



SERVICE BULLETIN No.1146A

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COACH MODEL	: T2145, S2145 and C2045
BULLETIN TYPE	: Product Improvement
MANUAL & SECTION	: Maintenance Manual: Chapter 4 – Axles, wheels and tires Chapter 7 - Steering Spare Parts Manual: Section 645009 - Wheels Section 642006 – Steering linkage
DATE	: October 22, 2014
SUBJECT	: 9.00 inch wheels
TERMS & CONDITIONS	: No claims will be accepted with reference to this Bulletin.

APPLICATION:

The product Improvement subject of this Bulletin has been cut into production as from the following units:

Model	Engine	Brakes	VIN
T2145	Cummins	Disc brakes on all axles	44268 →
	Detroit Diesel	Disc brakes on all axles	44585 →
C2045	Cummins	Disc brakes on all axles	45376 → 45382, 45392 →
	Detroit Diesel	Disc brakes on all axles	45808 → 45809, 45814 → 45815, 45835 → 45838, 45851 →
S2145	N/A	N/A	N/A

DESCRIPTION:

1. 9.00" wheels replace the previously installed 8.25" wheels:

- On Touring and Commuter coaches, 9.00 inch wide wheels have been introduced to replace the 8.25 inch wheels that have been fitted as standard on earlier units.
- The installation of 9.00 inch wheels reduces sidewall flexing of the tires, thus allowing for a higher Gross Axle Weight Rating (for vehicles with disc brakes on all axles only).
- The use of wider wheel also has further improved the ride quality of the coach.

Service personnel: please read, initial and circulate.

Service Manager	Parts Manager	Warranty Administrator	Workshop Foreman	Service Technician

2. 9.00 inch wheels require tie-rod arms with different offset (refer to Figure 1):

- To provide room for the new wheels and to clear the outer tie rod ball joints, different tie-rod arms had to be installed on the front axle.
- All tie-rod arms have the same number (#10648246) cast in them because they originate from the same mold, only to be finished differently (ground at a different angle). Identification has been provided by stamped markings, the key of which is given below.
- When the correct tie-rod arms have been fitted, the clearance between the outer ball joints and the wheel should be approximately 3/8 to 7/16 inch (9.5 to 11 mm).
- As a result of the change, the turning radius of the new production coaches has increased by 19-11/16 inch (500 mm) only.

