



SERVICE BULLETIN

SB1256

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| ADDRESSEES | : Owners and operators of Van Hool coaches ABC Customer Care and Parts Source |
| VEHICLE MODEL | : All coaches |
| MANUAL SECTION | : 7.06 Front axle steering system - Linkage |
| BULLETIN TYPE | : Service Information |
| DATE | : July 17 th , 2016 |
| SUBJECT | : Steering linkage joints |
| CONDITIONS | : This Service Bulletin does not entitle to any reimbursement. |

INTRODUCTION

Due to a changeover by our drag link and tie rod supplier, you can find different types of steering linkage joints on your vehicle. This Service Bulletin supplies you with information about this changeover. This Service Bulletin also repeats the periodic checks with regard to the steering linkage joints as given in the maintenance manual.

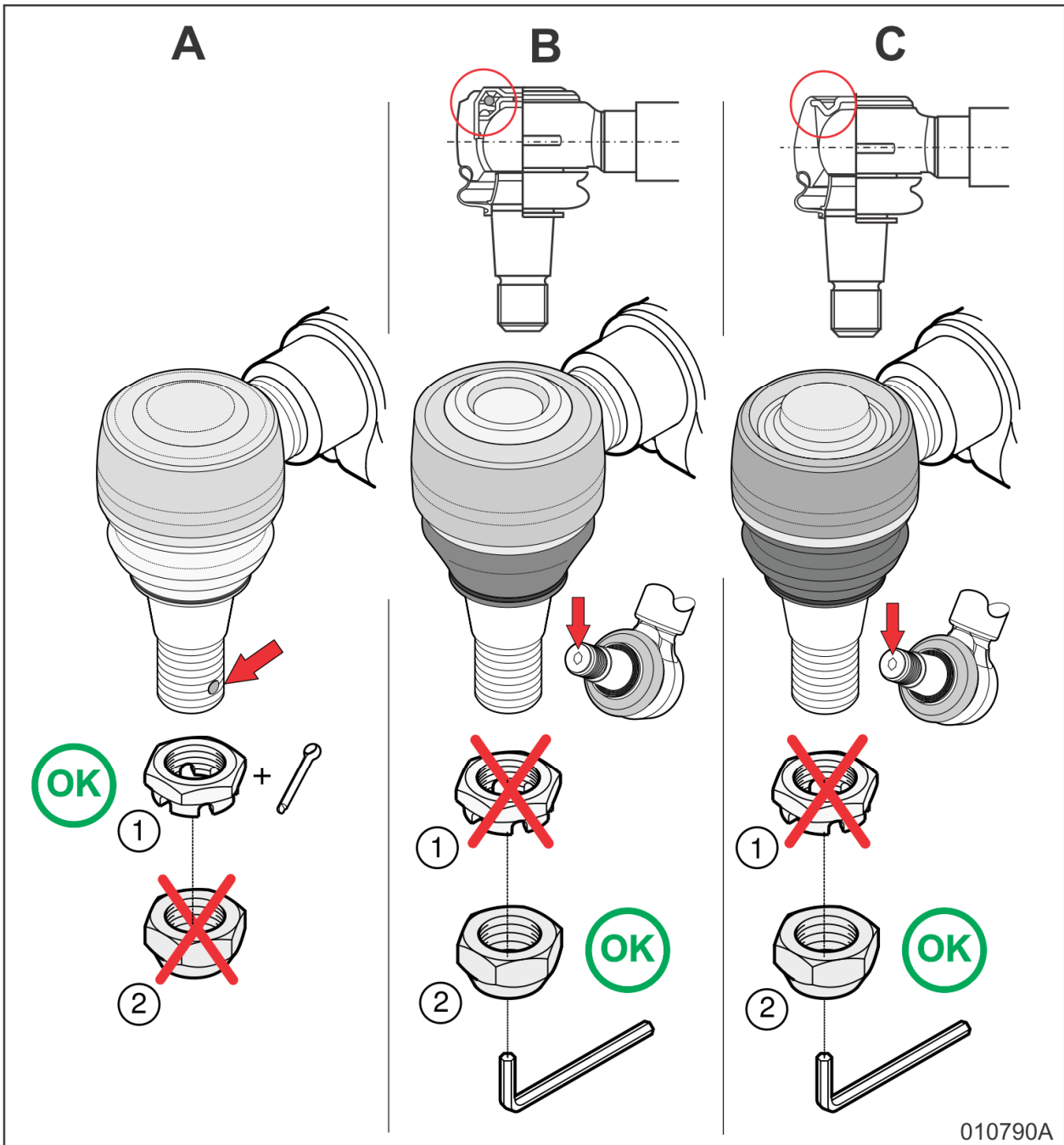
TYPES OF ROD ENDS

The drag link and tie rod ends can be equipped with rod ends for installation with:

- a castellated nut and a cotter pin (A-Figure 1) or...
- with a self-locking nut with nylon insert (B and C-Figure 1). For identification of steering linkage joints to be installed with self-locking nut, look at the shape of the joint cover in Figure 1!

| Vehicle | Location | Steering linkage joint type | VH number |
|---|-----------|--|-------------------------|
| T2100 Series C2045 CX Series TX Series | Tie rod | For installation with castellated nut and cotter pin | 10841028 (M30 x 1.5 RH) |
| | | | 10841030 (M30 x 1.5 LH) |
| | | For installation with self-locking nut | 11100538 (M30 x 1.5 RH) |
| | | | 11100558 (M30 x 1.5 LH) |
| TD925US TDX25US | Tie rod | For installation with castellated nut and cotter pin | 10984432 (M30 x 1.5 RH) |
| | | | 10984436 (M30 x 1.5 LH) |
