

**From:** UWE SCHMELZER [uwe.schmelzer@hubner-usa.com]

**Sent:** Monday, April 28, 2008 7:25 AM

**To:** Ansley, Alexander <NHTSA>

**Cc:** 'Johnson, Jim'; 'Hale, Peter'

**Subject:** RE: NHTSA Recall# 08V-004

**Attachments:** statement castings NABI artic.pdf

Dear Mr. Ansley,

This recall is strictly limited to 102 60 ft NABI BRT articulation buses delivered between August 2006 and March 2007. All of the buses affected are identified. HUBNER Manufacturing decided to exchange the 2 main casting parts of the articulation unit because of potential fatigue strength deficits. This is not an current risk however after a certain time in service the castings could probably crack. Affected from the fatigue strength problem are only castings made in foundry Willman in Cedar Grove, Wisconsin.

Hubner has already prepared the exchange of the articulations from Mai to August 2008. We have performed one prototype exchange on April 23 and 24, 2008 in NABI's facility in Ontario, Ca. in order to prepare the campaign and train our crew. We will keep you informed about our progress. Attached please find our original statement in regards to this issue.

Don't hesitate to contact me in case of further questions.

Best Regards

Uwe Schmelzer

CEO

Hubner Manufacturing

Ph.: (+1) 843 849 7571

Ce.: (+1) 843 412 8020

fax: (+1) 843 849 9404

---

**From:** alexander.ansley@dot.gov [mailto:alexander.ansley@dot.gov]

**Sent:** Friday, April 25, 2008 9:35 AM

**To:** uwe.schmelzer@hubner-usa.com

**Subject:** NHTSA Recall# 08V-004

Mr. Schmelzer,

Hello. I am looking for information pertinent to North American Bus Industries recall# 08V-004 regarding recalled metal castings made by Hubner. Did Hubner sell the same or similar castings recalled by NABI to any other vehicle manufacturer?

I have attached the referenced recall documentation.

Thank you,

**Alex Ansley**

DOT- NHTSA

Office of Defects Investigation

Recall Management / W46-437

1200 New Jersey Ave SE

Washington, DC 20590

P. (202) 493-0481

F. (202) 366-1767

## Statement

In regards to NABI articulation buses equipped with the articulation system HNG16.5 assembled out of castings made in the USA

HUBNER Manufacturing uses since July 2006 for the assembly of articulation systems HNG 16.5 for NABI castings made in USA. The supplier is the company Willman of Cedar Grove, WI. HUBNER Manufacturing has spend a lot of time and money together with our parent company in Germany to qualify Willman, including at least 4 visits with our casting specialist from Germany. Finally the castings met the requirements of the Huebner Standard HWN 505 in terms of mechanical properties, chemical composition X-Ray and ultra sonic testing.

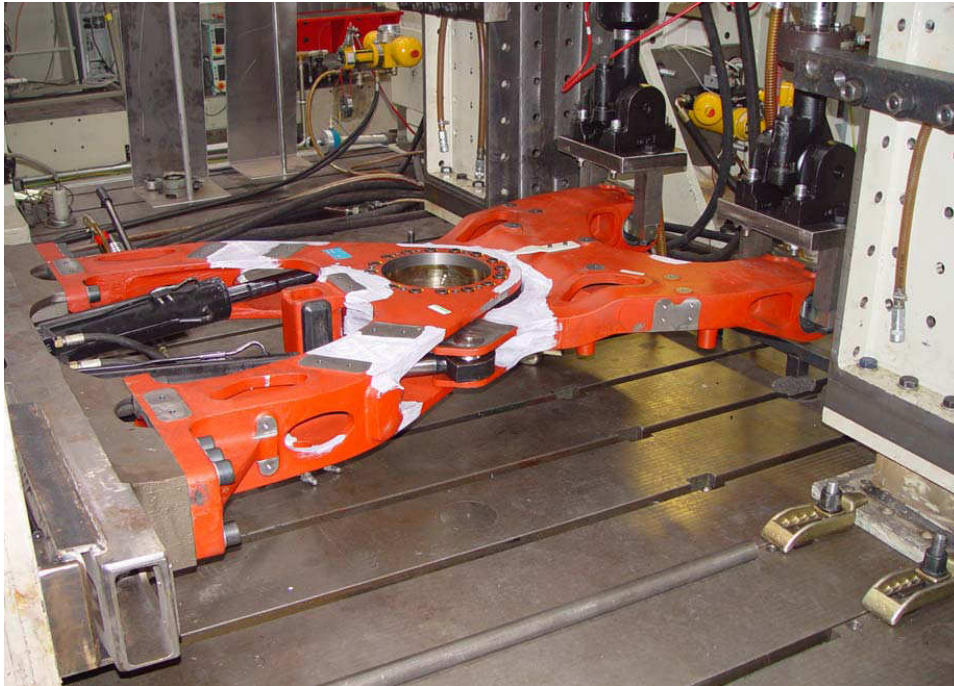
In July 2006 HUBNER Manufacturing started to use for the first 30 Articulation systems for Foothill only the rear car castings. Since September 2006 rear and front car castings are delivered from Willman. Altogether HUBNER Manufacturing has supplied 102 articulations with castings from Willman, 72 with front and rear casting and 30 with rear casting only.

