SERVICE BULLETIN No.1065A

Circulate to listed addressees

COACH MODEL	**:** T2145 and C2045
BULLETIN TYPE	**:** Product Improvement
MANUAL & SECTION	**:** Maintenance Manual: Chapter 4: Axles, wheels and tires Spare Parts Manual: Section 642106 – Drive axle: brakes
PARTS BOOK REVISION	**:** Yes
DATE	**:** September 8, 2004
SUBJECT	**: "Super Seal" unitized wheel bearings on Dana 11.36 drive axle**
TERMS & CONDITIONS	**:** No claims will be accepted with reference to this Bulletin.

THIS SERVICE BULLETIN SUPPLEMENTS SERVICE BULLETIN #1065

APPLICATION:

The new drive axle wheel bearings subject of this Bulletin have been cut into production as from following units:

Model	Engine	VIN
T2145	Cummins	44300 →
	Detroit Diesel	44611 →
C2045	Cummins	45453 →
	Detroit Diesel	46504 →

DESCRIPTION:

This Service Bulletin provides information about design changes Dana Corporation have made to their 11.36 model drive axle.
For improved sealing, and starting with axle # P-5428-03, "Super Seal" unitized bearings have been introduced in production. Changes to the new bearing installation include:

- The outboard O-ring and groove in the drive axle spindle (see Figure 1) have been omitted.
- The bearing-to-spindle seal has been relocated inboard.
  The seal is no longer an O-ring but is now incorporated in the bearing itself (see Figure 2).
- The outboard bearing has been provided with a redesigned seal (see Figure 3).

Service personnel: please read, initial and circulate.

Service Manager	Parts Manager	Warranty Administrator	Workshop Foreman	Service Technician

Dana Drive Axle "Super Seal" unitized Wheel Bearing

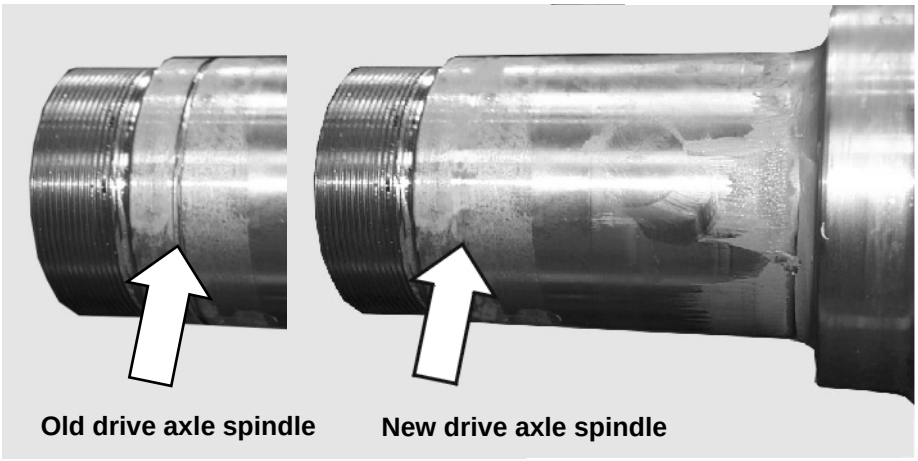

Figure 1: The O-ring and O-ring groove on the axle spindle of the previous design (see arrow) have

Figure 2: The outboard O-ring seal has been eliminated and an inboard seal has been installed. The new seal is incorporated in the bearing assembly.