| | Drag link | For installation with castellated nut and cotter pin | 10900233 (M38 x 1.5 RH) |
| | | | 10900235 (M38 x 1.5 LH) |

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Figure 1: Rod end

A: Rod end for installation with castellated nut and cotter pin (ball end equipped with hole for cotter pin)

B: Rod end for installation with self-locking nut with nylon insert, type 1 (bottom of joint equipped with hexagonal hole for Allen wrench)

C: Rod end for installation with self-locking nut with nylon insert, type 2 (bottom of joint equipped with hexagonal hole for Allen wrench)

1: Castellated nut

2: Self-locking nut with nylon insert

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TO CHECK STEERING LINKAGE JOINTS

1. To be carried out when?

Refer to "Maintenance schedule" in chapter 1.1 of the maintenance manual.

2. Equipment conditions

- Park the vehicle above an inspection pit.
- Make sure the parking brake is applied and switch off the engine.
- Switch off all systems and cut off the battery disconnect switch.
- Put a warning "DO NOT START: MAINTENANCE" on the steering wheel.
- Make sure you have read and understood all applicable instructions before beginning to work.
- Exterior of joint that is to be checked must have been cleaned with a dry rag.

3. To check what?

- joint exterior for corrosion
- dust cover of steering linkage joint
- dust cover retaining rings
- joint for play



CAUTION!

Do not damage ball-joint dust cover. Do not use any detergents or solvents. Water entering the ball-joint through an untight dust cover will damage the joint in no time.

4. To check exterior for corrosion - Figure 2

Nowhere on the joint should any corrosion marks with a depth of more than 1 mm (0.04 inch) be visible. Especially check whether edge of casing (1) around cover (3) is free of corrosion.

