumping out of position during handling prior to the hub bearing assembled to the vehicle. This "O" ring may be left on but is not required.

25. The hub sleeve and attached parts should turn freely after the unit has been completely assembled.
26. The five cover screws must be loosened to assemble the hub to the vehicle. Torque these screws after hub is installed to 4.5-5.6 N·m (40-50 in-lbs.).

Assemble New Hub to Wheel

27. A drag sleeve retainer washer (#30) is supplied with each new assembly. Assemble this washer between the wheel bearing adjustment nut and the lock nut. Adjust the inner nut to give proper bearing adjustment as follows.
28. Use J-6893 to torque adjusting nut (#31) to 60 N·m (50 ft. lbs.), to seat the bearings; then, back off the nut and torque to 47 N·m (35 ft. lbs.) while the hub is being rotated. Finally, back the adjusting nut off a maximum of 3/8 turn. Assemble the drag sleeve retainer washer (Item #30) over the axle shaft against the bearing adjustment nut. The tang on the inside diameter of this washer is assembled in the keyway of the axle shaft. The pin on the adjusting nut MUST pass through one of the holes in the washer. Assemble and tighten the outer lock nut to 217-310 N·m (160-205 lb-ft).
29. Align the cut-outs in the drag sleeve with tabs on the drag sleeve washer as the splines of the outer clutch housing are assembled into splines of the hub of the wheel. Loosen the cover screws three or four turns and push in on these screws, to allow the retaining ring to expand into groove in hub of wheel as the seal bridge is forced from position over the retaining ring as the tang of seal bridge contacts wheel hub. Torque the cover screws to 4.5-5.6 N·m (40-50 lb. in.)

Assemble a Rebuilt Hub to Wheel

30. Steps 1-17 in the assemble procedure are usually completed whenever the hub is rebuilt and then assembled to the wheel.
31. Hold the two tangs of the retaining ring in the clamped condition as the assembled components are assembled to the hub of the wheel. See step 29 for installation of drag sleeve washer.
32. Assemble the retainer (Item #11) in the cut-out of the outer clutch housing. For K10 and K20, assemble the sealing ring over the outer clutch housing.
33. Assemble the bearing and retainer assembly into the hub sleeve.
34. Assemble the bearing race spring to the cover.
35. Assemble the cover and cover bolts. Be sure that O-rings are in position under the bolts. Tighten cover screws to 4.5-5.6 N·m (40-50 lb. in.).

HUB-AND-DISC

Removal

1. Remove automatic locking hub as described earlier.
2. Remove the wheel bearing outer lock nut, retaining washer, and wheel bearing inner adjusting nut using Tool J-6893 and Adapter J-23446 or Tool J-6893-01.
3. Remove the hub-and-disc assembly and the outer wheel bearing.
   a. Remove the oil seal and inner bearing cone from the hub using a brass drift and tapping with a hammer. Discard the oil seal.
   b. Remove the inner and outer bearing cups using a brass drift and hammer.
   c. Clean, inspect and lubricate all parts as required.

Installation of Hub-and-Disc

NOTICE: All parts should be lubricated for normal operation during assembly with an ample amount of high speed grease. Lubrication MUST be applied to prevent deterioration before the unit is placed in service.

1. Assemble the outer wheel bearing cup into the wheel hub using Installer J-6368 and Driver Handle J-8092.
2. Assemble the inner wheel bearing cup into the wheel hub using Installer J-23448 and Driver Handle J-8092.
3. Pack the wheel bearing cone with a high melting point type wheel bearing grease and insert the cone into the cup.
4. After lubricating the wheel bearings, install the hub-and-disc and the bearings to the spindle.
5. Adjust wheel bearings as listed in "Maintenance and Adjustments".

SPINDLE

Removal

1. Remove the hub-and-disc assembly as outlined earlier.
2. Remove the spindle retaining bolts.
3. Remove the spindle and thrust washer by tapping the end of the spindle lightly with a soft hammer to break it loose from the knuckle as shown in Figure 3C-6K. Replace the thrust washer if excessive wear has occurred.