



Service Bulletin No. 1085

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COACH MODEL	: T900, T2100 and C2000 Series
BULLETIN TYPE	: Service Information
MANUAL & SECTION	: Maintenance Manual : Chapter 8 - Suspension Spare Parts Manual : Section 641206 - Drive axle suspension
DATE	: May 31st, 2001
SUBJECT	: Drive axle locating link
TERMS & CONDITIONS	: No claims will be accepted with reference to this Bulletin.

APPLICATION :

The procedure supplement to this Bulletin is applicable to coaches with C-beam mounted drive axles.

DESCRIPTION :

The attached procedure explains how to remove and install a drive axle locating link assembly and how to replace spring VH 624324690.

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.

Service personnel : please read, initial and circulate

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TO REMOVE AND INSTALL A DRIVE AXLE LOCATING LINK ASSEMBLY AND TO REPLACE SPRING VH 624324690

APPLICATION :

The present procedure below is applicable to T900, T2100 and C2000 Series coaches.

DESCRIPTION :

The step-by-step instructions below explain how to remove and install one of the two locating link assemblies connecting the upper part of the drive axle to the chassis.

PARTS :

- Refer to section no. 641206 "Drive axle : suspension" of the parts catalogue pertaining to the coach model.
- When replacing spring VH 624324690, also replace the split ball pivot, rubber cups and all related fasteners. Part numbers for these hardware parts are listed in Figure 3.

PROCEDURE :

1. General :

- The time required to replace a single locating link assembly is approximately 3 hours.

2. Special tools :

- 2x Allen bolt VH 660293402, 10x1.5x45 mm, grade 10.9.
- 2x plain washer VH 660627920, 10.5x21x2 mm.

3. Preparations :

- Park the coach on a level-surfaced service pit.
- Set the suspension to the normal ride height.
- Apply the parking brake and shut down the engine.
- Switch off all systems and turn off the battery master switch.
- Chock the road wheels.
- Put a "DO NOT OPERATE" tag on the steering wheel.
- Observe safe shop practices at all times.
- Read the entire procedure before beginning to work.

CAUTION : Leaf springs of drive axle locating links are made of high-grade steel. They must not be damaged, as any damage to this highly stressed component will result in premature failure. Avoid hitting with a hammer, while assembling or disassembling. Do not weld, grind or drill. Protect against spatter, when welding.

4. Locating link removal :

- 1) Undo and remove the four bolts #23 and nuts #24 securing spring #1 to the drive axle housing (see Figure 3).
- 2) Separate the locating link from the drive axle housing support by carefully jacking the coach at the rearmost jacking points, until the assembly disengages.
- 3) Support the chassis frame with a steel box girder and a wooden block (see Figure 1) at the foremost C-beam track rod anchor points (see Figure 2).