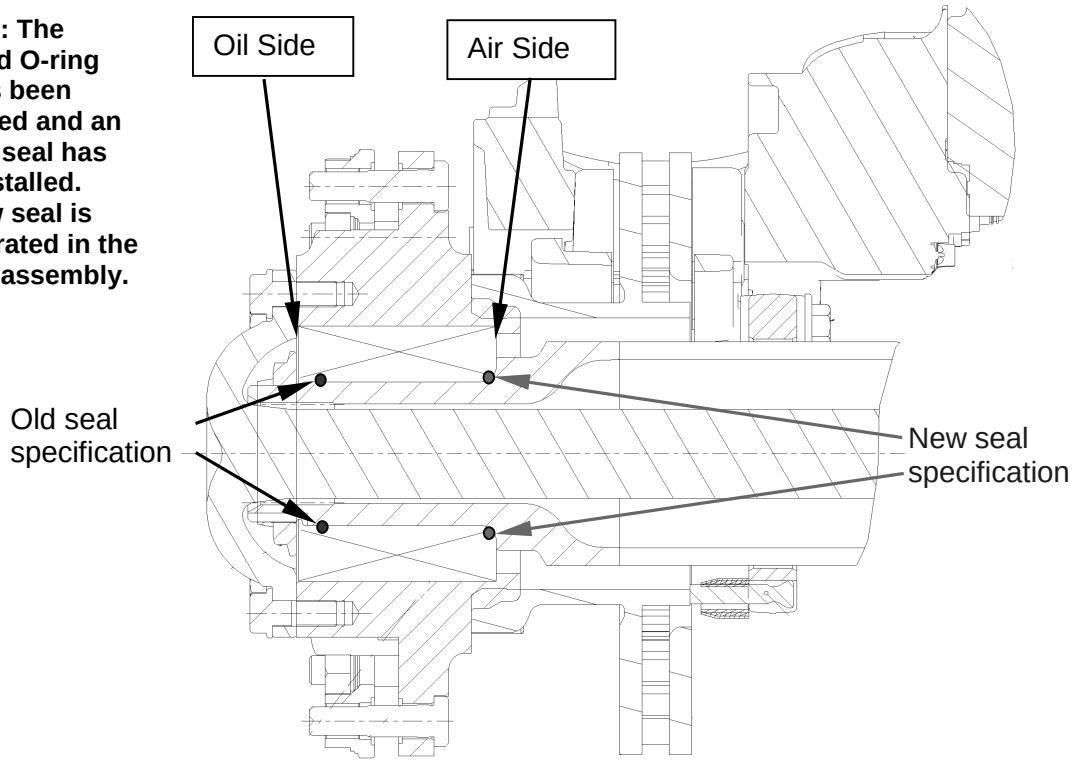

Figure 3: The outboard bearing has a new seal

PARTS AND PRODUCTS:

Old parts

Figures 4 and 5: Both ends of the old style bearing assembly are identical.

Part No.	Description	Qty.
VH 10720826	Unitized wheel bearing assembly, drive axle	1
VH 10721090	O-ring, drive axle spindle	1

New parts

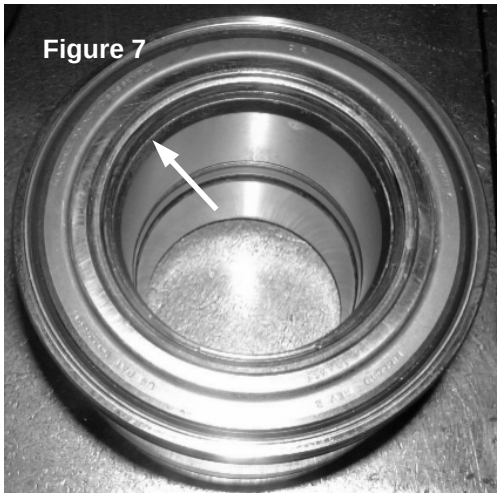

Figure 6: Outboard end of the new style wheel bearing assembly has new seal
Figure 7: Inboard end of new style wheel bearing assembly has incorporated bearing-to-spindle seal

Part No.	Description	Qty.
VH 10875658	“Super Seal” unitized wheel bearing assembly, drive axle	1

- Old and new parts are interchangeable, but only the new will be offered for service replacement.
- Parts may be purchased from your nearest ABC Customer Care & Parts Source service center.
- Parts and products disposition: discard according to applicable environmental regulations.

PROCEDURE:

“Super Seal” unitized drive axle wheel bearing assembly – service precautions and recommendations

1. General:

- Drive axle and unitized wheel bearing service should be executed by a technician experienced in drive axle repair.
- If you do not have the expertise to replace the unitized hub bearings, do not hesitate to go to your nearest ABC Customer Care & Parts Source service center.