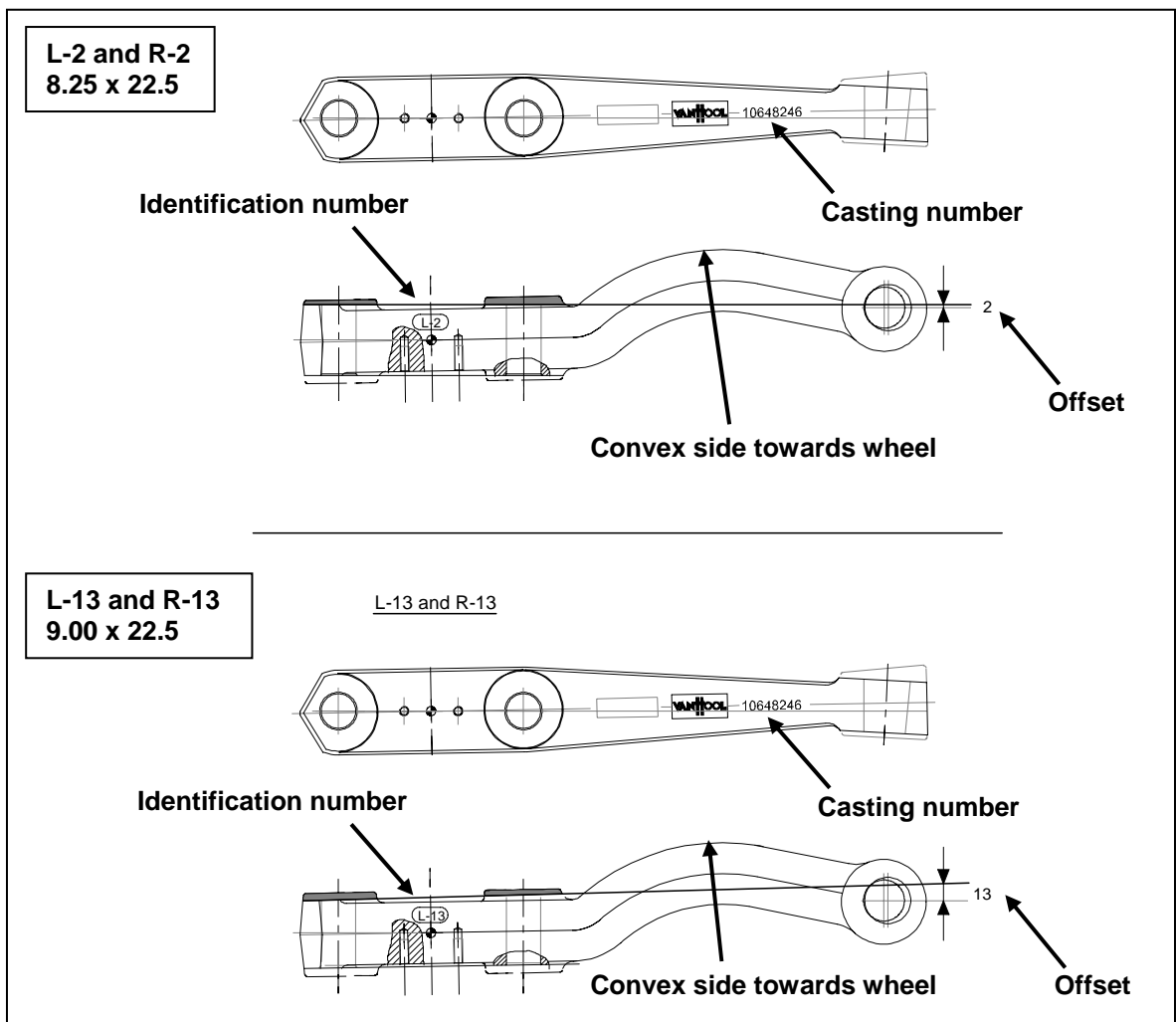


Figure 1: 8.25 inch vs 9.00 inch wheel tie-rod arms. Note that the casting number is the same (10648246) for all parts. Difference between left hand and right hand parts, and offset is made through stamped markings.

Key: L-2 = Left-hand, off-set 2mm (5/64 inch); R-2 = Right-hand, off-set 2mm (5/64 inch); L-13 = Left-hand, off-set 13mm (33/64 inch); R-13 = Right-hand, off-set 13mm (33/64 inch).

The convex side of the tie-rod arm should always point towards the wheel.

3. New type factory fitted tires:

- Touring, Commuter and Shell coaches are factory fitted with Goodyear G391E tires as standard. However, tests at Goodyear have indicated that the Goodyear Marathon LHS tire shows noticeable improvements over the tires currently used on Van Hool coaches.
- As shown in the chart below, the G391E tire characteristics such as removal miles, damage resistance, noise and handling (rated at 100), all have been ameliorated by the Marathon LHS tire (see Figure 2). The LHS tire will therefore replace the G391E tire on new production coaches.
- The old and new tire sizes remaining equal, no changes to the engine parameter settings or speedometer are necessary.
- Other brands of tires may be used, provided they meet or exceed the specifications of the OE items.