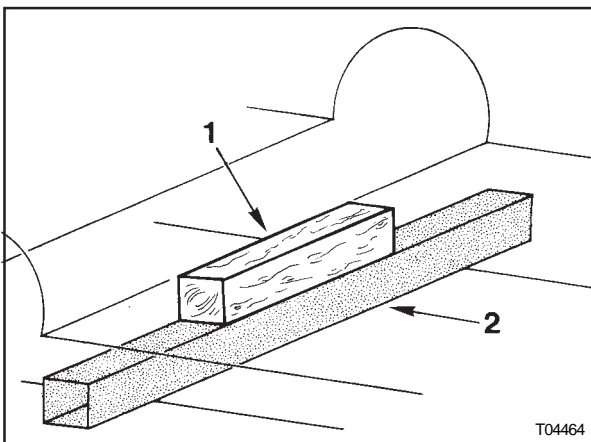


Figure 1: Chassis frame support

1. Wooden block
2. Steel box girder

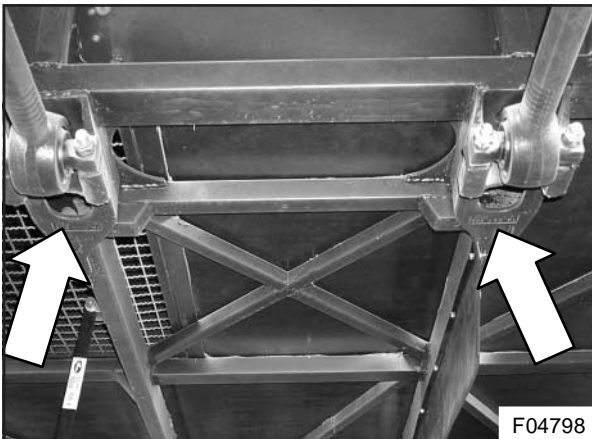


Figure 2 : Foremost C-beam trackrod anchor points

NOTE : In the following steps reference is made to Figure 3.

- 4) Locate the silent-block mounting bolts.
Rearmost bolts are located in the chassis crossmember above the drive axle.
Foremost bolts are accessible through the pneumatics/heating valve compartment in the luggage bay.
- 5) Between each pair of bolts there is a threaded hole, which allows compressing of the silent block by means of a bolt. Clean this threaded hole with a 10x1.5 mm trap and install a 10x1.5x45 mm Allen bolt (#17) and a plain washer (#18) for a loose fit.

- 6) Undo and remove bolts #20 securing the silent blocks to the chassis crossmembers.
- 7) Compress the fore and aft silent blocks by tightening the Allen bolts, until each block is about ½ inch (12 mm) shorter.
- 8) At the transmission end of the link assembly, undo and remove bolts #11 (2 pcs) and #13 as well as related hardware.
- 9) Remove clamp #10, taking note of its offset installation.
- 10) Remove silent block #9. Knock-out bush #15. Recover shim(s) #19. Note shim thickness and installation. Keep block and shim(s) together for reassembly.

NOTE : Do not swap fore and aft silent blocks and shims.

- 11) Carefully remove the link assembly from the coach. Recover the shim(s) of the foremost silent block. Note shim thickness and installation. Keep together for reassembly.
- 12) Undo and remove the bolts and related hardware securing the remaining silent block to the spring. Take note of the offset installation of the clamp. Knock-out the bush. Keep foremost silent block and shim(s) together for reassembly.
- 13) Inspect silent blocks for wear. Silent blocks with rubbers loosening or showing signs of cracking should be replaced. Mounting lip holes should be round and show no sign of damage. M16 bolt holes at the back of the block should be chased with a tap.
- 14) Recover clamping plates #22. Discard the old spring.

5) VH 624324690 spring assembly :

NOTE : All parts should be thoroughly cleaned before assembly. In the following steps reference is made to Figure 3.

- 1) Undo and remove the shipping fastener protecting the spring center hole. Discard the fastener.
- 2) Assembly spring #1, split ball pivot halves #5 and #6, and assorted hardware #2, #3, #7 and #8 as shown in the locating link assembly drawing. Mind the installation of plain washer #3, upper split ball pivot #5 and lower split ball pivot #6.
- 3) Tighten lock nut #8 to a torque of 170 to 230 ft.lbf (230 to 310 Nm). Install rubber cups #4.

NOTE : When reusing silent blocks, blocks should be installed in their old positions.

- 4) Slip the mounting lip of foremost silent block #9 between the upper and the lower leaf of new spring #1. Install offset bracket #10 with bolts #11 and nuts #12 as indicated. Assemble nuts for a loose fit.
- 5) Install a new bush #15 in the larger of the three holes of both the mounting lip of silentblock #9 and the lower leaf of spring #1. The bush should be flush with the edges of the holes. Install bolt #13, washers #14 and lock nut #16. Mind the installation of the washers. Tighten locknuts #12 and #16 to a torque of 170 to 230 ft.lbf (230 to 310 Nm).
- 6) Repeat steps 4 and 5 for the rearmost silent block.