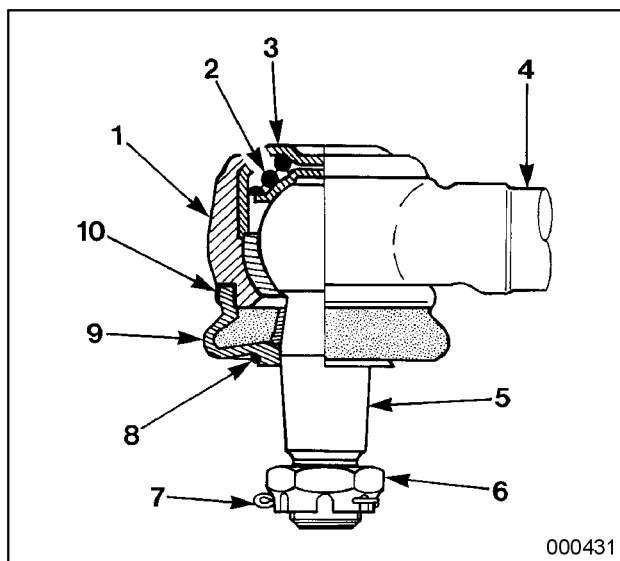


Figure 2: Typical linkage joint

- 1: Casing
- 2: Compression spring
- 3: Cover
- 4: Shank
- 5: Ball-joint pillar
- 6: Castellated nut
- 7: Cotter pin
- 8: Dust cover retaining ring
- 9: Dust cover
- 10: Dust cover retaining ring

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If the joint is corroded to a greater extent than permitted, change it as a whole by a new one.

Change cotter pin (7), if any pitting marks are found.

5. To check dust cover - Figure 2

Check dust cover (9) for punctures, cracks or tears. Work the flexible cover between your fingers. No grease should escape through the dust cover walls (only through the opening in the middle may escape grease).

If the dust cover is faulty, change the complete steering linkage joint by a new one.

Change cotter pin (7), if any pitting marks are found.

6. To check dust cover retaining rings - Figure 2

First check whether rings (8) and (10) have been installed correctly. Also, it must not be possible to rotate cover (9) by hand with respect to casing (1) (Grab cover with your fingers, near the largest ring, and try to turn it. Do not use any tools!).

If the rings are not up to standard, replace the steering linkage joint as a whole by a new one.

7. To check joint for play - Figure 3

Normal wear will not cause the ball-joint pillar to become any looser in its casing. This is because it is pushed against the joint liners by a spring. Play due to wear can only be detected by pressing the ball-joint pillar inwards against the spring pressure.

- 1) Set vehicle wheels in straight ahead position.
- 2) Mount a dial indicator with magnetic base on arm to which joint is attached.

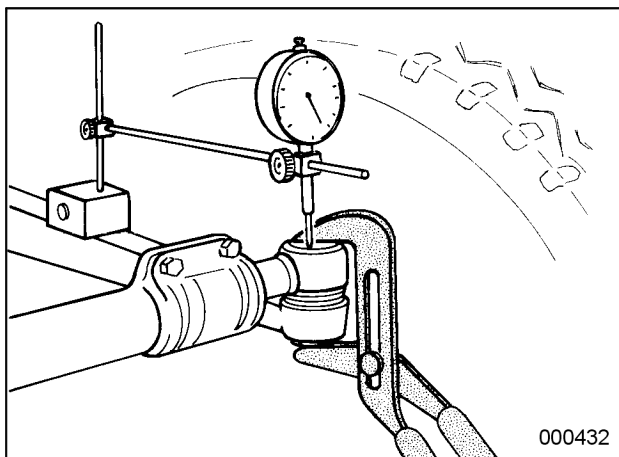


Figure 3: Set-up to check axial play

- 3) Position the dial indicator stylus with a slight pre-pressure perpendicular against cover (3).
- 4) By using adjustable joint pliers, press the joint and read on the dial indicator the compression of ball-joint pillar (5) . Compare the measured value to the maximum permissible play shown in figure 4.

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CAUTION!

The maximum permissible play is not identical for all steering linkage joints! In case of steering linkage joints for installation with self-locking nut you have two different types. Look at the shape of the joint cover for identification!