2. Procedure changes:

- When installing a hub fitted with a “Super Seal” unitized wheel bearing assembly (VH 10875658) on a drive axle spindle of previous design, DO NOT fit the O-ring (VH 10721090) in the spindle groove.
- The recommended anticorrosive grease to be used on the drive axle spindle during installation of the hub is Molycote TP 42, or similar.
- The new unitized bearing assembly is directional.
  Care must be taken to make sure that the incorporated seal is installed towards the differential housing.
  This means that the bearing inner ring featuring the bellmouth (see Figure 8) should point outboard (hub nut side) and that the part of the inner ring featuring the square seal (see Figure 9) should point inboard (differential side).

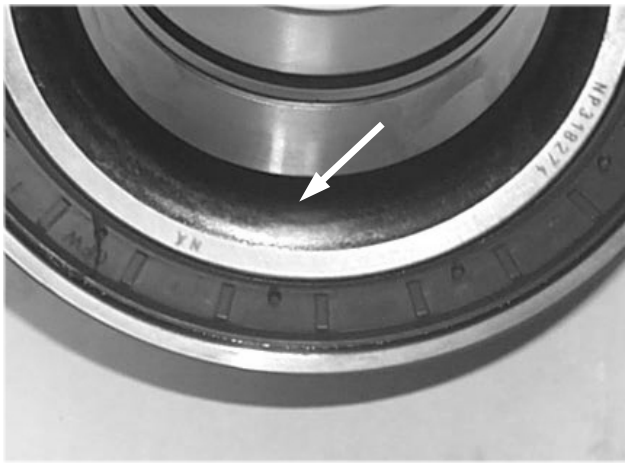

Figure 8: Round shouldered inner ring (bellmouth) should point to hub nut

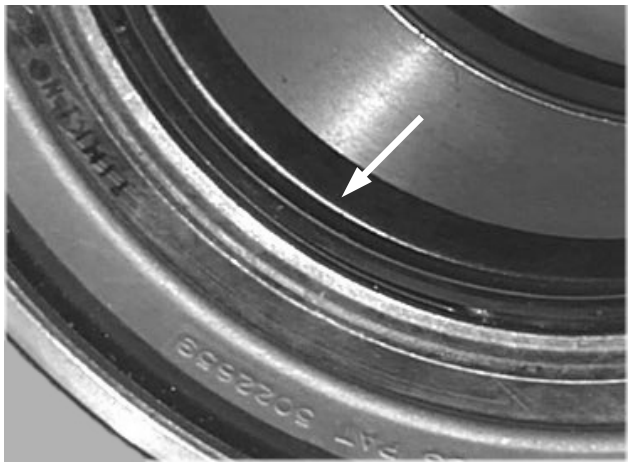

Figure 9: Square seal should point to differential

- **<u>CAUTION</u>: The final hub nut torque has been increased:**

Previously recommended torque	**660 to 735 ft.lbf**	**900 to 1000 Nm**
Actual recommended torque	**980 to 1080 ft.lbf**	**1330 to 1470 Nm**

3. Special tools, equipment or services:

- To remove the unitized bearing from the hub, use a hydraulic press and a flat punch, approximately 6.18 inch (157 mm) long, 1.5 inch (38 mm) thick and 0.39 inch (10 mm) wide.
- To install the unitized bearing in the hub, use the hydraulic press and installation tool VH 10914289 (see Figure 10).

