ZF Friedrichshafen AG
Commercial Vehicle Technology

Service Procedure #COL-208

Global Steering Column
Inner Cam Change Procedure
Service Kit – SK000337

Created 12/13/2017

Tool List – 100 in-lb torque wrench
½" and 11/16" wrench and socket
Needle Nose Pliers

This ZF Commercial Steering Division installation procedure has been written to help you switch the inner cam on hand actuated global columns.
This procedure should not replace your manuals; you should use them together.
These materials are intended for use by properly trained, professional mechanics, NOT "Do-it-yourselfers".

Column Lock Mechanism Components:

1. Thrust Bearing
2. Castle Nut
3. Cotter Pin
4. Inner Cam
5. Outer Cam
6. Through Bolt
7. Thrust Washer Stack
8. Handle

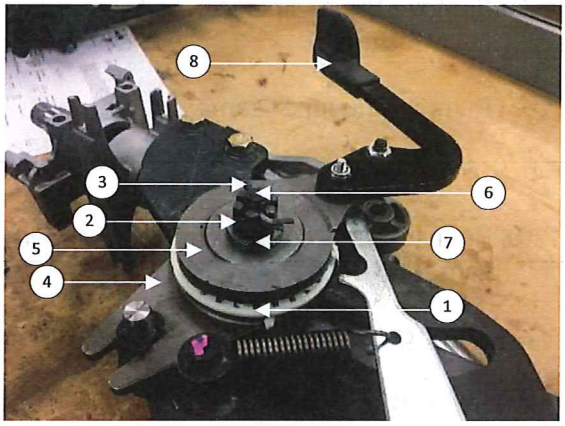

Figure 1

Procedure 1 – Switch Inner Cam:

1. Move handle into unlocked state.
2. Remove the cotter pin. **Figure 2**
3. With ½" wrench securing the bolt, remove the castle nut using a 11/16" wrench. **Figure 3**
4. Remove the thrust washer stack. **DO NOT DISCARD**. **Figure 4**
5. Remove the outer cam of the locking mechanism. **Figure 5**
6. Remove the thrust bearing.
7. Remove the e-clip securing the inner cam. **Figure 6**
8. Remove the inner cam.
9. Install the new inner cam.
10. Re-install snap ring securing the inner cam.
11. Apply grease to the inner cam. **Figure 7**
12. Install new thrust bearing.
13. Apply grease to the outer cam. **Figure 8**
14. Re-install the outer cam.
15. Re-install the thrust washer stack.
16. Put handle into locked state.
17. With the bolt secured by a ½" wrench, torque the castle nut to 85 in-lb. Then advance the castle nut to align the cotter pin hole. **Figure 9**
18. Install new cotter pin. **DO NOT BEND PIN OVER**. **Figure 10**
19. Proceed to **Procedure 2 – Column Lock Test.**

