SERVICE BULLETIN No.1146

Circulate to listed addressees

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	**: March** 31, 2006
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	VIN
T2145	Cummins	44268 →
	Detroit Diesel	44585 →
C2045	Cummins	45376 → 45382, 45392 →
	Detroit Diesel	45808 → 45809, 45814 → 45815, 45835 → 45838, 45851 →
S2145	N/A	N/A

DESCRIPTION:

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

- On Touring and Commuter coaches, 9.00 inch wide rims have been introduced to replace the 8.25 inch items that have been fitted as standard on earlier units.
- The installation of 9.00 inch rims reduces sidewall flexing of the tires, thus allowing for a higher Gross Axle Weight Rating.
- The use of wider rims also has further improved the ride quality of the coach.

Description continued on next page.

Service personnel: please read, initial and circulate.

Service Manager	Parts Manager	Warranty Administrator	Workshop Foreman	Service Technician

Description continued from page 1.

2. 9.00 inch rims require steering arms with different offset (see Figure 1):

- To provide room for the new rims and to clear the outer track rod ball joints, different steering arms had to be installed on the front axle.
- All steering 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 steering arms have been fitted, the clearance between the outer ball joints and the rims 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.

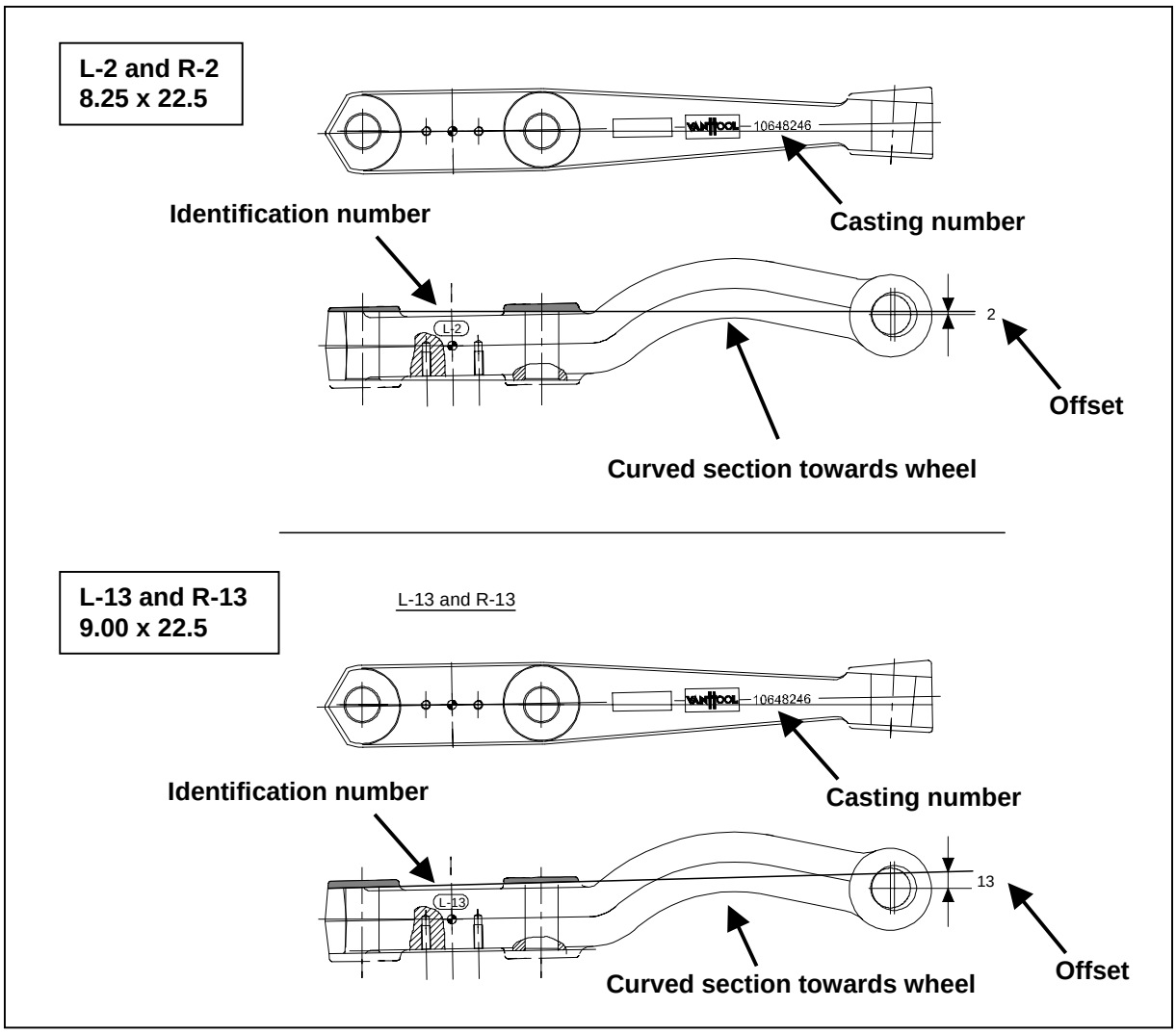


Figure 1: 8.25 inch vs 9.00 inch rim steering arms. Note that the casting numer is the same (10648246) for all parts. Difference between left hand and right hand parts, and off-set is made through stamped markings.

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

The curved section of the steering 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.