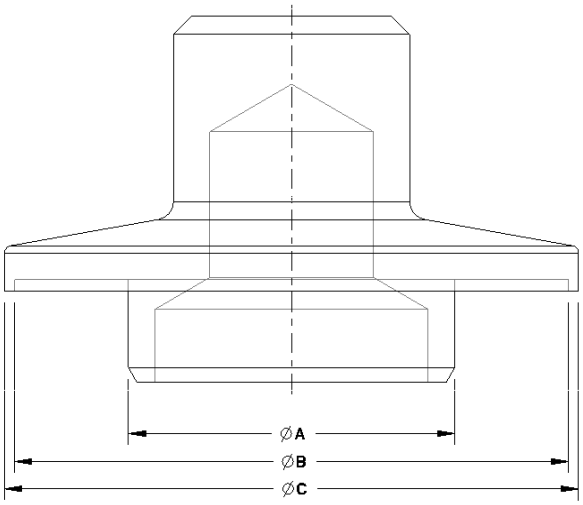

Figure 10: "Super Seal" unitized wheel bearing installation tool VH 10914289

Tool	∅ A (inch)	∅ A (mm)	∅ B (inch)	∅ B (mm)	∅ C (inch)	∅ C (mm)
90 Bearing	3.54 → 3.53	89.9 → 89.7	6	152.5	6.22	158

4. Drive axle hub with"Super Seal" unitized bearing – removal and installation

Removal:

1) Chock the road wheels of front and tag axle. Apply the parking brake. Jack-up the coach at the recommended jacking points to lift the drive axle.
   Support the drive axle at the C-beams with axle stands. Remove the road wheels.

2) Although the parking brake will hold the brake rotor in place, install a hard wooden block about $^{5}/8$ inch (16 mm) thick in the gap between the brake disc and the top of the axle housing as a precaution.

3) Install a drip pan below the hub to catch differential oil.

4) Undo and remove the halfshaft flange bolts. Remove the halfshaft.

5) Mark the position of the brake disc in relation to the hub.

6) Undo and remove the hub to disc Allen bolts.

7) Undo and remove the hub nut.

8) Support the hub with a trolley jack.
   Pull the hub assembly from the spindle.

9) Remove the O-ring from the drive axle spindle (see Figure 1).

10) Replace the unitized bearing assembly as explained in subsection 5. “To replace the drive axle hub “Super Seal” unitized bearing”.

Installation

1) Thoroughly clean the axle spindle and apply a thin film of Molycote TP 4 or similar.

   CAUTION: Before installing the hub and “Super Seal” assembly on the drive axle, carefully align it with the spindle and proceed with caution otherwise the incorporated seal may seize and become damaged.

2) Place the hub assembly on a trolley jack and install it on the spindle.

3) Run up the hub nut for a loose fit.

4) Align the holes in the hub with the holes in the brake disc using the mark previously made as a reference.
   Secure the hub to the brake disc with the Allen bolts and tighten crosswise in steps to a torque of 205 to 225 ft.lbf (275 to 305 Nm).

5) Tighten the hub nut to a torque of 265 to 295 ft.lbf (360 to 400 Nm).

6) Remove the wooden block from between the brake disc and the top of the drive axle housing.

7) Release the parking brake.

8) Rotate the hub ten revolutions to settle the bearings.

9) Turn the hub nut 200° to 220° further clockwise.

10) Finally tighten the hub nut to a torque of 980 to 1080 ft.lbf (1330 to 1470 Nm).

11) Re-apply the parking brake.

12) Apply Loctite 518 to the mating surfaces of the half shaft flange and the hub assembly.
    Install the shaft and tighten the retaining screws to a torque of 265 to 295 ft.lbf (360 to 400 Nm).

13) Remove the drip pan and refit the road wheels.
    Tighten the wheel nuts to a torque of 435 to 465 ft.lbf (580 to 620 Nm).
    Recheck torque after 50 miles.

14) Add fresh differential oil as required.
    Recheck oil level during the next A-type service interval (6,000 miles).

15) Remove the axle stands, lower the coach and remove the wheel chocks.

5. To replace the drive axle hub “Super Seal” unitized bearing:

Removal:

CAUTION: To remove the unitized bearing from the hub, or to install it, always use the proper tool and exert pressure on the outer ring of the assembly only.

1) Install the hub and bearing assembly in a hydraulic press, the outboard side (wheel studs) facing down. Make sure that the hub assembly is stable and that there is sufficient room beneath the hub to allow the bearing to be pressed out completely.

2) Install the flat punch, described under 3. “Special tools, equipment or services” in the slots at the back of the hub (see arrows, Figure 11).