6. Link adjustment and installation :

During production of the coach, shims have been added between the locating link assembly silent blocks and the chassis mounting points to obtain zero degrees thrust angle of the drive axle. Mixing up of the OEM fitted shims during link assembly service will alter wheel alignment. To determine the shims thickness required to obtain a zero degree thrust angle, accurately measure the distance between the link assembly mounting points. Next, refer to the chart below for corrective shims.

Mounting point distance (mm)	Shim thickness (mm)		Bolt length (mm)	Bolt part #
	Front **	Rear **		
1482 → 1486	3	3	40	VH 10577252
1484 → 1488	3	5	45	VH 660228702
1486 → 1490	5	5	45	VH 660228702
1490*	5	5	45	VH 660228702
1490 → 1493	3+5	5	45	VH 660228702
1493 → 1496	3+5	3+5	50	VH 10582084

* Nominal value ** Mounting point location

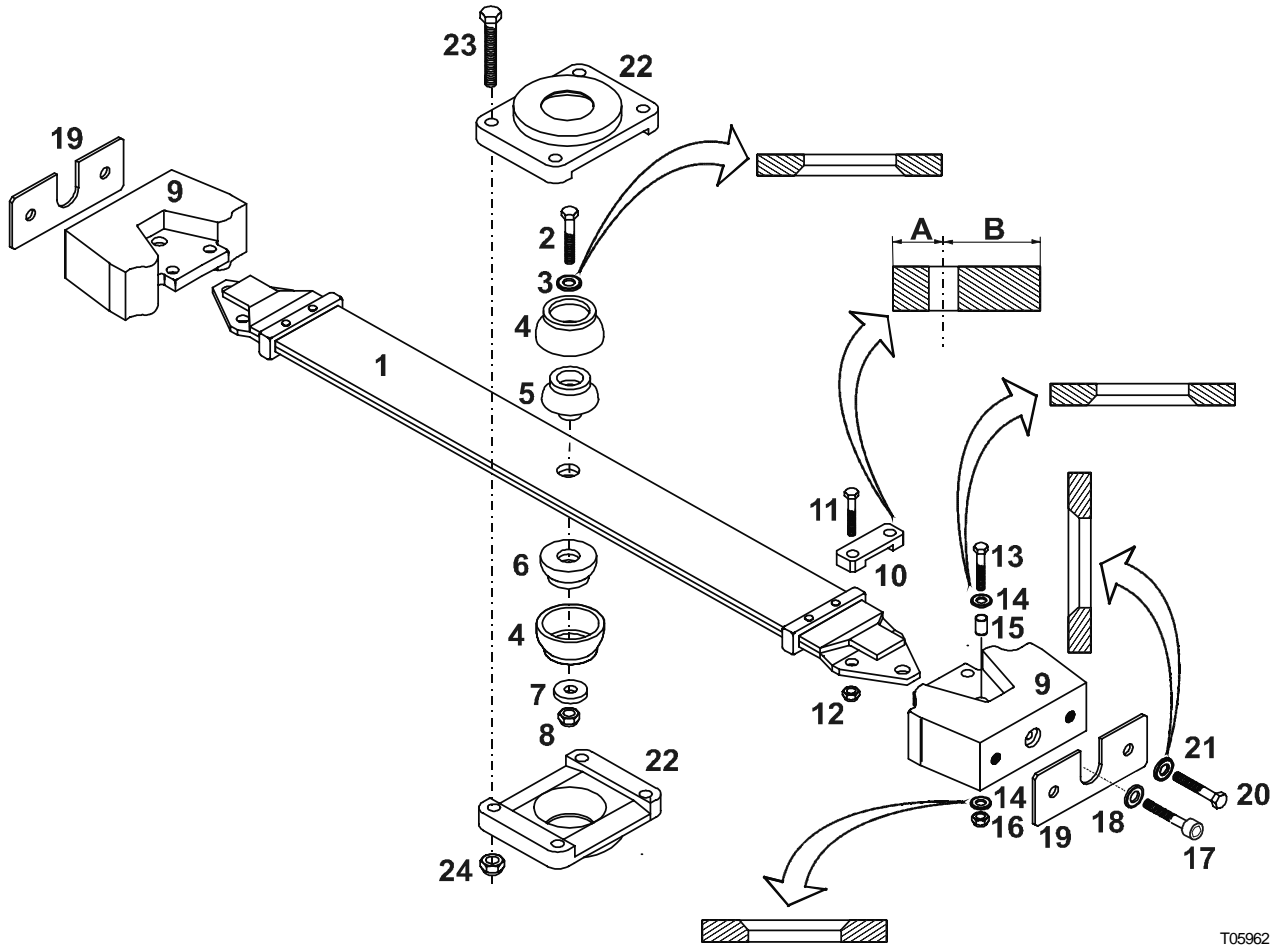
NOTE : In the following steps reference is made to Figure 3.