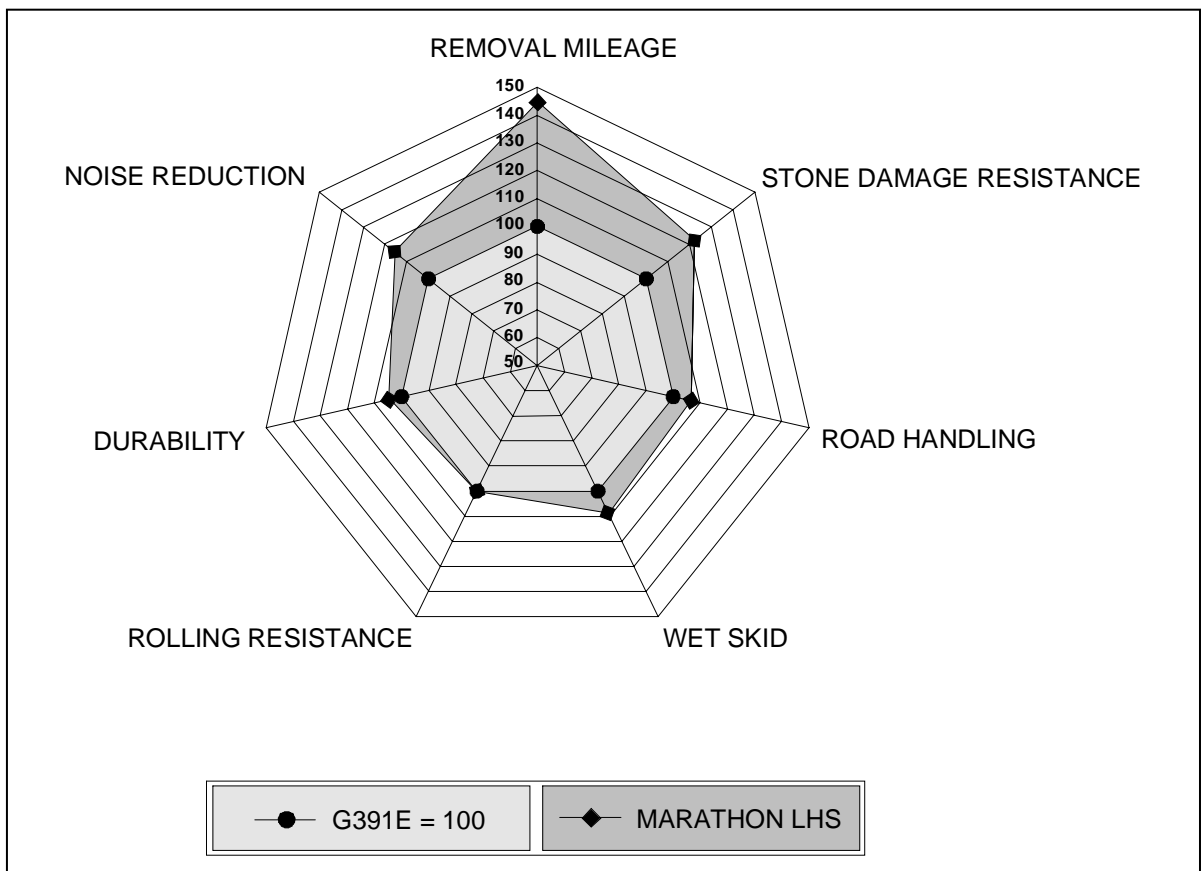


Figure 2: Goodyear G391E vs Goodyear Marathon LHS tire characteristics

4. New VIN plate and warning label:

1. To warn operators, service personnel and DOT inspectors that the coach has been equipped with 9.00 inch wheels a dedicated warning plate has been installed next to the VIN plate with the new axle load ratings (refer to Figure 3)
2. For field coaches with **disc brakes on all axles** that have been converted to 9.00 inch wheels, a new VIN plate (with new wheel data and axle load ratings) and a 9 inch wheel warning plate has been made available (refer to Figure 3). These plates are part of a conversion kit being offered by ABC Customer Care and Parts Source and should be installed in place of the original VIN plate.



Figure 3: VIN plate with new axle load ratings, and 9 inch wheel warning plate VH 10774277

3. For field coaches with **drum brakes on axle 2** that have been converted to 9.00 inch wheels, a new VIN plate (with only new wheel data) and a 9 inch wheel warning plate has been made available. These plates are part of a conversion kit being offered by ABC Customer Care and Parts Source and should be installed in place of the original VIN plate.

5. Conversions:

Wheels/tires are NOT directly interchangeable at the front axle. Operators who wish to install 9.00 inch wheels on coaches which have originally been equipped with 8.25 inch wheels need to consider the following:

- On the front axle:



CAUTION!

Installing 9.00 inch wheels on the front axle of coaches equipped with tie-rod arms for 8.25 inch wheels will cause the ball joints of the outer tie rods to foul the tires.

- The old tie-rod arms **MUST** be replaced by tie-rod arms with a larger offset: 33/64 vs 5/64 inch (13 vs 2 mm), refer to Figure 1. The tie-rod arms must be installed with new screws. Tighten the screws to a torque of 590 ± 60 ft.lbf (800 ± 80 Nm).
 - Secure the outer tie rods to the tie-rod arms as follows:
 - In case of a self-locking nut with nylon insert: use new nuts. Tighten the nuts to a torque of 195 ± 10 ft.lbf (265 ± 15 Nm).
 - In case of a castellated nut: re-use the nuts. Tighten the nuts to a torque of 195 ± 10 ft.lbf (265 ± 15 Nm) and install a new cotter pin.
 - The length of the outer tie rods needs to be changed.
 - The maximum turning angle must be reduced from 57.5° to 55°
 - The steering limiter relief pressure valve should be reset.
 - Alignment must be readjusted.
- *On all three axles:*



CAUTION!

It is necessary to always have the same tire/wheel combinations on all axles. Wheel and tire combinations should never be intermixed. Poor vehicle handling may result.