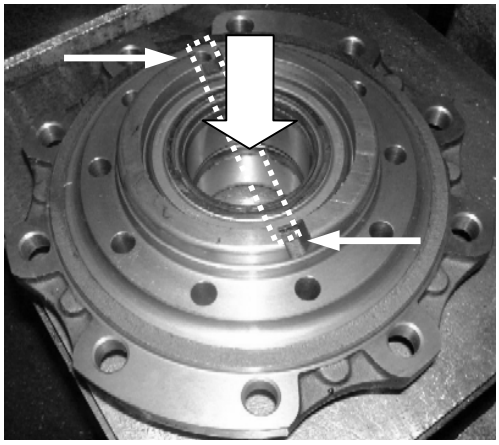

Figure 11: Bearing removal slots in hub to accept flat punch

3) Align the ram, the flat punch and the bearing assembly outer ring and apply pressure until the bearing is free from the hub.

<u>Installation</u>:

1) Make sure that all parts are perfectly clean.

<u>CAUTION</u>: Fitting the “Super Seal” unitized bearing inverted into the hub will cause leakage.

2) Install the bearing with the correct side up in the bore of the hub (see Figure 12).

Figure 12: Bearing in hub installation – stage 1

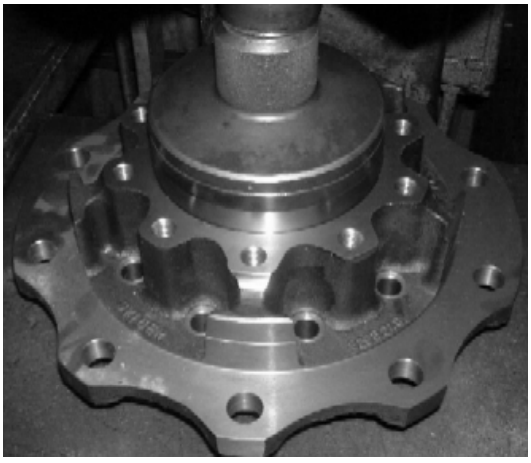

Figure 13: Bearing in hub installation – stage 2

3) Install the bearing installation tool.

4) Press the bearing down the bore using until the end-stop is reached (see Figure 13). Force required is 6,500 to 9,500 lbf (29 to 43 kN).

5) Keep pressing a few seconds until an axial force of 18,000 lbf (80 kN) has been reached. Figure 14 and 15 show the final installation.

Figure 13: Final installation – outboard (roadside)

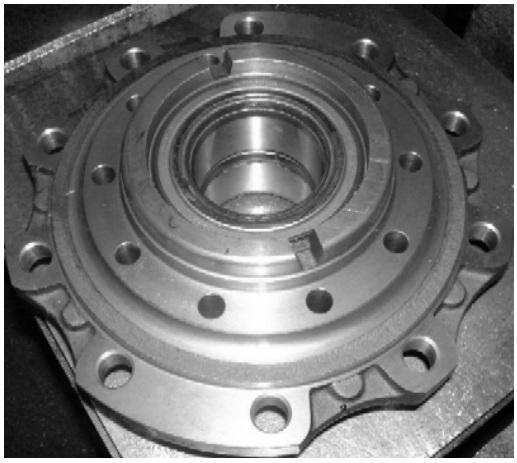

Figure 14: Final installation – inboard (differential side)

Procedure complete.

DISCLAIMER:

The procedures contained herein are not exclusive. Van Hool cannot possibly know, evaluate, or advise the transportation industry of all conceivable ways in which a procedure may be undertaken or of the possible consequences of each such procedure. Other procedures may be as good, or better, depending upon the particular circumstances involved.
Each carrier who uses the procedures herein must first satisfy itself thoroughly that neither the safety of its employees or agents, nor the safety or usefulness of any products, will be jeopardized by any procedure selected.

SERVICE INFORMATION:

Service Bulletins are issued to supplement or supersede information in the Van Hool manuals. Note Service Bulletin number, date and subject on the register at the end of the relevant chapter(s). File Service Bulletin separately for future reference.