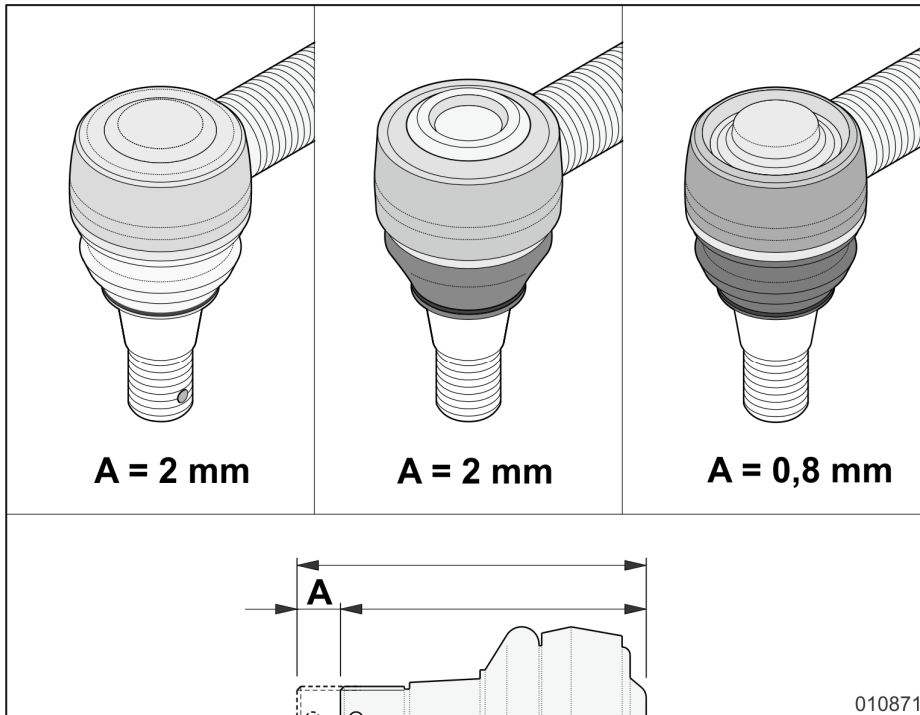


Figure 4: Maximum permissible play ("A" in figure)

- Left: steering linkage joint for installation with castellated nut and cotter pin (A= 2 mm or 0.08 inch)
- Middle: steering linkage joint for installation with self-locking nut, type 1 (A= 2mm or 0.08 inch)
- Right: steering linkage joint for installation with self-locking nut, type 2 (A= 0.8 mm or 0.03 inch)

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TO CHANGE STEERING LINKAGE JOINTS

To prevent confusion at inspection services it is not allowed:

- to install different types of steering linkage joints on the same rod;
- to use a metal self-locking castellated nut. The slots of such nut are pressed to the inside and will cut into the thread of the ball-joint pillar (see nut 3 in Figure 5). If nevertheless such nut is found during removal consider the steering linkage as single use. Additional, a metal self-locking castellated nut resembles a common castellated nut, which can create confusion at inspection services. The coach could be placed out of service due to the fact that no cotter pin is installed!

If you have to change a steering linkage joint and the used type is no longer available, the steering linkage joints at both ends of the rod have to be changed simultaneously.

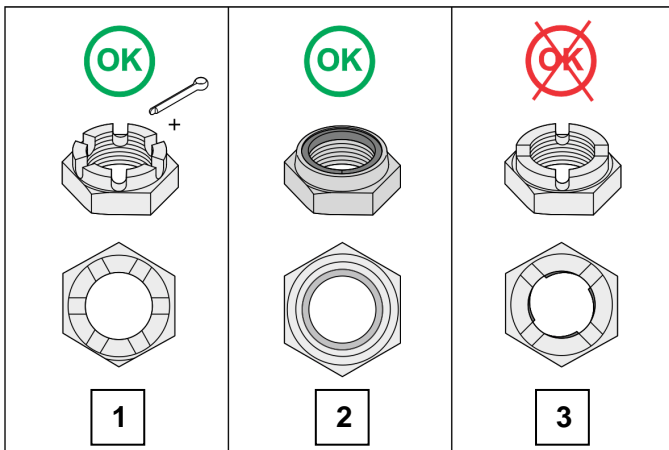


Figure 5: Nut types

- 1: Castellated nut
- 2: Self-locking nut with nylon insert
- 3: Metal self-locking castellated nut

INFORMATION HANDLING

Important additions and modifications regarding technical information not yet included in the manual will be communicated through Service Bulletins.

VAN HOOL CUSTOMER PORTAL:

Consult the Van Hool customer portal for the latest service documentation. Beside the maintenance manual, you will also find the operating manual and the spare parts catalogue of your vehicle on the customer portal. The customer portal is accessible through www.vanhool.be, and only with a code (password) from Van Hool. If you do not have a password yet, request it by using the link on the Van Hool website.