- On T, S and C-coaches the axle load ratings are determined by the wheels, not by the tires. Marathon LHS type tires can be fitted to 8.25 inch wheels, but the axle load rating remains the same as per G391E type tires.
- Coaches with **disc brakes on all axles** which have been retrofitted with 9.00 inch wheels should have a new VIN plate (with new wheel data and new axle load ratings) installed instead of the original VIN plate (see Figure 3).
- Coaches with **drum brakes on axle 2** which have been retrofitted with 9.00 inch wheels should have a new VIN plate (with only new wheel data) installed instead of the original VIN plate.
- Coaches originally equipped with 9.00 wheels must not be fitted with 8.25 wheels.
- Recommended tire pressures for coaches equipped with the new wheel/tire combination are different to those with the previous set-up (see typical chart below).

Wheel size	GVWR	Axle	GAWR lb.	Tire pressure
8.25" x 22.5"	49,350 lb	Front	14,990 lb	110 psi
		First intermediate	23,150 lb	95 psi
		Rear	11,245 lb	85 psi
9.00" x 22.5"	50,700 lb	Front	16,500 lb	120 psi
		First intermediate	24,250 lb	95 psi
		Rear	15,000 lb	110 psi

6. 9.00" vs 8.25" wheel summary:

Component	Specification	Old assembly	New assembly
Wheel	Width	8.25 inch	9.00 inch
	Diameter	22.5 inch	22.5 inch
	Off-set	6.69 inch	6.89 inch
	Steel	VH 10659948	VH 10704165
	Alloy	VH 10599035	VH 10699678
Tire	Size	315/80 R 22.5	315/80 R 22.5
	Type	G391E	Marathon LHS
Tie-rod arm	Left hand	VH 10648259	VH 10648488
	Off-set	5/64 inch (2 mm)	33/64 inch (13 mm)
	Right hand	VH 10648258	VH 10648486
	Off-set	5/64 inch	33/64 inch
Tie-rod arm fixing screw (micro encapsulated)	M22 x 1.5 x 85 mm	VH 10517129	VH 10517129
Nylon self-locking nut of tie-rod ball-pillar (if applicable)	M24 x 1.5 mm	VH 10786726	VH 10786726
Steering linkage – outer tie rod adjustment	Length	22.81 inch	22.38 inch
Front wheel steering angle (adjustable)	Angle	57.5°	55°

PARTS:

Previous installation (refer to Figure 1 for tie-rod arm identification):

Part reference	Description	Axle	Qty.*
VH 10639727	Tire, Goodyear G 391E 315/80R22.5	All	9
VH 10659948	Wheel, Lemmerz, steel, 8.25" x 22.5"	All	9
VH 10599035	Wheel, Alcoa, polished alloy, 8.25" x 22.5"	Front, tag, drive outer	7
VH 10711746	Wheel, Alcoa, unpolished alloy, 8.25" x 22.5"	Drive inner	2
VH 10648259	Tie-rod arm, left hand, to suit 8.25" x 22.5" wheel	Front axle	1
VH 10648258	Tie-rod arm, right hand, to suit 8.25" x 22.5" wheel	Front axle	1
VH 10517129	Screw, M22 x 1.5 x 85 mm	Front axle	4
VH 10786726	If applicable, nylon self-locking nut of tie-rod ball-pillar, M24 x 1.5 mm	Front axle	2

New installation (refer to Figure 1 for tie-rod arm identification and comparison):

Part reference	Description	Axle	Qty.*
VH 10735229	Tire, Goodyear Marathon LHS 315/80R22.5	All	9
VH 10704165	Wheel, Lemmerz, steel, 9.00" x 22.5"	All	9
VH 10699678	Wheel, Alcoa, polished alloy, 9.00" x 22.5"	Front, tag, drive outer	7
VH 10753627	Wheel, Alcoa, unpolished alloy, 9.00" x 22.5"	Drive inner	2
VH 10648488	Tie-rod arm, left hand, to suit 9.00" x 22.5" wheel	Front axle	1
VH 10648486	Tie-rod arm, right hand, to suit 9.00" x 22.5" wheel	Front axle	1
-	VIN plate with new wheel data and axle load ratings (for vehicles with disc brakes on all axles only)	Stepwell	1
-	VIN plate with only new wheel data (for vehicles with drum brakes on axle 2 only)	Stepwell	1
VH10774277	9 inch wheel warning plate	Stepwell	1
VH 10517129	Screw, M22 x 1.5 x 85 mm	Front axle	4
VH 10786726	If applicable, nylon self-locking nut of tie-rod ball- pillar, M24 x 1.5 mm	Front axle	2

* Quantities per coach, including spare wheel

- Old and new parts are not directly interchangeable.
- Both old and new parts will be available as service replacements.
- Parts may be purchased from your nearest ABC Customer Care & Parts Source service center.
- ABC Customer Care & Parts Source offer a conversion kit for coaches with 8.25 inch rims. Contact your technical representative for more details.
- Parts disposition: discard according to applicable environmental regulations.

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.