As part of our quality inspection process we sent one of the articulations HNG 16.5 assembled with castings made in the USA to Germany for testing.

Based on the Huebner Germany test procedures articulations even with no design change must perform a fatigue test if the supplier changes. Unfortunately the articulation unit failed during the life cycle test at the University of Claussthal, Germany. The test was performed on a two channel hydro pulse test rig, which was used for testing several articulations HNG 16.5 before.

The test is performed with 2 different load cases – vertical shaft load and rolling. Booth load cases are applied by the 2 hydraulic rams. The amplitudes are in the vertical shaft load case 50 kN (112,000 lb) and in the rolling load case 55 kN (124,000 lb).

Generally the first articulation of each foundry gets tested with the maximal values of the load cases vertical shaft load and rolling in cycles of 100 load reversals. The average of load reversals until the castings fails is about 1 million load reversals – the poorest performance in the past was an articulation with 640,000 load reversals. A second articulation gets tested with a load spectrum of 2,000,000 load reversals. The articulation has to perform the test without cracks. (10 % of the load reversals are performed with maximal load and the remaining reversals with a mix between 25%, 50% and 75% of the maximum).



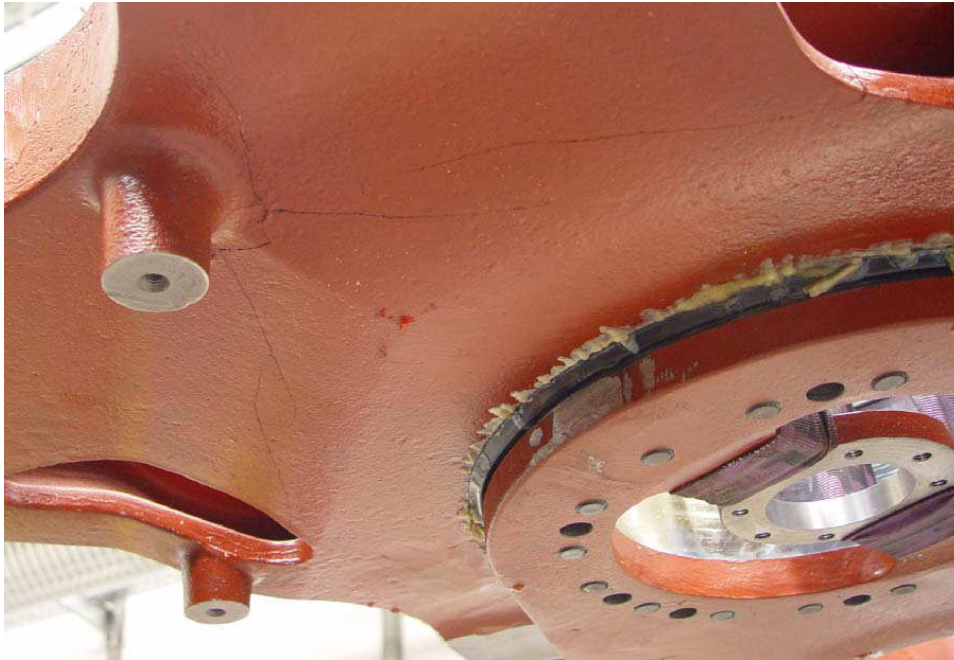
Hydro pulse test rig

The articulation HUBNER Manufacturing sent for testing failed in the first test with maximal load cases after 210,000 load reversal.



Cracks in the rear casting after 210,000 reversals

By removing the articulation from the test rig further strange cracks were recognized.



Cracks in the front casting

The scheduled second test was put on hold and a further investigation of the castings started. The castings got cut in order to have samples for micro structure analysis and tensional strength test. The results of the tensional strength test confirmed the values of Willmans report.

Unfortunately the metallographic analyzes of the micro structure confirmed a serious problem. The castings have abnormal and even burst sphere. They also have micro shrink holes and the micro structure failure dross. Dross is a failure which reduces the fatigue strength extremely even if the failure is not so much present. The test report and the micro structure report is available but only in German.

Based on these findings Huebner GmbH and HUBNER Manufacturing discussed the situation and came to the following statement:

1. The castings in these 102 articulation are a potential problem, however based on the results of the test we don't expect any major crack during the first year of service. The articulation performed at least 10 % of the requested load reversals but with maximum load. 10% of the load reversals represent approximately 1 ½ years of service. Additional safety results because the test was done only with maximum load cases
2. We believe the castings may be subject to replacement by castings which are proved and meet the fatigue strength expectations.
3. In order to verify for everybody the castings must be inspected to check for any cracks.

HUBNER Manufacturing proposed the following action plan.

	Action	Due date	note
1	Information of the end customers together with NABI about the failure	June 11, 2007	Metro L.A. and Foothill
2	Procurement of replacement parts from the original supplier in Germany	On order	Not available before January 2008
3	Final analyses of the reasons for the failing of the articulation together with the University of Claussthal and the foundry Willman	June 11, 2007	Willman analyzes to other castings currently
4	Inspection of the articulation buses equipped with the Willman castings.	Beginning June 11, 2007	See special inspection plan
5	Preparation of the exchange campaign to replace the castings in the articulation systems	January 2008	Document will be issued latest by end of September

Uwe Schmelzer  
05/23/2007