- 1) Install lower clamping plate #22 onto the drive axle support.
- 2) Place the locating link assembly onto the lower clamping plate with clamps #10 facing the coach floor. Make sure lower rubber cup #4 is properly seated.
- 3) Install the upper clamping plate. Make sure the upper rubber cup is properly seated.
- 4) Install bolts #23 and nuts #24 for a loose fit.
- 5) Install recovered shims #19 in their old locations. Install bolts #20 and washers #21 for a loose fit. Mind the installation of the washers and use Loctite #23 on the bolt thread. If necessary, adjust the silent block bolt hole to chassis mounting hole position using a jack.
- 6) Undo and remove silent block tensioner bolts #17 and washers #18.
- 7) Tighten bolts #20 to a torque of 185 ft.lbf (250 Nm). Make sure rubber cups #4 are properly seated and tighten nuts #24 to 120 to 160 ft.lbf (160 to 220 Nm).
- 8) Cover the heads of the rearmost bolts #20 liberally with grease.
- 9) Remove the chassis frame support and lower the coach.
- 10) Check suspension height. Adjust, if necessary.

Procedure complete.

Figure 3 : locating link assembly, replacement hardware part numbers and torque figures :

For the sake of clarity, not all parts have been shown.



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Part No.	Description	Qty.	Position #	Torque
VH 660251266	Bolt, 16x1.5x80 mm (grade 10.9)	1	2	
VH 660630990	Plain washer for 16 mm bolt, 17x30x4 mm	9	3-14-21	
VH 634301630	Cup, rubber	2	4	
VH 614310300	Split ball pivot, upper	1	5	
VH 614306230	Split ball pivot, lower	1	6	
VH 614307720	Ring, 44x17x8 mm	1	7	
VH 660620264	Bush	2	15	
VH 660207214	Lock nut for 16 mm bolt, 16x1.5 mm (grade 10)	7	8-12-16	170-230 ft.lbf
VH 660251314	Bolt, 16x1.5x65 mm (grade 10.9)	4	11	
VH 660251315	Bolt, 16x1.5x55 mm (grade 8.8)	2	13	
VH 10577252	Bolt, 16x2x40 mm* (grade 10.9)	4	20	185 ft.lbf**
VH 660228702	Bolt, 16x2x45 mm* (grade 10.9)	4	20	185 ft.lbf**
VH 10582084	Bolt, 16x2x50 mm* (grade 10.9)	4	20	185 ft.lbf**
VH 660251062	Bolt, 16x1.5x100 mm	4	23	
VH 660207210	Lock nut, 16x1.5 mm (grade 8)	4	24	120-160 ft.lbf
VH 614310760	Shim, 5 mm	#	19	
VH 10582117	Shim, 3 mm	#	19	

* Bolt length subject to shim thickness. See procedure. ** Install with Loctite 243 or similar.

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