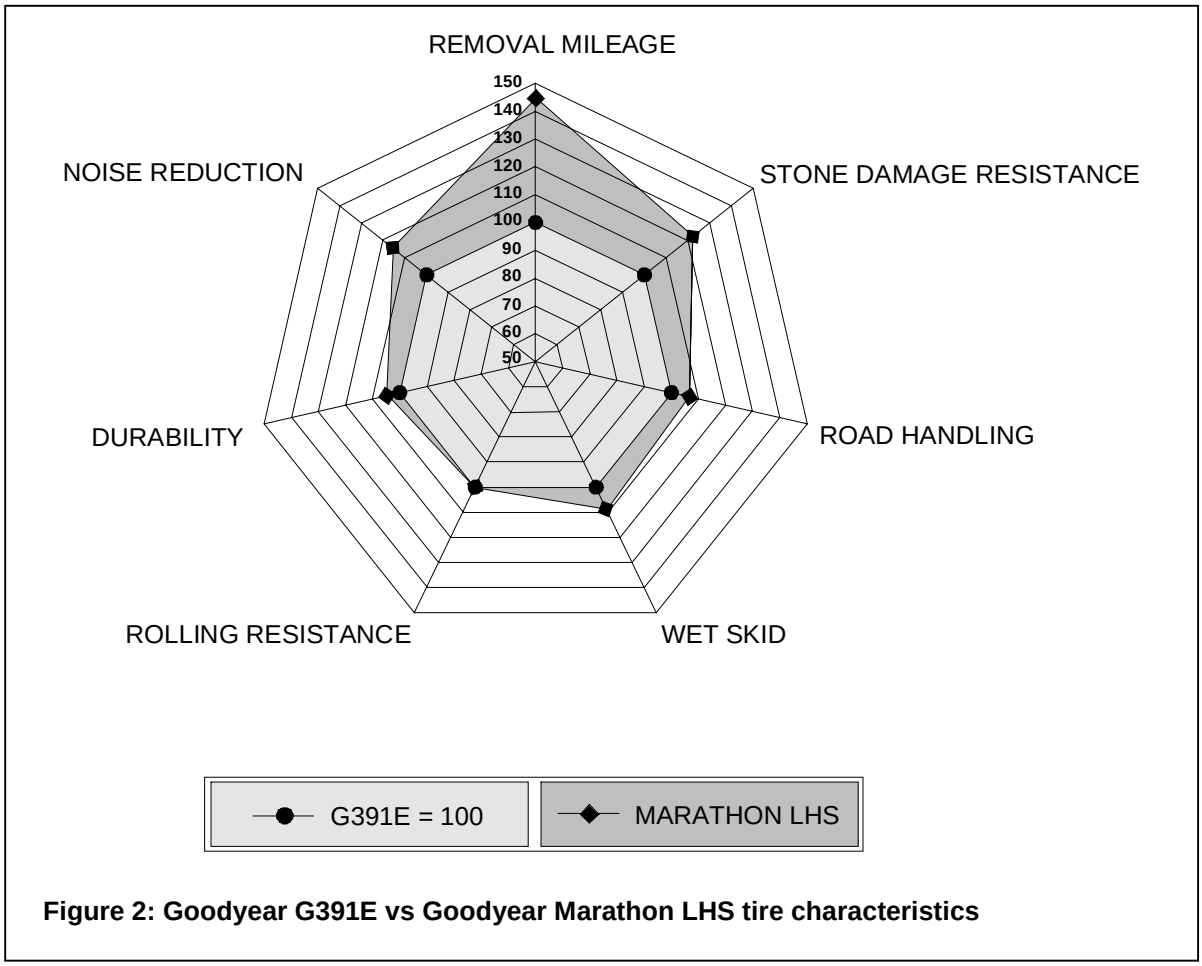


Figure 2: Goodyear G391E vs Goodyear Marathon LHS tire characteristics

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 (see Figure 3)

2. For field coaches that have been converted to 9.00 inch wheels, a new weight rating plate has been made available (see Figure 4.1). This plate is part of a conversion kit being offered by ABC Customer Care and Parts Source and should be installed next to the original VIN plate (see Figure 4.2).



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

9 inch WHEELS	GAWR	TIRE SIZE	RIM SIZE	COLD INFLATION PRESSURE	VANHOOL This plate is valid only for T2100 and C2045 coaches that have been converted according to the requirements stated in Service Bulletin #1146
Front	16,500 Lbs	315/80 R 22.5	9.00 x 22.5	120 Psi (Single)	
First intermediate	24,250 Lbs	315/80 R 22.5	9.00 x 22.5	95 Psi (Dual)	
Rear	15,000 Lbs	315/80 R 22.5	9.00 x 22.5	110 Psi (Single)	

Figure 4.1: Weight rating plate VH 10969345 with new axle load ratings, and 9.00 inch wheel warning label to complement coach VIN plate.



Figure 4.2: Weight rating plate VH 10969345 installed next to OE coach VIN plate.

5. Conversions:

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

- *On the front axle:*

  <u>CAUTION</u>: Installing 9.00 inch rims on the front axle of coaches equipped with steering arms for 8.25 inch rims will cause the ball joints of the outer track rods to foul the tires.

  → The old steering arms **MUST** be replaced by steering arms with a larger offset: 33/64 vs 5/64 inch (13 vs 2 mm), see Figure 1.
  → The length of the outer track 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:*