Figure 2

Figure 3

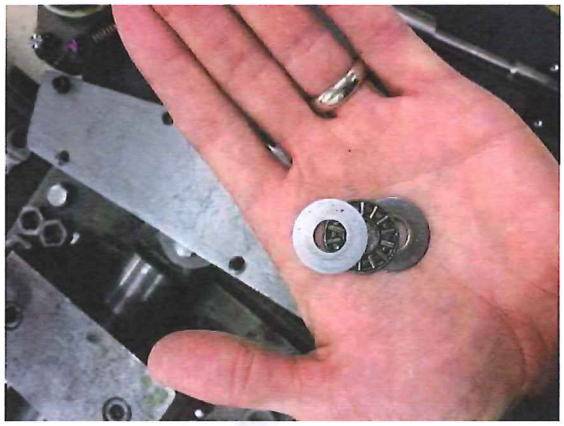

Figure 4

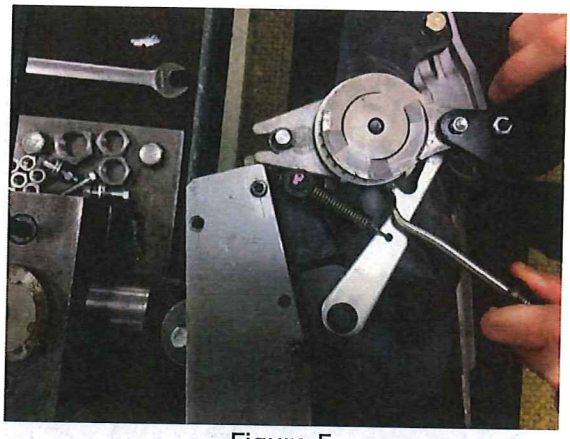

Figure 5

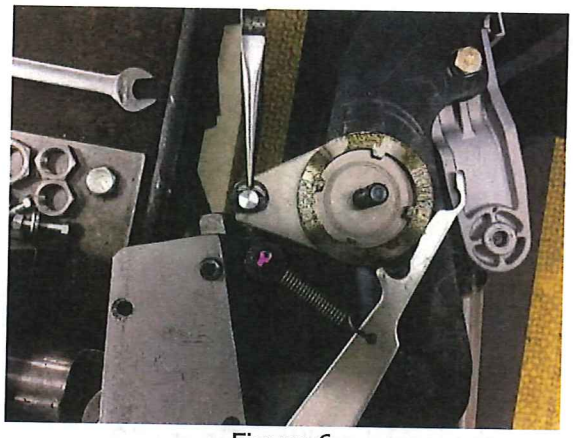

Figure 6

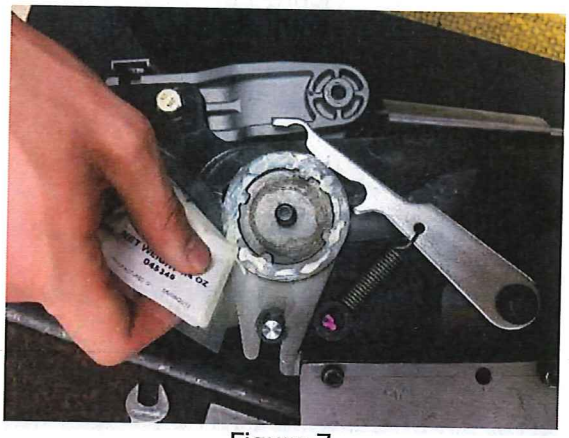

Figure 7

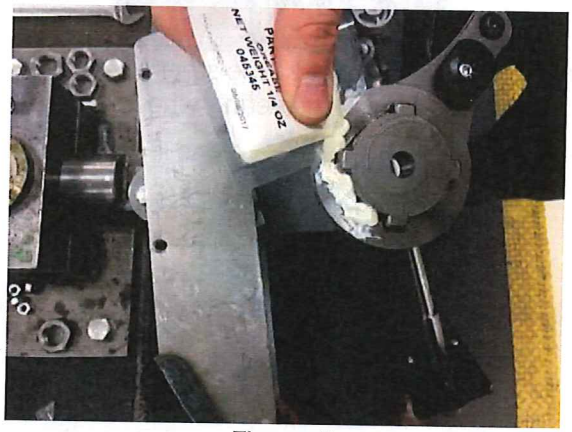

Figure 8

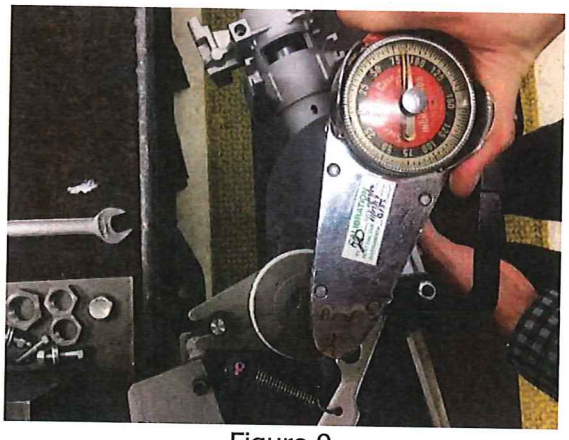

Figure 9

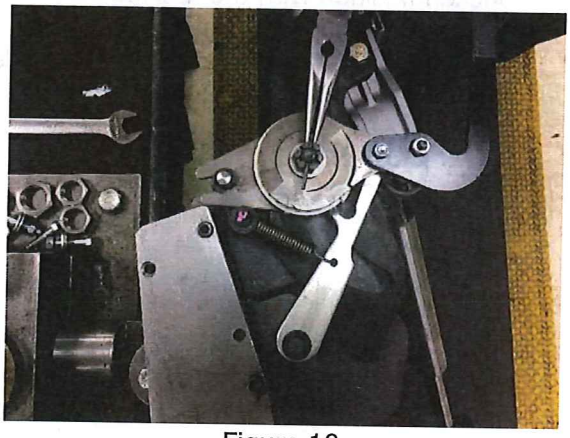

Figure 10

Procedure 2 – Column Lock Test:

1. Unlock column and place it in the full up and away position. Lock the column leaving in in that position. **Figure 12**

2. While seated with the hands at the 10 and 2 O'clock position on the steering wheel pull the wheel towards you with a force of approximately 120 lb. **DO NOT** unlock the column during the test. This test is to verify the column will remain in the locked position. **Figure 13**

NOTE

Gradually apply force to the steering wheel. **DO NOT** jerk on the steering wheel.

3. Column should remain locked when applying reasonable force expected in normal operation (80 - 120 lb). If the column remains in the locked position no further adjustments are required. Bend over cotter pin.

4. If the column does not remain in the locked position with the applied reasonable force expected in normal operation (80 – 120 lb) tighten the castle nut one slot, then perform steps 18 and 19 of **Procedure 1 – Switch Inner Cam.**

Figure 11

Figure 12