  <u>CAUTION</u>: It is necessary to always have the same tire/rim combinations on all axles. Rim 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 rims, not by the tires. Marathon LHS type tires can be fitted to 8.25 inch rims, but the axle load rating remains the same as per G391E type tires.
  → Coaches which have been retrofitted with 9.00 inch rims should have a **complementary** weight rating plate with the new axle load ratings installed next to the original VIN plate (see Figures 4.1 and 4.2).
  → Coaches originally equipped with 9.00 rims must not be fitted with 8.25 rims.
  → 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).

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

6. <u>9.00” vs 8.25” rim summary</u>:

Component	Specification	Old assembly	New assembly
Rim	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
Steering 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
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 (see Figure 1 for steering arm identification):

Part reference	Description	Axle	Qty.*
VH 10639727	Tire, Goodyear G 391E 315/80R22.5	All	9
VH 10659948	Wheel, Lemmerz, steel, 8.25x22.5	All	9
VH 10599035	Wheel, Alcoa, polished alloy, 8.25x22.5	Front, tag, drive outer	7
VH 10711746	Wheel, Alcoa, unpolished alloy, 8.25x22.5	Drive inner	2
VH 10648259	Steering arm, left hand, to suit 8.25x22.5 rim	Front axle	1
VH 10648258	Steering arm, right hand, to suit 8.25x22.5 rim	Front axle	1

New installation (see Figure 2 for steering 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, 9.00x22.5	All	9
VH 10699678	Wheel, Alcoa, polished alloy, 9.00x22.5	Front, tag, drive outer	7
VH 10753627	Wheel, Alcoa, unpolished alloy, 9.00x22.5	Drive inner	2
VH 10648488	Steering arm, left hand, to suit 9.00x22.5 rim	Front axle	1
VH 10648486	Steering arm, right hand, to suit 9.00x22.5 rim	Front axle	1
VH 10969345	Weight rating plate	Stepwell	1

* 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.